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Эфемериды Солнца и Луны

Мореходная астрономия — 2027–2035

Издание для Тихого океана

Часы около полудня и кульминации Луны на меридиане 180°

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Порядок работы

Пример шаг за шагом: Солнце, нижний край, 12 июня 2027 г. в 22 ч 23 мин 41 с UTC, высота глаза 2,5 м, поправка индекса $i = -1{,}4'$.

Высота светила

1 **Отсчёт секстана.** Снимите отсчёт секстана (ос) и прибавьте поправку индекса i с её знаком. С искусственным горизонтом разделите результат на 2: отсчёт равен двойной высоте.

$$h' = \text{ос} + i$$ 62°14,6’ − 1,4’ = 62°13,2’

2 **Наклонение горизонта.** По видимому (морскому) горизонту прибавьте наклонение горизонта d (табл. 1, всегда отрицательное) и получите видимую высоту $h_\text{в}$. С искусственным горизонтом эта поправка не нужна.

$$h_\text{в} = h' + d$$ 62°13,2’ − 2,8’ = 62°10,4’ (e = 2,5 м)

3 **Обсервованная высота.** Прибавьте общую поправку Δh для Солнца (табл. 2) или Луны (табл. 3), выбранную по $h_\text{в}$, а для Луны ещё и по горизонтальному параллаксу p со страницы месяца. В неё уже входят рефракция, параллакс и полудиаметр: второй раз их не учитывайте.

$$h_\text{о} = h_\text{в} + \Delta h$$ 62°10,4’ + 15,4’ = 62°25,8’ (табл. 2)

Координаты светила

4 **Часовой угол.** На странице месяца выберите $t^\text{ч}_\text{гр}$ на целый час перед наблюдением, затем интерполируйте на прошедшие минуты и секунды: табл. 4, затем табл. 5 для Δ строки $t_\text{гр}$ (превышение над 15°/ч у Солнца, над 14°/ч у Луны).

$$t_\text{гр} = t^\text{ч}_\text{гр} + \text{табл. 4} + \text{табл. 5}\,(\Delta)$$ 150°01,0’ + 5°55,2’ + 0,0’ = 155°56,2’

5 **Склонение.** Выберите склонение $\delta^\text{ч}$ на целый час и прибавьте поправку за Δ строки склонения (табл. 5) с её знаком.

$$\delta = \delta^\text{ч} + \text{табл. 5}\,(\Delta)$$ 23°10,7’ + 0,1’ = 23°10,8’ (Δ = +0,2)

Таблицы рассчитаны на 10 °C и 1010 гПа; при высоте ниже 10° рефракция меняется с погодой, и наблюдения менее надёжны. Формулы: наклонение горизонта $d = -1{,}76'\sqrt{e}$ (e — высота глаза, м); рефракция по Беннету; параллакс $0{,}15'\cos h_\text{в}$ (Солнце), $\arcsin(\sin p \cos h_\text{в})$ (Луна); полудиаметр Луны $R = 0{,}2725\,p$.

Таблица 1 — Наклонение видимого горизонта

e (м)	d
0,5	−1,2
1,0	−1,8
1,5	−2,2
2,0	−2,5
2,5	−2,8
3,0	−3,0
3,5	−3,3
4,0	−3,5
4,5	−3,7
5,0	−3,9
6,0	−4,3
7,0	−4,7
8,0	−5,0
9,0	−5,3
10,0	−5,6
12,0	−6,1
14,0	−6,6
16,0	−7,0
18,0	−7,5
20,0	−7,9
25,0	−8,8
30,0	−9,6

Таблица 2 — Солнце: общая поправка

$h_в$	Октябрь–март		Апрель–сентябрь	
	Нижний край	Верхний край	Нижний край	Верхний край
5°00’	+6.4	−25.8	+6.2	−25.6
5°30’	+7.1	−25.1	+6.9	−24.9
6°00’	+7.7	−24.5	+7.5	−24.3
6°30’	+8.3	−23.9	+8.1	−23.7
7°00’	+8.8	−23.4	+8.6	−23.2
7°30’	+9.2	−23.0	+9.0	−22.8
8°00’	+9.6	−22.6	+9.4	−22.4
8°30’	+10.0	−22.2	+9.8	−22.0
9°00’	+10.3	−21.9	+10.1	−21.7
9°30’	+10.6	−21.6	+10.4	−21.4
10°00’	+10.9	−21.3	+10.7	−21.1
11°00’	+11.3	−20.9	+11.1	−20.7
12°00’	+11.7	−20.5	+11.5	−20.3
13°00’	+12.1	−20.1	+11.9	−19.9
14°00’	+12.4	−19.8	+12.2	−19.6
15°00’	+12.6	−19.6	+12.4	−19.4
16°00’	+12.8	−19.4	+12.6	−19.2
17°00’	+13.0	−19.2	+12.8	−19.0
18°00’	+13.2	−19.0	+13.0	−18.8
19°00’	+13.4	−18.8	+13.2	−18.6
20°00’	+13.5	−18.7	+13.3	−18.5
25°00’	+14.1	−18.1	+13.9	−17.9
30°00’	+14.5	−17.7	+14.3	−17.5
35°00’	+14.8	−17.4	+14.6	−17.2
40°00’	+15.0	−17.2	+14.8	−17.0
45°00’	+15.2	−17.0	+15.0	−16.8
50°00’	+15.4	−16.8	+15.2	−16.6
55°00’	+15.5	−16.7	+15.3	−16.5
60°00’	+15.6	−16.6	+15.4	−16.4
65°00’	+15.7	−16.5	+15.5	−16.3
70°00’	+15.8	−16.4	+15.6	−16.2
75°00’	+15.9	−16.3	+15.7	−16.1
80°00’	+16.0	−16.2	+15.8	−16.0
85°00’	+16.0	−16.2	+15.8	−16.0
90°00’	+16.1	−16.1	+15.9	−15.9

Рефракция, параллакс и полудиаметр (16,1’ с октября по март, 15,9’ с апреля по сентябрь). Прибавить к $h_в$.

Таблица 3 — Луна: общая поправка

Нижний край									
$h_в \setminus p$	54’	55’	56’	57’	58’	59’	60’	61’	62’
5°00’	+58.6	+59.9	+61.2	+62.4	+63.7	+65.0	+66.2	+67.5	+68.8
6°00’	+59.9	+61.2	+62.4	+63.7	+65.0	+66.2	+67.5	+68.8	+70.0
7°00’	+60.9	+62.1	+63.4	+64.7	+65.9	+67.2	+68.4	+69.7	+71.0
8°00’	+61.6	+62.8	+64.1	+65.4	+66.6	+67.9	+69.1	+70.4	+71.7
9°00’	+62.1	+63.4	+64.6	+65.9	+67.1	+68.4	+69.7	+70.9	+72.2
10°00’	+62.5	+63.8	+65.0	+66.3	+67.5	+68.8	+70.0	+71.3	+72.6
11°00’	+62.8	+64.1	+65.3	+66.6	+67.8	+69.1	+70.3	+71.6	+72.8
12°00’	+63.0	+64.3	+65.5	+66.8	+68.0	+69.3	+70.5	+71.8	+73.0
13°00’	+63.1	+64.4	+65.6	+66.9	+68.1	+69.4	+70.6	+71.9	+73.1
14°00’	+63.2	+64.5	+65.7	+66.9	+68.2	+69.4	+70.7	+71.9	+73.2
15°00’	+63.2	+64.5	+65.7	+67.0	+68.2	+69.4	+70.7	+71.9	+73.1
20°00’	+62.8	+64.0	+65.2	+66.4	+67.6	+68.8	+70.0	+71.2	+72.5
25°00’	+61.5	+62.7	+63.9	+65.1	+66.2	+67.4	+68.6	+69.8	+71.0
30°00’	+59.8	+60.9	+62.0	+63.2	+64.3	+65.5	+66.6	+67.7	+68.9
35°00’	+57.5	+58.6	+59.7	+60.8	+61.9	+63.0	+64.1	+65.2	+66.3
40°00’	+54.9	+55.9	+57.0	+58.0	+59.0	+60.1	+61.1	+62.2	+63.2
45°00’	+51.9	+52.9	+53.9	+54.8	+55.8	+56.8	+57.8	+58.8	+59.7
50°00’	+48.6	+49.5	+50.4	+51.3	+52.3	+53.2	+54.1	+55.0	+55.9
55°00’	+45.0	+45.8	+46.7	+47.5	+48.4	+49.2	+50.1	+50.9	+51.8
60°00’	+41.1	+41.9	+42.7	+43.5	+44.2	+45.0	+45.8	+46.5	+47.3
65°00’	+37.1	+37.8	+38.5	+39.2	+39.9	+40.5	+41.2	+41.9	+42.6
70°00’	+32.8	+33.4	+34.1	+34.7	+35.3	+35.9	+36.5	+37.1	+37.7
75°00’	+28.4	+29.0	+29.5	+30.0	+30.5	+31.1	+31.6	+32.1	+32.7
80°00’	+23.9	+24.4	+24.8	+25.3	+25.7	+26.1	+26.6	+27.0	+27.5
85°00’	+19.3	+19.7	+20.1	+20.4	+20.8	+21.1	+21.5	+21.9	+22.2
90°00’	+14.7	+15.0	+15.3	+15.5	+15.8	+16.1	+16.4	+16.6	+16.9

Верхний край									
$h_в \setminus p$	54’	55’	56’	57’	58’	59’	60’	61’	62’
5°00’	+29.2	+29.9	+30.6	+31.4	+32.1	+32.8	+33.5	+34.3	+35.0
6°00’	+30.5	+31.2	+31.9	+32.6	+33.4	+34.1	+34.8	+35.5	+36.3
7°00’	+31.4	+32.1	+32.9	+33.6	+34.3	+35.0	+35.7	+36.5	+37.2
8°00’	+32.1	+32.9	+33.6	+34.3	+35.0	+35.7	+36.4	+37.2	+37.9
9°00’	+32.7	+33.4	+34.1	+34.8	+35.5	+36.2	+37.0	+37.7	+38.4
10°00’	+33.1	+33.8	+34.5	+35.2	+35.9	+36.6	+37.3	+38.1	+38.8
11°00’	+33.4	+34.1	+34.8	+35.5	+36.2	+36.9	+37.6	+38.3	+39.0
12°00’	+33.6	+34.3	+35.0	+35.7	+36.4	+37.1	+37.8	+38.5	+39.2
13°00’	+33.7	+34.4	+35.1	+35.8	+36.5	+37.2	+37.9	+38.6	+39.3
14°00’	+33.8	+34.5	+35.2	+35.9	+36.6	+37.3	+38.0	+38.7	+39.4
15°00’	+33.8	+34.5	+35.2	+35.9	+36.6	+37.3	+38.0	+38.7	+39.4
20°00’	+33.3	+34.0	+34.7	+35.3	+36.0	+36.7	+37.3	+38.0	+38.7
25°00’	+32.1	+32.7	+33.4	+34.0	+34.6	+35.3	+35.9	+36.5	+37.2
30°00’	+30.3	+30.9	+31.5	+32.1	+32.7	+33.3	+33.9	+34.5	+35.1
35°00’	+28.1	+28.6	+29.2	+29.7	+30.3	+30.8	+31.4	+31.9	+32.5
40°00’	+25.5	+26.0	+26.5	+26.9	+27.4	+27.9	+28.4	+28.9	+29.4
45°00’	+22.5	+22.9	+23.3	+23.8	+24.2	+24.6	+25.1	+25.5	+25.9
50°00’	+19.2	+19.5	+19.9	+20.3	+20.6	+21.0	+21.4	+21.8	+22.1
55°00’	+15.6	+15.9	+16.2	+16.5	+16.8	+17.1	+17.4	+17.7	+18.0
60°00’	+11.7	+11.9	+12.2	+12.4	+12.6	+12.8	+13.1	+13.3	+13.5
65°00’	+7.6	+7.8	+7.9	+8.1	+8.2	+8.4	+8.5	+8.7	+8.8
70°00’	+3.4	+3.5	+3.5	+3.6	+3.7	+3.7	+3.8	+3.9	+3.9
75°00’	−1.0	−1.0	−1.0	−1.0	−1.1	−1.1	−1.1	−1.1	−1.1
80°00’	−5.5	−5.6	−5.7	−5.8	−5.9	−6.0	−6.1	−6.2	−6.3
85°00’	−10.1	−10.3	−10.5	−10.7	−10.8	−11.0	−11.2	−11.4	−11.6
90°00’	−14.7	−15.0	−15.3	−15.5	−15.8	−16.1	−16.3	−16.6	−16.9

Столбцы: горизонтальный параллакс p (страница месяца, на дату). Рефракция, параллакс и полудиаметр ($R = 0{,}2725\,p$). Прибавить к $h_в$; интерполировать между строками и столбцами.

Таблица 4 — Приращение $t_{\text{гр}}$ за минуты и секунды

мин	Солнце	Луна	мин	Солнце	Луна	с	Солнце	Луна
0	0°00.0’	0°00.0’	30	7°30.0’	7°00.0’	0	0,0’	0,0’
1	0°15.0’	0°14.0’	31	7°45.0’	7°14.0’	2	0,5’	0,5’
2	0°30.0’	0°28.0’	32	8°00.0’	7°28.0’	4	1,0’	0,9’
3	0°45.0’	0°42.0’	33	8°15.0’	7°42.0’	6	1,5’	1,4’
4	1°00.0’	0°56.0’	34	8°30.0’	7°56.0’	8	2,0’	1,9’
5	1°15.0’	1°10.0’	35	8°45.0’	8°10.0’	10	2,5’	2,3’
6	1°30.0’	1°24.0’	36	9°00.0’	8°24.0’	12	3,0’	2,8’
7	1°45.0’	1°38.0’	37	9°15.0’	8°38.0’	14	3,5’	3,3’
8	2°00.0’	1°52.0’	38	9°30.0’	8°52.0’	16	4,0’	3,7’
9	2°15.0’	2°06.0’	39	9°45.0’	9°06.0’	18	4,5’	4,2’
10	2°30.0’	2°20.0’	40	10°00.0’	9°20.0’	20	5,0’	4,7’
11	2°45.0’	2°34.0’	41	10°15.0’	9°34.0’	22	5,5’	5,1’
12	3°00.0’	2°48.0’	42	10°30.0’	9°48.0’	24	6,0’	5,6’
13	3°15.0’	3°02.0’	43	10°45.0’	10°02.0’	26	6,5’	6,1’
14	3°30.0’	3°16.0’	44	11°00.0’	10°16.0’	28	7,0’	6,5’
15	3°45.0’	3°30.0’	45	11°15.0’	10°30.0’	30	7,5’	7,0’
16	4°00.0’	3°44.0’	46	11°30.0’	10°44.0’	32	8,0’	7,5’
17	4°15.0’	3°58.0’	47	11°45.0’	10°58.0’	34	8,5’	7,9’
18	4°30.0’	4°12.0’	48	12°00.0’	11°12.0’	36	9,0’	8,4’
19	4°45.0’	4°26.0’	49	12°15.0’	11°26.0’	38	9,5’	8,9’
20	5°00.0’	4°40.0’	50	12°30.0’	11°40.0’	40	10,0’	9,3’
21	5°15.0’	4°54.0’	51	12°45.0’	11°54.0’	42	10,5’	9,8’
22	5°30.0’	5°08.0’	52	13°00.0’	12°08.0’	44	11,0’	10,3’
23	5°45.0’	5°22.0’	53	13°15.0’	12°22.0’	46	11,5’	10,7’
24	6°00.0’	5°36.0’	54	13°30.0’	12°36.0’	48	12,0’	11,2’
25	6°15.0’	5°50.0’	55	13°45.0’	12°50.0’	50	12,5’	11,7’
26	6°30.0’	6°04.0’	56	14°00.0’	13°04.0’	52	13,0’	12,1’
27	6°45.0’	6°18.0’	57	14°15.0’	13°18.0’	54	13,5’	12,6’
28	7°00.0’	6°32.0’	58	14°30.0’	13°32.0’	56	14,0’	13,1’
29	7°15.0’	6°46.0’	59	14°45.0’	13°46.0’	58	14,5’	13,5’

На страницах месяцев $t_{\text{гр}}$ дан на целые часы; между ними он растёт равномерно, на 15° в час у Солнца и на 14° у Луны. Таблица даёт приращение за минуты (слева) и секунды (справа) после целого часа: прибавьте оба к $t_{\text{гр}}$ на целый час, затем поправку за Δ (табл. 5). Пример, Солнце в 15 ч 30 мин 52 с: 7°30,0’ + 13,0’ = 7°43,0’.

Таблица 5 — Поправка за Δ

Δ’/h \ мин	5	10	15	20	25	30	35	40	45	50	55	60
0,1	0,0	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,1	0,1
0,2	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2
0,3	0,0	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,3	0,3
0,5	0,0	0,1	0,1	0,2	0,2	0,2	0,3	0,3	0,4	0,4	0,5	0,5
0,7	0,1	0,1	0,2	0,2	0,3	0,3	0,4	0,5	0,5	0,6	0,6	0,7
1,0	0,1	0,2	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,8	0,9	1,0
2,0	0,2	0,3	0,5	0,7	0,8	1,0	1,2	1,3	1,5	1,7	1,8	2,0
3,0	0,2	0,5	0,8	1,0	1,2	1,5	1,8	2,0	2,2	2,5	2,8	3,0
4,0	0,3	0,7	1,0	1,3	1,7	2,0	2,3	2,7	3,0	3,3	3,7	4,0
5,0	0,4	0,8	1,2	1,7	2,1	2,5	2,9	3,3	3,8	4,2	4,6	5,0
6,0	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0
7,0	0,6	1,2	1,8	2,3	2,9	3,5	4,1	4,7	5,2	5,8	6,4	7,0
8,0	0,7	1,3	2,0	2,7	3,3	4,0	4,7	5,3	6,0	6,7	7,3	8,0
9,0	0,8	1,5	2,2	3,0	3,8	4,5	5,2	6,0	6,8	7,5	8,2	9,0
10,0	0,8	1,7	2,5	3,3	4,2	5,0	5,8	6,7	7,5	8,3	9,2	10,0
11,0	0,9	1,8	2,8	3,7	4,6	5,5	6,4	7,3	8,2	9,2	10,1	11,0
12,0	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0
13,0	1,1	2,2	3,2	4,3	5,4	6,5	7,6	8,7	9,8	10,8	11,9	13,0
14,0	1,2	2,3	3,5	4,7	5,8	7,0	8,2	9,3	10,5	11,7	12,8	14,0
15,0	1,2	2,5	3,8	5,0	6,2	7,5	8,8	10,0	11,2	12,5	13,8	15,0
16,0	1,3	2,7	4,0	5,3	6,7	8,0	9,3	10,7	12,0	13,3	14,7	16,0
17,0	1,4	2,8	4,2	5,7	7,1	8,5	9,9	11,3	12,8	14,2	15,6	17,0
18,0	1,5	3,0	4,5	6,0	7,5	9,0	10,5	12,0	13,5	15,0	16,5	18,0
20,0	1,7	3,3	5,0	6,7	8,3	10,0	11,7	13,3	15,0	16,7	18,3	20,0
30,0	2,5	5,0	7,5	10,0	12,5	15,0	17,5	20,0	22,5	25,0	27,5	30,0
40,0	3,3	6,7	10,0	13,3	16,7	20,0	23,3	26,7	30,0	33,3	36,7	40,0

Остаток интерполяции: $t_{\text{гр}}$ на самом деле растёт за час на Δ больше, чем на 15° (14°), а склонение меняется на Δ за час (Δ’/h на странице месяца). Таблица даёт $\Delta \times \text{мин}/60$ за минуты после целого часа; прибавьте её со знаком Δ. Для Δ, которого нет в таблице, сложите строки: Луна, Δ = 38,3’/h за 41 мин $\approx$ 30 + 8 + 0,3: 20,5 + 5,5 + 0,2 = 26,2’.

СОЛНЦЕ

Январь 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	179° 11.9 -23° 02.2	194° 11.6 -23° 02.0	209° 11.3 -23° 01.8	224° 11.0 -23° 01.6	239° 10.7 -23° 01.4	254° 10.5 -23° 01.2	89° 06.6 -22° 58.5	104° 06.3 -22° 58.3	119° 06.0 -22° 58.1	134° 05.7 -22° 57.9	149° 05.4 -22° 57.7	164° 05.1 -22° 57.4	-0.3 +0.2
Сб 2	179° 04.9 -22° 57.2	194° 04.6 -22° 57.0	209° 04.3 -22° 56.8	224° 04.0 -22° 56.6	239° 03.7 -22° 56.4	254° 03.4 -22° 56.1	88° 59.6 -22° 53.2	103° 59.3 -22° 53.0	118° 59.0 -22° 52.7	133° 58.7 -22° 52.5	148° 58.4 -22° 52.3	163° 58.1 -22° 52.0	-0.3 +0.2
Вс 3	178° 57.8 -22° 51.8	193° 57.6 -22° 51.6	208° 57.3 -22° 51.3	223° 57.0 -22° 51.1	238° 56.7 -22° 50.9	253° 56.4 -22° 50.6	88° 52.7 -22° 47.4	103° 52.4 -22° 47.2	118° 52.1 -22° 46.9	133° 51.8 -22° 46.7	148° 51.5 -22° 46.4	163° 51.2 -22° 46.2	-0.3 +0.2
Пн 4	178° 50.9 -22° 45.9	193° 50.6 -22° 45.7	208° 50.4 -22° 45.4	223° 50.1 -22° 45.2	238° 49.8 -22° 44.9	253° 49.5 -22° 44.6	88° 45.8 -22° 41.2	103° 45.5 -22° 40.9	118° 45.2 -22° 40.7	133° 44.9 -22° 40.4	148° 44.7 -22° 40.1	163° 44.4 -22° 39.9	-0.3 +0.3
Вт 5	178° 44.1 -22° 39.6	193° 43.8 -22° 39.3	208° 43.5 -22° 39.0	223° 43.3 -22° 38.8	238° 43.0 -22° 38.5	253° 42.7 -22° 38.2	88° 39.1 -22° 34.5	103° 38.8 -22° 34.3	118° 38.5 -22° 34.0	133° 38.2 -22° 33.7	148° 38.0 -22° 33.4	163° 37.7 -22° 33.1	-0.3 +0.3
Ср 6	178° 37.4 -22° 32.8	193° 37.1 -22° 32.5	208° 36.8 -22° 32.2	223° 36.6 -22° 31.9	238° 36.3 -22° 31.6	253° 36.0 -22° 31.3	88° 32.4 -22° 27.4	103° 32.2 -22° 27.1	118° 31.9 -22° 26.8	133° 31.6 -22° 26.5	148° 31.3 -22° 26.2	163° 31.1 -22° 25.9	-0.3 +0.3
Чт 7	178° 30.8 -22° 25.6	193° 30.5 -22° 25.3	208° 30.2 -22° 25.0	223° 30.0 -22° 24.6	238° 29.7 -22° 24.3	253° 29.4 -22° 24.0	88° 25.9 -22° 19.9	103° 25.6 -22° 19.5	118° 25.4 -22° 19.2	133° 25.1 -22° 18.9	148° 24.8 -22° 18.6	163° 24.6 -22° 18.2	-0.3 +0.3
Пт 8	178° 24.3 -22° 17.9	193° 24.0 -22° 17.6	208° 23.8 -22° 17.2	223° 23.5 -22° 16.9	238° 23.2 -22° 16.6	253° 23.0 -22° 16.3	88° 19.5 -22° 11.9	103° 19.3 -22° 11.5	118° 19.0 -22° 11.2	133° 18.7 -22° 10.8	148° 18.5 -22° 10.5	163° 18.2 -22° 10.1	-0.3 +0.3
Сб 9	178° 17.9 -22° 09.8	193° 17.7 -22° 09.5	208° 17.4 -22° 09.1	223° 17.2 -22° 08.8	238° 16.9 -22° 08.4	253° 16.6 -22° 08.1	88° 13.3 -22° 03.4	103° 13.0 -22° 03.1	118° 12.7 -22° 02.7	133° 12.5 -22° 02.3	148° 12.2 -22° 02.0	163° 12.0 -22° 01.6	-0.3 +0.3
Вс 10	178° 11.7 -22° 01.3	193° 11.5 -22° 00.9	208° 11.2 -22° 00.5	223° 10.9 -22° 00.2	238° 10.7 -21° 59.8	253° 10.4 -21° 59.4	88° 07.1 -21° 54.6	103° 06.9 -21° 54.2	118° 06.6 -21° 53.8	133° 06.4 -21° 53.4	148° 06.1 -21° 53.0	163° 05.9 -21° 52.7	-0.3 +0.4
Пн 11	178° 05.6 -21° 52.3	193° 05.4 -21° 51.9	208° 05.1 -21° 51.5	223° 04.9 -21° 51.1	238° 04.6 -21° 50.7	253° 04.4 -21° 50.4	88° 01.2 -21° 45.3	103° 00.9 -21° 44.9	118° 00.7 -21° 44.5	133° 00.4 -21° 44.1	148° 00.2 -21° 43.7	162° 59.9 -21° 43.3	-0.3 +0.4
Вт 12	177° 59.7 -21° 42.9	192° 59.4 -21° 42.5	207° 59.2 -21° 42.1	222° 59.0 -21° 41.7	237° 58.7 -21° 41.3	252° 58.5 -21° 40.9	87° 55.3 -21° 35.6	102° 55.1 -21° 35.1	117° 54.9 -21° 34.7	132° 54.6 -21° 34.3	147° 54.4 -21° 33.9	162° 54.1 -21° 33.5	-0.2 +0.4
Ср 13	177° 53.9 -21° 33.1	192° 53.7 -21° 32.6	207° 53.4 -21° 32.2	222° 53.2 -21° 31.8	237° 53.0 -21° 31.4	252° 52.7 -21° 31.0	87° 49.7 -21° 25.4	102° 49.4 -21° 25.0	117° 49.2 -21° 24.6	132° 49.0 -21° 24.1	147° 48.7 -21° 23.7	162° 48.5 -21° 23.3	-0.2 +0.4
Чт 14	177° 48.3 -21° 22.8	192° 48.0 -21° 22.4	207° 47.8 -21° 22.0	222° 47.6 -21° 21.5	237° 47.4 -21° 21.1	252° 47.1 -21° 20.6	87° 44.2 -21° 14.9	102° 43.9 -21° 14.4	117° 43.7 -21° 14.0	132° 43.5 -21° 13.5	147° 43.3 -21° 13.1	162° 43.0 -21° 12.6	-0.2 +0.4
Пт 15	177° 42.8 -21° 12.2	192° 42.6 -21° 11.7	207° 42.4 -21° 11.3	222° 42.1 -21° 10.8	237° 41.9 -21° 10.4	252° 41.7 -21° 09.9	87° 38.8 -21° 03.9	102° 38.6 -21° 03.5	117° 38.4 -21° 03.0	132° 38.2 -21° 02.5	147° 38.0 -21° 02.1	162° 37.7 -21° 01.6	-0.2 +0.5
Сб 16	177° 37.5 -21° 01.1	192° 37.3 -21° 00.6	207° 37.1 -21° 00.2	222° 36.9 -20° 59.7	237° 36.7 -20° 59.2	252° 36.4 -20° 58.8	87° 33.7 -20° 52.6	102° 33.5 -20° 52.1	117° 33.2 -20° 51.6	132° 33.0 -20° 51.1	147° 32.8 -20° 50.6	162° 32.6 -20° 50.1	-0.2 +0.5
Вс 17	177° 32.4 -20° 49.7	192° 32.2 -20° 49.2	207° 32.0 -20° 48.7	222° 31.8 -20° 48.2	237° 31.6 -20° 47.7	252° 31.4 -20° 47.2	87° 28.7 -20° 40.8	102° 28.5 -20° 40.3	117° 28.3 -20° 39.8	132° 28.1 -20° 39.3	147° 27.9 -20° 38.8	162° 27.7 -20° 38.3	-0.2 +0.5
Пн 18	177° 27.5 -20° 37.8	192° 27.3 -20° 37.3	207° 27.1 -20° 36.8	222° 26.9 -20° 36.3	237° 26.7 -20° 35.8	252° 26.5 -20° 35.3	87° 23.9 -20° 28.7	102° 23.7 -20° 28.2	117° 23.5 -20° 27.6	132° 23.3 -20° 27.1	147° 23.1 -20° 26.6	162° 22.9 -20° 26.1	-0.2 +0.5
Вт 19	177° 22.7 -20° 25.6	192° 22.5 -20° 25.1	207° 22.3 -20° 24.5	222° 22.1 -20° 24.0	237° 21.9 -20° 23.5	252° 21.7 -20° 23.0	87° 19.3 -20° 16.1	102° 19.1 -20° 15.6	117° 18.9 -20° 15.1	132° 18.7 -20° 14.5	147° 18.5 -20° 14.0	162° 18.3 -20° 13.5	-0.2 +0.5
Ср 20	177° 18.1 -20° 12.9	192° 18.0 -20° 12.4	207° 17.8 -20° 11.9	222° 17.6 -20° 11.3	237° 17.4 -20° 10.8	252° 17.2 -20° 10.3	87° 14.8 -20° 03.2	102° 14.7 -20° 02.7	117° 14.5 -20° 02.1	132° 14.3 -20° 01.6	147° 14.1 -20° 01.0	162° 13.9 -20° 00.5	-0.2 +0.5
Чт 21	177° 13.8 -19° 59.9	192° 13.6 -19° 59.4	207° 13.4 -19° 58.8	222° 13.2 -19° 58.3	237° 13.0 -19° 57.7	252° 12.9 -19° 57.2	87° 10.6 -19° 49.9	102° 10.4 -19° 49.4	117° 10.3 -19° 48.8	132° 10.1 -19° 48.3	147° 09.9 -19° 47.7	162° 09.7 -19° 47.1	-0.2 +0.5
Пт 22	177° 09.6 -19° 46.6	192° 09.4 -19° 46.0	207° 09.2 -19° 45.4	222° 09.1 -19° 44.9	237° 08.9 -19° 44.3	252° 08.7 -19° 43.7	87° 06.6 -19° 36.3	102° 06.4 -19° 35.7	117° 06.2 -19° 35.1	132° 06.1 -19° 34.6	147° 05.9 -19° 34.0	162° 05.7 -19° 33.4	-0.2 +0.6
Сб 23	177° 05.6 -19° 32.8	192° 05.4 -19° 32.2	207° 05.2 -19° 31.7	222° 05.1 -19° 31.1	237° 04.9 -19° 30.5	252° 04.8 -19° 29.9	87° 02.7 -19° 22.3	102° 02.5 -19° 21.7	117° 02.4 -19° 21.1	132° 02.2 -19° 20.5	147° 02.1 -19° 19.9	162° 01.9 -19° 19.3	-0.2 +0.6
Вс 24	177° 01.8 -19° 18.7	192° 01.6 -19° 18.1	207° 01.5 -19° 17.5	222° 01.3 -19° 16.9	237° 01.1 -19° 16.3	252° 01.0 -19° 15.7	86° 59.0 -19° 07.9	101° 58.9 -19° 07.3	116° 58.7 -19° 06.7	131° 58.6 -19° 06.1	146° 58.4 -19° 05.5	161° 58.3 -19° 04.9	-0.2 +0.6
Пн 25	176° 58.2 -19° 04.3	191° 58.0 -19° 03.7	206° 57.9 -19° 03.0	221° 57.7 -19° 02.4	236° 57.6 -19° 01.8	251° 57.4 -19° 01.2	86° 55.6 -18° 53.2	101° 55.4 -18° 52.6	116° 55.3 -18° 51.9	131° 55.2 -18° 51.3	146° 55.0 -18° 50.7	161° 54.9 -18° 50.1	-0.1 +0.6
Вт 26	176° 54.7 -18° 49.5	191° 54.6 -18° 48.8	206° 54.5 -18° 48.2	221° 54.3 -18° 47.6	236° 54.2 -18° 47.0	251° 54.0 -18° 46.3	86° 52.3 -18° 38.1	101° 52.2 -18° 37.5	116° 52.0 -18° 36.9	131° 51.9 -18° 36.2	146° 51.8 -18° 35.6	161° 51.6 -18° 34.9	-0.1 +0.6
Ср 27	176° 51.5 -18° 34.3	191° 51.4 -18° 33.7	206° 51.3 -18° 33.0	221° 51.1 -18° 32.4	236° 51.0 -18° 31.7	251° 50.9 -18° 31.1	86° 49.2 -18° 22.7	101° 49.1 -18° 22.1	116° 49.0 -18° 21.4	131° 48.9 -18° 20.8	146° 48.7 -18° 20.1	161° 48.6 -18° 19.5	-0.1 +0.6
Чт 28	176° 48.5 -18° 18.8	191° 48.4 -18° 18.2	206° 48.2 -18° 17.5	221° 48.1 -18° 16.8	236° 48.0 -18° 16.2	251° 47.9 -18° 15.5	86° 46.3 -18° 07.0	101° 46.2 -18° 06.3	116° 46.1 -18° 05.6	131° 46.0 -18° 05.0	146° 45.9 -18° 04.3	161° 45.8 -18° 03.6	-0.1 +0.7
Пт 29	176° 45.7 -18° 03.0	191° 45.5 -18° 02.3	206° 45.4 -18° 01.6	221° 45.3 -18° 01.0	236° 45.2 -18° 00.3	251° 45.1 -17° 59.6	86° 43.7 -17° 50.9	101° 43.6 -17° 50.2	116° 43.5 -17° 49.5	131° 43.3 -17° 48.9	146° 43.2 -17° 48.2	161° 43.1 -17° 47.5	-0.1 +0.7
Сб 30	176° 43.0 -17° 46.8	191° 42.9 -17° 46.1	206° 42.8 -17° 45.5	221° 42.7 -17° 44.8	236° 42.6 -17° 44.1	251° 42.5 -17° 43.4	86° 41.2 -17° 34.5	101° 41.1 -17° 33.8	116° 41.0 -17° 33.1	131° 40.9 -17° 32.4	146° 40.8 -17° 31.7	161° 40.7 -17° 31.1	-0.1 +0.7
Вс 31	176° 40.6 -17° 30.4	191° 40.5 -17° 29.7	206° 40.4 -17° 29.0	221° 40.3 -17° 28.3	236° 40.2 -17° 27.6	251° 40.1 -17° 26.9	86° 38.9 -17° 17.8	101° 38.8 -17° 17.1	116° 38.7 -17° 16.4	131° 38.6 -17° 15.7	146° 38.5 -17° 15.0	161° 38.5 -17° 14.3	-0.1 +0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2027

Д	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	Δ'/h	R/p
Пт 1	59° 21.4	73° 53.9	88° 26.4	102° 58.8	117° 31.1	132° 03.5	146° 35.8	161° 08.1	175° 40.3	190° 12.5	204° 44.6	+32.3	15.1
	-16° 07.2	-16° 19.3	-16° 31.2	-16° 43.1	-16° 54.9	-17° 06.6	-17° 18.3	-17° 29.8	-17° 41.3	-17° 52.6	-18° 03.9	-11.7	55.5
Сб 2	62° 42.0	77° 13.5	91° 44.9	106° 16.3	120° 47.6	135° 18.9	149° 50.1	164° 21.3	178° 52.5	193° 23.6	207° 54.6	+31.3	15.0
	-20° 42.2	-20° 52.0	-21° 01.7	-21° 11.3	-21° 20.7	-21° 30.1	-21° 39.4	-21° 48.6	-21° 57.6	-22° 06.6	-22° 15.5	-9.3	54.9
Вс 3	65° 35.0	80° 05.3	94° 35.6	109° 05.8	123° 36.0	138° 06.2	152° 36.3	167° 06.4	181° 36.4	196° 06.4	210° 36.3	+30.1	14.9
	-24° 15.2	-24° 22.3	-24° 29.2	-24° 36.1	-24° 42.8	-24° 49.4	-24° 55.9	-25° 02.3	-25° 08.5	-25° 14.6	-25° 20.6	-6.5	54.5
Пн 4	68° 01.1	82° 30.5	96° 59.9	111° 29.2	125° 58.5	140° 27.8	154° 57.1	169° 26.3	183° 55.6	198° 24.8	212° 53.9	+29.3	14.8
	-26° 35.8	-26° 39.8	-26° 43.7	-26° 47.4	-26° 51.0	-26° 54.5	-26° 57.9	-27° 01.1	-27° 04.2	-27° 07.1	-27° 09.9	-3.4	54.2
Вт 5	70° 10.0	84° 39.0	99° 08.0	113° 37.0	128° 06.0	142° 35.0	157° 04.0	171° 33.0	186° 02.1	200° 31.1	215° 00.1	+29.0	14.7
	-27° 36.3	-27° 37.0	-27° 37.6	-27° 38.0	-27° 38.3	-27° 38.5	-27° 38.5	-27° 38.4	-27° 38.1	-27° 37.7	-27° 37.2	-0.1	54.0
Ср 6	72° 17.6	86° 47.0	101° 16.3	115° 45.7	130° 15.2	144° 44.6	159° 14.1	173° 43.7	188° 13.2	202° 42.8	217° 12.4	+29.5	14.7
	-27° 13.6	-27° 10.9	-27° 08.2	-27° 05.3	-27° 02.3	-26° 59.1	-26° 55.9	-26° 52.4	-26° 48.9	-26° 45.3	-26° 41.5	+3.2	53.9
● Чт 7	74° 41.8	89° 12.2	103° 42.5	118° 13.0	132° 43.4	147° 14.0	161° 44.6	176° 15.2	190° 45.9	205° 16.6	219° 47.4	+30.6	14.7
	-25° 29.9	-25° 24.2	-25° 18.3	-25° 12.4	-25° 06.3	-25° 00.1	-24° 53.8	-24° 47.4	-24° 40.8	-24° 34.2	-24° 27.4	+6.3	53.9
Пт 8	77° 36.0	92° 07.7	106° 39.4	121° 11.2	135° 43.1	150° 15.0	164° 47.0	179° 19.0	193° 51.1	208° 23.3	222° 55.5	+32.0	14.7
	-22° 33.1	-22° 24.7	-22° 16.2	-22° 07.5	-21° 58.8	-21° 50.0	-21° 41.0	-21° 32.0	-21° 22.9	-21° 13.7	-21° 04.4	+8.9	54.0
Сб 9	81° 05.5	95° 38.6	110° 11.8	124° 45.0	139° 18.3	153° 51.6	168° 25.0	182° 58.4	197° 31.9	212° 05.4	226° 39.0	+33.3	14.8
	-18° 34.4	-18° 23.8	-18° 13.0	-18° 02.2	-17° 51.3	-17° 40.4	-17° 29.3	-17° 18.2	-17° 07.0	-16° 55.8	-16° 44.4	+11.0	54.2
Вс 10	85° 08.0	99° 42.3	114° 16.6	128° 50.9	143° 25.3	157° 59.7	172° 34.2	187° 08.7	201° 43.2	216° 17.7	230° 52.3	+34.4	14.8
	-13° 46.4	-13° 34.1	-13° 21.7	-13° 09.2	-12° 56.6	-12° 44.1	-12° 31.4	-12° 18.7	-12° 06.0	-11° 53.2	-11° 40.3	+12.6	54.5
Пн 11	89° 34.3	104° 09.3	118° 44.3	133° 19.3	147° 54.3	162° 29.3	177° 04.4	191° 39.4	206° 14.5	220° 49.6	235° 24.7	+35.0	15.0
	-8° 21.8	-8° 08.3	-7° 54.7	-7° 41.0	-7° 27.3	-7° 13.6	-6° 59.8	-6° 46.0	-6° 32.2	-6° 18.4	-6° 04.5	+13.7	54.8
Вт 12	94° 11.1	108° 46.2	123° 21.2	137° 56.2	152° 31.3	167° 06.3	181° 41.3	196° 16.3	210° 51.2	225° 26.2	240° 01.1	+35.0	15.1
	-2° 32.7	-2° 18.4	-2° 04.1	-1° 49.8	-1° 35.4	-1° 21.0	-1° 06.6	-0° 52.2	-0° 37.8	-0° 23.4	-0° 08.9	+14.4	55.4
Ср 13	98° 41.7	113° 16.1	127° 50.5	142° 24.9	156° 59.2	171° 33.4	186° 07.6	200° 41.8	215° 15.9	229° 50.0	244° 24.0	+34.2	15.3
	3° 28.8	3° 43.4	3° 57.9	4° 12.5	4° 27.0	4° 41.6	4° 56.1	5° 10.6	5° 25.1	5° 39.6	5° 54.1	+14.5	56.0
Чт 14	113° 16.1	127° 50.5	142° 24.9	156° 59.2	171° 33.4	186° 07.6	200° 41.8	215° 15.9	229° 50.0	244° 24.0	258° 58.0	+34.2	15.3
	3° 43.4	3° 57.9	4° 12.5	4° 27.0	4° 41.6	4° 56.1	5° 10.6	5° 25.1	5° 39.6	5° 54.1	6° 08.6	+14.5	56.0
◐ Пт 15	117° 20.2	131° 53.1	146° 25.9	160° 58.7	175° 31.4	190° 04.0	204° 36.6	219° 09.0	233° 41.4	248° 13.7	262° 45.9	+32.6	15.5
	9° 44.2	9° 58.4	10° 12.5	10° 26.7	10° 40.8	10° 54.9	11° 08.9	11° 22.9	11° 36.9	11° 50.8	12° 04.8	+14.1	56.8
Сб 16	120° 37.7	135° 08.3	149° 38.8	164° 09.3	178° 39.6	193° 09.8	207° 39.8	222° 09.8	236° 39.7	251° 09.4	265° 39.0	+30.1	15.7
	15° 28.0	15° 41.2	15° 54.2	16° 07.2	16° 20.2	16° 33.1	16° 45.9	16° 58.6	17° 11.3	17° 23.9	17° 36.4	+12.8	57.7
Вс 17	122° 48.6	137° 16.3	151° 43.7	166° 11.1	180° 38.3	195° 05.4	209° 32.4	223° 59.2	238° 25.9	252° 52.4	267° 18.8	+27.0	16.0
	20° 34.5	20° 45.7	20° 56.7	21° 07.6	21° 18.4	21° 29.1	21° 39.7	21° 50.2	22° 00.6	22° 10.8	22° 21.0	+10.7	58.6
Пн 18	123° 39.0	138° 03.2	152° 27.4	166° 51.4	181° 15.3	195° 39.1	210° 02.7	224° 26.2	238° 49.6	253° 12.9	267° 36.0	+23.7	16.2
	24° 37.5	24° 45.5	24° 53.3	25° 01.0	25° 08.5	25° 15.8	25° 23.0	25° 30.1	25° 37.0	25° 43.7	25° 50.2	+7.3	59.5
Вт 19	123° 09.7	137° 31.1	151° 52.5	166° 13.8	180° 34.9	194° 56.0	209° 17.1	223° 38.0	237° 58.9	252° 19.7	266° 40.5	+21.1	16.5
	27° 07.0	27° 10.6	27° 14.1	27° 17.3	27° 20.3	27° 23.2	27° 25.8	27° 28.2	27° 30.5	27° 32.5	27° 34.3	+2.7	60.3
Ср 20	121° 45.9	136° 06.0	150° 26.1	164° 46.2	179° 06.3	193° 26.4	207° 46.5	222° 06.6	236° 26.7	250° 46.9	265° 07.0	+20.1	16.6
	27° 36.4	27° 34.8	27° 33.0	27° 31.0	27° 28.8	27° 26.3	27° 23.7	27° 20.8	27° 17.8	27° 14.5	27° 11.0	-2.5	61.0
Чт 21	120° 13.6	134° 34.4	148° 55.3	163° 16.3	177° 37.4	191° 58.5	206° 19.8	220° 41.1	235° 02.5	249° 23.9	263° 45.5	+21.2	16.7
	25° 53.0	25° 46.2	25° 39.2	25° 31.9	25° 24.5	25° 16.9	25° 09.1	25° 01.0	24° 52.8	24° 44.5	24° 35.9	-7.7	61.3
○ Пт 22	119° 20.6	133° 43.8	148° 07.1	162° 30.5	176° 54.0	191° 17.7	205° 41.4	220° 05.3	234° 29.3	248° 53.4	263° 17.6	+23.7	16.7
	22° 06.1	21° 54.8	21° 43.3	21° 31.7	21° 20.0	21° 08.1	20° 56.0	20° 43.8	20° 31.5	20° 19.0	20° 06.4	-12.0	61.2
Сб 23	119° 35.3	134° 01.4	148° 27.6	162° 54.0	177° 20.5	191° 47.0	206° 13.7	220° 40.5	235° 07.5	249° 34.5	264° 01.6	+26.6	16.6
	16° 43.0	16° 28.5	16° 14.0	15° 59.4	15° 44.7	15° 29.9	15° 15.1	15° 00.1	14° 45.1	14° 30.0	14° 14.8	-14.8	60.8
Вс 24	121° 01.4	135° 30.2	149° 59.1	164° 28.0	178° 57.1	193° 26.2	207° 55.5	222° 24.8	236° 54.2	251° 23.7	265° 53.3	+29.2	16.4
	10° 19.4	10° 03.3	9° 47.2	9° 31.0	9° 14.8	8° 58.6	8° 42.3	8° 26.0	8° 09.7	7° 53.3	7° 36.9	-16.3	60.1
Пн 25	123° 26.1	137° 56.8	152° 27.6	166° 58.4	181° 29.3	196° 00.3	210° 31.3	225° 02.4	239° 33.5	254° 04.7	268° 35.9	+31.0	16.2
	3° 29.8	3° 13.3	2° 56.8	2° 40.3	2° 23.8	2° 07.3	1° 50.9	1° 34.4	1° 18.0	1° 01.6	0° 45.2	-16.5	59.2
Вт 26	126° 29.5	141° 01.3	155° 33.2	170° 05.1	184° 37.0	199° 09.0	213° 41.0	228° 13.0	242° 45.0	257° 17.0	271° 49.1	+32.0	15.9
	-3° 17.6	-3° 33.5	-3° 49.4	-4° 05.2	-4° 21.0	-4° 36.8	-4° 52.5	-5° 08.1	-5° 23.7	-5° 39.2	-5° 54.8	-15.7	58.2
Ср 27	129° 51.2	144° 23.4	158° 55.6	173° 27.8	188° 00.0	202° 32.1	217° 04.3	231° 36.5	246° 08.6	260° 40.8	275° 12.9	+32.2	15.6
	-9° 40.9	-9° 55.5	-10° 10.0	-10° 24.5	-10° 38.8	-10° 53.2	-11° 07.4	-11° 21.6	-11° 35.7	-11° 49.7	-12° 03.7	-14.3	57.2
Чт 28	133° 13.3	147° 45.2	162° 17.0	176° 48.8	191° 20.6	205° 52.4	220° 24.2	234° 55.9	249° 27.6	263° 59.3	278° 30.9	+31.8	15.3
	-15° 23.7	-15° 36.3	-15° 48.9	-16° 01.4	-16° 13.8	-16° 26.1	-16° 38.4	-16° 50.5	-17° 02.6	-17° 14.5	-17° 26.4	-12.3	56.3
◑ Пт 29	136° 21.8	150° 52.9	165° 24.0	179° 55.0	194° 26.0	208° 57.0	223° 27.9	237° 58.8	252° 29.7	267° 00.5	281° 31.3	+31.0	15.1
	-20° 12.7	-20° 23.0	-20° 33.2	-20° 43.3	-20° 53.3	-21° 03.1	-21° 12.9	-21° 22.5	-21° 32.1	-21° 41.5	-21° 50.8	-9.8	55.5
Сб 30	139° 08.5	153° 38.7	168° 08.9	182° 39.0	197° 09.0	211° 39.1	226° 09.1	240° 39.0	255° 09.0	269° 38.9	284° 08.7	+30.0	15.0
	-23° 57.2	-24° 04.7	-24° 12.0	-24° 19.3	-24° 26.4	-24° 33.4	-24° 40.3	-24° 47.1	-24° 53.8	-25° 00.3	-25° 06.7	-7.0	54.8
Вс 31	141° 32.9	156° 02.3	170° 31.7	185° 01.0	199° 30.3	213° 59.6	228° 28.9	242° 58.1	257° 27.4	271° 56.6	286° 25.8	+29.3	14.8
	-26° 27.8	-26° 32.1	-26° 36.4	-26° 40.5	-26° 44.5	-26° 48.4	-26° 52.1	-26° 55.7	-26° 59.2	-27° 02.5	-27° 05.7	-3.8	54.4

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 7 20h24 — Первая четв.: 15 20h34 — Полнолуние: 22 12h17 — Последняя четв.: 29 10h55

СОЛНЦЕ

Февраль 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	176° 38.4 -17° 13.6	191° 38.3 -17° 12.9	206° 38.2 -17° 12.2	221° 38.1 -17° 11.5	236° 38.0 -17° 10.7	251° 37.9 -17° 10.0	86° 36.8 -17° 00.8	101° 36.7 -17° 00.1	116° 36.7 -16° 59.4	131° 36.6 -16° 58.6	146° 36.5 -16° 57.9	161° 36.4 -16° 57.2	-0.1 +0.7
Вт 2	176° 36.3 -16° 56.5	191° 36.3 -16° 55.8	206° 36.2 -16° 55.0	221° 36.1 -16° 54.3	236° 36.0 -16° 53.6	251° 35.9 -16° 52.9	86° 34.9 -16° 43.5	101° 34.9 -16° 42.7	116° 34.8 -16° 42.0	131° 34.7 -16° 41.3	146° 34.6 -16° 40.6	161° 34.6 -16° 39.8	-0.1 +0.7
Ср 3	176° 34.5 -16° 39.1	191° 34.4 -16° 38.4	206° 34.4 -16° 37.6	221° 34.3 -16° 36.9	236° 34.2 -16° 36.2	251° 34.1 -16° 35.4	86° 33.3 -16° 25.9	101° 33.2 -16° 25.1	116° 33.1 -16° 24.4	131° 33.1 -16° 23.6	146° 33.0 -16° 22.9	161° 32.9 -16° 22.2	-0.1 +0.7
Чт 4	176° 32.9 -16° 21.4	191° 32.8 -16° 20.7	206° 32.7 -16° 19.9	221° 32.7 -16° 19.2	236° 32.6 -16° 18.4	251° 32.6 -16° 17.7	86° 31.8 -16° 08.0	101° 31.7 -16° 07.2	116° 31.7 -16° 06.5	131° 31.6 -16° 05.7	146° 31.6 -16° 05.0	161° 31.5 -16° 04.2	-0.1 +0.7
Пт 5	176° 31.4 -16° 03.5	191° 31.4 -16° 02.7	206° 31.3 -16° 01.9	221° 31.3 -16° 01.2	236° 31.2 -16° 00.4	251° 31.2 -15° 59.7	86° 30.5 -15° 49.8	101° 30.5 -15° 49.0	116° 30.4 -15° 48.3	131° 30.4 -15° 47.5	146° 30.3 -15° 46.7	161° 30.3 -15° 46.0	-0.1 +0.8
Сб 6	176° 30.2 -15° 45.2	191° 30.2 -15° 44.4	206° 30.1 -15° 43.7	221° 30.1 -15° 42.9	236° 30.0 -15° 42.1	251° 30.0 -15° 41.4	86° 29.4 -15° 31.4	101° 29.4 -15° 30.6	116° 29.3 -15° 29.8	131° 29.3 -15° 29.0	146° 29.3 -15° 28.3	161° 29.2 -15° 27.5	-0.0 +0.8
Вс 7	176° 29.2 -15° 26.7	191° 29.2 -15° 25.9	206° 29.1 -15° 25.1	221° 29.1 -15° 24.4	236° 29.0 -15° 23.6	251° 29.0 -15° 22.8	86° 28.6 -15° 12.6	101° 28.5 -15° 11.9	116° 28.5 -15° 11.1	131° 28.5 -15° 10.3	146° 28.4 -15° 09.5	161° 28.4 -15° 08.7	-0.0 +0.8
Пн 8	176° 28.4 -15° 07.9	191° 28.3 -15° 07.1	206° 28.3 -15° 06.3	221° 28.3 -15° 05.6	236° 28.2 -15° 04.8	251° 28.2 -15° 04.0	86° 27.9 -14° 53.7	101° 27.8 -14° 52.9	116° 27.8 -14° 52.1	131° 27.8 -14° 51.3	146° 27.8 -14° 50.5	161° 27.8 -14° 49.7	-0.0 +0.8
Вт 9	176° 27.7 -14° 48.9	191° 27.7 -14° 48.1	206° 27.7 -14° 47.3	221° 27.7 -14° 46.5	236° 27.6 -14° 45.7	251° 27.6 -14° 44.9	86° 27.4 -14° 34.5	101° 27.4 -14° 33.7	116° 27.4 -14° 32.8	131° 27.3 -14° 32.0	146° 27.3 -14° 31.2	161° 27.3 -14° 30.4	-0.0 +0.8
Ср 10	176° 27.3 -14° 29.6	191° 27.3 -14° 28.8	206° 27.3 -14° 28.0	221° 27.3 -14° 27.2	236° 27.3 -14° 26.4	251° 27.2 -14° 25.6	86° 27.1 -14° 15.0	101° 27.1 -14° 14.2	116° 27.1 -14° 13.4	131° 27.1 -14° 12.5	146° 27.1 -14° 11.7	161° 27.1 -14° 10.9	-0.0 +0.8
Чт 11	176° 27.1 -14° 10.1	191° 27.1 -14° 09.3	206° 27.1 -14° 08.5	221° 27.1 -14° 07.6	236° 27.1 -14° 06.8	251° 27.1 -14° 06.0	86° 27.0 -13° 55.3	101° 27.0 -13° 54.5	116° 27.0 -13° 53.6	131° 27.0 -13° 52.8	146° 27.0 -13° 52.0	161° 27.0 -13° 51.2	-0.0 +0.8
Пт 12	176° 27.0 -13° 50.3	191° 27.0 -13° 49.5	206° 27.0 -13° 48.7	221° 27.0 -13° 47.9	236° 27.1 -13° 47.0	251° 27.1 -13° 46.2	86° 27.1 -13° 35.4	101° 27.1 -13° 34.5	116° 27.2 -13° 33.7	131° 27.2 -13° 32.9	146° 27.2 -13° 32.0	161° 27.2 -13° 31.2	+0.0 +0.8
Сб 13	176° 27.2 -13° 30.4	191° 27.2 -13° 29.5	206° 27.2 -13° 28.7	221° 27.2 -13° 27.8	236° 27.2 -13° 27.0	251° 27.3 -13° 26.2	86° 27.4 -13° 15.2	101° 27.5 -13° 14.4	116° 27.5 -13° 13.5	131° 27.5 -13° 12.7	146° 27.5 -13° 11.8	161° 27.5 -13° 11.0	+0.0 +0.8
Вс 14	176° 27.5 -13° 10.2	191° 27.6 -13° 09.3	206° 27.6 -13° 08.5	221° 27.6 -13° 07.6	236° 27.6 -13° 06.8	251° 27.6 -13° 05.9	86° 27.9 -12° 54.9	101° 28.0 -12° 54.0	116° 28.0 -12° 53.2	131° 28.0 -12° 52.3	146° 28.0 -12° 51.5	161° 28.1 -12° 50.6	+0.0 +0.8
Пн 15	176° 28.1 -12° 49.7	191° 28.1 -12° 48.9	206° 28.1 -12° 48.0	221° 28.2 -12° 47.2	236° 28.2 -12° 46.3	251° 28.2 -12° 45.5	86° 28.6 -12° 34.3	101° 28.6 -12° 33.4	116° 28.7 -12° 32.6	131° 28.7 -12° 31.7	146° 28.7 -12° 30.8	161° 28.8 -12° 30.0	+0.0 +0.9
Вт 16	176° 28.8 -12° 29.1	191° 28.8 -12° 28.3	206° 28.9 -12° 27.4	221° 28.9 -12° 26.5	236° 29.0 -12° 25.7	251° 29.0 -12° 24.8	86° 29.5 -12° 13.5	101° 29.5 -12° 12.7	116° 29.6 -12° 11.8	131° 29.6 -12° 10.9	146° 29.6 -12° 10.0	161° 29.7 -12° 09.2	+0.0 +0.9
Ср 17	176° 29.7 -12° 08.3	191° 29.8 -12° 07.4	206° 29.8 -12° 06.6	221° 29.9 -12° 05.7	236° 29.9 -12° 04.8	251° 29.9 -12° 03.9	86° 30.5 -11° 52.6	101° 30.6 -11° 51.7	116° 30.6 -11° 50.8	131° 30.7 -11° 49.9	146° 30.7 -11° 49.1	161° 30.8 -11° 48.2	+0.0 +0.9
Чт 18	176° 30.8 -11° 47.3	191° 30.9 -11° 46.4	206° 30.9 -11° 45.5	221° 31.0 -11° 44.7	236° 31.0 -11° 43.8	251° 31.1 -11° 42.9	86° 31.8 -11° 31.4	101° 31.8 -11° 30.5	116° 31.9 -11° 29.6	131° 31.9 -11° 28.8	146° 32.0 -11° 27.9	161° 32.0 -11° 27.0	+0.0 +0.9
Пт 19	176° 32.1 -11° 26.1	191° 32.1 -11° 25.2	206° 32.2 -11° 24.3	221° 32.3 -11° 23.4	236° 32.3 -11° 22.6	251° 32.4 -11° 21.7	86° 33.1 -11° 10.1	101° 33.2 -11° 09.2	116° 33.3 -11° 08.3	131° 33.3 -11° 07.4	146° 33.4 -11° 06.5	161° 33.5 -11° 05.6	+0.1 +0.9
Сб 20	176° 33.5 -11° 04.7	191° 33.6 -11° 03.8	206° 33.6 -11° 02.9	221° 33.7 -11° 02.0	236° 33.8 -11° 01.2	251° 33.8 -11° 00.3	86° 34.7 -10° 48.6	101° 34.8 -10° 47.7	116° 34.8 -10° 46.8	131° 34.9 -10° 45.9	146° 35.0 -10° 45.0	161° 35.1 -10° 44.1	+0.1 +0.9
Вс 21	176° 35.1 -10° 43.2	191° 35.2 -10° 42.3	206° 35.3 -10° 41.4	221° 35.3 -10° 40.5	236° 35.4 -10° 39.6	251° 35.5 -10° 38.7	86° 36.4 -10° 26.9	101° 36.5 -10° 26.0	116° 36.6 -10° 25.1	131° 36.7 -10° 24.2	146° 36.7 -10° 23.3	161° 36.8 -10° 22.4	+0.1 +0.9
Пн 22	176° 36.9 -10° 21.5	191° 37.0 -10° 20.6	206° 37.0 -10° 19.7	221° 37.1 -10° 18.8	236° 37.2 -10° 17.8	251° 37.3 -10° 16.9	86° 38.3 -10° 05.1	101° 38.4 -10° 04.2	116° 38.5 -10° 03.3	131° 38.6 -10° 02.4	146° 38.7 -10° 01.4	161° 38.7 -10° 00.5	+0.1 +0.9
Вт 23	176° 38.8 -9° 59.6	191° 38.9 -9° 58.7	206° 39.0 -9° 57.8	221° 39.1 -9° 56.9	236° 39.2 -9° 55.9	251° 39.2 -9° 55.0	86° 40.4 -9° 43.1	101° 40.4 -9° 42.2	116° 40.5 -9° 41.3	131° 40.6 -9° 40.3	146° 40.7 -9° 39.4	161° 40.8 -9° 38.5	+0.1 +0.9
Ср 24	176° 40.9 -9° 37.6	191° 41.0 -9° 36.7	206° 41.1 -9° 35.7	221° 41.2 -9° 34.8	236° 41.3 -9° 33.9	251° 41.3 -9° 33.0	86° 42.5 -9° 21.0	101° 42.6 -9° 20.0	116° 42.7 -9° 19.1	131° 42.8 -9° 18.2	146° 42.9 -9° 17.3	161° 43.0 -9° 16.3	+0.1 +0.9
Чт 25	176° 43.1 -9° 15.4	191° 43.2 -9° 14.5	206° 43.3 -9° 13.6	221° 43.4 -9° 12.6	236° 43.5 -9° 11.7	251° 43.6 -9° 10.8	86° 44.9 -8° 58.7	101° 45.0 -8° 57.8	116° 45.1 -8° 56.8	131° 45.2 -8° 55.9	146° 45.3 -8° 55.0	161° 45.4 -8° 54.0	+0.1 +0.9
Пт 26	176° 45.5 -8° 53.1	191° 45.6 -8° 52.2	206° 45.7 -8° 51.2	221° 45.8 -8° 50.3	236° 45.9 -8° 49.4	251° 46.0 -8° 48.4	86° 47.3 -8° 36.3	101° 47.5 -8° 35.3	116° 47.6 -8° 34.4	131° 47.7 -8° 33.5	146° 47.8 -8° 32.5	161° 47.9 -8° 31.6	+0.1 +0.9
Сб 27	176° 48.0 -8° 30.7	191° 48.1 -8° 29.7	206° 48.2 -8° 28.8	221° 48.3 -8° 27.8	236° 48.4 -8° 26.9	251° 48.5 -8° 26.0	86° 50.0 -8° 13.7	101° 50.1 -8° 12.8	116° 50.2 -8° 11.9	131° 50.3 -8° 10.9	146° 50.4 -8° 10.0	161° 50.5 -8° 09.0	+0.1 +0.9
Вс 28	176° 50.6 -8° 08.1	191° 50.7 -8° 07.1	206° 50.9 -8° 06.2	221° 51.0 -8° 05.2	236° 51.1 -8° 04.3	251° 51.2 -8° 03.4	86° 52.7 -7° 51.1	101° 52.8 -7° 50.1	116° 52.9 -7° 49.2	131° 53.0 -7° 48.2	146° 53.2 -7° 47.3	161° 53.3 -7° 46.3	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2027

Д	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	Δ'/h	R/p
Пн 1	71° 17.0	85° 46.1	100° 15.1	114° 44.2	129° 13.2	143° 42.3	158° 11.3	172° 40.3	187° 09.4	201° 38.4	216° 07.5	+29.0	14.8
	-27° 30.5	-27° 32.2	-27° 33.9	-27° 35.3	-27° 36.7	-27° 37.9	-27° 39.0	-27° 39.9	-27° 40.7	-27° 41.4	-27° 41.9	-1.1	54.1
Вт 2	73° 24.0	87° 53.2	102° 22.4	116° 51.7	131° 21.0	145° 50.3	160° 19.6	174° 48.9	189° 18.3	203° 47.7	218° 17.1	+29.3	14.7
	-27° 34.0	-27° 32.4	-27° 30.7	-27° 28.9	-27° 26.9	-27° 24.8	-27° 22.5	-27° 20.1	-27° 17.6	-27° 15.0	-27° 12.2	+2.2	54.0
Ср 3	75° 42.4	90° 12.3	104° 42.4	119° 12.4	133° 42.5	148° 12.7	162° 42.9	177° 13.1	191° 43.4	206° 13.7	220° 44.1	+30.2	14.7
	-26° 15.5	-26° 10.7	-26° 05.8	-26° 00.8	-25° 55.7	-25° 50.4	-25° 45.0	-25° 39.5	-25° 33.9	-25° 28.1	-25° 22.3	+5.3	53.9
Чт 4	78° 25.7	92° 56.9	107° 28.2	121° 59.4	136° 30.8	151° 02.2	165° 33.6	180° 05.2	194° 36.7	209° 08.3	223° 40.0	+31.4	14.7
	-23° 40.8	-23° 33.1	-23° 25.4	-23° 17.5	-23° 09.6	-23° 01.5	-22° 53.3	-22° 45.1	-22° 36.7	-22° 28.2	-22° 19.6	+8.1	54.0
Пт 5	81° 41.6	96° 14.1	110° 46.7	125° 19.4	139° 52.1	154° 24.8	168° 57.6	183° 30.5	198° 03.4	212° 36.3	227° 09.3	+32.8	14.8
	-19° 59.5	-19° 49.5	-19° 39.3	-19° 29.1	-19° 18.8	-19° 08.3	-18° 57.9	-18° 47.3	-18° 36.6	-18° 25.9	-18° 15.1	+10.5	54.2
● Сб 6	85° 30.1	100° 03.8	114° 37.6	129° 11.5	143° 45.3	158° 19.3	172° 53.2	187° 27.2	202° 01.2	216° 35.3	231° 09.4	+33.9	14.9
	-15° 23.8	-15° 11.8	-14° 59.7	-14° 47.6	-14° 35.4	-14° 23.2	-14° 10.9	-13° 58.5	-13° 46.1	-13° 33.6	-13° 21.1	+12.3	54.5
Вс 7	89° 44.9	104° 19.5	118° 54.1	133° 28.8	148° 03.4	162° 38.1	177° 12.8	191° 47.6	206° 22.3	220° 57.1	235° 31.9	+34.7	14.9
	-10° 06.3	-9° 53.0	-9° 39.5	-9° 26.1	-9° 12.6	-8° 59.0	-8° 45.4	-8° 31.8	-8° 18.1	-8° 04.4	-7° 50.6	+13.6	54.8
Пн 8	94° 15.0	108° 50.0	123° 24.9	137° 59.8	152° 34.8	167° 09.7	181° 44.6	196° 19.5	210° 54.4	225° 29.4	240° 04.3	+34.9	15.1
	-4° 20.4	-4° 06.1	-3° 51.9	-3° 37.6	-3° 23.3	-3° 08.9	-2° 54.6	-2° 40.2	-2° 25.8	-2° 11.4	-1° 57.0	+14.3	55.2
Вт 9	98° 46.2	113° 20.9	127° 55.5	142° 30.1	157° 04.7	171° 39.2	186° 13.7	200° 48.2	215° 22.6	229° 57.0	244° 31.4	+34.5	15.2
	1° 40.9	1° 55.4	2° 10.0	2° 24.6	2° 39.2	2° 53.7	3° 08.3	3° 22.9	3° 37.5	3° 52.0	4° 06.6	+14.6	55.7
Ср 10	103° 02.1	117° 35.8	132° 09.4	146° 42.9	161° 16.4	175° 49.9	190° 23.2	204° 56.6	219° 29.8	234° 03.0	248° 36.2	+33.4	15.3
	7° 43.6	7° 57.9	8° 12.2	8° 26.5	8° 40.7	8° 55.0	9° 09.2	9° 23.4	9° 37.5	9° 51.6	10° 05.7	+14.2	56.2
Чт 11	106° 44.7	121° 16.7	135° 48.5	150° 20.3	164° 52.0	179° 23.6	193° 55.2	208° 26.6	222° 57.9	237° 29.2	252° 00.4	+31.6	15.5
	13° 32.4	13° 45.8	13° 59.2	14° 12.5	14° 25.8	14° 39.0	14° 52.1	15° 05.2	15° 18.3	15° 31.2	15° 44.1	+13.2	56.8
Пт 12	121° 16.7	135° 48.5	150° 20.3	164° 52.0	179° 23.6	193° 55.2	208° 26.6	222° 57.9	237° 29.2	252° 00.4	266° 31.4	+31.5	15.5
	13° 45.8	13° 59.2	14° 12.5	14° 25.8	14° 39.0	14° 52.1	15° 05.2	15° 18.3	15° 31.2	15° 44.1	15° 57.0	+13.1	56.9
Сб 13	124° 05.7	138° 35.2	153° 04.5	167° 33.7	182° 02.9	196° 31.9	211° 00.8	225° 29.6	239° 58.3	254° 26.8	268° 55.3	+29.0	15.7
	19° 01.1	19° 12.7	19° 24.3	19° 35.7	19° 47.1	19° 58.4	20° 09.6	20° 20.6	20° 31.6	20° 42.5	20° 53.3	+11.2	57.5
◐ Вс 14	125° 48.4	140° 15.0	154° 41.5	169° 07.8	183° 34.1	198° 00.2	212° 26.3	226° 52.2	241° 18.0	255° 43.6	270° 09.2	+26.1	15.9
	23° 21.9	23° 30.9	23° 39.7	23° 48.4	23° 57.0	24° 05.4	24° 13.7	24° 21.9	24° 29.9	24° 37.8	24° 45.5	+8.4	58.3
Пн 15	126° 19.6	140° 43.5	155° 07.3	169° 30.9	183° 54.5	198° 18.0	212° 41.4	227° 04.7	241° 27.9	255° 51.0	270° 14.1	+23.4	16.1
	26° 23.5	26° 28.8	26° 33.8	26° 38.8	26° 43.5	26° 48.1	26° 52.5	26° 56.7	27° 00.8	27° 04.6	27° 08.3	+4.5	59.0
Вт 16	125° 51.3	140° 13.3	154° 35.3	168° 57.2	183° 19.1	197° 41.0	212° 02.8	226° 24.6	240° 46.3	255° 08.1	269° 29.8	+21.8	16.3
	27° 41.4	27° 42.1	27° 42.6	27° 42.9	27° 43.0	27° 42.9	27° 42.6	27° 42.1	27° 41.4	27° 40.5	27° 39.4	-0.2	59.7
Ср 17	124° 54.5	139° 16.2	153° 37.9	167° 59.7	182° 21.4	196° 43.3	211° 05.1	225° 27.0	239° 48.9	254° 10.9	268° 32.9	+21.8	16.4
	26° 58.9	26° 54.6	26° 50.1	26° 45.4	26° 40.5	26° 35.4	26° 30.2	26° 24.7	26° 19.0	26° 13.1	26° 07.1	-5.2	60.2
Чт 18	124° 09.6	138° 32.5	152° 55.6	167° 18.7	181° 41.9	196° 05.2	210° 28.6	224° 52.0	239° 15.6	253° 39.2	268° 02.9	+23.3	16.5
	24° 13.8	24° 04.8	23° 55.6	23° 46.3	23° 36.8	23° 27.1	23° 17.2	23° 07.2	22° 57.1	22° 46.7	22° 36.2	-9.8	60.6
Пт 19	124° 09.5	138° 34.7	152° 59.9	167° 25.3	181° 50.8	196° 16.4	210° 42.1	225° 07.9	239° 33.7	253° 59.7	268° 25.8	+25.6	16.5
	19° 40.9	19° 28.1	19° 15.2	19° 02.2	18° 49.0	18° 35.7	18° 22.3	18° 08.8	17° 55.1	17° 41.4	17° 27.5	-13.3	60.7
○ Сб 20	125° 08.1	139° 35.7	154° 03.4	168° 31.1	182° 58.9	197° 26.8	211° 54.8	226° 22.9	240° 51.1	255° 19.3	269° 47.6	+28.0	16.5
	13° 47.8	13° 32.4	13° 17.0	13° 01.5	12° 46.0	12° 30.3	12° 14.6	11° 58.9	11° 43.1	11° 27.2	11° 11.3	-15.7	60.5
Вс 21	127° 01.8	141° 31.3	156° 00.8	170° 30.5	185° 00.1	199° 29.9	213° 59.7	228° 29.6	242° 59.5	257° 29.5	271° 59.5	+29.8	16.4
	7° 06.7	6° 50.1	6° 33.5	6° 16.8	6° 00.2	5° 43.5	5° 26.8	5° 10.1	4° 53.4	4° 36.7	4° 19.9	-16.7	60.0
Пн 22	129° 35.9	144° 06.7	158° 37.5	173° 08.3	187° 39.2	202° 10.1	216° 41.0	231° 11.9	245° 42.9	260° 13.9	274° 45.0	+30.9	16.2
	0° 09.0	-0° 07.7	-0° 24.3	-0° 40.9	-0° 57.5	-1° 14.0	-1° 30.6	-1° 47.1	-2° 03.6	-2° 20.0	-2° 36.4	-16.5	59.2
Вт 23	132° 32.7	147° 04.0	161° 35.3	176° 06.6	190° 37.9	205° 09.2	219° 40.5	234° 11.8	248° 43.1	263° 14.5	277° 45.8	+31.3	15.9
	-6° 38.0	-6° 53.7	-7° 09.4	-7° 25.0	-7° 40.5	-7° 56.0	-8° 11.5	-8° 26.8	-8° 42.2	-8° 57.4	-9° 12.6	-15.5	58.4
Ср 24	135° 34.7	150° 05.9	164° 37.1	179° 08.2	193° 39.4	208° 10.5	222° 41.6	237° 12.6	251° 43.7	266° 14.7	280° 45.7	+31.1	15.7
	-12° 51.9	-13° 06.0	-13° 19.9	-13° 33.7	-13° 47.5	-14° 01.2	-14° 14.7	-14° 28.2	-14° 41.7	-14° 55.0	-15° 08.2	-13.6	57.4
Чт 25	138° 28.0	152° 58.6	167° 29.2	181° 59.7	196° 30.2	211° 00.7	225° 31.1	240° 01.6	254° 31.9	269° 02.3	283° 32.6	+30.5	15.4
	-18° 15.3	-18° 27.0	-18° 38.6	-18° 50.0	-19° 01.4	-19° 12.6	-19° 23.8	-19° 34.8	-19° 45.7	-19° 56.6	-20° 07.3	-11.2	56.5
Пт 26	141° 03.6	155° 33.4	170° 03.2	184° 33.0	199° 02.7	213° 32.4	228° 02.0	242° 31.6	257° 01.2	271° 30.8	286° 00.3	+29.7	15.2
	-22° 34.2	-22° 43.1	-22° 51.8	-23° 00.5	-23° 08.9	-23° 17.3	-23° 25.6	-23° 33.7	-23° 41.7	-23° 49.6	-23° 57.3	-8.3	55.7
Сб 27	143° 19.8	157° 48.9	172° 18.0	186° 47.1	201° 16.1	215° 45.1	230° 14.1	244° 43.1	259° 12.1	273° 41.0	288° 09.9	+29.0	15.0
	-25° 38.3	-25° 43.9	-25° 49.5	-25° 54.9	-26° 00.2	-26° 05.4	-26° 10.4	-26° 15.3	-26° 20.1	-26° 24.7	-26° 29.2	-5.1	55.0
◑ Вс 28	145° 22.4	159° 51.2	174° 19.9	188° 48.7	203° 17.5	217° 46.2	232° 15.0	246° 43.8	261° 12.6	275° 41.4	290° 10.1	+28.8	14.9
	-27° 20.4	-27° 22.7	-27° 24.9	-27° 27.0	-27° 28.9	-27° 30.6	-27° 32.3	-27° 33.8	-27° 35.2	-27° 36.4	-27° 37.5	-1.7	54.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 6 15h56 — Первая четв.: 14 07h58 — Полнолуние: 20 23h23 — Последняя четв.: 28 05h16

СОЛНЦЕ

Март 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	176° 53.4 -7° 45.4	191° 53.5 -7° 44.4	206° 53.6 -7° 43.5	221° 53.7 -7° 42.5	236° 53.9 -7° 41.6	251° 54.0 -7° 40.6	86° 55.5 -7° 28.3	101° 55.7 -7° 27.3	116° 55.8 -7° 26.4	131° 55.9 -7° 25.4	146° 56.0 -7° 24.5	161° 56.2 -7° 23.5	+0.1 +0.9
Вт 2	176° 56.3 -7° 22.6	191° 56.4 -7° 21.6	206° 56.5 -7° 20.7	221° 56.7 -7° 19.7	236° 56.8 -7° 18.8	251° 56.9 -7° 17.8	86° 58.5 -7° 05.4	101° 58.7 -7° 04.4	116° 58.8 -7° 03.5	131° 58.9 -7° 02.5	146° 59.0 -7° 01.6	161° 59.2 -7° 00.6	+0.1 +1.0
Ср 3	176° 59.3 -6° 59.7	191° 59.4 -6° 58.7	206° 59.6 -6° 57.7	221° 59.7 -6° 56.8	236° 59.8 -6° 55.8	251° 59.9 -6° 54.9	87° 01.6 -6° 42.4	102° 01.8 -6° 41.4	117° 01.9 -6° 40.5	132° 02.0 -6° 39.5	147° 02.2 -6° 38.6	162° 02.3 -6° 37.6	+0.1 +1.0
Чт 4	177° 02.4 -6° 36.6	192° 02.6 -6° 35.7	207° 02.7 -6° 34.7	222° 02.8 -6° 33.8	237° 03.0 -6° 32.8	252° 03.1 -6° 31.8	87° 04.8 -6° 19.3	102° 05.0 -6° 18.3	117° 05.1 -6° 17.4	132° 05.3 -6° 16.4	147° 05.4 -6° 15.5	162° 05.5 -6° 14.5	+0.1 +1.0
Пт 5	177° 05.7 -6° 13.5	192° 05.8 -6° 12.6	207° 05.9 -6° 11.6	222° 06.1 -6° 10.6	237° 06.2 -6° 09.7	252° 06.4 -6° 08.7	87° 08.2 -5° 56.1	102° 08.3 -5° 55.2	117° 08.4 -5° 54.2	132° 08.6 -5° 53.2	147° 08.7 -5° 52.3	162° 08.9 -5° 51.3	+0.1 +1.0
Сб 6	177° 09.0 -5° 50.3	192° 09.2 -5° 49.4	207° 09.3 -5° 48.4	222° 09.4 -5° 47.4	237° 09.6 -5° 46.5	252° 09.7 -5° 45.5	87° 11.6 -5° 32.9	102° 11.7 -5° 31.9	117° 11.9 -5° 30.9	132° 12.0 -5° 30.0	147° 12.2 -5° 29.0	162° 12.3 -5° 28.0	+0.1 +1.0
Вс 7	177° 12.5 -5° 27.0	192° 12.6 -5° 26.1	207° 12.8 -5° 25.1	222° 12.9 -5° 24.1	237° 13.1 -5° 23.2	252° 13.2 -5° 22.2	87° 15.1 -5° 09.5	102° 15.3 -5° 08.6	117° 15.4 -5° 07.6	132° 15.6 -5° 06.6	147° 15.7 -5° 05.6	162° 15.9 -5° 04.7	+0.1 +1.0
Пн 8	177° 16.0 -5° 03.7	192° 16.2 -5° 02.7	207° 16.3 -5° 01.7	222° 16.5 -5° 00.8	237° 16.6 -4° 59.8	252° 16.8 -4° 58.8	87° 18.7 -4° 46.1	102° 18.9 -4° 45.2	117° 19.1 -4° 44.2	132° 19.2 -4° 43.2	147° 19.4 -4° 42.2	162° 19.5 -4° 41.3	+0.2 +1.0
Вт 9	177° 19.7 -4° 40.3	192° 19.8 -4° 39.3	207° 20.0 -4° 38.3	222° 20.1 -4° 37.3	237° 20.3 -4° 36.4	252° 20.4 -4° 35.4	87° 22.5 -4° 22.7	102° 22.6 -4° 21.7	117° 22.8 -4° 20.7	132° 22.9 -4° 19.7	147° 23.1 -4° 18.8	162° 23.2 -4° 17.8	+0.2 +1.0
Ср 10	177° 23.4 -4° 16.8	192° 23.6 -4° 15.8	207° 23.7 -4° 14.8	222° 23.9 -4° 13.9	237° 24.0 -4° 12.9	252° 24.2 -4° 11.9	87° 26.3 -3° 59.2	102° 26.4 -3° 58.2	117° 26.6 -3° 57.2	132° 26.7 -3° 56.2	147° 26.9 -3° 55.2	162° 27.1 -3° 54.2	+0.2 +1.0
Чт 11	177° 27.2 -3° 53.3	192° 27.4 -3° 52.3	207° 27.6 -3° 51.3	222° 27.7 -3° 50.3	237° 27.9 -3° 49.3	252° 28.0 -3° 48.4	87° 30.2 -3° 35.6	102° 30.3 -3° 34.6	117° 30.5 -3° 33.6	132° 30.6 -3° 32.6	147° 30.8 -3° 31.7	162° 31.0 -3° 30.7	+0.2 +1.0
Пт 12	177° 31.1 -3° 29.7	192° 31.3 -3° 28.7	207° 31.5 -3° 27.7	222° 31.6 -3° 26.7	237° 31.8 -3° 25.7	252° 32.0 -3° 24.8	87° 34.1 -3° 12.0	102° 34.3 -3° 11.0	117° 34.5 -3° 10.0	132° 34.6 -3° 09.0	147° 34.8 -3° 08.0	162° 35.0 -3° 07.0	+0.2 +1.0
Сб 13	177° 35.1 -3° 06.1	192° 35.3 -3° 05.1	207° 35.5 -3° 04.1	222° 35.6 -3° 03.1	237° 35.8 -3° 02.1	252° 36.0 -3° 01.1	87° 38.2 -2° 48.3	102° 38.3 -2° 47.3	117° 38.5 -2° 46.4	132° 38.7 -2° 45.4	147° 38.8 -2° 44.4	162° 39.0 -2° 43.4	+0.2 +1.0
Вс 14	177° 39.2 -2° 42.4	192° 39.4 -2° 41.4	207° 39.5 -2° 40.4	222° 39.7 -2° 39.5	237° 39.9 -2° 38.5	252° 40.0 -2° 37.5	87° 42.3 -2° 24.7	102° 42.5 -2° 23.7	117° 42.6 -2° 22.7	132° 42.8 -2° 21.7	147° 43.0 -2° 20.7	162° 43.1 -2° 19.7	+0.2 +1.0
Пн 15	177° 43.3 -2° 18.7	192° 43.5 -2° 17.7	207° 43.7 -2° 16.8	222° 43.8 -2° 15.8	237° 44.0 -2° 14.8	252° 44.2 -2° 13.8	87° 46.5 -2° 01.0	102° 46.6 -2° 00.0	117° 46.8 -1° 59.0	132° 47.0 -1° 58.0	147° 47.2 -1° 57.0	162° 47.3 -1° 56.0	+0.2 +1.0
Вт 16	177° 47.5 -1° 55.0	192° 47.7 -1° 54.0	207° 47.9 -1° 53.1	222° 48.0 -1° 52.1	237° 48.2 -1° 51.1	252° 48.4 -1° 50.1	87° 50.7 -1° 37.3	102° 50.9 -1° 36.3	117° 51.1 -1° 35.3	132° 51.2 -1° 34.3	147° 51.4 -1° 33.3	162° 51.6 -1° 32.3	+0.2 +1.0
Ср 17	177° 51.8 -1° 31.3	192° 51.9 -1° 30.3	207° 52.1 -1° 29.3	222° 52.3 -1° 28.4	237° 52.5 -1° 27.4	252° 52.7 -1° 26.4	87° 55.0 -1° 13.5	102° 55.2 -1° 12.5	117° 55.4 -1° 11.6	132° 55.5 -1° 10.6	147° 55.7 -1° 09.6	162° 55.9 -1° 08.6	+0.2 +1.0
Чт 18	177° 56.1 -1° 07.6	192° 56.3 -1° 06.6	207° 56.4 -1° 05.6	222° 56.6 -1° 04.6	237° 56.8 -1° 03.6	252° 57.0 -1° 02.7	87° 59.3 -0° 49.8	102° 59.5 -0° 48.8	117° 59.7 -0° 47.8	132° 59.9 -0° 46.8	148° 00.1 -0° 45.9	163° 00.3 -0° 44.9	+0.2 +1.0
Пт 19	178° 00.4 -0° 43.9	193° 00.6 -0° 42.9	208° 00.8 -0° 41.9	223° 01.0 -0° 40.9	238° 01.2 -0° 39.9	253° 01.4 -0° 38.9	88° 03.7 -0° 26.1	103° 03.9 -0° 25.1	118° 04.1 -0° 24.1	133° 04.3 -0° 23.1	148° 04.5 -0° 22.1	163° 04.7 -0° 21.2	+0.2 +1.0
Сб 20	178° 04.8 -0° 20.2	193° 05.0 -0° 19.2	208° 05.2 -0° 18.2	223° 05.4 -0° 17.2	238° 05.6 -0° 16.2	253° 05.8 -0° 15.2	88° 08.2 -0° 02.4	103° 08.4 -0° 01.4	118° 08.5 -0° 00.4	133° 08.7 0° 00.6	148° 08.9 0° 01.6	163° 09.1 0° 02.6	+0.2 +1.0
Вс 21	178° 09.3 0° 03.5	193° 09.5 0° 04.5	208° 09.7 0° 05.5	223° 09.8 0° 06.5	238° 10.0 0° 07.5	253° 10.2 0° 08.5	88° 12.6 0° 21.3	103° 12.8 0° 22.3	118° 13.0 0° 23.3	133° 13.2 0° 24.3	148° 13.4 0° 25.3	163° 13.6 0° 26.2	+0.2 +1.0
Пн 22	178° 13.8 0° 27.2	193° 14.0 0° 28.2	208° 14.1 0° 29.2	223° 14.3 0° 30.2	238° 14.5 0° 31.2	253° 14.7 0° 32.2	88° 17.1 0° 45.0	103° 17.3 0° 46.0	118° 17.5 0° 47.0	133° 17.7 0° 48.0	148° 17.9 0° 48.9	163° 18.1 0° 49.9	+0.2 +1.0
Вт 23	178° 18.3 0° 50.9	193° 18.5 0° 51.9	208° 18.6 0° 52.9	223° 18.8 0° 53.9	238° 19.0 0° 54.9	253° 19.2 0° 55.8	88° 21.7 1° 08.6	103° 21.8 1° 09.6	118° 22.0 1° 10.6	133° 22.2 1° 11.6	148° 22.4 1° 12.6	163° 22.6 1° 13.6	+0.2 +1.0
Ср 24	178° 22.8 1° 14.6	193° 23.0 1° 15.5	208° 23.2 1° 16.5	223° 23.4 1° 17.5	238° 23.5 1° 18.5	253° 23.7 1° 19.5	88° 26.2 1° 32.3	103° 26.4 1° 33.3	118° 26.6 1° 34.2	133° 26.8 1° 35.2	148° 26.9 1° 36.2	163° 27.1 1° 37.2	+0.2 +1.0
Чт 25	178° 27.3 1° 38.2	193° 27.5 1° 39.2	208° 27.7 1° 40.1	223° 27.9 1° 41.1	238° 28.1 1° 42.1	253° 28.3 1° 43.1	88° 30.7 1° 55.9	103° 30.9 1° 56.8	118° 31.1 1° 57.8	133° 31.3 1° 58.8	148° 31.5 1° 59.8	163° 31.7 2° 00.8	+0.2 +1.0
Пт 26	178° 31.9 2° 01.8	193° 32.0 2° 02.7	208° 32.2 2° 03.7	223° 32.4 2° 04.7	238° 32.6 2° 05.7	253° 32.8 2° 06.7	88° 35.3 2° 19.4	103° 35.5 2° 20.4	118° 35.6 2° 21.4	133° 35.8 2° 22.4	148° 36.0 2° 23.3	163° 36.2 2° 24.3	+0.2 +1.0
Сб 27	178° 36.4 2° 25.3	193° 36.6 2° 26.3	208° 36.8 2° 27.3	223° 37.0 2° 28.2	238° 37.2 2° 29.2	253° 37.3 2° 30.2	88° 39.8 2° 42.9	103° 40.0 2° 43.9	118° 40.2 2° 44.9	133° 40.4 2° 45.8	148° 40.6 2° 46.8	163° 40.7 2° 47.8	+0.2 +1.0
Вс 28	178° 40.9 2° 48.8	193° 41.1 2° 49.8	208° 41.3 2° 50.7	223° 41.5 2° 51.7	238° 41.7 2° 52.7	253° 41.9 2° 53.7	88° 44.3 3° 06.4	103° 44.5 3° 07.3	118° 44.7 3° 08.3	133° 44.9 3° 09.3	148° 45.1 3° 10.3	163° 45.3 3° 11.2	+0.2 +1.0
Пн 29	178° 45.5 3° 12.2	193° 45.7 3° 13.2	208° 45.8 3° 14.2	223° 46.0 3° 15.1	238° 46.2 3° 16.1	253° 46.4 3° 17.1	88° 48.9 3° 29.8	103° 49.0 3° 30.7	118° 49.2 3° 31.7	133° 49.4 3° 32.7	148° 49.6 3° 33.6	163° 49.8 3° 34.6	+0.2 +1.0
Вт 30	178° 50.0 3° 35.6	193° 50.2 3° 36.6	208° 50.4 3° 37.5	223° 50.5 3° 38.5	238° 50.7 3° 39.5	253° 50.9 3° 40.5	88° 53.4 3° 53.1	103° 53.5 3° 54.1	118° 53.7 3° 55.0	133° 53.9 3° 56.0	148° 54.1 3° 57.0	163° 54.3 3° 57.9	+0.2 +1.0
Ср 31	178° 54.5 3° 58.9	193° 54.7 3° 59.9	208° 54.8 4° 00.8	223° 55.0 4° 01.8	238° 55.2 4° 02.8	253° 55.4 4° 03.8	88° 57.8 4° 16.3	103° 58.0 4° 17.3	118° 58.2 4° 18.3	133° 58.4 4° 19.2	148° 58.6 4° 20.2	163° 58.8 4° 21.2	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2027

Д	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	Δ'/h	R/p
Пн 1	60° 29.7	74° 58.6	89° 27.5	103° 56.4	118° 25.4	132° 54.4	147° 23.4	161° 52.4	176° 21.4	190° 50.5	205° 19.6	+29.0	14.8
	-27° 41.3	-27° 41.1	-27° 40.7	-27° 40.1	-27° 39.5	-27° 38.7	-27° 37.8	-27° 36.7	-27° 35.5	-27° 34.2	-27° 32.7	+0.9	54.3
Вт 2	62° 39.3	77° 08.9	91° 38.5	106° 08.2	120° 37.9	135° 07.6	149° 37.4	164° 07.2	178° 37.1	193° 07.0	207° 36.9	+29.8	14.7
	-26° 55.2	-26° 51.7	-26° 48.0	-26° 44.2	-26° 40.3	-26° 36.3	-26° 32.1	-26° 27.9	-26° 23.5	-26° 18.9	-26° 14.3	+4.1	54.1
Ср 3	65° 11.7	79° 42.4	94° 13.2	108° 44.0	123° 14.9	137° 45.8	152° 16.7	166° 47.8	181° 18.8	195° 49.9	210° 21.1	+30.9	14.7
	-24° 50.2	-24° 43.7	-24° 37.1	-24° 30.3	-24° 23.5	-24° 16.5	-24° 09.4	-24° 02.2	-23° 54.9	-23° 47.5	-23° 40.0	+7.0	54.1
Чт 4	68° 15.0	82° 47.0	97° 19.1	111° 51.2	126° 23.4	140° 55.6	155° 27.9	170° 00.2	184° 32.6	199° 05.0	213° 37.5	+32.2	14.8
	-21° 34.9	-21° 25.8	-21° 16.5	-21° 07.2	-20° 57.8	-20° 48.3	-20° 38.7	-20° 29.0	-20° 19.2	-20° 09.4	-19° 59.4	+9.6	54.2
Пт 5	71° 50.4	86° 23.6	100° 56.9	115° 30.2	130° 03.6	144° 37.0	159° 10.4	173° 43.9	188° 17.4	202° 51.0	217° 24.6	+33.4	14.9
	-17° 19.8	-17° 08.6	-16° 57.2	-16° 45.8	-16° 34.3	-16° 22.7	-16° 11.0	-15° 59.3	-15° 47.5	-15° 35.6	-15° 23.7	+11.6	54.5
Сб 6	75° 52.8	90° 27.0	105° 01.1	119° 35.3	134° 09.5	148° 43.8	163° 18.0	177° 52.3	192° 26.6	207° 00.9	221° 35.3	+34.3	15.0
	-12° 16.9	-12° 03.9	-11° 51.0	-11° 37.9	-11° 24.8	-11° 11.6	-10° 58.4	-10° 45.2	-10° 31.9	-10° 18.5	-10° 05.1	+13.2	54.9
Вс 7	80° 12.5	94° 47.1	109° 21.7	123° 56.3	138° 30.8	153° 05.4	167° 40.0	182° 14.6	196° 49.2	211° 23.8	225° 58.4	+34.6	15.1
	-6° 38.6	-6° 24.5	-6° 10.4	-5° 56.2	-5° 42.0	-5° 27.8	-5° 13.6	-4° 59.3	-4° 45.0	-4° 30.6	-4° 16.3	+14.2	55.3
● Пн 8	84° 36.5	99° 11.0	113° 45.4	128° 19.8	142° 54.2	157° 28.6	172° 02.9	186° 37.2	201° 11.5	215° 45.8	230° 20.0	+34.4	15.2
	-0° 38.1	-0° 23.5	-0° 08.8	0° 05.9	0° 20.6	0° 35.4	0° 50.1	1° 04.8	1° 19.6	1° 34.3	1° 49.1	+14.7	55.8
Вт 9	88° 49.8	103° 23.5	117° 57.1	132° 30.7	147° 04.3	161° 37.8	176° 11.2	190° 44.6	205° 18.0	219° 51.2	234° 24.5	+33.5	15.4
	5° 30.0	5° 44.7	5° 59.3	6° 14.0	6° 28.6	6° 43.2	6° 57.8	7° 12.3	7° 26.9	7° 41.4	7° 55.9	+14.6	56.3
Ср 10	92° 36.1	107° 08.3	121° 40.5	136° 12.6	150° 44.6	165° 16.6	179° 48.5	194° 20.3	208° 52.0	223° 23.7	237° 55.3	+31.9	15.5
	11° 29.7	11° 43.7	11° 57.6	12° 11.4	12° 25.3	12° 39.0	12° 52.8	13° 06.4	13° 20.1	13° 33.6	13° 47.1	+13.7	56.8
Чт 11	95° 39.0	110° 09.2	124° 39.3	139° 09.4	153° 39.3	168° 09.1	182° 38.9	197° 08.5	211° 38.1	226° 07.5	240° 36.9	+29.8	15.6
	17° 02.4	17° 14.8	17° 27.2	17° 39.5	17° 51.7	18° 03.8	18° 15.9	18° 27.8	18° 39.7	18° 51.5	19° 03.2	+12.1	57.3
Пт 12	97° 45.2	112° 12.9	126° 40.6	141° 08.1	155° 35.5	170° 02.9	184° 30.1	198° 57.2	213° 24.3	227° 51.2	242° 18.0	+27.3	15.8
	21° 46.7	21° 56.8	22° 06.7	22° 16.5	22° 26.2	22° 35.8	22° 45.2	22° 54.6	23° 03.8	23° 12.8	23° 21.8	+9.5	57.8
Сб 13	98° 48.5	113° 13.7	127° 38.9	142° 04.0	156° 29.0	170° 53.9	185° 18.8	199° 43.5	214° 08.2	228° 32.7	242° 57.2	+24.9	15.9
	25° 19.6	25° 26.3	25° 32.8	25° 39.2	25° 45.4	25° 51.5	25° 57.4	26° 03.2	26° 08.8	26° 14.2	26° 19.5	+6.0	58.3
Вс 14	113° 13.7	127° 38.9	142° 04.0	156° 29.0	170° 53.9	185° 18.8	199° 43.5	214° 08.2	228° 32.7	242° 57.2	257° 21.6	+24.8	15.9
	25° 26.3	25° 32.8	25° 39.2	25° 45.4	25° 51.5	25° 57.4	26° 03.2	26° 08.8	26° 14.2	26° 19.5	26° 24.6	+5.8	58.3
◐ Пн 15	113° 19.5	127° 42.9	142° 06.2	156° 29.5	170° 52.7	185° 15.9	199° 39.0	214° 02.2	228° 25.2	242° 48.3	257° 11.3	+23.2	16.0
	27° 20.9	27° 23.2	27° 25.4	27° 27.4	27° 29.2	27° 30.8	27° 32.2	27° 33.5	27° 34.5	27° 35.4	27° 36.1	+1.5	58.8
Вт 16	112° 54.1	127° 16.9	141° 39.8	156° 02.6	170° 25.4	184° 48.3	199° 11.2	213° 34.0	227° 57.0	242° 19.9	256° 42.9	+22.9	16.1
	27° 24.1	27° 21.8	27° 19.3	27° 16.6	27° 13.8	27° 10.7	27° 07.5	27° 04.0	27° 00.4	26° 56.6	26° 52.6	-3.1	59.2
Ср 17	112° 31.6	126° 55.3	141° 19.0	155° 42.7	170° 06.5	184° 30.4	198° 54.3	213° 18.3	227° 42.4	242° 06.5	256° 30.7	+23.9	16.2
	25° 31.0	25° 24.1	25° 17.1	25° 09.9	25° 02.5	24° 54.9	24° 47.2	24° 39.3	24° 31.3	24° 23.1	24° 14.7	-7.6	59.5
Чт 18	112° 42.6	127° 08.1	141° 33.6	155° 59.2	170° 24.8	184° 50.6	199° 16.4	213° 42.4	228° 08.4	242° 34.5	257° 00.7	+25.8	16.3
	21° 50.3	21° 39.5	21° 28.5	21° 17.4	21° 06.2	20° 54.8	20° 43.3	20° 31.7	20° 20.0	20° 08.1	19° 56.1	-11.4	59.7
Пт 19	113° 43.5	128° 11.0	142° 38.6	157° 06.3	171° 34.0	186° 01.8	200° 29.8	214° 57.8	229° 25.8	243° 54.0	258° 22.2	+27.9	16.3
	16° 41.9	16° 28.1	16° 14.2	16° 00.2	15° 46.1	15° 31.9	15° 17.7	15° 03.3	14° 48.9	14° 34.3	14° 19.7	-14.2	59.8
Сб 20	115° 34.3	130° 03.6	144° 33.0	159° 02.5	173° 32.0	188° 01.6	202° 31.2	217° 00.9	231° 30.7	246° 00.5	260° 30.3	+29.6	16.3
	10° 31.9	10° 16.2	10° 00.5	9° 44.7	9° 28.9	9° 13.0	8° 57.0	8° 41.1	8° 25.1	8° 09.0	7° 52.9	-15.9	59.6
Вс 21	118° 04.1	132° 34.6	147° 05.3	161° 35.9	176° 06.6	190° 37.3	205° 08.0	219° 38.8	234° 09.6	248° 40.5	263° 11.3	+30.7	16.2
	3° 48.1	3° 31.7	3° 15.2	2° 58.7	2° 42.2	2° 25.7	2° 09.2	1° 52.7	1° 36.2	1° 19.7	1° 03.2	-16.5	59.3
○ Пн 22	120° 56.6	135° 27.8	149° 58.9	164° 30.1	179° 01.2	193° 32.4	208° 03.6	222° 34.7	237° 05.9	251° 37.1	266° 08.2	+31.2	16.0
	-3° 02.6	-3° 18.8	-3° 35.0	-3° 51.2	-4° 07.3	-4° 23.4	-4° 39.5	-4° 55.5	-5° 11.5	-5° 27.4	-5° 43.3	-16.1	58.7
Вт 23	123° 55.1	138° 26.2	152° 57.2	167° 28.2	181° 59.2	196° 30.2	211° 01.2	225° 32.1	240° 03.0	254° 33.9	269° 04.8	+31.0	15.8
	-9° 35.9	-9° 50.9	-10° 05.9	-10° 20.9	-10° 35.7	-10° 50.5	-11° 05.2	-11° 19.9	-11° 34.4	-11° 48.9	-12° 03.4	-14.8	58.1
Ср 24	126° 44.9	141° 15.4	155° 45.8	170° 16.2	184° 46.5	199° 16.9	213° 47.1	228° 17.4	242° 47.6	257° 17.8	271° 48.0	+30.3	15.6
	-15° 30.1	-15° 43.2	-15° 56.2	-16° 09.1	-16° 21.9	-16° 34.6	-16° 47.2	-16° 59.7	-17° 12.1	-17° 24.4	-17° 36.6	-12.7	57.3
Чт 25	129° 16.0	143° 45.6	158° 15.2	172° 44.7	187° 14.2	201° 43.6	216° 13.0	230° 42.4	245° 11.7	259° 41.0	274° 10.3	+29.4	15.4
	-20° 27.0	-20° 37.4	-20° 47.8	-20° 58.0	-21° 08.1	-21° 18.1	-21° 28.0	-21° 37.7	-21° 47.4	-21° 56.9	-22° 06.3	-9.9	56.5
Пт 26	131° 25.3	145° 54.1	160° 22.8	174° 51.5	189° 20.2	203° 48.9	218° 17.5	232° 46.1	247° 14.7	261° 43.3	276° 11.8	+28.6	15.2
	-24° 12.0	-24° 19.3	-24° 26.5	-24° 33.6	-24° 40.6	-24° 47.4	-24° 54.0	-25° 00.6	-25° 07.0	-25° 13.3	-25° 19.4	-6.7	55.8
Сб 27	133° 17.8	147° 46.1	162° 14.4	176° 42.7	191° 11.0	205° 39.3	220° 07.6	234° 35.9	249° 04.1	263° 32.4	278° 00.7	+28.3	15.0
	-26° 35.0	-26° 38.9	-26° 42.7	-26° 46.3	-26° 49.9	-26° 53.2	-26° 56.5	-26° 59.5	-27° 02.5	-27° 05.3	-27° 08.0	-3.3	55.1
Вс 28	135° 05.8	149° 34.3	164° 02.7	178° 31.2	192° 59.7	207° 28.2	221° 56.8	236° 25.4	250° 54.0	265° 22.6	279° 51.3	+28.5	14.9
	-27° 31.2	-27° 31.6	-27° 31.9	-27° 32.0	-27° 32.1	-27° 31.9	-27° 31.7	-27° 31.3	-27° 30.8	-27° 30.1	-27° 29.3	+0.2	54.6
Пн 29	137° 05.1	151° 34.3	166° 03.6	180° 32.9	195° 02.2	209° 31.6	224° 01.1	238° 30.5	253° 00.1	267° 29.7	281° 59.3	+29.4	14.8
	-27° 01.2	-26° 58.3	-26° 55.3	-26° 52.1	-26° 48.8	-26° 45.3	-26° 41.8	-26° 38.1	-26° 34.3	-26° 30.3	-26° 26.3	+3.5	54.3
◑ Вт 30	139° 29.7	154° 00.2	168° 30.7	183° 01.3	197° 31.9	212° 02.6	226° 33.3	241° 04.1	255° 34.9	270° 05.8	284° 36.8	+30.7	14.8
	-25° 10.9	-25° 04.9	-24° 58.8	-24° 52.6	-24° 46.3	-24° 39.9	-24° 33.4	-24° 26.7	-24° 20.0	-24° 13.1	-24° 06.1	+6.5	54.2
Ср 31	142° 27.8	156° 59.7	171° 31.6	186° 03.5	200° 35.5	215° 07.6	229° 39.7	244° 11.9	258° 44.1	273° 16.4	287° 48.8	+32.1	14.8
	-22° 09.1	-22° 00.5	-21° 51.8	-21° 43.0	-21° 34.1	-21° 25.1	-21° 16.0	-21° 06.9	-20° 57.6	-20° 48.2	-20° 38.8	+9.0	54.2

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 8 09h29 — Первая четв.: 15 16h25 — Полнолуние: 22 10h43 — Последняя четв.: 30 00h53

СОЛНЦЕ

Апрель 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	178° 58.9 4° 22.1	193° 59.1 4° 23.1	208° 59.3 4° 24.1	223° 59.5 4° 25.0	238° 59.7 4° 26.0	253° 59.9 4° 27.0	89° 02.3 4° 39.5	104° 02.5 4° 40.5	119° 02.7 4° 41.5	134° 02.8 4° 42.4	149° 03.0 4° 43.4	164° 03.2 4° 44.3	+0.2 +1.0
Пт 2	179° 03.4 4° 45.3	194° 03.6 4° 46.3	209° 03.8 4° 47.2	224° 03.9 4° 48.2	239° 04.1 4° 49.2	254° 04.3 4° 50.1	89° 06.7 5° 02.6	104° 06.9 5° 03.6	119° 07.1 5° 04.5	134° 07.3 5° 05.5	149° 07.4 5° 06.5	164° 07.6 5° 07.4	+0.2 +1.0
Сб 3	179° 07.8 5° 08.4	194° 08.0 5° 09.3	209° 08.2 5° 10.3	224° 08.3 5° 11.3	239° 08.5 5° 12.2	254° 08.7 5° 13.2	89° 11.1 5° 25.6	104° 11.3 5° 26.6	119° 11.4 5° 27.5	134° 11.6 5° 28.5	149° 11.8 5° 29.5	164° 12.0 5° 30.4	+0.2 +1.0
Вс 4	179° 12.2 5° 31.4	194° 12.4 5° 32.3	209° 12.5 5° 33.3	224° 12.7 5° 34.2	239° 12.9 5° 35.2	254° 13.1 5° 36.1	89° 15.4 5° 48.5	104° 15.6 5° 49.5	119° 15.8 5° 50.5	134° 16.0 5° 51.4	149° 16.1 5° 52.4	164° 16.3 5° 53.3	+0.2 +1.0
Пн 5	179° 16.5 5° 54.3	194° 16.7 5° 55.2	209° 16.9 5° 56.2	224° 17.0 5° 57.1	239° 17.2 5° 58.1	254° 17.4 5° 59.0	89° 19.7 6° 11.4	104° 19.9 6° 12.3	119° 20.1 6° 13.3	134° 20.3 6° 14.2	149° 20.4 6° 15.2	164° 20.6 6° 16.1	+0.2 +1.0
Вт 6	179° 20.8 6° 17.0	194° 21.0 6° 18.0	209° 21.1 6° 18.9	224° 21.3 6° 19.9	239° 21.5 6° 20.8	254° 21.7 6° 21.8	89° 24.0 6° 34.1	104° 24.1 6° 35.0	119° 24.3 6° 36.0	134° 24.5 6° 36.9	149° 24.7 6° 37.8	164° 24.8 6° 38.8	+0.2 +0.9
Ср 7	179° 25.0 6° 39.7	194° 25.2 6° 40.7	209° 25.4 6° 41.6	224° 25.5 6° 42.6	239° 25.7 6° 43.5	254° 25.9 6° 44.4	89° 28.2 6° 56.7	104° 28.3 6° 57.6	119° 28.5 6° 58.5	134° 28.7 6° 59.5	149° 28.9 7° 00.4	164° 29.0 7° 01.4	+0.2 +0.9
Чт 8	179° 29.2 7° 02.3	194° 29.4 7° 03.2	209° 29.6 7° 04.2	224° 29.7 7° 05.1	239° 29.9 7° 06.0	254° 30.1 7° 07.0	89° 32.3 7° 19.1	104° 32.5 7° 20.1	119° 32.6 7° 21.0	134° 32.8 7° 21.9	149° 33.0 7° 22.9	164° 33.2 7° 23.8	+0.2 +0.9
Пт 9	179° 33.3 7° 24.7	194° 33.5 7° 25.7	209° 33.7 7° 26.6	224° 33.8 7° 27.5	239° 34.0 7° 28.5	254° 34.2 7° 29.4	89° 36.4 7° 41.5	104° 36.6 7° 42.4	119° 36.7 7° 43.3	134° 36.9 7° 44.3	149° 37.1 7° 45.2	164° 37.2 7° 46.1	+0.2 +0.9
Сб 10	179° 37.4 7° 47.1	194° 37.6 7° 48.0	209° 37.7 7° 48.9	224° 37.9 7° 49.8	239° 38.1 7° 50.8	254° 38.2 7° 51.7	89° 40.4 8° 03.7	104° 40.6 8° 04.6	119° 40.7 8° 05.6	134° 40.9 8° 06.5	149° 41.1 8° 07.4	164° 41.2 8° 08.3	+0.2 +0.9
Вс 11	179° 41.4 8° 09.2	194° 41.6 8° 10.2	209° 41.7 8° 11.1	224° 41.9 8° 12.0	239° 42.1 8° 12.9	254° 42.2 8° 13.9	89° 44.4 8° 25.8	104° 44.5 8° 26.7	119° 44.7 8° 27.6	134° 44.8 8° 28.5	149° 45.0 8° 29.5	164° 45.2 8° 30.4	+0.2 +0.9
Пн 12	179° 45.3 8° 31.3	194° 45.5 8° 32.2	209° 45.7 8° 33.1	224° 45.8 8° 34.0	239° 46.0 8° 35.0	254° 46.1 8° 35.9	89° 48.2 8° 47.7	104° 48.4 8° 48.6	119° 48.6 8° 49.6	134° 48.7 8° 50.5	149° 48.9 8° 51.4	164° 49.0 8° 52.3	+0.2 +0.9
Вт 13	179° 49.2 8° 53.2	194° 49.4 8° 54.1	209° 49.5 8° 55.0	224° 49.7 8° 55.9	239° 49.8 8° 56.8	254° 50.0 8° 57.7	89° 52.0 9° 09.5	104° 52.2 9° 10.4	119° 52.4 9° 11.3	134° 52.5 9° 12.2	149° 52.7 9° 13.1	164° 52.8 9° 14.0	+0.2 +0.9
Ср 14	179° 53.0 9° 14.9	194° 53.1 9° 15.9	209° 53.3 9° 16.8	224° 53.5 9° 17.7	239° 53.6 9° 18.6	254° 53.8 9° 19.5	89° 55.8 9° 31.2	104° 55.9 9° 32.1	119° 56.1 9° 33.0	134° 56.2 9° 33.9	149° 56.4 9° 34.8	164° 56.6 9° 35.6	+0.2 +0.9
Чт 15	179° 56.7 9° 36.5	194° 56.9 9° 37.4	209° 57.0 9° 38.3	224° 57.2 9° 39.2	239° 57.3 9° 40.1	254° 57.5 9° 41.0	89° 59.4 9° 52.6	104° 59.6 9° 53.5	119° 59.7 9° 54.4	134° 59.9 9° 55.3	150° 00.0 9° 56.2	165° 00.2 9° 57.1	+0.2 +0.9
Пт 16	180° 00.3 9° 58.0	195° 00.5 9° 58.9	210° 00.6 9° 59.8	225° 00.8 10° 00.6	240° 00.9 10° 01.5	255° 01.1 10° 02.4	90° 03.0 10° 13.9	105° 03.2 10° 14.8	120° 03.3 10° 15.7	135° 03.4 10° 16.6	150° 03.6 10° 17.5	165° 03.7 10° 18.4	+0.1 +0.9
Сб 17	180° 03.9 10° 19.2	195° 04.0 10° 20.1	210° 04.2 10° 21.0	225° 04.3 10° 21.9	240° 04.5 10° 22.8	255° 04.6 10° 23.7	90° 06.5 10° 35.1	105° 06.6 10° 36.0	120° 06.8 10° 36.8	135° 06.9 10° 37.7	150° 07.1 10° 38.6	165° 07.2 10° 39.5	+0.1 +0.9
Вс 18	180° 07.3 10° 40.3	195° 07.5 10° 41.2	210° 07.6 10° 42.1	225° 07.8 10° 43.0	240° 07.9 10° 43.8	255° 08.0 10° 44.7	90° 09.9 10° 56.1	105° 10.0 10° 56.9	120° 10.1 10° 57.8	135° 10.3 10° 58.7	150° 10.4 10° 59.5	165° 10.6 11° 00.4	+0.1 +0.9
Пн 19	180° 10.7 11° 01.3	195° 10.8 11° 02.1	210° 11.0 11° 03.0	225° 11.1 11° 03.9	240° 11.3 11° 04.7	255° 11.4 11° 05.6	90° 13.2 11° 16.8	105° 13.3 11° 17.7	120° 13.4 11° 18.6	135° 13.6 11° 19.4	150° 13.7 11° 20.3	165° 13.8 11° 21.1	+0.1 +0.9
Вт 20	180° 14.0 11° 22.0	195° 14.1 11° 22.9	210° 14.2 11° 23.7	225° 14.4 11° 24.6	240° 14.5 11° 25.4	255° 14.6 11° 26.3	90° 16.3 11° 37.4	105° 16.5 11° 38.3	120° 16.6 11° 39.1	135° 16.7 11° 40.0	150° 16.9 11° 40.8	165° 17.0 11° 41.7	+0.1 +0.9
Ср 21	180° 17.1 11° 42.6	195° 17.3 11° 43.4	210° 17.4 11° 44.3	225° 17.5 11° 45.1	240° 17.6 11° 46.0	255° 17.8 11° 46.8	90° 19.4 11° 57.8	105° 19.6 11° 58.7	120° 19.7 11° 59.5	135° 19.8 12° 00.4	150° 19.9 12° 01.2	165° 20.1 12° 02.1	+0.1 +0.9
Чт 22	180° 20.2 12° 02.9	195° 20.3 12° 03.8	210° 20.4 12° 04.6	225° 20.6 12° 05.4	240° 20.7 12° 06.3	255° 20.8 12° 07.1	90° 22.4 12° 18.0	105° 22.5 12° 18.9	120° 22.6 12° 19.7	135° 22.8 12° 20.6	150° 22.9 12° 21.4	165° 23.0 12° 22.2	+0.1 +0.8
Пт 23	180° 23.1 12° 23.1	195° 23.2 12° 23.9	210° 23.4 12° 24.7	225° 23.5 12° 25.6	240° 23.6 12° 26.4	255° 23.7 12° 27.2	90° 25.3 12° 38.1	105° 25.4 12° 38.9	120° 25.5 12° 39.7	135° 25.6 12° 40.5	150° 25.7 12° 41.4	165° 25.8 12° 42.2	+0.1 +0.8
Сб 24	180° 25.9 12° 43.0	195° 26.1 12° 43.9	210° 26.2 12° 44.7	225° 26.3 12° 45.5	240° 26.4 12° 46.3	255° 26.5 12° 47.2	90° 28.0 12° 57.9	105° 28.1 12° 58.7	120° 28.2 12° 59.5	135° 28.3 13° 00.3	150° 28.4 13° 01.1	165° 28.5 13° 02.0	+0.1 +0.8
Вс 25	180° 28.7 13° 02.8	195° 28.8 13° 03.6	210° 28.9 13° 04.4	225° 29.0 13° 05.2	240° 29.1 13° 06.0	255° 29.2 13° 06.9	90° 30.6 13° 17.5	105° 30.7 13° 18.3	120° 30.8 13° 19.1	135° 30.9 13° 19.9	150° 31.0 13° 20.7	165° 31.1 13° 21.5	+0.1 +0.8
Пн 26	180° 31.2 13° 22.3	195° 31.3 13° 23.1	210° 31.4 13° 23.9	225° 31.6 13° 24.7	240° 31.7 13° 25.6	255° 31.8 13° 26.4	90° 33.1 13° 36.8	105° 33.2 13° 37.6	120° 33.3 13° 38.4	135° 33.4 13° 39.2	150° 33.5 13° 40.0	165° 33.6 13° 40.8	+0.1 +0.8
Вт 27	180° 33.7 13° 41.6	195° 33.8 13° 42.4	210° 33.9 13° 43.2	225° 34.0 13° 44.0	240° 34.1 13° 44.8	255° 34.2 13° 45.6	90° 35.5 13° 56.0	105° 35.6 13° 56.8	120° 35.6 13° 57.6	135° 35.7 13° 58.4	150° 35.8 13° 59.1	165° 35.9 13° 59.9	+0.1 +0.8
Ср 28	180° 36.0 14° 00.7	195° 36.1 14° 01.5	210° 36.2 14° 02.3	225° 36.3 14° 03.1	240° 36.4 14° 03.9	255° 36.5 14° 04.7	90° 37.7 14° 14.9	105° 37.8 14° 15.7	120° 37.9 14° 16.5	135° 38.0 14° 17.3	150° 38.0 14° 18.0	165° 38.1 14° 18.8	+0.1 +0.8
Чт 29	180° 38.2 14° 19.6	195° 38.3 14° 20.4	210° 38.4 14° 21.2	225° 38.5 14° 21.9	240° 38.6 14° 22.7	255° 38.7 14° 23.5	90° 39.8 14° 33.6	105° 39.9 14° 34.4	120° 40.0 14° 35.1	135° 40.0 14° 35.9	150° 40.1 14° 36.7	165° 40.2 14° 37.5	+0.1 +0.8
Пт 30	180° 40.3 14° 38.2	195° 40.4 14° 39.0	210° 40.5 14° 39.8	225° 40.5 14° 40.5	240° 40.6 14° 41.3	255° 40.7 14° 42.1	90° 41.7 14° 52.0	105° 41.8 14° 52.8	120° 41.9 14° 53.6	135° 42.0 14° 54.3	150° 42.1 14° 55.1	165° 42.1 14° 55.9	+0.1 +0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Апрель 2027

Д	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	Δ'/h	R/p
Чт 1	58° 42.1	73° 15.0	87° 47.9	102° 20.8	116° 53.8	131° 26.8	145° 59.9	160° 33.0	175° 06.2	189° 39.4	204° 12.7	+33.1	14.8
	-19° 09.8	-18° 59.5	-18° 49.1	-18° 38.6	-18° 28.0	-18° 17.4	-18° 06.7	-17° 55.9	-17° 45.0	-17° 34.0	-17° 23.0	+10.7	54.4
Пт 2	62° 36.4	77° 10.3	91° 44.2	106° 18.1	120° 52.1	135° 26.1	150° 00.1	164° 34.2	179° 08.2	193° 42.3	208° 16.5	+34.0	14.9
	-14° 28.7	-14° 16.5	-14° 04.3	-13° 52.0	-13° 39.6	-13° 27.2	-13° 14.7	-13° 02.2	-12° 49.6	-12° 36.9	-12° 24.2	+12.5	54.8
Сб 3	66° 51.0	81° 25.5	95° 59.9	110° 34.3	125° 08.8	139° 43.3	154° 17.8	168° 52.2	183° 26.7	198° 01.2	212° 35.7	+34.5	15.1
	-9° 06.7	-8° 53.1	-8° 39.5	-8° 25.9	-8° 12.1	-7° 58.4	-7° 44.6	-7° 30.8	-7° 16.9	-7° 03.0	-6° 49.0	+13.8	55.2
Вс 4	71° 12.9	85° 47.3	100° 21.7	114° 56.1	129° 30.5	144° 04.9	158° 39.2	173° 13.5	187° 47.8	202° 22.1	216° 56.3	+34.3	15.2
	-3° 15.6	-3° 01.1	-2° 46.6	-2° 32.1	-2° 17.5	-2° 02.9	-1° 48.4	-1° 33.7	-1° 19.1	-1° 04.5	-0° 49.8	+14.6	55.8
Пн 5	75° 26.8	90° 00.6	104° 34.3	119° 08.0	133° 41.6	148° 15.2	162° 48.7	177° 22.2	191° 55.7	206° 29.1	221° 02.4	+33.6	15.4
	2° 51.7	3° 06.5	3° 21.3	3° 36.1	3° 50.9	4° 05.7	4° 20.5	4° 35.3	4° 50.1	5° 04.9	5° 19.7	+14.8	56.4
● Вт 6	79° 16.1	93° 48.5	108° 20.9	122° 53.1	137° 25.4	151° 57.5	166° 29.6	181° 01.6	195° 33.5	210° 05.3	224° 37.1	+32.1	15.6
	8° 59.6	9° 14.1	9° 28.5	9° 42.9	9° 57.3	10° 11.7	10° 26.0	10° 40.3	10° 54.5	11° 08.7	11° 22.9	+14.3	57.0
Ср 7	82° 24.0	96° 54.5	111° 24.8	125° 55.1	140° 25.2	154° 55.3	169° 25.3	183° 55.1	198° 24.9	212° 54.6	227° 24.2	+30.0	15.7
	14° 49.6	15° 02.9	15° 16.2	15° 29.4	15° 42.5	15° 55.5	16° 08.5	16° 21.4	16° 34.3	16° 47.0	16° 59.7	+13.0	57.6
Чт 8	84° 36.2	99° 04.2	113° 32.1	127° 59.8	142° 27.5	156° 55.1	171° 22.6	185° 49.9	200° 17.2	214° 44.3	229° 11.4	+27.5	15.9
	19° 59.4	20° 10.6	20° 21.7	20° 32.7	20° 43.6	20° 54.4	21° 05.1	21° 15.6	21° 26.0	21° 36.3	21° 46.5	+10.7	58.1
Пт 9	85° 45.1	100° 10.6	114° 35.9	129° 01.2	143° 26.4	157° 51.5	172° 16.5	186° 41.4	201° 06.2	215° 31.0	229° 55.6	+25.0	16.0
	24° 04.1	24° 12.1	24° 20.1	24° 27.8	24° 35.5	24° 42.9	24° 50.3	24° 57.4	25° 04.4	25° 11.3	25° 18.0	+7.4	58.5
Сб 10	85° 56.3	100° 19.8	114° 43.2	129° 06.6	143° 30.0	157° 53.3	172° 16.5	186° 39.7	201° 02.9	215° 26.0	229° 49.1	+23.3	16.0
	26° 38.8	26° 42.8	26° 46.6	26° 50.3	26° 53.8	26° 57.1	27° 00.2	27° 03.2	27° 05.9	27° 08.5	27° 10.9	+3.2	58.8
Вс 11	85° 32.1	99° 54.9	114° 17.6	128° 40.4	143° 03.2	157° 26.0	171° 48.8	186° 11.6	200° 34.4	214° 57.2	229° 20.1	+22.8	16.1
	27° 24.7	27° 24.1	27° 23.4	27° 22.4	27° 21.3	27° 20.0	27° 18.4	27° 16.7	27° 14.9	27° 12.8	27° 10.5	-1.4	59.0
Пн 12	85° 06.9	99° 30.4	113° 53.9	128° 17.5	142° 41.2	157° 04.9	171° 28.6	185° 52.5	200° 16.4	214° 40.3	229° 04.4	+23.7	16.1
	26° 14.6	26° 09.4	26° 04.1	25° 58.6	25° 52.9	25° 47.0	25° 41.0	25° 34.8	25° 28.4	25° 21.9	25° 15.2	-5.9	59.2
◐ Вт 13	99° 30.4	113° 53.9	128° 17.5	142° 41.2	157° 04.9	171° 28.6	185° 52.5	200° 16.4	214° 40.3	229° 04.4	243° 28.5	+23.8	16.1
	26° 09.4	26° 04.1	25° 58.6	25° 52.9	25° 47.0	25° 41.0	25° 34.8	25° 28.4	25° 21.9	25° 15.2	25° 08.3	-6.1	59.2
Ср 14	99° 39.2	114° 04.5	128° 30.0	142° 55.5	157° 21.2	171° 46.9	186° 12.7	200° 38.6	215° 04.6	229° 30.6	243° 56.8	+25.8	16.1
	23° 06.2	22° 56.8	22° 47.3	22° 37.7	22° 27.9	22° 18.0	22° 08.0	21° 57.8	21° 47.4	21° 37.0	21° 26.4	-10.0	59.2
Чт 15	100° 39.9	115° 07.5	129° 35.1	144° 02.9	158° 30.7	172° 58.7	187° 26.7	201° 54.8	216° 23.0	230° 51.2	245° 19.6	+28.0	16.1
	18° 32.9	18° 20.4	18° 07.8	17° 55.1	17° 42.3	17° 29.5	17° 16.5	17° 03.4	16° 50.2	16° 37.0	16° 23.6	-12.9	59.1
Пт 16	102° 34.3	117° 03.8	131° 33.5	146° 03.2	160° 33.0	175° 02.8	189° 32.7	204° 02.7	218° 32.7	233° 02.8	247° 32.9	+29.9	16.1
	12° 53.4	12° 38.8	12° 24.2	12° 09.4	11° 54.6	11° 39.8	11° 24.9	11° 09.9	10° 54.9	10° 39.9	10° 24.7	-14.9	59.0
Сб 17	105° 11.8	119° 42.7	134° 13.8	148° 44.8	163° 15.9	177° 47.0	192° 18.2	206° 49.4	221° 20.7	235° 51.9	250° 23.2	+31.2	16.0
	6° 32.8	6° 17.0	6° 01.3	5° 45.5	5° 29.6	5° 13.8	4° 58.0	4° 42.1	4° 26.2	4° 10.3	3° 54.4	-15.8	58.7
Вс 18	108° 15.9	122° 47.5	137° 19.2	151° 50.9	166° 22.6	180° 54.3	195° 26.0	209° 57.7	224° 29.4	239° 01.2	253° 32.9	+31.7	15.9
	-0° 05.3	-0° 21.2	-0° 37.2	-0° 53.1	-1° 09.1	-1° 25.0	-1° 40.9	-1° 56.8	-2° 12.6	-2° 28.5	-2° 44.3	-15.9	58.4
Пн 19	111° 28.6	126° 00.2	140° 31.9	155° 03.5	169° 35.1	184° 06.7	198° 38.2	213° 09.8	227° 41.3	242° 12.8	256° 44.3	+31.6	15.8
	-6° 38.4	-6° 53.7	-7° 09.0	-7° 24.2	-7° 39.4	-7° 54.5	-8° 09.6	-8° 24.7	-8° 39.6	-8° 54.6	-9° 09.5	-15.1	57.9
○ Вт 20	114° 33.4	129° 04.5	143° 35.5	158° 06.5	172° 37.4	187° 08.3	201° 39.1	216° 10.0	230° 40.7	245° 11.5	259° 42.2	+30.9	15.6
	-12° 45.6	-12° 59.4	-13° 13.2	-13° 26.9	-13° 40.6	-13° 54.1	-14° 07.6	-14° 21.0	-14° 34.4	-14° 47.6	-15° 00.8	-13.5	57.4
Ср 21	117° 17.9	131° 47.9	146° 17.9	160° 47.9	175° 17.8	189° 47.6	204° 17.5	218° 47.2	233° 17.0	247° 46.7	262° 16.3	+29.8	15.5
	-18° 07.3	-18° 19.0	-18° 30.6	-18° 42.0	-18° 53.4	-19° 04.7	-19° 15.8	-19° 26.9	-19° 37.8	-19° 48.6	-19° 59.3	-11.2	56.8
Чт 22	119° 35.7	134° 04.6	148° 33.5	163° 02.4	177° 31.3	192° 00.1	206° 28.8	220° 57.5	235° 26.2	249° 54.9	264° 23.5	+28.8	15.3
	-22° 26.2	-22° 35.1	-22° 43.8	-22° 52.4	-23° 00.8	-23° 09.2	-23° 17.4	-23° 25.4	-23° 33.4	-23° 41.2	-23° 48.9	-8.3	56.1
Пт 23	121° 29.0	135° 57.2	150° 25.3	164° 53.5	179° 21.6	193° 49.7	208° 17.7	222° 45.8	237° 13.8	251° 41.8	266° 09.8	+28.1	15.1
	-25° 28.2	-25° 33.7	-25° 39.1	-25° 44.4	-25° 49.5	-25° 54.4	-25° 59.3	-26° 04.0	-26° 08.5	-26° 12.9	-26° 17.2	-4.9	55.5
Сб 24	123° 09.3	137° 37.3	152° 05.3	166° 33.3	181° 01.3	195° 29.3	209° 57.3	224° 25.4	238° 53.5	253° 21.5	267° 49.6	+28.0	15.0
	-27° 04.2	-27° 06.2	-27° 08.1	-27° 09.8	-27° 11.4	-27° 12.8	-27° 14.1	-27° 15.2	-27° 16.2	-27° 17.1	-27° 17.8	-1.4	55.0
Вс 25	124° 54.0	139° 22.6	153° 51.1	168° 19.8	182° 48.4	197° 17.1	211° 45.9	226° 14.6	240° 43.5	255° 12.3	269° 41.2	+28.7	14.9
	-27° 11.9	-27° 10.5	-27° 08.8	-27° 07.1	-27° 05.2	-27° 03.1	-27° 01.0	-26° 58.7	-26° 56.2	-26° 53.7	-26° 51.0	+2.1	54.6
Пн 26	127° 00.9	141° 30.6	156° 00.4	170° 30.3	185° 00.2	199° 30.1	214° 00.2	228° 30.2	243° 00.4	257° 30.6	272° 00.9	+30.0	14.8
	-25° 55.3	-25° 50.6	-25° 45.8	-25° 40.9	-25° 35.8	-25° 30.6	-25° 25.3	-25° 19.9	-25° 14.4	-25° 08.7	-25° 03.0	+5.2	54.3
Вт 27	129° 42.2	144° 13.4	158° 44.8	173° 16.1	187° 47.6	202° 19.1	216° 50.6	231° 22.3	245° 53.9	260° 25.7	274° 57.5	+31.5	14.8
	-23° 23.3	-23° 15.8	-23° 08.2	-23° 00.5	-22° 52.7	-22° 44.8	-22° 36.8	-22° 28.7	-22° 20.5	-22° 12.2	-22° 03.8	+7.9	54.2
◑ Ср 28	133° 01.8	147° 34.5	162° 07.3	176° 40.1	191° 13.0	205° 46.0	220° 19.0	234° 52.1	249° 25.2	263° 58.4	278° 31.6	+33.0	14.8
	-19° 47.1	-19° 37.3	-19° 27.4	-19° 17.4	-19° 07.3	-18° 57.2	-18° 46.9	-18° 36.6	-18° 26.3	-18° 15.8	-18° 05.3	+10.2	54.3
Чт 29	136° 55.4	151° 29.3	166° 03.3	180° 37.3	195° 11.3	209° 45.4	224° 19.5	238° 53.6	253° 27.8	268° 02.0	282° 36.3	+34.1	14.9
	-15° 18.4	-15° 06.7	-14° 55.0	-14° 43.2	-14° 31.3	-14° 19.4	-14° 07.4	-13° 55.3	-13° 43.2	-13° 31.0	-13° 18.8	+12.0	54.5
Пт 30	141° 13.0	155° 47.6	170° 22.2	184° 56.9	199° 31.5	214° 06.2	228° 40.9	243° 15.6	257° 50.3	272° 25.0	286° 59.7	+34.7	15.0
	-10° 08.4	-9° 55.3	-9° 42.1	-9° 28.9	-9° 15.7	-9° 02.4	-8° 49.1	-8° 35.7	-8° 22.2	-8° 08.8	-7° 55.2	+13.3	55.0

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Новолуние: 6 23h51 — Первая четв.: 13 22h56 — Полнолуние: 20 22h27 — Последняя четв.: 28 20h17

СОЛНЦЕ

Май 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	180° 42.2	195° 42.3	210° 42.4	225° 42.4	240° 42.5	255° 42.6	90° 43.6	105° 43.6	120° 43.7	135° 43.8	150° 43.9	165° 43.9	+0.1
	14° 56.6	14° 57.4	14° 58.1	14° 58.9	14° 59.7	15° 00.4	15° 10.2	15° 11.0	15° 11.8	15° 12.5	15° 13.3	15° 14.0	+0.8
Вс 2	180° 44.0	195° 44.1	210° 44.2	225° 44.2	240° 44.3	255° 44.4	90° 45.3	105° 45.3	120° 45.4	135° 45.5	150° 45.5	165° 45.6	+0.1
	15° 14.8	15° 15.5	15° 16.3	15° 17.0	15° 17.8	15° 18.5	15° 28.2	15° 28.9	15° 29.7	15° 30.4	15° 31.2	15° 31.9	+0.8
Пн 3	180° 45.7	195° 45.7	210° 45.8	225° 45.9	240° 45.9	255° 46.0	90° 46.8	105° 46.9	120° 46.9	135° 47.0	150° 47.1	165° 47.1	+0.1
	15° 32.7	15° 33.4	15° 34.1	15° 34.9	15° 35.6	15° 36.3	15° 45.9	15° 46.6	15° 47.4	15° 48.1	15° 48.8	15° 49.6	+0.7
Вт 4	180° 47.2	195° 47.2	210° 47.3	225° 47.4	240° 47.4	255° 47.5	90° 48.2	105° 48.3	120° 48.3	135° 48.4	150° 48.4	165° 48.5	+0.1
	15° 50.3	15° 51.0	15° 51.7	15° 52.5	15° 53.2	15° 53.9	16° 03.3	16° 04.1	16° 04.8	16° 05.5	16° 06.2	16° 06.9	+0.7
Ср 5	180° 48.5	195° 48.6	210° 48.7	225° 48.7	240° 48.8	255° 48.8	90° 49.5	105° 49.5	120° 49.6	135° 49.6	150° 49.7	165° 49.7	+0.1
	16° 07.7	16° 08.4	16° 09.1	16° 09.8	16° 10.5	16° 11.2	16° 20.5	16° 21.2	16° 21.9	16° 22.6	16° 23.4	16° 24.1	+0.7
Чт 6	180° 49.8	195° 49.8	210° 49.9	225° 49.9	240° 50.0	255° 50.0	90° 50.6	105° 50.7	120° 50.7	135° 50.7	150° 50.8	165° 50.8	+0.0
	16° 24.8	16° 25.5	16° 26.2	16° 26.9	16° 27.6	16° 28.3	16° 37.4	16° 38.1	16° 38.8	16° 39.5	16° 40.2	16° 40.9	+0.7
Пт 7	180° 50.9	195° 50.9	210° 51.0	225° 51.0	240° 51.0	255° 51.1	90° 51.6	105° 51.6	120° 51.7	135° 51.7	150° 51.7	165° 51.8	+0.0
	16° 41.6	16° 42.3	16° 43.0	16° 43.7	16° 44.4	16° 45.1	16° 54.0	16° 54.7	16° 55.4	16° 56.1	16° 56.8	16° 57.5	+0.7
Сб 8	180° 51.8	195° 51.9	210° 51.9	225° 51.9	240° 52.0	255° 52.0	90° 52.4	105° 52.5	120° 52.5	135° 52.5	150° 52.6	165° 52.6	+0.0
	16° 58.1	16° 58.8	16° 59.5	17° 00.2	17° 00.9	17° 01.6	17° 10.4	17° 11.1	17° 11.7	17° 12.4	17° 13.1	17° 13.7	+0.7
Вс 9	180° 52.6	195° 52.7	210° 52.7	225° 52.7	240° 52.7	255° 52.8	90° 53.1	105° 53.2	120° 53.2	135° 53.2	150° 53.2	165° 53.3	+0.0
	17° 14.4	17° 15.1	17° 15.8	17° 16.4	17° 17.1	17° 17.8	17° 26.4	17° 27.1	17° 27.8	17° 28.4	17° 29.1	17° 29.7	+0.7
Пн 10	180° 53.3	195° 53.3	210° 53.3	225° 53.4	240° 53.4	255° 53.4	90° 53.7	105° 53.7	120° 53.7	135° 53.8	150° 53.8	165° 53.8	+0.0
	17° 30.4	17° 31.1	17° 31.7	17° 32.4	17° 33.0	17° 33.7	17° 42.2	17° 42.8	17° 43.5	17° 44.1	17° 44.8	17° 45.4	+0.7
Вт 11	180° 53.8	195° 53.8	210° 53.9	225° 53.9	240° 53.9	255° 53.9	90° 54.1	105° 54.1	120° 54.2	135° 54.2	150° 54.2	165° 54.2	+0.0
	17° 46.1	17° 46.7	17° 47.4	17° 48.0	17° 48.7	17° 49.3	17° 57.6	17° 58.3	17° 58.9	17° 59.6	18° 00.2	18° 00.8	+0.6
Ср 12	180° 54.2	195° 54.2	210° 54.2	225° 54.3	240° 54.3	255° 54.3	90° 54.4	105° 54.4	120° 54.4	135° 54.4	150° 54.4	165° 54.5	+0.0
	18° 01.5	18° 02.1	18° 02.7	18° 03.4	18° 04.0	18° 04.6	18° 12.8	18° 13.4	18° 14.1	18° 14.7	18° 15.3	18° 15.9	+0.6
Чт 13	180° 54.5	195° 54.5	210° 54.5	225° 54.5	240° 54.5	255° 54.5	90° 54.6	105° 54.6	120° 54.6	135° 54.6	150° 54.6	165° 54.6	+0.0
	18° 16.5	18° 17.2	18° 17.8	18° 18.4	18° 19.0	18° 19.7	18° 27.7	18° 28.3	18° 28.9	18° 29.5	18° 30.1	18° 30.7	+0.6
Пт 14	180° 54.6	195° 54.6	210° 54.6	225° 54.6	240° 54.6	255° 54.6	90° 54.6	105° 54.6	120° 54.6	135° 54.6	150° 54.6	165° 54.6	+0.0
	18° 31.3	18° 31.9	18° 32.5	18° 33.1	18° 33.8	18° 34.4	18° 42.2	18° 42.8	18° 43.4	18° 44.0	18° 44.6	18° 45.2	+0.6
Сб 15	180° 54.6	195° 54.6	210° 54.5	225° 54.5	240° 54.5	255° 54.5	90° 54.5	105° 54.4	120° 54.4	135° 54.4	150° 54.4	165° 54.4	-0.0
	18° 45.8	18° 46.4	18° 47.0	18° 47.6	18° 48.2	18° 48.7	18° 56.4	18° 57.0	18° 57.6	18° 58.2	18° 58.7	18° 59.3	+0.6
Вс 16	180° 54.4	195° 54.4	210° 54.4	225° 54.4	240° 54.4	255° 54.3	90° 54.2	105° 54.2	120° 54.2	135° 54.1	150° 54.1	165° 54.1	-0.0
	18° 59.9	19° 00.5	19° 01.1	19° 01.7	19° 02.2	19° 02.8	19° 10.3	19° 10.9	19° 11.5	19° 12.0	19° 12.6	19° 13.2	+0.6
Пн 17	180° 54.1	195° 54.1	210° 54.1	225° 54.1	240° 54.0	255° 54.0	90° 53.8	105° 53.8	120° 53.8	135° 53.7	150° 53.7	165° 53.7	-0.0
	19° 13.7	19° 14.3	19° 14.9	19° 15.4	19° 16.0	19° 16.6	19° 23.9	19° 24.4	19° 25.0	19° 25.6	19° 26.1	19° 26.7	+0.6
Вт 18	180° 53.7	195° 53.7	210° 53.6	225° 53.6	240° 53.6	255° 53.6	90° 53.3	105° 53.2	120° 53.2	135° 53.2	150° 53.2	165° 53.1	-0.0
	19° 27.2	19° 27.8	19° 28.3	19° 28.9	19° 29.4	19° 30.0	19° 37.1	19° 37.7	19° 38.2	19° 38.8	19° 39.3	19° 39.8	+0.6
Ср 19	180° 53.1	195° 53.1	210° 53.0	225° 53.0	240° 53.0	255° 53.0	90° 52.6	105° 52.6	120° 52.5	135° 52.5	150° 52.5	165° 52.4	-0.0
	19° 40.4	19° 40.9	19° 41.5	19° 42.0	19° 42.5	19° 43.1	19° 50.0	19° 50.6	19° 51.1	19° 51.6	19° 52.2	19° 52.7	+0.5
Чт 20	180° 52.4	195° 52.4	210° 52.3	225° 52.3	240° 52.3	255° 52.2	90° 51.8	105° 51.7	120° 51.7	135° 51.7	150° 51.6	165° 51.6	-0.0
	19° 53.2	19° 53.7	19° 54.3	19° 54.8	19° 55.3	19° 55.8	20° 02.6	20° 03.1	20° 03.6	20° 04.2	20° 04.7	20° 05.2	+0.5
Пт 21	180° 51.6	195° 51.5	210° 51.5	225° 51.4	240° 51.4	255° 51.4	90° 50.8	105° 50.8	120° 50.8	135° 50.7	150° 50.7	165° 50.6	-0.0
	20° 05.7	20° 06.2	20° 06.7	20° 07.2	20° 07.7	20° 08.3	20° 14.8	20° 15.3	20° 15.8	20° 16.3	20° 16.8	20° 17.3	+0.5
Сб 22	180° 50.6	195° 50.5	210° 50.5	225° 50.5	240° 50.4	255° 50.4	90° 49.8	105° 49.7	120° 49.7	135° 49.6	150° 49.6	165° 49.5	-0.0
	20° 17.8	20° 18.3	20° 18.8	20° 19.3	20° 19.8	20° 20.3	20° 26.7	20° 27.2	20° 27.7	20° 28.2	20° 28.7	20° 29.2	+0.5
Вс 23	180° 49.5	195° 49.4	210° 49.4	225° 49.3	240° 49.3	255° 49.2	90° 48.6	105° 48.5	120° 48.5	135° 48.4	150° 48.3	165° 48.3	-0.0
	20° 29.6	20° 30.1	20° 30.6	20° 31.1	20° 31.6	20° 32.1	20° 38.3	20° 38.7	20° 39.2	20° 39.7	20° 40.1	20° 40.6	+0.5
Пн 24	180° 48.2	195° 48.2	210° 48.1	225° 48.1	240° 48.0	255° 48.0	90° 47.2	105° 47.2	120° 47.1	135° 47.0	150° 47.0	165° 46.9	-0.1
	20° 41.1	20° 41.6	20° 42.0	20° 42.5	20° 43.0	20° 43.4	20° 49.4	20° 49.9	20° 50.4	20° 50.8	20° 51.3	20° 51.7	+0.5
Вт 25	180° 46.9	195° 46.8	210° 46.8	225° 46.7	240° 46.6	255° 46.6	90° 45.8	105° 45.7	120° 45.6	135° 45.6	150° 45.5	165° 45.4	-0.1
	20° 52.2	20° 52.6	20° 53.1	20° 53.5	20° 54.0	20° 54.4	21° 00.3	21° 00.7	21° 01.1	21° 01.6	21° 02.0	21° 02.5	+0.5
Ср 26	180° 45.4	195° 45.3	210° 45.2	225° 45.2	240° 45.1	255° 45.0	90° 44.2	105° 44.1	120° 44.0	135° 44.0	150° 43.9	165° 43.8	-0.1
	21° 02.9	21° 03.4	21° 03.8	21° 04.2	21° 04.7	21° 05.1	21° 10.7	21° 11.2	21° 11.6	21° 12.0	21° 12.4	21° 12.9	+0.4
Чт 27	180° 43.8	195° 43.7	210° 43.6	225° 43.5	240° 43.5	255° 43.4	90° 42.5	105° 42.4	120° 42.3	135° 42.2	150° 42.2	165° 42.1	-0.1
	21° 13.3	21° 13.7	21° 14.1	21° 14.6	21° 15.0	21° 15.4	21° 20.8	21° 21.2	21° 21.7	21° 22.1	21° 22.5	21° 22.9	+0.4
Пт 28	180° 42.0	195° 41.9	210° 41.9	225° 41.8	240° 41.7	255° 41.6	90° 40.6	105° 40.5	120° 40.5	135° 40.4	150° 40.3	165° 40.2	-0.1
	21° 23.3	21° 23.7	21° 24.1	21° 24.5	21° 24.9	21° 25.3	21° 30.6	21° 31.0	21° 31.3	21° 31.7	21° 32.1	21° 32.5	+0.4
Сб 29	180° 40.1	195° 40.1	210° 40.0	225° 39.9	240° 39.8	255° 39.7	90° 38.7	105° 38.6	120° 38.5	135° 38.4	150° 38.3	165° 38.2	-0.1
	21° 32.9	21° 33.3	21° 33.7	21° 34.1	21° 34.5	21° 34.9	21° 39.9	21° 40.3	21° 40.7	21° 41.1	21° 41.4	21° 41.8	+0.4
Вс 30	180° 38.2	195° 38.1	210° 38.0	225° 37.9	240° 37.8	255° 37.7	90° 36.6	105° 36.5	120° 36.4	135° 36.3	150° 36.2	165° 36.1	-0.1
	21° 42.2	21° 42.6	21° 42.9	21° 43.3	21° 43.7	21° 44.1	21° 48.9	21° 49.3	21° 49.6	21° 50.0	21° 50.4	21° 50.7	+0.4
Пн 31	180° 36.1	195° 36.0	210° 35.9	225° 35.8	240° 35.7	255° 35.6	90° 34.4	105° 34.3	120° 34.2	135° 34.1	150° 34.0	165° 33.9	-0.1
	21° 51.1	21° 51.4	21° 51.8	21° 52.2	21° 52.5	21° 52.9	21° 57.5	21° 57.8	21° 58.2	21° 58.5	21° 58.9	21° 59.2	+0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2027

Д	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	Δ'/h	R/p
Сб 1	58° 12.4	72° 47.1	87° 21.8	101° 56.5	116° 31.3	131° 06.0	145° 40.7	160° 15.4	174° 50.1	189° 24.7	203° 59.4	+34.7	15.1
	-5° 51.8	-5° 37.9	-5° 23.9	-5° 09.9	-4° 55.9	-4° 41.9	-4° 27.8	-4° 13.7	-3° 59.6	-3° 45.4	-3° 31.2	+14.1	55.4
Вс 2	62° 36.9	77° 11.2	91° 45.4	106° 19.7	120° 53.8	135° 28.0	150° 02.1	164° 36.2	179° 10.2	193° 44.2	208° 18.2	+34.1	15.3
	0° 04.6	0° 19.2	0° 33.7	0° 48.3	1° 02.9	1° 17.5	1° 32.1	1° 46.7	2° 01.3	2° 15.9	2° 30.6	+14.6	56.1
Пн 3	66° 41.6	81° 14.7	95° 47.8	110° 20.7	124° 53.7	139° 26.5	153° 59.3	168° 32.0	183° 04.7	197° 37.3	212° 09.8	+32.8	15.5
	6° 10.4	6° 25.0	6° 39.6	6° 54.2	7° 08.8	7° 23.3	7° 37.9	7° 52.4	8° 06.9	8° 21.4	8° 35.9	+14.6	56.9
Вт 4	70° 07.9	84° 39.1	99° 10.2	113° 41.2	128° 12.2	142° 43.0	157° 13.7	171° 44.4	186° 14.9	200° 45.3	215° 15.7	+30.8	15.7
	12° 09.5	12° 23.5	12° 37.4	12° 51.3	13° 05.1	13° 18.8	13° 32.6	13° 46.2	13° 59.8	14° 13.4	14° 26.9	+13.7	57.6
Ср 5	72° 38.2	87° 06.9	101° 35.4	116° 03.8	130° 32.1	145° 00.3	159° 28.4	173° 56.3	188° 24.2	202° 51.9	217° 19.5	+28.1	15.9
	17° 41.4	17° 53.8	18° 06.1	18° 18.2	18° 30.3	18° 42.4	18° 54.3	19° 06.1	19° 17.8	19° 29.4	19° 41.0	+12.0	58.4
● Чт 6	73° 59.9	88° 25.7	102° 51.3	117° 16.9	131° 42.3	146° 07.6	160° 32.8	174° 58.0	189° 22.9	203° 47.8	218° 12.6	+25.3	16.1
	22° 20.5	22° 30.1	22° 39.7	22° 49.1	22° 58.3	23° 07.4	23° 16.4	23° 25.3	23° 34.0	23° 42.5	23° 50.9	+9.1	59.0
Пт 7	74° 12.3	88° 35.6	102° 58.7	117° 21.8	131° 44.8	146° 07.7	160° 30.6	174° 53.4	189° 16.1	203° 38.7	218° 01.3	+22.9	16.2
	25° 38.3	25° 44.2	25° 49.8	25° 55.3	26° 00.7	26° 05.8	26° 10.8	26° 15.6	26° 20.2	26° 24.6	26° 28.8	+5.1	59.4
Сб 8	73° 33.9	87° 55.7	102° 17.6	116° 39.4	131° 01.3	145° 23.1	159° 44.9	174° 06.7	188° 28.5	202° 50.2	217° 12.0	+21.8	16.3
	27° 09.9	27° 11.1	27° 12.1	27° 12.9	27° 13.5	27° 13.9	27° 14.1	27° 14.2	27° 14.0	27° 13.6	27° 13.1	+0.3	59.7
Вс 9	72° 41.0	87° 03.2	101° 25.4	115° 47.7	130° 10.1	144° 32.5	158° 54.9	173° 17.4	187° 40.0	202° 02.7	216° 25.4	+22.4	16.3
	26° 41.3	26° 37.6	26° 33.7	26° 29.7	26° 25.5	26° 21.1	26° 16.5	26° 11.7	26° 06.7	26° 01.6	25° 56.3	-4.5	59.7
Пн 10	72° 15.0	86° 39.0	101° 03.1	115° 27.2	129° 51.5	144° 15.9	158° 40.3	173° 04.9	187° 29.6	201° 54.3	216° 19.2	+24.4	16.3
	24° 15.5	24° 07.4	23° 59.2	23° 50.8	23° 42.3	23° 33.6	23° 24.8	23° 15.8	23° 06.7	22° 57.5	22° 48.0	-8.7	59.6
Вт 11	72° 44.3	87° 10.8	101° 37.4	116° 04.1	130° 30.9	144° 57.9	159° 24.9	173° 52.0	188° 19.2	202° 46.5	217° 14.0	+27.0	16.2
	20° 10.5	19° 59.0	19° 47.4	19° 35.7	19° 23.8	19° 11.9	18° 59.8	18° 47.7	18° 35.4	18° 23.0	18° 10.5	-12.0	59.4
Ср 12	74° 17.0	88° 46.0	103° 15.0	117° 44.1	132° 13.3	146° 42.6	161° 12.0	175° 41.5	190° 11.0	204° 40.7	219° 10.4	+29.3	16.1
	14° 52.3	14° 38.5	14° 24.5	14° 10.5	13° 56.4	13° 42.3	13° 28.1	13° 13.8	12° 59.4	12° 45.0	12° 30.6	-14.2	59.0
◐ Чт 13	88° 46.0	103° 15.0	117° 44.1	132° 13.3	146° 42.6	161° 12.0	175° 41.5	190° 11.0	204° 40.7	219° 10.4	233° 40.1	+29.4	16.1
	14° 38.5	14° 24.5	14° 10.5	13° 56.4	13° 42.3	13° 28.1	13° 13.8	12° 59.4	12° 45.0	12° 30.6	12° 16.1	-14.2	59.0
Пт 14	91° 15.6	105° 46.5	120° 17.5	134° 48.5	149° 19.6	163° 50.7	178° 21.8	192° 53.1	207° 24.3	221° 55.7	236° 27.0	+31.1	16.0
	8° 32.4	8° 17.1	8° 01.9	7° 46.5	7° 31.2	7° 15.9	7° 00.5	6° 45.1	6° 29.6	6° 14.2	5° 58.7	-15.4	58.6
Сб 15	94° 22.6	108° 54.6	123° 26.6	137° 58.6	152° 30.7	167° 02.8	181° 34.9	196° 07.0	210° 39.1	225° 11.3	239° 43.5	+32.1	15.8
	2° 04.8	1° 49.2	1° 33.5	1° 17.9	1° 02.2	0° 46.6	0° 31.0	0° 15.4	-0° 00.2	-0° 15.8	-0° 31.4	-15.6	58.1
Вс 16	97° 47.3	112° 19.5	126° 51.8	141° 24.1	155° 56.3	170° 28.6	185° 00.8	199° 33.1	214° 05.3	228° 37.5	243° 09.8	+32.3	15.7
	-4° 23.2	-4° 38.4	-4° 53.6	-5° 08.8	-5° 24.0	-5° 39.1	-5° 54.2	-6° 09.3	-6° 24.3	-6° 39.2	-6° 54.2	-15.1	57.6
Пн 17	101° 10.7	115° 42.6	130° 14.5	144° 46.3	159° 18.1	173° 49.8	188° 21.6	202° 53.3	217° 24.9	231° 56.6	246° 28.2	+31.7	15.6
	-10° 32.6	-10° 46.7	-11° 00.8	-11° 14.8	-11° 28.8	-11° 42.7	-11° 56.5	-12° 10.3	-12° 24.0	-12° 37.6	-12° 51.2	-13.9	57.1
Вт 18	104° 17.4	118° 48.4	133° 19.3	147° 50.1	162° 20.9	176° 51.7	191° 22.4	205° 53.1	220° 23.7	234° 54.3	249° 24.8	+30.7	15.4
	-16° 05.7	-16° 18.0	-16° 30.3	-16° 42.4	-16° 54.5	-17° 06.5	-17° 18.4	-17° 30.1	-17° 41.8	-17° 53.4	-18° 05.0	-11.9	56.6
Ср 19	106° 56.9	121° 26.6	135° 56.3	150° 26.0	164° 55.6	179° 25.1	193° 54.6	208° 24.1	222° 53.5	237° 22.8	251° 52.1	+29.5	15.3
	-20° 45.5	-20° 55.4	-21° 05.1	-21° 14.8	-21° 24.3	-21° 33.7	-21° 43.0	-21° 52.2	-22° 01.2	-22° 10.2	-22° 19.0	-9.4	56.1
○ Чт 20	109° 06.6	123° 35.2	138° 03.8	152° 32.4	167° 00.9	181° 29.4	195° 57.9	210° 26.3	224° 54.7	239° 23.1	253° 51.4	+28.5	15.2
	-24° 16.7	-24° 23.5	-24° 30.2	-24° 36.8	-24° 43.2	-24° 49.5	-24° 55.7	-25° 01.7	-25° 07.6	-25° 13.4	-25° 19.1	-6.2	55.6
Пт 21	110° 53.7	125° 21.7	139° 49.7	154° 17.7	168° 45.7	183° 13.7	197° 41.7	212° 09.6	226° 37.6	241° 05.6	255° 33.6	+28.0	15.0
	-26° 27.1	-26° 30.5	-26° 33.8	-26° 37.0	-26° 40.0	-26° 42.8	-26° 45.5	-26° 48.1	-26° 50.6	-26° 52.9	-26° 55.0	-2.8	55.1
Сб 22	112° 34.1	127° 02.3	141° 30.5	155° 58.7	170° 26.9	184° 55.2	199° 23.5	213° 51.8	228° 20.2	242° 48.5	257° 16.9	+28.3	14.9
	-27° 10.4	-27° 10.3	-27° 10.0	-27° 09.7	-27° 09.1	-27° 08.5	-27° 07.7	-27° 06.8	-27° 05.7	-27° 04.5	-27° 03.2	+0.7	54.7
Вс 23	114° 27.9	128° 57.0	143° 26.1	157° 55.3	172° 24.6	186° 53.9	201° 23.2	215° 52.6	230° 22.1	244° 51.6	259° 21.2	+29.3	14.8
	-26° 27.0	-26° 23.5	-26° 20.0	-26° 16.3	-26° 12.4	-26° 08.5	-26° 04.4	-26° 00.2	-25° 55.8	-25° 51.4	-25° 46.8	+4.0	54.4
Пн 24	116° 52.1	131° 22.6	145° 53.2	160° 23.9	174° 54.7	189° 25.5	203° 56.4	218° 27.3	232° 58.4	247° 29.4	262° 00.6	+30.9	14.8
	-24° 24.0	-24° 17.5	-24° 11.0	-24° 04.4	-23° 57.6	-23° 50.7	-23° 43.8	-23° 36.7	-23° 29.5	-23° 22.3	-23° 14.9	+6.9	54.2
Вт 25	119° 55.7	134° 27.9	149° 00.2	163° 32.5	178° 04.9	192° 37.3	207° 09.8	221° 42.4	236° 15.0	250° 47.7	265° 20.5	+32.5	14.8
	-21° 12.4	-21° 03.5	-20° 54.5	-20° 45.4	-20° 36.3	-20° 27.0	-20° 17.7	-20° 08.3	-19° 58.7	-19° 49.1	-19° 39.5	+9.3	54.1
Ср 26	123° 38.8	138° 12.4	152° 46.1	167° 19.9	181° 53.7	196° 27.5	211° 01.4	225° 35.4	240° 09.4	254° 43.4	269° 17.5	+33.9	14.8
	-17° 05.0	-16° 54.1	-16° 43.2	-16° 32.2	-16° 21.1	-16° 09.9	-15° 58.7	-15° 47.4	-15° 36.1	-15° 24.7	-15° 13.2	+11.2	54.2
Чт 27	127° 53.5	142° 28.2	157° 02.9	171° 37.7	186° 12.5	200° 47.3	215° 22.1	229° 56.9	244° 31.8	259° 06.7	273° 41.6	+34.8	14.9
	-12° 13.9	-12° 01.5	-11° 49.1	-11° 36.6	-11° 24.0	-11° 11.4	-10° 58.8	-10° 46.1	-10° 33.3	-10° 20.6	-10° 07.7	+12.6	54.5
◑ Пт 28	132° 27.4	147° 02.6	161° 37.7	176° 12.9	190° 48.0	205° 23.2	219° 58.3	234° 33.4	249° 08.6	263° 43.7	278° 18.9	+35.1	15.0
	-6° 50.1	-6° 36.6	-6° 23.1	-6° 09.6	-5° 56.0	-5° 42.4	-5° 28.7	-5° 15.0	-5° 01.3	-4° 47.6	-4° 33.8	+13.6	54.9
Сб 29	137° 04.6	151° 39.5	166° 14.3	180° 49.2	195° 24.0	209° 58.8	224° 33.6	239° 08.3	253° 43.0	268° 17.7	282° 52.3	+34.8	15.1
	-1° 04.1	-0° 50.0	-0° 35.8	-0° 21.6	-0° 07.4	0° 06.8	0° 21.0	0° 35.3	0° 49.5	1° 03.8	1° 18.1	+14.2	55.6
Вс 30	141° 26.9	156° 00.8	170° 34.6	185° 08.4	199° 42.2	214° 15.9	228° 49.5	243° 23.0	257° 56.5	272° 29.9	287° 03.3	+33.6	15.4
	4° 53.1	5° 07.4	5° 21.8	5° 36.1	5° 50.4	6° 04.7	6° 19.1	6° 33.4	6° 47.7	7° 01.9	7° 16.2	+14.3	56.3
Пн 31	145° 14.8	159° 46.9	174° 18.9	188° 50.8	203° 22.7	217° 54.4	232° 26.1	246° 57.7	261° 29.1	276° 00.5	290° 31.8	+31.7	15.6
	10° 48.1	11° 02.1	11° 16.0	11° 29.8	11° 43.6	11° 57.4	12° 11.2	12° 24.9	12° 38.6	12° 52.2	13° 05.8	+13.8	57.2

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Новолуние: 6 10h58 — Первая четв.: 13 04h43 — Полнолуние: 20 10h59 — Последняя четв.: 28 13h57

СОЛНЦЕ

Июнь 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	180° 33.9	195° 33.8	210° 33.7	225° 33.6	240° 33.5	255° 33.4	90° 32.1	105° 32.0	120° 31.9	135° 31.8	150° 31.7	165° 31.6	-0.1
	21° 59.6	21° 59.9	22° 00.3	22° 00.6	22° 01.0	22° 01.3	22° 05.7	22° 06.0	22° 06.4	22° 06.7	22° 07.0	22° 07.4	+0.3
Ср 2	180° 31.5	195° 31.4	210° 31.3	225° 31.2	240° 31.1	255° 31.0	90° 29.7	105° 29.6	120° 29.5	135° 29.4	150° 29.3	165° 29.2	-0.1
	22° 07.7	22° 08.0	22° 08.4	22° 08.7	22° 09.0	22° 09.4	22° 13.5	22° 13.9	22° 14.2	22° 14.5	22° 14.8	22° 15.1	+0.3
Чт 3	180° 29.1	195° 29.0	210° 28.9	225° 28.8	240° 28.7	255° 28.6	90° 27.3	105° 27.2	120° 27.0	135° 26.9	150° 26.8	165° 26.7	-0.1
	22° 15.4	22° 15.8	22° 16.1	22° 16.4	22° 16.7	22° 17.0	22° 21.0	22° 21.3	22° 21.6	22° 21.9	22° 22.2	22° 22.5	+0.3
Пт 4	180° 26.6	195° 26.5	210° 26.4	225° 26.3	240° 26.2	255° 26.1	90° 24.7	105° 24.6	120° 24.5	135° 24.4	150° 24.2	165° 24.1	-0.1
	22° 22.8	22° 23.1	22° 23.4	22° 23.7	22° 24.0	22° 24.3	22° 28.0	22° 28.3	22° 28.6	22° 28.9	22° 29.2	22° 29.5	+0.3
Сб 5	180° 24.0	195° 23.9	210° 23.8	225° 23.7	240° 23.6	255° 23.5	90° 22.0	105° 21.9	120° 21.8	135° 21.7	150° 21.6	165° 21.5	-0.1
	22° 29.7	22° 30.0	22° 30.3	22° 30.6	22° 30.9	22° 31.1	22° 34.7	22° 35.0	22° 35.2	22° 35.5	22° 35.8	22° 36.0	+0.3
Вс 6	180° 21.3	195° 21.2	210° 21.1	225° 21.0	240° 20.9	255° 20.8	90° 19.3	105° 19.2	120° 19.1	135° 18.9	150° 18.8	165° 18.7	-0.1
	22° 36.3	22° 36.6	22° 36.8	22° 37.1	22° 37.4	22° 37.6	22° 41.0	22° 41.2	22° 41.5	22° 41.7	22° 42.0	22° 42.2	+0.3
Пн 7	180° 18.6	195° 18.5	210° 18.4	225° 18.2	240° 18.1	255° 18.0	90° 16.5	105° 16.4	120° 16.2	135° 16.1	150° 16.0	165° 15.9	-0.1
	22° 42.5	22° 42.7	22° 43.0	22° 43.2	22° 43.5	22° 43.7	22° 46.8	22° 47.1	22° 47.3	22° 47.5	22° 47.8	22° 48.0	+0.2
Вт 8	180° 15.8	195° 15.6	210° 15.5	225° 15.4	240° 15.3	255° 15.2	90° 13.6	105° 13.5	120° 13.4	135° 13.2	150° 13.1	165° 13.0	-0.1
	22° 48.2	22° 48.5	22° 48.7	22° 48.9	22° 49.2	22° 49.4	22° 52.3	22° 52.5	22° 52.7	22° 53.0	22° 53.2	22° 53.4	+0.2
Ср 9	180° 12.9	195° 12.8	210° 12.6	225° 12.5	240° 12.4	255° 12.3	90° 10.7	105° 10.5	120° 10.4	135° 10.3	150° 10.2	165° 10.0	-0.1
	22° 53.6	22° 53.8	22° 54.0	22° 54.2	22° 54.5	22° 54.7	22° 57.4	22° 57.6	22° 57.8	22° 58.0	22° 58.2	22° 58.4	+0.2
Чт 10	180° 09.9	195° 09.8	210° 09.7	225° 09.6	240° 09.4	255° 09.3	90° 07.7	105° 07.5	120° 07.4	135° 07.3	150° 07.2	165° 07.0	-0.1
	22° 58.6	22° 58.8	22° 59.0	22° 59.2	22° 59.3	22° 59.5	23° 02.0	23° 02.2	23° 02.4	23° 02.6	23° 02.8	23° 02.9	+0.2
Пт 11	180° 06.9	195° 06.8	210° 06.7	225° 06.5	240° 06.4	255° 06.3	90° 04.6	105° 04.5	120° 04.4	135° 04.3	150° 04.1	165° 04.0	-0.1
	23° 03.1	23° 03.3	23° 03.5	23° 03.7	23° 03.8	23° 04.0	23° 06.3	23° 06.4	23° 06.6	23° 06.8	23° 06.9	23° 07.1	+0.2
Сб 12	180° 03.9	195° 03.7	210° 03.6	225° 03.5	240° 03.4	255° 03.2	90° 01.6	105° 01.4	120° 01.3	135° 01.2	150° 01.0	165° 00.9	-0.1
	23° 07.3	23° 07.4	23° 07.6	23° 07.8	23° 07.9	23° 08.1	23° 10.1	23° 10.3	23° 10.4	23° 10.6	23° 10.7	23° 10.9	+0.2
Вс 13	180° 00.8	195° 00.6	210° 00.5	225° 00.4	240° 00.3	255° 00.1	89° 58.4	104° 58.3	119° 58.2	134° 58.0	149° 57.9	164° 57.8	-0.1
	23° 11.0	23° 11.2	23° 11.3	23° 11.4	23° 11.6	23° 11.7	23° 13.5	23° 13.7	23° 13.8	23° 13.9	23° 14.1	23° 14.2	+0.1
Пн 14	179° 57.6	194° 57.5	209° 57.4	224° 57.3	239° 57.1	254° 57.0	89° 55.3	104° 55.1	119° 55.0	134° 54.9	149° 54.8	164° 54.6	-0.1
	23° 14.3	23° 14.5	23° 14.6	23° 14.7	23° 14.9	23° 15.0	23° 16.6	23° 16.7	23° 16.8	23° 16.9	23° 17.0	23° 17.1	+0.1
Вт 15	179° 54.5	194° 54.4	209° 54.2	224° 54.1	239° 54.0	254° 53.8	89° 52.1	104° 52.0	119° 51.8	134° 51.7	149° 51.6	164° 51.4	-0.1
	23° 17.3	23° 17.4	23° 17.5	23° 17.6	23° 17.7	23° 17.8	23° 19.2	23° 19.3	23° 19.4	23° 19.5	23° 19.6	23° 19.7	+0.1
Ср 16	179° 51.3	194° 51.2	209° 51.0	224° 50.9	239° 50.8	254° 50.6	89° 48.9	104° 48.8	119° 48.6	134° 48.5	149° 48.4	164° 48.2	-0.1
	23° 19.8	23° 19.9	23° 20.0	23° 20.1	23° 20.2	23° 20.2	23° 21.4	23° 21.5	23° 21.6	23° 21.6	23° 21.7	23° 21.8	+0.1
Чт 17	179° 48.1	194° 48.0	209° 47.8	224° 47.7	239° 47.6	254° 47.4	89° 45.7	104° 45.5	119° 45.4	134° 45.3	149° 45.1	164° 45.0	-0.1
	23° 21.9	23° 22.0	23° 22.0	23° 22.1	23° 22.2	23° 22.3	23° 23.2	23° 23.2	23° 23.3	23° 23.4	23° 23.4	23° 23.5	+0.1
Пт 18	179° 44.9	194° 44.7	209° 44.6	224° 44.5	239° 44.3	254° 44.2	89° 42.4	104° 42.3	119° 42.2	134° 42.0	149° 41.9	164° 41.8	-0.1
	23° 23.6	23° 23.6	23° 23.7	23° 23.7	23° 23.8	23° 23.9	23° 24.6	23° 24.6	23° 24.7	23° 24.7	23° 24.8	23° 24.8	+0.1
Сб 19	179° 41.6	194° 41.5	209° 41.3	224° 41.2	239° 41.1	254° 40.9	89° 39.2	104° 39.0	119° 38.9	134° 38.8	149° 38.6	164° 38.5	-0.1
	23° 24.8	23° 24.9	23° 24.9	23° 25.0	23° 25.0	23° 25.1	23° 25.5	23° 25.6	23° 25.6	23° 25.6	23° 25.7	23° 25.7	+0.0
Вс 20	179° 38.4	194° 38.2	209° 38.1	224° 38.0	239° 37.8	254° 37.7	89° 35.9	104° 35.8	119° 35.7	134° 35.5	149° 35.4	164° 35.3	-0.1
	23° 25.7	23° 25.7	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	+0.0
Пн 21	179° 35.1	194° 35.0	209° 34.9	224° 34.7	239° 34.6	254° 34.4	89° 32.7	104° 32.6	119° 32.4	134° 32.3	149° 32.1	164° 32.0	-0.1
	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	+0.0
Вт 22	179° 31.9	194° 31.7	209° 31.6	224° 31.5	239° 31.3	254° 31.2	89° 29.4	104° 29.3	119° 29.2	134° 29.0	149° 28.9	164° 28.8	-0.1
	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.0	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	-0.0
Ср 23	179° 28.6	194° 28.5	209° 28.4	224° 28.2	239° 28.1	254° 28.0	89° 26.2	104° 26.1	119° 26.0	134° 25.8	149° 25.7	164° 25.5	-0.1
	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 25.7	23° 25.7	23° 25.3	23° 25.2	23° 25.2	23° 25.2	23° 25.1	23° 25.1	-0.0
Чт 24	179° 25.4	194° 25.3	209° 25.1	224° 25.0	239° 24.9	254° 24.7	89° 23.0	104° 22.9	119° 22.7	134° 22.6	149° 22.5	164° 22.3	-0.1
	23° 25.0	23° 25.0	23° 25.0	23° 24.9	23° 24.9	23° 24.8	23° 24.2	23° 24.1	23° 24.1	23° 24.0	23° 24.0	23° 23.9	-0.0
Пт 25	179° 22.2	194° 22.1	209° 21.9	224° 21.8	239° 21.7	254° 21.5	89° 19.8	104° 19.7	119° 19.6	134° 19.4	149° 19.3	164° 19.2	-0.1
	23° 23.8	23° 23.8	23° 23.7	23° 23.7	23° 23.6	23° 23.5	23° 22.7	23° 22.6	23° 22.5	23° 22.5	23° 22.4	23° 22.3	-0.1
Сб 26	179° 19.0	194° 18.9	209° 18.8	224° 18.6	239° 18.5	254° 18.4	89° 16.7	104° 16.5	119° 16.4	134° 16.3	149° 16.1	164° 16.0	-0.1
	23° 22.2	23° 22.2	23° 22.1	23° 22.0	23° 21.9	23° 21.8	23° 20.8	23° 20.7	23° 20.6	23° 20.5	23° 20.4	23° 20.3	-0.1
Вс 27	179° 15.9	194° 15.7	209° 15.6	224° 15.5	239° 15.4	254° 15.2	89° 13.5	104° 13.4	119° 13.3	134° 13.1	149° 13.0	164° 12.9	-0.1
	23° 20.2	23° 20.1	23° 20.0	23° 19.9	23° 19.8	23° 19.7	23° 18.4	23° 18.3	23° 18.2	23° 18.1	23° 18.0	23° 17.9	-0.1
Пн 28	179° 12.8	194° 12.6	209° 12.5	224° 12.4	239° 12.2	254° 12.1	89° 10.4	104° 10.3	119° 10.2	134° 10.1	149° 09.9	164° 09.8	-0.1
	23° 17.8	23° 17.7	23° 17.6	23° 17.4	23° 17.3	23° 17.2	23° 15.7	23° 15.6	23° 15.4	23° 15.3	23° 15.2	23° 15.1	-0.1
Вт 29	179° 09.7	194° 09.6	209° 09.4	224° 09.3	239° 09.2	254° 09.0	89° 07.4	104° 07.3	119° 07.1	134° 07.0	149° 06.9	164° 06.8	-0.1
	23° 14.9	23° 14.8	23° 14.7	23° 14.5	23° 14.4	23° 14.3	23° 12.5	23° 12.4	23° 12.3	23° 12.1	23° 12.0	23° 11.8	-0.1
Ср 30	179° 06.6	194° 06.5	209° 06.4	224° 06.3	239° 06.1	254° 06.0	89° 04.4	104° 04.3	119° 04.2	134° 04.0	149° 03.9	164° 03.8	-0.1
	23° 11.7	23° 11.5	23° 11.4	23° 11.2	23° 11.1	23° 11.0	23° 09.0	23° 08.8	23° 08.7	23° 08.5	23° 08.3	23° 08.2	-0.1

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июнь 2027

Д	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	Δ'/h	R/p
Вт 1	61° 08.6	75° 38.8	90° 08.9	104° 38.9	119° 08.8	133° 38.6	148° 08.3	162° 37.8	177° 07.3	191° 36.6	206° 05.8	+29.7	15.8
	15° 05.9	15° 19.0	15° 32.0	15° 44.9	15° 57.8	16° 10.7	16° 23.4	16° 36.1	16° 48.7	17° 01.3	17° 13.7	+12.8	57.9
Ср 2	63° 09.0	77° 36.2	92° 03.3	106° 30.2	120° 57.1	135° 23.8	149° 50.3	164° 16.8	178° 43.1	193° 09.3	207° 35.3	+26.6	16.0
	20° 10.8	20° 21.9	20° 32.8	20° 43.7	20° 54.4	21° 05.0	21° 15.5	21° 25.9	21° 36.2	21° 46.3	21° 56.4	+10.6	58.8
Чт 3	63° 50.9	78° 15.0	92° 38.9	107° 02.7	121° 26.5	135° 50.1	150° 13.5	164° 36.9	179° 00.2	193° 23.3	207° 46.4	+23.5	16.2
	24° 11.1	24° 18.9	24° 26.6	24° 34.1	24° 41.5	24° 48.7	24° 55.8	25° 02.6	25° 09.4	25° 15.9	25° 22.3	+7.1	59.6
● Пт 4	63° 20.6	77° 42.3	92° 03.8	106° 25.3	120° 46.7	135° 08.1	149° 29.4	163° 50.7	178° 11.9	192° 33.0	206° 54.1	+21.3	16.4
	26° 36.8	26° 40.3	26° 43.5	26° 46.6	26° 49.5	26° 52.2	26° 54.7	26° 57.0	26° 59.1	27° 01.1	27° 02.8	+2.6	60.2
Сб 5	62° 07.5	76° 28.3	90° 49.1	105° 09.9	119° 30.8	133° 51.7	148° 12.5	162° 33.5	176° 54.4	191° 15.4	205° 36.4	+20.9	16.5
	27° 03.9	27° 02.4	27° 00.6	26° 58.6	26° 56.5	26° 54.1	26° 51.5	26° 48.7	26° 45.7	26° 42.5	26° 39.1	-2.5	60.5
Вс 6	60° 57.4	75° 19.3	89° 41.3	104° 03.3	118° 25.5	132° 47.7	147° 10.1	161° 32.5	175° 55.0	190° 17.6	204° 40.3	+22.3	16.5
	25° 24.6	25° 18.1	25° 11.4	25° 04.5	24° 57.5	24° 50.3	24° 42.9	24° 35.3	24° 27.5	24° 19.6	24° 11.5	-7.3	60.5
Пн 7	60° 32.8	74° 57.2	89° 21.7	103° 46.2	118° 10.9	132° 35.7	147° 00.7	161° 25.7	175° 50.9	190° 16.1	204° 41.5	+24.9	16.4
	21° 50.6	21° 40.0	21° 29.3	21° 18.4	21° 07.4	20° 56.2	20° 44.9	20° 33.5	20° 22.0	20° 10.3	19° 58.6	-11.2	60.3
Вт 8	61° 15.8	75° 43.0	90° 10.3	104° 37.7	119° 05.2	133° 32.8	148° 00.5	162° 28.3	176° 56.3	191° 24.3	205° 52.4	+27.7	16.3
	16° 48.4	16° 34.9	16° 21.3	16° 07.7	15° 53.9	15° 40.1	15° 26.2	15° 12.2	14° 58.1	14° 44.0	14° 29.8	-13.9	59.9
Ср 9	63° 05.9	77° 35.5	92° 05.2	106° 35.0	121° 04.9	135° 34.8	150° 04.9	164° 35.0	179° 05.2	193° 35.4	208° 05.7	+30.0	16.2
	10° 49.1	10° 33.9	10° 18.7	10° 03.5	9° 48.3	9° 33.0	9° 17.6	9° 02.2	8° 46.8	8° 31.4	8° 15.9	-15.3	59.3
Чт 10	65° 48.5	80° 19.8	94° 51.2	109° 22.6	123° 54.1	138° 25.6	152° 57.1	167° 28.7	182° 00.3	196° 32.0	211° 03.7	+31.5	16.0
	4° 21.4	4° 05.7	3° 49.9	3° 34.2	3° 18.4	3° 02.7	2° 46.9	2° 31.2	2° 15.4	1° 59.7	1° 43.9	-15.8	58.6
◐ Пт 11	69° 03.3	83° 35.5	98° 07.7	112° 39.9	127° 12.1	141° 44.3	156° 16.5	170° 48.8	185° 21.1	199° 53.3	214° 25.6	+32.2	15.8
	-2° 10.6	-2° 26.1	-2° 41.6	-2° 57.0	-3° 12.4	-3° 27.8	-3° 43.1	-3° 58.4	-4° 13.7	-4° 28.9	-4° 44.1	-15.4	57.9
Сб 12	83° 35.5	98° 07.7	112° 39.9	127° 12.1	141° 44.3	156° 16.5	170° 48.8	185° 21.1	199° 53.3	214° 25.6	228° 57.9	+32.2	15.8
	-2° 26.1	-2° 41.6	-2° 57.0	-3° 12.4	-3° 27.8	-3° 43.1	-3° 58.4	-4° 13.7	-4° 28.9	-4° 44.1	-4° 59.3	-15.3	57.9
Вс 13	87° 02.0	101° 34.2	116° 06.4	130° 38.6	145° 10.8	159° 42.9	174° 15.0	188° 47.2	203° 19.3	217° 51.3	232° 23.4	+32.1	15.6
	-8° 41.8	-8° 56.3	-9° 10.7	-9° 25.0	-9° 39.3	-9° 53.6	-10° 07.7	-10° 21.9	-10° 35.9	-10° 49.9	-11° 03.8	-14.2	57.2
Пн 14	90° 21.1	104° 52.7	119° 24.3	133° 55.8	148° 27.3	162° 58.7	177° 30.1	192° 01.5	206° 32.8	221° 04.1	235° 35.4	+31.4	15.4
	-14° 24.8	-14° 37.6	-14° 50.4	-15° 03.0	-15° 15.6	-15° 28.1	-15° 40.5	-15° 52.8	-16° 05.1	-16° 17.3	-16° 29.3	-12.5	56.6
Вт 15	93° 19.0	107° 49.6	122° 20.1	136° 50.5	151° 21.0	165° 51.3	180° 21.6	194° 51.9	209° 22.1	223° 52.3	238° 22.4	+30.3	15.3
	-19° 19.6	-19° 30.2	-19° 40.7	-19° 51.1	-20° 01.3	-20° 11.5	-20° 21.6	-20° 31.5	-20° 41.4	-20° 51.2	-21° 00.8	-10.1	56.0
Ср 16	95° 48.6	110° 18.0	124° 47.3	139° 16.6	153° 45.9	168° 15.1	182° 44.3	197° 13.4	211° 42.5	226° 11.5	240° 40.6	+29.2	15.1
	-23° 11.9	-23° 19.7	-23° 27.4	-23° 35.0	-23° 42.4	-23° 49.8	-23° 57.0	-24° 04.0	-24° 11.0	-24° 17.8	-24° 24.5	-7.3	55.5
Чт 17	97° 51.5	112° 20.0	126° 48.5	141° 17.0	155° 45.4	170° 13.8	184° 42.2	199° 10.5	213° 38.9	228° 07.2	242° 35.5	+28.4	15.0
	-25° 49.4	-25° 54.0	-25° 58.4	-26° 02.7	-26° 06.9	-26° 11.0	-26° 14.9	-26° 18.7	-26° 22.4	-26° 25.9	-26° 29.2	-4.0	55.0
Пт 18	99° 39.2	114° 07.4	128° 35.6	143° 03.9	157° 32.1	172° 00.4	186° 28.7	200° 57.0	215° 25.3	229° 53.6	244° 21.9	+28.3	14.9
	-27° 03.2	-27° 04.4	-27° 05.4	-27° 06.3	-27° 07.0	-27° 07.6	-27° 08.1	-27° 08.4	-27° 08.6	-27° 08.6	-27° 08.6	-0.5	54.7
○ Сб 19	101° 29.7	115° 58.5	130° 27.3	144° 56.1	159° 25.0	173° 53.9	188° 22.9	202° 51.9	217° 21.0	231° 50.0	246° 19.2	+28.9	14.8
	-26° 50.8	-26° 48.6	-26° 46.2	-26° 43.6	-26° 41.0	-26° 38.2	-26° 35.3	-26° 32.2	-26° 29.1	-26° 25.8	-26° 22.3	+2.8	54.4
Вс 20	103° 42.4	118° 12.4	132° 42.4	147° 12.5	161° 42.7	176° 12.9	190° 43.2	205° 13.5	219° 43.9	234° 14.4	248° 45.0	+30.3	14.8
	-25° 16.0	-25° 10.6	-25° 05.1	-24° 59.5	-24° 53.7	-24° 47.9	-24° 41.9	-24° 35.8	-24° 29.7	-24° 23.4	-24° 16.9	+5.9	54.1
Пн 21	106° 30.8	121° 02.3	135° 34.0	150° 05.7	164° 37.5	179° 09.3	193° 41.2	208° 13.2	222° 45.2	237° 17.3	251° 49.5	+31.9	14.7
	-22° 28.2	-22° 20.1	-22° 11.9	-22° 03.7	-21° 55.4	-21° 46.9	-21° 38.4	-21° 29.8	-21° 21.1	-21° 12.3	-21° 03.4	+8.5	54.0
Вт 22	109° 59.7	124° 32.9	139° 06.1	153° 39.4	168° 12.8	182° 46.2	197° 19.6	211° 53.2	226° 26.7	241° 00.4	255° 34.1	+33.4	14.7
	-18° 39.9	-18° 29.7	-18° 19.4	-18° 09.0	-17° 58.6	-17° 48.1	-17° 37.6	-17° 26.9	-17° 16.2	-17° 05.4	-16° 54.6	+10.5	54.0
Ср 23	114° 05.6	128° 40.1	143° 14.6	157° 49.2	172° 23.8	186° 58.4	201° 33.1	216° 07.9	230° 42.6	245° 17.4	259° 52.3	+34.7	14.8
	-14° 04.3	-13° 52.4	-13° 40.6	-13° 28.6	-13° 16.6	-13° 04.6	-12° 52.5	-12° 40.3	-12° 28.1	-12° 15.9	-12° 03.6	+12.1	54.1
Чт 24	118° 38.6	133° 13.9	147° 49.2	162° 24.5	176° 59.9	191° 35.3	206° 10.6	220° 46.0	235° 21.5	249° 56.9	264° 32.3	+35.4	14.8
	-8° 53.6	-8° 40.7	-8° 27.6	-8° 14.6	-8° 01.5	-7° 48.3	-7° 35.1	-7° 21.9	-7° 08.7	-6° 55.4	-6° 42.1	+13.2	54.4
Пт 25	123° 24.7	138° 00.2	152° 35.7	167° 11.2	181° 46.6	196° 22.1	210° 57.5	225° 33.0	240° 08.4	254° 43.8	269° 19.2	+35.5	15.0
	-3° 19.1	-3° 05.4	-2° 51.7	-2° 37.9	-2° 24.1	-2° 10.3	-1° 56.5	-1° 42.7	-1° 28.8	-1° 14.9	-1° 01.0	+13.8	54.8
Сб 26	128° 07.4	142° 42.4	157° 17.3	171° 52.2	186° 27.1	201° 01.9	215° 36.7	230° 11.5	244° 46.2	259° 20.8	273° 55.4	+34.8	15.1
	2° 28.6	2° 42.7	2° 56.7	3° 10.7	3° 24.8	3° 38.8	3° 52.8	4° 06.9	4° 20.9	4° 34.9	4° 49.0	+14.0	55.4
◑ Вс 27	132° 28.1	147° 01.8	161° 35.4	176° 09.0	190° 42.5	205° 15.9	219° 49.2	234° 22.5	248° 55.7	263° 28.8	278° 01.8	+33.4	15.3
	8° 18.4	8° 32.2	8° 46.0	8° 59.8	9° 13.6	9° 27.4	9° 41.1	9° 54.9	10° 08.5	10° 22.2	10° 35.9	+13.8	56.2
Пн 28	136° 06.9	150° 38.4	165° 09.9	179° 41.3	194° 12.6	208° 43.8	223° 14.9	237° 45.8	252° 16.7	266° 47.4	281° 18.1	+31.1	15.6
	13° 56.3	14° 09.3	14° 22.3	14° 35.2	14° 48.1	15° 01.0	15° 13.7	15° 26.4	15° 39.1	15° 51.7	16° 04.3	+12.8	57.1
Вт 29	138° 43.8	153° 12.5	167° 41.1	182° 09.6	196° 38.0	211° 06.2	225° 34.3	240° 02.3	254° 30.2	268° 57.9	283° 25.5	+28.2	15.8
	19° 04.2	19° 15.6	19° 26.9	19° 38.1	19° 49.2	20° 00.2	20° 11.1	20° 21.9	20° 32.6	20° 43.3	20° 53.8	+11.0	58.0
Ср 30	140° 03.4	154° 28.9	168° 54.2	183° 19.4	197° 44.5	212° 09.5	226° 34.3	240° 59.0	255° 23.5	269° 48.0	284° 12.3	+24.9	16.1
	23° 18.2	23° 26.8	23° 35.3	23° 43.7	23° 51.9	24° 00.0	24° 07.9	24° 15.7	24° 23.4	24° 30.9	24° 38.3	+8.0	59.0

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 4 19h40 — Первая четв.: 11 10h56 — Полнолуние: 19 00h44 — Последняя четв.: 27 04h54

СОЛНЦЕ

Июль 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	179° 03.7	194° 03.5	209° 03.4	224° 03.3	239° 03.2	254° 03.1	89° 01.5	104° 01.3	119° 01.2	134° 01.1	149° 01.0	164° 00.9	-0.1
	23° 08.0	23° 07.9	23° 07.7	23° 07.5	23° 07.4	23° 07.2	23° 05.0	23° 04.8	23° 04.7	23° 04.5	23° 04.3	23° 04.1	-0.2
Пт 2	179° 00.7	194° 00.6	209° 00.5	224° 00.4	239° 00.3	254° 00.1	88° 58.6	103° 58.5	118° 58.4	133° 58.2	148° 58.1	163° 58.0	-0.1
	23° 04.0	23° 03.8	23° 03.6	23° 03.4	23° 03.2	23° 03.1	23° 00.6	23° 00.5	23° 00.3	23° 00.1	22° 59.9	22° 59.7	-0.2
Сб 3	178° 57.9	193° 57.8	208° 57.7	223° 57.5	238° 57.4	253° 57.3	88° 55.8	103° 55.7	118° 55.6	133° 55.4	148° 55.3	163° 55.2	-0.1
	22° 59.5	22° 59.3	22° 59.1	22° 58.9	22° 58.7	22° 58.5	22° 55.9	22° 55.7	22° 55.5	22° 55.2	22° 55.0	22° 54.8	-0.2
Вс 4	178° 55.1	193° 55.0	208° 54.9	223° 54.8	238° 54.6	253° 54.5	88° 53.1	103° 53.0	118° 52.8	133° 52.7	148° 52.6	163° 52.5	-0.1
	22° 54.6	22° 54.4	22° 54.2	22° 54.0	22° 53.8	22° 53.6	22° 50.7	22° 50.5	22° 50.3	22° 50.0	22° 49.8	22° 49.6	-0.2
Пн 5	178° 52.4	193° 52.3	208° 52.2	223° 52.1	238° 52.0	253° 51.8	88° 50.4	103° 50.3	118° 50.2	133° 50.1	148° 50.0	163° 49.9	-0.1
	22° 49.3	22° 49.1	22° 48.9	22° 48.7	22° 48.4	22° 48.2	22° 45.1	22° 44.9	22° 44.7	22° 44.4	22° 44.2	22° 43.9	-0.2
Вт 6	178° 49.8	193° 49.7	208° 49.6	223° 49.5	238° 49.3	253° 49.2	88° 47.9	103° 47.8	118° 47.7	133° 47.6	148° 47.5	163° 47.3	-0.1
	22° 43.7	22° 43.4	22° 43.2	22° 42.9	22° 42.7	22° 42.5	22° 39.2	22° 38.9	22° 38.7	22° 38.4	22° 38.1	22° 37.9	-0.2
Ср 7	178° 47.2	193° 47.1	208° 47.0	223° 46.9	238° 46.8	253° 46.7	88° 45.4	103° 45.3	118° 45.2	133° 45.1	148° 45.0	163° 44.9	-0.1
	22° 37.6	22° 37.4	22° 37.1	22° 36.8	22° 36.6	22° 36.3	22° 32.8	22° 32.5	22° 32.3	22° 32.0	22° 31.7	22° 31.4	-0.3
Чт 8	178° 44.8	193° 44.7	208° 44.6	223° 44.5	238° 44.4	253° 44.3	88° 43.0	103° 43.0	118° 42.9	133° 42.8	148° 42.7	163° 42.6	-0.1
	22° 31.2	22° 30.9	22° 30.6	22° 30.3	22° 30.1	22° 29.8	22° 26.1	22° 25.8	22° 25.5	22° 25.2	22° 24.9	22° 24.6	-0.3
Пт 9	178° 42.5	193° 42.4	208° 42.3	223° 42.2	238° 42.1	253° 42.0	88° 40.8	103° 40.7	118° 40.6	133° 40.5	148° 40.4	163° 40.3	-0.1
	22° 24.3	22° 24.0	22° 23.7	22° 23.4	22° 23.1	22° 22.8	22° 18.9	22° 18.6	22° 18.3	22° 18.0	22° 17.7	22° 17.4	-0.3
Сб 10	178° 40.2	193° 40.2	208° 40.1	223° 40.0	238° 39.9	253° 39.8	88° 38.7	103° 38.6	118° 38.5	133° 38.4	148° 38.3	163° 38.2	-0.1
	22° 17.1	22° 16.8	22° 16.5	22° 16.2	22° 15.9	22° 15.5	22° 11.4	22° 11.1	22° 10.8	22° 10.5	22° 10.1	22° 09.8	-0.3
Вс 11	178° 38.1	193° 38.0	208° 38.0	223° 37.9	238° 37.8	253° 37.7	88° 36.6	103° 36.5	118° 36.5	133° 36.4	148° 36.3	163° 36.2	-0.1
	22° 09.5	22° 09.2	22° 08.8	22° 08.5	22° 08.2	22° 07.8	22° 03.5	22° 03.2	22° 02.8	22° 02.5	22° 02.2	22° 01.8	-0.3
Пн 12	178° 36.1	193° 36.1	208° 36.0	223° 35.9	238° 35.8	253° 35.7	88° 34.7	103° 34.6	118° 34.6	133° 34.5	148° 34.4	163° 34.3	-0.1
	22° 01.5	22° 01.2	22° 00.8	22° 00.5	22° 00.1	21° 59.8	21° 55.2	21° 54.9	21° 54.5	21° 54.2	21° 53.8	21° 53.5	-0.3
Вт 13	178° 34.3	193° 34.2	208° 34.1	223° 34.0	238° 34.0	253° 33.9	88° 32.9	103° 32.9	118° 32.8	133° 32.7	148° 32.6	163° 32.6	-0.1
	21° 53.1	21° 52.8	21° 52.4	21° 52.1	21° 51.7	21° 51.3	21° 46.6	21° 46.2	21° 45.9	21° 45.5	21° 45.1	21° 44.8	-0.4
Ср 14	178° 32.5	193° 32.4	208° 32.4	223° 32.3	238° 32.2	253° 32.1	88° 31.3	103° 31.2	118° 31.1	133° 31.1	148° 31.0	163° 30.9	-0.1
	21° 44.4	21° 44.0	21° 43.6	21° 43.3	21° 42.9	21° 42.5	21° 37.6	21° 37.2	21° 36.8	21° 36.4	21° 36.0	21° 35.7	-0.4
Чт 15	178° 30.9	193° 30.8	208° 30.7	223° 30.7	238° 30.6	253° 30.5	88° 29.7	103° 29.7	118° 29.6	133° 29.5	148° 29.5	163° 29.4	-0.1
	21° 35.3	21° 34.9	21° 34.5	21° 34.1	21° 33.7	21° 33.3	21° 28.2	21° 27.8	21° 27.4	21° 27.0	21° 26.6	21° 26.2	-0.4
Пт 16	178° 29.4	193° 29.3	208° 29.2	223° 29.2	238° 29.1	253° 29.1	88° 28.3	103° 28.3	118° 28.2	133° 28.1	148° 28.1	163° 28.0	-0.1
	21° 25.8	21° 25.4	21° 25.0	21° 24.6	21° 24.2	21° 23.8	21° 18.4	21° 18.0	21° 17.6	21° 17.2	21° 16.8	21° 16.4	-0.4
Сб 17	178° 28.0	193° 27.9	208° 27.9	223° 27.8	238° 27.8	253° 27.7	88° 27.0	103° 27.0	118° 26.9	133° 26.9	148° 26.8	163° 26.8	-0.1
	21° 15.9	21° 15.5	21° 15.1	21° 14.7	21° 14.3	21° 13.9	21° 08.3	21° 07.9	21° 07.5	21° 07.0	21° 06.6	21° 06.2	-0.4
Вс 18	178° 26.7	193° 26.7	208° 26.6	223° 26.6	238° 26.5	253° 26.5	88° 25.9	103° 25.8	118° 25.8	133° 25.7	148° 25.7	163° 25.7	-0.0
	21° 05.7	21° 05.3	21° 04.9	21° 04.4	21° 04.0	21° 03.6	20° 57.9	20° 57.4	20° 57.0	20° 56.5	20° 56.1	20° 55.6	-0.4
Пн 19	178° 25.6	193° 25.6	208° 25.5	223° 25.5	238° 25.4	253° 25.4	88° 24.9	103° 24.8	118° 24.8	133° 24.8	148° 24.7	163° 24.7	-0.0
	20° 55.2	20° 54.7	20° 54.3	20° 53.8	20° 53.4	20° 52.9	20° 47.0	20° 46.6	20° 46.1	20° 45.7	20° 45.2	20° 44.7	-0.4
Вт 20	178° 24.6	193° 24.6	208° 24.6	223° 24.5	238° 24.5	253° 24.5	88° 24.0	103° 24.0	118° 23.9	133° 23.9	148° 23.9	163° 23.8	-0.0
	20° 44.3	20° 43.8	20° 43.4	20° 42.9	20° 42.4	20° 42.0	20° 35.9	20° 35.4	20° 34.9	20° 34.4	20° 34.0	20° 33.5	-0.5
Ср 21	178° 23.8	193° 23.8	208° 23.7	223° 23.7	238° 23.7	253° 23.6	88° 23.3	103° 23.2	118° 23.2	133° 23.2	148° 23.2	163° 23.1	-0.0
	20° 33.0	20° 32.5	20° 32.1	20° 31.6	20° 31.1	20° 30.6	20° 24.4	20° 23.9	20° 23.4	20° 22.9	20° 22.4	20° 21.9	-0.5
Чт 22	178° 23.1	193° 23.1	208° 23.1	223° 23.0	238° 23.0	253° 23.0	88° 22.7	103° 22.7	118° 22.6	133° 22.6	148° 22.6	163° 22.6	-0.0
	20° 21.4	20° 20.9	20° 20.4	20° 19.9	20° 19.5	20° 19.0	20° 12.5	20° 12.0	20° 11.5	20° 11.0	20° 10.5	20° 10.0	-0.5
Пт 23	178° 22.5	193° 22.5	208° 22.5	223° 22.5	238° 22.5	253° 22.4	88° 22.2	103° 22.2	118° 22.2	133° 22.2	148° 22.2	163° 22.1	-0.0
	20° 09.5	20° 09.0	20° 08.5	20° 08.0	20° 07.4	20° 06.9	20° 00.3	19° 59.8	19° 59.3	19° 58.7	19° 58.2	19° 57.7	-0.5
Сб 24	178° 22.1	193° 22.1	208° 22.1	223° 22.1	238° 22.1	253° 22.1	88° 21.9	103° 21.9	118° 21.9	133° 21.9	148° 21.9	163° 21.9	-0.0
	19° 57.2	19° 56.7	19° 56.2	19° 55.6	19° 55.1	19° 54.6	19° 47.8	19° 47.2	19° 46.7	19° 46.2	19° 45.6	19° 45.1	-0.5
Вс 25	178° 21.9	193° 21.8	208° 21.8	223° 21.8	238° 21.8	253° 21.8	88° 21.7	103° 21.7	118° 21.7	133° 21.7	148° 21.7	163° 21.7	-0.0
	19° 44.6	19° 44.0	19° 43.5	19° 43.0	19° 42.4	19° 41.9	19° 34.9	19° 34.4	19° 33.8	19° 33.3	19° 32.7	19° 32.2	-0.5
Пн 26	178° 21.7	193° 21.7	208° 21.7	223° 21.7	238° 21.7	253° 21.7	88° 21.7	103° 21.7	118° 21.7	133° 21.7	148° 21.7	163° 21.7	-0.0
	19° 31.6	19° 31.1	19° 30.5	19° 30.0	19° 29.4	19° 28.9	19° 21.7	19° 21.1	19° 20.6	19° 20.0	19° 19.5	19° 18.9	-0.5
Вт 27	178° 21.7	193° 21.7	208° 21.7	223° 21.7	238° 21.8	253° 21.8	88° 21.8	103° 21.8	118° 21.9	133° 21.9	148° 21.9	163° 21.9	+0.0
	19° 18.4	19° 17.8	19° 17.2	19° 16.7	19° 16.1	19° 15.5	19° 08.2	19° 07.6	19° 07.0	19° 06.5	19° 05.9	19° 05.3	-0.6
Ср 28	178° 21.9	193° 21.9	208° 21.9	223° 21.9	238° 21.9	253° 21.9	88° 22.1	103° 22.1	118° 22.1	133° 22.2	148° 22.2	163° 22.2	+0.0
	19° 04.8	19° 04.2	19° 03.6	19° 03.0	19° 02.5	19° 01.9	18° 54.4	18° 53.8	18° 53.2	18° 52.6	18° 52.0	18° 51.4	-0.6
Чт 29	178° 22.2	193° 22.2	208° 22.2	223° 22.2	238° 22.3	253° 22.3	88° 22.5	103° 22.5	118° 22.6	133° 22.6	148° 22.6	163° 22.6	+0.0
	18° 50.9	18° 50.3	18° 49.7	18° 49.1	18° 48.5	18° 47.9	18° 40.2	18° 39.6	18° 39.0	18° 38.4	18° 37.8	18° 37.2	-0.6
Пт 30	178° 22.6	193° 22.7	208° 22.7	223° 22.7	238° 22.7	253° 22.8	88° 23.1	103° 23.1	118° 23.1	133° 23.2	148° 23.2	163° 23.2	+0.0
	18° 36.6	18° 36.0	18° 35.4	18° 34.8	18° 34.2	18° 33.6	18° 25.8	18° 25.2	18° 24.5	18° 23.9	18° 23.3	18° 22.7	-0.6
Сб 31	178° 23.2	193° 23.3	208° 23.3	223° 23.3	238° 23.4	253° 23.4	88° 23.8	103° 23.8	118° 23.9	133° 23.9	148° 23.9	163° 24.0	+0.0
	18° 22.1	18° 21.5	18° 20.9	18° 20.3	18° 19.7	18° 19.0	18° 11.0	18° 10.4	18° 09.8	18° 09.1	18° 08.5	18° 07.9	-0.6

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2027

Д	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	Δ°/h	R/p
Чт 1	68°08.7	82°31.7	96°54.6	111°17.3	125°40.0	140°02.6	154°25.1	168°47.4	183°09.7	197°31.9	211°53.9	+22.5	16.3
	25°43.2	25°48.8	25°54.3	25°59.5	26°04.6	26°09.5	26°14.2	26°18.7	26°23.1	26°27.3	26°31.3	+4.8	59.7
Пт 2	67°15.4	81°36.4	95°57.2	110°18.0	124°38.8	138°59.6	153°20.3	167°40.9	182°01.6	196°22.2	210°42.8	+20.7	16.5
	27°08.1	27°09.0	27°09.6	27°10.1	27°10.4	27°10.4	27°10.3	27°09.9	27°09.3	27°08.5	27°07.6	-0.1	60.5
Сб 3	65°51.1	80°11.8	94°32.5	108°53.2	123°14.0	137°34.8	151°55.7	166°16.6	180°37.5	194°58.5	209°19.6	+20.8	16.6
	26°27.8	26°23.5	26°19.0	26°14.3	26°09.3	26°04.2	25°58.9	25°53.4	25°47.6	25°41.7	25°35.6	-5.2	61.0
● Вс 4	64°43.7	79°06.0	93°28.4	107°50.8	122°13.3	136°36.0	150°58.7	165°21.6	179°44.5	194°07.5	208°30.7	+22.7	16.7
	23°41.0	23°31.9	23°22.6	23°13.2	23°03.6	22°53.8	22°43.9	22°33.8	22°23.5	22°13.1	22°02.5	-9.9	61.1
Пн 5	64°30.7	78°55.6	93°20.6	107°45.7	122°11.0	136°36.3	151°01.8	165°27.3	179°53.0	194°18.8	208°44.7	+25.4	16.6
	19°06.4	18°53.6	18°40.7	18°27.7	18°14.5	18°01.3	17°47.9	17°34.4	17°20.8	17°07.1	16°53.3	-13.3	60.9
Вт 6	65°26.2	79°53.8	94°21.5	108°49.3	123°17.2	137°45.2	152°13.3	166°41.5	181°09.8	195°38.2	210°06.6	+28.0	16.5
	13°15.7	13°00.5	12°45.3	12°30.1	12°14.8	11°59.4	11°44.0	11°28.5	11°12.9	10°57.4	10°41.7	-15.4	60.5
Ср 7	67°23.8	81°53.6	96°23.4	110°53.3	125°23.3	139°53.3	154°23.4	168°53.6	183°23.9	197°54.2	212°24.5	+30.1	16.3
	6°42.6	6°26.5	6°10.3	5°54.1	5°37.9	5°21.7	5°05.5	4°49.3	4°33.0	4°16.8	4°00.5	-16.2	59.7
Чт 8	70°06.1	84°37.3	99°08.4	113°39.6	128°10.9	142°42.2	157°13.5	171°44.8	186°16.2	200°47.6	215°19.0	+31.3	16.1
	-0°02.6	-0°18.7	-0°34.7	-0°50.8	-1°06.8	-1°22.8	-1°38.8	-1°54.8	-2°10.7	-2°26.6	-2°42.4	-16.0	58.9
Пт 9	73°12.6	87°44.3	102°16.0	116°47.6	131°19.3	145°51.0	160°22.7	174°54.4	189°26.1	203°57.8	218°29.5	+31.7	15.8
	-6°35.7	-6°50.9	-7°06.1	-7°21.1	-7°36.2	-7°51.1	-8°06.1	-8°20.9	-8°35.7	-8°50.5	-9°05.2	-14.9	58.0
◐ Сб 10	76°23.7	90°55.2	105°26.7	119°58.1	134°29.5	149°01.0	163°32.4	178°03.7	192°35.1	207°06.4	221°37.7	+31.4	15.6
	-12°37.6	-12°51.2	-13°04.8	-13°18.2	-13°31.6	-13°44.9	-13°58.1	-14°11.2	-14°24.2	-14°37.2	-14°50.1	-13.2	57.2
Вс 11	90°55.2	105°26.7	119°58.1	134°29.5	149°01.0	163°32.4	178°03.7	192°35.1	207°06.4	221°37.7	236°08.9	+31.4	15.6
	-12°51.2	-13°04.8	-13°18.2	-13°31.6	-13°44.9	-13°58.1	-14°11.2	-14°24.2	-14°37.2	-14°50.1	-15°02.9	-13.2	57.1
Пн 12	93°54.2	108°25.0	122°55.7	137°26.4	151°57.0	166°27.6	180°58.2	195°28.7	209°59.2	224°29.6	239°00.0	+30.6	15.4
	-18°04.0	-18°15.4	-18°26.6	-18°37.7	-18°48.8	-18°59.7	-19°10.5	-19°21.2	-19°31.9	-19°42.4	-19°52.8	-10.9	56.3
Вт 13	96°31.4	111°01.1	125°30.8	140°00.5	154°30.2	168°59.8	183°29.4	197°58.9	212°28.4	226°57.9	241°27.3	+29.6	15.2
	-22°15.9	-22°24.5	-22°33.0	-22°41.4	-22°49.7	-22°57.8	-23°05.9	-23°13.8	-23°21.6	-23°29.3	-23°36.8	-8.1	55.7
Ср 14	98°44.4	113°13.2	127°42.1	142°10.9	156°39.7	171°08.5	185°37.3	200°06.0	214°34.7	229°03.4	243°32.0	+28.8	15.0
	-25°15.2	-25°20.7	-25°26.1	-25°31.4	-25°36.5	-25°41.5	-25°46.4	-25°51.1	-25°55.7	-26°00.2	-26°04.5	-4.9	55.1
Чт 15	100°40.0	115°08.5	129°36.9	144°05.4	158°33.8	173°02.3	187°30.7	201°59.2	216°27.6	230°56.1	245°24.6	+28.4	14.9
	-26°53.4	-26°55.6	-26°57.6	-26°59.5	-27°01.2	-27°02.9	-27°04.3	-27°05.7	-27°06.9	-27°08.0	-27°08.9	-1.5	54.7
Пт 16	102°33.0	117°01.7	131°30.5	145°59.3	160°28.1	174°56.9	189°25.7	203°54.6	218°23.6	232°52.5	247°21.5	+28.8	14.8
	-27°06.5	-27°05.3	-27°03.9	-27°02.4	-27°00.8	-26°59.0	-26°57.1	-26°55.0	-26°52.9	-26°50.6	-26°48.1	+1.8	54.3
Сб 17	104°41.2	119°10.8	133°40.6	148°10.3	162°40.2	177°10.0	191°40.0	206°10.0	220°40.0	235°10.1	249°40.3	+29.9	14.8
	-25°56.3	-25°51.8	-25°47.2	-25°42.5	-25°37.7	-25°32.8	-25°27.7	-25°22.6	-25°17.3	-25°11.9	-25°06.3	+5.0	54.1
○ Вс 18	107°19.5	121°50.6	136°21.8	150°53.0	165°24.3	179°55.7	194°27.1	208°58.6	223°30.1	238°01.7	252°33.4	+31.4	14.7
	-23°30.0	-23°22.7	-23°15.3	-23°07.9	-23°00.3	-22°52.6	-22°44.8	-22°36.9	-22°28.9	-22°20.8	-22°12.7	+7.7	54.0
Пн 19	110°36.1	125°08.7	139°41.5	154°14.3	168°47.2	183°20.1	197°53.1	212°26.1	226°59.2	241°32.4	256°05.6	+33.0	14.7
	-19°59.0	-19°49.4	-19°39.7	-19°29.9	-19°20.1	-19°10.1	-19°00.1	-18°50.0	-18°39.9	-18°29.6	-18°19.3	+10.0	53.9
Вт 20	114°30.6	129°04.7	143°38.8	158°13.0	172°47.3	187°21.5	201°55.9	216°30.3	231°04.7	245°39.2	260°13.7	+34.3	14.7
	-15°36.2	-15°24.8	-15°13.4	-15°01.8	-14°50.3	-14°38.6	-14°26.9	-14°15.2	-14°03.4	-13°51.5	-13°39.6	+11.7	54.0
Ср 21	118°56.2	133°31.3	148°06.5	162°41.7	177°16.9	191°52.1	206°27.4	221°02.7	235°38.0	250°13.3	264°48.7	+35.3	14.8
	-10°34.8	-10°22.1	-10°09.4	-9°56.6	-9°43.8	-9°31.0	-9°18.1	-9°05.2	-8°52.2	-8°39.2	-8°26.2	+12.9	54.1
Чт 22	123°41.4	138°17.0	152°52.7	167°28.3	182°03.9	196°39.6	211°15.2	225°50.9	240°26.5	255°02.2	269°37.8	+35.6	14.8
	-5°07.0	-4°53.5	-4°39.9	-4°26.4	-4°12.8	-3°59.3	-3°45.6	-3°32.0	-3°18.4	-3°04.7	-2°51.0	+13.6	54.4
Пт 23	128°31.8	143°07.3	157°42.8	172°18.2	186°53.7	201°29.1	216°04.5	230°39.8	245°15.2	259°50.5	274°25.8	+35.4	15.0
	0°35.8	0°49.7	1°03.5	1°17.4	1°31.3	1°45.2	1°59.0	2°12.9	2°26.8	2°40.7	2°54.6	+13.9	54.8
Сб 24	133°10.9	147°45.5	162°20.2	176°54.7	191°29.3	206°03.7	220°38.2	235°12.5	249°46.8	264°21.1	278°55.3	+34.4	15.1
	6°22.2	6°35.9	6°49.7	7°03.4	7°17.1	7°30.8	7°44.5	7°58.2	8°11.8	8°25.4	8°39.0	+13.7	55.4
Вс 25	137°20.5	151°53.6	166°26.7	180°59.6	195°32.5	210°05.3	224°38.0	239°10.6	253°43.1	268°15.6	282°47.9	+32.7	15.3
	11°59.8	12°12.9	12°26.0	12°39.0	12°52.0	13°05.0	13°17.9	13°30.7	13°43.6	13°56.4	14°09.1	+12.9	56.1
◑ Пн 26	140°42.0	155°12.8	169°43.5	184°14.1	198°44.6	213°14.9	227°45.2	242°15.3	256°45.4	271°15.3	285°45.1	+30.3	15.5
	17°13.5	17°25.3	17°37.1	17°48.7	18°00.3	18°11.8	18°23.3	18°34.6	18°45.9	18°57.1	19°08.2	+11.5	56.9
Вт 27	142°58.1	157°26.0	171°53.8	186°21.4	200°49.0	215°16.4	229°43.6	244°10.8	258°37.8	273°04.7	287°31.5	+27.3	15.8
	21°44.4	21°54.0	22°03.5	22°12.9	22°22.2	22°31.4	22°40.4	22°49.4	22°58.2	23°06.9	23°15.5	+9.1	57.8
Ср 28	143°58.3	158°23.1	172°47.8	187°12.4	201°36.9	216°01.2	230°25.5	244°49.6	259°13.6	273°37.5	288°01.3	+24.3	16.0
	25°08.5	25°14.9	25°21.2	25°27.3	25°33.3	25°39.0	25°44.7	25°50.2	25°55.5	26°00.6	26°05.6	+5.7	58.8
Чт 29	143°46.5	158°08.8	172°31.1	186°53.2	201°15.3	215°37.3	229°59.3	244°21.2	258°43.0	273°04.8	287°26.5	+22.0	16.3
	26°59.7	27°01.9	27°03.9	27°05.7	27°07.3	27°08.7	27°09.9	27°10.9	27°11.7	27°12.4	27°12.8	+1.3	59.7
Пт 30	142°47.4	157°08.6	171°29.8	185°51.0	200°12.2	214°33.4	228°54.5	243°15.7	257°36.9	271°58.2	286°19.4	+21.2	16.5
	26°55.5	26°52.7	26°49.8	26°46.6	26°43.2	26°39.6	26°35.9	26°31.9	26°27.7	26°23.3	26°18.7	-3.7	60.5
Сб 31	141°41.6	156°03.4	170°25.3	184°47.3	199°09.3	213°31.4	227°53.5	242°15.8	256°38.0	271°00.4	285°22.8	+22.1	16.6
	24°46.2	24°38.5	24°30.6	24°22.5	24°14.3	24°05.8	23°57.2	23°48.4	23°39.4	23°30.2	23°20.9	-8.5	61.0

Строка 1: $t_{\text{гр}}$, Δ°/h = изменение $t_{\text{гр}}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ°/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Новолуние: 4 03h02 — Первая четв.: 10 18h39 — Полнолуние: 18 15h44 — Последняя четв.: 26 16h54

СОЛНЦЕ

Август 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	178° 24.0 18° 07.3	193° 24.0 18° 06.6	208° 24.1 18° 06.0	223° 24.1 18° 05.4	238° 24.1 18° 04.8	253° 24.2 18° 04.1	88° 24.7 17° 56.0	103° 24.7 17° 55.3	118° 24.7 17° 54.7	133° 24.8 17° 54.1	148° 24.8 17° 53.4	163° 24.9 17° 52.8	+0.0 -0.6
Пн 2	178° 24.9 17° 52.1	193° 24.9 17° 51.5	208° 25.0 17° 50.9	223° 25.0 17° 50.2	238° 25.1 17° 49.6	253° 25.1 17° 49.0	88° 25.7 17° 40.6	103° 25.7 17° 40.0	118° 25.8 17° 39.3	133° 25.8 17° 38.7	148° 25.8 17° 38.0	163° 25.9 17° 37.4	+0.0 -0.6
Вт 3	178° 25.9 17° 36.7	193° 26.0 17° 36.1	208° 26.0 17° 35.4	223° 26.1 17° 34.8	238° 26.1 17° 34.1	253° 26.2 17° 33.5	88° 26.8 17° 25.0	103° 26.9 17° 24.3	118° 26.9 17° 23.7	133° 27.0 17° 23.0	148° 27.0 17° 22.3	163° 27.1 17° 21.7	+0.0 -0.6
Ср 4	178° 27.1 17° 21.0	193° 27.2 17° 20.4	208° 27.2 17° 19.7	223° 27.3 17° 19.0	238° 27.4 17° 18.4	253° 27.4 17° 17.7	88° 28.1 17° 09.1	103° 28.2 17° 08.4	118° 28.3 17° 07.7	133° 28.3 17° 07.1	148° 28.4 17° 06.4	163° 28.4 17° 05.7	+0.1 -0.7
Чт 5	178° 28.5 17° 05.0	193° 28.6 17° 04.4	208° 28.6 17° 03.7	223° 28.7 17° 03.0	238° 28.7 17° 02.4	253° 28.8 17° 01.7	88° 29.6 16° 52.9	103° 29.7 16° 52.2	118° 29.7 16° 51.5	133° 29.8 16° 50.8	148° 29.9 16° 50.2	163° 29.9 16° 49.5	+0.1 -0.7
Пт 6	178° 30.0 16° 48.8	193° 30.1 16° 48.1	208° 30.1 16° 47.4	223° 30.2 16° 46.7	238° 30.3 16° 46.1	253° 30.3 16° 45.4	88° 31.2 16° 36.4	103° 31.3 16° 35.7	118° 31.4 16° 35.0	133° 31.5 16° 34.3	148° 31.5 16° 33.6	163° 31.6 16° 33.0	+0.1 -0.7
Сб 7	178° 31.7 16° 32.3	193° 31.7 16° 31.6	208° 31.8 16° 30.9	223° 31.9 16° 30.2	238° 32.0 16° 29.5	253° 32.0 16° 28.8	88° 33.0 16° 19.7	103° 33.1 16° 19.0	118° 33.2 16° 18.3	133° 33.2 16° 17.6	148° 33.3 16° 16.9	163° 33.4 16° 16.2	+0.1 -0.7
Вс 8	178° 33.5 16° 15.5	193° 33.6 16° 14.8	208° 33.6 16° 14.1	223° 33.7 16° 13.3	238° 33.8 16° 12.6	253° 33.9 16° 11.9	88° 34.9 16° 02.7	103° 35.0 16° 02.0	118° 35.1 16° 01.3	133° 35.2 16° 00.6	148° 35.3 15° 59.8	163° 35.4 15° 59.1	+0.1 -0.7
Пн 9	178° 35.5 15° 58.4	193° 35.5 15° 57.7	208° 35.6 15° 57.0	223° 35.7 15° 56.3	238° 35.8 15° 55.5	253° 35.9 15° 54.8	88° 37.0 15° 45.5	103° 37.1 15° 44.7	118° 37.2 15° 44.0	133° 37.3 15° 43.3	148° 37.4 15° 42.6	163° 37.5 15° 41.8	+0.1 -0.7
Вт 10	178° 37.6 15° 41.1	193° 37.7 15° 40.4	208° 37.8 15° 39.6	223° 37.8 15° 38.9	238° 37.9 15° 38.2	253° 38.0 15° 37.5	88° 39.3 15° 28.0	103° 39.4 15° 27.2	118° 39.4 15° 26.5	133° 39.5 15° 25.8	148° 39.6 15° 25.0	163° 39.7 15° 24.3	+0.1 -0.7
Ср 11	178° 39.8 15° 23.5	193° 39.9 15° 22.8	208° 40.0 15° 22.1	223° 40.1 15° 21.3	238° 40.2 15° 20.6	253° 40.3 15° 19.9	88° 41.6 15° 10.2	103° 41.7 15° 09.5	118° 41.8 15° 08.7	133° 41.9 15° 08.0	148° 42.0 15° 07.2	163° 42.1 15° 06.5	+0.1 -0.7
Чт 12	178° 42.2 15° 05.7	193° 42.4 15° 05.0	208° 42.5 15° 04.3	223° 42.6 15° 03.5	238° 42.7 15° 02.8	253° 42.8 15° 02.0	88° 44.2 14° 52.2	103° 44.3 14° 51.5	118° 44.4 14° 50.7	133° 44.5 14° 50.0	148° 44.6 14° 49.2	163° 44.7 14° 48.5	+0.1 -0.7
Пт 13	178° 44.8 14° 47.7	193° 44.9 14° 46.9	208° 45.0 14° 46.2	223° 45.1 14° 45.4	238° 45.2 14° 44.7	253° 45.4 14° 43.9	88° 46.8 14° 34.0	103° 46.9 14° 33.3	118° 47.0 14° 32.5	133° 47.2 14° 31.7	148° 47.3 14° 31.0	163° 47.4 14° 30.2	+0.1 -0.8
Сб 14	178° 47.5 14° 29.4	193° 47.6 14° 28.7	208° 47.7 14° 27.9	223° 47.9 14° 27.1	238° 48.0 14° 26.4	253° 48.1 14° 25.6	88° 49.6 14° 15.6	103° 49.7 14° 14.8	118° 49.9 14° 14.0	133° 50.0 14° 13.3	148° 50.1 14° 12.5	163° 50.2 14° 11.7	+0.1 -0.8
Вс 15	178° 50.3 14° 10.9	193° 50.5 14° 10.2	208° 50.6 14° 09.4	223° 50.7 14° 08.6	238° 50.8 14° 07.8	253° 50.9 14° 07.0	88° 52.6 13° 56.9	103° 52.7 13° 56.1	118° 52.8 13° 55.3	133° 52.9 13° 54.6	148° 53.1 13° 53.8	163° 53.2 13° 53.0	+0.1 -0.8
Пн 16	178° 53.3 13° 52.2	193° 53.4 13° 51.4	208° 53.6 13° 50.6	223° 53.7 13° 49.8	238° 53.8 13° 49.1	253° 53.9 13° 48.3	88° 55.6 13° 38.0	103° 55.8 13° 37.2	118° 55.9 13° 36.4	133° 56.0 13° 35.6	148° 56.2 13° 34.8	163° 56.3 13° 34.0	+0.1 -0.8
Вт 17	178° 56.4 13° 33.3	193° 56.6 13° 32.5	208° 56.7 13° 31.7	223° 56.8 13° 30.9	238° 56.9 13° 30.1	253° 57.1 13° 29.3	88° 58.8 13° 18.9	103° 59.0 13° 18.1	118° 59.1 13° 17.3	133° 59.2 13° 16.5	148° 59.4 13° 15.7	163° 59.5 13° 14.9	+0.1 -0.8
Ср 18	178° 59.7 13° 14.1	193° 59.8 13° 13.3	208° 59.9 13° 12.5	224° 00.1 13° 11.7	239° 00.2 13° 10.9	254° 00.3 13° 10.1	89° 02.2 12° 59.6	104° 02.3 12° 58.8	119° 02.4 12° 58.0	134° 02.6 12° 57.2	149° 02.7 12° 56.3	164° 02.9 12° 55.5	+0.1 -0.8
Чт 19	179° 03.0 12° 54.7	194° 03.2 12° 53.9	209° 03.3 12° 53.1	224° 03.4 12° 52.3	239° 03.6 12° 51.5	254° 03.7 12° 50.7	89° 05.6 12° 40.1	104° 05.8 12° 39.2	119° 05.9 12° 38.4	134° 06.1 12° 37.6	149° 06.2 12° 36.8	164° 06.3 12° 36.0	+0.1 -0.8
Пт 20	179° 06.5 12° 35.1	194° 06.6 12° 34.3	209° 06.8 12° 33.5	224° 06.9 12° 32.7	239° 07.1 12° 31.9	254° 07.2 12° 31.0	89° 09.2 12° 20.3	104° 09.3 12° 19.5	119° 09.5 12° 18.7	134° 09.6 12° 17.9	149° 09.8 12° 17.0	164° 09.9 12° 16.2	+0.1 -0.8
Сб 21	179° 10.1 12° 15.4	194° 10.2 12° 14.5	209° 10.4 12° 13.7	224° 10.6 12° 12.9	239° 10.7 12° 12.1	254° 10.9 12° 11.2	89° 12.9 12° 00.4	104° 13.0 11° 59.6	119° 13.2 11° 58.7	134° 13.3 11° 57.9	149° 13.5 11° 57.1	164° 13.7 11° 56.2	+0.2 -0.8
Вс 22	179° 13.8 11° 55.4	194° 14.0 11° 54.6	209° 14.1 11° 53.7	224° 14.3 11° 52.9	239° 14.4 11° 52.1	254° 14.6 11° 51.2	89° 16.7 11° 40.3	104° 16.8 11° 39.5	119° 17.0 11° 38.6	134° 17.2 11° 37.8	149° 17.3 11° 36.9	164° 17.5 11° 36.1	+0.2 -0.8
Пн 23	179° 17.6 11° 35.2	194° 17.8 11° 34.4	209° 18.0 11° 33.5	224° 18.1 11° 32.7	239° 18.3 11° 31.9	254° 18.4 11° 31.0	89° 20.6 11° 20.0	104° 20.7 11° 19.1	119° 20.9 11° 18.3	134° 21.1 11° 17.4	149° 21.2 11° 16.6	164° 21.4 11° 15.7	+0.2 -0.8
Вт 24	179° 21.6 11° 14.9	194° 21.7 11° 14.0	209° 21.9 11° 13.2	224° 22.1 11° 12.3	239° 22.2 11° 11.5	254° 22.4 11° 10.6	89° 24.6 10° 59.5	104° 24.8 10° 58.7	119° 24.9 10° 57.8	134° 25.1 10° 56.9	149° 25.3 10° 56.1	164° 25.4 10° 55.2	+0.2 -0.9
Ср 25	179° 25.6 10° 54.4	194° 25.8 10° 53.5	209° 25.9 10° 52.6	224° 26.1 10° 51.8	239° 26.3 10° 50.9	254° 26.5 10° 50.1	89° 28.7 10° 38.9	104° 28.9 10° 38.0	119° 29.0 10° 37.1	134° 29.2 10° 36.3	149° 29.4 10° 35.4	164° 29.6 10° 34.5	+0.2 -0.9
Чт 26	179° 29.7 10° 33.7	194° 29.9 10° 32.8	209° 30.1 10° 31.9	224° 30.3 10° 31.1	239° 30.4 10° 30.2	254° 30.6 10° 29.3	89° 32.9 10° 18.0	104° 33.1 10° 17.2	119° 33.3 10° 16.3	134° 33.4 10° 15.4	149° 33.6 10° 14.5	164° 33.8 10° 13.7	+0.2 -0.9
Пт 27	179° 34.0 10° 12.8	194° 34.2 10° 11.9	209° 34.3 10° 11.0	224° 34.5 10° 10.2	239° 34.7 10° 09.3	254° 34.9 10° 08.4	89° 37.2 9° 57.0	104° 37.4 9° 56.1	119° 37.6 9° 55.3	134° 37.8 9° 54.4	149° 37.9 9° 53.5	164° 38.1 9° 52.6	+0.2 -0.9
Сб 28	179° 38.3 9° 51.8	194° 38.5 9° 50.9	209° 38.7 9° 50.0	224° 38.8 9° 49.1	239° 39.0 9° 48.2	254° 39.2 9° 47.4	89° 41.6 9° 35.9	104° 41.8 9° 35.0	119° 42.0 9° 34.1	134° 42.2 9° 33.2	149° 42.3 9° 32.3	164° 42.5 9° 31.4	+0.2 -0.9
Вс 29	179° 42.7 9° 30.6	194° 42.9 9° 29.7	209° 43.1 9° 28.8	224° 43.3 9° 27.9	239° 43.5 9° 27.0	254° 43.6 9° 26.1	89° 46.1 9° 14.6	104° 46.3 9° 13.7	119° 46.4 9° 12.8	134° 46.6 9° 11.9	149° 46.8 9° 11.0	164° 47.0 9° 10.1	+0.2 -0.9
Пн 30	179° 47.2 9° 09.2	194° 47.4 9° 08.3	209° 47.6 9° 07.4	224° 47.8 9° 06.5	239° 48.0 9° 05.6	254° 48.2 9° 04.7	89° 50.6 8° 53.1	104° 50.8 8° 52.2	119° 51.0 8° 51.3	134° 51.2 8° 50.4	149° 51.4 8° 49.5	164° 51.6 8° 48.6	+0.2 -0.9
Вт 31	179° 51.8 8° 47.7	194° 52.0 8° 46.8	209° 52.2 8° 45.9	224° 52.4 8° 45.0	239° 52.6 8° 44.1	254° 52.7 8° 43.2	89° 55.3 8° 31.5	104° 55.5 8° 30.6	119° 55.7 8° 29.7	134° 55.9 8° 28.8	149° 56.1 8° 27.9	164° 56.2 8° 27.0	+0.2 -0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2027

Д	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	Δ'/h	R/p
Вс 1	69° 11.5	83° 34.9	97° 58.3	112° 21.8	126° 45.4	141° 09.1	155° 32.9	169° 56.8	184° 20.8	198° 44.9	213° 09.1	+23.7	16.7
	21° 38.2	21° 27.0	21° 15.7	21° 04.2	20° 52.6	20° 40.8	20° 28.9	20° 16.9	20° 04.7	19° 52.3	19° 39.8	-11.8	61.3
● Пн 2	69° 23.3	83° 49.1	98° 14.9	112° 40.8	127° 06.9	141° 33.0	155° 59.2	170° 25.5	184° 51.9	199° 18.4	213° 45.0	+26.2	16.7
	16° 17.6	16° 03.2	15° 48.7	15° 34.1	15° 19.4	15° 04.6	14° 49.8	14° 34.8	14° 19.8	14° 04.6	13° 49.4	-14.8	61.2
Вт 3	70° 34.7	85° 02.7	99° 30.7	113° 58.9	128° 27.1	142° 55.4	157° 23.8	171° 52.2	186° 20.8	200° 49.4	215° 18.0	+28.3	16.6
	9° 52.8	9° 36.5	9° 20.2	9° 03.9	8° 47.5	8° 31.1	8° 14.7	7° 58.2	7° 41.7	7° 25.2	7° 08.6	-16.4	60.8
Ср 4	72° 35.7	87° 05.4	101° 35.0	116° 04.8	130° 34.6	145° 04.4	159° 34.3	174° 04.2	188° 34.2	203° 04.2	217° 34.2	+29.9	16.4
	2° 57.9	2° 41.2	2° 24.4	2° 07.7	1° 50.9	1° 34.2	1° 17.4	1° 00.7	0° 44.0	0° 27.3	0° 10.7	-16.7	60.1
Чт 5	75° 09.0	89° 39.5	104° 10.1	118° 40.7	133° 11.2	147° 41.8	162° 12.5	176° 43.1	191° 13.8	205° 44.4	220° 15.1	+30.6	16.2
	-3° 56.3	-4° 12.5	-4° 28.6	-4° 44.7	-5° 00.7	-5° 16.7	-5° 32.7	-5° 48.6	-6° 04.5	-6° 20.3	-6° 36.0	-16.0	59.3
Пт 6	77° 55.8	92° 26.5	106° 57.2	121° 27.8	135° 58.5	150° 29.2	164° 59.9	179° 30.5	194° 01.2	208° 31.8	223° 02.4	+30.7	15.9
	-10° 24.9	-10° 39.6	-10° 54.3	-11° 08.9	-11° 23.4	-11° 37.8	-11° 52.1	-12° 06.4	-12° 20.6	-12° 34.7	-12° 48.7	-14.4	58.3
Сб 7	80° 39.5	95° 09.8	109° 40.1	124° 10.4	138° 40.6	153° 10.8	167° 41.0	182° 11.1	196° 41.2	211° 11.3	225° 41.4	+30.2	15.6
	-16° 08.3	-16° 20.9	-16° 33.4	-16° 45.7	-16° 58.0	-17° 10.2	-17° 22.2	-17° 34.2	-17° 46.1	-17° 57.8	-18° 09.5	-12.1	57.3
Вс 8	83° 08.8	97° 38.3	112° 07.9	126° 37.4	141° 06.9	155° 36.3	170° 05.7	184° 35.1	199° 04.4	213° 33.8	228° 03.1	+29.4	15.4
	-20° 51.1	-21° 00.9	-21° 10.7	-21° 20.3	-21° 29.8	-21° 39.2	-21° 48.5	-21° 57.6	-22° 06.7	-22° 15.6	-22° 24.3	-9.3	56.4
◐ Пн 9	97° 38.3	112° 07.9	126° 37.4	141° 06.9	155° 36.3	170° 05.7	184° 35.1	199° 04.4	213° 33.8	228° 03.1	242° 32.3	+29.4	15.4
	-21° 00.9	-21° 10.7	-21° 20.3	-21° 29.8	-21° 39.2	-21° 48.5	-21° 57.6	-22° 06.7	-22° 15.6	-22° 24.3	-22° 33.0	-9.2	56.4
Вт 10	99° 47.6	114° 16.4	128° 45.2	143° 13.9	157° 42.7	172° 11.4	186° 40.0	201° 08.7	215° 37.3	230° 06.0	244° 34.6	+28.7	15.2
	-24° 27.8	-24° 34.4	-24° 40.9	-24° 47.3	-24° 53.5	-24° 59.6	-25° 05.6	-25° 11.4	-25° 17.1	-25° 22.7	-25° 28.1	-6.0	55.6
Ср 11	101° 41.7	116° 10.1	130° 38.5	145° 06.9	159° 35.3	174° 03.7	188° 32.0	203° 00.4	217° 28.8	231° 57.2	246° 25.6	+28.4	15.0
	-26° 33.2	-26° 36.5	-26° 39.6	-26° 42.5	-26° 45.4	-26° 48.1	-26° 50.6	-26° 53.1	-26° 55.3	-26° 57.5	-26° 59.5	-2.6	55.0
Чт 12	103° 32.4	118° 00.9	132° 29.5	146° 58.1	161° 26.8	175° 55.4	190° 24.1	204° 52.8	219° 21.6	233° 50.4	248° 19.1	+28.7	14.9
	-27° 13.1	-27° 12.9	-27° 12.6	-27° 12.1	-27° 11.5	-27° 10.8	-27° 09.9	-27° 08.9	-27° 07.8	-27° 06.5	-27° 05.1	+0.8	54.5
Пт 13	105° 35.3	120° 04.7	134° 34.1	149° 03.6	163° 33.1	178° 02.7	192° 32.3	207° 02.0	221° 31.7	236° 01.5	250° 31.3	+29.6	14.8
	-26° 28.4	-26° 25.0	-26° 21.4	-26° 17.7	-26° 13.8	-26° 09.8	-26° 05.7	-26° 01.5	-25° 57.2	-25° 52.7	-25° 48.2	+4.0	54.2
Сб 14	108° 05.0	122° 35.7	137° 06.4	151° 37.2	166° 08.1	180° 39.0	195° 10.0	209° 41.1	224° 12.2	238° 43.4	253° 14.6	+31.0	14.7
	-24° 25.4	-24° 19.0	-24° 12.5	-24° 05.8	-23° 59.1	-23° 52.2	-23° 45.3	-23° 38.2	-23° 31.1	-23° 23.8	-23° 16.4	+6.9	54.0
Вс 15	111° 10.3	125° 42.5	140° 14.8	154° 47.1	169° 19.5	183° 52.0	198° 24.5	212° 57.0	227° 29.7	242° 02.3	256° 35.1	+32.5	14.7
	-21° 14.0	-21° 05.1	-20° 56.1	-20° 47.0	-20° 37.8	-20° 28.6	-20° 19.2	-20° 09.8	-20° 00.2	-19° 50.6	-19° 41.0	+9.3	53.9
Пн 16	114° 53.0	129° 26.6	144° 00.3	158° 34.0	173° 07.8	187° 41.6	202° 15.5	216° 49.4	231° 23.4	245° 57.4	260° 31.5	+33.9	14.7
	-17° 06.3	-16° 55.4	-16° 44.5	-16° 33.4	-16° 22.3	-16° 11.2	-15° 59.9	-15° 48.6	-15° 37.3	-15° 25.8	-15° 14.4	+11.2	54.0
○ Вт 17	119° 07.9	133° 42.6	148° 17.4	162° 52.2	177° 27.1	192° 02.0	206° 36.9	221° 11.8	235° 46.8	250° 21.8	264° 56.8	+34.9	14.8
	-12° 15.2	-12° 02.8	-11° 50.4	-11° 37.9	-11° 25.4	-11° 12.9	-11° 00.3	-10° 47.6	-10° 34.9	-10° 22.2	-10° 09.4	+12.6	54.1
Ср 18	123° 45.5	138° 20.9	152° 56.3	167° 31.7	182° 07.2	196° 42.6	211° 18.1	225° 53.6	240° 29.1	255° 04.6	269° 40.1	+35.5	14.8
	-6° 53.3	-6° 39.9	-6° 26.5	-6° 13.1	-5° 59.7	-5° 46.3	-5° 32.8	-5° 19.3	-5° 05.7	-4° 52.2	-4° 38.6	+13.5	54.3
Чт 19	128° 33.1	143° 08.6	157° 44.1	172° 19.6	186° 55.1	201° 30.5	216° 06.0	230° 41.4	245° 16.9	259° 52.3	274° 27.7	+35.5	14.9
	-1° 12.7	-0° 58.9	-0° 45.0	-0° 31.2	-0° 17.3	-0° 03.5	0° 10.4	0° 24.3	0° 38.2	0° 52.1	1° 06.0	+13.9	54.6
Пт 20	133° 16.1	147° 51.1	162° 26.0	177° 01.0	191° 35.9	206° 10.7	220° 45.6	235° 20.4	249° 55.1	264° 29.8	279° 04.5	+34.8	15.0
	4° 34.2	4° 48.1	5° 01.9	5° 15.7	5° 29.5	5° 43.3	5° 57.1	6° 10.8	6° 24.6	6° 38.3	6° 52.0	+13.8	55.0
Сб 21	137° 38.6	152° 12.4	166° 46.2	181° 19.9	195° 53.5	210° 27.1	225° 00.7	239° 34.1	254° 07.5	268° 40.8	283° 14.1	+33.6	15.1
	10° 14.9	10° 28.2	10° 41.4	10° 54.7	11° 07.9	11° 21.0	11° 34.1	11° 47.2	12° 00.3	12° 13.3	12° 26.2	+13.1	55.5
Вс 22	141° 23.9	155° 55.9	170° 27.8	184° 59.7	199° 31.4	214° 03.1	228° 34.7	243° 06.1	257° 37.5	272° 08.8	286° 40.0	+31.6	15.3
	15° 34.9	15° 47.0	15° 59.1	16° 11.1	16° 23.0	16° 34.9	16° 46.8	16° 58.5	17° 10.2	17° 21.8	17° 33.4	+11.9	56.1
Пн 23	144° 16.4	158° 46.0	173° 15.5	187° 44.9	202° 14.2	216° 43.4	231° 12.5	245° 41.4	260° 10.3	274° 39.1	289° 07.7	+29.1	15.5
	20° 17.3	20° 27.5	20° 37.7	20° 47.7	20° 57.7	21° 07.5	21° 17.3	21° 27.0	21° 36.5	21° 46.0	21° 55.3	+9.8	56.8
Вт 24	146° 04.4	160° 31.3	174° 58.1	189° 24.8	203° 51.4	218° 17.9	232° 44.3	247° 10.5	261° 36.7	276° 02.8	290° 28.7	+26.4	15.7
	24° 02.1	24° 09.5	24° 16.9	24° 24.1	24° 31.2	24° 38.1	24° 45.0	24° 51.6	24° 58.2	25° 04.6	25° 10.8	+6.9	57.6
◑ Ср 25	146° 46.2	161° 10.6	175° 34.9	189° 59.2	204° 23.3	218° 47.4	233° 11.4	247° 35.4	261° 59.2	276° 23.0	290° 46.7	+24.0	15.9
	26° 26.8	26° 30.6	26° 34.3	26° 37.8	26° 41.1	26° 44.2	26° 47.2	26° 50.0	26° 52.6	26° 55.1	26° 57.4	+3.1	58.4
Чт 26	146° 35.0	160° 57.8	175° 20.6	189° 43.3	204° 06.1	218° 28.7	232° 51.4	247° 14.0	261° 36.6	275° 59.2	290° 21.8	+22.7	16.2
	27° 10.3	27° 09.7	27° 08.9	27° 08.0	27° 06.8	27° 05.5	27° 03.9	27° 02.2	27° 00.3	26° 58.2	26° 55.9	-1.4	59.3
Пт 27	145° 59.7	160° 22.3	174° 45.0	189° 07.6	203° 30.3	217° 52.9	232° 15.7	246° 38.4	261° 01.2	275° 24.0	289° 46.9	+22.7	16.4
	25° 58.7	25° 53.4	25° 47.9	25° 42.2	25° 36.3	25° 30.2	25° 24.0	25° 17.6	25° 10.9	25° 04.1	24° 57.2	-6.2	60.0
Сб 28	145° 35.3	159° 59.0	174° 22.7	188° 46.6	203° 10.4	217° 34.4	231° 58.4	246° 22.5	260° 46.6	275° 10.8	289° 35.1	+24.0	16.5
	22° 51.3	22° 41.5	22° 31.6	22° 21.5	22° 11.3	22° 00.9	21° 50.4	21° 39.7	21° 28.8	21° 17.8	21° 06.6	-10.5	60.6
Вс 29	145° 48.5	160° 14.0	174° 39.6	189° 05.3	203° 31.0	217° 56.8	232° 22.7	246° 48.7	261° 14.8	275° 40.9	290° 07.1	+25.9	16.6
	18° 02.3	17° 49.0	17° 35.5	17° 21.9	17° 08.2	16° 54.4	16° 40.5	16° 26.5	16° 12.3	15° 58.1	15° 43.8	-13.9	60.9
Пн 30	146° 49.5	161° 16.9	175° 44.4	190° 12.0	204° 39.6	219° 07.2	233° 35.0	248° 02.8	262° 30.7	276° 58.6	291° 26.6	+27.7	16.6
	11° 57.4	11° 41.7	11° 25.9	11° 10.0	10° 54.0	10° 38.0	10° 22.0	10° 05.9	9° 49.7	9° 33.4	9° 17.1	-16.0	60.9
● Вт 31	148° 33.6	163° 02.5	177° 31.4	192° 00.4	206° 29.4	220° 58.5	235° 27.6	249° 56.7	264° 25.9	278° 55.1	293° 24.4	+29.1	16.5
	5° 07.9	4° 51.1	4° 34.2	4° 17.3	4° 00.4	3° 43.5	3° 26.6	3° 09.6	2° 52.7	2° 35.8	2° 18.8	-16.9	60.6

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 2 10h05 — Первая четв.: 9 04h54 — Полнолуние: 17 07h28 — Последняя четв.: 25 02h27 — Новолуние: 31 17h41

СОЛНЦЕ

Сентябрь 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	179° 56.4	194° 56.6	209° 56.8	224° 57.0	239° 57.2	254° 57.4	90° 00.0	105° 00.2	120° 00.4	135° 00.6	150° 00.8	165° 01.0	+0.2
	8° 26.1	8° 25.2	8° 24.3	8° 23.4	8° 22.5	8° 21.6	8° 09.8	8° 08.9	8° 08.0	8° 07.1	8° 06.1	8° 05.2	-0.9
Чт 2	180° 01.2	195° 01.4	210° 01.6	225° 01.8	240° 02.0	255° 02.2	90° 04.8	105° 05.0	120° 05.2	135° 05.4	150° 05.6	165° 05.8	+0.2
	8° 04.3	8° 03.4	8° 02.5	8° 01.6	8° 00.7	7° 59.8	7° 47.9	7° 47.0	7° 46.1	7° 45.2	7° 44.3	7° 43.3	-0.9
Пт 3	180° 06.0	195° 06.2	210° 06.4	225° 06.6	240° 06.8	255° 07.0	90° 09.6	105° 09.9	120° 10.1	135° 10.3	150° 10.5	165° 10.7	+0.2
	7° 42.4	7° 41.5	7° 40.6	7° 39.7	7° 38.8	7° 37.8	7° 25.9	7° 25.0	7° 24.1	7° 23.2	7° 22.2	7° 21.3	-0.9
Сб 4	180° 10.9	195° 11.1	210° 11.3	225° 11.5	240° 11.7	255° 11.9	90° 14.6	105° 14.8	120° 15.0	135° 15.2	150° 15.4	165° 15.6	+0.2
	7° 20.4	7° 19.5	7° 18.6	7° 17.6	7° 16.7	7° 15.8	7° 03.8	7° 02.9	7° 02.0	7° 01.0	7° 00.1	6° 59.2	-0.9
Вс 5	180° 15.8	195° 16.0	210° 16.2	225° 16.4	240° 16.7	255° 16.9	90° 19.6	105° 19.8	120° 20.0	135° 20.2	150° 20.4	165° 20.6	+0.2
	6° 58.3	6° 57.3	6° 56.4	6° 55.5	6° 54.6	6° 53.6	6° 41.6	6° 40.7	6° 39.7	6° 38.8	6° 37.9	6° 37.0	-0.9
Пн 6	180° 20.8	195° 21.0	210° 21.3	225° 21.5	240° 21.7	255° 21.9	90° 24.6	105° 24.8	120° 25.1	135° 25.3	150° 25.5	165° 25.7	+0.2
	6° 36.0	6° 35.1	6° 34.2	6° 33.2	6° 32.3	6° 31.4	6° 19.3	6° 18.3	6° 17.4	6° 16.5	6° 15.5	6° 14.6	-0.9
Вт 7	180° 25.9	195° 26.1	210° 26.3	225° 26.5	240° 26.7	255° 27.0	90° 29.7	105° 30.0	120° 30.2	135° 30.4	150° 30.6	165° 30.8	+0.2
	6° 13.7	6° 12.7	6° 11.8	6° 10.9	6° 09.9	6° 09.0	5° 56.8	5° 55.9	5° 55.0	5° 54.0	5° 53.1	5° 52.1	-0.9
Ср 8	180° 31.0	195° 31.2	210° 31.5	225° 31.7	240° 31.9	255° 32.1	90° 34.9	105° 35.1	120° 35.3	135° 35.5	150° 35.8	165° 36.0	+0.2
	5° 51.2	5° 50.3	5° 49.3	5° 48.4	5° 47.5	5° 46.5	5° 34.3	5° 33.4	5° 32.4	5° 31.5	5° 30.5	5° 29.6	-0.9
Чт 9	180° 36.2	195° 36.4	210° 36.6	225° 36.8	240° 37.1	255° 37.3	90° 40.1	105° 40.3	120° 40.5	135° 40.8	150° 41.0	165° 41.2	+0.2
	5° 28.7	5° 27.7	5° 26.8	5° 25.8	5° 24.9	5° 23.9	5° 11.7	5° 10.7	5° 09.8	5° 08.9	5° 07.9	5° 07.0	-0.9
Пт 10	180° 41.4	195° 41.6	210° 41.8	225° 42.1	240° 42.3	255° 42.5	90° 45.4	105° 45.6	120° 45.8	135° 46.0	150° 46.2	165° 46.4	+0.2
	5° 06.0	5° 05.1	5° 04.1	5° 03.2	5° 02.2	5° 01.3	4° 49.0	4° 48.0	4° 47.1	4° 46.1	4° 45.2	4° 44.2	-0.9
Сб 11	180° 46.7	195° 46.9	210° 47.1	225° 47.3	240° 47.5	255° 47.8	90° 50.6	105° 50.9	120° 51.1	135° 51.3	150° 51.5	165° 51.7	+0.2
	4° 43.3	4° 42.3	4° 41.4	4° 40.4	4° 39.5	4° 38.5	4° 26.2	4° 25.2	4° 24.3	4° 23.3	4° 22.4	4° 21.4	-0.9
Вс 12	180° 52.0	195° 52.2	210° 52.4	225° 52.6	240° 52.8	255° 53.1	90° 55.9	105° 56.2	120° 56.4	135° 56.6	150° 56.8	165° 57.1	+0.2
	4° 20.5	4° 19.5	4° 18.6	4° 17.6	4° 16.7	4° 15.7	4° 03.3	4° 02.4	4° 01.4	4° 00.5	3° 59.5	3° 58.6	-1.0
Пн 13	180° 57.3	195° 57.5	210° 57.7	225° 57.9	240° 58.2	255° 58.4	91° 01.3	106° 01.5	121° 01.7	136° 02.0	151° 02.2	166° 02.4	+0.2
	3° 57.6	3° 56.7	3° 55.7	3° 54.7	3° 53.8	3° 52.8	3° 40.4	3° 39.4	3° 38.5	3° 37.5	3° 36.6	3° 35.6	-1.0
Вт 14	181° 02.6	196° 02.8	211° 03.1	226° 03.3	241° 03.5	256° 03.7	91° 06.6	106° 06.9	121° 07.1	136° 07.3	151° 07.5	166° 07.8	+0.2
	3° 34.7	3° 33.7	3° 32.7	3° 31.8	3° 30.8	3° 29.9	3° 17.4	3° 16.5	3° 15.5	3° 14.5	3° 13.6	3° 12.6	-1.0
Ср 15	181° 08.0	196° 08.2	211° 08.4	226° 08.7	241° 08.9	256° 09.1	91° 12.0	106° 12.2	121° 12.5	136° 12.7	151° 12.9	166° 13.1	+0.2
	3° 11.7	3° 10.7	3° 09.7	3° 08.8	3° 07.8	3° 06.9	2° 54.4	2° 53.4	2° 52.4	2° 51.5	2° 50.5	2° 49.5	-1.0
Чт 16	181° 13.4	196° 13.6	211° 13.8	226° 14.0	241° 14.3	256° 14.5	91° 17.4	106° 17.6	121° 17.8	136° 18.1	151° 18.3	166° 18.5	+0.2
	2° 48.6	2° 47.6	2° 46.7	2° 45.7	2° 44.7	2° 43.8	2° 31.2	2° 30.3	2° 29.3	2° 28.4	2° 27.4	2° 26.4	-1.0
Пт 17	181° 18.7	196° 19.0	211° 19.2	226° 19.4	241° 19.6	256° 19.9	91° 22.8	106° 23.0	121° 23.2	136° 23.4	151° 23.7	166° 23.9	+0.2
	2° 25.5	2° 24.5	2° 23.5	2° 22.6	2° 21.6	2° 20.6	2° 08.1	2° 07.1	2° 06.2	2° 05.2	2° 04.2	2° 03.3	-1.0
Сб 18	181° 24.1	196° 24.3	211° 24.6	226° 24.8	241° 25.0	256° 25.2	91° 28.2	106° 28.4	121° 28.6	136° 28.8	151° 29.1	166° 29.3	+0.2
	2° 02.3	2° 01.3	2° 00.4	1° 59.4	1° 58.4	1° 57.5	1° 44.9	1° 43.9	1° 42.9	1° 42.0	1° 41.0	1° 40.0	-1.0
Вс 19	181° 29.5	196° 29.7	211° 29.9	226° 30.2	241° 30.4	256° 30.6	91° 33.5	106° 33.7	121° 34.0	136° 34.2	151° 34.4	166° 34.6	+0.2
	1° 39.1	1° 38.1	1° 37.1	1° 36.2	1° 35.2	1° 34.2	1° 21.6	1° 20.7	1° 19.7	1° 18.7	1° 17.8	1° 16.8	-1.0
Пн 20	181° 34.9	196° 35.1	211° 35.3	226° 35.5	241° 35.8	256° 36.0	91° 38.9	106° 39.1	121° 39.3	136° 39.5	151° 39.8	166° 40.0	+0.2
	1° 15.8	1° 14.8	1° 13.9	1° 12.9	1° 11.9	1° 11.0	0° 58.4	0° 57.4	0° 56.4	0° 55.4	0° 54.5	0° 53.5	-1.0
Вт 21	181° 40.2	196° 40.4	211° 40.7	226° 40.9	241° 41.1	256° 41.3	91° 44.2	106° 44.4	121° 44.7	136° 44.9	151° 45.1	166° 45.3	+0.2
	0° 52.5	0° 51.6	0° 50.6	0° 49.6	0° 48.6	0° 47.7	0° 35.0	0° 34.1	0° 33.1	0° 32.1	0° 31.2	0° 30.2	-1.0
Ср 22	181° 45.5	196° 45.8	211° 46.0	226° 46.2	241° 46.4	256° 46.7	91° 49.5	106° 49.7	121° 50.0	136° 50.2	151° 50.4	166° 50.6	+0.2
	0° 29.2	0° 28.2	0° 27.3	0° 26.3	0° 25.3	0° 24.3	0° 11.7	0° 10.7	0° 09.8	0° 08.8	0° 07.8	0° 06.8	-1.0
Чт 23	181° 50.8	196° 51.1	211° 51.3	226° 51.5	241° 51.7	256° 51.9	91° 54.8	106° 55.0	121° 55.2	136° 55.5	151° 55.7	166° 55.9	+0.2
	0° 05.9	0° 04.9	0° 03.9	0° 03.0	0° 02.0	0° 01.0	-0° 11.6	-0° 12.6	-0° 13.6	-0° 14.6	-0° 15.5	-0° 16.5	-1.0
Пт 24	181° 56.1	196° 56.3	211° 56.5	226° 56.8	241° 57.0	256° 57.2	92° 00.0	107° 00.3	122° 00.5	137° 00.7	152° 00.9	167° 01.1	+0.2
	-0° 17.5	-0° 18.5	-0° 19.4	-0° 20.4	-0° 21.4	-0° 22.4	-0° 35.0	-0° 36.0	-0° 37.0	-0° 37.9	-0° 38.9	-0° 39.9	-1.0
Сб 25	182° 01.3	197° 01.6	212° 01.8	227° 02.0	242° 02.2	257° 02.4	92° 05.2	107° 05.4	122° 05.7	137° 05.9	152° 06.1	167° 06.3	+0.2
	-0° 40.9	-0° 41.8	-0° 42.8	-0° 43.8	-0° 44.7	-0° 45.7	-0° 58.4	-0° 59.4	-1° 00.3	-1° 01.3	-1° 02.3	-1° 03.3	-1.0
Вс 26	182° 06.5	197° 06.7	212° 07.0	227° 07.2	242° 07.4	257° 07.6	92° 10.4	107° 10.6	122° 10.8	137° 11.0	152° 11.2	167° 11.4	+0.2
	-1° 04.2	-1° 05.2	-1° 06.2	-1° 07.1	-1° 08.1	-1° 09.1	-1° 21.8	-1° 22.7	-1° 23.7	-1° 24.7	-1° 25.7	-1° 26.6	-1.0
Пн 27	182° 11.7	197° 11.9	212° 12.1	227° 12.3	242° 12.5	257° 12.7	92° 15.5	107° 15.7	122° 15.9	137° 16.1	152° 16.3	167° 16.5	+0.2
	-1° 27.6	-1° 28.6	-1° 29.5	-1° 30.5	-1° 31.5	-1° 32.5	-1° 45.1	-1° 46.1	-1° 47.1	-1° 48.0	-1° 49.0	-1° 50.0	-1.0
Вт 28	182° 16.7	197° 17.0	212° 17.2	227° 17.4	242° 17.6	257° 17.8	92° 20.5	107° 20.7	122° 20.9	137° 21.1	152° 21.4	167° 21.6	+0.2
	-1° 51.0	-1° 51.9	-1° 52.9	-1° 53.9	-1° 54.9	-1° 55.8	-2° 08.5	-2° 09.4	-2° 10.4	-2° 11.4	-2° 12.4	-2° 13.3	-1.0
Ср 29	182° 21.8	197° 22.0	212° 22.2	227° 22.4	242° 22.6	257° 22.8	92° 25.5	107° 25.7	122° 25.9	137° 26.1	152° 26.3	167° 26.5	+0.2
	-2° 14.3	-2° 15.3	-2° 16.3	-2° 17.2	-2° 18.2	-2° 19.2	-2° 31.8	-2° 32.8	-2° 33.8	-2° 34.7	-2° 35.7	-2° 36.7	-1.0
Чт 30	182° 26.7	197° 26.9	212° 27.1	227° 27.4	242° 27.6	257° 27.8	92° 30.4	107° 30.6	122° 30.8	137° 31.0	152° 31.2	167° 31.4	+0.2
	-2° 37.6	-2° 38.6	-2° 39.6	-2° 40.6	-2° 41.5	-2° 42.5	-2° 55.1	-2° 56.1	-2° 57.1	-2° 58.0	-2° 59.0	-3° 00.0	-1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2027

Д	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	Δ'/h	R/p
Ср 1	63° 49.2 -0° 13.5	78° 18.8 -0° 30.4	92° 48.4 -0° 47.2	107° 18.0 -1° 04.1	121° 47.7 -1° 20.9	136° 17.3 -1° 37.7	150° 47.0 -1° 54.4	165° 16.7 -2° 11.2	179° 46.5 -2° 27.9	194° 16.2 -2° 44.6	208° 46.0 -3° 01.2	+29.7 -16.8	16.4 60.2
Чт 2	66° 13.7 -7° 06.1	80° 43.6 -7° 22.0	95° 13.5 -7° 37.9	109° 43.4 -7° 53.7	124° 13.3 -8° 09.5	138° 43.1 -8° 25.1	153° 13.0 -8° 40.8	167° 42.9 -8° 56.3	182° 12.8 -9° 11.8	196° 42.6 -9° 27.2	211° 12.5 -9° 42.6	+29.9 -15.7	16.2 59.4
Пт 3	68° 38.8 -13° 23.6	83° 08.5 -13° 37.6	97° 38.1 -13° 51.6	112° 07.7 -14° 05.5	126° 37.2 -14° 19.3	141° 06.8 -14° 33.0	155° 36.3 -14° 46.5	170° 05.8 -15° 00.0	184° 35.3 -15° 13.4	199° 04.7 -15° 26.7	213° 34.2 -15° 39.9	+29.5 -13.6	16.0 58.5
Сб 4	70° 52.5 -18° 45.2	85° 21.5 -18° 56.6	99° 50.5 -19° 08.0	114° 19.4 -19° 19.2	128° 48.3 -19° 30.3	143° 17.2 -19° 41.3	157° 46.1 -19° 52.2	172° 14.9 -20° 02.9	186° 43.7 -20° 13.5	201° 12.5 -20° 24.0	215° 41.2 -20° 34.4	+28.9 -10.9	15.7 57.5
Вс 5	72° 48.9 -22° 54.9	87° 17.2 -23° 03.3	101° 45.5 -23° 11.5	116° 13.8 -23° 19.5	130° 42.0 -23° 27.4	145° 10.2 -23° 35.2	159° 38.4 -23° 42.9	174° 06.6 -23° 50.4	188° 34.7 -23° 57.8	203° 02.8 -24° 05.0	217° 30.9 -24° 12.1	+28.2 -7.7	15.4 56.6
Пн 6	74° 30.6 -25° 42.1	88° 58.5 -25° 46.9	103° 26.4 -25° 51.7	117° 54.2 -25° 56.2	132° 22.1 -26° 00.7	146° 50.0 -26° 05.0	161° 17.8 -26° 09.1	175° 45.7 -26° 13.2	190° 13.5 -26° 17.0	204° 41.4 -26° 20.8	219° 09.2 -26° 24.4	+27.9 -4.2	15.2 55.8
◐ Вт 7	76° 07.9 -27° 01.1	90° 35.9 -27° 02.4	105° 03.9 -27° 03.6	119° 32.0 -27° 04.6	134° 00.0 -27° 05.5	148° 28.1 -27° 06.3	162° 56.2 -27° 06.9	177° 24.4 -27° 07.4	191° 52.5 -27° 07.7	206° 20.7 -27° 07.9	220° 48.9 -27° 08.0	+28.1 -0.7	15.0 55.1
Ср 8	90° 35.9 -27° 02.4	105° 03.9 -27° 03.6	119° 32.0 -27° 04.6	134° 00.0 -27° 05.5	148° 28.1 -27° 06.3	162° 56.2 -27° 06.9	177° 24.4 -27° 07.4	191° 52.5 -27° 07.7	206° 20.7 -27° 07.9	220° 48.9 -27° 08.0	235° 17.2 -27° 07.9	+28.1 -0.5	15.0 55.1
Чт 9	92° 24.8 -26° 50.3	106° 53.6 -26° 48.1	121° 22.5 -26° 45.7	135° 51.4 -26° 43.2	150° 20.3 -26° 40.6	164° 49.3 -26° 37.8	179° 18.4 -26° 35.0	193° 47.5 -26° 31.9	208° 16.6 -26° 28.8	222° 45.8 -26° 25.5	237° 15.0 -26° 22.1	+29.0 +2.8	14.9 54.6
Пт 10	94° 40.0 -25° 16.4	109° 10.1 -25° 11.1	123° 40.2 -25° 05.7	138° 10.5 -25° 00.1	152° 40.8 -24° 54.4	167° 11.1 -24° 48.6	181° 41.5 -24° 42.7	196° 12.0 -24° 36.7	210° 42.5 -24° 30.6	225° 13.1 -24° 24.4	239° 43.8 -24° 18.0	+30.4 +5.8	14.8 54.2
Сб 11	97° 30.9 -22° 30.3	112° 02.6 -22° 22.4	126° 34.3 -22° 14.3	141° 06.0 -22° 06.1	155° 37.9 -21° 57.8	170° 09.8 -21° 49.5	184° 41.7 -21° 41.0	199° 13.7 -21° 32.5	213° 45.8 -21° 23.8	228° 17.9 -21° 15.1	242° 50.1 -21° 06.3	+31.9 +8.4	14.7 54.1
Вс 12	101° 00.1 -18° 43.7	115° 33.2 -18° 33.5	130° 06.4 -18° 23.3	144° 39.6 -18° 13.0	159° 12.9 -18° 02.6	173° 46.2 -17° 52.1	188° 19.6 -17° 41.6	202° 53.0 -17° 31.0	217° 26.5 -17° 20.3	232° 00.0 -17° 09.6	246° 33.6 -16° 58.8	+33.4 +10.5	14.7 54.0
Пн 13	105° 03.1 -14° 08.6	119° 37.5 -13° 56.8	134° 11.8 -13° 44.9	148° 46.2 -13° 33.0	163° 20.6 -13° 21.0	177° 55.1 -13° 08.9	192° 29.6 -12° 56.8	207° 04.1 -12° 44.6	221° 38.7 -12° 32.4	236° 13.3 -12° 20.1	250° 48.0 -12° 07.8	+34.5 +12.1	14.8 54.2
Вт 14	109° 31.2 -8° 57.4	124° 06.2 -8° 44.3	138° 41.3 -8° 31.2	153° 16.5 -8° 18.1	167° 51.6 -8° 05.0	182° 26.7 -7° 51.8	197° 01.9 -7° 38.6	211° 37.1 -7° 25.3	226° 12.3 -7° 12.0	240° 47.5 -6° 58.7	255° 22.7 -6° 45.4	+35.2 +13.2	14.8 54.4
○ Ср 15	114° 12.1 -3° 21.8	128° 47.5 -3° 08.1	143° 22.8 -2° 54.3	157° 58.1 -2° 40.5	172° 33.4 -2° 26.7	187° 08.7 -2° 12.9	201° 44.0 -1° 59.0	216° 19.3 -1° 45.2	230° 54.6 -1° 31.3	245° 29.8 -1° 17.4	260° 05.1 -1° 03.6	+35.3 +13.8	14.9 54.7
Чт 16	118° 52.3 2° 25.7	133° 27.3 2° 39.6	148° 02.2 2° 53.6	162° 37.1 3° 07.6	177° 12.0 3° 21.5	191° 46.9 3° 35.5	206° 21.7 3° 49.4	220° 56.5 4° 03.4	235° 31.3 4° 17.3	250° 06.1 4° 31.2	264° 40.8 4° 45.1	+34.9 +13.9	15.0 55.1
Пт 17	123° 16.7 8° 12.0	137° 50.7 8° 25.6	152° 24.7 8° 39.2	166° 58.6 8° 52.8	181° 32.5 9° 06.4	196° 06.3 9° 19.9	210° 40.1 9° 33.4	225° 13.8 9° 46.8	239° 47.4 10° 00.2	254° 21.0 10° 13.6	268° 54.6 10° 27.0	+33.8 +13.5	15.1 55.5
Сб 18	127° 10.0 13° 42.4	141° 42.5 13° 55.1	156° 14.9 14° 07.7	170° 47.2 14° 20.2	185° 19.5 14° 32.7	199° 51.7 14° 45.1	214° 23.8 14° 57.5	228° 55.8 15° 09.8	243° 27.7 15° 22.1	257° 59.6 15° 34.3	272° 31.4 15° 46.4	+32.1 +12.4	15.3 56.0
Вс 19	130° 18.0 18° 39.9	144° 48.4 18° 50.9	159° 18.7 19° 01.7	173° 48.9 19° 12.5	188° 19.0 19° 23.2	202° 49.1 19° 33.8	217° 19.0 19° 44.3	231° 48.9 19° 54.8	246° 18.6 20° 05.1	260° 48.3 20° 15.3	275° 17.8 20° 25.5	+30.0 +10.6	15.4 56.5
Пн 20	132° 29.8 22° 45.3	146° 57.8 22° 53.7	161° 25.8 23° 02.1	175° 53.6 23° 10.3	190° 21.3 23° 18.3	204° 49.0 23° 26.3	219° 16.5 23° 34.1	233° 44.0 23° 41.8	248° 11.3 23° 49.4	262° 38.6 23° 56.9	277° 05.8 24° 04.2	+27.6 +7.9	15.6 57.1
Вт 21	133° 42.6 25° 37.8	148° 08.3 25° 42.9	162° 34.0 25° 47.8	176° 59.6 25° 52.6	191° 25.1 25° 57.2	205° 50.6 26° 01.7	220° 16.0 26° 06.1	234° 41.3 26° 10.3	249° 06.5 26° 14.3	263° 31.7 26° 18.1	277° 56.8 26° 21.8	+25.4 +4.4	15.7 57.7
Ср 22	134° 05.7 26° 57.9	148° 29.9 26° 58.9	162° 54.0 26° 59.8	177° 18.1 27° 00.5	191° 42.2 27° 01.1	206° 06.2 27° 01.4	220° 30.2 27° 01.6	234° 54.1 27° 01.6	249° 18.0 27° 01.5	263° 41.9 27° 01.2	278° 05.8 27° 00.6	+24.0 +0.3	15.9 58.3
◑ Чт 23	134° 01.9 26° 31.8	148° 25.6 26° 28.5	162° 49.3 26° 24.9	177° 13.1 26° 21.2	191° 36.8 26° 17.4	206° 00.5 26° 13.3	220° 24.3 26° 09.1	234° 48.1 26° 04.7	249° 11.9 26° 00.1	263° 35.7 25° 55.4	277° 59.5 25° 50.4	+23.8 -4.1	16.1 58.9
Пт 24	134° 00.8 24° 16.0	148° 25.2 24° 08.3	162° 49.6 24° 00.5	177° 14.1 23° 52.6	191° 38.7 23° 44.4	206° 03.3 23° 36.1	220° 27.9 23° 27.7	234° 52.6 23° 19.1	249° 17.4 23° 10.3	263° 42.2 23° 01.4	278° 07.1 22° 52.4	+24.6 -8.4	16.2 59.4
Сб 25	134° 27.4 20° 18.6	148° 53.3 20° 07.3	163° 19.2 19° 55.7	177° 45.3 19° 44.1	192° 11.3 19° 32.3	206° 37.5 19° 20.5	221° 03.7 19° 08.4	235° 29.9 18° 56.3	249° 56.3 18° 44.0	264° 22.7 18° 31.6	278° 49.2 18° 19.1	+26.2 -12.0	16.3 59.9
Вс 26	135° 34.3 14° 58.1	150° 01.8 14° 43.9	164° 29.4 14° 29.6	178° 57.0 14° 15.2	193° 24.8 14° 00.7	207° 52.5 13° 46.1	222° 20.4 13° 31.5	236° 48.3 13° 16.7	251° 16.2 13° 01.9	265° 44.2 12° 47.0	280° 12.3 12° 32.0	+27.8 -14.6	16.4 60.2
Пн 27	137° 19.8 8° 39.0	151° 48.7 8° 23.0	166° 17.6 8° 07.0	180° 46.6 7° 50.9	195° 15.6 7° 34.7	209° 44.7 7° 18.6	224° 13.8 7° 02.3	238° 42.9 6° 46.1	253° 12.1 6° 29.8	267° 41.3 6° 13.5	282° 10.5 5° 57.1	+29.1 -16.2	16.4 60.3
Вт 28	139° 32.9 1° 48.8	154° 02.6 1° 32.2	168° 32.3 1° 15.5	183° 02.0 0° 58.9	197° 31.7 0° 42.2	212° 01.5 0° 25.5	226° 31.2 0° 08.9	241° 01.0 -0° 07.8	255° 30.8 -0° 24.4	270° 00.6 -0° 41.0	284° 30.4 -0° 57.7	+29.8 -16.7	16.4 60.1
Ср 29	141° 58.0 -5° 04.5	156° 27.9 -5° 20.7	170° 57.7 -5° 36.8	185° 27.5 -5° 53.0	199° 57.3 -6° 09.1	214° 27.1 -6° 25.1	228° 56.9 -6° 41.1	243° 26.6 -6° 57.0	257° 56.4 -7° 12.9	272° 26.1 -7° 28.8	286° 55.9 -7° 44.6	+29.8 -16.0	16.3 59.7
● Чт 30	144° 19.6 -11° 34.1	158° 49.0 -11° 48.8	173° 18.3 -12° 03.5	187° 47.7 -12° 18.0	202° 17.0 -12° 32.5	216° 46.3 -12° 46.9	231° 15.5 -13° 01.3	245° 44.8 -13° 15.5	260° 14.0 -13° 29.7	274° 43.1 -13° 43.7	289° 12.3 -13° 57.7	+29.3 -14.4	16.1 59.0

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 7 18h31 — Полнолуние: 15 23h03 — Последняя четв.: 23 10h20 — Новолуние: 30 02h36

СОЛНЦЕ

Октябрь 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	182° 31.6 -3° 00.9	197° 31.8 -3° 01.9	212° 32.0 -3° 02.9	227° 32.2 -3° 03.9	242° 32.5 -3° 04.8	257° 32.7 -3° 05.8	92° 35.3 -3° 18.4	107° 35.5 -3° 19.4	122° 35.7 -3° 20.3	137° 35.9 -3° 21.3	152° 36.1 -3° 22.3	167° 36.3 -3° 23.2	+0.2 -1.0
Сб 2	182° 36.5 -3° 24.2	197° 36.7 -3° 25.2	212° 36.9 -3° 26.2	227° 37.1 -3° 27.1	242° 37.3 -3° 28.1	257° 37.5 -3° 29.1	92° 40.0 -3° 41.6	107° 40.2 -3° 42.6	122° 40.4 -3° 43.6	137° 40.6 -3° 44.5	152° 40.8 -3° 45.5	167° 41.0 -3° 46.5	+0.2 -1.0
Вс 3	182° 41.2 -3° 47.4	197° 41.4 -3° 48.4	212° 41.6 -3° 49.4	227° 41.8 -3° 50.3	242° 42.0 -3° 51.3	257° 42.2 -3° 52.3	92° 44.8 -4° 04.8	107° 44.9 -4° 05.8	122° 45.1 -4° 06.8	137° 45.3 -4° 07.7	152° 45.5 -4° 08.7	167° 45.7 -4° 09.7	+0.2 -1.0
Пн 4	182° 45.9 -4° 10.6	197° 46.1 -4° 11.6	212° 46.3 -4° 12.6	227° 46.5 -4° 13.5	242° 46.7 -4° 14.5	257° 46.9 -4° 15.5	92° 49.4 -4° 28.0	107° 49.6 -4° 29.0	122° 49.8 -4° 29.9	137° 49.9 -4° 30.9	152° 50.1 -4° 31.8	167° 50.3 -4° 32.8	+0.2 -1.0
Вт 5	182° 50.5 -4° 33.8	197° 50.7 -4° 34.7	212° 50.9 -4° 35.7	227° 51.1 -4° 36.7	242° 51.3 -4° 37.6	257° 51.5 -4° 38.6	92° 53.9 -4° 51.1	107° 54.1 -4° 52.0	122° 54.3 -4° 53.0	137° 54.5 -4° 54.0	152° 54.7 -4° 54.9	167° 54.8 -4° 55.9	+0.2 -1.0
Ср 6	182° 55.0 -4° 56.9	197° 55.2 -4° 57.8	212° 55.4 -4° 58.8	227° 55.6 -4° 59.7	242° 55.8 -5° 00.7	257° 56.0 -5° 01.7	92° 58.4 -5° 14.1	107° 58.5 -5° 15.1	122° 58.7 -5° 16.0	137° 58.9 -5° 17.0	152° 59.1 -5° 18.0	167° 59.3 -5° 18.9	+0.2 -1.0
Чт 7	182° 59.5 -5° 19.9	197° 59.6 -5° 20.8	212° 59.8 -5° 21.8	228° 00.0 -5° 22.7	243° 00.2 -5° 23.7	258° 00.4 -5° 24.7	93° 02.7 -5° 37.1	108° 02.9 -5° 38.0	123° 03.1 -5° 39.0	138° 03.2 -5° 39.9	153° 03.4 -5° 40.9	168° 03.6 -5° 41.9	+0.2 -1.0
Пт 8	183° 03.8 -5° 42.8	198° 04.0 -5° 43.8	213° 04.1 -5° 44.7	228° 04.3 -5° 45.7	243° 04.5 -5° 46.6	258° 04.7 -5° 47.6	93° 07.0 -6° 00.0	108° 07.1 -6° 00.9	123° 07.3 -6° 01.9	138° 07.5 -6° 02.8	153° 07.7 -6° 03.8	168° 07.8 -6° 04.7	+0.2 -1.0
Сб 9	183° 08.0 -6° 05.7	198° 08.2 -6° 06.6	213° 08.4 -6° 07.6	228° 08.5 -6° 08.5	243° 08.7 -6° 09.5	258° 08.9 -6° 10.4	93° 11.1 -6° 22.8	108° 11.3 -6° 23.7	123° 11.5 -6° 24.7	138° 11.6 -6° 25.6	153° 11.8 -6° 26.6	168° 12.0 -6° 27.5	+0.2 -1.0
Вс 10	183° 12.1 -6° 28.5	198° 12.3 -6° 29.4	213° 12.5 -6° 30.4	228° 12.6 -6° 31.3	243° 12.8 -6° 32.3	258° 13.0 -6° 33.2	93° 15.1 -6° 45.5	108° 15.3 -6° 46.5	123° 15.5 -6° 47.4	138° 15.6 -6° 48.3	153° 15.8 -6° 49.3	168° 16.0 -6° 50.2	+0.2 -0.9
Пн 11	183° 16.1 -6° 51.2	198° 16.3 -6° 52.1	213° 16.5 -6° 53.1	228° 16.6 -6° 54.0	243° 16.8 -6° 54.9	258° 17.0 -6° 55.9	93° 19.1 -7° 08.1	108° 19.2 -7° 09.1	123° 19.4 -7° 10.0	138° 19.6 -7° 11.0	153° 19.7 -7° 11.9	168° 19.9 -7° 12.8	+0.2 -0.9
Вт 12	183° 20.0 -7° 13.8	198° 20.2 -7° 14.7	213° 20.4 -7° 15.7	228° 20.5 -7° 16.6	243° 20.7 -7° 17.5	258° 20.8 -7° 18.5	93° 22.9 -7° 30.7	108° 23.0 -7° 31.6	123° 23.2 -7° 32.5	138° 23.3 -7° 33.5	153° 23.5 -7° 34.4	168° 23.7 -7° 35.4	+0.2 -0.9
Ср 13	183° 23.8 -7° 36.3	198° 24.0 -7° 37.2	213° 24.1 -7° 38.2	228° 24.3 -7° 39.1	243° 24.4 -7° 40.0	258° 24.6 -7° 41.0	93° 26.6 -7° 53.1	108° 26.7 -7° 54.0	123° 26.9 -7° 55.0	138° 27.0 -7° 55.9	153° 27.2 -7° 56.8	168° 27.3 -7° 57.8	+0.2 -0.9
Чт 14	183° 27.5 -7° 58.7	198° 27.6 -7° 59.6	213° 27.8 -8° 00.6	228° 27.9 -8° 01.5	243° 28.1 -8° 02.4	258° 28.2 -8° 03.3	93° 30.1 -8° 15.4	108° 30.3 -8° 16.4	123° 30.4 -8° 17.3	138° 30.5 -8° 18.2	153° 30.7 -8° 19.1	168° 30.8 -8° 20.1	+0.1 -0.9
Пт 15	183° 31.0 -8° 21.0	198° 31.1 -8° 21.9	213° 31.3 -8° 22.8	228° 31.4 -8° 23.8	243° 31.5 -8° 24.7	258° 31.7 -8° 25.6	93° 33.5 -8° 37.6	108° 33.7 -8° 38.6	123° 33.8 -8° 39.5	138° 33.9 -8° 40.4	153° 34.1 -8° 41.3	168° 34.2 -8° 42.2	+0.1 -0.9
Сб 16	183° 34.4 -8° 43.2	198° 34.5 -8° 44.1	213° 34.6 -8° 45.0	228° 34.8 -8° 45.9	243° 34.9 -8° 46.8	258° 35.0 -8° 47.8	93° 36.8 -8° 59.7	108° 36.9 -9° 00.6	123° 37.1 -9° 01.6	138° 37.2 -9° 02.5	153° 37.3 -9° 03.4	168° 37.5 -9° 04.3	+0.1 -0.9
Вс 17	183° 37.6 -9° 05.2	198° 37.7 -9° 06.1	213° 37.9 -9° 07.0	228° 38.0 -9° 08.0	243° 38.1 -9° 08.9	258° 38.2 -9° 09.8	93° 39.9 -9° 21.7	108° 40.1 -9° 22.6	123° 40.2 -9° 23.5	138° 40.3 -9° 24.4	153° 40.4 -9° 25.3	168° 40.6 -9° 26.2	+0.1 -0.9
Пн 18	183° 40.7 -9° 27.1	198° 40.8 -9° 28.1	213° 40.9 -9° 29.0	228° 41.1 -9° 29.9	243° 41.2 -9° 30.8	258° 41.3 -9° 31.7	93° 42.9 -9° 43.5	108° 43.0 -9° 44.4	123° 43.1 -9° 45.3	138° 43.3 -9° 46.2	153° 43.4 -9° 47.1	168° 43.5 -9° 48.0	+0.1 -0.9
Вт 19	183° 43.6 -9° 48.9	198° 43.7 -9° 49.8	213° 43.9 -9° 50.7	228° 44.0 -9° 51.6	243° 44.1 -9° 52.6	258° 44.2 -9° 53.5	93° 45.7 -10° 05.2	108° 45.8 -10° 06.1	123° 45.9 -10° 07.0	138° 46.1 -10° 07.9	153° 46.2 -10° 08.8	168° 46.3 -10° 09.7	+0.1 -0.9
Ср 20	183° 46.4 -10° 10.6	198° 46.5 -10° 11.5	213° 46.6 -10° 12.4	228° 46.7 -10° 13.3	243° 46.8 -10° 14.2	258° 47.0 -10° 15.1	93° 48.4 -10° 26.7	108° 48.5 -10° 27.6	123° 48.6 -10° 28.5	138° 48.7 -10° 29.4	153° 48.8 -10° 30.3	168° 48.9 -10° 31.2	+0.1 -0.9
Чт 21	183° 49.0 -10° 32.1	198° 49.1 -10° 33.0	213° 49.2 -10° 33.9	228° 49.3 -10° 34.8	243° 49.4 -10° 35.7	258° 49.5 -10° 36.5	93° 50.9 -10° 48.1	108° 51.0 -10° 49.0	123° 51.1 -10° 49.9	138° 51.2 -10° 50.8	153° 51.3 -10° 51.7	168° 51.4 -10° 52.6	+0.1 -0.9
Пт 22	183° 51.5 -10° 53.4	198° 51.6 -10° 54.3	213° 51.7 -10° 55.2	228° 51.8 -10° 56.1	243° 51.9 -10° 57.0	258° 52.0 -10° 57.9	93° 53.2 -11° 09.3	108° 53.3 -11° 10.2	123° 53.4 -11° 11.1	138° 53.5 -11° 12.0	153° 53.6 -11° 12.9	168° 53.7 -11° 13.7	+0.1 -0.9
Сб 23	183° 53.7 -11° 14.6	198° 53.8 -11° 15.5	213° 53.9 -11° 16.4	228° 54.0 -11° 17.3	243° 54.1 -11° 18.1	258° 54.2 -11° 19.0	93° 55.3 -11° 30.4	108° 55.4 -11° 31.3	123° 55.5 -11° 32.2	138° 55.6 -11° 33.0	153° 55.7 -11° 33.9	168° 55.8 -11° 34.8	+0.1 -0.9
Вс 24	183° 55.8 -11° 35.6	198° 55.9 -11° 36.5	213° 56.0 -11° 37.4	228° 56.1 -11° 38.3	243° 56.2 -11° 39.1	258° 56.3 -11° 40.0	93° 57.3 -11° 51.3	108° 57.4 -11° 52.2	123° 57.5 -11° 53.0	138° 57.5 -11° 53.9	153° 57.6 -11° 54.8	168° 57.7 -11° 55.6	+0.1 -0.9
Пн 25	183° 57.8 -11° 56.5	198° 57.8 -11° 57.4	213° 57.9 -11° 58.2	228° 58.0 -11° 59.1	243° 58.1 -12° 00.0	258° 58.2 -12° 00.8	93° 59.1 -12° 12.0	108° 59.2 -12° 12.9	123° 59.2 -12° 13.7	138° 59.3 -12° 14.6	153° 59.4 -12° 15.5	168° 59.4 -12° 16.3	+0.1 -0.9
Вт 26	183° 59.5 -12° 17.2	198° 59.6 -12° 18.0	213° 59.7 -12° 18.9	228° 59.7 -12° 19.7	243° 59.8 -12° 20.6	258° 59.9 -12° 21.4	94° 00.7 -12° 32.5	109° 00.8 -12° 33.4	124° 00.8 -12° 34.2	139° 00.9 -12° 35.1	154° 00.9 -12° 35.9	169° 01.0 -12° 36.8	+0.1 -0.9
Ср 27	184° 01.1 -12° 37.6	199° 01.1 -12° 38.5	214° 01.2 -12° 39.3	229° 01.3 -12° 40.2	244° 01.3 -12° 41.0	259° 01.4 -12° 41.9	94° 02.1 -12° 52.9	109° 02.2 -12° 53.7	124° 02.2 -12° 54.6	139° 02.3 -12° 55.4	154° 02.3 -12° 56.2	169° 02.4 -12° 57.1	+0.1 -0.8
Чт 28	184° 02.4 -12° 57.9	199° 02.5 -12° 58.8	214° 02.5 -12° 59.6	229° 02.6 -13° 00.5	244° 02.6 -13° 01.3	259° 02.7 -13° 02.1	94° 03.3 -13° 13.0	109° 03.4 -13° 13.8	124° 03.4 -13° 14.7	139° 03.5 -13° 15.5	154° 03.5 -13° 16.3	169° 03.6 -13° 17.2	+0.1 -0.8
Пт 29	184° 03.6 -13° 18.0	199° 03.7 -13° 18.8	214° 03.7 -13° 19.7	229° 03.8 -13° 20.5	244° 03.8 -13° 21.3	259° 03.8 -13° 22.2	94° 04.4 -13° 32.9	109° 04.4 -13° 33.8	124° 04.5 -13° 34.6	139° 04.5 -13° 35.4	154° 04.5 -13° 36.2	169° 04.6 -13° 37.1	+0.0 -0.8
Сб 30	184° 04.6 -13° 37.9	199° 04.6 -13° 38.7	214° 04.7 -13° 39.5	229° 04.7 -13° 40.4	244° 04.7 -13° 41.2	259° 04.8 -13° 42.0	94° 05.2 -13° 52.7	109° 05.2 -13° 53.5	124° 05.3 -13° 54.3	139° 05.3 -13° 55.1	154° 05.3 -13° 55.9	169° 05.4 -13° 56.7	+0.0 -0.8
Вс 31	184° 05.4 -13° 57.5	199° 05.4 -13° 58.4	214° 05.5 -13° 59.2	229° 05.5 -14° 00.0	244° 05.5 -14° 00.8	259° 05.5 -14° 01.6	94° 05.9 -14° 12.1	109° 05.9 -14° 12.9	124° 05.9 -14° 13.8	139° 05.9 -14° 14.6	154° 06.0 -14° 15.4	169° 06.0 -14° 16.2	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2027

Д	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	Δ'/h	R/p
Пт 1	59° 33.0	74° 01.8	88° 30.6	102° 59.3	117° 28.0	131° 56.6	146° 25.3	160° 53.8	175° 22.4	189° 50.9	204° 19.4	+28.6	15.9
	-15° 59.3	-16° 12.3	-16° 25.2	-16° 38.0	-16° 50.7	-17° 03.3	-17° 15.8	-17° 28.2	-17° 40.4	-17° 52.6	-18° 04.6	-12.5	58.4
Сб 2	61° 22.3	75° 50.2	90° 18.1	104° 45.9	119° 13.8	133° 41.6	148° 09.3	162° 37.0	177° 04.7	191° 32.4	206° 00.0	+27.8	15.7
	-20° 50.9	-21° 00.9	-21° 10.9	-21° 20.7	-21° 30.4	-21° 40.0	-21° 49.4	-21° 58.7	-22° 07.9	-22° 16.9	-22° 25.8	-9.5	57.6
Вс 3	62° 51.5	77° 18.8	91° 46.0	106° 13.2	120° 40.4	135° 07.7	149° 34.8	164° 02.0	178° 29.2	192° 56.4	207° 23.5	+27.2	15.5
	-24° 22.5	-24° 29.2	-24° 35.7	-24° 42.0	-24° 48.2	-24° 54.3	-25° 00.2	-25° 06.0	-25° 11.6	-25° 17.1	-25° 22.4	-6.0	56.7
Пн 4	64° 10.7	78° 37.9	93° 05.1	107° 32.3	121° 59.5	136° 26.8	150° 54.0	165° 21.3	179° 48.6	194° 15.9	208° 43.2	+27.3	15.2
	-26° 24.6	-26° 27.6	-26° 30.4	-26° 33.0	-26° 35.5	-26° 37.9	-26° 40.1	-26° 42.2	-26° 44.1	-26° 45.9	-26° 47.6	-2.3	55.9
Вт 5	65° 36.7	80° 04.6	94° 32.5	109° 00.4	123° 28.4	137° 56.4	152° 24.5	166° 52.6	181° 20.7	195° 48.9	210° 17.2	+28.0	15.1
	-26° 54.7	-26° 54.1	-26° 53.3	-26° 52.3	-26° 51.2	-26° 50.0	-26° 48.7	-26° 47.2	-26° 45.5	-26° 43.8	-26° 41.9	+1.3	55.2
Ср 6	67° 27.5	81° 56.6	96° 25.8	110° 55.1	125° 24.4	139° 53.8	154° 23.3	168° 52.8	183° 22.4	197° 52.1	212° 21.8	+29.4	14.9
	-25° 57.5	-25° 53.6	-25° 49.5	-25° 45.2	-25° 40.9	-25° 36.4	-25° 31.8	-25° 27.1	-25° 22.3	-25° 17.3	-25° 12.3	+4.5	54.7
◐ Чт 7	69° 55.6	84° 26.4	98° 57.3	113° 28.2	127° 59.2	142° 30.3	157° 01.4	171° 32.6	186° 03.9	200° 35.3	215° 06.7	+31.1	14.8
	-23° 42.7	-23° 35.9	-23° 28.9	-23° 21.9	-23° 14.7	-23° 07.5	-23° 00.1	-22° 52.7	-22° 45.1	-22° 37.5	-22° 29.8	+7.3	54.3
Пт 8	84° 26.4	98° 57.3	113° 28.2	127° 59.2	142° 30.3	157° 01.4	171° 32.6	186° 03.9	200° 35.3	215° 06.7	229° 38.1	+31.2	14.8
	-23° 35.9	-23° 28.9	-23° 21.9	-23° 14.7	-23° 07.5	-23° 00.1	-22° 52.7	-22° 45.1	-22° 37.5	-22° 29.8	-22° 21.9	+7.4	54.3
Сб 9	87° 38.3	102° 10.8	116° 43.4	131° 16.0	145° 48.7	160° 21.5	174° 54.3	189° 27.2	204° 00.1	218° 33.2	233° 06.2	+32.8	14.8
	-20° 13.3	-20° 04.0	-19° 54.6	-19° 45.2	-19° 35.7	-19° 26.1	-19° 16.4	-19° 06.6	-18° 56.8	-18° 46.9	-18° 36.9	+9.6	54.2
Вс 10	91° 28.7	106° 02.6	120° 36.5	135° 10.5	149° 44.6	164° 18.7	178° 52.8	193° 27.0	208° 01.2	222° 35.4	237° 09.7	+34.1	14.8
	-15° 58.3	-15° 47.2	-15° 36.0	-15° 24.8	-15° 13.5	-15° 02.1	-14° 50.7	-14° 39.2	-14° 27.6	-14° 16.0	-14° 04.4	+11.4	54.2
Пн 11	95° 48.6	110° 23.4	124° 58.3	139° 33.2	154° 08.1	168° 43.0	183° 18.0	197° 53.0	212° 28.0	227° 03.0	241° 38.1	+35.0	14.8
	-11° 02.9	-10° 50.4	-10° 37.9	-10° 25.3	-10° 12.6	-10° 00.0	-9° 47.2	-9° 34.5	-9° 21.7	-9° 08.8	-8° 55.9	+12.7	54.4
Вт 12	100° 25.5	115° 00.7	129° 35.9	144° 11.2	158° 46.4	173° 21.7	187° 56.9	202° 32.1	217° 07.4	231° 42.6	246° 17.8	+35.2	14.9
	-5° 38.2	-5° 24.8	-5° 11.3	-4° 57.8	-4° 44.3	-4° 30.8	-4° 17.2	-4° 03.6	-3° 50.0	-3° 36.4	-3° 22.7	+13.6	54.7
Ср 13	105° 05.0	119° 40.0	134° 15.0	148° 50.0	163° 25.0	177° 59.9	192° 34.8	207° 09.7	221° 44.5	236° 19.3	250° 54.1	+34.9	15.0
	0° 04.4	0° 18.3	0° 32.2	0° 46.2	1° 00.1	1° 14.1	1° 28.0	1° 42.0	1° 55.9	2° 09.9	2° 23.8	+13.9	55.1
Чт 14	109° 31.8	124° 05.9	138° 40.1	153° 14.2	167° 48.2	182° 22.2	196° 56.1	211° 30.0	226° 03.8	240° 37.6	255° 11.3	+34.0	15.2
	5° 52.8	6° 06.7	6° 20.5	6° 34.4	6° 48.2	7° 02.0	7° 15.8	7° 29.5	7° 43.3	7° 57.0	8° 10.7	+13.8	55.6
○ Пт 15	113° 29.9	128° 02.6	142° 35.3	157° 07.8	171° 40.3	186° 12.8	200° 45.1	215° 17.4	229° 49.6	244° 21.7	258° 53.8	+32.4	15.3
	11° 32.7	11° 45.9	11° 59.1	12° 12.2	12° 25.2	12° 38.3	12° 51.2	13° 04.2	13° 17.0	13° 29.8	13° 42.6	+13.0	56.1
Сб 16	116° 44.6	131° 15.3	145° 45.9	160° 16.4	174° 46.8	189° 17.2	203° 47.4	218° 17.5	232° 47.6	247° 17.6	261° 47.4	+30.3	15.5
	16° 47.1	16° 58.9	17° 10.6	17° 22.2	17° 33.7	17° 45.2	17° 56.6	18° 07.9	18° 19.1	18° 30.3	18° 41.3	+11.4	56.7
Вс 17	119° 04.1	133° 32.5	148° 00.7	162° 28.8	176° 56.9	191° 24.9	205° 52.7	220° 20.5	234° 48.2	249° 15.7	263° 43.2	+27.9	15.6
	21° 15.9	21° 25.4	21° 34.8	21° 44.0	21° 53.2	22° 02.2	22° 11.2	22° 20.0	22° 28.7	22° 37.3	22° 45.7	+9.0	57.2
Пн 18	120° 24.5	134° 50.6	149° 16.6	163° 42.5	178° 08.3	192° 34.0	206° 59.7	221° 25.3	235° 50.8	250° 16.2	264° 41.6	+25.7	15.7
	24° 37.1	24° 43.4	24° 49.6	24° 55.6	25° 01.5	25° 07.3	25° 12.9	25° 18.3	25° 23.6	25° 28.8	25° 33.8	+5.7	57.7
Вт 19	120° 54.2	135° 18.6	149° 43.0	164° 07.3	178° 31.6	192° 55.8	207° 20.0	221° 44.2	236° 08.3	250° 32.4	264° 56.5	+24.2	15.8
	26° 29.8	26° 32.2	26° 34.5	26° 36.5	26° 38.5	26° 40.2	26° 41.8	26° 43.2	26° 44.4	26° 45.5	26° 46.4	+1.7	58.1
Ср 20	120° 55.4	135° 19.3	149° 43.1	164° 07.0	178° 30.9	192° 54.8	207° 18.7	221° 42.7	236° 06.6	250° 30.6	264° 54.6	+23.9	16.0
	26° 39.0	26° 37.1	26° 35.0	26° 32.8	26° 30.3	26° 27.8	26° 25.0	26° 22.1	26° 18.9	26° 15.7	26° 12.2	-2.7	58.5
Чт 21	120° 58.2	135° 22.8	149° 47.4	164° 12.1	178° 36.8	193° 01.5	207° 26.4	221° 51.2	236° 16.2	250° 41.2	265° 06.2	+24.8	16.0
	25° 00.0	24° 53.9	24° 47.6	24° 41.1	24° 34.5	24° 27.7	24° 20.8	24° 13.7	24° 06.4	23° 59.0	23° 51.4	-6.9	58.8
◑ Пт 22	121° 29.6	135° 55.7	150° 21.9	164° 48.1	179° 14.4	193° 40.8	208° 07.2	222° 33.8	237° 00.4	251° 27.0	265° 53.8	+26.4	16.1
	21° 40.1	21° 30.3	21° 20.3	21° 10.1	20° 59.8	20° 49.4	20° 38.9	20° 28.2	20° 17.4	20° 06.5	19° 55.4	-10.5	59.1
Сб 23	122° 43.6	137° 11.5	151° 39.4	166° 07.4	180° 35.5	195° 03.7	209° 31.9	224° 00.2	238° 28.5	252° 57.0	267° 25.4	+28.2	16.2
	16° 55.9	16° 43.1	16° 30.2	16° 17.2	16° 04.1	15° 50.8	15° 37.5	15° 24.1	15° 10.7	14° 57.1	14° 43.4	-13.3	59.3
Вс 24	124° 39.9	139° 09.3	153° 38.7	168° 08.2	182° 37.8	197° 07.4	211° 37.0	226° 06.7	240° 36.5	255° 06.2	269° 36.1	+29.6	16.2
	11° 09.1	10° 54.3	10° 39.4	10° 24.4	10° 09.4	9° 54.3	9° 39.2	9° 24.0	9° 08.7	8° 53.5	8° 38.1	-15.1	59.4
Пн 25	127° 07.7	141° 38.1	156° 08.4	170° 38.8	185° 09.2	199° 39.7	214° 10.1	228° 40.6	243° 11.1	257° 41.6	272° 12.1	+30.4	16.2
	4° 43.3	4° 27.4	4° 11.4	3° 55.5	3° 39.5	3° 23.5	3° 07.5	2° 51.5	2° 35.5	2° 19.4	2° 03.4	-16.0	59.4
Вт 26	129° 51.0	144° 21.6	158° 52.2	173° 22.8	187° 53.3	202° 23.9	216° 54.5	231° 25.1	245° 55.6	260° 26.1	274° 56.7	+30.6	16.1
	-1° 57.7	-2° 13.7	-2° 29.7	-2° 45.7	-3° 01.7	-3° 17.6	-3° 33.5	-3° 49.4	-4° 05.3	-4° 21.1	-4° 37.0	-15.9	59.2
Ср 27	132° 32.4	147° 02.6	161° 32.7	176° 02.8	190° 33.0	205° 03.0	219° 33.1	234° 03.1	248° 33.0	263° 03.0	277° 32.9	+30.1	16.1
	-8° 29.9	-8° 45.1	-9° 00.2	-9° 15.3	-9° 30.3	-9° 45.2	-10° 00.1	-10° 15.0	-10° 29.7	-10° 44.4	-10° 59.1	-14.9	58.9
Чт 28	134° 56.8	149° 26.1	163° 55.3	178° 24.4	192° 53.6	207° 22.7	221° 51.7	236° 20.7	250° 49.6	265° 18.5	279° 47.4	+29.1	15.9
	-14° 29.9	-14° 43.4	-14° 56.7	-15° 09.9	-15° 23.0	-15° 36.1	-15° 49.0	-16° 01.9	-16° 14.6	-16° 27.3	-16° 39.9	-13.0	58.4
● Пт 29	136° 54.4	151° 22.5	165° 50.6	180° 18.6	194° 46.6	209° 14.5	223° 42.3	238° 10.2	252° 37.9	267° 05.7	281° 33.4	+27.9	15.8
	-19° 35.5	-19° 46.3	-19° 57.0	-20° 07.5	-20° 18.0	-20° 28.3	-20° 38.5	-20° 48.6	-20° 58.5	-21° 08.3	-21° 18.0	-10.3	57.8
Сб 30	138° 24.1	152° 51.2	167° 18.3	181° 45.3	196° 12.3	210° 39.3	225° 06.3	239° 33.2	254° 00.1	268° 27.0	282° 53.9	+27.0	15.6
	-23° 27.3	-23° 34.9	-23° 42.2	-23° 49.5	-23° 56.6	-24° 03.5	-24° 10.3	-24° 17.0	-24° 23.5	-24° 29.9	-24° 36.1	-6.9	57.1
Вс 31	139° 35.2	154° 01.9	168° 28.6	182° 55.3	197° 22.0	211° 48.7	226° 15.4	240° 42.2	255° 08.9	269° 35.7	284° 02.4	+26.7	15.4
	-25° 51.7	-25° 55.5	-25° 59.2	-26° 02.7	-26° 06.1	-26° 09.4	-26° 12.5	-26° 15.4	-26° 18.2	-26° 20.8	-26° 23.3	-3.2	56.4

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 7 11h47 — Полнолуние: 15 13h47 — Последняя четв.: 22 17h29 — Новолуние: 29 13h36

СОЛНЦЕ

Ноябрь 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	184° 06.0 -14° 17.0	199° 06.0 -14° 17.8	214° 06.0 -14° 18.6	229° 06.1 -14° 19.4	244° 06.1 -14° 20.2	259° 06.1 -14° 21.0	94° 06.3 -14° 31.4	109° 06.3 -14° 32.2	124° 06.3 -14° 33.0	139° 06.4 -14° 33.8	154° 06.4 -14° 34.6	169° 06.4 -14° 35.4	+0.0 -0.8
Вт 2	184° 06.4 -14° 36.2	199° 06.4 -14° 37.0	214° 06.4 -14° 37.8	229° 06.4 -14° 38.6	244° 06.4 -14° 39.4	259° 06.5 -14° 40.2	94° 06.6 -14° 50.4	109° 06.6 -14° 51.2	124° 06.6 -14° 52.0	139° 06.6 -14° 52.8	154° 06.6 -14° 53.6	169° 06.6 -14° 54.4	+0.0 -0.8
Ср 3	184° 06.6 -14° 55.2	199° 06.6 -14° 55.9	214° 06.6 -14° 56.7	229° 06.6 -14° 57.5	244° 06.6 -14° 58.3	259° 06.6 -14° 59.1	94° 06.6 -15° 09.2	109° 06.6 -15° 10.0	124° 06.6 -15° 10.8	139° 06.6 -15° 11.6	154° 06.6 -15° 12.3	169° 06.6 -15° 13.1	+0.0 -0.8
Чт 4	184° 06.6 -15° 13.9	199° 06.6 -15° 14.7	214° 06.6 -15° 15.4	229° 06.6 -15° 16.2	244° 06.6 -15° 17.0	259° 06.6 -15° 17.7	94° 06.5 -15° 27.8	109° 06.5 -15° 28.5	124° 06.5 -15° 29.3	139° 06.5 -15° 30.1	154° 06.4 -15° 30.8	169° 06.4 -15° 31.6	-0.0 -0.8
Пт 5	184° 06.4 -15° 32.4	199° 06.4 -15° 33.1	214° 06.4 -15° 33.9	229° 06.4 -15° 34.6	244° 06.4 -15° 35.4	259° 06.4 -15° 36.2	94° 06.1 -15° 46.0	109° 06.1 -15° 46.8	124° 06.1 -15° 47.6	139° 06.1 -15° 48.3	154° 06.1 -15° 49.1	169° 06.0 -15° 49.8	-0.0 -0.8
Сб 6	184° 06.0 -15° 50.6	199° 06.0 -15° 51.3	214° 06.0 -15° 52.1	229° 06.0 -15° 52.8	244° 05.9 -15° 53.6	259° 05.9 -15° 54.3	94° 05.6 -16° 04.1	109° 05.6 -16° 04.8	124° 05.5 -16° 05.5	139° 05.5 -16° 06.3	154° 05.5 -16° 07.0	169° 05.4 -16° 07.8	-0.0 -0.8
Вс 7	184° 05.4 -16° 08.5	199° 05.4 -16° 09.3	214° 05.4 -16° 10.0	229° 05.3 -16° 10.7	244° 05.3 -16° 11.5	259° 05.3 -16° 12.2	94° 04.8 -16° 21.8	109° 04.8 -16° 22.5	124° 04.8 -16° 23.3	139° 04.7 -16° 24.0	154° 04.7 -16° 24.7	169° 04.7 -16° 25.5	-0.0 -0.7
Пн 8	184° 04.6 -16° 26.2	199° 04.6 -16° 26.9	214° 04.5 -16° 27.7	229° 04.5 -16° 28.4	244° 04.5 -16° 29.1	259° 04.4 -16° 29.9	94° 03.9 -16° 39.3	109° 03.8 -16° 40.0	124° 03.8 -16° 40.7	139° 03.7 -16° 41.4	154° 03.7 -16° 42.2	169° 03.6 -16° 42.9	-0.0 -0.7
Вт 9	184° 03.6 -16° 43.6	199° 03.6 -16° 44.3	214° 03.5 -16° 45.0	229° 03.5 -16° 45.8	244° 03.4 -16° 46.5	259° 03.4 -16° 47.2	94° 02.7 -16° 56.5	109° 02.7 -16° 57.2	124° 02.6 -16° 57.9	139° 02.5 -16° 58.6	154° 02.5 -16° 59.3	169° 02.4 -17° 00.0	-0.0 -0.7
Ср 10	184° 02.4 -17° 00.7	199° 02.3 -17° 01.4	214° 02.3 -17° 02.1	229° 02.2 -17° 02.8	244° 02.2 -17° 03.6	259° 02.1 -17° 04.3	94° 01.3 -17° 13.4	109° 01.3 -17° 14.1	124° 01.2 -17° 14.8	139° 01.1 -17° 15.5	154° 01.1 -17° 16.2	169° 01.0 -17° 16.9	-0.1 -0.7
Чт 11	184° 01.0 -17° 17.6	199° 00.9 -17° 18.3	214° 00.8 -17° 18.9	229° 00.8 -17° 19.6	244° 00.7 -17° 20.3	259° 00.6 -17° 21.0	93° 59.8 -17° 30.0	108° 59.7 -17° 30.7	123° 59.6 -17° 31.4	138° 59.5 -17° 32.0	153° 59.5 -17° 32.7	168° 59.4 -17° 33.4	-0.1 -0.7
Пт 12	183° 59.3 -17° 34.1	198° 59.3 -17° 34.8	213° 59.2 -17° 35.5	228° 59.1 -17° 36.1	243° 59.0 -17° 36.8	258° 59.0 -17° 37.5	93° 58.0 -17° 46.3	108° 57.9 -17° 47.0	123° 57.8 -17° 47.6	138° 57.7 -17° 48.3	153° 57.6 -17° 49.0	168° 57.6 -17° 49.7	-0.1 -0.7
Сб 13	183° 57.5 -17° 50.3	198° 57.4 -17° 51.0	213° 57.3 -17° 51.7	228° 57.2 -17° 52.3	243° 57.1 -17° 53.0	258° 57.1 -17° 53.7	93° 56.0 -18° 02.3	108° 55.9 -18° 03.0	123° 55.8 -18° 03.6	138° 55.7 -18° 04.3	153° 55.6 -18° 04.9	168° 55.5 -18° 05.6	-0.1 -0.7
Вс 14	183° 55.4 -18° 06.2	198° 55.3 -18° 06.9	213° 55.2 -18° 07.6	228° 55.1 -18° 08.2	243° 55.1 -18° 08.9	258° 55.0 -18° 09.5	93° 53.7 -18° 18.0	108° 53.6 -18° 18.6	123° 53.5 -18° 19.3	138° 53.4 -18° 19.9	153° 53.3 -18° 20.6	168° 53.3 -18° 21.2	-0.1 -0.7
Пн 15	183° 53.2 -18° 21.9	198° 53.1 -18° 22.5	213° 53.0 -18° 23.1	228° 52.9 -18° 23.8	243° 52.8 -18° 24.4	258° 52.7 -18° 25.1	93° 51.3 -18° 33.3	108° 51.2 -18° 34.0	123° 51.1 -18° 34.6	138° 51.0 -18° 35.2	153° 50.9 -18° 35.9	168° 50.8 -18° 36.5	-0.1 -0.6
Вт 16	183° 50.7 -18° 37.1	198° 50.6 -18° 37.8	213° 50.5 -18° 38.4	228° 50.3 -18° 39.0	243° 50.2 -18° 39.7	258° 50.1 -18° 40.3	93° 48.7 -18° 48.4	108° 48.6 -18° 49.0	123° 48.4 -18° 49.6	138° 48.3 -18° 50.2	153° 48.2 -18° 50.9	168° 48.1 -18° 51.5	-0.1 -0.6
Ср 17	183° 48.0 -18° 52.1	198° 47.9 -18° 52.7	213° 47.7 -18° 53.3	228° 47.6 -18° 53.9	243° 47.5 -18° 54.6	258° 47.4 -18° 55.2	93° 45.8 -19° 03.1	108° 45.7 -19° 03.7	123° 45.6 -19° 04.3	138° 45.4 -19° 04.9	153° 45.3 -19° 05.5	168° 45.2 -19° 06.1	-0.1 -0.6
Чт 18	183° 45.1 -19° 06.7	198° 44.9 -19° 07.3	213° 44.8 -19° 07.9	228° 44.7 -19° 08.5	243° 44.6 -19° 09.1	258° 44.4 -19° 09.7	93° 42.8 -19° 17.5	108° 42.6 -19° 18.1	123° 42.5 -19° 18.7	138° 42.4 -19° 19.2	153° 42.2 -19° 19.8	168° 42.1 -19° 20.4	-0.1 -0.6
Пт 19	183° 42.0 -19° 21.0	198° 41.8 -19° 21.6	213° 41.7 -19° 22.2	228° 41.6 -19° 22.8	243° 41.4 -19° 23.4	258° 41.3 -19° 23.9	93° 39.5 -19° 31.5	108° 39.3 -19° 32.1	123° 39.2 -19° 32.7	138° 39.1 -19° 33.2	153° 38.9 -19° 33.8	168° 38.8 -19° 34.4	-0.1 -0.6
Сб 20	183° 38.6 -19° 34.9	198° 38.5 -19° 35.5	213° 38.3 -19° 36.1	228° 38.2 -19° 36.7	243° 38.1 -19° 37.2	258° 37.9 -19° 37.8	93° 36.0 -19° 45.2	108° 35.8 -19° 45.7	123° 35.7 -19° 46.3	138° 35.5 -19° 46.9	153° 35.4 -19° 47.4	168° 35.2 -19° 48.0	-0.1 -0.6
Вс 21	183° 35.1 -19° 48.5	198° 34.9 -19° 49.1	213° 34.8 -19° 49.7	228° 34.6 -19° 50.2	243° 34.5 -19° 50.8	258° 34.3 -19° 51.3	93° 32.3 -19° 58.5	108° 32.1 -19° 59.0	123° 32.0 -19° 59.6	138° 31.8 -20° 00.1	153° 31.7 -20° 00.7	168° 31.5 -20° 01.2	-0.2 -0.6
Пн 22	183° 31.3 -20° 01.8	198° 31.2 -20° 02.3	213° 31.0 -20° 02.8	228° 30.9 -20° 03.4	243° 30.7 -20° 03.9	258° 30.5 -20° 04.5	93° 28.4 -20° 11.4	108° 28.2 -20° 12.0	123° 28.1 -20° 12.5	138° 27.9 -20° 13.0	153° 27.7 -20° 13.6	168° 27.6 -20° 14.1	-0.2 -0.5
Вт 23	183° 27.4 -20° 14.6	198° 27.2 -20° 15.1	213° 27.1 -20° 15.7	228° 26.9 -20° 16.2	243° 26.7 -20° 16.7	258° 26.5 -20° 17.3	93° 24.3 -20° 24.0	108° 24.1 -20° 24.5	123° 23.9 -20° 25.1	138° 23.8 -20° 25.6	153° 23.6 -20° 26.1	168° 23.4 -20° 26.6	-0.2 -0.5
Ср 24	183° 23.2 -20° 27.1	198° 23.1 -20° 27.6	213° 22.9 -20° 28.1	228° 22.7 -20° 28.6	243° 22.5 -20° 29.2	258° 22.4 -20° 29.7	93° 20.0 -20° 36.2	108° 19.8 -20° 36.7	123° 19.6 -20° 37.2	138° 19.4 -20° 37.7	153° 19.3 -20° 38.2	168° 19.1 -20° 38.7	-0.2 -0.5
Чт 25	183° 18.9 -20° 39.2	198° 18.7 -20° 39.7	213° 18.5 -20° 40.2	228° 18.3 -20° 40.7	243° 18.1 -20° 41.2	258° 18.0 -20° 41.7	93° 15.5 -20° 48.1	108° 15.3 -20° 48.5	123° 15.1 -20° 49.0	138° 14.9 -20° 49.5	153° 14.7 -20° 50.0	168° 14.5 -20° 50.5	-0.2 -0.5
Пт 26	183° 14.3 -20° 50.9	198° 14.2 -20° 51.4	213° 14.0 -20° 51.9	228° 13.8 -20° 52.4	243° 13.6 -20° 52.9	258° 13.4 -20° 53.3	93° 10.8 -20° 59.5	108° 10.6 -21° 00.0	123° 10.4 -21° 00.4	138° 10.2 -21° 00.9	153° 10.0 -21° 01.4	168° 09.8 -21° 01.8	-0.2 -0.5
Сб 27	183° 09.6 -21° 02.3	198° 09.4 -21° 02.8	213° 09.2 -21° 03.2	228° 09.0 -21° 03.7	243° 08.8 -21° 04.1	258° 08.6 -21° 04.6	93° 05.9 -21° 10.5	108° 05.7 -21° 11.0	123° 05.5 -21° 11.4	138° 05.3 -21° 11.9	153° 05.1 -21° 12.3	168° 04.9 -21° 12.8	-0.2 -0.5
Вс 28	183° 04.7 -21° 13.2	198° 04.5 -21° 13.7	213° 04.3 -21° 14.1	228° 04.1 -21° 14.6	243° 03.9 -21° 15.0	258° 03.6 -21° 15.5	93° 00.9 -21° 21.2	108° 00.7 -21° 21.6	123° 00.5 -21° 22.0	138° 00.2 -21° 22.5	153° 00.0 -21° 22.9	167° 59.8 -21° 23.3	-0.2 -0.4
Пн 29	182° 59.6 -21° 23.8	197° 59.4 -21° 24.2	212° 59.2 -21° 24.6	227° 58.9 -21° 25.1	242° 58.7 -21° 25.5	257° 58.5 -21° 25.9	92° 55.7 -21° 31.4	107° 55.4 -21° 31.8	122° 55.2 -21° 32.3	137° 55.0 -21° 32.7	152° 54.8 -21° 33.1	167° 54.6 -21° 33.5	-0.2 -0.4
Вт 30	182° 54.3 -21° 33.9	197° 54.1 -21° 34.3	212° 53.9 -21° 34.7	227° 53.7 -21° 35.2	242° 53.4 -21° 35.6	257° 53.2 -21° 36.0	92° 50.3 -21° 41.2	107° 50.0 -21° 41.6	122° 49.8 -21° 42.0	137° 49.6 -21° 42.4	152° 49.3 -21° 42.8	167° 49.1 -21° 43.2	-0.2 -0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2027

Д	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	Δ'/h	R/p
Пн 1	54° 04.0	68° 31.0	82° 58.0	97° 25.0	111° 52.1	126° 19.1	140° 46.3	155° 13.4	169° 40.6	184° 07.8	198° 35.1	+27.1	15.2
	-26° 38.9	-26° 39.9	-26° 40.7	-26° 41.4	-26° 41.9	-26° 42.3	-26° 42.6	-26° 42.7	-26° 42.6	-26° 42.4	-26° 42.1	-0.3	55.8
Вт 2	55° 29.6	69° 57.6	84° 25.7	98° 53.9	113° 22.1	127° 50.4	142° 18.8	156° 47.2	171° 15.7	185° 44.2	200° 12.8	+28.3	15.1
	-26° 20.0	-26° 17.5	-26° 14.8	-26° 11.9	-26° 08.9	-26° 05.8	-26° 02.6	-25° 59.2	-25° 55.7	-25° 52.1	-25° 48.3	+3.2	55.2
Ср 3	57° 30.2	71° 59.9	86° 29.7	100° 59.6	115° 29.5	129° 59.6	144° 29.7	158° 59.8	173° 30.1	188° 00.4	202° 30.8	+30.1	14.9
	-24° 37.2	-24° 31.5	-24° 25.7	-24° 19.7	-24° 13.7	-24° 07.6	-24° 01.3	-23° 55.0	-23° 48.5	-23° 41.9	-23° 35.2	+6.2	54.7
Чт 4	60° 15.8	74° 47.4	89° 19.1	103° 50.9	118° 22.7	132° 54.6	147° 26.5	161° 58.5	176° 30.7	191° 02.8	205° 35.1	+31.9	14.8
	-21° 42.9	-21° 34.6	-21° 26.3	-21° 17.8	-21° 09.3	-21° 00.7	-20° 52.0	-20° 43.2	-20° 34.3	-20° 25.4	-20° 16.3	+8.7	54.4
Пт 5	63° 46.8	78° 20.1	92° 53.4	107° 26.8	122° 00.3	136° 33.8	151° 07.4	165° 41.0	180° 14.7	194° 48.5	209° 22.3	+33.6	14.8
	-17° 51.2	-17° 40.9	-17° 30.6	-17° 20.2	-17° 09.7	-16° 59.1	-16° 48.5	-16° 37.8	-16° 27.1	-16° 16.3	-16° 05.4	+10.6	54.2
◐ Сб 6	67° 55.4	82° 29.9	97° 04.5	111° 39.2	126° 13.9	140° 48.6	155° 23.3	169° 58.1	184° 32.9	199° 07.8	213° 42.7	+34.7	14.8
	-13° 15.1	-13° 03.3	-12° 51.5	-12° 39.6	-12° 27.7	-12° 15.7	-12° 03.6	-11° 51.5	-11° 39.4	-11° 27.2	-11° 14.9	+12.0	54.2
Вс 7	82° 29.9	97° 04.5	111° 39.2	126° 13.9	140° 48.6	155° 23.3	169° 58.1	184° 32.9	199° 07.8	213° 42.7	228° 17.6	+34.8	14.8
	-13° 03.3	-12° 51.5	-12° 39.6	-12° 27.7	-12° 15.7	-12° 03.6	-11° 51.5	-11° 39.4	-11° 27.2	-11° 14.9	-11° 02.7	+12.1	54.2
Пн 8	87° 04.6	101° 39.8	116° 15.2	130° 50.5	145° 25.8	160° 01.2	174° 36.5	189° 11.9	203° 47.2	218° 22.6	232° 58.0	+35.3	14.8
	-7° 53.4	-7° 40.5	-7° 27.6	-7° 14.6	-7° 01.5	-6° 48.5	-6° 35.4	-6° 22.3	-6° 09.1	-5° 56.0	-5° 42.8	+13.1	54.5
Вт 9	91° 48.8	106° 24.2	120° 59.5	135° 34.8	150° 10.1	164° 45.4	179° 20.7	193° 56.0	208° 31.2	223° 06.4	237° 41.6	+35.3	15.0
	-2° 21.6	-2° 08.0	-1° 54.4	-1° 40.8	-1° 27.2	-1° 13.5	-0° 59.9	-0° 46.2	-0° 32.5	-0° 18.8	-0° 05.1	+13.7	54.8
Ср 10	96° 26.3	111° 01.0	125° 35.7	140° 10.3	154° 44.9	169° 19.4	183° 54.0	198° 28.4	213° 02.8	227° 37.2	242° 11.5	+34.5	15.1
	3° 21.6	3° 35.4	3° 49.2	4° 03.0	4° 16.8	4° 30.6	4° 44.3	4° 58.1	5° 11.9	5° 25.7	5° 39.4	+13.8	55.4
Чт 11	100° 39.6	115° 13.0	129° 46.3	144° 19.6	158° 52.7	173° 25.8	187° 58.9	202° 31.8	217° 04.7	231° 37.5	246° 10.3	+33.1	15.3
	9° 04.0	9° 17.5	9° 31.0	9° 44.4	9° 57.8	10° 11.2	10° 24.5	10° 37.9	10° 51.1	11° 04.4	11° 17.6	+13.4	56.0
Пт 12	104° 11.6	118° 43.0	133° 14.3	147° 45.5	162° 16.6	176° 47.6	191° 18.5	205° 49.3	220° 20.1	234° 50.7	249° 21.2	+31.0	15.5
	14° 30.7	14° 43.2	14° 55.7	15° 08.0	15° 20.3	15° 32.6	15° 44.8	15° 56.9	16° 09.0	16° 21.0	16° 32.9	+12.2	56.7
Сб 13	106° 47.1	121° 15.9	135° 44.7	150° 13.4	164° 42.0	179° 10.4	193° 38.8	208° 07.0	222° 35.2	237° 03.2	251° 31.1	+28.4	15.7
	19° 22.6	19° 33.2	19° 43.8	19° 54.2	20° 04.6	20° 14.8	20° 25.0	20° 35.0	20° 44.9	20° 54.8	21° 04.5	+10.2	57.4
○ Вс 14	108° 17.2	122° 43.5	137° 09.6	151° 35.6	166° 01.6	180° 27.4	194° 53.2	209° 18.8	223° 44.4	238° 09.8	252° 35.2	+25.8	15.8
	23° 16.6	23° 24.4	23° 32.1	23° 39.6	23° 47.0	23° 54.3	24° 01.4	24° 08.4	24° 15.2	24° 21.9	24° 28.5	+7.2	58.0
Пн 15	108° 45.5	123° 09.6	137° 33.6	151° 57.5	166° 21.4	180° 45.2	195° 09.0	209° 32.7	223° 56.3	238° 19.9	252° 43.5	+23.8	16.0
	25° 48.4	25° 52.4	25° 56.3	26° 00.0	26° 03.5	26° 06.9	26° 10.1	26° 13.2	26° 16.0	26° 18.7	26° 21.2	+3.3	58.6
Вт 16	108° 32.1	122° 55.1	137° 18.2	151° 41.2	166° 04.2	180° 27.2	194° 50.3	209° 13.3	223° 36.3	237° 59.3	252° 22.4	+23.0	16.1
	26° 37.6	26° 37.2	26° 36.7	26° 36.0	26° 35.1	26° 34.0	26° 32.8	26° 31.3	26° 29.7	26° 27.9	26° 25.9	-1.2	59.0
Ср 17	108° 10.6	122° 34.1	136° 57.6	151° 21.2	165° 44.9	180° 08.5	194° 32.3	208° 56.1	223° 19.9	237° 43.8	252° 07.8	+23.7	16.1
	25° 34.6	25° 29.8	25° 24.8	25° 19.6	25° 14.3	25° 08.8	25° 03.1	24° 57.2	24° 51.2	24° 45.0	24° 38.7	-5.6	59.2
Чт 18	108° 15.5	122° 40.6	137° 05.8	151° 31.1	165° 56.4	180° 21.8	194° 47.4	209° 13.0	223° 38.7	238° 04.4	252° 30.3	+25.5	16.2
	22° 44.3	22° 35.5	22° 26.5	22° 17.4	22° 08.1	21° 58.7	21° 49.2	21° 39.5	21° 29.7	21° 19.7	21° 09.6	-9.5	59.3
Пт 19	109° 08.4	123° 35.7	138° 03.0	152° 30.4	166° 57.9	181° 25.5	195° 53.1	210° 20.9	224° 48.7	239° 16.6	253° 44.6	+27.6	16.2
	18° 23.6	18° 11.7	17° 59.6	17° 47.4	17° 35.1	17° 22.7	17° 10.2	16° 57.6	16° 44.9	16° 32.1	16° 19.3	-12.4	59.3
Сб 20	110° 53.8	125° 23.0	139° 52.2	154° 21.6	168° 51.0	183° 20.5	197° 50.0	212° 19.6	226° 49.3	241° 19.0	255° 48.8	+29.5	16.1
	12° 56.1	12° 42.0	12° 27.8	12° 13.5	11° 59.2	11° 44.8	11° 30.3	11° 15.8	11° 01.2	10° 46.6	10° 31.9	-14.4	59.2
◑ Вс 21	113° 22.2	127° 52.8	142° 23.4	156° 54.1	171° 24.8	185° 55.6	200° 26.4	214° 57.2	229° 28.1	243° 59.0	258° 30.0	+30.8	16.1
	6° 46.3	6° 31.0	6° 15.6	6° 00.2	5° 44.8	5° 29.3	5° 13.9	4° 58.4	4° 42.9	4° 27.3	4° 11.8	-15.5	59.0
Пн 22	116° 16.9	130° 48.2	145° 19.5	159° 50.8	174° 22.1	188° 53.4	203° 24.7	217° 56.0	232° 27.4	246° 58.7	261° 30.0	+31.3	16.0
	0° 17.4	0° 01.7	-0° 13.9	-0° 29.5	-0° 45.2	-1° 00.8	-1° 16.4	-1° 32.0	-1° 47.6	-2° 03.1	-2° 18.7	-15.6	58.7
Вт 23	119° 19.2	133° 50.4	148° 21.5	162° 52.7	177° 23.8	191° 54.9	206° 26.0	220° 57.0	235° 28.1	249° 59.1	264° 30.1	+31.1	15.9
	-6° 09.2	-6° 24.3	-6° 39.4	-6° 54.4	-7° 09.4	-7° 24.4	-7° 39.3	-7° 54.2	-8° 09.0	-8° 23.8	-8° 38.5	-14.9	58.4
Ср 24	122° 10.9	136° 41.4	151° 11.8	165° 42.1	180° 12.4	194° 42.7	209° 12.9	223° 43.1	238° 13.2	252° 43.3	267° 13.3	+30.2	15.8
	-12° 12.9	-12° 26.7	-12° 40.4	-12° 54.0	-13° 07.6	-13° 21.1	-13° 34.5	-13° 47.9	-14° 01.2	-14° 14.4	-14° 27.5	-13.5	58.0
Чт 25	124° 38.0	139° 07.2	153° 36.4	168° 05.6	182° 34.6	197° 03.7	211° 32.6	226° 01.6	240° 30.4	254° 59.2	269° 28.0	+29.0	15.7
	-17° 33.8	-17° 45.4	-17° 57.0	-18° 08.5	-18° 19.8	-18° 31.1	-18° 42.2	-18° 53.3	-19° 04.2	-19° 15.1	-19° 25.8	-11.2	57.5
Пт 26	126° 33.2	141° 01.1	155° 29.0	169° 56.9	184° 24.7	198° 52.5	213° 20.2	227° 47.8	242° 15.5	256° 43.1	271° 10.6	+27.7	15.5
	-21° 52.7	-22° 01.5	-22° 10.2	-22° 18.8	-22° 27.2	-22° 35.5	-22° 43.7	-22° 51.8	-22° 59.7	-23° 07.5	-23° 15.1	-8.2	57.0
Сб 27	127° 59.4	142° 26.4	156° 53.4	171° 20.3	185° 47.3	200° 14.2	214° 41.1	229° 08.0	243° 34.9	258° 01.7	272° 28.6	+26.9	15.4
	-24° 53.2	-24° 58.6	-25° 03.9	-25° 09.0	-25° 14.0	-25° 18.8	-25° 23.5	-25° 28.1	-25° 32.4	-25° 36.7	-25° 40.8	-4.8	56.5
● Вс 28	129° 10.7	143° 37.5	158° 04.4	172° 31.2	186° 58.1	201° 25.0	215° 51.9	230° 18.9	244° 45.8	259° 12.8	273° 39.8	+26.9	15.2
	-26° 24.4	-26° 26.1	-26° 27.6	-26° 29.0	-26° 30.3	-26° 31.4	-26° 32.4	-26° 33.2	-26° 33.9	-26° 34.4	-26° 34.8	-1.0	55.9
Пн 29	130° 28.9	144° 56.5	159° 24.2	173° 51.9	188° 19.7	202° 47.5	217° 15.3	231° 43.2	246° 11.2	260° 39.2	275° 07.3	+27.8	15.1
	-26° 23.1	-26° 21.2	-26° 19.1	-26° 16.9	-26° 14.6	-26° 12.1	-26° 09.5	-26° 06.8	-26° 03.9	-26° 00.9	-25° 57.7	+2.5	55.4
Вт 30	132° 16.2	146° 45.3	161° 14.5	175° 43.8	190° 13.2	204° 42.6	219° 12.1	233° 41.7	248° 11.3	262° 41.1	277° 10.9	+29.5	15.0
	-24° 55.0	-24° 49.9	-24° 44.6	-24° 39.2	-24° 33.6	-24° 28.0	-24° 22.2	-24° 16.3	-24° 10.3	-24° 04.2	-23° 58.0	+5.7	54.9

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 6 08h00 — Полнолуние: 14 03h25 — Последняя четв.: 21 00h48 — Новолуние: 28 03h24

СОЛНЦЕ

Декабрь 2027

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	182° 48.9	197° 48.7	212° 48.4	227° 48.2	242° 48.0	257° 47.7	92° 44.7	107° 44.5	122° 44.2	137° 44.0	152° 43.8	167° 43.5	-0.2
	-21° 43.6	-21° 44.0	-21° 44.4	-21° 44.8	-21° 45.2	-21° 45.6	-21° 50.7	-21° 51.0	-21° 51.4	-21° 51.8	-21° 52.2	-21° 52.6	-0.4
Чт 2	182° 43.3	197° 43.1	212° 42.8	227° 42.6	242° 42.3	257° 42.1	92° 39.0	107° 38.7	122° 38.5	137° 38.3	152° 38.0	167° 37.8	-0.2
	-21° 53.0	-21° 53.3	-21° 53.7	-21° 54.1	-21° 54.5	-21° 54.8	-21° 59.7	-22° 00.0	-22° 00.4	-22° 00.8	-22° 01.1	-22° 01.5	-0.4
Пт 3	182° 37.5	197° 37.3	212° 37.1	227° 36.8	242° 36.6	257° 36.3	92° 33.1	107° 32.9	122° 32.6	137° 32.4	152° 32.1	167° 31.9	-0.2
	-22° 01.8	-22° 02.2	-22° 02.6	-22° 02.9	-22° 03.3	-22° 03.6	-22° 08.2	-22° 08.6	-22° 08.9	-22° 09.3	-22° 09.6	-22° 10.0	-0.4
Сб 4	182° 31.6	197° 31.4	212° 31.1	227° 30.9	242° 30.6	257° 30.4	92° 27.1	107° 26.9	122° 26.6	137° 26.3	152° 26.1	167° 25.8	-0.2
	-22° 10.3	-22° 10.7	-22° 11.0	-22° 11.3	-22° 11.7	-22° 12.0	-22° 16.4	-22° 16.7	-22° 17.0	-22° 17.4	-22° 17.7	-22° 18.0	-0.3
Вс 5	182° 25.6	197° 25.3	212° 25.1	227° 24.8	242° 24.6	257° 24.3	92° 21.0	107° 20.7	122° 20.4	137° 20.2	152° 19.9	167° 19.7	-0.3
	-22° 18.3	-22° 18.7	-22° 19.0	-22° 19.3	-22° 19.6	-22° 20.0	-22° 24.1	-22° 24.4	-22° 24.7	-22° 25.0	-22° 25.3	-22° 25.6	-0.3
Пн 6	182° 19.4	197° 19.1	212° 18.9	227° 18.6	242° 18.4	257° 18.1	92° 14.7	107° 14.4	122° 14.2	137° 13.9	152° 13.6	167° 13.4	-0.3
	-22° 26.0	-22° 26.3	-22° 26.6	-22° 26.9	-22° 27.2	-22° 27.5	-22° 31.4	-22° 31.7	-22° 32.0	-22° 32.3	-22° 32.5	-22° 32.8	-0.3
Вт 7	182° 13.1	197° 12.8	212° 12.6	227° 12.3	242° 12.0	257° 11.8	92° 08.3	107° 08.0	122° 07.7	137° 07.5	152° 07.2	167° 06.9	-0.3
	-22° 33.1	-22° 33.4	-22° 33.7	-22° 34.0	-22° 34.3	-22° 34.6	-22° 38.2	-22° 38.5	-22° 38.8	-22° 39.0	-22° 39.3	-22° 39.6	-0.3
Ср 8	182° 06.7	197° 06.4	212° 06.1	227° 05.8	242° 05.6	257° 05.3	92° 01.7	107° 01.5	122° 01.2	137° 00.9	152° 00.6	167° 00.4	-0.3
	-22° 39.8	-22° 40.1	-22° 40.4	-22° 40.7	-22° 40.9	-22° 41.2	-22° 44.6	-22° 44.9	-22° 45.1	-22° 45.4	-22° 45.6	-22° 45.9	-0.3
Чт 9	182° 00.1	196° 59.8	211° 59.5	226° 59.3	241° 59.0	256° 58.7	91° 55.1	106° 54.8	121° 54.6	136° 54.3	151° 54.0	166° 53.7	-0.3
	-22° 46.1	-22° 46.4	-22° 46.6	-22° 46.9	-22° 47.1	-22° 47.4	-22° 50.6	-22° 50.8	-22° 51.0	-22° 51.3	-22° 51.5	-22° 51.7	-0.3
Пт 10	181° 53.4	196° 53.2	211° 52.9	226° 52.6	241° 52.3	256° 52.0	91° 48.4	106° 48.1	121° 47.8	136° 47.5	151° 47.2	166° 47.0	-0.3
	-22° 52.0	-22° 52.2	-22° 52.4	-22° 52.7	-22° 52.9	-22° 53.1	-22° 56.1	-22° 56.3	-22° 56.5	-22° 56.7	-22° 56.9	-22° 57.1	-0.2
Сб 11	181° 46.7	196° 46.4	211° 46.1	226° 45.8	241° 45.5	256° 45.2	91° 41.5	106° 41.2	121° 41.0	136° 40.7	151° 40.4	166° 40.1	-0.3
	-22° 57.4	-22° 57.6	-22° 57.8	-22° 58.0	-22° 58.2	-22° 58.4	-23° 01.1	-23° 01.3	-23° 01.5	-23° 01.7	-23° 01.9	-23° 02.1	-0.2
Вс 12	181° 39.8	196° 39.5	211° 39.2	226° 38.9	241° 38.7	256° 38.4	91° 34.6	106° 34.3	121° 34.0	136° 33.7	151° 33.4	166° 33.1	-0.3
	-23° 02.3	-23° 02.5	-23° 02.7	-23° 02.9	-23° 03.1	-23° 03.3	-23° 05.7	-23° 05.9	-23° 06.1	-23° 06.2	-23° 06.4	-23° 06.6	-0.2
Пн 13	181° 32.8	196° 32.6	211° 32.3	226° 32.0	241° 31.7	256° 31.4	91° 27.6	106° 27.3	121° 27.0	136° 26.7	151° 26.4	166° 26.1	-0.3
	-23° 06.8	-23° 06.9	-23° 07.1	-23° 07.3	-23° 07.5	-23° 07.6	-23° 09.8	-23° 10.0	-23° 10.1	-23° 10.3	-23° 10.5	-23° 10.6	-0.2
Вт 14	181° 25.8	196° 25.5	211° 25.2	226° 24.9	241° 24.6	256° 24.3	91° 20.5	106° 20.2	121° 19.9	136° 19.6	151° 19.3	166° 19.0	-0.3
	-23° 10.8	-23° 10.9	-23° 11.1	-23° 11.3	-23° 11.4	-23° 11.6	-23° 13.5	-23° 13.6	-23° 13.8	-23° 13.9	-23° 14.1	-23° 14.2	-0.2
Ср 15	181° 18.7	196° 18.4	211° 18.1	226° 17.8	241° 17.5	256° 17.2	91° 13.3	106° 13.0	121° 12.7	136° 12.4	151° 12.1	166° 11.8	-0.3
	-23° 14.3	-23° 14.5	-23° 14.6	-23° 14.8	-23° 14.9	-23° 15.0	-23° 16.7	-23° 16.8	-23° 17.0	-23° 17.1	-23° 17.2	-23° 17.3	-0.1
Чт 16	181° 11.5	196° 11.2	211° 10.9	226° 10.6	241° 10.3	256° 10.0	91° 06.1	106° 05.8	121° 05.5	136° 05.2	151° 04.9	166° 04.6	-0.3
	-23° 17.4	-23° 17.6	-23° 17.7	-23° 17.8	-23° 17.9	-23° 18.0	-23° 19.5	-23° 19.6	-23° 19.7	-23° 19.8	-23° 19.9	-23° 20.0	-0.1
Пт 17	181° 04.3	196° 04.0	211° 03.7	226° 03.3	241° 03.0	256° 02.7	90° 58.8	105° 58.5	120° 58.2	135° 57.9	150° 57.6	165° 57.3	-0.3
	-23° 20.1	-23° 20.2	-23° 20.3	-23° 20.4	-23° 20.5	-23° 20.6	-23° 21.7	-23° 21.8	-23° 21.9	-23° 22.0	-23° 22.1	-23° 22.2	-0.1
Сб 18	180° 57.0	195° 56.6	210° 56.3	225° 56.0	240° 55.7	255° 55.4	90° 51.4	105° 51.1	120° 50.8	135° 50.5	150° 50.2	165° 49.9	-0.3
	-23° 22.2	-23° 22.3	-23° 22.4	-23° 22.5	-23° 22.6	-23° 22.6	-23° 23.6	-23° 23.6	-23° 23.7	-23° 23.8	-23° 23.8	-23° 23.9	-0.1
Вс 19	180° 49.6	195° 49.3	210° 49.0	225° 48.7	240° 48.4	255° 48.1	90° 44.1	105° 43.7	120° 43.4	135° 43.1	150° 42.8	165° 42.5	-0.3
	-23° 23.9	-23° 24.0	-23° 24.1	-23° 24.1	-23° 24.2	-23° 24.2	-23° 24.9	-23° 25.0	-23° 25.0	-23° 25.0	-23° 25.1	-23° 25.1	-0.1
Пн 20	180° 42.2	195° 41.9	210° 41.6	225° 41.3	240° 41.0	255° 40.7	90° 36.6	105° 36.3	120° 36.0	135° 35.7	150° 35.4	165° 35.1	-0.3
	-23° 25.2	-23° 25.2	-23° 25.3	-23° 25.3	-23° 25.3	-23° 25.4	-23° 25.8	-23° 25.8	-23° 25.8	-23° 25.9	-23° 25.9	-23° 25.9	-0.0
Вт 21	180° 34.8	195° 34.5	210° 34.2	225° 33.8	240° 33.5	255° 33.2	90° 29.2	105° 28.9	120° 28.6	135° 28.3	150° 27.9	165° 27.6	-0.3
	-23° 25.9	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.2	-23° 26.2	-23° 26.2	-23° 26.2	-23° 26.2	-23° 26.2	-0.0
Ср 22	180° 27.3	195° 27.0	210° 26.7	225° 26.4	240° 26.1	255° 25.8	90° 21.7	105° 21.4	120° 21.1	135° 20.8	150° 20.5	165° 20.2	-0.3
	-23° 26.2	-23° 26.2	-23° 26.2	-23° 26.2	-23° 26.2	-23° 26.2	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-0.0
Чт 23	180° 19.8	195° 19.5	210° 19.2	225° 18.9	240° 18.6	255° 18.3	90° 14.2	105° 13.9	120° 13.6	135° 13.3	150° 13.0	165° 12.7	-0.3
	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.0	-23° 25.9	-23° 25.6	-23° 25.6	-23° 25.5	-23° 25.5	-23° 25.5	-23° 25.4	+0.0
Пт 24	180° 12.4	195° 12.1	210° 11.8	225° 11.4	240° 11.1	255° 10.8	90° 06.8	105° 06.5	120° 06.1	135° 05.8	150° 05.5	165° 05.2	-0.3
	-23° 25.4	-23° 25.3	-23° 25.3	-23° 25.3	-23° 25.2	-23° 25.2	-23° 24.6	-23° 24.5	-23° 24.5	-23° 24.4	-23° 24.4	-23° 24.3	+0.0
Сб 25	180° 04.9	195° 04.6	210° 04.3	225° 04.0	240° 03.7	255° 03.3	89° 59.3	104° 59.0	119° 58.7	134° 58.4	149° 58.1	164° 57.8	-0.3
	-23° 24.3	-23° 24.2	-23° 24.1	-23° 24.1	-23° 24.0	-23° 24.0	-23° 23.1	-23° 23.0	-23° 23.0	-23° 22.9	-23° 22.8	-23° 22.7	+0.1
Вс 26	179° 57.4	194° 57.1	209° 56.8	224° 56.5	239° 56.2	254° 55.9	89° 51.9	104° 51.6	119° 51.2	134° 50.9	149° 50.6	164° 50.3	-0.3
	-23° 22.7	-23° 22.6	-23° 22.5	-23° 22.4	-23° 22.3	-23° 22.3	-23° 21.2	-23° 21.1	-23° 21.0	-23° 20.9	-23° 20.8	-23° 20.7	+0.1
Пн 27	179° 50.0	194° 49.7	209° 49.4	224° 49.1	239° 48.8	254° 48.5	89° 44.5	104° 44.1	119° 43.8	134° 43.5	149° 43.2	164° 42.9	-0.3
	-23° 20.6	-23° 20.5	-23° 20.4	-23° 20.3	-23° 20.2	-23° 20.1	-23° 18.7	-23° 18.6	-23° 18.5	-23° 18.4	-23° 18.3	-23° 18.2	+0.1
Вт 28	179° 42.6	194° 42.3	209° 42.0	224° 41.7	239° 41.4	254° 41.1	89° 37.1	104° 36.8	119° 36.5	134° 36.2	149° 35.9	164° 35.5	-0.3
	-23° 18.1	-23° 17.9	-23° 17.8	-23° 17.7	-23° 17.6	-23° 17.5	-23° 15.8	-23° 15.7	-23° 15.6	-23° 15.5	-23° 15.3	-23° 15.2	+0.1
Ср 29	179° 35.2	194° 34.9	209° 34.6	224° 34.3	239° 34.0	254° 33.7	89° 29.8	104° 29.4	119° 29.1	134° 28.8	149° 28.5	164° 28.2	-0.3
	-23° 15.1	-23° 14.9	-23° 14.8	-23° 14.6	-23° 14.5	-23° 14.4	-23° 12.5	-23° 12.3	-23° 12.2	-23° 12.0	-23° 11.9	-23° 11.7	+0.1
Чт 30	179° 27.9	194° 27.6	209° 27.3	224° 27.0	239° 26.7	254° 26.4	89° 22.5	104° 22.2	119° 21.9	134° 21.6	149° 21.3	164° 21.0	-0.3
	-23° 11.6	-23° 11.4	-23° 11.3	-23° 11.1	-23° 11.0	-23° 10.8	-23° 08.7	-23° 08.5	-23° 08.3	-23° 08.2	-23° 08.0	-23° 07.8	+0.2
Пт 31	179° 20.7	194° 20.4	209° 20.1	224° 19.8	239° 19.5	254° 19.2	89° 15.3	104° 15.0	119° 14.7	134° 14.4	149° 14.1	164° 13.8	-0.3
	-23° 07.6	-23° 07.5	-23° 07.3	-23° 07.1	-23° 06.9	-23° 06.8	-23° 04.4	-23° 04.2	-23° 04.0	-23° 03.8	-23° 03.6	-23° 03.4	+0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Декабрь 2027

Д	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	Δ°/h	R/p
Ср 1	47° 42.5 -22° 57.2	62° 13.1 -22° 50.0	76° 43.8 -22° 42.6	91° 14.5 -22° 35.1	105° 45.3 -22° 27.5	120° 16.2 -22° 19.8	134° 47.1 -22° 12.1	149° 18.2 -22° 04.2	163° 49.3 -21° 56.2	178° 20.5 -21° 48.2	192° 51.8 -21° 40.0	+30.9 +7.7	14.9 54.6
Чт 2	50° 50.0 -19° 27.2	65° 22.5 -19° 17.7	79° 55.0 -19° 08.1	94° 27.6 -18° 58.4	109° 00.3 -18° 48.6	123° 33.1 -18° 38.8	138° 05.9 -18° 28.9	152° 38.8 -18° 19.0	167° 11.8 -18° 08.9	181° 44.8 -17° 58.8	196° 17.9 -17° 48.6	+32.8 +9.9	14.8 54.3
Пт 3	54° 42.1 -15° 08.1	69° 16.2 -14° 56.9	83° 50.3 -14° 45.6	98° 24.5 -14° 34.3	112° 58.8 -14° 23.0	127° 33.1 -14° 11.6	142° 07.4 -14° 00.1	156° 41.8 -13° 48.6	171° 16.3 -13° 37.0	185° 50.8 -13° 25.4	200° 25.3 -13° 13.7	+34.3 +11.4	14.8 54.1
Сб 4	59° 08.7 -10° 13.2	73° 43.9 -10° 00.8	88° 19.2 -9° 48.4	102° 54.4 -9° 35.9	117° 29.7 -9° 23.4	132° 05.0 -9° 10.9	146° 40.4 -8° 58.4	161° 15.7 -8° 45.8	175° 51.1 -8° 33.1	190° 26.6 -8° 20.5	205° 02.0 -8° 07.8	+35.3 +12.5	14.8 56.0
Вс 5	63° 55.8 -4° 53.8	78° 31.5 -4° 40.6	93° 07.2 -4° 27.5	107° 42.9 -4° 14.3	122° 18.6 -4° 01.1	136° 54.3 -3° 47.9	151° 30.0 -3° 34.6	166° 05.7 -3° 21.4	180° 41.4 -3° 08.1	195° 17.1 -2° 54.8	209° 52.8 -2° 41.4	+35.7 +13.2	14.8 54.4
◐ Пн 6	68° 47.0 0° 40.0	83° 22.5 0° 53.5	97° 58.0 1° 07.0	112° 33.4 1° 20.6	127° 08.9 1° 34.1	141° 44.2 1° 47.6	156° 19.6 2° 01.2	170° 54.9 2° 14.7	185° 30.2 2° 28.2	200° 05.5 2° 41.8	214° 40.8 2° 55.3	+35.4 +13.5	14.9 54.8
Вт 7	83° 22.5 0° 53.5	97° 58.0 1° 07.0	112° 33.4 1° 20.6	127° 08.9 1° 34.1	141° 44.2 1° 47.6	156° 19.6 2° 01.2	170° 54.9 2° 14.7	185° 30.2 2° 28.2	200° 05.5 2° 41.8	214° 40.8 2° 55.3	229° 16.0 3° 08.9	+35.3 +13.5	14.9 54.8
Ср 8	87° 59.2 6° 31.5	102° 33.7 6° 45.0	117° 08.2 6° 58.4	131° 42.6 7° 11.8	146° 16.9 7° 25.2	160° 51.2 7° 38.6	175° 25.5 7° 52.0	189° 59.6 8° 05.3	204° 33.7 8° 18.6	219° 07.8 8° 31.9	233° 41.8 8° 45.2	+34.3 +13.4	15.1 55.4
Чт 9	92° 03.1 12° 01.5	106° 35.9 12° 14.3	121° 08.6 12° 27.1	135° 41.2 12° 39.8	150° 13.8 12° 52.5	164° 46.2 13° 05.2	179° 18.6 13° 17.8	193° 50.9 13° 30.4	208° 23.1 13° 42.9	222° 55.2 13° 55.4	237° 27.2 14° 07.9	+32.4 +12.6	15.3 56.2
Пт 10	95° 15.7 17° 07.9	109° 46.1 17° 19.4	124° 16.4 17° 30.8	138° 46.5 17° 42.2	153° 16.6 17° 53.4	167° 46.6 18° 04.6	182° 16.4 18° 15.8	196° 46.2 18° 26.8	211° 15.8 18° 37.8	225° 45.3 18° 48.7	240° 14.7 18° 59.5	+29.9 +11.2	15.5 57.0
Сб 11	97° 21.7 21° 30.6	111° 49.3 21° 39.9	126° 16.7 21° 49.0	140° 44.0 21° 58.0	155° 11.1 22° 07.0	169° 38.2 22° 15.8	184° 05.1 22° 24.5	198° 31.9 22° 33.0	212° 58.6 22° 41.5	227° 25.2 22° 49.8	241° 51.6 22° 58.0	+27.0 +8.7	15.8 57.9
Вс 12	98° 14.8 24° 45.0	112° 39.5 24° 51.0	127° 04.1 24° 56.8	141° 28.5 25° 02.5	155° 52.9 25° 08.0	170° 17.2 25° 13.4	184° 41.3 25° 18.6	199° 05.4 25° 23.6	213° 29.4 25° 28.5	227° 53.3 25° 33.2	242° 17.1 25° 37.8	+24.2 +5.3	16.0 58.7
○ Пн 13	98° 04.5 26° 25.5	112° 27.1 26° 27.3	126° 49.7 26° 28.9	141° 12.2 26° 30.3	155° 34.7 26° 31.5	169° 57.1 26° 32.5	184° 19.4 26° 33.4	198° 41.8 26° 34.0	213° 04.1 26° 34.5	227° 26.3 26° 34.8	241° 48.6 26° 34.8	+22.4 +0.9	16.2 59.4
Вт 14	97° 19.8 26° 13.3	111° 41.9 26° 10.4	126° 04.0 26° 07.2	140° 26.0 26° 03.9	154° 48.2 26° 00.4	169° 10.3 25° 56.7	183° 32.5 25° 52.8	197° 54.6 25° 48.7	212° 16.9 25° 44.4	226° 39.1 25° 39.9	241° 01.4 25° 35.3	+22.1 -3.8	16.3 59.9
Ср 15	96° 41.3 24° 03.8	111° 04.4 23° 56.3	125° 27.6 23° 48.6	139° 50.9 23° 40.8	154° 14.2 23° 32.8	168° 37.7 23° 24.7	183° 01.2 23° 16.3	197° 24.7 23° 07.8	211° 48.4 22° 59.2	226° 12.1 22° 50.4	240° 36.0 22° 41.4	+23.5 -8.2	16.4 60.1
Чт 16	96° 43.8 20° 09.4	111° 09.0 19° 58.1	125° 34.4 19° 46.8	139° 59.8 19° 35.3	154° 25.4 19° 23.7	168° 51.0 19° 11.9	183° 16.8 19° 00.1	197° 42.6 18° 48.1	212° 08.5 18° 36.0	226° 34.5 18° 23.8	241° 00.7 18° 11.5	+25.7 -11.8	16.4 60.1
Пт 17	97° 43.8 14° 54.6	112° 11.5 14° 40.7	126° 39.2 14° 26.8	141° 07.0 14° 12.8	155° 34.8 13° 58.7	170° 02.8 13° 44.5	184° 30.9 13° 30.3	198° 59.0 13° 16.0	213° 27.2 13° 01.6	227° 55.6 12° 47.1	242° 24.0 12° 32.6	+28.0 -14.2	16.3 59.9
Сб 18	99° 39.2 8° 48.2	114° 08.8 8° 32.9	128° 38.4 8° 17.6	143° 08.1 8° 02.2	157° 37.9 7° 46.7	172° 07.8 7° 31.3	186° 37.7 7° 15.8	201° 07.6 7° 00.3	215° 37.6 6° 44.7	230° 07.7 6° 29.1	244° 37.8 6° 13.5	+29.9 -15.5	16.2 59.6
Вс 19	102° 15.6 2° 17.8	116° 46.5 2° 02.0	131° 17.3 1° 46.3	145° 48.3 1° 30.5	160° 19.2 1° 14.8	174° 50.2 0° 59.0	189° 21.2 0° 43.3	203° 52.2 0° 27.5	218° 23.3 0° 11.8	232° 54.3 -0° 03.9	247° 25.5 -0° 19.6	+31.0 -15.8	16.1 59.1
◑ Пн 20	105° 14.0 -4° 12.9	119° 45.3 -4° 28.2	134° 16.6 -4° 43.5	148° 47.9 -4° 58.8	163° 19.2 -5° 14.0	177° 50.6 -5° 29.2	192° 21.9 -5° 44.4	206° 53.2 -5° 59.5	221° 24.5 -6° 14.6	235° 55.8 -6° 29.6	250° 27.1 -6° 44.6	+31.3 -15.2	15.9 58.5
Вт 21	108° 14.8 -10° 23.4	122° 45.9 -10° 37.6	137° 16.9 -10° 51.7	151° 47.8 -11° 05.7	166° 18.8 -11° 19.6	180° 49.7 -11° 33.5	195° 20.6 -11° 47.3	209° 51.5 -12° 01.1	224° 22.3 -12° 14.7	238° 53.1 -12° 28.3	253° 23.9 -12° 41.9	+30.9 -13.8	15.8 57.9
Ср 22	111° 01.2 -15° 55.5	125° 31.4 -16° 07.7	140° 01.5 -16° 19.9	154° 31.6 -16° 32.0	169° 01.7 -16° 43.9	183° 31.6 -16° 55.8	198° 01.6 -17° 07.6	212° 31.5 -17° 19.3	227° 01.3 -17° 30.8	241° 31.2 -17° 42.3	256° 00.9 -17° 53.7	+30.0 -11.8	15.6 57.3
Чт 23	113° 21.6 -20° 32.1	127° 50.6 -20° 41.8	142° 19.6 -20° 51.4	156° 48.5 -21° 00.9	171° 17.3 -21° 10.2	185° 46.1 -21° 19.4	200° 14.9 -21° 28.5	214° 43.6 -21° 37.5	229° 12.2 -21° 46.4	243° 40.8 -21° 55.1	258° 09.4 -22° 03.8	+28.8 -9.2	15.5 56.8
Пт 24	115° 12.6 -23° 58.0	129° 40.5 -24° 04.6	144° 08.3 -24° 11.0	158° 36.2 -24° 17.3	173° 03.9 -24° 23.5	187° 31.7 -24° 29.5	201° 59.4 -24° 35.4	216° 27.1 -24° 41.2	230° 54.8 -24° 46.8	245° 22.4 -24° 52.3	259° 50.0 -24° 57.7	+27.7 -6.0	15.3 56.3
Сб 25	116° 41.2 -26° 01.0	131° 08.5 -26° 04.1	145° 35.8 -26° 07.0	160° 03.1 -26° 09.8	174° 30.4 -26° 12.4	188° 57.6 -26° 14.9	203° 24.9 -26° 17.3	217° 52.2 -26° 19.5	232° 19.4 -26° 21.6	246° 46.7 -26° 23.5	261° 14.0 -26° 25.3	+27.3 -2.4	15.2 55.8
Вс 26	118° 04.3 -26° 34.6	132° 31.8 -26° 34.1	146° 59.4 -26° 33.4	161° 26.9 -26° 32.6	175° 54.5 -26° 31.7	190° 22.2 -26° 30.6	204° 49.8 -26° 29.3	219° 17.5 -26° 28.0	233° 45.3 -26° 26.5	248° 13.0 -26° 24.8	262° 40.9 -26° 23.0	+27.6 +1.2	15.1 55.3
● Пн 27	119° 43.4 -25° 40.0	134° 12.0 -25° 36.0	148° 40.6 -25° 32.0	163° 09.3 -25° 27.8	177° 38.1 -25° 23.5	192° 06.9 -25° 19.1	206° 35.8 -25° 14.5	221° 04.7 -25° 09.8	235° 33.7 -25° 05.0	250° 02.8 -25° 00.1	264° 31.9 -24° 55.1	+28.8 +4.5	15.0 54.9
Вт 28	121° 57.0 -23° 25.4	136° 27.3 -23° 18.5	150° 57.6 -23° 11.6	165° 28.0 -23° 04.5	179° 58.4 -22° 57.3	194° 29.0 -22° 50.0	208° 59.6 -22° 42.6	223° 30.3 -22° 35.1	238° 01.0 -22° 27.5	252° 31.9 -22° 19.8	267° 02.8 -22° 12.1	+30.6 +7.3	14.9 54.5
Ср 29	124° 55.4 -20° 04.1	139° 27.5 -19° 54.9	153° 59.6 -19° 45.6	168° 31.9 -19° 36.2	183° 04.2 -19° 26.7	197° 36.6 -19° 17.2	212° 09.0 -19° 07.5	226° 41.6 -18° 57.8	241° 14.2 -18° 48.1	255° 46.8 -18° 38.2	270° 19.6 -18° 28.3	+32.4 +9.6	14.8 54.2
Чт 30	128° 38.8 -15° 51.1	143° 12.6 -15° 40.1	157° 46.4 -15° 29.0	172° 20.3 -15° 17.9	186° 54.3 -15° 06.8	201° 28.3 -14° 55.6	216° 02.4 -14° 44.3	230° 36.6 -14° 32.9	245° 10.8 -14° 21.6	259° 45.0 -14° 10.1	274° 19.3 -13° 58.6	+34.1 +11.2	14.7 54.1
Пт 31	143° 12.6 -15° 40.1	157° 46.4 -15° 29.0	172° 20.3 -15° 17.9	186° 54.3 -15° 06.8	201° 28.3 -14° 55.6	216° 02.4 -14° 44.3	230° 36.6 -14° 32.9	245° 10.8 -14° 21.6	259° 45.0 -14° 10.1	274° 19.3 -13° 58.6	288° 53.7 -13° 47.1	+34.1 +11.3	14.7 54.1

Строка 1: $t_{гр}$, Δ°/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ°/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Первая четв.: 6 05h22 — Полнолуние: 13 16h08 — Последняя четв.: 20 09h10 — Новолуние: 27 20h12

СОЛНЦЕ

Январь 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	179° 13.5	194° 13.2	209° 12.9	224° 12.6	239° 12.3	254° 12.0	89° 08.2	104° 07.9	119° 07.6	134° 07.3	149° 07.0	164° 06.7	-0.3
	-23° 03.3	-23° 03.1	-23° 02.9	-23° 02.7	-23° 02.5	-23° 02.3	-22° 59.7	-22° 59.4	-22° 59.2	-22° 59.0	-22° 58.8	-22° 58.6	+0.2
Вс 2	179° 06.4	194° 06.1	209° 05.8	224° 05.5	239° 05.2	254° 04.9	89° 01.1	104° 00.8	119° 00.5	134° 00.2	148° 59.9	163° 59.7	-0.3
	-22° 58.4	-22° 58.2	-22° 58.0	-22° 57.8	-22° 57.5	-22° 57.3	-22° 54.5	-22° 54.2	-22° 54.0	-22° 53.8	-22° 53.5	-22° 53.3	+0.2
Пн 3	178° 59.4	193° 59.1	208° 58.8	223° 58.5	238° 58.2	253° 57.9	88° 54.2	103° 53.9	118° 53.6	133° 53.3	148° 53.0	163° 52.7	-0.3
	-22° 53.1	-22° 52.8	-22° 52.6	-22° 52.4	-22° 52.1	-22° 51.9	-22° 48.8	-22° 48.5	-22° 48.3	-22° 48.1	-22° 47.8	-22° 47.6	+0.2
Вт 4	178° 52.4	193° 52.2	208° 51.9	223° 51.6	238° 51.3	253° 51.0	88° 47.3	103° 47.0	118° 46.7	133° 46.5	148° 46.2	163° 45.9	-0.3
	-22° 47.3	-22° 47.1	-22° 46.8	-22° 46.6	-22° 46.3	-22° 46.1	-22° 42.7	-22° 42.4	-22° 42.2	-22° 41.9	-22° 41.6	-22° 41.4	+0.2
Ср 5	178° 45.6	193° 45.3	208° 45.0	223° 44.8	238° 44.5	253° 44.2	88° 40.6	103° 40.3	118° 40.0	133° 39.7	148° 39.4	163° 39.2	-0.3
	-22° 41.1	-22° 40.8	-22° 40.5	-22° 40.3	-22° 40.0	-22° 39.7	-22° 36.1	-22° 35.8	-22° 35.6	-22° 35.3	-22° 35.0	-22° 34.7	+0.3
Чт 6	178° 38.9	193° 38.6	208° 38.3	223° 38.1	238° 37.8	253° 37.5	88° 33.9	103° 33.7	118° 33.4	133° 33.1	148° 32.8	163° 32.6	-0.3
	-22° 34.4	-22° 34.1	-22° 33.8	-22° 33.5	-22° 33.3	-22° 33.0	-22° 29.1	-22° 28.8	-22° 28.5	-22° 28.2	-22° 27.9	-22° 27.6	+0.3
Пт 7	178° 32.3	193° 32.0	208° 31.7	223° 31.5	238° 31.2	253° 30.9	88° 27.4	103° 27.2	118° 26.9	133° 26.6	148° 26.3	163° 26.1	-0.3
	-22° 27.3	-22° 27.0	-22° 26.7	-22° 26.4	-22° 26.1	-22° 25.8	-22° 21.7	-22° 21.4	-22° 21.0	-22° 20.7	-22° 20.4	-22° 20.1	+0.3
Сб 8	178° 25.8	193° 25.5	208° 25.3	223° 25.0	238° 24.7	253° 24.5	88° 21.0	103° 20.8	118° 20.5	133° 20.2	148° 20.0	163° 19.7	-0.3
	-22° 19.7	-22° 19.4	-22° 19.1	-22° 18.8	-22° 18.4	-22° 18.1	-22° 13.8	-22° 13.4	-22° 13.1	-22° 12.8	-22° 12.4	-22° 12.1	+0.3
Вс 9	178° 19.5	193° 19.2	208° 18.9	223° 18.7	238° 18.4	253° 18.2	88° 14.8	103° 14.5	118° 14.3	133° 14.0	148° 13.8	163° 13.5	-0.3
	-22° 11.7	-22° 11.4	-22° 11.1	-22° 10.7	-22° 10.4	-22° 10.0	-22° 05.5	-22° 05.1	-22° 04.7	-22° 04.4	-22° 04.0	-22° 03.7	+0.3
Пн 10	178° 13.2	193° 13.0	208° 12.7	223° 12.5	238° 12.2	253° 12.0	88° 08.7	103° 08.4	118° 08.2	133° 07.9	148° 07.7	163° 07.4	-0.3
	-22° 03.3	-22° 03.0	-22° 02.6	-22° 02.2	-22° 01.9	-22° 01.5	-21° 56.7	-21° 56.3	-21° 56.0	-21° 55.6	-21° 55.2	-21° 54.8	+0.4
Вт 11	178° 07.2	193° 06.9	208° 06.7	223° 06.4	238° 06.2	253° 05.9	88° 02.7	103° 02.5	118° 02.2	133° 02.0	148° 01.7	163° 01.5	-0.3
	-21° 54.5	-21° 54.1	-21° 53.7	-21° 53.3	-21° 52.9	-21° 52.6	-21° 47.5	-21° 47.1	-21° 46.7	-21° 46.3	-21° 46.0	-21° 45.6	+0.4
Ср 12	178° 01.2	193° 01.0	208° 00.7	223° 00.5	238° 00.3	253° 00.0	87° 56.9	102° 56.6	117° 56.4	132° 56.2	147° 55.9	162° 55.7	-0.2
	-21° 45.2	-21° 44.8	-21° 44.4	-21° 44.0	-21° 43.6	-21° 43.2	-21° 37.9	-21° 37.5	-21° 37.1	-21° 36.7	-21° 36.3	-21° 35.9	+0.4
Чт 13	177° 55.5	192° 55.2	207° 55.0	222° 54.7	237° 54.5	252° 54.3	87° 51.2	102° 51.0	117° 50.7	132° 50.5	147° 50.3	162° 50.1	-0.2
	-21° 35.5	-21° 35.0	-21° 34.6	-21° 34.2	-21° 33.8	-21° 33.4	-21° 27.9	-21° 27.5	-21° 27.0	-21° 26.6	-21° 26.2	-21° 25.8	+0.4
Пт 14	177° 49.8	192° 49.6	207° 49.4	222° 49.1	237° 48.9	252° 48.7	87° 45.7	102° 45.5	117° 45.2	132° 45.0	147° 44.8	162° 44.6	-0.2
	-21° 25.3	-21° 24.9	-21° 24.5	-21° 24.0	-21° 23.6	-21° 23.2	-21° 17.5	-21° 17.0	-21° 16.6	-21° 16.1	-21° 15.7	-21° 15.2	+0.4
Сб 15	177° 44.3	192° 44.1	207° 43.9	222° 43.7	237° 43.4	252° 43.2	87° 40.3	102° 40.1	117° 39.9	132° 39.7	147° 39.5	162° 39.2	-0.2
	-21° 14.8	-21° 14.3	-21° 13.9	-21° 13.4	-21° 13.0	-21° 12.5	-21° 06.6	-21° 06.2	-21° 05.7	-21° 05.2	-21° 04.8	-21° 04.3	+0.4
Вс 16	177° 39.0	192° 38.8	207° 38.6	222° 38.4	237° 38.2	252° 37.9	87° 35.2	102° 34.9	117° 34.7	132° 34.5	147° 34.3	162° 34.1	-0.2
	-21° 03.8	-21° 03.4	-21° 02.9	-21° 02.4	-21° 02.0	-21° 01.5	-20° 55.4	-20° 54.9	-20° 54.4	-20° 53.9	-20° 53.5	-20° 53.0	+0.5
Пн 17	177° 33.9	192° 33.7	207° 33.5	222° 33.2	237° 33.0	252° 32.8	87° 30.1	102° 29.9	117° 29.7	132° 29.5	147° 29.3	162° 29.1	-0.2
	-20° 52.5	-20° 52.0	-20° 51.5	-20° 51.0	-20° 50.6	-20° 50.1	-20° 43.7	-20° 43.2	-20° 42.7	-20° 42.2	-20° 41.7	-20° 41.2	+0.5
Вт 18	177° 28.9	192° 28.7	207° 28.5	222° 28.3	237° 28.1	252° 27.9	87° 25.3	102° 25.1	117° 24.9	132° 24.7	147° 24.5	162° 24.3	-0.2
	-20° 40.7	-20° 40.2	-20° 39.7	-20° 39.2	-20° 38.7	-20° 38.2	-20° 31.7	-20° 31.2	-20° 30.6	-20° 30.1	-20° 29.6	-20° 29.1	+0.5
Ср 19	177° 24.1	192° 23.9	207° 23.7	222° 23.5	237° 23.3	252° 23.1	87° 20.6	102° 20.4	117° 20.2	132° 20.0	147° 19.8	162° 19.6	-0.2
	-20° 28.6	-20° 28.1	-20° 27.6	-20° 27.0	-20° 26.5	-20° 26.0	-20° 19.2	-20° 18.7	-20° 18.2	-20° 17.6	-20° 17.1	-20° 16.6	+0.5
Чт 20	177° 19.5	192° 19.3	207° 19.1	222° 18.9	237° 18.7	252° 18.5	87° 16.1	102° 15.9	117° 15.7	132° 15.5	147° 15.4	162° 15.2	-0.2
	-20° 16.1	-20° 15.5	-20° 15.0	-20° 14.5	-20° 13.9	-20° 13.4	-20° 06.4	-20° 05.9	-20° 05.3	-20° 04.8	-20° 04.2	-20° 03.7	+0.5
Пт 21	177° 15.0	192° 14.8	207° 14.6	222° 14.5	237° 14.3	252° 14.1	87° 11.8	102° 11.6	117° 11.4	132° 11.3	147° 11.1	162° 10.9	-0.2
	-20° 03.1	-20° 02.6	-20° 02.0	-20° 01.5	-20° 00.9	-20° 00.4	-19° 53.2	-19° 52.6	-19° 52.1	-19° 51.5	-19° 51.0	-19° 50.4	+0.5
Сб 22	177° 10.7	192° 10.6	207° 10.4	222° 10.2	237° 10.0	252° 09.9	87° 07.6	102° 07.5	117° 07.3	132° 07.1	147° 07.0	162° 06.8	-0.2
	-19° 49.8	-19° 49.3	-19° 48.7	-19° 48.2	-19° 47.6	-19° 47.0	-19° 39.6	-19° 39.1	-19° 38.5	-19° 37.9	-19° 37.3	-19° 36.8	+0.6
Вс 23	177° 06.6	192° 06.5	207° 06.3	222° 06.1	237° 06.0	252° 05.8	87° 03.7	102° 03.5	117° 03.4	132° 03.2	147° 03.1	162° 02.9	-0.2
	-19° 36.2	-19° 35.6	-19° 35.0	-19° 34.4	-19° 33.9	-19° 33.3	-19° 25.7	-19° 25.1	-19° 24.5	-19° 23.9	-19° 23.3	-19° 22.7	+0.6
Пн 24	177° 02.7	192° 02.6	207° 02.4	222° 02.3	237° 02.1	252° 02.0	87° 00.0	101° 59.8	116° 59.6	131° 59.5	146° 59.3	161° 59.2	-0.2
	-19° 22.1	-19° 21.6	-19° 21.0	-19° 20.4	-19° 19.8	-19° 19.2	-19° 11.4	-19° 10.8	-19° 10.2	-19° 09.6	-19° 09.0	-19° 08.4	+0.6
Вт 25	176° 59.0	191° 58.9	206° 58.7	221° 58.6	236° 58.4	251° 58.3	86° 56.4	101° 56.3	116° 56.1	131° 56.0	146° 55.8	161° 55.7	-0.2
	-19° 07.8	-19° 07.2	-19° 06.5	-19° 05.9	-19° 05.3	-19° 04.7	-18° 56.7	-18° 56.1	-18° 55.5	-18° 54.9	-18° 54.3	-18° 53.6	+0.6
Ср 26	176° 55.5	191° 55.4	206° 55.3	221° 55.1	236° 55.0	251° 54.8	86° 53.0	101° 52.9	116° 52.8	131° 52.6	146° 52.5	161° 52.4	-0.1
	-18° 53.0	-18° 52.4	-18° 51.8	-18° 51.2	-18° 50.5	-18° 49.9	-18° 41.7	-18° 41.1	-18° 40.5	-18° 39.8	-18° 39.2	-18° 38.6	+0.6
Чт 27	176° 52.2	191° 52.1	206° 52.0	221° 51.8	236° 51.7	251° 51.6	86° 49.9	101° 49.8	116° 49.6	131° 49.5	146° 49.4	161° 49.3	-0.1
	-18° 37.9	-18° 37.3	-18° 36.7	-18° 36.0	-18° 35.4	-18° 34.7	-18° 26.4	-18° 25.7	-18° 25.1	-18° 24.5	-18° 23.8	-18° 23.2	+0.6
Пт 28	176° 49.1	191° 49.0	206° 48.9	221° 48.8	236° 48.6	251° 48.5	86° 46.9	101° 46.8	116° 46.7	131° 46.6	146° 46.5	161° 46.3	-0.1
	-18° 22.5	-18° 21.9	-18° 21.2	-18° 20.6	-18° 19.9	-18° 19.3	-18° 10.7	-18° 10.1	-18° 09.4	-18° 08.7	-18° 08.1	-18° 07.4	+0.6
Сб 29	176° 46.2	191° 46.1	206° 46.0	221° 45.9	236° 45.8	251° 45.6	86° 44.2	101° 44.1	116° 44.0	131° 43.9	146° 43.7	161° 43.6	-0.1
	-18° 06.8	-18° 06.1	-18° 05.4	-18° 04.8	-18° 04.1	-18° 03.4	-17° 54.7	-17° 54.0	-17° 53.4	-17° 52.7	-17° 52.0	-17° 51.3	+0.7
Вс 30	176° 43.5	191° 43.4	206° 43.3	221° 43.2	236° 43.1	251° 43.0	86° 41.6	101° 41.5	116° 41.4	131° 41.3	146° 41.2	161° 41.1	-0.1
	-17° 50.7	-17° 50.0	-17° 49.3	-17° 48.6	-17° 48.0	-17° 47.3	-17° 38.4	-17° 37.7	-17° 37.0	-17° 36.3	-17° 35.7	-17° 35.0	+0.7
Пн 31	176° 41.0	191° 40.9	206° 40.8	221° 40.7	236° 40.6	251° 40.5	86° 39.3	101° 39.2	116° 39.1	131° 39.0	146° 38.9	161° 38.8	-0.1
	-17° 34.3	-17° 33.6	-17° 32.9	-17° 32.2	-17° 31.5	-17° 30.8	-17° 21.8	-17° 21.1	-17° 20.4	-17° 19.7	-17° 19.0	-17° 18.3	+0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2028

Д	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	Δ'/h	R/p
Сб 1	50° 12.4 -7° 02.6	64° 48.1 -6° 49.8	79° 23.8 -6° 36.9	93° 59.6 -6° 24.1	108° 35.3 -6° 11.2	123° 11.1 -5° 58.2	137° 46.9 -5° 45.3	152° 22.7 -5° 32.3	166° 58.5 -5° 19.3	181° 34.3 -5° 06.3	196° 10.2 -4° 53.3	+35.8 +12.9	14.7 54.0
Вс 2	55° 08.9 -1° 35.8	69° 44.9 -1° 22.5	84° 20.8 -1° 09.2	98° 56.7 -0° 55.9	113° 32.6 -0° 42.6	128° 08.6 -0° 29.3	142° 44.5 -0° 16.0	157° 20.4 -0° 02.7	171° 56.2 0° 10.6	186° 32.1 0° 23.9	201° 08.0 0° 37.3	+35.9 +13.3	14.8 54.3
Пн 3	60° 03.7 3° 57.3	74° 39.2 4° 10.6	89° 14.6 4° 23.9	103° 50.1 4° 37.2	118° 25.5 4° 50.5	133° 00.9 5° 03.8	147° 36.2 5° 17.0	162° 11.5 5° 30.3	176° 46.8 5° 43.5	191° 22.0 5° 56.8	205° 57.2 6° 10.0	+35.4 +13.3	14.9 54.6
Вт 4	64° 39.1 9° 26.2	79° 13.4 9° 39.1	93° 47.7 9° 52.0	108° 21.9 10° 04.9	122° 56.1 10° 17.7	137° 30.2 10° 30.5	152° 04.3 10° 43.2	166° 38.2 10° 56.0	181° 12.1 11° 08.7	195° 46.0 11° 21.4	210° 19.7 11° 34.0	+34.1 +12.8	15.1 55.2
◐ Ср 5	68° 36.8 14° 38.9	83° 09.3 14° 50.9	97° 41.6 15° 02.8	112° 13.9 15° 14.7	126° 46.1 15° 26.5	141° 18.2 15° 38.2	155° 50.2 15° 49.9	170° 22.1 16° 01.6	184° 53.9 16° 13.2	199° 25.6 16° 24.7	213° 57.2 16° 36.2	+32.0 +11.7	15.3 55.9
Чт 6	83° 09.3 14° 50.9	97° 41.6 15° 02.8	112° 13.9 15° 14.7	126° 46.1 15° 26.5	141° 18.2 15° 38.2	155° 50.2 15° 49.9	170° 22.1 16° 01.6	184° 53.9 16° 13.2	199° 25.6 16° 24.7	213° 57.2 16° 36.2	228° 28.8 16° 47.6	+32.0 +11.7	15.3 56.0
Пт 7	86° 08.8 19° 30.3	100° 38.6 19° 40.6	115° 08.3 19° 50.7	129° 37.9 20° 00.8	144° 07.3 20° 10.8	158° 36.7 20° 20.6	173° 05.9 20° 30.4	187° 35.0 20° 40.1	202° 03.9 20° 49.7	216° 32.8 20° 59.3	231° 01.6 21° 08.7	+29.3 +9.8	15.5 56.9
Сб 8	87° 58.3 23° 17.2	102° 25.1 23° 24.9	116° 51.8 23° 32.4	131° 18.4 23° 39.8	145° 44.9 23° 47.1	160° 11.2 23° 54.2	174° 37.4 24° 01.2	189° 03.5 24° 08.1	203° 29.5 24° 14.9	217° 55.4 24° 21.5	232° 21.1 24° 27.9	+26.3 +7.1	15.8 57.8
Вс 9	88° 34.0 25° 47.5	102° 58.0 25° 51.5	117° 22.0 25° 55.4	131° 45.8 25° 59.1	146° 09.5 26° 02.7	160° 33.2 26° 06.1	174° 56.7 26° 09.3	189° 20.2 26° 12.4	203° 43.5 26° 15.3	218° 06.8 26° 18.0	232° 30.0 26° 20.5	+23.6 +3.3	16.0 58.8
Пн 10	88° 09.7 26° 36.9	102° 31.9 26° 36.5	116° 54.0 26° 36.0	131° 16.1 26° 35.2	145° 38.2 26° 34.2	160° 00.2 26° 33.1	174° 22.2 26° 31.7	188° 44.2 26° 30.2	203° 06.1 26° 28.4	217° 28.0 26° 26.5	231° 49.9 26° 24.4	+22.0 -1.2	16.3 59.7
Вт 11	87° 17.6 25° 29.5	101° 39.6 25° 24.3	116° 01.5 25° 18.9	130° 23.5 25° 13.3	144° 45.5 25° 07.5	159° 07.5 25° 01.6	173° 29.6 24° 55.4	187° 51.7 24° 49.1	202° 13.8 24° 42.6	216° 36.0 24° 35.9	230° 58.2 24° 29.0	+22.0 -6.0	16.5 60.4
○ Ср 12	86° 38.1 22° 24.5	101° 01.3 22° 14.8	115° 24.6 22° 05.0	129° 47.9 21° 55.0	144° 11.3 21° 44.9	158° 34.8 21° 34.6	172° 58.4 21° 24.2	187° 22.0 21° 13.6	201° 45.7 21° 02.8	216° 09.5 20° 51.9	230° 33.4 20° 40.9	+23.5 -10.4	16.6 60.9
Чт 13	86° 42.3 17° 38.7	101° 07.6 17° 25.6	115° 33.0 17° 12.3	129° 58.4 16° 58.9	144° 24.0 16° 45.5	158° 49.7 16° 31.9	173° 15.5 16° 18.2	187° 41.3 16° 04.4	202° 07.2 15° 50.5	216° 33.3 15° 36.5	230° 59.4 15° 22.4	+25.7 -13.6	16.6 61.0
Пт 14	87° 41.8 11° 40.7	102° 09.3 11° 25.3	116° 36.9 11° 09.9	131° 04.5 10° 54.4	145° 32.3 10° 38.9	160° 00.1 10° 23.3	174° 28.0 10° 07.6	188° 55.9 9° 51.9	203° 24.0 9° 36.2	217° 52.1 9° 20.4	232° 20.3 9° 04.5	+27.9 -15.6	16.6 60.8
Сб 15	89° 31.2 5° 02.8	104° 00.4 4° 46.5	118° 29.7 4° 30.2	132° 59.0 4° 13.8	147° 28.4 3° 57.5	161° 57.8 3° 41.2	176° 27.2 3° 24.8	190° 56.8 3° 08.4	205° 26.3 2° 52.1	219° 55.9 2° 35.7	234° 25.6 2° 19.4	+29.4 -16.3	16.4 60.3
Вс 16	91° 55.0 -1° 44.8	106° 25.2 -2° 00.9	120° 55.4 -2° 17.0	135° 25.7 -2° 33.1	149° 56.0 -2° 49.1	164° 26.3 -3° 05.1	178° 56.6 -3° 21.1	193° 26.9 -3° 37.0	207° 57.2 -3° 52.9	222° 27.6 -4° 08.8	236° 58.0 -4° 24.6	+30.3 -16.0	16.3 59.6
Пн 17	94° 34.6 -8° 16.3	109° 05.0 -8° 31.3	123° 35.4 -8° 46.2	138° 05.9 -9° 01.1	152° 36.3 -9° 16.0	167° 06.7 -9° 30.7	181° 37.2 -9° 45.4	196° 07.6 -10° 00.1	210° 38.0 -10° 14.6	225° 08.3 -10° 29.1	239° 38.7 -10° 43.5	+30.4 -14.7	16.0 58.8
◑ Вт 18	97° 12.2 -14° 10.7	111° 42.3 -14° 23.8	126° 12.3 -14° 36.9	140° 42.3 -14° 49.8	155° 12.3 -15° 02.7	169° 42.2 -15° 15.5	184° 12.2 -15° 28.2	198° 42.0 -15° 40.8	213° 11.9 -15° 53.3	227° 41.7 -16° 05.7	242° 11.5 -16° 18.0	+29.9 -12.7	15.8 58.0
Ср 19	99° 34.5 -19° 10.5	114° 03.7 -19° 21.1	128° 32.9 -19° 31.7	143° 02.1 -19° 42.1	157° 31.3 -19° 52.4	172° 00.4 -20° 02.6	186° 29.4 -20° 12.6	200° 58.4 -20° 22.6	215° 27.4 -20° 32.5	229° 56.4 -20° 42.2	244° 25.3 -20° 51.8	+29.1 -10.1	15.6 57.2
Чт 20	101° 34.6 -23° 01.3	116° 03.0 -23° 08.9	130° 31.3 -23° 16.4	144° 59.6 -23° 23.8	159° 27.8 -23° 31.0	173° 56.0 -23° 38.1	188° 24.2 -23° 45.1	202° 52.4 -23° 51.9	217° 20.5 -23° 58.7	231° 48.6 -24° 05.2	246° 16.6 -24° 11.7	+28.2 -7.0	15.4 56.4
Пт 21	103° 14.8 -25° 31.9	117° 42.5 -25° 36.2	132° 10.3 -25° 40.3	146° 38.0 -25° 44.2	161° 05.6 -25° 48.1	175° 33.3 -25° 51.7	190° 01.0 -25° 55.3	204° 28.7 -25° 58.7	218° 56.3 -26° 01.9	233° 24.0 -26° 05.1	247° 51.6 -26° 08.0	+27.7 -3.6	15.2 55.8
Сб 22	104° 46.5 -26° 35.7	119° 14.2 -26° 36.4	133° 42.0 -26° 36.9	148° 09.7 -26° 37.4	162° 37.5 -26° 37.7	177° 05.3 -26° 37.8	191° 33.1 -26° 37.8	206° 01.0 -26° 37.7	220° 28.8 -26° 37.4	234° 56.7 -26° 37.0	249° 24.6 -26° 36.4	+27.8 -0.1	15.1 55.3
Вс 23	106° 27.2 -26° 11.8	120° 55.6 -26° 09.1	135° 24.2 -26° 06.2	149° 52.7 -26° 03.2	164° 21.3 -26° 00.1	178° 50.0 -25° 56.9	193° 18.7 -25° 53.5	207° 47.5 -25° 50.0	222° 16.3 -25° 46.4	236° 45.2 -25° 42.6	251° 14.1 -25° 38.8	+28.7 +3.3	15.0 54.8
Пн 24	108° 34.6 -24° 25.9	123° 04.4 -24° 20.1	137° 34.3 -24° 14.2	152° 04.3 -24° 08.2	166° 34.3 -24° 02.0	181° 04.5 -23° 55.8	195° 34.6 -23° 49.4	210° 04.9 -23° 43.0	224° 35.2 -23° 36.4	239° 05.5 -23° 29.7	253° 36.0 -23° 22.9	+30.1 +6.3	14.9 54.5
Вт 25	111° 20.8 -21° 28.9	125° 52.3 -21° 20.5	140° 24.0 -21° 12.0	154° 55.6 -21° 03.5	169° 27.4 -20° 54.8	183° 59.2 -20° 46.1	198° 31.1 -20° 37.3	213° 03.0 -20° 28.4	227° 35.1 -20° 19.4	242° 07.2 -20° 10.3	256° 39.3 -20° 01.1	+31.9 +8.8	14.8 54.2
● Ср 26	114° 49.8 -17° 34.2	129° 23.0 -17° 23.9	143° 56.3 -17° 13.4	158° 29.6 -17° 02.9	173° 03.0 -16° 52.3	187° 36.5 -16° 41.7	202° 10.0 -16° 31.0	216° 43.6 -16° 20.2	231° 17.2 -16° 09.3	245° 50.9 -15° 58.4	260° 24.7 -15° 47.5	+33.5 +10.7	14.7 54.0
Чт 27	118° 57.8 -12° 56.3	133° 32.4 -12° 44.5	148° 07.0 -12° 32.6	162° 41.7 -12° 20.7	177° 16.5 -12° 08.8	191° 51.3 -11° 56.7	206° 26.1 -11° 44.7	221° 01.0 -11° 32.6	235° 36.0 -11° 20.5	250° 10.9 -11° 08.3	264° 45.9 -10° 56.1	+34.8 +12.0	14.7 53.9
Пт 28	123° 35.6 -7° 48.6	138° 11.2 -7° 35.9	152° 46.8 -7° 23.1	167° 22.4 -7° 10.3	181° 58.0 -6° 57.5	196° 33.7 -6° 44.6	211° 09.4 -6° 31.7	225° 45.1 -6° 18.8	240° 20.8 -6° 05.9	254° 56.6 -5° 52.9	269° 32.4 -5° 40.0	+35.7 +12.9	14.7 53.9
Сб 29	128° 30.9 -2° 23.4	143° 06.8 -2° 10.2	157° 42.8 -1° 56.9	172° 18.8 -1° 43.7	186° 54.8 -1° 30.5	201° 30.8 -1° 17.2	216° 06.8 -1° 03.9	230° 42.8 -0° 50.7	245° 18.7 -0° 37.4	259° 54.7 -0° 24.2	274° 30.7 -0° 10.9	+36.0 +13.3	14.7 54.0
Вс 30	143° 06.8 -2° 10.2	157° 42.8 -1° 56.9	172° 18.8 -1° 43.7	186° 54.8 -1° 30.5	201° 30.8 -1° 17.2	216° 06.8 -1° 03.9	230° 42.8 -0° 50.7	245° 18.7 -0° 37.4	259° 54.7 -0° 24.2	274° 30.7 -0° 10.9	289° 06.7 0° 02.4	+36.0 +13.3	14.7 54.0
Пн 31	148° 05.0 3° 21.5	162° 40.8 3° 34.7	177° 16.5 3° 48.0	191° 52.2 4° 01.2	206° 27.9 4° 14.4	221° 03.6 4° 27.6	235° 39.2 4° 40.8	250° 14.8 4° 54.0	264° 50.4 5° 07.1	279° 26.0 5° 20.3	294° 01.5 5° 33.4	+35.7 +13.2	14.8 54.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Первая четв.: 5 01h40 — Полнолуние: 12 04h03 — Последняя четв.: 18 19h25 — Новолуние: 26 15h12

СОЛНЦЕ

Февраль 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	176° 38.7 -17° 17.6	191° 38.7 -17° 16.9	206° 38.6 -17° 16.2	221° 38.5 -17° 15.5	236° 38.4 -17° 14.7	251° 38.3 -17° 14.0	86° 37.2 -17° 04.8	101° 37.1 -17° 04.1	116° 37.0 -17° 03.4	131° 36.9 -17° 02.7	146° 36.8 -17° 02.0	161° 36.8 -17° 01.3	-0.1 +0.7
Ср 2	176° 36.7 -17° 00.5	191° 36.6 -16° 59.8	206° 36.5 -16° 59.1	221° 36.4 -16° 58.4	236° 36.3 -16° 57.7	251° 36.3 -16° 57.0	86° 35.3 -16° 47.6	101° 35.2 -16° 46.9	116° 35.1 -16° 46.1	131° 35.0 -16° 45.4	146° 35.0 -16° 44.7	161° 34.9 -16° 44.0	-0.1 +0.7
Чт 3	176° 34.8 -16° 43.2	191° 34.7 -16° 42.5	206° 34.7 -16° 41.8	221° 34.6 -16° 41.1	236° 34.5 -16° 40.3	251° 34.4 -16° 39.6	86° 33.5 -16° 30.1	101° 33.5 -16° 29.3	116° 33.4 -16° 28.6	131° 33.3 -16° 27.8	146° 33.3 -16° 27.1	161° 33.2 -16° 26.4	-0.1 +0.7
Пт 4	176° 33.1 -16° 25.6	191° 33.1 -16° 24.9	206° 33.0 -16° 24.2	221° 33.0 -16° 23.4	236° 32.9 -16° 22.7	251° 32.8 -16° 21.9	86° 32.0 -16° 12.2	101° 32.0 -16° 11.5	116° 31.9 -16° 10.7	131° 31.9 -16° 10.0	146° 31.8 -16° 09.2	161° 31.7 -16° 08.5	-0.1 +0.7
Сб 5	176° 31.7 -16° 07.7	191° 31.6 -16° 07.0	206° 31.6 -16° 06.2	221° 31.5 -16° 05.5	236° 31.5 -16° 04.7	251° 31.4 -16° 04.0	86° 30.7 -15° 54.1	101° 30.7 -15° 53.4	116° 30.6 -15° 52.6	131° 30.6 -15° 51.9	146° 30.5 -15° 51.1	161° 30.5 -15° 50.3	-0.1 +0.8
Вс 6	176° 30.4 -15° 49.6	191° 30.4 -15° 48.8	206° 30.4 -15° 48.1	221° 30.3 -15° 47.3	236° 30.3 -15° 46.5	251° 30.2 -15° 45.8	86° 29.6 -15° 35.8	101° 29.6 -15° 35.0	116° 29.6 -15° 34.2	131° 29.5 -15° 33.5	146° 29.5 -15° 32.7	161° 29.4 -15° 31.9	-0.0 +0.8
Пн 7	176° 29.4 -15° 31.1	191° 29.4 -15° 30.4	206° 29.3 -15° 29.6	221° 29.3 -15° 28.8	236° 29.3 -15° 28.1	251° 29.2 -15° 27.3	86° 28.8 -15° 17.2	101° 28.7 -15° 16.4	116° 28.7 -15° 15.6	131° 28.7 -15° 14.8	146° 28.6 -15° 14.0	161° 28.6 -15° 13.2	-0.0 +0.8
Вт 8	176° 28.6 -15° 12.5	191° 28.5 -15° 11.7	206° 28.5 -15° 10.9	221° 28.5 -15° 10.1	236° 28.5 -15° 09.3	251° 28.4 -15° 08.5	86° 28.1 -14° 58.3	101° 28.1 -14° 57.5	116° 28.0 -14° 56.7	131° 28.0 -14° 55.9	146° 28.0 -14° 55.1	161° 28.0 -14° 54.3	-0.0 +0.8
Ср 9	176° 27.9 -14° 53.5	191° 27.9 -14° 52.7	206° 27.9 -14° 51.9	221° 27.9 -14° 51.1	236° 27.8 -14° 50.3	251° 27.8 -14° 49.5	86° 27.6 -14° 39.1	101° 27.6 -14° 38.3	116° 27.6 -14° 37.5	131° 27.5 -14° 36.7	146° 27.5 -14° 35.9	161° 27.5 -14° 35.1	-0.0 +0.8
Чт 10	176° 27.5 -14° 34.3	191° 27.5 -14° 33.5	206° 27.5 -14° 32.7	221° 27.5 -14° 31.9	236° 27.4 -14° 31.1	251° 27.4 -14° 30.3	86° 27.3 -14° 19.7	101° 27.3 -14° 18.9	116° 27.3 -14° 18.1	131° 27.3 -14° 17.3	146° 27.3 -14° 16.5	161° 27.3 -14° 15.7	-0.0 +0.8
Пт 11	176° 27.3 -14° 14.9	191° 27.3 -14° 14.0	206° 27.2 -14° 13.2	221° 27.2 -14° 12.4	236° 27.2 -14° 11.6	251° 27.2 -14° 10.8	86° 27.2 -14° 00.1	101° 27.2 -13° 59.3	116° 27.2 -13° 58.5	131° 27.2 -13° 57.6	146° 27.2 -13° 56.8	161° 27.2 -13° 56.0	-0.0 +0.8
Сб 12	176° 27.2 -13° 55.2	191° 27.2 -13° 54.3	206° 27.2 -13° 53.5	221° 27.2 -13° 52.7	236° 27.2 -13° 51.9	251° 27.2 -13° 51.0	86° 27.3 -13° 40.3	101° 27.3 -13° 39.4	116° 27.3 -13° 38.6	131° 27.3 -13° 37.8	146° 27.3 -13° 36.9	161° 27.3 -13° 36.1	+0.0 +0.8
Вс 13	176° 27.4 -13° 35.3	191° 27.4 -13° 34.4	206° 27.4 -13° 33.6	221° 27.4 -13° 32.8	236° 27.4 -13° 31.9	251° 27.4 -13° 31.1	86° 27.6 -13° 20.2	101° 27.6 -13° 19.3	116° 27.6 -13° 18.5	131° 27.6 -13° 17.7	146° 27.6 -13° 16.8	161° 27.7 -13° 16.0	+0.0 +0.8
Пн 14	176° 27.7 -13° 15.1	191° 27.7 -13° 14.3	206° 27.7 -13° 13.4	221° 27.7 -13° 12.6	236° 27.8 -13° 11.7	251° 27.8 -13° 10.9	86° 28.0 -12° 59.9	101° 28.1 -12° 59.0	116° 28.1 -12° 58.2	131° 28.1 -12° 57.3	146° 28.1 -12° 56.5	161° 28.2 -12° 55.6	+0.0 +0.8
Вт 15	176° 28.2 -12° 54.8	191° 28.2 -12° 53.9	206° 28.2 -12° 53.1	221° 28.3 -12° 52.2	236° 28.3 -12° 51.4	251° 28.3 -12° 50.5	86° 28.7 -12° 39.4	101° 28.7 -12° 38.5	116° 28.7 -12° 37.6	131° 28.8 -12° 36.8	146° 28.8 -12° 35.9	161° 28.8 -12° 35.1	+0.0 +0.9
Ср 16	176° 28.9 -12° 34.2	191° 28.9 -12° 33.3	206° 28.9 -12° 32.5	221° 29.0 -12° 31.6	236° 29.0 -12° 30.8	251° 29.0 -12° 29.9	86° 29.5 -12° 18.6	101° 29.5 -12° 17.8	116° 29.6 -12° 16.9	131° 29.6 -12° 16.0	146° 29.7 -12° 15.2	161° 29.7 -12° 14.3	+0.0 +0.9
Чт 17	176° 29.7 -12° 13.4	191° 29.8 -12° 12.6	206° 29.8 -12° 11.7	221° 29.9 -12° 10.8	236° 29.9 -12° 09.9	251° 29.9 -12° 09.1	86° 30.5 -11° 57.7	101° 30.5 -11° 56.8	116° 30.6 -11° 56.0	131° 30.6 -11° 55.1	146° 30.7 -11° 54.2	161° 30.7 -11° 53.3	+0.0 +0.9
Пт 18	176° 30.8 -11° 52.5	191° 30.8 -11° 51.6	206° 30.9 -11° 50.7	221° 30.9 -11° 49.8	236° 31.0 -11° 48.9	251° 31.0 -11° 48.1	86° 31.7 -11° 36.6	101° 31.7 -11° 35.7	116° 31.8 -11° 34.8	131° 31.8 -11° 34.0	146° 31.9 -11° 33.1	161° 31.9 -11° 32.2	+0.0 +0.9
Сб 19	176° 32.0 -11° 31.3	191° 32.0 -11° 30.4	206° 32.1 -11° 29.5	221° 32.1 -11° 28.6	236° 32.2 -11° 27.8	251° 32.2 -11° 26.9	86° 33.0 -11° 15.3	101° 33.0 -11° 14.4	116° 33.1 -11° 13.5	131° 33.2 -11° 12.6	146° 33.2 -11° 11.7	161° 33.3 -11° 10.8	+0.1 +0.9
Вс 20	176° 33.3 -11° 10.0	191° 33.4 -11° 09.1	206° 33.5 -11° 08.2	221° 33.5 -11° 07.3	236° 33.6 -11° 06.4	251° 33.6 -11° 05.5	86° 34.5 -10° 53.8	101° 34.5 -10° 52.9	116° 34.6 -10° 52.0	131° 34.7 -10° 51.1	146° 34.7 -10° 50.2	161° 34.8 -10° 49.3	+0.1 +0.9
Пн 21	176° 34.9 -10° 48.4	191° 34.9 -10° 47.5	206° 35.0 -10° 46.6	221° 35.1 -10° 45.7	236° 35.1 -10° 44.8	251° 35.2 -10° 43.9	86° 36.1 -10° 32.2	101° 36.2 -10° 31.3	116° 36.3 -10° 30.4	131° 36.3 -10° 29.5	146° 36.4 -10° 28.6	161° 36.5 -10° 27.7	+0.1 +0.9
Вт 22	176° 36.6 -10° 26.7	191° 36.6 -10° 25.8	206° 36.7 -10° 24.9	221° 36.8 -10° 24.0	236° 36.9 -10° 23.1	251° 36.9 -10° 22.2	86° 37.9 -10° 10.4	101° 38.0 -10° 09.5	116° 38.1 -10° 08.6	131° 38.2 -10° 07.6	146° 38.3 -10° 06.7	161° 38.3 -10° 05.8	+0.1 +0.9
Ср 23	176° 38.4 -10° 04.9	191° 38.5 -10° 04.0	206° 38.6 -10° 03.1	221° 38.7 -10° 02.2	236° 38.7 -10° 01.2	251° 38.8 -10° 00.3	86° 39.9 -9° 48.4	101° 40.0 -9° 47.5	116° 40.1 -9° 46.6	131° 40.2 -9° 45.7	146° 40.2 -9° 44.7	161° 40.3 -9° 43.8	+0.1 +0.9
Чт 24	176° 40.4 -9° 42.9	191° 40.5 -9° 42.0	206° 40.6 -9° 41.1	221° 40.7 -9° 40.1	236° 40.8 -9° 39.2	251° 40.9 -9° 38.3	86° 42.0 -9° 26.3	101° 42.1 -9° 25.4	116° 42.2 -9° 24.4	131° 42.3 -9° 23.5	146° 42.4 -9° 22.6	161° 42.5 -9° 21.7	+0.1 +0.9
Пт 25	176° 42.6 -9° 20.7	191° 42.7 -9° 19.8	206° 42.8 -9° 18.9	221° 42.8 -9° 18.0	236° 42.9 -9° 17.0	251° 43.0 -9° 16.1	86° 44.3 -9° 04.0	101° 44.4 -9° 03.1	116° 44.5 -9° 02.2	131° 44.6 -9° 01.2	146° 44.7 -9° 00.3	161° 44.8 -8° 59.4	+0.1 +0.9
Сб 26	176° 44.9 -8° 58.4	191° 45.0 -8° 57.5	206° 45.1 -8° 56.6	221° 45.2 -8° 55.7	236° 45.3 -8° 54.7	251° 45.4 -8° 53.8	86° 46.7 -8° 41.6	101° 46.8 -8° 40.7	116° 46.9 -8° 39.8	131° 47.0 -8° 38.8	146° 47.1 -8° 37.9	161° 47.2 -8° 37.0	+0.1 +0.9
Вс 27	176° 47.3 -8° 36.0	191° 47.4 -8° 35.1	206° 47.5 -8° 34.1	221° 47.6 -8° 33.2	236° 47.7 -8° 32.3	251° 47.8 -8° 31.3	86° 49.2 -8° 19.1	101° 49.3 -8° 18.2	116° 49.5 -8° 17.2	131° 49.6 -8° 16.3	146° 49.7 -8° 15.4	161° 49.8 -8° 14.4	+0.1 +0.9
Пн 28	176° 49.9 -8° 13.5	191° 50.0 -8° 12.5	206° 50.1 -8° 11.6	221° 50.2 -8° 10.6	236° 50.3 -8° 09.7	251° 50.5 -8° 08.8	86° 51.9 -7° 56.5	101° 52.0 -7° 55.5	116° 52.2 -7° 54.6	131° 52.3 -7° 53.6	146° 52.4 -7° 52.7	161° 52.5 -7° 51.7	+0.1 +0.9
Вт 29	176° 52.6 -7° 50.8	191° 52.7 -7° 49.8	206° 52.8 -7° 48.9	221° 53.0 -7° 48.0	236° 53.1 -7° 47.0	251° 53.2 -7° 46.1	86° 54.7 -7° 33.7	101° 54.9 -7° 32.8	116° 55.0 -7° 31.8	131° 55.1 -7° 30.9	146° 55.2 -7° 29.9	161° 55.3 -7° 29.0	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2028

Д	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	Δ'/h	R/p
Вт 1	55° 09.8 12° 34.0	69° 43.7 12° 46.2	84° 17.5 12° 58.3	98° 51.2 13° 10.4	113° 24.9 13° 22.5	127° 58.5 13° 34.5	142° 32.0 13° 46.5	157° 05.4 13° 58.4	171° 38.8 14° 10.3	186° 12.1 14° 22.1	200° 45.3 14° 33.9	+33.5 +12.0	15.0 55.0
Ср 2	58° 53.7 17° 24.0	73° 25.6 17° 34.8	87° 57.4 17° 45.6	102° 29.1 17° 56.3	117° 00.7 18° 06.9	131° 32.2 18° 17.5	146° 03.6 18° 28.0	160° 34.9 18° 38.4	175° 06.1 18° 48.7	189° 37.2 18° 59.0	204° 08.2 19° 09.2	+31.5 +10.5	15.2 55.7
◐ Чт 3	61° 41.2 21° 32.0	76° 10.5 21° 40.8	90° 39.8 21° 49.4	105° 08.9 21° 58.0	119° 38.0 22° 06.5	134° 06.9 22° 14.9	148° 35.7 22° 23.2	163° 04.4 22° 31.3	177° 33.0 22° 39.4	192° 01.5 22° 47.4	206° 29.9 22° 55.2	+28.9 +8.3	15.4 56.5
Пт 4	63° 22.3 24° 38.7	77° 49.0 24° 44.6	92° 15.5 24° 50.4	106° 41.9 24° 56.0	121° 08.2 25° 01.5	135° 34.4 25° 06.8	150° 00.6 25° 12.0	164° 26.6 25° 17.1	178° 52.5 25° 22.0	193° 18.3 25° 26.8	207° 44.0 25° 31.4	+26.2 +5.3	15.7 57.5
Сб 5	77° 49.0 24° 44.6	92° 15.5 24° 50.4	106° 41.9 24° 56.0	121° 08.2 25° 01.5	135° 34.4 25° 06.8	150° 00.6 25° 12.0	164° 26.6 25° 17.1	178° 52.5 25° 22.0	193° 18.3 25° 26.8	207° 44.0 25° 31.4	222° 09.6 25° 35.9	+26.1 +5.1	15.7 57.5
Вс 6	78° 22.4 26° 24.7	92° 46.6 26° 26.6	107° 10.7 26° 28.4	121° 34.7 26° 30.1	135° 58.6 26° 31.5	150° 22.5 26° 32.8	164° 46.3 26° 33.9	179° 10.1 26° 34.9	193° 33.7 26° 35.6	207° 57.3 26° 36.2	222° 20.9 26° 36.7	+23.8 +1.2	16.0 58.5
Пн 7	78° 07.9 26° 21.4	92° 30.8 26° 18.9	106° 53.6 26° 16.3	121° 16.3 26° 13.4	135° 39.1 26° 10.4	150° 01.8 26° 07.2	164° 24.6 26° 03.8	178° 47.3 26° 00.2	193° 10.0 25° 56.4	207° 32.7 25° 52.4	221° 55.3 25° 48.3	+22.7 -3.3	16.2 59.5
Вт 8	77° 36.2 24° 23.8	91° 59.0 24° 16.8	106° 21.9 24° 09.5	120° 44.8 24° 02.0	135° 07.8 23° 54.4	149° 30.8 23° 46.6	163° 53.8 23° 38.6	178° 16.9 23° 30.5	192° 40.0 23° 22.2	207° 03.1 23° 13.7	221° 26.3 23° 05.0	+23.0 -7.9	16.5 60.4
Ср 9	77° 20.2 20° 35.2	91° 44.2 20° 23.9	106° 08.3 20° 12.5	120° 32.5 20° 01.0	134° 56.8 19° 49.3	149° 21.1 19° 37.5	163° 45.5 19° 25.5	178° 09.9 19° 13.4	192° 34.5 19° 01.2	206° 59.1 18° 48.8	221° 23.7 18° 36.3	+24.4 -11.9	16.6 61.0
○ Чт 10	77° 42.2 15° 13.5	92° 08.0 14° 59.1	106° 33.9 14° 44.6	120° 59.8 14° 30.0	135° 25.9 14° 15.3	149° 52.0 14° 00.5	164° 18.1 13° 45.6	178° 44.4 13° 30.6	193° 10.7 13° 15.5	207° 37.1 13° 00.3	222° 03.5 12° 45.1	+26.1 -14.9	16.7 61.4
Пт 11	78° 48.1 8° 47.5	93° 15.6 8° 31.2	107° 43.2 8° 14.9	122° 10.8 7° 58.5	136° 38.4 7° 42.0	151° 06.1 7° 25.5	165° 33.9 7° 09.0	180° 01.7 6° 52.4	194° 29.5 6° 35.8	208° 57.5 6° 19.2	223° 25.4 6° 02.5	+27.7 -16.5	16.7 61.3
Сб 12	80° 30.4 1° 50.1	94° 59.0 1° 33.2	109° 27.7 1° 16.3	123° 56.4 0° 59.5	138° 25.2 0° 42.6	152° 53.9 0° 25.7	167° 22.7 0° 08.9	181° 51.6 -0° 08.0	196° 20.4 -0° 24.8	210° 49.3 -0° 41.6	225° 18.2 -0° 58.4	+28.8 -16.9	16.6 60.9
Вс 13	82° 34.1 -5° 06.8	97° 03.3 -5° 23.0	111° 32.5 -5° 39.2	126° 01.6 -5° 55.4	140° 30.8 -6° 11.5	155° 00.0 -6° 27.5	169° 29.2 -6° 43.5	183° 58.4 -6° 59.4	198° 27.6 -7° 15.3	212° 56.8 -7° 31.1	227° 26.0 -7° 46.9	+29.2 -16.0	16.4 60.2
Пн 14	84° 43.1 -11° 35.0	99° 12.2 -11° 49.6	113° 41.3 -12° 04.1	128° 10.3 -12° 18.5	142° 39.3 -12° 32.8	157° 08.3 -12° 47.1	171° 37.3 -13° 01.2	186° 06.3 -13° 15.3	200° 35.2 -13° 29.3	215° 04.1 -13° 43.1	229° 33.0 -13° 56.9	+29.0 -14.2	16.2 59.4
Вт 15	86° 43.9 -17° 11.6	101° 12.4 -17° 23.7	115° 40.9 -17° 35.7	130° 09.4 -17° 47.6	144° 37.8 -17° 59.4	159° 06.3 -18° 11.0	173° 34.6 -18° 22.6	188° 03.0 -18° 34.0	202° 31.3 -18° 45.3	216° 59.6 -18° 56.5	231° 27.9 -19° 07.6	+28.4 -11.6	15.9 58.4
Ср 16	88° 28.7 -21° 38.7	102° 56.6 -21° 47.7	117° 24.4 -21° 56.7	131° 52.2 -22° 05.4	146° 19.9 -22° 14.1	160° 47.7 -22° 22.6	175° 15.4 -22° 31.0	189° 43.1 -22° 39.2	204° 10.8 -22° 47.3	218° 38.4 -22° 55.3	233° 06.0 -23° 03.1	+27.7 -8.4	15.7 57.4
◑ Чт 17	89° 58.2 -24° 43.9	104° 25.6 -24° 49.5	118° 53.0 -24° 54.9	133° 20.3 -25° 00.2	147° 47.6 -25° 05.4	162° 15.0 -25° 10.4	176° 42.3 -25° 15.2	191° 09.6 -25° 20.0	205° 36.9 -25° 24.5	220° 04.3 -25° 29.0	234° 31.6 -25° 33.3	+27.3 -4.9	15.4 56.5
Пт 18	91° 21.7 -26° 20.2	105° 49.1 -26° 22.2	120° 16.5 -26° 24.0	134° 44.0 -26° 25.7	149° 11.5 -26° 27.3	163° 39.0 -26° 28.7	178° 06.5 -26° 29.9	192° 34.0 -26° 31.0	207° 01.6 -26° 32.0	221° 29.1 -26° 32.8	235° 56.7 -26° 33.5	+27.5 -1.3	15.2 55.7
Сб 19	92° 54.5 -26° 27.0	107° 22.7 -26° 25.5	121° 50.8 -26° 23.8	136° 19.1 -26° 22.0	150° 47.4 -26° 20.0	165° 15.7 -26° 18.0	179° 44.0 -26° 15.8	194° 12.5 -26° 13.4	208° 40.9 -26° 11.0	223° 09.4 -26° 08.4	237° 38.0 -26° 05.6	+28.3 +2.1	15.0 55.1
Вс 20	94° 53.0 -25° 09.5	109° 22.4 -25° 04.7	123° 52.0 -24° 59.9	138° 21.5 -24° 54.9	152° 51.2 -24° 49.9	167° 20.9 -24° 44.7	181° 50.7 -24° 39.3	196° 20.5 -24° 33.9	210° 50.4 -24° 28.4	225° 20.4 -24° 22.7	239° 50.4 -24° 17.0	+29.7 +5.3	14.9 54.6
Пн 21	97° 28.9 -22° 37.6	112° 00.0 -22° 30.1	126° 31.2 -22° 22.6	141° 02.4 -22° 15.0	155° 33.7 -22° 07.2	170° 05.1 -21° 59.4	184° 36.6 -21° 51.5	199° 08.1 -21° 43.4	213° 39.6 -21° 35.3	228° 11.3 -21° 27.1	242° 43.0 -21° 18.8	+31.4 +7.9	14.8 54.3
Вт 22	100° 46.8 -19° 04.0	115° 19.5 -18° 54.4	129° 52.4 -18° 44.7	144° 25.2 -18° 34.9	158° 58.2 -18° 25.0	173° 31.2 -18° 15.1	188° 04.3 -18° 05.1	202° 37.4 -17° 55.0	217° 10.7 -17° 44.8	231° 43.9 -17° 34.6	246° 17.2 -17° 24.3	+33.1 +10.0	14.7 54.0
Ср 23	104° 43.9 -14° 42.2	119° 18.1 -14° 30.9	133° 52.3 -14° 19.5	148° 26.6 -14° 08.1	163° 01.0 -13° 56.7	177° 35.4 -13° 45.2	192° 09.8 -13° 33.6	206° 44.3 -13° 22.0	221° 18.9 -13° 10.4	235° 53.5 -12° 58.7	250° 28.1 -12° 46.9	+34.4 +11.5	14.7 53.9
Чт 24	109° 12.4 -9° 45.2	123° 47.7 -9° 32.8	138° 22.9 -9° 20.4	152° 58.2 -9° 07.9	167° 33.6 -8° 55.3	182° 09.0 -8° 42.8	196° 44.3 -8° 30.2	211° 19.8 -8° 17.5	225° 55.2 -8° 04.9	240° 30.7 -7° 52.2	255° 06.2 -7° 39.5	+35.4 +12.6	14.7 53.9
● Пт 25	114° 01.2 -4° 25.6	128° 37.0 -4° 12.5	143° 12.9 -3° 59.4	157° 48.7 -3° 46.3	172° 24.5 -3° 33.2	187° 00.3 -3° 20.0	201° 36.2 -3° 06.9	216° 12.0 -2° 53.7	230° 47.9 -2° 40.5	245° 23.7 -2° 27.3	259° 59.6 -2° 14.1	+35.8 +13.2	14.7 54.0
Сб 26	118° 57.5 1° 04.9	133° 33.3 1° 18.2	148° 09.1 1° 31.5	162° 44.9 1° 44.8	177° 20.6 1° 58.1	191° 56.4 2° 11.3	206° 32.1 2° 24.6	221° 07.9 2° 37.9	235° 43.6 2° 51.1	250° 19.3 3° 04.4	264° 54.9 3° 17.6	+35.8 +13.3	14.8 54.1
Вс 27	123° 47.2 6° 34.8	138° 22.4 6° 47.8	152° 57.6 7° 00.8	167° 32.8 7° 13.8	182° 08.0 7° 26.8	196° 43.1 7° 39.7	211° 18.1 7° 52.6	225° 53.2 8° 05.5	240° 28.1 8° 18.3	255° 03.1 8° 31.2	269° 38.0 8° 43.9	+35.1 +12.9	14.8 54.4
Пн 28	128° 15.9 11° 52.1	142° 50.0 12° 04.3	157° 24.1 12° 16.5	171° 58.0 12° 28.7	186° 32.0 12° 40.8	201° 05.9 12° 52.9	215° 39.7 13° 04.9	230° 13.4 13° 16.9	244° 47.1 13° 28.8	259° 20.7 13° 40.7	273° 54.3 13° 52.5	+33.8 +12.0	14.9 54.7
Вт 29	142° 50.0 12° 04.3	157° 24.1 12° 16.5	171° 58.0 12° 28.7	186° 32.0 12° 40.8	201° 05.9 12° 52.9	215° 39.7 13° 04.9	230° 13.4 13° 16.9	244° 47.1 13° 28.8	259° 20.7 13° 40.7	273° 54.3 13° 52.5	288° 27.8 14° 04.3	+33.8 +12.0	14.9 54.8

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Первая четв.: 3 19h10 — Полнолуние: 10 15h03 — Последняя четв.: 17 08h08 — Новолуние: 25 10h37

СОЛНЦЕ

Март 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	176° 55.5 -7° 28.0	191° 55.6 -7° 27.1	206° 55.7 -7° 26.1	221° 55.8 -7° 25.2	236° 56.0 -7° 24.2	251° 56.1 -7° 23.2	86° 57.7 -7° 10.9	101° 57.8 -7° 09.9	116° 57.9 -7° 08.9	131° 58.1 -7° 08.0	146° 58.2 -7° 07.0	161° 58.3 -7° 06.1	+0.1 +1.0
Чт 2	176° 58.4 -7° 05.1	191° 58.6 -7° 04.2	206° 58.7 -7° 03.2	221° 58.8 -7° 02.3	236° 59.0 -7° 01.3	251° 59.1 -7° 00.3	87° 00.8 -6° 47.9	102° 00.9 -6° 46.9	117° 01.0 -6° 46.0	132° 01.2 -6° 45.0	147° 01.3 -6° 44.0	162° 01.4 -6° 43.1	+0.1 +1.0
Пт 3	177° 01.6 -6° 42.1	192° 01.7 -6° 41.2	207° 01.8 -6° 40.2	222° 01.9 -6° 39.2	237° 02.1 -6° 38.3	252° 02.2 -6° 37.3	87° 04.0 -6° 24.8	102° 04.1 -6° 23.9	117° 04.2 -6° 22.9	132° 04.4 -6° 21.9	147° 04.5 -6° 21.0	162° 04.6 -6° 20.0	+0.1 +1.0
Сб 4	177° 04.8 -6° 19.0	192° 04.9 -6° 18.1	207° 05.0 -6° 17.1	222° 05.2 -6° 16.2	237° 05.3 -6° 15.2	252° 05.5 -6° 14.2	87° 07.3 -6° 01.7	102° 07.4 -6° 00.7	117° 07.6 -5° 59.7	132° 07.7 -5° 58.8	147° 07.8 -5° 57.8	162° 08.0 -5° 56.8	+0.1 +1.0
Вс 5	177° 08.1 -5° 55.9	192° 08.3 -5° 54.9	207° 08.4 -5° 53.9	222° 08.5 -5° 53.0	237° 08.7 -5° 52.0	252° 08.8 -5° 51.0	87° 10.7 -5° 38.5	102° 10.8 -5° 37.5	117° 11.0 -5° 36.5	132° 11.1 -5° 35.5	147° 11.3 -5° 34.6	162° 11.4 -5° 33.6	+0.1 +1.0
Пн 6	177° 11.6 -5° 32.6	192° 11.7 -5° 31.7	207° 11.9 -5° 30.7	222° 12.0 -5° 29.7	237° 12.2 -5° 28.8	252° 12.3 -5° 27.8	87° 14.2 -5° 15.1	102° 14.4 -5° 14.2	117° 14.5 -5° 13.2	132° 14.7 -5° 12.2	147° 14.8 -5° 11.3	162° 15.0 -5° 10.3	+0.1 +1.0
Вт 7	177° 15.1 -5° 09.3	192° 15.3 -5° 08.3	207° 15.4 -5° 07.4	222° 15.6 -5° 06.4	237° 15.7 -5° 05.4	252° 15.9 -5° 04.4	87° 17.9 -4° 51.8	102° 18.0 -4° 50.8	117° 18.2 -4° 49.8	132° 18.3 -4° 48.9	147° 18.5 -4° 47.9	162° 18.6 -4° 46.9	+0.2 +1.0
Ср 8	177° 18.8 -4° 45.9	192° 18.9 -4° 45.0	207° 19.1 -4° 44.0	222° 19.2 -4° 43.0	237° 19.4 -4° 42.0	252° 19.6 -4° 41.0	87° 21.6 -4° 28.3	102° 21.7 -4° 27.4	117° 21.9 -4° 26.4	132° 22.1 -4° 25.4	147° 22.2 -4° 24.4	162° 22.4 -4° 23.5	+0.2 +1.0
Чт 9	177° 22.5 -4° 22.5	192° 22.7 -4° 21.5	207° 22.9 -4° 20.5	222° 23.0 -4° 19.5	237° 23.2 -4° 18.6	252° 23.3 -4° 17.6	87° 25.4 -4° 04.9	102° 25.6 -4° 03.9	117° 25.7 -4° 02.9	132° 25.9 -4° 01.9	147° 26.1 -4° 00.9	162° 26.2 -4° 00.0	+0.2 +1.0
Пт 10	177° 26.4 -3° 59.0	192° 26.5 -3° 58.0	207° 26.7 -3° 57.0	222° 26.9 -3° 56.0	237° 27.0 -3° 55.1	252° 27.2 -3° 54.1	87° 29.3 -3° 41.3	102° 29.5 -3° 40.3	117° 29.6 -3° 39.4	132° 29.8 -3° 38.4	147° 30.0 -3° 37.4	162° 30.1 -3° 36.4	+0.2 +1.0
Сб 11	177° 30.3 -3° 35.4	192° 30.5 -3° 34.5	207° 30.6 -3° 33.5	222° 30.8 -3° 32.5	237° 31.0 -3° 31.5	252° 31.1 -3° 30.5	87° 33.3 -3° 17.7	102° 33.5 -3° 16.8	117° 33.6 -3° 15.8	132° 33.8 -3° 14.8	147° 34.0 -3° 13.8	162° 34.1 -3° 12.8	+0.2 +1.0
Вс 12	177° 34.3 -3° 11.8	192° 34.5 -3° 10.9	207° 34.6 -3° 09.9	222° 34.8 -3° 08.9	237° 35.0 -3° 07.9	252° 35.2 -3° 06.9	87° 37.4 -2° 54.1	102° 37.5 -2° 53.1	117° 37.7 -2° 52.2	132° 37.9 -2° 51.2	147° 38.0 -2° 50.2	162° 38.2 -2° 49.2	+0.2 +1.0
Пн 13	177° 38.4 -2° 48.2	192° 38.6 -2° 47.2	207° 38.7 -2° 46.2	222° 38.9 -2° 45.3	237° 39.1 -2° 44.3	252° 39.2 -2° 43.3	87° 41.5 -2° 30.5	102° 41.7 -2° 29.5	117° 41.8 -2° 28.5	132° 42.0 -2° 27.5	147° 42.2 -2° 26.5	162° 42.4 -2° 25.5	+0.2 +1.0
Вт 14	177° 42.5 -2° 24.6	192° 42.7 -2° 23.6	207° 42.9 -2° 22.6	222° 43.1 -2° 21.6	237° 43.2 -2° 20.6	252° 43.4 -2° 19.6	87° 45.7 -2° 06.8	102° 45.8 -2° 05.8	117° 46.0 -2° 04.8	132° 46.2 -2° 03.8	147° 46.4 -2° 02.8	162° 46.6 -2° 01.9	+0.2 +1.0
Ср 15	177° 46.7 -2° 00.9	192° 46.9 -1° 59.9	207° 47.1 -1° 58.9	222° 47.3 -1° 57.9	237° 47.4 -1° 56.9	252° 47.6 -1° 55.9	87° 49.9 -1° 43.1	102° 50.1 -1° 42.1	117° 50.3 -1° 41.1	132° 50.4 -1° 40.1	147° 50.6 -1° 39.1	162° 50.8 -1° 38.2	+0.2 +1.0
Чт 16	177° 51.0 -1° 37.2	192° 51.2 -1° 36.2	207° 51.3 -1° 35.2	222° 51.5 -1° 34.2	237° 51.7 -1° 33.2	252° 51.9 -1° 32.2	87° 54.2 -1° 19.4	102° 54.4 -1° 18.4	117° 54.6 -1° 17.4	132° 54.7 -1° 16.4	147° 54.9 -1° 15.4	162° 55.1 -1° 14.4	+0.2 +1.0
Пт 17	177° 55.3 -1° 13.4	192° 55.5 -1° 12.5	207° 55.6 -1° 11.5	222° 55.8 -1° 10.5	237° 56.0 -1° 09.5	252° 56.2 -1° 08.5	87° 58.5 -0° 55.6	102° 58.7 -0° 54.7	117° 58.9 -0° 53.7	132° 59.1 -0° 52.7	147° 59.3 -0° 51.7	162° 59.4 -0° 50.7	+0.2 +1.0
Сб 18	177° 59.6 -0° 49.7	192° 59.8 -0° 48.7	208° 00.0 -0° 47.7	223° 00.2 -0° 46.7	238° 00.3 -0° 45.8	253° 00.5 -0° 44.8	88° 02.9 -0° 31.9	103° 03.1 -0° 30.9	118° 03.3 -0° 29.9	133° 03.5 -0° 28.9	148° 03.6 -0° 28.0	163° 03.8 -0° 27.0	+0.2 +1.0
Вс 19	178° 04.0 -0° 26.0	193° 04.2 -0° 25.0	208° 04.4 -0° 24.0	223° 04.6 -0° 23.0	238° 04.7 -0° 22.0	253° 04.9 -0° 21.0	88° 07.3 -0° 08.2	103° 07.5 -0° 07.2	118° 07.7 -0° 06.2	133° 07.9 -0° 05.2	148° 08.0 -0° 04.2	163° 08.2 -0° 03.2	+0.2 +1.0
Пн 20	178° 08.4 -0° 02.3	193° 08.6 -0° 01.3	208° 08.8 -0° 00.3	223° 09.0 0° 00.7	238° 09.1 0° 01.7	253° 09.3 0° 02.7	88° 11.7 0° 15.5	103° 11.9 0° 16.5	118° 12.1 0° 17.5	133° 12.3 0° 18.5	148° 12.5 0° 19.5	163° 12.7 0° 20.5	+0.2 +1.0
Вт 21	178° 12.9 0° 21.5	193° 13.0 0° 22.4	208° 13.2 0° 23.4	223° 13.4 0° 24.4	238° 13.6 0° 25.4	253° 13.8 0° 26.4	88° 16.2 0° 39.2	103° 16.4 0° 40.2	118° 16.6 0° 41.2	133° 16.8 0° 42.2	148° 16.9 0° 43.2	163° 17.1 0° 44.2	+0.2 +1.0
Ср 22	178° 17.3 0° 45.2	193° 17.5 0° 46.1	208° 17.7 0° 47.1	223° 17.9 0° 48.1	238° 18.1 0° 49.1	253° 18.2 0° 50.1	88° 20.7 1° 02.9	103° 20.9 1° 03.9	118° 21.0 1° 04.9	133° 21.2 1° 05.9	148° 21.4 1° 06.9	163° 21.6 1° 07.8	+0.2 +1.0
Чт 23	178° 21.8 1° 08.8	193° 22.0 1° 09.8	208° 22.2 1° 10.8	223° 22.4 1° 11.8	238° 22.5 1° 12.8	253° 22.7 1° 13.8	88° 25.2 1° 26.6	103° 25.3 1° 27.5	118° 25.5 1° 28.5	133° 25.7 1° 29.5	148° 25.9 1° 30.5	163° 26.1 1° 31.5	+0.2 +1.0
Пт 24	178° 26.3 1° 32.5	193° 26.5 1° 33.5	208° 26.7 1° 34.4	223° 26.8 1° 35.4	238° 27.0 1° 36.4	253° 27.2 1° 37.4	88° 29.7 1° 50.2	103° 29.8 1° 51.2	118° 30.0 1° 52.1	133° 30.2 1° 53.1	148° 30.4 1° 54.1	163° 30.6 1° 55.1	+0.2 +1.0
Сб 25	178° 30.8 1° 56.1	193° 31.0 1° 57.1	208° 31.2 1° 58.0	223° 31.4 1° 59.0	238° 31.5 2° 00.0	253° 31.7 2° 01.0	88° 34.2 2° 13.7	103° 34.4 2° 14.7	118° 34.5 2° 15.7	133° 34.7 2° 16.7	148° 34.9 2° 17.7	163° 35.1 2° 18.7	+0.2 +1.0
Вс 26	178° 35.3 2° 19.6	193° 35.5 2° 20.6	208° 35.7 2° 21.6	223° 35.9 2° 22.6	238° 36.0 2° 23.6	253° 36.2 2° 24.5	88° 38.7 2° 37.3	103° 38.9 2° 38.3	118° 39.1 2° 39.2	133° 39.2 2° 40.2	148° 39.4 2° 41.2	163° 39.6 2° 42.2	+0.2 +1.0
Пн 27	178° 39.8 2° 43.1	193° 40.0 2° 44.1	208° 40.2 2° 45.1	223° 40.4 2° 46.1	238° 40.6 2° 47.1	253° 40.7 2° 48.0	88° 43.2 3° 00.7	103° 43.4 3° 01.7	118° 43.6 3° 02.7	133° 43.7 3° 03.7	148° 43.9 3° 04.7	163° 44.1 3° 05.6	+0.2 +1.0
Вт 28	178° 44.3 3° 06.6	193° 44.5 3° 07.6	208° 44.7 3° 08.6	223° 44.9 3° 09.5	238° 45.1 3° 10.5	253° 45.2 3° 11.5	88° 47.7 3° 24.2	103° 47.9 3° 25.1	118° 48.1 3° 26.1	133° 48.2 3° 27.1	148° 48.4 3° 28.1	163° 48.6 3° 29.0	+0.2 +1.0
Ср 29	178° 48.8 3° 30.0	193° 49.0 3° 31.0	208° 49.2 3° 32.0	223° 49.4 3° 32.9	238° 49.6 3° 33.9	253° 49.7 3° 34.9	88° 52.2 3° 47.5	103° 52.4 3° 48.5	118° 52.5 3° 49.5	133° 52.7 3° 50.4	148° 52.9 3° 51.4	163° 53.1 3° 52.4	+0.2 +1.0
Чт 30	178° 53.3 3° 53.3	193° 53.5 3° 54.3	208° 53.7 3° 55.3	223° 53.8 3° 56.2	238° 54.0 3° 57.2	253° 54.2 3° 58.2	88° 56.6 4° 10.8	103° 56.8 4° 11.8	118° 57.0 4° 12.7	133° 57.2 4° 13.7	148° 57.4 4° 14.7	163° 57.6 4° 15.6	+0.2 +1.0
Пт 31	178° 57.8 4° 16.6	193° 57.9 4° 17.6	208° 58.1 4° 18.5	223° 58.3 4° 19.5	238° 58.5 4° 20.5	253° 58.7 4° 21.4	89° 01.1 4° 34.0	104° 01.3 4° 34.9	119° 01.5 4° 35.9	134° 01.6 4° 36.9	149° 01.8 4° 37.8	164° 02.0 4° 38.8	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2028

Д	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	Δ°/h	R/p
Ср 1	62° 42.1	77° 12.8	91° 43.5	106° 14.0	120° 44.5	135° 14.9	149° 45.2	164° 15.4	178° 45.5	193° 15.5	207° 45.4	+30.3	15.2
	20° 07.9	20° 17.3	20° 26.6	20° 35.8	20° 44.9	20° 53.9	21° 02.8	21° 11.7	21° 20.4	21° 29.1	21° 37.6	+9.0	55.7
Чт 2	65° 02.9	79° 31.3	93° 59.7	108° 27.9	122° 56.1	137° 24.1	151° 52.1	166° 19.9	180° 47.7	195° 15.4	209° 43.0	+28.0	15.4
	23° 33.4	23° 40.2	23° 46.9	23° 53.5	24° 00.0	24° 06.3	24° 12.5	24° 18.7	24° 24.6	24° 30.5	24° 36.2	+6.3	56.4
Пт 3	66° 26.5	80° 52.8	95° 19.0	109° 45.0	124° 11.1	138° 37.0	153° 02.9	167° 28.7	181° 54.4	196° 20.0	210° 45.6	+25.9	15.6
	25° 46.1	25° 49.6	25° 53.0	25° 56.3	25° 59.4	26° 02.3	26° 05.1	26° 07.8	26° 10.3	26° 12.6	26° 14.8	+2.9	57.2
◐ Сб 4	67° 02.1	81° 26.8	95° 51.5	110° 16.1	124° 40.6	139° 05.1	153° 29.6	167° 54.1	182° 18.5	196° 42.9	211° 07.2	+24.5	15.8
	26° 28.6	26° 28.3	26° 27.7	26° 27.0	26° 26.1	26° 25.1	26° 23.9	26° 22.5	26° 20.9	26° 19.2	26° 17.3	-1.1	58.1
Вс 5	81° 26.8	95° 51.5	110° 16.1	124° 40.6	139° 05.1	153° 29.6	167° 54.1	182° 18.5	196° 42.9	211° 07.2	225° 31.6	+24.5	15.8
	26° 28.3	26° 27.7	26° 27.0	26° 26.1	26° 25.1	26° 23.9	26° 22.5	26° 20.9	26° 19.2	26° 17.3	26° 15.2	-1.3	58.1
Пн 6	81° 34.4	95° 58.5	110° 22.7	124° 46.8	139° 11.0	153° 35.1	167° 59.3	182° 23.4	196° 47.6	211° 11.8	225° 36.0	+24.2	16.1
	25° 23.7	25° 18.9	25° 13.9	25° 08.7	25° 03.4	24° 57.9	24° 52.3	24° 46.4	24° 40.4	24° 34.2	24° 27.9	-5.6	59.0
Вт 7	81° 41.9	96° 06.5	110° 31.2	124° 55.9	139° 20.6	153° 45.4	168° 10.2	182° 35.1	197° 00.0	211° 25.0	225° 50.0	+24.8	16.3
	22° 32.9	22° 23.9	22° 14.8	22° 05.5	21° 56.1	21° 46.5	21° 36.7	21° 26.9	21° 16.8	21° 06.6	20° 56.3	-9.7	59.9
Ср 8	82° 10.8	96° 36.6	111° 02.4	125° 28.3	139° 54.3	154° 20.3	168° 46.3	183° 12.4	197° 38.6	212° 04.8	226° 31.1	+26.0	16.5
	18° 04.2	17° 51.7	17° 39.0	17° 26.2	17° 13.3	17° 00.3	16° 47.1	16° 33.8	16° 20.5	16° 07.0	15° 53.3	-13.1	60.6
Чт 9	83° 11.2	97° 38.3	112° 05.4	126° 32.6	140° 59.8	155° 27.1	169° 54.4	184° 21.7	198° 49.1	213° 16.5	227° 44.0	+27.3	16.7
	12° 16.8	12° 01.6	11° 46.3	11° 31.0	11° 15.6	11° 00.1	10° 44.5	10° 28.9	10° 13.1	9° 57.4	9° 41.5	-15.5	61.1
Пт 10	84° 40.7	99° 08.8	113° 36.8	128° 05.0	142° 33.1	157° 01.2	171° 29.4	185° 57.6	200° 25.9	214° 54.1	229° 22.4	+28.2	16.7
	5° 37.1	5° 20.4	5° 03.8	4° 47.1	4° 30.3	4° 13.5	3° 56.8	3° 39.9	3° 23.1	3° 06.2	2° 49.4	-16.8	61.2
○ Сб 11	86° 28.4	100° 56.8	115° 25.3	129° 53.8	144° 22.3	158° 50.8	173° 19.3	187° 47.8	202° 16.3	216° 44.8	231° 13.3	+28.5	16.6
	-1° 24.3	-1° 41.1	-1° 58.0	-2° 14.8	-2° 31.6	-2° 48.4	-3° 05.1	-3° 21.9	-3° 38.6	-3° 55.2	-4° 11.9	-16.8	61.0
Вс 12	88° 19.7	102° 48.0	117° 16.3	131° 44.6	146° 12.9	160° 41.1	175° 09.4	189° 37.6	204° 05.8	218° 33.9	233° 02.1	+28.2	16.5
	-8° 16.1	-8° 32.0	-8° 47.8	-9° 03.5	-9° 19.1	-9° 34.7	-9° 50.2	-10° 05.7	-10° 21.1	-10° 36.3	-10° 51.6	-15.5	60.5
Пн 13	90° 01.2	104° 29.0	118° 56.6	133° 24.3	147° 51.9	162° 19.5	176° 47.1	191° 14.6	205° 42.1	220° 09.6	234° 37.0	+27.6	16.3
	-14° 29.4	-14° 43.1	-14° 56.8	-15° 10.3	-15° 23.8	-15° 37.1	-15° 50.3	-16° 03.5	-16° 16.5	-16° 29.3	-16° 42.1	-13.3	59.7
Вт 14	91° 24.8	105° 51.8	120° 18.7	134° 45.6	149° 12.4	163° 39.2	178° 06.0	192° 32.8	206° 59.5	221° 26.3	235° 52.9	+26.8	16.0
	-19° 39.3	-19° 50.1	-20° 00.8	-20° 11.3	-20° 21.7	-20° 31.9	-20° 42.1	-20° 52.0	-21° 01.9	-21° 11.6	-21° 21.2	-10.2	58.8
Ср 15	92° 30.6	106° 57.0	121° 23.3	135° 49.7	150° 16.0	164° 42.3	179° 08.7	193° 35.0	208° 01.3	222° 27.6	236° 53.9	+26.3	15.7
	-23° 27.5	-23° 34.7	-23° 41.8	-23° 48.8	-23° 55.6	-24° 02.2	-24° 08.7	-24° 15.0	-24° 21.2	-24° 27.3	-24° 33.1	-6.6	57.7
Чт 16	93° 28.4	107° 54.8	122° 21.2	136° 47.6	151° 14.0	165° 40.5	180° 06.9	194° 33.4	208° 59.9	223° 26.5	237° 53.0	+26.5	15.5
	-25° 43.1	-25° 46.5	-25° 49.8	-25° 52.9	-25° 55.9	-25° 58.7	-26° 01.4	-26° 03.9	-26° 06.3	-26° 08.5	-26° 10.5	-2.7	56.8
◑ Пт 17	94° 35.4	109° 02.5	123° 29.7	137° 56.9	152° 24.2	166° 51.6	181° 18.9	195° 46.4	210° 13.8	224° 41.4	239° 09.0	+27.4	15.2
	-26° 23.6	-26° 23.3	-26° 22.8	-26° 22.2	-26° 21.5	-26° 20.6	-26° 19.6	-26° 18.5	-26° 17.2	-26° 15.7	-26° 14.1	+0.9	55.9
Сб 18	96° 09.9	110° 38.5	125° 07.1	139° 35.8	154° 04.6	168° 33.5	183° 02.4	197° 31.3	212° 00.4	226° 29.5	240° 58.7	+28.9	15.0
	-25° 34.3	-25° 30.6	-25° 26.8	-25° 22.8	-25° 18.7	-25° 14.5	-25° 10.2	-25° 05.8	-25° 01.2	-24° 56.5	-24° 51.7	+4.3	55.2
Вс 19	98° 25.5	112° 55.8	127° 26.3	141° 56.8	156° 27.4	170° 58.1	185° 28.8	199° 59.7	214° 30.6	229° 01.6	243° 32.6	+30.7	14.9
	-23° 25.9	-23° 19.3	-23° 12.6	-23° 05.8	-22° 58.9	-22° 51.9	-22° 44.8	-22° 37.6	-22° 30.3	-22° 22.9	-22° 15.4	+7.1	54.6
Пн 20	101° 27.2	115° 59.4	130° 31.7	145° 04.0	159° 36.4	174° 08.9	188° 41.5	203° 14.1	217° 46.8	232° 19.5	246° 52.4	+32.5	14.8
	-20° 12.0	-20° 03.1	-19° 54.1	-19° 45.0	-19° 35.8	-19° 26.6	-19° 17.3	-19° 07.9	-18° 58.4	-18° 48.8	-18° 39.2	+9.3	54.2
Вт 21	105° 12.2	119° 46.0	134° 19.9	148° 53.8	163° 27.8	178° 01.8	192° 35.8	207° 10.0	221° 44.1	236° 18.4	250° 52.6	+34.0	14.7
	-16° 06.4	-15° 55.7	-15° 44.9	-15° 34.1	-15° 23.2	-15° 12.2	-15° 01.2	-14° 50.1	-14° 39.0	-14° 27.8	-14° 16.6	+11.0	54.0
Ср 22	109° 32.2	124° 07.2	138° 42.2	153° 17.2	167° 52.3	182° 27.4	197° 02.5	211° 37.7	226° 12.9	240° 48.2	255° 23.4	+35.1	14.7
	-11° 22.1	-11° 10.1	-10° 58.0	-10° 45.9	-10° 33.8	-10° 21.6	-10° 09.4	-9° 57.2	-9° 44.9	-9° 32.6	-9° 20.2	+12.2	53.9
Чт 23	114° 15.4	128° 51.0	143° 26.7	158° 02.3	172° 38.0	187° 13.7	201° 49.4	216° 25.1	231° 00.8	245° 36.5	260° 12.3	+35.7	14.7
	-6° 11.0	-5° 58.2	-5° 45.3	-5° 32.4	-5° 19.5	-5° 06.6	-4° 53.6	-4° 40.7	-4° 27.7	-4° 14.7	-4° 01.6	+12.9	54.0
Пт 24	119° 08.6	133° 44.3	148° 20.1	162° 55.8	177° 31.5	192° 07.2	206° 42.9	221° 18.6	235° 54.3	250° 29.9	265° 05.6	+35.7	14.8
	-0° 44.5	-0° 31.3	-0° 18.0	-0° 04.8	0° 08.4	0° 21.7	0° 34.9	0° 48.2	1° 01.4	1° 14.7	1° 27.9	+13.2	54.2
Сб 25	123° 57.8	138° 33.1	153° 08.4	167° 43.6	182° 18.8	196° 53.9	211° 29.1	226° 04.2	240° 39.2	255° 14.2	269° 49.2	+35.1	14.8
	4° 46.1	4° 59.3	5° 12.4	5° 25.5	5° 38.6	5° 51.7	6° 04.8	6° 17.8	6° 30.9	6° 43.9	6° 56.9	+13.1	54.4
● Вс 26	128° 29.0	143° 03.2	157° 37.5	172° 11.6	186° 45.8	201° 19.8	215° 53.8	230° 27.8	245° 01.7	259° 35.5	274° 09.3	+34.0	14.9
	10° 08.8	10° 21.3	10° 33.8	10° 46.3	10° 58.8	11° 11.2	11° 23.5	11° 35.9	11° 48.1	12° 00.4	12° 12.6	+12.2	54.7
Пн 27	132° 28.5	147° 01.2	161° 33.9	176° 06.5	190° 39.0	205° 11.5	219° 43.9	234° 16.2	248° 48.4	263° 20.6	277° 52.7	+32.4	15.0
	15° 09.8	15° 21.2	15° 32.5	15° 43.8	15° 55.0	16° 06.1	16° 17.2	16° 28.2	16° 39.2	16° 50.0	17° 00.8	+11.1	55.1
Вт 28	135° 44.6	150° 15.4	164° 46.1	179° 16.8	193° 47.3	208° 17.8	222° 48.2	237° 18.5	251° 48.8	266° 18.9	280° 49.0	+30.4	15.2
	19° 34.0	19° 43.6	19° 53.0	20° 02.4	20° 11.7	20° 20.9	20° 30.1	20° 39.1	20° 48.0	20° 56.8	21° 05.6	+9.2	55.6
Ср 29	150° 15.4	164° 46.1	179° 16.8	193° 47.3	208° 17.8	222° 48.2	237° 18.5	251° 48.8	266° 18.9	280° 49.0	295° 18.9	+30.4	15.2
	19° 43.6	19° 53.0	20° 02.4	20° 11.7	20° 20.9	20° 30.1	20° 39.1	20° 48.0	20° 56.8	21° 05.6	21° 14.2	+9.1	55.6
Чт 30	152° 38.5	167° 07.1	181° 35.6	196° 04.1	210° 32.5	225° 00.8	239° 29.0	253° 57.2	268° 25.2	282° 53.2	297° 21.1	+28.3	15.3
	23° 11.3	23° 18.3	23° 25.1	23° 31.8	23° 38.3	23° 44.8	23° 51.1	23° 57.3	24° 03.4	24° 09.4	24° 15.2	+6.4	56.1
Пт 31	154° 10.8	168° 37.6	183° 04.3	197° 30.9	211° 57.5	226° 24.0	240° 50.4	255° 16.8	269° 43.1	284° 09.4	298° 35.6	+26.5	15.5
	25° 27.0	25° 30.7	25° 34.2	25° 37.6	25° 40.9	25° 44.0	25° 47.0	25° 49.8	25° 52.5	25° 55.1	25° 57.4	+3.0	56.7

Строка 1: $t_{гр}$, Δ°/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ°/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Первая четв.: 4 09h02 — Полнолуние: 11 01h06 — Последняя четв.: 17 23h22 — Новолуние: 26 04h31

СОЛНЦЕ

Апрель 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ’/h
Сб 1	179° 02.2 4° 39.8	194° 02.4 4° 40.7	209° 02.6 4° 41.7	224° 02.8 4° 42.7	239° 02.9 4° 43.6	254° 03.1 4° 44.6	89° 05.5 4° 57.1	104° 05.7 4° 58.1	119° 05.9 4° 59.0	134° 06.1 5° 00.0	149° 06.3 5° 00.9	164° 06.4 5° 01.9	+0.2 +1.0
Вс 2	179° 06.6 5° 02.9	194° 06.8 5° 03.8	209° 07.0 5° 04.8	224° 07.2 5° 05.7	239° 07.4 5° 06.7	254° 07.5 5° 07.7	89° 09.9 5° 20.1	104° 10.1 5° 21.1	119° 10.3 5° 22.0	134° 10.5 5° 23.0	149° 10.7 5° 23.9	164° 10.8 5° 24.9	+0.2 +1.0
Пн 3	179° 11.0 5° 25.9	194° 11.2 5° 26.8	209° 11.4 5° 27.8	224° 11.6 5° 28.7	239° 11.8 5° 29.7	254° 11.9 5° 30.6	89° 14.3 5° 43.0	104° 14.5 5° 44.0	119° 14.7 5° 45.0	134° 14.8 5° 45.9	149° 15.0 5° 46.9	164° 15.2 5° 47.8	+0.2 +1.0
Вт 4	179° 15.4 5° 48.8	194° 15.6 5° 49.7	209° 15.7 5° 50.7	224° 15.9 5° 51.6	239° 16.1 5° 52.6	254° 16.3 5° 53.5	89° 18.6 6° 05.9	104° 18.8 6° 06.8	119° 19.0 6° 07.8	134° 19.2 6° 08.7	149° 19.3 6° 09.7	164° 19.5 6° 10.6	+0.2 +1.0
Ср 5	179° 19.7 6° 11.6	194° 19.9 6° 12.5	209° 20.1 6° 13.5	224° 20.2 6° 14.4	239° 20.4 6° 15.3	254° 20.6 6° 16.3	89° 22.9 6° 28.6	104° 23.1 6° 29.5	119° 23.3 6° 30.5	134° 23.5 6° 31.4	149° 23.6 6° 32.4	164° 23.8 6° 33.3	+0.2 +0.9
Чт 6	179° 24.0 6° 34.2	194° 24.2 6° 35.2	209° 24.3 6° 36.1	224° 24.5 6° 37.1	239° 24.7 6° 38.0	254° 24.9 6° 39.0	89° 27.2 6° 51.2	104° 27.3 6° 52.1	119° 27.5 6° 53.1	134° 27.7 6° 54.0	149° 27.9 6° 54.9	164° 28.0 6° 55.9	+0.2 +0.9
Пт 7	179° 28.2 6° 56.8	194° 28.4 6° 57.8	209° 28.6 6° 58.7	224° 28.7 6° 59.6	239° 28.9 7° 00.6	254° 29.1 7° 01.5	89° 31.4 7° 13.7	104° 31.5 7° 14.6	119° 31.7 7° 15.5	134° 31.9 7° 16.5	149° 32.1 7° 17.4	164° 32.2 7° 18.3	+0.2 +0.9
Сб 8	179° 32.4 7° 19.3	194° 32.6 7° 20.2	209° 32.7 7° 21.1	224° 32.9 7° 22.1	239° 33.1 7° 23.0	254° 33.3 7° 23.9	89° 35.5 7° 36.0	104° 35.7 7° 37.0	119° 35.8 7° 37.9	134° 36.0 7° 38.8	149° 36.2 7° 39.8	164° 36.4 7° 40.7	+0.2 +0.9
Вс 9	179° 36.5 7° 41.6	194° 36.7 7° 42.5	209° 36.9 7° 43.5	224° 37.0 7° 44.4	239° 37.2 7° 45.3	254° 37.4 7° 46.2	89° 39.6 7° 58.3	104° 39.7 7° 59.2	119° 39.9 8° 00.1	134° 40.1 8° 01.0	149° 40.2 8° 02.0	164° 40.4 8° 02.9	+0.2 +0.9
Пн 10	179° 40.6 8° 03.8	194° 40.7 8° 04.7	209° 40.9 8° 05.7	224° 41.1 8° 06.6	239° 41.2 8° 07.5	254° 41.4 8° 08.4	89° 43.6 8° 20.4	104° 43.7 8° 21.3	119° 43.9 8° 22.2	134° 44.1 8° 23.1	149° 44.2 8° 24.0	164° 44.4 8° 25.0	+0.2 +0.9
Вт 11	179° 44.6 8° 25.9	194° 44.7 8° 26.8	209° 44.9 8° 27.7	224° 45.1 8° 28.6	239° 45.2 8° 29.5	254° 45.4 8° 30.5	89° 47.5 8° 42.3	104° 47.7 8° 43.3	119° 47.8 8° 44.2	134° 48.0 8° 45.1	149° 48.2 8° 46.0	164° 48.3 8° 46.9	+0.2 +0.9
Ср 12	179° 48.5 8° 47.8	194° 48.6 8° 48.7	209° 48.8 8° 49.6	224° 49.0 8° 50.5	239° 49.1 8° 51.4	254° 49.3 8° 52.4	89° 51.4 9° 04.2	104° 51.5 9° 05.1	119° 51.7 9° 06.0	134° 51.8 9° 06.9	149° 52.0 9° 07.8	164° 52.2 9° 08.7	+0.2 +0.9
Чт 13	179° 52.3 9° 09.6	194° 52.5 9° 10.5	209° 52.6 9° 11.4	224° 52.8 9° 12.3	239° 52.9 9° 13.2	254° 53.1 9° 14.1	89° 55.1 9° 25.8	104° 55.3 9° 26.7	119° 55.4 9° 27.6	134° 55.6 9° 28.5	149° 55.7 9° 29.4	164° 55.9 9° 30.3	+0.2 +0.9
Пт 14	179° 56.1 9° 31.2	194° 56.2 9° 32.1	209° 56.4 9° 33.0	224° 56.5 9° 33.9	239° 56.7 9° 34.8	254° 56.8 9° 35.7	89° 58.8 9° 47.3	104° 59.0 9° 48.2	119° 59.1 9° 49.1	134° 59.3 9° 50.0	149° 59.4 9° 50.9	164° 59.6 9° 51.8	+0.2 +0.9
Сб 15	179° 59.7 9° 52.7	194° 59.9 9° 53.6	210° 00.0 9° 54.5	225° 00.2 9° 55.4	240° 00.3 9° 56.3	255° 00.5 9° 57.2	90° 02.4 10° 08.7	105° 02.5 10° 09.6	120° 02.7 10° 10.5	135° 02.8 10° 11.4	150° 03.0 10° 12.2	165° 03.1 10° 13.1	+0.2 +0.9
Вс 16	180° 03.3 10° 14.0	195° 03.4 10° 14.9	210° 03.6 10° 15.8	225° 03.7 10° 16.7	240° 03.9 10° 17.6	255° 04.0 10° 18.4	90° 05.9 10° 29.9	105° 06.0 10° 30.8	120° 06.2 10° 31.7	135° 06.3 10° 32.5	150° 06.5 10° 33.4	165° 06.6 10° 34.3	+0.1 +0.9
Пн 17	180° 06.7 10° 35.2	195° 06.9 10° 36.0	210° 07.0 10° 36.9	225° 07.2 10° 37.8	240° 07.3 10° 38.7	255° 07.5 10° 39.5	90° 09.3 10° 50.9	105° 09.4 10° 51.8	120° 09.6 10° 52.7	135° 09.7 10° 53.5	150° 09.8 10° 54.4	165° 10.0 10° 55.3	+0.1 +0.9
Вт 18	180° 10.1 10° 56.1	195° 10.3 10° 57.0	210° 10.4 10° 57.9	225° 10.5 10° 58.7	240° 10.7 10° 59.6	255° 10.8 11° 00.5	90° 12.6 11° 11.8	105° 12.7 11° 12.6	120° 12.8 11° 13.5	135° 13.0 11° 14.3	150° 13.1 11° 15.2	165° 13.2 11° 16.1	+0.1 +0.9
Ср 19	180° 13.4 11° 16.9	195° 13.5 11° 17.8	210° 13.6 11° 18.7	225° 13.8 11° 19.5	240° 13.9 11° 20.4	255° 14.0 11° 21.2	90° 15.8 11° 32.4	105° 15.9 11° 33.3	120° 16.0 11° 34.1	135° 16.1 11° 35.0	150° 16.3 11° 35.8	165° 16.4 11° 36.7	+0.1 +0.9
Чт 20	180° 16.5 11° 37.5	195° 16.7 11° 38.4	210° 16.8 11° 39.3	225° 16.9 11° 40.1	240° 17.0 11° 41.0	255° 17.2 11° 41.8	90° 18.8 11° 52.9	105° 19.0 11° 53.7	120° 19.1 11° 54.6	135° 19.2 11° 55.4	150° 19.3 11° 56.3	165° 19.5 11° 57.1	+0.1 +0.9
Пт 21	180° 19.6 11° 58.0	195° 19.7 11° 58.8	210° 19.8 11° 59.7	225° 20.0 12° 00.5	240° 20.1 12° 01.3	255° 20.2 12° 02.2	90° 21.8 12° 13.1	105° 21.9 12° 14.0	120° 22.0 12° 14.8	135° 22.1 12° 15.7	150° 22.3 12° 16.5	165° 22.4 12° 17.3	+0.1 +0.8
Сб 22	180° 22.5 12° 18.2	195° 22.6 12° 19.0	210° 22.7 12° 19.9	225° 22.9 12° 20.7	240° 23.0 12° 21.5	255° 23.1 12° 22.4	90° 24.6 12° 33.2	105° 24.7 12° 34.1	120° 24.9 12° 34.9	135° 25.0 12° 35.7	150° 25.1 12° 36.5	165° 25.2 12° 37.4	+0.1 +0.8
Вс 23	180° 25.3 12° 38.2	195° 25.4 12° 39.0	210° 25.6 12° 39.9	225° 25.7 12° 40.7	240° 25.8 12° 41.5	255° 25.9 12° 42.4	90° 27.4 12° 53.1	105° 27.5 12° 53.9	120° 27.6 12° 54.7	135° 27.7 12° 55.6	150° 27.8 12° 56.4	165° 27.9 12° 57.2	+0.1 +0.8
Пн 24	180° 28.0 12° 58.0	195° 28.1 12° 58.8	210° 28.2 12° 59.7	225° 28.4 13° 00.5	240° 28.5 13° 01.3	255° 28.6 13° 02.1	90° 30.0 13° 12.7	105° 30.1 13° 13.6	120° 30.2 13° 14.4	135° 30.3 13° 15.2	150° 30.4 13° 16.0	165° 30.5 13° 16.8	+0.1 +0.8
Вт 25	180° 30.6 13° 17.6	195° 30.7 13° 18.4	210° 30.8 13° 19.2	225° 30.9 13° 20.1	240° 31.0 13° 20.9	255° 31.1 13° 21.7	90° 32.5 13° 32.2	105° 32.6 13° 33.0	120° 32.7 13° 33.8	135° 32.8 13° 34.6	150° 32.9 13° 35.4	165° 33.0 13° 36.2	+0.1 +0.8
Ср 26	180° 33.1 13° 37.0	195° 33.2 13° 37.8	210° 33.3 13° 38.6	225° 33.4 13° 39.4	240° 33.5 13° 40.2	255° 33.6 13° 41.0	90° 34.8 13° 51.4	105° 34.9 13° 52.2	120° 35.0 13° 53.0	135° 35.1 13° 53.8	150° 35.2 13° 54.6	165° 35.3 13° 55.4	+0.1 +0.8
Чт 27	180° 35.4 13° 56.1	195° 35.5 13° 56.9	210° 35.6 13° 57.7	225° 35.7 13° 58.5	240° 35.8 13° 59.3	255° 35.9 14° 00.1	90° 37.1 14° 10.4	105° 37.2 14° 11.2	120° 37.2 14° 11.9	135° 37.3 14° 12.7	150° 37.4 14° 13.5	165° 37.5 14° 14.3	+0.1 +0.8
Пт 28	180° 37.6 14° 15.1	195° 37.7 14° 15.9	210° 37.8 14° 16.6	225° 37.9 14° 17.4	240° 38.0 14° 18.2	255° 38.0 14° 19.0	90° 39.2 14° 29.1	105° 39.3 14° 29.9	120° 39.3 14° 30.7	135° 39.4 14° 31.4	150° 39.5 14° 32.2	165° 39.6 14° 33.0	+0.1 +0.8
Сб 29	180° 39.7 14° 33.8	195° 39.8 14° 34.5	210° 39.9 14° 35.3	225° 39.9 14° 36.1	240° 40.0 14° 36.9	255° 40.1 14° 37.6	90° 41.2 14° 47.6	105° 41.2 14° 48.4	120° 41.3 14° 49.1	135° 41.4 14° 49.9	150° 41.5 14° 50.7	165° 41.6 14° 51.4	+0.1 +0.8
Вс 30	180° 41.6 14° 52.2	195° 41.7 14° 53.0	210° 41.8 14° 53.7	225° 41.9 14° 54.5	240° 42.0 14° 55.3	255° 42.0 14° 56.0	90° 43.0 15° 05.9	105° 43.1 15° 06.6	120° 43.2 15° 07.4	135° 43.2 15° 08.1	150° 43.3 15° 08.9	165° 43.4 15° 09.7	+0.1 +0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ’/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ’/h = изменение δ за час
Полудиаметр R: 15.9’

ЛУНА

Апрель 2028

Д	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	Δ'/h	R/p
Сб 1	54° 39.1	69° 04.3	83° 29.5	97° 54.7	112° 19.9	126° 45.0	141° 10.2	155° 35.4	170° 00.7	184° 25.9	198° 51.1	+25.2	15.8
	25° 49.4	25° 46.4	25° 43.3	25° 40.0	25° 36.6	25° 33.0	25° 29.3	25° 25.3	25° 21.3	25° 17.0	25° 12.6	-3.7	57.9
◐ Вс 2	55° 11.4	69° 36.9	84° 02.5	98° 28.1	112° 53.7	127° 19.4	141° 45.1	156° 10.8	170° 36.6	185° 02.4	199° 28.2	+25.7	16.0
	23° 47.7	23° 40.8	23° 33.7	23° 26.5	23° 19.2	23° 11.6	23° 04.0	22° 56.2	22° 48.2	22° 40.1	22° 31.8	-7.6	58.6
Пн 3	56° 00.7	70° 27.2	84° 53.8	99° 20.4	113° 47.1	128° 13.8	142° 40.5	157° 07.3	171° 34.2	186° 01.1	200° 28.0	+26.7	16.2
	20° 11.0	20° 00.5	19° 49.9	19° 39.1	19° 28.3	19° 17.3	19° 06.2	18° 54.9	18° 43.5	18° 32.0	18° 20.4	-11.1	59.3
Вт 4	70° 27.2	84° 53.8	99° 20.4	113° 47.1	128° 13.8	142° 40.5	157° 07.3	171° 34.2	186° 01.1	200° 28.0	214° 55.0	+26.8	16.2
	20° 00.5	19° 49.9	19° 39.1	19° 28.3	19° 17.3	19° 06.2	18° 54.9	18° 43.5	18° 32.0	18° 20.4	18° 08.7	-11.2	59.3
Ср 5	71° 45.4	86° 13.1	100° 40.9	115° 08.7	129° 36.6	144° 04.4	158° 32.4	173° 00.4	187° 28.4	201° 56.4	216° 24.5	+27.9	16.3
	14° 59.1	14° 45.6	14° 32.1	14° 18.4	14° 04.6	13° 50.8	13° 36.8	13° 22.8	13° 08.6	12° 54.4	12° 40.1	-13.9	59.9
Чт 6	73° 30.3	87° 58.9	102° 27.6	116° 56.3	131° 25.0	145° 53.7	160° 22.5	174° 51.3	189° 20.1	203° 48.9	218° 17.7	+28.7	16.5
	8° 56.4	8° 41.0	8° 25.4	8° 09.9	7° 54.2	7° 38.6	7° 22.8	7° 07.1	6° 51.2	6° 35.4	6° 19.4	-15.7	60.4
Пт 7	75° 32.1	90° 01.1	104° 30.1	118° 59.1	133° 28.2	147° 57.2	162° 26.2	176° 55.2	191° 24.3	205° 53.3	220° 22.3	+29.0	16.5
	2° 16.4	2° 00.0	1° 43.6	1° 27.2	1° 10.8	0° 54.3	0° 37.9	0° 21.4	0° 04.9	-0° 11.5	-0° 28.0	-16.5	60.6
Сб 8	77° 36.2	92° 05.0	106° 33.8	121° 02.5	135° 31.3	150° 00.0	164° 28.6	178° 57.3	193° 25.9	207° 54.5	222° 23.1	+28.7	16.5
	-4° 33.9	-4° 50.1	-5° 06.3	-5° 22.5	-5° 38.6	-5° 54.7	-6° 10.7	-6° 26.8	-6° 42.7	-6° 58.7	-7° 14.6	-16.1	60.5
○ Вс 9	79° 27.7	93° 55.7	108° 23.7	122° 51.6	137° 19.5	151° 47.3	166° 15.1	180° 42.9	195° 10.6	209° 38.3	224° 05.9	+27.8	16.4
	-11° 06.2	-11° 21.1	-11° 35.9	-11° 50.7	-12° 05.4	-12° 20.0	-12° 34.5	-12° 48.9	-13° 03.3	-13° 17.6	-13° 31.7	-14.6	60.2
Пн 10	80° 55.0	95° 21.9	109° 48.8	124° 15.6	138° 42.3	153° 09.0	167° 35.7	182° 02.4	196° 28.9	210° 55.5	225° 22.0	+26.7	16.3
	-16° 52.5	-17° 05.1	-17° 17.5	-17° 29.8	-17° 41.9	-17° 54.0	-18° 05.9	-18° 17.8	-18° 29.4	-18° 41.0	-18° 52.4	-12.0	59.6
Вт 11	81° 54.5	96° 20.3	110° 46.2	125° 12.0	139° 37.7	154° 03.5	168° 29.2	182° 54.9	197° 20.5	211° 46.1	226° 11.7	+25.7	16.0
	-21° 28.0	-21° 37.3	-21° 46.4	-21° 55.4	-22° 04.2	-22° 12.9	-22° 21.4	-22° 29.8	-22° 38.0	-22° 46.1	-22° 54.0	-8.6	58.8
Ср 12	82° 33.6	96° 58.9	111° 24.3	125° 49.6	140° 15.0	154° 40.4	169° 05.7	183° 31.1	197° 56.5	212° 21.9	226° 47.3	+25.4	15.8
	-24° 34.2	-24° 39.7	-24° 44.9	-24° 50.0	-24° 55.0	-24° 59.8	-25° 04.4	-25° 08.8	-25° 13.1	-25° 17.3	-25° 21.3	-4.7	57.9
Чт 13	83° 10.4	97° 36.2	112° 02.0	126° 27.8	140° 53.7	155° 19.6	169° 45.5	184° 11.5	198° 37.5	213° 03.6	227° 29.8	+25.9	15.5
	-26° 01.9	-26° 03.3	-26° 04.6	-26° 05.7	-26° 06.7	-26° 07.5	-26° 08.1	-26° 08.6	-26° 09.0	-26° 09.2	-26° 09.2	-0.7	57.0
Пт 14	84° 08.3	98° 35.4	113° 02.5	127° 29.7	141° 57.0	156° 24.3	170° 51.7	185° 19.2	199° 46.8	214° 14.4	228° 42.1	+27.4	15.3
	-25° 52.1	-25° 49.8	-25° 47.3	-25° 44.7	-25° 42.0	-25° 39.2	-25° 36.2	-25° 33.1	-25° 29.8	-25° 26.4	-25° 22.9	+2.9	56.1
Сб 15	85° 47.1	100° 16.1	114° 45.2	129° 14.3	143° 43.6	158° 12.9	172° 42.3	187° 11.8	201° 41.4	216° 11.0	230° 40.8	+29.4	15.1
	-24° 14.7	-24° 09.2	-24° 03.6	-23° 57.8	-23° 51.9	-23° 46.0	-23° 39.9	-23° 33.7	-23° 27.4	-23° 21.0	-23° 14.5	+6.0	55.4
◑ Вс 16	88° 17.1	102° 48.2	117° 19.4	131° 50.6	146° 22.0	160° 53.4	175° 24.9	189° 56.5	204° 28.1	218° 59.9	233° 31.7	+31.5	14.9
	-21° 24.4	-21° 16.3	-21° 08.2	-20° 59.9	-20° 51.5	-20° 43.1	-20° 34.5	-20° 25.9	-20° 17.2	-20° 08.4	-19° 59.5	+8.5	54.8
Пн 17	91° 38.1	106° 11.1	120° 44.1	135° 17.3	149° 50.5	164° 23.8	178° 57.1	193° 30.5	208° 04.0	222° 37.5	237° 11.1	+33.3	14.8
	-17° 37.1	-17° 27.0	-17° 16.9	-17° 06.7	-16° 56.4	-16° 46.1	-16° 35.7	-16° 25.2	-16° 14.7	-16° 04.1	-15° 53.5	+10.4	54.4
Вт 18	95° 42.0	110° 16.5	124° 51.0	139° 25.6	154° 00.2	168° 34.9	183° 09.6	197° 44.4	212° 19.2	226° 54.0	241° 28.9	+34.7	14.8
	-13° 07.1	-12° 55.6	-12° 44.0	-12° 32.4	-12° 20.8	-12° 09.1	-11° 57.4	-11° 45.6	-11° 33.8	-11° 21.9	-11° 10.0	+11.7	54.1
Ср 19	100° 16.5	114° 51.9	129° 27.3	144° 02.8	158° 38.2	173° 13.8	187° 49.3	202° 24.8	217° 00.4	231° 36.0	246° 11.6	+35.5	14.7
	-8° 06.9	-7° 54.5	-7° 42.0	-7° 29.4	-7° 16.9	-7° 04.3	-6° 51.7	-6° 39.0	-6° 26.4	-6° 13.7	-6° 01.0	+12.6	54.1
Чт 20	105° 07.0	119° 42.7	134° 18.5	148° 54.2	163° 29.9	178° 05.7	192° 41.4	207° 17.1	221° 52.9	236° 28.6	251° 04.3	+35.7	14.8
	-2° 47.7	-2° 34.7	-2° 21.6	-2° 08.6	-1° 55.5	-1° 42.5	-1° 29.4	-1° 16.3	-1° 03.2	-0° 50.1	-0° 37.0	+13.1	54.2
Пт 21	109° 58.3	124° 33.8	139° 09.2	153° 44.6	168° 20.0	182° 55.4	197° 30.7	212° 06.0	226° 41.3	241° 16.5	255° 51.7	+35.3	14.8
	2° 40.2	2° 53.3	3° 06.5	3° 19.6	3° 32.7	3° 45.9	3° 59.0	4° 12.1	4° 25.2	4° 38.3	4° 51.3	+13.1	54.4
Сб 22	114° 35.3	129° 09.8	143° 44.3	158° 18.8	172° 53.2	187° 27.6	202° 01.9	216° 36.2	231° 10.4	245° 44.5	260° 18.6	+34.3	14.9
	8° 05.6	8° 18.4	8° 31.2	8° 44.0	8° 56.7	9° 09.4	9° 22.0	9° 34.7	9° 47.3	9° 59.8	10° 12.4	+12.7	54.8
Вс 23	118° 42.9	133° 16.0	147° 49.0	162° 22.0	176° 54.9	191° 27.7	206° 00.4	220° 33.1	235° 05.7	249° 38.2	264° 10.7	+32.8	15.1
	13° 15.9	13° 27.8	13° 39.7	13° 51.5	14° 03.2	14° 14.9	14° 26.5	14° 38.1	14° 49.6	15° 01.1	15° 12.5	+11.7	55.2
● Пн 24	122° 08.1	136° 39.3	151° 10.3	165° 41.4	180° 12.3	194° 43.1	209° 13.9	223° 44.5	238° 15.1	252° 45.6	267° 16.0	+30.8	15.2
	17° 56.0	18° 06.3	18° 16.6	18° 26.8	18° 36.9	18° 46.9	18° 56.8	19° 06.6	19° 16.4	19° 26.1	19° 35.7	+10.0	55.7
Вт 25	124° 41.7	139° 10.7	153° 39.6	168° 08.5	182° 37.3	197° 05.9	211° 34.5	226° 03.0	240° 31.4	254° 59.8	269° 28.0	+28.6	15.3
	21° 48.3	21° 56.3	22° 04.2	22° 12.1	22° 19.8	22° 27.4	22° 34.8	22° 42.2	22° 49.5	22° 56.6	23° 03.6	+7.5	56.2
Ср 26	126° 22.2	140° 49.2	155° 16.1	169° 43.0	184° 09.8	198° 36.5	213° 03.2	227° 29.8	241° 56.3	256° 22.8	270° 49.2	+26.7	15.5
	24° 34.0	24° 39.0	24° 43.9	24° 48.6	24° 53.1	24° 57.6	25° 01.9	25° 06.0	25° 10.0	25° 13.9	25° 17.6	+4.4	56.7
Чт 27	127° 18.9	141° 44.5	156° 10.1	170° 35.6	185° 01.1	199° 26.6	213° 52.1	228° 17.5	242° 42.9	257° 08.2	271° 33.6	+25.5	15.6
	25° 55.8	25° 57.2	25° 58.3	25° 59.4	26° 00.2	26° 00.9	26° 01.5	26° 01.9	26° 02.1	26° 02.2	26° 02.1	+0.6	57.2
Пт 28	141° 44.5	156° 10.1	170° 35.6	185° 01.1	199° 26.6	213° 52.1	228° 17.5	242° 42.9	257° 08.2	271° 33.6	285° 58.9	+25.4	15.6
	25° 57.2	25° 58.3	25° 59.4	26° 00.2	26° 00.9	26° 01.5	26° 01.9	26° 02.1	26° 02.2	26° 02.1	26° 01.9	+0.5	57.3
Сб 29	142° 17.3	156° 42.5	171° 07.7	185° 32.9	199° 58.1	214° 23.4	228° 48.6	243° 13.9	257° 39.2	272° 04.5	286° 29.8	+25.2	15.8
	25° 39.1	25° 36.4	25° 33.4	25° 30.3	25° 27.0	25° 23.6	25° 20.0	25° 16.3	25° 12.3	25° 08.3	25° 04.1	-3.5	57.8
Вс 30	142° 52.9	157° 18.8	171° 44.6	186° 10.5	200° 36.5	215° 02.4	229° 28.5	243° 54.5	258° 20.7	272° 46.8	287° 13.1	+26.0	15.9
	23° 42.2	23° 35.6	23° 28.8	23° 21.8	23° 14.7	23° 07.5	23° 00.1	22° 52.5	22° 44.8	22° 37.0	22° 29.1	-7.3	58.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Первая четв.: 2 19h15 — Полнолуние: 9 10h26 — Последняя четв.: 16 16h36 — Новолуние: 24 19h46

СОЛНЦЕ

Май 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	180° 43.5 15° 10.4	195° 43.5 15° 11.2	210° 43.6 15° 11.9	225° 43.7 15° 12.7	240° 43.8 15° 13.4	255° 43.8 15° 14.2	90° 44.8 15° 23.9	105° 44.8 15° 24.6	120° 44.9 15° 25.4	135° 45.0 15° 26.1	150° 45.0 15° 26.9	165° 45.1 15° 27.6	+0.1 +0.8
Вт 2	180° 45.2 15° 28.4	195° 45.2 15° 29.1	210° 45.3 15° 29.8	225° 45.4 15° 30.6	240° 45.4 15° 31.3	255° 45.5 15° 32.1	90° 46.4 15° 41.6	105° 46.4 15° 42.4	120° 46.5 15° 43.1	135° 46.5 15° 43.8	150° 46.6 15° 44.6	165° 46.7 15° 45.3	+0.1 +0.7
Ср 3	180° 46.7 15° 46.0	195° 46.8 15° 46.8	210° 46.9 15° 47.5	225° 46.9 15° 48.2	240° 47.0 15° 49.0	255° 47.0 15° 49.7	90° 47.8 15° 59.1	105° 47.9 15° 59.9	120° 47.9 16° 00.6	135° 48.0 16° 01.3	150° 48.1 16° 02.0	165° 48.1 16° 02.7	+0.1 +0.7
Чт 4	180° 48.2 16° 03.5	195° 48.2 16° 04.2	210° 48.3 16° 04.9	225° 48.3 16° 05.6	240° 48.4 16° 06.3	255° 48.4 16° 07.1	90° 49.2 16° 16.4	105° 49.2 16° 17.1	120° 49.3 16° 17.8	135° 49.3 16° 18.5	150° 49.4 16° 19.2	165° 49.4 16° 19.9	+0.1 +0.7
Пт 5	180° 49.5 16° 20.6	195° 49.5 16° 21.3	210° 49.6 16° 22.0	225° 49.6 16° 22.7	240° 49.7 16° 23.5	255° 49.7 16° 24.2	90° 50.4 16° 33.3	105° 50.4 16° 34.0	120° 50.4 16° 34.7	135° 50.5 16° 35.4	150° 50.5 16° 36.1	165° 50.6 16° 36.8	+0.1 +0.7
Сб 6	180° 50.6 16° 37.5	195° 50.7 16° 38.2	210° 50.7 16° 38.9	225° 50.8 16° 39.6	240° 50.8 16° 40.3	255° 50.9 16° 41.0	90° 51.4 16° 50.0	105° 51.5 16° 50.7	120° 51.5 16° 51.4	135° 51.5 16° 52.1	150° 51.6 16° 52.7	165° 51.6 16° 53.4	+0.0 +0.7
Вс 7	180° 51.7 16° 54.1	195° 51.7 16° 54.8	210° 51.7 16° 55.5	225° 51.8 16° 56.2	240° 51.8 16° 56.9	255° 51.9 16° 57.5	90° 52.3 17° 06.4	105° 52.4 17° 07.1	120° 52.4 17° 07.7	135° 52.4 17° 08.4	150° 52.5 17° 09.1	165° 52.5 17° 09.8	+0.0 +0.7
Пн 8	180° 52.5 17° 10.4	195° 52.6 17° 11.1	210° 52.6 17° 11.8	225° 52.6 17° 12.5	240° 52.7 17° 13.1	255° 52.7 17° 13.8	90° 53.1 17° 22.5	105° 53.1 17° 23.2	120° 53.2 17° 23.8	135° 53.2 17° 24.5	150° 53.2 17° 25.1	165° 53.3 17° 25.8	+0.0 +0.7
Вт 9	180° 53.3 17° 26.5	195° 53.3 17° 27.1	210° 53.3 17° 27.8	225° 53.4 17° 28.5	240° 53.4 17° 29.1	255° 53.4 17° 29.8	90° 53.8 17° 38.3	105° 53.8 17° 39.0	120° 53.8 17° 39.6	135° 53.8 17° 40.3	150° 53.9 17° 40.9	165° 53.9 17° 41.6	+0.0 +0.7
Ср 10	180° 53.9 17° 42.2	195° 53.9 17° 42.9	210° 53.9 17° 43.5	225° 54.0 17° 44.2	240° 54.0 17° 44.8	255° 54.0 17° 45.5	90° 54.3 17° 53.8	105° 54.3 17° 54.5	120° 54.3 17° 55.1	135° 54.3 17° 55.8	150° 54.3 17° 56.4	165° 54.3 17° 57.0	+0.0 +0.7
Чт 11	180° 54.4 17° 57.7	195° 54.4 17° 58.3	210° 54.4 17° 58.9	225° 54.4 17° 59.6	240° 54.4 18° 00.2	255° 54.4 18° 00.9	90° 54.6 18° 09.1	105° 54.6 18° 09.7	120° 54.6 18° 10.3	135° 54.6 18° 10.9	150° 54.6 18° 11.6	165° 54.7 18° 12.2	+0.0 +0.6
Пт 12	180° 54.7 18° 12.8	195° 54.7 18° 13.5	210° 54.7 18° 14.1	225° 54.7 18° 14.7	240° 54.7 18° 15.3	255° 54.7 18° 15.9	90° 54.8 18° 24.0	105° 54.8 18° 24.6	120° 54.8 18° 25.2	135° 54.8 18° 25.8	150° 54.8 18° 26.4	165° 54.8 18° 27.1	+0.0 +0.6
Сб 13	180° 54.8 18° 27.7	195° 54.8 18° 28.3	210° 54.8 18° 28.9	225° 54.8 18° 29.5	240° 54.9 18° 30.1	255° 54.9 18° 30.7	90° 54.9 18° 38.6	105° 54.9 18° 39.2	120° 54.9 18° 39.8	135° 54.9 18° 40.4	150° 54.9 18° 41.0	165° 54.9 18° 41.6	+0.0 +0.6
Вс 14	180° 54.9 18° 42.2	195° 54.9 18° 42.8	210° 54.9 18° 43.4	225° 54.9 18° 44.0	240° 54.8 18° 44.6	255° 54.8 18° 45.2	90° 54.8 18° 52.9	105° 54.8 18° 53.5	120° 54.8 18° 54.1	135° 54.8 18° 54.7	150° 54.8 18° 55.3	165° 54.7 18° 55.8	-0.0 +0.6
Пн 15	180° 54.7 18° 56.4	195° 54.7 18° 57.0	210° 54.7 18° 57.6	225° 54.7 18° 58.2	240° 54.7 18° 58.8	255° 54.7 18° 59.4	90° 54.5 19° 06.9	105° 54.5 19° 07.5	120° 54.5 19° 08.0	135° 54.5 19° 08.6	150° 54.5 19° 09.2	165° 54.5 19° 09.8	-0.0 +0.6
Вт 16	180° 54.5 19° 10.3	195° 54.5 19° 10.9	210° 54.4 19° 11.5	225° 54.4 19° 12.0	240° 54.4 19° 12.6	255° 54.4 19° 13.2	90° 54.2 19° 20.5	105° 54.2 19° 21.1	120° 54.1 19° 21.7	135° 54.1 19° 22.2	150° 54.1 19° 22.8	165° 54.1 19° 23.4	-0.0 +0.6
Ср 17	180° 54.1 19° 23.9	195° 54.0 19° 24.5	210° 54.0 19° 25.0	225° 54.0 19° 25.6	240° 54.0 19° 26.1	255° 53.9 19° 26.7	90° 53.6 19° 33.9	105° 53.6 19° 34.4	120° 53.6 19° 35.0	135° 53.6 19° 35.5	150° 53.5 19° 36.1	165° 53.5 19° 36.6	-0.0 +0.6
Чт 18	180° 53.5 19° 37.2	195° 53.5 19° 37.7	210° 53.4 19° 38.3	225° 53.4 19° 38.8	240° 53.4 19° 39.3	255° 53.4 19° 39.9	90° 53.0 19° 46.9	105° 53.0 19° 47.4	120° 52.9 19° 47.9	135° 52.9 19° 48.5	150° 52.9 19° 49.0	165° 52.8 19° 49.5	-0.0 +0.5
Пт 19	180° 52.8 19° 50.1	195° 52.8 19° 50.6	210° 52.7 19° 51.1	225° 52.7 19° 51.7	240° 52.7 19° 52.2	255° 52.6 19° 52.7	90° 52.2 19° 59.5	105° 52.1 20° 00.1	120° 52.1 20° 00.6	135° 52.1 20° 01.1	150° 52.0 20° 01.6	165° 52.0 20° 02.1	-0.0 +0.5
Сб 20	180° 52.0 20° 02.7	195° 51.9 20° 03.2	210° 51.9 20° 03.7	225° 51.8 20° 04.2	240° 51.8 20° 04.7	255° 51.8 20° 05.2	90° 51.2 20° 11.9	105° 51.2 20° 12.4	120° 51.2 20° 12.9	135° 51.1 20° 13.4	150° 51.1 20° 13.9	165° 51.0 20° 14.4	-0.0 +0.5
Вс 21	180° 51.0 20° 14.9	195° 50.9 20° 15.4	210° 50.9 20° 15.9	225° 50.8 20° 16.4	240° 50.8 20° 16.9	255° 50.8 20° 17.4	90° 50.2 20° 23.8	105° 50.1 20° 24.3	120° 50.1 20° 24.8	135° 50.0 20° 25.3	150° 50.0 20° 25.8	165° 49.9 20° 26.3	-0.0 +0.5
Пн 22	180° 49.9 20° 26.8	195° 49.8 20° 27.3	210° 49.8 20° 27.8	225° 49.7 20° 28.2	240° 49.7 20° 28.7	255° 49.6 20° 29.2	90° 48.9 20° 35.5	105° 48.9 20° 35.9	120° 48.8 20° 36.4	135° 48.8 20° 36.9	150° 48.7 20° 37.4	165° 48.7 20° 37.8	-0.0 +0.5
Вт 23	180° 48.6 20° 38.3	195° 48.6 20° 38.8	210° 48.5 20° 39.3	225° 48.5 20° 39.7	240° 48.4 20° 40.2	255° 48.3 20° 40.7	90° 47.6 20° 46.7	105° 47.5 20° 47.2	120° 47.5 20° 47.7	135° 47.4 20° 48.1	150° 47.4 20° 48.6	165° 47.3 20° 49.0	-0.1 +0.5
Ср 24	180° 47.2 20° 49.5	195° 47.2 20° 50.0	210° 47.1 20° 50.4	225° 47.1 20° 50.9	240° 47.0 20° 51.3	255° 46.9 20° 51.8	90° 46.1 20° 57.6	105° 46.1 20° 58.1	120° 46.0 20° 58.5	135° 45.9 20° 59.0	150° 45.9 20° 59.4	165° 45.8 20° 59.9	-0.1 +0.5
Чт 25	180° 45.7 21° 00.3	195° 45.7 21° 00.8	210° 45.6 21° 01.2	225° 45.5 21° 01.6	240° 45.5 21° 02.1	255° 45.4 21° 02.5	90° 44.5 21° 08.2	105° 44.5 21° 08.6	120° 44.4 21° 09.1	135° 44.3 21° 09.5	150° 44.3 21° 09.9	165° 44.2 21° 10.4	-0.1 +0.4
Пт 26	180° 44.1 21° 10.8	195° 44.0 21° 11.2	210° 44.0 21° 11.6	225° 43.9 21° 12.1	240° 43.8 21° 12.5	255° 43.8 21° 12.9	90° 42.8 21° 18.4	105° 42.7 21° 18.8	120° 42.7 21° 19.2	135° 42.6 21° 19.6	150° 42.5 21° 20.0	165° 42.4 21° 20.5	-0.1 +0.4
Сб 27	180° 42.4 21° 20.9	195° 42.3 21° 21.3	210° 42.2 21° 21.7	225° 42.1 21° 22.1	240° 42.1 21° 22.5	255° 42.0 21° 22.9	90° 41.0 21° 28.2	105° 40.9 21° 28.6	120° 40.8 21° 29.0	135° 40.8 21° 29.4	150° 40.7 21° 29.8	165° 40.6 21° 30.2	-0.1 +0.4
Вс 28	180° 40.5 21° 30.6	195° 40.4 21° 31.0	210° 40.4 21° 31.4	225° 40.3 21° 31.8	240° 40.2 21° 32.2	255° 40.1 21° 32.6	90° 39.1 21° 37.6	105° 39.0 21° 38.0	120° 38.9 21° 38.4	135° 38.8 21° 38.8	150° 38.7 21° 39.2	165° 38.6 21° 39.6	-0.1 +0.4
Пн 29	180° 38.6 21° 40.0	195° 38.5 21° 40.3	210° 38.4 21° 40.7	225° 38.3 21° 41.1	240° 38.2 21° 41.5	255° 38.1 21° 41.9	90° 37.0 21° 46.7	105° 36.9 21° 47.1	120° 36.8 21° 47.5	135° 36.7 21° 47.8	150° 36.7 21° 48.2	165° 36.6 21° 48.6	-0.1 +0.4
Вт 30	180° 36.5 21° 48.9	195° 36.4 21° 49.3	210° 36.3 21° 49.7	225° 36.2 21° 50.0	240° 36.1 21° 50.4	255° 36.0 21° 50.7	90° 34.9 21° 55.4	105° 34.8 21° 55.8	120° 34.7 21° 56.1	135° 34.6 21° 56.5	150° 34.5 21° 56.8	165° 34.4 21° 57.2	-0.1 +0.4
Ср 31	180° 34.3 21° 57.5	195° 34.2 21° 57.9	210° 34.1 21° 58.2	225° 34.0 21° 58.6	240° 33.9 21° 58.9	255° 33.8 21° 59.3	90° 32.6 22° 03.7	105° 32.5 22° 04.0	120° 32.4 22° 04.4	135° 32.3 22° 04.7	150° 32.2 22° 05.1	165° 32.1 22° 05.4	-0.1 +0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2028

	Д	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	Δ'/h	R/p
	Пн 1	58° 36.3	73° 04.4	87° 32.6	102° 00.8	116° 29.1	130° 57.4	145° 25.8	159° 54.3	174° 22.8	188° 51.3	203° 19.9	+28.4	16.1
		16° 42.0	16° 29.8	16° 17.5	16° 05.1	15° 52.6	15° 40.0	15° 27.3	15° 14.5	15° 01.6	14° 48.6	14° 35.6	-12.7	59.0
◐	Вт 2	60° 34.3	75° 03.6	89° 33.0	104° 02.4	118° 31.8	133° 01.2	147° 30.7	162° 00.2	176° 29.8	190° 59.3	205° 28.9	+29.5	16.2
		11° 09.8	10° 55.5	10° 41.1	10° 26.6	10° 12.1	9° 57.6	9° 42.9	9° 28.2	9° 13.5	8° 58.7	8° 43.8	-14.6	59.4
	Ср 3	75° 03.6	89° 33.0	104° 02.4	118° 31.8	133° 01.2	147° 30.7	162° 00.2	176° 29.8	190° 59.3	205° 28.9	219° 58.6	+29.5	16.2
		10° 55.5	10° 41.1	10° 26.6	10° 12.1	9° 57.6	9° 42.9	9° 28.2	9° 13.5	8° 58.7	8° 43.8	8° 28.9	-14.7	59.4
	Чт 4	77° 26.0	91° 56.0	106° 25.9	120° 55.9	135° 25.9	149° 55.9	164° 26.0	178° 56.0	193° 26.0	207° 56.0	222° 26.1	+30.0	16.3
		4° 39.9	4° 24.3	4° 08.7	3° 53.1	3° 37.4	3° 21.8	3° 06.1	2° 50.4	2° 34.6	2° 18.9	2° 03.1	-15.7	59.6
	Пт 5	79° 56.2	94° 26.1	108° 56.0	123° 25.9	137° 55.8	152° 25.7	166° 55.5	181° 25.3	195° 55.1	210° 24.9	224° 54.6	+29.8	16.3
		-1° 54.4	-2° 10.2	-2° 26.0	-2° 41.8	-2° 57.6	-3° 13.4	-3° 29.2	-3° 44.9	-4° 00.6	-4° 16.3	-4° 32.0	-15.8	59.8
	Сб 6	82° 17.2	96° 46.4	111° 15.5	125° 44.7	140° 13.8	154° 42.8	169° 11.8	183° 40.8	198° 09.7	212° 38.6	227° 07.4	+29.0	16.3
		-8° 23.5	-8° 38.6	-8° 53.7	-9° 08.7	-9° 23.6	-9° 38.5	-9° 53.3	-10° 08.1	-10° 22.8	-10° 37.5	-10° 52.1	-14.9	59.7
	Вс 7	84° 13.6	98° 41.6	113° 09.6	127° 37.4	142° 05.2	156° 33.0	171° 00.7	185° 28.4	199° 56.0	214° 23.5	228° 51.0	+27.7	16.2
		-14° 22.4	-14° 35.8	-14° 49.1	-15° 02.3	-15° 15.4	-15° 28.4	-15° 41.3	-15° 54.1	-16° 06.8	-16° 19.4	-16° 31.9	-13.0	59.4
○	Пн 8	85° 36.2	100° 02.7	114° 29.3	128° 55.7	143° 22.1	157° 48.5	172° 14.8	186° 41.0	201° 07.2	215° 33.3	229° 59.4	+26.3	16.1
		-19° 26.2	-19° 36.9	-19° 47.4	-19° 57.8	-20° 08.1	-20° 18.3	-20° 28.3	-20° 38.2	-20° 48.0	-20° 57.6	-21° 07.1	-10.1	59.0
	Вт 9	86° 25.6	100° 51.0	115° 16.4	129° 41.8	144° 07.1	158° 32.4	172° 57.7	187° 23.0	201° 48.2	216° 13.4	230° 38.6	+25.3	15.9
		-23° 12.3	-23° 19.5	-23° 26.5	-23° 33.4	-23° 40.1	-23° 46.7	-23° 53.1	-23° 59.3	-24° 05.4	-24° 11.3	-24° 17.1	-6.5	58.3
	Ср 10	86° 55.4	101° 20.5	115° 45.6	130° 10.7	144° 35.9	159° 01.0	173° 26.2	187° 51.4	202° 16.6	216° 41.8	231° 07.1	+25.2	15.7
		-25° 24.7	-25° 27.9	-25° 30.9	-25° 33.8	-25° 36.6	-25° 39.1	-25° 41.6	-25° 43.8	-25° 45.9	-25° 47.8	-25° 49.6	-2.5	57.6
	Чт 11	87° 29.7	101° 55.6	116° 21.5	130° 47.4	145° 13.4	159° 39.5	174° 05.6	188° 31.8	202° 58.0	217° 24.3	231° 50.7	+26.1	15.5
		-25° 57.1	-25° 56.4	-25° 55.5	-25° 54.4	-25° 53.2	-25° 51.9	-25° 50.3	-25° 48.7	-25° 46.9	-25° 45.0	-25° 42.9	+1.4	56.8
	Пт 12	88° 34.5	103° 02.1	117° 29.7	131° 57.4	146° 25.2	160° 53.0	175° 21.0	189° 49.0	204° 17.1	218° 45.3	233° 13.6	+27.9	15.3
		-24° 54.5	-24° 50.2	-24° 45.7	-24° 41.2	-24° 36.5	-24° 31.6	-24° 26.7	-24° 21.6	-24° 16.4	-24° 11.1	-24° 05.6	+4.9	56.1
	Сб 13	90° 28.4	104° 58.1	119° 27.9	133° 57.8	148° 27.7	162° 57.8	177° 28.0	191° 58.2	206° 28.5	220° 59.0	235° 29.5	+30.1	15.1
		-22° 30.1	-22° 22.8	-22° 15.5	-22° 08.1	-22° 00.5	-21° 52.9	-21° 45.1	-21° 37.3	-21° 29.3	-21° 21.3	-21° 13.2	+7.7	55.4
	Вс 14	93° 17.6	107° 49.5	122° 21.5	136° 53.5	151° 25.6	165° 57.9	180° 30.2	195° 02.5	209° 35.0	224° 07.5	238° 40.1	+32.3	15.0
		-19° 00.9	-18° 51.4	-18° 41.8	-18° 32.2	-18° 22.5	-18° 12.8	-18° 02.9	-17° 53.0	-17° 43.0	-17° 33.0	-17° 22.8	+9.8	54.8
	Пн 15	96° 57.8	111° 31.6	126° 05.3	140° 39.2	155° 13.1	169° 47.1	184° 21.1	198° 55.2	213° 29.3	228° 03.5	242° 37.8	+34.0	14.8
		-14° 43.6	-14° 32.5	-14° 21.4	-14° 10.2	-13° 59.0	-13° 47.7	-13° 36.3	-13° 25.0	-13° 13.5	-13° 02.1	-12° 50.5	+11.3	54.4
◑	Вт 16	101° 17.7	115° 52.8	130° 27.8	145° 02.9	159° 38.0	174° 13.2	188° 48.4	203° 23.7	217° 58.9	232° 34.2	247° 09.6	+35.2	14.8
		-9° 52.7	-9° 40.6	-9° 28.4	-9° 16.1	-9° 03.9	-8° 51.6	-8° 39.3	-8° 26.9	-8° 14.6	-8° 02.1	-7° 49.7	+12.3	54.2
	Ср 17	106° 02.6	120° 38.3	135° 14.0	149° 49.7	164° 25.4	179° 01.1	193° 36.9	208° 12.6	222° 48.4	237° 24.1	251° 59.9	+35.7	14.8
		-4° 40.3	-4° 27.5	-4° 14.6	-4° 01.8	-3° 49.0	-3° 36.1	-3° 23.2	-3° 10.3	-2° 57.4	-2° 44.5	-2° 31.6	+12.9	54.2
	Чт 18	110° 56.2	125° 31.9	140° 07.5	154° 43.2	169° 18.9	183° 54.5	198° 30.1	213° 05.7	227° 41.3	242° 16.8	256° 52.4	+35.6	14.8
		0° 43.4	0° 56.5	1° 09.5	1° 22.5	1° 35.6	1° 48.6	2° 01.7	2° 14.7	2° 27.7	2° 40.8	2° 53.8	+13.0	54.3
	Пт 19	115° 42.0	130° 17.0	144° 52.0	159° 26.9	174° 01.9	188° 36.7	203° 11.5	217° 46.3	232° 21.1	246° 55.7	261° 30.4	+34.8	14.9
		6° 08.3	6° 21.1	6° 34.0	6° 46.8	6° 59.7	7° 12.5	7° 25.2	7° 38.0	7° 50.7	8° 03.4	8° 16.1	+12.8	54.7
	Сб 20	120° 03.4	134° 37.1	149° 10.8	163° 44.4	178° 17.9	192° 51.4	207° 24.8	221° 58.1	236° 31.3	251° 04.5	265° 37.6	+33.4	15.0
		11° 23.2	11° 35.5	11° 47.6	11° 59.8	12° 11.9	12° 23.9	12° 35.9	12° 47.9	12° 59.8	13° 11.7	13° 23.6	+12.0	55.1
	Вс 21	123° 44.9	138° 16.8	152° 48.5	167° 20.2	181° 51.8	196° 23.3	210° 54.7	225° 26.0	239° 57.2	254° 28.3	268° 59.4	+31.4	15.2
		16° 14.9	16° 25.9	16° 36.8	16° 47.6	16° 58.3	17° 09.0	17° 19.7	17° 30.2	17° 40.7	17° 51.1	18° 01.4	+10.7	55.7
	Пн 22	126° 33.9	141° 03.4	155° 32.9	170° 02.2	184° 31.5	199° 00.7	213° 29.7	227° 58.7	242° 27.6	256° 56.4	271° 25.0	+29.1	15.4
		20° 26.7	20° 35.7	20° 44.6	20° 53.3	21° 02.0	21° 10.6	21° 19.1	21° 27.5	21° 35.7	21° 43.9	21° 52.0	+8.5	56.3
	Вт 23	128° 24.1	142° 51.3	157° 18.5	171° 45.5	186° 12.5	200° 39.3	215° 06.1	229° 32.8	243° 59.5	258° 26.0	272° 52.5	+26.8	15.5
		23° 39.2	23° 45.4	23° 51.5	23° 57.4	24° 03.2	24° 08.8	24° 14.4	24° 19.8	24° 25.0	24° 30.1	24° 35.1	+5.6	56.9
●	Ср 24	129° 20.7	143° 46.1	158° 11.4	172° 36.7	187° 01.9	201° 27.0	215° 52.1	230° 17.2	244° 42.2	259° 07.2	273° 32.1	+25.1	15.7
		25° 32.6	25° 35.2	25° 37.7	25° 40.0	25° 42.2	25° 44.2	25° 46.0	25° 47.7	25° 49.3	25° 50.7	25° 51.9	+1.9	57.5
	Чт 25	129° 42.3	144° 06.8	158° 31.3	172° 55.8	187° 20.3	201° 44.8	216° 09.3	230° 33.8	244° 58.3	259° 22.8	273° 47.3	+24.5	15.8
		25° 50.6	25° 49.2	25° 47.7	25° 45.9	25° 44.0	25° 42.0	25° 39.7	25° 37.4	25° 34.8	25° 32.1	25° 29.2	-2.1	58.1
	Пт 26	129° 57.1	144° 22.0	158° 46.9	173° 11.8	187° 36.8	202° 01.8	216° 26.9	230° 52.0	245° 17.2	259° 42.4	274° 07.6	+25.0	16.0
		24° 26.3	24° 20.8	24° 15.2	24° 09.4	24° 03.4	23° 57.3	23° 51.1	23° 44.7	23° 38.1	23° 31.4	23° 24.5	-6.2	58.5
	Сб 27	144° 22.0	158° 46.9	173° 11.8	187° 36.8	202° 01.8	216° 26.9	230° 52.0	245° 17.2	259° 42.4	274° 07.6	288° 32.9	+25.1	16.0
		24° 20.8	24° 15.2	24° 09.4	24° 03.4	23° 57.3	23° 51.1	23° 44.7	23° 38.1	23° 31.4	23° 24.5	23° 17.5	-6.3	58.5
	Вс 28	144° 59.1	159° 25.3	173° 51.6	188° 17.9	202° 44.4	217° 10.8	231° 37.4	246° 04.0	260° 30.7	274° 57.4	289° 24.3	+26.5	16.0
		21° 15.0	21° 05.7	20° 56.3	20° 46.8	20° 37.1	20° 27.3	20° 17.4	20° 07.4	19° 57.2	19° 46.9	19° 36.5	-9.9	58.8
	Пн 29	146° 14.6	160° 42.5	175° 10.5	189° 38.5	204° 06.6	218° 34.8	233° 03.0	247° 31.3	261° 59.6	276° 28.0	290° 56.5	+28.2	16.1
		16° 46.8	16° 34.6	16° 22.4	16° 10.0	15° 57.6	15° 45.0	15° 32.4	15° 19.7	15° 06.9	14° 54.0	14° 41.0	-12.6	59.1
	Вт 30	148° 10.8	162° 40.1	177° 09.6	191° 39.1	206° 08.6	220° 38.2	235° 07.8	249° 37.5	264° 07.2	278° 37.0	293° 06.8	+29.6	16.1
		11° 16.9	11° 02.8	10° 48.5	10° 34.3	10° 19.9	10° 05.5	9° 51.1	9° 36.6	9° 22.0	9° 07.4	8° 52.7	-14.4	59.2
◐	Ср 31	150° 38.3	165° 08.6	179° 39.0	194° 09.4	208° 39.8	223° 10.2	237° 40.7	252° 11.2	266° 41.7	281° 12.2	295° 42.7	+30.4	16.2
		5° 07.9	4° 52.6	4° 37.3	4° 22.0	4° 06.7	3° 51.3	3° 36.0	3° 20.6	3° 05.2	2° 49.7	2° 34.3	-15.4	59.2

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 2 02h25 — Полнолуние: 8 19h48 — Последняя четв.: 16 10h43 — Новолуние: 24 08h16 — Первая четв.: 31 07h36

СОЛНЦЕ

Июнь 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	180° 32.0	195° 32.0	210° 31.9	225° 31.8	240° 31.7	255° 31.6	90° 30.3	105° 30.2	120° 30.1	135° 30.0	150° 29.9	165° 29.8	-0.1
	22° 05.7	22° 06.1	22° 06.4	22° 06.7	22° 07.1	22° 07.4	22° 11.6	22° 12.0	22° 12.3	22° 12.6	22° 12.9	22° 13.2	+0.3
Пт 2	180° 29.7	195° 29.6	210° 29.5	225° 29.4	240° 29.3	255° 29.2	90° 27.9	105° 27.8	120° 27.7	135° 27.6	150° 27.5	165° 27.3	-0.1
	22° 13.6	22° 13.9	22° 14.2	22° 14.5	22° 14.8	22° 15.1	22° 19.2	22° 19.5	22° 19.8	22° 20.1	22° 20.4	22° 20.7	+0.3
Сб 3	180° 27.2	195° 27.1	210° 27.0	225° 26.9	240° 26.8	255° 26.7	90° 25.4	105° 25.2	120° 25.1	135° 25.0	150° 24.9	165° 24.8	-0.1
	22° 21.0	22° 21.3	22° 21.6	22° 21.9	22° 22.2	22° 22.5	22° 26.3	22° 26.6	22° 26.9	22° 27.2	22° 27.5	22° 27.7	+0.3
Вс 4	180° 24.7	195° 24.6	210° 24.5	225° 24.4	240° 24.3	255° 24.2	90° 22.8	105° 22.7	120° 22.5	135° 22.4	150° 22.3	165° 22.2	-0.1
	22° 28.0	22° 28.3	22° 28.6	22° 28.9	22° 29.2	22° 29.5	22° 33.1	22° 33.3	22° 33.6	22° 33.9	22° 34.1	22° 34.4	+0.3
Пн 5	180° 22.1	195° 22.0	210° 21.9	225° 21.8	240° 21.7	255° 21.5	90° 20.1	105° 20.0	120° 19.9	135° 19.8	150° 19.6	165° 19.5	-0.1
	22° 34.7	22° 35.0	22° 35.2	22° 35.5	22° 35.8	22° 36.0	22° 39.4	22° 39.7	22° 39.9	22° 40.2	22° 40.4	22° 40.7	+0.3
Вт 6	180° 19.4	195° 19.3	210° 19.2	225° 19.1	240° 19.0	255° 18.8	90° 17.3	105° 17.2	120° 17.1	135° 17.0	150° 16.9	165° 16.8	-0.1
	22° 40.9	22° 41.2	22° 41.4	22° 41.7	22° 41.9	22° 42.2	22° 45.4	22° 45.6	22° 45.9	22° 46.1	22° 46.3	22° 46.6	+0.3
Ср 7	180° 16.6	195° 16.5	210° 16.4	225° 16.3	240° 16.2	255° 16.1	90° 14.5	105° 14.4	120° 14.3	135° 14.2	150° 14.1	165° 13.9	-0.1
	22° 46.8	22° 47.0	22° 47.3	22° 47.5	22° 47.7	22° 48.0	22° 50.9	22° 51.2	22° 51.4	22° 51.6	22° 51.8	22° 52.0	+0.2
Чт 8	180° 13.8	195° 13.7	210° 13.6	225° 13.5	240° 13.3	255° 13.2	90° 11.6	105° 11.5	120° 11.4	135° 11.3	150° 11.2	165° 11.0	-0.1
	22° 52.3	22° 52.5	22° 52.7	22° 52.9	22° 53.1	22° 53.4	22° 56.1	22° 56.3	22° 56.5	22° 56.7	22° 56.9	22° 57.1	+0.2
Пт 9	180° 10.9	195° 10.8	210° 10.7	225° 10.6	240° 10.4	255° 10.3	90° 08.7	105° 08.6	120° 08.5	135° 08.3	150° 08.2	165° 08.1	-0.1
	22° 57.3	22° 57.5	22° 57.7	22° 57.9	22° 58.1	22° 58.3	23° 00.9	23° 01.0	23° 01.2	23° 01.4	23° 01.6	23° 01.8	+0.2
Сб 10	180° 08.0	195° 07.8	210° 07.7	225° 07.6	240° 07.5	255° 07.3	90° 05.7	105° 05.6	120° 05.5	135° 05.3	150° 05.2	165° 05.1	-0.1
	23° 02.0	23° 02.2	23° 02.4	23° 02.5	23° 02.7	23° 02.9	23° 05.2	23° 05.4	23° 05.6	23° 05.7	23° 05.9	23° 06.1	+0.2
Вс 11	180° 04.9	195° 04.8	210° 04.7	225° 04.6	240° 04.4	255° 04.3	90° 02.6	105° 02.5	120° 02.4	135° 02.3	150° 02.1	165° 02.0	-0.1
	23° 06.2	23° 06.4	23° 06.6	23° 06.7	23° 06.9	23° 07.1	23° 09.2	23° 09.3	23° 09.5	23° 09.6	23° 09.8	23° 09.9	+0.2
Пн 12	180° 01.9	195° 01.7	210° 01.6	225° 01.5	240° 01.4	255° 01.2	89° 59.5	104° 59.4	119° 59.3	134° 59.2	149° 59.0	164° 58.9	-0.1
	23° 10.1	23° 10.2	23° 10.4	23° 10.5	23° 10.7	23° 10.8	23° 12.7	23° 12.8	23° 13.0	23° 13.1	23° 13.2	23° 13.4	+0.2
Вт 13	179° 58.8	194° 58.6	209° 58.5	224° 58.4	239° 58.2	254° 58.1	89° 56.4	104° 56.3	119° 56.1	134° 56.0	149° 55.9	164° 55.7	-0.1
	23° 13.5	23° 13.7	23° 13.8	23° 13.9	23° 14.1	23° 14.2	23° 15.8	23° 15.9	23° 16.1	23° 16.2	23° 16.3	23° 16.4	+0.1
Ср 14	179° 55.6	194° 55.5	209° 55.3	224° 55.2	239° 55.1	254° 54.9	89° 53.2	104° 53.1	119° 52.9	134° 52.8	149° 52.7	164° 52.5	-0.1
	23° 16.5	23° 16.7	23° 16.8	23° 16.9	23° 17.0	23° 17.1	23° 18.5	23° 18.7	23° 18.8	23° 18.9	23° 19.0	23° 19.1	+0.1
Чт 15	179° 52.4	194° 52.3	209° 52.1	224° 52.0	239° 51.9	254° 51.7	89° 50.0	104° 49.9	119° 49.7	134° 49.6	149° 49.5	164° 49.3	-0.1
	23° 19.2	23° 19.3	23° 19.4	23° 19.5	23° 19.6	23° 19.7	23° 20.9	23° 20.9	23° 21.0	23° 21.1	23° 21.2	23° 21.3	+0.1
Пт 16	179° 49.2	194° 49.0	209° 48.9	224° 48.8	239° 48.6	254° 48.5	89° 46.7	104° 46.6	119° 46.5	134° 46.3	149° 46.2	164° 46.1	-0.1
	23° 21.4	23° 21.4	23° 21.5	23° 21.6	23° 21.7	23° 21.8	23° 22.7	23° 22.8	23° 22.9	23° 23.0	23° 23.0	23° 23.1	+0.1
Сб 17	179° 45.9	194° 45.8	209° 45.7	224° 45.5	239° 45.4	254° 45.3	89° 43.5	104° 43.3	119° 43.2	134° 43.1	149° 42.9	164° 42.8	-0.1
	23° 23.2	23° 23.2	23° 23.3	23° 23.4	23° 23.4	23° 23.5	23° 24.2	23° 24.3	23° 24.3	23° 24.4	23° 24.4	23° 24.5	+0.1
Вс 18	179° 42.7	194° 42.5	209° 42.4	224° 42.3	239° 42.1	254° 42.0	89° 40.2	104° 40.1	119° 39.9	134° 39.8	149° 39.7	164° 39.5	-0.1
	23° 24.5	23° 24.6	23° 24.6	23° 24.7	23° 24.7	23° 24.8	23° 25.3	23° 25.3	23° 25.4	23° 25.4	23° 25.4	23° 25.5	+0.0
Пн 19	179° 39.4	194° 39.2	209° 39.1	224° 39.0	239° 38.8	254° 38.7	89° 36.9	104° 36.8	119° 36.6	134° 36.5	149° 36.4	164° 36.2	-0.1
	23° 25.5	23° 25.5	23° 25.6	23° 25.6	23° 25.6	23° 25.6	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	+0.0
Вт 20	179° 36.1	194° 36.0	209° 35.8	224° 35.7	239° 35.5	254° 35.4	89° 33.6	104° 33.5	119° 33.4	134° 33.2	149° 33.1	164° 32.9	-0.1
	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	+0.0
Ср 21	179° 32.8	194° 32.7	209° 32.5	224° 32.4	239° 32.3	254° 32.1	89° 30.3	104° 30.2	119° 30.1	134° 29.9	149° 29.8	164° 29.7	-0.1
	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.2	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 25.9	23° 25.9	-0.0
Чт 22	179° 29.5	194° 29.4	209° 29.2	224° 29.1	239° 29.0	254° 28.8	89° 27.1	104° 26.9	119° 26.8	134° 26.7	149° 26.5	164° 26.4	-0.1
	23° 25.9	23° 25.9	23° 25.9	23° 25.8	23° 25.8	23° 25.8	23° 25.4	23° 25.4	23° 25.4	23° 25.3	23° 25.3	23° 25.3	-0.0
Пт 23	179° 26.3	194° 26.1	209° 26.0	224° 25.8	239° 25.7	254° 25.6	89° 23.8	104° 23.7	119° 23.5	134° 23.4	149° 23.3	164° 23.1	-0.1
	23° 25.2	23° 25.2	23° 25.1	23° 25.1	23° 25.1	23° 25.0	23° 24.4	23° 24.4	23° 24.3	23° 24.3	23° 24.2	23° 24.2	-0.0
Сб 24	179° 23.0	194° 22.9	209° 22.7	224° 22.6	239° 22.5	254° 22.3	89° 20.6	104° 20.5	119° 20.3	134° 20.2	149° 20.1	164° 19.9	-0.1
	23° 24.1	23° 24.1	23° 24.0	23° 23.9	23° 23.9	23° 23.8	23° 23.0	23° 22.9	23° 22.9	23° 22.8	23° 22.7	23° 22.7	-0.1
Вс 25	179° 19.8	194° 19.7	209° 19.5	224° 19.4	239° 19.3	254° 19.1	89° 17.4	104° 17.3	119° 17.1	134° 17.0	149° 16.9	164° 16.7	-0.1
	23° 22.6	23° 22.5	23° 22.5	23° 22.4	23° 22.3	23° 22.2	23° 21.2	23° 21.1	23° 21.0	23° 20.9	23° 20.8	23° 20.8	-0.1
Пн 26	179° 16.6	194° 16.5	209° 16.3	224° 16.2	239° 16.1	254° 15.9	89° 14.2	104° 14.1	119° 14.0	134° 13.9	149° 13.7	164° 13.6	-0.1
	23° 20.7	23° 20.6	23° 20.5	23° 20.4	23° 20.3	23° 20.2	23° 19.0	23° 18.9	23° 18.8	23° 18.6	23° 18.5	23° 18.4	-0.1
Вт 27	179° 13.5	194° 13.3	209° 13.2	224° 13.1	239° 12.9	254° 12.8	89° 11.1	104° 11.0	119° 10.9	134° 10.8	149° 10.6	164° 10.5	-0.1
	23° 18.3	23° 18.2	23° 18.1	23° 18.0	23° 17.9	23° 17.8	23° 16.3	23° 16.2	23° 16.1	23° 16.0	23° 15.8	23° 15.7	-0.1
Ср 28	179° 10.4	194° 10.2	209° 10.1	224° 10.0	239° 09.9	254° 09.7	89° 08.1	104° 08.0	119° 07.8	134° 07.7	149° 07.6	164° 07.5	-0.1
	23° 15.6	23° 15.5	23° 15.3	23° 15.2	23° 15.1	23° 15.0	23° 13.3	23° 13.1	23° 13.0	23° 12.9	23° 12.7	23° 12.6	-0.1
Чт 29	179° 07.3	194° 07.2	209° 07.1	224° 07.0	239° 06.8	254° 06.7	89° 05.1	104° 05.0	119° 04.9	134° 04.7	149° 04.6	164° 04.5	-0.1
	23° 12.4	23° 12.3	23° 12.2	23° 12.0	23° 11.9	23° 11.7	23° 09.8	23° 09.6	23° 09.5	23° 09.3	23° 09.2	23° 09.0	-0.1
Пт 30	179° 04.4	194° 04.2	209° 04.1	224° 04.0	239° 03.9	254° 03.8	89° 02.2	104° 02.1	119° 01.9	134° 01.8	149° 01.7	164° 01.6	-0.1
	23° 08.9	23° 08.7	23° 08.6	23° 08.4	23° 08.2	23° 08.1	23° 05.9	23° 05.8	23° 05.6	23° 05.4	23° 05.3	23° 05.1	-0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июнь 2028

Д	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	Δ'/h	R/p
Чт 1	54° 30.5	69° 00.9	83° 31.2	98° 01.4	112° 31.7	127° 01.9	141° 32.1	156° 02.3	170° 32.4	185° 02.5	199° 32.6	+30.2	16.1
	-5° 54.0	-6° 09.1	-6° 24.2	-6° 39.2	-6° 54.2	-7° 09.1	-7° 24.0	-7° 38.9	-7° 53.7	-8° 08.5	-8° 23.3	-14.9	59.1
Пт 2	69° 00.9	83° 31.2	98° 01.4	112° 31.7	127° 01.9	141° 32.1	156° 02.3	170° 32.4	185° 02.5	199° 32.6	214° 02.6	+30.2	16.1
	-6° 09.1	-6° 24.2	-6° 39.2	-6° 54.2	-7° 09.1	-7° 24.0	-7° 38.9	-7° 53.7	-8° 08.5	-8° 23.3	-8° 37.9	-14.9	59.1
Сб 3	71° 28.2	85° 57.6	100° 26.9	114° 56.1	129° 25.3	143° 54.5	158° 23.6	172° 52.6	187° 21.6	201° 50.6	216° 19.4	+29.1	16.0
	-12° 11.6	-12° 25.4	-12° 39.1	-12° 52.7	-13° 06.2	-13° 19.6	-13° 33.0	-13° 46.3	-13° 59.5	-14° 12.6	-14° 25.7	-13.4	58.9
Вс 4	73° 25.9	87° 53.9	102° 21.8	116° 49.6	131° 17.4	145° 45.2	160° 12.8	174° 40.4	189° 08.0	203° 35.5	218° 02.9	+27.7	16.0
	-17° 30.7	-17° 42.2	-17° 53.7	-18° 05.0	-18° 16.2	-18° 27.3	-18° 38.4	-18° 49.2	-19° 00.0	-19° 10.7	-19° 21.3	-11.1	58.5
Пн 5	74° 47.5	89° 14.1	103° 40.6	118° 07.0	132° 33.4	146° 59.8	161° 26.0	175° 52.3	190° 18.5	204° 44.7	219° 10.8	+26.3	15.8
	-21° 44.8	-21° 53.4	-22° 01.8	-22° 10.0	-22° 18.2	-22° 26.2	-22° 34.0	-22° 41.7	-22° 49.3	-22° 56.7	-23° 04.0	-7.9	58.1
Вт 6	75° 38.1	90° 03.7	104° 29.3	118° 54.8	133° 20.4	147° 45.9	162° 11.4	176° 36.9	191° 02.4	205° 27.8	219° 53.3	+25.5	15.7
	-24° 35.7	-24° 40.6	-24° 45.4	-24° 50.0	-24° 54.4	-24° 58.7	-25° 02.9	-25° 06.8	-25° 10.7	-25° 14.3	-25° 17.8	-4.2	57.6
○ Ср 7	76° 15.4	90° 41.0	105° 06.6	119° 32.2	133° 57.8	148° 23.5	162° 49.2	177° 14.9	191° 40.6	206° 06.4	220° 32.3	+25.7	15.5
	-25° 51.6	-25° 52.6	-25° 53.4	-25° 54.1	-25° 54.6	-25° 55.0	-25° 55.2	-25° 55.3	-25° 55.2	-25° 54.9	-25° 54.5	-0.3	57.0
Чт 8	77° 05.0	91° 31.6	105° 58.3	120° 25.1	134° 51.9	149° 18.7	163° 45.7	178° 12.7	192° 39.7	207° 06.9	221° 34.1	+26.9	15.4
	-25° 30.4	-25° 27.6	-25° 24.7	-25° 21.6	-25° 18.4	-25° 15.1	-25° 11.6	-25° 08.0	-25° 04.2	-25° 00.3	-24° 56.3	+3.4	56.4
Пт 9	78° 31.3	92° 59.8	107° 28.4	121° 57.0	136° 25.7	150° 54.5	165° 23.4	179° 52.4	194° 21.5	208° 50.6	223° 19.8	+28.8	15.2
	-23° 40.2	-23° 34.2	-23° 28.0	-23° 21.7	-23° 15.3	-23° 08.8	-23° 02.1	-22° 55.4	-22° 48.5	-22° 41.5	-22° 34.5	+6.6	55.8
Сб 10	80° 49.0	95° 19.6	109° 50.4	124° 21.2	138° 52.1	153° 23.1	167° 54.2	182° 25.3	196° 56.6	211° 27.9	225° 59.4	+31.0	15.1
	-20° 36.1	-20° 27.5	-20° 18.7	-20° 09.9	-20° 01.0	-19° 52.0	-19° 42.9	-19° 33.7	-19° 24.5	-19° 15.1	-19° 05.7	+9.0	55.2
Вс 11	84° 00.5	98° 33.2	113° 06.0	127° 38.9	142° 11.8	156° 44.8	171° 17.9	185° 51.1	200° 24.3	214° 57.6	229° 30.9	+33.0	14.9
	-16° 35.7	-16° 25.1	-16° 14.5	-16° 03.8	-15° 53.1	-15° 42.3	-15° 31.4	-15° 20.5	-15° 09.6	-14° 58.6	-14° 47.5	+10.8	54.7
Пн 12	87° 59.0	102° 33.4	117° 07.8	131° 42.2	146° 16.7	160° 51.3	175° 25.9	190° 00.6	204° 35.3	219° 10.0	233° 44.8	+34.6	14.8
	-11° 55.4	-11° 43.6	-11° 31.7	-11° 19.8	-11° 07.9	-10° 55.9	-10° 43.9	-10° 31.8	-10° 19.7	-10° 07.6	-9° 55.5	+12.0	54.4
Вт 13	92° 31.8	107° 07.2	121° 42.6	136° 18.1	150° 53.6	165° 29.1	180° 04.6	194° 40.2	209° 15.8	223° 51.4	238° 27.0	+35.5	14.8
	-6° 49.6	-6° 37.0	-6° 24.3	-6° 11.7	-5° 59.0	-5° 46.4	-5° 33.7	-5° 21.0	-5° 08.2	-4° 55.5	-4° 42.7	+12.7	54.2
Ср 14	97° 23.4	111° 59.2	126° 35.0	141° 10.8	155° 46.7	170° 22.5	184° 58.3	199° 34.1	214° 10.0	228° 45.8	243° 21.6	+35.8	14.8
	-1° 29.7	-1° 16.8	-1° 03.8	-0° 50.9	-0° 37.9	-0° 24.9	-0° 12.0	0° 01.0	0° 13.9	0° 26.9	0° 39.9	+13.0	54.2
◑ Чт 15	102° 17.2	116° 52.8	131° 28.3	146° 03.9	160° 39.3	175° 14.8	189° 50.2	204° 25.6	219° 01.0	233° 36.3	248° 11.6	+35.4	14.8
	3° 54.0	4° 06.9	4° 19.8	4° 32.7	4° 45.5	4° 58.4	5° 11.2	5° 24.0	5° 36.8	5° 49.6	6° 02.4	+12.8	54.4
Пт 16	106° 56.4	121° 31.0	136° 05.6	150° 40.1	165° 14.6	179° 49.0	194° 23.3	208° 57.6	223° 31.8	238° 06.0	252° 40.1	+34.4	14.9
	9° 11.7	9° 24.1	9° 36.5	9° 48.9	10° 01.2	10° 13.5	10° 25.8	10° 38.0	10° 50.2	11° 02.4	11° 14.6	+12.3	54.8
Сб 17	111° 03.9	125° 36.9	140° 09.8	154° 42.7	169° 15.4	183° 48.1	198° 20.7	212° 53.3	227° 25.7	241° 58.1	256° 30.4	+32.7	15.1
	14° 11.9	14° 23.4	14° 34.8	14° 46.2	14° 57.5	15° 08.7	15° 19.9	15° 31.1	15° 42.2	15° 53.2	16° 04.2	+11.2	55.3
Вс 18	114° 23.9	128° 54.8	143° 25.5	157° 56.1	172° 26.7	186° 57.1	201° 27.5	215° 57.7	230° 27.9	244° 57.9	259° 27.9	+30.4	15.3
	18° 40.9	18° 50.8	19° 00.6	19° 10.3	19° 19.9	19° 29.5	19° 38.9	19° 48.3	19° 57.6	20° 06.8	20° 15.9	+9.5	56.0
Пн 19	116° 44.9	131° 13.2	145° 41.5	160° 09.6	174° 37.6	189° 05.5	203° 33.3	218° 01.0	232° 28.7	246° 56.2	261° 23.6	+27.9	15.5
	22° 21.2	22° 28.7	22° 36.1	22° 43.4	22° 50.6	22° 57.6	23° 04.6	23° 11.4	23° 18.1	23° 24.7	23° 31.2	+7.0	56.7
Вт 20	118° 03.6	132° 29.5	146° 55.4	161° 21.1	175° 46.8	190° 12.5	204° 38.0	219° 03.4	233° 28.8	247° 54.1	262° 19.4	+25.6	15.7
	24° 52.6	24° 56.9	25° 01.1	25° 05.1	25° 09.0	25° 12.8	25° 16.4	25° 19.8	25° 23.1	25° 26.2	25° 29.2	+3.7	57.5
Ср 21	118° 30.2	132° 54.5	147° 18.8	161° 43.0	176° 07.1	190° 31.3	204° 55.4	219° 19.5	233° 43.5	248° 07.5	262° 31.5	+24.1	15.9
	25° 55.2	25° 55.6	25° 55.9	25° 55.9	25° 55.9	25° 55.6	25° 55.2	25° 54.6	25° 53.9	25° 53.0	25° 51.9	-0.3	58.2
● Чт 22	118° 29.6	132° 53.4	147° 17.3	161° 41.2	176° 05.0	190° 29.0	204° 52.9	219° 16.8	233° 40.8	248° 04.8	262° 28.8	+23.9	16.1
	25° 15.0	25° 11.2	25° 07.2	25° 03.0	24° 58.6	24° 54.1	24° 49.5	24° 44.6	24° 39.6	24° 34.4	24° 29.1	-4.6	58.9
Пт 23	118° 33.4	132° 58.1	147° 22.8	161° 47.6	176° 12.4	190° 37.3	205° 02.2	219° 27.2	233° 52.3	248° 17.4	262° 42.6	+24.9	16.2
	22° 49.4	22° 41.4	22° 33.4	22° 25.2	22° 16.8	22° 08.3	21° 59.6	21° 50.8	21° 41.9	21° 32.8	21° 23.5	-8.6	59.4
Сб 24	119° 08.3	133° 34.6	148° 00.9	162° 27.4	176° 53.8	191° 20.4	205° 47.0	220° 13.7	234° 40.5	249° 07.4	263° 34.3	+26.6	16.3
	18° 48.8	18° 37.5	18° 26.0	18° 14.5	18° 02.8	17° 51.0	17° 39.1	17° 27.1	17° 15.0	17° 02.7	16° 50.4	-11.8	59.7
Вс 25	120° 26.7	134° 54.7	149° 22.9	163° 51.0	178° 19.3	192° 47.6	207° 16.0	221° 44.4	236° 12.9	250° 41.5	265° 10.1	+28.3	16.3
	13° 33.9	13° 20.1	13° 06.2	12° 52.3	12° 38.3	12° 24.2	12° 10.0	11° 55.8	11° 41.5	11° 27.2	11° 12.7	-14.1	59.8
Пн 26	134° 54.7	149° 22.9	163° 51.0	178° 19.3	192° 47.6	207° 16.0	221° 44.4	236° 12.9	250° 41.5	265° 10.1	279° 38.8	+28.4	16.3
	13° 20.1	13° 06.2	12° 52.3	12° 38.3	12° 24.2	12° 10.0	11° 55.8	11° 41.5	11° 27.2	11° 12.7	10° 58.2	-14.2	59.8
Вт 27	136° 55.7	151° 25.2	165° 54.8	180° 24.4	194° 54.0	209° 23.7	223° 53.5	238° 23.2	252° 53.1	267° 22.9	281° 52.8	+29.7	16.3
	7° 14.7	6° 59.4	6° 44.1	6° 28.8	6° 13.5	5° 58.1	5° 42.7	5° 27.2	5° 11.8	4° 56.3	4° 40.8	-15.4	59.7
Ср 28	139° 24.6	153° 54.9	168° 25.2	182° 55.6	197° 25.9	211° 56.3	226° 26.6	240° 57.0	255° 27.4	269° 57.8	284° 28.2	+30.4	16.2
	0° 46.7	0° 31.0	0° 15.4	-0° 00.2	-0° 15.9	-0° 31.5	-0° 47.1	-1° 02.7	-1° 18.3	-1° 33.9	-1° 49.4	-15.6	59.4
◐ Чт 29	142° 04.3	156° 34.6	171° 05.0	185° 35.3	200° 05.6	214° 35.9	229° 06.2	243° 36.5	258° 06.7	272° 36.9	287° 07.1	+30.3	16.1
	-5° 40.0	-5° 55.2	-6° 10.2	-6° 25.3	-6° 40.3	-6° 55.3	-7° 10.2	-7° 25.1	-7° 39.9	-7° 54.7	-8° 09.4	-14.9	59.1
Пт 30	144° 36.9	159° 06.7	173° 36.4	188° 06.0	202° 35.6	217° 05.2	231° 34.8	246° 04.3	260° 33.7	275° 03.1	289° 32.5	+29.6	16.0
	-11° 43.6	-11° 57.4	-12° 11.1	-12° 24.7	-12° 38.2	-12° 51.7	-13° 05.1	-13° 18.4	-13° 31.7	-13° 44.8	-13° 57.9	-13.4	58.7

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 7 06h08 — Последняя четв.: 15 04h27 — Новолуние: 22 18h27 — Первая четв.: 29 12h10

СОЛНЦЕ

Июль 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	179° 01.5	194° 01.3	209° 01.2	224° 01.1	239° 01.0	254° 00.9	88° 59.3	103° 59.2	118° 59.1	133° 59.0	148° 58.9	163° 58.7	-0.1
	23° 04.9	23° 04.7	23° 04.6	23° 04.4	23° 04.2	23° 04.0	23° 01.7	23° 01.5	23° 01.3	23° 01.1	23° 00.9	23° 00.7	-0.2
Вс 2	178° 58.6	193° 58.5	208° 58.4	223° 58.3	238° 58.2	253° 58.0	88° 56.5	103° 56.4	118° 56.3	133° 56.2	148° 56.1	163° 56.0	-0.1
	23° 00.5	23° 00.4	23° 00.2	23° 00.0	22° 59.8	22° 59.6	22° 57.0	22° 56.8	22° 56.6	22° 56.4	22° 56.2	22° 56.0	-0.2
Пн 3	178° 55.9	193° 55.7	208° 55.6	223° 55.5	238° 55.4	253° 55.3	88° 53.8	103° 53.7	118° 53.6	133° 53.5	148° 53.4	163° 53.3	-0.1
	22° 55.8	22° 55.6	22° 55.4	22° 55.1	22° 54.9	22° 54.7	22° 51.9	22° 51.7	22° 51.5	22° 51.3	22° 51.1	22° 50.8	-0.2
Вт 4	178° 53.2	193° 53.1	208° 53.0	223° 52.8	238° 52.7	253° 52.6	88° 51.2	103° 51.1	118° 51.0	133° 50.9	148° 50.8	163° 50.7	-0.1
	22° 50.6	22° 50.4	22° 50.2	22° 49.9	22° 49.7	22° 49.5	22° 46.5	22° 46.2	22° 46.0	22° 45.8	22° 45.5	22° 45.3	-0.2
Ср 5	178° 50.6	193° 50.5	208° 50.4	223° 50.3	238° 50.2	253° 50.0	88° 48.7	103° 48.6	118° 48.5	133° 48.4	148° 48.3	163° 48.2	-0.1
	22° 45.0	22° 44.8	22° 44.6	22° 44.3	22° 44.1	22° 43.8	22° 40.6	22° 40.4	22° 40.1	22° 39.9	22° 39.6	22° 39.3	-0.2
Чт 6	178° 48.1	193° 48.0	208° 47.9	223° 47.8	238° 47.7	253° 47.6	88° 46.2	103° 46.1	118° 46.0	133° 46.0	148° 45.9	163° 45.8	-0.1
	22° 39.1	22° 38.8	22° 38.6	22° 38.3	22° 38.1	22° 37.8	22° 34.4	22° 34.1	22° 33.8	22° 33.6	22° 33.3	22° 33.0	-0.3
Пт 7	178° 45.7	193° 45.6	208° 45.5	223° 45.4	238° 45.3	253° 45.2	88° 43.9	103° 43.8	118° 43.7	133° 43.6	148° 43.5	163° 43.4	-0.1
	22° 32.7	22° 32.5	22° 32.2	22° 31.9	22° 31.6	22° 31.4	22° 27.7	22° 27.4	22° 27.2	22° 26.9	22° 26.6	22° 26.3	-0.3
Сб 8	178° 43.3	193° 43.2	208° 43.1	223° 43.0	238° 43.0	253° 42.9	88° 41.7	103° 41.6	118° 41.5	133° 41.4	148° 41.3	163° 41.2	-0.1
	22° 26.0	22° 25.7	22° 25.4	22° 25.1	22° 24.8	22° 24.5	22° 20.7	22° 20.4	22° 20.1	22° 19.8	22° 19.5	22° 19.2	-0.3
Вс 9	178° 41.1	193° 41.0	208° 40.9	223° 40.8	238° 40.8	253° 40.7	88° 39.5	103° 39.4	118° 39.3	133° 39.3	148° 39.2	163° 39.1	-0.1
	22° 18.9	22° 18.6	22° 18.3	22° 18.0	22° 17.7	22° 17.3	22° 13.3	22° 13.0	22° 12.6	22° 12.3	22° 12.0	22° 11.7	-0.3
Пн 10	178° 39.0	193° 38.9	208° 38.8	223° 38.7	238° 38.6	253° 38.6	88° 37.5	103° 37.4	118° 37.3	133° 37.2	148° 37.1	163° 37.1	-0.1
	22° 11.4	22° 11.0	22° 10.7	22° 10.4	22° 10.1	22° 09.8	22° 05.5	22° 05.1	22° 04.8	22° 04.5	22° 04.1	22° 03.8	-0.3
Вт 11	178° 37.0	193° 36.9	208° 36.8	223° 36.7	238° 36.7	253° 36.6	88° 35.5	103° 35.5	118° 35.4	133° 35.3	148° 35.2	163° 35.2	-0.1
	22° 03.5	22° 03.1	22° 02.8	22° 02.5	22° 02.1	22° 01.8	21° 57.3	21° 57.0	21° 56.6	21° 56.3	21° 55.9	21° 55.6	-0.3
Ср 12	178° 35.1	193° 35.0	208° 34.9	223° 34.8	238° 34.8	253° 34.7	88° 33.7	103° 33.6	118° 33.6	133° 33.5	148° 33.4	163° 33.4	-0.1
	21° 55.2	21° 54.8	21° 54.5	21° 54.1	21° 53.8	21° 53.4	21° 48.8	21° 48.4	21° 48.0	21° 47.7	21° 47.3	21° 46.9	-0.4
Чт 13	178° 33.3	193° 33.2	208° 33.1	223° 33.1	238° 33.0	253° 32.9	88° 32.0	103° 32.0	118° 31.9	133° 31.8	148° 31.7	163° 31.7	-0.1
	21° 46.6	21° 46.2	21° 45.8	21° 45.4	21° 45.1	21° 44.7	21° 39.8	21° 39.4	21° 39.1	21° 38.7	21° 38.3	21° 37.9	-0.4
Пт 14	178° 31.6	193° 31.5	208° 31.5	223° 31.4	238° 31.3	253° 31.3	88° 30.4	103° 30.4	118° 30.3	133° 30.2	148° 30.2	163° 30.1	-0.1
	21° 37.5	21° 37.1	21° 36.8	21° 36.4	21° 36.0	21° 35.6	21° 30.5	21° 30.1	21° 29.7	21° 29.3	21° 28.9	21° 28.5	-0.4
Сб 15	178° 30.1	193° 30.0	208° 29.9	223° 29.9	238° 29.8	253° 29.7	88° 29.0	103° 28.9	118° 28.9	133° 28.8	148° 28.7	163° 28.7	-0.1
	21° 28.1	21° 27.7	21° 27.3	21° 26.9	21° 26.5	21° 26.1	21° 20.9	21° 20.4	21° 20.0	21° 19.6	21° 19.2	21° 18.8	-0.4
Вс 16	178° 28.6	193° 28.6	208° 28.5	223° 28.5	238° 28.4	253° 28.3	88° 27.6	103° 27.6	118° 27.5	133° 27.5	148° 27.4	163° 27.4	-0.1
	21° 18.4	21° 18.0	21° 17.6	21° 17.1	21° 16.7	21° 16.3	21° 10.8	21° 10.4	21° 10.0	21° 09.5	21° 09.1	21° 08.7	-0.4
Пн 17	178° 27.3	193° 27.3	208° 27.2	223° 27.2	238° 27.1	253° 27.1	88° 26.4	103° 26.4	118° 26.3	133° 26.3	148° 26.2	163° 26.2	-0.1
	21° 08.3	21° 07.8	21° 07.4	21° 07.0	21° 06.5	21° 06.1	21° 00.4	21° 00.0	20° 59.6	20° 59.1	20° 58.7	20° 58.2	-0.4
Вт 18	178° 26.1	193° 26.1	208° 26.0	223° 26.0	238° 26.0	253° 25.9	88° 25.3	103° 25.3	118° 25.3	133° 25.2	148° 25.2	163° 25.1	-0.0
	20° 57.8	20° 57.3	20° 56.9	20° 56.4	20° 56.0	20° 55.6	20° 49.7	20° 49.2	20° 48.8	20° 48.3	20° 47.9	20° 47.4	-0.4
Ср 19	178° 25.1	193° 25.0	208° 25.0	223° 25.0	238° 24.9	253° 24.9	88° 24.4	103° 24.4	118° 24.3	133° 24.3	148° 24.2	163° 24.2	-0.0
	20° 46.9	20° 46.5	20° 46.0	20° 45.6	20° 45.1	20° 44.6	20° 38.6	20° 38.1	20° 37.6	20° 37.2	20° 36.7	20° 36.2	-0.5
Чт 20	178° 24.2	193° 24.1	208° 24.1	223° 24.1	238° 24.0	253° 24.0	88° 23.6	103° 23.6	118° 23.5	133° 23.5	148° 23.5	163° 23.4	-0.0
	20° 35.8	20° 35.3	20° 34.8	20° 34.3	20° 33.9	20° 33.4	20° 27.1	20° 26.7	20° 26.2	20° 25.7	20° 25.2	20° 24.7	-0.5
Пт 21	178° 23.4	193° 23.4	208° 23.3	223° 23.3	238° 23.3	253° 23.3	88° 22.9	103° 22.9	118° 22.9	133° 22.8	148° 22.8	163° 22.8	-0.0
	20° 24.2	20° 23.7	20° 23.3	20° 22.8	20° 22.3	20° 21.8	20° 15.4	20° 14.9	20° 14.4	20° 13.9	20° 13.4	20° 12.9	-0.5
Сб 22	178° 22.8	193° 22.7	208° 22.7	223° 22.7	238° 22.7	253° 22.7	88° 22.4	103° 22.4	118° 22.3	133° 22.3	148° 22.3	163° 22.3	-0.0
	20° 12.4	20° 11.9	20° 11.3	20° 10.8	20° 10.3	20° 09.8	20° 03.2	20° 02.7	20° 02.2	20° 01.7	20° 01.2	20° 00.7	-0.5
Вс 23	178° 22.3	193° 22.3	208° 22.2	223° 22.2	238° 22.2	253° 22.2	88° 22.0	103° 22.0	118° 22.0	133° 22.0	148° 22.0	163° 21.9	-0.0
	20° 00.1	19° 59.6	19° 59.1	19° 58.6	19° 58.1	19° 57.6	19° 50.8	19° 50.2	19° 49.7	19° 49.2	19° 48.7	19° 48.1	-0.5
Пн 24	178° 21.9	193° 21.9	208° 21.9	223° 21.9	238° 21.9	253° 21.9	88° 21.8	103° 21.8	118° 21.8	133° 21.8	148° 21.8	163° 21.7	-0.0
	19° 47.6	19° 47.1	19° 46.5	19° 46.0	19° 45.5	19° 44.9	19° 38.0	19° 37.4	19° 36.9	19° 36.3	19° 35.8	19° 35.3	-0.5
Вт 25	178° 21.7	193° 21.7	208° 21.7	223° 21.7	238° 21.7	253° 21.7	88° 21.7	103° 21.7	118° 21.7	133° 21.7	148° 21.7	163° 21.7	-0.0
	19° 34.7	19° 34.2	19° 33.6	19° 33.1	19° 32.5	19° 32.0	19° 24.9	19° 24.3	19° 23.7	19° 23.2	19° 22.6	19° 22.1	-0.5
Ср 26	178° 21.7	193° 21.7	208° 21.7	223° 21.7	238° 21.7	253° 21.7	88° 21.8	103° 21.8	118° 21.8	133° 21.8	148° 21.8	163° 21.8	+0.0
	19° 21.5	19° 21.0	19° 20.4	19° 19.8	19° 19.3	19° 18.7	19° 11.4	19° 10.8	19° 10.3	19° 09.7	19° 09.1	19° 08.6	-0.6
Чт 27	178° 21.8	193° 21.8	208° 21.8	223° 21.8	238° 21.8	253° 21.9	88° 22.0	103° 22.0	118° 22.0	133° 22.0	148° 22.1	163° 22.1	+0.0
	19° 08.0	19° 07.4	19° 06.9	19° 06.3	19° 05.7	19° 05.1	18° 57.7	18° 57.1	18° 56.5	18° 55.9	18° 55.3	18° 54.8	-0.6
Пт 28	178° 22.1	193° 22.1	208° 22.1	223° 22.1	238° 22.1	253° 22.2	88° 22.4	103° 22.4	118° 22.4	133° 22.4	148° 22.5	163° 22.5	+0.0
	18° 54.2	18° 53.6	18° 53.0	18° 52.4	18° 51.8	18° 51.3	18° 43.6	18° 43.0	18° 42.4	18° 41.8	18° 41.2	18° 40.6	-0.6
Сб 29	178° 22.5	193° 22.5	208° 22.6	223° 22.6	238° 22.6	253° 22.6	88° 22.9	103° 23.0	118° 23.0	133° 23.0	148° 23.0	163° 23.1	+0.0
	18° 40.0	18° 39.4	18° 38.8	18° 38.2	18° 37.6	18° 37.0	18° 29.2	18° 28.6	18° 28.0	18° 27.4	18° 26.8	18° 26.2	-0.6
Вс 30	178° 23.1	193° 23.1	208° 23.1	223° 23.2	238° 23.2	253° 23.2	88° 23.6	103° 23.7	118° 23.7	133° 23.7	148° 23.8	163° 23.8	+0.0
	18° 25.6	18° 25.0	18° 24.4	18° 23.8	18° 23.1	18° 22.5	18° 14.6	18° 13.9	18° 13.3	18° 12.7	18° 12.1	18° 11.5	-0.6
Пн 31	178° 23.8	193° 23.9	208° 23.9	223° 23.9	238° 24.0	253° 24.0	88° 24.5	103° 24.5	118° 24.6	133° 24.6	148° 24.6	163° 24.7	+0.0
	18° 10.8	18° 10.2	18° 09.6	18° 09.0	18° 08.4	18° 07.7	17° 59.6	17° 59.0	17° 58.3	17° 57.7	17° 57.1	17° 56.4	-0.6

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2028

Д	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	Δ'/h	R/p
Сб 1	74° 23.8	88° 52.6	103° 21.5	117° 50.2	132° 19.0	146° 47.6	161° 16.2	175° 44.8	190° 13.3	204° 41.8	219° 10.2	+28.6	15.9
	-16° 04.0	-16° 16.2	-16° 28.2	-16° 40.1	-16° 51.9	-17° 03.6	-17° 15.3	-17° 26.8	-17° 38.2	-17° 49.5	-18° 00.7	-11.7	58.3
Вс 2	76° 10.2	90° 37.8	105° 05.4	119° 32.9	134° 00.3	148° 27.7	162° 55.0	177° 22.3	191° 49.6	206° 16.8	220° 43.9	+27.4	15.8
	-20° 35.5	-20° 44.9	-20° 54.1	-21° 03.3	-21° 12.3	-21° 21.2	-21° 29.9	-21° 38.6	-21° 47.1	-21° 55.4	-22° 03.7	-8.8	57.8
Пн 3	77° 26.1	91° 52.6	106° 19.1	120° 45.5	135° 11.9	149° 38.3	164° 04.6	178° 31.0	192° 57.3	207° 23.6	221° 49.8	+26.4	15.6
	-23° 51.0	-23° 57.0	-24° 02.9	-24° 08.7	-24° 14.3	-24° 19.7	-24° 25.1	-24° 30.2	-24° 35.2	-24° 40.1	-24° 44.8	-5.4	57.3
Вт 4	78° 21.8	92° 47.9	107° 13.9	121° 40.0	136° 06.1	150° 32.2	164° 58.3	179° 24.4	193° 50.5	208° 16.6	222° 42.8	+26.1	15.5
	-25° 37.8	-25° 40.1	-25° 42.3	-25° 44.3	-25° 46.1	-25° 47.9	-25° 49.4	-25° 50.8	-25° 52.1	-25° 53.2	-25° 54.1	-1.6	56.8
Ср 5	79° 17.7	93° 44.2	108° 10.9	122° 37.5	137° 04.2	151° 31.0	165° 57.8	180° 24.6	194° 51.5	209° 18.4	223° 45.4	+26.8	15.3
	-25° 50.4	-25° 49.0	-25° 47.4	-25° 45.7	-25° 43.8	-25° 41.8	-25° 39.6	-25° 37.3	-25° 34.9	-25° 32.3	-25° 29.6	+2.1	56.3
○ Чт 6	80° 37.2	95° 05.2	109° 33.2	124° 01.3	138° 29.5	152° 57.8	167° 26.1	181° 54.5	196° 23.0	210° 51.5	225° 20.1	+28.3	15.2
	-24° 32.3	-24° 27.5	-24° 22.5	-24° 17.3	-24° 12.1	-24° 06.7	-24° 01.2	-23° 55.6	-23° 49.9	-23° 44.0	-23° 38.0	+5.4	55.8
Пт 7	82° 38.8	97° 08.7	111° 38.7	126° 08.7	140° 38.9	155° 09.1	169° 39.4	184° 09.8	198° 40.2	213° 10.8	227° 41.4	+30.3	15.1
	-21° 54.8	-21° 47.1	-21° 39.2	-21° 31.3	-21° 23.3	-21° 15.1	-21° 06.9	-20° 58.6	-20° 50.2	-20° 41.7	-20° 33.1	+8.2	55.3
Сб 8	85° 30.6	100° 02.5	114° 34.5	129° 06.6	143° 38.7	158° 10.9	172° 43.2	187° 15.6	201° 48.1	216° 20.6	230° 53.2	+32.3	15.0
	-18° 13.8	-18° 03.8	-17° 53.8	-17° 43.8	-17° 33.6	-17° 23.4	-17° 13.2	-17° 02.8	-16° 52.4	-16° 41.9	-16° 31.4	+10.2	54.8
Вс 9	89° 10.6	103° 44.2	118° 18.0	132° 51.8	147° 25.7	161° 59.6	176° 33.6	191° 07.7	205° 41.8	220° 15.9	234° 50.2	+34.0	14.9
	-13° 46.1	-13° 34.6	-13° 23.1	-13° 11.6	-13° 00.0	-12° 48.4	-12° 36.7	-12° 24.9	-12° 13.2	-12° 01.4	-11° 49.5	+11.7	54.5
Пн 10	93° 29.6	108° 04.6	122° 39.7	137° 14.7	151° 49.9	166° 25.0	181° 00.2	195° 35.4	210° 10.7	224° 46.0	239° 21.3	+35.2	14.8
	-8° 47.3	-8° 34.9	-8° 22.5	-8° 10.0	-7° 57.5	-7° 45.0	-7° 32.5	-7° 19.9	-7° 07.4	-6° 54.8	-6° 42.1	+12.5	54.2
Вт 11	98° 14.7	112° 50.4	127° 26.1	142° 01.9	156° 37.7	171° 13.5	185° 49.3	200° 25.1	215° 00.9	229° 36.8	244° 12.6	+35.8	14.8
	-3° 30.7	-3° 17.9	-3° 05.0	-2° 52.1	-2° 39.2	-2° 26.3	-2° 13.4	-2° 00.5	-1° 47.6	-1° 34.7	-1° 21.7	+12.9	54.1
Ср 12	103° 10.6	117° 46.5	132° 22.3	146° 58.1	161° 33.9	176° 09.7	190° 45.5	205° 21.3	219° 57.1	234° 32.8	249° 08.5	+35.8	14.8
	1° 52.3	2° 05.2	2° 18.1	2° 31.0	2° 43.9	2° 56.8	3° 09.6	3° 22.5	3° 35.3	3° 48.2	4° 01.0	+12.9	54.1
Чт 13	108° 01.5	122° 36.9	137° 12.1	151° 47.3	166° 22.5	180° 57.7	195° 32.8	210° 07.9	224° 42.9	239° 17.9	253° 52.8	+35.1	14.8
	7° 11.5	7° 24.1	7° 36.6	7° 49.1	8° 01.6	8° 14.1	8° 26.5	8° 38.9	8° 51.3	9° 03.6	9° 15.9	+12.4	54.3
◑ Пт 14	112° 31.0	127° 05.2	141° 39.2	156° 13.2	170° 47.1	185° 20.9	199° 54.7	214° 28.4	229° 02.1	243° 35.7	258° 09.2	+33.8	14.9
	12° 16.7	12° 28.5	12° 40.2	12° 51.9	13° 03.5	13° 15.1	13° 26.6	13° 38.1	13° 49.5	14° 00.9	14° 12.3	+11.6	54.7
Сб 15	116° 23.0	130° 55.3	145° 27.5	159° 59.6	174° 31.6	189° 03.6	203° 35.4	218° 07.2	232° 38.9	247° 10.5	261° 42.0	+31.9	15.1
	16° 56.0	17° 06.5	17° 16.9	17° 27.2	17° 37.4	17° 47.6	17° 57.7	18° 07.7	18° 17.7	18° 27.6	18° 37.4	+10.1	55.3
Вс 16	119° 23.2	133° 53.2	148° 23.0	162° 52.8	177° 22.5	191° 52.1	206° 21.6	220° 50.9	235° 20.2	249° 49.4	264° 18.5	+29.5	15.3
	20° 55.1	21° 03.5	21° 11.9	21° 20.2	21° 28.4	21° 36.5	21° 44.5	21° 52.4	22° 00.2	22° 07.9	22° 15.5	+8.1	56.0
Пн 17	121° 22.5	135° 49.9	150° 17.3	164° 44.6	179° 11.8	193° 38.9	208° 05.8	222° 32.7	236° 59.5	251° 26.2	265° 52.9	+27.0	15.5
	23° 56.2	24° 02.0	24° 07.6	24° 13.1	24° 18.5	24° 23.8	24° 28.9	24° 33.9	24° 38.7	24° 43.5	24° 48.1	+5.2	56.9
Вт 18	122° 21.6	136° 46.9	151° 12.1	165° 37.2	180° 02.3	194° 27.3	208° 52.2	223° 17.0	237° 41.8	252° 06.6	266° 31.2	+25.0	15.8
	25° 39.9	25° 42.1	25° 44.2	25° 46.2	25° 48.0	25° 49.6	25° 51.1	25° 52.5	25° 53.6	25° 54.6	25° 55.5	+1.6	57.8
Ср 19	122° 35.2	136° 59.2	151° 23.1	165° 47.0	180° 10.9	194° 34.7	208° 58.6	223° 22.4	237° 46.2	252° 10.0	266° 33.7	+23.8	16.0
	25° 48.2	25° 46.4	25° 44.3	25° 42.2	25° 39.8	25° 37.3	25° 34.6	25° 31.7	25° 28.7	25° 25.5	25° 22.1	-2.6	58.7
Чт 20	122° 30.3	136° 54.1	151° 18.0	165° 41.9	180° 05.8	194° 29.8	208° 53.7	223° 17.8	237° 41.8	252° 05.9	266° 30.0	+24.0	16.2
	24° 10.6	24° 04.5	23° 58.2	23° 51.7	23° 45.1	23° 38.3	23° 31.3	23° 24.2	23° 16.9	23° 09.5	23° 01.9	-6.9	59.5
Пт 21	122° 36.7	137° 01.6	151° 26.5	165° 51.5	180° 16.5	194° 41.6	209° 06.7	223° 31.9	237° 57.2	252° 22.5	266° 47.9	+25.1	16.4
	20° 48.8	20° 38.8	20° 28.6	20° 18.2	20° 07.7	19° 57.1	19° 46.3	19° 35.4	19° 24.4	19° 13.2	19° 01.9	-10.7	60.1
● Сб 22	123° 16.3	137° 42.7	152° 09.1	166° 35.7	181° 02.3	195° 29.0	209° 55.7	224° 22.5	238° 49.4	253° 16.4	267° 43.4	+26.7	16.5
	15° 57.7	15° 44.5	15° 31.2	15° 17.8	15° 04.3	14° 50.7	14° 37.0	14° 23.3	14° 09.4	13° 55.4	13° 41.4	-13.6	60.5
Вс 23	124° 35.8	139° 03.7	153° 31.8	167° 59.8	182° 28.0	196° 56.1	211° 24.4	225° 52.6	240° 21.0	254° 49.4	269° 17.8	+28.2	16.5
	10° 01.3	9° 46.1	9° 30.8	9° 15.5	9° 00.1	8° 44.7	8° 29.2	8° 13.7	7° 58.2	7° 42.5	7° 26.9	-15.5	60.6
Пн 24	126° 29.4	140° 58.4	155° 27.5	169° 56.7	184° 25.8	198° 55.0	213° 24.2	227° 53.5	242° 22.8	256° 52.1	271° 21.4	+29.2	16.5
	3° 28.3	3° 12.2	2° 56.1	2° 40.0	2° 23.9	2° 07.8	1° 51.7	1° 35.6	1° 19.5	1° 03.3	0° 47.2	-16.1	60.4
Вт 25	140° 58.4	155° 27.5	169° 56.7	184° 25.8	198° 55.0	213° 24.2	227° 53.5	242° 22.8	256° 52.1	271° 21.4	285° 50.7	+29.2	16.5
	3° 12.2	2° 56.1	2° 40.0	2° 23.9	2° 07.8	1° 51.7	1° 35.6	1° 19.5	1° 03.3	0° 47.2	0° 31.1	-16.1	60.4
Ср 26	143° 12.8	157° 42.3	172° 11.9	186° 41.4	201° 11.0	215° 40.5	230° 10.1	244° 39.6	259° 09.2	273° 38.7	288° 08.3	+29.6	16.3
	-3° 28.9	-3° 44.7	-4° 00.5	-4° 16.2	-4° 31.9	-4° 47.6	-5° 03.3	-5° 18.9	-5° 34.4	-5° 49.9	-6° 05.4	-15.7	59.9
Чт 27	145° 30.2	159° 59.5	174° 28.9	188° 58.2	203° 27.4	217° 56.7	232° 25.9	246° 55.1	261° 24.3	275° 53.4	290° 22.6	+29.2	16.2
	-9° 51.3	-10° 05.8	-10° 20.4	-10° 34.8	-10° 49.2	-11° 03.5	-11° 17.7	-11° 31.8	-11° 45.9	-11° 59.9	-12° 13.8	-14.3	59.4
◐ Пт 28	147° 35.7	162° 04.3	176° 32.9	191° 01.4	205° 29.9	219° 58.4	234° 26.8	248° 55.2	263° 23.5	277° 51.8	292° 20.1	+28.4	16.0
	-15° 32.2	-15° 44.7	-15° 57.1	-16° 09.4	-16° 21.6	-16° 33.7	-16° 45.7	-16° 57.6	-17° 09.3	-17° 21.0	-17° 32.6	-12.0	58.7
Сб 29	149° 19.3	163° 46.9	178° 14.5	192° 42.0	207° 09.5	221° 37.0	236° 04.4	250° 31.8	264° 59.2	279° 26.5	293° 53.8	+27.4	15.8
	-20° 12.3	-20° 22.0	-20° 31.6	-20° 41.0	-20° 50.3	-20° 59.5	-21° 08.6	-21° 17.5	-21° 26.3	-21° 35.0	-21° 43.5	-9.1	58.0
Вс 30	150° 38.9	165° 05.7	179° 32.4	193° 59.1	208° 25.8	222° 52.5	237° 19.1	251° 45.8	266° 12.4	280° 39.0	295° 05.5	+26.7	15.6
	-23° 35.5	-23° 41.9	-23° 48.1	-23° 54.1	-24° 00.1	-24° 05.8	-24° 11.5	-24° 17.0	-24° 22.3	-24° 27.5	-24° 32.6	-5.7	57.3
Пн 31	151° 42.8	166° 09.3	180° 35.7	195° 02.2	209° 28.6	223° 55.1	238° 21.6	252° 48.1	267° 14.6	281° 41.1	296° 07.6	+26.5	15.5
	-25° 30.8	-25° 33.5	-25° 36.0	-25° 38.4	-25° 40.7	-25° 42.8	-25° 44.7	-25° 46.5	-25° 48.2	-25° 49.7	-25° 51.1	-2.0	56.7

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 6 18h10 — Последняя четв.: 14 20h56 — Новолуние: 22 03h01 — Первая четв.: 28 17h40

СОЛНЦЕ

Август 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	178° 24.7	193° 24.8	208° 24.8	223° 24.9	238° 24.9	253° 24.9	88° 25.5	103° 25.5	118° 25.6	133° 25.6	148° 25.7	163° 25.7	+0.0
	17° 55.8	17° 55.2	17° 54.5	17° 53.9	17° 53.3	17° 52.6	17° 44.3	17° 43.7	17° 43.0	17° 42.4	17° 41.8	17° 41.1	-0.6
Ср 2	178° 25.8	193° 25.8	208° 25.9	223° 25.9	238° 26.0	253° 26.0	88° 26.7	103° 26.7	118° 26.8	133° 26.8	148° 26.9	163° 26.9	+0.0
	17° 40.5	17° 39.8	17° 39.2	17° 38.5	17° 37.9	17° 37.2	17° 28.8	17° 28.1	17° 27.5	17° 26.8	17° 26.2	17° 25.5	-0.6
Чт 3	178° 27.0	193° 27.0	208° 27.1	223° 27.1	238° 27.2	253° 27.3	88° 28.0	103° 28.0	118° 28.1	133° 28.2	148° 28.2	163° 28.3	+0.1
	17° 24.8	17° 24.2	17° 23.5	17° 22.9	17° 22.2	17° 21.6	17° 12.9	17° 12.3	17° 11.6	17° 10.9	17° 10.3	17° 09.6	-0.7
Пт 4	178° 28.3	193° 28.4	208° 28.5	223° 28.5	238° 28.6	253° 28.6	88° 29.5	103° 29.5	118° 29.6	133° 29.7	148° 29.7	163° 29.8	+0.1
	17° 08.9	17° 08.3	17° 07.6	17° 06.9	17° 06.3	17° 05.6	16° 56.8	16° 56.2	16° 55.5	16° 54.8	16° 54.1	16° 53.4	-0.7
Сб 5	178° 29.8	193° 29.9	208° 30.0	223° 30.0	238° 30.1	253° 30.2	88° 31.1	103° 31.1	118° 31.2	133° 31.3	148° 31.4	163° 31.4	+0.1
	16° 52.8	16° 52.1	16° 51.4	16° 50.7	16° 50.0	16° 49.4	16° 40.5	16° 39.8	16° 39.1	16° 38.4	16° 37.7	16° 37.0	-0.7
Вс 6	178° 31.5	193° 31.6	208° 31.7	223° 31.7	238° 31.8	253° 31.9	88° 32.8	103° 32.9	118° 33.0	133° 33.1	148° 33.2	163° 33.2	+0.1
	16° 36.3	16° 35.6	16° 34.9	16° 34.2	16° 33.6	16° 32.9	16° 23.8	16° 23.1	16° 22.4	16° 21.7	16° 21.0	16° 20.3	-0.7
Пн 7	178° 33.3	193° 33.4	208° 33.5	223° 33.6	238° 33.6	253° 33.7	88° 34.8	103° 34.8	118° 34.9	133° 35.0	148° 35.1	163° 35.2	+0.1
	16° 19.6	16° 18.9	16° 18.2	16° 17.5	16° 16.8	16° 16.1	16° 06.9	16° 06.2	16° 05.5	16° 04.8	16° 04.0	16° 03.3	-0.7
Вт 8	178° 35.3	193° 35.4	208° 35.4	223° 35.5	238° 35.6	253° 35.7	88° 36.8	103° 36.9	118° 37.0	133° 37.1	148° 37.2	163° 37.3	+0.1
	16° 02.6	16° 01.9	16° 01.2	16° 00.5	15° 59.8	15° 59.1	15° 49.7	15° 49.0	15° 48.3	15° 47.6	15° 46.8	15° 46.1	-0.7
Ср 9	178° 37.4	193° 37.5	208° 37.5	223° 37.6	238° 37.7	253° 37.8	88° 39.0	103° 39.1	118° 39.2	133° 39.3	148° 39.4	163° 39.5	+0.1
	15° 45.4	15° 44.7	15° 43.9	15° 43.2	15° 42.5	15° 41.8	15° 32.3	15° 31.6	15° 30.8	15° 30.1	15° 29.4	15° 28.6	-0.7
Чт 10	178° 39.6	193° 39.7	208° 39.8	223° 39.9	238° 40.0	253° 40.1	88° 41.4	103° 41.5	118° 41.6	133° 41.7	148° 41.8	163° 41.9	+0.1
	15° 27.9	15° 27.2	15° 26.4	15° 25.7	15° 25.0	15° 24.2	15° 14.6	15° 13.9	15° 13.1	15° 12.4	15° 11.6	15° 10.9	-0.7
Пт 11	178° 42.0	193° 42.1	208° 42.2	223° 42.3	238° 42.4	253° 42.5	88° 43.9	103° 44.0	118° 44.1	133° 44.2	148° 44.3	163° 44.4	+0.1
	15° 10.2	15° 09.4	15° 08.7	15° 07.9	15° 07.2	15° 06.4	14° 56.7	14° 55.9	14° 55.2	14° 54.4	14° 53.7	14° 52.9	-0.7
Сб 12	178° 44.5	193° 44.6	208° 44.7	223° 44.8	238° 44.9	253° 45.0	88° 46.5	103° 46.6	118° 46.7	133° 46.8	148° 46.9	163° 47.0	+0.1
	14° 52.2	14° 51.4	14° 50.7	14° 49.9	14° 49.2	14° 48.4	14° 38.5	14° 37.8	14° 37.0	14° 36.2	14° 35.5	14° 34.7	-0.8
Вс 13	178° 47.1	193° 47.3	208° 47.4	223° 47.5	238° 47.6	253° 47.7	88° 49.2	103° 49.3	118° 49.5	133° 49.6	148° 49.7	163° 49.8	+0.1
	14° 33.9	14° 33.2	14° 32.4	14° 31.7	14° 30.9	14° 30.1	14° 20.1	14° 19.4	14° 18.6	14° 17.8	14° 17.0	14° 16.3	-0.8
Пн 14	178° 49.9	193° 50.1	208° 50.2	223° 50.3	238° 50.4	253° 50.5	88° 52.1	103° 52.2	118° 52.4	133° 52.5	148° 52.6	163° 52.7	+0.1
	14° 15.5	14° 14.7	14° 13.9	14° 13.2	14° 12.4	14° 11.6	14° 01.5	14° 00.7	13° 59.9	13° 59.2	13° 58.4	13° 57.6	-0.8
Вт 15	178° 52.8	193° 53.0	208° 53.1	223° 53.2	238° 53.3	253° 53.5	88° 55.1	103° 55.2	118° 55.4	133° 55.5	148° 55.6	163° 55.8	+0.1
	13° 56.8	13° 56.0	13° 55.2	13° 54.5	13° 53.7	13° 52.9	13° 42.6	13° 41.9	13° 41.1	13° 40.3	13° 39.5	13° 38.7	-0.8
Ср 16	178° 55.9	193° 56.0	208° 56.1	223° 56.3	238° 56.4	253° 56.5	88° 58.3	103° 58.4	118° 58.5	133° 58.7	148° 58.8	163° 58.9	+0.1
	13° 37.9	13° 37.1	13° 36.3	13° 35.5	13° 34.7	13° 33.9	13° 23.6	13° 22.8	13° 22.0	13° 21.2	13° 20.4	13° 19.6	-0.8
Чт 17	178° 59.1	193° 59.2	208° 59.3	223° 59.5	238° 59.6	253° 59.7	89° 01.5	104° 01.6	119° 01.8	134° 01.9	149° 02.1	164° 02.2	+0.1
	13° 18.8	13° 18.0	13° 17.2	13° 16.4	13° 15.6	13° 14.8	13° 04.3	13° 03.5	13° 02.7	13° 01.9	13° 01.1	13° 00.2	-0.8
Пт 18	179° 02.3	194° 02.5	209° 02.6	224° 02.8	239° 02.9	254° 03.0	89° 04.9	104° 05.0	119° 05.2	134° 05.3	149° 05.5	164° 05.6	+0.1
	12° 59.4	12° 58.6	12° 57.8	12° 57.0	12° 56.2	12° 55.4	12° 44.8	12° 44.0	12° 43.2	12° 42.3	12° 41.5	12° 40.7	-0.8
Сб 19	179° 05.8	194° 05.9	209° 06.0	224° 06.2	239° 06.3	254° 06.5	89° 08.4	104° 08.5	119° 08.7	134° 08.8	149° 09.0	164° 09.1	+0.1
	12° 39.9	12° 39.1	12° 38.3	12° 37.4	12° 36.6	12° 35.8	12° 25.1	12° 24.3	12° 23.4	12° 22.6	12° 21.8	12° 21.0	-0.8
Вс 20	179° 09.3	194° 09.4	209° 09.6	224° 09.7	239° 09.9	254° 10.0	89° 12.0	104° 12.2	119° 12.3	134° 12.5	149° 12.6	164° 12.8	+0.1
	12° 20.1	12° 19.3	12° 18.5	12° 17.7	12° 16.8	12° 16.0	12° 05.2	12° 04.4	12° 03.5	12° 02.7	12° 01.9	12° 01.0	-0.8
Пн 21	179° 12.9	194° 13.1	209° 13.2	224° 13.4	239° 13.6	254° 13.7	89° 15.7	104° 15.9	119° 16.1	134° 16.2	149° 16.4	164° 16.5	+0.2
	12° 00.2	11° 59.4	11° 58.5	11° 57.7	11° 56.9	11° 56.0	11° 45.1	11° 44.3	11° 43.4	11° 42.6	11° 41.8	11° 40.9	-0.8
Вт 22	179° 16.7	194° 16.9	209° 17.0	224° 17.2	239° 17.3	254° 17.5	89° 19.6	104° 19.8	119° 19.9	134° 20.1	149° 20.3	164° 20.4	+0.2
	11° 40.1	11° 39.2	11° 38.4	11° 37.5	11° 36.7	11° 35.9	11° 24.9	11° 24.0	11° 23.2	11° 22.3	11° 21.5	11° 20.6	-0.8
Ср 23	179° 20.6	194° 20.7	209° 20.9	224° 21.1	239° 21.2	254° 21.4	89° 23.6	104° 23.7	119° 23.9	134° 24.1	149° 24.2	164° 24.4	+0.2
	11° 19.8	11° 18.9	11° 18.1	11° 17.2	11° 16.4	11° 15.5	11° 04.4	11° 03.6	11° 02.7	11° 01.8	11° 01.0	11° 00.1	-0.9
Чт 24	179° 24.6	194° 24.7	209° 24.9	224° 25.1	239° 25.2	254° 25.4	89° 27.6	104° 27.8	119° 28.0	134° 28.1	149° 28.3	164° 28.5	+0.2
	10° 59.3	10° 58.4	10° 57.6	10° 56.7	10° 55.8	10° 55.0	10° 43.8	10° 42.9	10° 42.1	10° 41.2	10° 40.3	10° 39.5	-0.9
Пт 25	179° 28.7	194° 28.8	209° 29.0	224° 29.2	239° 29.4	254° 29.5	89° 31.8	104° 32.0	119° 32.2	134° 32.3	149° 32.5	164° 32.7	+0.2
	10° 38.6	10° 37.7	10° 36.9	10° 36.0	10° 35.1	10° 34.3	10° 23.0	10° 22.1	10° 21.3	10° 20.4	10° 19.5	10° 18.6	-0.9
Сб 26	179° 32.9	194° 33.0	209° 33.2	224° 33.4	239° 33.6	254° 33.8	89° 36.1	104° 36.3	119° 36.5	134° 36.6	149° 36.8	164° 37.0	+0.2
	10° 17.8	10° 16.9	10° 16.0	10° 15.2	10° 14.3	10° 13.4	10° 02.0	10° 01.2	10° 00.3	9° 59.4	9° 58.5	9° 57.7	-0.9
Вс 27	179° 37.2	194° 37.4	209° 37.5	224° 37.7	239° 37.9	254° 38.1	89° 40.5	104° 40.7	119° 40.8	134° 41.0	149° 41.2	164° 41.4	+0.2
	9° 56.8	9° 55.9	9° 55.0	9° 54.1	9° 53.3	9° 52.4	9° 40.9	9° 40.1	9° 39.2	9° 38.3	9° 37.4	9° 36.5	-0.9
Пн 28	179° 41.6	194° 41.8	209° 41.9	224° 42.1	239° 42.3	254° 42.5	89° 44.9	104° 45.1	119° 45.3	134° 45.5	149° 45.7	164° 45.9	+0.2
	9° 35.6	9° 34.8	9° 33.9	9° 33.0	9° 32.1	9° 31.2	9° 19.7	9° 18.8	9° 17.9	9° 17.0	9° 16.1	9° 15.2	-0.9
Вт 29	179° 46.1	194° 46.3	209° 46.5	224° 46.6	239° 46.8	254° 47.0	89° 49.5	104° 49.7	119° 49.9	134° 50.1	149° 50.3	164° 50.5	+0.2
	9° 14.3	9° 13.5	9° 12.6	9° 11.7	9° 10.8	9° 09.9	8° 58.3	8° 57.4	8° 56.5	8° 55.6	8° 54.7	8° 53.8	-0.9
Ср 30	179° 50.7	194° 50.9	209° 51.0	224° 51.2	239° 51.4	254° 51.6	89° 54.2	104° 54.4	119° 54.5	134° 54.7	149° 54.9	164° 55.1	+0.2
	8° 52.9	8° 52.0	8° 51.1	8° 50.2	8° 49.3	8° 48.4	8° 36.7	8° 35.8	8° 34.9	8° 34.0	8° 33.1	8° 32.2	-0.9
Чт 31	179° 55.3	194° 55.5	209° 55.7	224° 55.9	239° 56.1	254° 56.3	89° 58.9	104° 59.1	119° 59.3	134° 59.5	149° 59.7	164° 59.9	+0.2
	8° 31.3	8° 30.4	8° 29.5	8° 28.6	8° 27.7	8° 26.8	8° 15.0	8° 14.1	8° 13.2	8° 12.3	8° 11.4	8° 10.5	-0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

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Д	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	Δ'/h	R/p
Вт 1	66° 07.2	80° 33.9	95° 00.7	109° 27.4	123° 54.3	138° 21.1	152° 48.0	167° 14.9	181° 41.9	196° 08.9	210° 35.9	+26.9	15.3
	-25° 56.6	-25° 56.5	-25° 56.2	-25° 55.8	-25° 55.3	-25° 54.6	-25° 53.7	-25° 52.7	-25° 51.6	-25° 50.3	-25° 48.9	+0.8	56.2
Ср 2	67° 27.0	81° 54.8	96° 22.7	110° 50.6	125° 18.6	139° 46.6	154° 14.8	168° 42.9	183° 11.2	197° 39.5	212° 07.8	+28.1	15.2
	-25° 11.0	-25° 07.4	-25° 03.7	-24° 59.8	-24° 55.8	-24° 51.7	-24° 47.4	-24° 43.0	-24° 38.5	-24° 33.9	-24° 29.1	+4.2	55.7
Чт 3	69° 21.6	83° 51.0	98° 20.6	112° 50.2	127° 19.9	141° 49.7	156° 19.6	170° 49.5	185° 19.5	199° 49.6	214° 19.8	+29.8	15.1
	-23° 03.2	-22° 56.6	-22° 49.8	-22° 43.0	-22° 36.0	-22° 28.9	-22° 21.8	-22° 14.5	-22° 07.1	-21° 59.6	-21° 52.0	+7.1	55.2
Пт 4	72° 01.3	86° 32.6	101° 04.1	115° 35.6	130° 07.2	144° 38.9	159° 10.6	173° 42.5	188° 14.4	202° 46.3	217° 18.4	+31.7	14.9
	-19° 46.7	-19° 37.7	-19° 28.5	-19° 19.3	-19° 10.0	-19° 00.6	-18° 51.1	-18° 41.5	-18° 31.9	-18° 22.2	-18° 12.4	+9.4	54.8
○ Сб 5	75° 27.4	90° 00.6	104° 33.8	119° 07.0	133° 40.4	148° 13.8	162° 47.2	177° 20.8	191° 54.4	206° 28.0	221° 01.7	+33.4	14.8
	-15° 37.2	-15° 26.4	-15° 15.4	-15° 04.5	-14° 53.4	-14° 42.3	-14° 31.2	-14° 20.0	-14° 08.7	-13° 57.4	-13° 46.1	+11.1	54.5
Вс 6	79° 33.9	94° 08.5	108° 43.1	123° 17.8	137° 52.5	152° 27.2	167° 02.0	181° 36.8	196° 11.7	210° 46.6	225° 21.6	+34.8	14.8
	-10° 50.2	-10° 38.1	-10° 26.0	-10° 13.9	-10° 01.7	-9° 49.5	-9° 37.3	-9° 25.0	-9° 12.7	-9° 00.4	-8° 48.1	+12.2	54.2
Пн 7	84° 10.2	98° 45.7	113° 21.2	127° 56.8	142° 32.4	157° 07.9	171° 43.6	186° 19.2	200° 54.8	215° 30.5	230° 06.2	+35.6	14.7
	-5° 39.7	-5° 27.0	-5° 14.3	-5° 01.5	-4° 48.7	-4° 36.0	-4° 23.2	-4° 10.4	-3° 57.5	-3° 44.7	-3° 31.9	+12.8	54.0
Вт 8	89° 03.2	103° 39.1	118° 15.0	132° 50.8	147° 26.7	162° 02.6	176° 38.5	191° 14.3	205° 50.2	220° 26.1	235° 01.9	+35.9	14.7
	-0° 18.4	-0° 05.5	0° 07.5	0° 20.4	0° 33.3	0° 46.2	0° 59.1	1° 12.0	1° 24.9	1° 37.8	1° 50.7	+12.9	54.0
Ср 9	93° 58.7	108° 34.4	123° 10.0	137° 45.6	152° 21.2	166° 56.8	181° 32.4	196° 07.9	210° 43.4	225° 18.9	239° 54.3	+35.6	14.7
	5° 02.7	5° 15.4	5° 28.1	5° 40.7	5° 53.3	6° 05.9	6° 18.5	6° 31.1	6° 43.6	6° 56.2	7° 08.7	+12.6	54.0
Чт 10	98° 41.9	113° 16.8	127° 51.6	142° 26.4	157° 01.1	171° 35.8	186° 10.5	200° 45.0	215° 19.6	229° 54.1	244° 28.5	+34.7	14.8
	10° 12.8	10° 24.9	10° 36.9	10° 48.8	11° 00.7	11° 12.6	11° 24.4	11° 36.2	11° 48.0	11° 59.7	12° 11.4	+11.9	54.2
Пт 11	102° 58.2	117° 31.7	132° 05.1	146° 38.5	161° 11.8	175° 45.0	190° 18.1	204° 51.2	219° 24.2	233° 57.1	248° 30.0	+33.2	14.9
	15° 01.0	15° 11.9	15° 22.7	15° 33.5	15° 44.2	15° 54.9	16° 05.5	16° 16.0	16° 26.5	16° 37.0	16° 47.3	+10.6	54.6
Сб 12	106° 33.7	121° 05.3	135° 36.8	150° 08.2	164° 39.5	179° 10.8	193° 42.0	208° 13.1	222° 44.1	237° 15.0	251° 45.8	+31.2	15.0
	19° 14.6	19° 23.8	19° 33.0	19° 42.0	19° 51.0	19° 59.9	20° 08.7	20° 17.5	20° 26.1	20° 34.7	20° 43.2	+8.9	55.2
◑ Вс 13	109° 17.3	123° 46.7	138° 16.0	152° 45.2	167° 14.3	181° 43.3	196° 12.2	210° 41.0	225° 09.8	239° 38.4	254° 07.0	+29.0	15.2
	22° 39.0	22° 46.0	22° 52.8	22° 59.5	23° 06.1	23° 12.6	23° 19.0	23° 25.2	23° 31.4	23° 37.4	23° 43.4	+6.4	55.9
Пн 14	111° 04.5	125° 31.6	139° 58.7	154° 25.7	168° 52.6	183° 19.4	197° 46.1	212° 12.8	226° 39.4	241° 05.9	255° 32.3	+26.8	15.5
	24° 57.6	25° 01.6	25° 05.3	25° 09.0	25° 12.5	25° 15.9	25° 19.1	25° 22.2	25° 25.2	25° 28.0	25° 30.7	+3.3	56.7
Вт 15	112° 00.4	126° 25.7	140° 51.0	155° 16.3	169° 41.5	184° 06.7	198° 31.8	212° 56.8	227° 21.9	241° 46.8	256° 11.8	+25.1	15.7
	25° 53.1	25° 53.4	25° 53.5	25° 53.5	25° 53.3	25° 52.9	25° 52.4	25° 51.7	25° 50.9	25° 49.9	25° 48.7	-0.4	57.7
Ср 16	112° 21.7	126° 46.2	141° 10.7	155° 35.1	169° 59.6	184° 24.0	198° 48.4	213° 12.8	227° 37.2	242° 01.7	256° 26.1	+24.4	16.0
	25° 11.6	25° 07.8	25° 03.8	24° 59.7	24° 55.4	24° 50.9	24° 46.3	24° 41.5	24° 36.5	24° 31.4	24° 26.0	-4.6	58.7
Чт 17	112° 33.2	126° 57.8	141° 22.5	155° 47.1	170° 11.8	184° 36.5	199° 01.3	213° 26.1	227° 50.9	242° 15.7	256° 40.6	+24.7	16.3
	22° 46.8	22° 38.9	22° 30.8	22° 22.6	22° 14.2	22° 05.6	21° 56.9	21° 48.1	21° 39.1	21° 29.9	21° 20.6	-8.6	59.6
Пт 18	112° 58.4	127° 23.9	141° 49.5	156° 15.1	170° 40.8	185° 06.5	199° 32.3	213° 58.1	228° 23.9	242° 49.9	257° 15.8	+25.7	16.5
	18° 43.6	18° 32.1	18° 20.4	18° 08.5	17° 56.6	17° 44.5	17° 32.3	17° 19.9	17° 07.5	16° 54.9	16° 42.2	-12.2	60.4
Сб 19	113° 51.2	128° 18.0	142° 44.8	157° 11.6	171° 38.5	186° 05.5	200° 32.4	214° 59.5	229° 26.6	243° 53.7	258° 20.9	+27.0	16.6
	13° 18.5	13° 04.1	12° 49.7	12° 35.1	12° 20.5	12° 05.8	11° 50.9	11° 36.1	11° 21.1	11° 06.0	10° 50.9	-14.8	60.9
● Вс 20	115° 13.4	129° 41.2	144° 09.1	158° 36.9	173° 04.8	187° 32.8	202° 00.8	216° 28.8	230° 56.8	245° 24.8	259° 52.9	+28.0	16.7
	6° 56.4	6° 40.4	6° 24.3	6° 08.1	5° 51.9	5° 35.7	5° 19.5	5° 03.2	4° 46.9	4° 30.5	4° 14.2	-16.2	61.2
Пн 21	116° 56.8	131° 25.1	145° 53.6	160° 22.0	174° 50.4	189° 18.8	203° 47.3	218° 15.7	232° 44.1	247° 12.6	261° 41.1	+28.4	16.6
	0° 06.9	-0° 09.6	-0° 26.1	-0° 42.6	-0° 59.1	-1° 15.6	-1° 32.0	-1° 48.5	-2° 04.9	-2° 21.3	-2° 37.7	-16.5	61.0
Вт 22	118° 47.8	133° 16.2	147° 44.5	162° 12.9	176° 41.3	191° 09.6	205° 37.9	220° 06.2	234° 34.5	249° 02.8	263° 31.1	+28.3	16.5
	-6° 39.5	-6° 55.2	-7° 11.0	-7° 26.6	-7° 42.2	-7° 57.8	-8° 13.3	-8° 28.7	-8° 44.1	-8° 59.4	-9° 14.6	-15.5	60.6
Ср 23	120° 32.4	135° 00.3	149° 28.1	163° 56.0	178° 23.8	192° 51.5	207° 19.3	221° 47.0	236° 14.6	250° 42.3	265° 09.9	+27.8	16.3
	-12° 54.2	-13° 08.2	-13° 22.1	-13° 35.8	-13° 49.5	-14° 03.1	-14° 16.6	-14° 30.0	-14° 43.3	-14° 56.5	-15° 09.6	-13.5	59.9
Чт 24	135° 00.3	149° 28.1	163° 56.0	178° 23.8	192° 51.5	207° 19.3	221° 47.0	236° 14.6	250° 42.3	265° 09.9	279° 37.5	+27.7	16.3
	-13° 08.2	-13° 22.1	-13° 35.8	-13° 49.5	-14° 03.1	-14° 16.6	-14° 30.0	-14° 43.3	-14° 56.5	-15° 09.6	-15° 22.6	-13.4	59.9
Пт 25	136° 27.3	150° 54.3	165° 21.4	179° 48.3	194° 15.3	208° 42.2	223° 09.1	237° 36.0	252° 02.8	266° 29.6	280° 56.3	+26.9	16.1
	-18° 24.0	-18° 35.1	-18° 46.2	-18° 57.1	-19° 07.8	-19° 18.5	-19° 29.0	-19° 39.4	-19° 49.7	-19° 59.8	-20° 09.8	-10.6	59.0
Сб 26	137° 34.3	152° 00.6	166° 26.9	180° 53.2	195° 19.5	209° 45.7	224° 12.0	238° 38.2	253° 04.4	267° 30.5	281° 56.7	+26.2	15.9
	-22° 23.4	-22° 31.2	-22° 38.8	-22° 46.3	-22° 53.7	-23° 00.9	-23° 07.9	-23° 14.8	-23° 21.6	-23° 28.2	-23° 34.7	-7.1	58.1
◐ Вс 27	138° 28.1	152° 54.1	167° 20.2	181° 46.3	196° 12.4	210° 38.5	225° 04.6	239° 30.7	253° 56.8	268° 22.9	282° 49.1	+26.1	15.6
	-24° 53.7	-24° 57.7	-25° 01.6	-25° 05.4	-25° 09.0	-25° 12.4	-25° 15.7	-25° 18.9	-25° 21.8	-25° 24.7	-25° 27.4	-3.4	57.3
Пн 28	139° 23.8	153° 50.4	168° 17.0	182° 43.6	197° 10.2	211° 36.9	226° 03.7	240° 30.4	254° 57.2	269° 24.1	283° 51.0	+26.7	15.4
	-25° 49.6	-25° 49.9	-25° 50.0	-25° 50.0	-25° 49.8	-25° 49.5	-25° 49.1	-25° 48.5	-25° 47.8	-25° 46.9	-25° 45.9	+0.4	56.5
Вт 29	140° 40.7	155° 08.5	169° 36.3	184° 04.2	198° 32.2	213° 00.2	227° 28.3	241° 56.4	256° 24.6	270° 52.9	285° 21.2	+28.0	15.2
	-25° 13.8	-25° 10.6	-25° 07.2	-25° 03.7	-25° 00.1	-24° 56.4	-24° 52.5	-24° 48.5	-24° 44.3	-24° 40.1	-24° 35.7	+3.8	55.8
Ср 30	142° 34.9	157° 04.4	171° 34.0	186° 03.6	200° 33.3	215° 03.1	229° 33.0	244° 02.9	258° 33.0	273° 03.1	287° 33.2	+29.8	15.1
	-23° 15.6	-23° 09.4	-23° 03.0	-22° 56.5	-22° 50.0	-22° 43.3	-22° 36.5	-22° 29.6	-22° 22.6	-22° 15.5	-22° 08.3	+6.7	55.2
Чт 31	145° 15.0	159° 46.4	174° 17.8	188° 49.3	203° 20.9	217° 52.6	232° 24.4	246° 56.2	261° 28.1	276° 00.1	290° 32.1	+31.7	14.9
	-20° 08.6	-19° 59.9	-19° 51.1	-19° 42.3	-19° 33.3	-19° 24.3	-19° 15.1	-19° 05.9	-18° 56.7	-18° 47.3	-18° 37.9	+9.1	54.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 5 08h09 — Последняя четв.: 13 11h45 — Новолуние: 20 10h43 — Первая четв.: 27 01h35

СОЛНЦЕ

Сентябрь 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	180° 00.1 8° 09.6	195° 00.3 8° 08.7	210° 00.5 8° 07.8	225° 00.7 8° 06.9	240° 00.9 8° 06.0	255° 01.1 8° 05.1	90° 03.7 7° 53.2	105° 03.9 7° 52.3	120° 04.1 7° 51.4	135° 04.3 7° 50.5	150° 04.5 7° 49.6	165° 04.7 7° 48.7	+0.2 -0.9
Сб 2	180° 04.9 7° 47.8	195° 05.1 7° 46.8	210° 05.3 7° 45.9	225° 05.5 7° 45.0	240° 05.7 7° 44.1	255° 05.9 7° 43.2	90° 08.6 7° 31.3	105° 08.8 7° 30.4	120° 09.0 7° 29.5	135° 09.2 7° 28.5	150° 09.4 7° 27.6	165° 09.6 7° 26.7	+0.2 -0.9
Вс 3	180° 09.8 7° 25.8	195° 10.0 7° 24.9	210° 10.2 7° 23.9	225° 10.4 7° 23.0	240° 10.6 7° 22.1	255° 10.8 7° 21.2	90° 13.5 7° 09.2	105° 13.7 7° 08.3	120° 13.9 7° 07.4	135° 14.1 7° 06.5	150° 14.4 7° 05.5	165° 14.6 7° 04.6	+0.2 -0.9
Пн 4	180° 14.8 7° 03.7	195° 15.0 7° 02.8	210° 15.2 7° 01.8	225° 15.4 7° 00.9	240° 15.6 7° 00.0	255° 15.8 6° 59.1	90° 18.5 6° 47.0	105° 18.7 6° 46.1	120° 19.0 6° 45.2	135° 19.2 6° 44.3	150° 19.4 6° 43.3	165° 19.6 6° 42.4	+0.2 -0.9
Вт 5	180° 19.8 6° 41.5	195° 20.0 6° 40.6	210° 20.2 6° 39.6	225° 20.4 6° 38.7	240° 20.6 6° 37.8	255° 20.8 6° 36.8	90° 23.6 6° 24.8	105° 23.8 6° 23.8	120° 24.0 6° 22.9	135° 24.2 6° 22.0	150° 24.4 6° 21.0	165° 24.7 6° 20.1	+0.2 -0.9
Ср 6	180° 24.9 6° 19.2	195° 25.1 6° 18.2	210° 25.3 6° 17.3	225° 25.5 6° 16.4	240° 25.7 6° 15.4	255° 25.9 6° 14.5	90° 28.7 6° 02.4	105° 28.9 6° 01.4	120° 29.1 6° 00.5	135° 29.4 5° 59.5	150° 29.6 5° 58.6	165° 29.8 5° 57.7	+0.2 -0.9
Чт 7	180° 30.0 5° 56.7	195° 30.2 5° 55.8	210° 30.4 5° 54.9	225° 30.6 5° 53.9	240° 30.9 5° 53.0	255° 31.1 5° 52.1	90° 33.9 5° 39.9	105° 34.1 5° 38.9	120° 34.3 5° 38.0	135° 34.5 5° 37.0	150° 34.7 5° 36.1	165° 35.0 5° 35.2	+0.2 -0.9
Пт 8	180° 35.2 5° 34.2	195° 35.4 5° 33.3	210° 35.6 5° 32.3	225° 35.8 5° 31.4	240° 36.0 5° 30.5	255° 36.3 5° 29.5	90° 39.1 5° 17.3	105° 39.3 5° 16.3	120° 39.5 5° 15.4	135° 39.7 5° 14.4	150° 40.0 5° 13.5	165° 40.2 5° 12.5	+0.2 -0.9
Сб 9	180° 40.4 5° 11.6	195° 40.6 5° 10.7	210° 40.8 5° 09.7	225° 41.0 5° 08.8	240° 41.3 5° 07.8	255° 41.5 5° 06.9	90° 44.3 4° 54.6	105° 44.5 4° 53.6	120° 44.8 4° 52.7	135° 45.0 4° 51.7	150° 45.2 4° 50.8	165° 45.4 4° 49.8	+0.2 -0.9
Вс 10	180° 45.6 4° 48.9	195° 45.9 4° 47.9	210° 46.1 4° 47.0	225° 46.3 4° 46.0	240° 46.5 4° 45.1	255° 46.7 4° 44.1	90° 49.6 4° 31.8	105° 49.8 4° 30.9	120° 50.0 4° 29.9	135° 50.2 4° 29.0	150° 50.5 4° 28.0	165° 50.7 4° 27.1	+0.2 -0.9
Пн 11	180° 50.9 4° 26.1	195° 51.1 4° 25.1	210° 51.3 4° 24.2	225° 51.6 4° 23.2	240° 51.8 4° 22.3	255° 52.0 4° 21.3	90° 54.9 4° 09.0	105° 55.1 4° 08.0	120° 55.3 4° 07.0	135° 55.5 4° 06.1	150° 55.8 4° 05.1	165° 56.0 4° 04.2	+0.2 -1.0
Вт 12	180° 56.2 4° 03.2	195° 56.4 4° 02.3	210° 56.6 4° 01.3	225° 56.9 4° 00.4	240° 57.1 3° 59.4	255° 57.3 3° 58.5	91° 00.2 3° 46.0	106° 00.4 3° 45.1	121° 00.6 3° 44.1	136° 00.9 3° 43.2	151° 01.1 3° 42.2	166° 01.3 3° 41.2	+0.2 -1.0
Ср 13	181° 01.5 3° 40.3	196° 01.7 3° 39.3	211° 02.0 3° 38.4	226° 02.2 3° 37.4	241° 02.4 3° 36.5	256° 02.6 3° 35.5	91° 05.5 3° 23.0	106° 05.7 3° 22.1	121° 06.0 3° 21.1	136° 06.2 3° 20.1	151° 06.4 3° 19.2	166° 06.6 3° 18.2	+0.2 -1.0
Чт 14	181° 06.8 3° 17.3	196° 07.1 3° 16.3	211° 07.3 3° 15.3	226° 07.5 3° 14.4	241° 07.7 3° 13.4	256° 08.0 3° 12.5	91° 10.8 3° 00.0	106° 11.1 2° 59.0	121° 11.3 2° 58.0	136° 11.5 2° 57.1	151° 11.7 2° 56.1	166° 12.0 2° 55.2	+0.2 -1.0
Пт 15	181° 12.2 2° 54.2	196° 12.4 2° 53.2	211° 12.6 2° 52.3	226° 12.9 2° 51.3	241° 13.1 2° 50.3	256° 13.3 2° 49.4	91° 16.2 2° 36.8	106° 16.4 2° 35.9	121° 16.6 2° 34.9	136° 16.9 2° 34.0	151° 17.1 2° 33.0	166° 17.3 2° 32.0	+0.2 -1.0
Сб 16	181° 17.5 2° 31.1	196° 17.7 2° 30.1	211° 18.0 2° 29.1	226° 18.2 2° 28.2	241° 18.4 2° 27.2	256° 18.6 2° 26.2	91° 21.5 2° 13.7	106° 21.8 2° 12.7	121° 22.0 2° 11.7	136° 22.2 2° 10.8	151° 22.4 2° 09.8	166° 22.6 2° 08.8	+0.2 -1.0
Вс 17	181° 22.9 2° 07.9	196° 23.1 2° 06.9	211° 23.3 2° 05.9	226° 23.5 2° 05.0	241° 23.8 2° 04.0	256° 24.0 2° 03.0	91° 26.9 1° 50.5	106° 27.1 1° 49.5	121° 27.3 1° 48.5	136° 27.5 1° 47.6	151° 27.8 1° 46.6	166° 28.0 1° 45.6	+0.2 -1.0
Пн 18	181° 28.2 1° 44.7	196° 28.4 1° 43.7	211° 28.6 1° 42.7	226° 28.9 1° 41.7	241° 29.1 1° 40.8	256° 29.3 1° 39.8	91° 32.2 1° 27.2	106° 32.4 1° 26.2	121° 32.6 1° 25.3	136° 32.9 1° 24.3	151° 33.1 1° 23.3	166° 33.3 1° 22.4	+0.2 -1.0
Вт 19	181° 33.5 1° 21.4	196° 33.8 1° 20.4	211° 34.0 1° 19.5	226° 34.2 1° 18.5	241° 34.4 1° 17.5	256° 34.6 1° 16.5	91° 37.5 1° 03.9	106° 37.7 1° 03.0	121° 38.0 1° 02.0	136° 38.2 1° 01.0	151° 38.4 1° 00.0	166° 38.6 0° 59.1	+0.2 -1.0
Ср 20	181° 38.8 0° 58.1	196° 39.1 0° 57.1	211° 39.3 0° 56.2	226° 39.5 0° 55.2	241° 39.7 0° 54.2	256° 40.0 0° 53.2	91° 42.8 0° 40.6	106° 43.0 0° 39.6	121° 43.3 0° 38.7	136° 43.5 0° 37.7	151° 43.7 0° 36.7	166° 43.9 0° 35.7	+0.2 -1.0
Чт 21	181° 44.1 0° 34.8	196° 44.4 0° 33.8	211° 44.6 0° 32.8	226° 44.8 0° 31.9	241° 45.0 0° 30.9	256° 45.3 0° 29.9	91° 48.1 0° 17.3	106° 48.3 0° 16.3	121° 48.5 0° 15.3	136° 48.8 0° 14.3	151° 49.0 0° 13.4	166° 49.2 0° 12.4	+0.2 -1.0
Пт 22	181° 49.4 0° 11.4	196° 49.6 0° 10.5	211° 49.9 0° 09.5	226° 50.1 0° 08.5	241° 50.3 0° 07.5	256° 50.5 0° 06.6	91° 53.4 -0° 06.1	106° 53.6 -0° 07.1	121° 53.8 -0° 08.0	136° 54.0 -0° 09.0	151° 54.2 -0° 10.0	166° 54.5 -0° 11.0	+0.2 -1.0
Сб 23	181° 54.7 -0° 11.9	196° 54.9 -0° 12.9	211° 55.1 -0° 13.9	226° 55.3 -0° 14.8	241° 55.6 -0° 15.8	256° 55.8 -0° 16.8	91° 58.6 -0° 29.5	106° 58.8 -0° 30.4	121° 59.0 -0° 31.4	136° 59.3 -0° 32.4	151° 59.5 -0° 33.3	166° 59.7 -0° 34.3	+0.2 -1.0
Вс 24	181° 59.9 -0° 35.3	197° 00.1 -0° 36.3	212° 00.3 -0° 37.2	227° 00.6 -0° 38.2	242° 00.8 -0° 39.2	257° 01.0 -0° 40.2	92° 03.8 -0° 52.8	107° 04.0 -0° 53.8	122° 04.2 -0° 54.8	137° 04.5 -0° 55.7	152° 04.7 -0° 56.7	167° 04.9 -0° 57.7	+0.2 -1.0
Пн 25	182° 05.1 -0° 58.7	197° 05.3 -0° 59.6	212° 05.5 -1° 00.6	227° 05.8 -1° 01.6	242° 06.0 -1° 02.6	257° 06.2 -1° 03.5	92° 09.0 -1° 16.2	107° 09.2 -1° 17.2	122° 09.4 -1° 18.1	137° 09.6 -1° 19.1	152° 09.8 -1° 20.1	167° 10.0 -1° 21.0	+0.2 -1.0
Вт 26	182° 10.3 -1° 22.0	197° 10.5 -1° 23.0	212° 10.7 -1° 24.0	227° 10.9 -1° 24.9	242° 11.1 -1° 25.9	257° 11.3 -1° 26.9	92° 14.1 -1° 39.5	107° 14.3 -1° 40.5	122° 14.5 -1° 41.5	137° 14.7 -1° 42.5	152° 14.9 -1° 43.4	167° 15.2 -1° 44.4	+0.2 -1.0
Ср 27	182° 15.4 -1° 45.4	197° 15.6 -1° 46.4	212° 15.8 -1° 47.3	227° 16.0 -1° 48.3	242° 16.2 -1° 49.3	257° 16.4 -1° 50.2	92° 19.2 -2° 02.9	107° 19.4 -2° 03.9	122° 19.6 -2° 04.8	137° 19.8 -2° 05.8	152° 20.0 -2° 06.8	167° 20.2 -2° 07.7	+0.2 -1.0
Чт 28	182° 20.4 -2° 08.7	197° 20.6 -2° 09.7	212° 20.9 -2° 10.7	227° 21.1 -2° 11.6	242° 21.3 -2° 12.6	257° 21.5 -2° 13.6	92° 24.2 -2° 26.2	107° 24.4 -2° 27.2	122° 24.6 -2° 28.2	137° 24.8 -2° 29.1	152° 25.0 -2° 30.1	167° 25.2 -2° 31.1	+0.2 -1.0
Пт 29	182° 25.4 -2° 32.0	197° 25.6 -2° 33.0	212° 25.9 -2° 34.0	227° 26.1 -2° 34.9	242° 26.3 -2° 35.9	257° 26.5 -2° 36.9	92° 29.2 -2° 49.5	107° 29.4 -2° 50.5	122° 29.6 -2° 51.4	137° 29.8 -2° 52.4	152° 30.0 -2° 53.4	167° 30.2 -2° 54.4	+0.2 -1.0
Сб 30	182° 30.4 -2° 55.3	197° 30.6 -2° 56.3	212° 30.8 -2° 57.3	227° 31.0 -2° 58.2	242° 31.2 -2° 59.2	257° 31.4 -3° 00.2	92° 34.1 -3° 12.8	107° 34.3 -3° 13.7	122° 34.5 -3° 14.7	137° 34.7 -3° 15.7	152° 34.9 -3° 16.7	167° 35.1 -3° 17.6	+0.2 -1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2028

Д	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Δ'/h	R/p
Пт 1	61° 23.6	75° 56.4	90° 29.2	105° 02.0	119° 35.0	134° 08.0	148° 41.0	163° 14.1	177° 47.3	192° 20.6	206° 53.9	+33.0	14.8
	-17° 09.7	-16° 59.5	-16° 49.3	-16° 39.0	-16° 28.6	-16° 18.2	-16° 07.7	-15° 57.2	-15° 46.6	-15° 35.9	-15° 25.2	+10.4	54.4
Сб 2	65° 20.6	79° 54.8	94° 29.0	109° 03.4	123° 37.7	138° 12.1	152° 46.6	167° 21.1	181° 55.6	196° 30.2	211° 04.9	+34.4	14.8
	-12° 37.8	-12° 26.2	-12° 14.6	-12° 03.0	-11° 51.3	-11° 39.5	-11° 27.8	-11° 15.9	-11° 04.1	-10° 52.2	-10° 40.3	+11.8	54.2
○ Вс 3	69° 49.3	84° 24.5	98° 59.8	113° 35.1	128° 10.5	142° 45.8	157° 21.2	171° 56.6	186° 32.1	201° 07.5	215° 43.0	+35.4	14.7
	-7° 37.2	-7° 24.8	-7° 12.3	-6° 59.8	-6° 47.3	-6° 34.8	-6° 22.2	-6° 09.6	-5° 57.1	-5° 44.4	-5° 31.8	+12.5	54.0
Пн 4	74° 37.7	89° 13.5	103° 49.3	118° 25.1	133° 00.8	147° 36.6	162° 12.4	176° 48.2	191° 24.1	205° 59.9	220° 35.7	+35.8	14.7
	-2° 20.6	-2° 07.7	-1° 54.9	-1° 42.1	-1° 29.2	-1° 16.4	-1° 03.5	-0° 50.6	-0° 37.8	-0° 24.9	-0° 12.1	+12.9	53.9
Вт 5	79° 32.7	94° 08.5	108° 44.2	123° 19.9	137° 55.6	152° 31.3	167° 07.0	181° 42.7	196° 18.3	210° 53.9	225° 29.5	+35.7	14.7
	3° 00.4	3° 13.2	3° 26.0	3° 38.7	3° 51.5	4° 04.2	4° 16.9	4° 29.6	4° 42.3	4° 54.9	5° 07.6	+12.7	53.9
Ср 6	84° 20.8	98° 56.0	113° 31.1	128° 06.3	142° 41.4	157° 16.4	171° 51.4	186° 26.4	201° 01.3	215° 36.2	230° 11.1	+35.0	14.7
	8° 14.6	8° 26.9	8° 39.1	8° 51.3	9° 03.5	9° 15.6	9° 27.7	9° 39.8	9° 51.8	10° 03.8	10° 15.8	+12.1	54.0
Чт 7	88° 48.7	103° 22.8	117° 56.8	132° 30.9	147° 04.8	161° 38.7	176° 12.5	190° 46.3	205° 20.1	219° 53.7	234° 27.3	+33.9	14.8
	13° 10.5	13° 21.8	13° 33.0	13° 44.2	13° 55.3	14° 06.4	14° 17.5	14° 28.4	14° 39.4	14° 50.2	15° 01.0	+11.1	54.3
Пт 8	92° 43.9	107° 16.5	121° 49.0	136° 21.5	150° 53.8	165° 26.1	179° 58.4	194° 30.5	209° 02.6	223° 34.6	238° 06.5	+32.3	14.9
	17° 35.9	17° 45.7	17° 55.4	18° 05.1	18° 14.7	18° 24.2	18° 33.6	18° 43.0	18° 52.2	19° 01.5	19° 10.6	+9.5	54.6
Сб 9	95° 56.5	110° 27.2	124° 57.8	139° 28.4	153° 58.8	168° 29.2	182° 59.6	197° 29.8	212° 00.0	226° 30.0	241° 00.0	+30.4	15.0
	21° 17.4	21° 25.1	21° 32.8	21° 40.3	21° 47.8	21° 55.2	22° 02.4	22° 09.6	22° 16.6	22° 23.6	22° 30.4	+7.3	55.1
Вс 10	98° 20.6	112° 49.4	127° 18.1	141° 46.7	156° 15.2	170° 43.6	185° 12.0	199° 40.3	214° 08.6	228° 36.7	243° 04.8	+28.4	15.2
	24° 00.3	24° 05.4	24° 10.4	24° 15.2	24° 19.9	24° 24.5	24° 29.0	24° 33.4	24° 37.6	24° 41.7	24° 45.7	+4.5	55.7
Пн 11	99° 58.0	114° 25.1	128° 52.1	143° 19.0	157° 45.9	172° 12.7	186° 39.5	201° 06.2	215° 32.8	229° 59.4	244° 26.0	+26.8	15.4
	25° 29.6	25° 31.5	25° 33.2	25° 34.8	25° 36.2	25° 37.5	25° 38.6	25° 39.6	25° 40.4	25° 41.1	25° 41.7	+1.2	56.5
◑ Вт 12	100° 59.3	115° 25.2	129° 51.1	144° 17.0	158° 42.9	173° 08.7	187° 34.5	202° 00.3	216° 26.1	230° 51.8	245° 17.5	+25.8	15.7
	25° 32.2	25° 30.4	25° 28.4	25° 26.3	25° 24.0	25° 21.5	25° 18.9	25° 16.1	25° 13.2	25° 10.1	25° 06.9	-2.5	57.4
Ср 13	101° 42.2	116° 07.9	130° 33.5	144° 59.1	159° 24.8	173° 50.4	188° 16.1	202° 41.7	217° 07.4	231° 33.1	245° 58.8	+25.6	15.9
	23° 59.8	23° 54.1	23° 48.2	23° 42.2	23° 36.0	23° 29.7	23° 23.2	23° 16.6	23° 09.8	23° 02.9	22° 55.8	-6.4	58.4
Чт 14	102° 26.4	116° 52.4	131° 18.5	145° 44.6	160° 10.7	174° 36.8	189° 03.0	203° 29.1	217° 55.4	232° 21.6	246° 47.9	+26.1	16.2
	20° 51.6	20° 42.2	20° 32.6	20° 22.9	20° 13.1	20° 03.1	19° 53.0	19° 42.7	19° 32.3	19° 21.8	19° 11.1	-10.1	59.3
Пт 15	103° 26.1	117° 52.9	132° 19.7	146° 46.6	161° 13.5	175° 40.5	190° 07.5	204° 34.5	219° 01.5	233° 28.6	247° 55.7	+27.0	16.4
	16° 16.0	16° 03.4	15° 50.6	15° 37.8	15° 24.8	15° 11.7	14° 58.5	14° 45.2	14° 31.8	14° 18.4	14° 04.8	-13.1	60.2
Сб 16	104° 46.1	119° 13.7	133° 41.3	148° 08.9	162° 36.6	177° 04.3	191° 32.0	205° 59.7	220° 27.5	234° 55.2	249° 23.0	+27.7	16.6
	10° 29.6	10° 14.6	9° 59.5	9° 44.4	9° 29.1	9° 13.8	8° 58.5	8° 43.0	8° 27.5	8° 12.0	7° 56.4	-15.3	60.9
Вс 17	106° 21.9	120° 49.9	135° 17.9	149° 45.9	164° 14.0	178° 42.0	193° 10.0	207° 38.1	222° 06.1	236° 34.2	251° 02.2	+28.0	16.7
	3° 56.1	3° 39.8	3° 23.5	3° 07.1	2° 50.7	2° 34.3	2° 17.8	2° 01.3	1° 44.9	1° 28.4	1° 11.8	-16.4	61.3
● Пн 18	108° 02.4	122° 30.3	136° 58.2	151° 26.1	165° 54.0	180° 21.9	194° 49.7	209° 17.5	223° 45.3	238° 13.1	252° 40.9	+27.9	16.7
	-2° 55.9	-3° 12.4	-3° 28.8	-3° 45.2	-4° 01.5	-4° 17.9	-4° 34.2	-4° 50.5	-5° 06.7	-5° 22.9	-5° 39.1	-16.3	61.3
Вт 19	109° 34.3	124° 01.7	138° 29.0	152° 56.2	167° 23.4	181° 50.6	196° 17.8	210° 44.9	225° 12.0	239° 39.0	254° 06.1	+27.2	16.6
	-9° 35.8	-9° 51.1	-10° 06.4	-10° 21.5	-10° 36.6	-10° 51.6	-11° 06.6	-11° 21.4	-11° 36.2	-11° 50.9	-12° 05.5	-15.0	61.0
Ср 20	110° 46.6	125° 13.0	139° 39.3	154° 05.6	168° 31.9	182° 58.1	197° 24.3	211° 50.5	226° 16.6	240° 42.6	255° 08.7	+26.2	16.5
	-15° 33.3	-15° 46.3	-15° 59.2	-16° 12.0	-16° 24.7	-16° 37.2	-16° 49.7	-17° 02.0	-17° 14.2	-17° 26.3	-17° 38.2	-12.5	60.4
Чт 21	111° 34.7	126° 00.1	140° 25.5	154° 50.9	169° 16.3	183° 41.6	198° 07.0	212° 32.2	226° 57.5	241° 22.7	255° 48.0	+25.3	16.2
	-20° 21.8	-20° 31.6	-20° 41.2	-20° 50.7	-21° 00.1	-21° 09.3	-21° 18.4	-21° 27.3	-21° 36.1	-21° 44.7	-21° 53.2	-9.1	59.5
Пт 22	112° 04.1	126° 29.1	140° 54.1	155° 19.0	169° 44.0	184° 09.0	198° 34.0	212° 59.0	227° 24.0	241° 49.0	256° 14.0	+25.0	16.0
	-23° 41.8	-23° 47.8	-23° 53.6	-23° 59.3	-24° 04.8	-24° 10.1	-24° 15.3	-24° 20.3	-24° 25.2	-24° 29.9	-24° 34.4	-5.3	58.5
Сб 23	126° 29.1	140° 54.1	155° 19.0	169° 44.0	184° 09.0	198° 34.0	212° 59.0	227° 24.0	241° 49.0	256° 14.0	270° 39.0	+25.0	15.9
	-23° 47.8	-23° 53.6	-23° 59.3	-24° 04.8	-24° 10.1	-24° 15.3	-24° 20.3	-24° 25.2	-24° 29.9	-24° 34.4	-24° 38.8	-5.1	58.5
Вс 24	126° 56.3	141° 21.7	155° 47.1	170° 12.5	184° 38.0	199° 03.5	213° 29.0	227° 54.6	242° 20.2	256° 45.9	271° 11.6	+25.5	15.7
	-25° 25.2	-25° 27.1	-25° 28.7	-25° 30.2	-25° 31.6	-25° 32.8	-25° 33.8	-25° 34.7	-25° 35.4	-25° 36.0	-25° 36.4	-1.1	57.5
◐ Пн 25	127° 43.7	142° 10.3	156° 37.0	171° 03.7	185° 30.6	199° 57.4	214° 24.4	228° 51.4	243° 18.5	257° 45.7	272° 12.9	+26.9	15.4
	-25° 24.6	-25° 22.6	-25° 20.5	-25° 18.3	-25° 15.9	-25° 13.3	-25° 10.7	-25° 07.9	-25° 05.0	-25° 01.9	-24° 58.7	+2.6	56.6
Вт 26	129° 10.7	143° 39.2	158° 07.8	172° 36.4	187° 05.2	201° 34.0	216° 02.9	230° 31.9	245° 01.0	259° 30.1	273° 59.4	+28.9	15.2
	-23° 55.1	-23° 49.8	-23° 44.5	-23° 39.0	-23° 33.4	-23° 27.7	-23° 21.9	-23° 16.0	-23° 10.0	-23° 03.8	-22° 57.6	+5.8	55.8
Ср 27	131° 28.1	145° 58.7	160° 29.4	175° 00.2	189° 31.0	204° 01.9	218° 32.9	233° 04.0	247° 35.2	262° 06.4	276° 37.7	+31.0	15.0
	-21° 11.3	-21° 03.4	-20° 55.4	-20° 47.4	-20° 39.2	-20° 31.0	-20° 22.7	-20° 14.3	-20° 05.8	-19° 57.2	-19° 48.5	+8.3	55.1
Чт 28	134° 37.0	149° 09.5	163° 42.1	178° 14.8	192° 47.6	207° 20.4	221° 53.3	236° 26.3	250° 59.3	265° 32.4	280° 05.5	+32.9	14.9
	-17° 29.2	-17° 19.3	-17° 09.4	-16° 59.4	-16° 49.3	-16° 39.1	-16° 28.9	-16° 18.7	-16° 08.3	-15° 58.0	-15° 47.5	+10.2	54.6
Пт 29	138° 30.4	153° 04.6	167° 38.7	182° 12.9	196° 47.2	211° 21.5	225° 55.9	240° 30.3	255° 04.8	269° 39.3	284° 13.9	+34.4	14.8
	-13° 04.0	-12° 52.7	-12° 41.4	-12° 30.0	-12° 18.6	-12° 07.1	-11° 55.5	-11° 44.0	-11° 32.4	-11° 20.7	-11° 09.0	+11.5	54.2
Сб 30	142° 57.4	157° 32.6	172° 07.8	186° 43.1	201° 18.3	215° 53.7	230° 29.0	245° 04.4	259° 39.8	274° 15.2	288° 50.6	+35.3	14.7
	-8° 09.4	-7° 57.2	-7° 44.9	-7° 32.6	-7° 20.3	-7° 08.0	-6° 55.6	-6° 43.3	-6° 30.9	-6° 18.4	-6° 06.0	+12.3	54.0

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 3 23h47 — Последняя четв.: 12 00h45 — Новолуние: 18 18h23 — Первая четв.: 25 13h10

СОЛНЦЕ

Октябрь 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	182° 35.3 -3° 18.6	197° 35.5 -3° 19.6	212° 35.7 -3° 20.5	227° 35.9 -3° 21.5	242° 36.1 -3° 22.5	257° 36.3 -3° 23.4	92° 38.9 -3° 36.0	107° 39.1 -3° 37.0	122° 39.3 -3° 37.9	137° 39.5 -3° 38.9	152° 39.7 -3° 39.9	167° 39.9 -3° 40.9	+0.2 -1.0
Пн 2	182° 40.1 -3° 41.8	197° 40.3 -3° 42.8	212° 40.5 -3° 43.8	227° 40.7 -3° 44.7	242° 40.9 -3° 45.7	257° 41.1 -3° 46.7	92° 43.6 -3° 59.2	107° 43.8 -4° 00.2	122° 44.0 -4° 01.1	137° 44.2 -4° 02.1	152° 44.4 -4° 03.1	167° 44.6 -4° 04.0	+0.2 -1.0
Вт 3	182° 44.8 -4° 05.0	197° 45.0 -4° 06.0	212° 45.2 -4° 06.9	227° 45.4 -4° 07.9	242° 45.6 -4° 08.9	257° 45.8 -4° 09.8	92° 48.3 -4° 22.4	107° 48.5 -4° 23.3	122° 48.7 -4° 24.3	137° 48.9 -4° 25.2	152° 49.1 -4° 26.2	167° 49.3 -4° 27.2	+0.2 -1.0
Ср 4	182° 49.5 -4° 28.1	197° 49.7 -4° 29.1	212° 49.9 -4° 30.1	227° 50.0 -4° 31.0	242° 50.2 -4° 32.0	257° 50.4 -4° 32.9	92° 52.9 -4° 45.5	107° 53.1 -4° 46.4	122° 53.3 -4° 47.4	137° 53.5 -4° 48.3	152° 53.7 -4° 49.3	167° 53.8 -4° 50.3	+0.2 -1.0
Чт 5	182° 54.0 -4° 51.2	197° 54.2 -4° 52.2	212° 54.4 -4° 53.1	227° 54.6 -4° 54.1	242° 54.8 -4° 55.1	257° 55.0 -4° 56.0	92° 57.4 -5° 08.5	107° 57.6 -5° 09.4	122° 57.8 -5° 10.4	137° 57.9 -5° 11.4	152° 58.1 -5° 12.3	167° 58.3 -5° 13.3	+0.2 -1.0
Пт 6	182° 58.5 -5° 14.2	197° 58.7 -5° 15.2	212° 58.9 -5° 16.2	227° 59.0 -5° 17.1	242° 59.2 -5° 18.1	257° 59.4 -5° 19.0	93° 01.8 -5° 31.5	108° 02.0 -5° 32.4	123° 02.1 -5° 33.4	138° 02.3 -5° 34.3	153° 02.5 -5° 35.3	168° 02.7 -5° 36.2	+0.2 -1.0
Сб 7	183° 02.9 -5° 37.2	198° 03.0 -5° 38.2	213° 03.2 -5° 39.1	228° 03.4 -5° 40.1	243° 03.6 -5° 41.0	258° 03.8 -5° 42.0	93° 06.1 -5° 54.4	108° 06.2 -5° 55.3	123° 06.4 -5° 56.3	138° 06.6 -5° 57.2	153° 06.8 -5° 58.2	168° 06.9 -5° 59.1	+0.2 -1.0
Вс 8	183° 07.1 -6° 00.1	198° 07.3 -6° 01.0	213° 07.5 -6° 02.0	228° 07.6 -6° 02.9	243° 07.8 -6° 03.9	258° 08.0 -6° 04.8	93° 10.2 -6° 17.2	108° 10.4 -6° 18.2	123° 10.6 -6° 19.1	138° 10.8 -6° 20.1	153° 10.9 -6° 21.0	168° 11.1 -6° 22.0	+0.2 -1.0
Пн 9	183° 11.3 -6° 22.9	198° 11.4 -6° 23.8	213° 11.6 -6° 24.8	228° 11.8 -6° 25.7	243° 12.0 -6° 26.7	258° 12.1 -6° 27.6	93° 14.3 -6° 40.0	108° 14.5 -6° 40.9	123° 14.6 -6° 41.8	138° 14.8 -6° 42.8	153° 15.0 -6° 43.7	168° 15.1 -6° 44.7	+0.2 -0.9
Вт 10	183° 15.3 -6° 45.6	198° 15.5 -6° 46.6	213° 15.6 -6° 47.5	228° 15.8 -6° 48.5	243° 16.0 -6° 49.4	258° 16.1 -6° 50.4	93° 18.3 -7° 02.6	108° 18.4 -7° 03.6	123° 18.6 -7° 04.5	138° 18.7 -7° 05.4	153° 18.9 -7° 06.4	168° 19.1 -7° 07.3	+0.2 -0.9
Ср 11	183° 19.2 -7° 08.3	198° 19.4 -7° 09.2	213° 19.5 -7° 10.2	228° 19.7 -7° 11.1	243° 19.9 -7° 12.0	258° 20.0 -7° 13.0	93° 22.1 -7° 25.2	108° 22.2 -7° 26.1	123° 22.4 -7° 27.1	138° 22.5 -7° 28.0	153° 22.7 -7° 28.9	168° 22.8 -7° 29.9	+0.2 -0.9
Чт 12	183° 23.0 -7° 30.8	198° 23.2 -7° 31.8	213° 23.3 -7° 32.7	228° 23.5 -7° 33.6	243° 23.6 -7° 34.6	258° 23.8 -7° 35.5	93° 25.8 -7° 47.7	108° 25.9 -7° 48.6	123° 26.1 -7° 49.5	138° 26.2 -7° 50.5	153° 26.4 -7° 51.4	168° 26.5 -7° 52.3	+0.2 -0.9
Пт 13	183° 26.7 -7° 53.3	198° 26.8 -7° 54.2	213° 27.0 -7° 55.1	228° 27.1 -7° 56.1	243° 27.3 -7° 57.0	258° 27.4 -7° 57.9	93° 29.3 -8° 10.0	108° 29.4 -8° 11.0	123° 29.6 -8° 11.9	138° 29.7 -8° 12.8	153° 29.9 -8° 13.7	168° 30.0 -8° 14.7	+0.1 -0.9
Сб 14	183° 30.2 -8° 15.6	198° 30.3 -8° 16.5	213° 30.5 -8° 17.5	228° 30.6 -8° 18.4	243° 30.7 -8° 19.3	258° 30.9 -8° 20.2	93° 32.7 -8° 32.3	108° 32.9 -8° 33.2	123° 33.0 -8° 34.1	138° 33.1 -8° 35.0	153° 33.3 -8° 36.0	168° 33.4 -8° 36.9	+0.1 -0.9
Вс 15	183° 33.5 -8° 37.8	198° 33.7 -8° 38.7	213° 33.8 -8° 39.7	228° 34.0 -8° 40.6	243° 34.1 -8° 41.5	258° 34.2 -8° 42.4	93° 36.0 -8° 54.4	108° 36.1 -8° 55.3	123° 36.2 -8° 56.2	138° 36.4 -8° 57.2	153° 36.5 -8° 58.1	168° 36.6 -8° 59.0	+0.1 -0.9
Пн 16	183° 36.8 -8° 59.9	198° 36.9 -9° 00.8	213° 37.0 -9° 01.8	228° 37.2 -9° 02.7	243° 37.3 -9° 03.6	258° 37.4 -9° 04.5	93° 39.1 -9° 16.4	108° 39.2 -9° 17.3	123° 39.4 -9° 18.2	138° 39.5 -9° 19.2	153° 39.6 -9° 20.1	168° 39.7 -9° 21.0	+0.1 -0.9
Вт 17	183° 39.9 -9° 21.9	198° 40.0 -9° 22.8	213° 40.1 -9° 23.7	228° 40.2 -9° 24.6	243° 40.4 -9° 25.5	258° 40.5 -9° 26.5	93° 42.1 -9° 38.3	108° 42.2 -9° 39.2	123° 42.3 -9° 40.1	138° 42.4 -9° 41.0	153° 42.5 -9° 41.9	168° 42.7 -9° 42.8	+0.1 -0.9
Ср 18	183° 42.8 -9° 43.7	198° 42.9 -9° 44.6	213° 43.0 -9° 45.5	228° 43.1 -9° 46.5	243° 43.3 -9° 47.4	258° 43.4 -9° 48.3	93° 44.9 -10° 00.0	108° 45.0 -10° 00.9	123° 45.1 -10° 01.8	138° 45.2 -10° 02.7	153° 45.3 -10° 03.6	168° 45.4 -10° 04.5	+0.1 -0.9
Чт 19	183° 45.6 -10° 05.4	198° 45.7 -10° 06.3	213° 45.8 -10° 07.2	228° 45.9 -10° 08.1	243° 46.0 -10° 09.0	258° 46.1 -10° 09.9	93° 47.5 -10° 21.6	108° 47.6 -10° 22.5	123° 47.8 -10° 23.4	138° 47.9 -10° 24.3	153° 48.0 -10° 25.2	168° 48.1 -10° 26.1	+0.1 -0.9
Пт 20	183° 48.2 -10° 27.0	198° 48.3 -10° 27.9	213° 48.4 -10° 28.8	228° 48.5 -10° 29.7	243° 48.6 -10° 30.6	258° 48.7 -10° 31.5	93° 50.0 -10° 43.0	108° 50.1 -10° 43.9	123° 50.2 -10° 44.8	138° 50.3 -10° 45.7	153° 50.4 -10° 46.6	168° 50.5 -10° 47.5	+0.1 -0.9
Сб 21	183° 50.6 -10° 48.4	198° 50.7 -10° 49.3	213° 50.8 -10° 50.1	228° 50.9 -10° 51.0	243° 51.0 -10° 51.9	258° 51.1 -10° 52.8	93° 52.4 -11° 04.3	108° 52.5 -11° 05.2	123° 52.6 -11° 06.1	138° 52.7 -11° 07.0	153° 52.7 -11° 07.8	168° 52.8 -11° 08.7	+0.1 -0.9
Вс 22	183° 52.9 -11° 09.6	198° 53.0 -11° 10.5	213° 53.1 -11° 11.4	228° 53.2 -11° 12.2	243° 53.3 -11° 13.1	258° 53.4 -11° 14.0	93° 54.5 -11° 25.4	108° 54.6 -11° 26.3	123° 54.7 -11° 27.2	138° 54.8 -11° 28.0	153° 54.9 -11° 28.9	168° 55.0 -11° 29.8	+0.1 -0.9
Пн 23	183° 55.1 -11° 30.7	198° 55.1 -11° 31.5	213° 55.2 -11° 32.4	228° 55.3 -11° 33.3	243° 55.4 -11° 34.2	258° 55.5 -11° 35.0	93° 56.5 -11° 46.4	108° 56.6 -11° 47.2	123° 56.7 -11° 48.1	138° 56.8 -11° 49.0	153° 56.9 -11° 49.8	168° 56.9 -11° 50.7	+0.1 -0.9
Вт 24	183° 57.0 -11° 51.6	198° 57.1 -11° 52.4	213° 57.2 -11° 53.3	228° 57.3 -11° 54.2	243° 57.3 -11° 55.0	258° 57.4 -11° 55.9	93° 58.4 -12° 07.1	108° 58.4 -12° 08.0	123° 58.5 -12° 08.8	138° 58.6 -12° 09.7	153° 58.7 -12° 10.5	168° 58.7 -12° 11.4	+0.1 -0.9
Ср 25	183° 58.8 -12° 12.3	198° 58.9 -12° 13.1	213° 58.9 -12° 14.0	228° 59.0 -12° 14.8	243° 59.1 -12° 15.7	258° 59.2 -12° 16.6	94° 00.0 -12° 27.7	109° 00.1 -12° 28.5	124° 00.2 -12° 29.4	139° 00.2 -12° 30.2	154° 00.3 -12° 31.1	169° 00.4 -12° 31.9	+0.1 -0.9
Чт 26	184° 00.4 -12° 32.8	199° 00.5 -12° 33.6	214° 00.5 -12° 34.5	229° 00.6 -12° 35.3	244° 00.7 -12° 36.2	259° 00.7 -12° 37.0	94° 01.5 -12° 48.0	109° 01.6 -12° 48.9	124° 01.6 -12° 49.7	139° 01.7 -12° 50.6	154° 01.7 -12° 51.4	169° 01.8 -12° 52.3	+0.1 -0.9
Пт 27	184° 01.8 -12° 53.1	199° 01.9 -12° 53.9	214° 02.0 -12° 54.8	229° 02.0 -12° 55.6	244° 02.1 -12° 56.5	259° 02.1 -12° 57.3	94° 02.8 -13° 08.2	109° 02.9 -13° 09.0	124° 02.9 -13° 09.9	139° 03.0 -13° 10.7	154° 03.0 -13° 11.6	169° 03.1 -13° 12.4	+0.1 -0.8
Сб 28	184° 03.1 -13° 13.2	199° 03.1 -13° 14.1	214° 03.2 -13° 14.9	229° 03.2 -13° 15.7	244° 03.3 -13° 16.6	259° 03.3 -13° 17.4	94° 03.9 -13° 28.2	109° 04.0 -13° 29.0	124° 04.0 -13° 29.8	139° 04.0 -13° 30.7	154° 04.1 -13° 31.5	169° 04.1 -13° 32.3	+0.0 -0.8
Вс 29	184° 04.2 -13° 33.1	199° 04.2 -13° 34.0	214° 04.2 -13° 34.8	229° 04.3 -13° 35.6	244° 04.3 -13° 36.4	259° 04.4 -13° 37.3	94° 04.8 -13° 47.9	109° 04.9 -13° 48.7	124° 04.9 -13° 49.6	139° 04.9 -13° 50.4	154° 05.0 -13° 51.2	169° 05.0 -13° 52.0	+0.0 -0.8
Пн 30	184° 05.0 -13° 52.8	199° 05.1 -13° 53.6	214° 05.1 -13° 54.5	229° 05.1 -13° 55.3	244° 05.2 -13° 56.1	259° 05.2 -13° 56.9	94° 05.6 -14° 07.5	109° 05.6 -14° 08.3	124° 05.6 -14° 09.1	139° 05.6 -14° 09.9	154° 05.7 -14° 10.7	169° 05.7 -14° 11.5	+0.0 -0.8
Вт 31	184° 05.7 -14° 12.3	199° 05.7 -14° 13.1	214° 05.8 -14° 13.9	229° 05.8 -14° 14.7	244° 05.8 -14° 15.5	259° 05.8 -14° 16.3	94° 06.1 -14° 26.8	109° 06.1 -14° 27.6	124° 06.1 -14° 28.4	139° 06.2 -14° 29.2	154° 06.2 -14° 30.0	169° 06.2 -14° 30.8	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2028

Д	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Δ'/h	R/p
Вс 1	60° 10.6	74° 46.3	89° 21.9	103° 57.6	118° 33.3	133° 09.0	147° 44.7	162° 20.4	176° 56.1	191° 31.9	206° 07.6	+35.7	14.7
	-4° 13.1	-4° 00.5	-3° 47.9	-3° 35.2	-3° 22.6	-3° 09.9	-2° 57.2	-2° 44.5	-2° 31.8	-2° 19.1	-2° 06.4	+12.7	53.9
Пн 2	65° 04.2	79° 39.9	94° 15.7	108° 51.4	123° 27.1	138° 02.9	152° 38.6	167° 14.3	181° 50.0	196° 25.6	211° 01.3	+35.7	14.7
	1° 04.8	1° 17.6	1° 30.3	1° 43.1	1° 55.8	2° 08.5	2° 21.2	2° 34.0	2° 46.7	2° 59.4	3° 12.1	+12.7	53.9
○ Вт 3	69° 54.0	84° 29.3	99° 04.6	113° 39.8	128° 15.1	142° 50.3	157° 25.5	172° 00.6	186° 35.7	201° 10.8	215° 45.8	+35.2	14.7
	6° 20.7	6° 33.1	6° 45.6	6° 57.9	7° 10.3	7° 22.6	7° 35.0	7° 47.2	7° 59.5	8° 11.7	8° 23.9	+12.3	54.0
Ср 4	74° 26.8	89° 01.2	103° 35.5	118° 09.8	132° 44.0	147° 18.2	161° 52.4	176° 26.5	191° 00.5	205° 34.5	220° 08.4	+34.2	14.8
	11° 23.1	11° 34.7	11° 46.3	11° 57.9	12° 09.4	12° 20.9	12° 32.3	12° 43.6	12° 55.0	13° 06.3	13° 17.5	+11.4	54.2
Чт 5	78° 30.6	93° 03.6	107° 36.6	122° 09.5	136° 42.3	151° 15.0	165° 47.7	180° 20.3	194° 52.9	209° 25.4	223° 57.8	+32.7	14.9
	15° 59.5	16° 09.8	16° 20.1	16° 30.3	16° 40.4	16° 50.5	17° 00.5	17° 10.4	17° 20.3	17° 30.1	17° 39.8	+10.0	54.5
Пт 6	81° 55.9	96° 27.2	110° 58.5	125° 29.6	140° 00.7	154° 31.8	169° 02.7	183° 33.6	198° 04.4	212° 35.2	227° 05.8	+31.0	15.0
	19° 56.4	20° 04.8	20° 13.2	20° 21.4	20° 29.6	20° 37.7	20° 45.7	20° 53.6	21° 01.4	21° 09.2	21° 16.8	+8.0	54.8
Сб 7	84° 37.3	99° 06.9	113° 36.3	128° 05.7	142° 35.1	157° 04.3	171° 33.5	186° 02.7	200° 31.7	215° 00.7	229° 29.6	+29.2	15.1
	22° 59.2	23° 05.1	23° 11.0	23° 16.8	23° 22.4	23° 27.9	23° 33.4	23° 38.7	23° 43.9	23° 48.9	23° 53.9	+5.5	55.3
Вс 8	86° 36.3	101° 04.2	115° 32.2	130° 00.0	144° 27.9	158° 55.6	173° 23.4	187° 51.0	202° 18.7	216° 46.3	231° 13.8	+27.7	15.2
	24° 53.5	24° 56.5	24° 59.3	25° 02.0	25° 04.6	25° 07.0	25° 09.3	25° 11.5	25° 13.5	25° 15.4	25° 17.2	+2.4	55.8
Пн 9	88° 02.1	102° 29.1	116° 56.0	131° 22.9	145° 49.8	160° 16.6	174° 43.5	189° 10.3	203° 37.1	218° 03.8	232° 30.6	+26.8	15.4
	25° 27.0	25° 26.6	25° 25.9	25° 25.2	25° 24.3	25° 23.2	25° 22.0	25° 20.7	25° 19.2	25° 17.6	25° 15.8	-1.1	56.5
Вт 10	89° 10.7	103° 37.4	118° 04.0	132° 30.7	146° 57.3	161° 24.0	175° 50.6	190° 17.3	204° 44.0	219° 10.7	233° 37.4	+26.7	15.6
	24° 31.9	24° 27.8	24° 23.5	24° 19.2	24° 14.6	24° 09.9	24° 05.1	24° 00.2	23° 55.1	23° 49.8	23° 44.4	-4.7	57.2
◑ Ср 11	90° 19.8	104° 46.7	119° 13.8	133° 40.8	148° 07.8	162° 34.9	177° 02.0	191° 29.2	205° 56.3	220° 23.5	234° 50.7	+27.1	15.8
	22° 06.5	21° 58.9	21° 51.1	21° 43.2	21° 35.2	21° 27.0	21° 18.7	21° 10.3	21° 01.7	20° 53.0	20° 44.2	-8.2	58.0
Чт 12	91° 42.5	106° 10.2	120° 37.9	135° 05.7	149° 33.5	164° 01.3	178° 29.1	192° 57.0	207° 24.9	221° 52.9	236° 20.8	+27.8	16.0
	18° 16.5	18° 05.7	17° 54.8	17° 43.7	17° 32.6	17° 21.3	17° 09.9	16° 58.4	16° 46.8	16° 35.1	16° 23.2	-11.3	58.8
Пт 13	93° 23.8	107° 52.3	122° 20.7	136° 49.2	151° 17.6	165° 46.1	180° 14.7	194° 43.2	209° 11.8	223° 40.4	238° 09.0	+28.5	16.3
	13° 13.6	13° 00.2	12° 46.7	12° 33.1	12° 19.4	12° 05.7	11° 51.8	11° 37.9	11° 23.9	11° 09.8	10° 55.7	-13.8	59.6
Сб 14	95° 19.9	109° 48.7	124° 17.5	138° 46.3	153° 15.1	167° 44.0	182° 12.8	196° 41.6	211° 10.5	225° 39.3	240° 08.1	+28.8	16.5
	7° 14.9	6° 59.7	6° 44.4	6° 29.1	6° 13.8	5° 58.3	5° 42.9	5° 27.4	5° 11.8	4° 56.2	4° 40.6	-15.4	60.3
Вс 15	97° 19.8	111° 48.5	126° 17.2	140° 45.8	155° 14.4	169° 43.0	184° 11.6	198° 40.2	213° 08.7	227° 37.2	242° 05.7	+28.6	16.6
	0° 42.3	0° 26.2	0° 10.1	-0° 05.9	-0° 22.0	-0° 38.1	-0° 54.2	-1° 10.3	-1° 26.4	-1° 42.5	-1° 58.6	-16.1	60.8
Пн 16	99° 09.4	113° 37.4	128° 05.3	142° 33.2	157° 01.0	171° 28.8	185° 56.6	200° 24.3	214° 51.9	229° 19.6	243° 47.1	+27.8	16.6
	-5° 58.4	-6° 14.2	-6° 30.0	-6° 45.7	-7° 01.4	-7° 17.0	-7° 32.6	-7° 48.2	-8° 03.7	-8° 19.2	-8° 34.6	-15.6	61.0
Вт 17	100° 34.7	115° 01.5	129° 28.2	143° 54.8	158° 21.4	172° 47.9	187° 14.4	201° 40.8	216° 07.2	230° 33.5	244° 59.7	+26.5	16.6
	-12° 18.2	-12° 32.5	-12° 46.8	-13° 00.9	-13° 15.0	-13° 29.0	-13° 42.9	-13° 56.7	-14° 10.4	-14° 24.0	-14° 37.5	-13.9	60.9
● Ср 18	101° 26.6	115° 52.0	130° 17.3	144° 42.5	159° 07.7	173° 32.8	187° 57.9	202° 23.0	216° 47.9	231° 12.9	245° 37.8	+25.1	16.5
	-17° 47.1	-17° 58.8	-18° 10.4	-18° 21.8	-18° 33.1	-18° 44.3	-18° 55.4	-19° 06.3	-19° 17.1	-19° 27.7	-19° 38.2	-11.1	60.4
Чт 19	101° 46.0	116° 10.2	130° 34.5	144° 58.7	159° 22.8	173° 47.0	188° 11.1	202° 35.2	216° 59.3	231° 23.3	245° 47.3	+24.1	16.3
	-21° 58.2	-22° 06.3	-22° 14.3	-22° 22.1	-22° 29.7	-22° 37.2	-22° 44.5	-22° 51.7	-22° 58.7	-23° 05.5	-23° 12.2	-7.4	59.7
Пт 20	101° 46.9	116° 10.9	130° 34.9	144° 58.9	159° 22.9	173° 47.0	188° 11.0	202° 35.1	216° 59.2	231° 23.4	245° 47.5	+24.1	16.0
	-24° 32.3	-24° 36.3	-24° 40.2	-24° 43.8	-24° 47.3	-24° 50.6	-24° 53.8	-24° 56.8	-24° 59.6	-25° 02.3	-25° 04.7	-3.2	58.8
Сб 21	101° 54.4	116° 19.2	130° 44.1	145° 09.0	159° 34.1	173° 59.1	188° 24.3	202° 49.4	217° 14.7	231° 40.0	246° 05.4	+25.1	15.8
	-25° 22.1	-25° 22.0	-25° 21.7	-25° 21.2	-25° 20.6	-25° 19.8	-25° 18.9	-25° 17.8	-25° 16.6	-25° 15.2	-25° 13.7	+0.9	57.8
Вс 22	102° 35.4	117° 02.0	131° 28.8	145° 55.6	160° 22.5	174° 49.5	189° 16.6	203° 43.8	218° 11.1	232° 38.4	247° 05.9	+27.0	15.5
	-24° 32.8	-24° 28.9	-24° 25.0	-24° 20.8	-24° 16.6	-24° 12.2	-24° 07.7	-24° 03.0	-23° 58.2	-23° 53.3	-23° 48.3	+4.5	56.8
Пн 23	117° 02.0	131° 28.8	145° 55.6	160° 22.5	174° 49.5	189° 16.6	203° 43.8	218° 11.1	232° 38.4	247° 05.9	261° 33.4	+27.1	15.5
	-24° 28.9	-24° 25.0	-24° 20.8	-24° 16.6	-24° 12.2	-24° 07.7	-24° 03.0	-23° 58.2	-23° 53.3	-23° 48.3	-23° 43.2	+4.6	56.8
Вт 24	118° 38.0	133° 07.1	147° 36.3	162° 05.5	176° 34.9	191° 04.3	205° 33.9	220° 03.5	234° 33.3	249° 03.1	263° 33.0	+29.5	15.3
	-22° 11.7	-22° 04.7	-21° 57.6	-21° 50.5	-21° 43.2	-21° 35.8	-21° 28.3	-21° 20.7	-21° 13.0	-21° 05.2	-20° 57.3	+7.4	55.9
◐ Ср 25	121° 13.1	135° 44.5	150° 15.9	164° 47.5	179° 19.2	193° 50.9	208° 22.7	222° 54.6	237° 26.6	251° 58.7	266° 30.8	+31.8	15.1
	-18° 48.5	-18° 39.3	-18° 30.0	-18° 20.6	-18° 11.1	-18° 01.6	-17° 52.0	-17° 42.3	-17° 32.6	-17° 22.7	-17° 12.8	+9.6	55.2
Чт 26	124° 42.3	139° 15.6	153° 49.0	168° 22.5	182° 56.1	197° 29.7	212° 03.4	226° 37.1	241° 10.9	255° 44.8	270° 18.7	+33.6	14.9
	-14° 37.1	-14° 26.3	-14° 15.4	-14° 04.4	-13° 53.4	-13° 42.4	-13° 31.3	-13° 20.2	-13° 09.0	-12° 57.8	-12° 46.5	+11.1	54.6
Пт 27	128° 54.1	143° 28.8	158° 03.7	172° 38.5	187° 13.4	201° 48.3	216° 23.3	230° 58.3	245° 33.3	260° 08.4	274° 43.5	+34.9	14.8
	-9° 52.5	-9° 40.7	-9° 28.7	-9° 16.8	-9° 04.8	-8° 52.8	-8° 40.8	-8° 28.7	-8° 16.6	-8° 04.5	-7° 52.3	+12.0	54.3
Сб 28	133° 34.0	148° 09.5	162° 45.1	177° 20.7	191° 56.3	206° 32.0	221° 07.6	235° 43.3	250° 19.0	264° 54.7	279° 30.4	+35.6	14.7
	-4° 47.4	-4° 35.0	-4° 22.5	-4° 10.0	-3° 57.5	-3° 44.9	-3° 32.4	-3° 19.8	-3° 07.3	-2° 54.7	-2° 42.1	+12.5	54.1
Вс 29	138° 26.6	153° 02.4	167° 38.1	182° 13.9	196° 49.6	211° 25.3	226° 01.0	240° 36.8	255° 12.5	269° 48.2	284° 23.8	+35.7	14.7
	0° 27.3	0° 40.0	0° 52.6	1° 05.3	1° 17.9	1° 30.5	1° 43.2	1° 55.8	2° 08.4	2° 21.0	2° 33.6	+12.6	54.0
Пн 30	143° 16.9	157° 52.2	172° 27.5	187° 02.8	201° 38.1	216° 13.3	230° 48.5	245° 23.7	259° 58.9	274° 34.0	289° 09.0	+35.2	14.8
	5° 41.5	5° 53.9	6° 06.3	6° 18.6	6° 31.0	6° 43.3	6° 55.6	7° 07.9	7° 20.2	7° 32.4	7° 44.6	+12.3	54.1
Вт 31	147° 50.3	162° 24.7	176° 59.1	191° 33.4	206° 07.6	220° 41.8	235° 16.0	249° 50.0	264° 24.1	278° 58.1	293° 32.0	+34.2	14.8
	10° 44.3	10° 56.0	11° 07.6	11° 19.3	11° 30.9	11° 42.4	11° 53.9	12° 05.4	12° 16.8	12° 28.2	12° 39.5	+11.5	54.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 3 16h24 — Последняя четв.: 11 11h56 — Новолуние: 18 02h56 — Первая четв.: 25 04h53

СОЛНЦЕ

Ноябрь 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	184° 06.2	199° 06.2	214° 06.2	229° 06.3	244° 06.3	259° 06.3	94° 06.4	109° 06.5	124° 06.5	139° 06.5	154° 06.5	169° 06.5	+0.0
	-14° 31.6	-14° 32.4	-14° 33.1	-14° 33.9	-14° 34.7	-14° 35.5	-14° 45.8	-14° 46.6	-14° 47.4	-14° 48.2	-14° 49.0	-14° 49.8	-0.8
Чт 2	184° 06.5	199° 06.5	214° 06.5	229° 06.5	244° 06.5	259° 06.5	94° 06.6	109° 06.6	124° 06.6	139° 06.6	154° 06.6	169° 06.6	+0.0
	-14° 50.6	-14° 51.4	-14° 52.1	-14° 52.9	-14° 53.7	-14° 54.5	-15° 04.7	-15° 05.5	-15° 06.2	-15° 07.0	-15° 07.8	-15° 08.6	-0.8
Пт 3	184° 06.6	199° 06.6	214° 06.6	229° 06.6	244° 06.6	259° 06.6	94° 06.5	109° 06.5	124° 06.5	139° 06.5	154° 06.5	169° 06.5	-0.0
	-15° 09.3	-15° 10.1	-15° 10.9	-15° 11.7	-15° 12.4	-15° 13.2	-15° 23.3	-15° 24.0	-15° 24.8	-15° 25.6	-15° 26.3	-15° 27.1	-0.8
Сб 4	184° 06.5	199° 06.5	214° 06.4	229° 06.4	244° 06.4	259° 06.4	94° 06.2	109° 06.2	124° 06.2	139° 06.2	154° 06.2	169° 06.2	-0.0
	-15° 27.9	-15° 28.6	-15° 29.4	-15° 30.2	-15° 30.9	-15° 31.7	-15° 41.6	-15° 42.4	-15° 43.1	-15° 43.9	-15° 44.6	-15° 45.4	-0.8
Вс 5	184° 06.1	199° 06.1	214° 06.1	229° 06.1	244° 06.1	259° 06.0	94° 05.8	109° 05.7	124° 05.7	139° 05.7	154° 05.7	169° 05.6	-0.0
	-15° 46.1	-15° 46.9	-15° 47.7	-15° 48.4	-15° 49.2	-15° 49.9	-15° 59.7	-16° 00.4	-16° 01.2	-16° 01.9	-16° 02.7	-16° 03.4	-0.8
Пн 6	184° 05.6	199° 05.6	214° 05.5	229° 05.5	244° 05.5	259° 05.5	94° 05.1	109° 05.0	124° 05.0	139° 05.0	154° 04.9	169° 04.9	-0.0
	-16° 04.2	-16° 04.9	-16° 05.7	-16° 06.4	-16° 07.1	-16° 07.9	-16° 17.5	-16° 18.2	-16° 19.0	-16° 19.7	-16° 20.4	-16° 21.2	-0.7
Вт 7	184° 04.9	199° 04.8	214° 04.8	229° 04.7	244° 04.7	259° 04.7	94° 04.2	109° 04.1	124° 04.1	139° 04.0	154° 04.0	169° 03.9	-0.0
	-16° 21.9	-16° 22.6	-16° 23.4	-16° 24.1	-16° 24.8	-16° 25.6	-16° 35.0	-16° 35.8	-16° 36.5	-16° 37.2	-16° 37.9	-16° 38.7	-0.7
Ср 8	184° 03.9	199° 03.8	214° 03.8	229° 03.8	244° 03.7	259° 03.7	94° 03.0	109° 03.0	124° 02.9	139° 02.9	154° 02.8	169° 02.8	-0.0
	-16° 39.4	-16° 40.1	-16° 40.8	-16° 41.6	-16° 42.3	-16° 43.0	-16° 52.3	-16° 53.0	-16° 53.7	-16° 54.5	-16° 55.2	-16° 55.9	-0.7
Чт 9	184° 02.7	199° 02.7	214° 02.6	229° 02.6	244° 02.5	259° 02.4	94° 01.7	109° 01.6	124° 01.6	139° 01.5	154° 01.4	169° 01.4	-0.1
	-16° 56.6	-16° 57.3	-16° 58.0	-16° 58.7	-16° 59.4	-17° 00.1	-17° 09.3	-17° 10.0	-17° 10.7	-17° 11.4	-17° 12.1	-17° 12.8	-0.7
Пт 10	184° 01.3	199° 01.3	214° 01.2	229° 01.1	244° 01.1	259° 01.0	94° 00.1	109° 00.1	124° 00.0	138° 59.9	153° 59.9	168° 59.8	-0.1
	-17° 13.5	-17° 14.2	-17° 14.9	-17° 15.6	-17° 16.3	-17° 17.0	-17° 26.0	-17° 26.7	-17° 27.4	-17° 28.1	-17° 28.7	-17° 29.4	-0.7
Сб 11	183° 59.7	198° 59.6	213° 59.6	228° 59.5	243° 59.4	258° 59.3	93° 58.4	108° 58.3	123° 58.2	138° 58.1	153° 58.0	168° 58.0	-0.1
	-17° 30.1	-17° 30.8	-17° 31.5	-17° 32.2	-17° 32.9	-17° 33.5	-17° 42.4	-17° 43.1	-17° 43.7	-17° 44.4	-17° 45.1	-17° 45.8	-0.7
Вс 12	183° 57.9	198° 57.8	213° 57.7	228° 57.6	243° 57.6	258° 57.5	93° 56.4	108° 56.3	123° 56.2	138° 56.1	153° 56.0	168° 55.9	-0.1
	-17° 46.4	-17° 47.1	-17° 47.8	-17° 48.4	-17° 49.1	-17° 49.8	-17° 58.5	-17° 59.1	-17° 59.8	-18° 00.5	-18° 01.1	-18° 01.8	-0.7
Пн 13	183° 55.8	198° 55.7	213° 55.7	228° 55.6	243° 55.5	258° 55.4	93° 54.2	108° 54.1	123° 54.0	138° 53.9	153° 53.8	168° 53.7	-0.1
	-18° 02.4	-18° 03.1	-18° 03.8	-18° 04.4	-18° 05.1	-18° 05.7	-18° 14.2	-18° 14.9	-18° 15.5	-18° 16.2	-18° 16.8	-18° 17.5	-0.7
Вт 14	183° 53.6	198° 53.5	213° 53.4	228° 53.3	243° 53.2	258° 53.1	93° 51.7	108° 51.6	123° 51.5	138° 51.4	153° 51.3	168° 51.2	-0.1
	-18° 18.1	-18° 18.8	-18° 19.4	-18° 20.1	-18° 20.7	-18° 21.4	-18° 29.7	-18° 30.3	-18° 31.0	-18° 31.6	-18° 32.2	-18° 32.9	-0.6
Ср 15	183° 51.1	198° 51.0	213° 50.9	228° 50.8	243° 50.7	258° 50.6	93° 49.1	108° 49.0	123° 48.9	138° 48.8	153° 48.6	168° 48.5	-0.1
	-18° 33.5	-18° 34.1	-18° 34.8	-18° 35.4	-18° 36.0	-18° 36.7	-18° 44.8	-18° 45.4	-18° 46.1	-18° 46.7	-18° 47.3	-18° 47.9	-0.6
Чт 16	183° 48.4	198° 48.3	213° 48.2	228° 48.1	243° 47.9	258° 47.8	93° 46.2	108° 46.1	123° 46.0	138° 45.9	153° 45.8	168° 45.6	-0.1
	-18° 48.5	-18° 49.2	-18° 49.8	-18° 50.4	-18° 51.0	-18° 51.6	-18° 59.6	-19° 00.2	-19° 00.8	-19° 01.4	-19° 02.0	-19° 02.7	-0.6
Пт 17	183° 45.5	198° 45.4	213° 45.3	228° 45.1	243° 45.0	258° 44.9	93° 43.2	108° 43.1	123° 42.9	138° 42.8	153° 42.7	168° 42.5	-0.1
	-19° 03.3	-19° 03.9	-19° 04.5	-19° 05.1	-19° 05.7	-19° 06.3	-19° 14.1	-19° 14.7	-19° 15.3	-19° 15.8	-19° 16.4	-19° 17.0	-0.6
Сб 18	183° 42.4	198° 42.3	213° 42.1	228° 42.0	243° 41.9	258° 41.7	93° 39.9	108° 39.8	123° 39.6	138° 39.5	153° 39.4	168° 39.2	-0.1
	-19° 17.6	-19° 18.2	-19° 18.8	-19° 19.4	-19° 20.0	-19° 20.6	-19° 28.2	-19° 28.8	-19° 29.3	-19° 29.9	-19° 30.5	-19° 31.1	-0.6
Вс 19	183° 39.1	198° 38.9	213° 38.8	228° 38.7	243° 38.5	258° 38.4	93° 36.5	108° 36.3	123° 36.2	138° 36.0	153° 35.9	168° 35.7	-0.1
	-19° 31.7	-19° 32.2	-19° 32.8	-19° 33.4	-19° 34.0	-19° 34.5	-19° 41.9	-19° 42.5	-19° 43.1	-19° 43.6	-19° 44.2	-19° 44.8	-0.6
Пн 20	183° 35.6	198° 35.4	213° 35.3	228° 35.1	243° 35.0	258° 34.8	93° 32.8	108° 32.6	123° 32.5	138° 32.3	153° 32.2	168° 32.0	-0.2
	-19° 45.3	-19° 45.9	-19° 46.4	-19° 47.0	-19° 47.6	-19° 48.1	-19° 55.3	-19° 55.9	-19° 56.4	-19° 57.0	-19° 57.5	-19° 58.1	-0.6
Вт 21	183° 31.8	198° 31.7	213° 31.5	228° 31.4	243° 31.2	258° 31.0	93° 28.9	108° 28.8	123° 28.6	138° 28.4	153° 28.3	168° 28.1	-0.2
	-19° 58.6	-19° 59.2	-19° 59.7	-20° 00.3	-20° 00.8	-20° 01.4	-20° 08.4	-20° 08.9	-20° 09.4	-20° 10.0	-20° 10.5	-20° 11.0	-0.5
Ср 22	183° 27.9	198° 27.8	213° 27.6	228° 27.4	243° 27.3	258° 27.1	93° 24.9	108° 24.7	123° 24.5	138° 24.4	153° 24.2	168° 24.0	-0.2
	-20° 11.6	-20° 12.1	-20° 12.6	-20° 13.2	-20° 13.7	-20° 14.2	-20° 21.0	-20° 21.6	-20° 22.1	-20° 22.6	-20° 23.1	-20° 23.6	-0.5
Чт 23	183° 23.8	198° 23.7	213° 23.5	228° 23.3	243° 23.1	258° 23.0	93° 20.6	108° 20.4	123° 20.3	138° 20.1	153° 19.9	168° 19.7	-0.2
	-20° 24.2	-20° 24.7	-20° 25.2	-20° 25.7	-20° 26.2	-20° 26.7	-20° 33.3	-20° 33.8	-20° 34.3	-20° 34.8	-20° 35.3	-20° 35.8	-0.5
Пт 24	183° 19.5	198° 19.4	213° 19.2	228° 19.0	243° 18.8	258° 18.6	93° 16.2	108° 16.0	123° 15.8	138° 15.6	153° 15.4	168° 15.2	-0.2
	-20° 36.3	-20° 36.8	-20° 37.3	-20° 37.8	-20° 38.3	-20° 38.8	-20° 45.2	-20° 45.7	-20° 46.2	-20° 46.7	-20° 47.2	-20° 47.7	-0.5
Сб 25	183° 15.1	198° 14.9	213° 14.7	228° 14.5	243° 14.3	258° 14.1	93° 11.6	108° 11.4	123° 11.2	138° 11.0	153° 10.8	168° 10.6	-0.2
	-20° 48.2	-20° 48.6	-20° 49.1	-20° 49.6	-20° 50.1	-20° 50.6	-20° 56.8	-20° 57.2	-20° 57.7	-20° 58.2	-20° 58.6	-20° 59.1	-0.5
Вс 26	183° 10.4	198° 10.2	213° 10.0	228° 09.8	243° 09.6	258° 09.4	93° 06.8	108° 06.6	123° 06.4	138° 06.2	153° 06.0	168° 05.8	-0.2
	-20° 59.6	-21° 00.1	-21° 00.5	-21° 01.0	-21° 01.5	-21° 01.9	-21° 07.9	-21° 08.4	-21° 08.8	-21° 09.3	-21° 09.7	-21° 10.2	-0.5
Пн 27	183° 05.6	198° 05.3	213° 05.1	228° 04.9	243° 04.7	258° 04.5	93° 01.8	108° 01.6	123° 01.4	138° 01.2	153° 01.0	168° 00.7	-0.2
	-21° 10.6	-21° 11.1	-21° 11.5	-21° 12.0	-21° 12.4	-21° 12.9	-21° 18.6	-21° 19.1	-21° 19.5	-21° 19.9	-21° 20.4	-21° 20.8	-0.5
Вт 28	183° 00.5	198° 00.3	213° 00.1	227° 59.9	242° 59.7	257° 59.5	92° 56.7	107° 56.4	122° 56.2	137° 56.0	152° 55.8	167° 55.6	-0.2
	-21° 21.3	-21° 21.7	-21° 22.1	-21° 22.6	-21° 23.0	-21° 23.4	-21° 29.0	-21° 29.4	-21° 29.8	-21° 30.2	-21° 30.6	-21° 31.1	-0.4
Ср 29	182° 55.3	197° 55.1	212° 54.9	227° 54.7	242° 54.5	257° 54.2	92° 51.3	107° 51.1	122° 50.9	137° 50.7	152° 50.4	167° 50.2	-0.2
	-21° 31.5	-21° 31.9	-21° 32.3	-21° 32.7	-21° 33.1	-21° 33.6	-21° 38.9	-21° 39.3	-21° 39.7	-21° 40.1	-21° 40.5	-21° 40.9	-0.4
Чт 30	182° 50.0	197° 49.8	212° 49.5	227° 49.3	242° 49.1	257° 48.9	92° 45.9	107° 45.6	122° 45.4	137° 45.2	152° 44.9	167° 44.7	-0.2
	-21° 41.3	-21° 41.7	-21° 42.1	-21° 42.5	-21° 42.9	-21° 43.3	-21° 48.4	-21° 48.8	-21° 49.2	-21° 49.6	-21° 49.9	-21° 50.3	-0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2028

Д	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	Δ'/h	R/p
Ср 1	64° 34.8	79° 08.2	93° 41.4	108° 14.7	122° 47.8	137° 20.9	151° 54.0	166° 26.9	180° 59.8	195° 32.7	210° 05.4	+33.1	14.9
	14° 19.4	14° 30.2	14° 41.0	14° 51.7	15° 02.4	15° 13.0	15° 23.5	15° 34.0	15° 44.5	15° 54.8	16° 05.1	+10.6	54.5
○ Чт 2	68° 08.7	82° 40.3	97° 11.9	111° 43.4	126° 14.9	140° 46.2	155° 17.5	169° 48.7	184° 19.8	198° 50.9	213° 21.9	+31.3	15.0
	18° 31.5	18° 40.7	18° 49.8	18° 58.8	19° 07.8	19° 16.6	19° 25.4	19° 34.1	19° 42.6	19° 51.2	19° 59.6	+8.8	54.9
Пт 3	70° 57.8	85° 27.6	99° 57.4	114° 27.0	128° 56.6	143° 26.2	157° 55.6	172° 25.0	186° 54.3	201° 23.6	215° 52.7	+29.5	15.1
	21° 54.7	22° 01.6	22° 08.4	22° 15.1	22° 21.6	22° 28.1	22° 34.5	22° 40.7	22° 46.8	22° 52.9	22° 58.8	+6.4	55.3
Сб 4	73° 02.5	87° 30.6	101° 58.7	116° 26.8	130° 54.8	145° 22.7	159° 50.6	174° 18.4	188° 46.2	203° 13.9	217° 41.6	+27.9	15.2
	24° 13.4	24° 17.4	24° 21.3	24° 25.0	24° 28.6	24° 32.1	24° 35.5	24° 38.7	24° 41.8	24° 44.8	24° 47.6	+3.4	55.8
Вс 5	74° 31.7	88° 58.8	103° 25.8	117° 52.8	132° 19.8	146° 46.7	161° 13.6	175° 40.5	190° 07.4	204° 34.3	219° 01.1	+26.9	15.3
	25° 13.9	25° 14.5	25° 15.0	25° 15.4	25° 15.6	25° 15.7	25° 15.6	25° 15.4	25° 15.1	25° 14.6	25° 14.0	+0.0	56.3
Пн 6	75° 42.6	90° 09.3	104° 36.0	119° 02.8	133° 29.6	147° 56.3	162° 23.1	176° 49.9	191° 16.7	205° 43.5	220° 10.3	+26.8	15.5
	24° 47.2	24° 44.3	24° 41.2	24° 38.0	24° 34.6	24° 31.1	24° 27.5	24° 23.7	24° 19.8	24° 15.7	24° 11.5	-3.6	56.8
Вт 7	76° 55.0	91° 22.2	105° 49.4	120° 16.6	134° 43.9	149° 11.2	163° 38.6	178° 05.9	192° 33.4	207° 00.8	221° 28.3	+27.3	15.6
	22° 51.5	22° 45.0	22° 38.5	22° 31.8	22° 25.0	22° 18.0	22° 10.9	22° 03.7	21° 56.3	21° 48.8	21° 41.2	-7.0	57.4
Ср 8	78° 25.0	92° 53.1	107° 21.3	121° 49.5	136° 17.7	150° 46.0	165° 14.3	179° 42.6	194° 11.0	208° 39.4	223° 07.9	+28.3	15.8
	19° 32.1	19° 22.5	19° 12.9	19° 03.1	18° 53.2	18° 43.1	18° 33.0	18° 22.8	18° 12.4	18° 02.0	17° 51.4	-10.1	57.9
◑ Чт 9	80° 19.8	94° 48.9	109° 18.0	123° 47.2	138° 16.4	152° 45.6	167° 14.9	181° 44.2	196° 13.5	210° 42.9	225° 12.3	+29.3	16.0
	15° 00.7	14° 48.5	14° 36.3	14° 24.0	14° 11.6	13° 59.1	13° 46.5	13° 33.8	13° 21.0	13° 08.2	12° 55.3	-12.5	58.5
Пт 10	82° 36.5	97° 06.3	111° 36.1	126° 06.0	140° 35.8	155° 05.7	169° 35.6	184° 05.4	198° 35.4	213° 05.3	227° 35.2	+29.9	16.1
	9° 32.7	9° 18.6	9° 04.5	8° 50.3	8° 36.1	8° 21.8	8° 07.5	7° 53.1	7° 38.6	7° 24.1	7° 09.6	-14.3	59.1
Сб 11	85° 04.8	99° 34.7	114° 04.7	128° 34.6	143° 04.6	157° 34.5	172° 04.4	186° 34.3	201° 04.2	215° 34.1	230° 04.0	+29.9	16.3
	3° 26.2	3° 11.0	2° 55.8	2° 40.6	2° 25.4	2° 10.1	1° 54.8	1° 39.5	1° 24.1	1° 08.8	0° 53.4	-15.3	59.6
Вс 12	87° 29.4	101° 58.8	116° 28.3	130° 57.7	145° 27.0	159° 56.4	174° 25.6	188° 54.9	203° 24.1	217° 53.3	232° 22.4	+29.3	16.4
	-2° 58.0	-3° 13.5	-3° 28.9	-3° 44.3	-3° 59.6	-4° 15.0	-4° 30.4	-4° 45.7	-5° 01.0	-5° 16.3	-5° 31.6	-15.4	60.0
Пн 13	89° 33.6	104° 01.9	118° 30.2	132° 58.4	147° 26.5	161° 54.6	176° 22.7	190° 50.6	205° 18.5	219° 46.4	234° 14.2	+28.1	16.4
	-9° 16.8	-9° 31.5	-9° 46.1	-10° 00.6	-10° 15.2	-10° 29.6	-10° 44.0	-10° 58.3	-11° 12.6	-11° 26.8	-11° 41.0	-14.4	60.2
Вт 14	91° 02.9	105° 29.7	119° 56.3	134° 22.9	148° 49.4	163° 15.8	177° 42.1	192° 08.4	206° 34.7	221° 00.8	235° 26.9	+26.4	16.4
	-15° 04.0	-15° 16.8	-15° 29.6	-15° 42.2	-15° 54.8	-16° 07.2	-16° 19.5	-16° 31.8	-16° 43.9	-16° 55.9	-17° 07.9	-12.4	60.2
Ср 15	91° 49.9	106° 15.0	120° 39.9	135° 04.8	149° 29.7	163° 54.4	178° 19.2	192° 43.8	207° 08.4	221° 33.0	235° 57.5	+24.7	16.3
	-19° 52.3	-20° 02.2	-20° 12.0	-20° 21.7	-20° 31.2	-20° 40.6	-20° 49.8	-20° 58.9	-21° 07.9	-21° 16.7	-21° 25.3	-9.3	59.9
● Чт 16	91° 59.5	106° 23.4	120° 47.2	135° 11.0	149° 34.7	163° 58.5	178° 22.2	192° 45.9	207° 09.6	221° 33.3	235° 56.9	+23.7	16.2
	-23° 16.9	-23° 23.0	-23° 29.0	-23° 34.9	-23° 40.5	-23° 46.0	-23° 51.4	-23° 56.5	-24° 01.5	-24° 06.4	-24° 11.1	-5.4	59.4
Пт 17	91° 51.7	106° 15.4	120° 39.2	135° 02.9	149° 26.7	163° 50.6	178° 14.5	192° 38.4	207° 02.3	221° 26.3	235° 50.3	+23.9	16.0
	-25° 00.8	-25° 02.7	-25° 04.5	-25° 06.1	-25° 07.6	-25° 08.9	-25° 10.0	-25° 10.9	-25° 11.7	-25° 12.3	-25° 12.7	-1.2	58.7
Сб 18	91° 56.5	106° 21.4	120° 46.4	135° 11.4	149° 36.5	164° 01.7	178° 27.0	192° 52.3	207° 17.8	221° 43.3	236° 08.8	+25.2	15.8
	-24° 59.7	-24° 57.6	-24° 55.3	-24° 52.8	-24° 50.2	-24° 47.5	-24° 44.6	-24° 41.5	-24° 38.3	-24° 35.0	-24° 31.5	+2.8	57.8
Вс 19	92° 43.1	107° 10.1	121° 37.2	136° 04.4	150° 31.8	164° 59.2	179° 26.7	193° 54.3	208° 22.0	222° 49.8	237° 17.8	+27.5	15.5
	-23° 22.4	-23° 16.7	-23° 10.9	-23° 05.0	-22° 59.0	-22° 52.8	-22° 46.5	-22° 40.1	-22° 33.6	-22° 27.0	-22° 20.3	+6.2	56.9
Пн 20	94° 28.7	108° 58.2	123° 27.8	137° 57.6	152° 27.4	166° 57.3	181° 27.4	195° 57.5	210° 27.8	224° 58.1	239° 28.5	+30.0	15.3
	-20° 26.3	-20° 17.9	-20° 09.4	-20° 00.8	-19° 52.2	-19° 43.4	-19° 34.6	-19° 25.7	-19° 16.6	-19° 07.6	-18° 58.4	+8.8	56.1
Вт 21	97° 16.2	111° 48.1	126° 20.1	140° 52.2	155° 24.3	169° 56.6	184° 28.9	199° 01.3	213° 33.8	228° 06.4	242° 39.0	+32.3	15.1
	-16° 31.7	-16° 21.4	-16° 11.0	-16° 00.5	-15° 50.0	-15° 39.4	-15° 28.8	-15° 18.1	-15° 07.4	-14° 56.6	-14° 45.7	+10.6	55.4
Ср 22	111° 48.1	126° 20.1	140° 52.2	155° 24.3	169° 56.6	184° 28.9	199° 01.3	213° 33.8	228° 06.4	242° 39.0	257° 11.8	+32.4	15.1
	-16° 21.4	-16° 11.0	-16° 00.5	-15° 50.0	-15° 39.4	-15° 28.8	-15° 18.1	-15° 07.4	-14° 56.6	-14° 45.7	-14° 34.8	+10.7	55.3
Чт 23	115° 31.5	130° 05.3	144° 39.3	159° 13.2	173° 47.3	188° 21.4	202° 55.5	217° 29.8	232° 04.0	246° 38.4	261° 12.7	+34.1	14.9
	-11° 45.5	-11° 33.9	-11° 22.3	-11° 10.6	-10° 58.8	-10° 47.0	-10° 35.2	-10° 23.4	-10° 11.5	-9° 59.6	-9° 47.7	+11.8	54.8
◐ Пт 24	119° 54.2	134° 29.3	149° 04.5	163° 39.7	178° 14.9	192° 50.1	207° 25.4	222° 00.7	236° 36.0	251° 11.4	265° 46.8	+35.3	14.8
	-6° 45.5	-6° 33.2	-6° 20.8	-6° 08.5	-5° 56.1	-5° 43.7	-5° 31.3	-5° 18.8	-5° 06.4	-4° 53.9	-4° 41.5	+12.4	54.4
Сб 25	124° 40.2	139° 15.8	153° 51.5	168° 27.2	183° 02.9	197° 38.7	212° 14.4	226° 50.1	241° 25.8	256° 01.6	270° 37.3	+35.7	14.8
	-1° 33.3	-1° 20.7	-1° 08.1	-0° 55.5	-0° 42.9	-0° 30.3	-0° 17.6	-0° 05.0	0° 07.6	0° 20.2	0° 32.8	+12.6	54.1
Вс 26	129° 32.6	144° 08.2	158° 43.8	173° 19.4	187° 55.0	202° 30.5	217° 06.0	231° 41.5	246° 17.0	260° 52.4	275° 27.8	+35.5	14.8
	3° 41.0	3° 53.5	4° 05.9	4° 18.4	4° 30.8	4° 43.3	4° 55.7	5° 08.1	5° 20.4	5° 32.8	5° 45.1	+12.4	54.1
Пн 27	134° 15.5	148° 50.4	163° 25.2	178° 00.1	192° 34.8	207° 09.5	221° 44.2	236° 18.9	250° 53.4	265° 28.0	280° 02.5	+34.7	14.8
	8° 47.6	8° 59.5	9° 11.4	9° 23.3	9° 35.2	9° 47.0	9° 58.8	10° 10.6	10° 22.3	10° 34.0	10° 45.7	+11.8	54.3
Вт 28	138° 33.5	153° 07.1	167° 40.6	182° 14.1	196° 47.5	211° 20.9	225° 54.2	240° 27.4	255° 00.5	269° 33.6	284° 06.6	+33.3	14.9
	13° 35.8	13° 46.8	13° 57.7	14° 08.6	14° 19.4	14° 30.2	14° 40.9	14° 51.6	15° 02.2	15° 12.7	15° 23.2	+10.7	54.6
Ср 29	142° 13.3	156° 45.2	171° 16.9	185° 48.6	200° 20.3	214° 51.8	229° 23.3	243° 54.6	258° 25.9	272° 57.2	287° 28.3	+31.5	15.0
	17° 53.2	18° 02.6	18° 12.0	18° 21.3	18° 30.5	18° 39.7	18° 48.8	18° 57.8	19° 06.7	19° 15.5	19° 24.3	+9.1	55.0
Чт 30	145° 05.7	159° 35.6	174° 05.3	188° 35.0	203° 04.6	217° 34.2	232° 03.6	246° 33.0	261° 02.3	275° 31.5	290° 00.6	+29.5	15.1
	21° 24.9	21° 32.2	21° 39.4	21° 46.5	21° 53.5	22° 00.4	22° 07.1	22° 13.8	22° 20.4	22° 26.8	22° 33.2	+6.8	55.5

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 2 09h17 — Последняя четв.: 9 21h25 — Новолуние: 16 13h18 — Первая четв.: 24 00h14

СОЛНЦЕ

Декабрь 2028

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	182° 44.5 -21° 50.7	197° 44.2 -21° 51.1	212° 44.0 -21° 51.5	227° 43.8 -21° 51.9	242° 43.5 -21° 52.2	257° 43.3 -21° 52.6	92° 40.2 -21° 57.5	107° 40.0 -21° 57.9	122° 39.7 -21° 58.2	137° 39.5 -21° 58.6	152° 39.3 -21° 59.0	167° 39.0 -21° 59.3	-0.2 -0.4
Сб 2	182° 38.8 -21° 59.7	197° 38.6 -22° 00.1	212° 38.3 -22° 00.4	227° 38.1 -22° 00.8	242° 37.8 -22° 01.2	257° 37.6 -22° 01.5	92° 34.4 -22° 06.2	107° 34.2 -22° 06.5	122° 33.9 -22° 06.9	137° 33.7 -22° 07.2	152° 33.4 -22° 07.6	167° 33.2 -22° 07.9	-0.2 -0.4
Вс 3	182° 33.0 -22° 08.3	197° 32.7 -22° 08.6	212° 32.5 -22° 09.0	227° 32.2 -22° 09.3	242° 32.0 -22° 09.7	257° 31.7 -22° 10.0	92° 28.5 -22° 14.4	107° 28.2 -22° 14.7	122° 28.0 -22° 15.1	137° 27.7 -22° 15.4	152° 27.5 -22° 15.7	167° 27.2 -22° 16.1	-0.2 -0.3
Пн 4	182° 27.0 -22° 16.4	197° 26.7 -22° 16.7	212° 26.5 -22° 17.1	227° 26.2 -22° 17.4	242° 26.0 -22° 17.7	257° 25.7 -22° 18.0	92° 22.4 -22° 22.2	107° 22.1 -22° 22.5	122° 21.9 -22° 22.9	137° 21.6 -22° 23.2	152° 21.4 -22° 23.5	167° 21.1 -22° 23.8	-0.3 -0.3
Вт 5	182° 20.8 -22° 24.1	197° 20.6 -22° 24.4	212° 20.3 -22° 24.7	227° 20.1 -22° 25.1	242° 19.8 -22° 25.4	257° 19.6 -22° 25.7	92° 16.2 -22° 29.6	107° 15.9 -22° 29.9	122° 15.6 -22° 30.2	137° 15.4 -22° 30.5	152° 15.1 -22° 30.8	167° 14.8 -22° 31.1	-0.3 -0.3
Ср 6	182° 14.6 -22° 31.4	197° 14.3 -22° 31.7	212° 14.1 -22° 32.0	227° 13.8 -22° 32.3	242° 13.5 -22° 32.6	257° 13.3 -22° 32.9	92° 09.8 -22° 36.6	107° 09.5 -22° 36.8	122° 09.3 -22° 37.1	137° 09.0 -22° 37.4	152° 08.7 -22° 37.7	167° 08.5 -22° 38.0	-0.3 -0.3
Чт 7	182° 08.2 -22° 38.2	197° 07.9 -22° 38.5	212° 07.6 -22° 38.8	227° 07.4 -22° 39.1	242° 07.1 -22° 39.3	257° 06.8 -22° 39.6	92° 03.3 -22° 43.1	107° 03.0 -22° 43.3	122° 02.8 -22° 43.6	137° 02.5 -22° 43.8	152° 02.2 -22° 44.1	167° 01.9 -22° 44.4	-0.3 -0.3
Пт 8	182° 01.7 -22° 44.6	197° 01.4 -22° 44.9	212° 01.1 -22° 45.1	227° 00.8 -22° 45.4	242° 00.6 -22° 45.6	257° 00.3 -22° 45.9	91° 56.7 -22° 49.1	106° 56.4 -22° 49.4	121° 56.1 -22° 49.6	136° 55.8 -22° 49.9	151° 55.6 -22° 50.1	166° 55.3 -22° 50.3	-0.3 -0.3
Сб 9	181° 55.0 -22° 50.6	196° 54.7 -22° 50.8	211° 54.4 -22° 51.0	226° 54.2 -22° 51.3	241° 53.9 -22° 51.5	256° 53.6 -22° 51.8	91° 49.9 -22° 54.7	106° 49.7 -22° 55.0	121° 49.4 -22° 55.2	136° 49.1 -22° 55.4	151° 48.8 -22° 55.6	166° 48.5 -22° 55.8	-0.3 -0.2
Вс 10	181° 48.2 -22° 56.1	196° 48.0 -22° 56.3	211° 47.7 -22° 56.5	226° 47.4 -22° 56.7	241° 47.1 -22° 56.9	256° 46.8 -22° 57.2	91° 43.1 -22° 59.9	106° 42.8 -23° 00.1	121° 42.5 -23° 00.3	136° 42.2 -23° 00.5	151° 41.9 -23° 00.7	166° 41.7 -23° 00.9	-0.3 -0.2
Пн 11	181° 41.4 -23° 01.1	196° 41.1 -23° 01.3	211° 40.8 -23° 01.5	226° 40.5 -23° 01.7	241° 40.2 -23° 01.9	256° 39.9 -23° 02.1	91° 36.1 -23° 04.6	106° 35.9 -23° 04.8	121° 35.6 -23° 05.0	136° 35.3 -23° 05.2	151° 35.0 -23° 05.3	166° 34.7 -23° 05.5	-0.3 -0.2
Вт 12	181° 34.4 -23° 05.7	196° 34.1 -23° 05.9	211° 33.8 -23° 06.1	226° 33.5 -23° 06.2	241° 33.2 -23° 06.4	256° 32.9 -23° 06.6	91° 29.1 -23° 08.8	106° 28.8 -23° 09.0	121° 28.5 -23° 09.2	136° 28.2 -23° 09.3	151° 27.9 -23° 09.5	166° 27.6 -23° 09.7	-0.3 -0.2
Ср 13	181° 27.3 -23° 09.8	196° 27.0 -23° 10.0	211° 26.7 -23° 10.2	226° 26.4 -23° 10.3	241° 26.1 -23° 10.5	256° 25.9 -23° 10.6	91° 22.0 -23° 12.6	106° 21.7 -23° 12.8	121° 21.4 -23° 12.9	136° 21.1 -23° 13.1	151° 20.8 -23° 13.2	166° 20.5 -23° 13.4	-0.3 -0.2
Чт 14	181° 20.2 -23° 13.5	196° 19.9 -23° 13.6	211° 19.6 -23° 13.8	226° 19.3 -23° 13.9	241° 19.0 -23° 14.1	256° 18.7 -23° 14.2	91° 14.8 -23° 15.9	106° 14.5 -23° 16.1	121° 14.2 -23° 16.2	136° 13.9 -23° 16.3	151° 13.6 -23° 16.5	166° 13.3 -23° 16.6	-0.3 -0.1
Пт 15	181° 13.0 -23° 16.7	196° 12.7 -23° 16.8	211° 12.4 -23° 16.9	226° 12.1 -23° 17.1	241° 11.8 -23° 17.2	256° 11.5 -23° 17.3	91° 07.5 -23° 18.8	106° 07.2 -23° 18.9	121° 06.9 -23° 19.0	136° 06.6 -23° 19.1	151° 06.3 -23° 19.2	166° 06.0 -23° 19.3	-0.3 -0.1
Сб 16	181° 05.7 -23° 19.4	196° 05.4 -23° 19.5	211° 05.1 -23° 19.6	226° 04.8 -23° 19.8	241° 04.5 -23° 19.9	256° 04.2 -23° 20.0	91° 00.2 -23° 21.2	105° 59.9 -23° 21.3	120° 59.6 -23° 21.4	135° 59.3 -23° 21.5	150° 59.0 -23° 21.5	165° 58.7 -23° 21.6	-0.3 -0.1
Вс 17	180° 58.3 -23° 21.7	195° 58.0 -23° 21.8	210° 57.7 -23° 21.9	225° 57.4 -23° 22.0	240° 57.1 -23° 22.0	255° 56.8 -23° 22.1	90° 52.8 -23° 23.1	105° 52.5 -23° 23.2	120° 52.2 -23° 23.3	135° 51.9 -23° 23.3	150° 51.6 -23° 23.4	165° 51.3 -23° 23.5	-0.3 -0.1
Пн 18	180° 51.0 -23° 23.5	195° 50.7 -23° 23.6	210° 50.4 -23° 23.7	225° 50.0 -23° 23.7	240° 49.7 -23° 23.8	255° 49.4 -23° 23.8	90° 45.4 -23° 24.6	105° 45.1 -23° 24.6	120° 44.8 -23° 24.7	135° 44.5 -23° 24.7	150° 44.2 -23° 24.8	165° 43.9 -23° 24.8	-0.3 -0.1
Вт 19	180° 43.6 -23° 24.9	195° 43.2 -23° 24.9	210° 42.9 -23° 25.0	225° 42.6 -23° 25.0	240° 42.3 -23° 25.0	255° 42.0 -23° 25.1	90° 38.0 -23° 25.6	105° 37.7 -23° 25.6	120° 37.4 -23° 25.6	135° 37.0 -23° 25.6	150° 36.7 -23° 25.7	165° 36.4 -23° 25.7	-0.3 -0.0
Ср 20	180° 36.1 -23° 25.7	195° 35.8 -23° 25.8	210° 35.5 -23° 25.8	225° 35.2 -23° 25.8	240° 34.9 -23° 25.8	255° 34.6 -23° 25.8	90° 30.5 -23° 26.1	105° 30.2 -23° 26.1	120° 29.9 -23° 26.1	135° 29.6 -23° 26.1	150° 29.3 -23° 26.1	165° 29.0 -23° 26.1	-0.3 -0.0
Чт 21	180° 28.6 -23° 26.1	195° 28.3 -23° 26.1	210° 28.0 -23° 26.1	225° 27.7 -23° 26.1	240° 27.4 -23° 26.1	255° 27.1 -23° 26.1	90° 23.0 -23° 26.1	105° 22.7 -23° 26.1	120° 22.4 -23° 26.1	135° 22.1 -23° 26.1	150° 21.8 -23° 26.1	165° 21.5 -23° 26.1	-0.3 -0.0
Пт 22	180° 21.2 -23° 26.1	195° 20.9 -23° 26.0	210° 20.6 -23° 26.0	225° 20.2 -23° 26.0	240° 19.9 -23° 26.0	255° 19.6 -23° 26.0	90° 15.6 -23° 25.7	105° 15.3 -23° 25.7	120° 15.0 -23° 25.6	135° 14.7 -23° 25.6	150° 14.3 -23° 25.6	165° 14.0 -23° 25.5	-0.3 +0.0
Сб 23	180° 13.7 -23° 25.5	195° 13.4 -23° 25.5	210° 13.1 -23° 25.4	225° 12.8 -23° 25.4	240° 12.5 -23° 25.4	255° 12.2 -23° 25.3	90° 08.1 -23° 24.8	105° 07.8 -23° 24.7	120° 07.5 -23° 24.7	135° 07.2 -23° 24.6	150° 06.9 -23° 24.6	165° 06.6 -23° 24.5	-0.3 +0.0
Вс 24	180° 06.3 -23° 24.5	195° 06.0 -23° 24.4	210° 05.6 -23° 24.4	225° 05.3 -23° 24.3	240° 05.0 -23° 24.3	255° 04.7 -23° 24.2	90° 00.7 -23° 23.4	105° 00.4 -23° 23.4	120° 00.1 -23° 23.3	134° 59.8 -23° 23.3	149° 59.4 -23° 23.2	164° 59.1 -23° 23.2	-0.3 +0.1
Пн 25	179° 58.8 -23° 23.0	194° 58.5 -23° 22.9	209° 58.2 -23° 22.9	224° 57.9 -23° 22.8	239° 57.6 -23° 22.7	254° 57.3 -23° 22.6	89° 53.3 -23° 21.6	104° 53.0 -23° 21.5	119° 52.6 -23° 21.4	134° 52.3 -23° 21.3	149° 52.0 -23° 21.2	164° 51.7 -23° 21.1	-0.3 +0.1
Вт 26	179° 51.4 -23° 21.1	194° 51.1 -23° 21.0	209° 50.8 -23° 20.9	224° 50.5 -23° 20.8	239° 50.2 -23° 20.7	254° 49.9 -23° 20.6	89° 45.9 -23° 19.3	104° 45.6 -23° 19.2	119° 45.3 -23° 19.1	134° 45.0 -23° 19.0	149° 44.7 -23° 18.9	164° 44.3 -23° 18.7	-0.3 +0.1
Ср 27	179° 44.0 -23° 18.6	194° 43.7 -23° 18.5	209° 43.4 -23° 18.4	224° 43.1 -23° 18.3	239° 42.8 -23° 18.2	254° 42.5 -23° 18.1	89° 38.5 -23° 16.5	104° 38.2 -23° 16.4	119° 37.9 -23° 16.3	134° 37.6 -23° 16.1	149° 37.3 -23° 16.0	164° 37.0 -23° 15.9	-0.3 +0.1
Чт 28	179° 36.7 -23° 15.7	194° 36.4 -23° 15.6	209° 36.1 -23° 15.5	224° 35.8 -23° 15.4	239° 35.5 -23° 15.2	254° 35.2 -23° 15.1	89° 31.2 -23° 13.3	104° 30.9 -23° 13.1	119° 30.6 -23° 13.0	134° 30.3 -23° 12.8	149° 30.0 -23° 12.7	164° 29.7 -23° 12.5	-0.3 +0.1
Пт 29	179° 29.4 -23° 12.4	194° 29.1 -23° 12.2	209° 28.8 -23° 12.1	224° 28.5 -23° 11.9	239° 28.2 -23° 11.8	254° 27.9 -23° 11.6	89° 24.0 -23° 09.6	104° 23.7 -23° 09.4	119° 23.4 -23° 09.2	134° 23.1 -23° 09.1	149° 22.8 -23° 08.9	164° 22.5 -23° 08.7	-0.3 +0.1
Сб 30	179° 22.2 -23° 08.6	194° 21.9 -23° 08.4	209° 21.6 -23° 08.2	224° 21.3 -23° 08.1	239° 21.0 -23° 07.9	254° 20.7 -23° 07.7	89° 16.8 -23° 05.4	104° 16.5 -23° 05.2	119° 16.2 -23° 05.0	134° 15.9 -23° 04.9	149° 15.6 -23° 04.7	164° 15.3 -23° 04.5	-0.3 +0.2
Вс 31	179° 15.1 -23° 04.3	194° 14.8 -23° 04.1	209° 14.5 -23° 03.9	224° 14.2 -23° 03.7	239° 13.9 -23° 03.5	254° 13.6 -23° 03.3	89° 09.7 -23° 00.8	104° 09.4 -23° 00.6	119° 09.1 -23° 00.4	134° 08.8 -23° 00.2	149° 08.6 -23° 00.0	164° 08.3 -22° 59.8	-0.3 +0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Декабрь 2028

Д	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	Δ'/h	R/p
Пт 1	74° 47.7	89° 16.0	103° 44.2	118° 12.4	132° 40.4	147° 08.5	161° 36.4	176° 04.3	190° 32.1	204° 59.9	219° 27.5	+28.0	15.2
	23° 30.4	23° 35.5	23° 40.5	23° 45.3	23° 50.0	23° 54.6	23° 59.1	24° 03.5	24° 07.7	24° 11.8	24° 15.7	+4.5	55.9
○ Сб 2	76° 15.8	90° 42.6	105° 09.3	119° 36.0	134° 02.7	148° 29.3	162° 55.9	177° 22.5	191° 49.0	206° 15.5	220° 41.9	+26.6	15.4
	24° 59.2	25° 01.0	25° 02.7	25° 04.2	25° 05.5	25° 06.8	25° 07.9	25° 08.8	25° 09.6	25° 10.3	25° 10.8	+1.2	56.5
Вс 3	77° 15.7	91° 41.9	106° 08.0	120° 34.1	135° 00.2	149° 26.3	163° 52.5	178° 18.6	192° 44.7	207° 10.8	221° 36.9	+26.1	15.5
	25° 00.9	24° 59.0	24° 57.1	24° 54.9	24° 52.6	24° 50.2	24° 47.6	24° 44.9	24° 42.0	24° 38.9	24° 35.8	-2.5	57.0
Пн 4	78° 10.5	92° 36.9	107° 03.3	121° 29.8	135° 56.3	150° 22.8	164° 49.4	179° 16.0	193° 42.6	208° 09.3	222° 36.0	+26.5	15.7
	23° 30.5	23° 25.0	23° 19.3	23° 13.5	23° 07.6	23° 01.5	22° 55.3	22° 49.0	22° 42.5	22° 35.9	22° 29.1	-6.1	57.5
Вт 5	79° 21.6	93° 49.0	108° 16.5	122° 44.0	137° 11.5	151° 39.1	166° 06.8	180° 34.5	195° 02.3	209° 30.1	223° 57.9	+27.6	15.8
	20° 32.0	20° 23.2	20° 14.2	20° 05.2	19° 56.0	19° 46.7	19° 37.3	19° 27.7	19° 18.1	19° 08.3	18° 58.5	-9.4	58.0
Ср 6	81° 02.2	95° 30.9	109° 59.6	124° 28.4	138° 57.3	153° 26.2	167° 55.1	182° 24.1	196° 53.2	211° 22.3	225° 51.4	+28.9	15.9
	16° 17.5	16° 06.0	15° 54.4	15° 42.6	15° 30.8	15° 18.9	15° 06.9	14° 54.9	14° 42.7	14° 30.5	14° 18.1	-11.9	58.4
Чт 7	83° 13.9	97° 43.7	112° 13.6	126° 43.5	141° 13.4	155° 43.4	170° 13.4	184° 43.4	199° 13.5	213° 43.6	228° 13.7	+30.0	16.0
	11° 04.0	10° 50.5	10° 37.0	10° 23.3	10° 09.7	9° 55.9	9° 42.1	9° 28.3	9° 14.4	9° 00.4	8° 46.4	-13.8	58.7
Пт 8	85° 48.7	100° 19.2	114° 49.7	129° 20.2	143° 50.7	158° 21.2	172° 51.8	187° 22.3	201° 52.9	216° 23.4	230° 54.0	+30.5	16.1
	5° 10.8	4° 56.1	4° 41.4	4° 26.7	4° 11.9	3° 57.2	3° 42.3	3° 27.5	3° 12.7	2° 57.8	2° 42.9	-14.8	59.0
◑ Сб 9	88° 32.2	103° 02.7	117° 33.1	132° 03.6	146° 34.0	161° 04.4	175° 34.8	190° 05.2	204° 35.5	219° 05.9	233° 36.2	+30.4	16.1
	-1° 02.1	-1° 17.1	-1° 32.2	-1° 47.2	-2° 02.2	-2° 17.2	-2° 32.2	-2° 47.2	-3° 02.2	-3° 17.2	-3° 32.2	-15.0	59.2
Вс 10	91° 07.2	105° 36.9	120° 06.7	134° 36.4	149° 06.0	163° 35.6	178° 05.2	192° 34.7	207° 04.1	221° 33.5	236° 02.9	+29.6	16.2
	-7° 14.1	-7° 28.6	-7° 43.1	-7° 57.6	-8° 12.0	-8° 26.4	-8° 40.8	-8° 55.1	-9° 09.4	-9° 23.6	-9° 37.7	-14.4	59.3
Пн 11	93° 16.7	107° 45.1	122° 13.5	136° 41.9	151° 10.1	165° 38.3	180° 06.4	194° 34.5	209° 02.5	223° 30.4	237° 58.3	+28.2	16.2
	-13° 03.3	-13° 16.5	-13° 29.6	-13° 42.6	-13° 55.5	-14° 08.4	-14° 21.2	-14° 33.9	-14° 46.5	-14° 59.0	-15° 11.5	-12.8	59.4
Вт 12	94° 47.8	109° 14.6	123° 41.3	138° 07.9	152° 34.4	167° 00.9	181° 27.3	195° 53.6	210° 19.9	224° 46.1	239° 12.2	+26.4	16.2
	-18° 06.7	-18° 17.6	-18° 28.3	-18° 38.9	-18° 49.4	-18° 59.8	-19° 10.1	-19° 20.3	-19° 30.3	-19° 40.2	-19° 50.0	-10.3	59.2
Ср 13	95° 36.4	110° 01.6	124° 26.7	138° 51.7	153° 16.7	167° 41.6	182° 06.5	196° 31.3	210° 56.1	225° 20.8	239° 45.5	+24.9	16.1
	-22° 01.1	-22° 08.8	-22° 16.3	-22° 23.6	-22° 30.8	-22° 37.9	-22° 44.8	-22° 51.5	-22° 58.1	-23° 04.6	-23° 10.9	-7.0	59.0
Чт 14	95° 51.8	110° 16.0	124° 40.2	139° 04.3	153° 28.5	167° 52.7	182° 16.8	196° 41.0	211° 05.1	225° 29.3	239° 53.4	+24.2	16.0
	-24° 26.6	-24° 30.4	-24° 34.0	-24° 37.4	-24° 40.7	-24° 43.8	-24° 46.8	-24° 49.5	-24° 52.2	-24° 54.6	-24° 56.9	-3.0	58.6
Пт 15	95° 57.0	110° 21.4	124° 45.9	139° 10.4	153° 34.9	167° 59.5	182° 24.1	196° 48.8	211° 13.5	225° 38.2	240° 03.0	+24.6	15.8
	-25° 11.5	-25° 11.2	-25° 10.7	-25° 10.0	-25° 09.2	-25° 08.2	-25° 07.1	-25° 05.8	-25° 04.3	-25° 02.7	-25° 00.9	+1.1	58.0
● Сб 16	96° 22.3	110° 48.1	125° 14.0	139° 40.0	154° 06.1	168° 32.2	182° 58.4	197° 24.7	211° 51.1	226° 17.6	240° 44.2	+26.2	15.6
	-24° 16.0	-24° 11.8	-24° 07.5	-24° 03.1	-23° 58.5	-23° 53.7	-23° 48.9	-23° 43.9	-23° 38.7	-23° 33.4	-23° 28.0	+4.8	57.4
Вс 17	97° 33.3	112° 01.3	126° 29.4	140° 57.6	155° 25.9	169° 54.3	184° 22.8	198° 51.4	213° 20.1	227° 48.9	242° 17.8	+28.5	15.5
	-21° 51.9	-21° 44.5	-21° 37.0	-21° 29.5	-21° 21.8	-21° 14.0	-21° 06.1	-20° 58.1	-20° 50.0	-20° 41.8	-20° 33.5	+7.8	56.7
Пн 18	99° 42.8	114° 13.3	128° 43.8	143° 14.4	157° 45.1	172° 15.9	186° 46.8	201° 17.8	215° 48.9	230° 20.1	244° 51.3	+30.9	15.3
	-18° 17.9	-18° 08.1	-17° 58.3	-17° 48.5	-17° 38.5	-17° 28.5	-17° 18.4	-17° 08.2	-16° 58.0	-16° 47.7	-16° 37.3	+10.1	56.0
Вт 19	102° 50.5	117° 23.1	131° 55.8	146° 28.5	161° 01.4	175° 34.3	190° 07.3	204° 40.3	219° 13.4	233° 46.6	248° 19.9	+32.9	15.1
	-13° 54.3	-13° 43.0	-13° 31.7	-13° 20.3	-13° 08.8	-12° 57.3	-12° 45.8	-12° 34.2	-12° 22.6	-12° 10.9	-11° 59.2	+11.5	55.3
Ср 20	106° 46.6	121° 20.8	135° 55.1	150° 29.5	165° 03.9	179° 38.4	194° 12.9	208° 47.4	223° 22.0	237° 56.7	252° 31.4	+34.5	14.9
	-8° 59.4	-8° 47.2	-8° 34.9	-8° 22.7	-8° 10.4	-7° 58.0	-7° 45.7	-7° 33.3	-7° 21.0	-7° 08.5	-6° 56.1	+12.3	54.8
Чт 21	121° 20.8	135° 55.1	150° 29.5	165° 03.9	179° 38.4	194° 12.9	208° 47.4	223° 22.0	237° 56.7	252° 31.4	267° 06.1	+34.5	14.9
	-8° 47.2	-8° 34.9	-8° 22.7	-8° 10.4	-7° 58.0	-7° 45.7	-7° 33.3	-7° 21.0	-7° 08.5	-6° 56.1	-6° 43.7	+12.4	54.8
Пт 22	125° 51.9	140° 27.2	155° 02.5	169° 37.9	184° 13.2	198° 48.6	213° 24.1	227° 59.5	242° 35.0	257° 10.5	271° 46.0	+35.4	14.8
	-3° 35.4	-3° 22.7	-3° 10.1	-2° 57.5	-2° 44.8	-2° 32.2	-2° 19.5	-2° 06.9	-1° 54.2	-1° 41.5	-1° 28.9	+12.7	54.4
◐ Сб 23	130° 39.9	145° 15.6	159° 51.2	174° 26.9	189° 02.5	203° 38.2	218° 13.8	232° 49.4	247° 25.0	262° 00.6	276° 36.2	+35.6	14.8
	1° 40.7	1° 53.3	2° 05.9	2° 18.4	2° 31.0	2° 43.5	2° 56.1	3° 08.6	3° 21.1	3° 33.6	3° 46.1	+12.5	54.2
Вс 24	135° 28.6	150° 03.9	164° 39.2	179° 14.5	193° 49.7	208° 24.9	223° 00.1	237° 35.2	252° 10.4	266° 45.5	281° 20.5	+35.2	14.8
	6° 51.1	7° 03.2	7° 15.4	7° 27.5	7° 39.6	7° 51.6	8° 03.7	8° 15.7	8° 27.6	8° 39.6	8° 51.5	+12.0	54.2
Пн 25	140° 01.5	154° 35.9	169° 10.2	183° 44.5	198° 18.7	212° 52.9	227° 27.0	242° 01.0	256° 35.0	271° 09.0	285° 42.9	+34.1	14.8
	11° 46.1	11° 57.4	12° 08.7	12° 20.0	12° 31.2	12° 42.4	12° 53.5	13° 04.6	13° 15.6	13° 26.6	13° 37.5	+11.1	54.4
Вт 26	144° 03.7	158° 36.5	173° 09.3	187° 42.0	202° 14.6	216° 47.2	231° 19.7	245° 52.1	260° 24.4	274° 56.7	289° 28.9	+32.5	14.9
	16° 15.1	16° 25.2	16° 35.1	16° 45.1	16° 54.9	17° 04.7	17° 14.4	17° 24.1	17° 33.7	17° 43.2	17° 52.7	+9.8	54.7
Ср 27	147° 22.2	161° 53.1	176° 23.9	190° 54.6	205° 25.2	219° 55.8	234° 26.3	248° 56.7	263° 27.0	277° 57.2	292° 27.3	+30.5	15.1
	20° 05.4	20° 13.6	20° 21.7	20° 29.7	20° 37.7	20° 45.5	20° 53.3	21° 00.9	21° 08.5	21° 16.0	21° 23.3	+7.8	55.2
Чт 28	149° 49.2	164° 18.0	178° 46.7	193° 15.3	207° 43.8	222° 12.3	236° 40.6	251° 08.9	265° 37.2	280° 05.3	294° 33.3	+28.4	15.2
	23° 01.8	23° 07.5	23° 13.1	23° 18.6	23° 24.0	23° 29.2	23° 34.3	23° 39.3	23° 44.2	23° 49.0	23° 53.6	+5.2	55.9
Пт 29	151° 25.4	165° 52.3	180° 19.1	194° 45.9	209° 12.7	223° 39.3	238° 06.0	252° 32.5	266° 59.0	281° 25.5	295° 51.9	+26.6	15.4
	24° 48.0	24° 50.6	24° 53.0	24° 55.3	24° 57.5	24° 59.5	25° 01.3	25° 03.1	25° 04.6	25° 06.1	25° 07.4	+1.9	56.6
Сб 30	152° 22.6	166° 48.3	181° 14.1	195° 39.8	210° 05.5	224° 31.1	238° 56.8	253° 22.4	267° 48.0	282° 13.6	296° 39.2	+25.7	15.6
	25° 09.2	25° 08.1	25° 06.9	25° 05.5	25° 03.9	25° 02.3	25° 00.4	24° 58.4	24° 56.3	24° 54.0	24° 51.5	-1.8	57.3
○ Вс 31	153° 02.4	167° 28.0	181° 53.6	196° 19.3	210° 44.9	225° 10.6	239° 36.2	254° 01.9	268° 27.6	282° 53.4	297° 19.2	+25.7	15.8
	23° 56.3	23° 51.4	23° 46.4	23° 41.2	23° 35.8	23° 30.3	23° 24.7	23° 18.9	23° 12.9	23° 06.8	23° 00.6	-5.6	58.0

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 2 01h40 — Последняя четв.: 9 05h38 — Новолуние: 16 02h06 — Первая четв.: 23 21h44 — Полнолуние: 31 16h48

СОЛНЦЕ

Январь 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	179° 08.0 -22° 59.5	194° 07.7 -22° 59.3	209° 07.4 -22° 59.1	224° 07.1 -22° 58.9	239° 06.8 -22° 58.7	254° 06.5 -22° 58.5	89° 02.7 -22° 55.7	104° 02.4 -22° 55.5	119° 02.1 -22° 55.2	134° 01.8 -22° 55.0	149° 01.5 -22° 54.8	164° 01.3 -22° 54.6	-0.3 +0.2
Вт 2	179° 01.0 -22° 54.4	194° 00.7 -22° 54.1	209° 00.4 -22° 53.9	224° 00.1 -22° 53.7	238° 59.8 -22° 53.4	253° 59.5 -22° 53.2	88° 55.8 -22° 50.2	103° 55.5 -22° 49.9	118° 55.2 -22° 49.7	133° 54.9 -22° 49.4	148° 54.6 -22° 49.2	163° 54.3 -22° 48.9	-0.3 +0.2
Ср 3	178° 54.0 -22° 48.7	193° 53.8 -22° 48.5	208° 53.5 -22° 48.2	223° 53.2 -22° 48.0	238° 52.9 -22° 47.7	253° 52.6 -22° 47.5	88° 48.9 -22° 44.2	103° 48.6 -22° 43.9	118° 48.3 -22° 43.6	133° 48.1 -22° 43.4	148° 47.8 -22° 43.1	163° 47.5 -22° 42.9	-0.3 +0.2
Чт 4	178° 47.2 -22° 42.6	193° 46.9 -22° 42.3	208° 46.7 -22° 42.1	223° 46.4 -22° 41.8	238° 46.1 -22° 41.5	253° 45.8 -22° 41.3	88° 42.2 -22° 37.7	103° 41.9 -22° 37.4	118° 41.6 -22° 37.2	133° 41.3 -22° 36.9	148° 41.0 -22° 36.6	163° 40.8 -22° 36.3	-0.3 +0.3
Пт 5	178° 40.5 -22° 36.0	193° 40.2 -22° 35.7	208° 39.9 -22° 35.5	223° 39.7 -22° 35.2	238° 39.4 -22° 34.9	253° 39.1 -22° 34.6	88° 35.5 -22° 30.8	103° 35.2 -22° 30.5	118° 35.0 -22° 30.2	133° 34.7 -22° 29.9	148° 34.4 -22° 29.6	163° 34.1 -22° 29.3	-0.3 +0.3
Сб 6	178° 33.9 -22° 29.0	193° 33.6 -22° 28.7	208° 33.3 -22° 28.4	223° 33.0 -22° 28.1	238° 32.8 -22° 27.8	253° 32.5 -22° 27.5	88° 29.0 -22° 23.5	103° 28.7 -22° 23.2	118° 28.4 -22° 22.8	133° 28.2 -22° 22.5	148° 27.9 -22° 22.2	163° 27.6 -22° 21.9	-0.3 +0.3
Вс 7	178° 27.4 -22° 21.6	193° 27.1 -22° 21.3	208° 26.8 -22° 20.9	223° 26.5 -22° 20.6	238° 26.3 -22° 20.3	253° 26.0 -22° 20.0	88° 22.5 -22° 15.7	103° 22.3 -22° 15.4	118° 22.0 -22° 15.0	133° 21.7 -22° 14.7	148° 21.5 -22° 14.4	163° 21.2 -22° 14.0	-0.3 +0.3
Пн 8	178° 21.0 -22° 13.7	193° 20.7 -22° 13.3	208° 20.4 -22° 13.0	223° 20.2 -22° 12.7	238° 19.9 -22° 12.3	253° 19.6 -22° 12.0	88° 16.2 -22° 07.5	103° 16.0 -22° 07.1	118° 15.7 -22° 06.8	133° 15.5 -22° 06.4	148° 15.2 -22° 06.1	163° 14.9 -22° 05.7	-0.3 +0.3
Вт 9	178° 14.7 -22° 05.3	193° 14.4 -22° 05.0	208° 14.2 -22° 04.6	223° 13.9 -22° 04.3	238° 13.7 -22° 03.9	253° 13.4 -22° 03.6	88° 10.1 -21° 58.8	103° 09.8 -21° 58.4	118° 09.6 -21° 58.1	133° 09.3 -21° 57.7	148° 09.0 -21° 57.3	163° 08.8 -21° 57.0	-0.3 +0.4
Ср 10	178° 08.5 -21° 56.6	193° 08.3 -21° 56.2	208° 08.0 -21° 55.8	223° 07.8 -21° 55.5	238° 07.5 -21° 55.1	253° 07.3 -21° 54.7	88° 04.0 -21° 49.7	103° 03.8 -21° 49.3	118° 03.5 -21° 48.9	133° 03.3 -21° 48.6	148° 03.0 -21° 48.2	163° 02.8 -21° 47.8	-0.3 +0.4
Чт 11	178° 02.5 -21° 47.4	193° 02.3 -21° 47.0	208° 02.0 -21° 46.6	223° 01.8 -21° 46.2	238° 01.6 -21° 45.8	253° 01.3 -21° 45.4	87° 58.1 -21° 40.2	102° 57.9 -21° 39.8	117° 57.6 -21° 39.4	132° 57.4 -21° 39.0	147° 57.2 -21° 38.6	162° 56.9 -21° 38.2	-0.2 +0.4
Пт 12	177° 56.7 -21° 37.8	192° 56.4 -21° 37.4	207° 56.2 -21° 36.9	222° 56.0 -21° 36.5	237° 55.7 -21° 36.1	252° 55.5 -21° 35.7	87° 52.4 -21° 30.3	102° 52.1 -21° 29.9	117° 51.9 -21° 29.4	132° 51.7 -21° 29.0	147° 51.4 -21° 28.6	162° 51.2 -21° 28.2	-0.2 +0.4
Сб 13	177° 51.0 -21° 27.7	192° 50.7 -21° 27.3	207° 50.5 -21° 26.9	222° 50.3 -21° 26.4	237° 50.0 -21° 26.0	252° 49.8 -21° 25.6	87° 46.8 -21° 19.9	102° 46.6 -21° 19.5	117° 46.3 -21° 19.0	132° 46.1 -21° 18.6	147° 45.9 -21° 18.2	162° 45.6 -21° 17.7	-0.2 +0.4
Вс 14	177° 45.4 -21° 17.3	192° 45.2 -21° 16.8	207° 45.0 -21° 16.4	222° 44.7 -21° 15.9	237° 44.5 -21° 15.5	252° 44.3 -21° 15.0	87° 41.4 -21° 09.2	102° 41.1 -21° 08.7	117° 40.9 -21° 08.3	132° 40.7 -21° 07.8	147° 40.5 -21° 07.3	162° 40.2 -21° 06.9	-0.2 +0.4
Пн 15	177° 40.0 -21° 06.4	192° 39.8 -21° 06.0	207° 39.6 -21° 05.5	222° 39.4 -21° 05.0	237° 39.1 -21° 04.6	252° 38.9 -21° 04.1	87° 36.1 -20° 58.0	102° 35.9 -20° 57.5	117° 35.7 -20° 57.1	132° 35.4 -20° 56.6	147° 35.2 -20° 56.1	162° 35.0 -20° 55.6	-0.2 +0.5
Вт 16	177° 34.8 -20° 55.1	192° 34.6 -20° 54.7	207° 34.4 -20° 54.2	222° 34.2 -20° 53.7	237° 33.9 -20° 53.2	252° 33.7 -20° 52.7	87° 31.0 -20° 46.4	102° 30.8 -20° 45.9	117° 30.6 -20° 45.5	132° 30.4 -20° 45.0	147° 30.2 -20° 44.5	162° 30.0 -20° 44.0	-0.2 +0.5
Ср 17	177° 29.7 -20° 43.5	192° 29.5 -20° 43.0	207° 29.3 -20° 42.5	222° 29.1 -20° 42.0	237° 28.9 -20° 41.5	252° 28.7 -20° 41.0	87° 26.1 -20° 34.5	102° 25.9 -20° 34.0	117° 25.7 -20° 33.5	132° 25.5 -20° 33.0	147° 25.3 -20° 32.4	162° 25.1 -20° 31.9	-0.2 +0.5
Чт 18	177° 24.9 -20° 31.4	192° 24.7 -20° 30.9	207° 24.5 -20° 30.4	222° 24.3 -20° 29.9	237° 24.1 -20° 29.4	252° 23.9 -20° 28.9	87° 21.3 -20° 22.1	102° 21.1 -20° 21.6	117° 21.0 -20° 21.1	132° 20.8 -20° 20.6	147° 20.6 -20° 20.0	162° 20.4 -20° 19.5	-0.2 +0.5
Пт 19	177° 20.2 -20° 19.0	192° 20.0 -20° 18.4	207° 19.8 -20° 17.9	222° 19.6 -20° 17.4	237° 19.4 -20° 16.9	252° 19.2 -20° 16.3	87° 16.8 -20° 09.4	102° 16.6 -20° 08.9	117° 16.4 -20° 08.3	132° 16.2 -20° 07.8	147° 16.1 -20° 07.2	162° 15.9 -20° 06.7	-0.2 +0.5
Сб 20	177° 15.7 -20° 06.1	192° 15.5 -20° 05.6	207° 15.3 -20° 05.1	222° 15.1 -20° 04.5	237° 15.0 -20° 04.0	252° 14.8 -20° 03.4	87° 12.4 -19° 56.3	102° 12.3 -19° 55.7	117° 12.1 -19° 55.2	132° 11.9 -19° 54.6	147° 11.7 -19° 54.1	162° 11.5 -19° 53.5	-0.2 +0.5
Вс 21	177° 11.4 -19° 52.9	192° 11.2 -19° 52.4	207° 11.0 -19° 51.8	222° 10.8 -19° 51.3	237° 10.7 -19° 50.7	252° 10.5 -19° 50.1	87° 08.3 -19° 42.8	102° 08.1 -19° 42.2	117° 07.9 -19° 41.7	132° 07.8 -19° 41.1	147° 07.6 -19° 40.5	162° 07.4 -19° 39.9	-0.2 +0.6
Пн 22	177° 07.3 -19° 39.4	192° 07.1 -19° 38.8	207° 06.9 -19° 38.2	222° 06.8 -19° 37.6	237° 06.6 -19° 37.1	252° 06.4 -19° 36.5	87° 04.3 -19° 29.0	102° 04.1 -19° 28.4	117° 04.0 -19° 27.8	132° 03.8 -19° 27.2	147° 03.7 -19° 26.6	162° 03.5 -19° 26.0	-0.2 +0.6
Вт 23	177° 03.3 -19° 25.4	192° 03.2 -19° 24.8	207° 03.0 -19° 24.3	222° 02.9 -19° 23.7	237° 02.7 -19° 23.1	252° 02.5 -19° 22.5	87° 00.5 -19° 14.7	102° 00.4 -19° 14.1	117° 00.2 -19° 13.5	132° 00.1 -19° 12.9	146° 59.9 -19° 12.3	161° 59.8 -19° 11.7	-0.2 +0.6
Ср 24	176° 59.6 -19° 11.1	191° 59.5 -19° 10.5	206° 59.3 -19° 09.9	221° 59.2 -19° 09.3	236° 59.0 -19° 08.7	251° 58.9 -19° 08.1	86° 57.0 -19° 00.2	101° 56.8 -18° 59.6	116° 56.7 -18° 59.0	131° 56.5 -18° 58.3	146° 56.4 -18° 57.7	161° 56.2 -18° 57.1	-0.2 +0.6
Чт 25	176° 56.1 -18° 56.5	191° 56.0 -18° 55.9	206° 55.8 -18° 55.3	221° 55.7 -18° 54.6	236° 55.5 -18° 54.0	251° 55.4 -18° 53.4	86° 53.6 -18° 45.3	101° 53.5 -18° 44.7	116° 53.3 -18° 44.0	131° 53.2 -18° 43.4	146° 53.0 -18° 42.8	161° 52.9 -18° 42.1	-0.1 +0.6
Пт 26	176° 52.8 -18° 41.5	191° 52.6 -18° 40.9	206° 52.5 -18° 40.2	221° 52.4 -18° 39.6	236° 52.2 -18° 39.0	251° 52.1 -18° 38.3	86° 50.4 -18° 30.0	101° 50.3 -18° 29.4	116° 50.2 -18° 28.7	131° 50.0 -18° 28.1	146° 49.9 -18° 27.5	161° 49.8 -18° 26.8	-0.1 +0.6
Сб 27	176° 49.7 -18° 26.2	191° 49.5 -18° 25.5	206° 49.4 -18° 24.9	221° 49.3 -18° 24.2	236° 49.2 -18° 23.6	251° 49.0 -18° 22.9	86° 47.5 -18° 14.5	101° 47.3 -18° 13.8	116° 47.2 -18° 13.1	131° 47.1 -18° 12.5	146° 47.0 -18° 11.8	161° 46.9 -18° 11.2	-0.1 +0.6
Вс 28	176° 46.8 -18° 10.5	191° 46.6 -18° 09.8	206° 46.5 -18° 09.2	221° 46.4 -18° 08.5	236° 46.3 -18° 07.9	251° 46.2 -18° 07.2	86° 44.7 -17° 58.5	101° 44.6 -17° 57.9	116° 44.5 -17° 57.2	131° 44.4 -17° 56.5	146° 44.3 -17° 55.9	161° 44.2 -17° 55.2	-0.1 +0.7
Пн 29	176° 44.1 -17° 54.5	191° 43.9 -17° 53.8	206° 43.8 -17° 53.2	221° 43.7 -17° 52.5	236° 43.6 -17° 51.8	251° 43.5 -17° 51.1	86° 42.2 -17° 42.3	101° 42.1 -17° 41.6	116° 42.0 -17° 41.0	131° 41.9 -17° 40.3	146° 41.8 -17° 39.6	161° 41.7 -17° 38.9	-0.1 +0.7
Вт 30	176° 41.6 -17° 38.2	191° 41.5 -17° 37.5	206° 41.4 -17° 36.8	221° 41.3 -17° 36.2	236° 41.2 -17° 35.5	251° 41.1 -17° 34.8	86° 39.8 -17° 25.8	101° 39.7 -17° 25.1	116° 39.6 -17° 24.4	131° 39.5 -17° 23.7	146° 39.4 -17° 23.0	161° 39.4 -17° 22.3	-0.1 +0.7
Ср 31	176° 39.3 -17° 21.6	191° 39.2 -17° 20.9	206° 39.1 -17° 20.2	221° 39.0 -17° 19.5	236° 38.9 -17° 18.8	251° 38.8 -17° 18.1	86° 37.7 -17° 08.9	101° 37.6 -17° 08.2	116° 37.5 -17° 07.5	131° 37.4 -17° 06.8	146° 37.3 -17° 06.1	161° 37.3 -17° 05.4	-0.1 +0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2029

Д	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	Δ'/h	R/p
Пн 1	67° 12.4	81° 38.5	96° 04.7	110° 30.8	124° 57.0	139° 23.3	153° 49.6	168° 15.9	182° 42.3	197° 08.7	211° 35.2	+26.3	15.9
	21° 57.9	21° 50.3	21° 42.5	21° 34.5	21° 26.4	21° 18.2	21° 09.9	21° 01.4	20° 52.8	20° 44.0	20° 35.1	-8.3	58.4
Вт 2	68° 18.1	82° 45.4	97° 12.7	111° 40.1	126° 07.6	140° 35.1	155° 02.6	169° 30.2	183° 57.9	198° 25.6	212° 53.3	+27.5	16.1
	18° 06.9	17° 56.1	17° 45.2	17° 34.1	17° 23.0	17° 11.7	17° 00.3	16° 48.9	16° 37.3	16° 25.6	16° 13.8	-11.3	58.9
Ср 3	69° 56.3	84° 24.9	98° 53.6	113° 22.3	127° 51.0	142° 19.9	156° 48.7	171° 17.6	185° 46.6	200° 15.6	214° 44.6	+28.8	16.1
	13° 06.1	12° 52.9	12° 39.7	12° 26.3	12° 12.9	11° 59.4	11° 45.9	11° 32.3	11° 18.6	11° 04.8	10° 51.0	-13.5	59.2
Чт 4	72° 05.3	86° 35.0	101° 04.7	115° 34.4	130° 04.2	144° 34.0	159° 03.8	173° 33.7	188° 03.6	202° 33.5	217° 03.4	+29.8	16.2
	7° 17.0	7° 02.4	6° 47.7	6° 33.0	6° 18.2	6° 03.4	5° 48.6	5° 33.7	5° 18.9	5° 03.9	4° 49.0	-14.8	59.4
Пт 5	74° 34.7	89° 04.9	103° 35.1	118° 05.3	132° 35.6	147° 05.8	161° 36.0	176° 06.2	190° 36.4	205° 06.7	219° 36.9	+30.2	16.2
	1° 02.6	0° 47.4	0° 32.2	0° 17.1	0° 01.9	-0° 13.3	-0° 28.5	-0° 43.7	-0° 58.8	-1° 14.0	-1° 29.1	-15.2	59.4
Сб 6	77° 09.3	91° 39.3	106° 09.4	120° 39.4	135° 09.4	149° 39.3	164° 09.3	178° 39.2	193° 09.1	207° 38.9	222° 08.8	+30.0	16.2
	-5° 14.4	-5° 29.2	-5° 44.0	-5° 58.8	-6° 13.5	-6° 28.2	-6° 42.8	-6° 57.4	-7° 12.0	-7° 26.5	-7° 41.0	-14.7	59.3
◑ Вс 7	79° 32.4	94° 01.6	108° 30.8	123° 00.0	137° 29.2	151° 58.2	166° 27.3	180° 56.3	195° 25.2	209° 54.1	224° 23.0	+29.1	16.1
	-11° 12.1	-11° 25.7	-11° 39.2	-11° 52.7	-12° 06.1	-12° 19.4	-12° 32.7	-12° 45.9	-12° 59.0	-13° 12.0	-13° 25.0	-13.3	59.1
Пн 8	81° 29.5	95° 57.5	110° 25.4	124° 53.3	139° 21.1	153° 48.9	168° 16.6	182° 44.2	197° 11.8	211° 39.4	226° 06.8	+27.7	16.0
	-16° 29.2	-16° 40.7	-16° 52.2	-17° 03.5	-17° 14.7	-17° 25.9	-17° 36.9	-17° 47.9	-17° 58.7	-18° 09.4	-18° 20.0	-11.1	58.8
Вт 9	82° 52.0	97° 18.6	111° 45.1	126° 11.5	140° 37.9	155° 04.3	169° 30.5	183° 56.8	198° 23.0	212° 49.1	227° 15.2	+26.3	15.9
	-20° 45.2	-20° 53.9	-21° 02.5	-21° 10.9	-21° 19.2	-21° 27.4	-21° 35.4	-21° 43.4	-21° 51.1	-21° 58.8	-22° 06.3	-8.1	58.5
Ср 10	83° 41.2	98° 06.7	112° 32.1	126° 57.4	141° 22.8	155° 48.1	170° 13.4	184° 38.6	199° 03.8	213° 29.1	227° 54.3	+25.3	15.8
	-23° 41.9	-23° 47.1	-23° 52.2	-23° 57.1	-24° 01.9	-24° 06.5	-24° 10.9	-24° 15.2	-24° 19.4	-24° 23.4	-24° 27.2	-4.5	58.1
Чт 11	84° 10.8	98° 35.9	113° 00.9	127° 26.0	141° 51.2	156° 16.3	170° 41.4	185° 06.6	199° 31.7	213° 56.9	228° 22.1	+25.1	15.7
	-25° 06.2	-25° 07.5	-25° 08.7	-25° 09.7	-25° 10.6	-25° 11.3	-25° 11.9	-25° 12.3	-25° 12.6	-25° 12.7	-25° 12.6	-0.6	57.7
Пт 12	84° 44.0	99° 09.8	113° 35.6	128° 01.5	142° 27.4	156° 53.4	171° 19.4	185° 45.5	200° 11.6	214° 37.8	229° 04.1	+26.0	15.6
	-24° 53.3	-24° 50.8	-24° 48.1	-24° 45.3	-24° 42.4	-24° 39.3	-24° 36.1	-24° 32.7	-24° 29.2	-24° 25.6	-24° 21.8	+3.2	57.2
Сб 13	85° 46.0	100° 13.4	114° 40.8	129° 08.3	143° 35.9	158° 03.6	172° 31.4	186° 59.2	201° 27.2	215° 55.2	230° 23.3	+27.7	15.5
	-23° 08.5	-23° 02.6	-22° 56.5	-22° 50.4	-22° 44.1	-22° 37.7	-22° 31.1	-22° 24.5	-22° 17.7	-22° 10.8	-22° 03.8	+6.5	56.7
● Вс 14	87° 34.8	102° 04.2	116° 33.8	131° 03.4	145° 33.1	160° 02.9	174° 32.8	189° 02.8	203° 32.9	218° 03.0	232° 33.3	+29.8	15.3
	-20° 05.8	-19° 57.1	-19° 48.3	-19° 39.4	-19° 30.5	-19° 21.4	-19° 12.3	-19° 03.0	-18° 53.7	-18° 44.3	-18° 34.8	+9.1	56.1
Пн 15	90° 17.0	104° 48.5	119° 20.2	133° 51.9	148° 23.7	162° 55.6	177° 27.6	191° 59.6	206° 31.7	221° 03.9	235° 36.2	+31.9	15.2
	-16° 03.2	-15° 52.6	-15° 41.8	-15° 31.0	-15° 20.2	-15° 09.3	-14° 58.3	-14° 47.2	-14° 36.1	-14° 25.0	-14° 13.8	+11.0	55.6
Вт 16	93° 48.7	108° 22.1	122° 55.6	137° 29.1	152° 02.6	166° 36.2	181° 09.9	195° 43.6	210° 17.4	224° 51.3	239° 25.2	+33.6	15.0
	-11° 19.8	-11° 07.9	-10° 55.9	-10° 43.9	-10° 31.8	-10° 19.8	-10° 07.6	-9° 55.5	-9° 43.3	-9° 31.1	-9° 18.9	+12.1	55.1
Ср 17	97° 59.8	112° 34.5	127° 09.2	141° 43.9	156° 18.7	170° 53.6	185° 28.4	200° 03.3	214° 38.3	229° 13.2	243° 48.2	+34.8	14.9
	-6° 12.3	-5° 59.7	-5° 47.1	-5° 34.5	-5° 21.9	-5° 09.2	-4° 56.6	-4° 43.9	-4° 31.3	-4° 18.6	-4° 05.9	+12.6	54.6
Чт 18	102° 36.4	117° 11.8	131° 47.2	146° 22.7	160° 58.1	175° 33.5	190° 09.0	204° 44.5	219° 19.9	233° 55.4	248° 30.9	+35.5	14.8
	-0° 55.0	-0° 42.2	-0° 29.5	-0° 16.8	-0° 04.1	0° 08.6	0° 21.3	0° 34.0	0° 46.7	0° 59.4	1° 12.1	+12.7	54.3
Пт 19	107° 23.7	121° 59.2	136° 34.7	151° 10.2	165° 45.6	180° 21.1	194° 56.5	209° 32.0	224° 07.4	238° 42.8	253° 18.2	+35.5	14.8
	4° 20.6	4° 33.0	4° 45.4	4° 57.8	5° 10.2	5° 22.5	5° 34.8	5° 47.1	5° 59.4	6° 11.7	6° 23.9	+12.3	54.1
Сб 20	121° 59.2	136° 34.7	151° 10.2	165° 45.6	180° 21.1	194° 56.5	209° 32.0	224° 07.4	238° 42.8	253° 18.2	267° 53.5	+35.4	14.8
	4° 33.0	4° 45.4	4° 57.8	5° 10.2	5° 22.5	5° 34.8	5° 47.1	5° 59.4	6° 11.7	6° 23.9	6° 36.1	+12.3	54.1
Вс 21	126° 41.4	141° 16.4	155° 51.3	170° 26.2	185° 01.1	199° 35.9	214° 10.7	228° 45.4	243° 20.2	257° 54.8	272° 29.5	+34.8	14.8
	9° 35.6	9° 47.4	9° 59.0	10° 10.7	10° 22.2	10° 33.8	10° 45.3	10° 56.8	11° 08.2	11° 19.6	11° 31.0	+11.5	54.1
◐ Пн 22	131° 03.6	145° 37.5	160° 11.3	174° 45.0	189° 18.7	203° 52.4	218° 26.0	232° 59.5	247° 33.0	262° 06.4	276° 39.7	+33.6	14.8
	14° 15.8	14° 26.3	14° 36.9	14° 47.4	14° 57.8	15° 08.1	15° 18.5	15° 28.7	15° 38.9	15° 49.0	15° 59.1	+10.3	54.3
Вт 23	134° 52.2	149° 24.4	163° 56.6	178° 28.8	193° 00.8	207° 32.8	222° 04.7	236° 36.5	251° 08.3	265° 40.0	280° 11.6	+31.9	14.9
	18° 22.5	18° 31.5	18° 40.4	18° 49.2	18° 58.0	19° 06.7	19° 15.3	19° 23.9	19° 32.3	19° 40.7	19° 49.0	+8.7	54.7
Ср 24	137° 56.2	152° 26.5	166° 56.8	181° 27.0	195° 57.1	210° 27.1	224° 57.0	239° 26.8	253° 56.6	268° 26.3	282° 55.9	+30.0	15.1
	21° 43.1	21° 50.0	21° 56.8	22° 03.5	22° 10.0	22° 16.5	22° 22.9	22° 29.2	22° 35.3	22° 41.4	22° 47.4	+6.4	55.2
Чт 25	140° 10.3	154° 38.6	169° 06.9	183° 35.1	198° 03.2	212° 31.2	226° 59.2	241° 27.1	255° 54.9	270° 22.6	284° 50.3	+28.0	15.3
	24° 03.4	24° 07.6	24° 11.6	24° 15.5	24° 19.3	24° 22.9	24° 26.4	24° 29.8	24° 33.1	24° 36.2	24° 39.2	+3.6	55.9
Пт 26	141° 37.5	156° 04.2	170° 30.8	184° 57.3	199° 23.8	213° 50.3	228° 16.7	242° 43.1	257° 09.4	271° 35.6	286° 01.9	+26.4	15.5
	25° 08.3	25° 09.1	25° 09.8	25° 10.4	25° 10.8	25° 11.0	25° 11.1	25° 11.1	25° 10.9	25° 10.6	25° 10.1	+0.2	56.8
Сб 27	142° 31.0	156° 56.7	171° 22.4	185° 48.1	200° 13.7	214° 39.4	229° 05.0	243° 30.6	257° 56.3	272° 21.9	286° 47.5	+25.6	15.7
	24° 45.1	24° 42.2	24° 39.1	24° 35.9	24° 32.6	24° 29.1	24° 25.5	24° 21.7	24° 17.7	24° 13.6	24° 09.3	-3.6	57.6
Вс 28	143° 11.5	157° 37.1	172° 02.8	186° 28.5	200° 54.3	215° 20.0	229° 45.7	244° 11.5	258° 37.3	273° 03.2	287° 29.0	+25.7	16.0
	22° 47.1	22° 40.4	22° 33.6	22° 26.6	22° 19.5	22° 12.2	22° 04.8	21° 57.2	21° 49.5	21° 41.7	21° 33.7	-7.3	58.5
Пн 29	144° 00.4	158° 26.8	172° 53.2	187° 19.6	201° 46.1	216° 12.6	230° 39.2	245° 05.8	259° 32.4	273° 59.1	288° 25.9	+26.5	16.2
	19° 17.2	19° 07.0	18° 56.7	18° 46.3	18° 35.7	18° 25.1	18° 14.3	18° 03.4	17° 52.3	17° 41.2	17° 29.9	-10.7	59.3
○ Вт 30	145° 12.1	159° 39.5	174° 07.0	188° 34.5	203° 02.1	217° 29.7	231° 57.4	246° 25.0	260° 52.8	275° 20.6	289° 48.4	+27.6	16.3
	14° 27.7	14° 14.8	14° 01.7	13° 48.6	13° 35.4	13° 22.0	13° 08.6	12° 55.1	12° 41.5	12° 27.9	12° 14.1	-13.4	59.9
Ср 31	146° 50.4	161° 18.8	175° 47.3	190° 15.8	204° 44.3	219° 12.9	233° 41.5	248° 10.1	262° 38.7	277° 07.4	291° 36.1	+28.6	16.4
	8° 39.3	8° 24.5	8° 09.6	7° 54.7	7° 39.7	7° 24.7	7° 09.6	6° 54.5	6° 39.4	6° 24.2	6° 08.9	-15.0	60.2

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 7 13h26 — Новолуние: 14 17h24 — Первая четв.: 22 19h23 — Полнолуние: 30 06h03

СОЛНЦЕ

Февраль 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	176° 37.2 -17° 04.7	191° 37.1 -17° 04.0	206° 37.0 -17° 03.2	221° 36.9 -17° 02.5	236° 36.8 -17° 01.8	251° 36.8 -17° 01.1	86° 35.7 -16° 51.8	101° 35.7 -16° 51.0	116° 35.6 -16° 50.3	131° 35.5 -16° 49.6	146° 35.4 -16° 48.9	161° 35.4 -16° 48.2	-0.1 +0.7
Пт 2	176° 35.3 -16° 47.4	191° 35.2 -16° 46.7	206° 35.1 -16° 46.0	221° 35.1 -16° 45.3	236° 35.0 -16° 44.5	251° 34.9 -16° 43.8	86° 34.0 -16° 34.3	101° 33.9 -16° 33.6	116° 33.9 -16° 32.9	131° 33.8 -16° 32.1	146° 33.7 -16° 31.4	161° 33.7 -16° 30.6	-0.1 +0.7
Сб 3	176° 33.6 -16° 29.9	191° 33.5 -16° 29.2	206° 33.5 -16° 28.4	221° 33.4 -16° 27.7	236° 33.3 -16° 27.0	251° 33.3 -16° 26.2	86° 32.5 -16° 16.6	101° 32.4 -16° 15.8	116° 32.3 -16° 15.1	131° 32.3 -16° 14.3	146° 32.2 -16° 13.6	161° 32.2 -16° 12.8	-0.1 +0.7
Вс 4	176° 32.1 -16° 12.1	191° 32.0 -16° 11.3	206° 32.0 -16° 10.6	221° 31.9 -16° 09.8	236° 31.9 -16° 09.1	251° 31.8 -16° 08.3	86° 31.1 -15° 58.5	101° 31.1 -15° 57.8	116° 31.0 -15° 57.0	131° 31.0 -15° 56.3	146° 30.9 -15° 55.5	161° 30.9 -15° 54.8	-0.1 +0.7
Пн 5	176° 30.8 -15° 54.0	191° 30.8 -15° 53.2	206° 30.7 -15° 52.5	221° 30.7 -15° 51.7	236° 30.6 -15° 51.0	251° 30.6 -15° 50.2	86° 30.0 -15° 40.2	101° 29.9 -15° 39.5	116° 29.9 -15° 38.7	131° 29.8 -15° 37.9	146° 29.8 -15° 37.2	161° 29.8 -15° 36.4	-0.0 +0.8
Вт 6	176° 29.7 -15° 35.6	191° 29.7 -15° 34.9	206° 29.6 -15° 34.1	221° 29.6 -15° 33.3	236° 29.6 -15° 32.5	251° 29.5 -15° 31.8	86° 29.0 -15° 21.7	101° 29.0 -15° 20.9	116° 29.0 -15° 20.1	131° 28.9 -15° 19.3	146° 28.9 -15° 18.6	161° 28.9 -15° 17.8	-0.0 +0.8
Ср 7	176° 28.8 -15° 17.0	191° 28.8 -15° 16.2	206° 28.8 -15° 15.4	221° 28.7 -15° 14.6	236° 28.7 -15° 13.9	251° 28.7 -15° 13.1	86° 28.3 -15° 02.8	101° 28.2 -15° 02.0	116° 28.2 -15° 01.3	131° 28.2 -15° 00.5	146° 28.2 -14° 59.7	161° 28.1 -14° 58.9	-0.0 +0.8
Чт 8	176° 28.1 -14° 58.1	191° 28.1 -14° 57.3	206° 28.1 -14° 56.5	221° 28.0 -14° 55.7	236° 28.0 -14° 54.9	251° 28.0 -14° 54.1	86° 27.7 -14° 43.7	101° 27.7 -14° 42.9	116° 27.7 -14° 42.1	131° 27.7 -14° 41.3	146° 27.6 -14° 40.5	161° 27.6 -14° 39.7	-0.0 +0.8
Пт 9	176° 27.6 -14° 38.9	191° 27.6 -14° 38.1	206° 27.6 -14° 37.3	221° 27.6 -14° 36.5	236° 27.5 -14° 35.7	251° 27.5 -14° 34.9	86° 27.3 -14° 24.4	101° 27.3 -14° 23.6	116° 27.3 -14° 22.8	131° 27.3 -14° 22.0	146° 27.3 -14° 21.2	161° 27.3 -14° 20.3	-0.0 +0.8
Сб 10	176° 27.3 -14° 19.5	191° 27.3 -14° 18.7	206° 27.3 -14° 17.9	221° 27.3 -14° 17.1	236° 27.2 -14° 16.3	251° 27.2 -14° 15.5	86° 27.2 -14° 04.8	101° 27.2 -14° 04.0	116° 27.2 -14° 03.2	131° 27.2 -14° 02.4	146° 27.2 -14° 01.5	161° 27.2 -14° 00.7	-0.0 +0.8
Вс 11	176° 27.2 -13° 59.9	191° 27.2 -13° 59.1	206° 27.2 -13° 58.2	221° 27.1 -13° 57.4	236° 27.1 -13° 56.6	251° 27.1 -13° 55.8	86° 27.2 -13° 45.0	101° 27.2 -13° 44.2	116° 27.2 -13° 43.3	131° 27.2 -13° 42.5	146° 27.2 -13° 41.7	161° 27.2 -13° 40.8	-0.0 +0.8
Пн 12	176° 27.2 -13° 40.0	191° 27.2 -13° 39.2	206° 27.2 -13° 38.3	221° 27.2 -13° 37.5	236° 27.2 -13° 36.7	251° 27.2 -13° 35.8	86° 27.4 -13° 25.0	101° 27.4 -13° 24.1	116° 27.4 -13° 23.3	131° 27.4 -13° 22.4	146° 27.4 -13° 21.6	161° 27.4 -13° 20.8	+0.0 +0.8
Вт 13	176° 27.5 -13° 19.9	191° 27.5 -13° 19.1	206° 27.5 -13° 18.2	221° 27.5 -13° 17.4	236° 27.5 -13° 16.5	251° 27.5 -13° 15.7	86° 27.8 -13° 04.7	101° 27.8 -13° 03.8	116° 27.8 -13° 03.0	131° 27.8 -13° 02.1	146° 27.8 -13° 01.3	161° 27.9 -13° 00.4	+0.0 +0.8
Ср 14	176° 27.9 -12° 59.6	191° 27.9 -12° 58.7	206° 27.9 -12° 57.9	221° 28.0 -12° 57.0	236° 28.0 -12° 56.2	251° 28.0 -12° 55.3	86° 28.3 -12° 44.2	101° 28.4 -12° 43.4	116° 28.4 -12° 42.5	131° 28.4 -12° 41.6	146° 28.4 -12° 40.8	161° 28.5 -12° 39.9	+0.0 +0.9
Чт 15	176° 28.5 -12° 39.1	191° 28.5 -12° 38.2	206° 28.6 -12° 37.3	221° 28.6 -12° 36.5	236° 28.6 -12° 35.6	251° 28.7 -12° 34.8	86° 29.1 -12° 23.5	101° 29.1 -12° 22.7	116° 29.2 -12° 21.8	131° 29.2 -12° 20.9	146° 29.2 -12° 20.1	161° 29.3 -12° 19.2	+0.0 +0.9
Пт 16	176° 29.3 -12° 18.3	191° 29.3 -12° 17.5	206° 29.4 -12° 16.6	221° 29.4 -12° 15.7	236° 29.5 -12° 14.9	251° 29.5 -12° 14.0	86° 30.0 -12° 02.7	101° 30.1 -12° 01.8	116° 30.1 -12° 00.9	131° 30.2 -12° 00.0	146° 30.2 -11° 59.2	161° 30.2 -11° 58.3	+0.0 +0.9
Сб 17	176° 30.3 -11° 57.4	191° 30.3 -11° 56.5	206° 30.4 -11° 55.7	221° 30.4 -11° 54.8	236° 30.5 -11° 53.9	251° 30.5 -11° 53.0	86° 31.1 -11° 41.6	101° 31.2 -11° 40.7	116° 31.2 -11° 39.8	131° 31.3 -11° 38.9	146° 31.3 -11° 38.1	161° 31.4 -11° 37.2	+0.0 +0.9
Вс 18	176° 31.4 -11° 36.3	191° 31.5 -11° 35.4	206° 31.5 -11° 34.5	221° 31.6 -11° 33.6	236° 31.6 -11° 32.8	251° 31.7 -11° 31.9	86° 32.4 -11° 20.3	101° 32.5 -11° 19.5	116° 32.5 -11° 18.6	131° 32.6 -11° 17.7	146° 32.6 -11° 16.8	161° 32.7 -11° 15.9	+0.1 +0.9
Пн 19	176° 32.8 -11° 15.0	191° 32.8 -11° 14.1	206° 32.9 -11° 13.2	221° 32.9 -11° 12.3	236° 33.0 -11° 11.4	251° 33.1 -11° 10.5	86° 33.9 -10° 58.9	101° 33.9 -10° 58.0	116° 34.0 -10° 57.1	131° 34.1 -10° 56.2	146° 34.1 -10° 55.3	161° 34.2 -10° 54.4	+0.1 +0.9
Вт 20	176° 34.3 -10° 53.5	191° 34.3 -10° 52.6	206° 34.4 -10° 51.7	221° 34.5 -10° 50.8	236° 34.5 -10° 49.9	251° 34.6 -10° 49.0	86° 35.5 -10° 37.3	101° 35.6 -10° 36.4	116° 35.6 -10° 35.5	131° 35.7 -10° 34.6	146° 35.8 -10° 33.7	161° 35.9 -10° 32.8	+0.1 +0.9
Ср 21	176° 35.9 -10° 31.9	191° 36.0 -10° 31.0	206° 36.1 -10° 30.1	221° 36.2 -10° 29.2	236° 36.2 -10° 28.3	251° 36.3 -10° 27.4	86° 37.3 -10° 15.6	101° 37.4 -10° 14.6	116° 37.4 -10° 13.7	131° 37.5 -10° 12.8	146° 37.6 -10° 11.9	161° 37.7 -10° 11.0	+0.1 +0.9
Чт 22	176° 37.8 -10° 10.1	191° 37.8 -10° 09.2	206° 37.9 -10° 08.3	221° 38.0 -10° 07.4	236° 38.1 -10° 06.4	251° 38.2 -10° 05.5	86° 39.2 -9° 53.6	101° 39.3 -9° 52.7	116° 39.4 -9° 51.8	131° 39.5 -9° 50.9	146° 39.6 -9° 50.0	161° 39.7 -9° 49.1	+0.1 +0.9
Пт 23	176° 39.8 -9° 48.1	191° 39.8 -9° 47.2	206° 39.9 -9° 46.3	221° 40.0 -9° 45.4	236° 40.1 -9° 44.5	251° 40.2 -9° 43.5	86° 41.4 -9° 31.6	101° 41.4 -9° 30.6	116° 41.5 -9° 29.7	131° 41.6 -9° 28.8	146° 41.7 -9° 27.9	161° 41.8 -9° 27.0	+0.1 +0.9
Сб 24	176° 41.9 -9° 26.0	191° 42.0 -9° 25.1	206° 42.1 -9° 24.2	221° 42.2 -9° 23.3	236° 42.3 -9° 22.3	251° 42.4 -9° 21.4	86° 43.6 -9° 09.4	101° 43.7 -9° 08.4	116° 43.8 -9° 07.5	131° 43.9 -9° 06.6	146° 44.0 -9° 05.6	161° 44.1 -9° 04.7	+0.1 +0.9
Вс 25	176° 44.2 -9° 03.8	191° 44.3 -9° 02.9	206° 44.4 -9° 01.9	221° 44.5 -9° 01.0	236° 44.6 -9° 00.1	251° 44.7 -8° 59.1	86° 46.0 -8° 47.0	101° 46.1 -8° 46.1	116° 46.2 -8° 45.2	131° 46.3 -8° 44.2	146° 46.4 -8° 43.3	161° 46.5 -8° 42.4	+0.1 +0.9
Пн 26	176° 46.7 -8° 41.4	191° 46.8 -8° 40.5	206° 46.9 -8° 39.5	221° 47.0 -8° 38.6	236° 47.1 -8° 37.7	251° 47.2 -8° 36.7	86° 48.6 -8° 24.5	101° 48.7 -8° 23.6	116° 48.8 -8° 22.7	131° 48.9 -8° 21.7	146° 49.0 -8° 20.8	161° 49.1 -8° 19.9	+0.1 +0.9
Вт 27	176° 49.2 -8° 18.9	191° 49.4 -8° 18.0	206° 49.5 -8° 17.0	221° 49.6 -8° 16.1	236° 49.7 -8° 15.2	251° 49.8 -8° 14.2	86° 51.3 -8° 02.0	101° 51.4 -8° 01.0	116° 51.5 -8° 00.1	131° 51.6 -7° 59.1	146° 51.7 -7° 58.2	161° 51.9 -7° 57.2	+0.1 +0.9
Ср 28	176° 52.0 -7° 56.3	191° 52.1 -7° 55.3	206° 52.2 -7° 54.4	221° 52.3 -7° 53.5	236° 52.4 -7° 52.5	251° 52.6 -7° 51.6	86° 54.1 -7° 39.2	101° 54.2 -7° 38.3	116° 54.3 -7° 37.3	131° 54.5 -7° 36.4	146° 54.6 -7° 35.4	161° 54.7 -7° 34.5	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2029

Д	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	Δ'/h	R/p
Чт 1	76° 24.5	90° 53.4	105° 22.4	119° 51.4	134° 20.4	148° 49.4	163° 18.4	177° 47.5	192° 16.5	206° 45.6	221° 14.7	+29.0	16.4
	3° 34.8	3° 19.3	3° 03.7	2° 48.1	2° 32.5	2° 16.9	2° 01.3	1° 45.6	1° 30.0	1° 14.3	0° 58.7	-15.6	60.3
Пт 2	78° 31.5	93° 00.6	107° 29.7	121° 58.8	136° 27.9	150° 57.0	165° 26.1	179° 55.1	194° 24.2	208° 53.2	223° 22.3	+29.1	16.4
	-2° 55.7	-3° 11.2	-3° 26.7	-3° 42.1	-3° 57.6	-4° 13.0	-4° 28.4	-4° 43.7	-4° 59.0	-5° 14.3	-5° 29.5	-15.4	60.2
Сб 3	80° 35.6	95° 04.3	109° 33.0	124° 01.7	138° 30.3	152° 58.9	167° 27.5	181° 56.0	196° 24.5	210° 53.0	225° 21.4	+28.6	16.3
	-9° 12.7	-9° 27.2	-9° 41.6	-9° 55.9	-10° 10.2	-10° 24.4	-10° 38.5	-10° 52.5	-11° 06.5	-11° 20.4	-11° 34.3	-14.2	59.8
Вс 4	82° 23.6	96° 51.4	111° 19.2	125° 46.9	140° 14.7	154° 42.3	169° 09.9	183° 37.5	198° 05.0	212° 32.5	227° 00.0	+27.6	16.2
	-14° 52.0	-15° 04.5	-15° 16.8	-15° 29.1	-15° 41.3	-15° 53.3	-16° 05.3	-16° 17.2	-16° 28.9	-16° 40.6	-16° 52.1	-12.0	59.4
◑ Пн 5	83° 46.4	98° 13.2	112° 39.9	127° 06.6	141° 33.2	155° 59.8	170° 26.3	184° 52.8	199° 19.3	213° 45.7	228° 12.1	+26.6	16.0
	-19° 31.7	-19° 41.4	-19° 50.9	-20° 00.3	-20° 09.6	-20° 18.8	-20° 27.9	-20° 36.8	-20° 45.5	-20° 54.2	-21° 02.7	-9.1	58.8
Вт 6	84° 43.5	99° 09.3	113° 35.2	128° 01.0	142° 26.7	156° 52.5	171° 18.2	185° 43.9	200° 09.6	214° 35.3	229° 00.9	+25.7	15.9
	-22° 53.9	-23° 00.2	-23° 06.3	-23° 12.3	-23° 18.1	-23° 23.8	-23° 29.4	-23° 34.8	-23° 40.0	-23° 45.1	-23° 50.1	-5.6	58.2
Ср 7	85° 24.3	99° 49.9	114° 15.4	128° 41.0	143° 06.5	157° 32.1	171° 57.7	186° 23.2	200° 48.8	215° 14.5	229° 40.1	+25.6	15.7
	-24° 46.2	-24° 48.7	-24° 51.1	-24° 53.3	-24° 55.4	-24° 57.3	-24° 59.0	-25° 00.6	-25° 02.1	-25° 03.4	-25° 04.6	-1.8	57.6
Чт 8	86° 07.3	100° 33.4	114° 59.5	129° 25.7	143° 51.9	158° 18.1	172° 44.4	187° 10.7	201° 37.1	216° 03.5	230° 30.0	+26.3	15.5
	-25° 03.7	-25° 02.4	-25° 01.1	-24° 59.5	-24° 57.8	-24° 56.0	-24° 54.0	-24° 51.9	-24° 49.6	-24° 47.2	-24° 44.7	+1.9	57.0
Пт 9	87° 13.8	101° 41.2	116° 08.7	130° 36.2	145° 03.8	159° 31.5	173° 59.2	188° 27.1	202° 55.0	217° 22.9	231° 51.0	+27.7	15.4
	-23° 50.0	-23° 45.3	-23° 40.4	-23° 35.5	-23° 30.4	-23° 25.2	-23° 19.8	-23° 14.4	-23° 08.8	-23° 03.1	-22° 57.2	+5.3	56.4
Сб 10	89° 00.4	103° 29.7	117° 59.0	132° 28.4	146° 57.9	161° 27.5	175° 57.1	190° 26.8	204° 56.6	219° 26.5	233° 56.5	+29.6	15.3
	-21° 16.1	-21° 08.4	-21° 00.7	-20° 52.9	-20° 45.0	-20° 37.0	-20° 28.8	-20° 20.6	-20° 12.3	-20° 03.9	-19° 55.4	+8.1	55.9
Вс 11	91° 35.2	106° 06.4	120° 37.7	135° 09.1	149° 40.5	164° 12.0	178° 43.6	193° 15.2	207° 46.9	222° 18.7	236° 50.6	+31.5	15.1
	-17° 37.5	-17° 27.6	-17° 17.7	-17° 07.7	-16° 57.6	-16° 47.5	-16° 37.3	-16° 27.0	-16° 16.7	-16° 06.2	-15° 55.8	+10.2	55.5
Пн 12	94° 56.9	109° 29.8	124° 02.8	138° 35.9	153° 09.0	167° 42.2	182° 15.5	196° 48.8	211° 22.2	225° 55.6	240° 29.1	+33.2	15.0
	-13° 11.3	-13° 00.0	-12° 48.5	-12° 37.0	-12° 25.5	-12° 13.9	-12° 02.3	-11° 50.6	-11° 38.9	-11° 27.1	-11° 15.3	+11.6	55.0
● Вт 13	98° 57.6	113° 31.9	128° 06.2	142° 40.6	157° 15.0	171° 49.5	186° 24.0	200° 58.5	215° 33.1	230° 07.7	244° 42.4	+34.5	14.9
	-8° 14.2	-8° 01.9	-7° 49.5	-7° 37.1	-7° 24.8	-7° 12.3	-6° 59.9	-6° 47.5	-6° 35.0	-6° 22.5	-6° 10.0	+12.4	54.6
Ср 14	103° 26.0	118° 01.2	132° 36.3	147° 11.5	161° 46.7	176° 21.9	190° 57.2	205° 32.4	220° 07.7	234° 43.0	249° 18.3	+35.2	14.8
	-3° 00.7	-2° 48.0	-2° 35.4	-2° 22.7	-2° 10.0	-1° 57.3	-1° 44.6	-1° 31.9	-1° 19.2	-1° 06.5	-0° 53.8	+12.7	54.3
Чт 15	108° 09.1	122° 44.6	137° 20.0	151° 55.4	166° 30.9	181° 06.3	195° 41.7	210° 17.2	224° 52.6	239° 28.0	254° 03.4	+35.4	14.8
	2° 16.0	2° 28.6	2° 41.1	2° 53.7	3° 06.2	3° 18.7	3° 31.2	3° 43.7	3° 56.1	4° 08.6	4° 21.0	+12.5	54.1
Пт 16	112° 53.4	127° 28.6	142° 03.8	156° 38.9	171° 14.1	185° 49.2	200° 24.3	214° 59.4	229° 34.4	244° 09.5	258° 44.4	+35.1	14.7
	7° 24.5	7° 36.5	7° 48.5	8° 00.5	8° 12.4	8° 24.3	8° 36.1	8° 48.0	8° 59.8	9° 11.5	9° 23.2	+11.9	54.0
Сб 17	117° 25.6	132° 00.1	146° 34.5	161° 08.9	175° 43.2	190° 17.5	204° 51.8	219° 26.0	234° 00.1	248° 34.3	263° 08.3	+34.3	14.7
	12° 14.1	12° 25.1	12° 36.1	12° 47.1	12° 58.0	13° 08.8	13° 19.6	13° 30.3	13° 41.0	13° 51.7	14° 02.2	+10.8	54.0
Вс 18	132° 00.1	146° 34.5	161° 08.9	175° 43.2	190° 17.5	204° 51.8	219° 26.0	234° 00.1	248° 34.3	263° 08.3	277° 42.4	+34.2	14.7
	12° 25.1	12° 36.1	12° 47.1	12° 58.0	13° 08.8	13° 19.6	13° 30.3	13° 41.0	13° 51.7	14° 02.2	14° 12.8	+10.8	54.0
Пн 19	136° 06.7	150° 39.9	165° 13.0	179° 46.1	194° 19.1	208° 52.1	223° 25.0	237° 57.8	252° 30.6	267° 03.3	281° 35.9	+32.9	14.8
	16° 43.7	16° 53.2	17° 02.7	17° 12.1	17° 21.5	17° 30.8	17° 40.0	17° 49.1	17° 58.2	18° 07.2	18° 16.1	+9.3	54.2
Вт 20	139° 38.0	154° 09.6	168° 41.1	183° 12.6	197° 44.0	212° 15.3	226° 46.6	241° 17.8	255° 48.9	270° 19.9	284° 50.9	+31.3	14.9
	20° 20.7	20° 28.4	20° 35.9	20° 43.4	20° 50.8	20° 58.1	21° 05.3	21° 12.4	21° 19.5	21° 26.4	21° 33.2	+7.3	54.5
◐ Ср 21	142° 27.1	156° 57.0	171° 26.8	185° 56.5	200° 26.1	214° 55.7	229° 25.2	243° 54.6	258° 24.0	272° 53.3	287° 22.5	+29.5	15.0
	23° 04.0	23° 09.3	23° 14.4	23° 19.4	23° 24.3	23° 29.1	23° 33.8	23° 38.3	23° 42.8	23° 47.1	23° 51.4	+4.7	55.1
Чт 22	144° 33.1	159° 01.3	173° 29.5	187° 57.6	202° 25.6	216° 53.6	231° 21.5	245° 49.4	260° 17.2	274° 44.9	289° 12.6	+27.9	15.2
	24° 40.6	24° 42.9	24° 45.0	24° 47.1	24° 49.0	24° 50.8	24° 52.4	24° 53.9	24° 55.3	24° 56.6	24° 57.7	+1.7	55.8
Пт 23	146° 02.5	160° 29.5	174° 56.4	189° 23.4	203° 50.2	218° 17.1	232° 43.9	247° 10.7	261° 37.5	276° 04.2	290° 30.9	+26.8	15.4
	24° 58.2	24° 57.2	24° 56.0	24° 54.6	24° 53.1	24° 51.4	24° 49.7	24° 47.7	24° 45.7	24° 43.4	24° 41.1	-1.7	56.7
Сб 24	147° 08.9	161° 35.3	176° 01.7	190° 28.1	204° 54.5	219° 20.9	233° 47.3	248° 13.7	262° 40.1	277° 06.4	291° 32.8	+26.4	15.7
	23° 48.2	23° 43.5	23° 38.7	23° 33.7	23° 28.6	23° 23.3	23° 17.9	23° 12.3	23° 06.6	23° 00.7	22° 54.7	-5.3	57.6
Вс 25	148° 09.2	162° 35.7	177° 02.2	191° 28.8	205° 55.3	220° 21.9	234° 48.5	249° 15.1	263° 41.7	278° 08.4	292° 35.1	+26.6	16.0
	21° 07.6	20° 59.3	20° 50.9	20° 42.4	20° 33.7	20° 24.9	20° 15.9	20° 06.8	19° 57.6	19° 48.3	19° 38.8	-8.9	58.6
Пн 26	149° 17.8	163° 44.9	178° 12.0	192° 39.1	207° 06.2	221° 33.3	236° 00.5	250° 27.7	264° 55.0	279° 22.2	293° 49.5	+27.2	16.2
	17° 01.4	16° 49.9	16° 38.3	16° 26.6	16° 14.8	16° 02.9	15° 50.9	15° 38.7	15° 26.5	15° 14.1	15° 01.7	-12.0	59.6
Вт 27	150° 42.0	165° 09.7	179° 37.4	194° 05.2	208° 32.9	223° 00.7	237° 28.5	251° 56.4	266° 24.2	280° 52.1	295° 20.0	+27.8	16.5
	11° 42.9	11° 28.9	11° 14.9	11° 00.7	10° 46.5	10° 32.2	10° 17.9	10° 03.4	9° 48.9	9° 34.3	9° 19.7	-14.3	60.3
○ Ср 28	152° 20.3	166° 48.4	181° 16.6	195° 44.7	210° 12.9	224° 41.0	239° 09.2	253° 37.4	268° 05.5	282° 33.7	297° 01.9	+28.2	16.6
	5° 32.7	5° 17.2	5° 01.6	4° 46.0	4° 30.3	4° 14.7	3° 58.9	3° 43.2	3° 27.4	3° 11.6	2° 55.8	-15.7	60.9

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Последняя четв.: 5 21h52 — Новолуние: 13 10h31 — Первая четв.: 21 15h09 — Полнолуние: 28 17h10

СОЛНЦЕ

Март 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ’/h
Чт 1	176° 54.8 -7° 33.5	191° 55.0 -7° 32.6	206° 55.1 -7° 31.6	221° 55.2 -7° 30.7	236° 55.3 -7° 29.7	251° 55.4 -7° 28.8	86° 57.1 -7° 16.4	101° 57.2 -7° 15.5	116° 57.3 -7° 14.5	131° 57.4 -7° 13.6	146° 57.6 -7° 12.6	161° 57.7 -7° 11.7	+0.1 +0.9
Пт 2	176° 57.8 -7° 10.7	191° 57.9 -7° 09.7	206° 58.1 -7° 08.8	221° 58.2 -7° 07.8	236° 58.3 -7° 06.9	251° 58.5 -7° 05.9	87° 00.1 -6° 53.5	102° 00.3 -6° 52.5	117° 00.4 -6° 51.6	132° 00.5 -6° 50.6	147° 00.7 -6° 49.7	162° 00.8 -6° 48.7	+0.1 +1.0
Сб 3	177° 00.9 -6° 47.7	192° 01.1 -6° 46.8	207° 01.2 -6° 45.8	222° 01.3 -6° 44.9	237° 01.5 -6° 43.9	252° 01.6 -6° 43.0	87° 03.3 -6° 30.5	102° 03.5 -6° 29.5	117° 03.6 -6° 28.5	132° 03.7 -6° 27.6	147° 03.9 -6° 26.6	162° 04.0 -6° 25.7	+0.1 +1.0
Вс 4	177° 04.1 -6° 24.7	192° 04.3 -6° 23.7	207° 04.4 -6° 22.8	222° 04.6 -6° 21.8	237° 04.7 -6° 20.8	252° 04.8 -6° 19.9	87° 06.6 -6° 07.4	102° 06.8 -6° 06.4	117° 06.9 -6° 05.4	132° 07.1 -6° 04.5	147° 07.2 -6° 03.5	162° 07.3 -6° 02.5	+0.1 +1.0
Пн 5	177° 07.5 -6° 01.6	192° 07.6 -6° 00.6	207° 07.8 -5° 59.6	222° 07.9 -5° 58.7	237° 08.0 -5° 57.7	252° 08.2 -5° 56.7	87° 10.0 -5° 44.1	102° 10.2 -5° 43.2	117° 10.3 -5° 42.2	132° 10.5 -5° 41.2	147° 10.6 -5° 40.3	162° 10.8 -5° 39.3	+0.1 +1.0
Вт 6	177° 10.9 -5° 38.3	192° 11.1 -5° 37.4	207° 11.2 -5° 36.4	222° 11.4 -5° 35.4	237° 11.5 -5° 34.5	252° 11.6 -5° 33.5	87° 13.6 -5° 20.9	102° 13.7 -5° 19.9	117° 13.9 -5° 18.9	132° 14.0 -5° 17.9	147° 14.1 -5° 17.0	162° 14.3 -5° 16.0	+0.1 +1.0
Ср 7	177° 14.4 -5° 15.0	192° 14.6 -5° 14.1	207° 14.7 -5° 13.1	222° 14.9 -5° 12.1	237° 15.0 -5° 11.1	252° 15.2 -5° 10.2	87° 17.2 -4° 57.5	102° 17.3 -4° 56.5	117° 17.5 -4° 55.6	132° 17.6 -4° 54.6	147° 17.8 -4° 53.6	162° 17.9 -4° 52.6	+0.1 +1.0
Чт 8	177° 18.1 -4° 51.6	192° 18.2 -4° 50.7	207° 18.4 -4° 49.7	222° 18.5 -4° 48.7	237° 18.7 -4° 47.7	252° 18.8 -4° 46.8	87° 20.9 -4° 34.1	102° 21.0 -4° 33.1	117° 21.2 -4° 32.1	132° 21.3 -4° 31.1	147° 21.5 -4° 30.2	162° 21.6 -4° 29.2	+0.2 +1.0
Пт 9	177° 21.8 -4° 28.2	192° 21.9 -4° 27.2	207° 22.1 -4° 26.3	222° 22.3 -4° 25.3	237° 22.4 -4° 24.3	252° 22.6 -4° 23.3	87° 24.6 -4° 10.6	102° 24.8 -4° 09.6	117° 24.9 -4° 08.6	132° 25.1 -4° 07.6	147° 25.3 -4° 06.7	162° 25.4 -4° 05.7	+0.2 +1.0
Сб 10	177° 25.6 -4° 04.7	192° 25.7 -4° 03.7	207° 25.9 -4° 02.7	222° 26.1 -4° 01.8	237° 26.2 -4° 00.8	252° 26.4 -3° 59.8	87° 28.5 -3° 47.0	102° 28.6 -3° 46.1	117° 28.8 -3° 45.1	132° 29.0 -3° 44.1	147° 29.1 -3° 43.1	162° 29.3 -3° 42.1	+0.2 +1.0
Вс 11	177° 29.5 -3° 41.2	192° 29.6 -3° 40.2	207° 29.8 -3° 39.2	222° 30.0 -3° 38.2	237° 30.1 -3° 37.2	252° 30.3 -3° 36.2	87° 32.4 -3° 23.5	102° 32.6 -3° 22.5	117° 32.8 -3° 21.5	132° 32.9 -3° 20.5	147° 33.1 -3° 19.5	162° 33.2 -3° 18.5	+0.2 +1.0
Пн 12	177° 33.4 -3° 17.6	192° 33.6 -3° 16.6	207° 33.7 -3° 15.6	222° 33.9 -3° 14.6	237° 34.1 -3° 13.6	252° 34.2 -3° 12.6	87° 36.4 -2° 59.8	102° 36.6 -2° 58.8	117° 36.8 -2° 57.9	132° 36.9 -2° 56.9	147° 37.1 -2° 55.9	162° 37.3 -2° 54.9	+0.2 +1.0
Вт 13	177° 37.4 -2° 53.9	192° 37.6 -2° 52.9	207° 37.8 -2° 51.9	222° 37.9 -2° 51.0	237° 38.1 -2° 50.0	252° 38.3 -2° 49.0	87° 40.5 -2° 36.2	102° 40.7 -2° 35.2	117° 40.8 -2° 34.2	132° 41.0 -2° 33.2	147° 41.2 -2° 32.2	162° 41.4 -2° 31.2	+0.2 +1.0
Ср 14	177° 41.5 -2° 30.2	192° 41.7 -2° 29.3	207° 41.9 -2° 28.3	222° 42.0 -2° 27.3	237° 42.2 -2° 26.3	252° 42.4 -2° 25.3	87° 44.6 -2° 12.5	102° 44.8 -2° 11.5	117° 45.0 -2° 10.5	132° 45.2 -2° 09.5	147° 45.3 -2° 08.5	162° 45.5 -2° 07.5	+0.2 +1.0
Чт 15	177° 45.7 -2° 06.6	192° 45.9 -2° 05.6	207° 46.0 -2° 04.6	222° 46.2 -2° 03.6	237° 46.4 -2° 02.6	252° 46.6 -2° 01.6	87° 48.8 -1° 48.8	102° 49.0 -1° 47.8	117° 49.2 -1° 46.8	132° 49.4 -1° 45.8	147° 49.5 -1° 44.8	162° 49.7 -1° 43.8	+0.2 +1.0
Пт 16	177° 49.9 -1° 42.8	192° 50.1 -1° 41.9	207° 50.2 -1° 40.9	222° 50.4 -1° 39.9	237° 50.6 -1° 38.9	252° 50.8 -1° 37.9	87° 53.1 -1° 25.0	102° 53.3 -1° 24.1	117° 53.4 -1° 23.1	132° 53.6 -1° 22.1	147° 53.8 -1° 21.1	162° 54.0 -1° 20.1	+0.2 +1.0
Сб 17	177° 54.2 -1° 19.1	192° 54.3 -1° 18.1	207° 54.5 -1° 17.1	222° 54.7 -1° 16.2	237° 54.9 -1° 15.2	252° 55.0 -1° 14.2	87° 57.4 -1° 01.3	102° 57.6 -1° 00.3	117° 57.7 -0° 59.3	132° 57.9 -0° 58.4	147° 58.1 -0° 57.4	162° 58.3 -0° 56.4	+0.2 +1.0
Вс 18	177° 58.5 -0° 55.4	192° 58.6 -0° 54.4	207° 58.8 -0° 53.4	222° 59.0 -0° 52.4	237° 59.2 -0° 51.4	252° 59.4 -0° 50.4	88° 01.7 -0° 37.6	103° 01.9 -0° 36.6	118° 02.1 -0° 35.6	133° 02.3 -0° 34.6	148° 02.5 -0° 33.6	163° 02.6 -0° 32.6	+0.2 +1.0
Пн 19	178° 02.8 -0° 31.7	193° 03.0 -0° 30.7	208° 03.2 -0° 29.7	223° 03.4 -0° 28.7	238° 03.6 -0° 27.7	253° 03.7 -0° 26.7	88° 06.1 -0° 13.9	103° 06.3 -0° 12.9	118° 06.5 -0° 11.9	133° 06.7 -0° 10.9	148° 06.9 -0° 09.9	163° 07.0 -0° 08.9	+0.2 +1.0
Вт 20	178° 07.2 -0° 07.9	193° 07.4 -0° 06.9	208° 07.6 -0° 06.0	223° 07.8 -0° 05.0	238° 08.0 -0° 04.0	253° 08.1 -0° 03.0	88° 10.5 0° 09.9	103° 10.7 0° 10.8	118° 10.9 0° 11.8	133° 11.1 0° 12.8	148° 11.3 0° 13.8	163° 11.5 0° 14.8	+0.2 +1.0
Ср 21	178° 11.7 0° 15.8	193° 11.8 0° 16.8	208° 12.0 0° 17.8	223° 12.2 0° 18.7	238° 12.4 0° 19.7	253° 12.6 0° 20.7	88° 15.0 0° 33.6	103° 15.2 0° 34.5	118° 15.4 0° 35.5	133° 15.6 0° 36.5	148° 15.7 0° 37.5	163° 15.9 0° 38.5	+0.2 +1.0
Чт 22	178° 16.1 0° 39.5	193° 16.3 0° 40.5	208° 16.5 0° 41.5	223° 16.7 0° 42.4	238° 16.9 0° 43.4	253° 17.0 0° 44.4	88° 19.5 0° 57.2	103° 19.7 0° 58.2	118° 19.9 0° 59.2	133° 20.0 1° 00.2	148° 20.2 1° 01.2	163° 20.4 1° 02.2	+0.2 +1.0
Пт 23	178° 20.6 1° 03.1	193° 20.8 1° 04.1	208° 21.0 1° 05.1	223° 21.2 1° 06.1	238° 21.4 1° 07.1	253° 21.5 1° 08.1	88° 24.0 1° 20.9	103° 24.2 1° 21.9	118° 24.4 1° 22.8	133° 24.5 1° 23.8	148° 24.7 1° 24.8	163° 24.9 1° 25.8	+0.2 +1.0
Сб 24	178° 25.1 1° 26.8	193° 25.3 1° 27.8	208° 25.5 1° 28.8	223° 25.7 1° 29.7	238° 25.9 1° 30.7	253° 26.1 1° 31.7	88° 28.5 1° 44.5	103° 28.7 1° 45.5	118° 28.9 1° 46.5	133° 29.1 1° 47.4	148° 29.3 1° 48.4	163° 29.5 1° 49.4	+0.2 +1.0
Вс 25	178° 29.6 1° 50.4	193° 29.8 1° 51.4	208° 30.0 1° 52.3	223° 30.2 1° 53.3	238° 30.4 1° 54.3	253° 30.6 1° 55.3	88° 33.0 2° 08.1	103° 33.2 2° 09.0	118° 33.4 2° 10.0	133° 33.6 2° 11.0	148° 33.8 2° 12.0	163° 34.0 2° 13.0	+0.2 +1.0
Пн 26	178° 34.2 2° 13.9	193° 34.4 2° 14.9	208° 34.6 2° 15.9	223° 34.7 2° 16.9	238° 34.9 2° 17.9	253° 35.1 2° 18.8	88° 37.6 2° 31.6	103° 37.8 2° 32.6	118° 38.0 2° 33.5	133° 38.2 2° 34.5	148° 38.3 2° 35.5	163° 38.5 2° 36.5	+0.2 +1.0
Вт 27	178° 38.7 2° 37.4	193° 38.9 2° 38.4	208° 39.1 2° 39.4	223° 39.3 2° 40.4	238° 39.5 2° 41.4	253° 39.7 2° 42.3	88° 42.1 2° 55.0	103° 42.3 2° 56.0	118° 42.5 2° 57.0	133° 42.7 2° 58.0	148° 42.9 2° 58.9	163° 43.1 2° 59.9	+0.2 +1.0
Ср 28	178° 43.3 3° 00.9	193° 43.5 3° 01.9	208° 43.6 3° 02.9	223° 43.8 3° 03.8	238° 44.0 3° 04.8	253° 44.2 3° 05.8	88° 46.7 3° 18.5	103° 46.9 3° 19.4	118° 47.1 3° 20.4	133° 47.2 3° 21.4	148° 47.4 3° 22.3	163° 47.6 3° 23.3	+0.2 +1.0
Чт 29	178° 47.8 3° 24.3	193° 48.0 3° 25.3	208° 48.2 3° 26.2	223° 48.4 3° 27.2	238° 48.6 3° 28.2	253° 48.8 3° 29.2	88° 51.2 3° 41.8	103° 51.4 3° 42.8	118° 51.6 3° 43.7	133° 51.8 3° 44.7	148° 52.0 3° 45.7	163° 52.1 3° 46.7	+0.2 +1.0
Пт 30	178° 52.3 3° 47.6	193° 52.5 3° 48.6	208° 52.7 3° 49.6	223° 52.9 3° 50.5	238° 53.1 3° 51.5	253° 53.3 3° 52.5	88° 55.7 4° 05.1	103° 55.9 4° 06.0	118° 56.1 4° 07.0	133° 56.3 4° 08.0	148° 56.5 4° 08.9	163° 56.7 4° 09.9	+0.2 +1.0
Сб 31	178° 56.8 4° 10.9	193° 57.0 4° 11.8	208° 57.2 4° 12.8	223° 57.4 4° 13.8	238° 57.6 4° 14.7	253° 57.8 4° 15.7	89° 00.2 4° 28.3	104° 00.4 4° 29.2	119° 00.6 4° 30.2	134° 00.8 4° 31.2	149° 01.0 4° 32.1	164° 01.1 4° 33.1	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ’/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение), − = южное), Δ’/h = изменение δ за час
Полудиаметр R: 16.1’

ЛУНА

Март 2029

Д	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	Δ'/h	R/p
Чт 1	67° 15.5	81° 43.7	96° 11.9	110° 40.0	125° 08.2	139° 36.3	154° 04.5	168° 32.6	183° 00.7	197° 28.8	211° 56.9	+28.1	16.6
	0° 32.6	0° 16.6	0° 00.6	-0° 15.4	-0° 31.4	-0° 47.3	-1° 03.3	-1° 19.3	-1° 35.3	-1° 51.2	-2° 07.2	-16.0	61.1
Пт 2	68° 56.2	83° 24.0	97° 51.8	112° 19.5	126° 47.2	141° 14.9	155° 42.5	170° 10.1	184° 37.7	199° 05.3	213° 32.8	+27.7	16.6
	-6° 03.8	-6° 19.3	-6° 34.8	-6° 50.2	-7° 05.6	-7° 20.9	-7° 36.2	-7° 51.5	-8° 06.6	-8° 21.8	-8° 36.8	-15.3	61.0
Сб 3	70° 21.7	84° 48.7	99° 15.6	113° 42.5	128° 09.3	142° 36.1	157° 02.9	171° 29.6	185° 56.3	200° 23.0	214° 49.6	+26.8	16.5
	-12° 14.7	-12° 28.6	-12° 42.4	-12° 56.1	-13° 09.8	-13° 23.3	-13° 36.8	-13° 50.1	-14° 03.4	-14° 16.5	-14° 29.6	-13.5	60.6
Вс 4	71° 23.6	85° 49.6	100° 15.5	114° 41.3	129° 07.1	143° 32.9	157° 58.7	172° 24.4	186° 50.0	201° 15.7	215° 41.2	+25.8	16.4
	-17° 32.5	-17° 43.8	-17° 54.9	-18° 05.9	-18° 16.8	-18° 27.6	-18° 38.2	-18° 48.7	-18° 59.1	-19° 09.3	-19° 19.4	-10.7	60.0
Пн 5	72° 01.1	86° 26.2	100° 51.3	115° 16.3	129° 41.3	144° 06.3	158° 31.3	172° 56.3	187° 21.2	201° 46.2	216° 11.1	+25.0	16.2
	-21° 34.2	-21° 42.1	-21° 49.8	-21° 57.3	-22° 04.7	-22° 11.9	-22° 19.0	-22° 25.9	-22° 32.7	-22° 39.3	-22° 45.8	-7.2	59.2
Вт 6	72° 23.8	86° 48.6	101° 13.4	115° 38.3	130° 03.2	144° 28.0	158° 52.9	173° 17.8	187° 42.7	202° 07.7	216° 32.6	+24.9	15.9
	-24° 04.2	-24° 08.2	-24° 12.0	-24° 15.6	-24° 19.1	-24° 22.5	-24° 25.6	-24° 28.7	-24° 31.5	-24° 34.2	-24° 36.8	-3.3	58.4
◑ Ср 7	72° 50.1	87° 15.6	101° 41.0	116° 06.6	130° 32.1	144° 57.8	159° 23.4	173° 49.2	188° 14.9	202° 40.7	217° 06.6	+25.6	15.7
	-24° 56.1	-24° 56.1	-24° 56.0	-24° 55.8	-24° 55.4	-24° 54.8	-24° 54.1	-24° 53.3	-24° 52.3	-24° 51.1	-24° 49.8	+0.6	57.6
Чт 8	73° 41.8	88° 08.7	102° 35.6	117° 02.6	131° 29.7	145° 56.8	160° 24.1	174° 51.4	189° 18.7	203° 46.2	218° 13.7	+27.2	15.5
	-24° 13.2	-24° 09.6	-24° 05.9	-24° 02.1	-23° 58.2	-23° 54.1	-23° 49.9	-23° 45.6	-23° 41.1	-23° 36.5	-23° 31.8	+4.1	56.8
Пт 9	75° 15.9	89° 44.7	104° 13.6	118° 42.5	133° 11.6	147° 40.7	162° 09.9	176° 39.2	191° 08.6	205° 38.0	220° 07.6	+29.2	15.3
	-22° 06.6	-22° 00.0	-21° 53.3	-21° 46.5	-21° 39.6	-21° 32.5	-21° 25.4	-21° 18.2	-21° 10.9	-21° 03.4	-20° 55.9	+7.1	56.1
Сб 10	77° 40.4	92° 11.2	106° 42.1	121° 13.1	135° 44.2	150° 15.3	164° 46.6	179° 17.9	193° 49.2	208° 20.7	222° 52.2	+31.2	15.1
	-18° 51.7	-18° 42.8	-18° 33.7	-18° 24.6	-18° 15.3	-18° 06.0	-17° 56.7	-17° 47.2	-17° 37.7	-17° 28.1	-17° 18.4	+9.3	55.5
Вс 11	80° 53.9	95° 26.5	109° 59.3	124° 32.1	139° 04.9	153° 37.8	168° 10.8	182° 43.9	197° 17.0	211° 50.1	226° 23.4	+33.0	15.0
	-14° 45.3	-14° 34.6	-14° 23.8	-14° 13.0	-14° 02.1	-13° 51.2	-13° 40.2	-13° 29.2	-13° 18.1	-13° 07.0	-12° 55.8	+10.9	55.0
Пн 12	84° 48.5	99° 22.6	113° 56.7	128° 30.9	143° 05.1	157° 39.4	172° 13.7	186° 48.1	201° 22.5	215° 56.9	230° 31.4	+34.3	14.9
	-10° 03.0	-9° 51.1	-9° 39.3	-9° 27.4	-9° 15.4	-9° 03.5	-8° 51.5	-8° 39.5	-8° 27.4	-8° 15.3	-8° 03.2	+12.0	54.6
Вт 13	89° 12.9	103° 47.9	118° 23.0	132° 58.1	147° 33.1	162° 08.3	176° 43.4	191° 18.6	205° 53.7	220° 29.0	235° 04.2	+35.1	14.8
	-4° 59.0	-4° 46.6	-4° 34.2	-4° 21.7	-4° 09.3	-3° 56.8	-3° 44.3	-3° 31.8	-3° 19.3	-3° 06.8	-2° 54.3	+12.5	54.3
Ср 14	93° 54.3	108° 29.8	123° 05.2	137° 40.6	152° 16.1	166° 51.5	181° 27.0	196° 02.4	210° 37.8	225° 13.3	239° 48.7	+35.4	14.7
	0° 13.8	0° 26.3	0° 38.8	0° 51.3	1° 03.8	1° 16.3	1° 28.8	1° 41.3	1° 53.8	2° 06.2	2° 18.7	+12.5	54.0
● Чт 15	98° 39.8	113° 15.1	127° 50.4	142° 25.7	157° 01.0	171° 36.3	186° 11.5	200° 46.7	215° 21.9	229° 57.1	244° 32.3	+35.3	14.7
	5° 23.7	5° 35.8	5° 48.0	6° 00.1	6° 12.2	6° 24.3	6° 36.4	6° 48.4	7° 00.4	7° 12.3	7° 24.3	+12.1	53.9
Пт 16	103° 16.8	117° 51.6	132° 26.3	147° 01.0	161° 35.6	176° 10.2	190° 44.8	205° 19.3	219° 53.8	234° 28.3	249° 02.7	+34.6	14.7
	10° 19.4	10° 30.8	10° 42.1	10° 53.4	11° 04.7	11° 15.9	11° 27.1	11° 38.2	11° 49.3	12° 00.3	12° 11.3	+11.2	53.9
Сб 17	107° 34.1	122° 07.9	136° 41.5	151° 15.2	165° 48.8	180° 22.3	194° 55.8	209° 29.3	224° 02.6	238° 36.0	253° 09.3	+33.5	14.7
	14° 49.9	15° 00.0	15° 10.1	15° 20.1	15° 30.0	15° 39.9	15° 49.7	15° 59.5	16° 09.2	16° 18.8	16° 28.4	+9.9	53.9
Вс 18	111° 22.1	125° 54.5	140° 26.9	154° 59.1	169° 31.4	184° 03.5	198° 35.7	213° 07.7	227° 39.7	242° 11.6	256° 43.5	+32.1	14.8
	18° 43.5	18° 51.9	19° 00.2	19° 08.5	19° 16.6	19° 24.7	19° 32.7	19° 40.7	19° 48.5	19° 56.3	20° 03.9	+8.0	54.1
Пн 19	114° 34.4	129° 05.3	143° 36.1	158° 06.9	172° 37.7	187° 08.3	201° 38.9	216° 09.5	230° 40.0	245° 10.4	259° 40.8	+30.6	14.9
	21° 48.3	21° 54.5	22° 00.7	22° 06.7	22° 12.6	22° 18.4	22° 24.1	22° 29.7	22° 35.2	22° 40.7	22° 46.0	+5.8	54.5
Вт 20	129° 05.3	143° 36.1	158° 06.9	172° 37.7	187° 08.3	201° 38.9	216° 09.5	230° 40.0	245° 10.4	259° 40.8	274° 11.1	+30.6	14.9
	21° 54.5	22° 00.7	22° 06.7	22° 12.6	22° 18.4	22° 24.1	22° 29.7	22° 35.2	22° 40.7	22° 46.0	22° 51.2	+5.7	54.5
Ср 21	131° 38.8	146° 08.2	160° 37.6	175° 06.9	189° 36.1	204° 05.3	218° 34.5	233° 03.6	247° 32.7	262° 01.7	276° 30.6	+29.2	15.0
	23° 56.1	23° 59.6	24° 02.9	24° 06.1	24° 09.2	24° 12.1	24° 15.0	24° 17.7	24° 20.3	24° 22.8	24° 25.2	+2.9	55.0
Чт 22	133° 39.6	148° 07.9	162° 36.2	177° 04.4	191° 32.6	206° 00.7	220° 28.8	234° 56.9	249° 24.9	263° 53.0	278° 21.0	+28.1	15.2
	24° 45.8	24° 46.2	24° 46.4	24° 46.5	24° 46.5	24° 46.3	24° 46.0	24° 45.6	24° 45.1	24° 44.4	24° 43.6	-0.2	55.6
◐ Пт 23	135° 18.0	149° 45.6	164° 13.3	178° 40.9	193° 08.5	207° 36.1	222° 03.7	236° 31.3	250° 58.9	265° 26.4	279° 54.0	+27.6	15.4
	24° 15.3	24° 12.4	24° 09.3	24° 06.0	24° 02.7	23° 59.2	23° 55.5	23° 51.7	23° 47.8	23° 43.8	23° 39.6	-3.6	56.4
Сб 24	136° 47.1	151° 14.6	165° 42.2	180° 09.7	194° 37.3	209° 04.9	223° 32.5	238° 00.1	252° 27.7	266° 55.3	281° 22.9	+27.6	15.6
	22° 20.7	22° 14.3	22° 07.9	22° 01.3	21° 54.5	21° 47.7	21° 40.7	21° 33.5	21° 26.3	21° 18.9	21° 11.4	-6.9	57.3
Вс 25	138° 18.8	152° 46.7	167° 14.5	181° 42.4	196° 10.3	210° 38.2	225° 06.1	239° 34.0	254° 02.0	268° 30.0	282° 58.0	+27.9	15.9
	19° 03.3	18° 53.8	18° 44.1	18° 34.4	18° 24.5	18° 14.5	18° 04.4	17° 54.1	17° 43.8	17° 33.3	17° 22.7	-10.1	58.3
Пн 26	139° 59.8	154° 28.1	168° 56.3	183° 24.6	197° 52.9	212° 21.2	226° 49.5	241° 17.9	255° 46.2	270° 14.6	284° 42.9	+28.3	16.2
	14° 30.8	14° 18.5	14° 06.1	13° 53.6	13° 41.0	13° 28.3	13° 15.5	13° 02.7	12° 49.7	12° 36.6	12° 23.5	-12.7	59.3
Вт 27	141° 49.5	156° 18.0	170° 46.5	185° 15.0	199° 43.5	214° 12.0	228° 40.5	243° 09.0	257° 37.5	272° 05.9	286° 34.4	+28.5	16.4
	8° 56.4	8° 42.0	8° 27.5	8° 13.0	7° 58.4	7° 43.7	7° 29.0	7° 14.2	6° 59.4	6° 44.5	6° 29.5	-14.7	60.2
Ср 28	143° 40.8	158° 09.1	172° 37.4	187° 05.7	201° 34.0	216° 02.2	230° 30.5	244° 58.7	259° 26.9	273° 55.0	288° 23.2	+28.2	16.6
	2° 39.6	2° 23.9	2° 08.3	1° 52.6	1° 36.9	1° 21.2	1° 05.4	0° 49.6	0° 33.9	0° 18.1	0° 02.3	-15.7	60.9
Чт 29	145° 21.9	159° 49.6	174° 17.2	188° 44.8	203° 12.3	217° 39.8	232° 07.3	246° 34.7	261° 02.1	275° 29.4	289° 56.7	+27.5	16.7
	-3° 55.1	-4° 10.9	-4° 26.6	-4° 42.4	-4° 58.0	-5° 13.7	-5° 29.4	-5° 45.0	-6° 00.5	-6° 16.1	-6° 31.6	-15.7	61.3
○ Пт 30	146° 40.4	161° 06.9	175° 33.3	189° 59.7	204° 26.1	218° 52.4	233° 18.6	247° 44.8	262° 10.9	276° 37.0	291° 03.0	+26.3	16.7
	-10° 18.6	-10° 33.2	-10° 47.8	-11° 02.3	-11° 16.8	-11° 31.2	-11° 45.5	-11° 59.7	-12° 13.8	-12° 27.9	-12° 41.8	-14.3	61.4
Сб 31	147° 26.6	161° 51.7	176° 16.8	190° 41.8	205° 06.8	219° 31.7	233° 56.5	248° 21.3	262° 46.1	277° 10.8	291° 35.4	+24.9	16.7
	-15° 59.7	-16° 12.0	-16° 24.2	-16° 36.3	-16° 48.3	-17° 00.2	-17° 11.9	-17° 23.5	-17° 35.0	-17° 46.4	-17° 57.6	-11.8	61.1

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 7 07h51 — Новолуние: 15 04h19 — Первая четв.: 23 07h33 — Полнолуние: 30 02h26

СОЛНЦЕ

Апрель 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	179° 01.3 4° 34.1	194° 01.5 4° 35.0	209° 01.7 4° 36.0	224° 01.9 4° 37.0	239° 02.1 4° 37.9	254° 02.3 4° 38.9	89° 04.7 4° 51.4	104° 04.9 4° 52.4	119° 05.1 4° 53.3	134° 05.2 4° 54.3	149° 05.4 4° 55.2	164° 05.6 4° 56.2	+0.2 +1.0
Пн 2	179° 05.8 4° 57.2	194° 06.0 4° 58.1	209° 06.2 4° 59.1	224° 06.3 5° 00.0	239° 06.5 5° 01.0	254° 06.7 5° 02.0	89° 09.1 5° 14.4	104° 09.3 5° 15.4	119° 09.5 5° 16.4	134° 09.7 5° 17.3	149° 09.8 5° 18.3	164° 10.0 5° 19.2	+0.2 +1.0
Вт 3	179° 10.2 5° 20.2	194° 10.4 5° 21.1	209° 10.6 5° 22.1	224° 10.8 5° 23.1	239° 10.9 5° 24.0	254° 11.1 5° 25.0	89° 13.5 5° 37.4	104° 13.7 5° 38.3	119° 13.9 5° 39.3	134° 14.1 5° 40.2	149° 14.2 5° 41.2	164° 14.4 5° 42.2	+0.2 +1.0
Ср 4	179° 14.6 5° 43.1	194° 14.8 5° 44.1	209° 15.0 5° 45.0	224° 15.1 5° 46.0	239° 15.3 5° 46.9	254° 15.5 5° 47.9	89° 17.9 6° 00.2	104° 18.0 6° 01.2	119° 18.2 6° 02.1	134° 18.4 6° 03.1	149° 18.6 6° 04.0	164° 18.8 6° 05.0	+0.2 +1.0
Чт 5	179° 18.9 6° 05.9	194° 19.1 6° 06.9	209° 19.3 6° 07.8	224° 19.5 6° 08.8	239° 19.7 6° 09.7	254° 19.8 6° 10.7	89° 22.2 6° 23.0	104° 22.3 6° 23.9	119° 22.5 6° 24.9	134° 22.7 6° 25.8	149° 22.9 6° 26.8	164° 23.0 6° 27.7	+0.2 +0.9
Пт 6	179° 23.2 6° 28.7	194° 23.4 6° 29.6	209° 23.6 6° 30.5	224° 23.8 6° 31.5	239° 23.9 6° 32.4	254° 24.1 6° 33.4	89° 26.4 6° 45.6	104° 26.6 6° 46.6	119° 26.7 6° 47.5	134° 26.9 6° 48.5	149° 27.1 6° 49.4	164° 27.3 6° 50.3	+0.2 +0.9
Сб 7	179° 27.4 6° 51.3	194° 27.6 6° 52.2	209° 27.8 6° 53.2	224° 28.0 6° 54.1	239° 28.1 6° 55.0	254° 28.3 6° 56.0	89° 30.6 7° 08.2	104° 30.8 7° 09.1	119° 30.9 7° 10.0	134° 31.1 7° 11.0	149° 31.3 7° 11.9	164° 31.4 7° 12.8	+0.2 +0.9
Вс 8	179° 31.6 7° 13.8	194° 31.8 7° 14.7	209° 32.0 7° 15.6	224° 32.1 7° 16.6	239° 32.3 7° 17.5	254° 32.5 7° 18.4	89° 34.7 7° 30.6	104° 34.9 7° 31.5	119° 35.0 7° 32.4	134° 35.2 7° 33.4	149° 35.4 7° 34.3	164° 35.6 7° 35.2	+0.2 +0.9
Пн 9	179° 35.7 7° 36.1	194° 35.9 7° 37.1	209° 36.1 7° 38.0	224° 36.2 7° 38.9	239° 36.4 7° 39.9	254° 36.6 7° 40.8	89° 38.8 7° 52.8	104° 38.9 7° 53.8	119° 39.1 7° 54.7	134° 39.3 7° 55.6	149° 39.4 7° 56.5	164° 39.6 7° 57.5	+0.2 +0.9
Вт 10	179° 39.8 7° 58.4	194° 39.9 7° 59.3	209° 40.1 8° 00.2	224° 40.3 8° 01.2	239° 40.4 8° 02.1	254° 40.6 8° 03.0	89° 42.7 8° 15.0	104° 42.9 8° 15.9	119° 43.1 8° 16.8	134° 43.2 8° 17.8	149° 43.4 8° 18.7	164° 43.6 8° 19.6	+0.2 +0.9
Ср 11	179° 43.7 8° 20.5	194° 43.9 8° 21.4	209° 44.1 8° 22.3	224° 44.2 8° 23.3	239° 44.4 8° 24.2	254° 44.6 8° 25.1	89° 46.7 8° 37.0	104° 46.8 8° 37.9	119° 47.0 8° 38.8	134° 47.1 8° 39.7	149° 47.3 8° 40.7	164° 47.5 8° 41.6	+0.2 +0.9
Чт 12	179° 47.6 8° 42.5	194° 47.8 8° 43.4	209° 47.9 8° 44.3	224° 48.1 8° 45.2	239° 48.3 8° 46.1	254° 48.4 8° 47.0	89° 50.5 8° 58.9	104° 50.7 8° 59.8	119° 50.8 9° 00.7	134° 51.0 9° 01.6	149° 51.1 9° 02.5	164° 51.3 9° 03.4	+0.2 +0.9
Пт 13	179° 51.4 9° 04.3	194° 51.6 9° 05.2	209° 51.8 9° 06.1	224° 51.9 9° 07.0	239° 52.1 9° 07.9	254° 52.2 9° 08.8	89° 54.3 9° 20.6	104° 54.4 9° 21.5	119° 54.6 9° 22.4	134° 54.7 9° 23.3	149° 54.9 9° 24.2	164° 55.0 9° 25.1	+0.2 +0.9
Сб 14	179° 55.2 9° 26.0	194° 55.3 9° 26.9	209° 55.5 9° 27.8	224° 55.6 9° 28.7	239° 55.8 9° 29.6	254° 55.9 9° 30.5	89° 57.9 9° 42.2	104° 58.1 9° 43.0	119° 58.2 9° 43.9	134° 58.4 9° 44.8	149° 58.5 9° 45.7	164° 58.7 9° 46.6	+0.2 +0.9
Вс 15	179° 58.8 9° 47.5	194° 59.0 9° 48.4	209° 59.1 9° 49.3	224° 59.3 9° 50.2	239° 59.4 9° 51.1	254° 59.6 9° 52.0	90° 01.5 10° 03.6	105° 01.7 10° 04.4	120° 01.8 10° 05.3	135° 01.9 10° 06.2	150° 02.1 10° 07.1	165° 02.2 10° 08.0	+0.2 +0.9
Пн 16	180° 02.4 10° 08.9	195° 02.5 10° 09.8	210° 02.7 10° 10.7	225° 02.8 10° 11.5	240° 03.0 10° 12.4	255° 03.1 10° 13.3	90° 05.0 10° 24.8	105° 05.1 10° 25.7	120° 05.3 10° 26.6	135° 05.4 10° 27.4	150° 05.6 10° 28.3	165° 05.7 10° 29.2	+0.1 +0.9
Вт 17	180° 05.9 10° 30.1	195° 06.0 10° 30.9	210° 06.1 10° 31.8	225° 06.3 10° 32.7	240° 06.4 10° 33.6	255° 06.6 10° 34.5	90° 08.4 10° 45.8	105° 08.5 10° 46.7	120° 08.7 10° 47.6	135° 08.8 10° 48.5	150° 09.0 10° 49.3	165° 09.1 10° 50.2	+0.1 +0.9
Ср 18	180° 09.2 10° 51.1	195° 09.4 10° 52.0	210° 09.5 10° 52.8	225° 09.6 10° 53.7	240° 09.8 10° 54.6	255° 09.9 10° 55.4	90° 11.7 11° 06.7	105° 11.8 11° 07.6	120° 12.0 11° 08.5	135° 12.1 11° 09.3	150° 12.2 11° 10.2	165° 12.4 11° 11.1	+0.1 +0.9
Чт 19	180° 12.5 11° 11.9	195° 12.6 11° 12.8	210° 12.8 11° 13.7	225° 12.9 11° 14.5	240° 13.0 11° 15.4	255° 13.2 11° 16.2	90° 14.9 11° 27.4	105° 15.0 11° 28.3	120° 15.2 11° 29.1	135° 15.3 11° 30.0	150° 15.4 11° 30.9	165° 15.6 11° 31.7	+0.1 +0.9
Пт 20	180° 15.7 11° 32.6	195° 15.8 11° 33.4	210° 16.0 11° 34.3	225° 16.1 11° 35.1	240° 16.2 11° 36.0	255° 16.3 11° 36.9	90° 18.0 11° 47.9	105° 18.1 11° 48.8	120° 18.3 11° 49.6	135° 18.4 11° 50.5	150° 18.5 11° 51.3	165° 18.6 11° 52.2	+0.1 +0.9
Сб 21	180° 18.8 11° 53.0	195° 18.9 11° 53.9	210° 19.0 11° 54.7	225° 19.2 11° 55.6	240° 19.3 11° 56.4	255° 19.4 11° 57.3	90° 21.0 12° 08.2	105° 21.1 12° 09.1	120° 21.3 12° 09.9	135° 21.4 12° 10.8	150° 21.5 12° 11.6	165° 21.6 12° 12.5	+0.1 +0.8
Вс 22	180° 21.7 12° 13.3	195° 21.9 12° 14.1	210° 22.0 12° 15.0	225° 22.1 12° 15.8	240° 22.2 12° 16.7	255° 22.4 12° 17.5	90° 23.9 12° 28.4	105° 24.0 12° 29.2	120° 24.1 12° 30.0	135° 24.3 12° 30.9	150° 24.4 12° 31.7	165° 24.5 12° 32.5	+0.1 +0.8
Пн 23	180° 24.6 12° 33.4	195° 24.7 12° 34.2	210° 24.8 12° 35.0	225° 25.0 12° 35.8	240° 25.1 12° 36.7	255° 25.2 12° 37.5	90° 26.7 12° 48.3	105° 26.8 12° 49.1	120° 26.9 12° 49.9	135° 27.0 12° 50.7	150° 27.1 12° 51.6	165° 27.3 12° 52.4	+0.1 +0.8
Вт 24	180° 27.4 12° 53.2	195° 27.5 12° 54.0	210° 27.6 12° 54.8	225° 27.7 12° 55.7	240° 27.8 12° 56.5	255° 27.9 12° 57.3	90° 29.4 13° 08.0	105° 29.5 13° 08.8	120° 29.6 13° 09.6	135° 29.7 13° 10.4	150° 29.8 13° 11.2	165° 29.9 13° 12.0	+0.1 +0.8
Ср 25	180° 30.0 13° 12.8	195° 30.1 13° 13.7	210° 30.2 13° 14.5	225° 30.3 13° 15.3	240° 30.4 13° 16.1	255° 30.6 13° 16.9	90° 31.9 13° 27.4	105° 32.0 13° 28.2	120° 32.1 13° 29.0	135° 32.2 13° 29.8	150° 32.3 13° 30.6	165° 32.4 13° 31.5	+0.1 +0.8
Чт 26	180° 32.5 13° 32.3	195° 32.6 13° 33.1	210° 32.7 13° 33.9	225° 32.8 13° 34.7	240° 33.0 13° 35.5	255° 33.1 13° 36.3	90° 34.4 13° 46.7	105° 34.5 13° 47.5	120° 34.6 13° 48.3	135° 34.7 13° 49.1	150° 34.8 13° 49.9	165° 34.9 13° 50.7	+0.1 +0.8
Пт 27	180° 34.9 13° 51.5	195° 35.0 13° 52.2	210° 35.1 13° 53.0	225° 35.2 13° 53.8	240° 35.3 13° 54.6	255° 35.4 13° 55.4	90° 36.7 14° 05.7	105° 36.8 14° 06.5	120° 36.9 14° 07.3	135° 37.0 14° 08.1	150° 37.0 14° 08.8	165° 37.1 14° 09.6	+0.1 +0.8
Сб 28	180° 37.2 14° 10.4	195° 37.3 14° 11.2	210° 37.4 14° 12.0	225° 37.5 14° 12.8	240° 37.6 14° 13.6	255° 37.7 14° 14.3	90° 38.9 14° 24.5	105° 38.9 14° 25.3	120° 39.0 14° 26.0	135° 39.1 14° 26.8	150° 39.2 14° 27.6	165° 39.3 14° 28.4	+0.1 +0.8
Вс 29	180° 39.4 14° 29.2	195° 39.5 14° 29.9	210° 39.6 14° 30.7	225° 39.6 14° 31.5	240° 39.7 14° 32.3	255° 39.8 14° 33.0	90° 40.9 14° 43.0	105° 41.0 14° 43.8	120° 41.1 14° 44.6	135° 41.2 14° 45.4	150° 41.2 14° 46.1	165° 41.3 14° 46.9	+0.1 +0.8
Пн 30	180° 41.4 14° 47.7	195° 41.5 14° 48.4	210° 41.6 14° 49.2	225° 41.7 14° 49.9	240° 41.7 14° 50.7	255° 41.8 14° 51.5	90° 42.8 15° 01.4	105° 42.9 15° 02.1	120° 43.0 15° 02.9	135° 43.1 15° 03.6	150° 43.1 15° 04.4	165° 43.2 15° 05.1	+0.1 +0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Апрель 2029

Д	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	Δ'/h	R/p
Вс 1	75° 39.3 -19° 42.4	90° 03.4 -19° 52.1	104° 27.5 -20° 01.7	118° 51.6 -20° 11.1	133° 15.6 -20° 20.4	147° 39.6 -20° 29.5	162° 03.5 -20° 38.4	176° 27.4 -20° 47.2	190° 51.3 -20° 55.9	205° 15.1 -21° 04.4	219° 38.9 -21° 12.7	+24.0 -9.0	16.5 60.6
Пн 2	75° 33.1 -22° 58.8	89° 56.6 -23° 04.5	104° 20.1 -23° 10.1	118° 43.6 -23° 15.6	133° 07.1 -23° 20.8	147° 30.6 -23° 25.9	161° 54.0 -23° 30.8	176° 17.5 -23° 35.6	190° 41.0 -23° 40.2	205° 04.5 -23° 44.6	219° 28.0 -23° 48.8	+23.5 -5.0	16.3 59.8
Вт 3	75° 22.7 -24° 32.3	89° 46.5 -24° 33.9	104° 10.4 -24° 35.3	118° 34.4 -24° 36.5	132° 58.4 -24° 37.5	147° 22.4 -24° 38.4	161° 46.5 -24° 39.2	176° 10.6 -24° 39.7	190° 34.8 -24° 40.2	204° 59.1 -24° 40.4	219° 23.3 -24° 40.5	+24.1 -0.8	16.0 58.8
Ср 4	75° 34.9 -24° 22.8	90° 00.2 -24° 20.5	104° 25.6 -24° 17.9	118° 51.1 -24° 15.2	133° 16.6 -24° 12.4	147° 42.3 -24° 09.4	162° 08.0 -24° 06.3	176° 33.8 -24° 03.0	190° 59.7 -23° 59.6	205° 25.6 -23° 56.1	219° 51.7 -23° 52.4	+25.7 +3.0	15.8 57.8
◑ Чт 5	76° 32.9 -22° 41.4	91° 00.4 -22° 35.6	105° 28.0 -22° 29.8	119° 55.7 -22° 23.8	134° 23.4 -22° 17.7	148° 51.3 -22° 11.5	163° 19.2 -22° 05.2	177° 47.3 -21° 58.7	192° 15.5 -21° 52.2	206° 43.7 -21° 45.5	221° 12.0 -21° 38.8	+27.9 +6.3	15.5 56.9
Пт 6	78° 28.6 -19° 45.2	92° 58.4 -19° 36.8	107° 28.4 -19° 28.4	121° 58.4 -19° 19.9	136° 28.6 -19° 11.3	150° 58.8 -19° 02.6	165° 29.1 -18° 53.9	179° 59.5 -18° 45.0	194° 30.0 -18° 36.1	209° 00.6 -18° 27.1	223° 31.3 -18° 18.0	+30.3 +8.7	15.3 56.0
Сб 7	81° 21.7 -15° 53.0	95° 53.7 -15° 42.8	110° 25.8 -15° 32.5	124° 58.0 -15° 22.2	139° 30.3 -15° 11.8	154° 02.6 -15° 01.4	168° 35.0 -14° 50.9	183° 07.5 -14° 40.4	197° 40.0 -14° 29.8	212° 12.6 -14° 19.1	226° 45.3 -14° 08.4	+32.4 +10.5	15.1 55.3
Вс 8	85° 03.7 -11° 22.0	99° 37.5 -11° 10.5	114° 11.2 -10° 59.1	128° 45.1 -10° 47.6	143° 19.0 -10° 36.0	157° 52.9 -10° 24.4	172° 26.9 -10° 12.8	187° 01.0 -10° 01.2	201° 35.1 -9° 49.5	216° 09.2 -9° 37.8	230° 43.4 -9° 26.0	+34.0 +11.6	14.9 54.8
Пн 9	89° 21.8 -6° 26.6	103° 56.6 -6° 14.5	118° 31.5 -6° 02.3	133° 06.5 -5° 50.2	147° 41.4 -5° 38.0	162° 16.4 -5° 25.8	176° 51.5 -5° 13.6	191° 26.5 -5° 01.3	206° 01.6 -4° 49.1	220° 36.7 -4° 36.8	235° 11.9 -4° 24.5	+35.0 +12.2	14.8 54.4
Вт 10	94° 01.5 -1° 19.4	108° 36.9 -1° 07.0	123° 12.4 -0° 54.7	137° 47.8 -0° 42.3	152° 23.3 -0° 29.9	166° 58.8 -0° 17.5	181° 34.2 -0° 05.2	196° 09.7 0° 07.2	210° 45.2 0° 19.6	225° 20.7 0° 31.9	239° 56.2 0° 44.3	+35.5 +12.4	14.7 54.1
Ср 11	98° 48.7 3° 48.5	113° 24.1 4° 00.7	127° 59.5 4° 12.9	142° 35.0 4° 25.0	157° 10.4 4° 37.2	171° 45.8 4° 49.3	186° 21.2 5° 01.4	200° 56.6 5° 13.4	215° 31.9 5° 25.5	230° 07.3 5° 37.5	244° 42.6 5° 49.5	+35.4 +12.1	14.7 53.9
Чт 12	103° 29.9 8° 46.5	118° 04.9 8° 58.1	132° 39.8 9° 09.6	147° 14.7 9° 21.1	161° 49.5 9° 32.5	176° 24.4 9° 44.0	190° 59.2 9° 55.3	205° 33.9 10° 06.7	220° 08.7 10° 18.0	234° 43.4 10° 29.3	249° 18.0 10° 40.5	+34.8 +11.4	14.7 53.9
● Пт 13	107° 53.3 13° 23.5	122° 27.3 13° 34.0	137° 01.2 13° 44.4	151° 35.2 13° 54.8	166° 09.0 14° 05.1	180° 42.9 14° 15.4	195° 16.6 14° 25.6	209° 50.4 14° 35.8	224° 24.0 14° 45.9	238° 57.7 14° 55.9	253° 31.3 15° 05.9	+33.8 +10.2	14.7 53.9
Сб 14	111° 48.8 17° 27.9	126° 21.5 17° 36.8	140° 54.2 17° 45.7	155° 26.8 17° 54.4	169° 59.4 18° 03.1	184° 31.9 18° 11.8	199° 04.4 18° 20.3	213° 36.8 18° 28.8	228° 09.1 18° 37.2	242° 41.4 18° 45.5	257° 13.6 18° 53.8	+32.5 +8.6	14.7 54.0
Вс 15	115° 10.1 20° 47.3	129° 41.4 20° 54.2	144° 12.6 21° 01.0	158° 43.8 21° 07.7	173° 14.9 21° 14.2	187° 46.0 21° 20.7	202° 17.0 21° 27.1	216° 48.0 21° 33.4	231° 18.8 21° 39.6	245° 49.7 21° 45.7	260° 20.5 21° 51.8	+31.0 +6.4	14.8 54.3
Пн 16	117° 55.6 23° 09.6	132° 25.5 23° 13.9	146° 55.4 23° 18.1	161° 25.2 23° 22.3	175° 55.0 23° 26.3	190° 24.7 23° 30.2	204° 54.4 23° 33.9	219° 24.0 23° 37.6	233° 53.6 23° 41.2	248° 23.1 23° 44.6	262° 52.6 23° 47.9	+29.7 +3.8	14.9 54.6
Вт 17	120° 10.0 24° 23.6	134° 38.8 24° 25.0	149° 07.7 24° 26.3	163° 36.4 24° 27.5	178° 05.2 24° 28.5	192° 33.9 24° 29.4	207° 02.6 24° 30.2	221° 31.3 24° 30.9	236° 00.0 24° 31.4	250° 28.6 24° 31.8	264° 57.2 24° 32.1	+28.7 +0.9	15.0 55.1
Ср 18	134° 38.8 24° 25.0	149° 07.7 24° 26.3	163° 36.4 24° 27.5	178° 05.2 24° 28.5	192° 33.9 24° 29.4	207° 02.6 24° 30.2	221° 31.3 24° 30.9	236° 00.0 24° 31.4	250° 28.6 24° 31.8	264° 57.2 24° 32.1	279° 25.7 24° 32.3	+28.7 +0.7	15.0 55.1
Чт 19	136° 31.9 24° 19.5	151° 00.2 24° 17.6	165° 28.5 24° 15.6	179° 56.7 24° 13.4	194° 25.0 24° 11.1	208° 53.3 24° 08.7	223° 21.5 24° 06.2	237° 49.8 24° 03.5	252° 18.0 24° 00.8	266° 46.2 23° 57.8	281° 14.5 23° 54.8	+28.3 -2.5	15.2 55.7
Пт 20	138° 18.2 22° 53.6	152° 46.5 22° 48.5	167° 14.8 22° 43.3	181° 43.2 22° 38.0	196° 11.5 22° 32.5	210° 39.8 22° 26.9	225° 08.2 22° 21.1	239° 36.6 22° 15.3	254° 05.0 22° 09.3	268° 33.3 22° 03.2	283° 01.8 21° 57.0	+28.3 -5.7	15.4 56.3
◐ Сб 21	140° 10.0 20° 09.0	154° 38.7 20° 00.9	169° 07.4 19° 52.6	183° 36.1 19° 44.2	198° 04.9 19° 35.7	212° 33.7 19° 27.1	227° 02.5 19° 18.4	241° 31.3 19° 09.6	256° 00.2 19° 00.6	270° 29.0 18° 51.6	284° 57.9 18° 42.4	+28.8 -8.7	15.6 57.1
Вс 22	142° 13.9 16° 12.0	156° 43.1 16° 01.1	171° 12.3 15° 50.2	185° 41.6 15° 39.1	200° 10.9 15° 28.0	214° 40.2 15° 16.7	229° 09.5 15° 05.4	243° 38.8 14° 54.0	258° 08.2 14° 42.5	272° 37.6 14° 30.8	287° 06.9 14° 19.1	+29.3 -11.3	15.8 58.0
Пн 23	144° 29.4 11° 13.1	158° 58.9 11° 00.0	173° 28.5 10° 46.9	187° 58.1 10° 33.7	202° 27.7 10° 20.4	216° 57.3 10° 07.1	231° 26.9 9° 53.6	245° 56.5 9° 40.2	260° 26.1 9° 26.6	274° 55.8 9° 13.0	289° 25.4 8° 59.3	+29.6 -13.4	16.1 58.9
Вт 24	146° 49.1 5° 26.7	161° 18.7 5° 12.1	175° 48.2 4° 57.5	190° 17.7 4° 42.8	204° 47.1 4° 28.1	219° 16.6 4° 13.3	233° 46.0 3° 58.5	248° 15.5 3° 43.6	262° 44.9 3° 28.7	277° 14.2 3° 13.8	291° 43.6 2° 58.9	+29.4 -14.8	16.3 59.8
Ср 25	149° 00.8 -0° 48.6	163° 29.7 -1° 03.9	177° 58.5 -1° 19.2	192° 27.3 -1° 34.6	206° 56.1 -1° 49.9	221° 24.8 -2° 05.2	235° 53.5 -2° 20.6	250° 22.2 -2° 35.9	264° 50.8 -2° 51.2	279° 19.3 -3° 06.5	293° 47.8 -3° 21.9	+28.7 -15.3	16.5 60.5
Чт 26	150° 49.4 -7° 09.8	165° 17.0 -7° 24.8	179° 44.6 -7° 39.8	194° 12.1 -7° 54.7	208° 39.6 -8° 09.6	223° 07.0 -8° 24.4	237° 34.4 -8° 39.2	252° 01.6 -8° 53.9	266° 28.9 -9° 08.6	280° 56.0 -9° 23.3	295° 23.1 -9° 37.9	+27.4 -14.8	16.6 61.0
Пт 27	152° 00.9 -13° 09.2	166° 26.9 -13° 22.7	180° 52.8 -13° 36.1	195° 18.6 -13° 49.4	209° 44.3 -14° 02.6	224° 09.9 -14° 15.8	238° 35.5 -14° 28.8	253° 01.0 -14° 41.7	267° 26.5 -14° 54.6	281° 51.8 -15° 07.3	296° 17.1 -15° 20.0	+25.6 -13.1	16.7 61.2
○ Сб 28	152° 27.6 -18° 16.3	166° 51.8 -18° 27.0	181° 15.8 -18° 37.7	195° 39.8 -18° 48.2	210° 03.8 -18° 58.5	224° 27.7 -19° 08.8	238° 51.5 -19° 18.9	253° 15.2 -19° 28.8	267° 38.9 -19° 38.6	282° 02.6 -19° 48.3	296° 26.1 -19° 57.8	+23.8 -10.2	16.7 61.1
Вс 29	152° 13.6 -22° 02.2	166° 36.4 -22° 09.3	180° 59.2 -22° 16.1	195° 21.9 -22° 22.8	209° 44.7 -22° 29.3	224° 07.4 -22° 35.7	238° 30.0 -22° 41.8	252° 52.7 -22° 47.9	267° 15.3 -22° 53.7	281° 37.9 -22° 59.4	296° 00.5 -23° 04.9	+22.7 -6.3	16.5 60.6
Пн 30	151° 38.7 -24° 06.4	166° 01.2 -24° 09.1	180° 23.9 -24° 11.6	194° 46.5 -24° 14.0	209° 09.2 -24° 16.2	223° 31.8 -24° 18.2	237° 54.6 -24° 20.0	252° 17.3 -24° 21.6	266° 40.1 -24° 23.1	281° 02.9 -24° 24.4	295° 25.7 -24° 25.5	+22.7 -1.9	16.3 59.8

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 5 19h51 — Новолуние: 13 21h40 — Первая четв.: 21 19h50 — Полнолуние: 28 10h36

СОЛНЦЕ

Май 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	180° 43.3	195° 43.4	210° 43.4	225° 43.5	240° 43.6	255° 43.7	90° 44.6	105° 44.7	120° 44.8	135° 44.8	150° 44.9	165° 45.0	+0.1
	15° 05.9	15° 06.7	15° 07.4	15° 08.2	15° 08.9	15° 09.7	15° 19.4	15° 20.2	15° 20.9	15° 21.7	15° 22.4	15° 23.2	+0.8
Ср 2	180° 45.1	195° 45.1	210° 45.2	225° 45.3	240° 45.3	255° 45.4	90° 46.3	105° 46.3	120° 46.4	135° 46.5	150° 46.5	165° 46.6	+0.1
	15° 23.9	15° 24.7	15° 25.4	15° 26.1	15° 26.9	15° 27.6	15° 37.2	15° 38.0	15° 38.7	15° 39.5	15° 40.2	15° 40.9	+0.7
Чт 3	180° 46.7	195° 46.7	210° 46.8	225° 46.9	240° 46.9	255° 47.0	90° 47.8	105° 47.8	120° 47.9	135° 48.0	150° 48.0	165° 48.1	+0.1
	15° 41.7	15° 42.4	15° 43.1	15° 43.9	15° 44.6	15° 45.3	15° 54.8	15° 55.5	15° 56.3	15° 57.0	15° 57.7	15° 58.4	+0.7
Пт 4	180° 48.1	195° 48.2	210° 48.3	225° 48.3	240° 48.4	255° 48.4	90° 49.1	105° 49.2	120° 49.3	135° 49.3	150° 49.4	165° 49.4	+0.1
	15° 59.2	15° 59.9	16° 00.6	16° 01.3	16° 02.0	16° 02.8	16° 12.1	16° 12.8	16° 13.5	16° 14.2	16° 15.0	16° 15.7	+0.7
Сб 5	180° 49.5	195° 49.5	210° 49.6	225° 49.6	240° 49.7	255° 49.7	90° 50.4	105° 50.4	120° 50.5	135° 50.5	150° 50.6	165° 50.6	+0.1
	16° 16.4	16° 17.1	16° 17.8	16° 18.5	16° 19.2	16° 19.9	16° 29.1	16° 29.8	16° 30.5	16° 31.2	16° 31.9	16° 32.6	+0.7
Вс 6	180° 50.6	195° 50.7	210° 50.7	225° 50.8	240° 50.8	255° 50.9	90° 51.4	105° 51.5	120° 51.5	135° 51.6	150° 51.6	165° 51.6	+0.0
	16° 33.3	16° 34.0	16° 34.7	16° 35.4	16° 36.1	16° 36.8	16° 45.9	16° 46.6	16° 47.3	16° 48.0	16° 48.6	16° 49.3	+0.7
Пн 7	180° 51.7	195° 51.7	210° 51.8	225° 51.8	240° 51.8	255° 51.9	90° 52.4	105° 52.4	120° 52.4	135° 52.5	150° 52.5	165° 52.5	+0.0
	16° 50.0	16° 50.7	16° 51.4	16° 52.1	16° 52.8	16° 53.5	17° 02.4	17° 03.0	17° 03.7	17° 04.4	17° 05.1	17° 05.8	+0.7
Вт 8	180° 52.6	195° 52.6	210° 52.6	225° 52.7	240° 52.7	255° 52.7	90° 53.2	105° 53.2	120° 53.2	135° 53.2	150° 53.3	165° 53.3	+0.0
	17° 06.4	17° 07.1	17° 07.8	17° 08.5	17° 09.1	17° 09.8	17° 18.5	17° 19.2	17° 19.9	17° 20.5	17° 21.2	17° 21.9	+0.7
Ср 9	180° 53.3	195° 53.4	210° 53.4	225° 53.4	240° 53.4	255° 53.5	90° 53.8	105° 53.8	120° 53.8	135° 53.9	150° 53.9	165° 53.9	+0.0
	17° 22.5	17° 23.2	17° 23.9	17° 24.5	17° 25.2	17° 25.9	17° 34.4	17° 35.1	17° 35.8	17° 36.4	17° 37.1	17° 37.7	+0.7
Чт 10	180° 53.9	195° 53.9	210° 54.0	225° 54.0	240° 54.0	255° 54.0	90° 54.3	105° 54.3	120° 54.3	135° 54.3	150° 54.3	165° 54.4	+0.0
	17° 38.4	17° 39.0	17° 39.7	17° 40.3	17° 41.0	17° 41.6	17° 50.1	17° 50.7	17° 51.3	17° 52.0	17° 52.6	17° 53.3	+0.7
Пт 11	180° 54.4	195° 54.4	210° 54.4	225° 54.4	240° 54.4	255° 54.5	90° 54.6	105° 54.6	120° 54.6	135° 54.7	150° 54.7	165° 54.7	+0.0
	17° 53.9	17° 54.5	17° 55.2	17° 55.8	17° 56.5	17° 57.1	18° 05.4	18° 06.0	18° 06.6	18° 07.3	18° 07.9	18° 08.5	+0.6
Сб 12	180° 54.7	195° 54.7	210° 54.7	225° 54.7	240° 54.7	255° 54.7	90° 54.8	105° 54.8	120° 54.8	135° 54.8	150° 54.8	165° 54.8	+0.0
	18° 09.1	18° 09.8	18° 10.4	18° 11.0	18° 11.7	18° 12.3	18° 20.4	18° 21.0	18° 21.6	18° 22.2	18° 22.8	18° 23.5	+0.6
Вс 13	180° 54.8	195° 54.9	210° 54.9	225° 54.9	240° 54.9	255° 54.9	90° 54.9	105° 54.9	120° 54.9	135° 54.9	150° 54.9	165° 54.9	+0.0
	18° 24.1	18° 24.7	18° 25.3	18° 25.9	18° 26.5	18° 27.1	18° 35.1	18° 35.7	18° 36.3	18° 36.9	18° 37.5	18° 38.1	+0.6
Пн 14	180° 54.9	195° 54.9	210° 54.9	225° 54.9	240° 54.9	255° 54.9	90° 54.8	105° 54.8	120° 54.8	135° 54.8	150° 54.8	165° 54.8	-0.0
	18° 38.7	18° 39.3	18° 39.9	18° 40.5	18° 41.1	18° 41.7	18° 49.4	18° 50.0	18° 50.6	18° 51.2	18° 51.8	18° 52.4	+0.6
Вт 15	180° 54.7	195° 54.7	210° 54.7	225° 54.7	240° 54.7	255° 54.7	90° 54.6	105° 54.5	120° 54.5	135° 54.5	150° 54.5	165° 54.5	-0.0
	18° 53.0	18° 53.6	18° 54.2	18° 54.8	18° 55.3	18° 55.9	19° 03.5	19° 04.1	19° 04.7	19° 05.2	19° 05.8	19° 06.4	+0.6
Ср 16	180° 54.5	195° 54.5	210° 54.5	225° 54.4	240° 54.4	255° 54.4	90° 54.2	105° 54.2	120° 54.2	135° 54.1	150° 54.1	165° 54.1	-0.0
	19° 07.0	19° 07.5	19° 08.1	19° 08.7	19° 09.3	19° 09.8	19° 17.2	19° 17.8	19° 18.4	19° 18.9	19° 19.5	19° 20.1	+0.6
Чт 17	180° 54.1	195° 54.1	210° 54.0	225° 54.0	240° 54.0	255° 54.0	90° 53.7	105° 53.7	120° 53.6	135° 53.6	150° 53.6	165° 53.6	-0.0
	19° 20.6	19° 21.2	19° 21.7	19° 22.3	19° 22.9	19° 23.4	19° 30.7	19° 31.2	19° 31.8	19° 32.3	19° 32.9	19° 33.4	+0.6
Пт 18	180° 53.5	195° 53.5	210° 53.5	225° 53.5	240° 53.4	255° 53.4	90° 53.1	105° 53.0	120° 53.0	135° 53.0	150° 52.9	165° 52.9	-0.0
	19° 34.0	19° 34.5	19° 35.0	19° 35.6	19° 36.1	19° 36.7	19° 43.7	19° 44.3	19° 44.8	19° 45.3	19° 45.9	19° 46.4	+0.5
Сб 19	180° 52.9	195° 52.8	210° 52.8	225° 52.8	240° 52.7	255° 52.7	90° 52.3	105° 52.2	120° 52.2	135° 52.2	150° 52.1	165° 52.1	-0.0
	19° 46.9	19° 47.5	19° 48.0	19° 48.5	19° 49.1	19° 49.6	19° 56.5	19° 57.0	19° 57.5	19° 58.0	19° 58.6	19° 59.1	+0.5
Вс 20	180° 52.1	195° 52.0	210° 52.0	225° 52.0	240° 51.9	255° 51.9	90° 51.4	105° 51.3	120° 51.3	135° 51.3	150° 51.2	165° 51.2	-0.0
	19° 59.6	20° 00.1	20° 00.6	20° 01.2	20° 01.7	20° 02.2	20° 08.9	20° 09.4	20° 09.9	20° 10.4	20° 10.9	20° 11.4	+0.5
Пн 21	180° 51.1	195° 51.1	210° 51.1	225° 51.0	240° 51.0	255° 50.9	90° 50.4	105° 50.3	120° 50.3	135° 50.2	150° 50.2	165° 50.1	-0.0
	20° 11.9	20° 12.4	20° 12.9	20° 13.4	20° 13.9	20° 14.4	20° 20.9	20° 21.4	20° 21.9	20° 22.4	20° 22.9	20° 23.4	+0.5
Вт 22	180° 50.1	195° 50.0	210° 50.0	225° 49.9	240° 49.9	255° 49.8	90° 49.2	105° 49.1	120° 49.1	135° 49.0	150° 49.0	165° 48.9	-0.0
	20° 23.9	20° 24.4	20° 24.9	20° 25.4	20° 25.8	20° 26.3	20° 32.6	20° 33.1	20° 33.6	20° 34.1	20° 34.5	20° 35.0	+0.5
Ср 23	180° 48.9	195° 48.8	210° 48.8	225° 48.7	240° 48.7	255° 48.6	90° 47.9	105° 47.9	120° 47.8	135° 47.7	150° 47.7	165° 47.6	-0.1
	20° 35.5	20° 36.0	20° 36.5	20° 36.9	20° 37.4	20° 37.9	20° 44.0	20° 44.4	20° 44.9	20° 45.4	20° 45.8	20° 46.3	+0.5
Чт 24	180° 47.6	195° 47.5	210° 47.5	225° 47.4	240° 47.3	255° 47.3	90° 46.5	105° 46.5	120° 46.4	135° 46.3	150° 46.3	165° 46.2	-0.1
	20° 46.8	20° 47.2	20° 47.7	20° 48.1	20° 48.6	20° 49.1	20° 55.0	20° 55.4	20° 55.9	20° 56.3	20° 56.8	20° 57.2	+0.5
Пт 25	180° 46.1	195° 46.1	210° 46.0	225° 46.0	240° 45.9	255° 45.8	90° 45.0	105° 44.9	120° 44.9	135° 44.8	150° 44.7	165° 44.7	-0.1
	20° 57.7	20° 58.1	20° 58.6	20° 59.0	20° 59.4	20° 59.9	21° 05.6	21° 06.0	21° 06.5	21° 06.9	21° 07.3	21° 07.8	+0.4
Сб 26	180° 44.6	195° 44.5	210° 44.5	225° 44.4	240° 44.3	255° 44.3	90° 43.4	105° 43.3	120° 43.2	135° 43.1	150° 43.1	165° 43.0	-0.1
	21° 08.2	21° 08.6	21° 09.1	21° 09.5	21° 09.9	21° 10.4	21° 15.9	21° 16.3	21° 16.7	21° 17.1	21° 17.6	21° 18.0	+0.4
Вс 27	180° 42.9	195° 42.9	210° 42.8	225° 42.7	240° 42.6	255° 42.6	90° 41.6	105° 41.5	120° 41.5	135° 41.4	150° 41.3	165° 41.2	-0.1
	21° 18.4	21° 18.8	21° 19.2	21° 19.6	21° 20.0	21° 20.5	21° 25.8	21° 26.2	21° 26.6	21° 27.0	21° 27.4	21° 27.8	+0.4
Пн 28	180° 41.1	195° 41.1	210° 41.0	225° 40.9	240° 40.8	255° 40.8	90° 39.7	105° 39.7	120° 39.6	135° 39.5	150° 39.4	165° 39.3	-0.1
	21° 28.2	21° 28.6	21° 29.0	21° 29.4	21° 29.8	21° 30.2	21° 35.3	21° 35.7	21° 36.1	21° 36.5	21° 36.9	21° 37.3	+0.4
Вт 29	180° 39.2	195° 39.2	210° 39.1	225° 39.0	240° 38.9	255° 38.8	90° 37.7	105° 37.7	120° 37.6	135° 37.5	150° 37.4	165° 37.3	-0.1
	21° 37.6	21° 38.0	21° 38.4	21° 38.8	21° 39.2	21° 39.6	21° 44.5	21° 44.8	21° 45.2	21° 45.6	21° 46.0	21° 46.3	+0.4
Ср 30	180° 37.2	195° 37.2	210° 37.1	225° 37.0	240° 36.9	255° 36.8	90° 35.7	105° 35.6	120° 35.5	135° 35.4	150° 35.3	165° 35.2	-0.1
	21° 46.7	21° 47.1	21° 47.4	21° 47.8	21° 48.2	21° 48.5	21° 53.3	21° 53.6	21° 54.0	21° 54.3	21° 54.7	21° 55.0	+0.4
Чт 31	180° 35.1	195° 35.0	210° 34.9	225° 34.8	240° 34.8	255° 34.7	90° 33.5	105° 33.4	120° 33.3	135° 33.2	150° 33.1	165° 33.0	-0.1
	21° 55.4	21° 55.7	21° 56.1	21° 56.5	21° 56.8	21° 57.2	22° 01.7	22° 02.0	22° 02.3	22° 02.7	22° 03.0	22° 03.4	+0.4

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2029

Д	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	Δ°/h	R/p
Вт 1	64° 53.4	79° 16.7	93° 40.1	108° 03.6	122° 27.1	136° 50.7	151° 14.3	165° 38.1	180° 01.9	194° 25.7	208° 49.7	+23.6	16.1
	-24° 27.9	-24° 27.3	-24° 26.6	-24° 25.7	-24° 24.6	-24° 23.3	-24° 21.9	-24° 20.3	-24° 18.6	-24° 16.7	-24° 14.7	+1.3	59.1
Ср 2	64° 58.6	79° 23.9	93° 49.3	108° 14.8	122° 40.4	137° 06.1	151° 31.9	165° 57.8	180° 23.9	194° 50.0	209° 16.2	+25.8	15.9
	-23° 25.4	-23° 21.0	-23° 16.4	-23° 11.7	-23° 06.8	-23° 01.8	-22° 56.7	-22° 51.4	-22° 46.0	-22° 40.5	-22° 34.8	+5.1	58.1
Чт 3	66° 01.9	80° 29.8	94° 57.8	109° 25.9	123° 54.1	138° 22.4	152° 50.9	167° 19.4	181° 48.1	196° 16.8	210° 45.7	+28.4	15.6
	-20° 55.5	-20° 47.9	-20° 40.3	-20° 32.6	-20° 24.7	-20° 16.8	-20° 08.8	-20° 00.7	-19° 52.4	-19° 44.1	-19° 35.7	+8.0	57.2
Пт 4	68° 10.9	82° 41.4	97° 11.9	111° 42.6	126° 13.4	140° 44.3	155° 15.2	169° 46.3	184° 17.4	198° 48.6	213° 20.0	+30.9	15.3
	-17° 19.3	-17° 09.5	-16° 59.7	-16° 49.9	-16° 39.9	-16° 29.9	-16° 19.9	-16° 09.7	-15° 59.5	-15° 49.3	-15° 39.0	+10.0	56.2
◑ Сб 5	71° 20.2	85° 52.8	100° 25.6	114° 58.4	129° 31.3	144° 04.2	158° 37.3	173° 10.4	187° 43.5	202° 16.8	216° 50.1	+33.0	15.1
	-12° 57.5	-12° 46.3	-12° 35.1	-12° 23.9	-12° 12.6	-12° 01.2	-11° 49.9	-11° 38.5	-11° 27.0	-11° 15.5	-11° 04.0	+11.4	55.5
Вс 6	75° 17.0	89° 51.2	104° 25.5	118° 59.8	133° 34.2	148° 08.7	162° 43.1	177° 17.7	191° 52.2	206° 26.8	221° 01.5	+34.5	15.0
	-8° 07.4	-7° 55.4	-7° 43.4	-7° 31.4	-7° 19.4	-7° 07.3	-6° 55.2	-6° 43.1	-6° 31.0	-6° 18.8	-6° 06.7	+12.1	54.8
Пн 7	79° 45.5	94° 20.6	108° 55.8	123° 31.1	138° 06.3	152° 41.6	167° 16.8	181° 52.1	196° 27.5	211° 02.8	225° 38.1	+35.3	14.8
	-3° 02.9	-2° 50.6	-2° 38.3	-2° 26.0	-2° 13.7	-2° 01.3	-1° 49.0	-1° 36.7	-1° 24.3	-1° 12.0	-0° 59.7	+12.3	54.4
Вт 8	84° 29.6	99° 05.1	113° 40.5	128° 16.0	142° 51.5	157° 26.9	172° 02.4	186° 37.8	201° 13.3	215° 48.7	230° 24.1	+35.5	14.7
	2° 04.7	2° 16.9	2° 29.1	2° 41.3	2° 53.5	3° 05.7	3° 17.8	3° 30.0	3° 42.1	3° 54.2	4° 06.3	+12.2	54.1
Ср 9	89° 14.0	103° 49.2	118° 24.3	132° 59.5	147° 34.6	162° 09.7	176° 44.7	191° 19.8	205° 54.8	220° 29.7	235° 04.7	+35.1	14.7
	7° 05.3	7° 17.0	7° 28.8	7° 40.4	7° 52.1	8° 03.7	8° 15.3	8° 26.9	8° 38.4	8° 49.9	9° 01.4	+11.6	53.9
Чт 10	93° 44.8	108° 19.1	122° 53.5	137° 27.7	152° 02.0	166° 36.2	181° 10.3	195° 44.4	210° 18.5	224° 52.5	239° 26.5	+34.2	14.7
	11° 48.8	11° 59.7	12° 10.5	12° 21.2	12° 31.9	12° 42.6	12° 53.2	13° 03.7	13° 14.2	13° 24.7	13° 35.1	+10.6	54.0
Пт 11	97° 50.0	112° 23.1	126° 56.2	141° 29.2	156° 02.2	170° 35.1	185° 07.9	199° 40.7	214° 13.5	228° 46.2	243° 18.8	+32.9	14.7
	16° 04.4	16° 13.9	16° 23.3	16° 32.6	16° 41.9	16° 51.1	17° 00.3	17° 09.3	17° 18.3	17° 27.3	17° 36.1	+9.2	54.1
Сб 12	101° 21.0	115° 52.6	130° 24.2	144° 55.7	159° 27.2	173° 58.6	188° 30.0	203° 01.3	217° 32.5	232° 03.6	246° 34.8	+31.4	14.8
	19° 39.9	19° 47.5	19° 55.1	20° 02.5	20° 09.9	20° 17.1	20° 24.3	20° 31.4	20° 38.4	20° 45.3	20° 52.1	+7.2	54.3
● Вс 13	104° 14.1	118° 44.3	133° 14.4	147° 44.4	162° 14.4	176° 44.4	191° 14.2	205° 44.1	220° 13.9	234° 43.6	249° 13.3	+29.9	14.9
	22° 22.7	22° 27.9	22° 33.0	22° 38.0	22° 43.0	22° 47.8	22° 52.5	22° 57.1	23° 01.5	23° 05.9	23° 10.2	+4.8	54.6
Пн 14	106° 32.6	121° 01.5	135° 30.4	149° 59.3	164° 28.1	178° 56.9	193° 25.7	207° 54.4	222° 23.1	236° 51.7	251° 20.3	+28.8	15.0
	24° 00.3	24° 02.7	24° 05.0	24° 07.2	24° 09.2	24° 11.1	24° 12.9	24° 14.6	24° 16.2	24° 17.6	24° 18.9	+1.9	55.0
Вт 15	108° 26.6	122° 54.9	137° 23.1	151° 51.3	166° 19.5	180° 47.8	195° 16.0	209° 44.1	224° 12.3	238° 40.5	253° 08.7	+28.2	15.1
	24° 23.2	24° 22.5	24° 21.6	24° 20.6	24° 19.5	24° 18.3	24° 16.9	24° 15.4	24° 13.8	24° 12.0	24° 10.1	-1.3	55.4
Ср 16	110° 11.3	124° 39.5	139° 07.8	153° 36.0	168° 04.3	182° 32.5	197° 00.8	211° 29.1	225° 57.4	240° 25.8	254° 54.1	+28.3	15.3
	23° 26.2	23° 22.3	23° 18.2	23° 14.0	23° 09.7	23° 05.2	23° 00.6	22° 55.9	22° 51.1	22° 46.1	22° 41.0	-4.5	56.0
Чт 17	112° 02.0	126° 30.7	140° 59.5	155° 28.2	169° 57.1	184° 25.9	198° 54.8	213° 23.7	227° 52.6	242° 21.5	256° 50.5	+28.9	15.4
	21° 10.1	21° 03.1	20° 55.9	20° 48.7	20° 41.3	20° 33.9	20° 26.3	20° 18.5	20° 10.7	20° 02.8	19° 54.7	-7.5	56.5
Пт 18	126° 30.7	140° 59.5	155° 28.2	169° 57.1	184° 25.9	198° 54.8	213° 23.7	227° 52.6	242° 21.5	256° 50.5	271° 19.5	+28.9	15.4
	21° 03.1	20° 55.9	20° 48.7	20° 41.3	20° 33.9	20° 26.3	20° 18.5	20° 10.7	20° 02.8	19° 54.7	19° 46.6	-7.7	56.6
Сб 19	128° 38.6	143° 08.1	157° 37.6	172° 07.2	186° 36.8	201° 06.5	215° 36.2	230° 05.9	244° 35.6	259° 05.4	273° 35.2	+29.7	15.6
	17° 31.4	17° 21.6	17° 11.7	17° 01.6	16° 51.5	16° 41.3	16° 31.0	16° 20.6	16° 10.1	15° 59.5	15° 48.8	-10.3	57.2
Вс 20	131° 05.4	145° 35.6	160° 05.8	174° 36.1	189° 06.3	203° 36.6	218° 06.9	232° 37.3	247° 07.6	261° 38.0	276° 08.4	+30.3	15.8
	12° 58.0	12° 46.0	12° 33.9	12° 21.7	12° 09.5	11° 57.1	11° 44.7	11° 32.2	11° 19.7	11° 07.1	10° 54.4	-12.4	57.9
◐ Пн 21	133° 45.5	148° 16.1	162° 46.6	177° 17.2	191° 47.7	206° 18.2	220° 48.8	235° 19.3	249° 49.8	264° 20.4	278° 50.9	+30.5	16.0
	7° 36.5	7° 22.9	7° 09.2	6° 55.4	6° 41.7	6° 27.8	6° 13.9	6° 00.0	5° 46.0	5° 32.0	5° 17.9	-13.9	58.6
Вт 22	136° 27.4	150° 57.7	165° 28.0	179° 58.3	194° 28.5	208° 58.7	223° 28.9	237° 59.0	252° 29.1	266° 59.2	281° 29.3	+30.2	16.2
	1° 42.8	1° 28.2	1° 13.6	0° 59.0	0° 44.4	0° 29.7	0° 15.0	0° 00.4	-0° 14.3	-0° 29.0	-0° 43.7	-14.7	59.2
Ср 23	138° 55.5	153° 24.9	167° 54.3	182° 23.6	196° 52.8	211° 22.0	225° 51.2	240° 20.3	254° 49.3	269° 18.3	283° 47.2	+29.2	16.3
	-4° 24.8	-4° 39.5	-4° 54.2	-5° 08.8	-5° 23.5	-5° 38.1	-5° 52.7	-6° 07.3	-6° 21.9	-6° 36.4	-6° 50.9	-14.6	59.8
Чт 24	140° 53.3	155° 21.1	169° 48.9	184° 16.6	198° 44.2	213° 11.8	227° 39.3	242° 06.7	256° 34.0	271° 01.3	285° 28.5	+27.5	16.4
	-10° 24.3	-10° 38.1	-10° 51.9	-11° 05.7	-11° 19.4	-11° 33.0	-11° 46.6	-12° 00.1	-12° 13.5	-12° 26.9	-12° 40.2	-13.6	60.3
Пт 25	142° 06.5	156° 32.4	170° 58.2	185° 23.9	199° 49.5	214° 15.1	228° 40.5	243° 05.9	257° 31.2	271° 56.4	286° 21.6	+25.5	16.5
	-15° 50.1	-16° 02.0	-16° 13.8	-16° 25.6	-16° 37.2	-16° 48.7	-17° 00.1	-17° 11.4	-17° 22.6	-17° 33.7	-17° 44.7	-11.5	60.5
Сб 26	142° 29.2	156° 53.1	171° 17.0	185° 40.7	200° 04.4	214° 28.1	228° 51.7	243° 15.2	257° 38.6	272° 02.0	286° 25.4	+23.6	16.5
	-20° 14.3	-20° 23.2	-20° 31.9	-20° 40.6	-20° 49.0	-20° 57.3	-21° 05.5	-21° 13.5	-21° 21.4	-21° 29.1	-21° 36.7	-8.2	60.5
○ Вс 27	142° 09.5	156° 32.1	170° 54.7	185° 17.3	199° 39.8	214° 02.3	228° 24.8	242° 47.3	257° 09.8	271° 32.3	285° 54.7	+22.5	16.4
	-23° 11.0	-23° 16.0	-23° 20.7	-23° 25.4	-23° 29.8	-23° 34.1	-23° 38.2	-23° 42.1	-23° 45.9	-23° 49.5	-23° 52.9	-4.2	60.2
Пн 28	141° 32.0	155° 54.6	170° 17.3	184° 40.0	199° 02.7	213° 25.4	227° 48.2	242° 11.1	256° 33.9	270° 56.9	285° 19.8	+22.8	16.3
	-24° 22.9	-24° 23.5	-24° 23.9	-24° 24.2	-24° 24.3	-24° 24.2	-24° 23.9	-24° 23.5	-24° 22.8	-24° 22.1	-24° 21.1	+0.2	59.6
Вт 29	141° 11.6	155° 35.6	169° 59.7	184° 23.9	198° 48.2	213° 12.5	227° 37.0	242° 01.5	256° 26.1	270° 50.8	285° 15.6	+24.4	16.1
	-23° 47.0	-23° 43.4	-23° 39.7	-23° 35.9	-23° 31.8	-23° 27.7	-23° 23.4	-23° 18.9	-23° 14.3	-23° 09.5	-23° 04.6	+4.2	58.9
Ср 30	141° 39.3	156° 05.7	170° 32.2	184° 58.8	199° 25.6	213° 52.4	228° 19.3	242° 46.4	257° 13.5	271° 40.8	286° 08.1	+26.9	15.8
	-21° 34.9	-21° 27.9	-21° 20.8	-21° 13.5	-21° 06.2	-20° 58.7	-20° 51.1	-20° 43.4	-20° 35.6	-20° 27.7	-20° 19.7	+7.5	58.0
Чт 31	143° 11.6	157° 40.7	172° 09.9	186° 39.2	201° 08.6	215° 38.1	230° 07.7	244° 37.4	259° 07.3	273° 37.2	288° 07.2	+29.6	15.6
	-18° 07.5	-17° 58.0	-17° 48.3	-17° 38.6	-17° 28.9	-17° 19.0	-17° 09.1	-16° 59.1	-16° 49.0	-16° 38.9	-16° 28.6	+9.9	57.1

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 5 09h48 — Новолуние: 13 13h42 — Первая четв.: 21 04h16 — Полнолуние: 27 18h37

СОЛНЦЕ

Июнь 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	180° 32.9	195° 32.8	210° 32.7	225° 32.6	240° 32.5	255° 32.4	90° 31.2	105° 31.1	120° 31.0	135° 30.9	150° 30.8	165° 30.7	-0.1
	22° 03.7	22° 04.0	22° 04.4	22° 04.7	22° 05.0	22° 05.4	22° 09.7	22° 10.0	22° 10.3	22° 10.7	22° 11.0	22° 11.3	+0.3
Сб 2	180° 30.6	195° 30.5	210° 30.4	225° 30.3	240° 30.2	255° 30.1	90° 28.8	105° 28.6	120° 28.5	135° 28.4	150° 28.3	165° 28.2	-0.1
	22° 11.6	22° 11.9	22° 12.3	22° 12.6	22° 12.9	22° 13.2	22° 17.3	22° 17.6	22° 17.9	22° 18.2	22° 18.5	22° 18.9	+0.3
Вс 3	180° 28.1	195° 28.0	210° 27.9	225° 27.8	240° 27.7	255° 27.6	90° 26.3	105° 26.1	120° 26.0	135° 25.9	150° 25.8	165° 25.7	-0.1
	22° 19.2	22° 19.5	22° 19.8	22° 20.1	22° 20.4	22° 20.7	22° 24.6	22° 24.8	22° 25.1	22° 25.4	22° 25.7	22° 26.0	+0.3
Пн 4	180° 25.6	195° 25.5	210° 25.4	225° 25.3	240° 25.2	255° 25.1	90° 23.7	105° 23.6	120° 23.4	135° 23.3	150° 23.2	165° 23.1	-0.1
	22° 26.3	22° 26.6	22° 26.9	22° 27.2	22° 27.5	22° 27.7	22° 31.4	22° 31.7	22° 32.0	22° 32.2	22° 32.5	22° 32.8	+0.3
Вт 5	180° 23.0	195° 22.9	210° 22.8	225° 22.7	240° 22.6	255° 22.4	90° 21.0	105° 20.9	120° 20.8	135° 20.6	150° 20.5	165° 20.4	-0.1
	22° 33.1	22° 33.3	22° 33.6	22° 33.9	22° 34.1	22° 34.4	22° 37.9	22° 38.1	22° 38.4	22° 38.6	22° 38.9	22° 39.2	+0.3
Ср 6	180° 20.3	195° 20.2	210° 20.1	225° 20.0	240° 19.8	255° 19.7	90° 18.2	105° 18.1	120° 18.0	135° 17.9	150° 17.8	165° 17.6	-0.1
	22° 39.4	22° 39.7	22° 39.9	22° 40.2	22° 40.4	22° 40.7	22° 43.9	22° 44.2	22° 44.4	22° 44.6	22° 44.9	22° 45.1	+0.3
Чт 7	180° 17.5	195° 17.4	210° 17.3	225° 17.2	240° 17.0	255° 16.9	90° 15.4	105° 15.3	120° 15.1	135° 15.0	150° 14.9	165° 14.8	-0.1
	22° 45.4	22° 45.6	22° 45.9	22° 46.1	22° 46.3	22° 46.6	22° 49.6	22° 49.8	22° 50.0	22° 50.3	22° 50.5	22° 50.7	+0.2
Пт 8	180° 14.7	195° 14.5	210° 14.4	225° 14.3	240° 14.2	255° 14.1	90° 12.5	105° 12.4	120° 12.2	135° 12.1	150° 12.0	165° 11.9	-0.1
	22° 50.9	22° 51.2	22° 51.4	22° 51.6	22° 51.8	22° 52.0	22° 54.8	22° 55.0	22° 55.3	22° 55.5	22° 55.7	22° 55.9	+0.2
Сб 9	180° 11.7	195° 11.6	210° 11.5	225° 11.4	240° 11.2	255° 11.1	90° 09.5	105° 09.4	120° 09.3	135° 09.1	150° 09.0	165° 08.9	-0.1
	22° 56.1	22° 56.3	22° 56.5	22° 56.7	22° 56.9	22° 57.1	22° 59.7	22° 59.9	23° 00.1	23° 00.3	23° 00.5	23° 00.7	+0.2
Вс 10	180° 08.8	195° 08.6	210° 08.5	225° 08.4	240° 08.2	255° 08.1	90° 06.5	105° 06.3	120° 06.2	135° 06.1	150° 06.0	165° 05.8	-0.1
	23° 00.8	23° 01.0	23° 01.2	23° 01.4	23° 01.6	23° 01.8	23° 04.1	23° 04.3	23° 04.5	23° 04.7	23° 04.8	23° 05.0	+0.2
Пн 11	180° 05.7	195° 05.6	210° 05.4	225° 05.3	240° 05.2	255° 05.1	90° 03.4	105° 03.3	120° 03.1	135° 03.0	150° 02.9	165° 02.7	-0.1
	23° 05.2	23° 05.4	23° 05.5	23° 05.7	23° 05.9	23° 06.0	23° 08.2	23° 08.3	23° 08.5	23° 08.7	23° 08.8	23° 09.0	+0.2
Вт 12	180° 02.6	195° 02.5	210° 02.3	225° 02.2	240° 02.1	255° 02.0	90° 00.3	105° 00.1	120° 00.0	134° 59.9	149° 59.7	164° 59.6	-0.1
	23° 09.1	23° 09.3	23° 09.4	23° 09.6	23° 09.7	23° 09.9	23° 11.8	23° 12.0	23° 12.1	23° 12.2	23° 12.4	23° 12.5	+0.2
Ср 13	179° 59.5	194° 59.3	209° 59.2	224° 59.1	239° 58.9	254° 58.8	89° 57.1	104° 57.0	119° 56.8	134° 56.7	149° 56.6	164° 56.4	-0.1
	23° 12.7	23° 12.8	23° 12.9	23° 13.1	23° 13.2	23° 13.3	23° 15.0	23° 15.2	23° 15.3	23° 15.4	23° 15.5	23° 15.7	+0.1
Чт 14	179° 56.3	194° 56.2	209° 56.0	224° 55.9	239° 55.8	254° 55.6	89° 53.9	104° 53.7	119° 53.6	134° 53.5	149° 53.3	164° 53.2	-0.1
	23° 15.8	23° 15.9	23° 16.0	23° 16.1	23° 16.3	23° 16.4	23° 17.9	23° 18.0	23° 18.1	23° 18.2	23° 18.3	23° 18.4	+0.1
Пт 15	179° 53.1	194° 52.9	209° 52.8	224° 52.7	239° 52.5	254° 52.4	89° 50.6	104° 50.5	119° 50.4	134° 50.2	149° 50.1	164° 50.0	-0.1
	23° 18.5	23° 18.6	23° 18.7	23° 18.8	23° 18.9	23° 19.0	23° 20.3	23° 20.4	23° 20.4	23° 20.5	23° 20.6	23° 20.7	+0.1
Сб 16	179° 49.8	194° 49.7	209° 49.6	224° 49.4	239° 49.3	254° 49.2	89° 47.4	104° 47.3	119° 47.1	134° 47.0	149° 46.9	164° 46.7	-0.1
	23° 20.8	23° 20.9	23° 21.0	23° 21.1	23° 21.1	23° 21.2	23° 22.3	23° 22.3	23° 22.4	23° 22.5	23° 22.6	23° 22.6	+0.1
Вс 17	179° 46.6	194° 46.4	209° 46.3	224° 46.2	239° 46.0	254° 45.9	89° 44.1	104° 44.0	119° 43.9	134° 43.7	149° 43.6	164° 43.5	-0.1
	23° 22.7	23° 22.8	23° 22.8	23° 22.9	23° 23.0	23° 23.0	23° 23.8	23° 23.9	23° 24.0	23° 24.0	23° 24.1	23° 24.1	+0.1
Пн 18	179° 43.3	194° 43.2	209° 43.0	224° 42.9	239° 42.8	254° 42.6	89° 40.9	104° 40.7	119° 40.6	134° 40.5	149° 40.3	164° 40.2	-0.1
	23° 24.2	23° 24.2	23° 24.3	23° 24.3	23° 24.4	23° 24.4	23° 25.0	23° 25.0	23° 25.1	23° 25.1	23° 25.2	23° 25.2	+0.1
Вт 19	179° 40.0	194° 39.9	209° 39.8	224° 39.6	239° 39.5	254° 39.4	89° 37.6	104° 37.5	119° 37.3	134° 37.2	149° 37.0	164° 36.9	-0.1
	23° 25.2	23° 25.3	23° 25.3	23° 25.3	23° 25.4	23° 25.4	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 25.9	+0.0
Ср 20	179° 36.8	194° 36.6	209° 36.5	224° 36.4	239° 36.2	254° 36.1	89° 34.3	104° 34.2	119° 34.1	134° 33.9	149° 33.8	164° 33.7	-0.1
	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 26.0	23° 26.0	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	+0.0
Чт 21	179° 33.5	194° 33.4	209° 33.2	224° 33.1	239° 33.0	254° 32.8	89° 31.1	104° 30.9	119° 30.8	134° 30.7	149° 30.5	164° 30.4	-0.1
	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	+0.0
Пт 22	179° 30.3	194° 30.1	209° 30.0	224° 29.9	239° 29.7	254° 29.6	89° 27.8	104° 27.7	119° 27.6	134° 27.4	149° 27.3	164° 27.2	-0.1
	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.5	23° 25.5	23° 25.5	23° 25.5	23° 25.4	23° 25.4	-0.0
Сб 23	179° 27.0	194° 26.9	209° 26.8	224° 26.6	239° 26.5	254° 26.4	89° 24.6	104° 24.5	119° 24.4	134° 24.2	149° 24.1	164° 24.0	-0.1
	23° 25.4	23° 25.3	23° 25.3	23° 25.3	23° 25.2	23° 25.2	23° 24.6	23° 24.6	23° 24.6	23° 24.5	23° 24.5	23° 24.4	-0.0
Вс 24	179° 23.8	194° 23.7	209° 23.6	224° 23.4	239° 23.3	254° 23.2	89° 21.4	104° 21.3	119° 21.2	134° 21.0	149° 20.9	164° 20.8	-0.1
	23° 24.4	23° 24.3	23° 24.3	23° 24.2	23° 24.2	23° 24.1	23° 23.3	23° 23.3	23° 23.2	23° 23.1	23° 23.1	23° 23.0	-0.1
Пн 25	179° 20.6	194° 20.5	209° 20.4	224° 20.3	239° 20.1	254° 20.0	89° 18.3	104° 18.2	119° 18.0	134° 17.9	149° 17.8	164° 17.6	-0.1
	23° 22.9	23° 22.9	23° 22.8	23° 22.7	23° 22.7	23° 22.6	23° 21.6	23° 21.5	23° 21.5	23° 21.4	23° 21.3	23° 21.2	-0.1
Вт 26	179° 17.5	194° 17.4	209° 17.2	224° 17.1	239° 17.0	254° 16.9	89° 15.2	104° 15.0	119° 14.9	134° 14.8	149° 14.7	164° 14.5	-0.1
	23° 21.1	23° 21.0	23° 21.0	23° 20.9	23° 20.8	23° 20.7	23° 19.5	23° 19.4	23° 19.3	23° 19.2	23° 19.1	23° 19.0	-0.1
Ср 27	179° 14.4	194° 14.3	209° 14.1	224° 14.0	239° 13.9	254° 13.8	89° 12.1	104° 12.0	119° 11.8	134° 11.7	149° 11.6	164° 11.5	-0.1
	23° 18.9	23° 18.8	23° 18.7	23° 18.6	23° 18.5	23° 18.4	23° 17.0	23° 16.8	23° 16.7	23° 16.6	23° 16.5	23° 16.4	-0.1
Чт 28	179° 11.3	194° 11.2	209° 11.1	224° 10.9	239° 10.8	254° 10.7	89° 09.1	104° 08.9	119° 08.8	134° 08.7	149° 08.6	164° 08.4	-0.1
	23° 16.3	23° 16.1	23° 16.0	23° 15.9	23° 15.8	23° 15.7	23° 14.0	23° 13.9	23° 13.7	23° 13.6	23° 13.5	23° 13.3	-0.1
Пт 29	179° 08.3	194° 08.2	209° 08.1	224° 07.9	239° 07.8	254° 07.7	89° 06.1	104° 05.9	119° 05.8	134° 05.7	149° 05.6	164° 05.5	-0.1
	23° 13.2	23° 13.1	23° 12.9	23° 12.8	23° 12.7	23° 12.5	23° 10.7	23° 10.5	23° 10.4	23° 10.2	23° 10.1	23° 09.9	-0.1
Сб 30	179° 05.3	194° 05.2	209° 05.1	224° 05.0	239° 04.8	254° 04.7	89° 03.1	104° 03.0	119° 02.9	134° 02.8	149° 02.7	164° 02.5	-0.1
	23° 09.7	23° 09.6	23° 09.4	23° 09.3	23° 09.1	23° 09.0	23° 06.9	23° 06.7	23° 06.6	23° 06.4	23° 06.2	23° 06.1	-0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

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Д	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	Δ'/h	R/p
Пт 1	73° 12.8	87° 43.9	102° 15.1	116° 46.3	131° 17.7	145° 49.1	160° 20.7	174° 52.3	189° 24.0	203° 55.8	218° 27.7	+31.5	15.4
	-14° 42.8	-14° 31.9	-14° 20.9	-14° 09.9	-13° 58.9	-13° 47.7	-13° 36.5	-13° 25.3	-13° 14.0	-13° 02.7	-12° 51.4	+11.2	56.4
Сб 2	76° 35.4	91° 08.5	105° 41.7	120° 14.9	134° 48.2	149° 21.6	163° 55.1	178° 28.5	193° 02.1	207° 35.7	222° 09.4	+33.4	15.2
	-9° 56.1	-9° 44.1	-9° 32.1	-9° 20.1	-9° 08.1	-8° 56.0	-8° 43.9	-8° 31.8	-8° 19.6	-8° 07.5	-7° 55.3	+12.1	55.6
Вс 3	80° 40.9	95° 15.4	109° 49.9	124° 24.5	138° 59.0	153° 33.7	168° 08.3	182° 43.1	197° 17.8	211° 52.6	226° 27.4	+34.6	15.0
	-4° 50.6	-4° 38.2	-4° 25.8	-4° 13.4	-4° 00.9	-3° 48.5	-3° 36.1	-3° 23.6	-3° 11.2	-2° 58.7	-2° 46.3	+12.4	54.9
◑ Пн 4	85° 12.5	99° 47.7	114° 22.9	128° 58.1	143° 33.3	158° 08.5	172° 43.7	187° 19.0	201° 54.2	216° 29.5	231° 04.7	+35.2	14.9
	0° 20.2	0° 32.6	0° 45.0	0° 57.4	1° 09.7	1° 22.1	1° 34.4	1° 46.7	1° 59.1	2° 11.4	2° 23.6	+12.3	54.5
Вт 5	89° 53.6	104° 28.8	119° 04.0	133° 39.2	148° 14.4	162° 49.6	177° 24.7	191° 59.9	206° 35.0	221° 10.1	235° 45.2	+35.2	14.8
	5° 25.8	5° 37.7	5° 49.7	6° 01.6	6° 13.5	6° 25.4	6° 37.2	6° 49.0	7° 00.8	7° 12.6	7° 24.3	+11.9	54.2
Ср 6	94° 28.6	109° 03.3	123° 37.9	138° 12.5	152° 47.1	167° 21.6	181° 56.1	196° 30.5	211° 05.0	225° 39.3	240° 13.7	+34.5	14.7
	10° 16.3	10° 27.5	10° 38.6	10° 49.7	11° 00.8	11° 11.8	11° 22.7	11° 33.7	11° 44.6	11° 55.4	12° 06.2	+11.0	54.1
Чт 7	98° 43.5	113° 17.1	127° 50.6	142° 24.1	156° 57.6	171° 31.0	186° 04.3	200° 37.6	215° 10.8	229° 44.0	244° 17.1	+33.4	14.8
	14° 42.0	14° 52.0	15° 01.9	15° 11.8	15° 21.5	15° 31.3	15° 40.9	15° 50.5	16° 00.1	16° 09.6	16° 19.0	+9.7	54.1
Пт 8	102° 26.8	116° 59.0	131° 31.1	146° 03.1	160° 35.1	175° 07.0	189° 38.8	204° 10.6	218° 42.3	233° 14.0	247° 45.6	+31.9	14.8
	18° 32.0	18° 40.3	18° 48.5	18° 56.6	19° 04.7	19° 12.6	19° 20.5	19° 28.3	19° 36.1	19° 43.7	19° 51.3	+7.9	54.3
Сб 9	105° 31.6	120° 02.1	134° 32.6	149° 03.0	163° 33.4	178° 03.7	192° 33.9	207° 04.1	221° 34.2	236° 04.2	250° 34.2	+30.3	14.9
	21° 33.9	21° 40.0	21° 46.0	21° 51.9	21° 57.7	22° 03.4	22° 09.0	22° 14.5	22° 19.9	22° 25.2	22° 30.4	+5.6	54.7
Вс 10	107° 57.0	122° 26.1	136° 55.1	151° 24.1	165° 53.0	180° 21.9	194° 50.7	209° 19.5	223° 48.2	238° 16.9	252° 45.5	+28.9	15.0
	23° 35.0	23° 38.4	23° 41.7	23° 44.9	23° 47.9	23° 50.8	23° 53.7	23° 56.3	23° 58.9	24° 01.4	24° 03.7	+2.9	55.1
Пн 11	109° 50.5	124° 18.5	138° 46.6	153° 14.6	167° 42.6	182° 10.5	196° 38.5	211° 06.4	225° 34.3	240° 02.2	254° 30.0	+27.9	15.1
	24° 23.6	24° 23.9	24° 24.1	24° 24.1	24° 24.1	24° 23.9	24° 23.5	24° 23.0	24° 22.4	24° 21.7	24° 20.8	-0.3	55.6
● Вт 12	111° 26.6	125° 54.3	140° 22.1	154° 49.8	169° 17.5	183° 45.3	198° 13.1	212° 40.8	227° 08.6	241° 36.4	256° 04.2	+27.8	15.3
	23° 52.0	23° 49.0	23° 45.9	23° 42.6	23° 39.3	23° 35.7	23° 32.1	23° 28.3	23° 24.4	23° 20.4	23° 16.2	-3.6	56.1
Ср 13	113° 03.1	127° 31.2	141° 59.3	156° 27.4	170° 55.6	185° 23.8	199° 52.1	214° 20.3	228° 48.6	243° 16.9	257° 45.3	+28.2	15.4
	21° 58.4	21° 52.2	21° 45.9	21° 39.5	21° 32.9	21° 26.2	21° 19.4	21° 12.5	21° 05.4	20° 58.3	20° 51.0	-6.7	56.6
Чт 14	114° 54.8	129° 23.7	143° 52.7	158° 21.7	172° 50.7	187° 19.8	201° 48.9	216° 18.1	230° 47.3	245° 16.5	259° 45.8	+29.1	15.6
	18° 48.1	18° 39.0	18° 29.8	18° 20.5	18° 11.1	18° 01.6	17° 52.1	17° 42.4	17° 32.6	17° 22.7	17° 12.7	-9.5	57.1
Пт 15	117° 09.4	131° 39.3	146° 09.2	160° 39.1	175° 09.1	189° 39.1	204° 09.1	218° 39.2	233° 09.3	247° 39.4	262° 09.6	+30.0	15.7
	14° 31.8	14° 20.3	14° 08.8	13° 57.2	13° 45.6	13° 33.8	13° 22.0	13° 10.1	12° 58.1	12° 46.1	12° 34.0	-11.8	57.6
Сб 16	131° 39.3	146° 09.2	160° 39.1	175° 09.1	189° 39.1	204° 09.1	218° 39.2	233° 09.3	247° 39.4	262° 09.6	276° 39.8	+30.1	15.7
	14° 20.3	14° 08.8	13° 57.2	13° 45.6	13° 33.8	13° 22.0	13° 10.1	12° 58.1	12° 46.1	12° 34.0	12° 21.8	-11.9	57.6
Вс 17	134° 16.1	148° 46.7	163° 17.3	177° 48.0	192° 18.6	206° 49.3	221° 20.0	235° 50.7	250° 21.4	264° 52.2	279° 22.9	+30.7	15.9
	9° 11.0	8° 57.8	8° 44.6	8° 31.3	8° 17.9	8° 04.5	7° 51.1	7° 37.6	7° 24.0	7° 10.4	6° 56.8	-13.4	58.1
Пн 18	137° 05.1	151° 36.0	166° 06.8	180° 37.6	195° 08.4	209° 39.3	224° 10.1	238° 40.8	253° 11.6	267° 42.4	282° 13.2	+30.8	16.0
	3° 27.7	3° 13.5	2° 59.3	2° 45.1	2° 30.8	2° 16.5	2° 02.2	1° 47.9	1° 33.6	1° 19.2	1° 04.9	-14.3	58.6
◐ Вт 19	139° 52.5	154° 22.9	168° 53.3	183° 23.7	197° 54.0	212° 24.3	226° 54.6	241° 24.8	255° 55.0	270° 25.1	284° 55.3	+30.3	16.1
	-2° 31.6	-2° 46.0	-3° 00.4	-3° 14.8	-3° 29.3	-3° 43.7	-3° 58.0	-4° 12.4	-4° 26.8	-4° 41.1	-4° 55.4	-14.4	59.0
Ср 20	142° 21.6	156° 51.0	171° 20.3	185° 49.5	200° 18.7	214° 47.8	229° 16.9	243° 45.9	258° 14.9	272° 43.7	287° 12.6	+29.1	16.2
	-8° 27.3	-8° 41.2	-8° 55.0	-9° 08.8	-9° 22.5	-9° 36.2	-9° 49.8	-10° 03.4	-10° 16.9	-10° 30.4	-10° 43.9	-13.7	59.4
Чт 21	144° 16.7	158° 44.4	173° 12.1	187° 39.6	202° 07.1	216° 34.5	231° 01.8	245° 29.1	259° 56.3	274° 23.4	288° 50.4	+27.4	16.3
	-13° 57.9	-14° 10.3	-14° 22.6	-14° 34.8	-14° 47.0	-14° 59.0	-15° 11.0	-15° 22.8	-15° 34.6	-15° 46.3	-15° 57.9	-12.0	59.6
Пт 22	145° 26.2	159° 52.0	174° 17.7	188° 43.3	203° 08.8	217° 34.3	231° 59.7	246° 25.0	260° 50.2	275° 15.4	289° 40.5	+25.4	16.3
	-18° 39.8	-18° 49.7	-18° 59.5	-19° 09.2	-19° 18.8	-19° 28.2	-19° 37.5	-19° 46.7	-19° 55.8	-20° 04.7	-20° 13.5	-9.4	59.7
Сб 23	145° 48.6	160° 12.6	174° 36.6	189° 00.5	203° 24.4	217° 48.2	232° 12.0	246° 35.7	260° 59.4	275° 23.0	289° 46.6	+23.8	16.3
	-22° 08.9	-22° 15.4	-22° 21.8	-22° 28.0	-22° 34.1	-22° 40.0	-22° 45.8	-22° 51.4	-22° 56.9	-23° 02.2	-23° 07.3	-5.8	59.7
Вс 24	145° 36.7	159° 59.8	174° 23.0	188° 46.1	203° 09.3	217° 32.4	231° 55.5	246° 18.7	260° 41.8	275° 05.0	289° 28.1	+23.1	16.2
	-24° 04.8	-24° 07.3	-24° 09.6	-24° 11.8	-24° 13.8	-24° 15.6	-24° 17.3	-24° 18.8	-24° 20.1	-24° 21.2	-24° 22.2	-1.7	59.4
Пн 25	145° 17.8	159° 41.4	174° 05.0	188° 28.6	202° 52.3	217° 16.1	231° 39.9	246° 03.8	260° 27.7	274° 51.7	289° 15.7	+23.8	16.1
	-24° 16.7	-24° 15.0	-24° 13.1	-24° 11.1	-24° 08.9	-24° 06.6	-24° 04.1	-24° 01.4	-23° 58.6	-23° 55.6	-23° 52.5	+2.4	59.0
○ Вт 26	145° 24.4	159° 49.6	174° 14.9	188° 40.3	203° 05.7	217° 31.3	231° 56.9	246° 22.6	260° 48.4	275° 14.4	289° 40.3	+25.6	15.9
	-22° 47.1	-22° 41.6	-22° 36.0	-22° 30.2	-22° 24.2	-22° 18.2	-22° 12.0	-22° 05.7	-21° 59.2	-21° 52.6	-21° 45.9	+6.1	58.4
Ср 27	146° 21.8	160° 49.4	175° 17.0	189° 44.8	204° 12.6	218° 40.6	233° 08.7	247° 36.8	262° 05.1	276° 33.4	291° 01.9	+28.0	15.7
	-19° 50.9	-19° 42.3	-19° 33.6	-19° 24.9	-19° 16.0	-19° 07.1	-18° 58.0	-18° 48.8	-18° 39.6	-18° 30.3	-18° 20.8	+9.0	57.7
Чт 28	148° 20.7	162° 50.7	177° 20.8	191° 51.0	206° 21.4	220° 51.8	235° 22.2	249° 52.8	264° 23.5	278° 54.3	293° 25.1	+30.4	15.5
	-15° 49.4	-15° 38.7	-15° 28.0	-15° 17.1	-15° 06.3	-14° 55.3	-14° 44.3	-14° 33.2	-14° 22.1	-14° 10.9	-13° 59.7	+11.0	56.9
Пт 29	151° 18.1	165° 50.3	180° 22.5	194° 54.9	209° 27.3	223° 59.7	238° 32.3	253° 04.9	267° 37.6	282° 10.3	296° 43.1	+32.5	15.3
	-11° 05.1	-10° 53.2	-10° 41.2	-10° 29.1	-10° 17.0	-10° 04.9	-9° 52.8	-9° 40.6	-9° 28.4	-9° 16.2	-9° 03.9	+12.1	56.1
Сб 30	155° 02.8	169° 36.5	184° 10.3	198° 44.2	213° 18.1	227° 52.1	242° 26.1	257° 00.1	271° 34.2	286° 08.3	300° 42.5	+34.0	15.1
	-5° 57.5	-5° 45.0	-5° 32.4	-5° 19.8	-5° 07.2	-4° 54.6	-4° 42.0	-4° 29.4	-4° 16.8	-4° 04.2	-3° 51.5	+12.6	55.4

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 4 01h18 — Новолуние: 12 03h50 — Первая четв.: 19 09h54 — Полнолуние: 26 03h22

СОЛНЦЕ

Июль 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	179° 02.4	194° 02.3	209° 02.2	224° 02.1	239° 01.9	254° 01.8	89° 00.3	104° 00.2	119° 00.0	133° 59.9	148° 59.8	163° 59.7	-0.1
	23° 05.9	23° 05.7	23° 05.5	23° 05.4	23° 05.2	23° 05.0	23° 02.7	23° 02.5	23° 02.4	23° 02.2	23° 02.0	23° 01.8	-0.2
Пн 2	178° 59.6	193° 59.4	208° 59.3	223° 59.2	238° 59.1	253° 59.0	88° 57.5	103° 57.4	118° 57.2	133° 57.1	148° 57.0	163° 56.9	-0.1
	23° 01.6	23° 01.4	23° 01.2	23° 01.1	23° 00.9	23° 00.7	22° 58.2	22° 58.0	22° 57.8	22° 57.6	22° 57.4	22° 57.2	-0.2
Вт 3	178° 56.8	193° 56.7	208° 56.5	223° 56.4	238° 56.3	253° 56.2	88° 54.7	103° 54.6	118° 54.5	133° 54.4	148° 54.3	163° 54.2	-0.1
	22° 56.9	22° 56.7	22° 56.5	22° 56.3	22° 56.1	22° 55.9	22° 53.2	22° 53.0	22° 52.8	22° 52.5	22° 52.3	22° 52.1	-0.2
Ср 4	178° 54.1	193° 54.0	208° 53.8	223° 53.7	238° 53.6	253° 53.5	88° 52.1	103° 52.0	118° 51.9	133° 51.7	148° 51.6	163° 51.5	-0.1
	22° 51.9	22° 51.7	22° 51.4	22° 51.2	22° 51.0	22° 50.8	22° 47.8	22° 47.6	22° 47.3	22° 47.1	22° 46.9	22° 46.6	-0.2
Чт 5	178° 51.4	193° 51.3	208° 51.2	223° 51.1	238° 51.0	253° 50.9	88° 49.5	103° 49.4	118° 49.3	133° 49.2	148° 49.1	163° 49.0	-0.1
	22° 46.4	22° 46.2	22° 45.9	22° 45.7	22° 45.5	22° 45.2	22° 42.0	22° 41.8	22° 41.5	22° 41.3	22° 41.0	22° 40.8	-0.2
Пт 6	178° 48.9	193° 48.8	208° 48.7	223° 48.5	238° 48.4	253° 48.3	88° 47.0	103° 46.9	118° 46.8	133° 46.7	148° 46.6	163° 46.5	-0.1
	22° 40.5	22° 40.3	22° 40.0	22° 39.8	22° 39.5	22° 39.3	22° 35.9	22° 35.6	22° 35.4	22° 35.1	22° 34.8	22° 34.6	-0.3
Сб 7	178° 46.4	193° 46.3	208° 46.2	223° 46.1	238° 46.0	253° 45.9	88° 44.6	103° 44.5	118° 44.4	133° 44.3	148° 44.2	163° 44.1	-0.1
	22° 34.3	22° 34.0	22° 33.7	22° 33.5	22° 33.2	22° 32.9	22° 29.3	22° 29.0	22° 28.8	22° 28.5	22° 28.2	22° 27.9	-0.3
Вс 8	178° 44.0	193° 43.9	208° 43.8	223° 43.7	238° 43.6	253° 43.5	88° 42.3	103° 42.2	118° 42.1	133° 42.0	148° 41.9	163° 41.8	-0.1
	22° 27.6	22° 27.3	22° 27.1	22° 26.8	22° 26.5	22° 26.2	22° 22.4	22° 22.1	22° 21.8	22° 21.5	22° 21.2	22° 20.9	-0.3
Пн 9	178° 41.7	193° 41.6	208° 41.5	223° 41.4	238° 41.3	253° 41.3	88° 40.1	103° 40.0	118° 39.9	133° 39.8	148° 39.7	163° 39.6	-0.1
	22° 20.6	22° 20.3	22° 20.0	22° 19.7	22° 19.4	22° 19.1	22° 15.1	22° 14.7	22° 14.4	22° 14.1	22° 13.8	22° 13.5	-0.3
Вт 10	178° 39.5	193° 39.4	208° 39.4	223° 39.3	238° 39.2	253° 39.1	88° 38.0	103° 37.9	118° 37.8	133° 37.7	148° 37.6	163° 37.5	-0.1
	22° 13.2	22° 12.8	22° 12.5	22° 12.2	22° 11.9	22° 11.6	22° 07.3	22° 07.0	22° 06.7	22° 06.3	22° 06.0	22° 05.7	-0.3
Ср 11	178° 37.5	193° 37.4	208° 37.3	223° 37.2	238° 37.1	253° 37.0	88° 36.0	103° 35.9	118° 35.8	133° 35.7	148° 35.6	163° 35.6	-0.1
	22° 05.4	22° 05.0	22° 04.7	22° 04.3	22° 04.0	22° 03.7	21° 59.2	21° 58.9	21° 58.6	21° 58.2	21° 57.9	21° 57.5	-0.3
Чт 12	178° 35.5	193° 35.4	208° 35.3	223° 35.2	238° 35.2	253° 35.1	88° 34.1	103° 34.0	118° 33.9	133° 33.9	148° 33.8	163° 33.7	-0.1
	21° 57.2	21° 56.8	21° 56.5	21° 56.1	21° 55.8	21° 55.4	21° 50.8	21° 50.4	21° 50.1	21° 49.7	21° 49.3	21° 49.0	-0.3
Пт 13	178° 33.6	193° 33.6	208° 33.5	223° 33.4	238° 33.3	253° 33.3	88° 32.3	103° 32.3	118° 32.2	133° 32.1	148° 32.0	163° 32.0	-0.1
	21° 48.6	21° 48.2	21° 47.9	21° 47.5	21° 47.1	21° 46.8	21° 41.9	21° 41.6	21° 41.2	21° 40.8	21° 40.4	21° 40.0	-0.4
Сб 14	178° 31.9	193° 31.8	208° 31.8	223° 31.7	238° 31.6	253° 31.6	88° 30.7	103° 30.6	118° 30.6	133° 30.5	148° 30.4	163° 30.4	-0.1
	21° 39.7	21° 39.3	21° 38.9	21° 38.5	21° 38.1	21° 37.8	21° 32.7	21° 32.3	21° 31.9	21° 31.5	21° 31.1	21° 30.7	-0.4
Вс 15	178° 30.3	193° 30.2	208° 30.2	223° 30.1	238° 30.0	253° 30.0	88° 29.2	103° 29.1	118° 29.1	133° 29.0	148° 28.9	163° 28.9	-0.1
	21° 30.4	21° 30.0	21° 29.6	21° 29.2	21° 28.8	21° 28.4	21° 23.1	21° 22.7	21° 22.3	21° 21.9	21° 21.5	21° 21.1	-0.4
Пн 16	178° 28.8	193° 28.8	208° 28.7	223° 28.6	238° 28.6	253° 28.5	88° 27.8	103° 27.7	118° 27.7	133° 27.6	148° 27.6	163° 27.5	-0.1
	21° 20.7	21° 20.3	21° 19.9	21° 19.4	21° 19.0	21° 18.6	21° 13.2	21° 12.8	21° 12.3	21° 11.9	21° 11.5	21° 11.1	-0.4
Вт 17	178° 27.5	193° 27.4	208° 27.4	223° 27.3	238° 27.3	253° 27.2	88° 26.6	103° 26.5	118° 26.5	133° 26.4	148° 26.4	163° 26.3	-0.1
	21° 10.6	21° 10.2	21° 09.8	21° 09.4	21° 08.9	21° 08.5	21° 02.9	21° 02.5	21° 02.0	21° 01.6	21° 01.1	21° 00.7	-0.4
Ср 18	178° 26.3	193° 26.2	208° 26.2	223° 26.1	238° 26.1	253° 26.0	88° 25.5	103° 25.4	118° 25.4	133° 25.3	148° 25.3	163° 25.3	-0.0
	21° 00.3	20° 59.8	20° 59.4	20° 58.9	20° 58.5	20° 58.0	20° 52.2	20° 51.8	20° 51.3	20° 50.9	20° 50.4	20° 50.0	-0.4
Чт 19	178° 25.2	193° 25.2	208° 25.1	223° 25.1	238° 25.1	253° 25.0	88° 24.5	103° 24.5	118° 24.4	133° 24.4	148° 24.4	163° 24.3	-0.0
	20° 49.5	20° 49.1	20° 48.6	20° 48.1	20° 47.7	20° 47.2	20° 41.2	20° 40.8	20° 40.3	20° 39.8	20° 39.4	20° 38.9	-0.5
Пт 20	178° 24.3	193° 24.3	208° 24.2	223° 24.2	238° 24.2	253° 24.1	88° 23.7	103° 23.7	118° 23.6	133° 23.6	148° 23.6	163° 23.5	-0.0
	20° 38.4	20° 37.9	20° 37.5	20° 37.0	20° 36.5	20° 36.1	20° 29.9	20° 29.4	20° 28.9	20° 28.4	20° 27.9	20° 27.5	-0.5
Сб 21	178° 23.5	193° 23.5	208° 23.5	223° 23.4	238° 23.4	253° 23.4	88° 23.0	103° 23.0	118° 23.0	133° 23.0	148° 22.9	163° 22.9	-0.0
	20° 27.0	20° 26.5	20° 26.0	20° 25.5	20° 25.0	20° 24.6	20° 18.2	20° 17.7	20° 17.2	20° 16.7	20° 16.2	20° 15.7	-0.5
Вс 22	178° 22.9	193° 22.9	208° 22.8	223° 22.8	238° 22.8	253° 22.8	88° 22.5	103° 22.5	118° 22.5	133° 22.5	148° 22.4	163° 22.4	-0.0
	20° 15.2	20° 14.7	20° 14.2	20° 13.7	20° 13.2	20° 12.7	20° 06.1	20° 05.6	20° 05.1	20° 04.6	20° 04.1	20° 03.6	-0.5
Пн 23	178° 22.4	193° 22.4	208° 22.4	223° 22.4	238° 22.3	253° 22.3	88° 22.1	103° 22.1	118° 22.1	133° 22.1	148° 22.1	163° 22.1	-0.0
	20° 03.1	20° 02.6	20° 02.1	20° 01.5	20° 01.0	20° 00.5	19° 53.8	19° 53.2	19° 52.7	19° 52.2	19° 51.7	19° 51.2	-0.5
Вт 24	178° 22.1	193° 22.1	208° 22.1	223° 22.0	238° 22.0	253° 22.0	88° 21.9	103° 21.9	118° 21.9	133° 21.9	148° 21.9	163° 21.9	-0.0
	19° 50.6	19° 50.1	19° 49.6	19° 49.0	19° 48.5	19° 48.0	19° 41.1	19° 40.5	19° 40.0	19° 39.5	19° 38.9	19° 38.4	-0.5
Ср 25	178° 21.9	193° 21.9	208° 21.9	223° 21.9	238° 21.9	253° 21.9	88° 21.8	103° 21.8	118° 21.8	133° 21.8	148° 21.8	163° 21.8	-0.0
	19° 37.8	19° 37.3	19° 36.8	19° 36.2	19° 35.7	19° 35.1	19° 28.0	19° 27.5	19° 26.9	19° 26.4	19° 25.8	19° 25.3	-0.5
Чт 26	178° 21.9	193° 21.9	208° 21.9	223° 21.9	238° 21.9	253° 21.9	88° 21.9	103° 21.9	118° 21.9	133° 21.9	148° 21.9	163° 22.0	+0.0
	19° 24.7	19° 24.2	19° 23.6	19° 23.1	19° 22.5	19° 22.0	19° 14.7	19° 14.1	19° 13.6	19° 13.0	19° 12.4	19° 11.9	-0.6
Пт 27	178° 22.0	193° 22.0	208° 22.0	223° 22.0	238° 22.0	253° 22.0	88° 22.1	103° 22.2	118° 22.2	133° 22.2	148° 22.2	163° 22.2	+0.0
	19° 11.3	19° 10.7	19° 10.2	19° 09.6	19° 09.0	19° 08.5	19° 01.0	19° 00.5	18° 59.9	18° 59.3	18° 58.7	18° 58.1	-0.6
Сб 28	178° 22.2	193° 22.2	208° 22.3	223° 22.3	238° 22.3	253° 22.3	88° 22.5	103° 22.5	118° 22.6	133° 22.6	148° 22.6	163° 22.6	+0.0
	18° 57.6	18° 57.0	18° 56.4	18° 55.8	18° 55.2	18° 54.7	18° 47.1	18° 46.5	18° 45.9	18° 45.3	18° 44.7	18° 44.1	-0.6
Вс 29	178° 22.6	193° 22.7	208° 22.7	223° 22.7	238° 22.7	253° 22.7	88° 23.0	103° 23.1	118° 23.1	133° 23.1	148° 23.1	163° 23.2	+0.0
	18° 43.5	18° 42.9	18° 42.3	18° 41.7	18° 41.1	18° 40.5	18° 32.8	18° 32.2	18° 31.6	18° 31.0	18° 30.4	18° 29.7	-0.6
Пн 30	178° 23.2	193° 23.2	208° 23.2	223° 23.3	238° 23.3	253° 23.3	88° 23.7	103° 23.7	118° 23.8	133° 23.8	148° 23.8	163° 23.9	+0.0
	18° 29.1	18° 28.5	18° 27.9	18° 27.3	18° 26.7	18° 26.1	18° 18.2	18° 17.6	18° 16.9	18° 16.3	18° 15.7	18° 15.1	-0.6
Вт 31	178° 23.9	193° 23.9	208° 24.0	223° 24.0	238° 24.0	253° 24.1	88° 24.5	103° 24.6	118° 24.6	133° 24.6	148° 24.7	163° 24.7	+0.0
	18° 14.5	18° 13.9	18° 13.2	18° 12.6	18° 12.0	18° 11.4	18° 03.3	18° 02.6	18° 02.0	18° 01.4	18° 00.8	18° 00.1	-0.6

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

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Д	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	Δ°/h	R/p
Вс 1	57° 17.3 -2° 10.5	71° 51.8 -1° 57.8	86° 26.3 -1° 45.2	101° 00.9 -1° 32.6	115° 35.5 -1° 20.0	130° 10.1 -1° 07.4	144° 44.7 -0° 54.8	159° 19.4 -0° 42.2	173° 54.1 -0° 29.6	188° 28.8 -0° 17.0	203° 03.6 -0° 04.4	+34.6 +12.6	15.0 55.0
Пн 2	61° 46.9 3° 02.7	76° 21.9 3° 15.0	90° 56.9 3° 27.4	105° 31.9 3° 39.7	120° 06.9 3° 51.9	134° 41.9 4° 04.2	149° 16.9 4° 16.4	163° 51.9 4° 28.6	178° 26.9 4° 40.8	193° 01.9 4° 53.0	207° 36.9 5° 05.1	+35.0 +12.2	14.9 54.6
◑ Вт 3	66° 21.0 8° 03.7	80° 55.8 8° 15.4	95° 30.7 8° 27.0	110° 05.5 8° 38.6	124° 40.2 8° 50.1	139° 15.0 9° 01.7	153° 49.7 9° 13.1	168° 24.5 9° 24.6	182° 59.2 9° 35.9	197° 33.8 9° 47.3	212° 08.5 9° 58.6	+34.8 +11.5	14.8 54.3
Ср 4	70° 44.5 12° 43.0	85° 18.6 12° 53.6	99° 52.7 13° 04.1	114° 26.8 13° 14.6	129° 00.8 13° 25.1	143° 34.7 13° 35.4	158° 08.7 13° 45.7	172° 42.5 13° 56.0	187° 16.4 14° 06.2	201° 50.2 14° 16.4	216° 23.9 14° 26.5	+33.9 +10.3	14.8 54.2
Чт 5	74° 44.2 16° 50.7	89° 17.1 16° 59.8	103° 50.0 17° 08.8	118° 22.8 17° 17.8	132° 55.6 17° 26.7	147° 28.3 17° 35.5	162° 01.0 17° 44.3	176° 33.5 17° 52.9	191° 06.1 18° 01.5	205° 38.6 18° 10.1	220° 11.0 18° 18.5	+32.7 +8.8	14.8 54.3
Пт 6	78° 09.7 20° 15.9	92° 41.1 20° 23.1	107° 12.5 20° 30.1	121° 43.8 20° 37.1	136° 15.0 20° 44.0	150° 46.1 20° 50.8	165° 17.2 20° 57.5	179° 48.3 21° 04.1	194° 19.2 21° 10.7	208° 50.1 21° 17.1	223° 20.9 21° 23.4	+31.1 +6.8	14.9 54.5
Сб 7	80° 55.6 22° 46.6	95° 25.4 22° 51.4	109° 55.1 22° 56.0	124° 24.8 23° 00.5	138° 54.4 23° 04.9	153° 24.0 23° 09.2	167° 53.5 23° 13.3	182° 22.9 23° 17.4	196° 52.3 23° 21.3	211° 21.6 23° 25.2	225° 50.9 23° 28.9	+29.5 +4.2	15.0 54.9
Вс 8	83° 03.2 24° 10.7	97° 31.6 24° 12.5	112° 00.0 24° 14.2	126° 28.3 24° 15.7	140° 56.6 24° 17.2	155° 24.9 24° 18.5	169° 53.1 24° 19.7	184° 21.2 24° 20.7	198° 49.3 24° 21.7	213° 17.4 24° 22.5	227° 45.5 24° 23.1	+28.2 +1.2	15.1 55.5
Пн 9	84° 42.2 24° 17.5	99° 09.8 24° 16.1	113° 37.4 24° 14.5	128° 04.9 24° 12.8	142° 32.4 24° 11.0	156° 59.9 24° 09.0	171° 27.4 24° 06.9	185° 54.9 24° 04.7	200° 22.4 24° 02.3	214° 49.8 23° 59.8	229° 17.3 23° 57.1	+27.5 -2.0	15.3 56.1
Вт 10	86° 08.6 23° 01.3	100° 36.0 22° 56.5	115° 03.5 22° 51.6	129° 31.0 22° 46.5	143° 58.4 22° 41.3	158° 25.9 22° 36.0	172° 53.4 22° 30.6	187° 20.9 22° 25.0	201° 48.5 22° 19.3	216° 16.0 22° 13.4	230° 43.6 22° 07.5	+27.5 -5.4	15.5 56.7
● Ср 11	87° 39.7 20° 22.8	102° 07.7 20° 14.8	116° 35.7 20° 06.7	131° 03.7 19° 58.5	145° 31.7 19° 50.2	159° 59.8 19° 41.8	174° 27.9 19° 33.2	188° 56.1 19° 24.5	203° 24.3 19° 15.8	217° 52.5 19° 06.9	232° 20.7 18° 57.9	+28.1 -8.5	15.6 57.3
Чт 12	89° 28.7 16° 29.9	103° 57.5 16° 19.2	118° 26.4 16° 08.4	132° 55.3 15° 57.5	147° 24.3 15° 46.6	161° 53.2 15° 35.5	176° 22.3 15° 24.4	190° 51.3 15° 13.1	205° 20.4 15° 01.8	219° 49.5 14° 50.4	234° 18.7 14° 38.9	+29.0 -11.1	15.8 57.9
Пт 13	91° 40.4 11° 36.5	106° 10.1 11° 23.8	120° 39.9 11° 11.0	135° 09.7 10° 58.1	149° 39.5 10° 45.2	164° 09.3 10° 32.2	178° 39.2 10° 19.1	193° 09.1 10° 05.9	207° 39.0 9° 52.8	222° 08.9 9° 39.5	236° 38.9 9° 26.2	+29.9 -13.0	15.9 58.4
Сб 14	94° 11.3 6° 00.6	108° 41.6 5° 46.5	123° 11.9 5° 32.4	137° 42.2 5° 18.3	152° 12.6 5° 04.1	166° 42.9 4° 50.0	181° 13.3 4° 35.7	195° 43.7 4° 21.5	210° 14.0 4° 07.2	224° 44.4 3° 52.9	239° 14.8 3° 38.6	+30.4 -14.2	16.0 58.7
Вс 15	96° 51.0 0° 01.6	111° 21.4 -0° 12.9	125° 51.8 -0° 27.5	140° 22.2 -0° 42.0	154° 52.5 -0° 56.6	169° 22.9 -1° 11.1	183° 53.2 -1° 25.7	198° 23.5 -1° 40.2	212° 53.8 -1° 54.7	227° 24.1 -2° 09.3	241° 54.4 -2° 23.8	+30.3 -14.5	16.1 59.0
Пн 16	99° 25.7 -5° 59.6	113° 55.6 -6° 13.8	128° 25.4 -6° 28.0	142° 55.2 -6° 42.1	157° 25.0 -6° 56.2	171° 54.7 -7° 10.3	186° 24.4 -7° 24.3	200° 54.0 -7° 38.3	215° 23.6 -7° 52.2	229° 53.2 -8° 06.1	244° 22.7 -8° 20.0	+29.7 -14.0	16.1 59.2
Вт 17	113° 55.6 -6° 13.8	128° 25.4 -6° 28.0	142° 55.2 -6° 42.1	157° 25.0 -6° 56.2	171° 54.7 -7° 10.3	186° 24.4 -7° 24.3	200° 54.0 -7° 38.3	215° 23.6 -7° 52.2	229° 53.2 -8° 06.1	244° 22.7 -8° 20.0	258° 52.2 -8° 33.8	+29.7 -14.0	16.1 59.2
◐ Ср 18	116° 08.9 -11° 54.9	130° 37.6 -12° 07.8	145° 06.2 -12° 20.7	159° 34.8 -12° 33.5	174° 03.3 -12° 46.2	188° 31.8 -12° 58.8	203° 00.2 -13° 11.4	217° 28.6 -13° 23.9	231° 56.9 -13° 36.3	246° 25.1 -13° 48.7	260° 53.3 -14° 00.9	+28.4 -12.6	16.2 59.2
Чт 19	117° 48.5 -16° 54.4	132° 15.6 -17° 05.2	146° 42.7 -17° 15.9	161° 09.7 -17° 26.5	175° 36.7 -17° 37.0	190° 03.6 -17° 47.4	204° 30.4 -17° 57.7	218° 57.2 -18° 07.9	233° 23.9 -18° 17.9	247° 50.5 -18° 27.9	262° 17.1 -18° 37.7	+26.9 -10.3	16.1 59.2
Пт 20	118° 47.9 -20° 50.8	133° 13.4 -20° 58.7	147° 38.9 -21° 06.4	162° 04.4 -21° 14.0	176° 29.7 -21° 21.5	190° 55.1 -21° 28.8	205° 20.3 -21° 35.9	219° 45.6 -21° 43.0	234° 10.7 -21° 49.9	248° 35.8 -21° 56.6	263° 00.9 -22° 03.2	+25.3 -7.2	16.1 59.1
Сб 21	119° 11.4 -23° 24.8	133° 35.8 -23° 29.0	148° 00.2 -23° 33.1	162° 24.5 -23° 37.0	176° 48.8 -23° 40.8	191° 13.1 -23° 44.4	205° 37.4 -23° 47.8	220° 01.6 -23° 51.1	234° 25.8 -23° 54.2	248° 50.0 -23° 57.2	263° 14.2 -24° 00.0	+24.3 -3.5	16.1 58.9
Вс 22	119° 16.2 -24° 23.0	133° 40.4 -24° 23.2	148° 04.6 -24° 23.3	162° 28.8 -24° 23.3	176° 53.0 -24° 23.0	191° 17.2 -24° 22.6	205° 41.4 -24° 22.1	220° 05.7 -24° 21.4	234° 30.0 -24° 20.5	248° 54.3 -24° 19.5	263° 18.7 -24° 18.3	+24.2 +0.5	16.0 58.6
Пн 23	119° 28.5 -23° 41.8	133° 53.6 -23° 38.2	148° 18.7 -23° 34.4	162° 43.8 -23° 30.5	177° 09.0 -23° 26.4	191° 34.3 -23° 22.2	205° 59.6 -23° 17.8	220° 25.0 -23° 13.3	234° 50.5 -23° 08.6	249° 16.0 -23° 03.9	263° 41.6 -22° 58.9	+25.3 +4.3	15.9 58.2
Вт 24	120° 14.2 -21° 28.9	134° 41.0 -21° 21.9	149° 07.9 -21° 14.8	163° 34.9 -21° 07.5	178° 01.9 -21° 00.1	192° 29.1 -20° 52.7	206° 56.3 -20° 45.1	221° 23.6 -20° 37.3	235° 51.0 -20° 29.5	250° 18.4 -20° 21.6	264° 46.0 -20° 13.5	+27.2 +7.5	15.7 57.7
○ Ср 25	121° 50.0 -18° 00.5	136° 19.0 -17° 50.9	150° 48.1 -17° 41.2	165° 17.2 -17° 31.4	179° 46.4 -17° 21.5	194° 15.8 -17° 11.6	208° 45.2 -17° 01.5	223° 14.7 -16° 51.4	237° 44.3 -16° 41.2	252° 14.0 -16° 30.9	266° 43.7 -16° 20.6	+29.4 +10.0	15.6 57.1
Чт 26	124° 20.3 -13° 37.1	138° 51.4 -13° 25.7	153° 22.6 -13° 14.3	167° 53.8 -13° 02.8	182° 25.2 -12° 51.3	196° 56.6 -12° 39.7	211° 28.0 -12° 28.0	225° 59.6 -12° 16.3	240° 31.2 -12° 04.6	255° 02.9 -11° 52.8	269° 34.7 -11° 41.0	+31.4 +11.6	15.4 56.4
Пт 27	127° 39.5 -8° 39.1	142° 12.3 -8° 26.7	156° 45.2 -8° 14.3	171° 18.2 -8° 01.9	185° 51.2 -7° 49.4	200° 24.2 -7° 36.9	214° 57.4 -7° 24.4	229° 30.5 -7° 11.9	244° 03.8 -6° 59.4	258° 37.0 -6° 46.8	273° 10.4 -6° 34.3	+33.1 +12.5	15.2 55.8
Сб 28	131° 36.0 -3° 24.3	146° 10.1 -3° 11.6	160° 44.1 -2° 58.8	175° 18.3 -2° 46.1	189° 52.4 -2° 33.4	204° 26.6 -2° 20.7	219° 00.8 -2° 08.0	233° 35.0 -1° 55.2	248° 09.3 -1° 42.5	262° 43.6 -1° 29.8	277° 18.0 -1° 17.1	+34.2 +12.7	15.1 55.3
Вс 29	135° 55.8 1° 52.4	150° 30.5 2° 04.9	165° 05.2 2° 17.4	179° 39.9 2° 29.9	194° 14.6 2° 42.4	208° 49.3 2° 54.8	223° 24.0 3° 07.2	237° 58.8 3° 19.7	252° 33.5 3° 32.0	267° 08.3 3° 44.4	281° 43.0 3° 56.8	+34.7 +12.4	14.9 54.8
Пн 30	140° 24.4 6° 58.7	154° 59.1 7° 10.6	169° 33.8 7° 22.4	184° 08.5 7° 34.2	198° 43.2 7° 46.0	213° 17.9 7° 57.8	227° 52.6 8° 09.5	242° 27.2 8° 21.1	257° 01.8 8° 32.8	271° 36.5 8° 44.4	286° 11.1 8° 55.9	+34.7 +11.7	14.8 54.4
Вт 31	144° 47.6 11° 44.1	159° 21.8 11° 54.9	173° 56.0 12° 05.7	188° 30.2 12° 16.5	203° 04.3 12° 27.2	217° 38.5 12° 37.8	232° 12.5 12° 48.4	246° 46.6 12° 58.9	261° 20.6 13° 09.4	275° 54.5 13° 19.8	290° 28.5 13° 30.2	+34.1 +10.6	14.8 54.2

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Последняя четв.: 3 17h57 — Новолуние: 11 15h51 — Первая четв.: 18 14h14 — Полнолуние: 25 13h35

СОЛНЦЕ

Август 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ°/h
Ср 1	178° 24.8	193° 24.8	208° 24.8	223° 24.9	238° 24.9	253° 25.0	88° 25.5	103° 25.5	118° 25.6	133° 25.6	148° 25.7	163° 25.7	+0.0
	17° 59.5	17° 58.9	17° 58.2	17° 57.6	17° 57.0	17° 56.3	17° 48.1	17° 47.4	17° 46.8	17° 46.2	17° 45.5	17° 44.9	-0.6
Чт 2	178° 25.8	193° 25.8	208° 25.8	223° 25.9	238° 25.9	253° 26.0	88° 26.6	103° 26.7	118° 26.7	133° 26.8	148° 26.8	163° 26.9	+0.0
	17° 44.2	17° 43.6	17° 42.9	17° 42.3	17° 41.7	17° 41.0	17° 32.6	17° 31.9	17° 31.3	17° 30.6	17° 30.0	17° 29.3	-0.6
Пт 3	178° 26.9	193° 27.0	208° 27.0	223° 27.1	238° 27.1	253° 27.2	88° 27.9	103° 27.9	118° 28.0	133° 28.0	148° 28.1	163° 28.2	+0.1
	17° 28.7	17° 28.0	17° 27.4	17° 26.7	17° 26.1	17° 25.4	17° 16.8	17° 16.2	17° 15.5	17° 14.8	17° 14.2	17° 13.5	-0.7
Сб 4	178° 28.2	193° 28.3	208° 28.3	223° 28.4	238° 28.4	253° 28.5	88° 29.3	103° 29.3	118° 29.4	133° 29.5	148° 29.5	163° 29.6	+0.1
	17° 12.8	17° 12.2	17° 11.5	17° 10.8	17° 10.2	17° 09.5	17° 00.8	17° 00.1	16° 59.4	16° 58.7	16° 58.1	16° 57.4	-0.7
Вс 5	178° 29.7	193° 29.7	208° 29.8	223° 29.8	238° 29.9	253° 30.0	88° 30.8	103° 30.9	118° 31.0	133° 31.0	148° 31.1	163° 31.2	+0.1
	16° 56.7	16° 56.0	16° 55.4	16° 54.7	16° 54.0	16° 53.3	16° 44.4	16° 43.8	16° 43.1	16° 42.4	16° 41.7	16° 41.0	-0.7
Пн 6	178° 31.2	193° 31.3	208° 31.4	223° 31.5	238° 31.5	253° 31.6	88° 32.5	103° 32.6	118° 32.7	133° 32.8	148° 32.8	163° 32.9	+0.1
	16° 40.3	16° 39.6	16° 38.9	16° 38.3	16° 37.6	16° 36.9	16° 27.8	16° 27.1	16° 26.4	16° 25.8	16° 25.1	16° 24.4	-0.7
Вт 7	178° 33.0	193° 33.1	208° 33.1	223° 33.2	238° 33.3	253° 33.4	88° 34.4	103° 34.5	118° 34.5	133° 34.6	148° 34.7	163° 34.8	+0.1
	16° 23.7	16° 23.0	16° 22.3	16° 21.6	16° 20.8	16° 20.1	16° 11.0	16° 10.3	16° 09.6	16° 08.9	16° 08.1	16° 07.4	-0.7
Ср 8	178° 34.9	193° 34.9	208° 35.0	223° 35.1	238° 35.2	253° 35.3	88° 36.4	103° 36.4	118° 36.5	133° 36.6	148° 36.7	163° 36.8	+0.1
	16° 06.7	16° 06.0	16° 05.3	16° 04.6	16° 03.9	16° 03.2	15° 53.9	15° 53.1	15° 52.4	15° 51.7	15° 51.0	15° 50.3	-0.7
Чт 9	178° 36.9	193° 37.0	208° 37.1	223° 37.1	238° 37.2	253° 37.3	88° 38.5	103° 38.6	118° 38.7	133° 38.8	148° 38.9	163° 39.0	+0.1
	15° 49.5	15° 48.8	15° 48.1	15° 47.4	15° 46.6	15° 45.9	15° 36.5	15° 35.7	15° 35.0	15° 34.3	15° 33.6	15° 32.8	-0.7
Пт 10	178° 39.1	193° 39.1	208° 39.2	223° 39.3	238° 39.4	253° 39.5	88° 40.8	103° 40.9	118° 41.0	133° 41.1	148° 41.2	163° 41.3	+0.1
	15° 32.1	15° 31.4	15° 30.6	15° 29.9	15° 29.2	15° 28.4	15° 18.8	15° 18.1	15° 17.4	15° 16.6	15° 15.9	15° 15.1	-0.7
Сб 11	178° 41.4	193° 41.5	208° 41.6	223° 41.7	238° 41.8	253° 41.9	88° 43.2	103° 43.3	118° 43.4	133° 43.5	148° 43.6	163° 43.7	+0.1
	15° 14.4	15° 13.7	15° 12.9	15° 12.2	15° 11.4	15° 10.7	15° 01.0	15° 00.2	14° 59.5	14° 58.7	14° 58.0	14° 57.2	-0.7
Вс 12	178° 43.8	193° 43.9	208° 44.0	223° 44.1	238° 44.2	253° 44.3	88° 45.8	103° 45.9	118° 46.0	133° 46.1	148° 46.2	163° 46.3	+0.1
	14° 56.5	14° 55.7	14° 55.0	14° 54.2	14° 53.5	14° 52.7	14° 42.9	14° 42.1	14° 41.3	14° 40.6	14° 39.8	14° 39.1	-0.8
Пн 13	178° 46.4	193° 46.5	208° 46.6	223° 46.7	238° 46.9	253° 47.0	88° 48.5	103° 48.6	118° 48.7	133° 48.8	148° 48.9	163° 49.0	+0.1
	14° 38.3	14° 37.5	14° 36.8	14° 36.0	14° 35.2	14° 34.5	14° 24.5	14° 23.7	14° 23.0	14° 22.2	14° 21.4	14° 20.7	-0.8
Вт 14	178° 49.1	193° 49.3	208° 49.4	223° 49.5	238° 49.6	253° 49.7	88° 51.3	103° 51.4	118° 51.5	133° 51.7	148° 51.8	163° 51.9	+0.1
	14° 19.9	14° 19.1	14° 18.3	14° 17.6	14° 16.8	14° 16.0	14° 05.9	14° 05.2	14° 04.4	14° 03.6	14° 02.8	14° 02.0	-0.8
Ср 15	178° 52.0	193° 52.1	208° 52.3	223° 52.4	238° 52.5	253° 52.6	88° 54.3	103° 54.4	118° 54.5	133° 54.7	148° 54.8	163° 54.9	+0.1
	14° 01.3	14° 00.5	13° 59.7	13° 58.9	13° 58.1	13° 57.3	13° 47.1	13° 46.4	13° 45.6	13° 44.8	13° 44.0	13° 43.2	-0.8
Чт 16	178° 55.0	193° 55.2	208° 55.3	223° 55.4	238° 55.6	253° 55.7	88° 57.4	103° 57.5	118° 57.7	133° 57.8	148° 57.9	163° 58.1	+0.1
	13° 42.4	13° 41.6	13° 40.8	13° 40.0	13° 39.2	13° 38.5	13° 28.1	13° 27.3	13° 26.5	13° 25.7	13° 24.9	13° 24.1	-0.8
Пт 17	178° 58.2	193° 58.3	208° 58.5	223° 58.6	238° 58.7	253° 58.9	89° 00.6	104° 00.8	119° 00.9	134° 01.1	149° 01.2	164° 01.3	+0.1
	13° 23.3	13° 22.5	13° 21.7	13° 20.9	13° 20.1	13° 19.3	13° 08.9	13° 08.1	13° 07.3	13° 06.5	13° 05.7	13° 04.9	-0.8
Сб 18	179° 01.5	194° 01.6	209° 01.7	224° 01.9	239° 02.0	254° 02.2	89° 04.0	104° 04.2	119° 04.3	134° 04.4	149° 04.6	164° 04.7	+0.1
	13° 04.1	13° 03.3	13° 02.4	13° 01.6	13° 00.8	13° 00.0	12° 49.5	12° 48.7	12° 47.8	12° 47.0	12° 46.2	12° 45.4	-0.8
Вс 19	179° 04.9	194° 05.0	209° 05.2	224° 05.3	239° 05.5	254° 05.6	89° 07.5	104° 07.7	119° 07.8	134° 08.0	149° 08.1	164° 08.3	+0.1
	12° 44.6	12° 43.8	12° 43.0	12° 42.1	12° 41.3	12° 40.5	12° 29.8	12° 29.0	12° 28.2	12° 27.4	12° 26.6	12° 25.7	-0.8
Пн 20	179° 08.4	194° 08.6	209° 08.7	224° 08.9	239° 09.0	254° 09.2	89° 11.1	104° 11.3	119° 11.5	134° 11.6	149° 11.8	164° 11.9	+0.1
	12° 24.9	12° 24.1	12° 23.3	12° 22.4	12° 21.6	12° 20.8	12° 10.0	12° 09.2	12° 08.4	12° 07.5	12° 06.7	12° 05.9	-0.8
Вт 21	179° 12.1	194° 12.2	209° 12.4	224° 12.5	239° 12.7	254° 12.9	89° 14.9	104° 15.1	119° 15.2	134° 15.4	149° 15.5	164° 15.7	+0.2
	12° 05.0	12° 04.2	12° 03.4	12° 02.5	12° 01.7	12° 00.9	11° 50.0	11° 49.2	11° 48.3	11° 47.5	11° 46.6	11° 45.8	-0.8
Ср 22	179° 15.9	194° 16.0	209° 16.2	224° 16.3	239° 16.5	254° 16.7	89° 18.8	104° 18.9	119° 19.1	134° 19.2	149° 19.4	164° 19.6	+0.2
	11° 45.0	11° 44.1	11° 43.3	11° 42.4	11° 41.6	11° 40.8	11° 29.8	11° 28.9	11° 28.1	11° 27.3	11° 26.4	11° 25.6	-0.8
Чт 23	179° 19.7	194° 19.9	209° 20.1	224° 20.2	239° 20.4	254° 20.6	89° 22.7	104° 22.9	119° 23.1	134° 23.2	149° 23.4	164° 23.6	+0.2
	11° 24.7	11° 23.9	11° 23.0	11° 22.2	11° 21.3	11° 20.5	11° 09.4	11° 08.6	11° 07.7	11° 06.8	11° 06.0	11° 05.1	-0.8
Пт 24	179° 23.7	194° 23.9	209° 24.1	224° 24.3	239° 24.4	254° 24.6	89° 26.8	104° 27.0	119° 27.2	134° 27.3	149° 27.5	164° 27.7	+0.2
	11° 04.3	11° 03.4	11° 02.6	11° 01.7	11° 00.9	11° 00.0	10° 48.8	10° 48.0	10° 47.1	10° 46.3	10° 45.4	10° 44.5	-0.9
Сб 25	179° 27.8	194° 28.0	209° 28.2	224° 28.4	239° 28.5	254° 28.7	89° 31.0	104° 31.2	119° 31.4	134° 31.5	149° 31.7	164° 31.9	+0.2
	10° 43.7	10° 42.8	10° 42.0	10° 41.1	10° 40.2	10° 39.4	10° 28.1	10° 27.2	10° 26.4	10° 25.5	10° 24.6	10° 23.8	-0.9
Вс 26	179° 32.1	194° 32.2	209° 32.4	224° 32.6	239° 32.8	254° 32.9	89° 35.3	104° 35.5	119° 35.6	134° 35.8	149° 36.0	164° 36.2	+0.2
	10° 22.9	10° 22.0	10° 21.2	10° 20.3	10° 19.4	10° 18.6	10° 07.2	10° 06.3	10° 05.5	10° 04.6	10° 03.7	10° 02.8	-0.9
Пн 27	179° 36.4	194° 36.5	209° 36.7	224° 36.9	239° 37.1	254° 37.3	89° 39.7	104° 39.8	119° 40.0	134° 40.2	149° 40.4	164° 40.6	+0.2
	10° 02.0	10° 01.1	10° 00.2	9° 59.3	9° 58.5	9° 57.6	9° 46.1	9° 45.3	9° 44.4	9° 43.5	9° 42.6	9° 41.7	-0.9
Вт 28	179° 40.8	194° 40.9	209° 41.1	224° 41.3	239° 41.5	254° 41.7	89° 44.1	104° 44.3	119° 44.5	134° 44.7	149° 44.9	164° 45.1	+0.2
	9° 40.9	9° 40.0	9° 39.1	9° 38.2	9° 37.3	9° 36.4	9° 24.9	9° 24.0	9° 23.2	9° 22.3	9° 21.4	9° 20.5	-0.9
Ср 29	179° 45.2	194° 45.4	209° 45.6	224° 45.8	239° 46.0	254° 46.2	89° 48.7	104° 48.9	119° 49.0	134° 49.2	149° 49.4	164° 49.6	+0.2
	9° 19.6	9° 18.7	9° 17.8	9° 16.9	9° 16.0	9° 15.2	9° 03.6	9° 02.7	9° 01.8	9° 00.9	9° 00.0	8° 59.1	-0.9
Чт 30	179° 49.8	194° 50.0	209° 50.2	224° 50.4	239° 50.6	254° 50.8	89° 53.3	104° 53.5	119° 53.7	134° 53.9	149° 54.1	164° 54.3	+0.2
	8° 58.2	8° 57.3	8° 56.4	8° 55.5	8° 54.6	8° 53.7	8° 42.0	8° 41.1	8° 40.2	8° 39.3	8° 38.4	8° 37.5	-0.9
Пт 31	179° 54.5	194° 54.7	209° 54.9	224° 55.0	239° 55.2	254° 55.4	89° 58.0	104° 58.2	119° 58.4	134° 58.6	149° 58.8	164° 59.0	+0.2
	8° 36.6	8° 35.7	8° 34.8	8° 33.9	8° 33.0	8° 32.1	8° 20.4	8° 19.5	8° 18.6	8° 17.7	8° 16.8	8° 15.9	-0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2029

Д	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	Δ'/h	R/p
Ср 1	61° 32.1	76° 05.7	90° 39.2	105° 12.6	119° 46.0	134° 19.4	148° 52.7	163° 26.0	177° 59.2	192° 32.3	207° 05.5	+33.3	14.8
	15° 01.0	15° 10.8	15° 20.5	15° 30.1	15° 39.7	15° 49.3	15° 58.8	16° 08.2	16° 17.5	16° 26.8	16° 36.0	+9.5	54.2
◑ Чт 2	65° 16.2	79° 48.5	94° 20.7	108° 52.9	123° 25.0	137° 57.0	152° 29.0	167° 01.0	181° 32.9	196° 04.7	210° 36.5	+32.0	14.8
	18° 45.5	18° 53.5	19° 01.5	19° 09.3	19° 17.1	19° 24.8	19° 32.5	19° 40.0	19° 47.5	19° 54.9	20° 02.1	+7.7	54.3
Пт 3	68° 25.8	82° 56.6	97° 27.3	111° 58.0	126° 28.7	140° 59.2	155° 29.7	170° 00.2	184° 30.5	199° 00.9	213° 31.1	+30.5	14.9
	21° 40.9	21° 46.7	21° 52.4	21° 58.1	22° 03.6	22° 09.1	22° 14.4	22° 19.7	22° 24.8	22° 29.8	22° 34.8	+5.4	54.6
Сб 4	70° 58.1	85° 27.4	99° 56.7	114° 26.0	128° 55.2	143° 24.3	157° 53.4	172° 22.4	186° 51.4	201° 20.3	215° 49.2	+29.1	15.0
	23° 35.9	23° 39.1	23° 42.2	23° 45.2	23° 48.0	23° 50.7	23° 53.3	23° 55.8	23° 58.2	24° 00.5	24° 02.6	+2.7	55.1
Вс 5	72° 56.9	87° 25.1	101° 53.2	116° 21.4	130° 49.4	145° 17.5	159° 45.5	174° 13.5	188° 41.4	203° 09.4	217° 37.3	+28.0	15.2
	24° 19.9	24° 20.1	24° 20.1	24° 20.0	24° 19.7	24° 19.4	24° 18.9	24° 18.2	24° 17.5	24° 16.6	24° 15.6	-0.4	55.7
Пн 6	74° 32.9	89° 00.4	103° 28.0	117° 55.5	132° 23.1	146° 50.6	161° 18.1	175° 45.6	190° 13.1	204° 40.6	219° 08.1	+27.5	15.4
	23° 44.4	23° 41.3	23° 38.0	23° 34.6	23° 31.0	23° 27.3	23° 23.5	23° 19.6	23° 15.5	23° 11.3	23° 06.9	-3.7	56.4
Вт 7	76° 00.8	90° 28.3	104° 55.9	119° 23.5	133° 51.1	148° 18.7	162° 46.3	177° 14.0	191° 41.6	206° 09.3	220° 37.0	+27.6	15.6
	21° 45.8	21° 39.3	21° 32.8	21° 26.1	21° 19.2	21° 12.2	21° 05.1	20° 57.9	20° 50.6	20° 43.1	20° 35.5	-7.0	57.2
Ср 8	77° 34.9	92° 02.9	106° 31.0	120° 59.1	135° 27.2	149° 55.3	164° 23.5	178° 51.7	193° 20.0	207° 48.2	222° 16.5	+28.2	15.8
	18° 27.0	18° 17.5	18° 07.9	17° 58.1	17° 48.3	17° 38.3	17° 28.3	17° 18.1	17° 07.8	16° 57.4	16° 46.9	-10.0	58.0
Чт 9	79° 24.2	93° 52.9	108° 21.7	122° 50.5	137° 19.3	151° 48.1	166° 17.0	180° 45.9	195° 14.8	209° 43.8	224° 12.7	+28.9	16.0
	13° 57.7	13° 45.6	13° 33.5	13° 21.3	13° 09.0	12° 56.6	12° 44.2	12° 31.6	12° 19.0	12° 06.3	11° 53.6	-12.4	58.7
● Пт 10	81° 30.1	95° 59.4	110° 28.8	124° 58.1	139° 27.5	153° 56.9	168° 26.3	182° 55.7	197° 25.2	211° 54.6	226° 24.1	+29.4	16.2
	8° 33.6	8° 19.8	8° 05.9	7° 51.9	7° 37.9	7° 23.9	7° 09.8	6° 55.7	6° 41.5	6° 27.3	6° 13.0	-14.1	59.2
Сб 11	83° 47.0	98° 16.5	112° 46.1	127° 15.6	141° 45.2	156° 14.7	170° 44.3	185° 13.8	199° 43.4	214° 12.9	228° 42.4	+29.6	16.3
	2° 34.8	2° 20.1	2° 05.3	1° 50.5	1° 35.7	1° 20.9	1° 06.1	0° 51.2	0° 36.4	0° 21.5	0° 06.6	-14.8	59.6
Вс 12	86° 04.0	100° 33.3	115° 02.5	129° 31.8	144° 01.0	158° 30.2	172° 59.4	187° 28.6	201° 57.7	216° 26.8	230° 55.9	+29.2	16.3
	-3° 35.9	-3° 50.6	-4° 05.4	-4° 20.1	-4° 34.7	-4° 49.4	-5° 04.0	-5° 18.6	-5° 33.2	-5° 47.7	-6° 02.2	-14.6	59.8
Пн 13	88° 08.2	102° 36.7	117° 05.2	131° 33.6	146° 02.0	160° 30.4	174° 58.7	189° 27.0	203° 55.2	218° 23.4	232° 51.5	+28.3	16.3
	-9° 34.7	-9° 48.4	-10° 02.1	-10° 15.8	-10° 29.4	-10° 42.9	-10° 56.3	-11° 09.7	-11° 23.0	-11° 36.3	-11° 49.4	-13.5	59.7
Вт 14	89° 47.7	104° 15.1	118° 42.4	133° 09.6	147° 36.8	162° 03.9	176° 31.0	190° 58.0	205° 25.0	219° 51.9	234° 18.8	+27.1	16.2
	-14° 57.6	-15° 09.4	-15° 21.2	-15° 32.9	-15° 44.4	-15° 55.9	-16° 07.2	-16° 18.5	-16° 29.6	-16° 40.7	-16° 51.6	-11.4	59.6
Ср 15	90° 55.4	105° 21.4	119° 47.4	134° 13.3	148° 39.2	163° 05.0	177° 30.8	191° 56.6	206° 22.2	220° 47.9	235° 13.5	+25.8	16.2
	-19° 22.2	-19° 31.2	-19° 40.2	-19° 49.0	-19° 57.7	-20° 06.3	-20° 14.7	-20° 23.0	-20° 31.2	-20° 39.2	-20° 47.1	-8.5	59.2
◐ Чт 16	105° 21.4	119° 47.4	134° 13.3	148° 39.2	163° 05.0	177° 30.8	191° 56.6	206° 22.2	220° 47.9	235° 13.5	249° 39.0	+25.8	16.2
	-19° 31.2	-19° 40.2	-19° 49.0	-19° 57.7	-20° 06.3	-20° 14.7	-20° 23.0	-20° 31.2	-20° 39.2	-20° 47.1	-20° 54.9	-8.4	59.2
Пт 17	105° 57.6	120° 22.5	134° 47.5	149° 12.4	163° 37.2	178° 02.1	192° 26.9	206° 51.7	221° 16.5	235° 41.3	250° 06.1	+24.8	16.0
	-22° 34.6	-22° 40.1	-22° 45.4	-22° 50.6	-22° 55.6	-23° 00.5	-23° 05.3	-23° 09.9	-23° 14.3	-23° 18.6	-23° 22.7	-4.8	58.8
Сб 18	106° 16.1	120° 40.8	135° 05.5	149° 30.1	163° 54.8	178° 19.5	192° 44.2	207° 09.0	221° 33.7	235° 58.5	250° 23.2	+24.7	15.9
	-24° 06.1	-24° 07.8	-24° 09.3	-24° 10.6	-24° 11.8	-24° 12.8	-24° 13.7	-24° 14.4	-24° 15.0	-24° 15.4	-24° 15.6	-1.0	58.4
Вс 19	106° 38.3	121° 03.6	135° 28.9	149° 54.3	164° 19.8	178° 45.2	193° 10.8	207° 36.4	222° 02.0	236° 27.7	250° 53.4	+25.5	15.8
	-24° 01.1	-23° 58.9	-23° 56.6	-23° 54.1	-23° 51.5	-23° 48.7	-23° 45.8	-23° 42.8	-23° 39.6	-23° 36.2	-23° 32.7	+2.8	57.9
Пн 20	107° 26.9	121° 53.6	136° 20.5	150° 47.4	165° 14.3	179° 41.4	194° 08.5	208° 35.7	223° 03.0	237° 30.3	251° 57.8	+27.1	15.6
	-22° 24.1	-22° 18.5	-22° 12.7	-22° 06.9	-22° 00.9	-21° 54.7	-21° 48.5	-21° 42.1	-21° 35.6	-21° 29.0	-21° 22.3	+6.2	57.4
Вт 21	108° 58.5	123° 27.2	137° 56.0	152° 24.8	166° 53.7	181° 22.8	195° 51.8	210° 21.0	224° 50.3	239° 19.6	253° 49.0	+29.1	15.5
	-19° 28.1	-19° 19.7	-19° 11.1	-19° 02.5	-18° 53.8	-18° 44.9	-18° 36.0	-18° 27.0	-18° 17.9	-18° 08.7	-17° 59.4	+8.9	56.9
Ср 22	111° 19.7	125° 50.4	140° 21.1	154° 52.0	169° 22.8	183° 53.8	198° 24.8	212° 56.0	227° 27.1	241° 58.4	256° 29.7	+31.0	15.4
	-15° 30.5	-15° 20.0	-15° 09.4	-14° 58.8	-14° 48.1	-14° 37.3	-14° 26.4	-14° 15.5	-14° 04.6	-13° 53.5	-13° 42.5	+10.8	56.3
Чт 23	114° 27.7	129° 00.1	143° 32.6	158° 05.1	172° 37.6	187° 10.2	201° 42.9	216° 15.6	230° 48.4	245° 21.3	259° 54.2	+32.6	15.2
	-10° 50.1	-10° 38.2	-10° 26.3	-10° 14.4	-10° 02.4	-9° 50.4	-9° 38.4	-9° 26.3	-9° 14.2	-9° 02.1	-8° 49.9	+12.0	55.8
○ Пт 24	118° 13.6	132° 47.2	147° 20.9	161° 54.6	176° 28.4	191° 02.2	205° 36.1	220° 10.0	234° 43.9	249° 17.8	263° 51.8	+33.8	15.1
	-5° 44.5	-5° 31.9	-5° 19.4	-5° 06.9	-4° 54.3	-4° 41.7	-4° 29.2	-4° 16.6	-4° 04.0	-3° 51.4	-3° 38.8	+12.6	55.3
Сб 25	122° 25.1	136° 59.6	151° 34.0	166° 08.4	180° 42.9	195° 17.4	209° 51.9	224° 26.4	239° 01.0	253° 35.5	268° 10.1	+34.5	15.0
	-0° 29.4	-0° 16.8	-0° 04.2	0° 08.4	0° 21.0	0° 33.6	0° 46.1	0° 58.7	1° 11.2	1° 23.7	1° 36.2	+12.6	54.9
Вс 26	126° 49.5	141° 24.1	155° 58.8	170° 33.4	185° 08.1	199° 42.7	214° 17.4	228° 52.0	243° 26.6	258° 01.2	272° 35.9	+34.6	14.9
	4° 41.6	4° 53.8	5° 05.9	5° 18.1	5° 30.2	5° 42.2	5° 54.3	6° 06.3	6° 18.3	6° 30.2	6° 42.1	+12.1	54.5
Пн 27	131° 13.7	145° 48.1	160° 22.5	174° 56.9	189° 31.2	204° 05.5	218° 39.8	233° 14.1	247° 48.3	262° 22.6	276° 56.8	+34.3	14.8
	9° 36.6	9° 47.9	9° 59.2	10° 10.4	10° 21.6	10° 32.7	10° 43.8	10° 54.8	11° 05.8	11° 16.8	11° 27.6	+11.1	54.2
Вт 28	135° 26.2	149° 59.9	164° 33.6	179° 07.2	193° 40.8	208° 14.3	222° 47.8	237° 21.3	251° 54.8	266° 28.2	281° 01.5	+33.5	14.8
	14° 04.8	14° 14.8	14° 24.7	14° 34.7	14° 44.5	14° 54.3	15° 04.0	15° 13.6	15° 23.2	15° 32.8	15° 42.2	+9.7	54.1
Ср 29	139° 16.8	153° 49.4	168° 22.0	182° 54.6	197° 27.1	211° 59.5	226° 31.9	241° 04.3	255° 36.6	270° 08.9	284° 41.1	+32.4	14.8
	17° 55.8	18° 04.2	18° 12.4	18° 20.6	18° 28.7	18° 36.7	18° 44.6	18° 52.5	19° 00.3	19° 08.0	19° 15.6	+8.0	54.1
Чт 30	142° 38.2	157° 09.5	171° 40.9	186° 12.2	200° 43.4	215° 14.6	229° 45.7	244° 16.8	258° 47.8	273° 18.8	287° 49.7	+31.2	14.8
	20° 59.6	21° 05.8	21° 11.9	21° 18.0	21° 23.9	21° 29.8	21° 35.5	21° 41.2	21° 46.7	21° 52.2	21° 57.5	+5.8	54.3
Пт 31	145° 27.2	159° 57.3	174° 27.4	188° 57.4	203° 27.3	217° 57.2	232° 27.1	246° 56.9	261° 26.7	275° 56.4	290° 26.1	+29.9	14.9
	23° 05.8	23° 09.5	23° 13.1	23° 16.6	23° 20.0	23° 23.3	23° 26.5	23° 29.5	23° 32.5	23° 35.3	23° 38.0	+3.2	54.6

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 2 11h15 — Новолуние: 10 01h55 — Первая четв.: 16 18h55 — Полнолуние: 24 01h51

СОЛНЦЕ

Сентябрь 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	179° 59.2 8° 14.9	194° 59.4 8° 14.0	209° 59.6 8° 13.1	224° 59.8 8° 12.2	240° 00.0 8° 11.3	255° 00.2 8° 10.4	90° 02.8 7° 58.6	105° 03.0 7° 57.7	120° 03.2 7° 56.8	135° 03.4 7° 55.9	150° 03.6 7° 54.9	165° 03.8 7° 54.0	+0.2 -0.9
Вс 2	180° 04.0 7° 53.1	195° 04.2 7° 52.2	210° 04.4 7° 51.3	225° 04.6 7° 50.4	240° 04.8 7° 49.5	255° 05.0 7° 48.6	90° 07.6 7° 36.7	105° 07.8 7° 35.8	120° 08.0 7° 34.8	135° 08.2 7° 33.9	150° 08.4 7° 33.0	165° 08.6 7° 32.1	+0.2 -0.9
Пн 3	180° 08.8 7° 31.2	195° 09.0 7° 30.2	210° 09.2 7° 29.3	225° 09.4 7° 28.4	240° 09.7 7° 27.5	255° 09.9 7° 26.6	90° 12.5 7° 14.6	105° 12.7 7° 13.7	120° 12.9 7° 12.8	135° 13.1 7° 11.9	150° 13.3 7° 10.9	165° 13.5 7° 10.0	+0.2 -0.9
Вт 4	180° 13.8 7° 09.1	195° 14.0 7° 08.2	210° 14.2 7° 07.2	225° 14.4 7° 06.3	240° 14.6 7° 05.4	255° 14.8 7° 04.5	90° 17.5 6° 52.5	105° 17.7 6° 51.5	120° 17.9 6° 50.6	135° 18.1 6° 49.7	150° 18.3 6° 48.7	165° 18.5 6° 47.8	+0.2 -0.9
Ср 5	180° 18.7 6° 46.9	195° 18.9 6° 46.0	210° 19.1 6° 45.0	225° 19.4 6° 44.1	240° 19.6 6° 43.2	255° 19.8 6° 42.3	90° 22.5 6° 30.2	105° 22.7 6° 29.2	120° 22.9 6° 28.3	135° 23.1 6° 27.4	150° 23.3 6° 26.4	165° 23.6 6° 25.5	+0.2 -0.9
Чт 6	180° 23.8 6° 24.6	195° 24.0 6° 23.7	210° 24.2 6° 22.7	225° 24.4 6° 21.8	240° 24.6 6° 20.9	255° 24.8 6° 19.9	90° 27.6 6° 07.8	105° 27.8 6° 06.8	120° 28.0 6° 05.9	135° 28.2 6° 05.0	150° 28.4 6° 04.0	165° 28.6 6° 03.1	+0.2 -0.9
Пт 7	180° 28.8 6° 02.2	195° 29.1 6° 01.2	210° 29.3 6° 00.3	225° 29.5 5° 59.4	240° 29.7 5° 58.4	255° 29.9 5° 57.5	90° 32.7 5° 45.3	105° 32.9 5° 44.4	120° 33.1 5° 43.4	135° 33.3 5° 42.5	150° 33.5 5° 41.5	165° 33.8 5° 40.6	+0.2 -0.9
Сб 8	180° 34.0 5° 39.7	195° 34.2 5° 38.7	210° 34.4 5° 37.8	225° 34.6 5° 36.8	240° 34.8 5° 35.9	255° 35.0 5° 35.0	90° 37.8 5° 22.7	105° 38.1 5° 21.8	120° 38.3 5° 20.8	135° 38.5 5° 19.9	150° 38.7 5° 18.9	165° 38.9 5° 18.0	+0.2 -0.9
Вс 9	180° 39.1 5° 17.0	195° 39.4 5° 16.1	210° 39.6 5° 15.2	225° 39.8 5° 14.2	240° 40.0 5° 13.3	255° 40.2 5° 12.3	90° 43.0 5° 00.0	105° 43.3 4° 59.1	120° 43.5 4° 58.1	135° 43.7 4° 57.2	150° 43.9 4° 56.2	165° 44.1 4° 55.3	+0.2 -0.9
Пн 10	180° 44.3 4° 54.3	195° 44.6 4° 53.4	210° 44.8 4° 52.5	225° 45.0 4° 51.5	240° 45.2 4° 50.6	255° 45.4 4° 49.6	90° 48.3 4° 37.3	105° 48.5 4° 36.3	120° 48.7 4° 35.4	135° 48.9 4° 34.4	150° 49.1 4° 33.5	165° 49.4 4° 32.5	+0.2 -0.9
Вт 11	180° 49.6 4° 31.6	195° 49.8 4° 30.6	210° 50.0 4° 29.7	225° 50.2 4° 28.7	240° 50.5 4° 27.8	255° 50.7 4° 26.8	90° 53.5 4° 14.4	105° 53.8 4° 13.5	120° 54.0 4° 12.5	135° 54.2 4° 11.6	150° 54.4 4° 10.6	165° 54.6 4° 09.7	+0.2 -1.0
Ср 12	180° 54.9 4° 08.7	195° 55.1 4° 07.8	210° 55.3 4° 06.8	225° 55.5 4° 05.9	240° 55.7 4° 04.9	255° 56.0 4° 03.9	90° 58.8 3° 51.5	105° 59.1 3° 50.6	120° 59.3 3° 49.6	135° 59.5 3° 48.7	150° 59.7 3° 47.7	165° 59.9 3° 46.7	+0.2 -1.0
Чт 13	181° 00.2 3° 45.8	196° 00.4 3° 44.8	211° 00.6 3° 43.9	226° 00.8 3° 42.9	241° 01.0 3° 42.0	256° 01.3 3° 41.0	91° 04.1 3° 28.5	106° 04.4 3° 27.6	121° 04.6 3° 26.6	136° 04.8 3° 25.7	151° 05.0 3° 24.7	166° 05.3 3° 23.8	+0.2 -1.0
Пт 14	181° 05.5 3° 22.8	196° 05.7 3° 21.8	211° 05.9 3° 20.9	226° 06.1 3° 19.9	241° 06.4 3° 19.0	256° 06.6 3° 18.0	91° 09.5 3° 05.5	106° 09.7 3° 04.5	121° 09.9 3° 03.6	136° 10.2 3° 02.6	151° 10.4 3° 01.7	166° 10.6 3° 00.7	+0.2 -1.0
Сб 15	181° 10.8 2° 59.7	196° 11.0 2° 58.8	211° 11.3 2° 57.8	226° 11.5 2° 56.9	241° 11.7 2° 55.9	256° 11.9 2° 54.9	91° 14.8 2° 42.4	106° 15.1 2° 41.5	121° 15.3 2° 40.5	136° 15.5 2° 39.5	151° 15.7 2° 38.6	166° 16.0 2° 37.6	+0.2 -1.0
Вс 16	181° 16.2 2° 36.6	196° 16.4 2° 35.7	211° 16.6 2° 34.7	226° 16.8 2° 33.7	241° 17.1 2° 32.8	256° 17.3 2° 31.8	91° 20.2 2° 19.3	106° 20.4 2° 18.3	121° 20.6 2° 17.3	136° 20.9 2° 16.4	151° 21.1 2° 15.4	166° 21.3 2° 14.4	+0.2 -1.0
Пн 17	181° 21.5 2° 13.5	196° 21.8 2° 12.5	211° 22.0 2° 11.5	226° 22.2 2° 10.6	241° 22.4 2° 09.6	256° 22.7 2° 08.6	91° 25.6 1° 56.1	106° 25.8 1° 55.1	121° 26.0 1° 54.1	136° 26.2 1° 53.2	151° 26.5 1° 52.2	166° 26.7 1° 51.2	+0.2 -1.0
Вт 18	181° 26.9 1° 50.3	196° 27.1 1° 49.3	211° 27.4 1° 48.3	226° 27.6 1° 47.4	241° 27.8 1° 46.4	256° 28.0 1° 45.4	91° 30.9 1° 32.9	106° 31.2 1° 31.9	121° 31.4 1° 30.9	136° 31.6 1° 30.0	151° 31.8 1° 29.0	166° 32.1 1° 28.0	+0.2 -1.0
Ср 19	181° 32.3 1° 27.0	196° 32.5 1° 26.1	211° 32.7 1° 25.1	226° 32.9 1° 24.1	241° 33.2 1° 23.2	256° 33.4 1° 22.2	91° 36.3 1° 09.6	106° 36.5 1° 08.6	121° 36.7 1° 07.7	136° 37.0 1° 06.7	151° 37.2 1° 05.7	166° 37.4 1° 04.7	+0.2 -1.0
Чт 20	181° 37.6 1° 03.8	196° 37.9 1° 02.8	211° 38.1 1° 01.8	226° 38.3 1° 00.9	241° 38.5 0° 59.9	256° 38.8 0° 58.9	91° 41.6 0° 46.3	106° 41.9 0° 45.3	121° 42.1 0° 44.4	136° 42.3 0° 43.4	151° 42.5 0° 42.4	166° 42.8 0° 41.4	+0.2 -1.0
Пт 21	181° 43.0 0° 40.5	196° 43.2 0° 39.5	211° 43.4 0° 38.5	226° 43.6 0° 37.6	241° 43.9 0° 36.6	256° 44.1 0° 35.6	91° 47.0 0° 23.0	106° 47.2 0° 22.0	121° 47.4 0° 21.0	136° 47.6 0° 20.1	151° 47.9 0° 19.1	166° 48.1 0° 18.1	+0.2 -1.0
Сб 22	181° 48.3 0° 17.2	196° 48.5 0° 16.2	211° 48.7 0° 15.2	226° 49.0 0° 14.2	241° 49.2 0° 13.3	256° 49.4 0° 12.3	91° 52.3 -0° 00.3	106° 52.5 -0° 01.3	121° 52.7 -0° 02.3	136° 52.9 -0° 03.3	151° 53.2 -0° 04.2	166° 53.4 -0° 05.2	+0.2 -1.0
Вс 23	181° 53.6 -0° 06.2	196° 53.8 -0° 07.2	211° 54.0 -0° 08.1	226° 54.3 -0° 09.1	241° 54.5 -0° 10.1	256° 54.7 -0° 11.0	91° 57.6 -0° 23.7	106° 57.8 -0° 24.7	121° 58.0 -0° 25.6	136° 58.2 -0° 26.6	151° 58.4 -0° 27.6	166° 58.7 -0° 28.6	+0.2 -1.0
Пн 24	181° 58.9 -0° 29.5	196° 59.1 -0° 30.5	211° 59.3 -0° 31.5	226° 59.5 -0° 32.4	241° 59.7 -0° 33.4	257° 00.0 -0° 34.4	92° 02.8 -0° 47.0	107° 03.0 -0° 48.0	122° 03.2 -0° 49.0	137° 03.4 -0° 50.0	152° 03.7 -0° 50.9	167° 03.9 -0° 51.9	+0.2 -1.0
Вт 25	182° 04.1 -0° 52.9	197° 04.3 -0° 53.9	212° 04.5 -0° 54.8	227° 04.8 -0° 55.8	242° 05.0 -0° 56.8	257° 05.2 -0° 57.7	92° 08.0 -1° 10.4	107° 08.2 -1° 11.4	122° 08.4 -1° 12.3	137° 08.6 -1° 13.3	152° 08.9 -1° 14.3	167° 09.1 -1° 15.3	+0.2 -1.0
Ср 26	182° 09.3 -1° 16.2	197° 09.5 -1° 17.2	212° 09.7 -1° 18.2	227° 09.9 -1° 19.2	242° 10.1 -1° 20.1	257° 10.4 -1° 21.1	92° 13.1 -1° 33.8	107° 13.4 -1° 34.7	122° 13.6 -1° 35.7	137° 13.8 -1° 36.7	152° 14.0 -1° 37.6	167° 14.2 -1° 38.6	+0.2 -1.0
Чт 27	182° 14.4 -1° 39.6	197° 14.6 -1° 40.6	212° 14.8 -1° 41.5	227° 15.1 -1° 42.5	242° 15.3 -1° 43.5	257° 15.5 -1° 44.5	92° 18.2 -1° 57.1	107° 18.5 -1° 58.1	122° 18.7 -1° 59.0	137° 18.9 -2° 00.0	152° 19.1 -2° 01.0	167° 19.3 -2° 02.0	+0.2 -1.0
Пт 28	182° 19.5 -2° 02.9	197° 19.7 -2° 03.9	212° 19.9 -2° 04.9	227° 20.1 -2° 05.9	242° 20.3 -2° 06.8	257° 20.6 -2° 07.8	92° 23.3 -2° 20.4	107° 23.5 -2° 21.4	122° 23.7 -2° 22.4	137° 23.9 -2° 23.4	152° 24.1 -2° 24.3	167° 24.3 -2° 25.3	+0.2 -1.0
Сб 29	182° 24.5 -2° 26.3	197° 24.7 -2° 27.2	212° 24.9 -2° 28.2	227° 25.2 -2° 29.2	242° 25.4 -2° 30.2	257° 25.6 -2° 31.1	92° 28.3 -2° 43.7	107° 28.5 -2° 44.7	122° 28.7 -2° 45.7	137° 28.9 -2° 46.7	152° 29.1 -2° 47.6	167° 29.3 -2° 48.6	+0.2 -1.0
Вс 30	182° 29.5 -2° 49.6	197° 29.7 -2° 50.5	212° 29.9 -2° 51.5	227° 30.1 -2° 52.5	242° 30.3 -2° 53.5	257° 30.5 -2° 54.4	92° 33.2 -3° 07.0	107° 33.4 -3° 08.0	122° 33.6 -3° 09.0	137° 33.8 -3° 09.9	152° 34.0 -3° 10.9	167° 34.2 -3° 11.9	+0.2 -1.0

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2029

	Д	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	Δ'/h	R/p
◑	Сб 1	75° 20.4	89° 49.6	104° 18.8	118° 47.9	133° 17.0	147° 46.0	162° 15.0	176° 44.0	191° 12.9	205° 41.9	220° 10.7	+29.0	15.0
		23° 58.9	24° 00.3	24° 01.7	24° 02.9	24° 04.0	24° 04.9	24° 05.8	24° 06.5	24° 07.1	24° 07.6	24° 08.0	+0.9	55.1
	Вс 2	77° 20.1	91° 48.5	106° 16.9	120° 45.3	135° 13.6	149° 42.0	164° 10.3	178° 38.6	193° 06.8	207° 35.1	222° 03.4	+28.3	15.2
		23° 58.6	23° 56.9	23° 55.2	23° 53.3	23° 51.3	23° 49.1	23° 46.9	23° 44.5	23° 41.9	23° 39.3	23° 36.5	-2.2	55.7
	Пн 3	79° 05.7	93° 33.7	108° 01.8	122° 29.9	136° 58.0	151° 26.1	165° 54.2	180° 22.3	194° 50.4	209° 18.5	223° 46.6	+28.1	15.4
		22° 39.4	22° 34.6	22° 29.6	22° 24.5	22° 19.3	22° 14.0	22° 08.5	22° 02.9	21° 57.2	21° 51.3	21° 45.4	-5.4	56.5
	Вт 4	80° 48.6	95° 16.8	109° 45.0	124° 13.2	138° 41.5	153° 09.7	167° 38.0	182° 06.3	196° 34.5	211° 02.8	225° 31.2	+28.3	15.7
		20° 00.8	19° 52.8	19° 44.7	19° 36.5	19° 28.2	19° 19.8	19° 11.3	19° 02.6	18° 53.8	18° 44.9	18° 35.9	-8.5	57.4
	Ср 5	82° 37.6	97° 06.2	111° 34.7	126° 03.3	140° 31.9	155° 00.5	169° 29.2	183° 57.8	198° 26.5	212° 55.1	227° 23.8	+28.6	15.9
		16° 07.4	15° 56.6	15° 45.8	15° 34.8	15° 23.7	15° 12.6	15° 01.3	14° 50.0	14° 38.5	14° 26.9	14° 15.3	-11.2	58.4
	Чт 6	84° 35.8	99° 04.7	113° 33.6	128° 02.5	142° 31.5	157° 00.4	171° 29.3	185° 58.3	200° 27.2	214° 56.2	229° 25.2	+28.9	16.1
		11° 09.9	10° 56.9	10° 43.8	10° 30.6	10° 17.4	10° 04.1	9° 50.7	9° 37.2	9° 23.7	9° 10.1	8° 56.5	-13.4	59.2
	Пт 7	86° 40.0	101° 09.0	115° 38.0	130° 07.0	144° 36.0	159° 04.9	173° 33.9	188° 02.8	202° 31.8	217° 00.7	231° 29.6	+29.0	16.3
		5° 24.6	5° 10.1	4° 55.5	4° 40.9	4° 26.3	4° 11.6	3° 56.9	3° 42.1	3° 27.3	3° 12.5	2° 57.7	-14.7	59.9
●	Сб 8	88° 41.9	103° 10.5	117° 39.2	132° 07.8	146° 36.4	161° 05.0	175° 33.5	190° 02.0	204° 30.5	218° 59.0	233° 27.4	+28.6	16.5
		-0° 47.4	-1° 02.5	-1° 17.5	-1° 32.6	-1° 47.7	-2° 02.8	-2° 17.9	-2° 33.0	-2° 48.0	-3° 03.1	-3° 18.1	-15.1	60.4
	Вс 9	90° 30.0	104° 57.9	119° 25.8	133° 53.6	148° 21.3	162° 49.0	177° 16.7	191° 44.3	206° 11.9	220° 39.5	235° 07.0	+27.7	16.5
		-7° 01.0	-7° 15.5	-7° 30.1	-7° 44.6	-7° 59.1	-8° 13.5	-8° 27.8	-8° 42.2	-8° 56.4	-9° 10.6	-9° 24.8	-14.4	60.6
	Пн 10	91° 53.6	106° 20.3	120° 47.0	135° 13.6	149° 40.2	164° 06.7	178° 33.1	192° 59.5	207° 25.9	221° 52.2	236° 18.4	+26.5	16.5
		-12° 48.9	-13° 01.9	-13° 14.8	-13° 27.7	-13° 40.4	-13° 53.1	-14° 05.6	-14° 18.1	-14° 30.4	-14° 42.7	-14° 54.9	-12.6	60.5
	Вт 11	92° 45.8	107° 11.3	121° 36.6	136° 02.0	150° 27.3	164° 52.5	179° 17.7	193° 42.8	208° 07.9	222° 33.0	236° 58.0	+25.2	16.4
		-17° 44.4	-17° 54.8	-18° 05.0	-18° 15.2	-18° 25.2	-18° 35.0	-18° 44.8	-18° 54.4	-19° 03.9	-19° 13.2	-19° 22.5	-9.8	60.2
	Ср 12	93° 08.3	107° 32.7	121° 57.1	136° 21.5	150° 45.8	165° 10.2	179° 34.5	193° 58.7	208° 23.0	222° 47.2	237° 11.4	+24.3	16.3
		-21° 24.0	-21° 30.9	-21° 37.7	-21° 44.3	-21° 50.8	-21° 57.2	-22° 03.4	-22° 09.4	-22° 15.3	-22° 21.0	-22° 26.6	-6.3	59.6
	Чт 13	93° 13.6	107° 37.7	122° 01.8	136° 26.0	150° 50.1	165° 14.3	179° 38.5	194° 02.7	208° 26.9	222° 51.2	237° 15.4	+24.2	16.1
		-23° 31.2	-23° 34.3	-23° 37.2	-23° 39.9	-23° 42.5	-23° 44.9	-23° 47.1	-23° 49.2	-23° 51.1	-23° 52.9	-23° 54.5	-2.3	59.0
	Пт 14	107° 37.7	122° 01.8	136° 26.0	150° 50.1	165° 14.3	179° 38.5	194° 02.7	208° 26.9	222° 51.2	237° 15.4	251° 39.7	+24.2	16.1
		-23° 34.3	-23° 37.2	-23° 39.9	-23° 42.5	-23° 44.9	-23° 47.1	-23° 49.2	-23° 51.1	-23° 52.9	-23° 54.5	-23° 55.9	-2.2	58.9
◐	Сб 15	107° 47.7	122° 12.6	136° 37.5	151° 02.4	165° 27.4	179° 52.5	194° 17.6	208° 42.7	223° 07.9	237° 33.2	251° 58.5	+25.1	15.9
		-23° 58.9	-23° 57.8	-23° 56.6	-23° 55.3	-23° 53.8	-23° 52.1	-23° 50.3	-23° 48.4	-23° 46.3	-23° 44.1	-23° 41.7	+1.7	58.2
	Вс 16	108° 26.1	122° 52.5	137° 18.9	151° 45.5	166° 12.1	180° 38.8	195° 05.6	209° 32.4	223° 59.3	238° 26.4	252° 53.4	+26.7	15.7
		-22° 49.1	-22° 44.5	-22° 39.7	-22° 34.9	-22° 29.9	-22° 24.8	-22° 19.6	-22° 14.2	-22° 08.7	-22° 03.1	-21° 57.4	+5.2	57.5
	Пн 17	109° 49.6	124° 18.0	138° 46.4	153° 15.0	167° 43.7	182° 12.4	196° 41.2	211° 10.1	225° 39.1	240° 08.2	254° 37.4	+28.8	15.5
		-20° 17.6	-20° 10.1	-20° 02.5	-19° 54.7	-19° 46.9	-19° 39.0	-19° 31.0	-19° 22.9	-19° 14.6	-19° 06.3	-18° 57.9	+8.0	56.9
	Вт 18	112° 04.6	126° 35.1	141° 05.6	155° 36.2	170° 06.9	184° 37.7	199° 08.5	213° 39.4	228° 10.4	242° 41.5	257° 12.6	+30.8	15.3
		-16° 41.5	-16° 31.8	-16° 22.0	-16° 12.1	-16° 02.2	-15° 52.2	-15° 42.1	-15° 31.9	-15° 21.7	-15° 11.4	-15° 01.1	+10.1	56.3
	Ср 19	115° 08.2	129° 40.5	144° 12.8	158° 45.1	173° 17.6	187° 50.0	202° 22.6	216° 55.2	231° 27.8	246° 00.6	260° 33.3	+32.5	15.2
		-12° 18.8	-12° 07.5	-11° 56.3	-11° 44.9	-11° 33.6	-11° 22.1	-11° 10.7	-10° 59.2	-10° 47.6	-10° 36.0	-10° 24.4	+11.4	55.7
	Чт 20	118° 51.2	133° 24.8	147° 58.4	162° 32.0	177° 05.7	191° 39.5	206° 13.3	220° 47.1	235° 20.9	249° 54.8	264° 28.8	+33.8	15.1
		-7° 26.1	-7° 14.0	-7° 01.9	-6° 49.7	-6° 37.5	-6° 25.3	-6° 13.1	-6° 00.9	-5° 48.6	-5° 36.4	-5° 24.1	+12.2	55.2
	Пт 21	123° 01.4	137° 35.8	152° 10.3	166° 44.7	181° 19.2	195° 53.6	210° 28.1	225° 02.6	239° 37.2	254° 11.7	268° 46.3	+34.5	14.9
		-2° 18.6	-2° 06.1	-1° 53.7	-1° 41.3	-1° 28.9	-1° 16.5	-1° 04.0	-0° 51.6	-0° 39.2	-0° 26.8	-0° 14.4	+12.4	54.8
○	Сб 22	127° 26.1	142° 00.8	156° 35.5	171° 10.2	185° 44.9	200° 19.6	214° 54.3	229° 29.0	244° 03.7	258° 38.4	273° 13.1	+34.7	14.9
		2° 50.5	3° 02.7	3° 14.9	3° 27.1	3° 39.3	3° 51.4	4° 03.5	4° 15.6	4° 27.7	4° 39.8	4° 51.8	+12.1	54.5
	Вс 23	131° 52.6	146° 27.1	161° 01.6	175° 36.1	190° 10.6	204° 45.1	219° 19.5	233° 54.0	248° 28.4	263° 02.8	277° 37.1	+34.5	14.8
		7° 48.9	8° 00.4	8° 12.0	8° 23.4	8° 34.9	8° 46.3	8° 57.6	9° 09.0	9° 20.2	9° 31.5	9° 42.7	+11.4	54.2
	Пн 24	136° 09.7	150° 43.7	165° 17.6	179° 51.5	194° 25.4	208° 59.2	223° 33.0	238° 06.7	252° 40.4	267° 14.1	281° 47.8	+33.8	14.7
		12° 25.2	12° 35.6	12° 46.0	12° 56.3	13° 06.6	13° 16.8	13° 27.0	13° 37.1	13° 47.1	13° 57.1	14° 07.0	+10.2	54.0
	Вт 25	140° 08.1	154° 41.2	169° 14.2	183° 47.1	198° 20.0	212° 52.9	227° 25.8	241° 58.5	256° 31.3	271° 04.0	285° 36.6	+32.9	14.7
		16° 28.4	16° 37.3	16° 46.1	16° 54.8	17° 03.5	17° 12.1	17° 20.6	17° 29.1	17° 37.5	17° 45.8	17° 54.0	+8.6	54.0
	Ср 26	143° 41.1	158° 13.1	172° 45.0	187° 16.8	201° 48.6	216° 20.4	230° 52.1	245° 23.7	259° 55.3	274° 26.9	288° 58.4	+31.7	14.7
		19° 47.9	19° 54.8	20° 01.6	20° 08.4	20° 15.1	20° 21.6	20° 28.1	20° 34.5	20° 40.8	20° 47.0	20° 53.1	+6.5	54.0
	Чт 27	146° 45.9	161° 16.7	175° 47.4	190° 18.2	204° 48.9	219° 19.5	233° 50.1	248° 20.7	262° 51.2	277° 21.6	291° 52.1	+30.6	14.8
		22° 13.5	22° 18.1	22° 22.6	22° 26.9	22° 31.2	22° 35.4	22° 39.4	22° 43.4	22° 47.2	22° 51.0	22° 54.6	+4.1	54.2
	Пт 28	149° 24.1	163° 53.9	178° 23.7	192° 53.5	207° 23.3	221° 53.0	236° 22.7	250° 52.4	265° 22.0	279° 51.6	294° 21.2	+29.7	14.9
		23° 36.2	23° 38.1	23° 39.9	23° 41.5	23° 43.1	23° 44.5	23° 45.8	23° 47.0	23° 48.1	23° 49.1	23° 50.0	+1.4	54.5
	Сб 29	151° 42.0	166° 11.2	180° 40.4	195° 09.6	209° 38.8	224° 07.9	238° 37.1	253° 06.2	267° 35.3	282° 04.4	296° 33.5	+29.1	15.0
		23° 48.8	23° 47.7	23° 46.6	23° 45.3	23° 43.9	23° 42.4	23° 40.8	23° 39.0	23° 37.2	23° 35.2	23° 33.1	-1.6	55.1
◑	Вс 30	153° 48.8	168° 17.8	182° 46.8	197° 15.8	211° 44.7	226° 13.7	240° 42.7	255° 11.7	269° 40.6	284° 09.6	298° 38.6	+29.0	15.2
		22° 46.9	22° 42.8	22° 38.7	22° 34.4	22° 30.0	22° 25.5	22° 20.8	22° 16.0	22° 11.2	22° 06.2	22° 01.0	-4.6	55.7

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 1 04h33 — Новолуние: 8 10h44 — Первая четв.: 15 01h29 — Полнолуние: 22 16h29 — Последняя четв.: 30 20h56

СОЛНЦЕ

Октябрь 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	182° 34.4 -3° 12.9	197° 34.6 -3° 13.8	212° 34.8 -3° 14.8	227° 35.0 -3° 15.8	242° 35.2 -3° 16.7	257° 35.4 -3° 17.7	92° 38.0 -3° 30.3	107° 38.2 -3° 31.3	122° 38.4 -3° 32.2	137° 38.6 -3° 33.2	152° 38.8 -3° 34.2	167° 39.0 -3° 35.1	+0.2 -1.0
Вт 2	182° 39.2 -3° 36.1	197° 39.4 -3° 37.1	212° 39.6 -3° 38.0	227° 39.8 -3° 39.0	242° 40.0 -3° 40.0	257° 40.2 -3° 40.9	92° 42.7 -3° 53.5	107° 42.9 -3° 54.5	122° 43.1 -3° 55.4	137° 43.3 -3° 56.4	152° 43.5 -3° 57.4	167° 43.7 -3° 58.3	+0.2 -1.0
Ср 3	182° 43.9 -3° 59.3	197° 44.1 -4° 00.3	212° 44.3 -4° 01.2	227° 44.5 -4° 02.2	242° 44.7 -4° 03.2	257° 44.9 -4° 04.1	92° 47.4 -4° 16.7	107° 47.6 -4° 17.6	122° 47.8 -4° 18.6	137° 48.0 -4° 19.6	152° 48.2 -4° 20.5	167° 48.4 -4° 21.5	+0.2 -1.0
Чт 4	182° 48.5 -4° 22.5	197° 48.7 -4° 23.4	212° 48.9 -4° 24.4	227° 49.1 -4° 25.4	242° 49.3 -4° 26.3	257° 49.5 -4° 27.3	92° 52.0 -4° 39.8	107° 52.2 -4° 40.8	122° 52.3 -4° 41.7	137° 52.5 -4° 42.7	152° 52.7 -4° 43.7	167° 52.9 -4° 44.6	+0.2 -1.0
Пт 5	182° 53.1 -4° 45.6	197° 53.3 -4° 46.5	212° 53.5 -4° 47.5	227° 53.7 -4° 48.5	242° 53.8 -4° 49.4	257° 54.0 -4° 50.4	92° 56.4 -5° 02.9	107° 56.6 -5° 03.8	122° 56.8 -5° 04.8	137° 57.0 -5° 05.8	152° 57.2 -5° 06.7	167° 57.4 -5° 07.7	+0.2 -1.0
Сб 6	182° 57.6 -5° 08.6	197° 57.7 -5° 09.6	212° 57.9 -5° 10.6	227° 58.1 -5° 11.5	242° 58.3 -5° 12.5	257° 58.5 -5° 13.4	93° 00.8 -5° 25.9	108° 01.0 -5° 26.8	123° 01.2 -5° 27.8	138° 01.4 -5° 28.8	153° 01.5 -5° 29.7	168° 01.7 -5° 30.7	+0.2 -1.0
Вс 7	183° 01.9 -5° 31.6	198° 02.1 -5° 32.6	213° 02.3 -5° 33.5	228° 02.4 -5° 34.5	243° 02.6 -5° 35.4	258° 02.8 -5° 36.4	93° 05.1 -5° 48.8	108° 05.3 -5° 49.8	123° 05.5 -5° 50.7	138° 05.6 -5° 51.7	153° 05.8 -5° 52.6	168° 06.0 -5° 53.6	+0.2 -1.0
Пн 8	183° 06.2 -5° 54.5	198° 06.3 -5° 55.5	213° 06.5 -5° 56.4	228° 06.7 -5° 57.4	243° 06.9 -5° 58.4	258° 07.0 -5° 59.3	93° 09.3 -6° 11.7	108° 09.4 -6° 12.6	123° 09.6 -6° 13.6	138° 09.8 -6° 14.5	153° 10.0 -6° 15.5	168° 10.1 -6° 16.4	+0.2 -1.0
Вт 9	183° 10.3 -6° 17.4	198° 10.5 -6° 18.3	213° 10.6 -6° 19.3	228° 10.8 -6° 20.2	243° 11.0 -6° 21.2	258° 11.1 -6° 22.1	93° 13.3 -6° 34.5	108° 13.5 -6° 35.4	123° 13.7 -6° 36.4	138° 13.8 -6° 37.3	153° 14.0 -6° 38.2	168° 14.2 -6° 39.2	+0.2 -1.0
Ср 10	183° 14.3 -6° 40.1	198° 14.5 -6° 41.1	213° 14.7 -6° 42.0	228° 14.8 -6° 43.0	243° 15.0 -6° 43.9	258° 15.2 -6° 44.9	93° 17.3 -6° 57.1	108° 17.4 -6° 58.1	123° 17.6 -6° 59.0	138° 17.8 -7° 00.0	153° 17.9 -7° 00.9	168° 18.1 -7° 01.9	+0.2 -0.9
Чт 11	183° 18.2 -7° 02.8	198° 18.4 -7° 03.7	213° 18.6 -7° 04.7	228° 18.7 -7° 05.6	243° 18.9 -7° 06.6	258° 19.0 -7° 07.5	93° 21.1 -7° 19.7	108° 21.3 -7° 20.7	123° 21.4 -7° 21.6	138° 21.6 -7° 22.6	153° 21.7 -7° 23.5	168° 21.9 -7° 24.4	+0.2 -0.9
Пт 12	183° 22.0 -7° 25.4	198° 22.2 -7° 26.3	213° 22.4 -7° 27.3	228° 22.5 -7° 28.2	243° 22.7 -7° 29.1	258° 22.8 -7° 30.1	93° 24.8 -7° 42.2	108° 25.0 -7° 43.2	123° 25.1 -7° 44.1	138° 25.3 -7° 45.0	153° 25.4 -7° 46.0	168° 25.6 -7° 46.9	+0.2 -0.9
Сб 13	183° 25.7 -7° 47.8	198° 25.9 -7° 48.8	213° 26.0 -7° 49.7	228° 26.2 -7° 50.6	243° 26.3 -7° 51.6	258° 26.5 -7° 52.5	93° 28.4 -8° 04.6	108° 28.5 -8° 05.6	123° 28.7 -8° 06.5	138° 28.8 -8° 07.4	153° 29.0 -8° 08.3	168° 29.1 -8° 09.3	+0.2 -0.9
Вс 14	183° 29.3 -8° 10.2	198° 29.4 -8° 11.1	213° 29.6 -8° 12.1	228° 29.7 -8° 13.0	243° 29.8 -8° 13.9	258° 30.0 -8° 14.8	93° 31.8 -8° 26.9	108° 32.0 -8° 27.8	123° 32.1 -8° 28.7	138° 32.3 -8° 29.7	153° 32.4 -8° 30.6	168° 32.6 -8° 31.5	+0.1 -0.9
Пн 15	183° 32.7 -8° 32.4	198° 32.8 -8° 33.4	213° 33.0 -8° 34.3	228° 33.1 -8° 35.2	243° 33.2 -8° 36.1	258° 33.4 -8° 37.1	93° 35.2 -8° 49.0	108° 35.3 -8° 50.0	123° 35.4 -8° 50.9	138° 35.6 -8° 51.8	153° 35.7 -8° 52.7	168° 35.8 -8° 53.6	+0.1 -0.9
Вт 16	183° 36.0 -8° 54.6	198° 36.1 -8° 55.5	213° 36.2 -8° 56.4	228° 36.4 -8° 57.3	243° 36.5 -8° 58.2	258° 36.6 -8° 59.2	93° 38.3 -9° 11.1	108° 38.5 -9° 12.0	123° 38.6 -9° 12.9	138° 38.7 -9° 13.8	153° 38.9 -9° 14.7	168° 39.0 -9° 15.6	+0.1 -0.9
Ср 17	183° 39.1 -9° 16.6	198° 39.2 -9° 17.5	213° 39.4 -9° 18.4	228° 39.5 -9° 19.3	243° 39.6 -9° 20.2	258° 39.8 -9° 21.1	93° 41.4 -9° 33.0	108° 41.5 -9° 33.9	123° 41.6 -9° 34.8	138° 41.8 -9° 35.7	153° 41.9 -9° 36.6	168° 42.0 -9° 37.5	+0.1 -0.9
Чт 18	183° 42.1 -9° 38.4	198° 42.2 -9° 39.3	213° 42.4 -9° 40.2	228° 42.5 -9° 41.1	243° 42.6 -9° 42.0	258° 42.7 -9° 42.9	93° 44.3 -9° 54.7	108° 44.4 -9° 55.6	123° 44.5 -9° 56.5	138° 44.6 -9° 57.4	153° 44.7 -9° 58.3	168° 44.9 -9° 59.2	+0.1 -0.9
Пт 19	183° 45.0 -10° 00.1	198° 45.1 -10° 01.0	213° 45.2 -10° 01.9	228° 45.3 -10° 02.8	243° 45.4 -10° 03.7	258° 45.5 -10° 04.6	93° 47.0 -10° 16.3	108° 47.1 -10° 17.2	123° 47.2 -10° 18.1	138° 47.3 -10° 19.0	153° 47.5 -10° 19.9	168° 47.6 -10° 20.8	+0.1 -0.9
Сб 20	183° 47.7 -10° 21.7	198° 47.8 -10° 22.6	213° 47.9 -10° 23.5	228° 48.0 -10° 24.4	243° 48.1 -10° 25.3	258° 48.2 -10° 26.2	93° 49.6 -10° 37.8	108° 49.7 -10° 38.7	123° 49.8 -10° 39.6	138° 49.9 -10° 40.4	153° 50.0 -10° 41.3	168° 50.1 -10° 42.2	+0.1 -0.9
Вс 21	183° 50.2 -10° 43.1	198° 50.3 -10° 44.0	213° 50.4 -10° 44.9	228° 50.5 -10° 45.8	243° 50.6 -10° 46.7	258° 50.7 -10° 47.6	93° 52.0 -10° 59.1	108° 52.1 -11° 00.0	123° 52.2 -11° 00.8	138° 52.3 -11° 01.7	153° 52.4 -11° 02.6	168° 52.5 -11° 03.5	+0.1 -0.9
Пн 22	183° 52.6 -11° 04.4	198° 52.7 -11° 05.3	213° 52.8 -11° 06.1	228° 52.9 -11° 07.0	243° 53.0 -11° 07.9	258° 53.1 -11° 08.8	93° 54.3 -11° 20.2	108° 54.3 -11° 21.1	123° 54.4 -11° 22.0	138° 54.5 -11° 22.8	153° 54.6 -11° 23.7	168° 54.7 -11° 24.6	+0.1 -0.9
Вт 23	183° 54.8 -11° 25.5	198° 54.9 -11° 26.3	213° 55.0 -11° 27.2	228° 55.1 -11° 28.1	243° 55.1 -11° 29.0	258° 55.2 -11° 29.8	93° 56.3 -11° 41.2	108° 56.4 -11° 42.0	123° 56.5 -11° 42.9	138° 56.6 -11° 43.8	153° 56.7 -11° 44.7	168° 56.7 -11° 45.5	+0.1 -0.9
Ср 24	183° 56.8 -11° 46.4	198° 56.9 -11° 47.3	213° 57.0 -11° 48.1	228° 57.1 -11° 49.0	243° 57.1 -11° 49.9	258° 57.2 -11° 50.7	93° 58.2 -12° 02.0	108° 58.3 -12° 02.8	123° 58.4 -12° 03.7	138° 58.5 -12° 04.5	153° 58.5 -12° 05.4	168° 58.6 -12° 06.3	+0.1 -0.9
Чт 25	183° 58.7 -12° 07.1	198° 58.8 -12° 08.0	213° 58.8 -12° 08.9	228° 58.9 -12° 09.7	243° 59.0 -12° 10.6	258° 59.0 -12° 11.4	94° 00.0 -12° 22.6	109° 00.0 -12° 23.4	124° 00.1 -12° 24.3	139° 00.2 -12° 25.1	154° 00.2 -12° 26.0	169° 00.3 -12° 26.8	+0.1 -0.9
Пт 26	184° 00.4 -12° 27.7	199° 00.4 -12° 28.5	214° 00.5 -12° 29.4	229° 00.5 -12° 30.2	244° 00.6 -12° 31.1	259° 00.7 -12° 32.0	94° 01.5 -12° 43.0	109° 01.5 -12° 43.8	124° 01.6 -12° 44.7	139° 01.7 -12° 45.5	154° 01.7 -12° 46.4	169° 01.8 -12° 47.2	+0.1 -0.9
Сб 27	184° 01.8 -12° 48.1	199° 01.9 -12° 48.9	214° 02.0 -12° 49.7	229° 02.0 -12° 50.6	244° 02.1 -12° 51.4	259° 02.1 -12° 52.3	94° 02.8 -13° 03.2	109° 02.9 -13° 04.0	124° 02.9 -13° 04.9	139° 03.0 -13° 05.7	154° 03.0 -13° 06.6	169° 03.1 -13° 07.4	+0.1 -0.8
Вс 28	184° 03.1 -13° 08.2	199° 03.2 -13° 09.1	214° 03.2 -13° 09.9	229° 03.3 -13° 10.7	244° 03.3 -13° 11.6	259° 03.4 -13° 12.4	94° 04.0 -13° 23.2	109° 04.0 -13° 24.1	124° 04.1 -13° 24.9	139° 04.1 -13° 25.7	154° 04.2 -13° 26.5	169° 04.2 -13° 27.4	+0.1 -0.8
Пн 29	184° 04.2 -13° 28.2	199° 04.3 -13° 29.0	214° 04.3 -13° 29.9	229° 04.4 -13° 30.7	244° 04.4 -13° 31.5	259° 04.5 -13° 32.3	94° 05.0 -13° 43.0	109° 05.0 -13° 43.9	124° 05.0 -13° 44.7	139° 05.1 -13° 45.5	154° 05.1 -13° 46.3	169° 05.1 -13° 47.1	+0.0 -0.8
Вт 30	184° 05.2 -13° 48.0	199° 05.2 -13° 48.8	214° 05.2 -13° 49.6	229° 05.3 -13° 50.4	244° 05.3 -13° 51.2	259° 05.3 -13° 52.0	94° 05.7 -14° 02.6	109° 05.7 -14° 03.4	124° 05.8 -14° 04.3	139° 05.8 -14° 05.1	154° 05.8 -14° 05.9	169° 05.8 -14° 06.7	+0.0 -0.8
Ср 31	184° 05.9 -14° 07.5	199° 05.9 -14° 08.3	214° 05.9 -14° 09.1	229° 05.9 -14° 09.9	244° 06.0 -14° 10.7	259° 06.0 -14° 11.5	94° 06.3 -14° 22.0	109° 06.3 -14° 22.8	124° 06.3 -14° 23.6	139° 06.3 -14° 24.4	154° 06.3 -14° 25.2	169° 06.4 -14° 26.0	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2029

Д	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	Δ'/h	R/p
Пн 1	68° 59.6	83° 28.6	97° 57.7	112° 26.7	126° 55.8	141° 24.8	155° 53.9	170° 23.0	184° 52.0	199° 21.1	213° 50.2	+29.1	15.4
	21° 09.6	21° 03.3	20° 56.8	20° 50.3	20° 43.6	20° 36.9	20° 30.0	20° 23.0	20° 15.9	20° 08.6	20° 01.3	-6.8	56.4
Вт 2	71° 07.9	85° 37.1	100° 06.4	114° 35.7	129° 05.0	143° 34.3	158° 03.6	172° 32.9	187° 02.2	201° 31.6	216° 00.9	+29.3	15.6
	17° 57.7	17° 48.6	17° 39.4	17° 30.1	17° 20.6	17° 11.1	17° 01.5	16° 51.7	16° 41.9	16° 31.9	16° 21.9	-9.6	57.3
Ср 3	73° 22.2	87° 51.7	102° 21.2	116° 50.7	131° 20.2	145° 49.7	160° 19.2	174° 48.7	189° 18.2	203° 47.7	218° 17.2	+29.5	15.9
	13° 39.6	13° 28.0	13° 16.4	13° 04.6	12° 52.8	12° 40.9	12° 28.9	12° 16.8	12° 04.7	11° 52.4	11° 40.1	-12.0	58.3
Чт 4	75° 39.6	90° 09.1	104° 38.6	119° 08.0	133° 37.4	148° 06.8	162° 36.3	177° 05.7	191° 35.0	206° 04.4	220° 33.8	+29.4	16.2
	8° 26.1	8° 12.6	7° 59.1	7° 45.5	7° 31.8	7° 18.1	7° 04.3	6° 50.4	6° 36.5	6° 22.6	6° 08.6	-13.8	59.3
Пт 5	77° 51.9	92° 21.0	106° 50.0	121° 18.9	135° 47.9	150° 16.8	164° 45.7	179° 14.5	193° 43.4	208° 12.1	222° 40.9	+28.9	16.4
	2° 32.9	2° 18.2	2° 03.5	1° 48.7	1° 33.9	1° 19.1	1° 04.3	0° 49.5	0° 34.6	0° 19.8	0° 04.9	-14.8	60.1
Сб 6	79° 47.5	94° 15.6	108° 43.6	123° 11.6	137° 39.6	152° 07.5	166° 35.3	181° 03.1	195° 30.8	209° 58.5	224° 26.2	+27.9	16.6
	-3° 39.5	-3° 54.5	-4° 09.4	-4° 24.3	-4° 39.2	-4° 54.1	-5° 09.0	-5° 23.8	-5° 38.7	-5° 53.5	-6° 08.2	-14.9	60.8
● Вс 7	81° 13.8	95° 40.5	110° 07.1	124° 33.6	139° 00.1	153° 26.6	167° 52.9	182° 19.2	196° 45.5	211° 11.6	225° 37.7	+26.4	16.7
	-9° 45.3	-9° 59.4	-10° 13.4	-10° 27.4	-10° 41.3	-10° 55.1	-11° 08.9	-11° 22.5	-11° 36.2	-11° 49.7	-12° 03.2	-13.8	61.2
Пн 8	82° 01.3	96° 26.3	110° 51.3	125° 16.2	139° 41.0	154° 05.8	168° 30.5	182° 55.2	197° 19.8	211° 44.3	226° 08.7	+24.7	16.7
	-15° 15.0	-15° 27.0	-15° 39.0	-15° 50.8	-16° 02.4	-16° 14.0	-16° 25.5	-16° 36.8	-16° 48.0	-16° 59.2	-17° 10.1	-11.5	61.2
Вт 9	82° 08.6	96° 32.2	110° 55.7	125° 19.2	139° 42.6	154° 06.0	168° 29.4	182° 52.7	197° 16.0	211° 39.2	226° 02.4	+23.4	16.6
	-19° 39.3	-19° 48.1	-19° 56.8	-20° 05.4	-20° 13.7	-20° 22.0	-20° 30.1	-20° 38.0	-20° 45.8	-20° 53.4	-21° 00.9	-8.2	60.9
Ср 10	81° 47.1	96° 09.9	110° 32.7	124° 55.6	139° 18.4	153° 41.2	168° 04.0	182° 26.9	196° 49.7	211° 12.5	225° 35.4	+22.8	16.4
	-22° 33.8	-22° 38.7	-22° 43.4	-22° 47.9	-22° 52.3	-22° 56.5	-23° 00.6	-23° 04.4	-23° 08.1	-23° 11.7	-23° 15.0	-4.1	60.2
Чт 11	81° 20.4	95° 43.7	110° 07.0	124° 30.3	138° 53.7	153° 17.1	167° 40.6	182° 04.1	196° 27.7	210° 51.4	225° 15.0	+23.5	16.2
	-23° 45.2	-23° 45.8	-23° 46.3	-23° 46.7	-23° 46.9	-23° 46.9	-23° 46.7	-23° 46.4	-23° 45.9	-23° 45.3	-23° 44.5	+0.1	59.4
Пт 12	81° 18.1	95° 42.9	110° 07.8	124° 32.7	138° 57.7	153° 22.9	167° 48.1	182° 13.3	196° 38.7	211° 04.2	225° 29.7	+25.2	16.0
	-23° 13.7	-23° 10.4	-23° 07.0	-23° 03.5	-22° 59.8	-22° 56.0	-22° 52.0	-22° 47.9	-22° 43.6	-22° 39.2	-22° 34.7	+3.9	58.5
Сб 13	82° 03.8	96° 30.8	110° 58.0	125° 25.2	139° 52.5	154° 19.9	168° 47.4	183° 15.1	197° 42.8	212° 10.6	226° 38.5	+27.5	15.7
	-21° 11.5	-21° 05.0	-20° 58.3	-20° 51.6	-20° 44.7	-20° 37.7	-20° 30.7	-20° 23.5	-20° 16.2	-20° 08.8	-20° 01.3	+7.0	57.6
◐ Вс 14	96° 30.8	110° 58.0	125° 25.2	139° 52.5	154° 19.9	168° 47.4	183° 15.1	197° 42.8	212° 10.6	226° 38.5	241° 06.5	+27.6	15.7
	-21° 05.0	-20° 58.3	-20° 51.6	-20° 44.7	-20° 37.7	-20° 30.7	-20° 23.5	-20° 16.2	-20° 08.8	-20° 01.3	-19° 53.7	+7.1	57.6
Пн 15	98° 18.1	112° 47.6	127° 17.2	141° 46.9	156° 16.7	170° 46.6	185° 16.6	199° 46.7	214° 16.9	228° 47.1	243° 17.5	+29.9	15.5
	-17° 48.3	-17° 39.2	-17° 30.1	-17° 20.8	-17° 11.5	-17° 02.2	-16° 52.7	-16° 43.2	-16° 33.6	-16° 23.9	-16° 14.2	+9.4	56.8
Вт 16	101° 02.7	115° 34.4	130° 06.1	144° 37.9	159° 09.8	173° 41.7	188° 13.8	202° 45.9	217° 18.0	231° 50.3	246° 22.6	+32.0	15.3
	-13° 40.2	-13° 29.5	-13° 18.7	-13° 07.9	-12° 57.0	-12° 46.1	-12° 35.1	-12° 24.1	-12° 13.0	-12° 01.9	-11° 50.8	+11.0	56.0
Ср 17	104° 34.9	119° 08.1	133° 41.5	148° 14.9	162° 48.3	177° 21.8	191° 55.3	206° 28.9	221° 02.6	235° 36.3	250° 10.0	+33.5	15.1
	-8° 58.8	-8° 47.1	-8° 35.3	-8° 23.5	-8° 11.7	-7° 59.9	-7° 48.0	-7° 36.1	-7° 24.2	-7° 12.3	-7° 00.3	+11.8	55.4
Чт 18	108° 40.8	123° 15.1	137° 49.5	152° 23.9	166° 58.3	181° 32.8	196° 07.3	210° 41.8	225° 16.3	239° 50.8	254° 25.4	+34.5	15.0
	-3° 59.1	-3° 46.9	-3° 34.7	-3° 22.5	-3° 10.3	-2° 58.1	-2° 45.9	-2° 33.7	-2° 21.5	-2° 09.3	-1° 57.1	+12.2	54.9
Пт 19	113° 06.1	127° 40.9	142° 15.7	156° 50.5	171° 25.4	186° 00.2	200° 35.0	215° 09.9	229° 44.7	244° 19.6	258° 54.4	+34.8	14.9
	1° 05.9	1° 18.1	1° 30.2	1° 42.3	1° 54.4	2° 06.5	2° 18.6	2° 30.7	2° 42.8	2° 54.8	3° 06.8	+12.1	54.5
Сб 20	117° 36.8	132° 11.5	146° 46.3	161° 21.0	175° 55.7	190° 30.4	205° 05.1	219° 39.8	234° 14.4	248° 49.1	263° 23.7	+34.7	14.8
	6° 04.7	6° 16.4	6° 28.0	6° 39.7	6° 51.2	7° 02.8	7° 14.3	7° 25.8	7° 37.3	7° 48.7	8° 00.1	+11.5	54.2
Вс 21	122° 00.4	136° 34.7	151° 08.9	165° 43.1	180° 17.3	194° 51.4	209° 25.5	223° 59.5	238° 33.6	253° 07.6	267° 41.5	+34.1	14.7
	10° 46.4	10° 57.1	11° 07.8	11° 18.5	11° 29.1	11° 39.7	11° 50.2	12° 00.6	12° 11.1	12° 21.4	12° 31.7	+10.5	54.0
○ Пн 22	126° 06.8	140° 40.2	155° 13.5	169° 46.8	184° 20.1	198° 53.3	213° 26.4	227° 59.6	242° 32.7	257° 05.7	271° 38.7	+33.2	14.7
	14° 59.8	15° 09.2	15° 18.6	15° 27.8	15° 37.0	15° 46.2	15° 55.2	16° 04.2	16° 13.2	16° 22.1	16° 30.9	+9.1	53.9
Вт 23	129° 48.5	144° 20.8	158° 53.0	173° 25.2	187° 57.4	202° 29.5	217° 01.5	231° 33.6	246° 05.5	260° 37.5	275° 09.3	+32.1	14.7
	18° 34.1	18° 41.7	18° 49.2	18° 56.7	19° 04.0	19° 11.3	19° 18.5	19° 25.6	19° 32.6	19° 39.5	19° 46.4	+7.2	53.9
Ср 24	133° 02.2	147° 33.4	162° 04.5	176° 35.6	191° 06.7	205° 37.7	220° 08.6	234° 39.6	249° 10.5	263° 41.3	278° 12.1	+31.0	14.7
	21° 18.4	21° 23.8	21° 29.1	21° 34.2	21° 39.3	21° 44.3	21° 49.2	21° 54.0	21° 58.7	22° 03.3	22° 07.8	+4.9	54.0
Чт 25	135° 49.8	150° 20.0	164° 50.2	179° 20.4	193° 50.5	208° 20.7	222° 50.7	237° 20.8	251° 50.8	266° 20.8	280° 50.8	+30.1	14.8
	23° 02.9	23° 05.7	23° 08.4	23° 11.0	23° 13.5	23° 15.9	23° 18.1	23° 20.3	23° 22.4	23° 24.3	23° 26.1	+2.3	54.2
Пт 26	138° 17.8	152° 47.5	167° 17.1	181° 46.7	196° 16.3	210° 45.9	225° 15.5	239° 45.1	254° 14.7	268° 44.2	283° 13.8	+29.6	14.9
	23° 40.0	23° 40.0	23° 39.9	23° 39.7	23° 39.3	23° 38.9	23° 38.3	23° 37.6	23° 36.8	23° 35.9	23° 37.6	-0.5	54.5
Сб 27	140° 36.4	155° 05.9	169° 35.4	184° 04.9	198° 34.4	213° 03.9	227° 33.5	242° 03.0	256° 32.5	271° 02.1	285° 31.6	+29.5	15.0
	23° 05.3	23° 02.4	22° 59.4	22° 56.3	22° 53.0	22° 49.7	22° 46.2	22° 42.6	22° 38.9	22° 35.1	22° 31.1	-3.4	55.0
Вс 28	142° 55.9	157° 25.7	171° 55.4	186° 25.1	200° 54.9	215° 24.7	229° 54.5	244° 24.3	258° 54.1	273° 24.0	287° 53.8	+29.8	15.2
	21° 18.5	21° 12.7	21° 06.9	21° 00.9	20° 54.8	20° 48.6	20° 42.4	20° 36.0	20° 29.4	20° 22.8	20° 16.1	-6.2	55.6
Пн 29	145° 23.7	159° 53.8	174° 24.0	188° 54.1	203° 24.3	217° 54.5	232° 24.7	246° 55.0	261° 25.2	275° 55.5	290° 25.8	+30.2	15.4
	18° 22.7	18° 14.3	18° 05.8	17° 57.2	17° 48.5	17° 39.8	17° 30.9	17° 21.9	17° 12.9	17° 03.7	16° 54.4	-8.8	56.3
◑ Вт 30	148° 01.7	162° 32.2	177° 02.7	191° 33.2	206° 03.7	220° 34.3	235° 04.8	249° 35.3	264° 05.9	278° 36.5	293° 07.0	+30.5	15.6
	14° 24.5	14° 13.8	14° 03.1	13° 52.2	13° 41.2	13° 30.2	13° 19.1	13° 07.9	12° 56.6	12° 45.3	12° 33.9	-11.1	57.2
Ср 31	150° 45.8	165° 16.4	179° 47.0	194° 17.5	208° 48.1	223° 18.7	237° 49.2	252° 19.7	266° 50.2	281° 20.8	295° 51.3	+30.5	15.9
	9° 33.5	9° 20.9	9° 08.2	8° 55.5	8° 42.7	8° 29.9	8° 17.0	8° 04.1	7° 51.0	7° 38.0	7° 24.8	-12.9	58.1

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Новолуние: 7 19h14 — Первая четв.: 14 11h08 — Полнолуние: 22 09h27 — Последняя четв.: 30 11h32

СОЛНЦЕ

Ноябрь 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ’/h
Чт 1	184° 06.4	199° 06.4	214° 06.4	229° 06.4	244° 06.4	259° 06.5	94° 06.6	109° 06.6	124° 06.6	139° 06.7	154° 06.7	169° 06.7	+0.0
	-14° 26.8	-14° 27.6	-14° 28.4	-14° 29.2	-14° 30.0	-14° 30.8	-14° 41.1	-14° 41.9	-14° 42.7	-14° 43.5	-14° 44.3	-14° 45.1	-0.8
Пт 2	184° 06.7	199° 06.7	214° 06.7	229° 06.7	244° 06.7	259° 06.7	94° 06.8	109° 06.8	124° 06.8	139° 06.8	154° 06.8	169° 06.8	+0.0
	-14° 45.9	-14° 46.7	-14° 47.5	-14° 48.3	-14° 49.1	-14° 49.8	-15° 00.1	-15° 00.8	-15° 01.6	-15° 02.4	-15° 03.2	-15° 04.0	-0.8
Сб 3	184° 06.8	199° 06.8	214° 06.8	229° 06.8	244° 06.8	259° 06.8	94° 06.7	109° 06.7	124° 06.7	139° 06.7	154° 06.7	169° 06.7	-0.0
	-15° 04.7	-15° 05.5	-15° 06.3	-15° 07.1	-15° 07.9	-15° 08.6	-15° 18.7	-15° 19.5	-15° 20.3	-15° 21.0	-15° 21.8	-15° 22.6	-0.8
Вс 4	184° 06.7	199° 06.7	214° 06.7	229° 06.6	244° 06.6	259° 06.6	94° 06.5	109° 06.4	124° 06.4	139° 06.4	154° 06.4	169° 06.4	-0.0
	-15° 23.3	-15° 24.1	-15° 24.9	-15° 25.6	-15° 26.4	-15° 27.2	-15° 37.1	-15° 37.9	-15° 38.6	-15° 39.4	-15° 40.2	-15° 40.9	-0.8
Пн 5	184° 06.4	199° 06.3	214° 06.3	229° 06.3	244° 06.3	259° 06.3	94° 06.0	109° 06.0	124° 05.9	139° 05.9	154° 05.9	169° 05.9	-0.0
	-15° 41.7	-15° 42.4	-15° 43.2	-15° 44.0	-15° 44.7	-15° 45.5	-15° 55.3	-15° 56.0	-15° 56.8	-15° 57.5	-15° 58.3	-15° 59.0	-0.8
Вт 6	184° 05.8	199° 05.8	214° 05.8	229° 05.7	244° 05.7	259° 05.7	94° 05.3	109° 05.3	124° 05.2	139° 05.2	154° 05.2	169° 05.1	-0.0
	-15° 59.8	-16° 00.5	-16° 01.3	-16° 02.0	-16° 02.8	-16° 03.5	-16° 13.2	-16° 13.9	-16° 14.6	-16° 15.4	-16° 16.1	-16° 16.9	-0.7
Ср 7	184° 05.1	199° 05.1	214° 05.0	229° 05.0	244° 04.9	259° 04.9	94° 04.4	109° 04.4	124° 04.3	139° 04.3	154° 04.2	169° 04.2	-0.0
	-16° 17.6	-16° 18.3	-16° 19.1	-16° 19.8	-16° 20.5	-16° 21.3	-16° 30.8	-16° 31.5	-16° 32.2	-16° 33.0	-16° 33.7	-16° 34.4	-0.7
Чт 8	184° 04.1	199° 04.1	214° 04.1	229° 04.0	244° 04.0	259° 03.9	94° 03.3	109° 03.2	124° 03.2	139° 03.1	154° 03.1	169° 03.0	-0.0
	-16° 35.1	-16° 35.9	-16° 36.6	-16° 37.3	-16° 38.0	-16° 38.8	-16° 48.1	-16° 48.8	-16° 49.6	-16° 50.3	-16° 51.0	-16° 51.7	-0.7
Пт 9	184° 03.0	199° 02.9	214° 02.9	229° 02.8	244° 02.8	259° 02.7	94° 02.0	109° 01.9	124° 01.9	139° 01.8	154° 01.7	169° 01.7	-0.1
	-16° 52.4	-16° 53.1	-16° 53.8	-16° 54.6	-16° 55.3	-16° 56.0	-17° 05.2	-17° 05.9	-17° 06.6	-17° 07.3	-17° 08.0	-17° 08.7	-0.7
Сб 10	184° 01.6	199° 01.6	214° 01.5	229° 01.4	244° 01.4	259° 01.3	94° 00.5	109° 00.4	124° 00.3	139° 00.3	154° 00.2	169° 00.1	-0.1
	-17° 09.4	-17° 10.1	-17° 10.8	-17° 11.5	-17° 12.2	-17° 12.9	-17° 21.9	-17° 22.6	-17° 23.3	-17° 24.0	-17° 24.7	-17° 25.4	-0.7
Вс 11	184° 00.1	199° 00.0	213° 59.9	228° 59.8	243° 59.8	258° 59.7	93° 58.7	108° 58.7	123° 58.6	138° 58.5	153° 58.4	168° 58.4	-0.1
	-17° 26.1	-17° 26.8	-17° 27.5	-17° 28.1	-17° 28.8	-17° 29.5	-17° 38.4	-17° 39.1	-17° 39.8	-17° 40.4	-17° 41.1	-17° 41.8	-0.7
Пн 12	183° 58.3	198° 58.2	213° 58.1	228° 58.0	243° 58.0	258° 57.9	93° 56.8	108° 56.7	123° 56.6	138° 56.6	153° 56.5	168° 56.4	-0.1
	-17° 42.5	-17° 43.1	-17° 43.8	-17° 44.5	-17° 45.2	-17° 45.8	-17° 54.6	-17° 55.2	-17° 55.9	-17° 56.6	-17° 57.2	-17° 57.9	-0.7
Вт 13	183° 56.3	198° 56.2	213° 56.1	228° 56.0	243° 55.9	258° 55.9	93° 54.7	108° 54.6	123° 54.5	138° 54.4	153° 54.3	168° 54.2	-0.1
	-17° 58.5	-17° 59.2	-17° 59.9	-18° 00.5	-18° 01.2	-18° 01.9	-18° 10.4	-18° 11.0	-18° 11.7	-18° 12.4	-18° 13.0	-18° 13.7	-0.7
Ср 14	183° 54.1	198° 54.0	213° 53.9	228° 53.8	243° 53.7	258° 53.6	93° 52.3	108° 52.2	123° 52.1	138° 52.0	153° 51.9	168° 51.8	-0.1
	-18° 14.3	-18° 15.0	-18° 15.6	-18° 16.3	-18° 16.9	-18° 17.6	-18° 25.9	-18° 26.6	-18° 27.2	-18° 27.8	-18° 28.5	-18° 29.1	-0.7
Чт 15	183° 51.7	198° 51.6	213° 51.5	228° 51.4	243° 51.3	258° 51.2	93° 49.8	108° 49.7	123° 49.5	138° 49.4	153° 49.3	168° 49.2	-0.1
	-18° 29.8	-18° 30.4	-18° 31.0	-18° 31.7	-18° 32.3	-18° 32.9	-18° 41.1	-18° 41.7	-18° 42.4	-18° 43.0	-18° 43.6	-18° 44.2	-0.6
Пт 16	183° 49.1	198° 49.0	213° 48.9	228° 48.8	243° 48.6	258° 48.5	93° 47.0	108° 46.9	123° 46.8	138° 46.6	153° 46.5	168° 46.4	-0.1
	-18° 44.9	-18° 45.5	-18° 46.1	-18° 46.7	-18° 47.4	-18° 48.0	-18° 56.0	-18° 56.6	-18° 57.2	-18° 57.8	-18° 58.4	-18° 59.0	-0.6
Сб 17	183° 46.3	198° 46.2	213° 46.0	228° 45.9	243° 45.8	258° 45.7	93° 44.0	108° 43.9	123° 43.8	138° 43.7	153° 43.5	168° 43.4	-0.1
	-18° 59.7	-19° 00.3	-19° 00.9	-19° 01.5	-19° 02.1	-19° 02.7	-19° 10.5	-19° 11.1	-19° 11.7	-19° 12.3	-19° 12.9	-19° 13.5	-0.6
Вс 18	183° 43.3	198° 43.1	213° 43.0	228° 42.9	243° 42.7	258° 42.6	93° 40.9	108° 40.7	123° 40.6	138° 40.5	153° 40.3	168° 40.2	-0.1
	-19° 14.1	-19° 14.7	-19° 15.3	-19° 15.9	-19° 16.5	-19° 17.1	-19° 24.7	-19° 25.3	-19° 25.9	-19° 26.5	-19° 27.0	-19° 27.6	-0.6
Пн 19	183° 40.0	198° 39.9	213° 39.8	228° 39.6	243° 39.5	258° 39.3	93° 37.5	108° 37.4	123° 37.2	138° 37.1	153° 36.9	168° 36.8	-0.1
	-19° 28.2	-19° 28.8	-19° 29.4	-19° 29.9	-19° 30.5	-19° 31.1	-19° 38.5	-19° 39.1	-19° 39.7	-19° 40.2	-19° 40.8	-19° 41.4	-0.6
Вт 20	183° 36.6	198° 36.5	213° 36.3	228° 36.2	243° 36.0	258° 35.9	93° 33.9	108° 33.8	123° 33.6	138° 33.5	153° 33.3	168° 33.1	-0.1
	-19° 41.9	-19° 42.5	-19° 43.1	-19° 43.6	-19° 44.2	-19° 44.8	-19° 52.0	-19° 52.6	-19° 53.1	-19° 53.7	-19° 54.2	-19° 54.8	-0.6
Ср 21	183° 33.0	198° 32.8	213° 32.7	228° 32.5	243° 32.4	258° 32.2	93° 30.1	108° 30.0	123° 29.8	138° 29.7	153° 29.5	168° 29.3	-0.2
	-19° 55.3	-19° 55.9	-19° 56.4	-19° 57.0	-19° 57.5	-19° 58.1	-20° 05.2	-20° 05.7	-20° 06.2	-20° 06.8	-20° 07.3	-20° 07.8	-0.6
Чт 22	183° 29.2	198° 29.0	213° 28.8	228° 28.7	243° 28.5	258° 28.3	93° 26.2	108° 26.0	123° 25.8	138° 25.7	153° 25.5	168° 25.3	-0.2
	-20° 08.4	-20° 08.9	-20° 09.4	-20° 10.0	-20° 10.5	-20° 11.0	-20° 17.9	-20° 18.4	-20° 19.0	-20° 19.5	-20° 20.0	-20° 20.5	-0.5
Пт 23	183° 25.1	198° 25.0	213° 24.8	228° 24.6	243° 24.4	258° 24.3	93° 22.0	108° 21.8	123° 21.6	138° 21.5	153° 21.3	168° 21.1	-0.2
	-20° 21.0	-20° 21.6	-20° 22.1	-20° 22.6	-20° 23.1	-20° 23.6	-20° 30.3	-20° 30.8	-20° 31.3	-20° 31.8	-20° 32.3	-20° 32.8	-0.5
Сб 24	183° 20.9	198° 20.7	213° 20.6	228° 20.4	243° 20.2	258° 20.0	93° 17.6	108° 17.4	123° 17.3	138° 17.1	153° 16.9	168° 16.7	-0.2
	-20° 33.3	-20° 33.8	-20° 34.3	-20° 34.8	-20° 35.3	-20° 35.8	-20° 42.3	-20° 42.8	-20° 43.3	-20° 43.8	-20° 44.3	-20° 44.7	-0.5
Вс 25	183° 16.5	198° 16.3	213° 16.1	228° 15.9	243° 15.7	258° 15.6	93° 13.1	108° 12.9	123° 12.7	138° 12.5	153° 12.3	168° 12.1	-0.2
	-20° 45.2	-20° 45.7	-20° 46.2	-20° 46.7	-20° 47.2	-20° 47.7	-20° 53.9	-20° 54.4	-20° 54.9	-20° 55.3	-20° 55.8	-20° 56.3	-0.5
Пн 26	183° 11.9	198° 11.7	213° 11.5	228° 11.3	243° 11.1	258° 10.9	93° 08.3	108° 08.1	123° 07.9	138° 07.7	153° 07.5	168° 07.3	-0.2
	-20° 56.8	-20° 57.2	-20° 57.7	-20° 58.2	-20° 58.6	-20° 59.1	-21° 05.1	-21° 05.6	-21° 06.1	-21° 06.5	-21° 07.0	-21° 07.4	-0.5
Вт 27	183° 07.1	198° 06.9	213° 06.7	228° 06.5	243° 06.3	258° 06.1	93° 03.4	108° 03.2	123° 03.0	138° 02.7	153° 02.5	168° 02.3	-0.2
	-21° 07.9	-21° 08.3	-21° 08.8	-21° 09.3	-21° 09.7	-21° 10.2	-21° 16.0	-21° 16.4	-21° 16.9	-21° 17.3	-21° 17.7	-21° 18.2	-0.5
Ср 28	183° 02.1	198° 01.9	213° 01.7	228° 01.5	243° 01.3	258° 01.1	92° 58.3	107° 58.0	122° 57.8	137° 57.6	152° 57.4	167° 57.2	-0.2
	-21° 18.6	-21° 19.1	-21° 19.5	-21° 19.9	-21° 20.4	-21° 20.8	-21° 26.4	-21° 26.8	-21° 27.3	-21° 27.7	-21° 28.1	-21° 28.5	-0.4
Чт 29	182° 57.0	197° 56.7	212° 56.5	227° 56.3	242° 56.1	257° 55.9	92° 53.0	107° 52.7	122° 52.5	137° 52.3	152° 52.1	167° 51.8	-0.2
	-21° 29.0	-21° 29.4	-21° 29.8	-21° 30.2	-21° 30.6	-21° 31.1	-21° 36.4	-21° 36.8	-21° 37.3	-21° 37.7	-21° 38.1	-21° 38.5	-0.4
Пт 30	182° 51.6	197° 51.4	212° 51.2	227° 50.9	242° 50.7	257° 50.5	92° 47.5	107° 47.3	122° 47.0	137° 46.8	152° 46.6	167° 46.3	-0.2
	-21° 38.9	-21° 39.3	-21° 39.7	-21° 40.1	-21° 40.5	-21° 40.9	-21° 46.1	-21° 46.4	-21° 46.8	-21° 47.2	-21° 47.6	-21° 48.0	-0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ’/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ’/h = изменение δ за час
Полудиаметр R: 16.2’

ЛУНА

Ноябрь 2029

Д	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	Δ'/h	R/p
Чт 1	66° 25.1 5° 24.2	80° 55.4 5° 10.6	95° 25.7 4° 56.9	109° 56.0 4° 43.2	124° 26.3 4° 29.4	138° 56.5 4° 15.6	153° 26.7 4° 01.7	167° 56.9 3° 47.8	182° 27.1 3° 33.8	196° 57.2 3° 19.9	211° 27.3 3° 05.8	+30.2 -13.8	16.1 58.9
Пт 2	68° 54.7 -0° 28.0	83° 24.3 -0° 42.5	97° 53.7 -0° 56.9	112° 23.1 -1° 11.4	126° 52.5 -1° 25.8	141° 21.8 -1° 40.3	155° 51.1 -1° 54.8	170° 20.3 -2° 09.3	184° 49.5 -2° 23.8	199° 18.6 -2° 38.3	213° 47.6 -2° 52.8	+29.3 -14.5	16.3 59.8
Сб 3	70° 56.4 -6° 29.7	85° 24.4 -6° 44.1	99° 52.4 -6° 58.4	114° 20.4 -7° 12.7	128° 48.2 -7° 26.9	143° 16.0 -7° 41.1	157° 43.7 -7° 55.3	172° 11.4 -8° 09.5	186° 38.9 -8° 23.6	201° 06.4 -8° 37.7	215° 33.8 -8° 51.7	+27.7 -14.2	16.5 60.6
Вс 4	72° 15.6 -12° 16.1	86° 41.7 -12° 29.2	101° 07.7 -12° 42.3	115° 33.7 -12° 55.3	129° 59.6 -13° 08.2	144° 25.3 -13° 21.0	158° 51.0 -13° 33.8	173° 16.7 -13° 46.4	187° 42.2 -13° 59.0	202° 07.6 -14° 11.5	216° 33.0 -14° 23.9	+25.7 -12.8	16.7 61.2
Пн 5	72° 43.1 -17° 17.8	87° 07.1 -17° 28.5	101° 31.1 -17° 39.1	115° 54.9 -17° 49.5	130° 18.7 -17° 59.9	144° 42.4 -18° 10.1	159° 06.0 -18° 20.1	173° 29.5 -18° 30.1	187° 53.0 -18° 39.9	202° 16.4 -18° 49.6	216° 39.7 -18° 59.1	+23.7 -10.1	16.7 61.4
● Вт 6	72° 21.5 -21° 04.7	86° 43.8 -21° 11.8	101° 06.1 -21° 18.8	115° 28.3 -21° 25.6	129° 50.5 -21° 32.3	144° 12.6 -21° 38.8	158° 34.7 -21° 45.1	172° 56.8 -21° 51.3	187° 18.8 -21° 57.3	201° 40.8 -22° 03.1	216° 02.7 -22° 08.7	+22.1 -6.4	16.7 61.2
Ср 7	71° 29.6 -23° 12.7	85° 51.4 -23° 15.6	100° 13.1 -23° 18.3	114° 34.9 -23° 20.8	128° 56.6 -23° 23.1	143° 18.4 -23° 25.2	157° 40.2 -23° 27.2	172° 02.0 -23° 29.0	186° 23.9 -23° 30.6	200° 45.7 -23° 32.0	215° 07.6 -23° 33.3	+21.8 -2.1	16.6 60.7
Чт 8	70° 40.6 -23° 31.2	85° 03.2 -23° 29.7	99° 25.8 -23° 28.0	113° 48.6 -23° 26.2	128° 11.4 -23° 24.2	142° 34.3 -23° 22.0	156° 57.2 -23° 19.7	171° 20.3 -23° 17.2	185° 43.4 -23° 14.5	200° 06.5 -23° 11.7	214° 29.8 -23° 08.7	+22.9 +2.3	16.3 59.9
Пт 9	70° 29.2 -22° 05.9	84° 53.9 -22° 00.6	99° 18.7 -21° 55.1	113° 43.6 -21° 49.5	128° 08.6 -21° 43.7	142° 33.7 -21° 37.8	156° 59.0 -21° 31.8	171° 24.3 -21° 25.7	185° 49.7 -21° 19.4	200° 15.3 -21° 13.0	214° 40.9 -21° 06.5	+25.2 +5.9	16.1 59.0
Сб 10	71° 18.8 -19° 14.9	85° 46.2 -19° 06.6	100° 13.7 -18° 58.2	114° 41.3 -18° 49.7	129° 09.0 -18° 41.2	143° 36.9 -18° 32.5	158° 04.8 -18° 23.7	172° 32.9 -18° 14.8	187° 01.0 -18° 05.9	201° 29.3 -17° 56.9	215° 57.7 -17° 47.7	+27.9 +8.7	15.8 58.0
Вс 11	73° 15.9 -15° 21.4	87° 46.0 -15° 11.1	102° 16.1 -15° 00.7	116° 46.3 -14° 50.3	131° 16.6 -14° 39.8	145° 47.0 -14° 29.2	160° 17.5 -14° 18.6	174° 48.1 -14° 07.9	189° 18.8 -13° 57.2	203° 49.6 -13° 46.4	218° 20.5 -13° 35.6	+30.5 +10.6	15.5 57.0
Пн 12	76° 13.8 -10° 47.4	90° 46.0 -10° 35.8	105° 18.3 -10° 24.3	119° 50.6 -10° 12.7	134° 23.0 -10° 01.0	148° 55.5 -9° 49.4	163° 28.1 -9° 37.7	178° 00.7 -9° 25.9	192° 33.4 -9° 14.2	207° 06.1 -9° 02.4	221° 39.0 -8° 50.6	+32.5 +11.7	15.3 56.1
◐ Вт 13	90° 46.0 -10° 35.8	105° 18.3 -10° 24.3	119° 50.6 -10° 12.7	134° 23.0 -10° 01.0	148° 55.5 -9° 49.4	163° 28.1 -9° 37.7	178° 00.7 -9° 25.9	192° 33.4 -9° 14.2	207° 06.1 -9° 02.4	221° 39.0 -8° 50.6	236° 11.8 -8° 38.8	+32.6 +11.7	15.3 56.1
Ср 14	94° 32.2 -5° 38.8	109° 06.0 -5° 26.7	123° 39.8 -5° 14.6	138° 13.7 -5° 02.4	152° 47.6 -4° 50.3	167° 21.5 -4° 38.1	181° 55.5 -4° 25.9	196° 29.6 -4° 13.8	211° 03.7 -4° 01.6	225° 37.8 -3° 49.4	240° 11.9 -3° 37.2	+34.0 +12.2	15.1 55.3
Чт 15	98° 48.2 -0° 34.2	113° 22.8 -0° 22.0	127° 57.4 -0° 09.9	142° 32.1 0° 02.3	157° 06.8 0° 14.4	171° 41.5 0° 26.6	186° 16.2 0° 38.7	200° 51.0 0° 50.8	215° 25.7 1° 02.9	230° 00.5 1° 15.0	244° 35.3 1° 27.1	+34.7 +12.1	14.9 54.8
Пт 16	103° 17.8 4° 26.4	117° 52.7 4° 38.2	132° 27.5 4° 50.0	147° 02.4 5° 01.8	161° 37.2 5° 13.5	176° 12.1 5° 25.2	190° 46.9 5° 36.9	205° 21.7 5° 48.5	219° 56.6 6° 00.1	234° 31.4 6° 11.7	249° 06.2 6° 23.3	+34.8 +11.7	14.8 54.3
Сб 17	107° 46.5 9° 12.9	122° 21.0 9° 23.9	136° 55.5 9° 34.9	151° 30.0 9° 45.8	166° 04.5 9° 56.7	180° 38.9 10° 07.6	195° 13.3 10° 18.4	209° 47.7 10° 29.2	224° 22.1 10° 39.9	238° 56.4 10° 50.6	253° 30.7 11° 01.2	+34.4 +10.8	14.7 54.1
Вс 18	112° 01.4 13° 35.0	126° 35.2 13° 44.9	141° 08.9 13° 54.7	155° 42.6 14° 04.4	170° 16.3 14° 14.1	184° 49.9 14° 23.7	199° 23.4 14° 33.2	213° 57.0 14° 42.7	228° 30.4 14° 52.1	243° 03.9 15° 01.5	257° 37.3 15° 10.8	+33.6 +9.6	14.7 53.9
Пн 19	115° 53.0 17° 22.5	130° 25.7 17° 30.7	144° 58.3 17° 38.9	159° 30.9 17° 47.0	174° 03.4 17° 55.0	188° 35.9 18° 02.9	203° 08.3 18° 10.7	217° 40.7 18° 18.5	232° 13.1 18° 26.2	246° 45.4 18° 33.8	261° 17.6 18° 41.4	+32.5 +7.9	14.7 53.9
Вт 20	119° 15.5 20° 24.4	133° 47.0 20° 30.6	148° 18.4 20° 36.7	162° 49.8 20° 42.6	177° 21.1 20° 48.5	191° 52.4 20° 54.4	206° 23.6 21° 00.1	220° 54.8 21° 05.7	235° 25.9 21° 11.2	249° 57.0 21° 16.6	264° 28.1 21° 22.0	+31.3 +5.8	14.7 54.0
○ Ср 21	122° 08.6 22° 30.0	136° 39.0 22° 33.8	151° 09.3 22° 37.4	165° 39.7 22° 40.9	180° 09.9 22° 44.3	194° 40.1 22° 47.6	209° 10.3 22° 50.8	223° 40.5 22° 53.8	238° 10.6 22° 56.8	252° 40.7 22° 59.7	267° 10.8 23° 02.4	+30.2 +3.2	14.8 54.2
Чт 22	124° 38.2 23° 30.4	139° 07.9 23° 31.4	153° 37.5 23° 32.2	168° 07.1 23° 32.9	182° 36.6 23° 33.6	197° 06.2 23° 34.1	211° 35.7 23° 34.4	226° 05.3 23° 34.7	240° 34.8 23° 34.9	255° 04.3 23° 34.9	269° 33.8 23° 34.8	+29.6 +0.4	14.8 54.4
Пт 23	126° 55.1 23° 19.6	141° 24.4 23° 17.7	155° 53.8 23° 15.6	170° 23.2 23° 13.4	184° 52.6 23° 11.1	199° 22.0 23° 08.7	213° 51.4 23° 06.2	228° 20.9 23° 03.5	242° 50.3 23° 00.8	257° 19.7 22° 57.9	271° 49.1 22° 54.9	+29.4 -2.5	14.9 54.8
Сб 24	129° 12.0 21° 56.3	143° 41.6 21° 51.5	158° 11.3 21° 46.5	172° 41.0 21° 41.5	187° 10.7 21° 36.4	201° 40.4 21° 31.1	216° 10.1 21° 25.7	230° 39.9 21° 20.3	245° 09.7 21° 14.7	259° 39.5 21° 09.0	274° 09.3 21° 03.2	+29.7 -5.3	15.1 55.2
Вс 25	131° 39.7 19° 23.6	146° 09.9 19° 16.1	160° 40.2 19° 08.5	175° 10.4 19° 00.9	189° 40.8 18° 53.1	204° 11.1 18° 45.3	218° 41.5 18° 37.3	233° 11.8 18° 29.3	247° 42.3 18° 21.1	262° 12.7 18° 12.9	276° 43.2 18° 04.5	+30.4 -7.9	15.2 55.7
Пн 26	134° 23.5 15° 48.6	148° 54.4 15° 38.8	163° 25.3 15° 29.0	177° 56.2 15° 19.1	192° 27.2 15° 09.0	206° 58.2 14° 58.9	221° 29.2 14° 48.8	236° 00.2 14° 38.5	250° 31.3 14° 28.2	265° 02.3 14° 17.8	279° 33.4 14° 07.3	+31.0 -10.1	15.4 56.3
Вт 27	137° 22.0 11° 21.1	151° 53.4 11° 09.5	166° 24.7 10° 57.8	180° 56.1 10° 46.0	195° 27.5 10° 34.2	209° 58.9 10° 22.3	224° 30.3 10° 10.4	239° 01.7 9° 58.4	253° 33.1 9° 46.3	268° 04.6 9° 34.2	282° 36.0 9° 22.0	+31.4 -11.9	15.5 57.0
◑ Ср 28	140° 27.6 6° 12.8	154° 59.0 5° 59.8	169° 30.4 5° 46.7	184° 01.8 5° 33.6	198° 33.2 5° 20.5	213° 04.6 5° 07.3	227° 35.9 4° 54.1	242° 07.3 4° 40.9	256° 38.6 4° 27.6	271° 09.9 4° 14.3	285° 41.2 4° 00.9	+31.4 -13.2	15.8 57.8
Чт 29	143° 27.8 0° 36.9	157° 58.7 0° 23.1	172° 29.6 0° 09.3	187° 00.4 -0° 04.5	201° 31.1 -0° 18.3	216° 01.9 -0° 32.2	230° 32.6 -0° 46.1	245° 03.2 -0° 59.9	259° 33.8 -1° 13.8	274° 04.4 -1° 27.7	288° 34.9 -1° 41.6	+30.7 -13.9	16.0 58.6
Пт 30	146° 07.0 -5° 10.4	160° 36.6 -5° 24.3	175° 06.3 -5° 38.2	189° 35.8 -5° 52.0	204° 05.3 -6° 05.8	218° 34.8 -6° 19.6	233° 04.1 -6° 33.4	247° 33.4 -6° 47.2	262° 02.7 -7° 00.9	276° 31.8 -7° 14.6	291° 00.9 -7° 28.3	+29.4 -13.8	16.2 59.4

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 6 04h24 — Первая четв.: 13 00h35 — Полнолуние: 21 04h02 — Последняя четв.: 28 23h47

СОЛНЦЕ

Декабрь 2029

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	182° 46.1	197° 45.9	212° 45.6	227° 45.4	242° 45.2	257° 44.9	92° 41.9	107° 41.6	122° 41.4	137° 41.1	152° 40.9	167° 40.7	-0.2
	-21° 48.4	-21° 48.8	-21° 49.2	-21° 49.6	-21° 49.9	-21° 50.3	-21° 55.3	-21° 55.6	-21° 56.0	-21° 56.4	-21° 56.7	-21° 57.1	-0.4
Вс 2	182° 40.4	197° 40.2	212° 39.9	227° 39.7	242° 39.5	257° 39.2	92° 36.1	107° 35.8	122° 35.6	137° 35.3	152° 35.1	167° 34.8	-0.2
	-21° 57.5	-21° 57.9	-21° 58.2	-21° 58.6	-21° 59.0	-21° 59.3	-22° 04.0	-22° 04.4	-22° 04.7	-22° 05.1	-22° 05.5	-22° 05.8	-0.4
Пн 3	182° 34.6	197° 34.3	212° 34.1	227° 33.8	242° 33.6	257° 33.3	92° 30.1	107° 29.8	122° 29.6	137° 29.3	152° 29.1	167° 28.8	-0.2
	-22° 06.2	-22° 06.5	-22° 06.9	-22° 07.2	-22° 07.6	-22° 07.9	-22° 12.4	-22° 12.7	-22° 13.1	-22° 13.4	-22° 13.7	-22° 14.1	-0.4
Вт 4	182° 28.6	197° 28.3	212° 28.1	227° 27.8	242° 27.6	257° 27.3	92° 24.0	107° 23.7	122° 23.5	137° 23.2	152° 23.0	167° 22.7	-0.3
	-22° 14.4	-22° 14.7	-22° 15.1	-22° 15.4	-22° 15.7	-22° 16.1	-22° 20.3	-22° 20.6	-22° 21.0	-22° 21.3	-22° 21.6	-22° 21.9	-0.3
Ср 5	182° 22.4	197° 22.2	212° 21.9	227° 21.7	242° 21.4	257° 21.1	92° 17.7	107° 17.5	122° 17.2	137° 17.0	152° 16.7	167° 16.4	-0.3
	-22° 22.2	-22° 22.5	-22° 22.9	-22° 23.2	-22° 23.5	-22° 23.8	-22° 27.8	-22° 28.1	-22° 28.4	-22° 28.7	-22° 29.0	-22° 29.3	-0.3
Чт 6	182° 16.2	197° 15.9	212° 15.6	227° 15.4	242° 15.1	257° 14.8	92° 11.4	107° 11.1	122° 10.8	137° 10.6	152° 10.3	167° 10.0	-0.3
	-22° 29.6	-22° 29.9	-22° 30.2	-22° 30.5	-22° 30.8	-22° 31.1	-22° 34.9	-22° 35.1	-22° 35.4	-22° 35.7	-22° 36.0	-22° 36.3	-0.3
Пт 7	182° 09.8	197° 09.5	212° 09.2	227° 08.9	242° 08.7	257° 08.4	92° 04.9	107° 04.6	122° 04.3	137° 04.0	152° 03.8	167° 03.5	-0.3
	-22° 36.6	-22° 36.8	-22° 37.1	-22° 37.4	-22° 37.7	-22° 37.9	-22° 41.5	-22° 41.7	-22° 42.0	-22° 42.3	-22° 42.5	-22° 42.8	-0.3
Сб 8	182° 03.2	197° 02.9	212° 02.7	227° 02.4	242° 02.1	257° 01.8	91° 58.2	106° 58.0	121° 57.7	136° 57.4	151° 57.1	166° 56.9	-0.3
	-22° 43.1	-22° 43.3	-22° 43.6	-22° 43.8	-22° 44.1	-22° 44.3	-22° 47.6	-22° 47.9	-22° 48.1	-22° 48.4	-22° 48.6	-22° 48.9	-0.3
Вс 9	181° 56.6	196° 56.3	211° 56.0	226° 55.7	241° 55.5	256° 55.2	91° 51.5	106° 51.2	121° 51.0	136° 50.7	151° 50.4	166° 50.1	-0.3
	-22° 49.1	-22° 49.3	-22° 49.6	-22° 49.8	-22° 50.1	-22° 50.3	-22° 53.4	-22° 53.6	-22° 53.8	-22° 54.0	-22° 54.3	-22° 54.5	-0.2
Пн 10	181° 49.8	196° 49.5	211° 49.3	226° 49.0	241° 48.7	256° 48.4	91° 44.7	106° 44.4	121° 44.1	136° 43.8	151° 43.5	166° 43.3	-0.3
	-22° 54.7	-22° 54.9	-22° 55.2	-22° 55.4	-22° 55.6	-22° 55.8	-22° 58.6	-22° 58.8	-22° 59.0	-22° 59.2	-22° 59.5	-22° 59.7	-0.2
Вт 11	181° 43.0	196° 42.7	211° 42.4	226° 42.1	241° 41.8	256° 41.5	91° 37.8	106° 37.5	121° 37.2	136° 36.9	151° 36.6	166° 36.3	-0.3
	-22° 59.9	-23° 00.1	-23° 00.3	-23° 00.5	-23° 00.7	-23° 00.9	-23° 03.4	-23° 03.6	-23° 03.8	-23° 04.0	-23° 04.2	-23° 04.4	-0.2
Ср 12	181° 36.0	196° 35.7	211° 35.4	226° 35.1	241° 34.9	256° 34.6	91° 30.8	106° 30.5	121° 30.2	136° 29.9	151° 29.6	166° 29.3	-0.3
	-23° 04.6	-23° 04.7	-23° 04.9	-23° 05.1	-23° 05.3	-23° 05.5	-23° 07.8	-23° 08.0	-23° 08.1	-23° 08.3	-23° 08.5	-23° 08.6	-0.2
Чт 13	181° 29.0	196° 28.7	211° 28.4	226° 28.1	241° 27.8	256° 27.5	91° 23.7	106° 23.4	121° 23.1	136° 22.8	151° 22.5	166° 22.2	-0.3
	-23° 08.8	-23° 09.0	-23° 09.1	-23° 09.3	-23° 09.5	-23° 09.6	-23° 11.7	-23° 11.8	-23° 12.0	-23° 12.1	-23° 12.3	-23° 12.4	-0.2
Пт 14	181° 21.9	196° 21.6	211° 21.3	226° 21.0	241° 20.7	256° 20.4	91° 16.5	106° 16.2	121° 15.9	136° 15.6	151° 15.3	166° 15.0	-0.3
	-23° 12.6	-23° 12.7	-23° 12.9	-23° 13.0	-23° 13.2	-23° 13.3	-23° 15.1	-23° 15.2	-23° 15.4	-23° 15.5	-23° 15.6	-23° 15.8	-0.1
Сб 15	181° 14.7	196° 14.4	211° 14.1	226° 13.8	241° 13.5	256° 13.2	91° 09.3	106° 09.0	121° 08.7	136° 08.4	151° 08.1	166° 07.8	-0.3
	-23° 15.9	-23° 16.0	-23° 16.2	-23° 16.3	-23° 16.4	-23° 16.5	-23° 18.1	-23° 18.2	-23° 18.3	-23° 18.4	-23° 18.5	-23° 18.6	-0.1
Вс 16	181° 07.5	196° 07.2	211° 06.9	226° 06.6	241° 06.3	256° 06.0	91° 02.0	106° 01.7	121° 01.4	136° 01.1	151° 00.8	166° 00.5	-0.3
	-23° 18.8	-23° 18.9	-23° 19.0	-23° 19.1	-23° 19.2	-23° 19.3	-23° 20.6	-23° 20.7	-23° 20.8	-23° 20.9	-23° 21.0	-23° 21.1	-0.1
Пн 17	181° 00.2	195° 59.9	210° 59.6	225° 59.3	240° 59.0	255° 58.7	90° 54.7	105° 54.4	120° 54.1	135° 53.8	150° 53.5	165° 53.2	-0.3
	-23° 21.1	-23° 21.2	-23° 21.3	-23° 21.4	-23° 21.5	-23° 21.6	-23° 22.6	-23° 22.7	-23° 22.8	-23° 22.8	-23° 22.9	-23° 23.0	-0.1
Вт 18	180° 52.9	195° 52.6	210° 52.3	225° 52.0	240° 51.7	255° 51.3	90° 47.4	105° 47.1	120° 46.7	135° 46.4	150° 46.1	165° 45.8	-0.3
	-23° 23.1	-23° 23.1	-23° 23.2	-23° 23.3	-23° 23.3	-23° 23.4	-23° 24.2	-23° 24.3	-23° 24.3	-23° 24.4	-23° 24.4	-23° 24.5	-0.1
Ср 19	180° 45.5	195° 45.2	210° 44.9	225° 44.6	240° 44.3	255° 44.0	90° 40.0	105° 39.7	120° 39.4	135° 39.0	150° 38.7	165° 38.4	-0.3
	-23° 24.5	-23° 24.6	-23° 24.6	-23° 24.7	-23° 24.7	-23° 24.8	-23° 25.3	-23° 25.3	-23° 25.4	-23° 25.4	-23° 25.4	-23° 25.5	-0.1
Чт 20	180° 38.1	195° 37.8	210° 37.5	225° 37.2	240° 36.9	255° 36.6	90° 32.6	105° 32.3	120° 31.9	135° 31.6	150° 31.3	165° 31.0	-0.3
	-23° 25.5	-23° 25.5	-23° 25.6	-23° 25.6	-23° 25.6	-23° 25.6	-23° 25.9	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.0	-0.0
Пт 21	180° 30.7	195° 30.4	210° 30.1	225° 29.8	240° 29.5	255° 29.2	90° 25.1	105° 24.8	120° 24.5	135° 24.2	150° 23.9	165° 23.6	-0.3
	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-23° 26.1	-0.0
Сб 22	180° 23.3	195° 23.0	210° 22.7	225° 22.3	240° 22.0	255° 21.7	90° 17.7	105° 17.4	120° 17.1	135° 16.8	150° 16.5	165° 16.1	-0.3
	-23° 26.1	-23° 26.1	-23° 26.0	-23° 26.0	-23° 26.0	-23° 26.0	-23° 25.8	-23° 25.8	-23° 25.7	-23° 25.7	-23° 25.7	-23° 25.7	+0.0
Вс 23	180° 15.8	195° 15.5	210° 15.2	225° 14.9	240° 14.6	255° 14.3	90° 10.3	105° 10.0	120° 09.6	135° 09.3	150° 09.0	165° 08.7	-0.3
	-23° 25.6	-23° 25.6	-23° 25.6	-23° 25.6	-23° 25.5	-23° 25.5	-23° 25.0	-23° 25.0	-23° 24.9	-23° 24.9	-23° 24.8	-23° 24.8	+0.0
Пн 24	180° 08.4	195° 08.1	210° 07.8	225° 07.5	240° 07.2	255° 06.9	90° 02.8	105° 02.5	120° 02.2	135° 01.9	150° 01.6	165° 01.3	-0.3
	-23° 24.7	-23° 24.7	-23° 24.7	-23° 24.6	-23° 24.6	-23° 24.5	-23° 23.8	-23° 23.7	-23° 23.6	-23° 23.6	-23° 23.5	-23° 23.4	+0.0
Вт 25	180° 01.0	195° 00.7	210° 00.4	225° 00.0	239° 59.7	254° 59.4	89° 55.4	104° 55.1	119° 54.8	134° 54.5	149° 54.2	164° 53.9	-0.3
	-23° 23.4	-23° 23.3	-23° 23.2	-23° 23.2	-23° 23.1	-23° 23.0	-23° 22.0	-23° 22.0	-23° 21.9	-23° 21.8	-23° 21.7	-23° 21.6	+0.1
Ср 26	179° 53.6	194° 53.3	209° 53.0	224° 52.6	239° 52.3	254° 52.0	89° 48.0	104° 47.7	119° 47.4	134° 47.1	149° 46.8	164° 46.5	-0.3
	-23° 21.5	-23° 21.5	-23° 21.4	-23° 21.3	-23° 21.2	-23° 21.1	-23° 19.9	-23° 19.8	-23° 19.7	-23° 19.6	-23° 19.4	-23° 19.3	+0.1
Чт 27	179° 46.2	194° 45.9	209° 45.6	224° 45.3	239° 45.0	254° 44.6	89° 40.7	104° 40.4	119° 40.1	134° 39.7	149° 39.4	164° 39.1	-0.3
	-23° 19.2	-23° 19.1	-23° 19.0	-23° 18.9	-23° 18.8	-23° 18.7	-23° 17.2	-23° 17.1	-23° 17.0	-23° 16.8	-23° 16.7	-23° 16.6	+0.1
Пт 28	179° 38.8	194° 38.5	209° 38.2	224° 37.9	239° 37.6	254° 37.3	89° 33.3	104° 33.0	119° 32.7	134° 32.4	149° 32.1	164° 31.8	-0.3
	-23° 16.5	-23° 16.3	-23° 16.2	-23° 16.1	-23° 16.0	-23° 15.8	-23° 14.1	-23° 13.9	-23° 13.8	-23° 13.7	-23° 13.5	-23° 13.4	+0.1
Сб 29	179° 31.5	194° 31.2	209° 30.9	224° 30.6	239° 30.3	254° 30.0	89° 26.1	104° 25.8	119° 25.5	134° 25.2	149° 24.8	164° 24.5	-0.3
	-23° 13.2	-23° 13.1	-23° 12.9	-23° 12.8	-23° 12.6	-23° 12.5	-23° 10.5	-23° 10.3	-23° 10.2	-23° 10.0	-23° 09.8	-23° 09.7	+0.1
Вс 30	179° 24.2	194° 23.9	209° 23.6	224° 23.3	239° 23.0	254° 22.7	89° 18.8	104° 18.5	119° 18.2	134° 17.9	149° 17.6	164° 17.3	-0.3
	-23° 09.5	-23° 09.3	-23° 09.2	-23° 09.0	-23° 08.8	-23° 08.7	-23° 06.4	-23° 06.2	-23° 06.1	-23° 05.9	-23° 05.7	-23° 05.5	+0.2
Пн 31	179° 17.0	194° 16.7	209° 16.4	224° 16.1	239° 15.8	254° 15.5	89° 11.7	104° 11.4	119° 11.1	134° 10.8	149° 10.5	164° 10.2	-0.3
	-23° 05.3	-23° 05.2	-23° 05.0	-23° 04.8	-23° 04.6	-23° 04.4	-23° 01.9	-23° 01.7	-23° 01.5	-23° 01.3	-23° 01.1	-23° 00.9	+0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Декабрь 2029

Д	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	Δ'/h	R/p
Сб 1	75° 47.8	90° 16.1	104° 44.3	119° 12.4	133° 40.4	148° 08.3	162° 36.2	177° 04.0	191° 31.6	205° 59.2	220° 26.8	+27.9	16.4
	-9° 43.5	-9° 56.8	-10° 10.1	-10° 23.3	-10° 36.5	-10° 49.6	-11° 02.6	-11° 15.6	-11° 28.6	-11° 41.5	-11° 54.4	-13.1	60.0
Вс 2	77° 08.6	91° 34.6	106° 00.6	120° 26.4	134° 52.2	149° 17.9	163° 43.4	178° 08.9	192° 34.3	206° 59.6	221° 24.8	+25.6	16.5
	-14° 58.8	-15° 10.5	-15° 22.0	-15° 33.5	-15° 44.9	-15° 56.2	-16° 07.4	-16° 18.5	-16° 29.5	-16° 40.4	-16° 51.2	-11.3	60.6
Пн 3	77° 31.6	91° 55.4	106° 19.0	120° 42.6	135° 06.1	149° 29.5	163° 52.8	178° 16.1	192° 39.3	207° 02.4	221° 25.4	+23.4	16.6
	-19° 19.5	-19° 28.4	-19° 37.1	-19° 45.8	-19° 54.2	-20° 02.6	-20° 10.8	-20° 18.8	-20° 26.8	-20° 34.5	-20° 42.2	-8.3	60.9
Вт 4	77° 02.7	91° 24.7	105° 46.7	120° 08.6	134° 30.5	148° 52.4	163° 14.2	177° 36.0	191° 57.8	206° 19.5	220° 41.2	+21.8	16.6
	-22° 17.9	-22° 23.0	-22° 27.9	-22° 32.7	-22° 37.3	-22° 41.7	-22° 45.9	-22° 50.0	-22° 53.9	-22° 57.6	-23° 01.2	-4.3	60.9
● Ср 5	76° 05.3	90° 26.9	104° 48.5	119° 10.1	133° 31.8	147° 53.5	162° 15.2	176° 37.0	190° 58.8	205° 20.6	219° 42.4	+21.7	16.5
	-23° 33.1	-23° 33.9	-23° 34.4	-23° 34.7	-23° 34.9	-23° 34.9	-23° 34.7	-23° 34.4	-23° 33.8	-23° 33.1	-23° 32.2	+0.1	60.6
Чт 6	75° 16.1	89° 38.9	104° 01.7	118° 24.6	132° 47.6	147° 10.6	161° 33.7	175° 57.0	190° 20.3	204° 43.7	219° 07.1	+23.1	16.4
	-22° 58.3	-22° 54.7	-22° 51.0	-22° 47.1	-22° 43.0	-22° 38.8	-22° 34.4	-22° 29.9	-22° 25.2	-22° 20.3	-22° 15.3	+4.3	60.0
Пт 7	75° 10.7	89° 35.8	104° 00.9	118° 26.2	132° 51.6	147° 17.1	161° 42.6	176° 08.4	190° 34.2	205° 00.1	219° 26.1	+25.5	16.1
	-20° 43.3	-20° 36.1	-20° 28.8	-20° 21.3	-20° 13.8	-20° 06.1	-19° 58.3	-19° 50.3	-19° 42.3	-19° 34.2	-19° 25.9	+7.8	59.2
Сб 8	76° 09.9	90° 37.8	105° 05.7	119° 33.7	134° 01.8	148° 30.1	162° 58.5	177° 26.9	191° 55.5	206° 24.2	220° 53.0	+28.3	15.9
	-17° 09.7	-16° 59.9	-16° 50.0	-16° 40.0	-16° 29.9	-16° 19.8	-16° 09.5	-15° 59.2	-15° 48.9	-15° 38.4	-15° 27.9	+10.2	58.2
Вс 9	78° 17.0	92° 47.4	107° 17.9	121° 48.5	136° 19.1	150° 49.9	165° 20.7	179° 51.7	194° 22.7	208° 53.8	223° 25.0	+30.8	15.6
	-12° 42.7	-12° 31.3	-12° 19.8	-12° 08.2	-11° 56.6	-11° 45.0	-11° 33.3	-11° 21.6	-11° 09.9	-10° 58.1	-10° 46.3	+11.6	57.3
Пн 10	81° 22.6	95° 55.0	110° 27.5	125° 00.1	139° 32.7	154° 05.4	168° 38.2	183° 11.0	197° 43.9	212° 16.8	226° 49.8	+32.7	15.4
	-7° 45.3	-7° 33.0	-7° 20.7	-7° 08.5	-6° 56.2	-6° 43.8	-6° 31.5	-6° 19.1	-6° 06.8	-5° 54.4	-5° 42.0	+12.3	56.3
Вт 11	85° 11.2	99° 45.0	114° 18.8	128° 52.7	143° 26.6	158° 00.6	172° 34.6	187° 08.6	201° 42.7	216° 16.8	230° 50.9	+34.0	15.1
	-2° 35.6	-2° 23.2	-2° 10.8	-1° 58.4	-1° 46.0	-1° 33.5	-1° 21.1	-1° 08.7	-0° 56.4	-0° 44.0	-0° 31.6	+12.4	55.5
◐ Ср 12	99° 45.0	114° 18.8	128° 52.7	143° 26.6	158° 00.6	172° 34.6	187° 08.6	201° 42.7	216° 16.8	230° 50.9	245° 25.1	+34.0	15.1
	-2° 23.2	-2° 10.8	-1° 58.4	-1° 46.0	-1° 33.5	-1° 21.1	-1° 08.7	-0° 56.4	-0° 44.0	-0° 31.6	-0° 19.3	+12.4	55.5
Чт 13	104° 00.4	118° 34.9	133° 09.4	147° 43.9	162° 18.5	176° 53.0	191° 27.6	206° 02.1	220° 36.7	235° 11.3	249° 45.9	+34.6	15.0
	2° 44.4	2° 56.5	3° 08.6	3° 20.6	3° 32.7	3° 44.7	3° 56.7	4° 08.6	4° 20.6	4° 32.5	4° 44.3	+12.0	54.9
Пт 14	108° 24.7	122° 59.2	137° 33.8	152° 08.3	166° 42.8	181° 17.3	195° 51.8	210° 26.2	225° 00.7	239° 35.1	254° 09.5	+34.5	14.8
	7° 39.0	7° 50.3	8° 01.7	8° 13.0	8° 24.2	8° 35.5	8° 46.7	8° 57.8	9° 08.9	9° 20.0	9° 31.0	+11.2	54.4
Сб 15	112° 43.2	127° 17.3	141° 51.3	156° 25.3	170° 59.2	185° 33.1	200° 07.0	214° 40.9	229° 14.7	243° 48.5	258° 22.2	+33.9	14.8
	12° 10.9	12° 21.2	12° 31.4	12° 41.6	12° 51.7	13° 01.8	13° 11.8	13° 21.8	13° 31.7	13° 41.5	13° 51.3	+10.0	54.1
Вс 16	116° 43.8	131° 16.9	145° 49.9	160° 22.9	174° 55.9	189° 28.8	204° 01.7	218° 34.5	233° 07.3	247° 40.1	262° 12.8	+32.9	14.7
	16° 10.9	16° 19.7	16° 28.4	16° 37.1	16° 45.7	16° 54.2	17° 02.6	17° 11.0	17° 19.3	17° 27.6	17° 35.7	+8.5	54.0
Пн 17	120° 17.3	134° 49.2	149° 21.1	163° 52.9	178° 24.7	192° 56.4	207° 28.0	221° 59.6	236° 31.2	251° 02.7	265° 34.1	+31.7	14.7
	19° 28.9	19° 35.8	19° 42.6	19° 49.4	19° 56.0	20° 02.6	20° 09.1	20° 15.4	20° 21.7	20° 27.9	20° 34.1	+6.5	54.1
Вт 18	123° 20.0	137° 50.7	152° 21.3	166° 51.9	181° 22.4	195° 52.9	210° 23.3	224° 53.7	239° 24.1	253° 54.4	268° 24.7	+30.5	14.8
	21° 54.6	21° 59.2	22° 03.7	22° 08.1	22° 12.4	22° 16.6	22° 20.7	22° 24.7	22° 28.6	22° 32.3	22° 36.0	+4.1	54.2
Ср 19	125° 54.0	140° 23.6	154° 53.3	169° 22.9	183° 52.4	198° 22.0	212° 51.5	227° 21.0	241° 50.5	256° 19.9	270° 49.3	+29.5	14.9
	23° 18.1	23° 20.1	23° 21.9	23° 23.6	23° 25.2	23° 26.6	23° 28.0	23° 29.2	23° 30.3	23° 31.4	23° 32.3	+1.4	54.5
○ Чт 20	128° 07.9	142° 37.0	157° 06.2	171° 35.3	186° 04.3	200° 33.4	215° 02.5	229° 31.6	244° 00.6	258° 29.7	272° 58.8	+29.1	15.0
	23° 31.6	23° 30.6	23° 29.5	23° 28.3	23° 27.0	23° 25.5	23° 23.9	23° 22.2	23° 20.4	23° 18.4	23° 16.4	-1.5	54.9
Пт 21	130° 15.0	144° 44.1	159° 13.2	173° 42.4	188° 11.6	202° 40.8	217° 10.0	231° 39.2	246° 08.4	260° 37.7	275° 06.9	+29.2	15.1
	22° 31.3	22° 27.3	22° 23.3	22° 19.1	22° 14.8	22° 10.4	22° 05.8	22° 01.2	21° 56.4	21° 51.6	21° 46.6	-4.5	55.3
Сб 22	132° 28.6	146° 58.2	161° 27.9	175° 57.6	190° 27.3	204° 57.1	219° 26.8	233° 56.7	248° 26.5	262° 56.4	277° 26.3	+29.8	15.2
	20° 18.4	20° 11.7	20° 04.8	19° 57.9	19° 50.8	19° 43.7	19° 36.4	19° 29.0	19° 21.6	19° 14.0	19° 06.3	-7.2	55.7
Вс 23	134° 58.5	149° 28.9	163° 59.3	178° 29.8	193° 00.3	207° 30.8	222° 01.4	236° 32.0	251° 02.6	265° 33.2	280° 03.9	+30.5	15.3
	16° 59.6	16° 50.4	16° 41.1	16° 31.7	16° 22.3	16° 12.7	16° 03.1	15° 53.4	15° 43.6	15° 33.7	15° 23.8	-9.6	56.2
Пн 24	137° 47.7	152° 18.9	166° 50.0	181° 21.2	195° 52.4	210° 23.7	224° 54.9	239° 26.2	253° 57.5	268° 28.8	283° 00.2	+31.2	15.5
	12° 45.0	12° 33.9	12° 22.6	12° 11.3	12° 00.0	11° 48.5	11° 37.0	11° 25.5	11° 13.9	11° 02.2	10° 50.5	-11.5	56.7
Вт 25	140° 52.4	155° 24.0	169° 55.6	184° 27.2	198° 58.8	213° 30.4	228° 02.1	242° 33.7	257° 05.3	271° 37.0	286° 08.6	+31.6	15.6
	7° 47.7	7° 35.1	7° 22.5	7° 09.8	6° 57.1	6° 44.3	6° 31.5	6° 18.7	6° 05.8	5° 52.9	5° 39.9	+12.8	57.3
Ср 26	144° 02.9	158° 34.5	173° 06.0	187° 37.5	202° 09.1	216° 40.5	231° 12.0	245° 43.5	260° 14.9	274° 46.4	289° 17.8	+31.5	15.8
	2° 21.8	2° 08.4	1° 54.9	1° 41.5	1° 28.0	1° 14.5	1° 01.0	0° 47.5	0° 34.0	0° 20.4	0° 06.9	-13.5	57.8
Чт 27	147° 05.5	161° 36.4	176° 07.3	190° 38.1	205° 08.9	219° 39.7	234° 10.4	248° 41.1	263° 11.7	277° 42.3	292° 12.8	+30.7	15.9
	-3° 17.2	-3° 30.7	-3° 44.3	-3° 57.9	-4° 11.5	-4° 25.0	-4° 38.6	-4° 52.1	-5° 05.6	-5° 19.1	-5° 32.6	-13.5	58.4
◑ Пт 28	149° 44.3	164° 14.0	178° 43.5	193° 13.0	207° 42.5	222° 11.8	236° 41.1	251° 10.4	265° 39.5	280° 08.6	294° 37.6	+29.3	16.1
	-8° 51.9	-9° 04.9	-9° 17.9	-9° 30.9	-9° 43.8	-9° 56.7	-10° 09.5	-10° 22.3	-10° 35.0	-10° 47.7	-11° 00.3	-12.8	58.9
Сб 29	151° 43.8	166° 11.6	180° 39.3	195° 06.9	209° 34.4	224° 01.9	238° 29.2	252° 56.5	267° 23.7	281° 50.8	296° 17.8	+27.4	16.2
	-14° 02.7	-14° 14.4	-14° 25.9	-14° 37.4	-14° 48.8	-15° 00.1	-15° 11.3	-15° 22.5	-15° 33.5	-15° 44.5	-15° 55.4	-11.3	59.5
Вс 30	152° 52.4	167° 18.0	181° 43.5	196° 09.0	210° 34.3	224° 59.6	239° 24.7	253° 49.8	268° 14.9	282° 39.8	297° 04.6	+25.2	16.3
	-18° 27.1	-18° 36.3	-18° 45.5	-18° 54.5	-19° 03.4	-19° 12.2	-19° 20.9	-19° 29.5	-19° 37.9	-19° 46.2	-19° 54.4	-8.7	59.9
Пн 31	153° 08.0	167° 31.6	181° 55.2	196° 18.7	210° 42.1	225° 05.5	239° 28.9	253° 52.1	268° 15.4	282° 38.5	297° 01.6	+23.4	16.4
	-21° 40.9	-21° 46.9	-21° 52.7	-21° 58.3	-22° 03.8	-22° 09.2	-22° 14.4	-22° 19.5	-22° 24.3	-22° 29.1	-22° 33.7	-5.3	60.1

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 5 14h52 — Первая четв.: 12 17h49 — Полнолуние: 20 22h46 — Последняя четв.: 28 09h49

СОЛНЦЕ

Январь 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	179° 09.9	194° 09.6	209° 09.3	224° 09.0	239° 08.7	254° 08.4	89° 04.6	104° 04.3	119° 04.0	134° 03.7	149° 03.4	164° 03.1	-0.3
	-23° 00.7	-23° 00.5	-23° 00.3	-23° 00.1	-22° 59.9	-22° 59.7	-22° 56.9	-22° 56.7	-22° 56.5	-22° 56.3	-22° 56.1	-22° 55.8	+0.2
Ср 2	179° 02.8	194° 02.5	209° 02.2	224° 01.9	239° 01.6	254° 01.4	88° 57.6	103° 57.3	118° 57.0	133° 56.7	148° 56.4	163° 56.1	-0.3
	-22° 55.6	-22° 55.4	-22° 55.2	-22° 54.9	-22° 54.7	-22° 54.5	-22° 51.5	-22° 51.2	-22° 51.0	-22° 50.8	-22° 50.5	-22° 50.3	+0.2
Чт 3	178° 55.8	193° 55.5	208° 55.3	223° 55.0	238° 54.7	253° 54.4	88° 50.6	103° 50.4	118° 50.1	133° 49.8	148° 49.5	163° 49.2	-0.3
	-22° 50.1	-22° 49.8	-22° 49.6	-22° 49.3	-22° 49.1	-22° 48.8	-22° 45.6	-22° 45.3	-22° 45.1	-22° 44.8	-22° 44.6	-22° 44.3	+0.2
Пт 4	178° 48.9	193° 48.6	208° 48.4	223° 48.1	238° 47.8	253° 47.5	88° 43.8	103° 43.5	118° 43.3	133° 43.0	148° 42.7	163° 42.4	-0.3
	-22° 44.0	-22° 43.8	-22° 43.5	-22° 43.3	-22° 43.0	-22° 42.7	-22° 39.2	-22° 39.0	-22° 38.7	-22° 38.4	-22° 38.1	-22° 37.9	+0.3
Сб 5	178° 42.1	193° 41.9	208° 41.6	223° 41.3	238° 41.0	253° 40.7	88° 37.1	103° 36.8	118° 36.6	133° 36.3	148° 36.0	163° 35.7	-0.3
	-22° 37.6	-22° 37.3	-22° 37.0	-22° 36.8	-22° 36.5	-22° 36.2	-22° 32.5	-22° 32.2	-22° 31.9	-22° 31.6	-22° 31.3	-22° 31.0	+0.3
Вс 6	178° 35.4	193° 35.2	208° 34.9	223° 34.6	238° 34.3	253° 34.1	88° 30.5	103° 30.2	118° 30.0	133° 29.7	148° 29.4	163° 29.1	-0.3
	-22° 30.7	-22° 30.4	-22° 30.1	-22° 29.8	-22° 29.5	-22° 29.2	-22° 25.2	-22° 24.9	-22° 24.6	-22° 24.3	-22° 24.0	-22° 23.7	+0.3
Пн 7	178° 28.9	193° 28.6	208° 28.3	223° 28.1	238° 27.8	253° 27.5	88° 24.0	103° 23.8	118° 23.5	133° 23.2	148° 23.0	163° 22.7	-0.3
	-22° 23.3	-22° 23.0	-22° 22.7	-22° 22.4	-22° 22.1	-22° 21.7	-22° 17.5	-22° 17.2	-22° 16.9	-22° 16.5	-22° 16.2	-22° 15.9	+0.3
Вт 8	178° 22.4	193° 22.2	208° 21.9	223° 21.6	238° 21.4	253° 21.1	88° 17.7	103° 17.4	118° 17.2	133° 16.9	148° 16.6	163° 16.4	-0.3
	-22° 15.5	-22° 15.2	-22° 14.9	-22° 14.5	-22° 14.2	-22° 13.9	-22° 09.4	-22° 09.1	-22° 08.7	-22° 08.4	-22° 08.0	-22° 07.7	+0.3
Ср 9	178° 16.1	193° 15.9	208° 15.6	223° 15.3	238° 15.1	253° 14.8	88° 11.5	103° 11.2	118° 11.0	133° 10.7	148° 10.5	163° 10.2	-0.3
	-22° 07.3	-22° 07.0	-22° 06.6	-22° 06.3	-22° 05.9	-22° 05.6	-22° 00.9	-22° 00.5	-22° 00.1	-21° 59.8	-21° 59.4	-21° 59.0	+0.4
Чт 10	178° 09.9	193° 09.7	208° 09.4	223° 09.2	238° 08.9	253° 08.7	88° 05.4	103° 05.2	118° 04.9	133° 04.7	148° 04.4	163° 04.2	-0.3
	-21° 58.7	-21° 58.3	-21° 57.9	-21° 57.5	-21° 57.2	-21° 56.8	-21° 51.9	-21° 51.5	-21° 51.1	-21° 50.7	-21° 50.3	-21° 50.0	+0.4
Пт 11	178° 03.9	193° 03.7	208° 03.4	223° 03.2	238° 02.9	253° 02.7	87° 59.5	102° 59.2	117° 59.0	132° 58.8	147° 58.5	162° 58.3	-0.2
	-21° 49.6	-21° 49.2	-21° 48.8	-21° 48.4	-21° 48.0	-21° 47.6	-21° 42.5	-21° 42.1	-21° 41.7	-21° 41.3	-21° 40.9	-21° 40.5	+0.4
Сб 12	177° 58.0	192° 57.8	207° 57.5	222° 57.3	237° 57.1	252° 56.8	87° 53.7	102° 53.5	117° 53.2	132° 53.0	147° 52.8	162° 52.5	-0.2
	-21° 40.1	-21° 39.7	-21° 39.2	-21° 38.8	-21° 38.4	-21° 38.0	-21° 32.7	-21° 32.2	-21° 31.8	-21° 31.4	-21° 31.0	-21° 30.6	+0.4
Вс 13	177° 52.3	192° 52.1	207° 51.8	222° 51.6	237° 51.4	252° 51.1	87° 48.1	102° 47.9	117° 47.7	132° 47.4	147° 47.2	162° 47.0	-0.2
	-21° 30.1	-21° 29.7	-21° 29.3	-21° 28.9	-21° 28.4	-21° 28.0	-21° 22.4	-21° 22.0	-21° 21.5	-21° 21.1	-21° 20.7	-21° 20.2	+0.4
Пн 14	177° 46.7	192° 46.5	207° 46.3	222° 46.1	237° 45.8	252° 45.6	87° 42.7	102° 42.5	117° 42.2	132° 42.0	147° 41.8	162° 41.6	-0.2
	-21° 19.8	-21° 19.3	-21° 18.9	-21° 18.5	-21° 18.0	-21° 17.6	-21° 11.8	-21° 11.3	-21° 10.9	-21° 10.4	-21° 09.9	-21° 09.5	+0.4
Вт 15	177° 41.3	192° 41.1	207° 40.9	222° 40.7	237° 40.5	252° 40.2	87° 37.4	102° 37.2	117° 37.0	132° 36.8	147° 36.5	162° 36.3	-0.2
	-21° 09.0	-21° 08.6	-21° 08.1	-21° 07.7	-21° 07.2	-21° 06.7	-21° 00.7	-21° 00.2	-20° 59.8	-20° 59.3	-20° 58.8	-20° 58.3	+0.5
Ср 16	177° 36.1	192° 35.9	207° 35.7	222° 35.5	237° 35.3	252° 35.1	87° 32.3	102° 32.1	117° 31.9	132° 31.7	147° 31.5	162° 31.3	-0.2
	-20° 57.9	-20° 57.4	-20° 56.9	-20° 56.4	-20° 56.0	-20° 55.5	-20° 49.2	-20° 48.8	-20° 48.3	-20° 47.8	-20° 47.3	-20° 46.8	+0.5
Чт 17	177° 31.1	192° 30.9	207° 30.7	222° 30.4	237° 30.2	252° 30.0	87° 27.4	102° 27.2	117° 27.0	132° 26.8	147° 26.6	162° 26.4	-0.2
	-20° 46.3	-20° 45.8	-20° 45.3	-20° 44.8	-20° 44.3	-20° 43.9	-20° 37.4	-20° 36.9	-20° 36.4	-20° 35.9	-20° 35.4	-20° 34.9	+0.5
Пт 18	177° 26.2	192° 26.0	207° 25.8	222° 25.6	237° 25.4	252° 25.2	87° 22.6	102° 22.5	117° 22.3	132° 22.1	147° 21.9	162° 21.7	-0.2
	-20° 34.4	-20° 33.9	-20° 33.3	-20° 32.8	-20° 32.3	-20° 31.8	-20° 25.1	-20° 24.6	-20° 24.1	-20° 23.6	-20° 23.1	-20° 22.5	+0.5
Сб 19	177° 21.5	192° 21.3	207° 21.1	222° 20.9	237° 20.7	252° 20.5	87° 18.1	102° 17.9	117° 17.7	132° 17.5	147° 17.4	162° 17.2	-0.2
	-20° 22.0	-20° 21.5	-20° 21.0	-20° 20.5	-20° 19.9	-20° 19.4	-20° 12.5	-20° 12.0	-20° 11.4	-20° 10.9	-20° 10.4	-20° 09.8	+0.5
Вс 20	177° 17.0	192° 16.8	207° 16.6	222° 16.4	237° 16.2	252° 16.1	87° 13.7	102° 13.5	117° 13.4	132° 13.2	147° 13.0	162° 12.8	-0.2
	-20° 09.3	-20° 08.8	-20° 08.2	-20° 07.7	-20° 07.1	-20° 06.6	-19° 59.5	-19° 59.0	-19° 58.4	-19° 57.9	-19° 57.3	-19° 56.7	+0.5
Пн 21	177° 12.7	192° 12.5	207° 12.3	222° 12.1	237° 12.0	252° 11.8	87° 09.5	102° 09.4	117° 09.2	132° 09.0	147° 08.9	162° 08.7	-0.2
	-19° 56.2	-19° 55.6	-19° 55.1	-19° 54.5	-19° 54.0	-19° 53.4	-19° 46.1	-19° 45.6	-19° 45.0	-19° 44.4	-19° 43.9	-19° 43.3	+0.6
Вт 22	177° 08.5	192° 08.3	207° 08.2	222° 08.0	237° 07.8	252° 07.7	87° 05.5	102° 05.4	117° 05.2	132° 05.1	147° 04.9	162° 04.7	-0.2
	-19° 42.7	-19° 42.1	-19° 41.6	-19° 41.0	-19° 40.4	-19° 39.9	-19° 32.4	-19° 31.8	-19° 31.2	-19° 30.6	-19° 30.0	-19° 29.5	+0.6
Ср 23	177° 04.6	192° 04.4	207° 04.2	222° 04.1	237° 03.9	252° 03.8	87° 01.7	102° 01.6	117° 01.4	132° 01.3	147° 01.1	162° 01.0	-0.2
	-19° 28.9	-19° 28.3	-19° 27.7	-19° 27.1	-19° 26.5	-19° 25.9	-19° 18.3	-19° 17.7	-19° 17.1	-19° 16.5	-19° 15.9	-19° 15.3	+0.6
Чт 24	177° 00.8	192° 00.7	207° 00.5	222° 00.4	237° 00.2	252° 00.0	86° 58.1	101° 58.0	116° 57.8	131° 57.7	146° 57.5	161° 57.4	-0.2
	-19° 14.7	-19° 14.1	-19° 13.5	-19° 12.9	-19° 12.3	-19° 11.7	-19° 03.8	-19° 03.2	-19° 02.6	-19° 02.0	-19° 01.3	-19° 00.7	+0.6
Пт 25	176° 57.2	191° 57.1	206° 57.0	221° 56.8	236° 56.7	251° 56.5	86° 54.7	101° 54.6	116° 54.4	131° 54.3	146° 54.1	161° 54.0	-0.1
	-19° 00.1	-18° 59.5	-18° 58.9	-18° 58.3	-18° 57.7	-18° 57.0	-18° 49.0	-18° 48.3	-18° 47.7	-18° 47.1	-18° 46.5	-18° 45.8	+0.6
Сб 26	176° 53.9	191° 53.7	206° 53.6	221° 53.5	236° 53.3	251° 53.2	86° 51.5	101° 51.3	116° 51.2	131° 51.1	146° 50.9	161° 50.8	-0.1
	-18° 45.2	-18° 44.6	-18° 43.9	-18° 43.3	-18° 42.7	-18° 42.1	-18° 33.8	-18° 33.2	-18° 32.5	-18° 31.9	-18° 31.2	-18° 30.6	+0.6
Вс 27	176° 50.7	191° 50.6	206° 50.4	221° 50.3	236° 50.2	251° 50.1	86° 48.4	101° 48.3	116° 48.2	131° 48.1	146° 48.0	161° 47.8	-0.1
	-18° 29.9	-18° 29.3	-18° 28.7	-18° 28.0	-18° 27.4	-18° 26.7	-18° 18.3	-18° 17.6	-18° 17.0	-18° 16.3	-18° 15.7	-18° 15.0	+0.6
Пн 28	176° 47.7	191° 47.6	206° 47.5	221° 47.4	236° 47.2	251° 47.1	86° 45.6	101° 45.5	116° 45.4	131° 45.3	146° 45.1	161° 45.0	-0.1
	-18° 14.4	-18° 13.7	-18° 13.0	-18° 12.4	-18° 11.7	-18° 11.1	-18° 02.4	-18° 01.8	-18° 01.1	-18° 00.4	-17° 59.8	-17° 59.1	+0.7
Вт 29	176° 44.9	191° 44.8	206° 44.7	221° 44.6	236° 44.5	251° 44.4	86° 43.0	101° 42.9	116° 42.8	131° 42.7	146° 42.5	161° 42.4	-0.1
	-17° 58.4	-17° 57.8	-17° 57.1	-17° 56.4	-17° 55.8	-17° 55.1	-17° 46.3	-17° 45.6	-17° 44.9	-17° 44.2	-17° 43.6	-17° 42.9	+0.7
Ср 30	176° 42.3	191° 42.2	206° 42.1	221° 42.0	236° 41.9	251° 41.8	86° 40.5	101° 40.4	116° 40.3	131° 40.2	146° 40.1	161° 40.0	-0.1
	-17° 42.2	-17° 41.5	-17° 40.8	-17° 40.1	-17° 39.5	-17° 38.8	-17° 29.8	-17° 29.1	-17° 28.4	-17° 27.7	-17° 27.0	-17° 26.3	+0.7
Чт 31	176° 40.0	191° 39.9	206° 39.8	221° 39.7	236° 39.6	251° 39.5	86° 38.3	101° 38.2	116° 38.1	131° 38.0	146° 37.9	161° 37.9	-0.1
	-17° 25.6	-17° 24.9	-17° 24.2	-17° 23.5	-17° 22.8	-17° 22.1	-17° 13.0	-17° 12.3	-17° 11.6	-17° 10.9	-17° 10.2	-17° 09.5	+0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2030

Д	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	Δ°/h	R/p
Вт 1	66° 27.6	80° 50.3	95° 12.9	109° 35.6	123° 58.2	138° 20.7	152° 43.3	167° 05.8	181° 28.3	195° 50.8	210° 13.3	+22.6	16.4
	-23° 07.6	-23° 10.6	-23° 13.4	-23° 16.0	-23° 18.4	-23° 20.7	-23° 22.8	-23° 24.8	-23° 26.6	-23° 28.2	-23° 29.6	-2.2	60.1
Ср 2	65° 50.4	80° 13.0	94° 35.5	108° 58.2	123° 20.8	137° 43.5	152° 06.2	166° 28.9	180° 51.7	195° 14.6	209° 37.4	+22.7	16.4
	-23° 30.8	-23° 29.5	-23° 28.0	-23° 26.4	-23° 24.6	-23° 22.7	-23° 20.6	-23° 18.3	-23° 15.8	-23° 13.2	-23° 10.4	+2.0	60.0
Чт 3	65° 26.8	79° 50.6	94° 14.5	108° 38.5	123° 02.5	137° 26.6	151° 50.8	166° 15.0	180° 39.4	195° 03.8	209° 28.3	+24.1	16.2
	-22° 09.5	-22° 04.2	-21° 58.8	-21° 53.2	-21° 47.5	-21° 41.6	-21° 35.6	-21° 29.4	-21° 23.2	-21° 16.7	-21° 10.1	+5.9	59.6
● Пт 4	65° 46.8	80° 12.8	94° 38.9	109° 05.1	123° 31.4	137° 57.7	152° 24.2	166° 50.8	181° 17.5	195° 44.2	210° 11.1	+26.4	16.1
	-19° 16.1	-19° 07.6	-18° 58.9	-18° 50.1	-18° 41.2	-18° 32.2	-18° 23.1	-18° 13.9	-18° 04.6	-17° 55.2	-17° 45.7	+9.0	59.0
Сб 5	67° 06.3	81° 34.8	96° 03.3	110° 32.0	125° 00.8	139° 29.6	153° 58.6	168° 27.6	182° 56.8	197° 26.0	211° 55.4	+28.9	15.9
	-15° 12.5	-15° 01.6	-14° 50.7	-14° 39.7	-14° 28.6	-14° 17.5	-14° 06.3	-13° 55.0	-13° 43.7	-13° 32.3	-13° 20.9	+11.2	58.2
Вс 6	69° 26.1	83° 56.8	98° 27.7	112° 58.6	127° 29.5	142° 00.6	156° 31.7	171° 02.9	185° 34.2	200° 05.6	214° 37.0	+31.1	15.6
	-10° 23.2	-10° 11.0	-9° 58.8	-9° 46.5	-9° 34.3	-9° 21.9	-9° 09.6	-8° 57.2	-8° 44.8	-8° 32.4	-8° 19.9	+12.3	57.3
Пн 7	72° 36.7	87° 09.2	101° 41.7	116° 14.3	130° 47.0	145° 19.7	159° 52.5	174° 25.3	188° 58.1	203° 31.0	218° 04.0	+32.7	15.4
	-5° 10.9	-4° 58.2	-4° 45.5	-4° 32.8	-4° 20.0	-4° 07.3	-3° 54.6	-3° 41.9	-3° 29.1	-3° 16.4	-3° 03.7	+12.7	56.5
Вт 8	76° 23.6	90° 57.2	105° 30.9	120° 04.6	134° 38.3	149° 12.0	163° 45.7	178° 19.5	192° 53.3	207° 27.2	222° 01.0	+33.7	15.2
	0° 06.4	0° 18.9	0° 31.5	0° 44.1	0° 56.6	1° 09.1	1° 21.6	1° 34.1	1° 46.5	1° 59.0	2° 11.4	+12.5	55.7
Ср 9	80° 31.1	95° 05.2	109° 39.3	124° 13.5	138° 47.6	153° 21.7	167° 55.8	182° 30.0	197° 04.1	211° 38.3	226° 12.4	+34.1	15.0
	5° 14.5	5° 26.4	5° 38.4	5° 50.3	6° 02.1	6° 14.0	6° 25.8	6° 37.5	6° 49.2	7° 00.9	7° 12.6	+11.8	55.0
Чт 10	84° 44.0	99° 18.0	113° 52.0	128° 26.0	143° 00.0	157° 34.0	172° 07.9	186° 41.8	201° 15.8	215° 49.6	230° 23.5	+34.0	14.9
	10° 02.3	10° 13.3	10° 24.2	10° 35.0	10° 45.9	10° 56.6	11° 07.3	11° 18.0	11° 28.6	11° 39.1	11° 49.6	+10.7	54.5
◐ Пт 11	99° 18.0	113° 52.0	128° 26.0	143° 00.0	157° 34.0	172° 07.9	186° 41.8	201° 15.8	215° 49.6	230° 23.5	244° 57.4	+33.9	14.9
	10° 13.3	10° 24.2	10° 35.0	10° 45.9	10° 56.6	11° 07.3	11° 18.0	11° 28.6	11° 39.1	11° 49.6	12° 00.1	+10.7	54.5
Сб 12	103° 22.1	117° 55.5	132° 28.9	147° 02.3	161° 35.6	176° 08.9	190° 42.1	205° 15.3	219° 48.5	234° 21.7	248° 54.8	+33.3	14.8
	14° 30.0	14° 39.5	14° 49.0	14° 58.4	15° 07.7	15° 17.0	15° 26.2	15° 35.3	15° 44.4	15° 53.3	16° 02.3	+9.2	54.2
Вс 13	107° 06.6	121° 39.1	136° 11.5	150° 43.8	165° 16.1	179° 48.4	194° 20.6	208° 52.8	223° 25.0	237° 57.1	252° 29.1	+32.3	14.8
	18° 07.6	18° 15.4	18° 23.0	18° 30.6	18° 38.2	18° 45.6	18° 53.0	19° 00.3	19° 07.5	19° 14.6	19° 21.6	+7.4	54.1
Пн 14	110° 24.1	124° 55.4	139° 26.7	153° 57.9	168° 29.0	183° 00.1	197° 31.1	212° 02.2	226° 33.1	241° 04.0	255° 34.9	+31.1	14.8
	20° 56.7	21° 02.4	21° 07.9	21° 13.3	21° 18.7	21° 23.9	21° 29.1	21° 34.1	21° 39.1	21° 44.0	21° 48.7	+5.2	54.2
Вт 15	113° 12.4	127° 42.6	142° 12.7	156° 42.8	171° 12.8	185° 42.8	200° 12.8	214° 42.7	229° 12.6	243° 42.4	258° 12.2	+30.0	14.8
	22° 48.1	22° 51.2	22° 54.2	22° 57.1	22° 59.9	23° 02.6	23° 05.2	23° 07.6	23° 10.0	23° 12.3	23° 14.4	+2.6	54.4
Ср 16	115° 35.3	130° 04.6	144° 33.8	159° 03.1	173° 32.3	188° 01.5	202° 30.7	216° 59.9	231° 29.0	245° 58.1	260° 27.2	+29.2	14.9
	23° 33.0	23° 33.3	23° 33.5	23° 33.6	23° 33.5	23° 33.4	23° 33.1	23° 32.7	23° 32.2	23° 31.6	23° 30.8	-0.2	54.8
Чт 17	117° 42.1	132° 11.0	146° 39.9	161° 08.8	175° 37.7	190° 06.6	204° 35.5	219° 04.4	233° 33.3	248° 02.2	262° 31.1	+28.9	15.1
	23° 05.3	23° 02.7	22° 59.9	22° 57.0	22° 54.0	22° 50.8	22° 47.6	22° 44.2	22° 40.7	22° 37.1	22° 33.4	-3.2	55.3
Пт 18	119° 45.4	134° 14.5	148° 43.5	163° 12.6	177° 41.7	192° 10.8	206° 39.9	221° 09.0	235° 38.2	250° 07.4	264° 36.5	+29.1	15.2
	21° 23.2	21° 17.6	21° 11.9	21° 06.0	21° 00.1	20° 54.0	20° 47.8	20° 41.5	20° 35.1	20° 28.6	20° 22.0	-6.1	55.8
○ Сб 19	121° 57.1	136° 26.7	150° 56.2	165° 25.9	179° 55.5	194° 25.2	208° 54.9	223° 24.6	237° 54.4	252° 24.1	266° 53.9	+29.7	15.4
	18° 29.7	18° 21.4	18° 13.0	18° 04.4	17° 55.8	17° 47.1	17° 38.3	17° 29.4	17° 20.4	17° 11.3	17° 02.1	-8.8	56.4
Вс 20	124° 24.4	138° 54.7	153° 24.9	167° 55.2	182° 25.6	196° 55.9	211° 26.3	225° 56.7	240° 27.2	254° 57.6	269° 28.1	+30.4	15.5
	14° 33.3	14° 22.7	14° 12.0	14° 01.2	13° 50.4	13° 39.5	13° 28.5	13° 17.4	13° 06.3	12° 55.0	12° 43.8	-11.0	57.0
Пн 21	127° 08.2	141° 39.1	156° 09.9	170° 40.8	185° 11.7	199° 42.6	214° 13.5	228° 44.5	243° 15.4	257° 46.4	272° 17.4	+30.9	15.7
	9° 46.4	9° 34.1	9° 21.7	9° 09.3	8° 56.8	8° 44.3	8° 31.7	8° 19.0	8° 06.4	7° 53.6	7° 40.9	-12.6	57.5
Вт 22	130° 03.2	144° 34.3	159° 05.4	173° 36.5	188° 07.6	202° 38.7	217° 09.8	231° 40.9	246° 12.0	260° 43.1	275° 14.2	+31.1	15.8
	4° 24.4	4° 11.0	3° 57.6	3° 44.2	3° 30.8	3° 17.3	3° 03.8	2° 50.3	2° 36.7	2° 23.2	2° 09.6	-13.5	57.9
Ср 23	132° 59.2	147° 30.1	162° 00.9	176° 31.8	191° 02.6	205° 33.4	220° 04.1	234° 34.9	249° 05.6	263° 36.3	278° 07.0	+30.8	15.9
	-1° 15.5	-1° 29.2	-1° 42.9	-1° 56.6	-2° 10.3	-2° 24.0	-2° 37.7	-2° 51.3	-3° 05.0	-3° 18.7	-3° 32.3	-13.7	58.3
Чт 24	135° 43.1	150° 13.2	164° 43.2	179° 13.2	193° 43.2	208° 13.1	222° 43.0	237° 12.9	251° 42.6	266° 12.4	280° 42.1	+29.9	16.0
	-6° 54.8	-7° 08.1	-7° 21.4	-7° 34.6	-7° 47.8	-8° 01.0	-8° 14.1	-8° 27.1	-8° 40.2	-8° 53.2	-9° 06.1	-13.1	58.7
Пт 25	138° 01.0	152° 29.8	166° 58.5	181° 27.2	195° 55.8	210° 24.3	224° 52.8	239° 21.2	253° 49.6	268° 17.9	282° 46.1	+28.5	16.1
	-12° 14.2	-12° 26.3	-12° 38.3	-12° 50.3	-13° 02.1	-13° 13.9	-13° 25.7	-13° 37.3	-13° 48.9	-14° 00.4	-14° 11.8	-11.8	58.9
◑ Сб 26	139° 41.2	154° 08.3	168° 35.3	183° 02.3	197° 29.2	211° 56.0	226° 22.8	240° 49.5	255° 16.1	269° 42.6	284° 09.1	+26.8	16.1
	-16° 53.1	-17° 03.1	-17° 13.0	-17° 22.9	-17° 32.6	-17° 42.2	-17° 51.7	-18° 01.1	-18° 10.4	-18° 19.5	-18° 28.6	-9.6	59.1
Вс 27	140° 37.9	155° 03.3	169° 28.7	183° 53.9	198° 19.1	212° 44.3	227° 09.4	241° 34.4	255° 59.3	270° 24.2	284° 49.1	+25.1	16.2
	-20° 30.5	-20° 37.7	-20° 44.7	-20° 51.5	-20° 58.3	-21° 04.9	-21° 11.4	-21° 17.7	-21° 23.9	-21° 29.9	-21° 35.9	-6.5	59.2
Пн 28	140° 55.9	155° 20.0	169° 44.1	184° 08.1	198° 32.1	212° 56.1	227° 20.1	241° 44.0	256° 07.9	270° 31.8	284° 55.6	+24.0	16.2
	-22° 47.3	-22° 50.9	-22° 54.3	-22° 57.6	-23° 00.7	-23° 03.6	-23° 06.4	-23° 09.1	-23° 11.6	-23° 13.9	-23° 16.1	-2.9	59.3
Вт 29	140° 52.0	155° 15.7	169° 39.5	184° 03.2	198° 27.0	212° 50.8	227° 14.6	241° 38.4	256° 02.2	270° 26.1	284° 50.0	+23.8	16.1
	-23° 29.7	-23° 29.3	-23° 28.8	-23° 28.1	-23° 27.3	-23° 26.3	-23° 25.1	-23° 23.8	-23° 22.3	-23° 20.7	-23° 18.9	+1.1	59.2
Ср 30	140° 52.0	155° 16.5	169° 41.0	184° 05.6	198° 30.2	212° 54.9	227° 19.7	241° 44.5	256° 09.3	270° 34.2	284° 59.2	+24.7	16.1
	-22° 33.6	-22° 29.3	-22° 25.0	-22° 20.4	-22° 15.8	-22° 10.9	-22° 06.0	-22° 00.9	-21° 55.7	-21° 50.3	-21° 44.8	+4.9	59.0
Чт 31	141° 21.9	155° 48.0	170° 14.1	184° 40.4	199° 06.7	213° 33.1	227° 59.6	242° 26.2	256° 52.8	271° 19.5	285° 46.3	+26.4	16.0
	-20° 06.0	-19° 58.5	-19° 50.7	-19° 42.9	-19° 35.0	-19° 26.9	-19° 18.7	-19° 10.5	-19° 02.1	-18° 53.6	-18° 44.9	+8.1	58.6

Строка 1: $t_{гр}$, Δ°/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ°/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 4 02h49 — Первая четв.: 11 14h06 — Полнолуние: 19 15h54 — Последняя четв.: 26 18h14

СОЛНЦЕ

Февраль 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	176° 37.8 -17° 08.8	191° 37.7 -17° 08.1	206° 37.6 -17° 07.3	221° 37.5 -17° 06.6	236° 37.4 -17° 05.9	251° 37.3 -17° 05.2	86° 36.3 -16° 55.9	101° 36.2 -16° 55.2	116° 36.1 -16° 54.5	131° 36.0 -16° 53.8	146° 35.9 -16° 53.0	161° 35.9 -16° 52.3	-0.1 +0.7
Сб 2	176° 35.8 -16° 51.6	191° 35.7 -16° 50.9	206° 35.6 -16° 50.1	221° 35.5 -16° 49.4	236° 35.5 -16° 48.7	251° 35.4 -16° 48.0	86° 34.4 -16° 38.5	101° 34.4 -16° 37.8	116° 34.3 -16° 37.1	131° 34.2 -16° 36.3	146° 34.1 -16° 35.6	161° 34.1 -16° 34.9	-0.1 +0.7
Вс 3	176° 34.0 -16° 34.1	191° 33.9 -16° 33.4	206° 33.9 -16° 32.7	221° 33.8 -16° 31.9	236° 33.7 -16° 31.2	251° 33.7 -16° 30.4	86° 32.8 -16° 20.8	101° 32.7 -16° 20.1	116° 32.7 -16° 19.3	131° 32.6 -16° 18.6	146° 32.6 -16° 17.9	161° 32.5 -16° 17.1	-0.1 +0.7
Пн 4	176° 32.4 -16° 16.4	191° 32.4 -16° 15.6	206° 32.3 -16° 14.9	221° 32.2 -16° 14.1	236° 32.2 -16° 13.4	251° 32.1 -16° 12.6	86° 31.4 -16° 02.9	101° 31.3 -16° 02.1	116° 31.3 -16° 01.4	131° 31.2 -16° 00.6	146° 31.2 -15° 59.8	161° 31.1 -15° 59.1	-0.1 +0.7
Вт 5	176° 31.1 -15° 58.3	191° 31.0 -15° 57.6	206° 30.9 -15° 56.8	221° 30.9 -15° 56.1	236° 30.8 -15° 55.3	251° 30.8 -15° 54.5	86° 30.2 -15° 44.6	101° 30.1 -15° 43.9	116° 30.1 -15° 43.1	131° 30.0 -15° 42.3	146° 30.0 -15° 41.6	161° 29.9 -15° 40.8	-0.1 +0.8
Ср 6	176° 29.9 -15° 40.0	191° 29.8 -15° 39.2	206° 29.8 -15° 38.5	221° 29.8 -15° 37.7	236° 29.7 -15° 36.9	251° 29.7 -15° 36.2	86° 29.1 -15° 26.1	101° 29.1 -15° 25.3	116° 29.1 -15° 24.6	131° 29.0 -15° 23.8	146° 29.0 -15° 23.0	161° 29.0 -15° 22.2	-0.0 +0.8
Чт 7	176° 28.9 -15° 21.4	191° 28.9 -15° 20.7	206° 28.9 -15° 19.9	221° 28.8 -15° 19.1	236° 28.8 -15° 18.3	251° 28.7 -15° 17.5	86° 28.3 -15° 07.3	101° 28.3 -15° 06.5	116° 28.3 -15° 05.8	131° 28.2 -15° 05.0	146° 28.2 -15° 04.2	161° 28.2 -15° 03.4	-0.0 +0.8
Пт 8	176° 28.2 -15° 02.6	191° 28.1 -15° 01.8	206° 28.1 -15° 01.0	221° 28.1 -15° 00.2	236° 28.1 -14° 59.4	251° 28.0 -14° 58.6	86° 27.7 -14° 48.3	101° 27.7 -14° 47.5	116° 27.7 -14° 46.7	131° 27.7 -14° 45.9	146° 27.6 -14° 45.1	161° 27.6 -14° 44.3	-0.0 +0.8
Сб 9	176° 27.6 -14° 43.5	191° 27.6 -14° 42.7	206° 27.6 -14° 41.9	221° 27.5 -14° 41.1	236° 27.5 -14° 40.3	251° 27.5 -14° 39.5	86° 27.3 -14° 29.0	101° 27.3 -14° 28.2	116° 27.3 -14° 27.4	131° 27.3 -14° 26.6	146° 27.3 -14° 25.8	161° 27.3 -14° 25.0	-0.0 +0.8
Вс 10	176° 27.2 -14° 24.2	191° 27.2 -14° 23.4	206° 27.2 -14° 22.5	221° 27.2 -14° 21.7	236° 27.2 -14° 20.9	251° 27.2 -14° 20.1	86° 27.1 -14° 09.5	101° 27.1 -14° 08.7	116° 27.1 -14° 07.9	131° 27.1 -14° 07.1	146° 27.1 -14° 06.2	161° 27.1 -14° 05.4	-0.0 +0.8
Пн 11	176° 27.1 -14° 04.6	191° 27.1 -14° 03.8	206° 27.1 -14° 03.0	221° 27.1 -14° 02.1	236° 27.1 -14° 01.3	251° 27.1 -14° 00.5	86° 27.1 -13° 49.8	101° 27.1 -13° 48.9	116° 27.1 -13° 48.1	131° 27.1 -13° 47.3	146° 27.1 -13° 46.4	161° 27.1 -13° 45.6	-0.0 +0.8
Вт 12	176° 27.1 -13° 44.8	191° 27.1 -13° 44.0	206° 27.1 -13° 43.1	221° 27.1 -13° 42.3	236° 27.1 -13° 41.5	251° 27.1 -13° 40.6	86° 27.3 -13° 29.8	101° 27.3 -13° 28.9	116° 27.3 -13° 28.1	131° 27.3 -13° 27.3	146° 27.3 -13° 26.4	161° 27.3 -13° 25.6	+0.0 +0.8
Ср 13	176° 27.3 -13° 24.8	191° 27.4 -13° 23.9	206° 27.4 -13° 23.1	221° 27.4 -13° 22.2	236° 27.4 -13° 21.4	251° 27.4 -13° 20.6	86° 27.6 -13° 09.6	101° 27.7 -13° 08.7	116° 27.7 -13° 07.9	131° 27.7 -13° 07.0	146° 27.7 -13° 06.2	161° 27.7 -13° 05.4	+0.0 +0.8
Чт 14	176° 27.8 -13° 04.5	191° 27.8 -13° 03.7	206° 27.8 -13° 02.8	221° 27.8 -13° 02.0	236° 27.8 -13° 01.1	251° 27.9 -13° 00.3	86° 28.2 -12° 49.2	101° 28.2 -12° 48.3	116° 28.2 -12° 47.5	131° 28.3 -12° 46.6	146° 28.3 -12° 45.8	161° 28.3 -12° 44.9	+0.0 +0.8
Пт 15	176° 28.4 -12° 44.0	191° 28.4 -12° 43.2	206° 28.4 -12° 42.3	221° 28.5 -12° 41.5	236° 28.5 -12° 40.6	251° 28.5 -12° 39.8	86° 28.9 -12° 28.6	101° 29.0 -12° 27.7	116° 29.0 -12° 26.8	131° 29.0 -12° 26.0	146° 29.1 -12° 25.1	161° 29.1 -12° 24.2	+0.0 +0.9
Сб 16	176° 29.2 -12° 23.4	191° 29.2 -12° 22.5	206° 29.2 -12° 21.6	221° 29.3 -12° 20.8	236° 29.3 -12° 19.9	251° 29.3 -12° 19.0	86° 29.9 -12° 07.7	101° 29.9 -12° 06.9	116° 29.9 -12° 06.0	131° 30.0 -12° 05.1	146° 30.0 -12° 04.3	161° 30.1 -12° 03.4	+0.0 +0.9
Вс 17	176° 30.1 -12° 02.5	191° 30.2 -12° 01.6	206° 30.2 -12° 00.8	221° 30.3 -11° 59.9	236° 30.3 -11° 59.0	251° 30.3 -11° 58.1	86° 31.0 -11° 46.7	101° 31.0 -11° 45.9	116° 31.1 -11° 45.0	131° 31.1 -11° 44.1	146° 31.2 -11° 43.2	161° 31.2 -11° 42.3	+0.0 +0.9
Пн 18	176° 31.3 -11° 41.5	191° 31.3 -11° 40.6	206° 31.4 -11° 39.7	221° 31.4 -11° 38.8	236° 31.5 -11° 37.9	251° 31.5 -11° 37.0	86° 32.2 -11° 25.5	101° 32.3 -11° 24.7	116° 32.4 -11° 23.8	131° 32.4 -11° 22.9	146° 32.5 -11° 22.0	161° 32.5 -11° 21.1	+0.1 +0.9
Вт 19	176° 32.6 -11° 20.2	191° 32.6 -11° 19.3	206° 32.7 -11° 18.4	221° 32.8 -11° 17.6	236° 32.8 -11° 16.7	251° 32.9 -11° 15.8	86° 33.7 -11° 04.2	101° 33.7 -11° 03.3	116° 33.8 -11° 02.4	131° 33.9 -11° 01.5	146° 33.9 -11° 00.6	161° 34.0 -10° 59.7	+0.1 +0.9
Ср 20	176° 34.1 -10° 58.8	191° 34.1 -10° 57.9	206° 34.2 -10° 57.0	221° 34.3 -10° 56.1	236° 34.3 -10° 55.2	251° 34.4 -10° 54.3	86° 35.3 -10° 42.6	101° 35.4 -10° 41.7	116° 35.4 -10° 40.8	131° 35.5 -10° 39.9	146° 35.6 -10° 39.0	161° 35.6 -10° 38.1	+0.1 +0.9
Чт 21	176° 35.7 -10° 37.2	191° 35.8 -10° 36.3	206° 35.9 -10° 35.4	221° 35.9 -10° 34.5	236° 36.0 -10° 33.6	251° 36.1 -10° 32.7	86° 37.1 -10° 20.9	101° 37.1 -10° 20.0	116° 37.2 -10° 19.1	131° 37.3 -10° 18.2	146° 37.4 -10° 17.3	161° 37.4 -10° 16.4	+0.1 +0.9
Пт 22	176° 37.5 -10° 15.5	191° 37.6 -10° 14.5	206° 37.7 -10° 13.6	221° 37.8 -10° 12.7	236° 37.8 -10° 11.8	251° 37.9 -10° 10.9	86° 39.0 -9° 59.0	101° 39.1 -9° 58.1	116° 39.1 -9° 57.2	131° 39.2 -9° 56.3	146° 39.3 -9° 55.4	161° 39.4 -9° 54.5	+0.1 +0.9
Сб 23	176° 39.5 -9° 53.5	191° 39.6 -9° 52.6	206° 39.7 -9° 51.7	221° 39.7 -9° 50.8	236° 39.8 -9° 49.9	251° 39.9 -9° 49.0	86° 41.1 -9° 37.0	101° 41.1 -9° 36.1	116° 41.2 -9° 35.2	131° 41.3 -9° 34.2	146° 41.4 -9° 33.3	161° 41.5 -9° 32.4	+0.1 +0.9
Вс 24	176° 41.6 -9° 31.5	191° 41.7 -9° 30.5	206° 41.8 -9° 29.6	221° 41.9 -9° 28.7	236° 42.0 -9° 27.8	251° 42.1 -9° 26.9	86° 43.3 -9° 14.8	101° 43.4 -9° 13.9	116° 43.5 -9° 13.0	131° 43.6 -9° 12.0	146° 43.7 -9° 11.1	161° 43.8 -9° 10.2	+0.1 +0.9
Пн 25	176° 43.8 -9° 09.3	191° 43.9 -9° 08.3	206° 44.0 -9° 07.4	221° 44.1 -9° 06.5	236° 44.2 -9° 05.5	251° 44.3 -9° 04.6	86° 45.6 -8° 52.5	101° 45.7 -8° 51.6	116° 45.8 -8° 50.6	131° 45.9 -8° 49.7	146° 46.0 -8° 48.8	161° 46.1 -8° 47.8	+0.1 +0.9
Вт 26	176° 46.2 -8° 46.9	191° 46.3 -8° 46.0	206° 46.4 -8° 45.0	221° 46.5 -8° 44.1	236° 46.7 -8° 43.2	251° 46.8 -8° 42.2	86° 48.1 -8° 30.0	101° 48.2 -8° 29.1	116° 48.3 -8° 28.2	131° 48.4 -8° 27.2	146° 48.6 -8° 26.3	161° 48.7 -8° 25.3	+0.1 +0.9
Ср 27	176° 48.8 -8° 24.4	191° 48.9 -8° 23.5	206° 49.0 -8° 22.5	221° 49.1 -8° 21.6	236° 49.2 -8° 20.6	251° 49.3 -8° 19.7	86° 50.8 -8° 07.5	101° 50.9 -8° 06.5	116° 51.0 -8° 05.6	131° 51.1 -8° 04.6	146° 51.2 -8° 03.7	161° 51.3 -8° 02.7	+0.1 +0.9
Чт 28	176° 51.4 -8° 01.8	191° 51.5 -8° 00.9	206° 51.7 -7° 59.9	221° 51.8 -7° 59.0	236° 51.9 -7° 58.0	251° 52.0 -7° 57.1	86° 53.5 -7° 44.8	101° 53.6 -7° 43.8	116° 53.7 -7° 42.9	131° 53.9 -7° 41.9	146° 54.0 -7° 41.0	161° 54.1 -7° 40.0	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2030

Д	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	Δ'/h	R/p
Пт 1	70° 18.9	84° 46.7	99° 14.5	113° 42.4	128° 10.3	142° 38.4	157° 06.5	171° 34.8	186° 03.1	200° 31.5	214° 59.9	+28.1	15.9
	-17° 13.2	-17° 03.4	-16° 53.6	-16° 43.8	-16° 33.8	-16° 23.7	-16° 13.6	-16° 03.3	-15° 53.0	-15° 42.6	-15° 32.1	+10.1	58.2
● Сб 2	72° 16.9	86° 46.6	101° 16.5	115° 46.4	130° 16.4	144° 46.5	159° 16.6	173° 46.9	188° 17.2	202° 47.5	217° 18.0	+30.1	15.7
	-12° 46.3	-12° 34.8	-12° 23.1	-12° 11.5	-11° 59.7	-11° 48.0	-11° 36.1	-11° 24.3	-11° 12.3	-11° 00.4	-10° 48.4	+11.8	57.6
Вс 3	75° 03.0	89° 34.5	104° 06.0	118° 37.7	133° 09.4	147° 41.1	162° 12.9	176° 44.8	191° 16.7	205° 48.7	220° 20.7	+31.8	15.5
	-7° 43.7	-7° 31.2	-7° 18.6	-7° 06.0	-6° 53.4	-6° 40.8	-6° 28.1	-6° 15.4	-6° 02.7	-5° 50.0	-5° 37.3	+12.6	56.9
Пн 4	78° 27.2	92° 59.9	107° 32.8	122° 05.6	136° 38.5	151° 11.5	165° 44.4	180° 17.4	194° 50.5	209° 23.5	223° 56.7	+33.0	15.3
	-2° 25.6	-2° 12.8	-2° 00.0	-1° 47.3	-1° 34.5	-1° 21.7	-1° 08.9	-0° 56.2	-0° 43.4	-0° 30.7	-0° 18.0	+12.8	56.2
Вт 5	82° 16.6	96° 50.1	111° 23.6	125° 57.1	140° 30.7	155° 04.3	169° 37.9	184° 11.5	198° 45.1	213° 18.7	227° 52.3	+33.6	15.2
	2° 51.0	3° 03.4	3° 15.8	3° 28.2	3° 40.5	3° 52.8	4° 05.1	4° 17.4	4° 29.6	4° 41.8	4° 54.0	+12.3	55.6
Ср 6	86° 17.7	100° 51.4	115° 25.1	129° 58.8	144° 32.5	159° 06.2	173° 39.9	188° 13.5	202° 47.2	217° 20.9	231° 54.5	+33.7	15.0
	7° 52.2	8° 03.7	8° 15.2	8° 26.7	8° 38.1	8° 49.5	9° 00.8	9° 12.1	9° 23.4	9° 34.6	9° 45.7	+11.4	55.0
Чт 7	90° 17.9	104° 51.3	119° 24.8	133° 58.1	148° 31.5	163° 04.9	177° 38.2	192° 11.5	206° 44.8	221° 18.0	235° 51.2	+33.3	14.9
	12° 26.6	12° 36.9	12° 47.1	12° 57.3	13° 07.4	13° 17.4	13° 27.4	13° 37.3	13° 47.1	13° 56.9	14° 06.6	+10.0	54.6
Пт 8	94° 06.4	108° 39.2	123° 11.9	137° 44.6	152° 17.3	166° 49.9	181° 22.5	195° 55.1	210° 27.6	225° 00.1	239° 32.6	+32.6	14.8
	16° 24.5	16° 33.1	16° 41.6	16° 50.1	16° 58.5	17° 06.9	17° 15.1	17° 23.3	17° 31.4	17° 39.4	17° 47.4	+8.3	54.3
Сб 9	108° 39.2	123° 11.9	137° 44.6	152° 17.3	166° 49.9	181° 22.5	195° 55.1	210° 27.6	225° 00.1	239° 32.6	254° 05.0	+32.6	14.8
	16° 33.1	16° 41.6	16° 50.1	16° 58.5	17° 06.9	17° 15.1	17° 23.3	17° 31.4	17° 39.4	17° 47.4	17° 55.2	+8.2	54.3
◐ Вс 10	112° 06.8	126° 38.6	141° 10.4	155° 42.1	170° 13.8	184° 45.5	199° 17.1	213° 48.7	228° 20.2	242° 51.7	257° 23.1	+31.6	14.8
	19° 43.4	19° 49.9	19° 56.4	20° 02.7	20° 09.0	20° 15.2	20° 21.3	20° 27.3	20° 33.2	20° 39.0	20° 44.7	+6.1	54.2
Пн 11	115° 10.0	129° 40.8	144° 11.6	158° 42.3	173° 13.0	187° 43.7	202° 14.3	216° 44.8	231° 15.4	245° 45.9	260° 16.3	+30.6	14.8
	21° 59.2	22° 03.4	22° 07.5	22° 11.5	22° 15.4	22° 19.1	22° 22.8	22° 26.4	22° 29.9	22° 33.2	22° 36.5	+3.7	54.3
Вт 12	117° 49.1	132° 19.0	146° 48.9	161° 18.8	175° 48.6	190° 18.4	204° 48.2	219° 17.9	233° 47.6	248° 17.3	262° 47.0	+29.8	14.9
	23° 12.7	23° 14.2	23° 15.6	23° 17.0	23° 18.2	23° 19.3	23° 20.3	23° 21.1	23° 21.9	23° 22.5	23° 23.1	+1.0	54.5
Ср 13	120° 09.3	134° 38.6	149° 07.9	163° 37.2	178° 06.5	192° 35.8	207° 05.0	221° 34.3	236° 03.5	250° 32.7	265° 02.0	+29.3	15.0
	23° 17.3	23° 16.0	23° 14.5	23° 13.0	23° 11.3	23° 09.6	23° 07.7	23° 05.6	23° 03.5	23° 01.3	22° 58.9	-1.8	55.0
Чт 14	122° 19.4	136° 48.5	151° 17.7	165° 46.8	180° 16.0	194° 45.1	209° 14.2	223° 43.4	238° 12.5	252° 41.7	267° 10.9	+29.1	15.2
	22° 09.3	22° 05.0	22° 00.7	21° 56.2	21° 51.6	21° 46.9	21° 42.1	21° 37.1	21° 32.1	21° 26.9	21° 21.6	-4.8	55.6
Пт 15	124° 29.3	138° 58.6	153° 27.9	167° 57.3	182° 26.6	196° 56.0	211° 25.4	225° 54.8	240° 24.2	254° 53.6	269° 23.0	+29.4	15.3
	19° 48.7	19° 41.6	19° 34.5	19° 27.2	19° 19.8	19° 12.2	19° 04.6	18° 56.9	18° 49.1	18° 41.1	18° 33.1	-7.6	56.3
Сб 16	126° 46.6	141° 16.3	155° 46.0	170° 15.8	184° 45.5	199° 15.3	213° 45.1	228° 14.9	242° 44.7	257° 14.6	271° 44.4	+29.8	15.5
	16° 20.2	16° 10.6	16° 00.9	15° 51.0	15° 41.1	15° 31.1	15° 21.0	15° 10.8	15° 00.6	14° 50.2	14° 39.7	-10.1	57.0
Вс 17	129° 14.4	143° 44.5	158° 14.6	172° 44.7	187° 14.9	201° 45.1	216° 15.2	230° 45.4	245° 15.6	259° 45.8	274° 16.1	+30.2	15.7
	11° 53.1	11° 41.3	11° 29.5	11° 17.7	11° 05.7	10° 53.7	10° 41.6	10° 29.5	10° 17.3	10° 05.0	9° 52.7	-12.0	57.7
○ Пн 18	131° 50.3	146° 20.6	160° 50.9	175° 21.2	189° 51.6	204° 21.9	218° 52.2	233° 22.5	247° 52.8	262° 23.1	276° 53.5	+30.3	15.9
	6° 40.7	6° 27.5	6° 14.3	6° 01.0	5° 47.7	5° 34.3	5° 20.9	5° 07.5	4° 54.0	4° 40.5	4° 26.9	-13.4	58.4
Вт 19	134° 27.2	148° 57.4	163° 27.5	177° 57.6	192° 27.7	206° 57.8	221° 27.9	235° 58.0	250° 28.0	264° 58.0	279° 28.0	+30.1	16.1
	1° 00.4	0° 46.5	0° 32.5	0° 18.6	0° 04.6	-0° 09.3	-0° 23.3	-0° 37.3	-0° 51.2	-1° 05.2	-1° 19.2	-14.0	58.9
Ср 20	136° 54.8	151° 24.3	165° 53.8	180° 23.3	194° 52.7	209° 22.1	223° 51.5	238° 20.8	252° 50.1	267° 19.3	281° 48.5	+29.4	16.2
	-4° 48.1	-5° 01.9	-5° 15.6	-5° 29.4	-5° 43.1	-5° 56.8	-6° 10.5	-6° 24.1	-6° 37.8	-6° 51.3	-7° 04.9	-13.7	59.2
Чт 21	139° 01.4	153° 29.8	167° 58.3	182° 26.6	196° 55.0	211° 23.2	225° 51.5	240° 19.6	254° 47.7	269° 15.8	283° 43.8	+28.2	16.2
	-10° 22.8	-10° 35.6	-10° 48.3	-11° 00.9	-11° 13.5	-11° 26.1	-11° 38.5	-11° 50.9	-12° 03.3	-12° 15.5	-12° 27.7	-12.5	59.4
Пт 22	140° 37.1	155° 04.2	169° 31.2	183° 58.2	198° 25.1	212° 52.0	227° 18.8	241° 45.5	256° 12.2	270° 38.8	285° 05.4	+26.8	16.2
	-15° 21.0	-15° 31.9	-15° 42.7	-15° 53.3	-16° 03.9	-16° 14.3	-16° 24.7	-16° 35.0	-16° 45.1	-16° 55.2	-17° 05.1	-10.4	59.5
Сб 23	141° 37.1	156° 02.7	170° 28.4	184° 53.9	199° 19.5	213° 44.9	228° 10.3	242° 35.7	257° 01.0	271° 26.3	285° 51.6	+25.4	16.2
	-19° 20.8	-19° 28.9	-19° 36.8	-19° 44.7	-19° 52.4	-20° 00.0	-20° 07.4	-20° 14.7	-20° 21.9	-20° 29.0	-20° 35.9	-7.5	59.3
Вс 24	142° 05.1	156° 29.7	170° 54.3	185° 18.9	199° 43.4	214° 07.9	228° 32.4	242° 56.9	257° 21.3	271° 45.8	286° 10.2	+24.5	16.1
	-22° 02.9	-22° 07.6	-22° 12.1	-22° 16.5	-22° 20.7	-22° 24.8	-22° 28.7	-22° 32.4	-22° 36.1	-22° 39.5	-22° 42.8	-4.0	59.1
◑ Пн 25	142° 15.2	156° 39.6	171° 03.9	185° 28.2	199° 52.6	214° 16.9	228° 41.3	243° 05.7	257° 30.1	271° 54.6	286° 19.0	+24.4	16.1
	-23° 14.3	-23° 15.2	-23° 15.9	-23° 16.5	-23° 16.9	-23° 17.1	-23° 17.2	-23° 17.2	-23° 17.0	-23° 16.6	-23° 16.1	-0.2	58.9
Вт 26	142° 29.1	156° 54.0	171° 19.0	185° 44.1	200° 09.2	214° 34.3	228° 59.5	243° 24.7	257° 50.0	272° 15.3	286° 40.7	+25.2	16.0
	-22° 50.4	-22° 47.5	-22° 44.5	-22° 41.3	-22° 38.0	-22° 34.5	-22° 30.9	-22° 27.2	-22° 23.3	-22° 19.3	-22° 15.1	+3.5	58.5
Ср 27	143° 08.7	157° 35.0	172° 01.5	186° 28.0	200° 54.6	215° 21.2	229° 47.9	244° 14.7	258° 41.6	273° 08.5	287° 35.5	+26.7	15.9
	-20° 56.5	-20° 50.3	-20° 43.9	-20° 37.4	-20° 30.7	-20° 24.0	-20° 17.1	-20° 10.2	-20° 03.1	-19° 55.9	-19° 48.5	+6.8	58.1
Чт 28	144° 29.4	158° 57.6	173° 25.9	187° 54.2	202° 22.6	216° 51.1	231° 19.7	245° 48.3	260° 17.1	274° 45.9	289° 14.7	+28.5	15.7
	-17° 45.8	-17° 36.9	-17° 27.8	-17° 18.6	-17° 09.4	-17° 00.0	-16° 50.6	-16° 41.1	-16° 31.5	-16° 21.8	-16° 12.0	+9.4	57.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Новолуние: 2 16h07 — Первая четв.: 10 11h49 — Полнолуние: 18 06h19 — Последняя четв.: 25 01h57

СОЛНЦЕ

Март 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	176° 54.2 -7° 39.1	191° 54.3 -7° 38.1	206° 54.5 -7° 37.2	221° 54.6 -7° 36.2	236° 54.7 -7° 35.3	251° 54.8 -7° 34.3	86° 56.4 -7° 21.9	101° 56.5 -7° 21.0	116° 56.6 -7° 20.0	131° 56.8 -7° 19.1	146° 56.9 -7° 18.1	161° 57.0 -7° 17.2	+0.1 +0.9
Сб 2	176° 57.1 -7° 16.2	191° 57.3 -7° 15.3	206° 57.4 -7° 14.3	221° 57.5 -7° 13.4	236° 57.6 -7° 12.4	251° 57.8 -7° 11.5	86° 59.4 -6° 59.0	101° 59.5 -6° 58.1	116° 59.7 -6° 57.1	131° 59.8 -6° 56.2	146° 59.9 -6° 55.2	162° 00.0 -6° 54.2	+0.1 +1.0
Вс 3	177° 00.2 -6° 53.3	192° 00.3 -6° 52.3	207° 00.4 -6° 51.4	222° 00.6 -6° 50.4	237° 00.7 -6° 49.4	252° 00.8 -6° 48.5	87° 02.5 -6° 36.0	102° 02.7 -6° 35.0	117° 02.8 -6° 34.1	132° 02.9 -6° 33.1	147° 03.1 -6° 32.2	162° 03.2 -6° 31.2	+0.1 +1.0
Пн 4	177° 03.3 -6° 30.2	192° 03.5 -6° 29.3	207° 03.6 -6° 28.3	222° 03.7 -6° 27.3	237° 03.9 -6° 26.4	252° 04.0 -6° 25.4	87° 05.8 -6° 12.9	102° 05.9 -6° 11.9	117° 06.0 -6° 11.0	132° 06.2 -6° 10.0	147° 06.3 -6° 09.0	162° 06.4 -6° 08.1	+0.1 +1.0
Вт 5	177° 06.6 -6° 07.1	192° 06.7 -6° 06.1	207° 06.9 -6° 05.2	222° 07.0 -6° 04.2	237° 07.1 -6° 03.2	252° 07.3 -6° 02.3	87° 09.1 -5° 49.7	102° 09.2 -5° 48.7	117° 09.4 -5° 47.8	132° 09.5 -5° 46.8	147° 09.7 -5° 45.8	162° 09.8 -5° 44.9	+0.1 +1.0
Ср 6	177° 10.0 -5° 43.9	192° 10.1 -5° 42.9	207° 10.2 -5° 41.9	222° 10.4 -5° 41.0	237° 10.5 -5° 40.0	252° 10.7 -5° 39.0	87° 12.6 -5° 26.4	102° 12.7 -5° 25.4	117° 12.9 -5° 24.5	132° 13.0 -5° 23.5	147° 13.1 -5° 22.5	162° 13.3 -5° 21.6	+0.1 +1.0
Чт 7	177° 13.4 -5° 20.6	192° 13.6 -5° 19.6	207° 13.7 -5° 18.6	222° 13.9 -5° 17.7	237° 14.0 -5° 16.7	252° 14.2 -5° 15.7	87° 16.1 -5° 03.1	102° 16.3 -5° 02.1	117° 16.4 -5° 01.1	132° 16.6 -5° 00.1	147° 16.7 -4° 59.2	162° 16.9 -4° 58.2	+0.1 +1.0
Пт 8	177° 17.0 -4° 57.2	192° 17.2 -4° 56.2	207° 17.3 -4° 55.3	222° 17.5 -4° 54.3	237° 17.6 -4° 53.3	252° 17.8 -4° 52.3	87° 19.8 -4° 39.7	102° 19.9 -4° 38.7	117° 20.1 -4° 37.7	132° 20.2 -4° 36.7	147° 20.4 -4° 35.7	162° 20.5 -4° 34.8	+0.2 +1.0
Сб 9	177° 20.7 -4° 33.8	192° 20.9 -4° 32.8	207° 21.0 -4° 31.8	222° 21.2 -4° 30.9	237° 21.3 -4° 29.9	252° 21.5 -4° 28.9	87° 23.5 -4° 16.2	102° 23.7 -4° 15.2	117° 23.8 -4° 14.2	132° 24.0 -4° 13.2	147° 24.1 -4° 12.3	162° 24.3 -4° 11.3	+0.2 +1.0
Вс 10	177° 24.5 -4° 10.3	192° 24.6 -4° 09.3	207° 24.8 -4° 08.3	222° 24.9 -4° 07.4	237° 25.1 -4° 06.4	252° 25.3 -4° 05.4	87° 27.4 -3° 52.7	102° 27.5 -3° 51.7	117° 27.7 -3° 50.7	132° 27.8 -3° 49.7	147° 28.0 -3° 48.7	162° 28.2 -3° 47.8	+0.2 +1.0
Пн 11	177° 28.3 -3° 46.8	192° 28.5 -3° 45.8	207° 28.7 -3° 44.8	222° 28.8 -3° 43.8	237° 29.0 -3° 42.8	252° 29.1 -3° 41.9	87° 31.3 -3° 29.1	102° 31.4 -3° 28.1	117° 31.6 -3° 27.1	132° 31.8 -3° 26.1	147° 31.9 -3° 25.2	162° 32.1 -3° 24.2	+0.2 +1.0
Вт 12	177° 32.3 -3° 23.2	192° 32.4 -3° 22.2	207° 32.6 -3° 21.2	222° 32.8 -3° 20.2	237° 32.9 -3° 19.3	252° 33.1 -3° 18.3	87° 35.3 -3° 05.5	102° 35.4 -3° 04.5	117° 35.6 -3° 03.5	132° 35.8 -3° 02.5	147° 35.9 -3° 01.5	162° 36.1 -3° 00.6	+0.2 +1.0
Ср 13	177° 36.3 -2° 59.6	192° 36.5 -2° 58.6	207° 36.6 -2° 57.6	222° 36.8 -2° 56.6	237° 37.0 -2° 55.6	252° 37.1 -2° 54.6	87° 39.3 -2° 41.8	102° 39.5 -2° 40.9	117° 39.7 -2° 39.9	132° 39.9 -2° 38.9	147° 40.0 -2° 37.9	162° 40.2 -2° 36.9	+0.2 +1.0
Чт 14	177° 40.4 -2° 35.9	192° 40.6 -2° 34.9	207° 40.7 -2° 34.0	222° 40.9 -2° 33.0	237° 41.1 -2° 32.0	252° 41.2 -2° 31.0	87° 43.5 -2° 18.2	102° 43.7 -2° 17.2	117° 43.8 -2° 16.2	132° 44.0 -2° 15.2	147° 44.2 -2° 14.2	162° 44.4 -2° 13.2	+0.2 +1.0
Пт 15	177° 44.5 -2° 12.2	192° 44.7 -2° 11.3	207° 44.9 -2° 10.3	222° 45.1 -2° 09.3	237° 45.2 -2° 08.3	252° 45.4 -2° 07.3	87° 47.7 -1° 54.5	102° 47.9 -1° 53.5	117° 48.1 -1° 52.5	132° 48.2 -1° 51.5	147° 48.4 -1° 50.5	162° 48.6 -1° 49.5	+0.2 +1.0
Сб 16	177° 48.8 -1° 48.6	192° 48.9 -1° 47.6	207° 49.1 -1° 46.6	222° 49.3 -1° 45.6	237° 49.5 -1° 44.6	252° 49.7 -1° 43.6	87° 52.0 -1° 30.8	102° 52.2 -1° 29.8	117° 52.3 -1° 28.8	132° 52.5 -1° 27.8	147° 52.7 -1° 26.8	162° 52.9 -1° 25.8	+0.2 +1.0
Вс 17	177° 53.0 -1° 24.8	192° 53.2 -1° 23.9	207° 53.4 -1° 22.9	222° 53.6 -1° 21.9	237° 53.8 -1° 20.9	252° 53.9 -1° 19.9	87° 56.3 -1° 07.1	102° 56.5 -1° 06.1	117° 56.7 -1° 05.1	132° 56.8 -1° 04.1	147° 57.0 -1° 03.1	162° 57.2 -1° 02.1	+0.2 +1.0
Пн 18	177° 57.4 -1° 01.1	192° 57.6 -1° 00.1	207° 57.7 -0° 59.2	222° 57.9 -0° 58.2	237° 58.1 -0° 57.2	252° 58.3 -0° 56.2	88° 00.7 -0° 43.3	103° 00.8 -0° 42.4	118° 01.0 -0° 41.4	133° 01.2 -0° 40.4	148° 01.4 -0° 39.4	163° 01.6 -0° 38.4	+0.2 +1.0
Вт 19	178° 01.8 -0° 37.4	193° 01.9 -0° 36.4	208° 02.1 -0° 35.4	223° 02.3 -0° 34.5	238° 02.5 -0° 33.5	253° 02.7 -0° 32.5	88° 05.1 -0° 19.6	103° 05.3 -0° 18.6	118° 05.4 -0° 17.7	133° 05.6 -0° 16.7	148° 05.8 -0° 15.7	163° 06.0 -0° 14.7	+0.2 +1.0
Ср 20	178° 06.2 -0° 13.7	193° 06.4 -0° 12.7	208° 06.6 -0° 11.7	223° 06.7 -0° 10.7	238° 06.9 -0° 09.8	253° 07.1 -0° 08.8	88° 09.5 0° 04.1	103° 09.7 0° 05.1	118° 09.9 0° 06.1	133° 10.1 0° 07.0	148° 10.3 0° 08.0	163° 10.4 0° 09.0	+0.2 +1.0
Чт 21	178° 10.6 0° 10.0	193° 10.8 0° 11.0	208° 11.0 0° 12.0	223° 11.2 0° 13.0	238° 11.4 0° 14.0	253° 11.6 0° 14.9	88° 14.0 0° 27.8	103° 14.2 0° 28.8	118° 14.4 0° 29.7	133° 14.6 0° 30.7	148° 14.7 0° 31.7	163° 14.9 0° 32.7	+0.2 +1.0
Пт 22	178° 15.1 0° 33.7	193° 15.3 0° 34.7	208° 15.5 0° 35.7	223° 15.7 0° 36.7	238° 15.9 0° 37.6	253° 16.1 0° 38.6	88° 18.5 0° 51.4	103° 18.7 0° 52.4	118° 18.9 0° 53.4	133° 19.1 0° 54.4	148° 19.2 0° 55.4	163° 19.4 0° 56.4	+0.2 +1.0
Сб 23	178° 19.6 0° 57.4	193° 19.8 0° 58.3	208° 20.0 0° 59.3	223° 20.2 1° 00.3	238° 20.4 1° 01.3	253° 20.6 1° 02.3	88° 23.0 1° 15.1	103° 23.2 1° 16.1	118° 23.4 1° 17.1	133° 23.6 1° 18.0	148° 23.8 1° 19.0	163° 23.9 1° 20.0	+0.2 +1.0
Вс 24	178° 24.1 1° 21.0	193° 24.3 1° 22.0	208° 24.5 1° 23.0	223° 24.7 1° 24.0	238° 24.9 1° 24.9	253° 25.1 1° 25.9	88° 27.5 1° 38.7	103° 27.7 1° 39.7	118° 27.9 1° 40.7	133° 28.1 1° 41.7	148° 28.3 1° 42.6	163° 28.5 1° 43.6	+0.2 +1.0
Пн 25	178° 28.7 1° 44.6	193° 28.8 1° 45.6	208° 29.0 1° 46.6	223° 29.2 1° 47.6	238° 29.4 1° 48.5	253° 29.6 1° 49.5	88° 32.1 2° 02.3	103° 32.2 2° 03.3	118° 32.4 2° 04.3	133° 32.6 2° 05.2	148° 32.8 2° 06.2	163° 33.0 2° 07.2	+0.2 +1.0
Вт 26	178° 33.2 2° 08.2	193° 33.4 2° 09.2	208° 33.6 2° 10.2	223° 33.8 2° 11.1	238° 33.9 2° 12.1	253° 34.1 2° 13.1	88° 36.6 2° 25.8	103° 36.8 2° 26.8	118° 37.0 2° 27.8	133° 37.1 2° 28.8	148° 37.3 2° 29.8	163° 37.5 2° 30.7	+0.2 +1.0
Ср 27	178° 37.7 2° 31.7	193° 37.9 2° 32.7	208° 38.1 2° 33.7	223° 38.3 2° 34.7	238° 38.5 2° 35.6	253° 38.7 2° 36.6	88° 41.1 2° 49.3	103° 41.3 2° 50.3	118° 41.5 2° 51.3	133° 41.7 2° 52.3	148° 41.9 2° 53.2	163° 42.0 2° 54.2	+0.2 +1.0
Чт 28	178° 42.2 2° 55.2	193° 42.4 2° 56.2	208° 42.6 2° 57.2	223° 42.8 2° 58.1	238° 43.0 2° 59.1	253° 43.2 3° 00.1	88° 45.6 3° 12.8	103° 45.8 3° 13.8	118° 46.0 3° 14.7	133° 46.2 3° 15.7	148° 46.4 3° 16.7	163° 46.6 3° 17.7	+0.2 +1.0
Пт 29	178° 46.7 3° 18.6	193° 46.9 3° 19.6	208° 47.1 3° 20.6	223° 47.3 3° 21.6	238° 47.5 3° 22.5	253° 47.7 3° 23.5	88° 50.1 3° 36.2	103° 50.3 3° 37.1	118° 50.5 3° 38.1	133° 50.7 3° 39.1	148° 50.9 3° 40.0	163° 51.1 3° 41.0	+0.2 +1.0
Сб 30	178° 51.2 3° 42.0	193° 51.4 3° 43.0	208° 51.6 3° 43.9	223° 51.8 3° 44.9	238° 52.0 3° 45.9	253° 52.2 3° 46.8	88° 54.6 3° 59.5	103° 54.8 4° 00.4	118° 55.0 4° 01.4	133° 55.2 4° 02.4	148° 55.3 4° 03.3	163° 55.5 4° 04.3	+0.2 +1.0
Вс 31	178° 55.7 4° 05.3	193° 55.9 4° 06.3	208° 56.1 4° 07.2	223° 56.3 4° 08.2	238° 56.5 4° 09.2	253° 56.6 4° 10.1	88° 59.1 4° 22.7	103° 59.2 4° 23.7	118° 59.4 4° 24.6	133° 59.6 4° 25.6	148° 59.8 4° 26.6	164° 00.0 4° 27.5	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2030

Д	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	Δ'/h	R/p
Пт 1	59° 37.9	74° 07.5	88° 37.2	103° 06.9	117° 36.8	132° 06.7	146° 36.6	161° 06.7	175° 36.8	190° 06.9	204° 37.2	+29.9	15.6
	-14° 40.5	-14° 30.0	-14° 19.4	-14° 08.7	-13° 58.0	-13° 47.2	-13° 36.3	-13° 25.4	-13° 14.4	-13° 03.3	-12° 52.2	+10.8	57.3
Сб 2	62° 18.5	76° 49.8	91° 21.1	105° 52.5	120° 23.9	134° 55.4	149° 26.9	163° 58.5	178° 30.2	193° 01.9	207° 33.6	+31.5	15.5
	-9° 59.2	-9° 47.3	-9° 35.4	-9° 23.4	-9° 11.4	-8° 59.4	-8° 47.3	-8° 35.2	-8° 23.0	-8° 10.9	-7° 58.6	+12.1	56.8
Вс 3	65° 35.7	80° 08.2	94° 40.7	109° 13.3	123° 45.9	138° 18.6	152° 51.3	167° 24.0	181° 56.7	196° 29.5	211° 02.4	+32.7	15.4
	-4° 52.7	-4° 40.2	-4° 27.7	-4° 15.1	-4° 02.5	-3° 50.0	-3° 37.4	-3° 24.8	-3° 12.2	-2° 59.6	-2° 47.0	+12.6	56.3
● Пн 4	69° 18.3	83° 51.5	98° 24.8	112° 58.1	127° 31.4	142° 04.7	156° 38.1	171° 11.5	185° 44.8	200° 18.2	214° 51.7	+33.3	15.2
	0° 21.7	0° 34.2	0° 46.7	0° 59.2	1° 11.7	1° 24.2	1° 36.6	1° 49.1	2° 01.5	2° 13.9	2° 26.3	+12.5	55.8
Вт 5	73° 14.1	87° 47.7	102° 21.2	116° 54.8	131° 28.3	146° 01.9	160° 35.4	175° 09.0	189° 42.5	204° 16.0	218° 49.6	+33.5	15.1
	5° 29.0	5° 40.9	5° 52.8	6° 04.7	6° 16.6	6° 28.4	6° 40.2	6° 51.9	7° 03.6	7° 15.2	7° 26.9	+11.8	55.2
Ср 6	77° 11.9	91° 45.3	106° 18.7	120° 52.0	135° 25.4	149° 58.7	164° 32.1	179° 05.4	193° 38.7	208° 11.9	222° 45.2	+33.3	14.9
	10° 15.9	10° 26.8	10° 37.6	10° 48.4	10° 59.1	11° 09.8	11° 20.4	11° 31.0	11° 41.5	11° 52.0	12° 02.4	+10.6	54.8
Чт 7	81° 01.6	95° 34.5	110° 07.4	124° 40.2	139° 13.1	153° 45.9	168° 18.6	182° 51.4	197° 24.1	211° 56.8	226° 29.5	+32.8	14.8
	14° 31.0	14° 40.4	14° 49.7	14° 59.0	15° 08.2	15° 17.3	15° 26.3	15° 35.3	15° 44.2	15° 53.0	16° 01.8	+9.1	54.4
Пт 8	84° 35.8	99° 08.0	113° 40.1	128° 12.2	142° 44.3	157° 16.3	171° 48.4	186° 20.3	200° 52.3	215° 24.2	229° 56.1	+32.0	14.8
	18° 04.1	18° 11.6	18° 19.1	18° 26.4	18° 33.7	18° 40.9	18° 48.0	18° 55.0	19° 01.9	19° 08.8	19° 15.5	+7.1	54.2
Сб 9	87° 50.2	102° 21.5	116° 52.8	131° 24.1	145° 55.3	160° 26.5	174° 57.7	189° 28.8	204° 00.0	218° 31.0	233° 02.1	+31.2	14.8
	20° 46.2	20° 51.5	20° 56.8	21° 01.9	21° 06.9	21° 11.8	21° 16.7	21° 21.4	21° 26.0	21° 30.6	21° 35.0	+4.9	54.1
Вс 10	90° 44.1	105° 14.7	119° 45.2	134° 15.7	148° 46.2	163° 16.7	177° 47.1	192° 17.5	206° 47.9	221° 18.3	235° 48.6	+30.5	14.8
	22° 29.6	22° 32.5	22° 35.2	22° 37.8	22° 40.3	22° 42.7	22° 45.0	22° 47.2	22° 49.3	22° 51.2	22° 53.1	+2.3	54.2
Пн 11	105° 14.7	119° 45.2	134° 15.7	148° 46.2	163° 16.7	177° 47.1	192° 17.5	206° 47.9	221° 18.3	235° 48.6	250° 18.9	+30.4	14.8
	22° 32.5	22° 35.2	22° 37.8	22° 40.3	22° 42.7	22° 45.0	22° 47.2	22° 49.3	22° 51.2	22° 53.1	22° 54.9	+2.2	54.2
◐ Вт 12	107° 51.1	122° 21.1	136° 51.0	151° 21.0	165° 51.0	180° 20.9	194° 50.8	209° 20.7	223° 50.6	238° 20.5	252° 50.3	+29.9	14.9
	23° 08.3	23° 08.3	23° 08.2	23° 08.0	23° 07.7	23° 07.2	23° 06.7	23° 06.0	23° 05.3	23° 04.4	23° 03.4	-0.5	54.5
Ср 13	110° 17.2	124° 46.9	139° 16.7	153° 46.4	168° 16.1	182° 45.8	197° 15.6	211° 45.3	226° 15.0	240° 44.7	255° 14.5	+29.7	15.0
	22° 35.1	22° 32.3	22° 29.4	22° 26.4	22° 23.3	22° 20.0	22° 16.7	22° 13.2	22° 09.6	22° 06.0	22° 02.2	-3.3	55.0
Чт 14	112° 40.5	127° 10.3	141° 40.1	156° 09.8	170° 39.6	185° 09.4	199° 39.2	214° 09.0	228° 38.9	243° 08.7	257° 38.5	+29.8	15.2
	20° 51.8	20° 46.3	20° 40.6	20° 34.8	20° 28.9	20° 22.9	20° 16.8	20° 10.6	20° 04.3	19° 57.8	19° 51.3	-6.1	55.6
Пт 15	115° 07.1	129° 37.1	144° 07.1	158° 37.1	173° 07.1	187° 37.1	202° 07.1	216° 37.2	231° 07.2	245° 37.3	260° 07.3	+30.0	15.4
	18° 00.7	17° 52.5	17° 44.2	17° 35.8	17° 27.3	17° 18.7	17° 10.1	17° 01.3	16° 52.4	16° 43.4	16° 34.4	-8.6	56.4
Сб 16	117° 39.4	132° 09.6	146° 39.8	161° 10.1	175° 40.3	190° 10.5	204° 40.7	219° 11.0	233° 41.2	248° 11.5	262° 41.7	+30.2	15.6
	14° 07.3	13° 56.8	13° 46.2	13° 35.5	13° 24.7	13° 13.9	13° 03.0	12° 51.9	12° 40.9	12° 29.7	12° 18.4	-10.9	57.3
Вс 17	120° 15.6	134° 45.9	149° 16.1	163° 46.4	178° 16.6	192° 46.8	207° 17.0	221° 47.3	236° 17.5	250° 47.7	265° 17.9	+30.2	15.9
	9° 21.0	9° 08.6	8° 56.1	8° 43.6	8° 31.1	8° 18.5	8° 05.8	7° 53.0	7° 40.2	7° 27.4	7° 14.5	-12.7	58.2
Пн 18	122° 49.3	137° 19.3	151° 49.2	166° 19.2	180° 49.1	195° 18.9	209° 48.8	224° 18.6	238° 48.5	253° 18.2	267° 48.0	+29.9	16.1
	3° 55.1	3° 41.4	3° 27.8	3° 14.1	3° 00.4	2° 46.6	2° 32.8	2° 19.0	2° 05.2	1° 51.3	1° 37.4	-13.8	59.0
○ Вт 19	125° 10.9	139° 40.1	154° 09.3	168° 38.5	183° 07.6	197° 36.7	212° 05.8	226° 34.8	241° 03.8	255° 32.7	270° 01.6	+29.1	16.3
	-1° 52.9	-2° 07.0	-2° 21.1	-2° 35.2	-2° 49.2	-3° 03.3	-3° 17.4	-3° 31.4	-3° 45.5	-3° 59.5	-4° 13.5	-14.1	59.7
Ср 20	127° 09.1	141° 37.2	156° 05.2	170° 33.2	185° 01.1	199° 29.0	213° 56.8	228° 24.5	242° 52.2	257° 19.9	271° 47.4	+27.8	16.4
	-7° 41.3	-7° 54.9	-8° 08.4	-8° 21.9	-8° 35.4	-8° 48.8	-9° 02.2	-9° 15.5	-9° 28.8	-9° 42.0	-9° 55.2	-13.4	60.1
Чт 21	128° 33.9	143° 00.5	157° 27.0	171° 53.5	186° 19.9	200° 46.2	215° 12.5	229° 38.7	244° 04.9	258° 31.0	272° 57.0	+26.3	16.5
	-13° 05.1	-13° 17.2	-13° 29.1	-13° 41.0	-13° 52.9	-14° 04.6	-14° 16.2	-14° 27.8	-14° 39.2	-14° 50.6	-15° 01.9	-11.7	60.3
Пт 22	129° 20.0	143° 45.1	158° 10.1	172° 35.0	186° 59.9	201° 24.8	215° 49.6	230° 14.3	244° 39.0	259° 03.6	273° 28.2	+24.8	16.4
	-17° 38.2	-17° 47.8	-17° 57.2	-18° 06.4	-18° 15.6	-18° 24.6	-18° 33.5	-18° 42.3	-18° 50.9	-18° 59.4	-19° 07.8	-9.0	60.3
Сб 23	129° 31.4	143° 55.3	158° 19.2	172° 43.0	187° 06.9	201° 30.6	215° 54.4	230° 18.1	244° 41.9	259° 05.6	273° 29.2	+23.8	16.4
	-20° 57.0	-21° 03.1	-21° 09.1	-21° 14.9	-21° 20.6	-21° 26.1	-21° 31.5	-21° 36.7	-21° 41.8	-21° 46.7	-21° 51.5	-5.5	60.0
Вс 24	129° 23.1	143° 46.7	158° 10.2	172° 33.8	186° 57.4	201° 21.1	215° 44.7	230° 08.3	244° 32.0	258° 55.7	273° 19.4	+23.6	16.2
	-22° 44.2	-22° 46.4	-22° 48.5	-22° 50.4	-22° 52.2	-22° 53.8	-22° 55.3	-22° 56.6	-22° 57.7	-22° 58.7	-22° 59.5	-1.5	59.5
Пн 25	129° 18.7	143° 43.0	158° 07.3	172° 31.7	186° 56.1	201° 20.6	215° 45.1	230° 09.7	244° 34.3	258° 59.0	273° 23.7	+24.5	16.1
	-22° 53.2	-22° 51.5	-22° 49.7	-22° 47.8	-22° 45.6	-22° 43.4	-22° 41.0	-22° 38.5	-22° 35.8	-22° 32.9	-22° 30.0	+2.3	59.0
◑ Вт 26	129° 42.8	144° 08.6	158° 34.5	173° 00.5	187° 26.5	201° 52.7	216° 18.9	230° 45.2	245° 11.5	259° 38.0	274° 04.5	+26.2	15.9
	-21° 28.5	-21° 23.4	-21° 18.1	-21° 12.7	-21° 07.1	-21° 01.5	-20° 55.7	-20° 49.8	-20° 43.7	-20° 37.6	-20° 31.3	+5.7	58.3
Ср 27	130° 52.2	145° 20.0	159° 47.9	174° 15.9	188° 44.0	203° 12.2	217° 40.4	232° 08.8	246° 37.2	261° 05.7	275° 34.3	+28.2	15.7
	-18° 43.7	-18° 35.7	-18° 27.6	-18° 19.4	-18° 11.1	-18° 02.7	-17° 54.2	-17° 45.6	-17° 36.9	-17° 28.2	-17° 19.3	+8.4	57.7
Чт 28	132° 52.6	147° 22.5	161° 52.4	176° 22.4	190° 52.5	205° 22.6	219° 52.8	234° 23.1	248° 53.5	263° 23.9	277° 54.5	+30.2	15.6
	-14° 56.7	-14° 46.6	-14° 36.4	-14° 26.2	-14° 15.9	-14° 05.5	-13° 55.1	-13° 44.6	-13° 34.0	-13° 23.4	-13° 12.7	+10.4	57.1
Пт 29	135° 40.2	150° 11.7	164° 43.4	179° 15.0	193° 46.8	208° 18.6	222° 50.4	237° 22.3	251° 54.2	266° 26.2	280° 58.3	+31.8	15.4
	-10° 26.2	-10° 14.8	-10° 03.3	-9° 51.7	-9° 40.1	-9° 28.5	-9° 16.8	-9° 05.2	-8° 53.4	-8° 41.7	-8° 29.9	+11.6	56.5
Сб 30	139° 05.0	153° 37.8	168° 10.6	182° 43.5	197° 16.4	211° 49.3	226° 22.3	240° 55.3	255° 28.4	270° 01.4	284° 34.5	+33.0	15.3
	-5° 29.9	-5° 17.7	-5° 05.5	-4° 53.3	-4° 41.1	-4° 28.9	-4° 16.7	-4° 04.4	-3° 52.2	-3° 39.9	-3° 27.6	+12.2	56.0
Вс 31	142° 54.5	157° 28.0	172° 01.6	186° 35.1	201° 08.7	215° 42.3	230° 15.9	244° 49.5	259° 23.1	273° 56.8	288° 30.4	+33.6	15.1
	-0° 23.3	-0° 11.0	0° 01.3	0° 13.5	0° 25.8	0° 38.0	0° 50.2	1° 02.5	1° 14.7	1° 26.9	1° 39.0	+12.2	55.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 4 06h34 — Первая четв.: 12 08h47 — Полнолуние: 19 17h56 — Последняя четв.: 26 09h51

СОЛНЦЕ

Апрель 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	179° 00.2 4° 28.5	194° 00.3 4° 29.5	209° 00.5 4° 30.4	224° 00.7 4° 31.4	239° 00.9 4° 32.4	254° 01.1 4° 33.3	89° 03.5 4° 45.9	104° 03.7 4° 46.8	119° 03.8 4° 47.8	134° 04.0 4° 48.8	149° 04.2 4° 49.7	164° 04.4 4° 50.7	+0.2 +1.0
Вт 2	179° 04.6 4° 51.6	194° 04.8 4° 52.6	209° 05.0 4° 53.6	224° 05.1 4° 54.5	239° 05.3 4° 55.5	254° 05.5 4° 56.4	89° 07.9 5° 08.9	104° 08.1 5° 09.9	119° 08.2 5° 10.9	134° 08.4 5° 11.8	149° 08.6 5° 12.8	164° 08.8 5° 13.7	+0.2 +1.0
Ср 3	179° 09.0 5° 14.7	194° 09.2 5° 15.6	209° 09.3 5° 16.6	224° 09.5 5° 17.6	239° 09.7 5° 18.5	254° 09.9 5° 19.5	89° 12.2 5° 31.9	104° 12.4 5° 32.9	119° 12.6 5° 33.8	134° 12.8 5° 34.8	149° 13.0 5° 35.7	164° 13.1 5° 36.7	+0.2 +1.0
Чт 4	179° 13.3 5° 37.6	194° 13.5 5° 38.6	209° 13.7 5° 39.6	224° 13.9 5° 40.5	239° 14.0 5° 41.5	254° 14.2 5° 42.4	89° 16.6 5° 54.8	104° 16.7 5° 55.8	119° 16.9 5° 56.7	134° 17.1 5° 57.7	149° 17.3 5° 58.6	164° 17.5 5° 59.6	+0.2 +1.0
Пт 5	179° 17.6 6° 00.5	194° 17.8 6° 01.5	209° 18.0 6° 02.4	224° 18.2 6° 03.4	239° 18.4 6° 04.3	254° 18.5 6° 05.3	89° 20.8 6° 17.6	104° 21.0 6° 18.5	119° 21.2 6° 19.5	134° 21.4 6° 20.4	149° 21.6 6° 21.4	164° 21.7 6° 22.3	+0.2 +1.0
Сб 6	179° 21.9 6° 23.3	194° 22.1 6° 24.2	209° 22.3 6° 25.2	224° 22.4 6° 26.1	239° 22.6 6° 27.0	254° 22.8 6° 28.0	89° 25.1 6° 40.3	104° 25.3 6° 41.2	119° 25.4 6° 42.1	134° 25.6 6° 43.1	149° 25.8 6° 44.0	164° 26.0 6° 45.0	+0.2 +0.9
Вс 7	179° 26.1 6° 45.9	194° 26.3 6° 46.8	209° 26.5 6° 47.8	224° 26.7 6° 48.7	239° 26.8 6° 49.7	254° 27.0 6° 50.6	89° 29.3 7° 02.8	104° 29.4 7° 03.7	119° 29.6 7° 04.7	134° 29.8 7° 05.6	149° 30.0 7° 06.6	164° 30.1 7° 07.5	+0.2 +0.9
Пн 8	179° 30.3 7° 08.4	194° 30.5 7° 09.4	209° 30.6 7° 10.3	224° 30.8 7° 11.2	239° 31.0 7° 12.2	254° 31.2 7° 13.1	89° 33.4 7° 25.2	104° 33.6 7° 26.2	119° 33.7 7° 27.1	134° 33.9 7° 28.0	149° 34.1 7° 29.0	164° 34.2 7° 29.9	+0.2 +0.9
Вт 9	179° 34.4 7° 30.8	194° 34.6 7° 31.8	209° 34.8 7° 32.7	224° 34.9 7° 33.6	239° 35.1 7° 34.6	254° 35.3 7° 35.5	89° 37.5 7° 47.6	104° 37.6 7° 48.5	119° 37.8 7° 49.4	134° 38.0 7° 50.3	149° 38.1 7° 51.3	164° 38.3 7° 52.2	+0.2 +0.9
Ср 10	179° 38.5 7° 53.1	194° 38.6 7° 54.0	209° 38.8 7° 55.0	224° 39.0 7° 55.9	239° 39.1 7° 56.8	254° 39.3 7° 57.7	89° 41.5 8° 09.7	104° 41.6 8° 10.6	119° 41.8 8° 11.6	134° 42.0 8° 12.5	149° 42.1 8° 13.4	164° 42.3 8° 14.3	+0.2 +0.9
Чт 11	179° 42.5 8° 15.3	194° 42.6 8° 16.2	209° 42.8 8° 17.1	224° 43.0 8° 18.0	239° 43.1 8° 18.9	254° 43.3 8° 19.8	89° 45.4 8° 31.8	104° 45.6 8° 32.7	119° 45.7 8° 33.6	134° 45.9 8° 34.5	149° 46.1 8° 35.4	164° 46.2 8° 36.3	+0.2 +0.9
Пт 12	179° 46.4 8° 37.3	194° 46.6 8° 38.2	209° 46.7 8° 39.1	224° 46.9 8° 40.0	239° 47.0 8° 40.9	254° 47.2 8° 41.8	89° 49.3 8° 53.7	104° 49.5 8° 54.6	119° 49.6 8° 55.5	134° 49.8 8° 56.4	149° 49.9 8° 57.3	164° 50.1 8° 58.2	+0.2 +0.9
Сб 13	179° 50.3 8° 59.1	194° 50.4 9° 00.0	209° 50.6 9° 00.9	224° 50.7 9° 01.8	239° 50.9 9° 02.7	254° 51.0 9° 03.6	89° 53.1 9° 15.4	104° 53.2 9° 16.3	119° 53.4 9° 17.2	134° 53.6 9° 18.1	149° 53.7 9° 19.0	164° 53.9 9° 19.9	+0.2 +0.9
Вс 14	179° 54.0 9° 20.8	194° 54.2 9° 21.7	209° 54.3 9° 22.6	224° 54.5 9° 23.5	239° 54.7 9° 24.4	254° 54.8 9° 25.3	89° 56.8 9° 37.0	104° 57.0 9° 37.9	119° 57.1 9° 38.8	134° 57.3 9° 39.7	149° 57.4 9° 40.6	164° 57.6 9° 41.5	+0.2 +0.9
Пн 15	179° 57.7 9° 42.4	194° 57.9 9° 43.3	209° 58.0 9° 44.1	224° 58.2 9° 45.0	239° 58.3 9° 45.9	254° 58.5 9° 46.8	90° 00.5 9° 58.4	105° 00.6 9° 59.3	120° 00.8 10° 00.2	135° 00.9 10° 01.1	150° 01.1 10° 02.0	165° 01.2 10° 02.9	+0.2 +0.9
Вт 16	180° 01.3 10° 03.7	195° 01.5 10° 04.6	210° 01.6 10° 05.5	225° 01.8 10° 06.4	240° 01.9 10° 07.3	255° 02.1 10° 08.2	90° 04.0 10° 19.7	105° 04.1 10° 20.6	120° 04.3 10° 21.4	135° 04.4 10° 22.3	150° 04.6 10° 23.2	165° 04.7 10° 24.1	+0.1 +0.9
Ср 17	180° 04.9 10° 25.0	195° 05.0 10° 25.8	210° 05.2 10° 26.7	225° 05.3 10° 27.6	240° 05.5 10° 28.5	255° 05.6 10° 29.4	90° 07.5 10° 40.8	105° 07.6 10° 41.6	120° 07.7 10° 42.5	135° 07.9 10° 43.4	150° 08.0 10° 44.3	165° 08.2 10° 45.1	+0.1 +0.9
Чт 18	180° 08.3 10° 46.0	195° 08.5 10° 46.9	210° 08.6 10° 47.8	225° 08.7 10° 48.6	240° 08.9 10° 49.5	255° 09.0 10° 50.4	90° 10.8 11° 01.7	105° 11.0 11° 02.5	120° 11.1 11° 03.4	135° 11.2 11° 04.3	150° 11.4 11° 05.2	165° 11.5 11° 06.0	+0.1 +0.9
Пт 19	180° 11.6 11° 06.9	195° 11.8 11° 07.7	210° 11.9 11° 08.6	225° 12.1 11° 09.5	240° 12.2 11° 10.3	255° 12.3 11° 11.2	90° 14.1 11° 22.4	105° 14.2 11° 23.3	120° 14.4 11° 24.1	135° 14.5 11° 25.0	150° 14.6 11° 25.9	165° 14.7 11° 26.7	+0.1 +0.9
Сб 20	180° 14.9 11° 27.6	195° 15.0 11° 28.4	210° 15.1 11° 29.3	225° 15.3 11° 30.1	240° 15.4 11° 31.0	255° 15.5 11° 31.9	90° 17.2 11° 43.0	105° 17.4 11° 43.8	120° 17.5 11° 44.7	135° 17.6 11° 45.5	150° 17.8 11° 46.4	165° 17.9 11° 47.2	+0.1 +0.9
Вс 21	180° 18.0 11° 48.1	195° 18.1 11° 48.9	210° 18.3 11° 49.8	225° 18.4 11° 50.6	240° 18.5 11° 51.5	255° 18.6 11° 52.3	90° 20.3 12° 03.3	105° 20.4 12° 04.2	120° 20.5 12° 05.0	135° 20.7 12° 05.9	150° 20.8 12° 06.7	165° 20.9 12° 07.5	+0.1 +0.9
Пн 22	180° 21.0 12° 08.4	195° 21.1 12° 09.2	210° 21.3 12° 10.1	225° 21.4 12° 10.9	240° 21.5 12° 11.7	255° 21.6 12° 12.6	90° 23.2 12° 23.5	105° 23.3 12° 24.3	120° 23.4 12° 25.2	135° 23.6 12° 26.0	150° 23.7 12° 26.8	165° 23.8 12° 27.7	+0.1 +0.8
Вт 23	180° 23.9 12° 28.5	195° 24.0 12° 29.3	210° 24.2 12° 30.2	225° 24.3 12° 31.0	240° 24.4 12° 31.8	255° 24.5 12° 32.7	90° 26.0 12° 43.4	105° 26.1 12° 44.3	120° 26.2 12° 45.1	135° 26.4 12° 45.9	150° 26.5 12° 46.7	165° 26.6 12° 47.6	+0.1 +0.8
Ср 24	180° 26.7 12° 48.4	195° 26.8 12° 49.2	210° 26.9 12° 50.0	225° 27.0 12° 50.9	240° 27.2 12° 51.7	255° 27.3 12° 52.5	90° 28.7 13° 03.2	105° 28.8 13° 04.0	120° 28.9 13° 04.8	135° 29.0 13° 05.6	150° 29.1 13° 06.5	165° 29.2 13° 07.3	+0.1 +0.8
Чт 25	180° 29.4 13° 08.1	195° 29.5 13° 08.9	210° 29.6 13° 09.7	225° 29.7 13° 10.5	240° 29.8 13° 11.4	255° 29.9 13° 12.2	90° 31.3 13° 22.7	105° 31.4 13° 23.5	120° 31.5 13° 24.3	135° 31.6 13° 25.2	150° 31.7 13° 26.0	165° 31.8 13° 26.8	+0.1 +0.8
Пт 26	180° 31.9 13° 27.6	195° 32.0 13° 28.4	210° 32.1 13° 29.2	225° 32.2 13° 30.0	240° 32.3 13° 30.8	255° 32.4 13° 31.6	90° 33.7 13° 42.0	105° 33.8 13° 42.8	120° 33.9 13° 43.6	135° 34.0 13° 44.4	150° 34.1 13° 45.2	165° 34.2 13° 46.0	+0.1 +0.8
Сб 27	180° 34.3 13° 46.8	195° 34.4 13° 47.6	210° 34.5 13° 48.4	225° 34.6 13° 49.2	240° 34.7 13° 50.0	255° 34.8 13° 50.8	90° 36.0 14° 01.1	105° 36.1 14° 01.9	120° 36.2 14° 02.7	135° 36.3 14° 03.5	150° 36.4 14° 04.3	165° 36.5 14° 05.1	+0.1 +0.8
Вс 28	180° 36.6 14° 05.9	195° 36.7 14° 06.7	210° 36.8 14° 07.4	225° 36.8 14° 08.2	240° 36.9 14° 09.0	255° 37.0 14° 09.8	90° 38.2 14° 20.0	105° 38.3 14° 20.8	120° 38.4 14° 21.6	135° 38.4 14° 22.3	150° 38.5 14° 23.1	165° 38.6 14° 23.9	+0.1 +0.8
Пн 29	180° 38.7 14° 24.7	195° 38.8 14° 25.5	210° 38.9 14° 26.2	225° 39.0 14° 27.0	240° 39.1 14° 27.8	255° 39.1 14° 28.6	90° 40.2 14° 38.6	105° 40.3 14° 39.4	120° 40.4 14° 40.2	135° 40.5 14° 40.9	150° 40.6 14° 41.7	165° 40.6 14° 42.5	+0.1 +0.8
Вт 30	180° 40.7 14° 43.2	195° 40.8 14° 44.0	210° 40.9 14° 44.8	225° 41.0 14° 45.5	240° 41.0 14° 46.3	255° 41.1 14° 47.1	90° 42.1 14° 57.0	105° 42.2 14° 57.8	120° 42.3 14° 58.5	135° 42.4 14° 59.3	150° 42.4 15° 00.0	165° 42.5 15° 00.8	+0.1 +0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Апрель 2030

Д	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	Δ'/h	R/p
Пн 1	59° 33.7	74° 07.4	88° 41.2	103° 14.9	117° 48.6	132° 22.4	146° 56.1	161° 29.9	176° 03.6	190° 37.4	205° 11.1	+33.7	15.0
	3° 27.9	3° 39.9	3° 51.8	4° 03.8	4° 15.7	4° 27.6	4° 39.5	4° 51.3	5° 03.2	5° 14.9	5° 26.7	+11.9	55.2
● Вт 2	63° 36.6	78° 10.2	92° 43.8	107° 17.4	121° 51.0	136° 24.6	150° 58.1	165° 31.7	180° 05.2	194° 38.7	209° 12.2	+33.6	14.9
	8° 19.1	8° 30.3	8° 41.5	8° 52.6	9° 03.6	9° 14.7	9° 25.6	9° 36.6	9° 47.5	9° 58.3	10° 09.1	+11.0	54.8
Ср 3	67° 32.2	82° 05.4	96° 38.5	111° 11.6	125° 44.7	140° 17.8	154° 50.8	169° 23.8	183° 56.8	198° 29.7	213° 02.6	+33.0	14.8
	12° 44.7	12° 54.7	13° 04.5	13° 14.3	13° 24.1	13° 33.8	13° 43.4	13° 53.0	14° 02.5	14° 11.9	14° 21.3	+9.7	54.4
Чт 4	71° 13.0	85° 45.4	100° 17.8	114° 50.2	129° 22.6	143° 54.9	158° 27.2	172° 59.4	187° 31.7	202° 03.9	216° 36.0	+32.3	14.8
	16° 33.6	16° 41.8	16° 50.0	16° 58.1	17° 06.1	17° 14.0	17° 21.9	17° 29.6	17° 37.3	17° 45.0	17° 52.5	+7.9	54.2
Пт 5	74° 34.6	89° 06.2	103° 37.8	118° 09.4	132° 40.9	147° 12.5	161° 44.0	176° 15.4	190° 46.8	205° 18.2	219° 49.6	+31.5	14.7
	19° 35.5	19° 41.7	19° 47.8	19° 53.8	19° 59.7	20° 05.5	20° 11.2	20° 16.9	20° 22.4	20° 27.8	20° 33.2	+5.8	54.0
Сб 6	77° 36.6	92° 07.5	106° 38.4	121° 09.3	135° 40.1	150° 11.0	164° 41.8	179° 12.5	193° 43.3	208° 14.0	222° 44.7	+30.8	14.7
	21° 41.9	21° 45.7	21° 49.4	21° 53.0	21° 56.5	21° 59.9	22° 03.2	22° 06.4	22° 09.5	22° 12.5	22° 15.4	+3.3	54.0
Вс 7	80° 22.9	94° 53.3	109° 23.7	123° 54.1	138° 24.5	152° 54.9	167° 25.2	181° 55.6	196° 25.9	210° 56.2	225° 26.5	+30.4	14.8
	22° 46.1	22° 47.3	22° 48.4	22° 49.4	22° 50.3	22° 51.0	22° 51.7	22° 52.3	22° 52.7	22° 53.1	22° 53.3	+0.7	54.1
Пн 8	83° 00.2	97° 30.4	112° 00.7	126° 30.9	141° 01.1	155° 31.3	170° 01.5	184° 31.7	199° 01.9	213° 32.2	228° 02.4	+30.2	14.8
	22° 43.8	22° 42.3	22° 40.7	22° 39.0	22° 37.2	22° 35.3	22° 33.2	22° 31.1	22° 28.8	22° 26.5	22° 24.0	-2.0	54.4
Вт 9	85° 36.3	100° 06.6	114° 36.9	129° 07.2	143° 37.6	158° 07.9	172° 38.3	187° 08.6	201° 39.0	216° 09.4	230° 39.8	+30.4	14.9
	21° 34.0	21° 29.8	21° 25.5	21° 21.1	21° 16.6	21° 12.0	21° 07.3	21° 02.5	20° 57.6	20° 52.5	20° 47.4	-4.7	54.8
Ср 10	100° 06.6	114° 36.9	129° 07.2	143° 37.6	158° 07.9	172° 38.3	187° 08.6	201° 39.0	216° 09.4	230° 39.8	245° 10.2	+30.4	15.0
	21° 29.8	21° 25.5	21° 21.1	21° 16.6	21° 12.0	21° 07.3	21° 02.5	20° 57.6	20° 52.5	20° 47.4	20° 42.2	-4.8	54.8
◐ Чт 11	102° 47.8	117° 18.4	131° 49.0	146° 19.7	160° 50.3	175° 21.0	189° 51.6	204° 22.3	218° 53.0	233° 23.7	247° 54.5	+30.7	15.1
	19° 11.5	19° 04.7	18° 57.7	18° 50.7	18° 43.6	18° 36.3	18° 29.0	18° 21.6	18° 14.0	18° 06.4	17° 58.7	-7.3	55.5
Пт 12	105° 36.7	120° 07.6	134° 38.5	149° 09.4	163° 40.3	178° 11.2	192° 42.2	207° 13.1	221° 44.1	236° 15.0	250° 46.0	+30.9	15.3
	15° 52.0	15° 42.8	15° 33.6	15° 24.2	15° 14.8	15° 05.3	14° 55.7	14° 46.0	14° 36.3	14° 26.4	14° 16.5	-9.6	56.3
Сб 13	108° 30.9	123° 01.9	137° 32.9	152° 03.9	166° 34.9	181° 05.9	195° 36.9	210° 07.9	224° 38.8	239° 09.8	253° 40.8	+31.0	15.6
	11° 38.1	11° 27.0	11° 15.7	11° 04.4	10° 53.1	10° 41.6	10° 30.1	10° 18.5	10° 06.9	9° 55.2	9° 43.4	-11.5	57.2
Вс 14	111° 23.9	125° 54.7	140° 25.4	154° 56.1	169° 26.8	183° 57.5	198° 28.1	212° 58.8	227° 29.4	241° 59.9	256° 30.5	+30.7	15.9
	6° 39.5	6° 26.8	6° 14.0	6° 01.2	5° 48.3	5° 35.4	5° 22.5	5° 09.5	4° 56.4	4° 43.3	4° 30.2	-12.9	58.1
Пн 15	114° 05.1	128° 35.2	143° 05.2	157° 35.1	172° 05.0	186° 34.9	201° 04.7	215° 34.5	230° 04.2	244° 33.9	259° 03.5	+29.8	16.1
	1° 08.9	0° 55.2	0° 41.5	0° 27.8	0° 14.1	0° 00.3	-0° 13.5	-0° 27.2	-0° 41.0	-0° 54.9	-1° 08.7	-13.8	59.1
Вт 16	116° 21.8	130° 50.6	145° 19.3	159° 47.9	174° 16.5	188° 45.0	203° 13.5	217° 41.9	232° 10.2	246° 38.4	261° 06.6	+28.5	16.4
	-4° 36.7	-4° 50.5	-5° 04.3	-5° 18.1	-5° 31.9	-5° 45.7	-5° 59.4	-6° 13.2	-6° 26.9	-6° 40.6	-6° 54.3	-13.8	60.0
Ср 17	118° 00.9	132° 27.9	146° 54.8	161° 21.7	175° 48.5	190° 15.2	204° 41.8	219° 08.4	233° 34.8	248° 01.2	262° 27.5	+26.7	16.5
	-10° 15.0	-10° 28.0	-10° 41.0	-10° 53.9	-11° 06.7	-11° 19.5	-11° 32.2	-11° 44.9	-11° 57.5	-12° 10.0	-12° 22.4	-12.8	60.6
○ Чт 18	118° 52.6	133° 17.6	147° 42.6	162° 07.5	176° 32.3	190° 57.0	205° 21.6	219° 46.2	234° 10.7	248° 35.1	262° 59.4	+24.7	16.6
	-15° 19.5	-15° 30.6	-15° 41.5	-15° 52.4	-16° 03.1	-16° 13.8	-16° 24.3	-16° 34.8	-16° 45.1	-16° 55.3	-17° 05.4	-10.6	61.0
Пт 19	118° 56.0	133° 19.2	147° 42.4	162° 05.5	176° 28.6	190° 51.6	205° 14.6	219° 37.5	234° 00.4	248° 23.2	262° 46.0	+23.0	16.6
	-19° 21.7	-19° 29.7	-19° 37.5	-19° 45.3	-19° 52.8	-20° 00.3	-20° 07.6	-20° 14.7	-20° 21.7	-20° 28.5	-20° 35.2	-7.4	61.0
Сб 20	118° 23.3	132° 45.5	147° 07.8	161° 30.0	175° 52.3	190° 14.5	204° 36.7	218° 59.0	233° 21.2	247° 43.4	262° 05.6	+22.2	16.6
	-21° 56.5	-22° 00.6	-22° 04.6	-22° 08.4	-22° 12.0	-22° 15.5	-22° 18.8	-22° 21.9	-22° 24.8	-22° 27.6	-22° 30.2	-3.4	60.7
Вс 21	117° 40.6	132° 03.1	146° 25.7	160° 48.3	175° 11.0	189° 33.7	203° 56.5	218° 19.3	232° 42.1	247° 05.0	261° 28.0	+22.7	16.4
	-22° 49.3	-22° 49.2	-22° 48.9	-22° 48.5	-22° 48.0	-22° 47.2	-22° 46.3	-22° 45.3	-22° 44.1	-22° 42.7	-22° 41.1	+0.8	60.2
Пн 22	117° 19.9	131° 44.0	146° 08.1	160° 32.3	174° 56.6	189° 20.9	203° 45.4	218° 09.9	232° 34.5	246° 59.2	261° 24.0	+24.4	16.2
	-21° 59.3	-21° 55.3	-21° 51.2	-21° 46.9	-21° 42.5	-21° 37.9	-21° 33.2	-21° 28.4	-21° 23.4	-21° 18.3	-21° 13.1	+4.6	59.4
Вт 23	117° 47.0	132° 13.3	146° 39.7	161° 06.2	175° 32.7	189° 59.4	204° 26.2	218° 53.1	233° 20.1	247° 47.2	262° 14.3	+26.7	16.0
	-19° 39.2	-19° 32.0	-19° 24.7	-19° 17.3	-19° 09.7	-19° 02.1	-18° 54.3	-18° 46.5	-18° 38.5	-18° 30.5	-18° 22.3	+7.7	58.6
◑ Ср 24	119° 13.7	133° 42.4	148° 11.2	162° 40.1	177° 09.1	191° 38.2	206° 07.4	220° 36.6	235° 06.0	249° 35.5	264° 05.0	+29.1	15.7
	-16° 09.0	-15° 59.4	-15° 49.8	-15° 40.1	-15° 30.3	-15° 20.4	-15° 10.5	-15° 00.5	-14° 50.4	-14° 40.3	-14° 30.1	+9.9	57.7
Чт 25	121° 38.3	136° 09.1	150° 40.1	165° 11.1	179° 42.2	194° 13.3	208° 44.6	223° 15.9	237° 47.2	252° 18.7	266° 50.2	+31.2	15.5
	-11° 50.0	-11° 39.0	-11° 27.8	-11° 16.7	-11° 05.4	-10° 54.2	-10° 42.9	-10° 31.5	-10° 20.2	-10° 08.7	-9° 57.3	+11.3	56.9
Пт 26	124° 50.5	139° 22.9	153° 55.5	168° 28.1	183° 00.7	197° 33.4	212° 06.1	226° 38.9	241° 11.7	255° 44.6	270° 17.5	+32.7	15.3
	-7° 01.8	-6° 49.9	-6° 37.9	-6° 26.0	-6° 14.0	-6° 02.1	-5° 50.1	-5° 38.1	-5° 26.0	-5° 14.0	-5° 02.0	+12.0	56.2
Сб 27	128° 36.0	143° 09.5	157° 43.0	172° 16.6	186° 50.2	201° 23.8	215° 57.5	230° 31.1	245° 04.8	259° 38.5	274° 12.2	+33.6	15.2
	-2° 00.3	-1° 48.2	-1° 36.1	-1° 24.0	-1° 11.8	-0° 59.7	-0° 47.6	-0° 35.5	-0° 23.4	-0° 11.3	0° 00.8	+12.1	55.6
Вс 28	132° 40.1	147° 14.1	161° 48.0	176° 22.0	190° 56.0	205° 29.9	220° 03.9	234° 37.9	249° 11.9	263° 45.8	278° 19.8	+34.0	15.0
	3° 00.6	3° 12.4	3° 24.3	3° 36.1	3° 47.9	3° 59.6	4° 11.4	4° 23.1	4° 34.8	4° 46.5	4° 58.1	+11.8	55.1
Пн 29	136° 49.0	151° 22.9	165° 56.8	180° 30.7	195° 04.5	209° 38.3	224° 12.1	238° 45.9	253° 19.7	267° 53.5	282° 27.3	+33.8	14.9
	7° 49.0	8° 00.2	8° 11.3	8° 22.3	8° 33.3	8° 44.3	8° 55.2	9° 06.1	9° 16.9	9° 27.7	9° 38.4	+10.9	54.7
Вт 30	140° 51.1	155° 24.5	169° 57.9	184° 31.2	199° 04.5	213° 37.8	228° 11.1	242° 44.4	257° 17.6	271° 50.7	286° 23.9	+33.3	14.8
	12° 14.0	12° 23.9	12° 33.8	12° 43.7	12° 53.4	13° 03.2	13° 12.8	13° 22.4	13° 32.0	13° 41.5	13° 50.9	+9.7	54.3

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 2 22h02 — Первая четв.: 11 02h56 — Полнолуние: 18 03h20 — Последняя четв.: 24 18h39

СОЛНЦЕ

Май 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	180° 42.6	195° 42.7	210° 42.7	225° 42.8	240° 42.9	255° 43.0	90° 43.9	105° 44.0	120° 44.1	135° 44.1	150° 44.2	165° 44.3	+0.1
	15° 01.6	15° 02.3	15° 03.1	15° 03.8	15° 04.6	15° 05.3	15° 15.1	15° 15.9	15° 16.6	15° 17.4	15° 18.1	15° 18.9	+0.8
Чт 2	180° 44.3	195° 44.4	210° 44.5	225° 44.5	240° 44.6	255° 44.7	90° 45.6	105° 45.6	120° 45.7	135° 45.7	150° 45.8	165° 45.9	+0.1
	15° 19.6	15° 20.4	15° 21.1	15° 21.9	15° 22.6	15° 23.4	15° 33.0	15° 33.8	15° 34.5	15° 35.2	15° 36.0	15° 36.7	+0.7
Пт 3	180° 45.9	195° 46.0	210° 46.1	225° 46.1	240° 46.2	255° 46.3	90° 47.1	105° 47.1	120° 47.2	135° 47.2	150° 47.3	165° 47.3	+0.1
	15° 37.5	15° 38.2	15° 38.9	15° 39.7	15° 40.4	15° 41.1	15° 50.6	15° 51.4	15° 52.1	15° 52.8	15° 53.6	15° 54.3	+0.7
Сб 4	180° 47.4	195° 47.5	210° 47.5	225° 47.6	240° 47.6	255° 47.7	90° 48.4	105° 48.5	120° 48.5	135° 48.6	150° 48.6	165° 48.7	+0.1
	15° 55.0	15° 55.7	15° 56.5	15° 57.2	15° 57.9	15° 58.6	16° 08.0	16° 08.7	16° 09.4	16° 10.2	16° 10.9	16° 11.6	+0.7
Вс 5	180° 48.7	195° 48.8	210° 48.8	225° 48.9	240° 48.9	255° 49.0	90° 49.6	105° 49.7	120° 49.7	135° 49.8	150° 49.8	165° 49.9	+0.1
	16° 12.3	16° 13.0	16° 13.7	16° 14.5	16° 15.2	16° 15.9	16° 25.1	16° 25.8	16° 26.5	16° 27.2	16° 27.9	16° 28.6	+0.7
Пн 6	180° 49.9	195° 50.0	210° 50.0	225° 50.1	240° 50.1	255° 50.2	90° 50.7	105° 50.8	120° 50.8	135° 50.9	150° 50.9	165° 50.9	+0.0
	16° 29.3	16° 30.0	16° 30.7	16° 31.4	16° 32.1	16° 32.8	16° 41.9	16° 42.6	16° 43.3	16° 44.0	16° 44.7	16° 45.4	+0.7
Вт 7	180° 51.0	195° 51.0	210° 51.1	225° 51.1	240° 51.1	255° 51.2	90° 51.7	105° 51.7	120° 51.8	135° 51.8	150° 51.8	165° 51.9	+0.0
	16° 46.1	16° 46.8	16° 47.5	16° 48.2	16° 48.8	16° 49.5	16° 58.5	16° 59.1	16° 59.8	17° 00.5	17° 01.2	17° 01.9	+0.7
Ср 8	180° 51.9	195° 51.9	210° 52.0	225° 52.0	240° 52.0	255° 52.1	90° 52.5	105° 52.5	120° 52.6	135° 52.6	150° 52.6	165° 52.6	+0.0
	17° 02.6	17° 03.2	17° 03.9	17° 04.6	17° 05.3	17° 05.9	17° 14.7	17° 15.4	17° 16.1	17° 16.7	17° 17.4	17° 18.1	+0.7
Чт 9	180° 52.7	195° 52.7	210° 52.7	225° 52.8	240° 52.8	255° 52.8	90° 53.2	105° 53.2	120° 53.2	135° 53.2	150° 53.3	165° 53.3	+0.0
	17° 18.7	17° 19.4	17° 20.1	17° 20.7	17° 21.4	17° 22.1	17° 30.7	17° 31.3	17° 32.0	17° 32.7	17° 33.3	17° 34.0	+0.7
Пт 10	180° 53.3	195° 53.3	210° 53.4	225° 53.4	240° 53.4	255° 53.4	90° 53.7	105° 53.7	120° 53.7	135° 53.8	150° 53.8	165° 53.8	+0.0
	17° 34.6	17° 35.3	17° 35.9	17° 36.6	17° 37.3	17° 37.9	17° 46.4	17° 47.0	17° 47.7	17° 48.3	17° 48.9	17° 49.6	+0.7
Сб 11	180° 53.8	195° 53.8	210° 53.8	225° 53.9	240° 53.9	255° 53.9	90° 54.1	105° 54.1	120° 54.1	135° 54.1	150° 54.1	165° 54.2	+0.0
	17° 50.2	17° 50.9	17° 51.5	17° 52.2	17° 52.8	17° 53.4	18° 01.7	18° 02.4	18° 03.0	18° 03.6	18° 04.3	18° 04.9	+0.6
Вс 12	180° 54.2	195° 54.2	210° 54.2	225° 54.2	240° 54.2	255° 54.2	90° 54.4	105° 54.4	120° 54.4	135° 54.4	150° 54.4	165° 54.4	+0.0
	18° 05.5	18° 06.2	18° 06.8	18° 07.4	18° 08.0	18° 08.7	18° 16.8	18° 17.4	18° 18.0	18° 18.7	18° 19.3	18° 19.9	+0.6
Пн 13	180° 54.4	195° 54.4	210° 54.4	225° 54.4	240° 54.4	255° 54.4	90° 54.5	105° 54.5	120° 54.5	135° 54.5	150° 54.5	165° 54.5	+0.0
	18° 20.5	18° 21.1	18° 21.8	18° 22.4	18° 23.0	18° 23.6	18° 31.6	18° 32.2	18° 32.8	18° 33.4	18° 34.0	18° 34.6	+0.6
Вт 14	180° 54.5	195° 54.5	210° 54.5	225° 54.5	240° 54.5	255° 54.5	90° 54.5	105° 54.5	120° 54.5	135° 54.4	150° 54.4	165° 54.4	+0.0
	18° 35.2	18° 35.8	18° 36.4	18° 37.0	18° 37.6	18° 38.2	18° 46.0	18° 46.6	18° 47.2	18° 47.8	18° 48.4	18° 49.0	+0.6
Ср 15	180° 54.4	195° 54.4	210° 54.4	225° 54.4	240° 54.4	255° 54.4	90° 54.3	105° 54.3	120° 54.3	135° 54.3	150° 54.3	165° 54.3	-0.0
	18° 49.6	18° 50.2	18° 50.8	18° 51.3	18° 51.9	18° 52.5	19° 00.1	19° 00.7	19° 01.3	19° 01.9	19° 02.5	19° 03.0	+0.6
Чт 16	180° 54.2	195° 54.2	210° 54.2	225° 54.2	240° 54.2	255° 54.2	90° 54.0	105° 54.0	120° 54.0	135° 54.0	150° 53.9	165° 53.9	-0.0
	19° 03.6	19° 04.2	19° 04.8	19° 05.4	19° 05.9	19° 06.5	19° 13.9	19° 14.5	19° 15.1	19° 15.7	19° 16.2	19° 16.8	+0.6
Пт 17	180° 53.9	195° 53.9	210° 53.9	225° 53.9	240° 53.8	255° 53.8	90° 53.6	105° 53.6	120° 53.5	135° 53.5	150° 53.5	165° 53.5	-0.0
	19° 17.4	19° 17.9	19° 18.5	19° 19.0	19° 19.6	19° 20.2	19° 27.4	19° 28.0	19° 28.5	19° 29.1	19° 29.6	19° 30.2	+0.6
Сб 18	180° 53.4	195° 53.4	210° 53.4	225° 53.4	240° 53.4	255° 53.3	90° 53.0	105° 53.0	120° 53.0	135° 52.9	150° 52.9	165° 52.9	-0.0
	19° 30.8	19° 31.3	19° 31.9	19° 32.4	19° 33.0	19° 33.5	19° 40.6	19° 41.1	19° 41.7	19° 42.2	19° 42.7	19° 43.3	+0.6
Вс 19	180° 52.8	195° 52.8	210° 52.8	225° 52.8	240° 52.7	255° 52.7	90° 52.3	105° 52.3	120° 52.2	135° 52.2	150° 52.2	165° 52.1	-0.0
	19° 43.8	19° 44.4	19° 44.9	19° 45.4	19° 46.0	19° 46.5	19° 53.4	19° 53.9	19° 54.5	19° 55.0	19° 55.5	19° 56.0	+0.5
Пн 20	180° 52.1	195° 52.1	210° 52.0	225° 52.0	240° 52.0	255° 51.9	90° 51.4	105° 51.4	120° 51.4	135° 51.3	150° 51.3	165° 51.3	-0.0
	19° 56.6	19° 57.1	19° 57.6	19° 58.1	19° 58.6	19° 59.2	20° 05.9	20° 06.4	20° 06.9	20° 07.4	20° 07.9	20° 08.4	+0.5
Вт 21	180° 51.2	195° 51.2	210° 51.1	225° 51.1	240° 51.1	255° 51.0	90° 50.5	105° 50.4	120° 50.4	135° 50.3	150° 50.3	165° 50.2	-0.0
	20° 09.0	20° 09.5	20° 10.0	20° 10.5	20° 11.0	20° 11.5	20° 18.0	20° 18.5	20° 19.0	20° 19.5	20° 20.0	20° 20.5	+0.5
Ср 22	180° 50.2	195° 50.1	210° 50.1	225° 50.1	240° 50.0	255° 50.0	90° 49.3	105° 49.3	120° 49.2	135° 49.2	150° 49.1	165° 49.1	-0.0
	20° 21.0	20° 21.5	20° 22.0	20° 22.5	20° 23.0	20° 23.5	20° 29.8	20° 30.3	20° 30.8	20° 31.3	20° 31.7	20° 32.2	+0.5
Чт 23	180° 49.0	195° 49.0	210° 48.9	225° 48.9	240° 48.8	255° 48.8	90° 48.1	105° 48.0	120° 48.0	135° 47.9	150° 47.9	165° 47.8	-0.1
	20° 32.7	20° 33.2	20° 33.7	20° 34.1	20° 34.6	20° 35.1	20° 41.3	20° 41.7	20° 42.2	20° 42.7	20° 43.1	20° 43.6	+0.5
Пт 24	180° 47.7	195° 47.7	210° 47.6	225° 47.6	240° 47.5	255° 47.5	90° 46.7	105° 46.6	120° 46.6	135° 46.5	150° 46.4	165° 46.4	-0.1
	20° 44.1	20° 44.5	20° 45.0	20° 45.5	20° 45.9	20° 46.4	20° 52.3	20° 52.8	20° 53.2	20° 53.7	20° 54.2	20° 54.6	+0.5
Сб 25	180° 46.3	195° 46.3	210° 46.2	225° 46.1	240° 46.1	255° 46.0	90° 45.2	105° 45.1	120° 45.0	135° 45.0	150° 44.9	165° 44.8	-0.1
	20° 55.1	20° 55.5	20° 56.0	20° 56.4	20° 56.9	20° 57.3	21° 03.1	21° 03.5	21° 03.9	21° 04.4	21° 04.8	21° 05.3	+0.5
Вс 26	180° 44.8	195° 44.7	210° 44.6	225° 44.6	240° 44.5	255° 44.4	90° 43.5	105° 43.5	120° 43.4	135° 43.3	150° 43.2	165° 43.2	-0.1
	21° 05.7	21° 06.1	21° 06.6	21° 07.0	21° 07.4	21° 07.9	21° 13.4	21° 13.8	21° 14.3	21° 14.7	21° 15.1	21° 15.5	+0.4
Пн 27	180° 43.1	195° 43.0	210° 42.9	225° 42.9	240° 42.8	255° 42.7	90° 41.8	105° 41.7	120° 41.6	135° 41.5	150° 41.4	165° 41.4	-0.1
	21° 16.0	21° 16.4	21° 16.8	21° 17.2	21° 17.6	21° 18.1	21° 23.4	21° 23.8	21° 24.2	21° 24.6	21° 25.1	21° 25.5	+0.4
Вт 28	180° 41.3	195° 41.2	210° 41.1	225° 41.1	240° 41.0	255° 40.9	90° 39.9	105° 39.8	120° 39.7	135° 39.6	150° 39.5	165° 39.5	-0.1
	21° 25.9	21° 26.3	21° 26.7	21° 27.1	21° 27.5	21° 27.9	21° 33.0	21° 33.4	21° 33.8	21° 34.2	21° 34.6	21° 35.0	+0.4
Ср 29	180° 39.4	195° 39.3	210° 39.2	225° 39.1	240° 39.0	255° 39.0	90° 37.9	105° 37.8	120° 37.7	135° 37.6	150° 37.5	165° 37.4	-0.1
	21° 35.4	21° 35.8	21° 36.2	21° 36.6	21° 36.9	21° 37.3	21° 42.3	21° 42.7	21° 43.0	21° 43.4	21° 43.8	21° 44.2	+0.4
Чт 30	180° 37.3	195° 37.3	210° 37.2	225° 37.1	240° 37.0	255° 36.9	90° 35.7	105° 35.7	120° 35.6	135° 35.5	150° 35.4	165° 35.3	-0.1
	21° 44.5	21° 44.9	21° 45.3	21° 45.7	21° 46.0	21° 46.4	21° 51.2	21° 51.5	21° 51.9	21° 52.3	21° 52.6	21° 53.0	+0.4
Пт 31	180° 35.2	195° 35.1	210° 35.0	225° 34.9	240° 34.8	255° 34.7	90° 33.5	105° 33.4	120° 33.3	135° 33.2	150° 33.2	165° 33.1	-0.1
	21° 53.3	21° 53.7	21° 54.0	21° 54.4	21° 54.8	21° 55.1	21° 59.7	22° 00.0	22° 00.4	22° 00.7	22° 01.0	22° 01.4	+0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2030

Д	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	Δ°/h	R/p
Ср 1	71° 53.8	86° 26.6	100° 59.3	115° 32.1	130° 04.8	144° 37.5	159° 10.1	173° 42.7	188° 15.3	202° 47.9	217° 20.4	+32.7	14.8
	15° 21.7	15° 30.4	15° 39.1	15° 47.6	15° 56.2	16° 04.6	16° 13.0	16° 21.3	16° 29.5	16° 37.6	16° 45.7	+8.4	54.1
● Чт 2	75° 23.8	89° 55.8	104° 27.7	118° 59.6	133° 31.4	148° 03.2	162° 35.0	177° 06.7	191° 38.4	206° 10.1	220° 41.8	+31.8	14.7
	18° 37.5	18° 44.3	18° 51.0	18° 57.7	19° 04.2	19° 10.7	19° 17.1	19° 23.4	19° 29.6	19° 35.7	19° 41.7	+6.4	54.0
Пт 3	78° 32.5	93° 03.6	107° 34.7	122° 05.8	136° 36.9	151° 07.9	165° 38.9	180° 09.8	194° 40.8	209° 11.7	223° 42.6	+31.0	14.7
	21° 01.2	21° 05.8	21° 10.2	21° 14.6	21° 18.9	21° 23.0	21° 27.1	21° 31.0	21° 34.9	21° 38.7	21° 42.3	+4.1	53.9
Сб 4	81° 23.2	95° 53.8	110° 24.3	124° 54.8	139° 25.3	153° 55.8	168° 26.3	182° 56.8	197° 27.2	211° 57.7	226° 28.1	+30.5	14.7
	22° 25.1	22° 27.1	22° 29.0	22° 30.8	22° 32.6	22° 34.2	22° 35.7	22° 37.1	22° 38.3	22° 39.5	22° 40.6	+1.6	53.9
Вс 5	84° 03.5	98° 33.9	113° 04.2	127° 34.5	142° 04.8	156° 35.2	171° 05.5	185° 35.8	200° 06.1	214° 36.5	229° 06.8	+30.3	14.7
	22° 43.9	22° 43.2	22° 42.5	22° 41.7	22° 40.7	22° 39.6	22° 38.4	22° 37.2	22° 35.8	22° 34.3	22° 32.7	-1.1	54.1
Пн 6	86° 42.8	101° 13.2	115° 43.7	130° 14.2	144° 44.7	159° 15.3	173° 45.8	188° 16.4	202° 46.9	217° 17.5	231° 48.1	+30.5	14.8
	21° 55.9	21° 52.6	21° 49.2	21° 45.7	21° 42.1	21° 38.3	21° 34.5	21° 30.6	21° 26.6	21° 22.5	21° 18.2	-3.8	54.4
Вт 7	89° 29.3	104° 00.1	118° 31.1	133° 02.0	147° 32.9	162° 03.9	176° 34.9	191° 05.9	205° 37.0	220° 08.0	234° 39.1	+31.0	14.9
	20° 02.7	19° 56.9	19° 51.0	19° 45.0	19° 38.9	19° 32.7	19° 26.4	19° 20.0	19° 13.5	19° 06.9	19° 00.2	-6.3	54.8
Ср 8	92° 27.7	106° 59.1	121° 30.5	136° 01.9	150° 33.4	165° 04.8	179° 36.3	194° 07.8	208° 39.4	223° 10.9	237° 42.4	+31.5	15.1
	17° 09.2	17° 01.1	16° 52.9	16° 44.6	16° 36.2	16° 27.8	16° 19.2	16° 10.6	16° 01.9	15° 53.1	15° 44.3	-8.5	55.3
Чт 9	106° 59.1	121° 30.5	136° 01.9	150° 33.4	165° 04.8	179° 36.3	194° 07.8	208° 39.4	223° 10.9	237° 42.4	252° 14.0	+31.5	15.1
	17° 01.1	16° 52.9	16° 44.6	16° 36.2	16° 27.8	16° 19.2	16° 10.6	16° 01.9	15° 53.1	15° 44.3	15° 35.3	-8.6	55.4
◐ Пт 10	110° 09.3	124° 41.1	139° 12.9	153° 44.7	168° 16.5	182° 48.3	197° 20.1	211° 51.9	226° 23.8	240° 55.6	255° 27.4	+31.8	15.3
	13° 11.9	13° 01.7	12° 51.5	12° 41.2	12° 30.8	12° 20.4	12° 09.9	11° 59.3	11° 48.7	11° 37.9	11° 27.2	-10.5	56.1
Сб 11	113° 25.1	127° 56.9	142° 28.7	157° 00.5	171° 32.2	186° 04.0	200° 35.8	215° 07.5	229° 39.3	244° 11.0	258° 42.7	+31.8	15.5
	8° 38.0	8° 26.2	8° 14.4	8° 02.6	7° 50.7	7° 38.7	7° 26.7	7° 14.6	7° 02.5	6° 50.3	6° 38.1	-12.0	57.0
Вс 12	116° 36.0	131° 07.3	145° 38.7	160° 10.0	174° 41.2	189° 12.4	203° 43.6	218° 14.8	232° 45.9	247° 17.0	261° 48.0	+31.2	15.8
	3° 29.6	3° 16.7	3° 03.8	2° 50.9	2° 37.9	2° 24.9	2° 11.8	1° 58.8	1° 45.7	1° 32.6	1° 19.4	-13.0	57.9
Пн 13	119° 28.5	133° 58.8	148° 29.1	162° 59.2	177° 29.4	191° 59.4	206° 29.5	220° 59.4	235° 29.3	249° 59.1	264° 28.9	+30.0	16.1
	-2° 00.3	-2° 13.7	-2° 27.1	-2° 40.6	-2° 54.0	-3° 07.5	-3° 20.9	-3° 34.4	-3° 47.8	-4° 01.3	-4° 14.7	-13.4	58.9
Вт 14	121° 47.2	136° 15.8	150° 44.4	165° 12.8	179° 41.2	194° 09.5	208° 37.7	223° 05.9	237° 33.9	252° 01.9	266° 29.8	+28.3	16.3
	-7° 35.0	-7° 48.2	-8° 01.4	-8° 14.5	-8° 27.6	-8° 40.7	-8° 53.7	-9° 06.7	-9° 19.7	-9° 32.6	-9° 45.5	-13.1	59.8
Ср 15	123° 17.4	137° 43.8	152° 10.2	166° 36.4	181° 02.6	195° 28.6	209° 54.6	224° 20.4	238° 46.2	253° 11.9	267° 37.5	+26.0	16.5
	-12° 52.7	-13° 04.6	-13° 16.6	-13° 28.4	-13° 40.2	-13° 51.9	-14° 03.5	-14° 15.0	-14° 26.4	-14° 37.8	-14° 49.1	-11.7	60.6
Чт 16	123° 49.7	138° 13.7	152° 37.7	167° 01.6	181° 25.4	195° 49.1	210° 12.7	224° 36.2	238° 59.7	253° 23.1	267° 46.3	+23.7	16.7
	-17° 26.5	-17° 36.2	-17° 45.7	-17° 55.1	-18° 04.4	-18° 13.5	-18° 22.5	-18° 31.4	-18° 40.2	-18° 48.8	-18° 57.3	-9.1	61.2
○ Пт 17	123° 26.3	137° 48.4	152° 10.5	166° 32.5	180° 54.5	195° 16.4	209° 38.2	224° 00.0	238° 21.7	252° 43.5	267° 05.1	+21.9	16.7
	-20° 47.9	-20° 54.1	-21° 00.1	-21° 06.0	-21° 11.6	-21° 17.2	-21° 22.6	-21° 27.8	-21° 32.8	-21° 37.7	-21° 42.4	-5.5	61.3
Сб 18	122° 26.6	136° 47.9	151° 09.2	165° 30.5	179° 51.8	194° 13.1	208° 34.4	222° 55.8	237° 17.1	251° 38.5	265° 59.9	+21.3	16.7
	-22° 32.7	-22° 34.6	-22° 36.4	-22° 38.0	-22° 39.4	-22° 40.7	-22° 41.8	-22° 42.7	-22° 43.4	-22° 44.0	-22° 44.3	-1.2	61.2
Вс 19	121° 24.5	135° 46.5	150° 08.5	164° 30.7	178° 52.8	193° 15.1	207° 37.4	221° 59.8	236° 22.3	250° 44.8	265° 07.4	+22.3	16.5
	-22° 29.2	-22° 26.9	-22° 24.3	-22° 21.6	-22° 18.8	-22° 15.7	-22° 12.6	-22° 09.2	-22° 05.7	-22° 02.0	-21° 58.2	+3.1	60.7
Пн 20	120° 56.5	135° 20.5	149° 44.6	164° 08.8	178° 33.1	192° 57.5	207° 22.0	221° 46.6	236° 11.3	250° 36.1	265° 01.0	+24.4	16.3
	-20° 42.8	-20° 36.6	-20° 30.3	-20° 23.9	-20° 17.3	-20° 10.7	-20° 03.8	-19° 56.9	-19° 49.8	-19° 42.6	-19° 35.3	+6.8	59.9
Вт 21	121° 27.5	135° 54.1	150° 20.8	164° 47.7	179° 14.6	193° 41.7	208° 08.8	222° 36.1	237° 03.5	251° 31.0	265° 58.6	+27.1	16.1
	-17° 32.1	-17° 23.0	-17° 13.9	-17° 04.7	-16° 55.3	-16° 45.9	-16° 36.4	-16° 26.9	-16° 17.2	-16° 07.4	-15° 57.6	+9.5	59.0
Ср 22	123° 04.8	137° 34.0	152° 03.3	166° 32.7	181° 02.2	195° 31.8	210° 01.5	224° 31.3	239° 01.1	253° 31.1	268° 01.1	+29.6	15.8
	-13° 21.5	-13° 10.6	-12° 59.6	-12° 48.5	-12° 37.5	-12° 26.3	-12° 15.1	-12° 03.9	-11° 52.6	-11° 41.3	-11° 29.9	+11.2	58.0
Чт 23	125° 41.9	140° 13.2	154° 44.6	169° 16.1	183° 47.7	198° 19.3	212° 51.0	227° 22.8	241° 54.6	256° 26.5	270° 58.5	+31.7	15.6
	-8° 34.7	-8° 22.8	-8° 10.8	-7° 58.8	-7° 46.8	-7° 34.8	-7° 22.7	-7° 10.7	-6° 58.6	-6° 46.5	-6° 34.4	+12.0	57.1
◑ Пт 24	129° 04.8	143° 37.6	158° 10.5	172° 43.5	187° 16.4	201° 49.5	216° 22.5	230° 55.6	245° 28.8	260° 02.0	274° 35.2	+33.0	15.3
	-3° 31.3	-3° 19.1	-3° 06.8	-2° 54.5	-2° 42.3	-2° 30.0	-2° 17.8	-2° 05.6	-1° 53.3	-1° 41.1	-1° 28.9	+12.2	56.2
Сб 25	132° 57.3	147° 31.0	162° 04.7	176° 38.4	191° 12.1	205° 45.9	220° 19.7	234° 53.5	249° 27.3	264° 01.1	278° 34.9	+33.8	15.1
	1° 33.3	1° 45.3	1° 57.3	2° 09.3	2° 21.3	2° 33.3	2° 45.2	2° 57.1	3° 09.0	3° 20.8	3° 32.7	+11.9	55.5
Вс 26	137° 03.5	151° 37.4	166° 11.3	180° 45.2	195° 19.2	209° 53.1	224° 27.0	239° 00.9	253° 34.8	268° 08.7	282° 42.6	+33.9	15.0
	6° 26.9	6° 38.2	6° 49.5	7° 00.8	7° 12.1	7° 23.3	7° 34.5	7° 45.6	7° 56.7	8° 07.8	8° 18.8	+11.2	54.9
Пн 27	141° 09.3	155° 43.0	170° 16.6	184° 50.3	199° 23.9	213° 57.4	228° 31.0	243° 04.5	257° 38.0	272° 11.5	286° 45.0	+33.6	14.8
	10° 58.8	11° 09.1	11° 19.3	11° 29.5	11° 39.6	11° 49.7	11° 59.7	12° 09.7	12° 19.6	12° 29.5	12° 39.3	+10.1	54.4
Вт 28	145° 03.6	159° 36.6	174° 09.6	188° 42.5	203° 15.4	217° 48.3	232° 21.2	246° 54.0	261° 26.8	275° 59.5	290° 32.2	+32.9	14.8
	14° 59.3	15° 08.1	15° 16.9	15° 25.6	15° 34.2	15° 42.8	15° 51.2	15° 59.7	16° 08.0	16° 16.3	16° 24.5	+8.5	54.1
Ср 29	148° 38.6	163° 10.7	177° 42.8	192° 14.9	206° 46.9	221° 18.9	235° 50.9	250° 22.8	264° 54.6	279° 26.5	293° 58.3	+32.0	14.7
	18° 18.7	18° 25.7	18° 32.6	18° 39.4	18° 46.1	18° 52.8	18° 59.3	19° 05.8	19° 12.2	19° 18.6	19° 24.8	+6.6	54.0
Чт 30	151° 51.2	166° 22.4	180° 53.6	195° 24.8	209° 56.0	224° 27.1	238° 58.2	253° 29.2	268° 00.3	282° 31.3	297° 02.2	+31.1	14.7
	20° 47.6	20° 52.4	20° 57.1	21° 01.7	21° 06.2	21° 10.6	21° 14.9	21° 19.2	21° 23.3	21° 27.3	21° 31.2	+4.4	53.9
Пт 31	154° 43.6	169° 14.1	183° 44.7	198° 15.2	212° 45.7	227° 16.2	241° 46.7	256° 17.1	270° 47.5	285° 18.0	299° 48.4	+30.5	14.7
	22° 18.0	22° 20.3	22° 22.5	22° 24.6	22° 26.6	22° 28.5	22° 30.3	22° 31.9	22° 33.5	22° 35.0	22° 36.3	+1.8	53.9

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час -14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 2 14h12 — Первая четв.: 10 17h11 — Полнолуние: 17 11h19 — Последняя четв.: 24 04h57

СОЛНЦЕ

Июнь 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	180° 33.0	195° 32.9	210° 32.8	225° 32.7	240° 32.6	255° 32.5	90° 31.2	105° 31.1	120° 31.0	135° 30.9	150° 30.8	165° 30.7	-0.1
	22° 01.7	22° 02.1	22° 02.4	22° 02.7	22° 03.1	22° 03.4	22° 07.8	22° 08.1	22° 08.4	22° 08.8	22° 09.1	22° 09.4	+0.3
Вс 2	180° 30.6	195° 30.5	210° 30.4	225° 30.3	240° 30.2	255° 30.1	90° 28.8	105° 28.7	120° 28.6	135° 28.5	150° 28.4	165° 28.3	-0.1
	22° 09.7	22° 10.1	22° 10.4	22° 10.7	22° 11.0	22° 11.4	22° 15.5	22° 15.8	22° 16.1	22° 16.4	22° 16.7	22° 17.1	+0.3
Пн 3	180° 28.2	195° 28.1	210° 28.0	225° 27.9	240° 27.8	255° 27.7	90° 26.3	105° 26.2	120° 26.1	135° 26.0	150° 25.9	165° 25.7	-0.1
	22° 17.4	22° 17.7	22° 18.0	22° 18.3	22° 18.6	22° 18.9	22° 22.8	22° 23.1	22° 23.4	22° 23.7	22° 24.0	22° 24.3	+0.3
Вт 4	180° 25.6	195° 25.5	210° 25.4	225° 25.3	240° 25.2	255° 25.1	90° 23.7	105° 23.6	120° 23.5	135° 23.4	150° 23.2	165° 23.1	-0.1
	22° 24.6	22° 24.9	22° 25.2	22° 25.5	22° 25.8	22° 26.1	22° 29.8	22° 30.1	22° 30.3	22° 30.6	22° 30.9	22° 31.2	+0.3
Ср 5	180° 23.0	195° 22.9	210° 22.8	225° 22.7	240° 22.6	255° 22.5	90° 21.0	105° 20.9	120° 20.8	135° 20.7	150° 20.6	165° 20.4	-0.1
	22° 31.4	22° 31.7	22° 32.0	22° 32.3	22° 32.5	22° 32.8	22° 36.3	22° 36.6	22° 36.8	22° 37.1	22° 37.4	22° 37.6	+0.3
Чт 6	180° 20.3	195° 20.2	210° 20.1	225° 20.0	240° 19.9	255° 19.8	90° 18.3	105° 18.1	120° 18.0	135° 17.9	150° 17.8	165° 17.7	-0.1
	22° 37.9	22° 38.2	22° 38.4	22° 38.7	22° 38.9	22° 39.2	22° 42.5	22° 42.7	22° 43.0	22° 43.2	22° 43.5	22° 43.7	+0.3
Пт 7	180° 17.6	195° 17.5	210° 17.3	225° 17.2	240° 17.1	255° 17.0	90° 15.4	105° 15.3	120° 15.2	135° 15.1	150° 15.0	165° 14.9	-0.1
	22° 43.9	22° 44.2	22° 44.4	22° 44.7	22° 44.9	22° 45.2	22° 48.2	22° 48.5	22° 48.7	22° 48.9	22° 49.1	22° 49.4	+0.2
Сб 8	180° 14.7	195° 14.6	210° 14.5	225° 14.4	240° 14.3	255° 14.1	90° 12.6	105° 12.4	120° 12.3	135° 12.2	150° 12.1	165° 12.0	-0.1
	22° 49.6	22° 49.8	22° 50.1	22° 50.3	22° 50.5	22° 50.7	22° 53.6	22° 53.8	22° 54.0	22° 54.2	22° 54.4	22° 54.6	+0.2
Вс 9	180° 11.8	195° 11.7	210° 11.6	225° 11.5	240° 11.3	255° 11.2	90° 09.6	105° 09.5	120° 09.4	135° 09.3	150° 09.1	165° 09.0	-0.1
	22° 54.9	22° 55.1	22° 55.3	22° 55.5	22° 55.7	22° 55.9	22° 58.5	22° 58.7	22° 58.9	22° 59.1	22° 59.3	22° 59.5	+0.2
Пн 10	180° 08.9	195° 08.8	210° 08.6	225° 08.5	240° 08.4	255° 08.3	90° 06.6	105° 06.5	120° 06.4	135° 06.3	150° 06.1	165° 06.0	-0.1
	22° 59.7	22° 59.9	23° 00.1	23° 00.3	23° 00.5	23° 00.7	23° 03.1	23° 03.3	23° 03.4	23° 03.6	23° 03.8	23° 04.0	+0.2
Вт 11	180° 05.9	195° 05.8	210° 05.6	225° 05.5	240° 05.4	255° 05.2	90° 03.6	105° 03.5	120° 03.3	135° 03.2	150° 03.1	165° 03.0	-0.1
	23° 04.1	23° 04.3	23° 04.5	23° 04.7	23° 04.8	23° 05.0	23° 07.2	23° 07.4	23° 07.5	23° 07.7	23° 07.9	23° 08.0	+0.2
Ср 12	180° 02.8	195° 02.7	210° 02.6	225° 02.4	240° 02.3	255° 02.2	90° 00.5	105° 00.4	120° 00.3	135° 00.1	150° 00.0	164° 59.9	-0.1
	23° 08.2	23° 08.3	23° 08.5	23° 08.7	23° 08.8	23° 09.0	23° 10.9	23° 11.1	23° 11.2	23° 11.4	23° 11.5	23° 11.7	+0.2
Чт 13	179° 59.7	194° 59.6	209° 59.5	224° 59.3	239° 59.2	254° 59.1	89° 57.4	104° 57.3	119° 57.1	134° 57.0	149° 56.9	164° 56.7	-0.1
	23° 11.8	23° 12.0	23° 12.1	23° 12.2	23° 12.4	23° 12.5	23° 14.3	23° 14.4	23° 14.5	23° 14.7	23° 14.8	23° 14.9	+0.1
Пт 14	179° 56.6	194° 56.5	209° 56.3	224° 56.2	239° 56.1	254° 56.0	89° 54.2	104° 54.1	119° 54.0	134° 53.8	149° 53.7	164° 53.6	-0.1
	23° 15.0	23° 15.2	23° 15.3	23° 15.4	23° 15.5	23° 15.7	23° 17.2	23° 17.3	23° 17.4	23° 17.5	23° 17.6	23° 17.7	+0.1
Сб 15	179° 53.4	194° 53.3	209° 53.2	224° 53.0	239° 52.9	254° 52.8	89° 51.1	104° 50.9	119° 50.8	134° 50.7	149° 50.5	164° 50.4	-0.1
	23° 17.8	23° 18.0	23° 18.1	23° 18.2	23° 18.3	23° 18.4	23° 19.7	23° 19.8	23° 19.9	23° 20.0	23° 20.1	23° 20.2	+0.1
Вс 16	179° 50.3	194° 50.1	209° 50.0	224° 49.9	239° 49.7	254° 49.6	89° 47.9	104° 47.7	119° 47.6	134° 47.4	149° 47.3	164° 47.2	-0.1
	23° 20.2	23° 20.3	23° 20.4	23° 20.5	23° 20.6	23° 20.7	23° 21.8	23° 21.9	23° 21.9	23° 22.0	23° 22.1	23° 22.2	+0.1
Пн 17	179° 47.0	194° 46.9	209° 46.8	224° 46.6	239° 46.5	254° 46.4	89° 44.6	104° 44.5	119° 44.4	134° 44.2	149° 44.1	164° 43.9	-0.1
	23° 22.2	23° 22.3	23° 22.4	23° 22.5	23° 22.5	23° 22.6	23° 23.5	23° 23.5	23° 23.6	23° 23.6	23° 23.7	23° 23.8	+0.1
Вт 18	179° 43.8	194° 43.7	209° 43.5	224° 43.4	239° 43.3	254° 43.1	89° 41.4	104° 41.2	119° 41.1	134° 41.0	149° 40.8	164° 40.7	-0.1
	23° 23.8	23° 23.9	23° 23.9	23° 24.0	23° 24.0	23° 24.1	23° 24.7	23° 24.8	23° 24.8	23° 24.9	23° 24.9	23° 24.9	+0.1
Ср 19	179° 40.6	194° 40.4	209° 40.3	224° 40.2	239° 40.0	254° 39.9	89° 38.1	104° 38.0	119° 37.9	134° 37.7	149° 37.6	164° 37.5	-0.1
	23° 25.0	23° 25.0	23° 25.1	23° 25.1	23° 25.1	23° 25.2	23° 25.6	23° 25.6	23° 25.6	23° 25.7	23° 25.7	23° 25.7	+0.0
Чт 20	179° 37.3	194° 37.2	209° 37.0	224° 36.9	239° 36.8	254° 36.6	89° 34.9	104° 34.7	119° 34.6	134° 34.5	149° 34.3	164° 34.2	-0.1
	23° 25.7	23° 25.7	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.1	23° 26.1	+0.0
Пт 21	179° 34.1	194° 33.9	209° 33.8	224° 33.6	239° 33.5	254° 33.4	89° 31.6	104° 31.5	119° 31.3	134° 31.2	149° 31.1	164° 30.9	-0.1
	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.1	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	+0.0
Сб 22	179° 30.8	194° 30.7	209° 30.5	224° 30.4	239° 30.3	254° 30.1	89° 28.4	104° 28.2	119° 28.1	134° 28.0	149° 27.8	164° 27.7	-0.1
	23° 26.0	23° 26.0	23° 26.0	23° 25.9	23° 25.9	23° 25.9	23° 25.7	23° 25.6	23° 25.6	23° 25.6	23° 25.6	23° 25.5	-0.0
Вс 23	179° 27.6	194° 27.4	209° 27.3	224° 27.1	239° 27.0	254° 26.9	89° 25.1	104° 25.0	119° 24.9	134° 24.7	149° 24.6	164° 24.4	-0.1
	23° 25.5	23° 25.5	23° 25.4	23° 25.4	23° 25.4	23° 25.3	23° 24.9	23° 24.8	23° 24.8	23° 24.7	23° 24.7	23° 24.6	-0.0
Пн 24	179° 24.3	194° 24.2	209° 24.0	224° 23.9	239° 23.8	254° 23.6	89° 21.9	104° 21.8	119° 21.6	134° 21.5	149° 21.4	164° 21.2	-0.1
	23° 24.6	23° 24.5	23° 24.5	23° 24.4	23° 24.4	23° 24.4	23° 23.6	23° 23.6	23° 23.5	23° 23.5	23° 23.4	23° 23.3	-0.0
Вт 25	179° 21.1	194° 21.0	209° 20.8	224° 20.7	239° 20.6	254° 20.4	89° 18.7	104° 18.6	119° 18.4	134° 18.3	149° 18.2	164° 18.0	-0.1
	23° 23.3	23° 23.2	23° 23.1	23° 23.1	23° 23.0	23° 22.9	23° 22.0	23° 21.9	23° 21.9	23° 21.8	23° 21.7	23° 21.6	-0.1
Ср 26	179° 17.9	194° 17.8	209° 17.6	224° 17.5	239° 17.4	254° 17.2	89° 15.5	104° 15.4	119° 15.3	134° 15.1	149° 15.0	164° 14.9	-0.1
	23° 21.5	23° 21.5	23° 21.4	23° 21.3	23° 21.2	23° 21.1	23° 20.0	23° 19.9	23° 19.8	23° 19.7	23° 19.6	23° 19.5	-0.1
Чт 27	179° 14.7	194° 14.6	209° 14.5	224° 14.4	239° 14.2	254° 14.1	89° 12.4	104° 12.3	119° 12.1	134° 12.0	149° 11.9	164° 11.8	-0.1
	23° 19.4	23° 19.3	23° 19.2	23° 19.1	23° 19.0	23° 18.9	23° 17.5	23° 17.4	23° 17.3	23° 17.2	23° 17.1	23° 17.0	-0.1
Пт 28	179° 11.6	194° 11.5	209° 11.4	224° 11.2	239° 11.1	254° 11.0	89° 09.3	104° 09.2	119° 09.1	134° 08.9	149° 08.8	164° 08.7	-0.1
	23° 16.9	23° 16.7	23° 16.6	23° 16.5	23° 16.4	23° 16.3	23° 14.7	23° 14.5	23° 14.4	23° 14.3	23° 14.2	23° 14.0	-0.1
Сб 29	179° 08.5	194° 08.4	209° 08.3	224° 08.2	239° 08.0	254° 07.9	89° 06.3	104° 06.1	119° 06.0	134° 05.9	149° 05.8	164° 05.6	-0.1
	23° 13.9	23° 13.8	23° 13.6	23° 13.5	23° 13.4	23° 13.2	23° 11.4	23° 11.3	23° 11.1	23° 11.0	23° 10.8	23° 10.7	-0.1
Вс 30	179° 05.5	194° 05.4	209° 05.3	224° 05.2	239° 05.0	254° 04.9	89° 03.3	104° 03.2	119° 03.0	134° 02.9	149° 02.8	164° 02.7	-0.1
	23° 10.5	23° 10.4	23° 10.2	23° 10.1	23° 09.9	23° 09.8	23° 07.7	23° 07.6	23° 07.4	23° 07.2	23° 07.1	23° 06.9	-0.1

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

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	Д	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	Δ'/h	R/p
●	Сб 1	70° 21.4	84° 51.7	99° 22.0	113° 52.2	128° 22.5	142° 52.8	157° 23.0	171° 53.3	186° 23.5	200° 53.7	215° 24.0	+30.3	14.7
		22° 43.7	22° 44.0	22° 44.2	22° 44.3	22° 44.3	22° 44.1	22° 43.9	22° 43.5	22° 43.1	22° 42.5	22° 41.8	-0.2	54.0
	Вс 2	72° 57.8	87° 28.1	101° 58.4	116° 28.7	130° 59.0	145° 29.3	159° 59.7	174° 30.0	189° 00.4	203° 30.8	218° 01.2	+30.3	14.8
		22° 18.7	22° 16.3	22° 13.8	22° 11.2	22° 08.5	22° 05.7	22° 02.8	21° 59.8	21° 56.6	21° 53.4	21° 50.0	-2.9	54.2
	Пн 3	75° 39.3	90° 10.0	104° 40.7	119° 11.4	133° 42.2	148° 13.0	162° 43.8	177° 14.6	191° 45.4	206° 16.3	220° 47.2	+30.8	14.9
		20° 47.5	20° 42.5	20° 37.5	20° 32.3	20° 27.0	20° 21.6	20° 16.2	20° 10.6	20° 04.9	19° 59.2	19° 53.3	-5.4	54.5
	Вт 4	78° 33.8	93° 05.1	107° 36.5	122° 07.8	136° 39.2	151° 10.6	165° 42.1	180° 13.6	194° 45.1	209° 16.6	223° 48.1	+31.4	15.0
		18° 14.3	18° 07.0	17° 59.6	17° 52.1	17° 44.5	17° 36.8	17° 29.1	17° 21.2	17° 13.3	17° 05.3	16° 57.2	-7.7	54.9
	Ср 5	81° 44.4	96° 16.3	110° 48.2	125° 20.2	139° 52.2	154° 24.2	168° 56.3	183° 28.3	198° 00.4	212° 32.5	227° 04.6	+32.0	15.1
		14° 46.3	14° 36.9	14° 27.5	14° 18.0	14° 08.5	13° 58.9	13° 49.2	13° 39.4	13° 29.6	13° 19.7	13° 09.7	-9.7	55.4
	Чт 6	85° 08.2	99° 40.6	114° 12.9	128° 45.2	143° 17.6	157° 50.0	172° 22.3	186° 54.7	201° 27.1	215° 59.5	230° 31.9	+32.4	15.3
		10° 32.4	10° 21.5	10° 10.4	9° 59.4	9° 48.2	9° 37.0	9° 25.8	9° 14.5	9° 03.1	8° 51.8	8° 40.3	-11.2	56.0
	Пт 7	88° 37.5	103° 09.8	117° 42.2	132° 14.5	146° 46.8	161° 19.0	175° 51.3	190° 23.5	204° 55.8	219° 28.0	234° 00.2	+32.3	15.5
		5° 43.0	5° 30.8	5° 18.6	5° 06.4	4° 54.1	4° 41.8	4° 29.5	4° 17.1	4° 04.7	3° 52.2	3° 39.7	-12.3	56.8
	Сб 8	103° 09.8	117° 42.2	132° 14.5	146° 46.8	161° 19.0	175° 51.3	190° 23.5	204° 55.8	219° 28.0	234° 00.2	248° 32.4	+32.3	15.5
		5° 30.8	5° 18.6	5° 06.4	4° 54.1	4° 41.8	4° 29.5	4° 17.1	4° 04.7	3° 52.2	3° 39.7	3° 27.2	-12.4	56.8
◐	Вс 9	106° 32.0	121° 03.8	135° 35.5	150° 07.1	164° 38.8	179° 10.3	193° 41.9	208° 13.4	222° 44.8	237° 16.3	251° 47.6	+31.6	15.7
		0° 16.6	0° 03.7	-0° 09.2	-0° 22.1	-0° 35.0	-0° 48.0	-1° 00.9	-1° 13.9	-1° 26.9	-1° 39.8	-1° 52.8	-12.9	57.6
	Пн 10	109° 32.1	124° 02.6	138° 33.1	153° 03.5	167° 33.8	182° 04.1	196° 34.2	211° 04.4	225° 34.4	240° 04.4	254° 34.3	+30.2	16.0
		-5° 07.8	-5° 20.7	-5° 33.7	-5° 46.6	-5° 59.5	-6° 12.4	-6° 25.3	-6° 38.2	-6° 51.0	-7° 03.9	-7° 16.7	-12.9	58.5
	Вт 11	111° 53.9	126° 22.5	140° 51.1	155° 19.6	169° 48.0	184° 16.3	198° 44.5	213° 12.6	227° 40.7	242° 08.6	256° 36.4	+28.3	16.2
		-10° 25.3	-10° 37.6	-10° 49.8	-11° 02.0	-11° 14.2	-11° 26.2	-11° 38.3	-11° 50.3	-12° 02.2	-12° 14.1	-12° 25.9	-12.1	59.4
	Ср 12	113° 22.7	127° 49.0	142° 15.2	156° 41.3	171° 07.3	185° 33.2	199° 59.0	214° 24.7	228° 50.3	243° 15.8	257° 41.2	+25.8	16.4
		-15° 15.0	-15° 25.7	-15° 36.2	-15° 46.7	-15° 57.1	-16° 07.4	-16° 17.6	-16° 27.7	-16° 37.7	-16° 47.7	-16° 57.5	-10.3	60.2
	Чт 13	113° 50.4	128° 14.2	142° 38.0	157° 01.7	171° 25.2	185° 48.7	200° 12.1	214° 35.4	228° 58.7	243° 21.8	257° 44.9	+23.4	16.6
		-19° 11.5	-19° 19.4	-19° 27.3	-19° 35.0	-19° 42.6	-19° 50.0	-19° 57.3	-20° 04.5	-20° 11.5	-20° 18.4	-20° 25.1	-7.4	60.8
	Пт 14	113° 22.0	127° 43.9	142° 05.8	156° 27.7	170° 49.5	185° 11.2	199° 32.9	213° 54.6	228° 16.2	242° 37.8	256° 59.4	+21.7	16.7
		-21° 48.3	-21° 52.6	-21° 56.7	-22° 00.6	-22° 04.4	-22° 08.1	-22° 11.5	-22° 14.8	-22° 17.9	-22° 20.9	-22° 23.6	-3.5	61.1
○	Сб 15	112° 20.0	126° 41.4	141° 02.7	155° 24.0	169° 45.4	184° 06.7	198° 28.1	212° 49.5	227° 10.9	241° 32.3	255° 53.8	+21.4	16.7
		-22° 44.5	-22° 44.5	-22° 44.3	-22° 44.0	-22° 43.4	-22° 42.7	-22° 41.8	-22° 40.8	-22° 39.6	-22° 38.1	-22° 36.6	+0.8	61.1
	Вс 16	111° 20.7	125° 42.9	140° 05.2	154° 27.5	168° 50.0	183° 12.4	197° 35.0	211° 57.6	226° 20.4	240° 43.1	255° 06.0	+22.5	16.6
		-21° 52.5	-21° 48.3	-21° 43.8	-21° 39.3	-21° 34.5	-21° 29.6	-21° 24.6	-21° 19.4	-21° 14.1	-21° 08.6	-21° 02.9	+5.0	60.8
	Пн 17	110° 59.6	125° 23.9	139° 48.4	154° 12.9	168° 37.5	183° 02.2	197° 27.1	211° 52.0	226° 17.0	240° 42.2	255° 07.4	+24.8	16.4
		-19° 21.2	-19° 13.4	-19° 05.4	-18° 57.4	-18° 49.2	-18° 40.8	-18° 32.4	-18° 23.8	-18° 15.2	-18° 06.4	-17° 57.5	+8.4	60.1
	Вт 18	111° 38.8	126° 05.7	140° 32.8	154° 59.9	169° 27.2	183° 54.5	198° 22.0	212° 49.6	227° 17.2	241° 45.0	256° 12.9	+27.4	16.2
		-15° 32.3	-15° 21.9	-15° 11.5	-15° 00.9	-14° 50.3	-14° 39.6	-14° 28.8	-14° 17.9	-14° 07.0	-13° 56.0	-13° 45.0	+10.7	59.3
	Ср 19	113° 22.8	127° 52.2	142° 21.7	156° 51.3	171° 21.0	185° 50.7	200° 20.6	214° 50.5	229° 20.6	243° 50.7	258° 20.9	+29.8	15.9
		-10° 52.2	-10° 40.3	-10° 28.4	-10° 16.4	-10° 04.3	-9° 52.3	-9° 40.2	-9° 28.0	-9° 15.9	-9° 03.7	-8° 51.5	+12.1	58.3
	Чт 20	116° 03.1	130° 34.5	145° 06.0	159° 37.5	174° 09.1	188° 40.7	203° 12.4	217° 44.2	232° 16.0	246° 47.9	261° 19.9	+31.7	15.6
		-5° 45.4	-5° 32.9	-5° 20.3	-5° 07.8	-4° 55.2	-4° 42.7	-4° 30.1	-4° 17.5	-4° 05.0	-3° 52.4	-3° 39.8	+12.6	57.3
	Пт 21	119° 25.3	133° 58.0	148° 30.7	163° 03.5	177° 36.4	192° 09.3	206° 42.2	221° 15.1	235° 48.1	250° 21.1	264° 54.2	+32.9	15.4
		-0° 31.8	-0° 19.3	-0° 06.9	0° 05.5	0° 18.0	0° 30.4	0° 42.7	0° 55.1	1° 07.4	1° 19.7	1° 32.0	+12.4	56.4
◑	Сб 22	123° 12.9	137° 46.3	152° 19.7	166° 53.2	181° 26.6	196° 00.1	210° 33.6	225° 07.1	239° 40.5	254° 14.1	268° 47.6	+33.5	15.2
		4° 33.5	4° 45.3	4° 57.2	5° 09.0	5° 20.7	5° 32.4	5° 44.1	5° 55.8	6° 07.4	6° 19.0	6° 30.5	+11.7	55.6
	Вс 23	127° 10.6	141° 44.1	156° 17.6	170° 51.1	185° 24.6	199° 58.1	214° 31.6	229° 05.1	243° 38.5	258° 12.0	272° 45.4	+33.5	15.0
		9° 18.6	9° 29.4	9° 40.2	9° 51.0	10° 01.7	10° 12.3	10° 22.9	10° 33.5	10° 44.0	10° 54.4	11° 04.8	+10.6	54.9
	Пн 24	131° 05.0	145° 38.2	160° 11.3	174° 44.4	189° 17.5	203° 50.5	218° 23.6	232° 56.6	247° 29.6	262° 02.5	276° 35.5	+33.0	14.9
		13° 33.8	13° 43.2	13° 52.6	14° 01.9	14° 11.2	14° 20.4	14° 29.5	14° 38.6	14° 47.6	14° 56.6	15° 05.4	+9.2	54.5
	Вт 25	134° 45.9	149° 18.3	163° 50.8	178° 23.1	192° 55.5	207° 27.8	222° 00.1	236° 32.3	251° 04.6	265° 36.7	280° 08.9	+32.3	14.8
		17° 10.0	17° 17.7	17° 25.4	17° 32.9	17° 40.4	17° 47.8	17° 55.1	18° 02.4	18° 09.6	18° 16.6	18° 23.7	+7.4	54.1
	Ср 26	138° 06.9	152° 38.5	167° 10.1	181° 41.6	196° 13.1	210° 44.5	225° 16.0	239° 47.4	254° 18.7	268° 50.0	283° 21.3	+31.4	14.7
		19° 58.7	20° 04.3	20° 09.9	20° 15.3	20° 20.7	20° 26.0	20° 31.2	20° 36.2	20° 41.2	20° 46.2	20° 51.0	+5.2	54.0
	Чт 27	141° 06.8	155° 37.6	170° 08.3	184° 39.1	199° 09.8	213° 40.5	228° 11.1	242° 41.8	257° 12.4	271° 43.0	286° 13.5	+30.7	14.7
		21° 51.7	21° 54.9	21° 58.1	22° 01.1	22° 04.1	22° 06.9	22° 09.7	22° 12.3	22° 14.9	22° 17.3	22° 19.7	+2.8	54.0
	Пт 28	143° 49.5	158° 19.7	172° 50.0	187° 20.2	201° 50.4	216° 20.6	230° 50.8	245° 21.0	259° 51.2	274° 21.4	288° 51.5	+30.2	14.7
		22° 42.2	22° 42.9	22° 43.4	22° 43.9	22° 44.2	22° 44.4	22° 44.5	22° 44.4	22° 44.2	22° 43.9	+0.2	54.1	
	Сб 29	146° 23.5	160° 53.6	175° 23.7	189° 53.9	204° 24.0	218° 54.2	233° 24.3	247° 54.5	262° 24.7	276° 54.8	291° 25.0	+30.2	14.8
		22° 26.2	22° 24.1	22° 22.0	22° 19.7	22° 17.4	22° 14.9	22° 12.3	22° 09.6	22° 06.8	22° 03.9	22° 00.9	-2.5	54.3
●	Вс 30	148° 59.3	163° 29.7	178° 00.2	192° 30.6	207° 01.1	221° 31.6	236° 02.1	250° 32.6	265° 03.2	279° 33.7	294° 04.3	+30.5	14.9
		21° 03.1	20° 58.4	20° 53.6	20° 48.7	20° 43.7	20° 38.6	20° 33.4	20° 28.2	20° 22.8	20° 17.3	20° 11.7	-5.1	54.6

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 1 06h21 — Первая четв.: 9 03h35 — Полнолуние: 15 18h41 — Последняя четв.: 22 17h19 — Новолуние: 30 21h34

СОЛНЦЕ

Июль 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	179° 02.6	194° 02.4	209° 02.3	224° 02.2	239° 02.1	254° 01.9	89° 00.4	104° 00.3	119° 00.1	134° 00.0	148° 59.9	163° 59.8	-0.1
	23° 06.7	23° 06.6	23° 06.4	23° 06.2	23° 06.1	23° 05.9	23° 03.7	23° 03.5	23° 03.3	23° 03.1	23° 02.9	23° 02.8	-0.2
Вт 2	178° 59.7	193° 59.5	208° 59.4	223° 59.3	238° 59.2	253° 59.1	88° 57.5	103° 57.4	118° 57.3	133° 57.2	148° 57.1	163° 56.9	-0.1
	23° 02.6	23° 02.4	23° 02.2	23° 02.0	23° 01.8	23° 01.7	22° 59.2	22° 59.0	22° 58.8	22° 58.6	22° 58.4	22° 58.2	-0.2
Ср 3	178° 56.8	193° 56.7	208° 56.6	223° 56.5	238° 56.4	253° 56.2	88° 54.7	103° 54.6	118° 54.5	133° 54.4	148° 54.3	163° 54.2	-0.1
	22° 58.0	22° 57.8	22° 57.6	22° 57.4	22° 57.2	22° 57.0	22° 54.3	22° 54.1	22° 53.9	22° 53.7	22° 53.4	22° 53.2	-0.2
Чт 4	178° 54.1	193° 54.0	208° 53.8	223° 53.7	238° 53.6	253° 53.5	88° 52.1	103° 51.9	118° 51.8	133° 51.7	148° 51.6	163° 51.5	-0.1
	22° 53.0	22° 52.8	22° 52.6	22° 52.4	22° 52.1	22° 51.9	22° 49.0	22° 48.8	22° 48.6	22° 48.3	22° 48.1	22° 47.9	-0.2
Пт 5	178° 51.4	193° 51.3	208° 51.2	223° 51.1	238° 51.0	253° 50.8	88° 49.4	103° 49.3	118° 49.2	133° 49.1	148° 49.0	163° 48.9	-0.1
	22° 47.6	22° 47.4	22° 47.2	22° 46.9	22° 46.7	22° 46.5	22° 43.3	22° 43.1	22° 42.9	22° 42.6	22° 42.4	22° 42.1	-0.2
Сб 6	178° 48.8	193° 48.7	208° 48.6	223° 48.5	238° 48.4	253° 48.3	88° 46.9	103° 46.8	118° 46.7	133° 46.6	148° 46.5	163° 46.4	-0.1
	22° 41.9	22° 41.6	22° 41.4	22° 41.1	22° 40.9	22° 40.6	22° 37.3	22° 37.0	22° 36.7	22° 36.5	22° 36.2	22° 36.0	-0.2
Вс 7	178° 46.3	193° 46.2	208° 46.1	223° 46.0	238° 45.9	253° 45.8	88° 44.5	103° 44.4	118° 44.3	133° 44.2	148° 44.1	163° 44.0	-0.1
	22° 35.7	22° 35.4	22° 35.2	22° 34.9	22° 34.6	22° 34.4	22° 30.8	22° 30.5	22° 30.3	22° 30.0	22° 29.7	22° 29.4	-0.3
Пн 8	178° 43.9	193° 43.8	208° 43.7	223° 43.6	238° 43.5	253° 43.4	88° 42.2	103° 42.1	118° 42.0	133° 41.9	148° 41.8	163° 41.7	-0.1
	22° 29.1	22° 28.9	22° 28.6	22° 28.3	22° 28.0	22° 27.7	22° 24.0	22° 23.7	22° 23.4	22° 23.1	22° 22.8	22° 22.5	-0.3
Вт 9	178° 41.6	193° 41.5	208° 41.4	223° 41.4	238° 41.3	253° 41.2	88° 40.0	103° 39.9	118° 39.8	133° 39.7	148° 39.6	163° 39.5	-0.1
	22° 22.2	22° 21.9	22° 21.6	22° 21.3	22° 21.0	22° 20.7	22° 16.7	22° 16.4	22° 16.1	22° 15.8	22° 15.5	22° 15.2	-0.3
Ср 10	178° 39.4	193° 39.4	208° 39.3	223° 39.2	238° 39.1	253° 39.0	88° 37.9	103° 37.8	118° 37.7	133° 37.6	148° 37.5	163° 37.5	-0.1
	22° 14.9	22° 14.5	22° 14.2	22° 13.9	22° 13.6	22° 13.3	22° 09.1	22° 08.8	22° 08.5	22° 08.1	22° 07.8	22° 07.5	-0.3
Чт 11	178° 37.4	193° 37.3	208° 37.2	223° 37.1	238° 37.0	253° 37.0	88° 35.9	103° 35.8	118° 35.7	133° 35.7	148° 35.6	163° 35.5	-0.1
	22° 07.1	22° 06.8	22° 06.5	22° 06.2	22° 05.8	22° 05.5	22° 01.1	22° 00.8	22° 00.4	22° 00.1	21° 59.7	21° 59.4	-0.3
Пт 12	178° 35.4	193° 35.3	208° 35.3	223° 35.2	238° 35.1	253° 35.0	88° 34.0	103° 34.0	118° 33.9	133° 33.8	148° 33.7	163° 33.7	-0.1
	21° 59.1	21° 58.7	21° 58.4	21° 58.0	21° 57.7	21° 57.3	21° 52.7	21° 52.4	21° 52.0	21° 51.7	21° 51.3	21° 50.9	-0.3
Сб 13	178° 33.6	193° 33.5	208° 33.4	223° 33.4	238° 33.3	253° 33.2	88° 32.3	103° 32.2	118° 32.2	133° 32.1	148° 32.0	163° 31.9	-0.1
	21° 50.6	21° 50.2	21° 49.9	21° 49.5	21° 49.1	21° 48.8	21° 44.0	21° 43.6	21° 43.2	21° 42.9	21° 42.5	21° 42.1	-0.4
Вс 14	178° 31.9	193° 31.8	208° 31.7	223° 31.7	238° 31.6	253° 31.5	88° 30.7	103° 30.6	118° 30.5	133° 30.5	148° 30.4	163° 30.4	-0.1
	21° 41.7	21° 41.4	21° 41.0	21° 40.6	21° 40.2	21° 39.9	21° 34.9	21° 34.5	21° 34.1	21° 33.7	21° 33.3	21° 32.9	-0.4
Пн 15	178° 30.3	193° 30.2	208° 30.2	223° 30.1	238° 30.0	253° 30.0	88° 29.2	103° 29.1	118° 29.1	133° 29.0	148° 28.9	163° 28.9	-0.1
	21° 32.5	21° 32.1	21° 31.8	21° 31.4	21° 31.0	21° 30.6	21° 25.4	21° 25.0	21° 24.6	21° 24.2	21° 23.8	21° 23.4	-0.4
Вт 16	178° 28.8	193° 28.8	208° 28.7	223° 28.7	238° 28.6	253° 28.5	88° 27.8	103° 27.8	118° 27.7	133° 27.7	148° 27.6	163° 27.5	-0.1
	21° 23.0	21° 22.6	21° 22.1	21° 21.7	21° 21.3	21° 20.9	21° 15.5	21° 15.1	21° 14.7	21° 14.3	21° 13.9	21° 13.4	-0.4
Ср 17	178° 27.5	193° 27.4	208° 27.4	223° 27.3	238° 27.3	253° 27.2	88° 26.6	103° 26.5	118° 26.5	133° 26.4	148° 26.4	163° 26.3	-0.1
	21° 13.0	21° 12.6	21° 12.2	21° 11.8	21° 11.3	21° 10.9	21° 05.3	21° 04.9	21° 04.5	21° 04.0	21° 03.6	21° 03.2	-0.4
Чт 18	178° 26.3	193° 26.2	208° 26.2	223° 26.1	238° 26.1	253° 26.0	88° 25.5	103° 25.4	118° 25.4	133° 25.3	148° 25.3	163° 25.3	-0.0
	21° 02.7	21° 02.3	21° 01.9	21° 01.4	21° 01.0	21° 00.5	20° 54.8	20° 54.3	20° 53.9	20° 53.4	20° 53.0	20° 52.5	-0.4
Пт 19	178° 25.2	193° 25.2	208° 25.1	223° 25.1	238° 25.0	253° 25.0	88° 24.5	103° 24.5	118° 24.4	133° 24.4	148° 24.3	163° 24.3	-0.0
	20° 52.1	20° 51.6	20° 51.2	20° 50.7	20° 50.3	20° 49.8	20° 43.8	20° 43.4	20° 42.9	20° 42.5	20° 42.0	20° 41.5	-0.5
Сб 20	178° 24.3	193° 24.2	208° 24.2	223° 24.2	238° 24.1	253° 24.1	88° 23.6	103° 23.6	118° 23.6	133° 23.6	148° 23.5	163° 23.5	-0.0
	20° 41.1	20° 40.6	20° 40.1	20° 39.7	20° 39.2	20° 38.7	20° 32.6	20° 32.1	20° 31.6	20° 31.1	20° 30.7	20° 30.2	-0.5
Вс 21	178° 23.5	193° 23.4	208° 23.4	223° 23.4	238° 23.3	253° 23.3	88° 22.9	103° 22.9	118° 22.9	133° 22.9	148° 22.8	163° 22.8	-0.0
	20° 29.7	20° 29.2	20° 28.7	20° 28.3	20° 27.8	20° 27.3	20° 21.0	20° 20.5	20° 20.0	20° 19.5	20° 19.0	20° 18.5	-0.5
Пн 22	178° 22.8	193° 22.8	208° 22.7	223° 22.7	238° 22.7	253° 22.7	88° 22.4	103° 22.4	118° 22.3	133° 22.3	148° 22.3	163° 22.3	-0.0
	20° 18.0	20° 17.5	20° 17.0	20° 16.5	20° 16.0	20° 15.5	20° 09.0	20° 08.5	20° 08.0	20° 07.5	20° 07.0	20° 06.5	-0.5
Вт 23	178° 22.3	193° 22.2	208° 22.2	223° 22.2	238° 22.2	253° 22.2	88° 22.0	103° 21.9	118° 21.9	133° 21.9	148° 21.9	163° 21.9	-0.0
	20° 06.0	20° 05.4	20° 04.9	20° 04.4	20° 03.9	20° 03.4	19° 56.7	19° 56.2	19° 55.7	19° 55.1	19° 54.6	19° 54.1	-0.5
Ср 24	178° 21.9	193° 21.9	208° 21.8	223° 21.8	238° 21.8	253° 21.8	88° 21.7	103° 21.7	118° 21.7	133° 21.6	148° 21.6	163° 21.6	-0.0
	19° 53.6	19° 53.0	19° 52.5	19° 52.0	19° 51.5	19° 51.0	19° 44.1	19° 43.5	19° 43.0	19° 42.5	19° 41.9	19° 41.4	-0.5
Чт 25	178° 21.6	193° 21.6	208° 21.6	223° 21.6	238° 21.6	253° 21.6	88° 21.5	103° 21.5	118° 21.5	133° 21.5	148° 21.5	163° 21.5	-0.0
	19° 40.9	19° 40.3	19° 39.8	19° 39.2	19° 38.7	19° 38.2	19° 31.1	19° 30.6	19° 30.0	19° 29.5	19° 28.9	19° 28.4	-0.5
Пт 26	178° 21.5	193° 21.5	208° 21.5	223° 21.5	238° 21.5	253° 21.5	88° 21.5	103° 21.5	118° 21.5	133° 21.5	148° 21.5	163° 21.6	-0.0
	19° 27.8	19° 27.3	19° 26.7	19° 26.2	19° 25.6	19° 25.1	19° 17.8	19° 17.3	19° 16.7	19° 16.1	19° 15.6	19° 15.0	-0.6
Сб 27	178° 21.6	193° 21.6	208° 21.6	223° 21.6	238° 21.6	253° 21.6	88° 21.7	103° 21.7	118° 21.7	133° 21.7	148° 21.7	163° 21.7	+0.0
	19° 14.5	19° 13.9	19° 13.3	19° 12.8	19° 12.2	19° 11.6	19° 04.2	19° 03.6	19° 03.1	19° 02.5	19° 01.9	19° 01.3	-0.6
Вс 28	178° 21.7	193° 21.8	208° 21.8	223° 21.8	238° 21.8	253° 21.8	88° 22.0	103° 22.0	118° 22.0	133° 22.0	148° 22.1	163° 22.1	+0.0
	19° 00.8	19° 00.2	18° 59.6	18° 59.0	18° 58.5	18° 57.9	18° 50.3	18° 49.7	18° 49.1	18° 48.5	18° 48.0	18° 47.4	-0.6
Пн 29	178° 22.1	193° 22.1	208° 22.1	223° 22.1	238° 22.2	253° 22.2	88° 22.4	103° 22.5	118° 22.5	133° 22.5	148° 22.5	163° 22.6	+0.0
	18° 46.8	18° 46.2	18° 45.6	18° 45.0	18° 44.4	18° 43.8	18° 36.1	18° 35.5	18° 34.9	18° 34.3	18° 33.7	18° 33.1	-0.6
Вт 30	178° 22.6	193° 22.6	208° 22.6	223° 22.6	238° 22.7	253° 22.7	88° 23.0	103° 23.1	118° 23.1	133° 23.1	148° 23.2	163° 23.2	+0.0
	18° 32.5	18° 31.9	18° 31.3	18° 30.7	18° 30.1	18° 29.4	18° 21.5	18° 20.9	18° 20.3	18° 19.7	18° 19.1	18° 18.5	-0.6
Ср 31	178° 23.2	193° 23.2	208° 23.3	223° 23.3	238° 23.3	253° 23.4	88° 23.8	103° 23.8	118° 23.9	133° 23.9	148° 23.9	163° 24.0	+0.0
	18° 17.9	18° 17.2	18° 16.6	18° 16.0	18° 15.4	18° 14.8	18° 06.7	18° 06.1	18° 05.5	18° 04.8	18° 04.2	18° 03.6	-0.6

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2030

Д	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	Δ°/h	R/p
Пн 1	50°09.9	64°40.7	79°11.6	93°42.4	108°13.3	122°44.2	137°15.2	151°46.2	166°17.2	180°48.2	195°19.2	+30.9	15.0
	19°23.5	19°17.0	19°10.5	19°03.8	18°57.1	18°50.3	18°43.4	18°36.4	18°29.3	18°22.1	18°14.8	-6.9	54.8
Вт 2	53°08.2	67°39.7	82°11.2	96°42.7	111°14.3	125°45.9	140°17.5	154°49.2	169°20.8	183°52.5	198°24.2	+31.6	15.1
	16°15.2	16°06.6	15°57.8	15°49.1	15°40.2	15°31.2	15°22.2	15°13.1	15°03.9	14°54.7	14°45.4	-9.0	55.3
Ср 3	56°23.0	70°55.1	85°27.2	99°59.3	114°31.5	129°03.6	143°35.8	158°08.0	172°40.2	187°12.5	201°44.7	+32.2	15.2
	12°17.1	12°06.7	11°56.2	11°45.7	11°35.1	11°24.5	11°13.8	11°03.0	10°52.2	10°41.3	10°30.3	-10.7	55.7
Чт 4	59°50.0	74°22.4	88°54.9	103°27.3	117°59.7	132°32.2	147°04.6	161°37.1	176°09.5	190°42.0	205°14.4	+32.4	15.3
	7°40.2	7°28.4	7°16.7	7°04.9	6°53.0	6°41.1	6°29.2	6°17.3	6°05.3	5°53.2	5°41.2	-11.9	56.3
Пт 5	63°20.4	77°52.8	92°25.1	106°57.4	121°29.6	136°01.9	150°34.1	165°06.3	179°38.5	194°10.7	208°42.9	+32.2	15.5
	2°36.4	2°23.9	2°11.3	1°58.8	1°46.2	1°33.6	1°21.0	1°08.3	0°55.7	0°43.0	0°30.3	-12.6	56.9
Сб 6	66°41.8	81°13.5	95°45.1	110°16.7	124°48.2	139°19.7	153°51.2	168°22.6	182°54.0	197°25.3	211°56.6	+31.5	15.7
	-2°40.9	-2°53.7	-3°06.4	-3°19.2	-3°32.0	-3°44.7	-3°57.5	-4°10.2	-4°22.9	-4°35.7	-4°48.4	-12.8	57.5
Вс 7	69°39.5	84°09.9	98°40.3	113°10.5	127°40.7	142°10.9	156°40.9	171°10.9	185°40.9	200°10.8	214°40.6	+30.1	15.9
	-7°56.9	-8°09.3	-8°21.7	-8°34.0	-8°46.3	-8°58.5	-9°10.7	-9°22.9	-9°35.1	-9°47.2	-9°59.2	-12.2	58.2
◐ Пн 8	71°58.5	86°27.1	100°55.5	115°23.9	129°52.2	144°20.5	158°48.6	173°16.6	187°44.6	202°12.5	216°40.3	+28.2	16.1
	-12°54.4	-13°05.6	-13°16.8	-13°27.9	-13°38.9	-13°49.9	-14°00.8	-14°11.6	-14°22.4	-14°33.1	-14°43.7	-10.9	58.9
Вт 9	86°27.1	100°55.5	115°23.9	129°52.2	144°20.5	158°48.6	173°16.6	187°44.6	202°12.5	216°40.3	231°08.0	+28.1	16.1
	-13°05.6	-13°16.8	-13°27.9	-13°38.9	-13°49.9	-14°00.8	-14°11.6	-14°22.4	-14°33.1	-14°43.7	-14°54.2	-10.9	58.9
Ср 10	87°52.6	102°18.9	116°45.0	131°11.1	145°37.1	160°03.0	174°28.8	188°54.5	203°20.1	217°45.6	232°11.0	+25.8	16.2
	-17°22.1	-17°31.2	-17°40.2	-17°49.1	-17°57.9	-18°06.6	-18°15.2	-18°23.7	-18°32.0	-18°40.3	-18°48.4	-8.6	59.6
Чт 11	88°22.0	102°46.0	117°10.0	131°34.0	145°57.8	160°21.6	174°45.2	189°08.9	203°32.4	217°55.9	232°19.3	+23.7	16.4
	-20°35.9	-20°42.0	-20°48.0	-20°53.8	-20°59.5	-21°05.1	-21°10.5	-21°15.8	-21°20.9	-21°25.9	-21°30.8	-5.5	60.1
Пт 12	88°03.4	102°26.0	116°48.5	131°10.9	145°33.4	159°55.8	174°18.2	188°40.5	203°02.8	217°25.1	231°47.4	+22.4	16.5
	-22°24.9	-22°27.3	-22°29.5	-22°31.5	-22°33.3	-22°35.0	-22°36.5	-22°37.9	-22°39.1	-22°40.1	-22°41.0	-1.6	60.4
Сб 13	87°20.5	101°42.7	116°05.0	130°27.2	144°49.5	159°11.8	173°34.2	187°56.5	202°18.9	216°41.4	231°03.8	+22.3	16.5
	-22°33.8	-22°32.0	-22°30.0	-22°27.9	-22°25.6	-22°23.1	-22°20.4	-22°17.6	-22°14.7	-22°11.5	-22°08.2	+2.6	60.5
Вс 14	86°46.0	101°09.3	115°32.6	129°56.0	144°19.4	158°42.9	173°06.5	187°30.2	201°53.9	216°17.7	230°41.6	+23.6	16.5
	-20°59.8	-20°54.0	-20°48.1	-20°42.0	-20°35.8	-20°29.4	-20°22.9	-20°16.3	-20°09.5	-20°02.6	-19°55.5	+6.4	60.4
○ Пн 15	86°49.6	101°14.9	115°40.2	130°05.6	144°31.1	158°56.7	173°22.4	187°48.1	202°14.0	216°40.0	231°06.0	+25.6	16.3
	-17°54.3	-17°45.3	-17°36.1	-17°26.9	-17°17.5	-17°08.1	-16°58.5	-16°48.8	-16°39.1	-16°29.2	-16°19.2	+9.5	59.9
Вт 16	87°48.0	102°15.6	116°43.2	131°10.9	145°38.7	160°06.6	174°34.6	189°02.7	203°30.9	217°59.2	232°27.5	+28.0	16.1
	-13°39.4	-13°28.1	-13°16.8	-13°05.4	-12°53.9	-12°42.3	-12°30.7	-12°19.1	-12°07.4	-11°55.6	-11°43.8	+11.6	59.2
Ср 17	89°43.0	104°12.7	118°42.4	133°12.3	147°42.2	162°12.1	176°42.2	191°12.3	205°42.5	220°12.8	234°43.1	+30.0	15.9
	-8°40.8	-8°28.3	-8°15.8	-8°03.2	-7°50.6	-7°38.0	-7°25.4	-7°12.7	-7°00.0	-6°47.3	-6°34.6	+12.6	58.4
Чт 18	92°26.1	106°57.4	121°28.8	136°00.3	150°31.8	165°03.3	179°34.9	194°06.6	208°38.3	223°10.0	237°41.8	+31.6	15.7
	-3°22.5	-3°09.7	-2°56.9	-2°44.0	-2°31.2	-2°18.4	-2°05.5	-1°52.7	-1°39.9	-1°27.1	-1°14.3	+12.8	57.5
Пт 19	95°43.8	110°16.2	124°48.7	139°21.1	153°53.7	168°26.2	182°58.8	197°31.4	212°04.0	226°36.6	241°09.3	+32.6	15.4
	1°55.5	2°08.0	2°20.5	2°32.9	2°45.3	2°57.7	3°10.1	3°22.4	3°34.7	3°46.9	3°59.1	+12.4	56.6
Сб 20	99°21.5	113°54.4	128°27.4	143°00.3	157°33.3	172°06.2	186°39.2	201°12.1	215°45.1	230°18.1	244°51.1	+33.0	15.2
	6°58.1	7°09.7	7°21.2	7°32.8	7°44.2	7°55.6	8°07.0	8°18.3	8°29.6	8°40.8	8°52.0	+11.4	55.8
Вс 21	103°05.5	117°38.5	132°11.4	146°44.3	161°17.2	175°50.0	190°22.9	204°55.8	219°28.6	234°01.4	248°34.2	+32.9	15.0
	11°33.2	11°43.5	11°53.7	12°03.9	12°14.0	12°24.1	12°34.1	12°44.0	12°53.9	13°03.7	13°13.4	+10.0	55.1
◑ Пн 22	106°44.4	121°16.9	135°49.4	150°21.8	164°54.3	179°26.7	193°59.1	208°31.5	223°03.8	237°36.1	252°08.4	+32.4	14.9
	15°31.3	15°39.9	15°48.5	15°56.9	16°05.3	16°13.7	16°21.9	16°30.1	16°38.2	16°46.2	16°54.2	+8.3	54.6
Вт 23	110°09.6	124°41.5	139°13.3	153°45.1	168°16.9	182°48.6	197°20.3	211°52.0	226°23.6	240°55.2	255°26.8	+31.7	14.8
	18°43.8	18°50.5	18°57.0	19°03.5	19°09.9	19°16.2	19°22.4	19°28.5	19°34.6	19°40.5	19°46.4	+6.3	54.3
Ср 24	113°17.0	127°48.1	142°19.2	156°50.2	171°21.3	185°52.2	200°23.2	214°54.2	229°25.1	243°56.0	258°26.8	+31.0	14.8
	21°03.2	21°07.6	21°11.9	21°16.0	21°20.1	21°24.1	21°28.0	21°31.8	21°35.5	21°39.1	21°42.5	+3.9	54.1
Чт 25	116°06.8	130°37.3	145°07.7	159°38.2	174°08.6	188°39.0	203°09.4	217°39.8	232°10.1	246°40.5	261°10.8	+30.4	14.8
	22°22.8	22°24.6	22°26.4	22°28.0	22°29.6	22°31.0	22°32.3	22°33.6	22°34.7	22°35.7	22°36.6	+1.4	54.1
Пт 26	118°44.1	133°14.2	147°44.3	162°14.4	176°44.6	191°14.7	205°44.8	220°14.9	234°45.0	249°15.1	263°45.2	+30.1	14.8
	22°37.5	22°36.7	22°35.7	22°34.7	22°33.6	22°32.4	22°31.0	22°29.6	22°28.0	22°26.3	22°24.6	-1.3	54.3
Сб 27	121°17.0	135°47.1	150°17.3	164°47.5	179°17.6	193°47.8	208°18.0	222°48.2	237°18.5	251°48.7	266°19.0	+30.2	14.9
	21°45.0	21°41.5	21°37.9	21°34.2	21°30.4	21°26.5	21°22.4	21°18.3	21°14.1	21°09.8	21°05.3	-4.0	54.6
Вс 28	123°54.5	138°25.0	152°55.5	167°26.1	181°56.6	196°27.2	210°57.8	225°28.4	239°59.1	254°29.8	269°00.5	+30.6	15.0
	19°46.5	19°40.4	19°34.3	19°28.0	19°21.7	19°15.2	19°08.7	19°02.0	18°55.3	18°48.5	18°41.6	-6.5	55.0
Пн 29	126°43.5	141°14.5	155°45.6	170°16.7	184°47.8	199°19.0	213°50.2	228°21.4	242°52.6	257°23.8	271°55.1	+31.2	15.1
	16°46.8	16°38.5	16°30.0	16°21.5	16°12.9	16°04.2	15°55.5	15°46.6	15°37.7	15°28.7	15°19.6	-8.7	55.5
● Вт 30	129°46.7	144°18.3	158°49.9	173°21.6	187°53.2	202°24.9	216°56.6	231°28.3	246°00.1	260°31.8	275°03.6	+31.7	15.3
	12°54.3	12°44.1	12°33.7	12°23.3	12°12.9	12°02.4	11°51.8	11°41.2	11°30.5	11°19.7	11°08.9	-10.5	56.0
Ср 31	133°01.8	147°33.8	162°05.8	176°37.8	191°09.8	205°41.8	220°13.8	234°45.8	249°17.8	263°49.9	278°21.9	+32.0	15.4
	8°19.9	8°08.2	7°56.5	7°44.7	7°32.9	7°21.1	7°09.2	6°57.2	6°45.3	6°33.2	6°21.2	-11.9	56.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Первая четв.: 8 11h01 — Полнолуние: 15 02h12 — Последняя четв.: 22 08h07 — Новолуние: 30 11h11

СОЛНЦЕ

Август 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	178° 24.0 18° 03.0	193° 24.0 18° 02.3	208° 24.1 18° 01.7	223° 24.1 18° 01.1	238° 24.2 18° 00.4	253° 24.2 17° 59.8	88° 24.7 17° 51.6	103° 24.7 17° 50.9	118° 24.8 17° 50.3	133° 24.8 17° 49.7	148° 24.9 17° 49.0	163° 24.9 17° 48.4	+0.0 -0.6
Пт 2	178° 25.0 17° 47.8	193° 25.0 17° 47.1	208° 25.0 17° 46.5	223° 25.1 17° 45.8	238° 25.1 17° 45.2	253° 25.2 17° 44.5	88° 25.8 17° 36.2	103° 25.8 17° 35.5	118° 25.9 17° 34.9	133° 25.9 17° 34.2	148° 26.0 17° 33.6	163° 26.0 17° 32.9	+0.0 -0.6
Сб 3	178° 26.1 17° 32.3	193° 26.1 17° 31.6	208° 26.2 17° 31.0	223° 26.2 17° 30.3	238° 26.3 17° 29.7	253° 26.3 17° 29.0	88° 27.0 17° 20.5	103° 27.0 17° 19.8	118° 27.1 17° 19.1	133° 27.1 17° 18.5	148° 27.2 17° 17.8	163° 27.3 17° 17.1	+0.0 -0.7
Вс 4	178° 27.3 17° 16.5	193° 27.4 17° 15.8	208° 27.4 17° 15.2	223° 27.5 17° 14.5	238° 27.5 17° 13.8	253° 27.6 17° 13.2	88° 28.4 17° 04.5	103° 28.4 17° 03.8	118° 28.5 17° 03.1	133° 28.5 17° 02.5	148° 28.6 17° 01.8	163° 28.7 17° 01.1	+0.1 -0.7
Пн 5	178° 28.7 17° 00.4	193° 28.8 16° 59.8	208° 28.8 16° 59.1	223° 28.9 16° 58.4	238° 29.0 16° 57.7	253° 29.0 16° 57.1	88° 29.9 16° 48.2	103° 30.0 16° 47.5	118° 30.0 16° 46.8	133° 30.1 16° 46.2	148° 30.2 16° 45.5	163° 30.2 16° 44.8	+0.1 -0.7
Вт 6	178° 30.3 16° 44.1	193° 30.4 16° 43.4	208° 30.4 16° 42.7	223° 30.5 16° 42.0	238° 30.6 16° 41.4	253° 30.6 16° 40.7	88° 31.6 16° 31.7	103° 31.6 16° 31.0	118° 31.7 16° 30.3	133° 31.8 16° 29.6	148° 31.9 16° 28.9	163° 31.9 16° 28.2	+0.1 -0.7
Ср 7	178° 32.0 16° 27.5	193° 32.1 16° 26.8	208° 32.2 16° 26.1	223° 32.2 16° 25.4	238° 32.3 16° 24.7	253° 32.4 16° 24.0	88° 33.4 16° 14.9	103° 33.5 16° 14.2	118° 33.6 16° 13.5	133° 33.6 16° 12.8	148° 33.7 16° 12.1	163° 33.8 16° 11.4	+0.1 -0.7
Чт 8	178° 33.9 16° 10.7	193° 34.0 16° 09.9	208° 34.0 16° 09.2	223° 34.1 16° 08.5	238° 34.2 16° 07.8	253° 34.3 16° 07.1	88° 35.4 15° 57.8	103° 35.5 15° 57.1	118° 35.6 15° 56.4	133° 35.6 15° 55.7	148° 35.7 15° 55.0	163° 35.8 15° 54.3	+0.1 -0.7
Пт 9	178° 35.9 15° 53.5	193° 36.0 15° 52.8	208° 36.1 15° 52.1	223° 36.2 15° 51.4	238° 36.3 15° 50.7	253° 36.3 15° 49.9	88° 37.5 15° 40.5	103° 37.6 15° 39.8	118° 37.7 15° 39.1	133° 37.8 15° 38.4	148° 37.9 15° 37.6	163° 38.0 15° 36.9	+0.1 -0.7
Сб 10	178° 38.1 15° 36.2	193° 38.2 15° 35.4	208° 38.3 15° 34.7	223° 38.4 15° 34.0	238° 38.5 15° 33.3	253° 38.6 15° 32.5	88° 39.8 15° 23.0	103° 39.9 15° 22.2	118° 40.0 15° 21.5	133° 40.1 15° 20.8	148° 40.2 15° 20.0	163° 40.3 15° 19.3	+0.1 -0.7
Вс 11	178° 40.4 15° 18.6	193° 40.5 15° 17.8	208° 40.6 15° 17.1	223° 40.7 15° 16.3	238° 40.8 15° 15.6	253° 40.9 15° 14.9	88° 42.2 15° 05.2	103° 42.3 15° 04.4	118° 42.4 15° 03.7	133° 42.6 15° 02.9	148° 42.7 15° 02.2	163° 42.8 15° 01.4	+0.1 -0.7
Пн 12	178° 42.9 15° 00.7	193° 43.0 14° 59.9	208° 43.1 14° 59.2	223° 43.2 14° 58.4	238° 43.3 14° 57.7	253° 43.4 14° 56.9	88° 44.8 14° 47.1	103° 44.9 14° 46.4	118° 45.0 14° 45.6	133° 45.1 14° 44.9	148° 45.3 14° 44.1	163° 45.4 14° 43.4	+0.1 -0.7
Вт 13	178° 45.5 14° 42.6	193° 45.6 14° 41.8	208° 45.7 14° 41.1	223° 45.8 14° 40.3	238° 45.9 14° 39.6	253° 46.0 14° 38.8	88° 47.5 14° 28.9	103° 47.6 14° 28.1	118° 47.8 14° 27.3	133° 47.9 14° 26.6	148° 48.0 14° 25.8	163° 48.1 14° 25.0	+0.1 -0.8
Ср 14	178° 48.2 14° 24.3	193° 48.3 14° 23.5	208° 48.5 14° 22.7	223° 48.6 14° 22.0	238° 48.7 14° 21.2	253° 48.8 14° 20.4	88° 50.4 14° 10.4	103° 50.5 14° 09.6	118° 50.6 14° 08.8	133° 50.7 14° 08.0	148° 50.9 14° 07.3	163° 51.0 14° 06.5	+0.1 -0.8
Чт 15	178° 51.1 14° 05.7	193° 51.2 14° 04.9	208° 51.4 14° 04.1	223° 51.5 14° 03.4	238° 51.6 14° 02.6	253° 51.7 14° 01.8	88° 53.4 13° 51.6	103° 53.5 13° 50.8	118° 53.6 13° 50.1	133° 53.7 13° 49.3	148° 53.9 13° 48.5	163° 54.0 13° 47.7	+0.1 -0.8
Пт 16	178° 54.1 13° 46.9	193° 54.2 13° 46.1	208° 54.4 13° 45.3	223° 54.5 13° 44.6	238° 54.6 13° 43.8	253° 54.8 13° 43.0	88° 56.5 13° 32.7	103° 56.6 13° 31.9	118° 56.7 13° 31.1	133° 56.9 13° 30.3	148° 57.0 13° 29.5	163° 57.1 13° 28.7	+0.1 -0.8
Сб 17	178° 57.3 13° 27.9	193° 57.4 13° 27.1	208° 57.5 13° 26.3	223° 57.7 13° 25.5	238° 57.8 13° 24.7	253° 57.9 13° 23.9	88° 59.7 13° 13.5	103° 59.8 13° 12.7	119° 00.0 13° 11.9	134° 00.1 13° 11.1	149° 00.3 13° 10.3	164° 00.4 13° 09.5	+0.1 -0.8
Вс 18	179° 00.5 13° 08.7	194° 00.7 13° 07.9	209° 00.8 13° 07.1	224° 00.9 13° 06.3	239° 01.1 13° 05.5	254° 01.2 13° 04.7	89° 03.1 12° 54.1	104° 03.2 12° 53.3	119° 03.3 12° 52.5	134° 03.5 12° 51.7	149° 03.6 12° 50.9	164° 03.8 12° 50.1	+0.1 -0.8
Пн 19	179° 03.9 12° 49.3	194° 04.1 12° 48.4	209° 04.2 12° 47.6	224° 04.4 12° 46.8	239° 04.5 12° 46.0	254° 04.6 12° 45.2	89° 06.5 12° 34.6	104° 06.7 12° 33.7	119° 06.8 12° 32.9	134° 07.0 12° 32.1	149° 07.1 12° 31.3	164° 07.3 12° 30.4	+0.1 -0.8
Вт 20	179° 07.4 12° 29.6	194° 07.6 12° 28.8	209° 07.7 12° 28.0	224° 07.9 12° 27.2	239° 08.0 12° 26.3	254° 08.2 12° 25.5	89° 10.1 12° 14.8	104° 10.3 12° 13.9	119° 10.4 12° 13.1	134° 10.6 12° 12.3	149° 10.7 12° 11.4	164° 10.9 12° 10.6	+0.1 -0.8
Ср 21	179° 11.1 12° 09.8	194° 11.2 12° 09.0	209° 11.4 12° 08.1	224° 11.5 12° 07.3	239° 11.7 12° 06.5	254° 11.8 12° 05.6	89° 13.8 11° 54.8	104° 14.0 11° 53.9	119° 14.2 11° 53.1	134° 14.3 11° 52.3	149° 14.5 11° 51.4	164° 14.6 11° 50.6	+0.2 -0.8
Чт 22	179° 14.8 11° 49.8	194° 14.9 11° 48.9	209° 15.1 11° 48.1	224° 15.3 11° 47.2	239° 15.4 11° 46.4	254° 15.6 11° 45.6	89° 17.7 11° 34.6	104° 17.8 11° 33.8	119° 18.0 11° 32.9	134° 18.1 11° 32.1	149° 18.3 11° 31.2	164° 18.5 11° 30.4	+0.2 -0.8
Пт 23	179° 18.6 11° 29.5	194° 18.8 11° 28.7	209° 19.0 11° 27.8	224° 19.1 11° 27.0	239° 19.3 11° 26.2	254° 19.5 11° 25.3	89° 21.6 11° 14.3	104° 21.8 11° 13.4	119° 21.9 11° 12.6	134° 22.1 11° 11.7	149° 22.3 11° 10.8	164° 22.4 11° 10.0	+0.2 -0.8
Сб 24	179° 22.6 11° 09.1	194° 22.8 11° 08.3	209° 22.9 11° 07.4	224° 23.1 11° 06.6	239° 23.3 11° 05.7	254° 23.4 11° 04.9	89° 25.6 10° 53.7	104° 25.8 10° 52.9	119° 26.0 10° 52.0	134° 26.1 10° 51.1	149° 26.3 10° 50.3	164° 26.5 10° 49.4	+0.2 -0.9
Вс 25	179° 26.6 10° 48.6	194° 26.8 10° 47.7	209° 27.0 10° 46.8	224° 27.2 10° 46.0	239° 27.3 10° 45.1	254° 27.5 10° 44.3	89° 29.7 10° 33.0	104° 29.9 10° 32.2	119° 30.1 10° 31.3	134° 30.3 10° 30.4	149° 30.4 10° 29.6	164° 30.6 10° 28.7	+0.2 -0.9
Пн 26	179° 30.8 10° 27.8	194° 31.0 10° 26.9	209° 31.1 10° 26.1	224° 31.3 10° 25.2	239° 31.5 10° 24.3	254° 31.7 10° 23.5	89° 34.0 10° 12.1	104° 34.2 10° 11.3	119° 34.3 10° 10.4	134° 34.5 10° 09.5	149° 34.7 10° 08.6	164° 34.9 10° 07.8	+0.2 -0.9
Вт 27	179° 35.0 10° 06.9	194° 35.2 10° 06.0	209° 35.4 10° 05.1	224° 35.6 10° 04.3	239° 35.8 10° 03.4	254° 35.9 10° 02.5	89° 38.3 9° 51.1	104° 38.5 9° 50.2	119° 38.7 9° 49.3	134° 38.8 9° 48.5	149° 39.0 9° 47.6	164° 39.2 9° 46.7	+0.2 -0.9
Ср 28	179° 39.4 9° 45.8	194° 39.6 9° 44.9	209° 39.8 9° 44.1	224° 39.9 9° 43.2	239° 40.1 9° 42.3	254° 40.3 9° 41.4	89° 42.7 9° 29.9	104° 42.9 9° 29.0	119° 43.1 9° 28.1	134° 43.3 9° 27.3	149° 43.5 9° 26.4	164° 43.6 9° 25.5	+0.2 -0.9
Чт 29	179° 43.8 9° 24.6	194° 44.0 9° 23.7	209° 44.2 9° 22.8	224° 44.4 9° 21.9	239° 44.6 9° 21.0	254° 44.8 9° 20.2	89° 47.2 9° 08.6	104° 47.4 9° 07.7	119° 47.6 9° 06.8	134° 47.8 9° 05.9	149° 48.0 9° 05.0	164° 48.2 9° 04.1	+0.2 -0.9
Пт 30	179° 48.3 9° 03.2	194° 48.5 9° 02.3	209° 48.7 9° 01.4	224° 48.9 9° 00.5	239° 49.1 8° 59.6	254° 49.3 8° 58.7	89° 51.8 8° 47.1	104° 52.0 8° 46.2	119° 52.2 8° 45.3	134° 52.4 8° 44.4	149° 52.6 8° 43.5	164° 52.8 8° 42.6	+0.2 -0.9
Сб 31	179° 53.0 8° 41.7	194° 53.1 8° 40.8	209° 53.3 8° 39.9	224° 53.5 8° 39.0	239° 53.7 8° 38.1	254° 53.9 8° 37.2	89° 56.5 8° 25.5	104° 56.7 8° 24.6	119° 56.9 8° 23.6	134° 57.1 8° 22.7	149° 57.2 8° 21.8	164° 57.4 8° 20.9	+0.2 -0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2030

Д	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	Δ'/h	R/p
Чт 1	49° 10.2	63° 42.2	78° 14.2	92° 46.3	107° 18.3	121° 50.3	136° 22.3	150° 54.3	165° 26.3	179° 58.2	194° 30.2	+32.0	15.5
	4° 31.2	4° 18.8	4° 06.4	3° 53.9	3° 41.5	3° 29.0	3° 16.4	3° 03.9	2° 51.3	2° 38.8	2° 26.2	-12.5	56.9
Пт 2	52° 27.9	66° 59.6	81° 31.3	96° 03.0	110° 34.6	125° 06.2	139° 37.8	154° 09.3	168° 40.8	183° 12.3	197° 43.8	+31.6	15.6
	-0° 44.7	-0° 57.5	-1° 10.3	-1° 23.1	-1° 35.9	-1° 48.7	-2° 01.5	-2° 14.3	-2° 27.1	-2° 39.9	-2° 52.7	-12.8	57.4
Сб 3	55° 31.4	70° 02.3	84° 33.1	99° 03.9	113° 34.6	128° 05.3	142° 35.9	157° 06.5	171° 37.0	186° 07.5	200° 37.9	+30.7	15.8
	-6° 03.1	-6° 15.7	-6° 28.2	-6° 40.7	-6° 53.2	-7° 05.6	-7° 18.0	-7° 30.4	-7° 42.8	-7° 55.1	-8° 07.4	-12.4	57.9
Вс 4	58° 07.7	72° 37.2	87° 06.6	101° 36.0	116° 05.3	130° 34.6	145° 03.7	159° 32.9	174° 01.9	188° 30.9	202° 59.8	+29.2	15.9
	-11° 07.0	-11° 18.6	-11° 30.1	-11° 41.6	-11° 53.0	-12° 04.4	-12° 15.7	-12° 27.0	-12° 38.2	-12° 49.3	-13° 00.3	-11.3	58.4
Пн 5	60° 04.9	74° 32.6	89° 00.3	103° 27.9	117° 55.5	132° 22.9	146° 50.3	161° 17.6	175° 44.8	190° 11.9	204° 39.0	+27.4	16.0
	-15° 37.6	-15° 47.5	-15° 57.2	-16° 06.9	-16° 16.5	-16° 26.0	-16° 35.4	-16° 44.7	-16° 53.9	-17° 03.1	-17° 12.1	-9.5	58.8
◐ Вт 6	61° 15.9	75° 41.8	90° 07.6	104° 33.3	118° 58.9	133° 24.5	147° 50.0	162° 15.5	176° 40.8	191° 06.1	205° 31.4	+25.5	16.1
	-19° 14.9	-19° 22.2	-19° 29.4	-19° 36.5	-19° 43.4	-19° 50.2	-19° 56.9	-20° 03.5	-20° 09.9	-20° 16.3	-20° 22.5	-6.8	59.2
Ср 7	61° 42.3	76° 06.6	90° 30.8	104° 55.0	119° 19.1	133° 43.2	148° 07.2	162° 31.2	176° 55.2	191° 19.1	205° 42.9	+24.1	16.2
	-21° 39.2	-21° 43.3	-21° 47.1	-21° 50.8	-21° 54.4	-21° 57.8	-22° 01.1	-22° 04.2	-22° 07.2	-22° 10.0	-22° 12.7	-3.3	59.5
Чт 8	76° 06.6	90° 30.8	104° 55.0	119° 19.1	133° 43.2	148° 07.2	162° 31.2	176° 55.2	191° 19.1	205° 42.9	220° 06.8	+24.0	16.2
	-21° 43.3	-21° 47.1	-21° 50.8	-21° 54.4	-21° 57.8	-22° 01.1	-22° 04.2	-22° 07.2	-22° 10.0	-22° 12.7	-22° 15.2	-3.2	59.5
Пт 9	76° 00.8	90° 24.3	104° 47.7	119° 11.1	133° 34.6	147° 58.0	162° 21.4	176° 44.8	191° 08.2	205° 31.7	219° 55.1	+23.4	16.3
	-22° 34.7	-22° 34.8	-22° 34.7	-22° 34.4	-22° 34.0	-22° 33.5	-22° 32.7	-22° 31.8	-22° 30.8	-22° 29.6	-22° 28.2	+0.6	59.7
○ Вт 13	78° 15.2	92° 43.9	107° 12.7	121° 41.6	136° 10.5	150° 39.5	165° 08.6	179° 37.8	194° 07.0	208° 36.3	223° 05.6	+29.0	16.0
	-11° 18.9	-11° 07.0	-10° 55.1	-10° 43.2	-10° 31.2	-10° 19.1	-10° 07.0	-9° 54.9	-9° 42.7	-9° 30.5	-9° 18.2	+12.1	58.7
Ср 14	80° 33.7	95° 04.1	109° 34.5	124° 05.0	138° 35.5	153° 06.1	167° 36.7	182° 07.4	196° 38.2	211° 09.0	225° 39.8	+30.6	15.8
	-6° 10.2	-5° 57.5	-5° 44.8	-5° 32.0	-5° 19.2	-5° 06.4	-4° 53.6	-4° 40.8	-4° 28.0	-4° 15.1	-4° 02.3	+12.8	58.0
Чт 15	83° 28.0	97° 59.6	112° 31.2	127° 02.8	141° 34.5	156° 06.2	170° 37.9	185° 09.7	199° 41.5	214° 13.3	228° 45.1	+31.7	15.6
	-0° 49.4	-0° 36.6	-0° 23.8	-0° 11.1	0° 01.7	0° 14.5	0° 27.2	0° 39.9	0° 52.6	1° 05.3	1° 18.0	+12.7	57.3
Пт 16	86° 46.2	101° 18.4	115° 50.7	130° 23.0	144° 55.3	159° 27.6	173° 59.9	188° 32.2	203° 04.6	217° 36.9	232° 09.3	+32.3	15.4
	4° 24.9	4° 37.1	4° 49.3	5° 01.4	5° 13.5	5° 25.6	5° 37.6	5° 49.6	6° 01.6	6° 13.5	6° 25.3	+12.0	56.5
Сб 17	90° 15.9	104° 48.3	119° 20.8	133° 53.3	148° 25.7	162° 58.2	177° 30.7	192° 03.1	206° 35.6	221° 08.0	235° 40.5	+32.5	15.2
	9° 17.7	9° 28.8	9° 39.8	9° 50.8	10° 01.7	10° 12.6	10° 23.4	10° 34.1	10° 44.8	10° 55.4	11° 06.0	+10.8	55.8
Вс 18	93° 46.3	108° 18.6	122° 50.9	137° 23.1	151° 55.4	166° 27.6	180° 59.9	195° 32.1	210° 04.3	224° 36.5	239° 08.6	+32.2	15.0
	13° 36.9	13° 46.4	13° 55.9	14° 05.2	14° 14.6	14° 23.8	14° 33.0	14° 42.1	14° 51.1	15° 00.0	15° 08.9	+9.2	55.1
Пн 19	97° 08.9	111° 40.7	126° 12.6	140° 44.4	155° 16.2	169° 48.0	184° 19.7	198° 51.4	213° 23.1	227° 54.8	242° 26.5	+31.8	14.9
	17° 12.7	17° 20.4	17° 27.9	17° 35.3	17° 42.7	17° 50.0	17° 57.2	18° 04.3	18° 11.3	18° 18.3	18° 25.1	+7.2	54.6
Вт 20	100° 18.5	114° 49.8	129° 21.1	143° 52.3	158° 23.5	172° 54.7	187° 25.9	201° 57.0	216° 28.2	230° 59.2	245° 30.3	+31.2	14.8
	19° 57.3	20° 02.7	20° 08.0	20° 13.2	20° 18.4	20° 23.4	20° 28.3	20° 33.2	20° 37.9	20° 42.6	20° 47.2	+5.0	54.3
◑ Ср 21	103° 13.8	117° 44.6	132° 15.3	146° 46.0	161° 16.7	175° 47.3	190° 18.0	204° 48.6	219° 19.2	233° 49.8	248° 20.4	+30.7	14.8
	21° 43.9	21° 46.8	21° 49.7	21° 52.5	21° 55.2	21° 57.8	22° 00.2	22° 02.6	22° 04.9	22° 07.0	22° 09.1	+2.5	54.2
Чт 22	105° 57.3	120° 27.7	134° 58.0	149° 28.4	163° 58.7	178° 29.0	192° 59.3	207° 29.6	222° 00.0	236° 30.3	251° 00.5	+30.3	14.8
	22° 27.6	22° 28.0	22° 28.2	22° 28.4	22° 28.5	22° 28.5	22° 28.3	22° 28.1	22° 27.7	22° 27.3	22° 26.7	-0.1	54.3
Пт 23	108° 34.5	123° 04.8	137° 35.0	152° 05.3	166° 35.5	181° 05.8	195° 36.1	210° 06.3	224° 36.6	239° 06.9	253° 37.2	+30.3	14.9
	22° 05.5	22° 03.3	22° 00.9	21° 58.4	21° 55.8	21° 53.1	21° 50.3	21° 47.5	21° 44.4	21° 41.3	21° 38.1	-2.7	54.5
Сб 24	111° 12.4	125° 42.8	140° 13.2	154° 43.7	169° 14.1	183° 44.6	198° 15.1	212° 45.6	227° 16.1	241° 46.6	256° 17.1	+30.5	15.0
	20° 37.5	20° 32.6	20° 27.6	20° 22.6	20° 17.4	20° 12.1	20° 06.7	20° 01.3	19° 55.7	19° 50.0	19° 44.3	-5.3	54.9
Вс 25	113° 56.9	128° 27.7	142° 58.5	157° 29.3	172° 00.2	186° 31.0	201° 01.9	215° 32.7	230° 03.6	244° 34.5	259° 05.5	+30.9	15.1
	18° 06.1	17° 58.8	17° 51.5	17° 44.0	17° 36.4	17° 28.8	17° 21.0	17° 13.2	17° 05.2	16° 57.2	16° 49.1	-7.7	55.4
Пн 26	116° 51.4	131° 22.5	145° 53.7	160° 25.0	174° 56.2	189° 27.4	203° 58.7	218° 29.9	233° 01.2	247° 32.5	262° 03.8	+31.2	15.3
	14° 37.5	14° 28.0	14° 18.5	14° 08.9	13° 59.3	13° 49.6	13° 39.8	13° 29.9	13° 19.9	13° 09.9	12° 59.8	-9.8	56.0
Вт 27	119° 54.8	134° 26.3	148° 57.8	163° 29.3	178° 00.8	192° 32.3	207° 03.8	221° 35.3	236° 06.8	250° 38.3	265° 09.8	+31.5	15.4
	10° 20.2	10° 09.1	9° 57.9	9° 46.6	9° 35.3	9° 24.0	9° 12.5	9° 01.1	8° 49.5	8° 37.9	8° 26.3	-11.4	56.6
● Ср 28	123° 02.7	137° 34.2	152° 05.6	166° 37.1	181° 08.6	195° 40.1	210° 11.5	224° 43.0	239° 14.4	253° 45.8	268° 17.3	+31.5	15.6
	5° 26.2	5° 13.8	5° 01.5	4° 49.1	4° 36.6	4° 24.1	4° 11.6	3° 59.1	3° 46.5	3° 33.9	3° 21.3	-12.5	57.2
Чт 29	126° 06.7	140° 37.8	155° 08.9	169° 40.0	184° 11.1	198° 42.1	213° 13.1	227° 44.1	242° 15.1	256° 46.0	271° 16.9	+31.0	15.8
	0° 09.5	-0° 03.4	-0° 16.4	-0° 29.3	-0° 42.2	-0° 55.2	-1° 08.1	-1° 21.1	-1° 34.0	-1° 47.0	-1° 59.9	-12.9	57.8
Пт 30	128° 56.5	143° 26.8	157° 57.1	172° 27.4	186° 57.6	201° 27.8	215° 57.9	230° 28.0	244° 58.0	259° 28.0	273° 58.0	+30.2	15.9
	-5° 13.2	-5° 26.0	-5° 38.8	-5° 51.5	-6° 04.2	-6° 16.9	-6° 29.5	-6° 42.2	-6° 54.8	-7° 07.3	-7° 19.9	-12.7	58.3
Сб 31	131° 21.1	145° 50.3	160° 19.3	174° 48.3	189° 17.3	203° 46.1	218° 15.0	232° 43.7	247° 12.5	261° 41.1	276° 09.7	+28.9	16.0
	-10° 23.2	-10° 35.1	-10° 46.8	-10° 58.6	-11° 10.3	-11° 21.9	-11° 33.5	-11° 45.0	-11° 56.4	-12° 07.8	-12° 19.1	-11.6	58.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 6 16h42 — Полнолуние: 13 10h44 — Последняя четв.: 21 01h15 — Новолуние: 28 23h07

СОЛНЦЕ

Сентябрь 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	179° 57.6 8° 20.0	194° 57.8 8° 19.1	209° 58.0 8° 18.2	224° 58.2 8° 17.3	239° 58.4 8° 16.4	254° 58.6 8° 15.5	90° 01.2 8° 03.7	105° 01.4 8° 02.8	120° 01.6 8° 01.9	135° 01.8 8° 01.0	150° 02.0 8° 00.1	165° 02.2 7° 59.1	+0.2 -0.9
Пн 2	180° 02.4 7° 58.2	195° 02.6 7° 57.3	210° 02.8 7° 56.4	225° 03.0 7° 55.5	240° 03.2 7° 54.6	255° 03.4 7° 53.7	90° 06.0 7° 41.8	105° 06.2 7° 40.9	120° 06.4 7° 40.0	135° 06.6 7° 39.1	150° 06.8 7° 38.1	165° 07.0 7° 37.2	+0.2 -0.9
Вт 3	180° 07.3 7° 36.3	195° 07.5 7° 35.4	210° 07.7 7° 34.5	225° 07.9 7° 33.6	240° 08.1 7° 32.6	255° 08.3 7° 31.7	90° 10.9 7° 19.8	105° 11.1 7° 18.9	120° 11.3 7° 18.0	135° 11.5 7° 17.0	150° 11.8 7° 16.1	165° 12.0 7° 15.2	+0.2 -0.9
Ср 4	180° 12.2 7° 14.3	195° 12.4 7° 13.3	210° 12.6 7° 12.4	225° 12.8 7° 11.5	240° 13.0 7° 10.6	255° 13.2 7° 09.7	90° 15.9 6° 57.7	105° 16.1 6° 56.7	120° 16.3 6° 55.8	135° 16.5 6° 54.9	150° 16.7 6° 54.0	165° 16.9 6° 53.0	+0.2 -0.9
Чт 5	180° 17.1 6° 52.1	195° 17.4 6° 51.2	210° 17.6 6° 50.3	225° 17.8 6° 49.3	240° 18.0 6° 48.4	255° 18.2 6° 47.5	90° 20.9 6° 35.4	105° 21.1 6° 34.5	120° 21.3 6° 33.6	135° 21.6 6° 32.6	150° 21.8 6° 31.7	165° 22.0 6° 30.8	+0.2 -0.9
Пт 6	180° 22.2 6° 29.8	195° 22.4 6° 28.9	210° 22.6 6° 28.0	225° 22.8 6° 27.1	240° 23.0 6° 26.1	255° 23.2 6° 25.2	90° 26.0 6° 13.1	105° 26.2 6° 12.1	120° 26.4 6° 11.2	135° 26.6 6° 10.3	150° 26.9 6° 09.3	165° 27.1 6° 08.4	+0.2 -0.9
Сб 7	180° 27.3 6° 07.5	195° 27.5 6° 06.5	210° 27.7 6° 05.6	225° 27.9 6° 04.7	240° 28.1 6° 03.7	255° 28.4 6° 02.8	90° 31.1 5° 50.6	105° 31.4 5° 49.7	120° 31.6 5° 48.8	135° 31.8 5° 47.8	150° 32.0 5° 46.9	165° 32.2 5° 45.9	+0.2 -0.9
Вс 8	180° 32.4 5° 45.0	195° 32.7 5° 44.1	210° 32.9 5° 43.1	225° 33.1 5° 42.2	240° 33.3 5° 41.2	255° 33.5 5° 40.3	90° 36.3 5° 28.1	105° 36.6 5° 27.1	120° 36.8 5° 26.2	135° 37.0 5° 25.3	150° 37.2 5° 24.3	165° 37.4 5° 23.4	+0.2 -0.9
Пн 9	180° 37.6 5° 22.4	195° 37.9 5° 21.5	210° 38.1 5° 20.5	225° 38.3 5° 19.6	240° 38.5 5° 18.7	255° 38.7 5° 17.7	90° 41.6 5° 05.5	105° 41.8 5° 04.5	120° 42.0 5° 03.6	135° 42.2 5° 02.6	150° 42.4 5° 01.7	165° 42.7 5° 00.7	+0.2 -0.9
Вт 10	180° 42.9 4° 59.8	195° 43.1 4° 58.8	210° 43.3 4° 57.9	225° 43.5 4° 56.9	240° 43.8 4° 56.0	255° 44.0 4° 55.0	90° 46.8 4° 42.7	105° 47.1 4° 41.8	120° 47.3 4° 40.8	135° 47.5 4° 39.9	150° 47.7 4° 38.9	165° 47.9 4° 38.0	+0.2 -0.9
Ср 11	180° 48.2 4° 37.0	195° 48.4 4° 36.1	210° 48.6 4° 35.1	225° 48.8 4° 34.2	240° 49.0 4° 33.2	255° 49.3 4° 32.3	90° 52.1 4° 19.9	105° 52.4 4° 19.0	120° 52.6 4° 18.0	135° 52.8 4° 17.1	150° 53.0 4° 16.1	165° 53.2 4° 15.2	+0.2 -0.9
Чт 12	180° 53.5 4° 14.2	195° 53.7 4° 13.3	210° 53.9 4° 12.3	225° 54.1 4° 11.4	240° 54.4 4° 10.4	255° 54.6 4° 09.5	90° 57.5 3° 57.1	105° 57.7 3° 56.1	120° 57.9 3° 55.1	135° 58.1 3° 54.2	150° 58.4 3° 53.2	165° 58.6 3° 52.3	+0.2 -1.0
Пт 13	180° 58.8 3° 51.3	195° 59.0 3° 50.4	210° 59.3 3° 49.4	225° 59.5 3° 48.5	240° 59.7 3° 47.5	255° 59.9 3° 46.5	91° 02.8 3° 34.1	106° 03.0 3° 33.2	121° 03.3 3° 32.2	136° 03.5 3° 31.2	151° 03.7 3° 30.3	166° 03.9 3° 29.3	+0.2 -1.0
Сб 14	181° 04.2 3° 28.4	196° 04.4 3° 27.4	211° 04.6 3° 26.4	226° 04.8 3° 25.5	241° 05.1 3° 24.5	256° 05.3 3° 23.6	91° 08.2 3° 11.1	106° 08.4 3° 10.1	121° 08.6 3° 09.2	136° 08.9 3° 08.2	151° 09.1 3° 07.3	166° 09.3 3° 06.3	+0.2 -1.0
Вс 15	181° 09.5 3° 05.3	196° 09.8 3° 04.4	211° 10.0 3° 03.4	226° 10.2 3° 02.5	241° 10.4 3° 01.5	256° 10.6 3° 00.5	91° 13.6 2° 48.0	106° 13.8 2° 47.1	121° 14.0 2° 46.1	136° 14.2 2° 45.1	151° 14.5 2° 44.2	166° 14.7 2° 43.2	+0.2 -1.0
Пн 16	181° 14.9 2° 42.2	196° 15.1 2° 41.3	211° 15.4 2° 40.3	226° 15.6 2° 39.4	241° 15.8 2° 38.4	256° 16.0 2° 37.4	91° 18.9 2° 24.9	106° 19.2 2° 23.9	121° 19.4 2° 23.0	136° 19.6 2° 22.0	151° 19.8 2° 21.0	166° 20.1 2° 20.1	+0.2 -1.0
Вт 17	181° 20.3 2° 19.1	196° 20.5 2° 18.1	211° 20.7 2° 17.2	226° 21.0 2° 16.2	241° 21.2 2° 15.2	256° 21.4 2° 14.3	91° 24.3 2° 01.7	106° 24.5 2° 00.8	121° 24.8 1° 59.8	136° 25.0 1° 58.8	151° 25.2 1° 57.9	166° 25.4 1° 56.9	+0.2 -1.0
Ср 18	181° 25.7 1° 55.9	196° 25.9 1° 55.0	211° 26.1 1° 54.0	226° 26.3 1° 53.0	241° 26.6 1° 52.1	256° 26.8 1° 51.1	91° 29.7 1° 38.5	106° 29.9 1° 37.5	121° 30.1 1° 36.6	136° 30.4 1° 35.6	151° 30.6 1° 34.6	166° 30.8 1° 33.7	+0.2 -1.0
Чт 19	181° 31.0 1° 32.7	196° 31.2 1° 31.7	211° 31.5 1° 30.8	226° 31.7 1° 29.8	241° 31.9 1° 28.8	256° 32.1 1° 27.8	91° 35.0 1° 15.2	106° 35.3 1° 14.3	121° 35.5 1° 13.3	136° 35.7 1° 12.3	151° 35.9 1° 11.4	166° 36.2 1° 10.4	+0.2 -1.0
Пт 20	181° 36.4 1° 09.4	196° 36.6 1° 08.5	211° 36.8 1° 07.5	226° 37.0 1° 06.5	241° 37.3 1° 05.5	256° 37.5 1° 04.6	91° 40.4 0° 51.9	106° 40.6 0° 51.0	121° 40.8 0° 50.0	136° 41.0 0° 49.0	151° 41.3 0° 48.1	166° 41.5 0° 47.1	+0.2 -1.0
Сб 21	181° 41.7 0° 46.1	196° 41.9 0° 45.2	211° 42.2 0° 44.2	226° 42.4 0° 43.2	241° 42.6 0° 42.2	256° 42.8 0° 41.3	91° 45.7 0° 28.6	106° 45.9 0° 27.7	121° 46.1 0° 26.7	136° 46.4 0° 25.7	151° 46.6 0° 24.7	166° 46.8 0° 23.8	+0.2 -1.0
Вс 22	181° 47.0 0° 22.8	196° 47.2 0° 21.8	211° 47.5 0° 20.9	226° 47.7 0° 19.9	241° 47.9 0° 18.9	256° 48.1 0° 17.9	91° 51.0 0° 05.3	106° 51.2 0° 04.3	121° 51.4 0° 03.3	136° 51.6 0° 02.4	151° 51.9 0° 01.4	166° 52.1 0° 00.4	+0.2 -1.0
Пн 23	181° 52.3 -0° 00.5	196° 52.5 -0° 01.5	211° 52.7 -0° 02.5	226° 53.0 -0° 03.5	241° 53.2 -0° 04.4	256° 53.4 -0° 05.4	91° 56.2 -0° 18.1	106° 56.5 -0° 19.0	121° 56.7 -0° 20.0	136° 56.9 -0° 21.0	151° 57.1 -0° 22.0	166° 57.3 -0° 22.9	+0.2 -1.0
Вт 24	181° 57.6 -0° 23.9	196° 57.8 -0° 24.9	211° 58.0 -0° 25.9	226° 58.2 -0° 26.8	241° 58.4 -0° 27.8	256° 58.6 -0° 28.8	92° 01.5 -0° 41.4	107° 01.7 -0° 42.4	122° 01.9 -0° 43.4	137° 02.1 -0° 44.4	152° 02.3 -0° 45.3	167° 02.5 -0° 46.3	+0.2 -1.0
Ср 25	182° 02.8 -0° 47.3	197° 03.0 -0° 48.2	212° 03.2 -0° 49.2	227° 03.4 -0° 50.2	242° 03.6 -0° 51.2	257° 03.8 -0° 52.1	92° 06.6 -1° 04.8	107° 06.9 -1° 05.8	122° 07.1 -1° 06.7	137° 07.3 -1° 07.7	152° 07.5 -1° 08.7	167° 07.7 -1° 09.7	+0.2 -1.0
Чт 26	182° 07.9 -1° 10.6	197° 08.1 -1° 11.6	212° 08.4 -1° 12.6	227° 08.6 -1° 13.6	242° 08.8 -1° 14.5	257° 09.0 -1° 15.5	92° 11.8 -1° 28.2	107° 12.0 -1° 29.1	122° 12.2 -1° 30.1	137° 12.4 -1° 31.1	152° 12.6 -1° 32.1	167° 12.8 -1° 33.0	+0.2 -1.0
Пт 27	182° 13.0 -1° 34.0	197° 13.3 -1° 35.0	212° 13.5 -1° 36.0	227° 13.7 -1° 36.9	242° 13.9 -1° 37.9	257° 14.1 -1° 38.9	92° 16.8 -1° 51.5	107° 17.1 -1° 52.5	122° 17.3 -1° 53.5	137° 17.5 -1° 54.4	152° 17.7 -1° 55.4	167° 17.9 -1° 56.4	+0.2 -1.0
Сб 28	182° 18.1 -1° 57.4	197° 18.3 -1° 58.3	212° 18.5 -1° 59.3	227° 18.7 -2° 00.3	242° 19.0 -2° 01.3	257° 19.2 -2° 02.2	92° 21.9 -2° 14.9	107° 22.1 -2° 15.8	122° 22.3 -2° 16.8	137° 22.5 -2° 17.8	152° 22.7 -2° 18.8	167° 22.9 -2° 19.7	+0.2 -1.0
Вс 29	182° 23.1 -2° 20.7	197° 23.3 -2° 21.7	212° 23.5 -2° 22.6	227° 23.7 -2° 23.6	242° 24.0 -2° 24.6	257° 24.2 -2° 25.6	92° 26.8 -2° 38.2	107° 27.0 -2° 39.2	122° 27.3 -2° 40.1	137° 27.5 -2° 41.1	152° 27.7 -2° 42.1	167° 27.9 -2° 43.0	+0.2 -1.0
Пн 30	182° 28.1 -2° 44.0	197° 28.3 -2° 45.0	212° 28.5 -2° 46.0	227° 28.7 -2° 46.9	242° 28.9 -2° 47.9	257° 29.1 -2° 48.9	92° 31.7 -3° 01.5	107° 32.0 -3° 02.5	122° 32.2 -3° 03.4	137° 32.4 -3° 04.4	152° 32.6 -3° 05.4	167° 32.8 -3° 06.3	+0.2 -1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2030

Д	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	Δ'/h	R/p
Вс 1	60° 52.2	75° 20.1	89° 47.9	104° 15.7	118° 43.4	133° 11.1	147° 38.7	162° 06.2	176° 33.6	191° 01.0	205° 28.3	+27.6	16.1
	-14° 08.4	-14° 19.0	-14° 29.4	-14° 39.7	-14° 50.0	-15° 00.2	-15° 10.3	-15° 20.3	-15° 30.2	-15° 40.1	-15° 49.8	-10.1	58.9
Пн 2	62° 10.5	76° 36.8	91° 03.0	105° 29.2	119° 55.3	134° 21.4	148° 47.4	163° 13.3	177° 39.2	192° 05.0	206° 30.8	+26.0	16.1
	-18° 04.2	-18° 12.3	-18° 20.3	-18° 28.2	-18° 36.0	-18° 43.6	-18° 51.2	-18° 58.6	-19° 05.9	-19° 13.1	-19° 20.2	-7.6	59.1
Вт 3	62° 50.9	77° 15.8	91° 40.7	106° 05.6	120° 30.4	134° 55.2	149° 19.9	163° 44.6	178° 09.3	192° 33.9	206° 58.5	+24.8	16.1
	-20° 51.0	-20° 56.0	-21° 00.9	-21° 05.6	-21° 10.2	-21° 14.7	-21° 19.0	-21° 23.1	-21° 27.2	-21° 31.1	-21° 34.8	-4.4	59.2
◐ Ср 4	63° 04.2	77° 28.4	91° 52.6	106° 16.8	120° 41.0	135° 05.2	149° 29.4	163° 53.6	178° 17.8	192° 41.9	207° 06.1	+24.2	16.1
	-22° 13.6	-22° 15.0	-22° 16.2	-22° 17.4	-22° 18.3	-22° 19.1	-22° 19.8	-22° 20.3	-22° 20.6	-22° 20.9	-22° 20.9	-0.7	59.2
Чт 5	63° 09.9	77° 34.3	91° 58.7	106° 23.2	120° 47.7	135° 12.2	149° 36.7	164° 01.3	178° 25.9	192° 50.5	207° 15.2	+24.5	16.1
	-22° 03.9	-22° 01.6	-21° 59.1	-21° 56.5	-21° 53.7	-21° 50.8	-21° 47.8	-21° 44.6	-21° 41.3	-21° 37.8	-21° 34.2	+3.0	59.1
Пт 6	77° 34.3	91° 58.7	106° 23.2	120° 47.7	135° 12.2	149° 36.7	164° 01.3	178° 25.9	192° 50.5	207° 15.2	221° 39.9	+24.6	16.1
	-22° 01.6	-21° 59.1	-21° 56.5	-21° 53.7	-21° 50.8	-21° 47.8	-21° 44.6	-21° 41.3	-21° 37.8	-21° 34.2	-21° 30.4	+3.1	59.1
Сб 7	77° 55.8	92° 21.3	106° 46.8	121° 12.4	135° 38.0	150° 03.7	164° 29.4	178° 55.2	193° 21.1	207° 47.0	222° 13.0	+25.7	16.1
	-20° 17.6	-20° 11.7	-20° 05.7	-19° 59.5	-19° 53.2	-19° 46.8	-19° 40.3	-19° 33.6	-19° 26.8	-19° 19.9	-19° 12.9	+6.5	58.9
Вс 8	78° 50.4	93° 17.5	107° 44.6	122° 11.7	136° 38.9	151° 06.2	165° 33.6	180° 01.0	194° 28.5	208° 56.1	223° 23.8	+27.3	16.0
	-17° 14.0	-17° 05.2	-16° 56.4	-16° 47.4	-16° 38.3	-16° 29.2	-16° 19.9	-16° 10.6	-16° 01.1	-15° 51.6	-15° 42.0	+9.2	58.7
Пн 9	80° 26.5	94° 55.2	109° 24.0	123° 52.8	138° 21.7	152° 50.7	167° 19.7	181° 48.8	196° 18.0	210° 47.2	225° 16.5	+29.0	15.9
	-13° 07.9	-12° 57.0	-12° 46.1	-12° 35.1	-12° 24.0	-12° 12.9	-12° 01.7	-11° 50.5	-11° 39.2	-11° 27.8	-11° 16.4	+11.2	58.3
Вт 10	82° 43.0	97° 13.2	111° 43.5	126° 13.8	140° 44.1	155° 14.6	169° 45.0	184° 15.6	198° 46.1	213° 16.7	227° 47.4	+30.4	15.8
	-8° 19.3	-8° 07.1	-7° 55.0	-7° 42.8	-7° 30.5	-7° 18.3	-7° 06.0	-6° 53.6	-6° 41.3	-6° 28.9	-6° 16.5	+12.3	57.9
○ Ср 11	85° 32.6	100° 04.0	114° 35.3	129° 06.7	143° 38.2	158° 09.6	172° 41.1	187° 12.7	201° 44.2	216° 15.8	230° 47.5	+31.5	15.6
	-3° 08.4	-2° 55.8	-2° 43.2	-2° 30.5	-2° 17.9	-2° 05.3	-1° 52.6	-1° 40.0	-1° 27.4	-1° 14.8	-1° 02.1	+12.6	57.3
Чт 12	88° 45.0	103° 17.0	117° 49.0	132° 21.1	146° 53.1	161° 25.2	175° 57.3	190° 29.4	205° 01.5	219° 33.6	234° 05.8	+32.1	15.5
	2° 05.9	2° 18.3	2° 30.7	2° 43.1	2° 55.4	3° 07.7	3° 20.0	3° 32.3	3° 44.5	3° 56.7	4° 08.9	+12.3	56.7
Пт 13	92° 09.0	106° 41.2	121° 13.5	135° 45.8	150° 18.0	164° 50.3	179° 22.5	193° 54.8	208° 27.0	222° 59.3	237° 31.5	+32.3	15.3
	7° 07.2	7° 18.8	7° 30.3	7° 41.8	7° 53.3	8° 04.6	8° 16.0	8° 27.3	8° 38.5	8° 49.7	9° 00.9	+11.4	56.1
Сб 14	95° 34.7	110° 06.8	124° 38.9	139° 11.1	153° 43.2	168° 15.3	182° 47.4	197° 19.4	211° 51.5	226° 23.5	240° 55.6	+32.1	15.1
	11° 41.4	11° 51.6	12° 01.8	12° 11.9	12° 21.9	12° 31.9	12° 41.8	12° 51.6	13° 01.4	13° 11.1	13° 20.7	+9.9	55.5
Вс 15	98° 54.3	113° 26.1	127° 57.8	142° 29.6	157° 01.3	171° 33.0	186° 04.7	200° 36.4	215° 08.0	229° 39.6	244° 11.3	+31.7	15.0
	15° 36.5	15° 45.0	15° 53.3	16° 01.6	16° 09.8	16° 18.0	16° 26.0	16° 34.0	16° 41.9	16° 49.7	16° 57.4	+8.1	55.0
Пн 16	102° 03.1	116° 34.4	131° 05.7	145° 37.0	160° 08.2	174° 39.4	189° 10.6	203° 41.8	218° 13.0	232° 44.1	247° 15.3	+31.2	14.9
	18° 43.0	18° 49.3	18° 55.6	19° 01.7	19° 07.8	19° 13.8	19° 19.7	19° 25.4	19° 31.1	19° 36.7	19° 42.2	+5.9	54.6
Вт 17	105° 00.0	119° 30.9	134° 01.7	148° 32.5	163° 03.3	177° 34.1	192° 04.9	206° 35.7	221° 06.4	235° 37.1	250° 07.9	+30.8	14.8
	20° 53.4	20° 57.4	21° 01.2	21° 05.0	21° 08.7	21° 12.2	21° 15.7	21° 19.1	21° 22.3	21° 25.5	21° 28.6	+3.5	54.3
Ср 18	107° 47.3	122° 17.9	136° 48.4	151° 18.9	165° 49.5	180° 20.0	194° 50.5	209° 21.0	223° 51.6	238° 22.1	252° 52.6	+30.5	14.8
	22° 02.4	22° 03.8	22° 05.1	22° 06.3	22° 07.5	22° 08.5	22° 09.4	22° 10.2	22° 10.9	22° 11.5	22° 12.0	+1.0	54.2
◑ Чт 19	110° 29.9	125° 00.4	139° 30.9	154° 01.4	168° 31.8	183° 02.4	197° 32.9	212° 03.4	226° 33.9	241° 04.4	255° 34.9	+30.5	14.8
	22° 07.0	22° 05.8	22° 04.6	22° 03.2	22° 01.7	22° 00.1	21° 58.4	21° 56.6	21° 54.7	21° 52.8	21° 50.7	-1.6	54.3
Пт 20	113° 13.7	127° 44.3	142° 15.0	156° 45.7	171° 16.4	185° 47.1	200° 17.8	214° 48.5	229° 19.2	243° 50.0	258° 20.7	+30.7	14.9
	21° 06.8	21° 03.1	20° 59.3	20° 55.3	20° 51.3	20° 47.2	20° 42.9	20° 38.6	20° 34.2	20° 29.6	20° 25.0	-4.2	54.5
Сб 21	116° 03.6	130° 34.6	145° 05.6	159° 36.6	174° 07.6	188° 38.6	203° 09.7	217° 40.7	232° 11.8	246° 42.9	261° 14.0	+31.0	15.0
	19° 03.9	18° 57.8	18° 51.5	18° 45.1	18° 38.7	18° 32.2	18° 25.5	18° 18.8	18° 12.0	18° 05.1	17° 58.1	-6.6	55.0
Вс 22	119° 02.1	133° 33.4	148° 04.7	162° 36.1	177° 07.4	191° 38.8	206° 10.1	220° 41.5	235° 12.9	249° 44.3	264° 15.7	+31.4	15.2
	16° 02.6	15° 54.2	15° 45.8	15° 37.2	15° 28.6	15° 19.9	15° 11.1	15° 02.2	14° 53.3	14° 44.2	14° 35.1	-8.8	55.6
Пн 23	122° 07.8	136° 39.3	151° 10.8	165° 42.4	180° 13.9	194° 45.4	209° 17.0	223° 48.5	238° 20.0	252° 51.6	267° 23.1	+31.5	15.4
	12° 09.5	11° 59.2	11° 48.8	11° 38.4	11° 27.9	11° 17.4	11° 06.8	10° 56.1	10° 45.3	10° 34.5	10° 23.7	-10.6	56.3
Вт 24	125° 15.8	139° 47.3	154° 18.7	168° 50.2	183° 21.6	197° 53.0	212° 24.4	226° 55.8	241° 27.2	255° 58.6	270° 29.9	+31.4	15.6
	7° 33.6	7° 21.8	7° 10.0	6° 58.1	6° 46.2	6° 34.2	6° 22.2	6° 10.2	5° 58.1	5° 45.9	5° 33.7	-12.0	57.1
Ср 25	128° 18.1	142° 49.1	157° 20.1	171° 51.1	186° 22.0	200° 53.0	215° 23.8	229° 54.7	244° 25.5	258° 56.3	273° 27.1	+30.9	15.8
	2° 26.6	2° 13.9	2° 01.1	1° 48.4	1° 35.6	1° 22.8	1° 09.9	0° 57.1	0° 44.2	0° 31.3	0° 18.4	-12.8	57.9
Чт 26	131° 04.3	145° 34.5	160° 04.6	174° 34.6	189° 04.7	203° 34.6	218° 04.6	232° 34.5	247° 04.3	261° 34.1	276° 03.8	+30.0	16.0
	-2° 56.4	-3° 09.4	-3° 22.4	-3° 35.4	-3° 48.4	-4° 01.3	-4° 14.3	-4° 27.3	-4° 40.2	-4° 53.0	-5° 06.0	-13.0	58.6
● Пт 27	133° 23.4	147° 52.3	162° 21.1	176° 49.8	191° 18.5	205° 47.1	220° 15.7	234° 44.2	249° 12.6	263° 40.9	278° 09.2	+28.6	16.1
	-8° 16.9	-8° 29.4	-8° 41.8	-8° 54.2	-9° 06.6	-9° 18.9	-9° 31.1	-9° 43.3	-9° 55.5	-10° 07.6	-10° 19.7	-12.3	59.2
Сб 28	135° 05.9	149° 33.1	164° 00.3	178° 27.4	192° 54.5	207° 21.4	221° 48.3	236° 15.2	250° 41.9	265° 08.6	279° 35.3	+26.9	16.2
	-13° 13.3	-13° 24.3	-13° 35.3	-13° 46.2	-13° 56.9	-14° 07.6	-14° 18.3	-14° 28.8	-14° 39.3	-14° 49.6	-14° 59.9	-10.7	59.6
Вс 29	136° 06.8	150° 32.3	164° 57.9	179° 23.3	193° 48.7	208° 14.1	222° 39.3	237° 04.6	251° 29.7	265° 54.8	280° 19.9	+25.3	16.3
	-17° 22.3	-17° 30.9	-17° 39.4	-17° 47.9	-17° 56.2	-18° 04.4	-18° 12.4	-18° 20.4	-18° 28.2	-18° 35.9	-18° 43.5	-8.1	59.8
Пн 30	150° 32.3	164° 57.9	179° 23.3	193° 48.7	208° 14.1	222° 39.3	237° 04.6	251° 29.7	265° 54.8	280° 19.9	294° 44.9	+25.3	16.3
	-17° 30.9	-17° 39.4	-17° 47.9	-17° 56.2	-18° 04.4	-18° 12.4	-18° 20.4	-18° 28.2	-18° 35.9	-18° 43.5	-18° 50.9	-8.0	59.8

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Первая четв.: 4 21h55 — Полнолуние: 11 21h17 — Последняя четв.: 19 19h56 — Новолуние: 27 09h54

СОЛНЦЕ

Октябрь 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	182° 33.0 -3° 07.3	197° 33.2 -3° 08.3	212° 33.4 -3° 09.2	227° 33.6 -3° 10.2	242° 33.8 -3° 11.2	257° 34.0 -3° 12.1	92° 36.6 -3° 24.7	107° 36.8 -3° 25.7	122° 37.0 -3° 26.7	137° 37.2 -3° 27.6	152° 37.4 -3° 28.6	167° 37.6 -3° 29.6	+0.2 -1.0
Ср 2	182° 37.8 -3° 30.6	197° 38.0 -3° 31.5	212° 38.2 -3° 32.5	227° 38.4 -3° 33.5	242° 38.6 -3° 34.4	257° 38.8 -3° 35.4	92° 41.4 -3° 48.0	107° 41.6 -3° 48.9	122° 41.8 -3° 49.9	137° 41.9 -3° 50.9	152° 42.1 -3° 51.8	167° 42.3 -3° 52.8	+0.2 -1.0
Чт 3	182° 42.5 -3° 53.8	197° 42.7 -3° 54.7	212° 42.9 -3° 55.7	227° 43.1 -3° 56.7	242° 43.3 -3° 57.6	257° 43.5 -3° 58.6	92° 46.0 -4° 11.1	107° 46.2 -4° 12.1	122° 46.4 -4° 13.1	137° 46.6 -4° 14.0	152° 46.8 -4° 15.0	167° 47.0 -4° 16.0	+0.2 -1.0
Пт 4	182° 47.2 -4° 16.9	197° 47.4 -4° 17.9	212° 47.6 -4° 18.9	227° 47.8 -4° 19.8	242° 48.0 -4° 20.8	257° 48.2 -4° 21.7	92° 50.7 -4° 34.3	107° 50.9 -4° 35.2	122° 51.0 -4° 36.2	137° 51.2 -4° 37.2	152° 51.4 -4° 38.1	167° 51.6 -4° 39.1	+0.2 -1.0
Сб 5	182° 51.8 -4° 40.0	197° 52.0 -4° 41.0	212° 52.2 -4° 42.0	227° 52.4 -4° 42.9	242° 52.6 -4° 43.9	257° 52.7 -4° 44.8	92° 55.2 -4° 57.3	107° 55.4 -4° 58.3	122° 55.6 -4° 59.3	137° 55.7 -5° 00.2	152° 55.9 -5° 01.2	167° 56.1 -5° 02.1	+0.2 -1.0
Вс 6	182° 56.3 -5° 03.1	197° 56.5 -5° 04.1	212° 56.7 -5° 05.0	227° 56.9 -5° 06.0	242° 57.1 -5° 06.9	257° 57.2 -5° 07.9	92° 59.6 -5° 20.3	107° 59.8 -5° 21.3	123° 00.0 -5° 22.3	138° 00.2 -5° 23.2	153° 00.4 -5° 24.2	168° 00.5 -5° 25.1	+0.2 -1.0
Пн 7	183° 00.7 -5° 26.1	198° 00.9 -5° 27.0	213° 01.1 -5° 28.0	228° 01.3 -5° 28.9	243° 01.4 -5° 29.9	258° 01.6 -5° 30.9	93° 04.0 -5° 43.3	108° 04.1 -5° 44.2	123° 04.3 -5° 45.2	138° 04.5 -5° 46.1	153° 04.7 -5° 47.1	168° 04.9 -5° 48.0	+0.2 -1.0
Вт 8	183° 05.0 -5° 49.0	198° 05.2 -5° 50.0	213° 05.4 -5° 50.9	228° 05.6 -5° 51.9	243° 05.7 -5° 52.8	258° 05.9 -5° 53.8	93° 08.2 -6° 06.1	108° 08.4 -6° 07.1	123° 08.6 -6° 08.0	138° 08.7 -6° 09.0	153° 08.9 -6° 09.9	168° 09.1 -6° 10.9	+0.2 -1.0
Ср 9	183° 09.3 -6° 11.8	198° 09.4 -6° 12.8	213° 09.6 -6° 13.7	228° 09.8 -6° 14.7	243° 09.9 -6° 15.6	258° 10.1 -6° 16.6	93° 12.3 -6° 28.9	108° 12.5 -6° 29.9	123° 12.7 -6° 30.8	138° 12.9 -6° 31.8	153° 13.0 -6° 32.7	168° 13.2 -6° 33.7	+0.2 -1.0
Чт 10	183° 13.4 -6° 34.6	198° 13.5 -6° 35.5	213° 13.7 -6° 36.5	228° 13.9 -6° 37.4	243° 14.0 -6° 38.4	258° 14.2 -6° 39.3	93° 16.4 -6° 51.6	108° 16.5 -6° 52.6	123° 16.7 -6° 53.5	138° 16.9 -6° 54.4	153° 17.0 -6° 55.4	168° 17.2 -6° 56.3	+0.2 -0.9
Пт 11	183° 17.4 -6° 57.3	198° 17.5 -6° 58.2	213° 17.7 -6° 59.2	228° 17.8 -7° 00.1	243° 18.0 -7° 01.0	258° 18.2 -7° 02.0	93° 20.3 -7° 14.2	108° 20.4 -7° 15.2	123° 20.6 -7° 16.1	138° 20.7 -7° 17.0	153° 20.9 -7° 18.0	168° 21.1 -7° 18.9	+0.2 -0.9
Сб 12	183° 21.2 -7° 19.8	198° 21.4 -7° 20.8	213° 21.5 -7° 21.7	228° 21.7 -7° 22.7	243° 21.9 -7° 23.6	258° 22.0 -7° 24.5	93° 24.0 -7° 36.7	108° 24.2 -7° 37.7	123° 24.4 -7° 38.6	138° 24.5 -7° 39.5	153° 24.7 -7° 40.5	168° 24.8 -7° 41.4	+0.2 -0.9
Вс 13	183° 25.0 -7° 42.3	198° 25.1 -7° 43.3	213° 25.3 -7° 44.2	228° 25.4 -7° 45.1	243° 25.6 -7° 46.1	258° 25.7 -7° 47.0	93° 27.7 -7° 59.1	108° 27.8 -8° 00.0	123° 28.0 -8° 01.0	138° 28.1 -8° 01.9	153° 28.3 -8° 02.8	168° 28.4 -8° 03.8	+0.2 -0.9
Пн 14	183° 28.6 -8° 04.7	198° 28.7 -8° 05.6	213° 28.9 -8° 06.6	228° 29.0 -8° 07.5	243° 29.2 -8° 08.4	258° 29.3 -8° 09.3	93° 31.2 -8° 21.4	108° 31.3 -8° 22.3	123° 31.5 -8° 23.3	138° 31.6 -8° 24.2	153° 31.8 -8° 25.1	168° 31.9 -8° 26.0	+0.1 -0.9
Вт 15	183° 32.1 -8° 27.0	198° 32.2 -8° 27.9	213° 32.3 -8° 28.8	228° 32.5 -8° 29.7	243° 32.6 -8° 30.7	258° 32.8 -8° 31.6	93° 34.6 -8° 43.6	108° 34.7 -8° 44.5	123° 34.9 -8° 45.4	138° 35.0 -8° 46.3	153° 35.1 -8° 47.3	168° 35.3 -8° 48.2	+0.1 -0.9
Ср 16	183° 35.4 -8° 49.1	198° 35.5 -8° 50.0	213° 35.7 -8° 51.0	228° 35.8 -8° 51.9	243° 35.9 -8° 52.8	258° 36.1 -8° 53.7	93° 37.8 -9° 05.6	108° 37.9 -9° 06.6	123° 38.1 -9° 07.5	138° 38.2 -9° 08.4	153° 38.3 -9° 09.3	168° 38.5 -9° 10.2	+0.1 -0.9
Чт 17	183° 38.6 -9° 11.1	198° 38.7 -9° 12.0	213° 38.9 -9° 13.0	228° 39.0 -9° 13.9	243° 39.1 -9° 14.8	258° 39.2 -9° 15.7	93° 40.9 -9° 27.6	108° 41.0 -9° 28.5	123° 41.1 -9° 29.4	138° 41.3 -9° 30.3	153° 41.4 -9° 31.2	168° 41.5 -9° 32.1	+0.1 -0.9
Пт 18	183° 41.6 -9° 33.0	198° 41.8 -9° 33.9	213° 41.9 -9° 34.8	228° 42.0 -9° 35.8	243° 42.1 -9° 36.7	258° 42.2 -9° 37.6	93° 43.8 -9° 49.4	108° 43.9 -9° 50.3	123° 44.0 -9° 51.2	138° 44.2 -9° 52.1	153° 44.3 -9° 53.0	168° 44.4 -9° 53.9	+0.1 -0.9
Сб 19	183° 44.5 -9° 54.8	198° 44.6 -9° 55.7	213° 44.7 -9° 56.6	228° 44.9 -9° 57.5	243° 45.0 -9° 58.4	258° 45.1 -9° 59.3	93° 46.6 -10° 11.0	108° 46.7 -10° 11.9	123° 46.8 -10° 12.8	138° 46.9 -10° 13.7	153° 47.0 -10° 14.6	168° 47.1 -10° 15.5	+0.1 -0.9
Вс 20	183° 47.2 -10° 16.4	198° 47.4 -10° 17.3	213° 47.5 -10° 18.2	228° 47.6 -10° 19.1	243° 47.7 -10° 20.0	258° 47.8 -10° 20.9	93° 49.2 -10° 32.5	108° 49.3 -10° 33.4	123° 49.4 -10° 34.3	138° 49.5 -10° 35.2	153° 49.6 -10° 36.1	168° 49.7 -10° 37.0	+0.1 -0.9
Пн 21	183° 49.8 -10° 37.9	198° 49.9 -10° 38.7	213° 50.0 -10° 39.6	228° 50.1 -10° 40.5	243° 50.2 -10° 41.4	258° 50.3 -10° 42.3	93° 51.6 -10° 53.9	108° 51.7 -10° 54.7	123° 51.8 -10° 55.6	138° 51.9 -10° 56.5	153° 52.0 -10° 57.4	168° 52.1 -10° 58.3	+0.1 -0.9
Вт 22	183° 52.2 -10° 59.2	198° 52.3 -11° 00.0	213° 52.4 -11° 00.9	228° 52.5 -11° 01.8	243° 52.6 -11° 02.7	258° 52.7 -11° 03.6	93° 53.9 -11° 15.0	108° 54.0 -11° 15.9	123° 54.1 -11° 16.8	138° 54.1 -11° 17.7	153° 54.2 -11° 18.5	168° 54.3 -11° 19.4	+0.1 -0.9
Ср 23	183° 54.4 -11° 20.3	198° 54.5 -11° 21.2	213° 54.6 -11° 22.1	228° 54.7 -11° 22.9	243° 54.8 -11° 23.8	258° 54.8 -11° 24.7	93° 56.0 -11° 36.1	108° 56.0 -11° 36.9	123° 56.1 -11° 37.8	138° 56.2 -11° 38.7	153° 56.3 -11° 39.5	168° 56.4 -11° 40.4	+0.1 -0.9
Чт 24	183° 56.5 -11° 41.3	198° 56.5 -11° 42.1	213° 56.6 -11° 43.0	228° 56.7 -11° 43.9	243° 56.8 -11° 44.8	258° 56.9 -11° 45.6	93° 57.9 -11° 56.9	108° 57.9 -11° 57.8	123° 58.0 -11° 58.6	138° 58.1 -11° 59.5	153° 58.2 -12° 00.3	168° 58.2 -12° 01.2	+0.1 -0.9
Пт 25	183° 58.3 -12° 02.1	198° 58.4 -12° 02.9	213° 58.5 -12° 03.8	228° 58.5 -12° 04.7	243° 58.6 -12° 05.5	258° 58.7 -12° 06.4	93° 59.6 -12° 17.6	108° 59.7 -12° 18.4	123° 59.7 -12° 19.3	138° 59.8 -12° 20.1	153° 59.9 -12° 21.0	168° 59.9 -12° 21.8	+0.1 -0.9
Сб 26	184° 00.0 -12° 22.7	199° 00.1 -12° 23.5	214° 00.1 -12° 24.4	229° 00.2 -12° 25.3	244° 00.3 -12° 26.1	259° 00.3 -12° 27.0	94° 01.1 -12° 38.0	109° 01.2 -12° 38.9	124° 01.3 -12° 39.7	139° 01.3 -12° 40.6	154° 01.4 -12° 41.4	169° 01.4 -12° 42.3	+0.1 -0.9
Вс 27	184° 01.5 -12° 43.1	199° 01.6 -12° 44.0	214° 01.6 -12° 44.8	229° 01.7 -12° 45.7	244° 01.7 -12° 46.5	259° 01.8 -12° 47.3	94° 02.5 -12° 58.3	109° 02.6 -12° 59.1	124° 02.6 -13° 00.0	139° 02.7 -13° 00.8	154° 02.7 -13° 01.7	169° 02.8 -13° 02.5	+0.1 -0.8
Пн 28	184° 02.8 -13° 03.3	199° 02.9 -13° 04.2	214° 02.9 -13° 05.0	229° 03.0 -13° 05.9	244° 03.0 -13° 06.7	259° 03.1 -13° 07.5	94° 03.7 -13° 18.4	109° 03.7 -13° 19.2	124° 03.8 -13° 20.0	139° 03.8 -13° 20.9	154° 03.9 -13° 21.7	169° 03.9 -13° 22.5	+0.1 -0.8
Вт 29	184° 03.9 -13° 23.4	199° 04.0 -13° 24.2	214° 04.0 -13° 25.0	229° 04.1 -13° 25.8	244° 04.1 -13° 26.7	259° 04.2 -13° 27.5	94° 04.7 -13° 38.2	109° 04.7 -13° 39.1	124° 04.7 -13° 39.9	139° 04.8 -13° 40.7	154° 04.8 -13° 41.5	169° 04.8 -13° 42.3	+0.1 -0.8
Ср 30	184° 04.9 -13° 43.2	199° 04.9 -13° 44.0	214° 05.0 -13° 44.8	229° 05.0 -13° 45.6	244° 05.0 -13° 46.4	259° 05.1 -13° 47.3	94° 05.5 -13° 57.9	109° 05.5 -13° 58.7	124° 05.5 -13° 59.5	139° 05.5 -14° 00.3	154° 05.6 -14° 01.1	169° 05.6 -14° 01.9	+0.0 -0.8
Чт 31	184° 05.6 -14° 02.8	199° 05.7 -14° 03.6	214° 05.7 -14° 04.4	229° 05.7 -14° 05.2	244° 05.7 -14° 06.0	259° 05.8 -14° 06.8	94° 06.1 -14° 17.3	109° 06.1 -14° 18.1	124° 06.1 -14° 18.9	139° 06.1 -14° 19.7	154° 06.1 -14° 20.5	169° 06.2 -14° 21.3	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2030

Д	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	Δ'/h	R/p
Вт 1	50° 05.6	64° 29.4	78° 53.1	93° 16.9	107° 40.7	122° 04.4	136° 28.2	150° 51.9	165° 15.7	179° 39.4	194° 03.1	+23.8	16.3
	-21° 40.9	-21° 43.6	-21° 46.2	-21° 48.6	-21° 50.8	-21° 52.9	-21° 54.8	-21° 56.6	-21° 58.3	-21° 59.7	-22° 01.1	-2.0	59.6
Ср 2	50° 00.6	64° 24.6	78° 48.7	93° 12.7	107° 36.8	122° 00.9	136° 25.1	150° 49.2	165° 13.5	179° 37.7	194° 02.0	+24.1	16.2
	-22° 02.8	-22° 01.7	-22° 00.5	-21° 59.1	-21° 57.5	-21° 55.8	-21° 54.0	-21° 52.0	-21° 49.9	-21° 47.6	-21° 45.2	+1.8	59.4
Чт 3	50° 12.2	64° 37.3	79° 02.5	93° 27.7	107° 53.0	122° 18.4	136° 43.8	151° 09.2	165° 34.8	180° 00.4	194° 26.1	+25.4	16.1
	-20° 52.0	-20° 47.4	-20° 42.6	-20° 37.7	-20° 32.7	-20° 27.5	-20° 22.2	-20° 16.8	-20° 11.2	-20° 05.6	-19° 59.8	+5.2	59.0
◐ Пт 4	50° 59.5	65° 26.3	79° 53.1	94° 20.1	108° 47.1	123° 14.2	137° 41.4	152° 08.6	166° 35.9	181° 03.3	195° 30.8	+27.1	16.0
	-18° 18.7	-18° 11.1	-18° 03.4	-17° 55.5	-17° 47.6	-17° 39.6	-17° 31.4	-17° 23.2	-17° 14.8	-17° 06.4	-16° 57.9	+8.1	58.5
Сб 5	52° 31.6	67° 00.2	81° 28.9	95° 57.7	110° 26.5	124° 55.4	139° 24.4	153° 53.5	168° 22.6	182° 51.8	197° 21.0	+28.9	15.8
	-14° 39.4	-14° 29.5	-14° 19.5	-14° 09.5	-13° 59.4	-13° 49.2	-13° 39.0	-13° 28.7	-13° 18.3	-13° 07.8	-12° 57.3	+10.2	58.1
Вс 6	67° 00.2	81° 28.9	95° 57.7	110° 26.5	124° 55.4	139° 24.4	153° 53.5	168° 22.6	182° 51.8	197° 21.0	211° 50.4	+29.0	15.8
	-14° 29.5	-14° 19.5	-14° 09.5	-13° 59.4	-13° 49.2	-13° 39.0	-13° 28.7	-13° 18.3	-13° 07.8	-12° 57.3	-12° 46.7	+10.3	58.0
Пн 7	69° 17.9	83° 48.2	98° 18.6	112° 49.0	127° 19.5	141° 50.0	156° 20.6	170° 51.3	185° 22.0	199° 52.7	214° 23.5	+30.6	15.7
	-10° 01.4	-9° 49.9	-9° 38.5	-9° 27.0	-9° 15.4	-9° 03.8	-8° 52.2	-8° 40.5	-8° 28.8	-8° 17.1	-8° 05.3	+11.6	57.6
Вт 8	72° 11.2	86° 42.7	101° 14.3	115° 45.9	130° 17.5	144° 49.2	159° 20.9	173° 52.6	188° 24.4	202° 56.2	217° 28.0	+31.7	15.6
	-5° 05.4	-4° 53.2	-4° 41.0	-4° 28.9	-4° 16.6	-4° 04.4	-3° 52.2	-3° 39.9	-3° 27.7	-3° 15.4	-3° 03.1	+12.2	57.1
Ср 9	75° 28.9	90° 01.1	104° 33.4	119° 05.6	133° 37.9	148° 10.2	162° 42.6	177° 14.9	191° 47.3	206° 19.6	220° 52.0	+32.3	15.4
	0° 01.1	0° 13.4	0° 25.6	0° 37.9	0° 50.1	1° 02.3	1° 14.5	1° 26.7	1° 38.8	1° 51.0	2° 03.1	+12.2	56.5
Чт 10	78° 58.9	93° 31.4	108° 03.9	122° 36.4	137° 08.9	151° 41.4	166° 13.9	180° 46.4	195° 18.9	209° 51.4	224° 23.9	+32.5	15.3
	5° 02.5	5° 14.2	5° 26.0	5° 37.6	5° 49.3	6° 00.9	6° 12.5	6° 24.0	6° 35.5	6° 47.0	6° 58.4	+11.6	56.0
○ Пт 11	82° 30.5	97° 02.9	111° 35.2	126° 07.6	140° 39.9	155° 12.2	169° 44.5	184° 16.8	198° 49.1	213° 21.4	227° 53.6	+32.3	15.1
	9° 44.5	9° 55.2	10° 05.8	10° 16.4	10° 26.9	10° 37.4	10° 47.8	10° 58.2	11° 08.5	11° 18.7	11° 28.9	+10.4	55.5
Сб 12	85° 55.3	100° 27.2	114° 59.2	129° 31.1	144° 03.0	158° 34.9	173° 06.7	187° 38.6	202° 10.4	216° 42.2	231° 13.9	+31.9	15.0
	13° 54.3	14° 03.4	14° 12.5	14° 21.6	14° 30.5	14° 39.4	14° 48.2	14° 56.9	15° 05.6	15° 14.1	15° 22.6	+8.8	55.1
Вс 13	89° 08.0	103° 39.4	118° 10.8	132° 42.2	147° 13.6	161° 44.9	176° 16.2	190° 47.5	205° 18.8	219° 50.0	234° 21.3	+31.3	14.9
	17° 20.7	17° 27.9	17° 35.1	17° 42.1	17° 49.1	17° 55.9	18° 02.7	18° 09.4	18° 16.0	18° 22.6	18° 29.0	+6.8	54.7
Пн 14	92° 07.4	106° 38.4	121° 09.3	135° 40.2	150° 11.1	164° 41.9	179° 12.8	193° 43.6	208° 14.4	222° 45.2	237° 16.0	+30.9	14.8
	19° 54.5	19° 59.5	20° 04.3	20° 09.1	20° 13.8	20° 18.3	20° 22.8	20° 27.2	20° 31.4	20° 35.6	20° 39.7	+4.5	54.3
Вт 15	94° 56.4	109° 27.0	123° 57.6	138° 28.2	152° 58.8	167° 29.4	182° 00.0	196° 30.6	211° 01.2	225° 31.7	240° 02.3	+30.6	14.8
	21° 28.9	21° 31.4	21° 33.8	21° 36.1	21° 38.2	21° 40.3	21° 42.3	21° 44.1	21° 45.9	21° 47.6	21° 49.1	+2.0	54.1
Ср 16	97° 40.7	112° 11.3	126° 41.9	141° 12.4	155° 43.0	170° 13.6	184° 44.2	199° 14.8	213° 45.5	228° 16.1	242° 46.7	+30.6	14.7
	22° 00.1	22° 00.0	21° 59.8	21° 59.5	21° 59.1	21° 58.6	21° 58.0	21° 57.3	21° 56.5	21° 55.6	21° 54.6	-0.6	54.1
Чт 17	100° 27.4	114° 58.2	129° 29.1	143° 59.9	158° 30.8	173° 01.6	187° 32.5	202° 03.4	216° 34.3	231° 05.3	245° 36.2	+30.9	14.8
	21° 27.2	21° 24.5	21° 21.8	21° 19.0	21° 16.0	21° 13.0	21° 09.9	21° 06.7	21° 03.3	20° 59.9	20° 56.4	-3.1	54.2
Пт 18	103° 22.6	117° 53.8	132° 25.1	146° 56.3	161° 27.6	175° 59.0	190° 30.3	205° 01.6	219° 33.0	234° 04.4	248° 35.8	+31.3	14.8
	19° 52.1	19° 47.0	19° 41.9	19° 36.6	19° 31.3	19° 25.9	19° 20.4	19° 14.8	19° 09.1	19° 03.3	18° 57.5	-5.5	54.4
◑ Сб 19	106° 29.2	121° 00.9	135° 32.6	150° 04.4	164° 36.1	179° 07.9	193° 39.7	208° 11.5	222° 43.3	237° 15.2	251° 47.0	+31.8	15.0
	17° 19.0	17° 11.7	17° 04.4	16° 56.9	16° 49.4	16° 41.9	16° 34.2	16° 26.5	16° 18.6	16° 10.7	16° 02.7	-7.6	54.9
Вс 20	109° 46.4	124° 18.4	138° 50.5	153° 22.5	167° 54.6	182° 26.7	196° 58.8	211° 30.9	226° 03.0	240° 35.1	255° 07.2	+32.1	15.1
	13° 53.7	13° 44.5	13° 35.2	13° 25.9	13° 16.5	13° 07.0	12° 57.5	12° 47.8	12° 38.2	12° 28.4	12° 18.6	-9.5	55.5
Пн 21	113° 08.9	127° 41.0	142° 13.1	156° 45.2	171° 17.3	185° 49.4	200° 21.5	214° 53.5	229° 25.6	243° 57.6	258° 29.6	+32.1	15.4
	9° 43.6	9° 32.8	9° 21.9	9° 10.9	9° 00.0	8° 48.9	8° 37.8	8° 26.7	8° 15.4	8° 04.2	7° 52.9	-11.1	56.3
Вт 22	116° 28.2	131° 00.0	145° 31.7	160° 03.4	174° 35.1	189° 06.7	203° 38.3	218° 09.9	232° 41.5	247° 13.0	261° 44.5	+31.6	15.6
	4° 57.5	4° 45.4	4° 33.4	4° 21.2	4° 09.1	3° 56.9	3° 44.7	3° 32.4	3° 20.1	3° 07.8	2° 55.4	-12.2	57.2
Ср 23	119° 32.8	134° 03.7	148° 34.5	163° 05.3	177° 36.1	192° 06.8	206° 37.5	221° 08.1	235° 38.6	250° 09.1	264° 39.6	+30.7	15.9
	-0° 13.2	-0° 26.0	-0° 38.7	-0° 51.5	-1° 04.3	-1° 17.1	-1° 29.9	-1° 42.7	-1° 55.5	-2° 08.4	-2° 21.2	-12.8	58.1
Чт 24	122° 09.7	136° 39.2	151° 08.6	165° 38.0	180° 07.3	194° 36.6	209° 05.7	223° 34.8	238° 03.9	252° 32.8	267° 01.7	+29.2	16.1
	-5° 33.7	-5° 46.4	-5° 59.2	-6° 11.9	-6° 24.6	-6° 37.3	-6° 50.0	-7° 02.6	-7° 15.2	-7° 27.8	-7° 40.4	-12.7	59.0
Пт 25	124° 06.1	138° 33.8	153° 01.4	167° 28.9	181° 56.3	196° 23.7	210° 50.9	225° 18.1	239° 45.2	254° 12.2	268° 39.1	+27.3	16.3
	-10° 44.6	-10° 56.5	-11° 08.3	-11° 20.1	-11° 31.9	-11° 43.6	-11° 55.2	-12° 06.8	-12° 18.3	-12° 29.7	-12° 41.1	-11.7	59.8
● Сб 26	125° 13.0	139° 38.6	154° 04.1	168° 29.6	182° 54.9	197° 20.2	211° 45.4	226° 10.5	240° 35.5	255° 00.4	269° 25.3	+25.2	16.5
	-15° 22.2	-15° 32.3	-15° 42.3	-15° 52.1	-16° 01.9	-16° 11.5	-16° 21.1	-16° 30.5	-16° 39.9	-16° 49.1	-16° 58.2	-9.6	60.4
Вс 27	125° 29.4	139° 53.1	154° 16.7	168° 40.3	183° 03.9	197° 27.3	211° 50.8	226° 14.1	240° 37.4	255° 00.7	269° 23.9	+23.4	16.5
	-19° 00.9	-19° 08.1	-19° 15.1	-19° 22.0	-19° 28.7	-19° 35.4	-19° 41.8	-19° 48.2	-19° 54.4	-20° 00.4	-20° 06.4	-6.6	60.6
Пн 28	125° 06.8	139° 29.4	153° 52.0	168° 14.6	182° 37.1	196° 59.6	211° 22.1	225° 44.6	240° 07.1	254° 29.6	268° 52.1	+22.5	16.5
	-21° 17.1	-21° 20.6	-21° 23.9	-21° 27.1	-21° 30.1	-21° 33.0	-21° 35.6	-21° 38.2	-21° 40.6	-21° 42.8	-21° 44.8	-2.8	60.6
Вт 29	124° 30.0	138° 52.6	153° 15.3	167° 38.1	182° 00.8	196° 23.6	210° 46.4	225° 09.3	239° 32.2	253° 55.2	268° 18.2	+22.8	16.4
	-21° 56.2	-21° 55.7	-21° 55.0	-21° 54.2	-21° 53.2	-21° 52.0	-21° 50.7	-21° 49.2	-21° 47.6	-21° 45.8	-21° 43.8	+1.2	60.3
Ср 30	138° 52.6	153° 15.3	167° 38.1	182° 00.8	196° 23.6	210° 46.4	225° 09.3	239° 32.2	253° 55.2	268° 18.2	282° 41.2	+22.8	16.4
	-21° 55.7	-21° 55.0	-21° 54.2	-21° 53.2	-21° 52.0	-21° 50.7	-21° 49.2	-21° 47.6	-21° 45.8	-21° 43.8	-21° 41.7	+1.4	60.3
Чт 31	138° 33.3	152° 57.3	167° 21.4	181° 45.5	196° 09.7	210° 34.0	224° 58.3	239° 22.7	253° 47.2	268° 11.8	282° 36.5	+24.3	16.3
	-20° 52.3	-20° 47.8	-20° 43.2	-20° 38.5	-20° 33.6	-20° 28.6	-20° 23.5	-20° 18.2	-20° 12.8	-20° 07.3	-20° 01.6	+5.1	59.8

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 4 03h56 — Полнолуние: 11 10h46 — Последняя четв.: 19 14h50 — Новолуние: 26 20h17

СОЛНЦЕ

Ноябрь 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	184° 06.2	199° 06.2	214° 06.2	229° 06.2	244° 06.3	259° 06.3	94° 06.5	109° 06.5	124° 06.5	139° 06.5	154° 06.5	169° 06.5	+0.0
	-14° 22.1	-14° 22.9	-14° 23.7	-14° 24.5	-14° 25.3	-14° 26.1	-14° 36.5	-14° 37.3	-14° 38.1	-14° 38.9	-14° 39.7	-14° 40.5	-0.8
Сб 2	184° 06.5	199° 06.6	214° 06.6	229° 06.6	244° 06.6	259° 06.6	94° 06.7	109° 06.7	124° 06.7	139° 06.7	154° 06.7	169° 06.7	+0.0
	-14° 41.3	-14° 42.1	-14° 42.8	-14° 43.6	-14° 44.4	-14° 45.2	-14° 55.5	-14° 56.2	-14° 57.0	-14° 57.8	-14° 58.6	-14° 59.4	-0.8
Вс 3	184° 06.7	199° 06.7	214° 06.7	229° 06.7	244° 06.7	259° 06.7	94° 06.7	109° 06.7	124° 06.7	139° 06.7	154° 06.7	169° 06.7	+0.0
	-15° 00.2	-15° 00.9	-15° 01.7	-15° 02.5	-15° 03.3	-15° 04.1	-15° 14.2	-15° 14.9	-15° 15.7	-15° 16.5	-15° 17.3	-15° 18.0	-0.8
Пн 4	184° 06.7	199° 06.7	214° 06.7	229° 06.7	244° 06.7	259° 06.6	94° 06.5	109° 06.5	124° 06.5	139° 06.5	154° 06.5	169° 06.5	-0.0
	-15° 18.8	-15° 19.6	-15° 20.4	-15° 21.1	-15° 21.9	-15° 22.7	-15° 32.6	-15° 33.4	-15° 34.2	-15° 34.9	-15° 35.7	-15° 36.4	-0.8
Вт 5	184° 06.4	199° 06.4	214° 06.4	229° 06.4	244° 06.4	259° 06.4	94° 06.1	109° 06.1	124° 06.1	139° 06.1	154° 06.1	169° 06.0	-0.0
	-15° 37.2	-15° 38.0	-15° 38.7	-15° 39.5	-15° 40.2	-15° 41.0	-15° 50.8	-15° 51.6	-15° 52.3	-15° 53.1	-15° 53.8	-15° 54.6	-0.8
Ср 6	184° 06.0	199° 06.0	214° 06.0	229° 05.9	244° 05.9	259° 05.9	94° 05.6	109° 05.5	124° 05.5	139° 05.5	154° 05.4	169° 05.4	-0.0
	-15° 55.3	-15° 56.1	-15° 56.8	-15° 57.6	-15° 58.3	-15° 59.1	-16° 08.8	-16° 09.5	-16° 10.3	-16° 11.0	-16° 11.7	-16° 12.5	-0.8
Чт 7	184° 05.4	199° 05.3	214° 05.3	229° 05.3	244° 05.2	259° 05.2	94° 04.8	109° 04.7	124° 04.7	139° 04.6	154° 04.6	169° 04.6	-0.0
	-16° 13.2	-16° 14.0	-16° 14.7	-16° 15.4	-16° 16.2	-16° 16.9	-16° 26.5	-16° 27.2	-16° 27.9	-16° 28.6	-16° 29.4	-16° 30.1	-0.7
Пт 8	184° 04.5	199° 04.5	214° 04.4	229° 04.4	244° 04.4	259° 04.3	94° 03.8	109° 03.7	124° 03.7	139° 03.6	154° 03.6	169° 03.5	-0.0
	-16° 30.8	-16° 31.6	-16° 32.3	-16° 33.0	-16° 33.7	-16° 34.5	-16° 43.8	-16° 44.6	-16° 45.3	-16° 46.0	-16° 46.7	-16° 47.4	-0.7
Сб 9	184° 03.5	199° 03.4	214° 03.4	229° 03.3	244° 03.3	259° 03.2	94° 02.5	109° 02.5	124° 02.4	139° 02.4	154° 02.3	169° 02.3	-0.0
	-16° 48.2	-16° 48.9	-16° 49.6	-16° 50.3	-16° 51.0	-16° 51.7	-17° 01.0	-17° 01.7	-17° 02.4	-17° 03.1	-17° 03.8	-17° 04.5	-0.7
Вс 10	184° 02.2	199° 02.1	214° 02.1	229° 02.0	244° 02.0	259° 01.9	94° 01.1	109° 01.1	124° 01.0	139° 00.9	154° 00.9	169° 00.8	-0.1
	-17° 05.2	-17° 05.9	-17° 06.6	-17° 07.3	-17° 08.0	-17° 08.7	-17° 17.8	-17° 18.5	-17° 19.2	-17° 19.9	-17° 20.6	-17° 21.3	-0.7
Пн 11	184° 00.7	199° 00.7	214° 00.6	229° 00.5	244° 00.5	259° 00.4	93° 59.5	108° 59.4	123° 59.3	138° 59.3	153° 59.2	168° 59.1	-0.1
	-17° 21.9	-17° 22.6	-17° 23.3	-17° 24.0	-17° 24.7	-17° 25.4	-17° 34.3	-17° 35.0	-17° 35.7	-17° 36.4	-17° 37.0	-17° 37.7	-0.7
Вт 12	183° 59.0	198° 59.0	213° 58.9	228° 58.8	243° 58.7	258° 58.7	93° 57.6	108° 57.5	123° 57.5	138° 57.4	153° 57.3	168° 57.2	-0.1
	-17° 38.4	-17° 39.1	-17° 39.8	-17° 40.4	-17° 41.1	-17° 41.8	-17° 50.5	-17° 51.2	-17° 51.9	-17° 52.5	-17° 53.2	-17° 53.9	-0.7
Ср 13	183° 57.1	198° 57.0	213° 57.0	228° 56.9	243° 56.8	258° 56.7	93° 55.6	108° 55.5	123° 55.4	138° 55.3	153° 55.2	168° 55.1	-0.1
	-17° 54.5	-17° 55.2	-17° 55.9	-17° 56.5	-17° 57.2	-17° 57.9	-18° 06.5	-18° 07.1	-18° 07.8	-18° 08.4	-18° 09.1	-18° 09.7	-0.7
Чт 14	183° 55.0	198° 54.9	213° 54.8	228° 54.7	243° 54.6	258° 54.5	93° 53.3	108° 53.2	123° 53.1	138° 53.0	153° 52.9	168° 52.8	-0.1
	-18° 10.4	-18° 11.0	-18° 11.7	-18° 12.3	-18° 13.0	-18° 13.6	-18° 22.1	-18° 22.7	-18° 23.3	-18° 24.0	-18° 24.6	-18° 25.3	-0.7
Пт 15	183° 52.7	198° 52.6	213° 52.5	228° 52.4	243° 52.3	258° 52.2	93° 50.8	108° 50.7	123° 50.6	138° 50.5	153° 50.3	168° 50.2	-0.1
	-18° 25.9	-18° 26.5	-18° 27.2	-18° 27.8	-18° 28.5	-18° 29.1	-18° 37.3	-18° 38.0	-18° 38.6	-18° 39.2	-18° 39.9	-18° 40.5	-0.6
Сб 16	183° 50.1	198° 50.0	213° 49.9	228° 49.8	243° 49.7	258° 49.6	93° 48.1	108° 48.0	123° 47.8	138° 47.7	153° 47.6	168° 47.5	-0.1
	-18° 41.1	-18° 41.7	-18° 42.4	-18° 43.0	-18° 43.6	-18° 44.2	-18° 52.3	-18° 52.9	-18° 53.5	-18° 54.1	-18° 54.8	-18° 55.4	-0.6
Вс 17	183° 47.4	198° 47.2	213° 47.1	228° 47.0	243° 46.9	258° 46.8	93° 45.2	108° 45.0	123° 44.9	138° 44.8	153° 44.6	168° 44.5	-0.1
	-18° 56.0	-18° 56.6	-18° 57.2	-18° 57.8	-18° 58.4	-18° 59.0	-19° 06.9	-19° 07.5	-19° 08.1	-19° 08.7	-19° 09.3	-19° 09.9	-0.6
Пн 18	183° 44.4	198° 44.3	213° 44.1	228° 44.0	243° 43.9	258° 43.7	93° 42.0	108° 41.9	123° 41.7	138° 41.6	153° 41.5	168° 41.3	-0.1
	-19° 10.5	-19° 11.1	-19° 11.7	-19° 12.3	-19° 12.9	-19° 13.5	-19° 21.2	-19° 21.8	-19° 22.4	-19° 22.9	-19° 23.5	-19° 24.1	-0.6
Вт 19	183° 41.2	198° 41.1	213° 40.9	228° 40.8	243° 40.6	258° 40.5	93° 38.7	108° 38.5	123° 38.4	138° 38.2	153° 38.1	168° 37.9	-0.1
	-19° 24.7	-19° 25.3	-19° 25.9	-19° 26.5	-19° 27.0	-19° 27.6	-19° 35.1	-19° 35.7	-19° 36.3	-19° 36.8	-19° 37.4	-19° 38.0	-0.6
Ср 20	183° 37.8	198° 37.7	213° 37.5	228° 37.4	243° 37.2	258° 37.1	93° 35.1	108° 35.0	123° 34.8	138° 34.7	153° 34.5	168° 34.3	-0.1
	-19° 38.5	-19° 39.1	-19° 39.7	-19° 40.3	-19° 40.8	-19° 41.4	-19° 48.7	-19° 49.3	-19° 49.8	-19° 50.4	-19° 50.9	-19° 51.5	-0.6
Чт 21	183° 34.2	198° 34.0	213° 33.9	228° 33.7	243° 33.6	258° 33.4	93° 31.3	108° 31.2	123° 31.0	138° 30.9	153° 30.7	168° 30.5	-0.2
	-19° 52.0	-19° 52.6	-19° 53.1	-19° 53.7	-19° 54.2	-19° 54.8	-20° 01.9	-20° 02.5	-20° 03.0	-20° 03.5	-20° 04.1	-20° 04.6	-0.6
Пт 22	183° 30.4	198° 30.2	213° 30.0	228° 29.9	243° 29.7	258° 29.6	93° 27.4	108° 27.2	123° 27.0	138° 26.9	153° 26.7	168° 26.5	-0.2
	-20° 05.2	-20° 05.7	-20° 06.2	-20° 06.8	-20° 07.3	-20° 07.8	-20° 14.8	-20° 15.3	-20° 15.8	-20° 16.3	-20° 16.9	-20° 17.4	-0.5
Сб 23	183° 26.4	198° 26.2	213° 26.0	228° 25.8	243° 25.7	258° 25.5	93° 23.2	108° 23.0	123° 22.9	138° 22.7	153° 22.5	168° 22.3	-0.2
	-20° 17.9	-20° 18.4	-20° 19.0	-20° 19.5	-20° 20.0	-20° 20.5	-20° 27.2	-20° 27.7	-20° 28.3	-20° 28.8	-20° 29.3	-20° 29.8	-0.5
Вс 24	183° 22.1	198° 22.0	213° 21.8	228° 21.6	243° 21.4	258° 21.2	93° 18.8	108° 18.7	123° 18.5	138° 18.3	153° 18.1	168° 17.9	-0.2
	-20° 30.3	-20° 30.8	-20° 31.3	-20° 31.8	-20° 32.3	-20° 32.8	-20° 39.3	-20° 39.8	-20° 40.3	-20° 40.8	-20° 41.3	-20° 41.8	-0.5
Пн 25	183° 17.7	198° 17.5	213° 17.4	228° 17.2	243° 17.0	258° 16.8	93° 14.3	108° 14.1	123° 13.9	138° 13.7	153° 13.5	168° 13.3	-0.2
	-20° 42.3	-20° 42.8	-20° 43.3	-20° 43.8	-20° 44.3	-20° 44.8	-20° 51.1	-20° 51.5	-20° 52.0	-20° 52.5	-20° 53.0	-20° 53.4	-0.5
Вт 26	183° 13.1	198° 12.9	213° 12.7	228° 12.5	243° 12.3	258° 12.1	93° 09.6	108° 09.4	123° 09.1	138° 08.9	153° 08.7	168° 08.5	-0.2
	-20° 53.9	-20° 54.4	-20° 54.9	-20° 55.3	-20° 55.8	-20° 56.3	-21° 02.4	-21° 02.8	-21° 03.3	-21° 03.8	-21° 04.2	-21° 04.7	-0.5
Ср 27	183° 08.3	198° 08.1	213° 07.9	228° 07.7	243° 07.5	258° 07.3	93° 04.6	108° 04.4	123° 04.2	138° 04.0	153° 03.8	168° 03.6	-0.2
	-21° 05.2	-21° 05.6	-21° 06.1	-21° 06.5	-21° 07.0	-21° 07.4	-21° 13.3	-21° 13.8	-21° 14.2	-21° 14.7	-21° 15.1	-21° 15.5	-0.5
Чт 28	183° 03.4	198° 03.2	213° 03.0	228° 02.7	243° 02.5	258° 02.3	92° 59.5	107° 59.3	122° 59.1	137° 58.9	152° 58.7	167° 58.4	-0.2
	-21° 16.0	-21° 16.4	-21° 16.9	-21° 17.3	-21° 17.7	-21° 18.2	-21° 23.8	-21° 24.3	-21° 24.7	-21° 25.1	-21° 25.6	-21° 26.0	-0.4
Пт 29	182° 58.2	197° 58.0	212° 57.8	227° 57.6	242° 57.4	257° 57.1	92° 54.3	107° 54.0	122° 53.8	137° 53.6	152° 53.4	167° 53.1	-0.2
	-21° 26.4	-21° 26.8	-21° 27.3	-21° 27.7	-21° 28.1	-21° 28.5	-21° 34.0	-21° 34.4	-21° 34.8	-21° 35.2	-21° 35.6	-21° 36.0	-0.4
Сб 30	182° 52.9	197° 52.7	212° 52.5	227° 52.2	242° 52.0	257° 51.8	92° 48.8	107° 48.6	122° 48.4	137° 48.1	152° 47.9	167° 47.7	-0.2
	-21° 36.4	-21° 36.8	-21° 37.3	-21° 37.7	-21° 38.1	-21° 38.5	-21° 43.7	-21° 44.1	-21° 44.5	-21° 44.9	-21° 45.3	-21° 45.7	-0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2030

Д	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	Δ'/h	R/p
Пт 1	53° 25.8	67° 53.5	82° 21.3	96° 49.2	111° 17.1	125° 45.2	140° 13.3	154° 41.5	169° 09.8	183° 38.2	198° 06.7	+28.1	16.0
	-15° 41.2	-15° 31.8	-15° 22.4	-15° 12.9	-15° 03.3	-14° 53.6	-14° 43.8	-14° 34.0	-14° 24.1	-14° 14.1	-14° 04.1	+9.7	58.6
◐ Сб 2	55° 23.6	69° 53.4	84° 23.2	98° 53.1	113° 23.1	127° 53.1	142° 23.2	156° 53.4	171° 23.6	185° 53.9	200° 24.3	+30.1	15.8
	-11° 25.8	-11° 14.8	-11° 03.8	-10° 52.7	-10° 41.5	-10° 30.4	-10° 19.1	-10° 07.9	-9° 56.5	-9° 45.2	-9° 33.8	+11.2	57.8
Вс 3	58° 07.5	72° 38.8	87° 10.2	101° 41.7	116° 13.2	130° 44.7	145° 16.3	159° 47.9	174° 19.6	188° 51.3	203° 23.1	+31.6	15.6
	-6° 39.0	-6° 27.1	-6° 15.2	-6° 03.3	-5° 51.4	-5° 39.5	-5° 27.5	-5° 15.5	-5° 03.5	-4° 51.5	-4° 39.5	+12.0	57.1
Пн 4	72° 38.8	87° 10.2	101° 41.7	116° 13.2	130° 44.7	145° 16.3	159° 47.9	174° 19.6	188° 51.3	203° 23.1	217° 54.9	+31.6	15.6
	-6° 27.1	-6° 15.2	-6° 03.3	-5° 51.4	-5° 39.5	-5° 27.5	-5° 15.5	-5° 03.5	-4° 51.5	-4° 39.5	-4° 27.5	+12.0	57.1
Вт 5	75° 56.8	90° 29.2	105° 01.7	119° 34.1	134° 06.6	148° 39.1	163° 11.6	177° 44.2	192° 16.7	206° 49.3	221° 22.0	+32.5	15.4
	-1° 26.3	-1° 14.2	-1° 02.1	-0° 50.0	-0° 38.0	-0° 25.9	-0° 13.8	-0° 01.8	0° 10.3	0° 22.3	0° 34.3	+12.1	56.5
Ср 6	79° 33.2	94° 06.1	108° 38.9	123° 11.8	137° 44.6	152° 17.5	166° 50.4	181° 23.3	195° 56.1	210° 29.0	225° 01.9	+32.9	15.2
	3° 32.7	3° 44.5	3° 56.2	4° 07.9	4° 19.5	4° 31.1	4° 42.7	4° 54.3	5° 05.9	5° 17.4	5° 28.9	+11.6	55.9
Чт 7	83° 14.9	97° 47.7	112° 20.5	126° 53.3	141° 26.0	155° 58.8	170° 31.6	185° 04.3	199° 37.0	214° 09.8	228° 42.5	+32.8	15.1
	8° 16.8	8° 27.7	8° 38.5	8° 49.3	9° 00.1	9° 10.7	9° 21.4	9° 32.0	9° 42.6	9° 53.1	10° 03.5	+10.7	55.4
Пт 8	86° 51.0	101° 23.4	115° 55.8	130° 28.1	145° 00.5	159° 32.8	174° 05.1	188° 37.4	203° 09.7	217° 41.9	232° 14.1	+32.3	15.0
	12° 33.9	12° 43.5	12° 53.0	13° 02.4	13° 11.8	13° 21.1	13° 30.3	13° 39.5	13° 48.6	13° 57.7	14° 06.7	+9.3	55.0
Сб 9	90° 14.2	104° 46.0	119° 17.8	133° 49.5	148° 21.3	162° 53.0	177° 24.6	191° 56.3	206° 27.9	220° 59.5	235° 31.0	+31.7	14.9
	16° 12.9	16° 20.7	16° 28.5	16° 36.1	16° 43.7	16° 51.2	16° 58.7	17° 06.0	17° 13.3	17° 20.5	17° 27.6	+7.5	54.6
○ Вс 10	93° 21.5	107° 52.6	122° 23.8	136° 54.9	151° 26.0	165° 57.1	180° 28.1	194° 59.1	209° 30.2	224° 01.1	238° 32.1	+31.1	14.8
	19° 03.8	19° 09.5	19° 15.2	19° 20.7	19° 26.1	19° 31.5	19° 36.7	19° 41.9	19° 47.0	19° 51.9	19° 56.8	+5.3	54.3
Пн 11	96° 14.4	110° 45.1	125° 15.8	139° 46.5	154° 17.1	168° 47.8	183° 18.4	197° 49.0	212° 19.6	226° 50.2	241° 20.8	+30.6	14.8
	20° 58.5	21° 01.8	21° 05.0	21° 08.2	21° 11.2	21° 14.1	21° 16.9	21° 19.7	21° 22.3	21° 24.8	21° 27.2	+2.9	54.1
Вт 12	98° 59.1	113° 29.6	128° 00.2	142° 30.7	157° 01.2	171° 31.8	186° 02.3	200° 32.9	215° 03.4	229° 34.0	244° 04.5	+30.5	14.7
	21° 51.3	21° 52.1	21° 52.8	21° 53.4	21° 53.8	21° 54.2	21° 54.5	21° 54.7	21° 54.7	21° 54.7	21° 54.5	+0.3	54.0
Ср 13	101° 44.0	116° 14.8	130° 45.5	145° 16.3	159° 47.1	174° 17.9	188° 48.7	203° 19.5	217° 50.3	232° 21.2	246° 52.1	+30.8	14.7
	21° 40.2	21° 38.4	21° 36.6	21° 34.6	21° 32.5	21° 30.4	21° 28.1	21° 25.7	21° 23.3	21° 20.7	21° 18.0	-2.2	54.0
Чт 14	104° 37.8	119° 09.0	133° 40.2	148° 11.5	162° 42.8	177° 14.1	191° 45.5	206° 16.9	220° 48.3	235° 19.7	249° 51.1	+31.3	14.7
	20° 26.5	20° 22.3	20° 18.0	20° 13.6	20° 09.1	20° 04.5	19° 59.9	19° 55.1	19° 50.3	19° 45.4	19° 40.3	-4.6	54.1
Пт 15	107° 46.0	122° 17.9	136° 49.7	151° 21.7	165° 53.6	180° 25.6	194° 57.6	209° 29.6	224° 01.6	238° 33.7	253° 05.8	+32.0	14.8
	18° 14.4	18° 08.0	18° 01.5	17° 54.9	17° 48.2	17° 41.5	17° 34.7	17° 27.8	17° 20.8	17° 13.7	17° 06.6	-6.8	54.3
Сб 16	111° 10.0	125° 42.5	140° 15.0	154° 47.4	169° 20.0	183° 52.5	198° 25.0	212° 57.6	227° 30.2	242° 02.8	256° 35.4	+32.5	14.9
	15° 10.2	15° 01.9	14° 53.5	14° 45.0	14° 36.4	14° 27.8	14° 19.1	14° 10.3	14° 01.5	13° 52.6	13° 43.6	-8.7	54.8
Вс 17	114° 46.3	129° 19.1	143° 52.0	158° 24.8	172° 57.6	187° 30.4	202° 03.3	216° 36.1	231° 09.0	245° 41.8	260° 14.7	+32.8	15.1
	11° 21.4	11° 11.4	11° 01.4	10° 51.3	10° 41.2	10° 31.0	10° 20.7	10° 10.4	10° 00.1	9° 49.7	9° 39.2	-10.2	55.4
◑ Пн 18	118° 27.1	132° 59.8	147° 32.6	162° 05.3	176° 38.1	191° 10.8	205° 43.5	220° 16.2	234° 48.8	249° 21.5	263° 54.1	+32.7	15.3
	6° 56.1	6° 44.9	6° 33.6	6° 22.3	6° 10.9	5° 59.5	5° 48.1	5° 36.6	5° 25.0	5° 13.5	5° 01.9	-11.4	56.1
Вт 19	122° 00.8	136° 33.0	151° 05.2	165° 37.3	180° 09.4	194° 41.5	209° 13.5	223° 45.5	238° 17.5	252° 49.4	267° 21.3	+32.1	15.5
	2° 03.7	1° 51.6	1° 39.5	1° 27.3	1° 15.1	1° 02.9	0° 50.7	0° 38.4	0° 26.1	0° 13.9	0° 01.5	-12.2	57.0
Ср 20	125° 13.6	139° 44.6	154° 15.6	168° 46.6	183° 17.4	197° 48.3	212° 19.0	226° 49.7	241° 20.3	255° 50.9	270° 21.4	+30.8	15.8
	-3° 04.7	-3° 17.1	-3° 29.6	-3° 42.1	-3° 54.6	-4° 07.1	-4° 19.5	-4° 32.0	-4° 44.5	-4° 56.9	-5° 09.4	-12.5	58.0
Чт 21	127° 50.1	142° 19.4	156° 48.6	171° 17.7	185° 46.7	200° 15.7	214° 44.6	229° 13.3	243° 42.0	258° 10.7	272° 39.2	+28.9	16.1
	-8° 14.4	-8° 26.6	-8° 38.7	-8° 50.8	-9° 02.9	-9° 15.0	-9° 27.0	-9° 38.9	-9° 50.9	-10° 02.7	-10° 14.6	-12.0	59.0
Пт 22	129° 35.9	144° 02.9	158° 29.8	172° 56.7	187° 23.4	201° 50.0	216° 16.5	230° 43.0	245° 09.3	259° 35.5	274° 01.7	+26.6	16.3
	-13° 06.4	-13° 17.4	-13° 28.3	-13° 39.1	-13° 49.9	-14° 00.6	-14° 11.2	-14° 21.7	-14° 32.2	-14° 42.6	-14° 52.9	-10.7	59.9
Сб 23	130° 21.7	144° 46.2	159° 10.7	173° 35.1	187° 59.3	202° 23.5	216° 47.6	231° 11.6	245° 35.5	259° 59.3	274° 23.0	+24.1	16.5
	-17° 16.4	-17° 25.2	-17° 33.8	-17° 42.3	-17° 50.8	-17° 59.1	-18° 07.2	-18° 15.3	-18° 23.2	-18° 31.0	-18° 38.7	-8.2	60.7
Вс 24	130° 09.0	144° 31.4	158° 53.8	173° 16.2	187° 38.5	202° 00.7	216° 22.8	230° 44.9	245° 07.0	259° 29.0	273° 50.9	+22.2	16.7
	-20° 18.0	-20° 23.4	-20° 28.8	-20° 33.9	-20° 39.0	-20° 43.8	-20° 48.6	-20° 53.1	-20° 57.5	-21° 01.8	-21° 05.9	-4.8	61.1
● Пн 25	129° 15.5	143° 37.0	157° 58.4	172° 19.8	186° 41.2	201° 02.6	215° 24.0	229° 45.5	244° 06.9	258° 28.3	272° 49.7	+21.4	16.7
	-21° 47.6	-21° 49.1	-21° 50.4	-21° 51.5	-21° 52.4	-21° 53.2	-21° 53.8	-21° 54.3	-21° 54.5	-21° 54.6	-21° 54.5	-0.7	61.3
Вт 26	128° 13.7	142° 35.6	156° 57.5	171° 19.5	185° 41.5	200° 03.6	214° 25.7	228° 47.9	243° 10.2	257° 32.5	271° 54.9	+22.1	16.6
	-21° 33.3	-21° 30.5	-21° 27.6	-21° 24.6	-21° 21.3	-21° 17.9	-21° 14.4	-21° 10.7	-21° 06.8	-21° 02.8	-20° 58.7	+3.5	61.0
Ср 27	127° 39.4	142° 03.0	156° 26.7	170° 50.5	185° 14.4	199° 38.3	214° 02.4	228° 26.6	242° 50.8	257° 15.2	271° 39.6	+24.0	16.5
	-19° 38.5	-19° 32.0	-19° 25.4	-19° 18.7	-19° 11.9	-19° 04.9	-18° 57.8	-18° 50.5	-18° 43.2	-18° 35.7	-18° 28.1	+7.0	60.5
Чт 28	142° 03.0	156° 26.7	170° 50.5	185° 14.4	199° 38.3	214° 02.4	228° 26.6	242° 50.8	257° 15.2	271° 39.6	286° 04.1	+24.1	16.5
	-19° 32.0	-19° 25.4	-19° 18.7	-19° 11.9	-19° 04.9	-18° 57.8	-18° 50.5	-18° 43.2	-18° 35.7	-18° 28.1	-18° 20.4	+7.2	60.4
Пт 29	142° 24.0	156° 50.2	171° 16.4	185° 42.7	200° 09.1	214° 35.7	229° 02.3	243° 29.0	257° 55.9	272° 22.8	286° 49.8	+26.6	16.3
	-16° 11.6	-16° 02.2	-15° 52.7	-15° 43.2	-15° 33.5	-15° 23.8	-15° 13.9	-15° 04.0	-14° 54.1	-14° 44.0	-14° 33.9	+9.8	59.6
Сб 30	143° 46.8	158° 15.4	172° 44.0	187° 12.8	201° 41.6	216° 10.5	230° 39.5	245° 08.6	259° 37.7	274° 07.0	288° 36.3	+28.9	16.0
	-11° 53.5	-11° 42.4	-11° 31.1	-11° 19.9	-11° 08.5	-10° 57.2	-10° 45.8	-10° 34.3	-10° 22.8	-10° 11.3	-9° 59.7	+11.4	58.7

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 2 11h56 — Полнолуние: 10 03h30 — Последняя четв.: 18 08h32 — Новолуние: 25 06h46

СОЛНЦЕ

Декабрь 2030

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	182° 47.5 -21° 46.1	197° 47.2 -21° 46.4	212° 47.0 -21° 46.8	227° 46.8 -21° 47.2	242° 46.5 -21° 47.6	257° 46.3 -21° 48.0	92° 43.2 -21° 53.0	107° 43.0 -21° 53.4	122° 42.8 -21° 53.7	137° 42.5 -21° 54.1	152° 42.3 -21° 54.5	167° 42.1 -21° 54.9	-0.2 -0.4
Пн 2	182° 41.8 -21° 55.2	197° 41.6 -21° 55.6	212° 41.3 -21° 56.0	227° 41.1 -21° 56.4	242° 40.9 -21° 56.7	257° 40.6 -21° 57.1	92° 37.5 -22° 01.9	107° 37.3 -22° 02.2	122° 37.0 -22° 02.6	137° 36.8 -22° 03.0	152° 36.5 -22° 03.3	167° 36.3 -22° 03.7	-0.2 -0.4
Вт 3	182° 36.0 -22° 04.0	197° 35.8 -22° 04.4	212° 35.6 -22° 04.7	227° 35.3 -22° 05.1	242° 35.1 -22° 05.4	257° 34.8 -22° 05.8	92° 31.6 -22° 10.3	107° 31.4 -22° 10.7	122° 31.1 -22° 11.0	137° 30.9 -22° 11.4	152° 30.6 -22° 11.7	167° 30.4 -22° 12.0	-0.2 -0.4
Ср 4	182° 30.1 -22° 12.4	197° 29.9 -22° 12.7	212° 29.6 -22° 13.1	227° 29.4 -22° 13.4	242° 29.1 -22° 13.7	257° 28.9 -22° 14.1	92° 25.6 -22° 18.4	107° 25.3 -22° 18.7	122° 25.1 -22° 19.0	137° 24.8 -22° 19.3	152° 24.6 -22° 19.7	167° 24.3 -22° 20.0	-0.2 -0.3
Чт 5	182° 24.1 -22° 20.3	197° 23.8 -22° 20.6	212° 23.5 -22° 20.9	227° 23.3 -22° 21.3	242° 23.0 -22° 21.6	257° 22.8 -22° 21.9	92° 19.4 -22° 26.0	107° 19.2 -22° 26.3	122° 18.9 -22° 26.6	137° 18.6 -22° 26.9	152° 18.4 -22° 27.2	167° 18.1 -22° 27.5	-0.3 -0.3
Пт 6	182° 17.8 -22° 27.8	197° 17.6 -22° 28.1	212° 17.3 -22° 28.4	227° 17.1 -22° 28.7	242° 16.8 -22° 29.0	257° 16.5 -22° 29.3	92° 13.1 -22° 33.1	107° 12.8 -22° 33.4	122° 12.6 -22° 33.7	137° 12.3 -22° 34.0	152° 12.0 -22° 34.3	167° 11.8 -22° 34.5	-0.3 -0.3
Сб 7	182° 11.5 -22° 34.8	197° 11.2 -22° 35.1	212° 11.0 -22° 35.4	227° 10.7 -22° 35.7	242° 10.4 -22° 36.0	257° 10.2 -22° 36.2	92° 06.7 -22° 39.8	107° 06.4 -22° 40.1	122° 06.1 -22° 40.4	137° 05.9 -22° 40.6	152° 05.6 -22° 40.9	167° 05.3 -22° 41.2	-0.3 -0.3
Вс 8	182° 05.1 -22° 41.4	197° 04.8 -22° 41.7	212° 04.5 -22° 42.0	227° 04.2 -22° 42.2	242° 04.0 -22° 42.5	257° 03.7 -22° 42.8	92° 00.1 -22° 46.1	106° 59.9 -22° 46.4	121° 59.6 -22° 46.6	136° 59.3 -22° 46.9	151° 59.0 -22° 47.1	166° 58.8 -22° 47.4	-0.3 -0.3
Пн 9	181° 58.5 -22° 47.6	196° 58.2 -22° 47.8	211° 57.9 -22° 48.1	226° 57.7 -22° 48.3	241° 57.4 -22° 48.6	256° 57.1 -22° 48.8	91° 53.5 -22° 51.9	106° 53.2 -22° 52.2	121° 52.9 -22° 52.4	136° 52.6 -22° 52.6	151° 52.4 -22° 52.9	166° 52.1 -22° 53.1	-0.3 -0.2
Вт 10	181° 51.8 -22° 53.3	196° 51.5 -22° 53.5	211° 51.2 -22° 53.8	226° 51.0 -22° 54.0	241° 50.7 -22° 54.2	256° 50.4 -22° 54.5	91° 46.7 -22° 57.3	106° 46.4 -22° 57.5	121° 46.1 -22° 57.7	136° 45.9 -22° 57.9	151° 45.6 -22° 58.2	166° 45.3 -22° 58.4	-0.3 -0.2
Ср 11	181° 45.0 -22° 58.6	196° 44.7 -22° 58.8	211° 44.4 -22° 59.0	226° 44.1 -22° 59.2	241° 43.9 -22° 59.4	256° 43.6 -22° 59.6	91° 39.8 -23° 02.2	106° 39.6 -23° 02.4	121° 39.3 -23° 02.6	136° 39.0 -23° 02.8	151° 38.7 -23° 03.0	166° 38.4 -23° 03.2	-0.3 -0.2
Чт 12	181° 38.1 -23° 03.4	196° 37.8 -23° 03.6	211° 37.5 -23° 03.8	226° 37.2 -23° 04.0	241° 37.0 -23° 04.2	256° 36.7 -23° 04.3	91° 32.9 -23° 06.7	106° 32.6 -23° 06.9	121° 32.3 -23° 07.1	136° 32.0 -23° 07.2	151° 31.7 -23° 07.4	166° 31.4 -23° 07.6	-0.3 -0.2
Пт 13	181° 31.1 -23° 07.7	196° 30.8 -23° 07.9	211° 30.5 -23° 08.1	226° 30.3 -23° 08.3	241° 30.0 -23° 08.4	256° 29.7 -23° 08.6	91° 25.8 -23° 10.7	106° 25.5 -23° 10.9	121° 25.2 -23° 11.0	136° 24.9 -23° 11.2	151° 24.7 -23° 11.3	166° 24.4 -23° 11.5	-0.3 -0.2
Сб 14	181° 24.1 -23° 11.6	196° 23.8 -23° 11.8	211° 23.5 -23° 11.9	226° 23.2 -23° 12.1	241° 22.9 -23° 12.2	256° 22.6 -23° 12.4	91° 18.7 -23° 14.3	106° 18.4 -23° 14.4	121° 18.1 -23° 14.5	136° 17.8 -23° 14.7	151° 17.5 -23° 14.8	166° 17.2 -23° 14.9	-0.3 -0.2
Вс 15	181° 16.9 -23° 15.1	196° 16.6 -23° 15.2	211° 16.3 -23° 15.3	226° 16.0 -23° 15.5	241° 15.7 -23° 15.6	256° 15.4 -23° 15.7	91° 11.5 -23° 17.3	106° 11.2 -23° 17.5	121° 10.9 -23° 17.6	136° 10.6 -23° 17.7	151° 10.3 -23° 17.8	166° 10.0 -23° 17.9	-0.3 -0.1
Пн 16	181° 09.7 -23° 18.0	196° 09.4 -23° 18.2	211° 09.1 -23° 18.3	226° 08.8 -23° 18.4	241° 08.5 -23° 18.5	256° 08.2 -23° 18.6	91° 04.2 -23° 20.0	106° 03.9 -23° 20.1	121° 03.6 -23° 20.2	136° 03.3 -23° 20.3	151° 03.0 -23° 20.4	166° 02.7 -23° 20.5	-0.3 -0.1
Вт 17	181° 02.4 -23° 20.6	196° 02.1 -23° 20.6	211° 01.8 -23° 20.7	226° 01.5 -23° 20.8	241° 01.2 -23° 20.9	256° 00.9 -23° 21.0	90° 56.9 -23° 22.1	105° 56.6 -23° 22.2	120° 56.3 -23° 22.3	135° 56.0 -23° 22.4	150° 55.7 -23° 22.4	165° 55.4 -23° 22.5	-0.3 -0.1
Ср 18	180° 55.1 -23° 22.6	195° 54.8 -23° 22.7	210° 54.5 -23° 22.7	225° 54.2 -23° 22.8	240° 53.9 -23° 22.9	255° 53.5 -23° 23.0	90° 49.5 -23° 23.8	105° 49.2 -23° 23.9	120° 48.9 -23° 23.9	135° 48.6 -23° 24.0	150° 48.3 -23° 24.0	165° 48.0 -23° 24.1	-0.3 -0.1
Чт 19	180° 47.7 -23° 24.2	195° 47.4 -23° 24.2	210° 47.1 -23° 24.3	225° 46.8 -23° 24.3	240° 46.5 -23° 24.4	255° 46.2 -23° 24.4	90° 42.1 -23° 25.0	105° 41.8 -23° 25.1	120° 41.5 -23° 25.1	135° 41.2 -23° 25.1	150° 40.9 -23° 25.2	165° 40.6 -23° 25.2	-0.3 -0.1
Пт 20	180° 40.3 -23° 25.3	195° 40.0 -23° 25.3	210° 39.7 -23° 25.3	225° 39.3 -23° 25.4	240° 39.0 -23° 25.4	255° 38.7 -23° 25.4	90° 34.7 -23° 25.8	105° 34.4 -23° 25.8	120° 34.1 -23° 25.8	135° 33.8 -23° 25.8	150° 33.4 -23° 25.9	165° 33.1 -23° 25.9	-0.3 -0.0
Сб 21	180° 32.8 -23° 25.9	195° 32.5 -23° 25.9	210° 32.2 -23° 25.9	225° 31.9 -23° 25.9	240° 31.6 -23° 25.9	255° 31.3 -23° 26.0	90° 27.2 -23° 26.0	105° 26.9 -23° 26.0	120° 26.6 -23° 26.0	135° 26.3 -23° 26.0	150° 26.0 -23° 26.0	165° 25.7 -23° 26.0	-0.3 -0.0
Вс 22	180° 25.4 -23° 26.0	195° 25.0 -23° 26.0	210° 24.7 -23° 26.0	225° 24.4 -23° 26.0	240° 24.1 -23° 26.0	255° 23.8 -23° 26.0	90° 19.7 -23° 25.8	105° 19.4 -23° 25.8	120° 19.1 -23° 25.8	135° 18.8 -23° 25.8	150° 18.5 -23° 25.8	165° 18.2 -23° 25.7	-0.3 +0.0
Пн 23	180° 17.9 -23° 25.7	195° 17.6 -23° 25.7	210° 17.2 -23° 25.7	225° 16.9 -23° 25.7	240° 16.6 -23° 25.6	255° 16.3 -23° 25.6	90° 12.3 -23° 25.2	105° 11.9 -23° 25.1	120° 11.6 -23° 25.1	135° 11.3 -23° 25.1	150° 11.0 -23° 25.0	165° 10.7 -23° 25.0	-0.3 +0.0
Вт 24	180° 10.4 -23° 24.9	195° 10.1 -23° 24.9	210° 09.8 -23° 24.9	225° 09.4 -23° 24.8	240° 09.1 -23° 24.8	255° 08.8 -23° 24.7	90° 04.8 -23° 24.0	105° 04.5 -23° 24.0	120° 04.2 -23° 23.9	135° 03.8 -23° 23.9	150° 03.5 -23° 23.8	165° 03.2 -23° 23.7	-0.3 +0.0
Ср 25	180° 02.9 -23° 23.7	195° 02.6 -23° 23.6	210° 02.3 -23° 23.6	225° 02.0 -23° 23.5	240° 01.7 -23° 23.4	255° 01.4 -23° 23.4	89° 57.3 -23° 22.4	104° 57.0 -23° 22.4	119° 56.7 -23° 22.3	134° 56.4 -23° 22.2	149° 56.1 -23° 22.1	164° 55.8 -23° 22.0	-0.3 +0.1
Чт 26	179° 55.4 -23° 22.0	194° 55.1 -23° 21.9	209° 54.8 -23° 21.8	224° 54.5 -23° 21.7	239° 54.2 -23° 21.6	254° 53.9 -23° 21.5	89° 49.9 -23° 20.4	104° 49.6 -23° 20.3	119° 49.3 -23° 20.2	134° 48.9 -23° 20.1	149° 48.6 -23° 20.0	164° 48.3 -23° 19.9	-0.3 +0.1
Пт 27	179° 48.0 -23° 19.8	194° 47.7 -23° 19.7	209° 47.4 -23° 19.6	224° 47.1 -23° 19.5	239° 46.8 -23° 19.4	254° 46.5 -23° 19.3	89° 42.5 -23° 17.8	104° 42.2 -23° 17.7	119° 41.9 -23° 17.6	134° 41.5 -23° 17.5	149° 41.2 -23° 17.3	164° 40.9 -23° 17.2	-0.3 +0.1
Сб 28	179° 40.6 -23° 17.1	194° 40.3 -23° 17.0	209° 40.0 -23° 16.9	224° 39.7 -23° 16.7	239° 39.4 -23° 16.6	254° 39.1 -23° 16.5	89° 35.1 -23° 14.8	104° 34.8 -23° 14.7	119° 34.5 -23° 14.5	134° 34.2 -23° 14.4	149° 33.9 -23° 14.3	164° 33.6 -23° 14.1	-0.3 +0.1
Вс 29	179° 33.3 -23° 14.0	194° 33.0 -23° 13.8	209° 32.7 -23° 13.7	224° 32.4 -23° 13.6	239° 32.1 -23° 13.4	254° 31.8 -23° 13.3	89° 27.8 -23° 11.3	104° 27.5 -23° 11.2	119° 27.2 -23° 11.0	134° 26.9 -23° 10.9	149° 26.6 -23° 10.7	164° 26.3 -23° 10.5	-0.3 +0.1
Пн 30	179° 26.0 -23° 10.4	194° 25.7 -23° 10.2	209° 25.4 -23° 10.1	224° 25.1 -23° 09.9	239° 24.8 -23° 09.7	254° 24.5 -23° 09.6	89° 20.6 -23° 07.4	104° 20.3 -23° 07.2	119° 20.0 -23° 07.0	134° 19.7 -23° 06.9	149° 19.4 -23° 06.7	164° 19.1 -23° 06.5	-0.3 +0.2
Вт 31	179° 18.8 -23° 06.3	194° 18.5 -23° 06.1	209° 18.2 -23° 06.0	224° 17.9 -23° 05.8	239° 17.6 -23° 05.6	254° 17.3 -23° 05.4	89° 13.4 -23° 03.0	104° 13.1 -23° 02.8	119° 12.8 -23° 02.6	134° 12.5 -23° 02.4	149° 12.2 -23° 02.2	164° 11.9 -23° 02.0	-0.3 +0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Декабрь 2030

	Д	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	Δ'/h	R/p
◐	Вс 1	47° 25.3	61° 56.9	76° 28.6	91° 00.3	105° 32.0	120° 03.9	134° 35.7	149° 07.6	163° 39.6	178° 11.6	192° 43.6	+31.8	15.6
		-3° 22.9	-3° 10.6	-2° 58.4	-2° 46.2	-2° 33.9	-2° 21.7	-2° 09.5	-1° 57.2	-1° 45.0	-1° 32.8	-1° 20.6	+12.2	57.2
	Пн 2	50° 48.4	65° 21.0	79° 53.5	94° 26.2	108° 58.8	123° 31.5	138° 04.1	152° 36.8	167° 09.5	181° 42.3	196° 15.0	+32.7	15.4
		1° 41.1	1° 53.1	2° 05.0	2° 17.0	2° 28.9	2° 40.8	2° 52.6	3° 04.5	3° 16.3	3° 28.1	3° 39.8	+11.9	56.4
	Вт 3	54° 27.9	69° 00.8	83° 33.7	98° 06.6	112° 39.5	127° 12.5	141° 45.4	156° 18.3	170° 51.2	185° 24.2	199° 57.1	+32.9	15.2
		6° 32.5	6° 43.7	6° 54.9	7° 06.0	7° 17.1	7° 28.2	7° 39.2	7° 50.2	8° 01.1	8° 12.0	8° 22.9	+11.0	55.7
	Ср 4	69° 00.8	83° 33.7	98° 06.6	112° 39.5	127° 12.5	141° 45.4	156° 18.3	170° 51.2	185° 24.2	199° 57.1	214° 30.0	+32.9	15.2
		6° 43.7	6° 54.9	7° 06.0	7° 17.1	7° 28.2	7° 39.2	7° 50.2	8° 01.1	8° 12.0	8° 22.9	8° 33.7	+11.0	55.6
	Чт 5	72° 42.8	87° 15.6	101° 48.3	116° 21.1	130° 53.8	145° 26.5	159° 59.2	174° 31.8	189° 04.5	203° 37.1	218° 09.7	+32.7	15.0
		11° 09.8	11° 19.8	11° 29.7	11° 39.6	11° 49.4	11° 59.2	12° 08.9	12° 18.5	12° 28.1	12° 37.6	12° 47.1	+9.7	55.1
	Пт 6	76° 16.5	90° 48.8	105° 21.0	119° 53.2	134° 25.4	148° 57.6	163° 29.7	178° 01.9	192° 33.9	207° 06.0	221° 38.0	+32.2	14.9
		15° 01.3	15° 09.7	15° 18.0	15° 26.3	15° 34.5	15° 42.6	15° 50.6	15° 58.6	16° 06.5	16° 14.3	16° 22.0	+8.1	54.6
	Сб 7	79° 35.4	94° 07.0	108° 38.6	123° 10.1	137° 41.6	152° 13.1	166° 44.6	181° 16.0	195° 47.5	210° 18.9	224° 50.2	+31.5	14.8
		18° 08.7	18° 15.2	18° 21.5	18° 27.8	18° 34.0	18° 40.1	18° 46.2	18° 52.1	18° 58.0	19° 03.7	19° 09.4	+6.1	54.3
	Вс 8	82° 37.7	97° 08.7	111° 39.7	126° 10.6	140° 41.5	155° 12.4	169° 43.3	184° 14.2	198° 45.0	213° 15.8	227° 46.6	+30.9	14.7
		20° 23.7	20° 27.9	20° 32.0	20° 36.0	20° 39.9	20° 43.7	20° 47.4	20° 51.1	20° 54.6	20° 58.0	21° 01.4	+3.8	54.1
○	Пн 9	85° 27.0	99° 57.6	114° 28.2	128° 58.7	143° 29.3	157° 59.9	172° 30.4	187° 01.0	201° 31.6	216° 02.1	230° 32.6	+30.6	14.7
		21° 39.4	21° 41.2	21° 42.8	21° 44.3	21° 45.8	21° 47.1	21° 48.3	21° 49.4	21° 50.5	21° 51.4	21° 52.2	+1.3	53.9
	Вт 10	88° 10.8	102° 41.4	117° 12.0	131° 42.6	146° 13.2	160° 43.8	175° 14.4	189° 45.0	204° 15.7	218° 46.3	233° 17.0	+30.6	14.7
		21° 52.1	21° 51.3	21° 50.4	21° 49.4	21° 48.2	21° 47.0	21° 45.7	21° 44.2	21° 42.7	21° 41.1	21° 39.3	-1.3	53.9
	Ср 11	90° 58.8	105° 29.7	120° 00.7	134° 31.7	149° 02.7	163° 33.7	178° 04.7	192° 35.8	207° 06.9	221° 38.0	236° 09.2	+31.0	14.7
		21° 01.3	20° 58.0	20° 54.5	20° 51.0	20° 47.4	20° 43.7	20° 39.9	20° 36.0	20° 32.0	20° 27.9	20° 23.7	-3.8	54.0
	Чт 12	93° 59.5	108° 31.1	123° 02.7	137° 34.3	152° 06.0	166° 37.7	181° 09.4	195° 41.2	210° 12.9	224° 44.8	239° 16.6	+31.7	14.8
		19° 10.0	19° 04.4	18° 58.7	18° 52.9	18° 47.0	18° 41.0	18° 35.0	18° 28.8	18° 22.6	18° 16.3	18° 09.9	-6.0	54.1
	Пт 13	97° 17.8	111° 50.2	126° 22.5	140° 54.9	155° 27.3	169° 59.7	184° 32.2	199° 04.7	213° 37.2	228° 09.7	242° 42.3	+32.4	14.8
		16° 24.5	16° 16.9	16° 09.2	16° 01.4	15° 53.5	15° 45.6	15° 37.6	15° 29.5	15° 21.3	15° 13.1	15° 04.8	-8.0	54.4
	Сб 14	100° 53.8	115° 26.8	129° 59.7	144° 32.7	159° 05.7	173° 38.8	188° 11.8	202° 44.9	217° 18.0	231° 51.1	246° 24.2	+33.0	14.9
		12° 52.7	12° 43.4	12° 34.0	12° 24.6	12° 15.1	12° 05.5	11° 55.9	11° 46.3	11° 36.5	11° 26.8	11° 16.9	-9.6	54.7
	Вс 15	104° 42.5	119° 15.8	133° 49.1	148° 22.4	162° 55.7	177° 29.0	192° 02.4	206° 35.7	221° 09.0	235° 42.3	250° 15.6	+33.3	15.1
		8° 43.4	8° 32.8	8° 22.2	8° 11.5	8° 00.7	7° 49.9	7° 39.1	7° 28.2	7° 17.3	7° 06.4	6° 55.4	-10.8	55.3
	Пн 16	108° 34.8	123° 08.0	137° 41.2	152° 14.4	166° 47.5	181° 20.7	195° 53.8	210° 26.9	225° 00.0	239° 33.0	254° 06.1	+33.1	15.2
		4° 06.3	3° 54.7	3° 43.2	3° 31.6	3° 20.0	3° 08.3	2° 56.7	2° 45.0	2° 33.3	2° 21.6	2° 09.8	-11.6	55.9
	Вт 17	112° 18.4	126° 50.9	141° 23.4	155° 55.9	170° 28.4	185° 00.7	199° 33.1	214° 05.4	228° 37.7	243° 09.9	257° 42.1	+32.4	15.5
		-0° 48.7	-1° 00.7	-1° 12.7	-1° 24.8	-1° 36.8	-1° 48.9	-2° 00.9	-2° 13.0	-2° 25.0	-2° 37.1	-2° 49.1	-12.0	56.7
◑	Ср 18	115° 38.4	130° 09.7	144° 40.9	159° 12.0	173° 43.1	188° 14.2	202° 45.1	217° 16.0	231° 46.8	246° 17.6	260° 48.3	+31.0	15.7
		-5° 49.8	-6° 01.8	-6° 13.8	-6° 25.7	-6° 37.6	-6° 49.6	-7° 01.5	-7° 13.3	-7° 25.2	-7° 37.0	-7° 48.8	-11.9	57.6
	Чт 19	118° 19.1	132° 48.5	147° 17.8	161° 47.0	176° 16.1	190° 45.1	205° 14.1	219° 43.0	234° 11.7	248° 40.4	263° 09.0	+29.0	16.0
		-10° 42.6	-10° 53.9	-11° 05.1	-11° 16.3	-11° 27.5	-11° 38.6	-11° 49.7	-12° 00.7	-12° 11.6	-12° 22.5	-12° 33.4	-11.1	58.6
	Пт 20	120° 05.9	134° 32.9	148° 59.8	163° 26.6	177° 53.3	192° 19.9	206° 46.3	221° 12.7	235° 39.0	250° 05.2	264° 31.2	+26.5	16.2
		-15° 08.6	-15° 18.4	-15° 28.1	-15° 37.7	-15° 47.2	-15° 56.7	-16° 06.0	-16° 15.3	-16° 24.5	-16° 33.5	-16° 42.5	-9.4	59.5
	Сб 21	120° 49.9	135° 14.4	149° 38.7	164° 03.0	178° 27.1	192° 51.2	207° 15.2	221° 39.0	236° 02.8	250° 26.5	264° 50.1	+24.0	16.5
		-18° 45.2	-18° 52.4	-18° 59.6	-19° 06.6	-19° 13.5	-19° 20.3	-19° 27.0	-19° 33.5	-19° 39.9	-19° 46.2	-19° 52.3	-6.7	60.4
	Вс 22	120° 34.0	134° 56.3	149° 18.6	163° 40.8	178° 02.9	192° 25.0	206° 47.1	221° 09.0	235° 30.9	249° 52.8	264° 14.6	+22.1	16.6
		-21° 07.5	-21° 11.3	-21° 15.0	-21° 18.5	-21° 21.9	-21° 25.1	-21° 28.1	-21° 31.0	-21° 33.7	-21° 36.3	-21° 38.7	-3.1	61.0
	Пн 23	119° 37.5	133° 58.9	148° 20.2	162° 41.5	177° 02.9	191° 24.2	205° 45.5	220° 06.8	234° 28.2	248° 49.5	263° 10.9	+21.3	16.7
		-21° 54.6	-21° 54.3	-21° 53.9	-21° 53.2	-21° 52.4	-21° 51.5	-21° 50.3	-21° 49.0	-21° 47.6	-21° 45.9	-21° 44.1	+1.1	61.3
●	Вт 24	118° 34.1	132° 55.9	147° 17.8	161° 39.8	176° 01.8	190° 23.8	204° 45.9	219° 08.1	233° 30.3	247° 52.6	262° 15.0	+22.1	16.7
		-20° 56.9	-20° 52.4	-20° 47.8	-20° 43.0	-20° 38.1	-20° 33.0	-20° 27.8	-20° 22.4	-20° 16.8	-20° 11.1	-20° 05.3	+5.2	61.3
	Ср 25	117° 59.3	132° 22.9	146° 46.6	161° 10.4	175° 34.2	189° 58.2	204° 22.3	218° 46.4	233° 10.6	247° 35.0	261° 59.4	+24.0	16.6
		-18° 20.7	-18° 12.7	-18° 04.5	-17° 56.2	-17° 47.8	-17° 39.3	-17° 30.7	-17° 21.9	-17° 13.0	-17° 04.0	-16° 55.0	+8.6	60.9
	Чт 26	118° 17.3	132° 43.3	147° 09.4	161° 35.6	176° 01.8	190° 28.2	204° 54.7	219° 21.2	233° 47.9	248° 14.7	262° 41.5	+26.4	16.4
		-14° 26.5	-14° 15.9	-14° 05.2	-13° 54.4	-13° 43.6	-13° 32.6	-13° 21.6	-13° 10.6	-12° 59.4	-12° 48.2	-12° 36.9	+11.0	60.2
	Пт 27	119° 35.6	134° 03.9	148° 32.3	163° 00.8	177° 29.4	191° 58.0	206° 26.8	220° 55.6	235° 24.6	249° 53.5	264° 22.6	+28.7	16.2
		-9° 41.0	-9° 28.9	-9° 16.8	-9° 04.6	-8° 52.4	-8° 40.1	-8° 27.8	-8° 15.5	-8° 03.2	-7° 50.8	-7° 38.4	+12.3	59.3
	Сб 28	134° 03.9	148° 32.3	163° 00.8	177° 29.4	191° 58.0	206° 26.8	220° 55.6	235° 24.6	249° 53.5	264° 22.6	278° 51.8	+28.8	16.2
		-9° 28.9	-9° 16.8	-9° 04.6	-8° 52.4	-8° 40.1	-8° 27.8	-8° 15.5	-8° 03.2	-7° 50.8	-7° 38.4	-7° 26.0	+12.3	59.2
	Вс 29	136° 18.1	150° 48.4	165° 18.8	179° 49.2	194° 19.7	208° 50.3	223° 20.9	237° 51.6	252° 22.3	266° 53.1	281° 23.9	+30.6	15.9
		-4° 17.6	-4° 05.0	-3° 52.3	-3° 39.7	-3° 27.1	-3° 14.4	-3° 01.8	-2° 49.2	-2° 36.5	-2° 23.9	-2° 11.3	+12.6	58.2
	Пн 30	139° 12.7	153° 44.3	168° 16.0	182° 47.6	197° 19.4	211° 51.1	226° 22.9	240° 54.7	255° 26.6	269° 58.5	284° 30.4	+31.8	15.6
		0° 56.5	1° 08.9	1° 21.3	1° 33.6	1° 45.9	1° 58.2	2° 10.4	2° 22.7	2° 34.9	2° 47.0	2° 59.2	+12.3	57.2
◐	Вт 31	142° 32.4	157° 04.7	171° 37.0	186° 09.4	200° 41.7	215° 14.1	229° 46.5	244° 18.9	258° 51.3	273° 23.7	287° 56.1	+32.4	15.4
		5° 57.1	6° 08.7	6° 20.2	6° 31.7	6° 43.1	6° 54.5	7° 05.8	7° 17.1	7° 28.3	7° 39.5	7° 50.7	+11.4	56.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 1 22h56 — Полнолуние: 9 22h40 — Последняя четв.: 18 00h01 — Новолуние: 24 17h32 — Первая четв.: 31 13h36

СОЛНЦЕ

Январь 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	179° 11.6	194° 11.3	209° 11.0	224° 10.7	239° 10.4	254° 10.1	89° 06.3	104° 06.0	119° 05.7	134° 05.4	149° 05.1	164° 04.8	-0.3
	-23° 01.8	-23° 01.6	-23° 01.4	-23° 01.2	-23° 01.0	-23° 00.8	-22° 58.1	-22° 57.9	-22° 57.7	-22° 57.5	-22° 57.3	-22° 57.0	+0.2
Чт 2	179° 04.6	194° 04.3	209° 04.0	224° 03.7	239° 03.4	254° 03.1	88° 59.3	103° 59.0	118° 58.7	133° 58.4	148° 58.2	163° 57.9	-0.3
	-22° 56.8	-22° 56.6	-22° 56.4	-22° 56.2	-22° 56.0	-22° 55.7	-22° 52.8	-22° 52.6	-22° 52.3	-22° 52.1	-22° 51.9	-22° 51.6	+0.2
Пт 3	178° 57.6	193° 57.3	208° 57.0	223° 56.7	238° 56.4	253° 56.1	88° 52.4	103° 52.1	118° 51.8	133° 51.5	148° 51.3	163° 51.0	-0.3
	-22° 51.4	-22° 51.2	-22° 50.9	-22° 50.7	-22° 50.4	-22° 50.2	-22° 47.0	-22° 46.8	-22° 46.5	-22° 46.3	-22° 46.0	-22° 45.8	+0.2
Сб 4	178° 50.7	193° 50.4	208° 50.1	223° 49.8	238° 49.5	253° 49.3	88° 45.6	103° 45.3	118° 45.0	133° 44.7	148° 44.5	163° 44.2	-0.3
	-22° 45.5	-22° 45.2	-22° 45.0	-22° 44.7	-22° 44.5	-22° 44.2	-22° 40.8	-22° 40.5	-22° 40.2	-22° 40.0	-22° 39.7	-22° 39.4	+0.3
Вс 5	178° 43.9	193° 43.6	208° 43.3	223° 43.1	238° 42.8	253° 42.5	88° 38.9	103° 38.6	118° 38.3	133° 38.1	148° 37.8	163° 37.5	-0.3
	-22° 39.2	-22° 38.9	-22° 38.6	-22° 38.3	-22° 38.1	-22° 37.8	-22° 34.1	-22° 33.8	-22° 33.5	-22° 33.2	-22° 33.0	-22° 32.7	+0.3
Пн 6	178° 37.2	193° 37.0	208° 36.7	223° 36.4	238° 36.1	253° 35.9	88° 32.3	103° 32.0	118° 31.8	133° 31.5	148° 31.2	163° 30.9	-0.3
	-22° 32.4	-22° 32.1	-22° 31.8	-22° 31.5	-22° 31.2	-22° 30.9	-22° 27.0	-22° 26.7	-22° 26.4	-22° 26.1	-22° 25.8	-22° 25.4	+0.3
Вт 7	178° 30.7	193° 30.4	208° 30.1	223° 29.9	238° 29.6	253° 29.3	88° 25.8	103° 25.6	118° 25.3	133° 25.0	148° 24.8	163° 24.5	-0.3
	-22° 25.1	-22° 24.8	-22° 24.5	-22° 24.2	-22° 23.9	-22° 23.6	-22° 19.4	-22° 19.1	-22° 18.8	-22° 18.4	-22° 18.1	-22° 17.8	+0.3
Ср 8	178° 24.2	193° 24.0	208° 23.7	223° 23.4	238° 23.2	253° 22.9	88° 19.5	103° 19.2	118° 19.0	133° 18.7	148° 18.4	163° 18.2	-0.3
	-22° 17.5	-22° 17.1	-22° 16.8	-22° 16.5	-22° 16.1	-22° 15.8	-22° 11.4	-22° 11.1	-22° 10.7	-22° 10.4	-22° 10.0	-22° 09.7	+0.3
Чт 9	178° 17.9	193° 17.7	208° 17.4	223° 17.1	238° 16.9	253° 16.6	88° 13.3	103° 13.0	118° 12.8	133° 12.5	148° 12.2	163° 12.0	-0.3
	-22° 09.4	-22° 09.0	-22° 08.7	-22° 08.3	-22° 08.0	-22° 07.6	-22° 03.0	-22° 02.6	-22° 02.3	-22° 01.9	-22° 01.5	-22° 01.2	+0.3
Пт 10	178° 11.7	193° 11.5	208° 11.2	223° 11.0	238° 10.7	253° 10.5	88° 07.2	103° 06.9	118° 06.7	133° 06.4	148° 06.2	163° 05.9	-0.3
	-22° 00.8	-22° 00.4	-22° 00.1	-21° 59.7	-21° 59.3	-21° 59.0	-21° 54.1	-21° 53.7	-21° 53.4	-21° 53.0	-21° 52.6	-21° 52.2	+0.4
Сб 11	178° 05.7	193° 05.4	208° 05.2	223° 05.0	238° 04.7	253° 04.5	88° 01.3	103° 01.0	118° 00.8	133° 00.5	148° 00.3	163° 00.0	-0.2
	-21° 51.8	-21° 51.4	-21° 51.1	-21° 50.7	-21° 50.3	-21° 49.9	-21° 44.8	-21° 44.4	-21° 44.0	-21° 43.6	-21° 43.2	-21° 42.8	+0.4
Вс 12	177° 59.8	192° 59.6	207° 59.3	222° 59.1	237° 58.8	252° 58.6	87° 55.5	102° 55.2	117° 55.0	132° 54.8	147° 54.5	162° 54.3	-0.2
	-21° 42.4	-21° 42.0	-21° 41.6	-21° 41.2	-21° 40.8	-21° 40.4	-21° 35.1	-21° 34.7	-21° 34.3	-21° 33.9	-21° 33.4	-21° 33.0	+0.4
Пн 13	177° 54.0	192° 53.8	207° 53.6	222° 53.3	237° 53.1	252° 52.9	87° 49.8	102° 49.6	117° 49.4	132° 49.1	147° 48.9	162° 48.7	-0.2
	-21° 32.6	-21° 32.2	-21° 31.8	-21° 31.3	-21° 30.9	-21° 30.5	-21° 25.0	-21° 24.5	-21° 24.1	-21° 23.7	-21° 23.2	-21° 22.8	+0.4
Вт 14	177° 48.4	192° 48.2	207° 48.0	222° 47.8	237° 47.5	252° 47.3	87° 44.3	102° 44.1	117° 43.9	132° 43.7	147° 43.4	162° 43.2	-0.2
	-21° 22.4	-21° 21.9	-21° 21.5	-21° 21.0	-21° 20.6	-21° 20.2	-21° 14.4	-21° 14.0	-21° 13.5	-21° 13.1	-21° 12.6	-21° 12.2	+0.4
Ср 15	177° 43.0	192° 42.8	207° 42.6	222° 42.3	237° 42.1	252° 41.9	87° 39.0	102° 38.8	117° 38.6	132° 38.4	147° 38.2	162° 37.9	-0.2
	-21° 11.7	-21° 11.2	-21° 10.8	-21° 10.3	-21° 09.9	-21° 09.4	-21° 03.4	-21° 03.0	-21° 02.5	-21° 02.0	-21° 01.6	-21° 01.1	+0.5
Чт 16	177° 37.7	192° 37.5	207° 37.3	222° 37.1	237° 36.9	252° 36.6	87° 33.9	102° 33.7	117° 33.4	132° 33.2	147° 33.0	162° 32.8	-0.2
	-21° 00.6	-21° 00.2	-20° 59.7	-20° 59.2	-20° 58.8	-20° 58.3	-20° 52.1	-20° 51.6	-20° 51.1	-20° 50.6	-20° 50.1	-20° 49.7	+0.5
Пт 17	177° 32.6	192° 32.4	207° 32.2	222° 32.0	237° 31.8	252° 31.6	87° 28.9	102° 28.7	117° 28.5	132° 28.3	147° 28.1	162° 27.9	-0.2
	-20° 49.2	-20° 48.7	-20° 48.2	-20° 47.7	-20° 47.2	-20° 46.7	-20° 40.3	-20° 39.8	-20° 39.3	-20° 38.8	-20° 38.3	-20° 37.8	+0.5
Сб 18	177° 27.6	192° 27.4	207° 27.2	222° 27.0	237° 26.8	252° 26.6	87° 24.0	102° 23.9	117° 23.7	132° 23.5	147° 23.3	162° 23.1	-0.2
	-20° 37.3	-20° 36.8	-20° 36.3	-20° 35.8	-20° 35.3	-20° 34.8	-20° 28.1	-20° 27.6	-20° 27.1	-20° 26.6	-20° 26.1	-20° 25.6	+0.5
Вс 19	177° 22.9	192° 22.7	207° 22.5	222° 22.3	237° 22.1	252° 21.9	87° 19.4	102° 19.2	117° 19.0	132° 18.8	147° 18.6	162° 18.5	-0.2
	-20° 25.0	-20° 24.5	-20° 24.0	-20° 23.5	-20° 23.0	-20° 22.4	-20° 15.6	-20° 15.1	-20° 14.5	-20° 14.0	-20° 13.5	-20° 12.9	+0.5
Пн 20	177° 18.3	192° 18.1	207° 17.9	222° 17.7	237° 17.5	252° 17.3	87° 14.9	102° 14.8	117° 14.6	132° 14.4	147° 14.2	162° 14.0	-0.2
	-20° 12.4	-20° 11.9	-20° 11.3	-20° 10.8	-20° 10.3	-20° 09.7	-20° 02.7	-20° 02.1	-20° 01.6	-20° 01.0	-20° 00.5	-19° 59.9	+0.5
Вт 21	177° 13.9	192° 13.7	207° 13.5	222° 13.3	237° 13.1	252° 13.0	87° 10.7	102° 10.5	117° 10.3	132° 10.1	147° 10.0	162° 09.8	-0.2
	-19° 59.4	-19° 58.8	-19° 58.3	-19° 57.7	-19° 57.2	-19° 56.6	-19° 49.4	-19° 48.8	-19° 48.2	-19° 47.7	-19° 47.1	-19° 46.5	+0.6
Ср 22	177° 09.6	192° 09.4	207° 09.3	222° 09.1	237° 08.9	252° 08.8	87° 06.6	102° 06.4	117° 06.2	132° 06.1	147° 05.9	162° 05.7	-0.2
	-19° 46.0	-19° 45.4	-19° 44.8	-19° 44.3	-19° 43.7	-19° 43.1	-19° 35.7	-19° 35.1	-19° 34.5	-19° 34.0	-19° 33.4	-19° 32.8	+0.6
Чт 23	177° 05.6	192° 05.4	207° 05.2	222° 05.1	237° 04.9	252° 04.8	87° 02.7	102° 02.5	117° 02.4	132° 02.2	147° 02.0	162° 01.9	-0.2
	-19° 32.2	-19° 31.6	-19° 31.1	-19° 30.5	-19° 29.9	-19° 29.3	-19° 21.7	-19° 21.1	-19° 20.5	-19° 19.9	-19° 19.3	-19° 18.7	+0.6
Пт 24	177° 01.7	192° 01.6	207° 01.4	222° 01.3	237° 01.1	252° 00.9	86° 59.0	101° 58.8	116° 58.7	131° 58.5	146° 58.4	161° 58.2	-0.2
	-19° 18.1	-19° 17.5	-19° 16.9	-19° 16.3	-19° 15.7	-19° 15.1	-19° 07.3	-19° 06.6	-19° 06.0	-19° 05.4	-19° 04.8	-19° 04.2	+0.6
Сб 25	176° 58.1	191° 57.9	206° 57.8	221° 57.6	236° 57.5	251° 57.3	86° 55.5	101° 55.3	116° 55.2	131° 55.0	146° 54.9	161° 54.8	-0.1
	-19° 03.6	-19° 03.0	-19° 02.4	-19° 01.8	-19° 01.2	-19° 00.5	-18° 52.5	-18° 51.9	-18° 51.3	-18° 50.6	-18° 50.0	-18° 49.4	+0.6
Вс 26	176° 54.6	191° 54.5	206° 54.3	221° 54.2	236° 54.1	251° 53.9	86° 52.2	101° 52.0	116° 51.9	131° 51.8	146° 51.6	161° 51.5	-0.1
	-18° 48.8	-18° 48.1	-18° 47.5	-18° 46.9	-18° 46.3	-18° 45.6	-18° 37.4	-18° 36.8	-18° 36.2	-18° 35.5	-18° 34.9	-18° 34.2	+0.6
Пн 27	176° 51.4	191° 51.2	206° 51.1	221° 51.0	236° 50.8	251° 50.7	86° 49.1	101° 48.9	116° 48.8	131° 48.7	146° 48.6	161° 48.4	-0.1
	-18° 33.6	-18° 33.0	-18° 32.3	-18° 31.7	-18° 31.0	-18° 30.4	-18° 22.0	-18° 21.3	-18° 20.7	-18° 20.0	-18° 19.4	-18° 18.7	+0.6
Вт 28	176° 48.3	191° 48.2	206° 48.1	221° 48.0	236° 47.8	251° 47.7	86° 46.2	101° 46.1	116° 45.9	131° 45.8	146° 45.7	161° 45.6	-0.1
	-18° 18.1	-18° 17.4	-18° 16.8	-18° 16.1	-18° 15.5	-18° 14.8	-18° 06.2	-18° 05.6	-18° 04.9	-18° 04.2	-18° 03.6	-18° 02.9	+0.7
Ср 29	176° 45.5	191° 45.4	206° 45.3	221° 45.1	236° 45.0	251° 44.9	86° 43.5	101° 43.4	116° 43.3	131° 43.2	146° 43.1	161° 43.0	-0.1
	-18° 02.2	-18° 01.6	-18° 00.9	-18° 00.2	-17° 59.6	-17° 58.9	-17° 50.2	-17° 49.5	-17° 48.8	-17° 48.1	-17° 47.4	-17° 46.8	+0.7
Чт 30	176° 42.9	191° 42.7	206° 42.6	221° 42.5	236° 42.4	251° 42.3	86° 41.0	101° 40.9	116° 40.8	131° 40.7	146° 40.6	161° 40.5	-0.1
	-17° 46.1	-17° 45.4	-17° 44.7	-17° 44.0	-17° 43.4	-17° 42.7	-17° 33.8	-17° 33.1	-17° 32.4	-17° 31.7	-17° 31.0	-17° 30.3	+0.7
Пт 31	176° 40.4	191° 40.3	206° 40.2	221° 40.1	236° 40.0	251° 39.9	86° 38.7	101° 38.7	116° 38.6	131° 38.5	146° 38.4	161° 38.3	-0.1
	-17° 29.6	-17° 28.9	-17° 28.2	-17° 27.5	-17° 26.8	-17° 26.1	-17° 17.0	-17° 16.3	-17° 15.6	-17° 14.9	-17° 14.2	-17° 13.5	+0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2031

Д	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	Δ'/h	R/p
Ср 1	47° 46.4	62° 18.7	76° 51.0	91° 23.3	105° 55.6	120° 27.9	135° 00.1	149° 32.4	164° 04.6	178° 36.8	193° 09.0	+32.3	15.0
	13° 27.6	13° 36.8	13° 45.9	13° 54.9	14° 03.9	14° 12.8	14° 21.6	14° 30.3	14° 39.0	14° 47.6	14° 56.1	+8.8	55.1
Чт 2	51° 09.6	65° 41.5	80° 13.4	94° 45.2	109° 17.0	123° 48.8	138° 20.6	152° 52.3	167° 24.0	181° 55.8	196° 27.4	+31.8	14.9
	16° 55.0	17° 02.3	17° 09.6	17° 16.7	17° 23.8	17° 30.8	17° 37.7	17° 44.5	17° 51.2	17° 57.9	18° 04.4	+6.9	54.6
Пт 3	65° 41.5	80° 13.4	94° 45.2	109° 17.0	123° 48.8	138° 20.6	152° 52.3	167° 24.0	181° 55.8	196° 27.4	210° 59.1	+31.8	14.9
	17° 02.3	17° 09.6	17° 16.7	17° 23.8	17° 30.8	17° 37.7	17° 44.5	17° 51.2	17° 57.9	18° 04.4	18° 10.9	+6.9	54.5
Сб 4	68° 51.3	83° 22.6	97° 53.8	112° 25.1	126° 56.3	141° 27.5	155° 58.7	170° 29.9	185° 01.0	199° 32.2	214° 03.3	+31.2	14.8
	19° 37.7	19° 42.8	19° 47.7	19° 52.6	19° 57.4	20° 02.1	20° 06.7	20° 11.3	20° 15.7	20° 20.0	20° 24.3	+4.7	54.2
Вс 5	71° 47.6	86° 18.5	100° 49.3	115° 20.1	129° 50.8	144° 21.6	158° 52.4	173° 23.1	187° 53.8	202° 24.6	216° 55.3	+30.8	14.7
	21° 16.3	21° 19.0	21° 21.6	21° 24.1	21° 26.5	21° 28.8	21° 31.0	21° 33.1	21° 35.1	21° 37.0	21° 38.8	+2.2	54.0
Пн 6	74° 34.9	89° 05.5	103° 36.1	118° 06.7	132° 37.3	147° 07.9	161° 38.5	176° 09.1	190° 39.7	205° 10.3	219° 40.9	+30.6	14.7
	21° 53.6	21° 53.8	21° 53.8	21° 53.8	21° 53.7	21° 53.5	21° 53.1	21° 52.7	21° 52.1	21° 51.5	21° 50.8	-0.3	53.9
Вт 7	77° 20.7	91° 51.4	106° 22.2	120° 52.9	135° 23.7	149° 54.5	164° 25.3	178° 56.1	193° 26.9	207° 57.7	222° 28.6	+30.8	14.7
	21° 27.5	21° 25.1	21° 22.7	21° 20.1	21° 17.4	21° 14.7	21° 11.8	21° 08.9	21° 05.8	21° 02.7	20° 59.4	-2.8	54.0
○ Ср 8	80° 13.7	94° 44.9	109° 16.1	123° 47.3	138° 18.5	152° 49.8	167° 21.1	181° 52.4	196° 23.8	210° 55.1	225° 26.5	+31.3	14.8
	19° 59.2	19° 54.4	19° 49.6	19° 44.6	19° 39.6	19° 34.5	19° 29.2	19° 23.9	19° 18.5	19° 13.0	19° 07.4	-5.2	54.1
Чт 9	83° 20.8	97° 52.6	112° 24.5	126° 56.4	141° 28.3	156° 00.2	170° 32.2	185° 04.2	199° 36.3	214° 08.3	228° 40.4	+32.0	14.8
	17° 33.4	17° 26.5	17° 19.5	17° 12.4	17° 05.2	16° 57.9	16° 50.6	16° 43.2	16° 35.7	16° 28.2	16° 20.5	-7.3	54.3
Пт 10	86° 45.1	101° 17.7	115° 50.2	130° 22.8	144° 55.4	159° 28.0	174° 00.7	188° 33.4	203° 06.1	217° 38.8	232° 11.6	+32.6	14.9
	14° 17.4	14° 08.6	13° 59.8	13° 50.9	13° 42.0	13° 33.0	13° 23.9	13° 14.7	13° 05.5	12° 56.3	12° 46.9	-9.0	54.6
Сб 11	90° 25.4	104° 58.5	119° 31.6	134° 04.7	148° 37.8	163° 10.9	177° 44.1	192° 17.2	206° 50.4	221° 23.6	235° 56.8	+33.1	15.0
	10° 20.4	10° 10.2	9° 59.9	9° 49.6	9° 39.3	9° 28.9	9° 18.5	9° 08.0	8° 57.5	8° 46.9	8° 36.3	-10.4	55.0
Вс 12	94° 15.7	108° 49.0	123° 22.3	137° 55.7	152° 29.0	167° 02.3	181° 35.6	196° 08.8	210° 42.1	225° 15.4	239° 48.7	+33.3	15.1
	5° 52.6	5° 41.4	5° 30.1	5° 18.9	5° 07.6	4° 56.3	4° 44.9	4° 33.6	4° 22.2	4° 10.7	3° 59.3	-11.3	55.5
Пн 13	98° 06.8	112° 39.9	127° 13.0	141° 46.0	156° 19.1	170° 52.1	185° 25.1	199° 58.1	214° 31.0	229° 03.9	243° 36.8	+33.0	15.3
	1° 05.0	0° 53.2	0° 41.4	0° 29.7	0° 17.9	0° 06.1	-0° 05.7	-0° 17.6	-0° 29.4	-0° 41.2	-0° 53.1	-11.8	56.0
Вт 14	101° 46.5	116° 18.9	130° 51.2	145° 23.5	159° 55.7	174° 27.9	189° 00.1	203° 32.2	218° 04.2	232° 36.2	247° 08.2	+32.2	15.4
	-3° 50.8	-4° 02.6	-4° 14.4	-4° 26.2	-4° 38.0	-4° 49.8	-5° 01.6	-5° 13.3	-5° 25.1	-5° 36.8	-5° 48.5	-11.8	56.6
Ср 15	105° 01.1	119° 32.1	134° 03.1	148° 34.0	163° 04.9	177° 35.7	192° 06.4	206° 37.1	221° 07.7	235° 38.2	250° 08.7	+30.8	15.6
	-8° 41.7	-8° 53.0	-9° 04.3	-9° 15.6	-9° 26.8	-9° 38.0	-9° 49.2	-10° 00.3	-10° 11.4	-10° 22.4	-10° 33.4	-11.2	57.4
◑ Чт 16	107° 36.4	122° 05.6	136° 34.7	151° 03.7	165° 32.7	180° 01.6	194° 30.4	208° 59.1	223° 27.7	237° 56.2	252° 24.7	+28.8	15.9
	-13° 12.7	-13° 22.9	-13° 33.0	-13° 43.0	-13° 53.0	-14° 03.0	-14° 12.8	-14° 22.6	-14° 32.3	-14° 42.0	-14° 51.6	-9.9	58.1
Пт 17	109° 20.5	123° 47.5	138° 14.4	152° 41.2	167° 07.9	181° 34.5	196° 01.0	210° 27.5	224° 53.8	239° 20.1	253° 46.2	+26.6	16.1
	-17° 05.8	-17° 14.0	-17° 22.2	-17° 30.3	-17° 38.2	-17° 46.1	-17° 53.9	-18° 01.5	-18° 09.1	-18° 16.5	-18° 23.9	-7.8	58.9
Сб 18	110° 07.9	124° 32.6	138° 57.3	153° 21.9	167° 46.4	182° 10.8	196° 35.2	210° 59.4	225° 23.6	239° 47.7	254° 11.8	+24.4	16.3
	-20° 00.6	-20° 06.1	-20° 11.4	-20° 16.7	-20° 21.8	-20° 26.7	-20° 31.5	-20° 36.2	-20° 40.8	-20° 45.2	-20° 49.5	-4.9	59.7
Вс 19	110° 04.2	124° 27.2	138° 50.2	153° 13.1	167° 36.0	181° 58.8	196° 21.6	210° 44.4	225° 07.1	239° 29.7	253° 52.4	+22.8	16.5
	-21° 36.6	-21° 38.5	-21° 40.3	-21° 42.0	-21° 43.4	-21° 44.8	-21° 46.0	-21° 47.0	-21° 47.8	-21° 48.5	-21° 49.1	-1.3	60.3
Пн 20	109° 29.0	123° 51.3	138° 13.7	152° 36.0	166° 58.3	181° 20.7	195° 43.0	210° 05.4	224° 27.8	238° 50.1	253° 12.5	+22.3	16.6
	-21° 38.0	-21° 36.0	-21° 33.8	-21° 31.5	-21° 28.9	-21° 26.3	-21° 23.4	-21° 20.5	-21° 17.3	-21° 14.0	-21° 10.5	+2.7	60.8
Вт 21	108° 51.7	123° 14.6	137° 37.5	152° 00.5	166° 23.5	180° 46.6	195° 09.8	209° 33.0	223° 56.2	238° 19.5	252° 42.9	+23.1	16.6
	-19° 59.9	-19° 54.0	-19° 47.9	-19° 41.7	-19° 35.4	-19° 28.9	-19° 22.2	-19° 15.5	-19° 08.6	-19° 01.5	-18° 54.3	+6.6	60.9
Ср 22	108° 41.2	123° 05.6	137° 30.2	151° 54.8	166° 19.4	180° 44.2	195° 09.0	209° 33.9	223° 58.9	238° 24.0	252° 49.1	+24.8	16.6
	-16° 51.1	-16° 41.9	-16° 32.6	-16° 23.2	-16° 13.7	-16° 04.1	-15° 54.4	-15° 44.5	-15° 34.6	-15° 24.6	-15° 14.5	+9.7	60.7
● Чт 23	109° 16.1	123° 42.5	138° 09.0	152° 35.6	167° 02.3	181° 29.1	195° 56.0	210° 22.9	224° 49.9	239° 17.0	253° 44.2	+26.8	16.4
	-12° 31.9	-12° 20.5	-12° 08.9	-11° 57.3	-11° 45.7	-11° 34.0	-11° 22.2	-11° 10.3	-10° 58.4	-10° 46.4	-10° 34.4	+11.8	60.2
Пт 24	110° 41.1	125° 09.5	139° 38.0	154° 06.5	168° 35.1	183° 03.8	197° 32.5	212° 01.3	226° 30.2	240° 59.1	255° 28.1	+28.7	16.2
	-7° 28.6	-7° 15.9	-7° 03.2	-6° 50.5	-6° 37.7	-6° 25.0	-6° 12.2	-5° 59.3	-5° 46.5	-5° 33.6	-5° 20.8	+12.8	59.5
Сб 25	112° 50.6	127° 20.6	141° 50.6	156° 20.6	170° 50.7	185° 20.9	199° 51.1	214° 21.4	228° 51.7	243° 22.0	257° 52.4	+30.2	16.0
	-2° 06.9	-1° 54.0	-1° 41.1	-1° 28.1	-1° 15.3	-1° 02.4	-0° 49.5	-0° 36.6	-0° 23.8	-0° 11.0	0° 01.8	+12.9	58.6
Вс 26	115° 33.3	130° 04.3	144° 35.3	159° 06.4	173° 37.5	188° 08.7	202° 39.8	217° 11.0	231° 42.2	246° 13.5	260° 44.7	+31.2	15.7
	3° 11.1	3° 23.5	3° 35.9	3° 48.2	4° 00.5	4° 12.7	4° 24.9	4° 37.1	4° 49.2	5° 01.3	5° 13.3	+12.2	57.6
Пн 27	130° 04.3	144° 35.3	159° 06.4	173° 37.5	188° 08.7	202° 39.8	217° 11.0	231° 42.2	246° 13.5	260° 44.7	275° 16.0	+31.2	15.7
	3° 23.5	3° 35.9	3° 48.2	4° 00.5	4° 12.7	4° 24.9	4° 37.1	4° 49.2	5° 01.3	5° 13.3	5° 25.3	+12.2	57.6
Вт 28	133° 07.9	147° 39.5	162° 11.1	176° 42.7	191° 14.3	205° 45.9	220° 17.6	234° 49.2	249° 20.8	263° 52.5	278° 24.2	+31.6	15.4
	8° 19.5	8° 30.7	8° 41.8	8° 52.9	9° 04.0	9° 14.9	9° 25.8	9° 36.7	9° 47.5	9° 58.2	10° 08.9	+10.9	56.6
Ср 29	136° 19.6	150° 51.3	165° 23.0	179° 54.7	194° 26.4	208° 58.1	223° 29.7	238° 01.4	252° 33.1	267° 04.7	281° 36.4	+31.7	15.2
	12° 41.2	12° 50.8	13° 00.3	13° 09.8	13° 19.2	13° 28.5	13° 37.8	13° 46.9	13° 56.0	14° 05.1	14° 14.0	+9.3	55.8
◐ Чт 30	139° 30.2	154° 01.8	168° 33.3	183° 04.7	197° 36.2	212° 07.7	226° 39.1	241° 10.6	255° 42.0	270° 13.4	284° 44.8	+31.5	15.0
	16° 18.9	16° 26.6	16° 34.2	16° 41.7	16° 49.1	16° 56.5	17° 03.8	17° 10.9	17° 18.0	17° 25.1	17° 32.0	+7.3	55.1
Пт 31	142° 34.0	157° 05.2	171° 36.4	186° 07.5	200° 38.6	215° 09.7	229° 40.8	244° 11.9	258° 43.0	273° 14.0	287° 45.1	+31.1	14.9
	19° 05.3	19° 10.8	19° 16.2	19° 21.5	19° 26.7	19° 31.8	19° 36.9	19° 41.8	19° 46.7	19° 51.4	19° 56.1	+5.1	54.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 8 18h25 — Последняя четв.: 16 12h47 — Новолуние: 23 04h31 — Первая четв.: 30 07h43

СОЛНЦЕ

Февраль 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	176° 38.2 -17° 12.8	191° 38.1 -17° 12.1	206° 38.0 -17° 11.4	221° 38.0 -17° 10.7	236° 37.9 -17° 10.0	251° 37.8 -17° 09.3	86° 36.7 -17° 00.0	101° 36.6 -16° 59.3	116° 36.5 -16° 58.6	131° 36.4 -16° 57.9	146° 36.4 -16° 57.2	161° 36.3 -16° 56.5	-0.1 +0.7
Вс 2	176° 36.2 -16° 55.7	191° 36.1 -16° 55.0	206° 36.0 -16° 54.3	221° 36.0 -16° 53.6	236° 35.9 -16° 52.9	251° 35.8 -16° 52.1	86° 34.8 -16° 42.7	101° 34.8 -16° 42.0	116° 34.7 -16° 41.3	131° 34.6 -16° 40.5	146° 34.6 -16° 39.8	161° 34.5 -16° 39.1	-0.1 +0.7
Пн 3	176° 34.4 -16° 38.4	191° 34.3 -16° 37.6	206° 34.3 -16° 36.9	221° 34.2 -16° 36.2	236° 34.1 -16° 35.4	251° 34.1 -16° 34.7	86° 33.2 -16° 25.1	101° 33.1 -16° 24.4	116° 33.1 -16° 23.6	131° 33.0 -16° 22.9	146° 32.9 -16° 22.2	161° 32.9 -16° 21.4	-0.1 +0.7
Вт 4	176° 32.8 -16° 20.7	191° 32.8 -16° 19.9	206° 32.7 -16° 19.2	221° 32.6 -16° 18.4	236° 32.6 -16° 17.7	251° 32.5 -16° 17.0	86° 31.8 -16° 07.2	101° 31.7 -16° 06.5	116° 31.6 -16° 05.7	131° 31.6 -16° 05.0	146° 31.5 -16° 04.2	161° 31.5 -16° 03.5	-0.1 +0.7
Ср 5	176° 31.4 -16° 02.7	191° 31.4 -16° 02.0	206° 31.3 -16° 01.2	221° 31.3 -16° 00.5	236° 31.2 -15° 59.7	251° 31.2 -15° 58.9	86° 30.5 -15° 49.1	101° 30.5 -15° 48.3	116° 30.4 -15° 47.5	131° 30.4 -15° 46.8	146° 30.3 -15° 46.0	161° 30.3 -15° 45.3	-0.1 +0.8
Чт 6	176° 30.2 -15° 44.5	191° 30.2 -15° 43.7	206° 30.2 -15° 43.0	221° 30.1 -15° 42.2	236° 30.1 -15° 41.4	251° 30.0 -15° 40.7	86° 29.5 -15° 30.6	101° 29.5 -15° 29.9	116° 29.4 -15° 29.1	131° 29.4 -15° 28.3	146° 29.3 -15° 27.5	161° 29.3 -15° 26.8	-0.0 +0.8
Пт 7	176° 29.3 -15° 26.0	191° 29.2 -15° 25.2	206° 29.2 -15° 24.4	221° 29.2 -15° 23.7	236° 29.1 -15° 22.9	251° 29.1 -15° 22.1	86° 28.7 -15° 11.9	101° 28.6 -15° 11.2	116° 28.6 -15° 10.4	131° 28.6 -15° 09.6	146° 28.5 -15° 08.8	161° 28.5 -15° 08.0	-0.0 +0.8
Сб 8	176° 28.5 -15° 07.2	191° 28.5 -15° 06.4	206° 28.4 -15° 05.6	221° 28.4 -15° 04.9	236° 28.4 -15° 04.1	251° 28.4 -15° 03.3	86° 28.0 -14° 53.0	101° 28.0 -14° 52.2	116° 28.0 -14° 51.4	131° 28.0 -14° 50.6	146° 27.9 -14° 49.8	161° 27.9 -14° 49.0	-0.0 +0.8
Вс 9	176° 27.9 -14° 48.2	191° 27.9 -14° 47.4	206° 27.9 -14° 46.6	221° 27.8 -14° 45.8	236° 27.8 -14° 45.0	251° 27.8 -14° 44.2	86° 27.6 -14° 33.8	101° 27.6 -14° 33.0	116° 27.6 -14° 32.2	131° 27.6 -14° 31.4	146° 27.5 -14° 30.5	161° 27.5 -14° 29.7	-0.0 +0.8
Пн 10	176° 27.5 -14° 28.9	191° 27.5 -14° 28.1	206° 27.5 -14° 27.3	221° 27.5 -14° 26.5	236° 27.5 -14° 25.7	251° 27.5 -14° 24.9	86° 27.4 -14° 14.3	101° 27.4 -14° 13.5	116° 27.3 -14° 12.7	131° 27.3 -14° 11.9	146° 27.3 -14° 11.1	161° 27.3 -14° 10.2	-0.0 +0.8
Вт 11	176° 27.3 -14° 09.4	191° 27.3 -14° 08.6	206° 27.3 -14° 07.8	221° 27.3 -14° 07.0	236° 27.3 -14° 06.1	251° 27.3 -14° 05.3	86° 27.3 -13° 54.6	101° 27.3 -13° 53.8	116° 27.3 -13° 53.0	131° 27.3 -13° 52.1	146° 27.3 -13° 51.3	161° 27.3 -13° 50.5	-0.0 +0.8
Ср 12	176° 27.3 -13° 49.7	191° 27.3 -13° 48.8	206° 27.3 -13° 48.0	221° 27.3 -13° 47.2	236° 27.3 -13° 46.4	251° 27.3 -13° 45.5	86° 27.4 -13° 34.7	101° 27.4 -13° 33.9	116° 27.5 -13° 33.0	131° 27.5 -13° 32.2	146° 27.5 -13° 31.4	161° 27.5 -13° 30.5	+0.0 +0.8
Чт 13	176° 27.5 -13° 29.7	191° 27.5 -13° 28.9	206° 27.5 -13° 28.0	221° 27.5 -13° 27.2	236° 27.6 -13° 26.3	251° 27.6 -13° 25.5	86° 27.8 -13° 14.6	101° 27.8 -13° 13.7	116° 27.8 -13° 12.9	131° 27.8 -13° 12.0	146° 27.8 -13° 11.2	161° 27.8 -13° 10.3	+0.0 +0.8
Пт 14	176° 27.9 -13° 09.5	191° 27.9 -13° 08.6	206° 27.9 -13° 07.8	221° 27.9 -13° 06.9	236° 27.9 -13° 06.1	251° 28.0 -13° 05.2	86° 28.3 -12° 54.2	101° 28.3 -12° 53.3	116° 28.3 -12° 52.5	131° 28.3 -12° 51.6	146° 28.4 -12° 50.8	161° 28.4 -12° 49.9	+0.0 +0.8
Сб 15	176° 28.4 -12° 49.1	191° 28.4 -12° 48.2	206° 28.5 -12° 47.4	221° 28.5 -12° 46.5	236° 28.5 -12° 45.6	251° 28.5 -12° 44.8	86° 28.9 -12° 33.6	101° 29.0 -12° 32.8	116° 29.0 -12° 31.9	131° 29.0 -12° 31.0	146° 29.1 -12° 30.2	161° 29.1 -12° 29.3	+0.0 +0.9
Вс 16	176° 29.1 -12° 28.4	191° 29.2 -12° 27.6	206° 29.2 -12° 26.7	221° 29.2 -12° 25.8	236° 29.3 -12° 25.0	251° 29.3 -12° 24.1	86° 29.8 -12° 12.8	101° 29.8 -12° 12.0	116° 29.9 -12° 11.1	131° 29.9 -12° 10.2	146° 29.9 -12° 09.3	161° 30.0 -12° 08.5	+0.0 +0.9
Пн 17	176° 30.0 -12° 07.6	191° 30.1 -12° 06.7	206° 30.1 -12° 05.9	221° 30.1 -12° 05.0	236° 30.2 -12° 04.1	251° 30.2 -12° 03.2	86° 30.8 -11° 51.9	101° 30.9 -11° 51.0	116° 30.9 -11° 50.1	131° 30.9 -11° 49.2	146° 31.0 -11° 48.3	161° 31.0 -11° 47.5	+0.0 +0.9
Вт 18	176° 31.1 -11° 46.6	191° 31.1 -11° 45.7	206° 31.2 -11° 44.8	221° 31.2 -11° 43.9	236° 31.3 -11° 43.1	251° 31.3 -11° 42.2	86° 32.0 -11° 30.7	101° 32.1 -11° 29.8	116° 32.1 -11° 28.9	131° 32.2 -11° 28.0	146° 32.2 -11° 27.1	161° 32.3 -11° 26.3	+0.0 +0.9
Ср 19	176° 32.3 -11° 25.4	191° 32.4 -11° 24.5	206° 32.4 -11° 23.6	221° 32.5 -11° 22.7	236° 32.5 -11° 21.8	251° 32.6 -11° 20.9	86° 33.4 -11° 09.3	101° 33.4 -11° 08.4	116° 33.5 -11° 07.6	131° 33.5 -11° 06.7	146° 33.6 -11° 05.8	161° 33.7 -11° 04.9	+0.1 +0.9
Чт 20	176° 33.7 -11° 04.0	191° 33.8 -11° 03.1	206° 33.9 -11° 02.2	221° 33.9 -11° 01.3	236° 34.0 -11° 00.4	251° 34.0 -10° 59.5	86° 34.9 -10° 47.8	101° 35.0 -10° 46.9	116° 35.0 -10° 46.0	131° 35.1 -10° 45.1	146° 35.2 -10° 44.2	161° 35.2 -10° 43.3	+0.1 +0.9
Пт 21	176° 35.3 -10° 42.4	191° 35.4 -10° 41.5	206° 35.4 -10° 40.6	221° 35.5 -10° 39.7	236° 35.6 -10° 38.8	251° 35.6 -10° 37.9	86° 36.6 -10° 26.1	101° 36.6 -10° 25.2	116° 36.7 -10° 24.3	131° 36.8 -10° 23.4	146° 36.9 -10° 22.5	161° 36.9 -10° 21.6	+0.1 +0.9
Сб 22	176° 37.0 -10° 20.7	191° 37.1 -10° 19.8	206° 37.2 -10° 18.9	221° 37.2 -10° 17.9	236° 37.3 -10° 17.0	251° 37.4 -10° 16.1	86° 38.4 -10° 04.3	101° 38.5 -10° 03.4	116° 38.6 -10° 02.4	131° 38.7 -10° 01.5	146° 38.7 -10° 00.6	161° 38.8 -9° 59.7	+0.1 +0.9
Вс 23	176° 38.9 -9° 58.8	191° 39.0 -9° 57.9	206° 39.1 -9° 57.0	221° 39.1 -9° 56.0	236° 39.2 -9° 55.1	251° 39.3 -9° 54.2	86° 40.4 -9° 42.3	101° 40.5 -9° 41.3	116° 40.6 -9° 40.4	131° 40.7 -9° 39.5	146° 40.8 -9° 38.6	161° 40.9 -9° 37.7	+0.1 +0.9
Пн 24	176° 40.9 -9° 36.7	191° 41.0 -9° 35.8	206° 41.1 -9° 34.9	221° 41.2 -9° 34.0	236° 41.3 -9° 33.1	251° 41.4 -9° 32.1	86° 42.6 -9° 20.1	101° 42.7 -9° 19.2	116° 42.8 -9° 18.3	131° 42.8 -9° 17.3	146° 42.9 -9° 16.4	161° 43.0 -9° 15.5	+0.1 +0.9
Вт 25	176° 43.1 -9° 14.6	191° 43.2 -9° 13.6	206° 43.3 -9° 12.7	221° 43.4 -9° 11.8	236° 43.5 -9° 10.8	251° 43.6 -9° 09.9	86° 44.9 -8° 57.8	101° 45.0 -8° 56.9	116° 45.1 -8° 56.0	131° 45.2 -8° 55.0	146° 45.3 -8° 54.1	161° 45.4 -8° 53.2	+0.1 +0.9
Ср 26	176° 45.5 -8° 52.2	191° 45.6 -8° 51.3	206° 45.7 -8° 50.4	221° 45.8 -8° 49.4	236° 45.9 -8° 48.5	251° 46.0 -8° 47.6	86° 47.3 -8° 35.4	101° 47.4 -8° 34.5	116° 47.5 -8° 33.5	131° 47.6 -8° 32.6	146° 47.7 -8° 31.7	161° 47.9 -8° 30.7	+0.1 +0.9
Чт 27	176° 48.0 -8° 29.8	191° 48.1 -8° 28.8	206° 48.2 -8° 27.9	221° 48.3 -8° 27.0	236° 48.4 -8° 26.0	251° 48.5 -8° 25.1	86° 49.9 -8° 12.9	101° 50.0 -8° 11.9	116° 50.1 -8° 11.0	131° 50.3 -8° 10.0	146° 50.4 -8° 09.1	161° 50.5 -8° 08.1	+0.1 +0.9
Пт 28	176° 50.6 -8° 07.2	191° 50.7 -8° 06.3	206° 50.8 -8° 05.3	221° 50.9 -8° 04.4	236° 51.0 -8° 03.4	251° 51.2 -8° 02.5	86° 52.6 -7° 50.2	101° 52.8 -7° 49.2	116° 52.9 -7° 48.3	131° 53.0 -7° 47.3	146° 53.1 -7° 46.4	161° 53.2 -7° 45.5	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2031

Д	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	Δ'/h	R/p
Сб 1	72° 54.8	87° 25.7	101° 56.6	116° 27.4	130° 58.3	145° 29.2	160° 00.0	174° 30.8	189° 01.7	203° 32.5	218° 03.3	+30.8	14.8
	20° 37.5	20° 41.1	20° 44.6	20° 48.0	20° 51.3	20° 54.5	20° 57.7	21° 00.7	21° 03.6	21° 06.4	21° 09.2	+3.2	54.3
Вс 2	75° 44.3	90° 15.0	104° 45.7	119° 16.4	133° 47.1	148° 17.8	162° 48.4	177° 19.1	191° 49.8	206° 20.4	220° 51.1	+30.7	14.7
	21° 38.1	21° 39.3	21° 40.3	21° 41.2	21° 42.1	21° 42.8	21° 43.4	21° 43.9	21° 44.4	21° 44.7	21° 44.9	+0.7	54.1
Пн 3	78° 31.4	93° 02.1	107° 32.8	122° 03.5	136° 34.3	151° 05.0	165° 35.8	180° 06.5	194° 37.3	209° 08.1	223° 38.9	+30.7	14.7
	21° 36.2	21° 34.8	21° 33.3	21° 31.7	21° 30.0	21° 28.2	21° 26.3	21° 24.3	21° 22.3	21° 20.1	21° 17.8	-1.8	54.0
Вт 4	81° 22.2	95° 53.2	110° 24.3	124° 55.3	139° 26.4	153° 57.4	168° 28.5	182° 59.6	197° 30.8	212° 01.9	226° 33.1	+31.1	14.8
	20° 31.8	20° 27.9	20° 24.0	20° 20.0	20° 15.8	20° 11.6	20° 07.3	20° 02.9	19° 58.4	19° 53.8	19° 49.1	-4.3	54.1
Ср 5	84° 23.0	98° 54.4	113° 26.0	127° 57.5	142° 29.1	157° 00.7	171° 32.3	186° 03.9	200° 35.6	215° 07.2	229° 38.9	+31.6	14.8
	18° 28.0	18° 21.9	18° 15.7	18° 09.4	18° 03.0	17° 56.5	17° 50.0	17° 43.4	17° 36.7	17° 29.9	17° 23.0	-6.5	54.4
Чт 6	87° 37.2	102° 09.3	116° 41.4	131° 13.5	145° 45.6	160° 17.8	174° 50.0	189° 22.2	203° 54.4	218° 26.6	232° 58.9	+32.2	14.9
	15° 30.4	15° 22.3	15° 14.2	15° 05.9	14° 57.6	14° 49.2	14° 40.7	14° 32.2	14° 23.5	14° 14.9	14° 06.1	-8.4	54.7
○ Пт 7	91° 05.3	105° 37.8	120° 10.4	134° 43.0	149° 15.6	163° 48.3	178° 20.9	192° 53.6	207° 26.3	221° 59.0	236° 31.7	+32.6	15.0
	11° 47.2	11° 37.5	11° 27.7	11° 17.8	11° 07.9	10° 57.9	10° 47.9	10° 37.8	10° 27.7	10° 17.5	10° 07.3	-10.0	55.1
Сб 8	94° 43.6	109° 16.4	123° 49.3	138° 22.1	152° 55.0	167° 27.9	182° 00.8	196° 33.7	211° 06.5	225° 39.4	240° 12.3	+32.9	15.1
	7° 28.2	7° 17.2	7° 06.2	6° 55.2	6° 44.1	6° 33.0	6° 21.9	6° 10.7	5° 59.5	5° 48.3	5° 37.0	-11.1	55.5
Вс 9	98° 25.3	112° 58.1	127° 30.9	142° 03.7	156° 36.4	171° 09.2	185° 42.0	200° 14.7	214° 47.4	229° 20.2	243° 52.8	+32.8	15.3
	2° 44.6	2° 32.9	2° 21.3	2° 09.5	1° 57.8	1° 46.1	1° 34.3	1° 22.5	1° 10.7	0° 58.9	0° 47.1	-11.8	56.0
Пн 10	102° 00.9	116° 33.3	131° 05.6	145° 37.9	160° 10.1	174° 42.4	189° 14.6	203° 46.7	218° 18.9	232° 51.0	247° 23.0	+32.2	15.4
	-2° 10.9	-2° 22.7	-2° 34.6	-2° 46.5	-2° 58.4	-3° 10.2	-3° 22.1	-3° 33.9	-3° 45.7	-3° 57.6	-4° 09.4	-11.9	56.5
Вт 11	105° 19.4	119° 50.8	134° 22.2	148° 53.5	163° 24.8	177° 56.0	192° 27.2	206° 58.3	221° 29.3	236° 00.4	250° 31.3	+31.2	15.6
	-7° 04.5	-7° 16.0	-7° 27.5	-7° 38.9	-7° 50.4	-8° 01.7	-8° 13.1	-8° 24.4	-8° 35.7	-8° 46.9	-8° 58.1	-11.4	57.0
Ср 12	108° 09.0	122° 39.1	137° 09.0	151° 38.9	166° 08.8	180° 38.5	195° 08.2	209° 37.9	224° 07.5	238° 37.0	253° 06.4	+29.7	15.7
	-11° 41.2	-11° 51.7	-12° 02.1	-12° 12.5	-12° 22.8	-12° 33.1	-12° 43.3	-12° 53.4	-13° 03.5	-13° 13.5	-13° 23.4	-10.2	57.6
Чт 13	110° 19.6	124° 47.9	139° 16.1	153° 44.2	168° 12.3	182° 40.3	197° 08.2	211° 36.1	226° 03.9	240° 31.6	254° 59.2	+28.0	15.9
	-15° 44.2	-15° 53.0	-16° 01.7	-16° 10.3	-16° 18.8	-16° 27.2	-16° 35.6	-16° 43.8	-16° 52.0	-17° 00.1	-17° 08.0	-8.4	58.1
◑ Пт 14	111° 44.8	126° 11.3	140° 37.7	155° 04.0	169° 30.2	183° 56.4	198° 22.5	212° 48.5	227° 14.5	241° 40.4	256° 06.2	+26.1	16.0
	-18° 55.8	-19° 02.1	-19° 08.3	-19° 14.4	-19° 20.4	-19° 26.3	-19° 32.1	-19° 37.7	-19° 43.3	-19° 48.7	-19° 54.0	-5.8	58.7
Сб 15	112° 26.1	126° 51.0	141° 15.8	155° 40.6	170° 05.3	184° 29.9	198° 54.6	213° 19.1	227° 43.6	242° 08.1	256° 32.6	+24.6	16.1
	-20° 58.2	-21° 01.4	-21° 04.5	-21° 07.5	-21° 10.3	-21° 13.0	-21° 15.5	-21° 18.0	-21° 20.2	-21° 22.4	-21° 24.3	-2.6	59.2
Вс 16	112° 34.8	126° 58.7	141° 22.6	155° 46.5	170° 10.4	184° 34.3	198° 58.1	213° 22.0	227° 45.8	242° 09.6	256° 33.4	+23.9	16.3
	-21° 36.9	-21° 36.5	-21° 36.1	-21° 35.4	-21° 34.7	-21° 33.7	-21° 32.6	-21° 31.4	-21° 30.0	-21° 28.5	-21° 26.9	+1.0	59.6
Пн 17	112° 30.8	126° 54.7	141° 18.7	155° 42.6	170° 06.6	184° 30.6	198° 54.6	213° 18.6	227° 42.7	242° 06.8	256° 30.9	+24.0	16.3
	-20° 44.0	-20° 40.0	-20° 35.8	-20° 31.5	-20° 27.1	-20° 22.5	-20° 17.7	-20° 12.9	-20° 07.8	-20° 02.7	-19° 57.4	+4.7	59.9
Вт 18	112° 37.2	127° 02.0	141° 26.8	155° 51.7	170° 16.6	184° 41.5	199° 06.5	213° 31.6	227° 56.7	242° 21.9	256° 47.1	+25.0	16.4
	-18° 21.7	-18° 14.3	-18° 06.8	-17° 59.1	-17° 51.3	-17° 43.4	-17° 35.4	-17° 27.3	-17° 19.0	-17° 10.6	-17° 02.2	+8.0	60.1
Ср 19	113° 12.4	127° 38.5	142° 04.7	156° 31.0	170° 57.4	185° 23.8	199° 50.3	214° 16.8	228° 43.4	243° 10.1	257° 36.8	+26.4	16.4
	-14° 42.1	-14° 32.0	-14° 21.8	-14° 11.5	-14° 01.1	-13° 50.6	-13° 40.0	-13° 29.4	-13° 18.7	-13° 07.8	-12° 57.0	+10.5	60.0
Чт 20	114° 25.1	128° 52.8	143° 20.6	157° 48.4	172° 16.3	186° 44.2	201° 12.3	215° 40.3	230° 08.4	244° 36.6	259° 04.9	+28.0	16.3
	-10° 05.2	-9° 53.2	-9° 41.2	-9° 29.2	-9° 17.1	-9° 04.9	-8° 52.8	-8° 40.5	-8° 28.2	-8° 15.9	-8° 03.6	+12.2	59.6
● Пт 21	116° 15.0	130° 44.0	145° 13.2	159° 42.4	174° 11.6	188° 40.9	203° 10.2	217° 39.5	232° 09.0	246° 38.4	261° 07.9	+29.3	16.1
	-4° 54.3	-4° 41.5	-4° 28.7	-4° 15.8	-4° 03.0	-3° 50.1	-3° 37.3	-3° 24.4	-3° 11.5	-2° 58.6	-2° 45.7	+12.9	59.1
Сб 22	118° 35.1	133° 05.2	147° 35.4	162° 05.5	176° 35.7	191° 05.9	205° 36.2	220° 06.5	234° 36.8	249° 07.1	263° 37.5	+30.2	15.9
	0° 27.2	0° 40.0	0° 52.7	1° 05.5	1° 18.2	1° 30.9	1° 43.6	1° 56.2	2° 08.8	2° 21.4	2° 34.0	+12.7	58.4
Вс 23	121° 15.9	135° 46.6	150° 17.3	164° 48.1	179° 18.8	193° 49.6	208° 20.4	222° 51.2	237° 22.0	251° 52.8	266° 23.7	+30.8	15.7
	5° 38.6	5° 50.6	6° 02.5	6° 14.4	6° 26.3	6° 38.1	6° 49.8	7° 01.6	7° 13.2	7° 24.8	7° 36.4	+11.8	57.5
Пн 24	124° 07.4	138° 38.4	153° 09.3	167° 40.3	182° 11.3	196° 42.3	211° 13.2	225° 44.2	240° 15.2	254° 46.2	269° 17.1	+31.0	15.5
	10° 22.9	10° 33.5	10° 44.0	10° 54.5	11° 04.9	11° 15.2	11° 25.5	11° 35.7	11° 45.9	11° 55.9	12° 05.9	+10.3	56.7
Вт 25	138° 38.4	153° 09.3	167° 40.3	182° 11.3	196° 42.3	211° 13.2	225° 44.2	240° 15.2	254° 46.2	269° 17.1	283° 48.1	+31.0	15.5
	10° 33.5	10° 44.0	10° 54.5	11° 04.9	11° 15.2	11° 25.5	11° 35.7	11° 45.9	11° 55.9	12° 05.9	12° 15.8	+10.2	56.7
Ср 26	141° 32.6	156° 03.5	170° 34.5	185° 05.4	199° 36.3	214° 07.2	228° 38.1	243° 09.0	257° 39.9	272° 10.8	286° 41.7	+30.9	15.2
	14° 35.6	14° 44.3	14° 52.9	15° 01.5	15° 09.9	15° 18.3	15° 26.5	15° 34.7	15° 42.8	15° 50.9	15° 58.8	+8.3	55.9
Чт 27	144° 24.1	158° 54.9	173° 25.7	187° 56.4	202° 27.2	216° 57.9	231° 28.6	245° 59.3	260° 30.1	275° 00.8	289° 31.5	+30.7	15.0
	17° 47.4	17° 53.9	18° 00.3	18° 06.7	18° 12.9	18° 19.1	18° 25.1	18° 31.1	18° 36.9	18° 42.7	18° 48.4	+6.1	55.2
Пт 28	147° 11.2	161° 41.8	176° 12.4	190° 43.0	205° 13.6	219° 44.2	234° 14.8	248° 45.3	263° 15.9	277° 46.5	292° 17.0	+30.6	14.9
	20° 02.1	20° 06.2	20° 10.2	20° 14.2	20° 18.0	20° 21.8	20° 25.4	20° 28.9	20° 32.4	20° 35.7	20° 39.0	+3.7	54.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Полнолуние: 7 12h46 — Последняя четв.: 14 22h49 — Новолуние: 21 15h48

СОЛНЦЕ

Март 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	176° 53.4 -7° 44.5	191° 53.5 -7° 43.6	206° 53.6 -7° 42.6	221° 53.7 -7° 41.7	236° 53.8 -7° 40.7	251° 53.9 -7° 39.8	86° 55.5 -7° 27.4	101° 55.6 -7° 26.5	116° 55.8 -7° 25.5	131° 55.9 -7° 24.6	146° 56.0 -7° 23.6	161° 56.1 -7° 22.7	+0.1 +0.9
Вс 2	176° 56.3 -7° 21.7	191° 56.4 -7° 20.7	206° 56.5 -7° 19.8	221° 56.6 -7° 18.8	236° 56.7 -7° 17.9	251° 56.9 -7° 16.9	86° 58.5 -7° 04.5	101° 58.6 -7° 03.6	116° 58.8 -7° 02.6	131° 58.9 -7° 01.7	146° 59.0 -7° 00.7	161° 59.1 -6° 59.7	+0.1 +1.0
Пн 3	176° 59.3 -6° 58.8	191° 59.4 -6° 57.8	206° 59.5 -6° 56.9	221° 59.7 -6° 55.9	236° 59.8 -6° 55.0	251° 59.9 -6° 54.0	87° 01.6 -6° 41.5	102° 01.8 -6° 40.6	117° 01.9 -6° 39.6	132° 02.0 -6° 38.7	147° 02.2 -6° 37.7	162° 02.3 -6° 36.7	+0.1 +1.0
Вт 4	177° 02.4 -6° 35.8	192° 02.6 -6° 34.8	207° 02.7 -6° 33.9	222° 02.8 -6° 32.9	237° 03.0 -6° 31.9	252° 03.1 -6° 31.0	87° 04.9 -6° 18.5	102° 05.0 -6° 17.5	117° 05.1 -6° 16.5	132° 05.3 -6° 15.6	147° 05.4 -6° 14.6	162° 05.6 -6° 13.6	+0.1 +1.0
Ср 5	177° 05.7 -6° 12.7	192° 05.8 -6° 11.7	207° 06.0 -6° 10.8	222° 06.1 -6° 09.8	237° 06.2 -6° 08.8	252° 06.4 -6° 07.9	87° 08.2 -5° 55.3	102° 08.4 -5° 54.3	117° 08.5 -5° 53.4	132° 08.6 -5° 52.4	147° 08.8 -5° 51.4	162° 08.9 -5° 50.5	+0.1 +1.0
Чт 6	177° 09.1 -5° 49.5	192° 09.2 -5° 48.5	207° 09.4 -5° 47.6	222° 09.5 -5° 46.6	237° 09.6 -5° 45.6	252° 09.8 -5° 44.7	87° 11.7 -5° 32.1	102° 11.8 -5° 31.1	117° 12.0 -5° 30.1	132° 12.1 -5° 29.2	147° 12.3 -5° 28.2	162° 12.4 -5° 27.2	+0.1 +1.0
Пт 7	177° 12.6 -5° 26.2	192° 12.7 -5° 25.3	207° 12.9 -5° 24.3	222° 13.0 -5° 23.3	237° 13.2 -5° 22.4	252° 13.3 -5° 21.4	87° 15.2 -5° 08.7	102° 15.4 -5° 07.8	117° 15.6 -5° 06.8	132° 15.7 -5° 05.8	147° 15.9 -5° 04.9	162° 16.0 -5° 03.9	+0.1 +1.0
Сб 8	177° 16.2 -5° 02.9	192° 16.3 -5° 01.9	207° 16.5 -5° 01.0	222° 16.6 -5° 00.0	237° 16.8 -4° 59.0	252° 16.9 -4° 58.0	87° 18.9 -4° 45.4	102° 19.1 -4° 44.4	117° 19.2 -4° 43.4	132° 19.4 -4° 42.4	147° 19.5 -4° 41.5	162° 19.7 -4° 40.5	+0.2 +1.0
Вс 9	177° 19.8 -4° 39.5	192° 20.0 -4° 38.5	207° 20.2 -4° 37.6	222° 20.3 -4° 36.6	237° 20.5 -4° 35.6	252° 20.6 -4° 34.6	87° 22.7 -4° 21.9	102° 22.8 -4° 20.9	117° 23.0 -4° 20.0	132° 23.1 -4° 19.0	147° 23.3 -4° 18.0	162° 23.5 -4° 17.0	+0.2 +1.0
Пн 10	177° 23.6 -4° 16.0	192° 23.8 -4° 15.1	207° 23.9 -4° 14.1	222° 24.1 -4° 13.1	237° 24.3 -4° 12.1	252° 24.4 -4° 11.2	87° 26.5 -3° 58.4	102° 26.7 -3° 57.4	117° 26.8 -3° 56.5	132° 27.0 -3° 55.5	147° 27.2 -3° 54.5	162° 27.3 -3° 53.5	+0.2 +1.0
Вт 11	177° 27.5 -3° 52.5	192° 27.7 -3° 51.6	207° 27.8 -3° 50.6	222° 28.0 -3° 49.6	237° 28.1 -3° 48.6	252° 28.3 -3° 47.6	87° 30.4 -3° 34.9	102° 30.6 -3° 33.9	117° 30.8 -3° 32.9	132° 30.9 -3° 31.9	147° 31.1 -3° 30.9	162° 31.3 -3° 30.0	+0.2 +1.0
Ср 12	177° 31.4 -3° 29.0	192° 31.6 -3° 28.0	207° 31.8 -3° 27.0	222° 31.9 -3° 26.0	237° 32.1 -3° 25.0	252° 32.3 -3° 24.1	87° 34.4 -3° 11.3	102° 34.6 -3° 10.3	117° 34.8 -3° 09.3	132° 34.9 -3° 08.3	147° 35.1 -3° 07.3	162° 35.3 -3° 06.3	+0.2 +1.0
Чт 13	177° 35.4 -3° 05.4	192° 35.6 -3° 04.4	207° 35.8 -3° 03.4	222° 36.0 -3° 02.4	237° 36.1 -3° 01.4	252° 36.3 -3° 00.4	87° 38.5 -2° 47.6	102° 38.7 -2° 46.6	117° 38.8 -2° 45.7	132° 39.0 -2° 44.7	147° 39.2 -2° 43.7	162° 39.4 -2° 42.7	+0.2 +1.0
Пт 14	177° 39.5 -2° 41.7	192° 39.7 -2° 40.7	207° 39.9 -2° 39.7	222° 40.0 -2° 38.8	237° 40.2 -2° 37.8	252° 40.4 -2° 36.8	87° 42.6 -2° 24.0	102° 42.8 -2° 23.0	117° 43.0 -2° 22.0	132° 43.2 -2° 21.0	147° 43.3 -2° 20.0	162° 43.5 -2° 19.0	+0.2 +1.0
Сб 15	177° 43.7 -2° 18.0	192° 43.9 -2° 17.1	207° 44.0 -2° 16.1	222° 44.2 -2° 15.1	237° 44.4 -2° 14.1	252° 44.5 -2° 13.1	87° 46.8 -2° 00.3	102° 47.0 -1° 59.3	117° 47.2 -1° 58.3	132° 47.3 -1° 57.3	147° 47.5 -1° 56.3	162° 47.7 -1° 55.3	+0.2 +1.0
Вс 16	177° 47.9 -1° 54.3	192° 48.1 -1° 53.4	207° 48.2 -1° 52.4	222° 48.4 -1° 51.4	237° 48.6 -1° 50.4	252° 48.8 -1° 49.4	87° 51.1 -1° 36.6	102° 51.2 -1° 35.6	117° 51.4 -1° 34.6	132° 51.6 -1° 33.6	147° 51.8 -1° 32.6	162° 51.9 -1° 31.6	+0.2 +1.0
Пн 17	177° 52.1 -1° 30.6	192° 52.3 -1° 29.6	207° 52.5 -1° 28.7	222° 52.7 -1° 27.7	237° 52.8 -1° 26.7	252° 53.0 -1° 25.7	87° 55.3 -1° 12.8	102° 55.5 -1° 11.8	117° 55.7 -1° 10.9	132° 55.9 -1° 09.9	147° 56.1 -1° 08.9	162° 56.2 -1° 07.9	+0.2 +1.0
Вт 18	177° 56.4 -1° 06.9	192° 56.6 -1° 05.9	207° 56.8 -1° 04.9	222° 57.0 -1° 03.9	237° 57.1 -1° 03.0	252° 57.3 -1° 02.0	87° 59.7 -0° 49.1	102° 59.9 -0° 48.1	118° 00.0 -0° 47.1	133° 00.2 -0° 46.1	148° 00.4 -0° 45.2	163° 00.6 -0° 44.2	+0.2 +1.0
Ср 19	178° 00.8 -0° 43.2	193° 00.9 -0° 42.2	208° 01.1 -0° 41.2	223° 01.3 -0° 40.2	238° 01.5 -0° 39.2	253° 01.7 -0° 38.2	88° 04.0 -0° 25.4	103° 04.2 -0° 24.4	118° 04.4 -0° 23.4	133° 04.6 -0° 22.4	148° 04.8 -0° 21.4	163° 05.0 -0° 20.4	+0.2 +1.0
Чт 20	178° 05.1 -0° 19.4	193° 05.3 -0° 18.5	208° 05.5 -0° 17.5	223° 05.7 -0° 16.5	238° 05.9 -0° 15.5	253° 06.0 -0° 14.5	88° 08.4 -0° 01.6	103° 08.6 -0° 00.7	118° 08.8 0° 00.3	133° 09.0 0° 01.3	148° 09.2 0° 02.3	163° 09.4 0° 03.3	+0.2 +1.0
Пт 21	178° 09.5 0° 04.3	193° 09.7 0° 05.3	208° 09.9 0° 06.3	223° 10.1 0° 07.2	238° 10.3 0° 08.2	253° 10.5 0° 09.2	88° 12.9 0° 22.1	103° 13.0 0° 23.1	118° 13.2 0° 24.0	133° 13.4 0° 25.0	148° 13.6 0° 26.0	163° 13.8 0° 27.0	+0.2 +1.0
Сб 22	178° 14.0 0° 28.0	193° 14.2 0° 29.0	208° 14.3 0° 30.0	223° 14.5 0° 31.0	238° 14.7 0° 31.9	253° 14.9 0° 32.9	88° 17.3 0° 45.8	103° 17.5 0° 46.7	118° 17.7 0° 47.7	133° 17.9 0° 48.7	148° 18.1 0° 49.7	163° 18.2 0° 50.7	+0.2 +1.0
Вс 23	178° 18.4 0° 51.7	193° 18.6 0° 52.7	208° 18.8 0° 53.7	223° 19.0 0° 54.6	238° 19.2 0° 55.6	253° 19.4 0° 56.6	88° 21.8 1° 09.4	103° 22.0 1° 10.4	118° 22.2 1° 11.4	133° 22.3 1° 12.4	148° 22.5 1° 13.4	163° 22.7 1° 14.4	+0.2 +1.0
Пн 24	178° 22.9 1° 15.3	193° 23.1 1° 16.3	208° 23.3 1° 17.3	223° 23.5 1° 18.3	238° 23.6 1° 19.3	253° 23.8 1° 20.3	88° 26.3 1° 33.1	103° 26.5 1° 34.1	118° 26.6 1° 35.0	133° 26.8 1° 36.0	148° 27.0 1° 37.0	163° 27.2 1° 38.0	+0.2 +1.0
Вт 25	178° 27.4 1° 39.0	193° 27.6 1° 40.0	208° 27.8 1° 40.9	223° 27.9 1° 41.9	238° 28.1 1° 42.9	253° 28.3 1° 43.9	88° 30.8 1° 56.7	103° 31.0 1° 57.6	118° 31.1 1° 58.6	133° 31.3 1° 59.6	148° 31.5 2° 00.6	163° 31.7 2° 01.6	+0.2 +1.0
Ср 26	178° 31.9 2° 02.6	193° 32.1 2° 03.5	208° 32.3 2° 04.5	223° 32.5 2° 05.5	238° 32.6 2° 06.5	253° 32.8 2° 07.5	88° 35.3 2° 20.2	103° 35.5 2° 21.2	118° 35.6 2° 22.2	133° 35.8 2° 23.2	148° 36.0 2° 24.1	163° 36.2 2° 25.1	+0.2 +1.0
Чт 27	178° 36.4 2° 26.1	193° 36.6 2° 27.1	208° 36.8 2° 28.1	223° 37.0 2° 29.0	238° 37.1 2° 30.0	253° 37.3 2° 31.0	88° 39.8 2° 43.7	103° 40.0 2° 44.7	118° 40.2 2° 45.7	133° 40.3 2° 46.7	148° 40.5 2° 47.6	163° 40.7 2° 48.6	+0.2 +1.0
Пт 28	178° 40.9 2° 49.6	193° 41.1 2° 50.6	208° 41.3 2° 51.6	223° 41.5 2° 52.5	238° 41.7 2° 53.5	253° 41.8 2° 54.5	88° 44.3 3° 07.2	103° 44.5 3° 08.2	118° 44.7 3° 09.1	133° 44.8 3° 10.1	148° 45.0 3° 11.1	163° 45.2 3° 12.1	+0.2 +1.0
Сб 29	178° 45.4 3° 13.0	193° 45.6 3° 14.0	208° 45.8 3° 15.0	223° 46.0 3° 16.0	238° 46.2 3° 16.9	253° 46.4 3° 17.9	88° 48.8 3° 30.6	103° 49.0 3° 31.5	118° 49.2 3° 32.5	133° 49.4 3° 33.5	148° 49.5 3° 34.5	163° 49.7 3° 35.4	+0.2 +1.0
Вс 30	178° 49.9 3° 36.4	193° 50.1 3° 37.4	208° 50.3 3° 38.4	223° 50.5 3° 39.3	238° 50.7 3° 40.3	253° 50.9 3° 41.3	88° 53.3 3° 53.9	103° 53.5 3° 54.9	118° 53.7 3° 55.8	133° 53.8 3° 56.8	148° 54.0 3° 57.8	163° 54.2 3° 58.7	+0.2 +1.0
Пн 31	178° 54.4 3° 59.7	193° 54.6 4° 00.7	208° 54.8 4° 01.6	223° 55.0 4° 02.6	238° 55.2 4° 03.6	253° 55.3 4° 04.6	88° 57.8 4° 17.1	103° 57.9 4° 18.1	118° 58.1 4° 19.1	133° 58.3 4° 20.0	148° 58.5 4° 21.0	163° 58.7 4° 22.0	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2031

	Д	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	Δ'/h	R/p
◐	Сб 1	51° 06.0	65° 36.6	80° 07.3	94° 37.9	109° 08.6	123° 39.3	138° 09.9	152° 40.6	167° 11.3	181° 42.0	196° 12.8	+30.7	14.8
		21° 29.6	21° 29.5	21° 29.2	21° 28.8	21° 28.3	21° 27.8	21° 27.1	21° 26.3	21° 25.4	21° 24.5	21° 23.4	-0.6	54.2
	Вс 2	53° 55.1	68° 26.0	82° 56.9	97° 27.9	111° 58.9	126° 29.9	141° 00.9	155° 31.9	170° 02.9	184° 34.0	199° 05.1	+31.0	14.8
		20° 55.4	20° 52.8	20° 50.1	20° 47.2	20° 44.3	20° 41.3	20° 38.1	20° 34.9	20° 31.6	20° 28.2	20° 24.7	-3.1	54.2
	Пн 3	68° 26.0	82° 56.9	97° 27.9	111° 58.9	126° 29.9	141° 00.9	155° 31.9	170° 02.9	184° 34.0	199° 05.1	213° 36.2	+31.0	14.8
		20° 52.8	20° 50.1	20° 47.2	20° 44.3	20° 41.3	20° 38.1	20° 34.9	20° 31.6	20° 28.2	20° 24.7	20° 21.1	-3.2	54.2
	Вт 4	71° 24.7	85° 56.1	100° 27.5	114° 59.0	129° 30.4	144° 01.9	158° 33.4	173° 04.9	187° 36.4	202° 08.0	216° 39.6	+31.5	14.8
		19° 16.0	19° 11.0	19° 05.8	19° 00.6	18° 55.2	18° 49.8	18° 44.3	18° 38.7	18° 33.1	18° 27.3	18° 21.4	-5.5	54.3
	Ср 5	74° 35.5	89° 07.4	103° 39.3	118° 11.3	132° 43.2	147° 15.2	161° 47.2	176° 19.2	190° 51.2	205° 23.2	219° 55.3	+32.0	14.9
		16° 43.7	16° 36.5	16° 29.2	16° 21.9	16° 14.5	16° 07.0	15° 59.5	15° 51.8	15° 44.1	15° 36.4	15° 28.5	-7.5	54.6
	Чт 6	77° 58.2	92° 30.5	107° 02.9	121° 35.2	136° 07.6	150° 39.9	165° 12.3	179° 44.7	194° 17.1	208° 49.6	223° 22.0	+32.4	15.0
		13° 22.0	13° 13.0	13° 04.0	12° 54.9	12° 45.7	12° 36.5	12° 27.2	12° 17.8	12° 08.4	11° 58.9	11° 49.4	-9.3	55.1
	Пт 7	81° 29.5	96° 02.0	110° 34.6	125° 07.1	139° 39.7	154° 12.3	168° 44.8	183° 17.4	197° 50.0	212° 22.5	226° 55.1	+32.6	15.2
		9° 19.3	9° 08.9	8° 58.4	8° 47.9	8° 37.3	8° 26.7	8° 16.0	8° 05.3	7° 54.5	7° 43.7	7° 32.9	-10.6	55.6
	Сб 8	85° 03.2	99° 35.6	114° 08.1	128° 40.6	143° 13.0	157° 45.5	172° 17.9	186° 50.3	201° 22.7	215° 55.1	230° 27.5	+32.4	15.3
		4° 45.5	4° 34.0	4° 22.6	4° 11.1	3° 59.5	3° 48.0	3° 36.4	3° 24.8	3° 13.2	3° 01.5	2° 49.8	-11.6	56.2
○	Вс 9	88° 30.8	103° 02.9	117° 34.9	132° 06.9	146° 38.8	161° 10.8	175° 42.7	190° 14.5	204° 46.4	219° 18.2	233° 50.0	+31.9	15.5
		-0° 07.6	-0° 19.5	-0° 31.5	-0° 43.4	-0° 55.4	-1° 07.3	-1° 19.3	-1° 31.3	-1° 43.2	-1° 55.2	-2° 07.2	-12.0	56.7
	Пн 10	91° 42.6	106° 13.8	120° 44.9	135° 16.0	149° 47.1	164° 18.1	178° 49.1	193° 20.0	207° 50.9	222° 21.7	236° 52.5	+31.0	15.6
		-5° 05.9	-5° 17.8	-5° 29.6	-5° 41.3	-5° 53.1	-6° 04.8	-6° 16.6	-6° 28.3	-6° 39.9	-6° 51.6	-7° 03.2	-11.7	57.3
	Вт 11	94° 28.3	108° 58.2	123° 28.1	137° 58.0	152° 27.8	166° 57.5	181° 27.2	195° 56.8	210° 26.3	224° 55.8	239° 25.2	+29.7	15.8
		-9° 53.5	-10° 04.5	-10° 15.5	-10° 26.4	-10° 37.3	-10° 48.1	-10° 58.9	-11° 09.6	-11° 20.3	-11° 30.9	-11° 41.5	-10.8	57.8
	Ср 12	96° 39.2	111° 07.6	125° 36.0	140° 04.3	154° 32.5	169° 00.7	183° 28.8	197° 56.8	212° 24.8	226° 52.7	241° 20.5	+28.1	15.9
		-14° 12.4	-14° 21.9	-14° 31.3	-14° 40.7	-14° 49.9	-14° 59.1	-15° 08.2	-15° 17.2	-15° 26.2	-15° 35.0	-15° 43.8	-9.1	58.2
	Чт 13	98° 10.4	112° 37.3	127° 04.0	141° 30.7	155° 57.4	170° 23.9	184° 50.5	199° 16.9	213° 43.3	228° 09.6	242° 35.9	+26.5	16.0
		-17° 44.1	-17° 51.3	-17° 58.4	-18° 05.4	-18° 12.3	-18° 19.1	-18° 25.8	-18° 32.4	-18° 38.8	-18° 45.2	-18° 51.4	-6.7	58.6
	Пт 14	99° 03.7	113° 29.2	127° 54.6	142° 20.0	156° 45.3	171° 10.6	185° 35.8	200° 01.0	214° 26.2	228° 51.3	243° 16.4	+25.3	16.1
		-20° 10.7	-20° 15.0	-20° 19.2	-20° 23.2	-20° 27.1	-20° 30.9	-20° 34.5	-20° 38.0	-20° 41.4	-20° 44.6	-20° 47.8	-3.7	58.9
	Сб 15	99° 29.3	113° 53.9	128° 18.6	142° 43.2	157° 07.9	171° 32.5	185° 57.1	200° 21.7	214° 46.3	229° 10.9	243° 35.4	+24.6	16.1
		-21° 18.1	-21° 19.0	-21° 19.7	-21° 20.4	-21° 20.9	-21° 21.2	-21° 21.4	-21° 21.5	-21° 21.4	-21° 21.2	-21° 20.8	-0.3	59.1
◑	Вс 16	99° 44.4	114° 09.1	128° 33.8	142° 58.5	157° 23.2	171° 48.0	186° 12.7	200° 37.5	215° 02.3	229° 27.2	243° 52.1	+24.8	16.1
		-20° 58.4	-20° 55.8	-20° 53.0	-20° 50.2	-20° 47.1	-20° 44.0	-20° 40.6	-20° 37.2	-20° 33.6	-20° 29.9	-20° 26.1	+3.2	59.2
	Пн 17	100° 08.9	114° 34.3	128° 59.8	143° 25.3	157° 50.9	172° 16.5	186° 42.1	201° 07.8	215° 33.5	229° 59.3	244° 25.1	+25.6	16.2
		-19° 12.5	-19° 06.5	-19° 00.5	-18° 54.3	-18° 48.0	-18° 41.6	-18° 35.0	-18° 28.4	-18° 21.6	-18° 14.7	-18° 07.7	+6.5	59.3
	Вт 18	100° 58.7	115° 25.3	129° 52.0	144° 18.8	158° 45.6	173° 12.5	187° 39.4	202° 06.4	216° 33.4	231° 00.5	245° 27.7	+26.9	16.1
		-16° 09.3	-16° 00.5	-15° 51.7	-15° 42.8	-15° 33.8	-15° 24.7	-15° 15.5	-15° 06.2	-14° 56.8	-14° 47.3	-14° 37.7	+9.2	59.2
	Ср 19	102° 21.6	116° 49.6	131° 17.7	145° 45.8	160° 14.0	174° 42.2	189° 10.5	203° 38.9	218° 07.2	232° 35.7	247° 04.2	+28.3	16.1
		-12° 04.4	-11° 53.6	-11° 42.7	-11° 31.8	-11° 20.8	-11° 09.7	-10° 58.6	-10° 47.4	-10° 36.1	-10° 24.8	-10° 13.4	+11.1	59.0
	Чт 20	104° 17.4	118° 46.6	133° 15.9	147° 45.2	162° 14.6	176° 44.0	191° 13.4	205° 42.9	220° 12.5	234° 42.0	249° 11.6	+29.4	16.0
		-7° 17.1	-7° 05.0	-6° 52.9	-6° 40.7	-6° 28.5	-6° 16.3	-6° 04.1	-5° 51.8	-5° 39.5	-5° 27.2	-5° 14.8	+12.2	58.7
	Пт 21	106° 39.9	121° 10.0	135° 40.1	150° 10.3	164° 40.5	179° 10.8	193° 41.0	208° 11.3	222° 41.6	237° 12.0	251° 42.3	+30.3	15.9
		-2° 07.7	-1° 55.1	-1° 42.6	-1° 30.0	-1° 17.4	-1° 04.9	-0° 52.3	-0° 39.8	-0° 27.3	-0° 14.7	-0° 02.2	+12.6	58.3
	Сб 22	109° 20.0	123° 50.7	138° 21.3	152° 52.0	167° 22.6	181° 53.3	196° 24.0	210° 54.7	225° 25.4	239° 56.2	254° 26.9	+30.7	15.7
		3° 04.0	3° 16.2	3° 28.4	3° 40.6	3° 52.8	4° 04.9	4° 17.0	4° 29.1	4° 41.1	4° 53.1	5° 05.1	+12.1	57.7
●	Вс 23	112° 08.5	126° 39.3	141° 10.1	155° 40.9	170° 11.7	184° 42.5	199° 13.2	213° 44.0	228° 14.8	242° 45.6	257° 16.4	+30.8	15.6
		7° 59.6	8° 10.9	8° 22.1	8° 33.3	8° 44.4	8° 55.4	9° 06.4	9° 17.3	9° 28.2	9° 39.0	9° 49.8	+11.0	57.1
	Пн 24	114° 57.5	129° 28.2	143° 58.9	158° 29.6	173° 00.2	187° 30.9	202° 01.5	216° 32.2	231° 02.8	245° 33.4	260° 04.1	+30.7	15.4
		12° 23.5	12° 33.2	12° 42.9	12° 52.4	13° 01.9	13° 11.3	13° 20.7	13° 29.9	13° 39.1	13° 48.2	13° 57.2	+9.4	56.4
	Вт 25	117° 42.2	132° 12.7	146° 43.1	161° 13.6	175° 44.0	190° 14.5	204° 44.9	219° 15.3	233° 45.7	248° 16.1	262° 46.5	+30.4	15.2
		16° 02.9	16° 10.6	16° 18.2	16° 25.7	16° 33.1	16° 40.5	16° 47.7	16° 54.9	17° 02.0	17° 08.9	17° 15.8	+7.3	55.8
	Ср 26	120° 21.3	134° 51.6	149° 21.9	163° 52.1	178° 22.4	192° 52.6	207° 22.9	221° 53.1	236° 23.4	250° 53.6	265° 23.9	+30.3	15.0
		18° 48.0	18° 53.4	18° 58.6	19° 03.8	19° 08.9	19° 13.9	19° 18.8	19° 23.6	19° 28.3	19° 32.9	19° 37.3	+4.9	55.2
	Чт 27	134° 51.6	149° 21.9	163° 52.1	178° 22.4	192° 52.6	207° 22.9	221° 53.1	236° 23.4	250° 53.6	265° 23.9	279° 54.1	+30.2	15.0
		18° 53.4	18° 58.6	19° 03.8	19° 08.9	19° 13.9	19° 18.8	19° 23.6	19° 28.3	19° 32.9	19° 37.3	19° 41.7	+4.8	55.1
	Пт 28	137° 27.5	151° 57.7	166° 27.9	180° 58.2	195° 28.4	209° 58.7	224° 28.9	238° 59.2	253° 29.5	267° 59.8	282° 30.0	+30.3	14.9
		20° 35.6	20° 38.3	20° 41.0	20° 43.6	20° 46.1	20° 48.4	20° 50.7	20° 52.9	20° 54.9	20° 56.9	20° 58.8	+2.3	54.7
	Сб 29	140° 05.3	154° 35.7	169° 06.2	183° 36.7	198° 07.1	212° 37.6	227° 08.1	241° 38.7	256° 09.2	270° 39.7	285° 10.3	+30.5	14.8
		21° 14.5	21° 14.7	21° 14.8	21° 14.9	21° 14.8	21° 14.6	21° 14.4	21° 14.0	21° 13.5	21° 13.0	21° 12.3	-0.2	54.3
	Вс 30	142° 51.0	157° 21.9	171° 52.7	186° 23.7	200° 54.6	215° 25.5	229° 56.5	244° 27.5	258° 58.5	273° 29.6	288° 00.6	+31.0	14.8
		20° 50.4	20° 48.2	20° 45.8	20° 43.4	20° 40.9	20° 38.3	20° 35.6	20° 32.8	20° 29.8	20° 26.8	20° 23.8	-2.7	54.2
◐	Пн 31	145° 49.4	160° 20.8	174° 52.3	189° 23.7	203° 55.3	218° 26.8	232° 58.4	247° 29.9	262° 01.5	276° 33.2	291° 04.8	+31.5	14.8
		19° 26.3	19° 21.8	19° 17.1	19° 12.4	19° 07.6	19° 02.7	18° 57.7	18° 52.6	18° 47.5	18° 42.2	18° 36.9	-4.9	54.2

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 1 04h02 — Полнолуние: 9 04h29 — Последняя четв.: 16 06h35 — Новолуние: 23 03h49 — Первая четв.: 31 00h32

СОЛНЦЕ

Апрель 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ’/h
Вт 1	178° 58.9	193° 59.1	208° 59.2	223° 59.4	238° 59.6	253° 59.8	89° 02.2	104° 02.4	119° 02.6	134° 02.8	149° 03.0	164° 03.1	+0.2
	4° 22.9	4° 23.9	4° 24.9	4° 25.8	4° 26.8	4° 27.8	4° 40.3	4° 41.3	4° 42.2	4° 43.2	4° 44.2	4° 45.1	+1.0
Ср 2	179° 03.3	194° 03.5	209° 03.7	224° 03.9	239° 04.1	254° 04.3	89° 06.7	104° 06.8	119° 07.0	134° 07.2	149° 07.4	164° 07.6	+0.2
	4° 46.1	4° 47.0	4° 48.0	4° 49.0	4° 49.9	4° 50.9	5° 03.4	5° 04.3	5° 05.3	5° 06.3	5° 07.2	5° 08.2	+1.0
Чт 3	179° 07.8	194° 07.9	209° 08.1	224° 08.3	239° 08.5	254° 08.7	89° 11.1	104° 11.2	119° 11.4	134° 11.6	149° 11.8	164° 12.0	+0.2
	5° 09.1	5° 10.1	5° 11.1	5° 12.0	5° 13.0	5° 13.9	5° 26.4	5° 27.3	5° 28.3	5° 29.2	5° 30.2	5° 31.2	+1.0
Пт 4	179° 12.2	194° 12.3	209° 12.5	224° 12.7	239° 12.9	254° 13.1	89° 15.4	104° 15.6	119° 15.8	134° 16.0	149° 16.2	164° 16.3	+0.2
	5° 32.1	5° 33.1	5° 34.0	5° 35.0	5° 35.9	5° 36.9	5° 49.3	5° 50.2	5° 51.2	5° 52.1	5° 53.1	5° 54.0	+1.0
Сб 5	179° 16.5	194° 16.7	209° 16.9	224° 17.1	239° 17.2	254° 17.4	89° 19.8	104° 19.9	119° 20.1	134° 20.3	149° 20.5	164° 20.7	+0.2
	5° 55.0	5° 55.9	5° 56.9	5° 57.8	5° 58.8	5° 59.7	6° 12.1	6° 13.0	6° 14.0	6° 14.9	6° 15.8	6° 16.8	+1.0
Вс 6	179° 20.8	194° 21.0	209° 21.2	224° 21.4	239° 21.5	254° 21.7	89° 24.0	104° 24.2	119° 24.4	134° 24.6	149° 24.7	164° 24.9	+0.2
	6° 17.7	6° 18.7	6° 19.6	6° 20.6	6° 21.5	6° 22.5	6° 34.7	6° 35.7	6° 36.6	6° 37.6	6° 38.5	6° 39.5	+0.9
Пн 7	179° 25.1	194° 25.3	209° 25.5	224° 25.6	239° 25.8	254° 26.0	89° 28.3	104° 28.4	119° 28.6	134° 28.8	149° 29.0	164° 29.1	+0.2
	6° 40.4	6° 41.3	6° 42.3	6° 43.2	6° 44.2	6° 45.1	6° 57.3	6° 58.3	6° 59.2	7° 00.1	7° 01.1	7° 02.0	+0.9
Вт 8	179° 29.3	194° 29.5	209° 29.7	224° 29.8	239° 30.0	254° 30.2	89° 32.4	104° 32.6	119° 32.8	134° 33.0	149° 33.1	164° 33.3	+0.2
	7° 02.9	7° 03.9	7° 04.8	7° 05.8	7° 06.7	7° 07.6	7° 19.8	7° 20.7	7° 21.6	7° 22.6	7° 23.5	7° 24.4	+0.9
Ср 9	179° 33.5	194° 33.7	209° 33.8	224° 34.0	239° 34.2	254° 34.3	89° 36.6	104° 36.7	119° 36.9	134° 37.1	149° 37.2	164° 37.4	+0.2
	7° 25.4	7° 26.3	7° 27.2	7° 28.2	7° 29.1	7° 30.0	7° 42.1	7° 43.0	7° 44.0	7° 44.9	7° 45.8	7° 46.7	+0.9
Чт 10	179° 37.6	194° 37.8	209° 37.9	224° 38.1	239° 38.3	254° 38.4	89° 40.6	104° 40.8	119° 40.9	134° 41.1	149° 41.3	164° 41.4	+0.2
	7° 47.7	7° 48.6	7° 49.5	7° 50.4	7° 51.4	7° 52.3	8° 04.3	8° 05.2	8° 06.1	8° 07.1	8° 08.0	8° 08.9	+0.9
Пт 11	179° 41.6	194° 41.8	209° 41.9	224° 42.1	239° 42.3	254° 42.4	89° 44.6	104° 44.8	119° 44.9	134° 45.1	149° 45.2	164° 45.4	+0.2
	8° 09.8	8° 10.8	8° 11.7	8° 12.6	8° 13.5	8° 14.4	8° 26.4	8° 27.3	8° 28.2	8° 29.1	8° 30.0	8° 31.0	+0.9
Сб 12	179° 45.6	194° 45.7	209° 45.9	224° 46.1	239° 46.2	254° 46.4	89° 48.5	104° 48.6	119° 48.8	134° 49.0	149° 49.1	164° 49.3	+0.2
	8° 31.9	8° 32.8	8° 33.7	8° 34.6	8° 35.5	8° 36.4	8° 48.3	8° 49.2	8° 50.1	8° 51.0	8° 51.9	8° 52.9	+0.9
Вс 13	179° 49.4	194° 49.6	209° 49.8	224° 49.9	239° 50.1	254° 50.2	89° 52.3	104° 52.5	119° 52.6	134° 52.8	149° 52.9	164° 53.1	+0.2
	8° 53.8	8° 54.7	8° 55.6	8° 56.5	8° 57.4	8° 58.3	9° 10.1	9° 11.0	9° 11.9	9° 12.8	9° 13.7	9° 14.6	+0.9
Пн 14	179° 53.2	194° 53.4	209° 53.6	224° 53.7	239° 53.9	254° 54.0	89° 56.0	104° 56.2	119° 56.3	134° 56.5	149° 56.6	164° 56.8	+0.2
	9° 15.5	9° 16.4	9° 17.3	9° 18.2	9° 19.1	9° 20.0	9° 31.7	9° 32.6	9° 33.5	9° 34.4	9° 35.3	9° 36.2	+0.9
Вт 15	179° 57.0	194° 57.1	209° 57.3	224° 57.4	239° 57.6	254° 57.7	89° 59.7	104° 59.8	120° 00.0	135° 00.1	150° 00.3	165° 00.4	+0.2
	9° 37.1	9° 38.0	9° 38.9	9° 39.8	9° 40.7	9° 41.6	9° 53.2	9° 54.1	9° 55.0	9° 55.9	9° 56.8	9° 57.6	+0.9
Ср 16	180° 00.6	195° 00.7	210° 00.9	225° 01.0	240° 01.2	255° 01.3	90° 03.2	105° 03.4	120° 03.5	135° 03.7	150° 03.8	165° 03.9	+0.1
	9° 58.5	9° 59.4	10° 00.3	10° 01.2	10° 02.1	10° 03.0	10° 14.5	10° 15.4	10° 16.3	10° 17.2	10° 18.0	10° 18.9	+0.9
Чт 17	180° 04.1	195° 04.2	210° 04.4	225° 04.5	240° 04.7	255° 04.8	90° 06.7	105° 06.8	120° 06.9	135° 07.1	150° 07.2	165° 07.4	+0.1
	10° 19.8	10° 20.7	10° 21.6	10° 22.5	10° 23.3	10° 24.2	10° 35.7	10° 36.5	10° 37.4	10° 38.3	10° 39.2	10° 40.0	+0.9
Пт 18	180° 07.5	195° 07.6	210° 07.8	225° 07.9	240° 08.1	255° 08.2	90° 10.0	105° 10.1	120° 10.3	135° 10.4	150° 10.6	165° 10.7	+0.1
	10° 40.9	10° 41.8	10° 42.7	10° 43.5	10° 44.4	10° 45.3	10° 56.6	10° 57.5	10° 58.4	10° 59.2	11° 00.1	11° 01.0	+0.9
Сб 19	180° 10.8	195° 11.0	210° 11.1	225° 11.2	240° 11.4	255° 11.5	90° 13.3	105° 13.4	120° 13.5	135° 13.6	150° 13.8	165° 13.9	+0.1
	11° 01.8	11° 02.7	11° 03.6	11° 04.4	11° 05.3	11° 06.2	11° 17.4	11° 18.3	11° 19.1	11° 20.0	11° 20.9	11° 21.7	+0.9
Вс 20	180° 14.0	195° 14.2	210° 14.3	225° 14.4	240° 14.6	255° 14.7	90° 16.4	105° 16.5	120° 16.6	135° 16.8	150° 16.9	165° 17.0	+0.1
	11° 22.6	11° 23.4	11° 24.3	11° 25.2	11° 26.0	11° 26.9	11° 38.0	11° 38.9	11° 39.7	11° 40.6	11° 41.4	11° 42.3	+0.9
Пн 21	180° 17.2	195° 17.3	210° 17.4	225° 17.5	240° 17.7	255° 17.8	90° 19.4	105° 19.5	120° 19.7	135° 19.8	150° 19.9	165° 20.0	+0.1
	11° 43.1	11° 44.0	11° 44.8	11° 45.7	11° 46.5	11° 47.4	11° 58.4	11° 59.3	12° 00.1	12° 01.0	12° 01.8	12° 02.7	+0.9
Вт 22	180° 20.2	195° 20.3	210° 20.4	225° 20.5	240° 20.6	255° 20.8	90° 22.3	105° 22.5	120° 22.6	135° 22.7	150° 22.8	165° 22.9	+0.1
	12° 03.5	12° 04.3	12° 05.2	12° 06.0	12° 06.9	12° 07.7	12° 18.6	12° 19.5	12° 20.3	12° 21.2	12° 22.0	12° 22.8	+0.8
Ср 23	180° 23.0	195° 23.2	210° 23.3	225° 23.4	240° 23.5	255° 23.6	90° 25.1	105° 25.3	120° 25.4	135° 25.5	150° 25.6	165° 25.7	+0.1
	12° 23.7	12° 24.5	12° 25.3	12° 26.2	12° 27.0	12° 27.8	12° 38.7	12° 39.5	12° 40.3	12° 41.1	12° 42.0	12° 42.8	+0.8
Чт 24	180° 25.8	195° 25.9	210° 26.1	225° 26.2	240° 26.3	255° 26.4	90° 27.8	105° 27.9	120° 28.1	135° 28.2	150° 28.3	165° 28.4	+0.1
	12° 43.6	12° 44.5	12° 45.3	12° 46.1	12° 46.9	12° 47.8	12° 58.5	12° 59.3	13° 00.1	13° 00.9	13° 01.7	13° 02.6	+0.8
Пт 25	180° 28.5	195° 28.6	210° 28.7	225° 28.8	240° 28.9	255° 29.0	90° 30.4	105° 30.5	120° 30.6	135° 30.7	150° 30.8	165° 30.9	+0.1
	13° 03.4	13° 04.2	13° 05.0	13° 05.8	13° 06.6	13° 07.5	13° 18.0	13° 18.9	13° 19.7	13° 20.5	13° 21.3	13° 22.1	+0.8
Сб 26	180° 31.0	195° 31.1	210° 31.2	225° 31.3	240° 31.4	255° 31.6	90° 32.9	105° 33.0	120° 33.1	135° 33.2	150° 33.3	165° 33.4	+0.1
	13° 22.9	13° 23.7	13° 24.5	13° 25.3	13° 26.1	13° 27.0	13° 37.4	13° 38.2	13° 39.0	13° 39.8	13° 40.6	13° 41.4	+0.8
Вс 27	180° 33.5	195° 33.6	210° 33.7	225° 33.8	240° 33.9	255° 34.0	90° 35.2	105° 35.3	120° 35.4	135° 35.5	150° 35.6	165° 35.7	+0.1
	13° 42.2	13° 43.0	13° 43.8	13° 44.6	13° 45.4	13° 46.2	13° 56.6	13° 57.4	13° 58.1	13° 58.9	13° 59.7	14° 00.5	+0.8
Пн 28	180° 35.8	195° 35.9	210° 36.0	225° 36.0	240° 36.1	255° 36.2	90° 37.4	105° 37.5	120° 37.6	135° 37.7	150° 37.8	165° 37.9	+0.1
	14° 01.3	14° 02.1	14° 02.9	14° 03.7	14° 04.5	14° 05.3	14° 15.5	14° 16.3	14° 17.0	14° 17.8	14° 18.6	14° 19.4	+0.8
Вт 29	180° 38.0	195° 38.0	210° 38.1	225° 38.2	240° 38.3	255° 38.4	90° 39.5	105° 39.6	120° 39.7	135° 39.8	150° 39.8	165° 39.9	+0.1
	14° 20.2	14° 20.9	14° 21.7	14° 22.5	14° 23.3	14° 24.1	14° 34.1	14° 34.9	14° 35.7	14° 36.5	14° 37.2	14° 38.0	+0.8
Ср 30	180° 40.0	195° 40.1	210° 40.2	225° 40.3	240° 40.3	255° 40.4	90° 41.5	105° 41.5	120° 41.6	135° 41.7	150° 41.8	165° 41.9	+0.1
	14° 38.8	14° 39.6	14° 40.3	14° 41.1	14° 41.9	14° 42.6	14° 52.6	14° 53.3	14° 54.1	14° 54.9	14° 55.6	14° 56.4	+0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ’/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ’/h = изменение δ за час
Полудиаметр R: 15.9’

ЛУНА

Апрель 2031

Д	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	Δ'/h	R/p
Вт 1	50° 42.2	65° 14.6	79° 47.0	94° 19.4	108° 51.9	123° 24.3	137° 56.8	152° 29.3	167° 01.8	181° 34.3	196° 06.8	+32.5	14.9
	14° 55.8	14° 47.8	14° 39.8	14° 31.7	14° 23.5	14° 15.2	14° 06.9	13° 58.5	13° 50.0	13° 41.5	13° 32.9	-8.3	54.7
Ср 2	65° 14.6	79° 47.0	94° 19.4	108° 51.9	123° 24.3	137° 56.8	152° 29.3	167° 01.8	181° 34.3	196° 06.8	210° 39.4	+32.5	14.9
	14° 47.8	14° 39.8	14° 31.7	14° 23.5	14° 15.2	14° 06.9	13° 58.5	13° 50.0	13° 41.5	13° 32.9	13° 24.2	-8.4	54.7
Чт 3	68° 48.8	83° 21.5	97° 54.2	112° 26.9	126° 59.6	141° 32.3	156° 05.0	170° 37.7	185° 10.4	199° 43.2	214° 15.9	+32.7	15.1
	11° 06.8	10° 57.1	10° 47.4	10° 37.7	10° 27.9	10° 18.0	10° 08.1	9° 58.1	9° 48.1	9° 38.0	9° 27.9	-9.9	55.3
Пт 4	72° 26.5	86° 59.1	101° 31.8	116° 04.4	130° 37.0	145° 09.6	159° 42.2	174° 14.8	188° 47.4	203° 20.0	217° 52.5	+32.6	15.2
	6° 50.1	6° 39.2	6° 28.3	6° 17.3	6° 06.3	5° 55.3	5° 44.2	5° 33.1	5° 22.0	5° 10.8	4° 59.6	-11.1	55.9
Сб 5	75° 58.5	90° 30.7	105° 02.9	119° 35.0	134° 07.2	148° 39.3	163° 11.4	177° 43.4	192° 15.4	206° 47.4	221° 19.3	+32.1	15.4
	2° 07.5	1° 55.8	1° 44.1	1° 32.4	1° 20.7	1° 08.9	0° 57.1	0° 45.3	0° 33.5	0° 21.7	0° 09.8	-11.8	56.6
Вс 6	79° 14.1	93° 45.4	108° 16.7	122° 47.9	137° 19.1	151° 50.3	166° 21.4	180° 52.4	195° 23.4	209° 54.3	224° 25.2	+31.1	15.6
	-2° 48.9	-3° 00.9	-3° 12.8	-3° 24.8	-3° 36.7	-3° 48.6	-4° 00.6	-4° 12.5	-4° 24.4	-4° 36.3	-4° 48.2	-11.9	57.4
○ Пн 7	82° 02.1	96° 32.1	111° 02.0	125° 31.9	140° 01.7	154° 31.5	169° 01.2	183° 30.8	198° 00.3	212° 29.8	226° 59.3	+29.7	15.8
	-7° 44.4	-7° 55.9	-8° 07.4	-8° 18.9	-8° 30.4	-8° 41.8	-8° 53.2	-9° 04.5	-9° 15.8	-9° 27.1	-9° 38.3	-11.4	58.1
Вт 8	84° 12.6	98° 40.9	113° 09.2	127° 37.4	142° 05.5	156° 33.5	171° 01.5	185° 29.4	199° 57.2	214° 25.0	228° 52.7	+28.0	16.0
	-12° 20.7	-12° 31.1	-12° 41.4	-12° 51.7	-13° 01.8	-13° 11.9	-13° 22.0	-13° 31.9	-13° 41.8	-13° 51.7	-14° 01.4	-10.1	58.7
Ср 9	85° 39.5	100° 06.0	114° 32.5	128° 58.9	143° 25.3	157° 51.5	172° 17.8	186° 43.9	201° 10.0	215° 36.0	230° 02.0	+26.2	16.1
	-16° 17.6	-16° 25.9	-16° 34.2	-16° 42.3	-16° 50.4	-16° 58.3	-17° 06.2	-17° 13.9	-17° 21.6	-17° 29.1	-17° 36.5	-7.9	59.1
Чт 10	86° 23.9	100° 49.0	115° 13.9	129° 38.8	144° 03.7	158° 28.5	172° 53.3	187° 18.0	201° 42.7	216° 07.4	230° 32.0	+24.8	16.2
	-19° 14.1	-19° 19.7	-19° 25.1	-19° 30.4	-19° 35.5	-19° 40.5	-19° 45.4	-19° 50.2	-19° 54.8	-19° 59.3	-20° 03.7	-5.0	59.4
Пт 11	86° 36.9	101° 01.0	115° 25.1	129° 49.2	144° 13.3	158° 37.4	173° 01.4	187° 25.4	201° 49.5	216° 13.5	230° 37.5	+24.1	16.2
	-20° 52.8	-20° 54.9	-20° 56.9	-20° 58.8	-21° 00.5	-21° 02.1	-21° 03.5	-21° 04.8	-21° 06.0	-21° 07.0	-21° 07.8	-1.5	59.5
Сб 12	86° 38.1	101° 02.2	115° 26.4	129° 50.6	144° 14.8	158° 39.0	173° 03.2	187° 27.5	201° 51.8	216° 16.1	230° 40.5	+24.2	16.2
	-21° 03.2	-21° 01.8	-21° 00.2	-20° 58.4	-20° 56.6	-20° 54.5	-20° 52.4	-20° 50.0	-20° 47.6	-20° 45.0	-20° 42.3	+2.1	59.5
Вс 13	86° 50.5	101° 15.5	115° 40.6	130° 05.7	144° 30.9	158° 56.1	173° 21.4	187° 46.7	202° 12.1	216° 37.5	231° 03.0	+25.3	16.2
	-19° 45.0	-19° 40.1	-19° 35.1	-19° 30.0	-19° 24.7	-19° 19.3	-19° 13.8	-19° 08.2	-19° 02.5	-18° 56.6	-18° 50.6	+5.4	59.3
◑ Пн 14	87° 32.7	101° 59.1	116° 25.7	130° 52.3	145° 18.9	159° 45.7	174° 12.5	188° 39.3	203° 06.2	217° 33.2	232° 00.3	+26.8	16.1
	-17° 07.0	-16° 59.2	-16° 51.3	-16° 43.3	-16° 35.3	-16° 27.1	-16° 18.8	-16° 10.4	-16° 02.0	-15° 53.4	-15° 44.8	+8.2	59.1
Вт 15	88° 53.9	103° 22.0	117° 50.1	132° 18.3	146° 46.6	161° 14.9	175° 43.3	190° 11.7	204° 40.2	219° 08.8	233° 37.4	+28.4	16.0
	-13° 24.7	-13° 14.7	-13° 04.7	-12° 54.6	-12° 44.4	-12° 34.1	-12° 23.8	-12° 13.4	-12° 03.0	-11° 52.5	-11° 41.9	+10.3	58.7
Ср 16	90° 53.6	105° 23.1	119° 52.7	134° 22.3	148° 52.0	163° 21.7	177° 51.4	192° 21.2	206° 51.0	221° 20.9	235° 50.9	+29.7	15.9
	-8° 56.7	-8° 45.2	-8° 33.8	-8° 22.3	-8° 10.8	-7° 59.2	-7° 47.6	-7° 36.0	-7° 24.3	-7° 12.6	-7° 00.9	+11.6	58.3
Чт 17	93° 24.6	107° 55.2	122° 25.8	136° 56.4	151° 27.0	165° 57.7	180° 28.4	194° 59.1	209° 29.8	224° 00.6	238° 31.4	+30.7	15.8
	-4° 01.7	-3° 49.6	-3° 37.5	-3° 25.3	-3° 13.2	-3° 01.0	-2° 48.9	-2° 36.7	-2° 24.6	-2° 12.4	-2° 00.2	+12.2	57.9
Пт 18	96° 16.1	110° 47.3	125° 18.4	139° 49.6	154° 20.7	168° 51.9	183° 23.1	197° 54.3	212° 25.5	226° 56.7	241° 27.9	+31.2	15.7
	1° 02.3	1° 14.4	1° 26.5	1° 38.6	1° 50.6	2° 02.7	2° 14.7	2° 26.7	2° 38.7	2° 50.6	3° 02.6	+12.0	57.4
Сб 19	99° 16.9	113° 48.2	128° 19.4	142° 50.7	157° 22.0	171° 53.3	186° 24.5	200° 55.8	215° 27.0	229° 58.3	244° 29.5	+31.3	15.5
	5° 58.5	6° 10.0	6° 21.4	6° 32.8	6° 44.1	6° 55.4	7° 06.7	7° 17.9	7° 29.1	7° 40.2	7° 51.3	+11.3	56.9
Вс 20	102° 17.1	116° 48.2	131° 19.3	145° 50.4	160° 21.4	174° 52.5	189° 23.5	203° 54.5	218° 25.5	232° 56.5	247° 27.4	+31.0	15.4
	10° 31.7	10° 41.9	10° 52.1	11° 02.2	11° 12.3	11° 22.3	11° 32.2	11° 42.1	11° 51.9	12° 01.7	12° 11.3	+10.0	56.4
● Пн 21	105° 10.1	119° 40.8	134° 11.5	148° 42.2	163° 12.8	177° 43.5	192° 14.1	206° 44.7	221° 15.3	235° 45.9	250° 16.5	+30.6	15.2
	14° 28.1	14° 36.6	14° 45.0	14° 53.4	15° 01.7	15° 09.9	15° 18.0	15° 26.0	15° 34.0	15° 41.9	15° 49.7	+8.2	55.9
Вт 22	107° 53.1	122° 23.4	136° 53.7	151° 24.0	165° 54.3	180° 24.6	194° 54.8	209° 25.1	223° 55.3	238° 25.5	252° 55.7	+30.3	15.1
	17° 36.2	17° 42.6	17° 48.9	17° 55.1	18° 01.2	18° 07.2	18° 13.1	18° 18.9	18° 24.7	18° 30.3	18° 35.9	+6.0	55.3
Ср 23	110° 27.9	124° 58.0	139° 28.1	153° 58.2	168° 28.2	182° 58.3	197° 28.4	211° 58.5	226° 28.6	240° 58.6	255° 28.7	+30.1	15.0
	19° 47.3	19° 51.3	19° 55.1	19° 58.9	20° 02.6	20° 06.1	20° 09.6	20° 13.0	20° 16.2	20° 19.4	20° 22.5	+3.5	54.9
Чт 24	113° 00.3	127° 30.4	142° 00.6	156° 30.7	171° 00.9	185° 31.1	200° 01.3	214° 31.5	229° 01.8	243° 32.0	258° 02.2	+30.2	14.9
	20° 56.1	20° 57.6	20° 58.9	21° 00.1	21° 01.2	21° 02.2	21° 03.2	21° 04.0	21° 04.7	21° 05.3	21° 05.8	+1.0	54.5
Пт 25	115° 38.0	130° 08.5	144° 39.1	159° 09.6	173° 40.2	188° 10.8	202° 41.5	217° 12.1	231° 42.8	246° 13.6	260° 44.3	+30.6	14.8
	21° 01.3	21° 00.2	20° 59.0	20° 57.7	20° 56.3	20° 54.8	20° 53.2	20° 51.5	20° 49.7	20° 47.8	20° 45.8	-1.5	54.2
Сб 26	130° 08.5	144° 39.1	159° 09.6	173° 40.2	188° 10.8	202° 41.5	217° 12.1	231° 42.8	246° 13.6	260° 44.3	275° 15.0	+30.7	14.8
	21° 00.2	20° 59.0	20° 57.7	20° 56.3	20° 54.8	20° 53.2	20° 51.5	20° 49.7	20° 47.8	20° 45.8	20° 43.7	-1.6	54.2
Вс 27	132° 59.6	147° 30.8	162° 02.0	176° 33.3	191° 04.6	205° 35.9	220° 07.2	234° 38.6	249° 10.0	263° 41.4	278° 12.9	+31.3	14.8
	20° 01.2	19° 57.6	19° 54.0	19° 50.2	19° 46.4	19° 42.4	19° 38.4	19° 34.3	19° 30.1	19° 25.8	19° 21.4	-4.0	54.1
Пн 28	136° 08.4	150° 40.3	165° 12.3	179° 44.3	194° 16.3	208° 48.4	223° 20.5	237° 52.6	252° 24.7	266° 56.9	281° 29.1	+32.1	14.8
	18° 05.5	17° 59.7	17° 53.9	17° 48.1	17° 42.1	17° 36.1	17° 29.9	17° 23.7	17° 17.5	17° 11.1	17° 04.7	-6.1	54.2
◐ Вт 29	139° 35.4	154° 08.0	168° 40.6	183° 13.3	197° 46.0	212° 18.7	226° 51.4	241° 24.2	255° 56.9	270° 29.7	285° 02.6	+32.7	14.8
	15° 19.3	15° 11.7	15° 04.1	14° 56.3	14° 48.5	14° 40.7	14° 32.7	14° 24.8	14° 16.7	14° 08.6	14° 00.4	-7.9	54.4
Ср 30	143° 16.9	157° 49.9	172° 23.0	186° 56.1	201° 29.2	216° 02.3	230° 35.4	245° 08.6	259° 41.7	274° 14.8	288° 48.0	+33.1	15.0
	11° 50.0	11° 40.8	11° 31.6	11° 22.3	11° 13.0	11° 03.6	10° 54.1	10° 44.6	10° 35.1	10° 25.5	10° 15.8	-9.4	54.8

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 7 17h21 — Последняя четв.: 14 12h57 — Новолуние: 21 16h57 — Первая четв.: 29 19h19

СОЛНЦЕ

Май 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	180° 41.9	195° 42.0	210° 42.1	225° 42.2	240° 42.2	255° 42.3	90° 43.3	105° 43.4	120° 43.5	135° 43.5	150° 43.6	165° 43.7	+0.1
	14° 57.2	14° 57.9	14° 58.7	14° 59.4	15° 00.2	15° 00.9	15° 10.8	15° 11.5	15° 12.3	15° 13.0	15° 13.8	15° 14.5	+0.8
Пт 2	180° 43.7	195° 43.8	210° 43.9	225° 44.0	240° 44.0	255° 44.1	90° 45.0	105° 45.1	120° 45.1	135° 45.2	150° 45.3	165° 45.3	+0.1
	15° 15.3	15° 16.0	15° 16.8	15° 17.5	15° 18.3	15° 19.0	15° 28.7	15° 29.4	15° 30.2	15° 30.9	15° 31.7	15° 32.4	+0.7
Сб 3	180° 45.4	195° 45.5	210° 45.5	225° 45.6	240° 45.7	255° 45.7	90° 46.6	105° 46.6	120° 46.7	135° 46.8	150° 46.8	165° 46.9	+0.1
	15° 33.2	15° 33.9	15° 34.6	15° 35.4	15° 36.1	15° 36.8	15° 46.4	15° 47.1	15° 47.8	15° 48.6	15° 49.3	15° 50.0	+0.7
Вс 4	180° 47.0	195° 47.0	210° 47.1	225° 47.1	240° 47.2	255° 47.3	90° 48.0	105° 48.1	120° 48.1	135° 48.2	150° 48.2	165° 48.3	+0.1
	15° 50.8	15° 51.5	15° 52.2	15° 52.9	15° 53.7	15° 54.4	16° 03.8	16° 04.5	16° 05.2	16° 06.0	16° 06.7	16° 07.4	+0.7
Пн 5	180° 48.4	195° 48.4	210° 48.5	225° 48.5	240° 48.6	255° 48.6	90° 49.3	105° 49.4	120° 49.4	135° 49.5	150° 49.5	165° 49.6	+0.1
	16° 08.1	16° 08.8	16° 09.5	16° 10.3	16° 11.0	16° 11.7	16° 20.9	16° 21.7	16° 22.4	16° 23.1	16° 23.8	16° 24.5	+0.7
Вт 6	180° 49.6	195° 49.7	210° 49.7	225° 49.8	240° 49.8	255° 49.9	90° 50.5	105° 50.5	120° 50.6	135° 50.6	150° 50.7	165° 50.7	+0.0
	16° 25.2	16° 25.9	16° 26.6	16° 27.3	16° 28.0	16° 28.7	16° 37.8	16° 38.5	16° 39.2	16° 39.9	16° 40.6	16° 41.3	+0.7
Ср 7	180° 50.8	195° 50.8	210° 50.8	225° 50.9	240° 50.9	255° 51.0	90° 51.5	105° 51.5	120° 51.6	135° 51.6	150° 51.7	165° 51.7	+0.0
	16° 42.0	16° 42.7	16° 43.4	16° 44.1	16° 44.8	16° 45.5	16° 54.4	16° 55.1	16° 55.8	16° 56.5	16° 57.2	16° 57.9	+0.7
Чт 8	180° 51.7	195° 51.8	210° 51.8	225° 51.9	240° 51.9	255° 51.9	90° 52.4	105° 52.4	120° 52.5	135° 52.5	150° 52.5	165° 52.6	+0.0
	16° 58.5	16° 59.2	16° 59.9	17° 00.6	17° 01.3	17° 01.9	17° 10.7	17° 11.4	17° 12.1	17° 12.8	17° 13.4	17° 14.1	+0.7
Пт 9	180° 52.6	195° 52.6	210° 52.6	225° 52.7	240° 52.7	255° 52.7	90° 53.1	105° 53.2	120° 53.2	135° 53.2	150° 53.2	165° 53.3	+0.0
	17° 14.8	17° 15.5	17° 16.1	17° 16.8	17° 17.5	17° 18.1	17° 26.8	17° 27.4	17° 28.1	17° 28.8	17° 29.4	17° 30.1	+0.7
Сб 10	180° 53.3	195° 53.3	210° 53.3	225° 53.4	240° 53.4	255° 53.4	90° 53.7	105° 53.7	120° 53.8	135° 53.8	150° 53.8	165° 53.8	+0.0
	17° 30.7	17° 31.4	17° 32.1	17° 32.7	17° 33.4	17° 34.0	17° 42.5	17° 43.2	17° 43.8	17° 44.5	17° 45.1	17° 45.8	+0.7
Вс 11	180° 53.8	195° 53.9	210° 53.9	225° 53.9	240° 53.9	255° 53.9	90° 54.2	105° 54.2	120° 54.2	135° 54.2	150° 54.2	165° 54.2	+0.0
	17° 46.4	17° 47.1	17° 47.7	17° 48.4	17° 49.0	17° 49.6	17° 58.0	17° 58.6	17° 59.2	17° 59.9	18° 00.5	18° 01.2	+0.6
Пн 12	180° 54.2	195° 54.3	210° 54.3	225° 54.3	240° 54.3	255° 54.3	90° 54.5	105° 54.5	120° 54.5	135° 54.5	150° 54.5	165° 54.5	+0.0
	18° 01.8	18° 02.4	18° 03.1	18° 03.7	18° 04.3	18° 04.9	18° 13.1	18° 13.7	18° 14.4	18° 15.0	18° 15.6	18° 16.2	+0.6
Вт 13	180° 54.5	195° 54.5	210° 54.5	225° 54.5	240° 54.5	255° 54.5	90° 54.6	105° 54.6	120° 54.6	135° 54.6	150° 54.6	165° 54.6	+0.0
	18° 16.9	18° 17.5	18° 18.1	18° 18.7	18° 19.3	18° 20.0	18° 28.0	18° 28.6	18° 29.2	18° 29.8	18° 30.4	18° 31.0	+0.6
Ср 14	180° 54.6	195° 54.6	210° 54.6	225° 54.6	240° 54.6	255° 54.6	90° 54.6	105° 54.6	120° 54.6	135° 54.6	150° 54.6	165° 54.6	+0.0
	18° 31.6	18° 32.2	18° 32.8	18° 33.4	18° 34.0	18° 34.7	18° 42.5	18° 43.1	18° 43.7	18° 44.3	18° 44.9	18° 45.5	+0.6
Чт 15	180° 54.6	195° 54.6	210° 54.6	225° 54.6	240° 54.6	255° 54.5	90° 54.5	105° 54.4	120° 54.4	135° 54.4	150° 54.4	165° 54.4	-0.0
	18° 46.1	18° 46.7	18° 47.3	18° 47.9	18° 48.4	18° 49.0	18° 56.7	18° 57.3	18° 57.9	18° 58.5	18° 59.0	18° 59.6	+0.6
Пт 16	180° 54.4	195° 54.4	210° 54.4	225° 54.4	240° 54.3	255° 54.3	90° 54.2	105° 54.1	120° 54.1	135° 54.1	150° 54.1	165° 54.1	-0.0
	19° 00.2	19° 00.8	19° 01.4	19° 01.9	19° 02.5	19° 03.1	19° 10.6	19° 11.2	19° 11.7	19° 12.3	19° 12.9	19° 13.4	+0.6
Сб 17	180° 54.1	195° 54.0	210° 54.0	225° 54.0	240° 54.0	255° 54.0	90° 53.7	105° 53.7	120° 53.7	135° 53.7	150° 53.6	165° 53.6	-0.0
	19° 14.0	19° 14.6	19° 15.1	19° 15.7	19° 16.3	19° 16.8	19° 24.2	19° 24.7	19° 25.3	19° 25.8	19° 26.4	19° 26.9	+0.6
Вс 18	180° 53.6	195° 53.6	210° 53.5	225° 53.5	240° 53.5	255° 53.5	90° 53.1	105° 53.1	120° 53.1	135° 53.1	150° 53.0	165° 53.0	-0.0
	19° 27.5	19° 28.1	19° 28.6	19° 29.2	19° 29.7	19° 30.3	19° 37.4	19° 37.9	19° 38.5	19° 39.0	19° 39.6	19° 40.1	+0.6
Пн 19	180° 53.0	195° 52.9	210° 52.9	225° 52.9	240° 52.9	255° 52.8	90° 52.4	105° 52.4	120° 52.3	135° 52.3	150° 52.3	165° 52.2	-0.0
	19° 40.7	19° 41.2	19° 41.7	19° 42.3	19° 42.8	19° 43.4	19° 50.3	19° 50.8	19° 51.4	19° 51.9	19° 52.4	19° 52.9	+0.5
Вт 20	180° 52.2	195° 52.2	210° 52.1	225° 52.1	240° 52.1	255° 52.0	90° 51.6	105° 51.5	120° 51.5	135° 51.4	150° 51.4	165° 51.4	-0.0
	19° 53.5	19° 54.0	19° 54.5	19° 55.1	19° 55.6	19° 56.1	20° 02.9	20° 03.4	20° 03.9	20° 04.4	20° 04.9	20° 05.4	+0.5
Ср 21	180° 51.3	195° 51.3	210° 51.2	225° 51.2	240° 51.2	255° 51.1	90° 50.6	105° 50.5	120° 50.5	135° 50.4	150° 50.4	165° 50.3	-0.0
	20° 06.0	20° 06.5	20° 07.0	20° 07.5	20° 08.0	20° 08.5	20° 15.1	20° 15.6	20° 16.1	20° 16.6	20° 17.1	20° 17.6	+0.5
Чт 22	180° 50.3	195° 50.2	210° 50.2	225° 50.2	240° 50.1	255° 50.1	90° 49.4	105° 49.4	120° 49.3	135° 49.3	150° 49.2	165° 49.2	-0.0
	20° 18.1	20° 18.6	20° 19.1	20° 19.6	20° 20.1	20° 20.6	20° 27.0	20° 27.5	20° 27.9	20° 28.4	20° 28.9	20° 29.4	+0.5
Пт 23	180° 49.1	195° 49.1	210° 49.0	225° 49.0	240° 48.9	255° 48.9	90° 48.2	105° 48.1	120° 48.1	135° 48.0	150° 48.0	165° 47.9	-0.1
	20° 29.9	20° 30.4	20° 30.8	20° 31.3	20° 31.8	20° 32.3	20° 38.5	20° 39.0	20° 39.4	20° 39.9	20° 40.4	20° 40.8	+0.5
Сб 24	180° 47.9	195° 47.8	210° 47.7	225° 47.7	240° 47.6	255° 47.6	90° 46.8	105° 46.7	120° 46.7	135° 46.6	150° 46.6	165° 46.5	-0.1
	20° 41.3	20° 41.8	20° 42.3	20° 42.7	20° 43.2	20° 43.7	20° 49.7	20° 50.1	20° 50.6	20° 51.0	20° 51.5	20° 51.9	+0.5
Вс 25	180° 46.4	195° 46.4	210° 46.3	225° 46.3	240° 46.2	255° 46.1	90° 45.3	105° 45.2	120° 45.2	135° 45.1	150° 45.0	165° 45.0	-0.1
	20° 52.4	20° 52.9	20° 53.3	20° 53.8	20° 54.2	20° 54.7	21° 00.5	21° 00.9	21° 01.4	21° 01.8	21° 02.2	21° 02.7	+0.5
Пн 26	180° 44.9	195° 44.8	210° 44.8	225° 44.7	240° 44.6	255° 44.6	90° 43.7	105° 43.6	120° 43.5	135° 43.5	150° 43.4	165° 43.3	-0.1
	21° 03.1	21° 03.6	21° 04.0	21° 04.4	21° 04.9	21° 05.3	21° 10.9	21° 11.3	21° 11.8	21° 12.2	21° 12.6	21° 13.1	+0.4
Вт 27	180° 43.3	195° 43.2	210° 43.1	225° 43.0	240° 43.0	255° 42.9	90° 41.9	105° 41.9	120° 41.8	135° 41.7	150° 41.6	165° 41.6	-0.1
	21° 13.5	21° 13.9	21° 14.3	21° 14.7	21° 15.2	21° 15.6	21° 21.0	21° 21.4	21° 21.8	21° 22.2	21° 22.6	21° 23.1	+0.4
Ср 28	180° 41.5	195° 41.4	210° 41.3	225° 41.3	240° 41.2	255° 41.1	90° 40.1	105° 40.0	120° 39.9	135° 39.9	150° 39.8	165° 39.7	-0.1
	21° 23.5	21° 23.9	21° 24.3	21° 24.7	21° 25.1	21° 25.5	21° 30.7	21° 31.1	21° 31.5	21° 31.9	21° 32.3	21° 32.7	+0.4
Чт 29	180° 39.6	195° 39.5	210° 39.5	225° 39.4	240° 39.3	255° 39.2	90° 38.1	105° 38.1	120° 38.0	135° 37.9	150° 37.8	165° 37.7	-0.1
	21° 33.1	21° 33.5	21° 33.9	21° 34.3	21° 34.7	21° 35.0	21° 40.1	21° 40.4	21° 40.8	21° 41.2	21° 41.6	21° 42.0	+0.4
Пт 30	180° 37.6	195° 37.5	210° 37.5	225° 37.4	240° 37.3	255° 37.2	90° 36.1	105° 36.0	120° 35.9	135° 35.8	150° 35.7	165° 35.6	-0.1
	21° 42.3	21° 42.7	21° 43.1	21° 43.5	21° 43.8	21° 44.2	21° 49.0	21° 49.4	21° 49.7	21° 50.1	21° 50.5	21° 50.8	+0.4
Сб 31	180° 35.5	195° 35.5	210° 35.4	225° 35.3	240° 35.2	255° 35.1	90° 33.9	105° 33.8	120° 33.7	135° 33.6	150° 33.5	165° 33.5	-0.1
	21° 51.2	21° 51.6	21° 51.9	21° 52.3	21° 52.6	21° 53.0	21° 57.6	21° 58.0	21° 58.3	21° 58.6	21° 59.0	21° 59.3	+0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2031

Д	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	Δ'/h	R/p
Чт 1	49° 01.0	63° 34.0	78° 06.9	92° 39.8	107° 12.7	121° 45.6	136° 18.4	150° 51.2	165° 24.0	179° 56.8	194° 29.6	+32.9	15.3
	4° 31.5	4° 20.4	4° 09.3	3° 58.1	3° 46.9	3° 35.7	3° 24.4	3° 13.1	3° 01.8	2° 50.5	2° 39.1	-11.2	55.9
Пт 2	63° 34.0	78° 06.9	92° 39.8	107° 12.7	121° 45.6	136° 18.4	150° 51.2	165° 24.0	179° 56.8	194° 29.6	209° 02.3	+32.8	15.3
	4° 20.4	4° 09.3	3° 58.1	3° 46.9	3° 35.7	3° 24.4	3° 13.1	3° 01.8	2° 50.5	2° 39.1	2° 27.8	-11.3	56.0
Сб 3	67° 09.3	81° 41.5	96° 13.6	110° 45.7	125° 17.7	139° 49.8	154° 21.7	168° 53.6	183° 25.5	197° 57.3	212° 29.1	+32.0	15.5
	-0° 25.6	-0° 37.3	-0° 49.0	-1° 00.7	-1° 12.4	-1° 24.1	-1° 35.9	-1° 47.6	-1° 59.4	-2° 11.1	-2° 22.9	-11.7	56.8
Вс 4	70° 19.3	84° 50.2	99° 21.1	113° 51.8	128° 22.5	142° 53.1	157° 23.7	171° 54.2	186° 24.6	200° 55.0	215° 25.3	+30.6	15.7
	-5° 19.3	-5° 31.0	-5° 42.7	-5° 54.4	-6° 06.1	-6° 17.7	-6° 29.4	-6° 41.0	-6° 52.6	-7° 04.2	-7° 15.7	-11.6	57.7
Пн 5	72° 51.1	87° 20.2	101° 49.2	116° 18.2	130° 47.0	145° 15.8	159° 44.5	174° 13.1	188° 41.7	203° 10.1	217° 38.5	+28.7	16.0
	-10° 05.6	-10° 16.7	-10° 27.6	-10° 38.6	-10° 49.5	-11° 00.4	-11° 11.2	-11° 21.9	-11° 32.6	-11° 43.3	-11° 53.9	-10.8	58.6
Вт 6	74° 33.9	89° 00.9	103° 27.8	117° 54.7	132° 21.4	146° 48.1	161° 14.6	175° 41.1	190° 07.5	204° 33.8	219° 00.1	+26.6	16.2
	-14° 25.2	-14° 34.7	-14° 44.2	-14° 53.5	-15° 02.8	-15° 12.0	-15° 21.1	-15° 30.1	-15° 39.0	-15° 47.9	-15° 56.6	-9.1	59.3
○ Ср 7	75° 23.6	89° 48.5	104° 13.3	118° 38.1	133° 02.8	147° 27.5	161° 52.0	176° 16.5	190° 40.9	205° 05.3	219° 29.5	+24.6	16.3
	-17° 55.8	-18° 02.9	-18° 09.8	-18° 16.7	-18° 23.4	-18° 30.0	-18° 36.5	-18° 42.8	-18° 49.1	-18° 55.2	-19° 01.2	-6.5	59.9
Чт 8	75° 26.5	89° 49.9	104° 13.2	118° 36.5	132° 59.7	147° 22.9	161° 46.1	176° 09.3	190° 32.4	204° 55.4	219° 18.5	+23.2	16.4
	-20° 15.0	-20° 18.8	-20° 22.5	-20° 26.0	-20° 29.4	-20° 32.6	-20° 35.7	-20° 38.6	-20° 41.4	-20° 44.0	-20° 46.5	-3.2	60.3
Пт 9	75° 01.9	89° 24.7	103° 47.5	118° 10.4	132° 33.2	146° 56.0	161° 18.9	175° 41.8	190° 04.7	204° 27.6	218° 50.5	+22.9	16.5
	-21° 05.7	-21° 05.8	-21° 05.7	-21° 05.4	-21° 05.0	-21° 04.5	-21° 03.8	-21° 02.9	-21° 01.9	-21° 00.7	-20° 59.4	+0.6	60.4
Сб 10	74° 37.7	89° 01.1	103° 24.6	117° 48.2	132° 11.8	146° 35.4	160° 59.1	175° 22.9	189° 46.7	204° 10.6	218° 34.5	+23.7	16.4
	-20° 21.6	-20° 17.9	-20° 14.1	-20° 10.1	-20° 06.0	-20° 01.8	-19° 57.4	-19° 52.8	-19° 48.2	-19° 43.4	-19° 38.4	+4.3	60.2
Вс 11	74° 41.0	89° 06.0	103° 31.1	117° 56.2	132° 21.5	146° 46.7	161° 12.1	175° 37.6	190° 03.1	204° 28.7	218° 54.3	+25.3	16.3
	-18° 08.9	-18° 01.9	-17° 54.8	-17° 47.7	-17° 40.4	-17° 33.0	-17° 25.4	-17° 17.8	-17° 10.1	-17° 02.2	-16° 54.3	+7.5	59.8
Пн 12	75° 29.0	89° 55.9	104° 22.9	118° 50.0	133° 17.2	147° 44.4	162° 11.8	176° 39.2	191° 06.7	205° 34.3	220° 01.9	+27.3	16.2
	-14° 43.5	-14° 34.0	-14° 24.5	-14° 14.9	-14° 05.2	-13° 55.5	-13° 45.6	-13° 35.7	-13° 25.8	-13° 15.7	-13° 05.6	+9.8	59.3
◑ Вт 13	77° 05.5	91° 34.3	106° 03.2	120° 32.1	135° 01.2	149° 30.2	163° 59.4	178° 28.6	192° 57.9	207° 27.2	221° 56.6	+29.1	16.0
	-10° 26.2	-10° 15.1	-10° 04.0	-9° 52.8	-9° 41.6	-9° 30.4	-9° 19.1	-9° 07.7	-8° 56.3	-8° 44.9	-8° 33.5	+11.3	58.7
Ср 14	79° 24.6	93° 54.9	108° 25.2	122° 55.6	137° 26.1	151° 56.5	166° 27.1	180° 57.6	195° 28.3	209° 58.9	224° 29.6	+30.5	15.8
	-5° 37.9	-5° 26.0	-5° 14.0	-5° 02.1	-4° 50.1	-4° 38.2	-4° 26.2	-4° 14.2	-4° 02.2	-3° 50.2	-3° 38.1	+12.0	58.1
Чт 15	82° 14.5	96° 45.8	111° 17.1	125° 48.4	140° 19.7	154° 51.1	169° 22.4	183° 53.8	198° 25.3	212° 56.7	227° 28.2	+31.4	15.7
	-0° 37.3	-0° 25.3	-0° 13.2	-0° 01.2	0° 10.8	0° 22.8	0° 34.8	0° 46.8	0° 58.7	1° 10.7	1° 22.6	+12.0	57.4
Пт 16	85° 22.0	99° 53.7	114° 25.3	128° 57.0	143° 28.7	158° 00.4	172° 32.1	187° 03.8	201° 35.5	216° 07.3	230° 39.0	+31.7	15.5
	4° 19.2	4° 30.8	4° 42.3	4° 53.8	5° 05.3	5° 16.7	5° 28.1	5° 39.5	5° 50.9	6° 02.2	6° 13.4	+11.4	56.8
Сб 17	88° 34.4	103° 06.1	117° 37.7	132° 09.3	146° 41.0	161° 12.6	175° 44.2	190° 15.8	204° 47.3	219° 18.9	233° 50.5	+31.6	15.3
	8° 57.4	9° 07.9	9° 18.5	9° 28.9	9° 39.3	9° 49.7	10° 00.0	10° 10.2	10° 20.4	10° 30.6	10° 40.6	+10.3	56.3
Вс 18	91° 42.0	106° 13.3	120° 44.6	135° 15.8	149° 47.1	164° 18.3	178° 49.5	193° 20.7	207° 51.9	222° 23.0	236° 54.1	+31.2	15.2
	13° 04.5	13° 13.6	13° 22.6	13° 31.5	13° 40.4	13° 49.2	13° 57.9	14° 06.5	14° 15.1	14° 23.6	14° 32.0	+8.8	55.7
Пн 19	94° 38.7	109° 09.5	123° 40.3	138° 11.0	152° 41.8	167° 12.5	181° 43.2	196° 13.9	210° 44.6	225° 15.2	239° 45.8	+30.7	15.1
	16° 29.2	16° 36.3	16° 43.4	16° 50.4	16° 57.3	17° 04.1	17° 10.8	17° 17.5	17° 24.1	17° 30.5	17° 36.9	+6.8	55.3
Вт 20	97° 23.3	111° 53.6	126° 24.0	140° 54.3	155° 24.7	169° 55.0	184° 25.3	198° 55.6	213° 25.9	227° 56.2	242° 26.4	+30.3	15.0
	19° 01.7	19° 06.7	19° 11.5	19° 16.2	19° 20.8	19° 25.3	19° 29.8	19° 34.1	19° 38.3	19° 42.5	19° 46.5	+4.5	54.9
● Ср 21	99° 59.6	114° 29.7	128° 59.9	143° 30.1	158° 00.3	172° 30.4	187° 00.6	201° 30.8	216° 01.0	230° 31.2	245° 01.4	+30.2	14.9
	20° 35.2	20° 37.6	20° 40.0	20° 42.2	20° 44.4	20° 46.4	20° 48.3	20° 50.2	20° 51.9	20° 53.5	20° 55.1	+2.0	54.5
Чт 22	102° 35.1	117° 05.5	131° 35.8	146° 06.2	160° 36.6	175° 07.0	189° 37.4	204° 07.8	218° 38.3	233° 08.7	247° 39.2	+30.4	14.8
	21° 05.8	21° 05.7	21° 05.5	21° 05.2	21° 04.8	21° 04.3	21° 03.7	21° 03.1	21° 02.3	21° 01.4	21° 00.4	-0.5	54.2
Пт 23	105° 19.1	119° 50.0	134° 20.9	148° 51.8	163° 22.7	177° 53.7	192° 24.7	206° 55.7	221° 26.8	235° 57.8	250° 28.9	+31.0	14.7
	20° 33.7	20° 31.2	20° 28.5	20° 25.8	20° 23.0	20° 20.0	20° 17.0	20° 13.9	20° 10.7	20° 07.4	20° 04.0	-3.0	54.0
Сб 24	108° 19.3	122° 50.9	137° 22.6	151° 54.3	166° 26.0	180° 57.7	195° 29.5	210° 01.4	224° 33.2	239° 05.1	253° 37.0	+31.8	14.7
	19° 02.5	18° 57.7	18° 52.9	18° 47.9	18° 42.8	18° 37.7	18° 32.5	18° 27.2	18° 21.8	18° 16.4	18° 10.8	-5.2	54.0
Вс 25	111° 39.8	126° 12.3	140° 44.7	155° 17.3	169° 49.8	184° 22.4	198° 55.0	213° 27.6	228° 00.3	242° 33.0	257° 05.7	+32.6	14.7
	16° 38.4	16° 31.7	16° 24.8	16° 17.9	16° 11.0	16° 03.9	15° 56.8	15° 49.6	15° 42.4	15° 35.0	15° 27.6	-7.1	54.1
Пн 26	126° 12.3	140° 44.7	155° 17.3	169° 49.8	184° 22.4	198° 55.0	213° 27.6	228° 00.3	242° 33.0	257° 05.7	271° 38.5	+32.6	14.7
	16° 31.7	16° 24.8	16° 17.9	16° 11.0	16° 03.9	15° 56.8	15° 49.6	15° 42.4	15° 35.0	15° 27.6	15° 20.2	-7.2	54.1
Вт 27	129° 53.2	144° 26.4	158° 59.6	173° 32.8	188° 06.1	202° 39.4	217° 12.7	231° 46.0	246° 19.3	260° 52.7	275° 26.0	+33.3	14.8
	13° 20.6	13° 12.1	13° 03.6	12° 55.0	12° 46.4	12° 37.7	12° 28.9	12° 20.1	12° 11.2	12° 02.3	11° 53.3	-8.7	54.3
Ср 28	133° 48.6	148° 22.1	162° 55.8	177° 29.4	192° 03.0	206° 36.6	221° 10.3	235° 43.9	250° 17.5	264° 51.2	279° 24.8	+33.6	14.9
	9° 32.6	9° 22.8	9° 13.0	9° 03.1	8° 53.2	8° 43.3	8° 33.3	8° 23.3	8° 13.2	8° 03.1	7° 52.9	-10.0	54.7
◐ Чт 29	137° 49.4	152° 23.0	166° 56.6	181° 30.1	196° 03.7	210° 37.2	225° 10.8	239° 44.3	254° 17.8	268° 51.3	283° 24.7	+33.5	15.1
	5° 16.0	5° 05.3	4° 54.5	4° 43.7	4° 32.9	4° 22.0	4° 11.1	4° 00.2	3° 49.3	3° 38.3	3° 27.3	-10.9	55.3
Пт 30	141° 44.0	156° 17.1	170° 50.1	185° 23.1	199° 56.1	214° 29.0	229° 01.9	243° 34.8	258° 07.6	272° 40.3	287° 13.1	+32.9	15.3
	0° 39.6	0° 28.2	0° 16.9	0° 05.5	-0° 05.9	-0° 17.3	-0° 28.7	-0° 40.1	-0° 51.5	-1° 02.9	-1° 14.4	-11.4	56.0
Сб 31	145° 18.7	159° 50.6	174° 22.5	188° 54.4	203° 26.2	217° 57.9	232° 29.6	247° 01.2	261° 32.7	276° 04.2	290° 35.6	+31.7	15.5
	-4° 06.7	-4° 18.2	-4° 29.6	-4° 41.1	-4° 52.6	-5° 04.1	-5° 15.5	-5° 27.0	-5° 38.4	-5° 49.8	-6° 01.2	-11.5	56.9

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 7 03h39 — Последняя четв.: 13 19h06 — Новолуние: 21 07h17 — Первая четв.: 29 11h19

СОЛНЦЕ

Июнь 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	180° 33.4	195° 33.3	210° 33.2	225° 33.1	240° 33.0	255° 32.9	90° 31.7	105° 31.6	120° 31.5	135° 31.4	150° 31.3	165° 31.2	-0.1
	21° 59.7	22° 00.0	22° 00.4	22° 00.7	22° 01.1	22° 01.4	22° 05.8	22° 06.1	22° 06.5	22° 06.8	22° 07.1	22° 07.5	+0.3
Пн 2	180° 31.1	195° 31.0	210° 30.9	225° 30.8	240° 30.7	255° 30.6	90° 29.3	105° 29.2	120° 29.1	135° 29.0	150° 28.9	165° 28.8	-0.1
	22° 07.8	22° 08.1	22° 08.4	22° 08.8	22° 09.1	22° 09.4	22° 13.6	22° 13.9	22° 14.3	22° 14.6	22° 14.9	22° 15.2	+0.3
Вт 3	180° 28.7	195° 28.6	210° 28.5	225° 28.4	240° 28.3	255° 28.2	90° 26.9	105° 26.8	120° 26.7	135° 26.6	150° 26.5	165° 26.3	-0.1
	22° 15.5	22° 15.8	22° 16.1	22° 16.4	22° 16.8	22° 17.1	22° 21.0	22° 21.3	22° 21.6	22° 21.9	22° 22.2	22° 22.5	+0.3
Ср 4	180° 26.2	195° 26.1	210° 26.0	225° 25.9	240° 25.8	255° 25.7	90° 24.3	105° 24.2	120° 24.1	135° 24.0	150° 23.9	165° 23.8	-0.1
	22° 22.8	22° 23.1	22° 23.4	22° 23.7	22° 24.0	22° 24.3	22° 28.1	22° 28.4	22° 28.6	22° 28.9	22° 29.2	22° 29.5	+0.3
Чт 5	180° 23.7	195° 23.6	210° 23.5	225° 23.4	240° 23.3	255° 23.2	90° 21.7	105° 21.6	120° 21.5	135° 21.4	150° 21.3	165° 21.2	-0.1
	22° 29.8	22° 30.1	22° 30.3	22° 30.6	22° 30.9	22° 31.2	22° 34.7	22° 35.0	22° 35.3	22° 35.5	22° 35.8	22° 36.1	+0.3
Пт 6	180° 21.1	195° 21.0	210° 20.8	225° 20.7	240° 20.6	255° 20.5	90° 19.0	105° 18.9	120° 18.8	135° 18.7	150° 18.6	165° 18.5	-0.1
	22° 36.3	22° 36.6	22° 36.8	22° 37.1	22° 37.4	22° 37.6	22° 41.0	22° 41.2	22° 41.5	22° 41.7	22° 42.0	22° 42.2	+0.3
Сб 7	180° 18.4	195° 18.2	210° 18.1	225° 18.0	240° 17.9	255° 17.8	90° 16.3	105° 16.2	120° 16.0	135° 15.9	150° 15.8	165° 15.7	-0.1
	22° 42.5	22° 42.7	22° 43.0	22° 43.2	22° 43.5	22° 43.7	22° 46.8	22° 47.1	22° 47.3	22° 47.5	22° 47.8	22° 48.0	+0.2
Вс 8	180° 15.6	195° 15.4	210° 15.3	225° 15.2	240° 15.1	255° 15.0	90° 13.4	105° 13.3	120° 13.2	135° 13.1	150° 12.9	165° 12.8	-0.1
	22° 48.2	22° 48.5	22° 48.7	22° 48.9	22° 49.1	22° 49.4	22° 52.3	22° 52.5	22° 52.7	22° 52.9	22° 53.1	22° 53.4	+0.2
Пн 9	180° 12.7	195° 12.6	210° 12.5	225° 12.3	240° 12.2	255° 12.1	90° 10.5	105° 10.4	120° 10.3	135° 10.2	150° 10.0	165° 09.9	-0.1
	22° 53.6	22° 53.8	22° 54.0	22° 54.2	22° 54.4	22° 54.6	22° 57.3	22° 57.5	22° 57.7	22° 57.9	22° 58.1	22° 58.3	+0.2
Вт 10	180° 09.8	195° 09.7	210° 09.5	225° 09.4	240° 09.3	255° 09.2	90° 07.5	105° 07.4	120° 07.3	135° 07.2	150° 07.0	165° 06.9	-0.1
	22° 58.5	22° 58.7	22° 58.9	22° 59.1	22° 59.3	22° 59.5	23° 02.0	23° 02.1	23° 02.3	23° 02.5	23° 02.7	23° 02.9	+0.2
Ср 11	180° 06.8	195° 06.7	210° 06.5	225° 06.4	240° 06.3	255° 06.2	90° 04.5	105° 04.4	120° 04.3	135° 04.1	150° 04.0	165° 03.9	-0.1
	23° 03.1	23° 03.2	23° 03.4	23° 03.6	23° 03.8	23° 04.0	23° 06.2	23° 06.4	23° 06.5	23° 06.7	23° 06.9	23° 07.0	+0.2
Чт 12	180° 03.7	195° 03.6	210° 03.5	225° 03.4	240° 03.2	255° 03.1	90° 01.4	105° 01.3	120° 01.2	135° 01.0	150° 00.9	165° 00.8	-0.1
	23° 07.2	23° 07.4	23° 07.5	23° 07.7	23° 07.8	23° 08.0	23° 10.0	23° 10.2	23° 10.3	23° 10.5	23° 10.6	23° 10.8	+0.2
Пт 13	180° 00.6	195° 00.5	210° 00.4	225° 00.3	240° 00.1	255° 00.0	89° 58.3	104° 58.2	119° 58.0	134° 57.9	149° 57.8	164° 57.6	-0.1
	23° 10.9	23° 11.1	23° 11.2	23° 11.4	23° 11.5	23° 11.6	23° 13.5	23° 13.6	23° 13.7	23° 13.9	23° 14.0	23° 14.1	+0.1
Сб 14	179° 57.5	194° 57.4	209° 57.2	224° 57.1	239° 57.0	254° 56.8	89° 55.1	104° 55.0	119° 54.8	134° 54.7	149° 54.6	164° 54.4	-0.1
	23° 14.2	23° 14.4	23° 14.5	23° 14.6	23° 14.8	23° 14.9	23° 16.5	23° 16.6	23° 16.7	23° 16.8	23° 16.9	23° 17.0	+0.1
Вс 15	179° 54.3	194° 54.2	209° 54.0	224° 53.9	239° 53.8	254° 53.6	89° 51.9	104° 51.8	119° 51.6	134° 51.5	149° 51.4	164° 51.2	-0.1
	23° 17.2	23° 17.3	23° 17.4	23° 17.5	23° 17.6	23° 17.7	23° 19.1	23° 19.2	23° 19.3	23° 19.4	23° 19.5	23° 19.6	+0.1
Пн 16	179° 51.1	194° 51.0	209° 50.8	224° 50.7	239° 50.6	254° 50.4	89° 48.7	104° 48.5	119° 48.4	134° 48.3	149° 48.1	164° 48.0	-0.1
	23° 19.6	23° 19.7	23° 19.8	23° 19.9	23° 20.0	23° 20.1	23° 21.3	23° 21.3	23° 21.4	23° 21.5	23° 21.6	23° 21.7	+0.1
Вт 17	179° 47.8	194° 47.7	209° 47.6	224° 47.4	239° 47.3	254° 47.2	89° 45.4	104° 45.3	119° 45.1	134° 45.0	149° 44.8	164° 44.7	-0.1
	23° 21.7	23° 21.8	23° 21.9	23° 22.0	23° 22.0	23° 22.1	23° 23.0	23° 23.1	23° 23.2	23° 23.2	23° 23.3	23° 23.3	+0.1
Ср 18	179° 44.6	194° 44.4	209° 44.3	224° 44.2	239° 44.0	254° 43.9	89° 42.1	104° 42.0	119° 41.8	134° 41.7	149° 41.6	164° 41.4	-0.1
	23° 23.4	23° 23.5	23° 23.5	23° 23.6	23° 23.6	23° 23.7	23° 24.4	23° 24.4	23° 24.5	23° 24.5	23° 24.6	23° 24.6	+0.1
Чт 19	179° 41.3	194° 41.1	209° 41.0	224° 40.9	239° 40.7	254° 40.6	89° 38.8	104° 38.7	119° 38.5	134° 38.4	149° 38.3	164° 38.1	-0.1
	23° 24.7	23° 24.7	23° 24.8	23° 24.8	23° 24.8	23° 24.9	23° 25.3	23° 25.4	23° 25.4	23° 25.4	23° 25.5	23° 25.5	+0.0
Пт 20	179° 38.0	194° 37.9	209° 37.7	224° 37.6	239° 37.4	254° 37.3	89° 35.5	104° 35.4	119° 35.2	134° 35.1	149° 35.0	164° 34.8	-0.1
	23° 25.5	23° 25.5	23° 25.6	23° 25.6	23° 25.6	23° 25.6	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	+0.0
Сб 21	179° 34.7	194° 34.6	209° 34.4	224° 34.3	239° 34.2	254° 34.0	89° 32.2	104° 32.1	119° 32.0	134° 31.8	149° 31.7	164° 31.5	-0.1
	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	+0.0
Вс 22	179° 31.4	194° 31.3	209° 31.1	224° 31.0	239° 30.9	254° 30.7	89° 29.0	104° 28.8	119° 28.7	134° 28.5	149° 28.4	164° 28.3	-0.1
	23° 26.0	23° 26.0	23° 26.0	23° 25.9	23° 25.9	23° 25.9	23° 25.7	23° 25.7	23° 25.7	23° 25.7	23° 25.6	23° 25.6	-0.0
Пн 23	179° 28.1	194° 28.0	209° 27.9	224° 27.7	239° 27.6	254° 27.5	89° 25.7	104° 25.6	119° 25.4	134° 25.3	149° 25.2	164° 25.0	-0.1
	23° 25.6	23° 25.6	23° 25.5	23° 25.5	23° 25.5	23° 25.4	23° 25.0	23° 25.0	23° 24.9	23° 24.9	23° 24.9	23° 24.8	-0.0
Вт 24	179° 24.9	194° 24.7	209° 24.6	224° 24.5	239° 24.3	254° 24.2	89° 22.5	104° 22.3	119° 22.2	134° 22.1	149° 21.9	164° 21.8	-0.1
	23° 24.8	23° 24.7	23° 24.7	23° 24.6	23° 24.6	23° 24.6	23° 23.9	23° 23.8	23° 23.8	23° 23.7	23° 23.7	23° 23.6	-0.0
Ср 25	179° 21.7	194° 21.5	209° 21.4	224° 21.3	239° 21.1	254° 21.0	89° 19.3	104° 19.1	119° 19.0	134° 18.9	149° 18.7	164° 18.6	-0.1
	23° 23.6	23° 23.5	23° 23.4	23° 23.4	23° 23.3	23° 23.3	23° 22.4	23° 22.3	23° 22.2	23° 22.2	23° 22.1	23° 22.0	-0.1
Чт 26	179° 18.5	194° 18.3	209° 18.2	224° 18.1	239° 17.9	254° 17.8	89° 16.1	104° 16.0	119° 15.8	134° 15.7	149° 15.6	164° 15.4	-0.1
	23° 21.9	23° 21.9	23° 21.8	23° 21.7	23° 21.6	23° 21.5	23° 20.4	23° 20.3	23° 20.3	23° 20.2	23° 20.1	23° 20.0	-0.1
Пт 27	179° 15.3	194° 15.2	209° 15.0	224° 14.9	239° 14.8	254° 14.6	89° 13.0	104° 12.8	119° 12.7	134° 12.6	149° 12.4	164° 12.3	-0.1
	23° 19.9	23° 19.8	23° 19.7	23° 19.6	23° 19.5	23° 19.4	23° 18.1	23° 18.0	23° 17.9	23° 17.8	23° 17.7	23° 17.6	-0.1
Сб 28	179° 12.2	194° 12.1	209° 11.9	224° 11.8	239° 11.7	254° 11.5	89° 09.9	104° 09.8	119° 09.6	134° 09.5	149° 09.4	164° 09.2	-0.1
	23° 17.4	23° 17.3	23° 17.2	23° 17.1	23° 17.0	23° 16.9	23° 15.3	23° 15.2	23° 15.1	23° 15.0	23° 14.8	23° 14.7	-0.1
Вс 29	179° 09.1	194° 09.0	209° 08.9	224° 08.7	239° 08.6	254° 08.5	89° 06.9	104° 06.7	119° 06.6	134° 06.5	149° 06.4	164° 06.2	-0.1
	23° 14.6	23° 14.5	23° 14.3	23° 14.2	23° 14.1	23° 13.9	23° 12.2	23° 12.0	23° 11.9	23° 11.8	23° 11.6	23° 11.5	-0.1
Пн 30	179° 06.1	194° 06.0	209° 05.9	224° 05.7	239° 05.6	254° 05.5	89° 03.9	104° 03.8	119° 03.7	134° 03.5	149° 03.4	164° 03.3	-0.1
	23° 11.3	23° 11.2	23° 11.0	23° 10.9	23° 10.7	23° 10.6	23° 08.6	23° 08.4	23° 08.3	23° 08.1	23° 08.0	23° 07.8	-0.1

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июнь 2031

Д	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	Δ'/h	R/p
Вс 1	61° 15.4 -7° 43.2	75° 46.1 -7° 54.4	90° 16.8 -8° 05.6	104° 47.4 -8° 16.8	119° 17.9 -8° 28.0	133° 48.3 -8° 39.1	148° 18.7 -8° 50.2	162° 48.9 -9° 01.3	177° 19.1 -9° 12.3	191° 49.2 -9° 23.3	206° 19.3 -9° 34.3	+30.4 -11.1	15.7 57.7
Пн 2	63° 39.6 -12° 14.0	78° 08.2 -12° 24.3	92° 36.8 -12° 34.5	107° 05.3 -12° 44.6	121° 33.6 -12° 54.7	136° 01.9 -13° 04.8	150° 30.1 -13° 14.8	164° 58.2 -13° 24.7	179° 26.2 -13° 34.5	193° 54.1 -13° 44.3	208° 21.9 -13° 54.0	+28.2 -10.0	16.0 58.6
Вт 3	65° 07.2 -16° 10.7	79° 33.4 -16° 19.2	93° 59.6 -16° 27.5	108° 25.6 -16° 35.8	122° 51.6 -16° 43.9	137° 17.4 -16° 52.0	151° 43.2 -17° 00.0	166° 08.9 -17° 07.8	180° 34.4 -17° 15.6	194° 59.9 -17° 23.2	209° 25.3 -17° 30.8	+25.8 -8.0	16.2 59.6
Ср 4	65° 34.9 -19° 10.5	79° 58.9 -19° 16.2	94° 22.7 -19° 21.8	108° 46.5 -19° 27.2	123° 10.2 -19° 32.5	137° 33.9 -19° 37.6	151° 57.4 -19° 42.6	166° 20.9 -19° 47.5	180° 44.3 -19° 52.3	195° 07.7 -19° 56.9	209° 30.9 -20° 01.4	+23.6 -5.1	16.5 60.3
○ Чт 5	65° 12.6 -20° 51.0	79° 34.9 -20° 53.1	93° 57.3 -20° 55.1	108° 19.5 -20° 56.8	122° 41.8 -20° 58.5	137° 04.0 -21° 00.0	151° 26.2 -21° 01.3	165° 48.4 -21° 02.5	180° 10.5 -21° 03.5	194° 32.6 -21° 04.3	208° 54.7 -21° 05.0	+22.2 -1.4	16.6 60.9
Пт 6	64° 24.5 -20° 56.3	78° 46.5 -20° 54.4	93° 08.6 -20° 52.4	107° 30.6 -20° 50.3	121° 52.6 -20° 47.9	136° 14.7 -20° 45.4	150° 36.8 -20° 42.8	164° 58.9 -20° 40.0	179° 21.1 -20° 37.0	193° 43.3 -20° 33.9	208° 05.5 -20° 30.6	+22.1 +2.6	16.6 61.1
Сб 7	63° 43.5 -19° 23.5	78° 06.5 -19° 17.9	92° 29.5 -19° 12.1	106° 52.6 -19° 06.2	121° 15.7 -19° 00.1	135° 38.9 -18° 53.9	150° 02.2 -18° 47.6	164° 25.5 -18° 41.2	178° 48.9 -18° 34.6	193° 12.4 -18° 27.9	207° 35.9 -18° 21.0	+23.2 +6.3	16.6 60.9
Вс 8	63° 38.3 -16° 23.8	78° 03.1 -16° 15.1	92° 28.0 -16° 06.3	106° 53.0 -15° 57.4	121° 18.0 -15° 48.3	135° 43.2 -15° 39.2	150° 08.4 -15° 30.0	164° 33.7 -15° 20.7	178° 59.1 -15° 11.3	193° 24.6 -15° 01.8	207° 50.2 -14° 52.2	+25.2 +9.2	16.5 60.5
Пн 9	64° 24.3 -12° 18.5	78° 51.3 -12° 07.7	93° 18.3 -11° 56.8	107° 45.4 -11° 45.9	122° 12.6 -11° 34.8	136° 39.9 -11° 23.8	151° 07.3 -11° 12.6	165° 34.8 -11° 01.4	180° 02.3 -10° 50.2	194° 30.0 -10° 38.9	208° 57.7 -10° 27.6	+27.3 +11.1	16.3 59.8
Вт 10	66° 02.6 -7° 32.2	80° 31.5 -7° 20.2	95° 00.5 -7° 08.2	109° 29.5 -6° 56.2	123° 58.7 -6° 44.1	138° 27.9 -6° 32.0	152° 57.1 -6° 19.9	167° 26.4 -6° 07.8	181° 55.8 -5° 55.7	196° 25.3 -5° 43.5	210° 54.8 -5° 31.4	+29.2 +12.1	16.1 59.0
Ср 11	68° 24.3 -2° 27.6	82° 54.7 -2° 15.3	97° 25.2 -2° 03.0	111° 55.6 -1° 50.7	126° 26.2 -1° 38.5	140° 56.7 -1° 26.2	155° 27.4 -1° 14.0	169° 58.0 -1° 01.7	184° 28.7 -0° 49.5	198° 59.5 -0° 37.3	213° 30.2 -0° 25.0	+30.6 +12.3	15.9 58.2
◑ Чт 12	71° 16.1 2° 36.2	85° 47.4 2° 48.1	100° 18.7 3° 00.0	114° 50.1 3° 11.8	129° 21.4 3° 23.6	143° 52.8 3° 35.4	158° 24.2 3° 47.2	172° 55.7 3° 58.9	187° 27.1 4° 10.6	201° 58.6 4° 22.3	216° 30.1 4° 33.9	+31.4 +11.8	15.6 57.3
Пт 13	74° 23.9 7° 23.8	88° 55.6 7° 34.8	103° 27.2 7° 45.7	117° 58.9 7° 56.6	132° 30.6 8° 07.4	147° 02.3 8° 18.2	161° 33.9 8° 28.9	176° 05.6 8° 39.6	190° 37.3 8° 50.3	205° 09.0 9° 00.8	219° 40.7 9° 11.4	+31.7 +10.8	15.4 56.6
Сб 14	77° 35.4 11° 42.6	92° 07.0 11° 52.2	106° 38.6 12° 01.7	121° 10.1 12° 11.2	135° 41.7 12° 20.6	150° 13.2 12° 29.9	164° 44.8 12° 39.2	179° 16.3 12° 48.4	193° 47.8 12° 57.6	208° 19.3 13° 06.6	222° 50.8 13° 15.6	+31.5 +9.3	15.2 55.9
Вс 15	80° 41.4 15° 22.0	95° 12.6 15° 29.8	109° 43.8 15° 37.6	124° 15.0 15° 45.2	138° 46.2 15° 52.8	153° 17.4 16° 00.3	167° 48.5 16° 07.8	182° 19.7 16° 15.1	196° 50.8 16° 22.4	211° 21.9 16° 29.5	225° 53.0 16° 36.6	+31.2 +7.5	15.1 55.3
Пн 16	83° 37.0 18° 12.9	98° 07.8 18° 18.6	112° 38.6 18° 24.3	127° 09.4 18° 29.8	141° 40.1 18° 35.2	156° 10.8 18° 40.6	170° 41.6 18° 45.8	185° 12.3 18° 51.0	199° 42.9 18° 56.1	214° 13.6 19° 01.1	228° 44.3 19° 06.0	+30.7 +5.3	15.0 54.8
Вт 17	86° 22.5 20° 08.0	100° 53.0 20° 11.3	115° 23.4 20° 14.6	129° 53.9 20° 17.8	144° 24.3 20° 20.8	158° 54.7 20° 23.8	173° 25.2 20° 26.7	187° 55.6 20° 29.5	202° 26.0 20° 32.1	216° 56.4 20° 34.7	231° 26.8 20° 37.2	+30.4 +2.9	14.9 54.5
Ср 18	89° 02.6 21° 02.3	103° 33.0 21° 03.2	118° 03.4 21° 04.0	132° 33.8 21° 04.7	147° 04.3 21° 05.2	161° 34.7 21° 05.7	176° 05.1 21° 06.1	190° 35.5 21° 06.4	205° 06.0 21° 06.5	219° 36.4 21° 06.6	234° 06.9 21° 06.6	+30.4 +0.4	14.8 54.2
● Чт 19	91° 45.4 20° 54.3	106° 16.1 20° 52.7	120° 46.8 20° 51.0	135° 17.5 20° 49.2	149° 48.3 20° 47.3	164° 19.1 20° 45.3	178° 49.9 20° 43.2	193° 20.7 20° 41.0	207° 51.5 20° 38.8	222° 22.4 20° 36.4	236° 53.2 20° 33.9	+30.8 -2.0	14.7 54.0
Пт 20	94° 39.5 19° 45.7	109° 10.8 19° 41.8	123° 42.2 19° 37.7	138° 13.5 19° 33.6	152° 44.9 19° 29.4	167° 16.4 19° 25.1	181° 47.8 19° 20.7	196° 19.3 19° 16.3	210° 50.8 19° 11.7	225° 22.4 19° 07.1	239° 54.0 19° 02.3	+31.4 -4.3	14.7 53.9
Сб 21	97° 51.6 17° 41.5	112° 23.8 17° 35.5	126° 55.9 17° 29.4	141° 28.1 17° 23.2	156° 00.3 17° 17.0	170° 32.5 17° 10.7	185° 04.8 17° 04.3	199° 37.1 16° 57.8	214° 09.5 16° 51.2	228° 41.9 16° 44.6	243° 14.3 16° 37.9	+32.3 -6.4	14.7 53.9
Вс 22	101° 24.5 14° 49.1	115° 57.4 14° 41.3	130° 30.4 14° 33.5	145° 03.4 14° 25.5	159° 36.4 14° 17.6	174° 09.4 14° 09.5	188° 42.5 14° 01.4	203° 15.6 13° 53.3	217° 48.8 13° 45.1	232° 21.9 13° 36.8	246° 55.1 13° 28.5	+33.1 -8.1	14.7 54.0
Пн 23	105° 16.2 11° 16.8	119° 49.7 11° 07.6	134° 23.4 10° 58.4	148° 57.0 10° 49.1	163° 30.6 10° 39.8	178° 04.3 10° 30.4	192° 38.0 10° 20.9	207° 11.7 10° 11.5	221° 45.4 10° 01.9	236° 19.1 9° 52.4	250° 52.9 9° 42.8	+33.7 -9.4	14.8 54.3
Вт 24	109° 20.7 7° 13.6	123° 54.6 7° 03.4	138° 28.6 6° 53.1	153° 02.5 6° 42.8	167° 36.4 6° 32.5	182° 10.4 6° 22.1	196° 44.3 6° 11.7	211° 18.3 6° 01.2	225° 52.2 5° 50.8	240° 26.2 5° 40.3	255° 00.1 5° 29.7	+33.9 -10.4	14.9 54.6
Ср 25	123° 54.6 7° 03.4	138° 28.6 6° 53.1	153° 02.5 6° 42.8	167° 36.4 6° 32.5	182° 10.4 6° 22.1	196° 44.3 6° 11.7	211° 18.3 6° 01.2	225° 52.2 5° 50.8	240° 26.2 5° 40.3	255° 00.1 5° 29.7	269° 34.0 5° 19.2	+33.9 -10.4	14.9 54.7
Чт 26	128° 02.5 2° 37.7	142° 36.3 2° 26.7	157° 10.1 2° 15.8	171° 43.9 2° 04.8	186° 17.7 1° 53.8	200° 51.4 1° 42.8	215° 25.1 1° 31.7	229° 58.9 1° 20.7	244° 32.5 1° 09.6	259° 06.2 0° 58.5	273° 39.9 0° 47.4	+33.7 -11.0	15.1 55.2
Пт 27	132° 01.3 -2° 00.1	146° 34.5 -2° 11.4	161° 07.6 -2° 22.6	175° 40.7 -2° 33.8	190° 13.7 -2° 45.0	204° 46.7 -2° 56.3	219° 19.7 -3° 07.5	233° 52.6 -3° 18.7	248° 25.5 -3° 29.9	262° 58.4 -3° 41.1	277° 31.2 -3° 52.4	+33.0 -11.2	15.2 55.9
◐ Сб 28	135° 37.1 -6° 39.5	150° 09.0 -6° 50.5	164° 40.9 -7° 01.5	179° 12.7 -7° 12.5	193° 44.5 -7° 23.5	208° 16.2 -7° 34.5	222° 47.8 -7° 45.4	237° 19.4 -7° 56.3	251° 50.9 -8° 07.2	266° 22.3 -8° 18.1	280° 53.6 -8° 28.9	+31.7 -10.9	15.5 56.7
Вс 29	138° 35.2 -11° 07.6	153° 05.3 -11° 17.9	167° 35.4 -11° 28.1	182° 05.5 -11° 38.3	196° 35.3 -11° 48.4	211° 05.1 -11° 58.5	225° 34.8 -12° 08.5	240° 04.4 -12° 18.5	254° 34.0 -12° 28.5	269° 03.4 -12° 38.4	283° 32.8 -12° 48.2	+29.8 -10.1	15.7 57.7
Пн 30	140° 42.2 -15° 08.4	155° 10.1 -15° 17.1	169° 37.9 -15° 25.9	184° 05.5 -15° 34.5	198° 33.1 -15° 43.1	213° 00.6 -15° 51.6	227° 28.0 -16° 00.0	241° 55.3 -16° 08.3	256° 22.4 -16° 16.5	270° 49.5 -16° 24.7	285° 16.5 -16° 32.7	+27.4 -8.4	16.0 58.6

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 5 11h58 — Последняя четв.: 12 02h20 — Новолуние: 19 22h24 — Первая четв.: 28 00h19

СОЛНЦЕ

Июль 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	179° 03.2	194° 03.1	209° 02.9	224° 02.8	239° 02.7	254° 02.6	89° 01.0	104° 00.9	119° 00.8	134° 00.7	149° 00.5	164° 00.4	-0.1
	23° 07.7	23° 07.5	23° 07.3	23° 07.2	23° 07.0	23° 06.8	23° 04.6	23° 04.5	23° 04.3	23° 04.1	23° 03.9	23° 03.8	-0.2
Ср 2	179° 00.3	194° 00.2	209° 00.1	223° 59.9	238° 59.8	253° 59.7	88° 58.2	103° 58.1	118° 58.0	133° 57.8	148° 57.7	163° 57.6	-0.1
	23° 03.6	23° 03.4	23° 03.2	23° 03.0	23° 02.9	23° 02.7	23° 00.3	23° 00.1	22° 59.9	22° 59.7	22° 59.5	22° 59.3	-0.2
Чт 3	178° 57.5	193° 57.4	208° 57.3	223° 57.1	238° 57.0	253° 56.9	88° 55.4	103° 55.3	118° 55.2	133° 55.1	148° 55.0	163° 54.9	-0.1
	22° 59.1	22° 58.9	22° 58.7	22° 58.5	22° 58.3	22° 58.1	22° 55.5	22° 55.3	22° 55.1	22° 54.9	22° 54.6	22° 54.4	-0.2
Пт 4	178° 54.8	193° 54.7	208° 54.5	223° 54.4	238° 54.3	253° 54.2	88° 52.8	103° 52.7	118° 52.6	133° 52.4	148° 52.3	163° 52.2	-0.1
	22° 54.2	22° 54.0	22° 53.8	22° 53.6	22° 53.4	22° 53.2	22° 50.3	22° 50.1	22° 49.9	22° 49.6	22° 49.4	22° 49.2	-0.2
Сб 5	178° 52.1	193° 52.0	208° 51.9	223° 51.8	238° 51.7	253° 51.6	88° 50.2	103° 50.1	118° 50.0	133° 49.9	148° 49.8	163° 49.7	-0.1
	22° 48.9	22° 48.7	22° 48.5	22° 48.3	22° 48.0	22° 47.8	22° 44.7	22° 44.5	22° 44.3	22° 44.0	22° 43.8	22° 43.5	-0.2
Вс 6	178° 49.5	193° 49.4	208° 49.3	223° 49.2	238° 49.1	253° 49.0	88° 47.7	103° 47.6	118° 47.5	133° 47.4	148° 47.3	163° 47.2	-0.1
	22° 43.3	22° 43.0	22° 42.8	22° 42.5	22° 42.3	22° 42.0	22° 38.8	22° 38.5	22° 38.2	22° 38.0	22° 37.7	22° 37.5	-0.2
Пн 7	178° 47.1	193° 47.0	208° 46.9	223° 46.8	238° 46.7	253° 46.6	88° 45.3	103° 45.2	118° 45.1	133° 45.0	148° 44.9	163° 44.8	-0.1
	22° 37.2	22° 37.0	22° 36.7	22° 36.4	22° 36.2	22° 35.9	22° 32.4	22° 32.1	22° 31.9	22° 31.6	22° 31.3	22° 31.0	-0.3
Вт 8	178° 44.7	193° 44.6	208° 44.5	223° 44.4	238° 44.3	253° 44.2	88° 42.9	103° 42.9	118° 42.8	133° 42.7	148° 42.6	163° 42.5	-0.1
	22° 30.8	22° 30.5	22° 30.2	22° 29.9	22° 29.6	22° 29.4	22° 25.7	22° 25.4	22° 25.1	22° 24.8	22° 24.5	22° 24.2	-0.3
Ср 9	178° 42.4	193° 42.3	208° 42.2	223° 42.1	238° 42.0	253° 41.9	88° 40.7	103° 40.6	118° 40.5	133° 40.5	148° 40.4	163° 40.3	-0.1
	22° 23.9	22° 23.6	22° 23.3	22° 23.0	22° 22.7	22° 22.4	22° 18.5	22° 18.2	22° 17.9	22° 17.6	22° 17.3	22° 17.0	-0.3
Чт 10	178° 40.2	193° 40.1	208° 40.0	223° 39.9	238° 39.8	253° 39.7	88° 38.6	103° 38.5	118° 38.4	133° 38.3	148° 38.3	163° 38.2	-0.1
	22° 16.7	22° 16.4	22° 16.0	22° 15.7	22° 15.4	22° 15.1	22° 11.0	22° 10.7	22° 10.3	22° 10.0	22° 09.7	22° 09.4	-0.3
Пт 11	178° 38.1	193° 38.0	208° 37.9	223° 37.8	238° 37.7	253° 37.7	88° 36.6	103° 36.5	118° 36.4	133° 36.3	148° 36.3	163° 36.2	-0.1
	22° 09.0	22° 08.7	22° 08.4	22° 08.1	22° 07.7	22° 07.4	22° 03.1	22° 02.7	22° 02.4	22° 02.1	22° 01.7	22° 01.4	-0.3
Сб 12	178° 36.1	193° 36.0	208° 35.9	223° 35.8	238° 35.8	253° 35.7	88° 34.7	103° 34.6	118° 34.5	133° 34.4	148° 34.4	163° 34.3	-0.1
	22° 01.0	22° 00.7	22° 00.4	22° 00.0	21° 59.7	21° 59.3	21° 54.8	21° 54.4	21° 54.1	21° 53.7	21° 53.4	21° 53.0	-0.3
Вс 13	178° 34.2	193° 34.1	208° 34.1	223° 34.0	238° 33.9	253° 33.8	88° 32.9	103° 32.8	118° 32.7	133° 32.6	148° 32.6	163° 32.5	-0.1
	21° 52.7	21° 52.3	21° 51.9	21° 51.6	21° 51.2	21° 50.9	21° 46.1	21° 45.8	21° 45.4	21° 45.0	21° 44.6	21° 44.3	-0.4
Пн 14	178° 32.4	193° 32.4	208° 32.3	223° 32.2	238° 32.1	253° 32.1	88° 31.2	103° 31.1	118° 31.0	133° 31.0	148° 30.9	163° 30.8	-0.1
	21° 43.9	21° 43.5	21° 43.2	21° 42.8	21° 42.4	21° 42.0	21° 37.1	21° 36.7	21° 36.3	21° 35.9	21° 35.6	21° 35.2	-0.4
Вт 15	178° 30.8	193° 30.7	208° 30.6	223° 30.6	238° 30.5	253° 30.4	88° 29.6	103° 29.6	118° 29.5	133° 29.4	148° 29.4	163° 29.3	-0.1
	21° 34.8	21° 34.4	21° 34.0	21° 33.6	21° 33.2	21° 32.8	21° 27.7	21° 27.3	21° 26.9	21° 26.5	21° 26.1	21° 25.7	-0.4
Ср 16	178° 29.2	193° 29.2	208° 29.1	223° 29.1	238° 29.0	253° 28.9	88° 28.2	103° 28.1	118° 28.1	133° 28.0	148° 28.0	163° 27.9	-0.1
	21° 25.3	21° 24.9	21° 24.5	21° 24.1	21° 23.7	21° 23.3	21° 17.9	21° 17.5	21° 17.1	21° 16.7	21° 16.3	21° 15.8	-0.4
Чт 17	178° 27.8	193° 27.8	208° 27.7	223° 27.7	238° 27.6	253° 27.6	88° 26.9	103° 26.8	118° 26.8	133° 26.7	148° 26.7	163° 26.6	-0.1
	21° 15.4	21° 15.0	21° 14.6	21° 14.2	21° 13.7	21° 13.3	21° 07.8	21° 07.4	21° 06.9	21° 06.5	21° 06.1	21° 05.6	-0.4
Пт 18	178° 26.6	193° 26.5	208° 26.5	223° 26.4	238° 26.4	253° 26.3	88° 25.7	103° 25.6	118° 25.6	133° 25.5	148° 25.5	163° 25.5	-0.1
	21° 05.2	21° 04.8	21° 04.3	21° 03.9	21° 03.5	21° 03.0	20° 57.3	20° 56.8	20° 56.4	20° 56.0	20° 55.5	20° 55.1	-0.4
Сб 19	178° 25.4	193° 25.4	208° 25.3	223° 25.3	238° 25.2	253° 25.2	88° 24.6	103° 24.6	118° 24.6	133° 24.5	148° 24.5	163° 24.4	-0.0
	20° 54.6	20° 54.2	20° 53.7	20° 53.3	20° 52.8	20° 52.4	20° 46.5	20° 46.0	20° 45.5	20° 45.1	20° 44.6	20° 44.1	-0.4
Вс 20	178° 24.4	193° 24.4	208° 24.3	223° 24.3	238° 24.2	253° 24.2	88° 23.7	103° 23.7	118° 23.7	133° 23.6	148° 23.6	163° 23.6	-0.0
	20° 43.7	20° 43.2	20° 42.8	20° 42.3	20° 41.8	20° 41.4	20° 35.3	20° 34.8	20° 34.3	20° 33.8	20° 33.4	20° 32.9	-0.5
Пн 21	178° 23.5	193° 23.5	208° 23.5	223° 23.4	238° 23.4	253° 23.4	88° 23.0	103° 22.9	118° 22.9	133° 22.9	148° 22.9	163° 22.8	-0.0
	20° 32.4	20° 31.9	20° 31.4	20° 31.0	20° 30.5	20° 30.0	20° 23.7	20° 23.2	20° 22.7	20° 22.3	20° 21.8	20° 21.3	-0.5
Вт 22	178° 22.8	193° 22.8	208° 22.8	223° 22.7	238° 22.7	253° 22.7	88° 22.4	103° 22.3	118° 22.3	133° 22.3	148° 22.3	163° 22.2	-0.0
	20° 20.8	20° 20.3	20° 19.8	20° 19.3	20° 18.8	20° 18.3	20° 11.8	20° 11.3	20° 10.8	20° 10.3	20° 09.8	20° 09.3	-0.5
Ср 23	178° 22.2	193° 22.2	208° 22.2	223° 22.2	238° 22.1	253° 22.1	88° 21.9	103° 21.9	118° 21.8	133° 21.8	148° 21.8	163° 21.8	-0.0
	20° 08.8	20° 08.3	20° 07.8	20° 07.3	20° 06.8	20° 06.3	19° 59.6	19° 59.1	19° 58.6	19° 58.1	19° 57.6	19° 57.0	-0.5
Чт 24	178° 21.8	193° 21.8	208° 21.8	223° 21.7	238° 21.7	253° 21.7	88° 21.6	103° 21.5	118° 21.5	133° 21.5	148° 21.5	163° 21.5	-0.0
	19° 56.5	19° 56.0	19° 55.5	19° 55.0	19° 54.4	19° 53.9	19° 47.1	19° 46.5	19° 46.0	19° 45.5	19° 45.0	19° 44.4	-0.5
Пт 25	178° 21.5	193° 21.5	208° 21.5	223° 21.5	238° 21.5	253° 21.5	88° 21.4	103° 21.4	118° 21.4	133° 21.4	148° 21.4	163° 21.4	-0.0
	19° 43.9	19° 43.4	19° 42.8	19° 42.3	19° 41.8	19° 41.2	19° 34.2	19° 33.7	19° 33.1	19° 32.6	19° 32.0	19° 31.5	-0.5
Сб 26	178° 21.4	193° 21.4	208° 21.4	223° 21.4	238° 21.4	253° 21.4	88° 21.4	103° 21.4	118° 21.4	133° 21.4	148° 21.4	163° 21.4	-0.0
	19° 30.9	19° 30.4	19° 29.8	19° 29.3	19° 28.7	19° 28.2	19° 21.0	19° 20.4	19° 19.9	19° 19.3	19° 18.8	19° 18.2	-0.5
Вс 27	178° 21.4	193° 21.4	208° 21.4	223° 21.4	238° 21.4	253° 21.4	88° 21.5	103° 21.5	118° 21.5	133° 21.5	148° 21.5	163° 21.6	+0.0
	19° 17.6	19° 17.1	19° 16.5	19° 16.0	19° 15.4	19° 14.8	19° 07.5	19° 06.9	19° 06.3	19° 05.8	19° 05.2	19° 04.6	-0.6
Пн 28	178° 21.6	193° 21.6	208° 21.6	223° 21.6	238° 21.6	253° 21.6	88° 21.8	103° 21.8	118° 21.8	133° 21.8	148° 21.9	163° 21.9	+0.0
	19° 04.1	19° 03.5	19° 02.9	19° 02.3	19° 01.8	19° 01.2	18° 53.6	18° 53.1	18° 52.5	18° 51.9	18° 51.3	18° 50.7	-0.6
Вт 29	178° 21.9	193° 21.9	208° 21.9	223° 21.9	238° 22.0	253° 22.0	88° 22.2	103° 22.3	118° 22.3	133° 22.3	148° 22.3	163° 22.4	+0.0
	18° 50.1	18° 49.6	18° 49.0	18° 48.4	18° 47.8	18° 47.2	18° 39.5	18° 38.9	18° 38.3	18° 37.7	18° 37.1	18° 36.5	-0.6
Ср 30	178° 22.4	193° 22.4	208° 22.4	223° 22.5	238° 22.5	253° 22.5	88° 22.8	103° 22.9	118° 22.9	133° 22.9	148° 23.0	163° 23.0	+0.0
	18° 35.9	18° 35.3	18° 34.7	18° 34.1	18° 33.5	18° 32.9	18° 25.1	18° 24.4	18° 23.8	18° 23.2	18° 22.6	18° 22.0	-0.6
Чт 31	178° 23.0	193° 23.1	208° 23.1	223° 23.1	238° 23.1	253° 23.2	88° 23.6	103° 23.6	118° 23.7	133° 23.7	148° 23.7	163° 23.8	+0.0
	18° 21.4	18° 20.8	18° 20.2	18° 19.6	18° 18.9	18° 18.3	18° 10.3	18° 09.7	18° 09.1	18° 08.4	18° 07.8	18° 07.2	-0.6

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2031

Д	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	Δ'/h	R/p
Вт 1	69° 40.9	84° 06.8	98° 32.6	112° 58.3	127° 23.9	141° 49.4	156° 14.8	170° 40.2	185° 05.4	199° 30.5	213° 55.6	+25.5	16.2
	-17° 48.2	-17° 55.2	-18° 02.1	-18° 08.9	-18° 15.6	-18° 22.1	-18° 28.6	-18° 35.0	-18° 41.2	-18° 47.3	-18° 53.3	-6.5	59.4
Ср 2	70° 00.4	84° 24.1	98° 47.6	113° 11.1	127° 34.6	141° 57.9	156° 21.2	170° 44.4	185° 07.6	199° 30.6	213° 53.7	+23.3	16.4
	-20° 08.7	-20° 12.7	-20° 16.5	-20° 20.2	-20° 23.8	-20° 27.2	-20° 30.5	-20° 33.6	-20° 36.6	-20° 39.5	-20° 42.2	-3.4	60.3
Чт 3	69° 32.2	83° 54.4	98° 16.6	112° 38.7	127° 00.8	141° 22.9	155° 45.0	170° 07.0	184° 29.1	198° 51.1	213° 13.0	+22.1	16.6
	-21° 04.6	-21° 04.9	-21° 05.0	-21° 04.9	-21° 04.7	-21° 04.3	-21° 03.8	-21° 03.1	-21° 02.2	-21° 01.2	-21° 00.0	+0.5	61.0
○ Пт 4	68° 42.3	83° 04.3	97° 26.3	111° 48.4	126° 10.5	140° 32.6	154° 54.7	169° 16.9	183° 39.1	198° 01.3	212° 23.6	+22.1	16.7
	-20° 23.2	-20° 19.5	-20° 15.7	-20° 11.6	-20° 07.4	-20° 03.1	-19° 58.6	-19° 54.0	-19° 49.2	-19° 44.2	-19° 39.1	+4.4	61.3
Сб 5	68° 02.9	82° 26.0	96° 49.1	111° 12.3	125° 35.5	139° 58.9	154° 22.2	168° 45.7	183° 09.2	197° 32.8	211° 56.5	+23.3	16.7
	-18° 05.4	-17° 58.0	-17° 50.5	-17° 42.9	-17° 35.2	-17° 27.3	-17° 19.3	-17° 11.2	-17° 02.9	-16° 54.6	-16° 46.1	+7.9	61.3
Вс 6	68° 00.4	82° 25.3	96° 50.3	111° 15.4	125° 40.5	140° 05.7	154° 31.0	168° 56.4	183° 21.9	197° 47.4	212° 13.1	+25.3	16.6
	-14° 25.7	-14° 15.6	-14° 05.3	-13° 55.0	-13° 44.6	-13° 34.0	-13° 23.5	-13° 12.8	-13° 02.0	-12° 51.2	-12° 40.3	+10.6	60.9
Пн 7	68° 47.4	83° 14.4	97° 41.4	112° 08.5	126° 35.7	141° 02.9	155° 30.2	169° 57.6	184° 25.1	198° 52.7	213° 20.3	+27.3	16.4
	-9° 48.5	-9° 36.6	-9° 24.7	-9° 12.7	-9° 00.6	-8° 48.5	-8° 36.4	-8° 24.2	-8° 12.0	-7° 59.8	-7° 47.5	+12.1	60.3
Вт 8	70° 23.3	84° 52.0	99° 20.8	113° 49.6	128° 18.6	142° 47.5	157° 16.6	171° 45.7	186° 14.8	200° 44.0	215° 13.3	+29.0	16.2
	-4° 40.3	-4° 27.7	-4° 15.0	-4° 02.4	-3° 49.7	-3° 37.1	-3° 24.4	-3° 11.8	-2° 59.1	-2° 46.5	-2° 33.8	+12.6	59.4
Ср 9	72° 38.5	87° 08.6	101° 38.7	116° 08.8	130° 39.0	145° 09.2	159° 39.5	174° 09.7	188° 40.1	203° 10.4	217° 40.8	+30.2	15.9
	0° 34.9	0° 47.4	0° 59.8	1° 12.3	1° 24.6	1° 37.0	1° 49.4	2° 01.7	2° 14.0	2° 26.2	2° 38.5	+12.4	58.5
Чт 10	75° 20.5	89° 51.3	104° 22.2	118° 53.1	133° 24.0	147° 54.9	162° 25.8	176° 56.8	191° 27.8	205° 58.8	220° 29.8	+30.9	15.7
	5° 37.7	5° 49.3	6° 00.9	6° 12.4	6° 23.9	6° 35.3	6° 46.7	6° 58.1	7° 09.4	7° 20.6	7° 31.8	+11.4	57.5
◑ Пт 11	78° 16.3	92° 47.4	107° 18.6	121° 49.8	136° 20.9	150° 52.1	165° 23.3	179° 54.5	194° 25.7	208° 56.8	223° 28.0	+31.2	15.4
	10° 13.0	10° 23.2	10° 33.4	10° 43.6	10° 53.7	11° 03.7	11° 13.6	11° 23.5	11° 33.3	11° 43.1	11° 52.8	+10.0	56.6
Сб 12	81° 15.4	95° 46.5	110° 17.7	124° 48.8	139° 19.9	153° 51.0	168° 22.0	182° 53.1	197° 24.2	211° 55.2	226° 26.3	+31.1	15.2
	14° 09.4	14° 17.9	14° 26.4	14° 34.8	14° 43.0	14° 51.2	14° 59.4	15° 07.4	15° 15.4	15° 23.3	15° 31.1	+8.2	55.8
Вс 13	84° 10.8	98° 41.7	113° 12.6	127° 43.5	142° 14.3	156° 45.1	171° 16.0	185° 46.8	200° 17.6	214° 48.4	229° 19.2	+30.8	15.0
	17° 18.2	17° 24.6	17° 31.0	17° 37.3	17° 43.5	17° 49.5	17° 55.6	18° 01.5	18° 07.3	18° 13.0	18° 18.7	+6.1	55.2
Пн 14	86° 59.7	101° 30.3	116° 01.0	130° 31.6	145° 02.2	159° 32.8	174° 03.4	188° 34.0	203° 04.5	217° 35.1	232° 05.7	+30.6	14.9
	19° 32.3	19° 36.5	19° 40.6	19° 44.5	19° 48.4	19° 52.2	19° 55.8	19° 59.4	20° 02.9	20° 06.3	20° 09.6	+3.7	54.6
Вт 15	89° 43.7	104° 14.2	118° 44.8	133° 15.3	147° 45.8	162° 16.3	176° 46.9	191° 17.4	205° 48.0	220° 18.5	234° 49.0	+30.5	14.8
	20° 47.2	20° 48.9	20° 50.5	20° 52.1	20° 53.5	20° 54.8	20° 56.0	20° 57.1	20° 58.2	20° 59.1	20° 59.9	+1.3	54.3
Ср 16	92° 28.1	106° 58.8	121° 29.5	136° 00.2	150° 30.9	165° 01.7	179° 32.4	194° 03.2	208° 34.0	223° 04.8	237° 35.6	+30.7	14.7
	21° 00.5	20° 59.7	20° 58.9	20° 57.9	20° 56.9	20° 55.8	20° 54.5	20° 53.2	20° 51.8	20° 50.2	20° 48.6	-1.2	54.0
Чт 17	95° 20.1	109° 51.2	124° 22.4	138° 53.6	153° 24.8	167° 56.0	182° 27.3	196° 58.6	211° 29.9	226° 01.2	240° 32.6	+31.2	14.7
	20° 12.9	20° 09.7	20° 06.5	20° 03.2	19° 59.8	19° 56.3	19° 52.7	19° 49.0	19° 45.3	19° 41.4	19° 37.5	-3.5	53.9
Пт 18	98° 26.3	112° 58.1	127° 30.0	142° 01.8	156° 33.7	171° 05.7	185° 37.6	200° 09.6	214° 41.7	229° 13.7	243° 45.8	+32.0	14.7
	18° 27.9	18° 22.6	18° 17.2	18° 11.7	18° 06.2	18° 00.6	17° 54.9	17° 49.1	17° 43.2	17° 37.2	17° 31.2	-5.7	53.9
● Сб 19	101° 50.9	116° 23.5	130° 56.1	145° 28.7	160° 01.4	174° 34.1	189° 06.8	203° 39.6	218° 12.4	232° 45.2	247° 18.1	+32.7	14.7
	15° 51.9	15° 44.7	15° 37.4	15° 30.1	15° 22.7	15° 15.2	15° 07.7	15° 00.1	14° 52.4	14° 44.7	14° 36.9	-7.5	54.0
Вс 20	105° 34.2	120° 07.5	134° 40.8	149° 14.2	163° 47.5	178° 20.9	192° 54.3	207° 27.7	222° 01.2	236° 34.7	251° 08.2	+33.4	14.8
	12° 32.7	12° 24.0	12° 15.2	12° 06.3	11° 57.4	11° 48.5	11° 39.5	11° 30.4	11° 21.3	11° 12.2	11° 03.0	-9.0	54.1
Пн 21	109° 32.9	124° 06.7	138° 40.5	153° 14.3	167° 48.1	182° 21.9	196° 55.8	211° 29.6	226° 03.5	240° 37.4	255° 11.2	+33.8	14.8
	8° 39.5	8° 29.6	8° 19.7	8° 09.7	7° 59.7	7° 49.6	7° 39.5	7° 29.4	7° 19.2	7° 09.1	6° 58.8	-10.1	54.4
Вт 22	113° 40.1	128° 14.0	142° 47.9	157° 21.9	171° 55.8	186° 29.7	201° 03.6	215° 37.6	230° 11.5	244° 45.4	259° 19.3	+33.9	14.9
	4° 21.9	4° 11.2	4° 00.5	3° 49.8	3° 39.1	3° 28.3	3° 17.5	3° 06.7	2° 55.9	2° 45.1	2° 34.2	-10.8	54.8
Ср 23	117° 46.1	132° 19.8	146° 53.4	161° 27.1	176° 00.7	190° 34.2	205° 07.8	219° 41.3	234° 14.8	248° 48.3	263° 21.7	+33.6	15.1
	-0° 10.2	-0° 21.3	-0° 32.3	-0° 43.3	-0° 54.4	-1° 05.5	-1° 16.5	-1° 27.6	-1° 38.6	-1° 49.7	-2° 00.8	-11.1	55.3
Чт 24	132° 19.8	146° 53.4	161° 27.1	176° 00.7	190° 34.2	205° 07.8	219° 41.3	234° 14.8	248° 48.3	263° 21.7	277° 55.1	+33.5	15.1
	-0° 21.3	-0° 32.3	-0° 43.3	-0° 54.4	-1° 05.5	-1° 16.5	-1° 27.6	-1° 38.6	-1° 49.7	-2° 00.8	-2° 11.8	-11.1	55.3
Пт 25	136° 12.4	150° 45.2	165° 18.0	179° 50.8	194° 23.5	208° 56.2	223° 28.8	238° 01.4	252° 33.9	267° 06.4	281° 38.9	+32.7	15.2
	-4° 57.3	-5° 08.2	-5° 19.1	-5° 30.1	-5° 41.0	-5° 51.9	-6° 02.8	-6° 13.6	-6° 24.5	-6° 35.3	-6° 46.1	-10.9	55.9
Сб 26	139° 38.9	154° 10.4	168° 41.9	183° 13.3	197° 44.6	212° 15.9	226° 47.1	241° 18.3	255° 49.3	270° 20.3	284° 51.3	+31.2	15.4
	-9° 25.1	-9° 35.5	-9° 45.8	-9° 56.1	-10° 06.4	-10° 16.6	-10° 26.8	-10° 36.9	-10° 47.0	-10° 57.1	-11° 07.1	-10.2	56.6
◐ Вс 27	142° 26.4	156° 56.1	171° 25.8	185° 55.3	200° 24.8	214° 54.2	229° 23.5	243° 52.8	258° 21.9	272° 51.0	287° 20.0	+29.4	15.7
	-13° 31.4	-13° 40.5	-13° 49.6	-13° 58.7	-14° 07.7	-14° 16.6	-14° 25.5	-14° 34.3	-14° 43.0	-14° 51.7	-15° 00.3	-8.9	57.5
Пн 28	144° 24.2	158° 51.8	173° 19.3	187° 46.7	202° 14.0	216° 41.2	231° 08.4	245° 35.4	260° 02.4	274° 29.2	288° 56.0	+27.2	15.9
	-16° 59.9	-17° 07.2	-17° 14.4	-17° 21.5	-17° 28.5	-17° 35.5	-17° 42.3	-17° 49.0	-17° 55.7	-18° 02.2	-18° 08.7	-6.9	58.3
Вт 29	145° 27.2	159° 52.6	174° 18.0	188° 43.2	203° 08.4	217° 33.5	231° 58.5	246° 23.4	260° 48.2	275° 13.0	289° 37.7	+25.0	16.1
	-19° 32.4	-19° 37.1	-19° 41.6	-19° 46.0	-19° 50.3	-19° 54.5	-19° 58.6	-20° 02.5	-20° 06.3	-20° 10.0	-20° 13.5	-4.1	59.2
Ср 30	145° 40.0	160° 03.7	174° 27.3	188° 50.9	203° 14.4	217° 37.8	232° 01.2	246° 24.6	260° 47.9	275° 11.2	289° 34.4	+23.4	16.4
	-20° 50.5	-20° 51.8	-20° 53.0	-20° 54.1	-20° 55.0	-20° 55.8	-20° 56.4	-20° 56.9	-20° 57.2	-20° 57.4	-20° 57.4	-0.7	60.0
Чт 31	145° 19.2	159° 42.0	174° 04.8	188° 27.6	202° 50.4	217° 13.2	231° 35.9	245° 58.7	260° 21.5	274° 44.3	289° 07.0	+22.8	16.5
	-20° 39.6	-20° 37.2	-20° 34.7	-20° 32.0	-20° 29.1	-20° 26.1	-20° 22.9	-20° 19.6	-20° 16.2	-20° 12.5	-20° 08.8	+3.1	60.7

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 4 19h01 — Последняя четв.: 11 11h49 — Новолуние: 19 13h40 — Первая четв.: 27 10h34

СОЛНЦЕ

Август 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	178° 23.8 18° 06.6	193° 23.9 18° 06.0	208° 23.9 18° 05.3	223° 23.9 18° 04.7	238° 24.0 18° 04.1	253° 24.0 18° 03.5	88° 24.5 17° 55.3	103° 24.6 17° 54.6	118° 24.6 17° 54.0	133° 24.6 17° 53.4	148° 24.7 17° 52.7	163° 24.7 17° 52.1	+0.0 -0.6
Сб 2	178° 24.8 17° 51.5	193° 24.8 17° 50.8	208° 24.9 17° 50.2	223° 24.9 17° 49.6	238° 25.0 17° 48.9	253° 25.0 17° 48.3	88° 25.6 17° 39.9	103° 25.6 17° 39.3	118° 25.7 17° 38.6	133° 25.7 17° 38.0	148° 25.8 17° 37.3	163° 25.8 17° 36.7	+0.0 -0.6
Вс 3	178° 25.9 17° 36.1	193° 25.9 17° 35.4	208° 26.0 17° 34.8	223° 26.0 17° 34.1	238° 26.1 17° 33.5	253° 26.1 17° 32.8	88° 26.8 17° 24.3	103° 26.9 17° 23.7	118° 26.9 17° 23.0	133° 27.0 17° 22.3	148° 27.0 17° 21.7	163° 27.1 17° 21.0	+0.0 -0.6
Пн 4	178° 27.1 17° 20.4	193° 27.2 17° 19.7	208° 27.3 17° 19.0	223° 27.3 17° 18.4	238° 27.4 17° 17.7	253° 27.4 17° 17.1	88° 28.2 17° 08.4	103° 28.2 17° 07.7	118° 28.3 17° 07.1	133° 28.4 17° 06.4	148° 28.4 17° 05.7	163° 28.5 17° 05.1	+0.1 -0.7
Вт 5	178° 28.6 17° 04.4	193° 28.6 17° 03.7	208° 28.7 17° 03.0	223° 28.7 17° 02.4	238° 28.8 17° 01.7	253° 28.9 17° 01.0	88° 29.7 16° 52.2	103° 29.8 16° 51.5	118° 29.8 16° 50.9	133° 29.9 16° 50.2	148° 30.0 16° 49.5	163° 30.0 16° 48.8	+0.1 -0.7
Ср 6	178° 30.1 16° 48.1	193° 30.2 16° 47.5	208° 30.2 16° 46.8	223° 30.3 16° 46.1	238° 30.4 16° 45.4	253° 30.5 16° 44.7	88° 31.4 16° 35.8	103° 31.4 16° 35.1	118° 31.5 16° 34.4	133° 31.6 16° 33.7	148° 31.7 16° 33.0	163° 31.7 16° 32.3	+0.1 -0.7
Чт 7	178° 31.8 16° 31.6	193° 31.9 16° 30.9	208° 32.0 16° 30.2	223° 32.0 16° 29.5	238° 32.1 16° 28.8	253° 32.2 16° 28.1	88° 33.2 16° 19.0	103° 33.3 16° 18.3	118° 33.3 16° 17.6	133° 33.4 16° 16.9	148° 33.5 16° 16.2	163° 33.6 16° 15.5	+0.1 -0.7
Пт 8	178° 33.7 16° 14.8	193° 33.7 16° 14.1	208° 33.8 16° 13.4	223° 33.9 16° 12.7	238° 34.0 16° 12.0	253° 34.1 16° 11.3	88° 35.1 16° 02.1	103° 35.2 16° 01.3	118° 35.3 16° 00.6	133° 35.4 15° 59.9	148° 35.5 15° 59.2	163° 35.6 15° 58.5	+0.1 -0.7
Сб 9	178° 35.7 15° 57.8	193° 35.7 15° 57.0	208° 35.8 15° 56.3	223° 35.9 15° 55.6	238° 36.0 15° 54.9	253° 36.1 15° 54.2	88° 37.2 15° 44.8	103° 37.3 15° 44.1	118° 37.4 15° 43.4	133° 37.5 15° 42.6	148° 37.6 15° 41.9	163° 37.7 15° 41.2	+0.1 -0.7
Вс 10	178° 37.8 15° 40.5	193° 37.9 15° 39.7	208° 38.0 15° 39.0	223° 38.1 15° 38.3	238° 38.2 15° 37.5	253° 38.2 15° 36.8	88° 39.5 15° 27.3	103° 39.6 15° 26.6	118° 39.7 15° 25.8	133° 39.8 15° 25.1	148° 39.9 15° 24.4	163° 40.0 15° 23.6	+0.1 -0.7
Пн 11	178° 40.1 15° 22.9	193° 40.2 15° 22.2	208° 40.3 15° 21.4	223° 40.3 15° 20.7	238° 40.4 15° 19.9	253° 40.5 15° 19.2	88° 41.8 15° 09.6	103° 42.0 15° 08.8	118° 42.1 15° 08.1	133° 42.2 15° 07.3	148° 42.3 15° 06.6	163° 42.4 15° 05.8	+0.1 -0.7
Вт 12	178° 42.5 15° 05.1	193° 42.6 15° 04.3	208° 42.7 15° 03.6	223° 42.8 15° 02.8	238° 42.9 15° 02.1	253° 43.0 15° 01.3	88° 44.4 14° 51.6	103° 44.5 14° 50.8	118° 44.6 14° 50.1	133° 44.7 14° 49.3	148° 44.8 14° 48.5	163° 44.9 14° 47.8	+0.1 -0.7
Ср 13	178° 45.0 14° 47.0	193° 45.1 14° 46.3	208° 45.2 14° 45.5	223° 45.3 14° 44.8	238° 45.4 14° 44.0	253° 45.6 14° 43.2	88° 47.0 14° 33.3	103° 47.1 14° 32.6	118° 47.2 14° 31.8	133° 47.3 14° 31.0	148° 47.5 14° 30.3	163° 47.6 14° 29.5	+0.1 -0.8
Чт 14	178° 47.7 14° 28.7	193° 47.8 14° 28.0	208° 47.9 14° 27.2	223° 48.0 14° 26.4	238° 48.1 14° 25.7	253° 48.3 14° 24.9	88° 49.8 14° 14.9	103° 49.9 14° 14.1	118° 50.0 14° 13.3	133° 50.1 14° 12.5	148° 50.3 14° 11.8	163° 50.4 14° 11.0	+0.1 -0.8
Пт 15	178° 50.5 14° 10.2	193° 50.6 14° 09.4	208° 50.7 14° 08.7	223° 50.9 14° 07.9	238° 51.0 14° 07.1	253° 51.1 14° 06.3	88° 52.7 13° 56.2	103° 52.8 13° 55.4	118° 52.9 13° 54.6	133° 53.1 13° 53.8	148° 53.2 13° 53.0	163° 53.3 13° 52.3	+0.1 -0.8
Сб 16	178° 53.4 13° 51.5	193° 53.6 13° 50.7	208° 53.7 13° 49.9	223° 53.8 13° 49.1	238° 54.0 13° 48.3	253° 54.1 13° 47.5	88° 55.7 13° 37.3	103° 55.9 13° 36.5	118° 56.0 13° 35.7	133° 56.1 13° 34.9	148° 56.3 13° 34.1	163° 56.4 13° 33.3	+0.1 -0.8
Вс 17	178° 56.5 13° 32.5	193° 56.7 13° 31.7	208° 56.8 13° 30.9	223° 56.9 13° 30.1	238° 57.0 13° 29.3	253° 57.2 13° 28.5	88° 58.9 13° 18.1	103° 59.0 13° 17.3	118° 59.2 13° 16.5	133° 59.3 13° 15.7	148° 59.5 13° 14.9	163° 59.6 13° 14.1	+0.1 -0.8
Пн 18	178° 59.7 13° 13.3	193° 59.9 13° 12.5	209° 00.0 13° 11.7	224° 00.1 13° 10.9	239° 00.3 13° 10.1	254° 00.4 13° 09.3	89° 02.2 12° 58.8	104° 02.4 12° 58.0	119° 02.5 12° 57.2	134° 02.6 12° 56.4	149° 02.8 12° 55.6	164° 02.9 12° 54.8	+0.1 -0.8
Вт 19	179° 03.1 12° 53.9	194° 03.2 12° 53.1	209° 03.3 12° 52.3	224° 03.5 12° 51.5	239° 03.6 12° 50.7	254° 03.8 12° 49.9	89° 05.6 12° 39.3	104° 05.8 12° 38.4	119° 05.9 12° 37.6	134° 06.1 12° 36.8	149° 06.2 12° 36.0	164° 06.4 12° 35.2	+0.1 -0.8
Ср 20	179° 06.5 12° 34.3	194° 06.7 12° 33.5	209° 06.8 12° 32.7	224° 07.0 12° 31.9	239° 07.1 12° 31.1	254° 07.2 12° 30.2	89° 09.2 12° 19.5	104° 09.3 12° 18.7	119° 09.5 12° 17.9	134° 09.6 12° 17.0	149° 09.8 12° 16.2	164° 09.9 12° 15.4	+0.1 -0.8
Чт 21	179° 10.1 12° 14.6	194° 10.2 12° 13.7	209° 10.4 12° 12.9	224° 10.5 12° 12.1	239° 10.7 12° 11.2	254° 10.8 12° 10.4	89° 12.8 11° 59.6	104° 13.0 11° 58.8	119° 13.2 11° 57.9	134° 13.3 11° 57.1	149° 13.5 11° 56.2	164° 13.6 11° 55.4	+0.2 -0.8
Пт 22	179° 13.8 11° 54.6	194° 13.9 11° 53.7	209° 14.1 11° 52.9	224° 14.3 11° 52.1	239° 14.4 11° 51.2	254° 14.6 11° 50.4	89° 16.6 11° 39.5	104° 16.8 11° 38.6	119° 16.9 11° 37.8	134° 17.1 11° 36.9	149° 17.3 11° 36.1	164° 17.4 11° 35.2	+0.2 -0.8
Сб 23	179° 17.6 11° 34.4	194° 17.8 11° 33.6	209° 17.9 11° 32.7	224° 18.1 11° 31.9	239° 18.2 11° 31.0	254° 18.4 11° 30.2	89° 20.5 11° 19.2	104° 20.7 11° 18.3	119° 20.9 11° 17.5	134° 21.0 11° 16.6	149° 21.2 11° 15.8	164° 21.4 11° 14.9	+0.2 -0.8
Вс 24	179° 21.5 11° 14.1	194° 21.7 11° 13.2	209° 21.9 11° 12.4	224° 22.0 11° 11.5	239° 22.2 11° 10.6	254° 22.4 11° 09.8	89° 24.5 10° 58.7	104° 24.7 10° 57.8	119° 24.9 10° 57.0	134° 25.0 10° 56.1	149° 25.2 10° 55.2	164° 25.4 10° 54.4	+0.2 -0.9
Пн 25	179° 25.6 10° 53.5	194° 25.7 10° 52.7	209° 25.9 10° 51.8	224° 26.1 10° 50.9	239° 26.2 10° 50.1	254° 26.4 10° 49.2	89° 28.7 10° 38.0	104° 28.8 10° 37.2	119° 29.0 10° 36.3	134° 29.2 10° 35.4	149° 29.4 10° 34.6	164° 29.5 10° 33.7	+0.2 -0.9
Вт 26	179° 29.7 10° 32.8	194° 29.9 10° 32.0	209° 30.1 10° 31.1	224° 30.2 10° 30.2	239° 30.4 10° 29.4	254° 30.6 10° 28.5	89° 32.9 10° 17.2	104° 33.1 10° 16.3	119° 33.2 10° 15.5	134° 33.4 10° 14.6	149° 33.6 10° 13.7	164° 33.8 10° 12.8	+0.2 -0.9
Ср 27	179° 34.0 10° 12.0	194° 34.1 10° 11.1	209° 34.3 10° 10.2	224° 34.5 10° 09.3	239° 34.7 10° 08.5	254° 34.9 10° 07.6	89° 37.2 9° 56.2	104° 37.4 9° 55.3	119° 37.6 9° 54.5	134° 37.8 9° 53.6	149° 37.9 9° 52.7	164° 38.1 9° 51.8	+0.2 -0.9
Чт 28	179° 38.3 9° 50.9	194° 38.5 9° 50.1	209° 38.7 9° 49.2	224° 38.9 9° 48.3	239° 39.0 9° 47.4	254° 39.2 9° 46.5	89° 41.6 9° 35.1	104° 41.8 9° 34.2	119° 42.0 9° 33.3	134° 42.2 9° 32.4	149° 42.4 9° 31.5	164° 42.6 9° 30.6	+0.2 -0.9
Пт 29	179° 42.8 9° 29.8	194° 42.9 9° 28.9	209° 43.1 9° 28.0	224° 43.3 9° 27.1	239° 43.5 9° 26.2	254° 43.7 9° 25.3	89° 46.2 9° 13.8	104° 46.3 9° 12.9	119° 46.5 9° 12.0	134° 46.7 9° 11.1	149° 46.9 9° 10.2	164° 47.1 9° 09.3	+0.2 -0.9
Сб 30	179° 47.3 9° 08.4	194° 47.5 9° 07.5	209° 47.7 9° 06.7	224° 47.9 9° 05.8	239° 48.1 9° 04.9	254° 48.3 9° 04.0	89° 50.8 8° 52.3	104° 51.0 8° 51.4	119° 51.1 8° 50.6	134° 51.3 8° 49.7	149° 51.5 8° 48.8	164° 51.7 8° 47.9	+0.2 -0.9
Вс 31	179° 51.9 8° 47.0	194° 52.1 8° 46.1	209° 52.3 8° 45.2	224° 52.5 8° 44.3	239° 52.7 8° 43.4	254° 52.9 8° 42.5	89° 55.5 8° 30.8	104° 55.6 8° 29.9	119° 55.8 8° 29.0	134° 56.0 8° 28.1	149° 56.2 8° 27.2	164° 56.4 8° 26.3	+0.2 -0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2031

Д	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	Δ'/h	R/p
Пт 1	72° 55.3 -19° 22.9	87° 18.2 -19° 17.5	101° 41.2 -19° 12.0	116° 04.2 -19° 06.3	130° 27.2 -19° 00.5	144° 50.2 -18° 54.5	159° 13.2 -18° 48.4	173° 36.3 -18° 42.1	187° 59.4 -18° 35.8	202° 22.6 -18° 29.2	216° 45.8 -18° 22.6	+23.0 +6.0	16.6 61.0
Сб 2	72° 38.7 -16° 26.9	87° 02.7 -16° 18.2	101° 26.6 -16° 09.4	115° 50.7 -16° 00.5	130° 14.8 -15° 51.4	144° 38.9 -15° 42.3	159° 03.1 -15° 33.0	173° 27.4 -15° 23.6	187° 51.7 -15° 14.2	202° 16.1 -15° 04.6	216° 40.5 -14° 54.9	+24.2 +9.2	16.7 61.2
○ Вс 3	72° 54.9 -12° 18.0	87° 20.4 -12° 06.9	101° 46.0 -11° 55.6	116° 11.6 -11° 44.4	130° 37.3 -11° 33.0	145° 03.0 -11° 21.5	159° 28.9 -11° 10.0	173° 54.8 -10° 58.5	188° 20.7 -10° 46.8	202° 46.7 -10° 35.1	217° 12.8 -10° 23.3	+25.8 +11.5	16.6 61.0
Пн 4	73° 52.2 -7° 20.5	88° 19.4 -7° 08.0	102° 46.6 -6° 55.4	117° 13.8 -6° 42.8	131° 41.2 -6° 30.2	146° 08.6 -6° 17.5	160° 36.0 -6° 04.8	175° 03.5 -5° 52.1	189° 31.1 -5° 39.4	203° 58.7 -5° 26.6	218° 26.4 -5° 13.9	+27.4 +12.7	16.5 60.4
Вт 5	75° 28.5 -2° 00.9	89° 57.0 -1° 48.0	104° 25.6 -1° 35.1	118° 54.3 -1° 22.2	133° 23.0 -1° 09.4	147° 51.7 -0° 56.5	162° 20.5 -0° 43.7	176° 49.3 -0° 30.8	191° 18.2 -0° 18.0	205° 47.1 -0° 05.2	220° 16.1 0° 07.6	+28.8 +12.9	16.3 59.7
Ср 6	77° 35.3 3° 16.7	92° 04.9 3° 29.0	106° 34.5 3° 41.3	121° 04.1 3° 53.6	135° 33.8 4° 05.9	150° 03.4 4° 18.1	164° 33.2 4° 30.3	179° 02.9 4° 42.4	193° 32.7 4° 54.5	208° 02.5 5° 06.5	222° 32.3 5° 18.5	+29.7 +12.2	16.0 58.7
Чт 7	80° 02.3 8° 12.4	94° 32.4 8° 23.6	109° 02.6 8° 34.7	123° 32.8 8° 45.7	138° 03.0 8° 56.7	152° 33.2 9° 07.6	167° 03.4 9° 18.4	181° 33.7 9° 29.2	196° 03.9 9° 39.9	210° 34.2 9° 50.6	225° 04.5 10° 01.1	+30.2 +10.9	15.7 57.7
Пт 8	82° 39.6 12° 31.5	97° 10.0 12° 40.9	111° 40.4 12° 50.3	126° 10.8 12° 59.6	140° 41.2 13° 08.8	155° 11.6 13° 17.9	169° 42.0 13° 26.9	184° 12.5 13° 35.9	198° 42.9 13° 44.8	213° 13.3 13° 53.6	227° 43.7 14° 02.3	+30.4 +9.1	15.5 56.8
Сб 9	85° 20.0 16° 03.1	99° 50.5 16° 10.5	114° 20.9 16° 17.7	128° 51.3 16° 24.9	143° 21.7 16° 32.0	157° 52.1 16° 39.0	172° 22.5 16° 45.9	186° 52.9 16° 52.7	201° 23.3 16° 59.5	215° 53.7 17° 06.1	230° 24.1 17° 12.7	+30.4 +7.0	15.2 55.9
◑ Вс 10	87° 59.8 18° 39.8	102° 30.2 18° 44.8	117° 00.5 18° 49.8	131° 30.9 18° 54.6	146° 01.2 18° 59.4	160° 31.6 19° 04.0	175° 02.0 19° 08.6	189° 32.3 19° 13.1	204° 02.7 19° 17.5	218° 33.0 19° 21.7	233° 03.4 19° 25.9	+30.4 +4.6	15.0 55.2
Пн 11	90° 38.8 20° 16.8	105° 09.2 20° 19.4	119° 39.6 20° 21.9	134° 10.0 20° 24.3	148° 40.4 20° 26.7	163° 10.8 20° 28.9	177° 41.2 20° 31.0	192° 11.6 20° 33.0	206° 42.0 20° 34.9	221° 12.5 20° 36.7	235° 42.9 20° 38.4	+30.4 +2.2	14.9 54.6
Вт 12	93° 20.4 20° 52.2	107° 51.0 20° 52.3	122° 21.5 20° 52.4	136° 52.2 20° 52.3	151° 22.8 20° 52.1	165° 53.4 20° 51.9	180° 24.1 20° 51.5	194° 54.7 20° 51.1	209° 25.4 20° 50.5	223° 56.1 20° 49.9	238° 26.8 20° 49.1	+30.6 -0.3	14.8 54.3
Ср 13	96° 09.4 20° 26.4	110° 40.4 20° 24.1	125° 11.5 20° 21.7	139° 42.5 20° 19.2	154° 13.6 20° 16.7	168° 44.6 20° 14.0	183° 15.8 20° 11.3	197° 46.9 20° 08.5	212° 18.0 20° 05.6	226° 49.2 20° 02.5	241° 20.4 19° 59.4	+31.1 -2.7	14.7 54.0
Чт 14	99° 11.3 19° 02.2	113° 42.9 18° 57.6	128° 14.5 18° 53.0	142° 46.1 18° 48.4	157° 17.8 18° 43.6	171° 49.5 18° 38.7	186° 21.2 18° 33.8	200° 53.0 18° 28.8	215° 24.8 18° 23.7	229° 56.6 18° 18.5	244° 28.4 18° 13.2	+31.7 -4.9	14.7 54.0
Пт 15	102° 29.4 16° 44.8	117° 01.6 16° 38.2	131° 34.0 16° 31.7	146° 06.3 16° 25.0	160° 38.7 16° 18.3	175° 11.1 16° 11.5	189° 43.5 16° 04.6	204° 15.9 15° 57.7	218° 48.4 15° 50.6	233° 20.9 15° 43.6	247° 53.4 15° 36.4	+32.4 -6.8	14.7 54.0
Сб 16	106° 04.5 13° 41.1	120° 37.5 13° 32.9	135° 10.4 13° 24.7	149° 43.4 13° 16.4	164° 16.4 13° 08.0	178° 49.5 12° 59.6	193° 22.5 12° 51.1	207° 55.6 12° 42.5	222° 28.7 12° 33.9	237° 01.8 12° 25.3	251° 35.0 12° 16.6	+33.0 -8.5	14.8 54.2
Вс 17	109° 54.5 9° 59.7	124° 27.9 9° 50.1	139° 01.4 9° 40.6	153° 34.8 9° 31.0	168° 08.3 9° 21.3	182° 41.8 9° 11.6	197° 15.3 9° 01.9	211° 48.8 8° 52.1	226° 22.4 8° 42.3	240° 55.9 8° 32.4	255° 29.5 8° 22.5	+33.5 -9.7	14.8 54.4
● Пн 18	113° 53.8 5° 49.7	128° 27.5 5° 39.3	143° 01.2 5° 28.8	157° 34.9 5° 18.3	172° 08.5 5° 07.8	186° 42.2 4° 57.2	201° 15.9 4° 46.6	215° 49.6 4° 36.0	230° 23.2 4° 25.4	244° 56.9 4° 14.7	259° 30.6 4° 04.0	+33.7 -10.6	14.9 54.8
Вт 19	117° 54.9 1° 21.6	132° 28.5 1° 10.6	147° 02.0 0° 59.6	161° 35.6 0° 48.7	176° 09.1 0° 37.7	190° 42.6 0° 26.7	205° 16.0 0° 15.7	219° 49.5 0° 04.7	234° 22.9 -0° 06.3	248° 56.4 -0° 17.3	263° 29.8 -0° 28.4	+33.5 -11.0	15.1 55.2
Ср 20	121° 48.3 -3° 13.8	136° 21.3 -3° 24.8	150° 54.3 -3° 35.8	165° 27.2 -3° 46.8	180° 00.2 -3° 57.7	194° 33.1 -4° 08.7	209° 05.9 -4° 19.6	223° 38.7 -4° 30.6	238° 11.5 -4° 41.5	252° 44.3 -4° 52.4	267° 17.0 -5° 03.3	+32.9 -11.0	15.2 55.7
Чт 21	125° 23.1 -7° 44.3	139° 55.2 -7° 54.9	154° 27.2 -8° 05.4	168° 59.1 -8° 15.9	183° 31.0 -8° 26.3	198° 02.9 -8° 36.7	212° 34.7 -8° 47.1	227° 06.5 -8° 57.5	241° 38.2 -9° 07.8	256° 09.8 -9° 18.1	270° 41.4 -9° 28.3	+31.8 -10.4	15.3 56.2
Пт 22	139° 55.2 -7° 54.9	154° 27.2 -8° 05.4	168° 59.1 -8° 15.9	183° 31.0 -8° 26.3	198° 02.9 -8° 36.7	212° 34.7 -8° 47.1	227° 06.5 -8° 57.5	241° 38.2 -9° 07.8	256° 09.8 -9° 18.1	270° 41.4 -9° 28.3	285° 13.0 -9° 38.5	+31.8 -10.4	15.3 56.2
Сб 23	142° 59.4 -12° 06.4	157° 30.0 -12° 15.8	172° 00.5 -12° 25.3	186° 31.0 -12° 34.6	201° 01.4 -12° 43.9	215° 31.7 -12° 53.2	230° 02.0 -13° 02.4	244° 32.3 -13° 11.5	259° 02.4 -13° 20.6	273° 32.5 -13° 29.6	288° 02.5 -13° 38.5	+30.3 -9.2	15.5 56.8
Вс 24	145° 24.4 -15° 44.6	159° 53.3 -15° 52.4	174° 22.1 -16° 00.1	188° 50.9 -16° 07.8	203° 19.6 -16° 15.3	217° 48.2 -16° 22.8	232° 16.7 -16° 30.2	246° 45.1 -16° 37.5	261° 13.5 -16° 44.8	275° 41.8 -16° 51.9	290° 10.1 -16° 59.0	+28.6 -7.4	15.7 57.5
◐ Пн 25	147° 04.7 -18° 33.5	161° 31.8 -18° 39.0	175° 58.8 -18° 44.4	190° 25.7 -18° 49.7	204° 52.6 -18° 54.9	219° 19.4 -19° 00.0	233° 46.1 -19° 05.0	248° 12.7 -19° 09.8	262° 39.3 -19° 14.6	277° 05.8 -19° 19.2	291° 32.2 -19° 23.7	+26.7 -5.0	15.9 58.2
Вт 26	148° 01.1 -20° 17.3	162° 26.6 -20° 19.9	176° 51.9 -20° 22.3	191° 17.3 -20° 24.7	205° 42.6 -20° 26.9	220° 07.8 -20° 28.9	234° 33.0 -20° 30.9	248° 58.1 -20° 32.7	263° 23.2 -20° 34.4	277° 48.2 -20° 35.9	292° 13.2 -20° 37.3	+25.2 -2.0	16.0 58.8
Ср 27	148° 23.0 -20° 42.2	162° 47.4 -20° 41.4	177° 11.8 -20° 40.5	191° 36.1 -20° 39.5	206° 00.4 -20° 38.3	220° 24.7 -20° 36.9	234° 48.9 -20° 35.4	249° 13.2 -20° 33.8	263° 37.4 -20° 32.0	278° 01.6 -20° 30.1	292° 25.8 -20° 28.1	+24.3 +1.4	16.2 59.5
Чт 28	148° 27.7 -19° 40.5	162° 51.8 -19° 36.2	177° 15.9 -19° 31.8	191° 40.1 -19° 27.2	206° 04.2 -19° 22.5	220° 28.3 -19° 17.6	234° 52.5 -19° 12.7	249° 16.7 -19° 07.5	263° 40.9 -19° 02.3	278° 05.1 -18° 56.9	292° 29.3 -18° 51.4	+24.2 +4.9	16.4 60.0
Пт 29	148° 35.4 -17° 13.0	163° 00.0 -17° 05.5	177° 24.7 -16° 57.8	191° 49.4 -16° 50.0	206° 14.1 -16° 42.1	220° 38.9 -16° 34.0	235° 03.7 -16° 25.9	249° 28.6 -16° 17.6	263° 53.4 -16° 09.2	278° 18.4 -16° 00.7	292° 43.3 -15° 52.1	+24.8 +8.1	16.5 60.4
Сб 30	149° 03.0 -13° 30.6	163° 28.7 -13° 20.4	177° 54.4 -13° 10.1	192° 20.2 -12° 59.7	206° 46.0 -12° 49.2	221° 11.9 -12° 38.6	235° 37.8 -12° 28.0	250° 03.7 -12° 17.3	264° 29.8 -12° 06.5	278° 55.8 -11° 55.6	293° 21.9 -11° 44.6	+25.9 +10.6	16.5 60.6
Вс 31	149° 59.5 -8° 52.0	164° 26.4 -8° 40.0	178° 53.4 -8° 28.0	193° 20.4 -8° 15.9	207° 47.4 -8° 03.7	222° 14.5 -7° 51.5	236° 41.6 -7° 39.3	251° 08.8 -7° 27.0	265° 36.1 -7° 14.7	280° 03.3 -7° 02.4	294° 30.6 -6° 50.0	+27.1 +12.2	16.5 60.4

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 3 01h45 — Последняя четв.: 10 00h23 — Новолуние: 18 04h32 — Первая четв.: 25 18h39

СОЛНЦЕ

Сентябрь 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	179° 56.6 8° 25.4	194° 56.8 8° 24.4	209° 57.0 8° 23.5	224° 57.2 8° 22.6	239° 57.4 8° 21.7	254° 57.6 8° 20.8	90° 00.2 8° 09.1	105° 00.4 8° 08.1	120° 00.6 8° 07.2	135° 00.8 8° 06.3	150° 01.0 8° 05.4	165° 01.2 8° 04.5	+0.2 -0.9
Вт 2	180° 01.4 8° 03.6	195° 01.6 8° 02.7	210° 01.8 8° 01.8	225° 02.0 8° 00.9	240° 02.2 8° 00.0	255° 02.4 7° 59.1	90° 05.1 7° 47.2	105° 05.3 7° 46.3	120° 05.5 7° 45.4	135° 05.7 7° 44.5	150° 05.9 7° 43.6	165° 06.1 7° 42.6	+0.2 -0.9
Ср 3	180° 06.3 7° 41.7	195° 06.5 7° 40.8	210° 06.7 7° 39.9	225° 06.9 7° 39.0	240° 07.1 7° 38.1	255° 07.3 7° 37.2	90° 10.0 7° 25.2	105° 10.2 7° 24.3	120° 10.4 7° 23.4	135° 10.6 7° 22.5	150° 10.8 7° 21.6	165° 11.0 7° 20.6	+0.2 -0.9
Чт 4	180° 11.2 7° 19.7	195° 11.4 7° 18.8	210° 11.6 7° 17.9	225° 11.8 7° 17.0	240° 12.0 7° 16.0	255° 12.2 7° 15.1	90° 14.9 7° 03.1	105° 15.2 7° 02.2	120° 15.4 7° 01.3	135° 15.6 7° 00.4	150° 15.8 6° 59.5	165° 16.0 6° 58.5	+0.2 -0.9
Пт 5	180° 16.2 6° 57.6	195° 16.4 6° 56.7	210° 16.6 6° 55.8	225° 16.8 6° 54.8	240° 17.0 6° 53.9	255° 17.2 6° 53.0	90° 20.0 6° 40.9	105° 20.2 6° 40.0	120° 20.4 6° 39.1	135° 20.6 6° 38.2	150° 20.8 6° 37.2	165° 21.0 6° 36.3	+0.2 -0.9
Сб 6	180° 21.2 6° 35.4	195° 21.4 6° 34.4	210° 21.7 6° 33.5	225° 21.9 6° 32.6	240° 22.1 6° 31.6	255° 22.3 6° 30.7	90° 25.1 6° 18.6	105° 25.3 6° 17.7	120° 25.5 6° 16.8	135° 25.7 6° 15.8	150° 25.9 6° 14.9	165° 26.1 6° 14.0	+0.2 -0.9
Вс 7	180° 26.3 6° 13.0	195° 26.5 6° 12.1	210° 26.8 6° 11.2	225° 27.0 6° 10.2	240° 27.2 6° 09.3	255° 27.4 6° 08.4	90° 30.2 5° 56.2	105° 30.4 5° 55.3	120° 30.6 5° 54.3	135° 30.8 5° 53.4	150° 31.0 5° 52.4	165° 31.3 5° 51.5	+0.2 -0.9
Пн 8	180° 31.5 5° 50.6	195° 31.7 5° 49.6	210° 31.9 5° 48.7	225° 32.1 5° 47.8	240° 32.3 5° 46.8	255° 32.5 5° 45.9	90° 35.3 5° 33.7	105° 35.6 5° 32.7	120° 35.8 5° 31.8	135° 36.0 5° 30.8	150° 36.2 5° 29.9	165° 36.4 5° 29.0	+0.2 -0.9
Вт 9	180° 36.6 5° 28.0	195° 36.9 5° 27.1	210° 37.1 5° 26.1	225° 37.3 5° 25.2	240° 37.5 5° 24.2	255° 37.7 5° 23.3	90° 40.6 5° 11.0	105° 40.8 5° 10.1	120° 41.0 5° 09.2	135° 41.2 5° 08.2	150° 41.4 5° 07.3	165° 41.6 5° 06.3	+0.2 -0.9
Ср 10	180° 41.9 5° 05.4	195° 42.1 5° 04.4	210° 42.3 5° 03.5	225° 42.5 5° 02.5	240° 42.7 5° 01.6	255° 43.0 5° 00.6	90° 45.8 4° 48.3	105° 46.0 4° 47.4	120° 46.2 4° 46.4	135° 46.5 4° 45.5	150° 46.7 4° 44.5	165° 46.9 4° 43.6	+0.2 -0.9
Чт 11	180° 47.1 4° 42.6	195° 47.3 4° 41.7	210° 47.5 4° 40.7	225° 47.8 4° 39.8	240° 48.0 4° 38.8	255° 48.2 4° 37.9	90° 51.1 4° 25.5	105° 51.3 4° 24.6	120° 51.5 4° 23.6	135° 51.7 4° 22.7	150° 51.9 4° 21.7	165° 52.2 4° 20.8	+0.2 -0.9
Пт 12	180° 52.4 4° 19.8	195° 52.6 4° 18.9	210° 52.8 4° 17.9	225° 53.0 4° 17.0	240° 53.3 4° 16.0	255° 53.5 4° 15.1	90° 56.4 4° 02.7	105° 56.6 4° 01.7	120° 56.8 4° 00.8	135° 57.0 3° 59.8	150° 57.2 3° 58.8	165° 57.5 3° 57.9	+0.2 -1.0
Сб 13	180° 57.7 3° 56.9	195° 57.9 3° 56.0	210° 58.1 3° 55.0	225° 58.3 3° 54.1	240° 58.6 3° 53.1	255° 58.8 3° 52.2	91° 01.7 3° 39.7	106° 01.9 3° 38.8	121° 02.1 3° 37.8	136° 02.3 3° 36.9	151° 02.6 3° 35.9	166° 02.8 3° 34.9	+0.2 -1.0
Вс 14	181° 03.0 3° 34.0	196° 03.2 3° 33.0	211° 03.4 3° 32.1	226° 03.7 3° 31.1	241° 03.9 3° 30.1	256° 04.1 3° 29.2	91° 07.0 3° 16.7	106° 07.2 3° 15.8	121° 07.4 3° 14.8	136° 07.7 3° 13.8	151° 07.9 3° 12.9	166° 08.1 3° 11.9	+0.2 -1.0
Пн 15	181° 08.3 3° 11.0	196° 08.5 3° 10.0	211° 08.8 3° 09.0	226° 09.0 3° 08.1	241° 09.2 3° 07.1	256° 09.4 3° 06.1	91° 12.3 2° 53.6	106° 12.6 2° 52.7	121° 12.8 2° 51.7	136° 13.0 2° 50.8	151° 13.2 2° 49.8	166° 13.4 2° 48.8	+0.2 -1.0
Вт 16	181° 13.7 2° 47.9	196° 13.9 2° 46.9	211° 14.1 2° 45.9	226° 14.3 2° 45.0	241° 14.6 2° 44.0	256° 14.8 2° 43.1	91° 17.7 2° 30.5	106° 17.9 2° 29.6	121° 18.1 2° 28.6	136° 18.3 2° 27.6	151° 18.6 2° 26.7	166° 18.8 2° 25.7	+0.2 -1.0
Ср 17	181° 19.0 2° 24.7	196° 19.2 2° 23.8	211° 19.5 2° 22.8	226° 19.7 2° 21.8	241° 19.9 2° 20.9	256° 20.1 2° 19.9	91° 23.0 2° 07.3	106° 23.2 2° 06.4	121° 23.5 2° 05.4	136° 23.7 2° 04.4	151° 23.9 2° 03.5	166° 24.1 2° 02.5	+0.2 -1.0
Чт 18	181° 24.4 2° 01.5	196° 24.6 2° 00.6	211° 24.8 1° 59.6	226° 25.0 1° 58.6	241° 25.2 1° 57.7	256° 25.5 1° 56.7	91° 28.4 1° 44.1	106° 28.6 1° 43.2	121° 28.8 1° 42.2	136° 29.0 1° 41.2	151° 29.3 1° 40.3	166° 29.5 1° 39.3	+0.2 -1.0
Пт 19	181° 29.7 1° 38.3	196° 29.9 1° 37.4	211° 30.1 1° 36.4	226° 30.4 1° 35.4	241° 30.6 1° 34.4	256° 30.8 1° 33.5	91° 33.7 1° 20.9	106° 33.9 1° 19.9	121° 34.1 1° 18.9	136° 34.4 1° 18.0	151° 34.6 1° 17.0	166° 34.8 1° 16.0	+0.2 -1.0
Сб 20	181° 35.0 1° 15.1	196° 35.3 1° 14.1	211° 35.5 1° 13.1	226° 35.7 1° 12.1	241° 35.9 1° 11.2	256° 36.1 1° 10.2	91° 39.0 0° 57.6	106° 39.3 0° 56.6	121° 39.5 0° 55.7	136° 39.7 0° 54.7	151° 39.9 0° 53.7	166° 40.1 0° 52.7	+0.2 -1.0
Вс 21	181° 40.4 0° 51.8	196° 40.6 0° 50.8	211° 40.8 0° 49.8	226° 41.0 0° 48.9	241° 41.2 0° 47.9	256° 41.5 0° 46.9	91° 44.3 0° 34.3	106° 44.6 0° 33.3	121° 44.8 0° 32.3	136° 45.0 0° 31.4	151° 45.2 0° 30.4	166° 45.5 0° 29.4	+0.2 -1.0
Пн 22	181° 45.7 0° 28.4	196° 45.9 0° 27.5	211° 46.1 0° 26.5	226° 46.3 0° 25.5	241° 46.6 0° 24.6	256° 46.8 0° 23.6	91° 49.6 0° 10.9	106° 49.9 0° 10.0	121° 50.1 0° 09.0	136° 50.3 0° 08.0	151° 50.5 0° 07.1	166° 50.7 0° 06.1	+0.2 -1.0
Вт 23	181° 51.0 0° 05.1	196° 51.2 0° 04.1	211° 51.4 0° 03.2	226° 51.6 0° 02.2	241° 51.8 0° 01.2	256° 52.1 0° 00.3	91° 54.9 -0° 12.4	106° 55.1 -0° 13.4	121° 55.4 -0° 14.3	136° 55.6 -0° 15.3	151° 55.8 -0° 16.3	166° 56.0 -0° 17.3	+0.2 -1.0
Ср 24	181° 56.2 -0° 18.2	196° 56.4 -0° 19.2	211° 56.7 -0° 20.2	226° 56.9 -0° 21.2	241° 57.1 -0° 22.1	256° 57.3 -0° 23.1	92° 00.2 -0° 35.7	107° 00.4 -0° 36.7	122° 00.6 -0° 37.7	137° 00.8 -0° 38.7	152° 01.0 -0° 39.6	167° 01.3 -0° 40.6	+0.2 -1.0
Чт 25	182° 01.5 -0° 41.6	197° 01.7 -0° 42.6	212° 01.9 -0° 43.5	227° 02.1 -0° 44.5	242° 02.3 -0° 45.5	257° 02.6 -0° 46.5	92° 05.4 -0° 59.1	107° 05.6 -1° 00.1	122° 05.8 -1° 01.1	137° 06.0 -1° 02.0	152° 06.2 -1° 03.0	167° 06.5 -1° 04.0	+0.2 -1.0
Пт 26	182° 06.7 -1° 04.9	197° 06.9 -1° 05.9	212° 07.1 -1° 06.9	227° 07.3 -1° 07.9	242° 07.5 -1° 08.8	257° 07.8 -1° 09.8	92° 10.5 -1° 22.5	107° 10.8 -1° 23.4	122° 11.0 -1° 24.4	137° 11.2 -1° 25.4	152° 11.4 -1° 26.3	167° 11.6 -1° 27.3	+0.2 -1.0
Сб 27	182° 11.8 -1° 28.3	197° 12.1 -1° 29.3	212° 12.3 -1° 30.2	227° 12.5 -1° 31.2	242° 12.7 -1° 32.2	257° 12.9 -1° 33.2	92° 15.7 -1° 45.8	107° 15.9 -1° 46.8	122° 16.1 -1° 47.7	137° 16.3 -1° 48.7	152° 16.5 -1° 49.7	167° 16.7 -1° 50.7	+0.2 -1.0
Вс 28	182° 17.0 -1° 51.6	197° 17.2 -1° 52.6	212° 17.4 -1° 53.6	227° 17.6 -1° 54.6	242° 17.8 -1° 55.5	257° 18.0 -1° 56.5	92° 20.8 -2° 09.1	107° 21.0 -2° 10.1	122° 21.2 -2° 11.1	137° 21.4 -2° 12.0	152° 21.6 -2° 13.0	167° 21.8 -2° 14.0	+0.2 -1.0
Пн 29	182° 22.0 -2° 15.0	197° 22.2 -2° 15.9	212° 22.4 -2° 16.9	227° 22.7 -2° 17.9	242° 22.9 -2° 18.8	257° 23.1 -2° 19.8	92° 25.8 -2° 32.4	107° 26.0 -2° 33.4	122° 26.2 -2° 34.4	137° 26.4 -2° 35.4	152° 26.6 -2° 36.3	167° 26.8 -2° 37.3	+0.2 -1.0
Вт 30	182° 27.0 -2° 38.3	197° 27.2 -2° 39.2	212° 27.4 -2° 40.2	227° 27.7 -2° 41.2	242° 27.9 -2° 42.1	257° 28.1 -2° 43.1	92° 30.7 -2° 55.7	107° 31.0 -2° 56.7	122° 31.2 -2° 57.7	137° 31.4 -2° 58.6	152° 31.6 -2° 59.6	167° 31.8 -3° 00.6	+0.2 -1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2031

	Д	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	Δ'/h	R/p
○	Пн 1	64° 38.5 -4° 57.0	79° 06.3 -4° 44.4	93° 34.1 -4° 31.6	108° 01.9 -4° 18.9	122° 29.8 -4° 06.2	136° 57.7 -3° 53.4	151° 25.7 -3° 40.7	165° 53.7 -3° 27.9	180° 21.8 -3° 15.1	194° 49.8 -3° 02.3	209° 18.0 -2° 49.4	+27.9 +12.8	16.4 60.1
	Вт 2	66° 24.0 0° 22.8	80° 52.6 0° 35.6	95° 21.3 0° 48.3	109° 50.0 1° 01.0	124° 18.8 1° 13.7	138° 47.5 1° 26.4	153° 16.3 1° 39.1	167° 45.2 1° 51.7	182° 14.0 2° 04.3	196° 42.9 2° 16.9	211° 11.8 2° 29.5	+28.8 +12.7	16.2 59.5
	Ср 3	68° 28.0 5° 33.9	82° 57.3 5° 45.9	97° 26.5 5° 57.8	111° 55.8 6° 09.7	126° 25.1 6° 21.5	140° 54.4 6° 33.3	155° 23.7 6° 45.0	169° 53.0 6° 56.7	184° 22.4 7° 08.3	198° 51.7 7° 19.9	213° 21.1 7° 31.4	+29.3 +11.8	16.0 58.7
	Чт 4	70° 43.0 10° 16.7	85° 12.5 10° 27.2	99° 42.0 10° 37.7	114° 11.6 10° 48.0	128° 41.1 10° 58.3	143° 10.7 11° 08.5	157° 40.3 11° 18.7	172° 09.8 11° 28.7	186° 39.4 11° 38.7	201° 09.0 11° 48.6	215° 38.6 11° 58.5	+29.6 +10.2	15.8 57.8
	Пт 5	73° 02.8 14° 16.3	87° 32.4 14° 24.9	102° 02.1 14° 33.3	116° 31.7 14° 41.6	131° 01.4 14° 49.9	145° 31.0 14° 58.1	160° 00.7 15° 06.1	174° 30.3 15° 14.1	189° 00.0 15° 22.0	203° 29.6 15° 29.8	217° 59.3 15° 37.5	+29.6 +8.1	15.5 56.9
	Сб 6	75° 24.4 17° 22.1	89° 54.1 17° 28.3	104° 23.8 17° 34.4	118° 53.5 17° 40.4	133° 23.3 17° 46.3	147° 53.0 17° 52.2	162° 22.7 17° 57.9	176° 52.4 18° 03.5	191° 22.1 18° 09.0	205° 51.9 18° 14.4	220° 21.6 18° 19.8	+29.7 +5.8	15.3 56.0
	Вс 7	77° 48.3 19° 27.6	92° 18.2 19° 31.3	106° 48.0 19° 34.9	121° 17.9 19° 38.5	135° 47.7 19° 41.9	150° 17.6 19° 45.2	164° 47.5 19° 48.4	179° 17.4 19° 51.5	193° 47.3 19° 54.5	208° 17.2 19° 57.4	222° 47.1 20° 00.2	+29.9 +3.3	15.1 55.3
◑	Пн 8	80° 17.6 20° 30.1	94° 47.8 20° 31.3	109° 17.9 20° 32.3	123° 48.1 20° 33.3	138° 18.3 20° 34.2	152° 48.5 20° 35.0	167° 18.8 20° 35.7	181° 49.0 20° 36.3	196° 19.3 20° 36.7	210° 49.6 20° 37.1	225° 19.9 20° 37.4	+30.2 +0.7	14.9 54.7
	Вт 9	82° 57.0 20° 29.8	97° 27.7 20° 28.6	111° 58.4 20° 27.2	126° 29.1 20° 25.7	140° 59.8 20° 24.2	155° 30.5 20° 22.5	170° 01.3 20° 20.7	184° 32.1 20° 18.9	199° 02.9 20° 16.9	213° 33.8 20° 14.9	228° 04.7 20° 12.8	+30.8 -1.7	14.8 54.3
	Ср 10	85° 51.1 19° 29.8	100° 22.4 19° 26.2	114° 53.7 19° 22.5	129° 25.1 19° 18.8	143° 56.5 19° 14.9	158° 27.9 19° 11.0	172° 59.4 19° 07.0	187° 30.8 19° 02.9	202° 02.4 18° 58.7	216° 33.9 18° 54.4	231° 05.5 18° 50.1	+31.4 -4.0	14.8 54.1
	Чт 11	89° 02.5 17° 34.8	103° 34.5 17° 29.1	118° 06.6 17° 23.4	132° 38.7 17° 17.6	147° 10.8 17° 11.7	161° 42.9 17° 05.7	176° 15.1 16° 59.7	190° 47.3 16° 53.6	205° 19.5 16° 47.4	219° 51.8 16° 41.1	234° 24.1 16° 34.8	+32.2 -6.0	14.8 54.1
	Пт 12	92° 31.5 14° 51.1	107° 04.2 14° 43.7	121° 36.9 14° 36.2	136° 09.7 14° 28.6	150° 42.4 14° 20.9	165° 15.2 14° 13.2	179° 48.0 14° 05.4	194° 20.9 13° 57.6	208° 53.7 13° 49.7	223° 26.6 13° 41.7	237° 59.5 13° 33.7	+32.8 -7.7	14.8 54.2
	Сб 13	96° 15.3 11° 26.2	110° 48.5 11° 17.3	125° 21.7 11° 08.3	139° 55.0 10° 59.3	154° 28.2 10° 50.2	169° 01.5 10° 41.0	183° 34.7 10° 31.8	198° 08.0 10° 22.6	212° 41.3 10° 13.3	227° 14.6 10° 04.0	241° 47.9 9° 54.6	+33.3 -9.2	14.9 54.5
	Вс 14	100° 08.7 7° 28.5	114° 42.1 7° 18.4	129° 15.6 7° 08.3	143° 49.0 6° 58.1	158° 22.4 6° 48.0	172° 55.9 6° 37.8	187° 29.3 6° 27.5	202° 02.8 6° 17.2	216° 36.2 6° 06.9	231° 09.6 5° 56.6	245° 43.1 5° 46.2	+33.4 -10.2	15.0 54.8
	Пн 15	104° 04.1 3° 07.2	118° 37.5 2° 56.4	133° 10.8 2° 45.6	147° 44.1 2° 34.8	162° 17.4 2° 23.9	176° 50.7 2° 13.0	191° 24.0 2° 02.2	205° 57.3 1° 51.3	220° 30.5 1° 40.3	235° 03.7 1° 29.4	249° 36.9 1° 18.5	+33.3 -10.9	15.1 55.3
●	Вт 16	107° 52.8 -1° 26.9	122° 25.7 -1° 37.9	136° 58.5 -1° 49.0	151° 31.3 -2° 00.0	166° 04.1 -2° 11.1	180° 36.9 -2° 22.2	195° 09.6 -2° 33.2	209° 42.3 -2° 44.3	224° 15.0 -2° 55.3	238° 47.6 -3° 06.3	253° 20.2 -3° 17.4	+32.7 -11.1	15.2 55.8
	Ср 17	111° 25.0 -6° 01.5	125° 57.0 -6° 12.3	140° 28.9 -6° 23.1	155° 00.9 -6° 33.9	169° 32.7 -6° 44.6	184° 04.6 -6° 55.4	198° 36.4 -7° 06.1	213° 08.1 -7° 16.7	227° 39.8 -7° 27.4	242° 11.4 -7° 38.0	256° 43.0 -7° 48.5	+31.8 -10.7	15.3 56.3
	Чт 18	114° 31.1 -10° 23.1	129° 01.9 -10° 33.0	143° 32.6 -10° 43.0	158° 03.2 -10° 52.9	172° 33.9 -11° 02.7	187° 04.4 -11° 12.5	201° 34.9 -11° 22.2	216° 05.3 -11° 31.9	230° 35.7 -11° 41.5	245° 06.1 -11° 51.1	259° 36.3 -12° 00.6	+30.5 -9.8	15.5 56.8
	Пт 19	117° 03.0 -14° 16.2	131° 32.3 -14° 24.7	146° 01.5 -14° 33.1	160° 30.7 -14° 41.5	174° 59.8 -14° 49.8	189° 28.8 -14° 58.0	203° 57.8 -15° 06.1	218° 26.7 -15° 14.2	232° 55.5 -15° 22.2	247° 24.3 -15° 30.1	261° 53.0 -15° 37.9	+29.0 -8.2	15.6 57.3
	Сб 20	118° 56.1 -17° 24.8	133° 23.8 -17° 31.2	147° 51.4 -17° 37.5	162° 19.0 -17° 43.7	176° 46.5 -17° 49.8	191° 14.0 -17° 55.8	205° 41.4 -18° 01.7	220° 08.7 -18° 07.5	234° 36.0 -18° 13.2	249° 03.2 -18° 18.8	263° 30.4 -18° 24.3	+27.4 -5.9	15.8 57.8
	Вс 21	133° 23.8 -17° 31.2	147° 51.4 -17° 37.5	162° 19.0 -17° 43.7	176° 46.5 -17° 49.8	191° 14.0 -17° 55.8	205° 41.4 -18° 01.7	220° 08.7 -18° 07.5	234° 36.0 -18° 13.2	249° 03.2 -18° 18.8	263° 30.4 -18° 24.3	277° 57.5 -18° 29.7	+27.4 -5.8	15.8 57.8
	Пн 22	134° 37.5 -19° 37.0	149° 03.8 -19° 40.6	163° 30.0 -19° 44.1	177° 56.1 -19° 47.4	192° 22.3 -19° 50.6	206° 48.3 -19° 53.7	221° 14.4 -19° 56.7	235° 40.4 -19° 59.5	250° 06.3 -20° 02.2	264° 32.2 -20° 04.8	278° 58.1 -20° 07.3	+26.1 -3.0	15.9 58.3
	Вт 23	135° 21.8 -20° 29.2	149° 47.1 -20° 29.6	164° 12.5 -20° 29.9	178° 37.8 -20° 30.1	193° 03.1 -20° 30.1	207° 28.3 -20° 30.0	221° 53.6 -20° 29.8	236° 18.8 -20° 29.4	250° 44.0 -20° 28.9	265° 09.2 -20° 28.3	279° 34.4 -20° 27.5	+25.3 +0.2	16.0 58.7
◐	Ср 24	135° 51.1 -20° 00.1	150° 16.2 -19° 57.2	164° 41.3 -19° 54.2	179° 06.4 -19° 51.0	193° 31.6 -19° 47.7	207° 56.7 -19° 44.3	222° 21.8 -19° 40.7	236° 47.0 -19° 37.1	251° 12.1 -19° 33.3	265° 37.3 -19° 29.3	280° 02.5 -19° 25.3	+25.1 +3.5	16.1 59.1
	Чт 25	136° 22.4 -18° 09.1	150° 47.9 -18° 03.1	165° 13.5 -17° 56.9	179° 39.0 -17° 50.6	194° 04.6 -17° 44.2	208° 30.2 -17° 37.6	222° 55.9 -17° 31.0	237° 21.6 -17° 24.2	251° 47.3 -17° 17.3	266° 13.1 -17° 10.3	280° 38.8 -17° 03.2	+25.6 +6.6	16.2 59.4
	Пт 26	137° 09.8 -15° 03.7	151° 36.2 -14° 54.9	166° 02.6 -14° 46.0	180° 29.0 -14° 37.0	194° 55.5 -14° 27.9	209° 22.0 -14° 18.8	223° 48.6 -14° 09.5	238° 15.2 -14° 00.2	252° 41.8 -13° 50.7	267° 08.5 -13° 41.2	281° 35.3 -13° 31.6	+26.5 +9.2	16.3 59.6
	Сб 27	138° 21.1 -10° 57.7	152° 48.4 -10° 46.8	167° 15.8 -10° 35.9	181° 43.3 -10° 24.9	196° 10.8 -10° 13.9	210° 38.3 -10° 02.8	225° 05.9 -9° 51.6	239° 33.5 -9° 40.4	254° 01.2 -9° 29.1	268° 28.8 -9° 17.7	282° 56.6 -9° 06.3	+27.6 +11.1	16.3 59.7
	Вс 28	139° 56.7 -6° 09.6	154° 25.0 -5° 57.5	168° 53.3 -5° 45.3	183° 21.7 -5° 33.2	197° 50.0 -5° 21.0	212° 18.4 -5° 08.7	226° 46.9 -4° 56.5	241° 15.3 -4° 44.2	255° 43.8 -4° 31.9	270° 12.3 -4° 19.6	284° 40.9 -4° 07.2	+28.4 +12.2	16.2 59.6
	Пн 29	141° 52.1 -1° 00.3	156° 21.0 -0° 47.8	170° 49.9 -0° 35.3	185° 18.9 -0° 22.8	199° 47.9 -0° 10.3	214° 16.9 0° 02.2	228° 45.9 0° 14.7	243° 14.9 0° 27.2	257° 43.9 0° 39.6	272° 13.0 0° 52.1	286° 42.1 1° 04.5	+29.0 +12.5	16.2 59.3
○	Вт 30	143° 59.7 4° 08.9	158° 28.9 4° 21.0	172° 58.2 4° 33.0	187° 27.4 4° 45.0	201° 56.7 4° 57.0	216° 26.0 5° 08.9	230° 55.2 5° 20.8	245° 24.5 5° 32.7	259° 53.8 5° 44.5	274° 23.1 5° 56.3	288° 52.4 6° 08.0	+29.3 +11.9	16.0 58.8

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 1 09h20 — Последняя четв.: 8 16h14 — Новолуние: 16 18h46 — Первая четв.: 24 01h19 — Полнолуние: 30 18h57

СОЛНЦЕ

Октябрь 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	182° 32.0 -3° 01.5	197° 32.2 -3° 02.5	212° 32.4 -3° 03.5	227° 32.6 -3° 04.5	242° 32.8 -3° 05.4	257° 33.0 -3° 06.4	92° 35.6 -3° 19.0	107° 35.8 -3° 20.0	122° 36.0 -3° 20.9	137° 36.2 -3° 21.9	152° 36.4 -3° 22.9	167° 36.7 -3° 23.8	+0.2 -1.0
Чт 2	182° 36.9 -3° 24.8	197° 37.1 -3° 25.8	212° 37.3 -3° 26.7	227° 37.5 -3° 27.7	242° 37.7 -3° 28.7	257° 37.9 -3° 29.6	92° 40.5 -3° 42.2	107° 40.7 -3° 43.2	122° 40.9 -3° 44.1	137° 41.1 -3° 45.1	152° 41.3 -3° 46.1	167° 41.5 -3° 47.0	+0.2 -1.0
Пт 3	182° 41.7 -3° 48.0	197° 41.9 -3° 49.0	212° 42.0 -3° 49.9	227° 42.2 -3° 50.9	242° 42.4 -3° 51.9	257° 42.6 -3° 52.8	92° 45.2 -4° 05.4	107° 45.4 -4° 06.4	122° 45.6 -4° 07.3	137° 45.8 -4° 08.3	152° 46.0 -4° 09.2	167° 46.2 -4° 10.2	+0.2 -1.0
Сб 4	182° 46.4 -4° 11.2	197° 46.6 -4° 12.1	212° 46.8 -4° 13.1	227° 47.0 -4° 14.1	242° 47.1 -4° 15.0	257° 47.3 -4° 16.0	92° 49.9 -4° 28.5	107° 50.0 -4° 29.5	122° 50.2 -4° 30.4	137° 50.4 -4° 31.4	152° 50.6 -4° 32.4	167° 50.8 -4° 33.3	+0.2 -1.0
Вс 5	182° 51.0 -4° 34.3	197° 51.2 -4° 35.3	212° 51.4 -4° 36.2	227° 51.6 -4° 37.2	242° 51.8 -4° 38.1	257° 52.0 -4° 39.1	92° 54.4 -4° 51.6	107° 54.6 -4° 52.6	122° 54.8 -4° 53.5	137° 55.0 -4° 54.5	152° 55.2 -4° 55.4	167° 55.4 -4° 56.4	+0.2 -1.0
Пн 6	182° 55.5 -4° 57.4	197° 55.7 -4° 58.3	212° 55.9 -4° 59.3	227° 56.1 -5° 00.2	242° 56.3 -5° 01.2	257° 56.5 -5° 02.2	92° 58.9 -5° 14.6	107° 59.1 -5° 15.6	122° 59.2 -5° 16.5	137° 59.4 -5° 17.5	152° 59.6 -5° 18.5	167° 59.8 -5° 19.4	+0.2 -1.0
Вт 7	183° 00.0 -5° 20.4	198° 00.2 -5° 21.3	213° 00.3 -5° 22.3	228° 00.5 -5° 23.2	243° 00.7 -5° 24.2	258° 00.9 -5° 25.2	93° 03.2 -5° 37.6	108° 03.4 -5° 38.5	123° 03.6 -5° 39.5	138° 03.8 -5° 40.4	153° 04.0 -5° 41.4	168° 04.1 -5° 42.4	+0.2 -1.0
Ср 8	183° 04.3 -5° 43.3	198° 04.5 -5° 44.3	213° 04.7 -5° 45.2	228° 04.8 -5° 46.2	243° 05.0 -5° 47.1	258° 05.2 -5° 48.1	93° 07.5 -6° 00.5	108° 07.7 -6° 01.4	123° 07.8 -6° 02.4	138° 08.0 -6° 03.3	153° 08.2 -6° 04.3	168° 08.4 -6° 05.2	+0.2 -1.0
Чт 9	183° 08.5 -6° 06.2	198° 08.7 -6° 07.1	213° 08.9 -6° 08.1	228° 09.1 -6° 09.0	243° 09.2 -6° 10.0	258° 09.4 -6° 10.9	93° 11.6 -6° 23.3	108° 11.8 -6° 24.2	123° 12.0 -6° 25.2	138° 12.1 -6° 26.1	153° 12.3 -6° 27.1	168° 12.5 -6° 28.0	+0.2 -1.0
Пт 10	183° 12.6 -6° 29.0	198° 12.8 -6° 29.9	213° 13.0 -6° 30.9	228° 13.1 -6° 31.8	243° 13.3 -6° 32.8	258° 13.5 -6° 33.7	93° 15.6 -6° 46.0	108° 15.8 -6° 46.9	123° 16.0 -6° 47.9	138° 16.1 -6° 48.8	153° 16.3 -6° 49.8	168° 16.5 -6° 50.7	+0.2 -0.9
Сб 11	183° 16.6 -6° 51.7	198° 16.8 -6° 52.6	213° 17.0 -6° 53.6	228° 17.1 -6° 54.5	243° 17.3 -6° 55.4	258° 17.5 -6° 56.4	93° 19.5 -7° 08.6	108° 19.7 -7° 09.6	123° 19.9 -7° 10.5	138° 20.0 -7° 11.5	153° 20.2 -7° 12.4	168° 20.3 -7° 13.3	+0.2 -0.9
Вс 12	183° 20.5 -7° 14.3	198° 20.7 -7° 15.2	213° 20.8 -7° 16.2	228° 21.0 -7° 17.1	243° 21.1 -7° 18.0	258° 21.3 -7° 19.0	93° 23.3 -7° 31.2	108° 23.5 -7° 32.1	123° 23.6 -7° 33.1	138° 23.8 -7° 34.0	153° 23.9 -7° 34.9	168° 24.1 -7° 35.9	+0.2 -0.9
Пн 13	183° 24.2 -7° 36.8	198° 24.4 -7° 37.7	213° 24.6 -7° 38.7	228° 24.7 -7° 39.6	243° 24.9 -7° 40.5	258° 25.0 -7° 41.5	93° 27.0 -7° 53.6	108° 27.1 -7° 54.6	123° 27.3 -7° 55.5	138° 27.4 -7° 56.4	153° 27.6 -7° 57.3	168° 27.7 -7° 58.3	+0.2 -0.9
Вт 14	183° 27.9 -7° 59.2	198° 28.0 -8° 00.1	213° 28.1 -8° 01.1	228° 28.3 -8° 02.0	243° 28.4 -8° 02.9	258° 28.6 -8° 03.9	93° 30.5 -8° 15.9	108° 30.6 -8° 16.9	123° 30.8 -8° 17.8	138° 30.9 -8° 18.7	153° 31.0 -8° 19.7	168° 31.2 -8° 20.6	+0.1 -0.9
Ср 15	183° 31.3 -8° 21.5	198° 31.5 -8° 22.4	213° 31.6 -8° 23.4	228° 31.8 -8° 24.3	243° 31.9 -8° 25.2	258° 32.0 -8° 26.1	93° 33.8 -8° 38.2	108° 34.0 -8° 39.1	123° 34.1 -8° 40.0	138° 34.3 -8° 40.9	153° 34.4 -8° 41.9	168° 34.5 -8° 42.8	+0.1 -0.9
Чт 16	183° 34.7 -8° 43.7	198° 34.8 -8° 44.6	213° 34.9 -8° 45.5	228° 35.1 -8° 46.5	243° 35.2 -8° 47.4	258° 35.3 -8° 48.3	93° 37.1 -9° 00.3	108° 37.2 -9° 01.2	123° 37.3 -9° 02.1	138° 37.5 -9° 03.0	153° 37.6 -9° 03.9	168° 37.7 -9° 04.8	+0.1 -0.9
Пт 17	183° 37.9 -9° 05.8	198° 38.0 -9° 06.7	213° 38.1 -9° 07.6	228° 38.2 -9° 08.5	243° 38.4 -9° 09.4	258° 38.5 -9° 10.3	93° 40.2 -9° 22.2	108° 40.3 -9° 23.1	123° 40.4 -9° 24.0	138° 40.5 -9° 25.0	153° 40.7 -9° 25.9	168° 40.8 -9° 26.8	+0.1 -0.9
Сб 18	183° 40.9 -9° 27.7	198° 41.0 -9° 28.6	213° 41.1 -9° 29.5	228° 41.3 -9° 30.4	243° 41.4 -9° 31.3	258° 41.5 -9° 32.2	93° 43.1 -9° 44.0	108° 43.2 -9° 45.0	123° 43.3 -9° 45.9	138° 43.4 -9° 46.8	153° 43.6 -9° 47.7	168° 43.7 -9° 48.6	+0.1 -0.9
Вс 19	183° 43.8 -9° 49.5	198° 43.9 -9° 50.4	213° 44.0 -9° 51.3	228° 44.1 -9° 52.2	243° 44.3 -9° 53.1	258° 44.4 -9° 54.0	93° 45.9 -10° 05.7	108° 46.0 -10° 06.6	123° 46.1 -10° 07.5	138° 46.2 -10° 08.4	153° 46.3 -10° 09.3	168° 46.4 -10° 10.2	+0.1 -0.9
Пн 20	183° 46.5 -10° 11.1	198° 46.7 -10° 12.0	213° 46.8 -10° 12.9	228° 46.9 -10° 13.8	243° 47.0 -10° 14.7	258° 47.1 -10° 15.6	93° 48.5 -10° 27.3	108° 48.6 -10° 28.2	123° 48.7 -10° 29.1	138° 48.8 -10° 30.0	153° 48.9 -10° 30.8	168° 49.0 -10° 31.7	+0.1 -0.9
Вт 21	183° 49.1 -10° 32.6	198° 49.2 -10° 33.5	213° 49.3 -10° 34.4	228° 49.4 -10° 35.3	243° 49.5 -10° 36.2	258° 49.6 -10° 37.1	93° 51.0 -10° 48.7	108° 51.1 -10° 49.5	123° 51.2 -10° 50.4	138° 51.3 -10° 51.3	153° 51.4 -10° 52.2	168° 51.5 -10° 53.1	+0.1 -0.9
Ср 22	183° 51.6 -10° 54.0	198° 51.7 -10° 54.9	213° 51.8 -10° 55.7	228° 51.9 -10° 56.6	243° 51.9 -10° 57.5	258° 52.0 -10° 58.4	93° 53.3 -11° 09.9	108° 53.4 -11° 10.8	123° 53.5 -11° 11.6	138° 53.6 -11° 12.5	153° 53.6 -11° 13.4	168° 53.7 -11° 14.3	+0.1 -0.9
Чт 23	183° 53.8 -11° 15.2	198° 53.9 -11° 16.0	213° 54.0 -11° 16.9	228° 54.1 -11° 17.8	243° 54.2 -11° 18.7	258° 54.3 -11° 19.5	93° 55.4 -11° 30.9	108° 55.5 -11° 31.8	123° 55.6 -11° 32.7	138° 55.7 -11° 33.5	153° 55.8 -11° 34.4	168° 55.8 -11° 35.3	+0.1 -0.9
Пт 24	183° 55.9 -11° 36.2	198° 56.0 -11° 37.0	213° 56.1 -11° 37.9	228° 56.2 -11° 38.8	243° 56.3 -11° 39.6	258° 56.3 -11° 40.5	93° 57.4 -11° 51.8	108° 57.5 -11° 52.7	123° 57.6 -11° 53.5	138° 57.6 -11° 54.4	153° 57.7 -11° 55.3	168° 57.8 -11° 56.1	+0.1 -0.9
Сб 25	183° 57.9 -11° 57.0	198° 57.9 -11° 57.9	213° 58.0 -11° 58.7	228° 58.1 -11° 59.6	243° 58.2 -12° 00.5	258° 58.2 -12° 01.3	93° 59.2 -12° 12.5	108° 59.3 -12° 13.4	123° 59.3 -12° 14.2	138° 59.4 -12° 15.1	153° 59.5 -12° 15.9	168° 59.6 -12° 16.8	+0.1 -0.9
Вс 26	183° 59.6 -12° 17.6	198° 59.7 -12° 18.5	213° 59.8 -12° 19.4	228° 59.8 -12° 20.2	243° 59.9 -12° 21.1	259° 00.0 -12° 21.9	94° 00.8 -12° 33.0	109° 00.9 -12° 33.9	124° 01.0 -12° 34.7	139° 01.0 -12° 35.6	154° 01.1 -12° 36.4	169° 01.1 -12° 37.3	+0.1 -0.9
Пн 27	184° 01.2 -12° 38.1	199° 01.3 -12° 39.0	214° 01.3 -12° 39.8	229° 01.4 -12° 40.6	244° 01.5 -12° 41.5	259° 01.5 -12° 42.3	94° 02.3 -12° 53.3	109° 02.3 -12° 54.2	124° 02.4 -12° 55.0	139° 02.4 -12° 55.8	154° 02.5 -12° 56.7	169° 02.6 -12° 57.5	+0.1 -0.8
Вт 28	184° 02.6 -12° 58.4	199° 02.7 -12° 59.2	214° 02.7 -13° 00.0	229° 02.8 -13° 00.9	244° 02.8 -13° 01.7	259° 02.9 -13° 02.6	94° 03.5 -13° 13.4	109° 03.6 -13° 14.3	124° 03.6 -13° 15.1	139° 03.7 -13° 15.9	154° 03.7 -13° 16.8	169° 03.8 -13° 17.6	+0.1 -0.8
Ср 29	184° 03.8 -13° 18.4	199° 03.9 -13° 19.3	214° 03.9 -13° 20.1	229° 04.0 -13° 20.9	244° 04.0 -13° 21.7	259° 04.1 -13° 22.6	94° 04.6 -13° 33.3	109° 04.7 -13° 34.2	124° 04.7 -13° 35.0	139° 04.7 -13° 35.8	154° 04.8 -13° 36.6	169° 04.8 -13° 37.5	+0.0 -0.8
Чт 30	184° 04.9 -13° 38.3	199° 04.9 -13° 39.1	214° 04.9 -13° 39.9	229° 05.0 -13° 40.7	244° 05.0 -13° 41.6	259° 05.0 -13° 42.4	94° 05.5 -13° 53.0	109° 05.5 -13° 53.8	124° 05.6 -13° 54.7	139° 05.6 -13° 55.5	154° 05.6 -13° 56.3	169° 05.7 -13° 57.1	+0.0 -0.8
Пт 31	184° 05.7 -13° 57.9	199° 05.7 -13° 58.7	214° 05.7 -13° 59.5	229° 05.8 -14° 00.4	244° 05.8 -14° 01.2	259° 05.8 -14° 02.0	94° 06.2 -14° 12.5	109° 06.2 -14° 13.3	124° 06.2 -14° 14.1	139° 06.3 -14° 14.9	154° 06.3 -14° 15.7	169° 06.3 -14° 16.5	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2031

Д	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	Δ°/h	R/p
Ср 1	73° 45.5	88° 14.8	102° 44.1	117° 13.4	131° 42.8	146° 12.1	160° 41.4	175° 10.7	189° 40.0	204° 09.3	218° 38.6	+29.3	15.9
	8° 02.7	8° 13.9	8° 25.0	8° 36.1	8° 47.1	8° 58.1	9° 09.0	9° 19.8	9° 30.6	9° 41.3	9° 51.9	+10.9	58.3
Чт 2	75° 57.8	90° 27.1	104° 56.3	119° 25.5	133° 54.8	148° 24.0	162° 53.2	177° 22.5	191° 51.7	206° 20.9	220° 50.1	+29.2	15.7
	12° 23.3	12° 32.8	12° 42.2	12° 51.6	13° 00.8	13° 10.0	13° 19.1	13° 28.1	13° 37.1	13° 45.9	13° 54.7	+9.1	57.5
Пт 3	78° 07.9	92° 37.0	107° 06.2	121° 35.4	136° 04.5	150° 33.7	165° 02.8	179° 32.0	194° 01.1	208° 30.3	222° 59.5	+29.2	15.5
	15° 55.6	16° 02.9	16° 10.1	16° 17.2	16° 24.3	16° 31.2	16° 38.1	16° 44.8	16° 51.5	16° 58.1	17° 04.5	+6.9	56.7
Сб 4	80° 17.1	94° 46.3	109° 15.5	123° 44.7	138° 13.9	152° 43.2	167° 12.4	181° 41.7	196° 10.9	210° 40.2	225° 09.5	+29.2	15.3
	18° 29.4	18° 34.3	18° 39.0	18° 43.7	18° 48.2	18° 52.7	18° 57.0	19° 01.2	19° 05.3	19° 09.4	19° 13.3	+4.4	56.0
Вс 5	82° 30.2	96° 59.7	111° 29.2	125° 58.7	140° 28.3	154° 57.8	169° 27.4	183° 57.0	198° 26.7	212° 56.3	227° 26.0	+29.6	15.1
	19° 59.6	20° 01.8	20° 04.0	20° 06.0	20° 08.0	20° 09.8	20° 11.5	20° 13.2	20° 14.7	20° 16.1	20° 17.4	+1.8	55.3
Пн 6	84° 53.8	99° 23.9	113° 54.0	128° 24.1	142° 54.2	157° 24.4	171° 54.6	186° 24.9	200° 55.1	215° 25.4	229° 55.7	+30.2	14.9
	20° 25.0	20° 24.7	20° 24.3	20° 23.8	20° 23.2	20° 22.4	20° 21.6	20° 20.8	20° 19.8	20° 18.7	20° 17.5	-0.8	54.8
Вт 7	87° 34.4	102° 05.2	116° 36.1	131° 07.0	145° 37.9	160° 08.9	174° 39.9	189° 11.0	203° 42.0	218° 13.1	232° 44.3	+31.0	14.8
	19° 48.2	19° 45.5	19° 42.7	19° 39.8	19° 36.8	19° 33.8	19° 30.6	19° 27.4	19° 24.0	19° 20.6	19° 17.1	-3.1	54.4
◑ Ср 8	90° 35.7	105° 07.4	119° 39.2	134° 11.0	148° 42.8	163° 14.6	177° 46.5	192° 18.4	206° 50.4	221° 22.3	235° 54.3	+31.9	14.8
	18° 14.3	18° 09.4	18° 04.5	17° 59.5	17° 54.4	17° 49.2	17° 44.0	17° 38.6	17° 33.2	17° 27.8	17° 22.2	-5.2	54.2
Чт 9	93° 58.5	108° 31.0	123° 03.5	137° 36.1	152° 08.7	166° 41.4	181° 14.0	195° 46.7	210° 19.4	224° 52.2	239° 25.0	+32.7	14.8
	15° 49.9	15° 43.2	15° 36.4	15° 29.5	15° 22.6	15° 15.6	15° 08.5	15° 01.4	14° 54.2	14° 46.9	14° 39.6	-7.0	54.2
Пт 10	97° 39.6	112° 12.7	126° 45.9	141° 19.1	155° 52.3	170° 25.5	184° 58.7	199° 32.0	214° 05.3	228° 38.5	243° 11.9	+33.2	14.8
	12° 42.3	12° 34.0	12° 25.6	12° 17.2	12° 08.8	12° 00.2	11° 51.7	11° 43.1	11° 34.4	11° 25.6	11° 16.9	-8.5	54.4
Сб 11	101° 32.9	116° 06.4	130° 39.9	145° 13.4	159° 46.9	174° 20.4	188° 53.9	203° 27.4	218° 00.9	232° 34.4	247° 07.9	+33.5	14.9
	8° 59.2	8° 49.6	8° 40.0	8° 30.4	8° 20.7	8° 11.0	8° 01.2	7° 51.4	7° 41.6	7° 31.7	7° 21.8	-9.7	54.7
Вс 12	105° 30.2	120° 03.7	134° 37.1	149° 10.5	163° 43.9	178° 17.3	192° 50.7	207° 24.0	221° 57.4	236° 30.7	251° 04.1	+33.4	15.0
	4° 48.8	4° 38.3	4° 27.8	4° 17.3	4° 06.8	3° 56.2	3° 45.6	3° 35.0	3° 24.3	3° 13.7	3° 03.0	-10.6	55.2
Пн 13	109° 21.5	123° 54.5	138° 27.4	153° 00.4	167° 33.3	182° 06.1	196° 39.0	211° 11.8	225° 44.5	240° 17.3	254° 50.0	+32.8	15.2
	0° 20.3	0° 09.4	-0° 01.6	-0° 12.6	-0° 23.6	-0° 34.6	-0° 45.6	-0° 56.6	-1° 07.7	-1° 18.7	-1° 29.7	-11.0	55.8
Вт 14	112° 56.1	127° 28.2	142° 00.2	156° 32.2	171° 04.2	185° 36.1	200° 07.9	214° 39.7	229° 11.5	243° 43.2	258° 14.8	+31.9	15.4
	-4° 15.2	-4° 26.2	-4° 37.2	-4° 48.1	-4° 59.1	-5° 10.0	-5° 21.0	-5° 31.9	-5° 42.8	-5° 53.7	-6° 04.5	-10.9	56.4
Ср 15	116° 03.4	130° 34.1	145° 04.9	159° 35.5	174° 06.1	188° 36.7	203° 07.2	217° 37.6	232° 08.0	246° 38.3	261° 08.5	+30.5	15.6
	-8° 44.6	-8° 55.1	-9° 05.5	-9° 15.8	-9° 26.2	-9° 36.5	-9° 46.7	-9° 56.9	-10° 07.1	-10° 17.2	-10° 27.3	-10.3	57.0
● Чт 16	118° 34.3	133° 03.5	147° 32.6	162° 01.7	176° 30.7	190° 59.6	205° 28.5	219° 57.3	234° 26.0	248° 54.6	263° 23.2	+28.9	15.7
	-12° 52.4	-13° 01.6	-13° 10.7	-13° 19.8	-13° 28.8	-13° 37.8	-13° 46.7	-13° 55.5	-14° 04.2	-14° 12.9	-14° 21.5	-8.9	57.6
Пт 17	120° 23.8	134° 51.3	149° 18.7	163° 46.1	178° 13.4	192° 40.7	207° 07.9	221° 35.0	236° 02.0	250° 29.0	264° 56.0	+27.2	15.9
	-16° 20.9	-16° 28.2	-16° 35.3	-16° 42.4	-16° 49.4	-16° 56.3	-17° 03.1	-17° 09.8	-17° 16.4	-17° 22.9	-17° 29.3	-6.8	58.2
Сб 18	121° 32.9	135° 58.9	150° 24.9	164° 50.8	179° 16.7	193° 42.5	208° 08.3	222° 34.1	236° 59.8	251° 25.4	265° 51.0	+25.8	16.0
	-18° 52.5	-18° 57.2	-19° 01.7	-19° 06.1	-19° 10.4	-19° 14.6	-19° 18.6	-19° 22.6	-19° 26.4	-19° 30.1	-19° 33.7	-4.1	58.6
Вс 19	122° 10.9	136° 36.0	151° 01.1	165° 26.1	179° 51.1	194° 16.2	208° 41.1	223° 06.1	237° 31.1	251° 56.0	266° 21.0	+25.0	16.1
	-20° 12.1	-20° 13.6	-20° 15.0	-20° 16.3	-20° 17.4	-20° 18.4	-20° 19.3	-20° 20.0	-20° 20.6	-20° 21.1	-20° 21.4	-0.9	58.9
Пн 20	136° 36.0	151° 01.1	165° 26.1	179° 51.1	194° 16.2	208° 41.1	223° 06.1	237° 31.1	251° 56.0	266° 21.0	280° 45.9	+25.0	16.1
	-20° 13.6	-20° 15.0	-20° 16.3	-20° 17.4	-20° 18.4	-20° 19.3	-20° 20.0	-20° 20.6	-20° 21.1	-20° 21.4	-20° 21.6	-0.8	58.9
Вт 21	136° 59.3	151° 24.2	165° 49.1	180° 14.1	194° 39.0	209° 04.0	223° 29.0	237° 54.0	252° 19.0	266° 44.1	281° 09.1	+25.0	16.1
	-20° 08.5	-20° 06.6	-20° 04.5	-20° 02.3	-19° 59.9	-19° 57.5	-19° 54.9	-19° 52.1	-19° 49.3	-19° 46.3	-19° 43.1	+2.5	59.1
Ср 22	137° 28.1	151° 53.6	166° 19.2	180° 44.8	195° 10.4	209° 36.0	224° 01.7	238° 27.5	252° 53.3	267° 19.1	281° 45.0	+25.7	16.1
	-18° 41.0	-18° 35.9	-18° 30.6	-18° 25.2	-18° 19.8	-18° 14.1	-18° 08.4	-18° 02.6	-17° 56.6	-17° 50.5	-17° 44.4	+5.7	59.2
◐ Чт 23	138° 18.2	152° 44.8	167° 11.5	181° 38.2	196° 04.9	210° 31.7	224° 58.5	239° 25.4	253° 52.4	268° 19.3	282° 46.4	+26.8	16.1
	-15° 58.5	-15° 50.6	-15° 42.6	-15° 34.5	-15° 26.3	-15° 18.1	-15° 09.7	-15° 01.3	-14° 52.7	-14° 44.1	-14° 35.3	+8.3	59.2
Пт 24	139° 37.8	154° 05.6	168° 33.4	183° 01.4	197° 29.3	211° 57.3	226° 25.4	240° 53.4	255° 21.6	269° 49.8	284° 18.0	+28.0	16.1
	-12° 14.4	-12° 04.4	-11° 54.3	-11° 44.2	-11° 34.0	-11° 23.7	-11° 13.3	-11° 02.9	-10° 52.5	-10° 41.9	-10° 31.3	+10.3	59.1
Сб 25	141° 26.5	155° 55.4	170° 24.3	184° 53.2	199° 22.2	213° 51.2	228° 20.3	242° 49.4	257° 18.5	271° 47.7	286° 16.8	+29.0	16.1
	-7° 45.9	-7° 34.5	-7° 23.0	-7° 11.6	-7° 00.0	-6° 48.5	-6° 36.9	-6° 25.2	-6° 13.6	-6° 01.9	-5° 50.2	+11.6	58.9
Вс 26	143° 38.0	158° 07.6	172° 37.3	187° 06.9	201° 36.6	216° 06.3	230° 36.0	245° 05.7	259° 35.5	274° 05.2	288° 35.0	+29.7	16.0
	-2° 51.3	-2° 39.3	-2° 27.2	-2° 15.1	-2° 03.0	-1° 51.0	-1° 38.9	-1° 26.7	-1° 14.6	-1° 02.5	-0° 50.4	+12.1	58.7
Пн 27	146° 03.0	160° 33.0	175° 02.9	189° 32.9	204° 02.8	218° 32.8	233° 02.7	247° 32.7	262° 02.7	276° 32.6	291° 02.6	+30.0	15.9
	2° 10.7	2° 22.6	2° 34.6	2° 46.5	2° 58.5	3° 10.4	3° 22.2	3° 34.1	3° 45.9	3° 57.7	4° 09.5	+11.9	58.3
Вт 28	148° 31.7	163° 01.6	177° 31.5	192° 01.4	206° 31.3	221° 01.2	235° 31.0	250° 00.9	264° 30.7	279° 00.6	293° 30.4	+29.9	15.8
	7° 02.1	7° 13.3	7° 24.5	7° 35.6	7° 46.6	7° 57.6	8° 08.6	8° 19.5	8° 30.3	8° 41.1	8° 51.9	+11.0	57.9
Ср 29	150° 56.3	165° 26.0	179° 55.6	194° 25.2	208° 54.7	223° 24.3	237° 53.9	252° 23.4	266° 52.9	281° 22.4	295° 51.9	+29.6	15.6
	11° 26.1	11° 35.9	11° 45.6	11° 55.2	12° 04.7	12° 14.2	12° 23.6	12° 33.0	12° 42.3	12° 51.4	13° 00.6	+9.5	57.4
○ Чт 30	153° 12.7	167° 42.0	182° 11.2	196° 40.5	211° 09.7	225° 39.0	240° 08.2	254° 37.4	269° 06.6	283° 35.8	298° 04.9	+29.2	15.5
	15° 07.7	15° 15.5	15° 23.2	15° 30.8	15° 38.3	15° 45.8	15° 53.1	16° 00.4	16° 07.6	16° 14.7	16° 21.6	+7.4	56.8
Пт 31	155° 21.6	169° 50.6	184° 19.7	198° 48.7	213° 17.8	227° 46.8	242° 15.9	256° 44.9	271° 14.0	285° 43.0	300° 12.1	+29.0	15.3
	17° 54.9	18° 00.4	18° 05.7	18° 10.9	18° 16.1	18° 21.1	18° 26.0	18° 30.9	18° 35.6	18° 40.2	18° 44.7	+5.0	56.2

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 8 10h50 — Новолуние: 16 08h20 — Первая четв.: 23 07h36 — Полнолуние: 30 07h32

СОЛНЦЕ

Ноябрь 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	184° 06.3	199° 06.3	214° 06.4	229° 06.4	244° 06.4	259° 06.4	94° 06.7	109° 06.7	124° 06.7	139° 06.7	154° 06.7	169° 06.7	+0.0
	-14° 17.3	-14° 18.1	-14° 18.9	-14° 19.7	-14° 20.5	-14° 21.3	-14° 31.7	-14° 32.5	-14° 33.3	-14° 34.1	-14° 34.9	-14° 35.7	-0.8
Вс 2	184° 06.8	199° 06.8	214° 06.8	229° 06.8	244° 06.8	259° 06.8	94° 07.0	109° 07.0	124° 07.0	139° 07.0	154° 07.0	169° 07.0	+0.0
	-14° 36.5	-14° 37.3	-14° 38.1	-14° 38.9	-14° 39.7	-14° 40.5	-14° 50.8	-14° 51.5	-14° 52.3	-14° 53.1	-14° 53.9	-14° 54.7	-0.8
Пн 3	184° 07.0	199° 07.0	214° 07.0	229° 07.0	244° 07.0	259° 07.0	94° 07.0	109° 07.0	124° 07.0	139° 07.0	154° 07.0	169° 07.0	+0.0
	-14° 55.5	-14° 56.3	-14° 57.0	-14° 57.8	-14° 58.6	-14° 59.4	-15° 09.5	-15° 10.3	-15° 11.1	-15° 11.9	-15° 12.6	-15° 13.4	-0.8
Вт 4	184° 07.0	199° 07.0	214° 07.0	229° 07.0	244° 07.0	259° 07.0	94° 06.9	109° 06.9	124° 06.9	139° 06.9	154° 06.9	169° 06.9	-0.0
	-15° 14.2	-15° 15.0	-15° 15.7	-15° 16.5	-15° 17.3	-15° 18.0	-15° 28.0	-15° 28.8	-15° 29.6	-15° 30.3	-15° 31.1	-15° 31.9	-0.8
Ср 5	184° 06.8	199° 06.8	214° 06.8	229° 06.8	244° 06.8	259° 06.8	94° 06.6	109° 06.6	124° 06.5	139° 06.5	154° 06.5	169° 06.5	-0.0
	-15° 32.6	-15° 33.4	-15° 34.2	-15° 34.9	-15° 35.7	-15° 36.5	-15° 46.3	-15° 47.1	-15° 47.8	-15° 48.6	-15° 49.3	-15° 50.1	-0.8
Чт 6	184° 06.5	199° 06.4	214° 06.4	229° 06.4	244° 06.4	259° 06.3	94° 06.0	109° 06.0	124° 06.0	139° 05.9	154° 05.9	169° 05.9	-0.0
	-15° 50.8	-15° 51.6	-15° 52.4	-15° 53.1	-15° 53.9	-15° 54.6	-16° 04.3	-16° 05.1	-16° 05.8	-16° 06.6	-16° 07.3	-16° 08.0	-0.8
Пт 7	184° 05.9	199° 05.8	214° 05.8	229° 05.8	244° 05.7	259° 05.7	94° 05.3	109° 05.2	124° 05.2	139° 05.1	154° 05.1	169° 05.1	-0.0
	-16° 08.8	-16° 09.5	-16° 10.3	-16° 11.0	-16° 11.8	-16° 12.5	-16° 22.1	-16° 22.8	-16° 23.5	-16° 24.3	-16° 25.0	-16° 25.7	-0.7
Сб 8	184° 05.0	199° 05.0	214° 05.0	229° 04.9	244° 04.9	259° 04.8	94° 04.3	109° 04.2	124° 04.2	139° 04.1	154° 04.1	169° 04.0	-0.0
	-16° 26.5	-16° 27.2	-16° 27.9	-16° 28.7	-16° 29.4	-16° 30.1	-16° 39.5	-16° 40.3	-16° 41.0	-16° 41.7	-16° 42.4	-16° 43.2	-0.7
Вс 9	184° 04.0	199° 04.0	214° 03.9	229° 03.9	244° 03.8	259° 03.8	94° 03.1	109° 03.0	124° 03.0	139° 02.9	154° 02.9	169° 02.8	-0.0
	-16° 43.9	-16° 44.6	-16° 45.3	-16° 46.0	-16° 46.7	-16° 47.5	-16° 56.7	-16° 57.4	-16° 58.2	-16° 58.9	-16° 59.6	-17° 00.3	-0.7
Пн 10	184° 02.8	199° 02.7	214° 02.6	229° 02.6	244° 02.5	259° 02.5	94° 01.7	109° 01.6	124° 01.5	139° 01.5	154° 01.4	169° 01.4	-0.1
	-17° 01.0	-17° 01.7	-17° 02.4	-17° 03.1	-17° 03.8	-17° 04.5	-17° 13.6	-17° 14.3	-17° 15.0	-17° 15.7	-17° 16.4	-17° 17.1	-0.7
Вт 11	184° 01.3	199° 01.2	214° 01.2	229° 01.1	244° 01.0	259° 01.0	94° 00.0	109° 00.0	123° 59.9	138° 59.8	153° 59.8	168° 59.7	-0.1
	-17° 17.8	-17° 18.5	-17° 19.2	-17° 19.9	-17° 20.6	-17° 21.3	-17° 30.2	-17° 30.9	-17° 31.6	-17° 32.3	-17° 33.0	-17° 33.7	-0.7
Ср 12	183° 59.6	198° 59.5	213° 59.5	228° 59.4	243° 59.3	258° 59.2	93° 58.2	108° 58.1	123° 58.0	138° 58.0	153° 57.9	168° 57.8	-0.1
	-17° 34.4	-17° 35.0	-17° 35.7	-17° 36.4	-17° 37.1	-17° 37.8	-17° 46.6	-17° 47.2	-17° 47.9	-17° 48.6	-17° 49.2	-17° 49.9	-0.7
Чт 13	183° 57.7	198° 57.6	213° 57.5	228° 57.5	243° 57.4	258° 57.3	93° 56.2	108° 56.1	123° 56.0	138° 55.9	153° 55.8	168° 55.7	-0.1
	-17° 50.6	-17° 51.3	-17° 51.9	-17° 52.6	-17° 53.3	-17° 53.9	-18° 02.6	-18° 03.2	-18° 03.9	-18° 04.5	-18° 05.2	-18° 05.8	-0.7
Пт 14	183° 55.6	198° 55.5	213° 55.4	228° 55.3	243° 55.2	258° 55.1	93° 53.9	108° 53.8	123° 53.7	138° 53.6	153° 53.5	168° 53.4	-0.1
	-18° 06.5	-18° 07.2	-18° 07.8	-18° 08.5	-18° 09.1	-18° 09.8	-18° 18.2	-18° 18.9	-18° 19.5	-18° 20.2	-18° 20.8	-18° 21.5	-0.7
Сб 15	183° 53.3	198° 53.2	213° 53.1	228° 53.0	243° 52.9	258° 52.8	93° 51.4	108° 51.3	123° 51.2	138° 51.1	153° 51.0	168° 50.9	-0.1
	-18° 22.1	-18° 22.8	-18° 23.4	-18° 24.0	-18° 24.7	-18° 25.3	-18° 33.6	-18° 34.2	-18° 34.9	-18° 35.5	-18° 36.1	-18° 36.8	-0.6
Вс 16	183° 50.7	198° 50.6	213° 50.5	228° 50.4	243° 50.3	258° 50.2	93° 48.7	108° 48.6	123° 48.5	138° 48.4	153° 48.2	168° 48.1	-0.1
	-18° 37.4	-18° 38.0	-18° 38.7	-18° 39.3	-18° 39.9	-18° 40.5	-18° 48.6	-18° 49.3	-18° 49.9	-18° 50.5	-18° 51.1	-18° 51.7	-0.6
Пн 17	183° 48.0	198° 47.9	213° 47.8	228° 47.6	243° 47.5	258° 47.4	93° 45.8	108° 45.7	123° 45.6	138° 45.4	153° 45.3	168° 45.2	-0.1
	-18° 52.3	-18° 53.0	-18° 53.6	-18° 54.2	-18° 54.8	-18° 55.4	-19° 03.3	-19° 03.9	-19° 04.6	-19° 05.2	-19° 05.8	-19° 06.4	-0.6
Вт 18	183° 45.0	198° 44.9	213° 44.8	228° 44.7	243° 44.5	258° 44.4	93° 42.7	108° 42.6	123° 42.4	138° 42.3	153° 42.2	168° 42.0	-0.1
	-19° 07.0	-19° 07.6	-19° 08.2	-19° 08.8	-19° 09.4	-19° 10.0	-19° 17.7	-19° 18.3	-19° 18.9	-19° 19.5	-19° 20.1	-19° 20.7	-0.6
Ср 19	183° 41.9	198° 41.8	213° 41.6	228° 41.5	243° 41.3	258° 41.2	93° 39.4	108° 39.2	123° 39.1	138° 39.0	153° 38.8	168° 38.7	-0.1
	-19° 21.2	-19° 21.8	-19° 22.4	-19° 23.0	-19° 23.6	-19° 24.2	-19° 31.7	-19° 32.3	-19° 32.9	-19° 33.4	-19° 34.0	-19° 34.6	-0.6
Чт 20	183° 38.5	198° 38.4	213° 38.2	228° 38.1	243° 38.0	258° 37.8	93° 35.9	108° 35.7	123° 35.6	138° 35.4	153° 35.3	168° 35.1	-0.1
	-19° 35.2	-19° 35.7	-19° 36.3	-19° 36.9	-19° 37.5	-19° 38.0	-19° 45.4	-19° 45.9	-19° 46.5	-19° 47.1	-19° 47.6	-19° 48.2	-0.6
Пт 21	183° 35.0	198° 34.8	213° 34.7	228° 34.5	243° 34.4	258° 34.2	93° 32.2	108° 32.0	123° 31.9	138° 31.7	153° 31.5	168° 31.4	-0.2
	-19° 48.7	-19° 49.3	-19° 49.9	-19° 50.4	-19° 51.0	-19° 51.5	-19° 58.7	-19° 59.2	-19° 59.8	-20° 00.3	-20° 00.9	-20° 01.4	-0.6
Сб 22	183° 31.2	198° 31.1	213° 30.9	228° 30.7	243° 30.6	258° 30.4	93° 28.3	108° 28.1	123° 27.9	138° 27.8	153° 27.6	168° 27.4	-0.2
	-20° 02.0	-20° 02.5	-20° 03.0	-20° 03.6	-20° 04.1	-20° 04.7	-20° 11.6	-20° 12.2	-20° 12.7	-20° 13.2	-20° 13.7	-20° 14.3	-0.5
Вс 23	183° 27.3	198° 27.1	213° 26.9	228° 26.8	243° 26.6	258° 26.4	93° 24.2	108° 24.0	123° 23.8	138° 23.7	153° 23.5	168° 23.3	-0.2
	-20° 14.8	-20° 15.3	-20° 15.9	-20° 16.4	-20° 16.9	-20° 17.4	-20° 24.2	-20° 24.7	-20° 25.2	-20° 25.7	-20° 26.2	-20° 26.8	-0.5
Пн 24	183° 23.1	198° 23.0	213° 22.8	228° 22.6	243° 22.4	258° 22.2	93° 19.9	108° 19.7	123° 19.5	138° 19.4	153° 19.2	168° 19.0	-0.2
	-20° 27.3	-20° 27.8	-20° 28.3	-20° 28.8	-20° 29.3	-20° 29.8	-20° 36.4	-20° 36.9	-20° 37.4	-20° 37.9	-20° 38.4	-20° 38.9	-0.5
Вт 25	183° 18.8	198° 18.6	213° 18.4	228° 18.3	243° 18.1	258° 17.9	93° 15.4	108° 15.2	123° 15.1	138° 14.9	153° 14.7	168° 14.5	-0.2
	-20° 39.4	-20° 39.9	-20° 40.4	-20° 40.9	-20° 41.3	-20° 41.8	-20° 48.2	-20° 48.7	-20° 49.2	-20° 49.6	-20° 50.1	-20° 50.6	-0.5
Ср 26	183° 14.3	198° 14.1	213° 13.9	228° 13.7	243° 13.5	258° 13.3	93° 10.8	108° 10.6	123° 10.4	138° 10.2	153° 10.0	168° 09.8	-0.2
	-20° 51.1	-20° 51.6	-20° 52.0	-20° 52.5	-20° 53.0	-20° 53.5	-20° 59.6	-21° 00.1	-21° 00.5	-21° 01.0	-21° 01.5	-21° 01.9	-0.5
Чт 27	183° 09.6	198° 09.4	213° 09.2	228° 09.0	243° 08.8	258° 08.6	93° 06.0	108° 05.7	123° 05.5	138° 05.3	153° 05.1	168° 04.9	-0.2
	-21° 02.4	-21° 02.9	-21° 03.3	-21° 03.8	-21° 04.2	-21° 04.7	-21° 10.6	-21° 11.1	-21° 11.5	-21° 12.0	-21° 12.4	-21° 12.9	-0.5
Пт 28	183° 04.7	198° 04.5	213° 04.3	228° 04.1	243° 03.9	258° 03.7	93° 00.9	108° 00.7	123° 00.5	138° 00.3	153° 00.1	167° 59.9	-0.2
	-21° 13.3	-21° 13.8	-21° 14.2	-21° 14.7	-21° 15.1	-21° 15.5	-21° 21.3	-21° 21.7	-21° 22.1	-21° 22.6	-21° 23.0	-21° 23.4	-0.4
Сб 29	182° 59.7	197° 59.4	212° 59.2	227° 59.0	242° 58.8	257° 58.6	92° 55.8	107° 55.5	122° 55.3	137° 55.1	152° 54.9	167° 54.7	-0.2
	-21° 23.8	-21° 24.3	-21° 24.7	-21° 25.1	-21° 25.6	-21° 26.0	-21° 31.5	-21° 31.9	-21° 32.3	-21° 32.7	-21° 33.1	-21° 33.6	-0.4
Вс 30	182° 54.4	197° 54.2	212° 54.0	227° 53.8	242° 53.5	257° 53.3	92° 50.4	107° 50.2	122° 49.9	137° 49.7	152° 49.5	167° 49.3	-0.2
	-21° 34.0	-21° 34.4	-21° 34.8	-21° 35.2	-21° 35.6	-21° 36.0	-21° 41.3	-21° 41.7	-21° 42.1	-21° 42.5	-21° 42.9	-21° 43.3	-0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2031

Д	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	Δ'/h	R/p
Сб 1	70° 33.7	85° 02.8	99° 31.9	114° 01.0	128° 30.1	142° 59.2	157° 28.3	171° 57.5	186° 26.6	200° 55.8	215° 25.0	+29.1	15.2
	19° 20.7	19° 24.2	19° 27.6	19° 30.9	19° 34.0	19° 37.1	19° 40.0	19° 42.9	19° 45.6	19° 48.3	19° 50.8	+3.0	55.7
Вс 2	72° 44.5	87° 14.0	101° 43.5	116° 13.0	130° 42.5	145° 12.1	159° 41.6	174° 11.2	188° 40.9	203° 10.5	217° 40.2	+29.6	15.0
	20° 16.2	20° 17.1	20° 17.8	20° 18.5	20° 19.0	20° 19.5	20° 19.8	20° 20.1	20° 20.2	20° 20.2	20° 20.2	+0.4	55.1
Пн 3	75° 09.0	89° 39.2	104° 09.4	118° 39.6	133° 09.9	147° 40.2	162° 10.6	176° 41.0	191° 11.4	205° 41.9	220° 12.4	+30.3	14.9
	20° 07.1	20° 05.4	20° 03.7	20° 01.8	19° 59.9	19° 57.8	19° 55.7	19° 53.5	19° 51.1	19° 48.7	19° 46.2	-2.1	54.7
Вт 4	77° 54.6	92° 25.7	106° 56.9	121° 28.1	135° 59.4	150° 30.7	165° 02.0	179° 33.4	194° 04.8	208° 36.2	223° 07.7	+31.3	14.8
	18° 57.6	18° 53.7	18° 49.6	18° 45.5	18° 41.3	18° 37.0	18° 32.7	18° 28.2	18° 23.7	18° 19.1	18° 14.4	-4.3	54.3
Ср 5	81° 05.1	95° 37.2	110° 09.4	124° 41.6	139° 13.9	153° 46.1	168° 18.5	182° 50.8	197° 23.3	211° 55.7	226° 28.2	+32.3	14.8
	16° 54.5	16° 48.6	16° 42.6	16° 36.5	16° 30.4	16° 24.1	16° 17.9	16° 11.5	16° 05.1	15° 58.6	15° 52.0	-6.3	54.2
Чт 6	84° 39.5	99° 12.5	113° 45.6	128° 18.7	142° 51.8	157° 24.9	171° 58.1	186° 31.3	201° 04.5	215° 37.7	230° 11.0	+33.2	14.8
	14° 05.7	13° 58.1	13° 50.5	13° 42.8	13° 35.0	13° 27.2	13° 19.3	13° 11.4	13° 03.4	12° 55.3	12° 47.2	-7.9	54.2
◑ Пт 7	88° 32.9	103° 06.5	117° 40.1	132° 13.8	146° 47.5	161° 21.1	175° 54.8	190° 28.5	205° 02.3	219° 36.0	234° 09.7	+33.7	14.8
	10° 39.3	10° 30.4	10° 21.4	10° 12.4	10° 03.4	9° 54.2	9° 45.1	9° 35.9	9° 26.7	9° 17.4	9° 08.0	-9.1	54.4
Сб 8	92° 36.8	107° 10.6	121° 44.4	136° 18.2	150° 52.1	165° 25.9	179° 59.7	194° 33.5	209° 07.3	223° 41.1	238° 14.9	+33.8	14.9
	6° 43.3	6° 33.4	6° 23.4	6° 13.4	6° 03.4	5° 53.3	5° 43.2	5° 33.0	5° 22.9	5° 12.7	5° 02.4	-10.1	54.8
Вс 9	96° 40.5	111° 14.1	125° 47.6	140° 21.2	154° 54.7	169° 28.2	184° 01.6	198° 35.1	213° 08.5	227° 41.9	242° 15.3	+33.5	15.1
	2° 25.9	2° 15.2	2° 04.6	1° 53.9	1° 43.2	1° 32.5	1° 21.8	1° 11.1	1° 00.3	0° 49.6	0° 38.8	-10.7	55.3
Пн 10	100° 32.0	115° 04.8	129° 37.6	144° 10.3	158° 43.0	173° 15.6	187° 48.3	202° 20.8	216° 53.3	231° 25.8	245° 58.2	+32.6	15.3
	-2° 04.1	-2° 15.0	-2° 26.0	-2° 36.9	-2° 47.8	-2° 58.7	-3° 09.6	-3° 20.6	-3° 31.5	-3° 42.4	-3° 53.3	-10.9	56.0
Вт 11	103° 58.3	118° 29.9	133° 01.4	147° 32.8	162° 04.2	176° 35.5	191° 06.8	205° 38.0	220° 09.1	234° 40.1	249° 11.1	+31.3	15.5
	-6° 35.8	-6° 46.5	-6° 57.2	-7° 07.9	-7° 18.6	-7° 29.2	-7° 39.8	-7° 50.4	-8° 01.0	-8° 11.5	-8° 22.0	-10.6	56.8
Ср 12	106° 47.5	121° 17.4	135° 47.1	150° 16.8	164° 46.5	179° 16.0	193° 45.5	208° 14.8	222° 44.1	237° 13.4	251° 42.5	+29.5	15.7
	-10° 55.6	-11° 05.5	-11° 15.4	-11° 25.2	-11° 34.9	-11° 44.7	-11° 54.3	-12° 04.0	-12° 13.5	-12° 23.0	-12° 32.5	-9.7	57.6
Чт 13	108° 50.1	123° 17.9	137° 45.7	152° 13.4	166° 41.0	181° 08.5	195° 36.0	210° 03.3	224° 30.6	238° 57.8	253° 25.0	+27.5	15.9
	-14° 46.6	-14° 55.0	-15° 03.3	-15° 11.5	-15° 19.7	-15° 27.7	-15° 35.7	-15° 43.6	-15° 51.4	-15° 59.1	-16° 06.8	-8.0	58.4
● Пт 14	110° 02.5	124° 28.4	138° 54.2	153° 19.9	167° 45.6	182° 11.2	196° 36.8	211° 02.3	225° 27.7	239° 53.0	254° 18.3	+25.6	16.1
	-17° 49.7	-17° 55.8	-18° 01.7	-18° 07.6	-18° 13.3	-18° 18.9	-18° 24.4	-18° 29.7	-18° 35.0	-18° 40.1	-18° 45.2	-5.5	59.0
Сб 15	110° 30.6	124° 55.0	139° 19.4	153° 43.7	168° 08.0	182° 32.2	196° 56.5	211° 20.6	225° 44.8	240° 08.9	254° 32.9	+24.2	16.2
	-19° 45.7	-19° 48.7	-19° 51.6	-19° 54.3	-19° 57.0	-19° 59.4	-20° 01.8	-20° 04.0	-20° 06.0	-20° 08.0	-20° 09.8	-2.4	59.5
Вс 16	110° 31.3	124° 55.1	139° 18.9	153° 42.6	168° 06.4	182° 30.2	196° 54.0	211° 17.8	225° 41.6	240° 05.4	254° 29.2	+23.8	16.3
	-20° 19.8	-20° 19.4	-20° 18.8	-20° 18.0	-20° 17.2	-20° 16.1	-20° 15.0	-20° 13.7	-20° 12.2	-20° 10.6	-20° 08.9	+1.1	59.8
Пн 17	110° 28.5	124° 52.7	139° 16.9	153° 41.2	168° 05.4	182° 29.7	196° 54.1	211° 18.5	225° 42.9	240° 07.4	254° 31.9	+24.3	16.3
	-19° 26.3	-19° 22.4	-19° 18.3	-19° 14.1	-19° 09.8	-19° 05.3	-19° 00.7	-18° 56.0	-18° 51.2	-18° 46.2	-18° 41.1	+4.5	59.8
Вт 18	110° 45.8	125° 11.2	139° 36.6	154° 02.1	168° 27.6	182° 53.2	197° 18.9	211° 44.6	226° 10.4	240° 36.2	255° 02.1	+25.6	16.3
	-17° 10.0	-17° 03.0	-16° 55.9	-16° 48.6	-16° 41.3	-16° 33.9	-16° 26.3	-16° 18.7	-16° 11.0	-16° 03.1	-15° 55.2	+7.5	59.7
Ср 19	125° 11.2	139° 36.6	154° 02.1	168° 27.6	182° 53.2	197° 18.9	211° 44.6	226° 10.4	240° 36.2	255° 02.1	269° 28.1	+25.7	16.3
	-17° 03.0	-16° 55.9	-16° 48.6	-16° 41.3	-16° 33.9	-16° 26.3	-16° 18.7	-16° 11.0	-16° 03.1	-15° 55.2	-15° 47.1	+7.6	59.7
Чт 20	126° 05.3	140° 32.3	154° 59.4	169° 26.5	183° 53.7	198° 20.9	212° 48.3	227° 15.6	241° 43.1	256° 10.6	270° 38.1	+27.3	16.2
	-13° 35.4	-13° 25.9	-13° 16.4	-13° 06.7	-12° 57.1	-12° 47.3	-12° 37.4	-12° 27.5	-12° 17.6	-12° 07.5	-11° 57.4	+9.8	59.4
◐ Пт 21	127° 38.9	142° 07.4	156° 36.0	171° 04.6	185° 33.3	200° 02.0	214° 30.8	228° 59.6	243° 28.5	257° 57.4	272° 26.4	+28.8	16.1
	-9° 18.4	-9° 07.4	-8° 56.3	-8° 45.2	-8° 34.0	-8° 22.8	-8° 11.6	-8° 00.3	-7° 49.0	-7° 37.6	-7° 26.2	+11.2	59.0
Сб 22	129° 46.7	144° 16.4	158° 46.1	173° 15.8	187° 45.6	202° 15.5	216° 45.3	231° 15.2	245° 45.1	260° 15.1	274° 45.1	+29.8	16.0
	-4° 31.8	-4° 20.0	-4° 08.2	-3° 56.3	-3° 44.5	-3° 32.6	-3° 20.7	-3° 08.8	-2° 56.9	-2° 45.0	-2° 33.1	+11.9	58.6
Вс 23	132° 18.2	146° 48.5	161° 18.9	175° 49.4	190° 19.8	204° 50.2	219° 20.7	233° 51.2	248° 21.7	262° 52.2	277° 22.7	+30.5	15.8
	0° 25.8	0° 37.7	0° 49.6	1° 01.4	1° 13.3	1° 25.1	1° 36.9	1° 48.7	2° 00.5	2° 12.3	2° 24.1	+11.8	58.1
Пн 24	135° 01.3	149° 31.9	164° 02.5	178° 33.1	193° 03.7	207° 34.3	222° 04.9	236° 35.5	251° 06.0	265° 36.6	280° 07.2	+30.6	15.7
	5° 17.5	5° 28.8	5° 40.1	5° 51.3	6° 02.5	6° 13.7	6° 24.9	6° 36.0	6° 47.0	6° 58.0	7° 09.0	+11.2	57.6
Вт 25	137° 44.9	152° 15.3	166° 45.7	181° 16.1	195° 46.5	210° 16.9	224° 47.3	239° 17.6	253° 47.9	268° 18.3	282° 48.6	+30.4	15.6
	9° 47.9	9° 58.1	10° 08.2	10° 18.3	10° 28.3	10° 38.2	10° 48.1	10° 57.9	11° 07.7	11° 17.4	11° 27.0	+9.9	57.1
Ср 26	140° 21.0	154° 51.0	169° 21.0	183° 51.0	198° 20.9	212° 50.9	227° 20.8	241° 50.7	256° 20.6	270° 50.5	285° 20.3	+29.9	15.4
	13° 43.3	13° 51.8	14° 00.2	14° 08.6	14° 16.9	14° 25.0	14° 33.2	14° 41.2	14° 49.2	14° 57.0	15° 04.8	+8.2	56.6
Чт 27	142° 46.0	157° 15.5	171° 45.1	186° 14.7	200° 44.2	215° 13.7	229° 43.2	244° 12.7	258° 42.2	273° 11.6	287° 41.1	+29.5	15.3
	16° 51.4	16° 57.8	17° 04.1	17° 10.3	17° 16.4	17° 22.5	17° 28.4	17° 34.2	17° 40.0	17° 45.6	17° 51.2	+6.0	56.1
○ Пт 28	145° 01.7	159° 31.0	174° 00.3	188° 29.7	202° 59.0	217° 28.3	231° 57.6	246° 26.9	260° 56.2	275° 25.5	289° 54.8	+29.3	15.2
	19° 02.7	19° 06.7	19° 10.5	19° 14.3	19° 18.0	19° 21.5	19° 25.0	19° 28.4	19° 31.6	19° 34.8	19° 37.8	+3.5	55.6
Сб 29	147° 15.1	161° 44.5	176° 13.9	190° 43.4	205° 12.8	219° 42.3	234° 11.8	248° 41.3	263° 10.8	277° 40.4	292° 09.9	+29.5	15.0
	20° 11.2	20° 12.6	20° 13.8	20° 15.0	20° 16.1	20° 17.1	20° 18.0	20° 18.7	20° 19.4	20° 20.0	20° 20.4	+0.9	55.1
Вс 30	149° 35.9	164° 05.8	178° 35.8	193° 05.8	207° 35.8	222° 05.9	236° 36.0	251° 06.1	265° 36.2	280° 06.4	294° 36.6	+30.1	14.9
	20° 15.2	20° 14.0	20° 12.8	20° 11.4	20° 10.0	20° 08.4	20° 06.8	20° 05.0	20° 03.2	20° 01.2	19° 59.2	-1.6	54.7

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 7 07h02 — Новолуние: 14 21h09 — Первая четв.: 21 14h44 — Полнолуние: 28 23h18

СОЛНЦЕ

Декабрь 2031

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	182° 49.0 -21° 43.7	197° 48.8 -21° 44.1	212° 48.6 -21° 44.5	227° 48.3 -21° 44.9	242° 48.1 -21° 45.3	257° 47.9 -21° 45.7	92° 44.9 -21° 50.7	107° 44.6 -21° 51.1	122° 44.4 -21° 51.5	137° 44.2 -21° 51.8	152° 43.9 -21° 52.2	167° 43.7 -21° 52.6	-0.2 -0.4
Вт 2	182° 43.5 -21° 53.0	197° 43.2 -21° 53.4	212° 43.0 -21° 53.7	227° 42.8 -21° 54.1	242° 42.5 -21° 54.5	257° 42.3 -21° 54.9	92° 39.2 -21° 59.7	107° 38.9 -22° 00.0	122° 38.7 -22° 00.4	137° 38.5 -22° 00.8	152° 38.2 -22° 01.1	167° 38.0 -22° 01.5	-0.2 -0.4
Ср 3	182° 37.7 -22° 01.9	197° 37.5 -22° 02.2	212° 37.3 -22° 02.6	227° 37.0 -22° 02.9	242° 36.8 -22° 03.3	257° 36.5 -22° 03.7	92° 33.3 -22° 08.2	107° 33.1 -22° 08.6	122° 32.8 -22° 08.9	137° 32.6 -22° 09.3	152° 32.3 -22° 09.6	167° 32.1 -22° 10.0	-0.2 -0.4
Чт 4	182° 31.9 -22° 10.3	197° 31.6 -22° 10.7	212° 31.4 -22° 11.0	227° 31.1 -22° 11.3	242° 30.9 -22° 11.7	257° 30.6 -22° 12.0	92° 27.3 -22° 16.4	107° 27.1 -22° 16.7	122° 26.8 -22° 17.0	137° 26.6 -22° 17.4	152° 26.3 -22° 17.7	167° 26.1 -22° 18.0	-0.2 -0.3
Пт 5	182° 25.8 -22° 18.3	197° 25.6 -22° 18.7	212° 25.3 -22° 19.0	227° 25.1 -22° 19.3	242° 24.8 -22° 19.6	257° 24.5 -22° 20.0	92° 21.2 -22° 24.1	107° 20.9 -22° 24.4	122° 20.7 -22° 24.7	137° 20.4 -22° 25.0	152° 20.2 -22° 25.3	167° 19.9 -22° 25.6	-0.3 -0.3
Сб 6	182° 19.6 -22° 25.9	197° 19.4 -22° 26.2	212° 19.1 -22° 26.6	227° 18.9 -22° 26.9	242° 18.6 -22° 27.2	257° 18.3 -22° 27.5	92° 14.9 -22° 31.3	107° 14.6 -22° 31.6	122° 14.4 -22° 31.9	137° 14.1 -22° 32.2	152° 13.8 -22° 32.5	167° 13.6 -22° 32.8	-0.3 -0.3
Вс 7	182° 13.3 -22° 33.1	197° 13.1 -22° 33.4	212° 12.8 -22° 33.7	227° 12.5 -22° 34.0	242° 12.3 -22° 34.2	257° 12.0 -22° 34.5	92° 08.5 -22° 38.2	107° 08.2 -22° 38.4	122° 07.9 -22° 38.7	137° 07.7 -22° 39.0	152° 07.4 -22° 39.3	167° 07.1 -22° 39.5	-0.3 -0.3
Пн 8	182° 06.9 -22° 39.8	197° 06.6 -22° 40.1	212° 06.3 -22° 40.4	227° 06.0 -22° 40.6	242° 05.8 -22° 40.9	257° 05.5 -22° 41.2	92° 01.9 -22° 44.6	107° 01.7 -22° 44.8	122° 01.4 -22° 45.1	137° 01.1 -22° 45.3	152° 00.8 -22° 45.6	167° 00.6 -22° 45.8	-0.3 -0.3
Вт 9	182° 00.3 -22° 46.1	197° 00.0 -22° 46.3	211° 59.7 -22° 46.6	226° 59.5 -22° 46.8	241° 59.2 -22° 47.1	256° 58.9 -22° 47.3	91° 55.3 -22° 50.5	106° 55.0 -22° 50.7	121° 54.7 -22° 51.0	136° 54.4 -22° 51.2	151° 54.1 -22° 51.4	166° 53.9 -22° 51.7	-0.3 -0.3
Ср 10	181° 53.6 -22° 51.9	196° 53.3 -22° 52.1	211° 53.0 -22° 52.4	226° 52.7 -22° 52.6	241° 52.5 -22° 52.8	256° 52.2 -22° 53.1	91° 48.5 -22° 56.0	106° 48.2 -22° 56.2	121° 47.9 -22° 56.4	136° 47.6 -22° 56.6	151° 47.3 -22° 56.9	166° 47.1 -22° 57.1	-0.3 -0.2
Чт 11	181° 46.8 -22° 57.3	196° 46.5 -22° 57.5	211° 46.2 -22° 57.7	226° 45.9 -22° 57.9	241° 45.6 -22° 58.1	256° 45.3 -22° 58.3	91° 41.6 -23° 01.0	106° 41.3 -23° 01.2	121° 41.0 -23° 01.4	136° 40.7 -23° 01.6	151° 40.4 -23° 01.8	166° 40.1 -23° 02.0	-0.3 -0.2
Пт 12	181° 39.9 -23° 02.2	196° 39.6 -23° 02.4	211° 39.3 -23° 02.6	226° 39.0 -23° 02.8	241° 38.7 -23° 03.0	256° 38.4 -23° 03.2	91° 34.6 -23° 05.6	106° 34.3 -23° 05.8	121° 34.0 -23° 06.0	136° 33.7 -23° 06.1	151° 33.4 -23° 06.3	166° 33.1 -23° 06.5	-0.3 -0.2
Сб 13	181° 32.8 -23° 06.7	196° 32.6 -23° 06.8	211° 32.3 -23° 07.0	226° 32.0 -23° 07.2	241° 31.7 -23° 07.4	256° 31.4 -23° 07.5	91° 27.5 -23° 09.7	106° 27.2 -23° 09.9	121° 26.9 -23° 10.0	136° 26.6 -23° 10.2	151° 26.3 -23° 10.4	166° 26.0 -23° 10.5	-0.3 -0.2
Вс 14	181° 25.7 -23° 10.7	196° 25.5 -23° 10.8	211° 25.2 -23° 11.0	226° 24.9 -23° 11.1	241° 24.6 -23° 11.3	256° 24.3 -23° 11.5	91° 20.4 -23° 13.4	106° 20.1 -23° 13.5	121° 19.8 -23° 13.7	136° 19.5 -23° 13.8	151° 19.2 -23° 13.9	166° 18.9 -23° 14.1	-0.3 -0.2
Пн 15	181° 18.6 -23° 14.2	196° 18.3 -23° 14.4	211° 18.0 -23° 14.5	226° 17.7 -23° 14.6	241° 17.4 -23° 14.8	256° 17.1 -23° 14.9	91° 13.1 -23° 16.6	106° 12.8 -23° 16.7	121° 12.5 -23° 16.8	136° 12.2 -23° 16.9	151° 11.9 -23° 17.1	166° 11.6 -23° 17.2	-0.3 -0.1
Вт 16	181° 11.3 -23° 17.3	196° 11.0 -23° 17.4	211° 10.7 -23° 17.5	226° 10.4 -23° 17.7	241° 10.1 -23° 17.8	256° 09.8 -23° 17.9	91° 05.9 -23° 19.3	106° 05.6 -23° 19.4	121° 05.3 -23° 19.5	136° 04.9 -23° 19.6	151° 04.6 -23° 19.7	166° 04.3 -23° 19.8	-0.3 -0.1
Ср 17	181° 04.0 -23° 19.9	196° 03.7 -23° 20.0	211° 03.4 -23° 20.1	226° 03.1 -23° 20.2	241° 02.8 -23° 20.3	256° 02.5 -23° 20.4	90° 58.5 -23° 21.6	105° 58.2 -23° 21.7	120° 57.9 -23° 21.7	135° 57.6 -23° 21.8	150° 57.3 -23° 21.9	165° 57.0 -23° 22.0	-0.3 -0.1
Чт 18	180° 56.7 -23° 22.1	195° 56.4 -23° 22.2	210° 56.1 -23° 22.2	225° 55.8 -23° 22.3	240° 55.5 -23° 22.4	255° 55.1 -23° 22.5	90° 51.1 -23° 23.4	105° 50.8 -23° 23.4	120° 50.5 -23° 23.5	135° 50.2 -23° 23.6	150° 49.9 -23° 23.6	165° 49.6 -23° 23.7	-0.3 -0.1
Пт 19	180° 49.3 -23° 23.8	195° 49.0 -23° 23.8	210° 48.7 -23° 23.9	225° 48.4 -23° 23.9	240° 48.1 -23° 24.0	255° 47.8 -23° 24.0	90° 43.7 -23° 24.7	105° 43.4 -23° 24.8	120° 43.1 -23° 24.8	135° 42.8 -23° 24.8	150° 42.5 -23° 24.9	165° 42.2 -23° 24.9	-0.3 -0.1
Сб 20	180° 41.9 -23° 25.0	195° 41.6 -23° 25.0	210° 41.3 -23° 25.0	225° 40.9 -23° 25.1	240° 40.6 -23° 25.1	255° 40.3 -23° 25.2	90° 36.3 -23° 25.6	105° 36.0 -23° 25.6	120° 35.7 -23° 25.6	135° 35.4 -23° 25.6	150° 35.1 -23° 25.7	165° 34.7 -23° 25.7	-0.3 -0.0
Вс 21	180° 34.4 -23° 25.7	195° 34.1 -23° 25.7	210° 33.8 -23° 25.8	225° 33.5 -23° 25.8	240° 33.2 -23° 25.8	255° 32.9 -23° 25.8	90° 28.9 -23° 26.0	105° 28.5 -23° 26.0	120° 28.2 -23° 26.0	135° 27.9 -23° 26.0	150° 27.6 -23° 26.0	165° 27.3 -23° 26.0	-0.3 -0.0
Пн 22	180° 27.0 -23° 26.0	195° 26.7 -23° 26.0	210° 26.4 -23° 26.0	225° 26.1 -23° 26.0	240° 25.7 -23° 26.0	255° 25.4 -23° 26.0	90° 21.4 -23° 25.9	105° 21.1 -23° 25.9	120° 20.8 -23° 25.9	135° 20.5 -23° 25.8	150° 20.2 -23° 25.8	165° 19.8 -23° 25.8	-0.3 -0.0
Вт 23	180° 19.5 -23° 25.8	195° 19.2 -23° 25.8	210° 18.9 -23° 25.8	225° 18.6 -23° 25.7	240° 18.3 -23° 25.7	255° 18.0 -23° 25.7	90° 13.9 -23° 25.3	105° 13.6 -23° 25.3	120° 13.3 -23° 25.3	135° 13.0 -23° 25.2	150° 12.7 -23° 25.2	165° 12.4 -23° 25.2	-0.3 +0.0
Ср 24	180° 12.1 -23° 25.1	195° 11.8 -23° 25.1	210° 11.5 -23° 25.0	225° 11.1 -23° 25.0	240° 10.8 -23° 25.0	255° 10.5 -23° 24.9	90° 06.5 -23° 24.3	105° 06.2 -23° 24.3	120° 05.9 -23° 24.2	135° 05.6 -23° 24.2	150° 05.3 -23° 24.1	165° 04.9 -23° 24.0	-0.3 +0.0
Чт 25	180° 04.6 -23° 24.0	195° 04.3 -23° 23.9	210° 04.0 -23° 23.9	225° 03.7 -23° 23.8	240° 03.4 -23° 23.8	255° 03.1 -23° 23.7	89° 59.1 -23° 22.8	104° 58.8 -23° 22.8	119° 58.5 -23° 22.7	134° 58.1 -23° 22.6	149° 57.8 -23° 22.5	164° 57.5 -23° 22.5	-0.3 +0.1
Пт 26	179° 57.2 -23° 22.4	194° 56.9 -23° 22.3	209° 56.6 -23° 22.2	224° 56.3 -23° 22.1	239° 56.0 -23° 22.1	254° 55.7 -23° 22.0	89° 51.7 -23° 20.9	104° 51.4 -23° 20.8	119° 51.1 -23° 20.7	134° 50.7 -23° 20.6	149° 50.4 -23° 20.5	164° 50.1 -23° 20.4	-0.3 +0.1
Сб 27	179° 49.8 -23° 20.3	194° 49.5 -23° 20.2	209° 49.2 -23° 20.1	224° 48.9 -23° 20.0	239° 48.6 -23° 19.9	254° 48.3 -23° 19.8	89° 44.3 -23° 18.4	104° 44.0 -23° 18.3	119° 43.7 -23° 18.2	134° 43.4 -23° 18.1	149° 43.1 -23° 18.0	164° 42.8 -23° 17.9	-0.3 +0.1
Вс 28	179° 42.5 -23° 17.8	194° 42.2 -23° 17.6	209° 41.8 -23° 17.5	224° 41.5 -23° 17.4	239° 41.2 -23° 17.3	254° 40.9 -23° 17.2	89° 37.0 -23° 15.5	104° 36.7 -23° 15.4	119° 36.4 -23° 15.3	134° 36.1 -23° 15.1	149° 35.8 -23° 15.0	164° 35.4 -23° 14.9	-0.3 +0.1
Пн 29	179° 35.1 -23° 14.7	194° 34.8 -23° 14.6	209° 34.5 -23° 14.5	224° 34.2 -23° 14.3	239° 33.9 -23° 14.2	254° 33.6 -23° 14.1	89° 29.7 -23° 12.2	104° 29.4 -23° 12.0	119° 29.1 -23° 11.9	134° 28.8 -23° 11.7	149° 28.5 -23° 11.6	164° 28.2 -23° 11.4	-0.3 +0.1
Вт 30	179° 27.9 -23° 11.3	194° 27.6 -23° 11.1	209° 27.3 -23° 11.0	224° 27.0 -23° 10.8	239° 26.7 -23° 10.6	254° 26.4 -23° 10.5	89° 22.5 -23° 08.4	104° 22.2 -23° 08.2	119° 21.9 -23° 08.0	134° 21.6 -23° 07.8	149° 21.3 -23° 07.7	164° 21.0 -23° 07.5	-0.3 +0.2
Ср 31	179° 20.7 -23° 07.3	194° 20.4 -23° 07.2	209° 20.1 -23° 07.0	224° 19.8 -23° 06.8	239° 19.5 -23° 06.6	254° 19.2 -23° 06.4	89° 15.3 -23° 04.1	104° 15.0 -23° 03.9	119° 14.7 -23° 03.7	134° 14.4 -23° 03.5	149° 14.1 -23° 03.3	164° 13.8 -23° 03.1	-0.3 +0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

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Д	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	Δ'/h	R/p
Пн 1	65° 10.1 19° 36.7	79° 40.7 19° 33.7	94° 11.3 19° 30.6	108° 41.9 19° 27.5	123° 12.6 19° 24.2	137° 43.3 19° 20.9	152° 14.1 19° 17.5	166° 44.9 19° 14.0	181° 15.7 19° 10.3	195° 46.6 19° 06.7	210° 17.5 19° 02.9	+30.7 -3.4	14.8 54.4
Вт 2	68° 06.2 17° 56.1	82° 37.8 17° 51.0	97° 09.4 17° 45.8	111° 41.1 17° 40.5	126° 12.8 17° 35.2	140° 44.5 17° 29.8	155° 16.3 17° 24.3	169° 48.2 17° 18.7	184° 20.0 17° 13.0	198° 52.0 17° 07.3	213° 23.9 17° 01.5	+31.8 -5.5	14.8 54.2
Ср 3	71° 28.4 15° 26.1	86° 01.0 15° 19.2	100° 33.7 15° 12.3	115° 06.4 15° 05.2	129° 39.1 14° 58.1	144° 11.9 14° 51.0	158° 44.7 14° 43.8	173° 17.6 14° 36.5	187° 50.5 14° 29.1	202° 23.4 14° 21.7	216° 56.4 14° 14.3	+32.8 -7.2	14.7 54.0
Чт 4	75° 15.1 12° 15.6	89° 48.6 12° 07.3	104° 22.1 11° 58.9	118° 55.6 11° 50.5	133° 29.2 11° 42.0	148° 02.8 11° 33.4	162° 36.5 11° 24.8	177° 10.2 11° 16.2	191° 43.8 11° 07.5	206° 17.6 10° 58.8	220° 51.3 10° 50.0	+33.6 -8.6	14.7 54.1
Пт 5	79° 20.1 8° 33.3	93° 54.1 8° 23.9	108° 28.2 8° 14.4	123° 02.3 8° 04.9	137° 36.4 7° 55.4	152° 10.5 7° 45.8	166° 44.6 7° 36.2	181° 18.7 7° 26.6	195° 52.9 7° 16.9	210° 27.0 7° 07.2	225° 01.2 6° 57.4	+34.1 -9.6	14.8 54.3
Сб 6	83° 34.1 4° 27.7	98° 08.3 4° 17.5	112° 42.4 4° 07.3	127° 16.6 3° 57.1	141° 50.8 3° 46.8	156° 24.9 3° 36.5	170° 59.1 3° 26.2	185° 33.2 3° 15.9	200° 07.4 3° 05.5	214° 41.5 2° 55.2	229° 15.6 2° 44.8	+34.2 -10.3	14.9 54.6
◑ Вс 7	87° 45.3 0° 07.0	102° 19.2 -0° 03.6	116° 52.9 -0° 14.3	131° 26.7 -0° 24.9	146° 00.4 -0° 35.5	160° 34.1 -0° 46.2	175° 07.8 -0° 56.9	189° 41.4 -1° 07.5	204° 15.0 -1° 18.2	218° 48.6 -1° 28.9	233° 22.2 -1° 39.6	+33.7 -10.7	15.1 55.2
Пн 8	91° 40.6 -4° 19.9	106° 13.5 -4° 30.5	120° 46.3 -4° 41.2	135° 19.1 -4° 51.8	149° 51.8 -5° 02.5	164° 24.5 -5° 13.1	178° 57.1 -5° 23.7	193° 29.7 -5° 34.3	208° 02.2 -5° 44.9	222° 34.7 -5° 55.5	237° 07.1 -6° 06.1	+32.7 -10.6	15.3 55.9
Вт 9	95° 05.8 -8° 42.3	109° 37.2 -8° 52.5	124° 08.6 -9° 02.7	138° 39.8 -9° 12.9	153° 11.0 -9° 23.1	167° 42.1 -9° 33.2	182° 13.1 -9° 43.2	196° 44.1 -9° 53.3	211° 14.9 -10° 03.3	225° 45.7 -10° 13.2	240° 16.5 -10° 23.2	+31.1 -10.1	15.5 56.8
Ср 10	97° 47.6 -12° 46.9	112° 17.0 -12° 56.1	126° 46.4 -13° 05.2	141° 15.6 -13° 14.3	155° 44.7 -13° 23.3	170° 13.8 -13° 32.2	184° 42.7 -13° 41.1	199° 11.6 -13° 50.0	213° 40.4 -13° 58.7	228° 09.1 -14° 07.4	242° 37.7 -14° 16.1	+29.0 -8.9	15.7 57.7
Чт 11	99° 35.7 -16° 16.7	114° 02.8 -16° 24.1	128° 29.9 -16° 31.4	142° 56.8 -16° 38.6	157° 23.7 -16° 45.8	171° 50.4 -16° 52.8	186° 17.1 -16° 59.7	200° 43.7 -17° 06.6	215° 10.2 -17° 13.3	229° 36.6 -17° 20.0	244° 02.9 -17° 26.5	+26.7 -7.0	16.0 58.7
Пт 12	100° 26.9 -18° 52.0	114° 51.9 -18° 56.8	129° 16.7 -19° 01.5	143° 41.5 -19° 06.0	158° 06.2 -19° 10.5	172° 30.8 -19° 14.8	186° 55.4 -19° 19.0	201° 19.9 -19° 23.0	215° 44.3 -19° 26.9	230° 08.6 -19° 30.7	244° 32.9 -19° 34.4	+24.6 -4.2	16.2 59.5
Сб 13	100° 29.4 -20° 13.3	114° 52.8 -20° 14.8	129° 16.1 -20° 16.1	143° 39.3 -20° 17.3	158° 02.6 -20° 18.4	172° 25.7 -20° 19.3	186° 48.9 -20° 20.0	201° 12.0 -20° 20.6	215° 35.1 -20° 21.1	229° 58.1 -20° 21.4	244° 21.1 -20° 21.6	+23.2 -0.8	16.4 60.2
● Вс 14	100° 04.1 -20° 06.4	114° 26.9 -20° 04.1	128° 49.7 -20° 01.8	143° 12.6 -19° 59.3	157° 35.4 -19° 56.6	171° 58.2 -19° 53.9	186° 21.1 -19° 50.9	200° 43.9 -19° 47.8	215° 06.8 -19° 44.6	229° 29.7 -19° 41.2	243° 52.6 -19° 37.7	+22.8 +2.9	16.5 60.6
Пн 15	99° 39.4 -18° 27.8	114° 02.9 -18° 22.1	128° 26.3 -18° 16.2	142° 49.8 -18° 10.2	157° 13.4 -18° 04.0	171° 37.0 -17° 57.8	186° 00.7 -17° 51.3	200° 24.4 -17° 44.8	214° 48.2 -17° 38.2	229° 12.0 -17° 31.4	243° 35.9 -17° 24.5	+23.6 +6.3	16.6 60.8
Вт 16	99° 41.3 -15° 27.1	114° 06.2 -15° 18.4	128° 31.2 -15° 09.6	142° 56.2 -15° 00.7	157° 21.3 -14° 51.7	171° 46.4 -14° 42.6	186° 11.7 -14° 33.4	200° 37.0 -14° 24.1	215° 02.4 -14° 14.8	229° 27.8 -14° 05.3	243° 53.3 -13° 55.8	+25.2 +9.1	16.5 60.6
Ср 17	100° 24.9 -11° 23.1	114° 51.6 -11° 12.3	129° 18.3 -11° 01.5	143° 45.1 -10° 50.6	158° 12.0 -10° 39.7	172° 39.0 -10° 28.7	187° 06.1 -10° 17.7	201° 33.2 -10° 06.6	216° 00.3 -9° 55.4	230° 27.6 -9° 44.2	244° 54.9 -9° 32.9	+27.0 +11.0	16.4 60.1
Чт 18	101° 52.6 -6° 39.0	116° 20.9 -6° 27.1	130° 49.3 -6° 15.3	145° 17.8 -6° 03.3	159° 46.3 -5° 51.4	174° 14.9 -5° 39.4	188° 43.5 -5° 27.4	203° 12.2 -5° 15.4	217° 41.0 -5° 03.4	232° 09.8 -4° 51.4	246° 38.7 -4° 39.3	+28.6 +12.0	16.2 59.5
Пт 19	116° 20.9 -6° 27.1	130° 49.3 -6° 15.3	145° 17.8 -6° 03.3	159° 46.3 -5° 51.4	174° 14.9 -5° 39.4	188° 43.5 -5° 27.4	203° 12.2 -5° 15.4	217° 41.0 -5° 03.4	232° 09.8 -4° 51.4	246° 38.7 -4° 39.3	261° 07.6 -4° 27.3	+28.7 +12.0	16.2 59.5
Сб 20	118° 27.0 -1° 25.3	132° 56.7 -1° 13.2	147° 26.3 -1° 01.1	161° 56.1 -0° 49.0	176° 25.8 -0° 36.8	190° 55.6 -0° 24.7	205° 25.5 -0° 12.7	219° 55.3 -0° 00.6	234° 25.2 0° 11.5	248° 55.2 0° 23.5	263° 25.1 0° 35.6	+29.8 +12.1	16.0 58.7
◐ Вс 21	120° 58.0 3° 33.7	135° 28.4 3° 45.4	149° 58.8 3° 57.0	164° 29.2 4° 08.6	178° 59.6 4° 20.2	193° 30.1 4° 31.7	208° 00.6 4° 43.2	222° 31.0 4° 54.6	237° 01.5 5° 06.1	251° 32.0 5° 17.5	266° 02.5 5° 28.8	+30.5 +11.5	15.8 58.0
Пн 22	123° 41.4 8° 13.8	138° 12.0 8° 24.4	152° 42.6 8° 35.0	167° 13.2 8° 45.5	181° 43.9 8° 56.0	196° 14.5 9° 06.4	210° 45.1 9° 16.7	225° 15.8 9° 27.0	239° 46.4 9° 37.2	254° 17.0 9° 47.4	268° 47.6 9° 57.5	+30.6 +10.4	15.6 57.3
Вт 23	126° 26.2 12° 21.7	140° 56.7 12° 30.8	155° 27.2 12° 39.8	169° 57.7 12° 48.7	184° 28.2 12° 57.6	198° 58.6 13° 06.4	213° 29.1 13° 15.1	227° 59.5 13° 23.8	242° 29.9 13° 32.3	257° 00.3 13° 40.8	271° 30.7 13° 49.3	+30.5 +8.8	15.4 56.6
Ср 24	129° 05.2 15° 46.2	143° 35.4 15° 53.3	158° 05.5 16° 00.4	172° 35.7 16° 07.4	187° 05.8 16° 14.2	201° 35.9 16° 21.0	216° 06.1 16° 27.8	230° 36.1 16° 34.4	245° 06.2 16° 40.9	259° 36.3 16° 47.4	274° 06.4 16° 53.7	+30.1 +6.8	15.3 56.0
Чт 25	131° 35.7 18° 18.2	146° 05.5 18° 23.1	160° 35.4 18° 27.9	175° 05.2 18° 32.6	189° 35.0 18° 37.2	204° 04.9 18° 41.7	218° 34.7 18° 46.1	233° 04.5 18° 50.4	247° 34.3 18° 54.6	262° 04.1 18° 58.7	276° 33.9 19° 02.7	+29.8 +4.5	15.1 55.5
Пт 26	134° 00.1 19° 51.1	148° 29.9 19° 53.5	162° 59.6 19° 55.8	177° 29.4 19° 58.0	191° 59.1 20° 00.2	206° 28.9 20° 02.2	220° 58.6 20° 04.1	235° 28.4 20° 05.9	249° 58.1 20° 07.7	264° 27.9 20° 09.3	278° 57.7 20° 10.8	+29.8 +2.0	15.0 55.0
Сб 27	136° 25.4 20° 21.4	150° 55.4 20° 21.3	165° 25.4 20° 21.2	179° 55.3 20° 20.9	194° 25.3 20° 20.5	208° 55.4 20° 20.0	223° 25.4 20° 19.4	237° 55.5 20° 18.7	252° 25.6 20° 17.9	266° 55.7 20° 17.0	281° 25.8 20° 16.0	+30.0 -0.5	14.9 54.6
○ Вс 28	139° 00.6 19° 49.7	153° 31.1 19° 47.1	168° 01.7 19° 44.5	182° 32.3 19° 41.8	197° 02.9 19° 39.0	211° 33.5 19° 36.1	226° 04.2 19° 33.2	240° 35.0 19° 30.1	255° 05.7 19° 26.9	269° 36.5 19° 23.7	284° 07.3 19° 20.3	+30.7 -2.9	14.8 54.3
Пн 29	141° 53.9 18° 19.8	156° 25.3 18° 15.1	170° 56.7 18° 10.3	185° 28.2 18° 05.4	199° 59.7 18° 00.5	214° 31.3 17° 55.4	229° 02.9 17° 50.3	243° 34.5 17° 45.1	258° 06.2 17° 39.8	272° 37.9 17° 34.5	287° 09.7 17° 29.1	+31.6 -5.1	14.8 54.1
Вт 30	145° 10.7 15° 58.8	159° 43.1 15° 52.2	174° 15.5 15° 45.6	188° 48.0 15° 38.9	203° 20.5 15° 32.1	217° 53.1 15° 25.2	232° 25.7 15° 18.3	246° 58.3 15° 11.4	261° 30.9 15° 04.3	276° 03.6 14° 57.2	290° 36.4 14° 50.0	+32.6 -6.9	14.7 54.0
Ср 31	148° 51.9 12° 55.5	163° 25.2 12° 47.4	177° 58.6 12° 39.2	192° 32.0 12° 31.1	207° 05.4 12° 22.8	221° 38.9 12° 14.5	236° 12.3 12° 06.2	250° 45.9 11° 57.8	265° 19.4 11° 49.4	279° 53.0 11° 40.9	294° 26.6 11° 32.3	+33.5 -8.3	14.7 53.9

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 7 03h19 — Новолуние: 14 09h05 — Первая четв.: 21 00h00 — Полнолуние: 28 17h33

СОЛНЦЕ

Январь 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	179° 13.5 -23° 02.9	194° 13.2 -23° 02.7	209° 12.9 -23° 02.5	224° 12.6 -23° 02.3	239° 12.3 -23° 02.1	254° 12.0 -23° 01.9	89° 08.2 -22° 59.3	104° 07.9 -22° 59.1	119° 07.6 -22° 58.9	134° 07.3 -22° 58.7	149° 07.0 -22° 58.5	164° 06.7 -22° 58.3	-0.3 +0.2
Пт 2	179° 06.4 -22° 58.1	194° 06.1 -22° 57.8	209° 05.8 -22° 57.6	224° 05.6 -22° 57.4	239° 05.3 -22° 57.2	254° 05.0 -22° 57.0	89° 01.2 -22° 54.1	104° 00.9 -22° 53.9	119° 00.6 -22° 53.7	134° 00.3 -22° 53.4	149° 00.0 -22° 53.2	163° 59.7 -22° 53.0	-0.3 +0.2
Сб 3	178° 59.4 -22° 52.7	193° 59.1 -22° 52.5	208° 58.9 -22° 52.3	223° 58.6 -22° 52.0	238° 58.3 -22° 51.8	253° 58.0 -22° 51.6	88° 54.2 -22° 48.4	103° 54.0 -22° 48.2	118° 53.7 -22° 47.9	133° 53.4 -22° 47.7	148° 53.1 -22° 47.5	163° 52.8 -22° 47.2	-0.3 +0.2
Вс 4	178° 52.5 -22° 47.0	193° 52.2 -22° 46.7	208° 51.9 -22° 46.4	223° 51.7 -22° 46.2	238° 51.4 -22° 45.9	253° 51.1 -22° 45.7	88° 47.4 -22° 42.3	103° 47.1 -22° 42.1	118° 46.8 -22° 41.8	133° 46.5 -22° 41.5	148° 46.3 -22° 41.3	163° 46.0 -22° 41.0	-0.3 +0.3
Пн 5	178° 45.7 -22° 40.7	193° 45.4 -22° 40.4	208° 45.1 -22° 40.2	223° 44.9 -22° 39.9	238° 44.6 -22° 39.6	253° 44.3 -22° 39.4	88° 40.6 -22° 35.7	103° 40.4 -22° 35.5	118° 40.1 -22° 35.2	133° 39.8 -22° 34.9	148° 39.5 -22° 34.6	163° 39.3 -22° 34.3	-0.3 +0.3
Вт 6	178° 39.0 -22° 34.0	193° 38.7 -22° 33.7	208° 38.4 -22° 33.5	223° 38.1 -22° 33.2	238° 37.9 -22° 32.9	253° 37.6 -22° 32.6	88° 34.0 -22° 28.7	103° 33.7 -22° 28.4	118° 33.5 -22° 28.1	133° 33.2 -22° 27.8	148° 32.9 -22° 27.5	163° 32.6 -22° 27.2	-0.3 +0.3
Ср 7	178° 32.4 -22° 26.9	193° 32.1 -22° 26.6	208° 31.8 -22° 26.3	223° 31.5 -22° 26.0	238° 31.3 -22° 25.7	253° 31.0 -22° 25.4	88° 27.5 -22° 21.3	103° 27.2 -22° 20.9	118° 26.9 -22° 20.6	133° 26.7 -22° 20.3	148° 26.4 -22° 20.0	163° 26.1 -22° 19.7	-0.3 +0.3
Чт 8	178° 25.9 -22° 19.3	193° 25.6 -22° 19.0	208° 25.3 -22° 18.7	223° 25.1 -22° 18.3	238° 24.8 -22° 18.0	253° 24.5 -22° 17.7	88° 21.1 -22° 13.4	103° 20.8 -22° 13.0	118° 20.5 -22° 12.7	133° 20.3 -22° 12.3	148° 20.0 -22° 12.0	163° 19.7 -22° 11.7	-0.3 +0.3
Пт 9	178° 19.5 -22° 11.3	193° 19.2 -22° 11.0	208° 18.9 -22° 10.6	223° 18.7 -22° 10.3	238° 18.4 -22° 09.9	253° 18.2 -22° 09.6	88° 14.8 -22° 05.0	103° 14.5 -22° 04.7	118° 14.2 -22° 04.3	133° 14.0 -22° 03.9	148° 13.7 -22° 03.6	163° 13.5 -22° 03.2	-0.3 +0.3
Сб 10	178° 13.2 -22° 02.9	193° 13.0 -22° 02.5	208° 12.7 -22° 02.1	223° 12.4 -22° 01.8	238° 12.2 -22° 01.4	253° 11.9 -22° 01.0	88° 08.6 -21° 56.2	103° 08.4 -21° 55.9	118° 08.1 -21° 55.5	133° 07.8 -21° 55.1	148° 07.6 -21° 54.7	163° 07.3 -21° 54.4	-0.3 +0.4
Вс 11	178° 07.1 -21° 54.0	193° 06.8 -21° 53.6	208° 06.6 -21° 53.2	223° 06.3 -21° 52.8	238° 06.1 -21° 52.5	253° 05.8 -21° 52.1	88° 02.6 -21° 47.0	103° 02.3 -21° 46.6	118° 02.1 -21° 46.2	133° 01.8 -21° 45.9	148° 01.6 -21° 45.5	163° 01.4 -21° 45.1	-0.3 +0.4
Пн 12	178° 01.1 -21° 44.7	193° 00.9 -21° 44.3	208° 00.6 -21° 43.9	223° 00.4 -21° 43.5	238° 00.1 -21° 43.1	252° 59.9 -21° 42.7	87° 56.7 -21° 37.4	102° 56.5 -21° 37.0	117° 56.2 -21° 36.6	132° 56.0 -21° 36.2	147° 55.7 -21° 35.8	162° 55.5 -21° 35.3	-0.2 +0.4
Вт 13	177° 55.3 -21° 34.9	192° 55.0 -21° 34.5	207° 54.8 -21° 34.1	222° 54.5 -21° 33.7	237° 54.3 -21° 33.3	252° 54.1 -21° 32.9	87° 51.0 -21° 27.4	102° 50.8 -21° 26.9	117° 50.5 -21° 26.5	132° 50.3 -21° 26.1	147° 50.1 -21° 25.6	162° 49.8 -21° 25.2	-0.2 +0.4
Ср 14	177° 49.6 -21° 24.8	192° 49.4 -21° 24.4	207° 49.1 -21° 23.9	222° 48.9 -21° 23.5	237° 48.7 -21° 23.1	252° 48.4 -21° 22.6	87° 45.4 -21° 16.9	102° 45.2 -21° 16.5	117° 45.0 -21° 16.0	132° 44.7 -21° 15.6	147° 44.5 -21° 15.1	162° 44.3 -21° 14.7	-0.2 +0.4
Чт 15	177° 44.1 -21° 14.2	192° 43.8 -21° 13.8	207° 43.6 -21° 13.3	222° 43.4 -21° 12.9	237° 43.2 -21° 12.4	252° 42.9 -21° 12.0	87° 40.0 -21° 06.0	102° 39.8 -21° 05.6	117° 39.6 -21° 05.1	132° 39.4 -21° 04.6	147° 39.2 -21° 04.2	162° 38.9 -21° 03.7	-0.2 +0.4
Пт 16	177° 38.7 -21° 03.3	192° 38.5 -21° 02.8	207° 38.3 -21° 02.3	222° 38.1 -21° 01.9	237° 37.8 -21° 01.4	252° 37.6 -21° 00.9	87° 34.8 -20° 54.8	102° 34.6 -20° 54.3	117° 34.4 -20° 53.8	132° 34.2 -20° 53.3	147° 34.0 -20° 52.8	162° 33.7 -20° 52.4	-0.2 +0.5
Сб 17	177° 33.5 -20° 51.9	192° 33.3 -20° 51.4	207° 33.1 -20° 50.9	222° 32.9 -20° 50.4	237° 32.7 -20° 49.9	252° 32.5 -20° 49.5	87° 29.8 -20° 43.1	102° 29.6 -20° 42.6	117° 29.4 -20° 42.1	132° 29.1 -20° 41.6	147° 28.9 -20° 41.1	162° 28.7 -20° 40.6	-0.2 +0.5
Вс 18	177° 28.5 -20° 40.1	192° 28.3 -20° 39.6	207° 28.1 -20° 39.1	222° 27.9 -20° 38.6	237° 27.7 -20° 38.1	252° 27.5 -20° 37.6	87° 24.9 -20° 31.0	102° 24.7 -20° 30.5	117° 24.5 -20° 30.0	132° 24.3 -20° 29.5	147° 24.1 -20° 29.0	162° 23.9 -20° 28.5	-0.2 +0.5
Пн 19	177° 23.7 -20° 28.0	192° 23.5 -20° 27.4	207° 23.3 -20° 26.9	222° 23.1 -20° 26.4	237° 22.9 -20° 25.9	252° 22.7 -20° 25.4	87° 20.2 -20° 18.6	102° 20.0 -20° 18.1	117° 19.8 -20° 17.5	132° 19.6 -20° 17.0	147° 19.5 -20° 16.5	162° 19.3 -20° 15.9	-0.2 +0.5
Вт 20	177° 19.1 -20° 15.4	192° 18.9 -20° 14.9	207° 18.7 -20° 14.3	222° 18.5 -20° 13.8	237° 18.3 -20° 13.3	252° 18.1 -20° 12.7	87° 15.7 -20° 05.7	102° 15.5 -20° 05.2	117° 15.4 -20° 04.7	132° 15.2 -20° 04.1	147° 15.0 -20° 03.6	162° 14.8 -20° 03.0	-0.2 +0.5
Ср 21	177° 14.6 -20° 02.5	192° 14.5 -20° 01.9	207° 14.3 -20° 01.4	222° 14.1 -20° 00.8	237° 13.9 -20° 00.3	252° 13.7 -19° 59.7	87° 11.4 -19° 52.5	102° 11.2 -19° 52.0	117° 11.1 -19° 51.4	132° 10.9 -19° 50.9	147° 10.7 -19° 50.3	162° 10.6 -19° 49.7	-0.2 +0.5
Чт 22	177° 10.4 -19° 49.2	192° 10.2 -19° 48.6	207° 10.0 -19° 48.1	222° 09.9 -19° 47.5	237° 09.7 -19° 46.9	252° 09.5 -19° 46.4	87° 07.3 -19° 39.0	102° 07.2 -19° 38.4	117° 07.0 -19° 37.8	132° 06.8 -19° 37.2	147° 06.7 -19° 36.7	162° 06.5 -19° 36.1	-0.2 +0.6
Пт 23	177° 06.3 -19° 35.5	192° 06.2 -19° 34.9	207° 06.0 -19° 34.4	222° 05.8 -19° 33.8	237° 05.7 -19° 33.2	252° 05.5 -19° 32.6	87° 03.4 -19° 25.0	102° 03.3 -19° 24.4	117° 03.1 -19° 23.8	132° 02.9 -19° 23.3	147° 02.8 -19° 22.7	162° 02.6 -19° 22.1	-0.2 +0.6
Сб 24	177° 02.5 -19° 21.5	192° 02.3 -19° 20.9	207° 02.1 -19° 20.3	222° 02.0 -19° 19.7	237° 01.8 -19° 19.1	252° 01.7 -19° 18.5	86° 59.7 -19° 10.7	101° 59.5 -19° 10.1	116° 59.4 -19° 09.5	131° 59.2 -19° 08.9	146° 59.1 -19° 08.3	161° 58.9 -19° 07.7	-0.2 +0.6
Вс 25	176° 58.8 -19° 07.1	191° 58.7 -19° 06.5	206° 58.5 -19° 05.9	221° 58.4 -19° 05.3	236° 58.2 -19° 04.7	251° 58.1 -19° 04.1	86° 56.2 -18° 56.1	101° 56.0 -18° 55.5	116° 55.9 -18° 54.8	131° 55.8 -18° 54.2	146° 55.6 -18° 53.6	161° 55.5 -18° 53.0	-0.1 +0.6
Пн 26	176° 55.3 -18° 52.4	191° 55.2 -18° 51.7	206° 55.1 -18° 51.1	221° 54.9 -18° 50.5	236° 54.8 -18° 49.9	251° 54.6 -18° 49.2	86° 52.9 -18° 41.1	101° 52.7 -18° 40.4	116° 52.6 -18° 39.8	131° 52.5 -18° 39.2	146° 52.3 -18° 38.5	161° 52.2 -18° 37.9	-0.1 +0.6
Вт 27	176° 52.1 -18° 37.3	191° 51.9 -18° 36.6	206° 51.8 -18° 36.0	221° 51.7 -18° 35.4	236° 51.6 -18° 34.7	251° 51.4 -18° 34.1	86° 49.8 -18° 25.7	101° 49.6 -18° 25.1	116° 49.5 -18° 24.5	131° 49.4 -18° 23.8	146° 49.3 -18° 23.2	161° 49.1 -18° 22.5	-0.1 +0.6
Ср 28	176° 49.0 -18° 21.9	191° 48.9 -18° 21.2	206° 48.8 -18° 20.6	221° 48.6 -18° 19.9	236° 48.5 -18° 19.3	251° 48.4 -18° 18.6	86° 46.8 -18° 10.1	101° 46.7 -18° 09.4	116° 46.6 -18° 08.8	131° 46.5 -18° 08.1	146° 46.4 -18° 07.4	161° 46.3 -18° 06.8	-0.1 +0.6
Чт 29	176° 46.2 -18° 06.1	191° 46.0 -18° 05.4	206° 45.9 -18° 04.8	221° 45.8 -18° 04.1	236° 45.7 -18° 03.4	251° 45.6 -18° 02.8	86° 44.1 -17° 54.1	101° 44.0 -17° 53.4	116° 43.9 -17° 52.7	131° 43.8 -17° 52.1	146° 43.7 -17° 51.4	161° 43.6 -17° 50.7	-0.1 +0.7
Пт 30	176° 43.5 -17° 50.0	191° 43.4 -17° 49.4	206° 43.3 -17° 48.7	221° 43.2 -17° 48.0	236° 43.1 -17° 47.3	251° 43.0 -17° 46.6	86° 41.6 -17° 37.8	101° 41.5 -17° 37.1	116° 41.4 -17° 36.4	131° 41.3 -17° 35.7	146° 41.2 -17° 35.0	161° 41.1 -17° 34.3	-0.1 +0.7
Сб 31	176° 41.0 -17° 33.6	191° 40.9 -17° 32.9	206° 40.8 -17° 32.2	221° 40.7 -17° 31.6	236° 40.6 -17° 30.9	251° 40.6 -17° 30.2	86° 39.3 -17° 21.1	101° 39.2 -17° 20.4	116° 39.1 -17° 19.7	131° 39.1 -17° 19.0	146° 39.0 -17° 18.3	161° 38.9 -17° 17.6	-0.1 +0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2032

Д	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	Δ°/h	R/p
Чт 1	65° 30.3	80° 04.2	94° 38.1	109° 12.1	123° 46.0	138° 20.0	152° 54.0	167° 28.1	182° 02.1	196° 36.2	211° 10.3	+34.0	14.7
	10° 13.5	10° 04.5	9° 55.5	9° 46.5	9° 37.4	9° 28.2	9° 19.1	9° 09.8	9° 00.6	8° 51.3	8° 42.0	-9.2	54.0
Пт 2	69° 43.7	84° 18.0	98° 52.4	113° 26.8	128° 01.1	142° 35.5	157° 09.9	171° 44.3	186° 18.7	200° 53.1	215° 27.5	+34.4	14.8
	6° 18.1	6° 08.3	5° 58.5	5° 48.6	5° 38.7	5° 28.7	5° 18.8	5° 08.8	4° 58.8	4° 48.8	4° 38.7	-9.9	54.2
Сб 3	74° 03.5	88° 37.9	103° 12.2	117° 46.6	132° 20.9	146° 55.3	161° 29.6	176° 03.9	190° 38.2	205° 12.4	219° 46.7	+34.3	14.9
	2° 05.7	1° 55.3	1° 45.0	1° 34.6	1° 24.3	1° 13.9	1° 03.5	0° 53.1	0° 42.7	0° 32.3	0° 21.8	-10.4	54.5
Вс 4	78° 18.2	92° 52.2	107° 26.0	121° 59.9	136° 33.7	151° 07.5	165° 41.2	180° 14.9	194° 48.6	209° 22.3	223° 55.9	+33.8	15.0
	-2° 15.1	-2° 25.6	-2° 36.1	-2° 46.5	-2° 57.0	-3° 07.5	-3° 17.9	-3° 28.4	-3° 38.8	-3° 49.3	-3° 59.7	-10.5	55.0
◑ Пн 5	82° 15.0	96° 47.9	111° 20.7	125° 53.5	140° 26.3	154° 59.0	169° 31.6	184° 04.2	198° 36.7	213° 09.2	227° 41.6	+32.7	15.2
	-6° 34.9	-6° 45.1	-6° 55.3	-7° 05.5	-7° 15.7	-7° 25.8	-7° 36.0	-7° 46.1	-7° 56.1	-8° 06.2	-8° 16.2	-10.1	55.7
Вт 6	85° 40.1	100° 11.4	114° 42.7	129° 13.9	143° 45.1	158° 16.1	172° 47.1	187° 18.0	201° 48.8	216° 19.6	230° 50.3	+31.0	15.4
	-10° 43.0	-10° 52.5	-11° 02.0	-11° 11.4	-11° 20.8	-11° 30.1	-11° 39.4	-11° 48.6	-11° 57.8	-12° 07.0	-12° 16.1	-9.3	56.5
Ср 7	88° 20.5	102° 49.9	117° 19.1	131° 48.3	146° 17.4	160° 46.3	175° 15.2	189° 44.0	204° 12.7	218° 41.3	233° 09.9	+28.9	15.7
	-14° 26.3	-14° 34.5	-14° 42.6	-14° 50.7	-14° 58.7	-15° 06.6	-15° 14.5	-15° 22.2	-15° 30.0	-15° 37.6	-15° 45.2	-7.9	57.5
Чт 8	90° 06.7	104° 33.7	119° 00.6	133° 27.5	147° 54.3	162° 20.9	176° 47.5	191° 14.0	205° 40.4	220° 06.7	234° 32.9	+26.6	16.0
	-17° 28.7	-17° 34.9	-17° 41.0	-17° 47.0	-17° 52.9	-17° 58.7	-18° 04.4	-18° 10.0	-18° 15.5	-18° 20.9	-18° 26.2	-5.7	58.5
Пт 9	90° 55.7	105° 20.6	119° 45.4	134° 10.1	148° 34.7	162° 59.2	177° 23.7	191° 48.1	206° 12.4	220° 36.7	235° 00.9	+24.5	16.2
	-19° 31.9	-19° 35.3	-19° 38.6	-19° 41.8	-19° 44.9	-19° 47.8	-19° 50.6	-19° 53.3	-19° 55.8	-19° 58.2	-20° 00.5	-2.9	59.5
Сб 10	90° 56.3	105° 19.5	119° 42.7	134° 05.9	148° 29.1	162° 52.2	177° 15.2	191° 38.2	206° 01.2	220° 24.2	234° 47.1	+23.1	16.5
	-20° 17.9	-20° 18.0	-20° 17.8	-20° 17.6	-20° 17.2	-20° 16.6	-20° 15.9	-20° 15.1	-20° 14.1	-20° 12.9	-20° 11.6	+0.6	60.4
Вс 11	90° 28.7	104° 51.4	119° 14.1	133° 36.8	147° 59.5	162° 22.2	176° 44.9	191° 07.6	205° 30.4	219° 53.1	234° 15.9	+22.7	16.6
	-19° 34.4	-19° 30.7	-19° 26.9	-19° 23.0	-19° 18.8	-19° 14.6	-19° 10.2	-19° 05.6	-19° 01.0	-18° 56.1	-18° 51.1	+4.3	61.0
● Пн 12	90° 00.3	104° 23.6	118° 46.8	133° 10.1	147° 33.5	161° 56.9	176° 20.3	190° 43.8	205° 07.4	219° 31.0	233° 54.6	+23.4	16.7
	-17° 19.8	-17° 12.7	-17° 05.4	-16° 58.0	-16° 50.4	-16° 42.7	-16° 35.0	-16° 27.1	-16° 19.0	-16° 10.9	-16° 02.6	+7.7	61.3
Вт 13	89° 55.9	104° 20.5	118° 45.1	133° 09.8	147° 34.5	161° 59.4	176° 24.2	190° 49.2	205° 14.2	219° 39.3	234° 04.4	+24.9	16.7
	-13° 45.5	-13° 35.5	-13° 25.5	-13° 15.4	-13° 05.1	-12° 54.8	-12° 44.4	-12° 34.0	-12° 23.4	-12° 12.8	-12° 02.0	+10.4	61.3
Ср 14	90° 29.7	104° 55.9	119° 22.2	133° 48.5	148° 14.9	162° 41.4	177° 07.9	191° 34.5	206° 01.2	220° 27.9	234° 54.7	+26.5	16.6
	-9° 12.9	-9° 01.1	-8° 49.3	-8° 37.5	-8° 25.6	-8° 13.6	-8° 01.7	-7° 49.6	-7° 37.6	-7° 25.5	-7° 13.3	+12.0	60.9
Чт 15	91° 44.0	106° 11.7	120° 39.5	135° 07.4	149° 35.3	164° 03.3	178° 31.3	192° 59.3	207° 27.5	221° 55.6	236° 23.9	+28.0	16.4
	-4° 07.9	-3° 55.3	-3° 42.8	-3° 30.3	-3° 17.7	-3° 05.2	-2° 52.7	-2° 40.1	-2° 27.6	-2° 15.0	-2° 02.5	+12.5	60.2
Пт 16	93° 32.6	108° 01.6	122° 30.5	136° 59.5	151° 28.5	165° 57.6	180° 26.7	194° 55.9	209° 25.0	223° 54.2	238° 23.5	+29.1	16.2
	1° 04.7	1° 17.1	1° 29.4	1° 41.7	1° 53.9	2° 06.2	2° 18.4	2° 30.6	2° 42.7	2° 54.9	3° 07.0	+12.2	59.3
Сб 17	95° 45.4	110° 15.0	124° 44.7	139° 14.4	153° 44.1	168° 13.8	182° 43.6	197° 13.3	211° 43.1	226° 12.9	240° 42.7	+29.7	15.9
	6° 03.7	6° 15.2	6° 26.6	6° 37.9	6° 49.2	7° 00.4	7° 11.6	7° 22.7	7° 33.8	7° 44.8	7° 55.7	+11.2	58.4
Вс 18	110° 15.0	124° 44.7	139° 14.4	153° 44.1	168° 13.8	182° 43.6	197° 13.3	211° 43.1	226° 12.9	240° 42.7	255° 12.6	+29.8	15.9
	6° 15.2	6° 26.6	6° 37.9	6° 49.2	7° 00.4	7° 11.6	7° 22.7	7° 33.8	7° 44.8	7° 55.7	8° 06.6	+11.1	58.3
◐ Пн 19	112° 41.4	127° 11.4	141° 41.4	156° 11.4	170° 41.4	185° 11.4	199° 41.4	214° 11.4	228° 41.5	243° 11.5	257° 41.5	+30.0	15.7
	10° 42.7	10° 52.6	11° 02.4	11° 12.2	11° 21.8	11° 31.4	11° 41.0	11° 50.4	11° 59.8	12° 09.1	12° 18.4	+9.6	57.4
Вт 20	115° 12.1	129° 42.1	144° 12.1	158° 42.2	173° 12.2	187° 42.2	202° 12.2	216° 42.2	231° 12.3	245° 42.3	260° 12.3	+30.0	15.4
	14° 27.5	14° 35.5	14° 43.4	14° 51.2	14° 58.9	15° 06.5	15° 14.1	15° 21.5	15° 28.9	15° 36.2	15° 43.4	+7.6	56.5
Ср 21	117° 42.0	132° 12.0	146° 41.9	161° 11.9	175° 41.8	190° 11.8	204° 41.7	219° 11.7	233° 41.6	248° 11.5	262° 41.5	+29.9	15.2
	17° 20.6	17° 26.4	17° 32.0	17° 37.6	17° 43.1	17° 48.4	17° 53.7	17° 58.9	18° 04.0	18° 09.0	18° 13.9	+5.3	55.8
Чт 22	120° 10.4	134° 40.3	149° 10.2	163° 40.2	178° 10.1	192° 40.1	207° 10.0	221° 40.0	236° 09.9	250° 39.9	265° 09.9	+29.9	15.0
	19° 15.9	19° 19.2	19° 22.5	19° 25.7	19° 28.7	19° 31.7	19° 34.5	19° 37.3	19° 40.0	19° 42.5	19° 45.0	+2.9	55.2
Пт 23	122° 40.3	137° 10.4	151° 40.5	166° 10.6	180° 40.8	195° 10.9	209° 41.1	224° 11.3	238° 41.5	253° 11.7	267° 42.0	+30.2	14.9
	20° 10.0	20° 10.9	20° 11.7	20° 12.4	20° 13.0	20° 13.4	20° 13.8	20° 14.1	20° 14.3	20° 14.4	20° 14.4	+0.4	54.7
Сб 24	125° 17.6	139° 48.2	154° 18.8	168° 49.3	183° 20.0	197° 50.6	212° 21.3	226° 52.0	241° 22.7	255° 53.4	270° 24.2	+30.7	14.8
	20° 02.7	20° 01.1	19° 59.5	19° 57.8	19° 55.9	19° 54.0	19° 52.0	19° 49.9	19° 47.7	19° 45.4	19° 43.0	-2.0	54.3
Вс 25	128° 09.1	142° 40.3	157° 11.6	171° 42.9	186° 14.2	200° 45.6	215° 17.0	229° 48.4	244° 19.8	258° 51.3	273° 22.9	+31.4	14.7
	18° 56.5	18° 52.7	18° 48.8	18° 44.8	18° 40.8	18° 36.6	18° 32.4	18° 28.1	18° 23.7	18° 19.2	18° 14.7	-4.2	54.1
Пн 26	131° 19.9	145° 51.9	160° 24.0	174° 56.2	189° 28.4	204° 00.6	218° 32.8	233° 05.1	247° 37.5	262° 09.8	276° 42.2	+32.2	14.7
	16° 56.8	16° 51.0	16° 45.2	16° 39.2	16° 33.2	16° 27.1	16° 21.0	16° 14.7	16° 08.4	16° 02.1	15° 55.6	-6.1	53.9
○ Вт 27	134° 52.3	149° 25.2	163° 58.2	178° 31.2	193° 04.2	207° 37.3	222° 10.4	236° 43.5	251° 16.7	265° 49.9	280° 23.1	+33.1	14.7
	14° 11.2	14° 03.8	13° 56.2	13° 48.7	13° 41.0	13° 33.3	13° 25.6	13° 17.8	13° 09.9	13° 02.0	12° 54.0	-7.7	53.9
Ср 28	138° 45.1	153° 18.8	167° 52.5	182° 26.3	197° 00.0	211° 33.8	226° 07.6	240° 41.5	255° 15.3	269° 49.2	284° 23.1	+33.8	14.7
	10° 48.4	10° 39.6	10° 30.8	10° 22.0	10° 13.1	10° 04.2	9° 55.2	9° 46.2	9° 37.1	9° 28.0	9° 18.9	-8.9	53.9
Чт 29	142° 53.9	157° 28.1	172° 02.3	186° 36.5	201° 10.7	215° 45.0	230° 19.2	244° 53.5	259° 27.8	274° 02.0	288° 36.3	+34.2	14.7
	6° 57.7	6° 48.0	6° 38.3	6° 28.6	6° 18.9	6° 09.1	5° 59.3	5° 49.4	5° 39.6	5° 29.7	5° 19.8	-9.8	54.1
Пт 30	147° 11.4	161° 45.7	176° 20.1	190° 54.4	205° 28.8	220° 03.1	234° 37.4	249° 11.8	263° 46.1	278° 20.4	292° 54.7	+34.3	14.8
	2° 48.7	2° 38.5	2° 28.3	2° 18.0	2° 07.8	1° 57.5	1° 47.3	1° 37.0	1° 26.7	1° 16.4	1° 06.1	-10.3	54.3
Сб 31	151° 28.1	166° 02.2	180° 36.3	195° 10.4	209° 44.5	224° 18.5	238° 52.5	253° 26.5	268° 00.4	282° 34.4	297° 08.3	+34.0	14.9
	-1° 29.1	-1° 39.5	-1° 49.8	-2° 00.2	-2° 10.5	-2° 20.9	-2° 31.2	-2° 41.6	-2° 51.9	-3° 02.2	-3° 12.5	-10.3	54.6

Строка 1: $t_{гр}$, Δ°/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ°/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Последняя четв.: 5 22h04 — Новолуние: 12 20h06 — Первая четв.: 19 12h14 — Полнолуние: 27 12h52

СОЛНЦЕ

Февраль 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	176° 38.8	191° 38.7	206° 38.6	221° 38.5	236° 38.4	251° 38.3	86° 37.2	101° 37.1	116° 37.1	131° 37.0	146° 36.9	161° 36.8	-0.1
	-17° 16.9	-17° 16.2	-17° 15.5	-17° 14.8	-17° 14.1	-17° 13.4	-17° 04.2	-17° 03.5	-17° 02.8	-17° 02.0	-17° 01.3	-17° 00.6	+0.7
Пн 2	176° 36.7	191° 36.6	206° 36.6	221° 36.5	236° 36.4	251° 36.3	86° 35.3	101° 35.2	116° 35.2	131° 35.1	146° 35.0	161° 35.0	-0.1
	-16° 59.9	-16° 59.2	-16° 58.5	-16° 57.8	-16° 57.0	-16° 56.3	-16° 46.9	-16° 46.2	-16° 45.5	-16° 44.8	-16° 44.0	-16° 43.3	+0.7
Вт 3	176° 34.9	191° 34.8	206° 34.7	221° 34.7	236° 34.6	251° 34.5	86° 33.6	101° 33.6	116° 33.5	131° 33.4	146° 33.4	161° 33.3	-0.1
	-16° 42.6	-16° 41.9	-16° 41.1	-16° 40.4	-16° 39.7	-16° 38.9	-16° 29.4	-16° 28.7	-16° 27.9	-16° 27.2	-16° 26.5	-16° 25.7	+0.7
Ср 4	176° 33.2	191° 33.2	206° 33.1	221° 33.0	236° 33.0	251° 32.9	86° 32.1	101° 32.1	116° 32.0	131° 31.9	146° 31.9	161° 31.8	-0.1
	-16° 25.0	-16° 24.2	-16° 23.5	-16° 22.8	-16° 22.0	-16° 21.3	-16° 11.6	-16° 10.8	-16° 10.1	-16° 09.3	-16° 08.6	-16° 07.8	+0.7
Чт 5	176° 31.8	191° 31.7	206° 31.7	221° 31.6	236° 31.5	251° 31.5	86° 30.8	101° 30.8	116° 30.7	131° 30.7	146° 30.6	161° 30.6	-0.1
	-16° 07.1	-16° 06.3	-16° 05.6	-16° 04.8	-16° 04.1	-16° 03.3	-15° 53.5	-15° 52.7	-15° 51.9	-15° 51.2	-15° 50.4	-15° 49.7	+0.8
Пт 6	176° 30.5	191° 30.5	206° 30.4	221° 30.4	236° 30.3	251° 30.3	86° 29.7	101° 29.6	116° 29.6	131° 29.6	146° 29.5	161° 29.5	-0.0
	-15° 48.9	-15° 48.1	-15° 47.4	-15° 46.6	-15° 45.8	-15° 45.1	-15° 35.1	-15° 34.3	-15° 33.5	-15° 32.8	-15° 32.0	-15° 31.2	+0.8
Сб 7	176° 29.4	191° 29.4	206° 29.4	221° 29.3	236° 29.3	251° 29.2	86° 28.8	101° 28.7	116° 28.7	131° 28.7	146° 28.6	161° 28.6	-0.0
	-15° 30.4	-15° 29.7	-15° 28.9	-15° 28.1	-15° 27.3	-15° 26.6	-15° 16.4	-15° 15.6	-15° 14.9	-15° 14.1	-15° 13.3	-15° 12.5	+0.8
Вс 8	176° 28.6	191° 28.5	206° 28.5	221° 28.5	236° 28.4	251° 28.4	86° 28.1	101° 28.0	116° 28.0	131° 28.0	146° 27.9	161° 27.9	-0.0
	-15° 11.7	-15° 10.9	-15° 10.2	-15° 09.4	-15° 08.6	-15° 07.8	-14° 57.5	-14° 56.7	-14° 55.9	-14° 55.1	-14° 54.3	-14° 53.5	+0.8
Пн 9	176° 27.9	191° 27.9	206° 27.9	221° 27.8	236° 27.8	251° 27.8	86° 27.5	101° 27.5	116° 27.5	131° 27.5	146° 27.5	161° 27.4	-0.0
	-14° 52.8	-14° 52.0	-14° 51.2	-14° 50.4	-14° 49.6	-14° 48.8	-14° 38.4	-14° 37.6	-14° 36.7	-14° 35.9	-14° 35.1	-14° 34.3	+0.8
Вт 10	176° 27.4	191° 27.4	206° 27.4	221° 27.4	236° 27.4	251° 27.3	86° 27.2	101° 27.2	116° 27.2	131° 27.2	146° 27.2	161° 27.1	-0.0
	-14° 33.5	-14° 32.7	-14° 31.9	-14° 31.1	-14° 30.3	-14° 29.5	-14° 18.9	-14° 18.1	-14° 17.3	-14° 16.5	-14° 15.7	-14° 14.9	+0.8
Ср 11	176° 27.1	191° 27.1	206° 27.1	221° 27.1	236° 27.1	251° 27.1	86° 27.0	101° 27.0	116° 27.0	131° 27.0	146° 27.0	161° 27.0	-0.0
	-14° 14.1	-14° 13.2	-14° 12.4	-14° 11.6	-14° 10.8	-14° 10.0	-13° 59.3	-13° 58.5	-13° 57.7	-13° 56.8	-13° 56.0	-13° 55.2	+0.8
Чт 12	176° 27.0	191° 27.0	206° 27.0	221° 27.0	236° 27.0	251° 27.0	86° 27.1	101° 27.1	116° 27.1	131° 27.1	146° 27.1	161° 27.1	+0.0
	-13° 54.4	-13° 53.5	-13° 52.7	-13° 51.9	-13° 51.0	-13° 50.2	-13° 39.4	-13° 38.6	-13° 37.8	-13° 36.9	-13° 36.1	-13° 35.3	+0.8
Пт 13	176° 27.1	191° 27.1	206° 27.2	221° 27.2	236° 27.2	251° 27.2	86° 27.3	101° 27.4	116° 27.4	131° 27.4	146° 27.4	161° 27.4	+0.0
	-13° 34.4	-13° 33.6	-13° 32.7	-13° 31.9	-13° 31.1	-13° 30.2	-13° 19.3	-13° 18.5	-13° 17.6	-13° 16.8	-13° 15.9	-13° 15.1	+0.8
Сб 14	176° 27.4	191° 27.4	206° 27.5	221° 27.5	236° 27.5	251° 27.5	86° 27.8	101° 27.8	116° 27.8	131° 27.8	146° 27.9	161° 27.9	+0.0
	-13° 14.3	-13° 13.4	-13° 12.6	-13° 11.7	-13° 10.9	-13° 10.0	-12° 59.0	-12° 58.2	-12° 57.3	-12° 56.4	-12° 55.6	-12° 54.7	+0.8
Вс 15	176° 27.9	191° 27.9	206° 28.0	221° 28.0	236° 28.0	251° 28.0	86° 28.4	101° 28.4	116° 28.4	131° 28.5	146° 28.5	161° 28.5	+0.0
	-12° 53.9	-12° 53.0	-12° 52.2	-12° 51.3	-12° 50.5	-12° 49.6	-12° 38.5	-12° 37.6	-12° 36.8	-12° 35.9	-12° 35.0	-12° 34.2	+0.9
Пн 16	176° 28.6	191° 28.6	206° 28.6	221° 28.7	236° 28.7	251° 28.7	86° 29.2	101° 29.2	116° 29.3	131° 29.3	146° 29.3	161° 29.4	+0.0
	-12° 33.3	-12° 32.4	-12° 31.6	-12° 30.7	-12° 29.9	-12° 29.0	-12° 17.7	-12° 16.9	-12° 16.0	-12° 15.1	-12° 14.3	-12° 13.4	+0.9
Вт 17	176° 29.4	191° 29.5	206° 29.5	221° 29.5	236° 29.6	251° 29.6	86° 30.2	101° 30.2	116° 30.3	131° 30.3	146° 30.4	161° 30.4	+0.0
	-12° 12.5	-12° 11.7	-12° 10.8	-12° 09.9	-12° 09.0	-12° 08.2	-11° 56.8	-11° 55.9	-11° 55.1	-11° 54.2	-11° 53.3	-11° 52.4	+0.9
Ср 18	176° 30.4	191° 30.5	206° 30.5	221° 30.6	236° 30.6	251° 30.7	86° 31.3	101° 31.4	116° 31.4	131° 31.5	146° 31.5	161° 31.6	+0.0
	-11° 51.6	-11° 50.7	-11° 49.8	-11° 48.9	-11° 48.0	-11° 47.2	-11° 35.7	-11° 34.8	-11° 33.9	-11° 33.1	-11° 32.2	-11° 31.3	+0.9
Чт 19	176° 31.7	191° 31.7	206° 31.8	221° 31.8	236° 31.9	251° 31.9	86° 32.7	101° 32.7	116° 32.8	131° 32.9	146° 32.9	161° 33.0	+0.1
	-11° 30.4	-11° 29.5	-11° 28.6	-11° 27.7	-11° 26.9	-11° 26.0	-11° 14.4	-11° 13.5	-11° 12.6	-11° 11.7	-11° 10.8	-11° 10.0	+0.9
Пт 20	176° 33.0	191° 33.1	206° 33.2	221° 33.2	236° 33.3	251° 33.3	86° 34.2	101° 34.3	116° 34.3	131° 34.4	146° 34.5	161° 34.5	+0.1
	-11° 09.1	-11° 08.2	-11° 07.3	-11° 06.4	-11° 05.5	-11° 04.6	-10° 52.9	-10° 52.0	-10° 51.1	-10° 50.2	-10° 49.3	-10° 48.4	+0.9
Сб 21	176° 34.6	191° 34.7	206° 34.7	221° 34.8	236° 34.9	251° 34.9	86° 35.9	101° 35.9	116° 36.0	131° 36.1	146° 36.2	161° 36.2	+0.1
	-10° 47.5	-10° 46.6	-10° 45.7	-10° 44.8	-10° 43.9	-10° 43.0	-10° 31.3	-10° 30.4	-10° 29.5	-10° 28.6	-10° 27.7	-10° 26.8	+0.9
Вс 22	176° 36.3	191° 36.4	206° 36.5	221° 36.5	236° 36.6	251° 36.7	86° 37.7	101° 37.8	116° 37.9	131° 38.0	146° 38.0	161° 38.1	+0.1
	-10° 25.9	-10° 25.0	-10° 24.1	-10° 23.1	-10° 22.2	-10° 21.3	-10° 09.5	-10° 08.6	-10° 07.7	-10° 06.8	-10° 05.9	-10° 04.9	+0.9
Пн 23	176° 38.2	191° 38.3	206° 38.4	221° 38.4	236° 38.5	251° 38.6	86° 39.7	101° 39.8	116° 39.9	131° 40.0	146° 40.1	161° 40.1	+0.1
	-10° 04.0	-10° 03.1	-10° 02.2	-10° 01.3	-10° 00.4	-9° 59.5	-9° 47.5	-9° 46.6	-9° 45.7	-9° 44.8	-9° 43.9	-9° 43.0	+0.9
Вт 24	176° 40.2	191° 40.3	206° 40.4	221° 40.5	236° 40.6	251° 40.7	86° 41.9	101° 42.0	116° 42.0	131° 42.1	146° 42.2	161° 42.3	+0.1
	-9° 42.0	-9° 41.1	-9° 40.2	-9° 39.3	-9° 38.4	-9° 37.4	-9° 25.4	-9° 24.5	-9° 23.6	-9° 22.7	-9° 21.7	-9° 20.8	+0.9
Ср 25	176° 42.4	191° 42.5	206° 42.6	221° 42.7	236° 42.8	251° 42.9	86° 44.2	101° 44.3	116° 44.4	131° 44.5	146° 44.6	161° 44.7	+0.1
	-9° 19.9	-9° 19.0	-9° 18.0	-9° 17.1	-9° 16.2	-9° 15.3	-9° 03.2	-9° 02.3	-9° 01.3	-9° 00.4	-8° 59.5	-8° 58.5	+0.9
Чт 26	176° 44.8	191° 44.9	206° 45.0	221° 45.1	236° 45.2	251° 45.3	86° 46.6	101° 46.7	116° 46.8	131° 46.9	146° 47.0	161° 47.1	+0.1
	-8° 57.6	-8° 56.7	-8° 55.8	-8° 54.8	-8° 53.9	-8° 53.0	-8° 40.8	-8° 39.9	-8° 39.0	-8° 38.0	-8° 37.1	-8° 36.1	+0.9
Пт 27	176° 47.2	191° 47.4	206° 47.5	221° 47.6	236° 47.7	251° 47.8	86° 49.2	101° 49.3	116° 49.4	131° 49.5	146° 49.6	161° 49.8	+0.1
	-8° 35.2	-8° 34.3	-8° 33.3	-8° 32.4	-8° 31.5	-8° 30.5	-8° 18.3	-8° 17.4	-8° 16.4	-8° 15.5	-8° 14.5	-8° 13.6	+0.9
Сб 28	176° 49.9	191° 50.0	206° 50.1	221° 50.2	236° 50.3	251° 50.4	86° 51.9	101° 52.0	116° 52.2	131° 52.3	146° 52.4	161° 52.5	+0.1
	-8° 12.7	-8° 11.7	-8° 10.8	-8° 09.8	-8° 08.9	-8° 08.0	-7° 55.7	-7° 54.7	-7° 53.8	-7° 52.8	-7° 51.9	-7° 51.0	+0.9
Вс 29	176° 52.6	191° 52.7	206° 52.9	221° 53.0	236° 53.1	251° 53.2	86° 54.8	101° 54.9	116° 55.0	131° 55.1	146° 55.3	161° 55.4	+0.1
	-7° 50.0	-7° 49.1	-7° 48.1	-7° 47.2	-7° 46.2	-7° 45.3	-7° 32.9	-7° 32.0	-7° 31.0	-7° 30.1	-7° 29.1	-7° 28.2	+0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2032

Д	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	Δ°/h	R/p
Вс 1	68° 12.2	82° 45.9	97° 19.5	111° 53.0	126° 26.5	141° 00.0	155° 33.5	170° 06.9	184° 40.3	199° 13.6	213° 46.9	+33.5	15.0
	-4° 45.0	-4° 55.2	-5° 05.4	-5° 15.6	-5° 25.7	-5° 35.9	-5° 46.0	-5° 56.1	-6° 06.2	-6° 16.3	-6° 26.3	-10.1	55.0
Пн 2	72° 01.1	86° 33.7	101° 06.2	115° 38.7	130° 11.1	144° 43.4	159° 15.7	173° 48.0	188° 20.2	202° 52.3	217° 24.4	+32.3	15.2
	-8° 54.3	-9° 03.9	-9° 13.5	-9° 23.1	-9° 32.6	-9° 42.1	-9° 51.6	-10° 01.0	-10° 10.4	-10° 19.7	-10° 29.0	-9.5	55.6
Вт 3	75° 18.1	89° 49.2	104° 20.2	118° 51.1	133° 22.0	147° 52.8	162° 23.5	176° 54.1	191° 24.7	205° 55.2	220° 25.6	+30.7	15.4
	-12° 43.5	-12° 52.0	-13° 00.6	-13° 09.0	-13° 17.4	-13° 25.8	-13° 34.1	-13° 42.3	-13° 50.5	-13° 58.6	-14° 06.7	-8.3	56.3
◑ Ср 4	77° 52.9	92° 22.1	106° 51.2	121° 20.3	135° 49.2	150° 18.1	164° 46.9	179° 15.6	193° 44.3	208° 12.8	222° 41.3	+28.8	15.6
	-15° 59.6	-16° 06.5	-16° 13.4	-16° 20.2	-16° 26.9	-16° 33.6	-16° 40.1	-16° 46.6	-16° 53.0	-16° 59.3	-17° 05.5	-6.6	57.1
Чт 5	79° 38.7	94° 05.9	108° 33.0	123° 00.0	137° 27.0	151° 53.8	166° 20.6	180° 47.3	195° 14.0	209° 40.5	224° 07.0	+26.8	15.8
	-18° 27.8	-18° 32.5	-18° 37.1	-18° 41.6	-18° 46.0	-18° 50.3	-18° 54.5	-18° 58.5	-19° 02.5	-19° 06.4	-19° 10.1	-4.2	58.1
Пт 6	80° 35.4	95° 00.8	109° 26.0	123° 51.3	138° 16.4	152° 41.5	167° 06.5	181° 31.5	195° 56.4	210° 21.2	224° 46.0	+25.1	16.1
	-19° 52.3	-19° 54.2	-19° 55.9	-19° 57.5	-19° 59.0	-20° 00.3	-20° 01.5	-20° 02.6	-20° 03.5	-20° 04.3	-20° 05.0	-1.3	59.0
Сб 7	80° 52.0	95° 16.1	109° 40.1	124° 04.1	138° 28.0	152° 51.9	167° 15.8	181° 39.7	196° 03.5	210° 27.4	224° 51.1	+23.9	16.3
	-19° 59.1	-19° 57.6	-19° 56.0	-19° 54.2	-19° 52.3	-19° 50.3	-19° 48.1	-19° 45.8	-19° 43.3	-19° 40.7	-19° 37.9	+2.1	59.9
Вс 8	80° 46.1	95° 09.7	109° 33.3	123° 56.9	138° 20.5	152° 44.1	167° 07.8	181° 31.4	195° 55.0	210° 18.7	224° 42.3	+23.6	16.6
	-18° 39.8	-18° 34.8	-18° 29.7	-18° 24.4	-18° 19.0	-18° 13.5	-18° 07.8	-18° 02.0	-17° 56.0	-17° 50.0	-17° 43.8	+5.6	60.7
Пн 9	80° 39.3	95° 03.3	109° 27.3	123° 51.4	138° 15.4	152° 39.6	167° 03.7	181° 27.9	195° 52.1	210° 16.4	224° 40.7	+24.1	16.7
	-15° 55.3	-15° 47.1	-15° 38.8	-15° 30.3	-15° 21.8	-15° 13.1	-15° 04.3	-14° 55.4	-14° 46.4	-14° 37.3	-14° 28.1	+8.7	61.2
Вт 10	80° 50.0	95° 15.0	109° 40.0	124° 05.1	138° 30.2	152° 55.3	167° 20.5	181° 45.8	196° 11.1	210° 36.4	225° 01.8	+25.2	16.7
	-11° 57.9	-11° 47.1	-11° 36.3	-11° 25.4	-11° 14.4	-11° 03.4	-10° 52.2	-10° 41.0	-10° 29.7	-10° 18.4	-10° 07.0	+11.1	61.4
● Ср 11	81° 28.6	95° 54.8	110° 21.0	124° 47.3	139° 13.6	153° 39.9	168° 06.3	182° 32.8	196° 59.3	211° 25.8	225° 52.4	+26.4	16.7
	-7° 08.6	-6° 56.3	-6° 43.9	-6° 31.6	-6° 19.2	-6° 06.7	-5° 54.2	-5° 41.7	-5° 29.2	-5° 16.6	-5° 04.1	+12.5	61.2
Чт 12	82° 36.6	97° 03.8	111° 31.2	125° 58.5	140° 25.9	154° 53.3	169° 20.8	183° 48.3	198° 15.9	212° 43.4	227° 11.1	+27.5	16.5
	-1° 53.2	-1° 40.4	-1° 27.6	-1° 14.9	-1° 02.1	-0° 49.3	-0° 36.6	-0° 23.8	-0° 11.1	0° 01.7	0° 14.4	+12.8	60.6
Пт 13	84° 09.3	98° 37.4	113° 05.5	127° 33.7	142° 01.9	156° 30.1	170° 58.4	185° 26.7	199° 55.0	214° 23.3	228° 51.6	+28.2	16.3
	3° 22.5	3° 34.8	3° 47.1	3° 59.3	4° 11.5	4° 23.6	4° 35.7	4° 47.8	4° 59.8	5° 11.8	5° 23.7	+12.1	59.8
Сб 14	85° 59.4	100° 28.1	114° 56.8	129° 25.4	143° 54.2	158° 22.9	172° 51.6	187° 20.4	201° 49.2	216° 18.0	230° 46.8	+28.7	16.0
	8° 16.3	8° 27.3	8° 38.3	8° 49.2	9° 00.0	9° 10.8	9° 21.5	9° 32.1	9° 42.7	9° 53.1	10° 03.6	+10.7	58.8
Вс 15	88° 00.2	102° 29.1	116° 58.1	131° 27.1	145° 56.1	160° 25.1	174° 54.1	189° 23.2	203° 52.2	218° 21.3	232° 50.3	+29.0	15.8
	12° 30.8	12° 40.0	12° 49.1	12° 58.1	13° 07.0	13° 15.8	13° 24.6	13° 33.3	13° 41.9	13° 50.3	13° 58.8	+8.8	57.8
Пн 16	90° 07.0	104° 36.2	119° 05.4	133° 34.5	148° 03.7	162° 32.9	177° 02.1	191° 31.4	206° 00.6	220° 29.8	234° 59.1	+29.2	15.5
	15° 54.0	16° 00.9	16° 07.8	16° 14.5	16° 21.2	16° 27.7	16° 34.2	16° 40.6	16° 46.8	16° 53.0	16° 59.1	+6.5	56.8
Вт 17	104° 36.2	119° 05.4	133° 34.5	148° 03.7	162° 32.9	177° 02.1	191° 31.4	206° 00.6	220° 29.8	234° 59.1	249° 28.3	+29.2	15.5
	16° 00.9	16° 07.8	16° 14.5	16° 21.2	16° 27.7	16° 34.2	16° 40.6	16° 46.8	16° 53.0	16° 59.1	17° 05.0	+6.4	56.8
◐ Ср 18	106° 48.1	121° 17.5	135° 46.9	150° 16.3	164° 45.8	179° 15.2	193° 44.7	208° 14.1	222° 43.6	237° 13.1	251° 42.6	+29.5	15.3
	18° 22.8	18° 27.2	18° 31.5	18° 35.7	18° 39.7	18° 43.7	18° 47.6	18° 51.4	18° 55.1	18° 58.6	19° 02.1	+3.9	55.9
Чт 19	109° 07.0	123° 36.7	138° 06.5	152° 36.3	167° 06.1	181° 35.9	196° 05.8	210° 35.7	225° 05.5	239° 35.5	254° 05.4	+29.8	15.1
	19° 42.2	19° 44.0	19° 45.8	19° 47.5	19° 49.0	19° 50.5	19° 51.8	19° 53.1	19° 54.3	19° 55.3	19° 56.3	+1.4	55.2
Пт 20	111° 37.0	126° 07.3	140° 37.7	155° 08.0	169° 38.4	184° 08.8	198° 39.2	213° 09.7	227° 40.2	242° 10.7	256° 41.3	+30.4	14.9
	19° 58.9	19° 58.3	19° 57.6	19° 56.8	19° 55.9	19° 55.0	19° 53.9	19° 52.7	19° 51.4	19° 50.1	19° 48.6	-1.0	54.6
Сб 21	114° 23.0	128° 54.0	143° 25.1	157° 56.2	172° 27.3	186° 58.5	201° 29.6	216° 00.9	230° 32.1	245° 03.4	259° 34.7	+31.2	14.8
	19° 15.8	19° 12.9	19° 09.9	19° 06.8	19° 03.6	19° 00.3	18° 57.0	18° 53.6	18° 50.1	18° 46.5	18° 42.8	-3.3	54.3
Вс 22	117° 28.5	132° 00.4	146° 32.3	161° 04.2	175° 36.2	190° 08.2	204° 40.2	219° 12.3	233° 44.4	248° 16.5	262° 48.7	+32.0	14.7
	17° 37.7	17° 32.7	17° 27.6	17° 22.5	17° 17.3	17° 12.0	17° 06.6	17° 01.2	16° 55.7	16° 50.1	16° 44.5	-5.3	54.0
Пн 23	120° 55.1	135° 27.8	150° 00.5	164° 33.2	179° 06.0	193° 38.8	208° 11.7	222° 44.6	237° 17.5	251° 50.4	266° 23.4	+32.8	14.7
	15° 11.2	15° 04.5	14° 57.7	14° 50.8	14° 43.9	14° 36.8	14° 29.8	14° 22.6	14° 15.5	14° 08.2	14° 00.9	-7.0	53.9
Вт 24	124° 41.2	139° 14.6	153° 48.1	168° 21.5	182° 55.0	197° 28.5	212° 02.0	226° 35.6	241° 09.1	255° 42.7	270° 16.3	+33.5	14.7
	12° 04.4	11° 56.2	11° 47.9	11° 39.6	11° 31.3	11° 22.9	11° 14.4	11° 05.9	10° 57.4	10° 48.8	10° 40.2	-8.4	53.9
Ср 25	128° 42.9	143° 16.9	157° 50.8	172° 24.7	186° 58.7	201° 32.6	216° 06.6	230° 40.6	245° 14.6	259° 48.6	274° 22.7	+34.0	14.7
	8° 25.6	8° 16.3	8° 07.0	7° 57.6	7° 48.2	7° 38.8	7° 29.3	7° 19.8	7° 10.3	7° 00.8	6° 51.2	-9.4	54.1
○ Чт 26	132° 54.0	147° 28.2	162° 02.3	176° 36.4	191° 10.6	205° 44.7	220° 18.8	234° 53.0	249° 27.1	264° 01.2	278° 35.4	+34.1	14.8
	4° 24.1	4° 14.1	4° 04.1	3° 54.0	3° 44.0	3° 33.9	3° 23.8	3° 13.7	3° 03.6	2° 53.4	2° 43.3	-10.1	54.3
Пт 27	137° 06.6	151° 40.6	166° 14.6	180° 48.6	195° 22.5	209° 56.5	224° 30.4	239° 04.4	253° 38.3	268° 12.2	282° 46.0	+33.9	14.9
	0° 09.5	-0° 00.8	-0° 11.1	-0° 21.4	-0° 31.8	-0° 42.1	-0° 52.4	-1° 02.7	-1° 13.1	-1° 23.4	-1° 33.7	-10.3	54.6
Сб 28	141° 11.6	155° 45.1	170° 18.6	184° 52.1	199° 25.5	213° 58.9	228° 32.3	243° 05.6	257° 38.9	272° 12.2	286° 45.4	+33.4	15.0
	-4° 07.9	-4° 18.2	-4° 28.3	-4° 38.5	-4° 48.7	-4° 58.8	-5° 09.0	-5° 19.1	-5° 29.2	-5° 39.3	-5° 49.3	-10.1	54.9
Вс 29	144° 59.6	159° 32.2	174° 04.8	188° 37.4	203° 09.9	217° 42.3	232° 14.7	246° 47.1	261° 19.4	275° 51.7	290° 23.9	+32.4	15.1
	-8° 17.4	-8° 27.1	-8° 36.7	-8° 46.3	-8° 55.8	-9° 05.4	-9° 14.8	-9° 24.3	-9° 33.7	-9° 43.1	-9° 52.4	-9.5	55.4

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Последняя четв.: 4 13h48 — Новолуние: 11 06h24 — Первая четв.: 18 03h29 — Полнолуние: 26 07h43

СОЛНЦЕ

Март 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	176° 55.5 -7° 27.2	191° 55.6 -7° 26.3	206° 55.8 -7° 25.3	221° 55.9 -7° 24.4	236° 56.0 -7° 23.4	251° 56.1 -7° 22.5	86° 57.8 -7° 10.1	101° 57.9 -7° 09.1	116° 58.0 -7° 08.2	131° 58.1 -7° 07.2	146° 58.3 -7° 06.3	161° 58.4 -7° 05.3	+0.1 +1.0
Вт 2	176° 58.5 -7° 04.3	191° 58.6 -7° 03.4	206° 58.8 -7° 02.4	221° 58.9 -7° 01.5	236° 59.0 -7° 00.5	251° 59.2 -6° 59.6	87° 00.8 -6° 47.1	102° 01.0 -6° 46.2	117° 01.1 -6° 45.2	132° 01.2 -6° 44.2	147° 01.4 -6° 43.3	162° 01.5 -6° 42.3	+0.1 +1.0
Ср 3	177° 01.6 -6° 41.4	192° 01.8 -6° 40.4	207° 01.9 -6° 39.4	222° 02.0 -6° 38.5	237° 02.2 -6° 37.5	252° 02.3 -6° 36.6	87° 04.1 -6° 24.1	102° 04.2 -6° 23.1	117° 04.3 -6° 22.1	132° 04.5 -6° 21.2	147° 04.6 -6° 20.2	162° 04.7 -6° 19.2	+0.1 +1.0
Чт 4	177° 04.9 -6° 18.3	192° 05.0 -6° 17.3	207° 05.1 -6° 16.4	222° 05.3 -6° 15.4	237° 05.4 -6° 14.4	252° 05.6 -6° 13.5	87° 07.4 -6° 00.9	102° 07.5 -5° 59.9	117° 07.7 -5° 59.0	132° 07.8 -5° 58.0	147° 07.9 -5° 57.0	162° 08.1 -5° 56.1	+0.1 +1.0
Пт 5	177° 08.2 -5° 55.1	192° 08.4 -5° 54.1	207° 08.5 -5° 53.2	222° 08.6 -5° 52.2	237° 08.8 -5° 51.2	252° 08.9 -5° 50.3	87° 10.8 -5° 37.7	102° 10.9 -5° 36.7	117° 11.1 -5° 35.7	132° 11.2 -5° 34.8	147° 11.4 -5° 33.8	162° 11.5 -5° 32.8	+0.1 +1.0
Сб 6	177° 11.7 -5° 31.9	192° 11.8 -5° 30.9	207° 11.9 -5° 29.9	222° 12.1 -5° 28.9	237° 12.2 -5° 28.0	252° 12.4 -5° 27.0	87° 14.3 -5° 14.4	102° 14.5 -5° 13.4	117° 14.6 -5° 12.4	132° 14.7 -5° 11.4	147° 14.9 -5° 10.5	162° 15.0 -5° 09.5	+0.1 +1.0
Вс 7	177° 15.2 -5° 08.5	192° 15.3 -5° 07.5	207° 15.5 -5° 06.6	222° 15.6 -5° 05.6	237° 15.8 -5° 04.6	252° 15.9 -5° 03.7	87° 17.9 -4° 51.0	102° 18.1 -4° 50.0	117° 18.2 -4° 49.0	132° 18.4 -4° 48.1	147° 18.5 -4° 47.1	162° 18.7 -4° 46.1	+0.1 +1.0
Пн 8	177° 18.8 -4° 45.1	192° 19.0 -4° 44.1	207° 19.1 -4° 43.2	222° 19.3 -4° 42.2	237° 19.4 -4° 41.2	252° 19.6 -4° 40.2	87° 21.6 -4° 27.5	102° 21.8 -4° 26.6	117° 21.9 -4° 25.6	132° 22.1 -4° 24.6	147° 22.2 -4° 23.6	162° 22.4 -4° 22.6	+0.2 +1.0
Вт 9	177° 22.5 -4° 21.7	192° 22.7 -4° 20.7	207° 22.9 -4° 19.7	222° 23.0 -4° 18.7	237° 23.2 -4° 17.7	252° 23.3 -4° 16.8	87° 25.4 -4° 04.0	102° 25.6 -4° 03.0	117° 25.7 -4° 02.1	132° 25.9 -4° 01.1	147° 26.0 -4° 00.1	162° 26.2 -3° 59.1	+0.2 +1.0
Ср 10	177° 26.3 -3° 58.1	192° 26.5 -3° 57.2	207° 26.7 -3° 56.2	222° 26.8 -3° 55.2	237° 27.0 -3° 54.2	252° 27.2 -3° 53.2	87° 29.3 -3° 40.5	102° 29.4 -3° 39.5	117° 29.6 -3° 38.5	132° 29.7 -3° 37.5	147° 29.9 -3° 36.5	162° 30.1 -3° 35.6	+0.2 +1.0
Чт 11	177° 30.2 -3° 34.6	192° 30.4 -3° 33.6	207° 30.6 -3° 32.6	222° 30.7 -3° 31.6	237° 30.9 -3° 30.6	252° 31.1 -3° 29.7	87° 33.2 -3° 16.9	102° 33.4 -3° 15.9	117° 33.5 -3° 14.9	132° 33.7 -3° 13.9	147° 33.9 -3° 12.9	162° 34.0 -3° 12.0	+0.2 +1.0
Пт 12	177° 34.2 -3° 11.0	192° 34.4 -3° 10.0	207° 34.5 -3° 09.0	222° 34.7 -3° 08.0	237° 34.9 -3° 07.0	252° 35.0 -3° 06.0	87° 37.2 -2° 53.2	102° 37.4 -2° 52.3	117° 37.5 -2° 51.3	132° 37.7 -2° 50.3	147° 37.9 -2° 49.3	162° 38.1 -2° 48.3	+0.2 +1.0
Сб 13	177° 38.2 -2° 47.3	192° 38.4 -2° 46.3	207° 38.6 -2° 45.4	222° 38.7 -2° 44.4	237° 38.9 -2° 43.4	252° 39.1 -2° 42.4	87° 41.3 -2° 29.6	102° 41.5 -2° 28.6	117° 41.6 -2° 27.6	132° 41.8 -2° 26.6	147° 42.0 -2° 25.6	162° 42.1 -2° 24.6	+0.2 +1.0
Вс 14	177° 42.3 -2° 23.7	192° 42.5 -2° 22.7	207° 42.7 -2° 21.7	222° 42.8 -2° 20.7	237° 43.0 -2° 19.7	252° 43.2 -2° 18.7	87° 45.4 -2° 05.9	102° 45.6 -2° 04.9	117° 45.8 -2° 03.9	132° 46.0 -2° 02.9	147° 46.1 -2° 01.9	162° 46.3 -2° 00.9	+0.2 +1.0
Пн 15	177° 46.5 -2° 00.0	192° 46.7 -1° 59.0	207° 46.8 -1° 58.0	222° 47.0 -1° 57.0	237° 47.2 -1° 56.0	252° 47.4 -1° 55.0	87° 49.6 -1° 42.2	102° 49.8 -1° 41.2	117° 50.0 -1° 40.2	132° 50.2 -1° 39.2	147° 50.4 -1° 38.2	162° 50.5 -1° 37.2	+0.2 +1.0
Вт 16	177° 50.7 -1° 36.2	192° 50.9 -1° 35.3	207° 51.1 -1° 34.3	222° 51.2 -1° 33.3	237° 51.4 -1° 32.3	252° 51.6 -1° 31.3	87° 53.9 -1° 18.5	102° 54.1 -1° 17.5	117° 54.3 -1° 16.5	132° 54.4 -1° 15.5	147° 54.6 -1° 14.5	162° 54.8 -1° 13.5	+0.2 +1.0
Ср 17	177° 55.0 -1° 12.5	192° 55.2 -1° 11.5	207° 55.3 -1° 10.5	222° 55.5 -1° 09.6	237° 55.7 -1° 08.6	252° 55.9 -1° 07.6	87° 58.2 -0° 54.7	102° 58.4 -0° 53.7	117° 58.6 -0° 52.7	132° 58.8 -0° 51.8	147° 59.0 -0° 50.8	162° 59.1 -0° 49.8	+0.2 +1.0
Чт 18	177° 59.3 -0° 48.8	192° 59.5 -0° 47.8	207° 59.7 -0° 46.8	222° 59.9 -0° 45.8	238° 00.0 -0° 44.8	253° 00.2 -0° 43.8	88° 02.6 -0° 31.0	103° 02.8 -0° 30.0	118° 03.0 -0° 29.0	133° 03.1 -0° 28.0	148° 03.3 -0° 27.0	163° 03.5 -0° 26.1	+0.2 +1.0
Пт 19	178° 03.7 -0° 25.1	193° 03.9 -0° 24.1	208° 04.1 -0° 23.1	223° 04.2 -0° 22.1	238° 04.4 -0° 21.1	253° 04.6 -0° 20.1	88° 07.0 -0° 07.3	103° 07.2 -0° 06.3	118° 07.4 -0° 05.3	133° 07.6 -0° 04.3	148° 07.7 -0° 03.3	163° 07.9 -0° 02.3	+0.2 +1.0
Сб 20	178° 08.1 -0° 01.4	193° 08.3 -0° 00.4	208° 08.5 0° 00.6	223° 08.7 0° 01.6	238° 08.8 0° 02.6	253° 09.0 0° 03.6	88° 11.4 0° 16.4	103° 11.6 0° 17.4	118° 11.8 0° 18.4	133° 12.0 0° 19.4	148° 12.2 0° 20.4	163° 12.4 0° 21.4	+0.2 +1.0
Вс 21	178° 12.6 0° 22.3	193° 12.7 0° 23.3	208° 12.9 0° 24.3	223° 13.1 0° 25.3	238° 13.3 0° 26.3	253° 13.5 0° 27.3	88° 15.9 0° 40.1	103° 16.1 0° 41.1	118° 16.3 0° 42.1	133° 16.5 0° 43.1	148° 16.7 0° 44.1	163° 16.8 0° 45.0	+0.2 +1.0
Пн 22	178° 17.0 0° 46.0	193° 17.2 0° 47.0	208° 17.4 0° 48.0	223° 17.6 0° 49.0	238° 17.8 0° 50.0	253° 18.0 0° 51.0	88° 20.4 1° 03.8	103° 20.6 1° 04.8	118° 20.8 1° 05.7	133° 21.0 1° 06.7	148° 21.2 1° 07.7	163° 21.4 1° 08.7	+0.2 +1.0
Вт 23	178° 21.5 1° 09.7	193° 21.7 1° 10.7	208° 21.9 1° 11.7	223° 22.1 1° 12.6	238° 22.3 1° 13.6	253° 22.5 1° 14.6	88° 24.9 1° 27.4	103° 25.1 1° 28.4	118° 25.3 1° 29.4	133° 25.5 1° 30.4	148° 25.7 1° 31.3	163° 25.9 1° 32.3	+0.2 +1.0
Ср 24	178° 26.1 1° 33.3	193° 26.3 1° 34.3	208° 26.4 1° 35.3	223° 26.6 1° 36.3	238° 26.8 1° 37.2	253° 27.0 1° 38.2	88° 29.5 1° 51.0	103° 29.7 1° 52.0	118° 29.8 1° 53.0	133° 30.0 1° 53.9	148° 30.2 1° 54.9	163° 30.4 1° 55.9	+0.2 +1.0
Чт 25	178° 30.6 1° 56.9	193° 30.8 1° 57.9	208° 31.0 1° 58.9	223° 31.2 1° 59.8	238° 31.4 2° 00.8	253° 31.5 2° 01.8	88° 34.0 2° 14.6	103° 34.2 2° 15.5	118° 34.4 2° 16.5	133° 34.6 2° 17.5	148° 34.8 2° 18.5	163° 35.0 2° 19.5	+0.2 +1.0
Пт 26	178° 35.1 2° 20.4	193° 35.3 2° 21.4	208° 35.5 2° 22.4	223° 35.7 2° 23.4	238° 35.9 2° 24.4	253° 36.1 2° 25.3	88° 38.6 2° 38.1	103° 38.7 2° 39.0	118° 38.9 2° 40.0	133° 39.1 2° 41.0	148° 39.3 2° 42.0	163° 39.5 2° 42.9	+0.2 +1.0
Сб 27	178° 39.7 2° 43.9	193° 39.9 2° 44.9	208° 40.1 2° 45.9	223° 40.3 2° 46.9	238° 40.4 2° 47.8	253° 40.6 2° 48.8	88° 43.1 3° 01.5	103° 43.3 3° 02.5	118° 43.5 3° 03.5	133° 43.7 3° 04.4	148° 43.9 3° 05.4	163° 44.0 3° 06.4	+0.2 +1.0
Вс 28	178° 44.2 3° 07.4	193° 44.4 3° 08.3	208° 44.6 3° 09.3	223° 44.8 3° 10.3	238° 45.0 3° 11.3	253° 45.2 3° 12.2	88° 47.6 3° 24.9	103° 47.8 3° 25.9	118° 48.0 3° 26.9	133° 48.2 3° 27.8	148° 48.4 3° 28.8	163° 48.6 3° 29.8	+0.2 +1.0
Пн 29	178° 48.8 3° 30.7	193° 49.0 3° 31.7	208° 49.1 3° 32.7	223° 49.3 3° 33.7	238° 49.5 3° 34.6	253° 49.7 3° 35.6	88° 52.2 3° 48.2	103° 52.3 3° 49.2	118° 52.5 3° 50.2	133° 52.7 3° 51.1	148° 52.9 3° 52.1	163° 53.1 3° 53.1	+0.2 +1.0
Вт 30	178° 53.3 3° 54.1	193° 53.5 3° 55.0	208° 53.7 3° 56.0	223° 53.8 3° 57.0	238° 54.0 3° 57.9	253° 54.2 3° 58.9	88° 56.7 4° 11.5	103° 56.8 4° 12.5	118° 57.0 4° 13.4	133° 57.2 4° 14.4	148° 57.4 4° 15.4	163° 57.6 4° 16.3	+0.2 +1.0
Ср 31	178° 57.8 4° 17.3	193° 58.0 4° 18.3	208° 58.2 4° 19.2	223° 58.3 4° 20.2	238° 58.5 4° 21.2	253° 58.7 4° 22.1	89° 01.1 4° 34.7	104° 01.3 4° 35.6	119° 01.5 4° 36.6	134° 01.7 4° 37.6	149° 01.9 4° 38.5	164° 02.1 4° 39.5	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2032

Д	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	Δ'/h	R/p
Пн 1	61° 11.6 -11° 14.5	75° 43.3 -11° 23.4	90° 15.0 -11° 32.3	104° 46.6 -11° 41.1	119° 18.2 -11° 49.8	133° 49.7 -11° 58.5	148° 21.1 -12° 07.2	162° 52.5 -12° 15.8	177° 23.8 -12° 24.4	191° 55.1 -12° 32.9	206° 26.3 -12° 41.3	+31.5 -8.7	15.2 55.8
Вт 2	64° 07.5 -14° 40.9	78° 37.8 -14° 48.3	93° 08.0 -14° 55.7	107° 38.1 -15° 03.1	122° 08.2 -15° 10.3	136° 38.2 -15° 17.5	151° 08.1 -15° 24.6	165° 38.0 -15° 31.6	180° 07.8 -15° 38.6	194° 37.6 -15° 45.5	209° 07.3 -15° 52.3	+30.0 -7.1	15.4 56.4
Ср 3	66° 24.8 -17° 24.7	80° 53.4 -17° 30.2	95° 22.0 -17° 35.5	109° 50.5 -17° 40.8	124° 18.9 -17° 46.0	138° 47.3 -17° 51.1	153° 15.6 -17° 56.1	167° 43.9 -18° 01.1	182° 12.1 -18° 05.9	196° 40.2 -18° 10.6	211° 08.3 -18° 15.2	+28.4 -5.1	15.6 57.1
Чт 4	68° 01.8 -19° 12.4	82° 28.9 -19° 15.3	96° 55.9 -19° 18.2	111° 22.9 -19° 20.9	125° 49.8 -19° 23.6	140° 16.7 -19° 26.1	154° 43.5 -19° 28.5	169° 10.2 -19° 30.8	183° 36.9 -19° 32.9	198° 03.6 -19° 35.0	212° 30.2 -19° 36.9	+26.8 -2.5	15.8 57.8
◑ Пт 5	69° 03.2 -19° 51.7	83° 29.1 -19° 51.7	97° 54.9 -19° 51.6	112° 20.7 -19° 51.4	126° 46.4 -19° 51.0	141° 12.1 -19° 50.5	155° 37.8 -19° 49.9	170° 03.4 -19° 49.1	184° 29.0 -19° 48.3	198° 54.6 -19° 47.3	213° 20.1 -19° 46.1	+25.7 +0.6	16.0 58.6
Сб 6	69° 40.0 -19° 13.8	84° 05.1 -19° 10.7	98° 30.3 -19° 07.3	112° 55.4 -19° 03.9	127° 20.5 -19° 00.3	141° 45.6 -18° 56.6	156° 10.7 -18° 52.8	170° 35.8 -18° 48.8	185° 00.9 -18° 44.8	199° 26.0 -18° 40.5	213° 51.0 -18° 36.2	+25.1 +3.8	16.2 59.3
Вс 7	70° 06.7 -17° 16.0	84° 31.8 -17° 09.7	98° 56.9 -17° 03.2	113° 22.0 -16° 56.6	127° 47.1 -16° 49.9	142° 12.2 -16° 43.1	156° 37.3 -16° 36.2	171° 02.5 -16° 29.2	185° 27.6 -16° 22.0	199° 52.8 -16° 14.7	214° 18.0 -16° 07.3	+25.1 +6.9	16.4 60.0
Пн 8	70° 37.8 -14° 03.3	85° 03.3 -13° 54.2	99° 28.8 -13° 45.0	113° 54.4 -13° 35.7	128° 19.9 -13° 26.3	142° 45.5 -13° 16.8	157° 11.2 -13° 07.2	171° 36.8 -12° 57.5	186° 02.5 -12° 47.7	200° 28.2 -12° 37.9	214° 53.9 -12° 27.9	+25.6 +9.5	16.5 60.5
Вт 9	71° 23.1 -9° 48.9	85° 49.3 -9° 37.7	100° 15.5 -9° 26.4	114° 41.7 -9° 15.1	129° 08.0 -9° 03.7	143° 34.3 -8° 52.2	158° 00.6 -8° 40.7	172° 26.9 -8° 29.1	186° 53.3 -8° 17.5	201° 19.7 -8° 05.8	215° 46.2 -7° 54.1	+26.3 +11.5	16.6 60.8
Ср 10	72° 26.1 -4° 52.5	86° 53.0 -4° 40.1	101° 19.9 -4° 27.7	115° 46.8 -4° 15.2	130° 13.8 -4° 02.8	144° 40.8 -3° 50.3	159° 07.8 -3° 37.7	173° 34.8 -3° 25.2	188° 01.9 -3° 12.6	202° 28.9 -3° 00.1	216° 56.0 -2° 47.5	+27.0 +12.5	16.6 60.8
● Чт 11	73° 45.1 0° 22.2	88° 12.6 0° 34.8	102° 40.0 0° 47.4	117° 07.5 1° 00.0	131° 35.0 1° 12.6	146° 02.5 1° 25.1	160° 30.0 1° 37.7	174° 57.5 1° 50.2	189° 25.0 2° 02.7	203° 52.6 2° 15.2	218° 20.2 2° 27.7	+27.5 +12.6	16.5 60.5
Пт 12	75° 15.4 5° 30.9	89° 43.2 5° 42.8	104° 11.0 5° 54.7	118° 38.8 6° 06.5	133° 06.6 6° 18.2	147° 34.4 6° 30.0	162° 02.2 6° 41.6	176° 30.0 6° 53.2	190° 57.9 7° 04.8	205° 25.7 7° 16.3	219° 53.6 7° 27.7	+27.8 +11.7	16.3 59.8
Сб 13	76° 52.2 10° 11.7	91° 20.1 10° 22.1	105° 48.1 10° 32.4	120° 16.0 10° 42.7	134° 44.0 10° 52.8	149° 12.0 11° 02.9	163° 40.0 11° 12.9	178° 07.9 11° 22.8	192° 35.9 11° 32.7	207° 03.9 11° 42.4	221° 31.9 11° 52.1	+28.0 +10.0	16.1 59.0
Вс 14	78° 32.6 14° 07.0	93° 00.7 14° 15.2	107° 28.7 14° 23.4	121° 56.8 14° 31.5	136° 25.0 14° 39.5	150° 53.1 14° 47.4	165° 21.2 14° 55.2	179° 49.3 15° 02.9	194° 17.5 15° 10.5	208° 45.6 15° 18.0	223° 13.8 15° 25.4	+28.1 +7.8	15.8 58.1
Пн 15	80° 17.2 17° 04.4	94° 45.5 17° 10.2	109° 13.8 17° 15.9	123° 42.1 17° 21.5	138° 10.5 17° 26.9	152° 38.9 17° 32.3	167° 07.2 17° 37.6	181° 35.6 17° 42.7	196° 04.1 17° 47.8	210° 32.5 17° 52.7	225° 00.9 17° 57.6	+28.4 +5.3	15.6 57.1
Вт 16	82° 09.7 18° 57.5	96° 38.5 19° 00.7	111° 07.2 19° 03.7	125° 36.0 19° 06.6	140° 04.9 19° 09.5	154° 33.7 19° 12.2	169° 02.6 19° 14.8	183° 31.5 19° 17.3	198° 00.4 19° 19.7	212° 29.3 19° 22.0	226° 58.3 19° 24.2	+28.9 +2.7	15.3 56.2
Ср 17	84° 16.1 19° 44.7	98° 45.5 19° 45.3	113° 15.0 19° 45.7	127° 44.5 19° 46.0	142° 14.0 19° 46.3	156° 43.6 19° 46.4	171° 13.2 19° 46.5	185° 42.8 19° 46.4	200° 12.5 19° 46.2	214° 42.2 19° 46.0	229° 11.9 19° 45.6	+29.6 +0.1	15.1 55.4
◐ Чт 18	98° 45.5 19° 45.3	113° 15.0 19° 45.7	127° 44.5 19° 46.0	142° 14.0 19° 46.3	156° 43.6 19° 46.4	171° 13.2 19° 46.5	185° 42.8 19° 46.4	200° 12.5 19° 46.2	214° 42.2 19° 46.0	229° 11.9 19° 45.6	243° 41.7 19° 45.2	+29.6 -0.0	15.1 55.4
Пт 19	101° 12.6 19° 26.7	115° 42.9 19° 24.7	130° 13.3 19° 22.6	144° 43.8 19° 20.5	159° 14.2 19° 18.2	173° 44.8 19° 15.8	188° 15.3 19° 13.4	202° 45.9 19° 10.9	217° 16.5 19° 08.2	231° 47.2 19° 05.5	246° 17.9 19° 02.7	+30.5 -2.4	14.9 54.8
Сб 20	104° 03.5 18° 10.3	118° 34.9 18° 06.2	133° 06.3 18° 01.9	147° 37.8 17° 57.6	162° 09.2 17° 53.2	176° 40.8 17° 48.7	191° 12.3 17° 44.2	205° 43.9 17° 39.6	220° 15.6 17° 34.8	234° 47.3 17° 30.0	249° 19.0 17° 25.2	+31.5 -4.5	14.8 54.3
Вс 21	107° 19.5 16° 03.3	121° 51.9 15° 57.2	136° 24.2 15° 51.1	150° 56.7 15° 45.0	165° 29.1 15° 38.7	180° 01.6 15° 32.4	194° 34.1 15° 26.1	209° 06.7 15° 19.6	223° 39.2 15° 13.1	238° 11.9 15° 06.6	252° 44.5 14° 59.9	+32.5 -6.3	14.8 54.1
Пн 22	110° 58.3 13° 13.2	125° 31.5 13° 05.6	140° 04.7 12° 58.0	154° 37.9 12° 50.3	169° 11.2 12° 42.5	183° 44.5 12° 34.7	198° 17.8 12° 26.9	212° 51.1 12° 19.0	227° 24.4 12° 11.0	241° 57.8 12° 03.0	256° 31.2 11° 54.9	+33.3 -7.8	14.7 54.0
Вт 23	114° 55.1 9° 48.3	129° 28.8 9° 39.5	144° 02.6 9° 30.6	158° 36.4 9° 21.7	173° 10.2 9° 12.8	187° 44.0 9° 03.8	202° 17.8 8° 54.8	216° 51.6 8° 45.8	231° 25.5 8° 36.7	245° 59.4 8° 27.6	260° 33.3 8° 18.4	+33.8 -9.0	14.8 54.1
Ср 24	119° 02.7 5° 56.9	133° 36.7 5° 47.2	148° 10.7 5° 37.5	162° 44.7 5° 27.7	177° 18.8 5° 18.0	191° 52.8 5° 08.2	206° 26.8 4° 58.4	221° 00.9 4° 48.5	235° 34.9 4° 38.7	250° 08.9 4° 28.8	264° 42.9 4° 18.9	+34.0 -9.8	14.8 54.3
Чт 25	123° 12.8 1° 47.9	137° 46.7 1° 37.7	152° 20.6 1° 27.5	166° 54.5 1° 17.2	181° 28.4 1° 07.0	196° 02.3 0° 56.8	210° 36.2 0° 46.5	225° 10.0 0° 36.3	239° 43.9 0° 26.0	254° 17.7 0° 15.7	268° 51.5 0° 05.4	+33.9 -10.2	14.9 54.6
Пт 26	127° 16.2 -2° 29.1	141° 49.7 -2° 39.4	156° 23.1 -2° 49.7	170° 56.5 -3° 00.0	185° 29.9 -3° 10.3	200° 03.2 -3° 20.5	214° 36.6 -3° 30.8	229° 09.9 -3° 41.0	243° 43.1 -3° 51.3	258° 16.4 -4° 01.5	272° 49.6 -4° 11.7	+33.3 -10.3	15.0 55.0
○ Сб 27	131° 03.5 -6° 43.2	145° 36.1 -6° 53.2	160° 08.7 -7° 03.1	174° 41.3 -7° 13.0	189° 13.8 -7° 22.8	203° 46.3 -7° 32.7	218° 18.7 -7° 42.5	232° 51.1 -7° 52.2	247° 23.4 -8° 02.0	261° 55.7 -8° 11.7	276° 27.9 -8° 21.4	+32.4 -9.8	15.1 55.5
Вс 28	134° 25.9 -10° 42.4	148° 57.4 -10° 51.5	163° 28.8 -11° 00.5	178° 00.2 -11° 09.5	192° 31.5 -11° 18.4	207° 02.8 -11° 27.3	221° 34.0 -11° 36.1	236° 05.1 -11° 44.9	250° 36.2 -11° 53.6	265° 07.3 -12° 02.3	279° 38.2 -12° 10.9	+31.2 -8.9	15.3 56.0
Пн 29	137° 16.3 -14° 13.3	151° 46.4 -14° 20.9	166° 16.4 -14° 28.5	180° 46.4 -14° 36.0	195° 16.3 -14° 43.5	209° 46.2 -14° 50.9	224° 15.9 -14° 58.2	238° 45.7 -15° 05.4	253° 15.4 -15° 12.5	267° 45.0 -15° 19.6	282° 14.5 -15° 26.6	+29.8 -7.3	15.4 56.5
Вт 30	139° 30.8 -17° 02.0	153° 59.4 -17° 07.6	168° 28.0 -17° 13.2	182° 56.5 -17° 18.7	197° 25.0 -17° 24.1	211° 53.4 -17° 29.4	226° 21.7 -17° 34.6	240° 50.0 -17° 39.7	255° 18.2 -17° 44.8	269° 46.4 -17° 49.7	284° 14.6 -17° 54.5	+28.4 -5.3	15.5 57.0
Ср 31	141° 10.2 -18° 54.9	155° 37.6 -18° 58.0	170° 04.8 -19° 01.1	184° 32.1 -19° 04.1	198° 59.3 -19° 06.9	213° 26.4 -19° 09.7	227° 53.5 -19° 12.3	242° 20.6 -19° 14.8	256° 47.6 -19° 17.3	271° 14.6 -19° 19.5	285° 41.5 -19° 21.7	+27.1 -2.7	15.7 57.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 5 01h47 — Новолуние: 11 16h24 — Первая четв.: 18 20h56 — Полнолуние: 27 00h46

СОЛНЦЕ

Апрель 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	179° 02.2 4° 40.5	194° 02.4 4° 41.4	209° 02.6 4° 42.4	224° 02.8 4° 43.4	239° 03.0 4° 44.3	254° 03.2 4° 45.3	89° 05.6 4° 57.8	104° 05.8 4° 58.7	119° 05.9 4° 59.7	134° 06.1 5° 00.7	149° 06.3 5° 01.6	164° 06.5 5° 02.6	+0.2 +1.0
Пт 2	179° 06.7 5° 03.5	194° 06.9 5° 04.5	209° 07.0 5° 05.5	224° 07.2 5° 06.4	239° 07.4 5° 07.4	254° 07.6 5° 08.3	89° 10.0 5° 20.8	104° 10.2 5° 21.8	119° 10.3 5° 22.7	134° 10.5 5° 23.7	149° 10.7 5° 24.6	164° 10.9 5° 25.6	+0.2 +1.0
Сб 3	179° 11.1 5° 26.5	194° 11.3 5° 27.5	209° 11.4 5° 28.5	224° 11.6 5° 29.4	239° 11.8 5° 30.4	254° 12.0 5° 31.3	89° 14.3 5° 43.7	104° 14.5 5° 44.7	119° 14.7 5° 45.6	134° 14.9 5° 46.6	149° 15.1 5° 47.5	164° 15.2 5° 48.5	+0.2 +1.0
Вс 4	179° 15.4 5° 49.4	194° 15.6 5° 50.4	209° 15.8 5° 51.3	224° 16.0 5° 52.3	239° 16.2 5° 53.2	254° 16.3 5° 54.2	89° 18.7 6° 06.6	104° 18.8 6° 07.5	119° 19.0 6° 08.4	134° 19.2 6° 09.4	149° 19.4 6° 10.3	164° 19.6 6° 11.3	+0.2 +1.0
Пн 5	179° 19.7 6° 12.2	194° 19.9 6° 13.2	209° 20.1 6° 14.1	224° 20.3 6° 15.1	239° 20.4 6° 16.0	254° 20.6 6° 17.0	89° 22.9 6° 29.3	104° 23.1 6° 30.2	119° 23.3 6° 31.2	134° 23.5 6° 32.1	149° 23.6 6° 33.0	164° 23.8 6° 34.0	+0.2 +0.9
Вт 6	179° 24.0 6° 34.9	194° 24.2 6° 35.9	209° 24.3 6° 36.8	224° 24.5 6° 37.8	239° 24.7 6° 38.7	254° 24.9 6° 39.7	89° 27.1 6° 51.9	104° 27.3 6° 52.8	119° 27.5 6° 53.8	134° 27.7 6° 54.7	149° 27.8 6° 55.6	164° 28.0 6° 56.6	+0.2 +0.9
Ср 7	179° 28.2 6° 57.5	194° 28.4 6° 58.5	209° 28.5 6° 59.4	224° 28.7 7° 00.3	239° 28.9 7° 01.3	254° 29.1 7° 02.2	89° 31.3 7° 14.4	104° 31.5 7° 15.3	119° 31.6 7° 16.2	134° 31.8 7° 17.2	149° 32.0 7° 18.1	164° 32.2 7° 19.0	+0.2 +0.9
Чт 8	179° 32.3 7° 20.0	194° 32.5 7° 20.9	209° 32.7 7° 21.8	224° 32.8 7° 22.8	239° 33.0 7° 23.7	254° 33.2 7° 24.6	89° 35.4 7° 36.8	104° 35.6 7° 37.7	119° 35.7 7° 38.6	134° 35.9 7° 39.5	149° 36.1 7° 40.5	164° 36.2 7° 41.4	+0.2 +0.9
Пт 9	179° 36.4 7° 42.3	194° 36.6 7° 43.3	209° 36.7 7° 44.2	224° 36.9 7° 45.1	239° 37.1 7° 46.0	254° 37.2 7° 47.0	89° 39.4 7° 59.0	104° 39.6 7° 59.9	119° 39.7 8° 00.8	134° 39.9 8° 01.8	149° 40.1 8° 02.7	164° 40.2 8° 03.6	+0.2 +0.9
Сб 10	179° 40.4 8° 04.5	194° 40.6 8° 05.5	209° 40.7 8° 06.4	224° 40.9 8° 07.3	239° 41.1 8° 08.2	254° 41.2 8° 09.1	89° 43.4 8° 21.1	104° 43.5 8° 22.0	119° 43.7 8° 22.9	134° 43.9 8° 23.9	149° 44.0 8° 24.8	164° 44.2 8° 25.7	+0.2 +0.9
Вс 11	179° 44.3 8° 26.6	194° 44.5 8° 27.5	209° 44.7 8° 28.4	224° 44.8 8° 29.4	239° 45.0 8° 30.3	254° 45.2 8° 31.2	89° 47.2 8° 43.1	104° 47.4 8° 44.0	119° 47.6 8° 44.9	134° 47.7 8° 45.8	149° 47.9 8° 46.7	164° 48.0 8° 47.6	+0.2 +0.9
Пн 12	179° 48.2 8° 48.5	194° 48.4 8° 49.5	209° 48.5 8° 50.4	224° 48.7 8° 51.3	239° 48.8 8° 52.2	254° 49.0 8° 53.1	89° 51.1 9° 04.9	104° 51.2 9° 05.8	119° 51.4 9° 06.7	134° 51.5 9° 07.6	149° 51.7 9° 08.5	164° 51.8 9° 09.4	+0.2 +0.9
Вт 13	179° 52.0 9° 10.3	194° 52.2 9° 11.2	209° 52.3 9° 12.1	224° 52.5 9° 13.0	239° 52.6 9° 13.9	254° 52.8 9° 14.8	89° 54.8 9° 26.6	104° 54.9 9° 27.5	119° 55.1 9° 28.4	134° 55.3 9° 29.3	149° 55.4 9° 30.2	164° 55.6 9° 31.1	+0.2 +0.9
Ср 14	179° 55.7 9° 32.0	194° 55.9 9° 32.9	209° 56.0 9° 33.8	224° 56.2 9° 34.7	239° 56.3 9° 35.6	254° 56.5 9° 36.4	89° 58.4 9° 48.1	104° 58.6 9° 49.0	119° 58.7 9° 49.9	134° 58.9 9° 50.8	149° 59.0 9° 51.7	164° 59.2 9° 52.5	+0.2 +0.9
Чт 15	179° 59.3 9° 53.4	194° 59.5 9° 54.3	209° 59.6 9° 55.2	224° 59.8 9° 56.1	239° 59.9 9° 57.0	255° 00.1 9° 57.9	90° 02.0 10° 09.4	105° 02.2 10° 10.3	120° 02.3 10° 11.2	135° 02.4 10° 12.1	150° 02.6 10° 13.0	165° 02.7 10° 13.9	+0.1 +0.9
Пт 16	180° 02.9 10° 14.7	195° 03.0 10° 15.6	210° 03.2 10° 16.5	225° 03.3 10° 17.4	240° 03.5 10° 18.3	255° 03.6 10° 19.2	90° 05.5 10° 30.6	105° 05.6 10° 31.5	120° 05.8 10° 32.4	135° 05.9 10° 33.2	150° 06.1 10° 34.1	165° 06.2 10° 35.0	+0.1 +0.9
Сб 17	180° 06.3 10° 35.9	195° 06.5 10° 36.8	210° 06.6 10° 37.6	225° 06.8 10° 38.5	240° 06.9 10° 39.4	255° 07.0 10° 40.3	90° 08.9 10° 51.6	105° 09.0 10° 52.5	120° 09.1 10° 53.4	135° 09.3 10° 54.2	150° 09.4 10° 55.1	165° 09.6 10° 56.0	+0.1 +0.9
Вс 18	180° 09.7 10° 56.8	195° 09.8 10° 57.7	210° 10.0 10° 58.6	225° 10.1 10° 59.4	240° 10.3 11° 00.3	255° 10.4 11° 01.2	90° 12.2 11° 12.4	105° 12.3 11° 13.3	120° 12.4 11° 14.2	135° 12.6 11° 15.0	150° 12.7 11° 15.9	165° 12.8 11° 16.8	+0.1 +0.9
Пн 19	180° 13.0 11° 17.6	195° 13.1 11° 18.5	210° 13.2 11° 19.3	225° 13.4 11° 20.2	240° 13.5 11° 21.1	255° 13.6 11° 21.9	90° 15.4 11° 33.1	105° 15.5 11° 33.9	120° 15.6 11° 34.8	135° 15.7 11° 35.6	150° 15.9 11° 36.5	165° 16.0 11° 37.4	+0.1 +0.9
Вт 20	180° 16.1 11° 38.2	195° 16.3 11° 39.1	210° 16.4 11° 39.9	225° 16.5 11° 40.8	240° 16.7 11° 41.6	255° 16.8 11° 42.5	90° 18.4 11° 53.5	105° 18.6 11° 54.4	120° 18.7 11° 55.2	135° 18.8 11° 56.1	150° 18.9 11° 56.9	165° 19.1 11° 57.8	+0.1 +0.9
Ср 21	180° 19.2 11° 58.6	195° 19.3 11° 59.5	210° 19.4 12° 00.3	225° 19.6 12° 01.1	240° 19.7 12° 02.0	255° 19.8 12° 02.8	90° 21.4 12° 13.8	105° 21.5 12° 14.6	120° 21.7 12° 15.5	135° 21.8 12° 16.3	150° 21.9 12° 17.1	165° 22.0 12° 18.0	+0.1 +0.8
Чт 22	180° 22.2 12° 18.8	195° 22.3 12° 19.6	210° 22.4 12° 20.5	225° 22.5 12° 21.3	240° 22.6 12° 22.2	255° 22.8 12° 23.0	90° 24.3 12° 33.8	105° 24.4 12° 34.7	120° 24.5 12° 35.5	135° 24.7 12° 36.3	150° 24.8 12° 37.2	165° 24.9 12° 38.0	+0.1 +0.8
Пт 23	180° 25.0 12° 38.8	195° 25.1 12° 39.6	210° 25.2 12° 40.5	225° 25.4 12° 41.3	240° 25.5 12° 42.1	255° 25.6 12° 43.0	90° 27.1 12° 53.7	105° 27.2 12° 54.5	120° 27.3 12° 55.3	135° 27.4 12° 56.1	150° 27.5 12° 57.0	165° 27.6 12° 57.8	+0.1 +0.8
Сб 24	180° 27.7 12° 58.6	195° 27.8 12° 59.4	210° 28.0 13° 00.2	225° 28.1 13° 01.1	240° 28.2 13° 01.9	255° 28.3 13° 02.7	90° 29.7 13° 13.3	105° 29.8 13° 14.1	120° 29.9 13° 14.9	135° 30.0 13° 15.7	150° 30.1 13° 16.6	165° 30.2 13° 17.4	+0.1 +0.8
Вс 25	180° 30.4 13° 18.2	195° 30.5 13° 19.0	210° 30.6 13° 19.8	225° 30.7 13° 20.6	240° 30.8 13° 21.4	255° 30.9 13° 22.2	90° 32.2 13° 32.7	105° 32.3 13° 33.5	120° 32.4 13° 34.3	135° 32.5 13° 35.1	150° 32.6 13° 35.9	165° 32.7 13° 36.7	+0.1 +0.8
Пн 26	180° 32.8 13° 37.5	195° 32.9 13° 38.3	210° 33.1 13° 39.1	225° 33.2 13° 39.9	240° 33.3 13° 40.7	255° 33.4 13° 41.5	90° 34.6 13° 51.9	105° 34.7 13° 52.7	120° 34.8 13° 53.5	135° 34.9 13° 54.3	150° 35.0 13° 55.1	165° 35.1 13° 55.9	+0.1 +0.8
Вт 27	180° 35.2 13° 56.7	195° 35.3 13° 57.5	210° 35.4 13° 58.2	225° 35.5 13° 59.0	240° 35.6 13° 59.8	255° 35.7 14° 00.6	90° 36.9 14° 10.9	105° 37.0 14° 11.6	120° 37.1 14° 12.4	135° 37.2 14° 13.2	150° 37.3 14° 14.0	165° 37.4 14° 14.8	+0.1 +0.8
Ср 28	180° 37.5 14° 15.6	195° 37.6 14° 16.4	210° 37.6 14° 17.1	225° 37.7 14° 17.9	240° 37.8 14° 18.7	255° 37.9 14° 19.5	90° 39.1 14° 29.6	105° 39.1 14° 30.4	120° 39.2 14° 31.1	135° 39.3 14° 31.9	150° 39.4 14° 32.7	165° 39.5 14° 33.5	+0.1 +0.8
Чт 29	180° 39.6 14° 34.2	195° 39.7 14° 35.0	210° 39.7 14° 35.8	225° 39.8 14° 36.6	240° 39.9 14° 37.3	255° 40.0 14° 38.1	90° 41.1 14° 48.1	105° 41.2 14° 48.8	120° 41.2 14° 49.6	135° 41.3 14° 50.4	150° 41.4 14° 51.1	165° 41.5 14° 51.9	+0.1 +0.8
Пт 30	180° 41.6 14° 52.7	195° 41.6 14° 53.4	210° 41.7 14° 54.2	225° 41.8 14° 55.0	240° 41.9 14° 55.7	255° 41.9 14° 56.5	90° 42.9 15° 06.3	105° 43.0 15° 07.1	120° 43.1 15° 07.8	135° 43.2 15° 08.6	150° 43.2 15° 09.3	165° 43.3 15° 10.1	+0.1 +0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Апрель 2032

Д	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	Δ'/h	R/p
Чт 1	70° 08.8	84° 35.3	99° 01.9	113° 28.3	127° 54.8	142° 21.2	156° 47.6	171° 14.0	185° 40.3	200° 06.7	214° 33.0	+26.4	15.8
	-19° 37.3	-19° 38.2	-19° 39.0	-19° 39.6	-19° 40.2	-19° 40.6	-19° 40.9	-19° 41.1	-19° 41.2	-19° 41.1	-19° 41.0	-0.4	58.0
Пт 2	71° 05.1	85° 31.2	99° 57.2	114° 23.2	128° 49.2	143° 15.2	157° 41.2	172° 07.2	186° 33.2	200° 59.2	215° 25.2	+26.0	15.9
	-19° 23.9	-19° 21.7	-19° 19.5	-19° 17.1	-19° 14.7	-19° 12.1	-19° 09.3	-19° 06.5	-19° 03.5	-19° 00.4	-18° 57.2	+2.7	58.5
◑ Сб 3	71° 55.3	86° 21.4	100° 47.5	115° 13.5	129° 39.6	144° 05.8	158° 31.9	172° 58.0	187° 24.2	201° 50.3	216° 16.5	+26.1	16.1
	-17° 54.6	-17° 49.4	-17° 44.2	-17° 38.8	-17° 33.4	-17° 27.8	-17° 22.1	-17° 16.3	-17° 10.4	-17° 04.4	-16° 58.2	+5.6	59.0
Вс 4	72° 51.5	87° 18.0	101° 44.5	116° 11.1	130° 37.6	145° 04.2	159° 30.9	173° 57.5	188° 24.2	202° 50.8	217° 17.6	+26.6	16.2
	-15° 13.1	-15° 05.3	-14° 57.4	-14° 49.3	-14° 41.2	-14° 33.0	-14° 24.7	-14° 16.2	-14° 07.7	-13° 59.1	-13° 50.4	+8.3	59.4
Пн 5	74° 01.3	88° 28.4	102° 55.5	117° 22.7	131° 49.9	146° 17.1	160° 44.3	175° 11.6	189° 38.9	204° 06.2	218° 33.6	+27.2	16.3
	-11° 29.6	-11° 19.6	-11° 09.5	-10° 59.3	-10° 49.1	-10° 38.7	-10° 28.3	-10° 17.9	-10° 07.4	-9° 56.8	-9° 46.1	+10.4	59.8
Вт 6	75° 26.3	89° 54.0	104° 21.7	118° 49.5	133° 17.2	147° 45.0	162° 12.7	176° 40.5	191° 08.4	205° 36.2	220° 04.0	+27.8	16.4
	-6° 59.2	-6° 47.6	-6° 36.1	-6° 24.4	-6° 12.8	-6° 01.1	-5° 49.3	-5° 37.5	-5° 25.7	-5° 13.8	-5° 02.0	+11.7	60.0
Ср 7	77° 03.4	91° 31.5	105° 59.5	120° 27.6	134° 55.7	149° 23.7	163° 51.8	178° 19.9	192° 48.0	207° 16.1	221° 44.3	+28.1	16.4
	-2° 00.6	-1° 48.3	-1° 36.1	-1° 23.8	-1° 11.5	-0° 59.3	-0° 47.0	-0° 34.7	-0° 22.4	-0° 10.2	0° 02.1	+12.3	60.0
Чт 8	78° 46.4	93° 14.5	107° 42.7	122° 10.8	136° 38.9	151° 07.1	165° 35.2	180° 03.4	194° 31.5	208° 59.6	223° 27.7	+28.1	16.3
	3° 05.3	3° 17.4	3° 29.4	3° 41.4	3° 53.4	4° 05.4	4° 17.4	4° 29.3	4° 41.2	4° 53.0	5° 04.8	+12.0	59.7
Пт 9	80° 28.9	94° 57.0	109° 25.0	123° 53.0	138° 21.0	152° 49.0	167° 17.0	181° 44.9	196° 12.9	210° 40.9	225° 08.8	+28.0	16.2
	7° 57.0	8° 08.0	8° 19.1	8° 30.0	8° 41.0	8° 51.8	9° 02.6	9° 13.3	9° 24.0	9° 34.6	9° 45.1	+10.8	59.3
● Сб 10	82° 07.0	96° 34.8	111° 02.6	125° 30.4	139° 58.2	154° 26.0	168° 53.8	183° 21.6	197° 49.3	212° 17.1	226° 44.8	+27.8	16.0
	12° 14.6	12° 23.9	12° 33.2	12° 42.4	12° 51.5	13° 00.5	13° 09.4	13° 18.3	13° 27.0	13° 35.7	13° 44.3	+9.0	58.6
Вс 11	83° 40.6	98° 08.3	112° 36.0	127° 03.7	141° 31.4	155° 59.1	170° 26.9	184° 54.6	199° 22.3	213° 50.0	228° 17.7	+27.7	15.8
	15° 41.7	15° 48.7	15° 55.7	16° 02.5	16° 09.3	16° 15.9	16° 22.5	16° 28.9	16° 35.3	16° 41.5	16° 47.6	+6.6	57.9
Пн 12	85° 14.4	99° 42.3	114° 10.2	128° 38.1	143° 06.0	157° 33.9	172° 01.8	186° 29.8	200° 57.8	215° 25.8	229° 53.8	+27.9	15.6
	18° 06.9	18° 11.3	18° 15.6	18° 19.8	18° 23.9	18° 27.9	18° 31.8	18° 35.5	18° 39.2	18° 42.7	18° 46.2	+3.9	57.0
Вт 13	86° 56.7	101° 25.1	115° 53.6	130° 22.0	144° 50.5	159° 19.1	173° 47.6	188° 16.2	202° 44.8	217° 13.5	231° 42.2	+28.5	15.3
	19° 24.7	19° 26.4	19° 28.0	19° 29.4	19° 30.8	19° 32.1	19° 33.2	19° 34.3	19° 35.2	19° 36.1	19° 36.8	+1.2	56.2
Ср 14	88° 57.0	103° 26.4	117° 55.7	132° 25.1	146° 54.5	161° 24.0	175° 53.5	190° 23.1	204° 52.7	219° 22.4	233° 52.1	+29.5	15.1
	19° 35.3	19° 34.4	19° 33.4	19° 32.3	19° 31.0	19° 29.7	19° 28.3	19° 26.8	19° 25.2	19° 23.5	19° 21.7	-1.4	55.5
Чт 15	91° 23.1	105° 53.5	120° 24.0	134° 54.5	149° 25.1	163° 55.8	178° 26.5	192° 57.2	207° 28.0	221° 58.8	236° 29.7	+30.7	15.0
	18° 43.5	18° 40.2	18° 36.9	18° 33.4	18° 29.9	18° 26.3	18° 22.6	18° 18.8	18° 14.9	18° 11.0	18° 06.9	-3.7	54.9
Пт 16	105° 53.5	120° 24.0	134° 54.5	149° 25.1	163° 55.8	178° 26.5	192° 57.2	207° 28.0	221° 58.8	236° 29.7	251° 00.6	+30.7	15.0
	18° 40.2	18° 36.9	18° 33.4	18° 29.9	18° 26.3	18° 22.6	18° 18.8	18° 14.9	18° 11.0	18° 06.9	18° 02.8	-3.7	54.9
◐ Сб 17	108° 50.3	123° 22.0	137° 53.7	152° 25.5	166° 57.3	181° 29.2	196° 01.1	210° 33.0	225° 05.0	239° 37.1	254° 09.2	+31.9	14.8
	16° 51.5	16° 46.1	16° 40.6	16° 35.1	16° 29.6	16° 23.9	16° 18.2	16° 12.4	16° 06.5	16° 00.6	15° 54.6	-5.7	54.4
Вс 18	112° 15.7	126° 48.5	141° 21.3	155° 54.1	170° 27.0	184° 59.9	199° 32.8	214° 05.8	228° 38.8	243° 11.9	257° 44.9	+32.9	14.8
	14° 16.7	14° 09.7	14° 02.6	13° 55.4	13° 48.2	13° 41.0	13° 33.7	13° 26.3	13° 18.9	13° 11.4	13° 03.9	-7.3	54.2
Пн 19	116° 05.0	130° 38.6	145° 12.2	159° 45.8	174° 19.4	188° 53.1	203° 26.8	218° 00.5	232° 34.2	247° 08.0	261° 41.7	+33.7	14.8
	11° 04.6	10° 56.3	10° 47.9	10° 39.5	10° 31.0	10° 22.5	10° 13.9	10° 05.3	9° 56.7	9° 48.0	9° 39.3	-8.5	54.1
Вт 20	120° 10.4	134° 44.4	149° 18.5	163° 52.5	178° 26.6	193° 00.6	207° 34.7	222° 08.7	236° 42.8	251° 16.9	265° 51.0	+34.1	14.8
	7° 23.7	7° 14.4	7° 05.0	6° 55.6	6° 46.2	6° 36.8	6° 27.3	6° 17.8	6° 08.2	5° 58.7	5° 49.1	-9.5	54.3
Ср 21	124° 22.4	138° 56.4	153° 30.5	168° 04.5	182° 38.6	197° 12.6	211° 46.6	226° 20.6	240° 54.6	255° 28.6	270° 02.6	+34.0	14.9
	3° 22.1	3° 12.1	3° 02.1	2° 52.1	2° 42.1	2° 32.1	2° 22.0	2° 11.9	2° 01.8	1° 51.7	1° 41.6	-10.1	54.6
Чт 22	128° 30.2	143° 03.9	157° 37.5	172° 11.2	186° 44.8	201° 18.3	215° 51.9	230° 25.4	244° 58.9	259° 32.3	274° 05.8	+33.6	15.0
	-0° 51.5	-1° 01.8	-1° 12.0	-1° 22.3	-1° 32.6	-1° 42.9	-1° 53.1	-2° 03.4	-2° 13.7	-2° 23.9	-2° 34.2	-10.3	55.0
Пт 23	132° 23.1	146° 55.9	161° 28.7	176° 01.5	190° 34.2	205° 06.9	219° 39.6	234° 12.2	248° 44.7	263° 17.2	277° 49.7	+32.7	15.1
	-5° 07.5	-5° 17.6	-5° 27.7	-5° 37.8	-5° 47.9	-5° 58.0	-6° 08.1	-6° 18.1	-6° 28.1	-6° 38.1	-6° 48.1	-10.1	55.5
Сб 24	135° 50.5	150° 22.2	164° 53.8	179° 25.3	193° 56.8	208° 28.2	222° 59.5	237° 30.8	252° 02.1	266° 33.3	281° 04.4	+31.4	15.3
	-9° 14.5	-9° 24.0	-9° 33.5	-9° 42.9	-9° 52.3	-10° 01.7	-10° 11.0	-10° 20.3	-10° 29.5	-10° 38.7	-10° 47.9	-9.3	56.1
○ Вс 25	138° 43.9	153° 14.1	167° 44.1	182° 14.1	196° 44.1	211° 14.0	225° 43.8	240° 13.5	254° 43.2	269° 12.8	283° 42.4	+29.8	15.5
	-12° 59.3	-13° 07.6	-13° 15.9	-13° 24.1	-13° 32.2	-13° 40.3	-13° 48.3	-13° 56.2	-14° 04.1	-14° 11.9	-14° 19.7	-8.0	56.7
Пн 26	140° 58.0	155° 26.5	169° 55.0	184° 23.4	198° 51.7	213° 20.0	227° 48.2	242° 16.3	256° 44.4	271° 12.5	285° 40.4	+28.2	15.6
	-16° 06.9	-16° 13.4	-16° 19.8	-16° 26.2	-16° 32.4	-16° 38.6	-16° 44.7	-16° 50.7	-16° 56.6	-17° 02.4	-17° 08.1	-6.1	57.2
Вт 27	142° 33.0	157° 00.1	171° 27.1	185° 54.1	200° 21.0	214° 47.9	229° 14.7	243° 41.5	258° 08.3	272° 34.9	287° 01.6	+26.9	15.8
	-18° 22.1	-18° 26.2	-18° 30.2	-18° 34.1	-18° 37.9	-18° 41.5	-18° 45.1	-18° 48.6	-18° 51.9	-18° 55.2	-18° 58.3	-3.6	57.8
Ср 28	143° 36.6	158° 02.6	172° 28.7	186° 54.7	201° 20.7	215° 46.6	230° 12.5	244° 38.5	259° 04.3	273° 30.2	287° 56.1	+25.9	15.9
	-19° 31.3	-19° 32.5	-19° 33.7	-19° 34.7	-19° 35.5	-19° 36.3	-19° 37.0	-19° 37.5	-19° 37.9	-19° 38.1	-19° 38.3	-0.7	58.2
Чт 29	144° 22.3	158° 48.0	173° 13.7	187° 39.4	202° 05.1	216° 30.8	230° 56.5	245° 22.2	259° 47.9	274° 13.6	288° 39.3	+25.7	16.0
	-19° 25.7	-19° 23.9	-19° 21.9	-19° 19.8	-19° 17.6	-19° 15.3	-19° 12.8	-19° 10.2	-19° 07.5	-19° 04.7	-19° 01.8	+2.4	58.6
Пт 30	145° 06.8	159° 32.8	173° 58.8	188° 24.9	202° 50.9	217° 17.0	231° 43.1	246° 09.2	260° 35.4	275° 01.5	289° 27.7	+26.1	16.1
	-18° 03.2	-17° 58.3	-17° 53.4	-17° 48.3	-17° 43.1	-17° 37.8	-17° 32.4	-17° 26.8	-17° 21.2	-17° 15.4	-17° 09.6	+5.4	58.9

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 3 10h10 — Новолуние: 10 02h39 — Первая четв.: 17 15h24 — Полнолуние: 25 15h09

СОЛНЦЕ

Май 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	180° 43.4	195° 43.5	210° 43.5	225° 43.6	240° 43.7	255° 43.8	90° 44.7	105° 44.8	120° 44.8	135° 44.9	150° 45.0	165° 45.0	+0.1
	15° 10.9	15° 11.6	15° 12.4	15° 13.1	15° 13.9	15° 14.6	15° 24.3	15° 25.1	15° 25.8	15° 26.6	15° 27.3	15° 28.0	+0.8
Вс 2	180° 45.1	195° 45.2	210° 45.2	225° 45.3	240° 45.4	255° 45.4	90° 46.3	105° 46.3	120° 46.4	135° 46.5	150° 46.5	165° 46.6	+0.1
	15° 28.8	15° 29.5	15° 30.3	15° 31.0	15° 31.8	15° 32.5	15° 42.1	15° 42.8	15° 43.5	15° 44.3	15° 45.0	15° 45.7	+0.7
Пн 3	180° 46.7	195° 46.7	210° 46.8	225° 46.8	240° 46.9	255° 47.0	90° 47.7	105° 47.8	120° 47.8	135° 47.9	150° 48.0	165° 48.0	+0.1
	15° 46.5	15° 47.2	15° 47.9	15° 48.7	15° 49.4	15° 50.1	15° 59.6	16° 00.3	16° 01.0	16° 01.7	16° 02.4	16° 03.2	+0.7
Вт 4	180° 48.1	195° 48.1	210° 48.2	225° 48.2	240° 48.3	255° 48.4	90° 49.0	105° 49.1	120° 49.1	135° 49.2	150° 49.2	165° 49.3	+0.1
	16° 03.9	16° 04.6	16° 05.3	16° 06.0	16° 06.8	16° 07.5	16° 16.8	16° 17.5	16° 18.2	16° 18.9	16° 19.6	16° 20.3	+0.7
Ср 5	180° 49.3	195° 49.4	210° 49.4	225° 49.5	240° 49.5	255° 49.6	90° 50.2	105° 50.3	120° 50.3	135° 50.3	150° 50.4	165° 50.4	+0.1
	16° 21.0	16° 21.7	16° 22.5	16° 23.2	16° 23.9	16° 24.6	16° 33.7	16° 34.4	16° 35.1	16° 35.8	16° 36.5	16° 37.2	+0.7
Чт 6	180° 50.5	195° 50.5	210° 50.6	225° 50.6	240° 50.6	255° 50.7	90° 51.2	105° 51.3	120° 51.3	135° 51.3	150° 51.4	165° 51.4	+0.0
	16° 37.9	16° 38.6	16° 39.3	16° 40.0	16° 40.7	16° 41.4	16° 50.4	16° 51.1	16° 51.8	16° 52.5	16° 53.2	16° 53.8	+0.7
Пт 7	180° 51.5	195° 51.5	210° 51.5	225° 51.6	240° 51.6	255° 51.6	90° 52.1	105° 52.1	120° 52.2	135° 52.2	150° 52.2	165° 52.3	+0.0
	16° 54.5	16° 55.2	16° 55.9	16° 56.6	16° 57.3	16° 57.9	17° 06.8	17° 07.5	17° 08.1	17° 08.8	17° 09.5	17° 10.2	+0.7
Сб 8	180° 52.3	195° 52.3	210° 52.4	225° 52.4	240° 52.4	255° 52.5	90° 52.8	105° 52.9	120° 52.9	135° 52.9	150° 52.9	165° 53.0	+0.0
	17° 10.8	17° 11.5	17° 12.2	17° 12.9	17° 13.5	17° 14.2	17° 22.9	17° 23.6	17° 24.2	17° 24.9	17° 25.6	17° 26.2	+0.7
Вс 9	180° 53.0	195° 53.0	210° 53.0	225° 53.1	240° 53.1	255° 53.1	90° 53.4	105° 53.4	120° 53.5	135° 53.5	150° 53.5	165° 53.5	+0.0
	17° 26.9	17° 27.5	17° 28.2	17° 28.9	17° 29.5	17° 30.2	17° 38.7	17° 39.4	17° 40.0	17° 40.7	17° 41.3	17° 42.0	+0.7
Пн 10	180° 53.5	195° 53.6	210° 53.6	225° 53.6	240° 53.6	255° 53.6	90° 53.9	105° 53.9	120° 53.9	135° 53.9	150° 53.9	165° 53.9	+0.0
	17° 42.6	17° 43.3	17° 43.9	17° 44.6	17° 45.2	17° 45.9	17° 54.2	17° 54.9	17° 55.5	17° 56.2	17° 56.8	17° 57.4	+0.6
Вт 11	180° 53.9	195° 54.0	210° 54.0	225° 54.0	240° 54.0	255° 54.0	90° 54.2	105° 54.2	120° 54.2	135° 54.2	150° 54.2	165° 54.2	+0.0
	17° 58.1	17° 58.7	17° 59.3	18° 00.0	18° 00.6	18° 01.3	18° 09.5	18° 10.1	18° 10.7	18° 11.3	18° 12.0	18° 12.6	+0.6
Ср 12	180° 54.2	195° 54.2	210° 54.2	225° 54.2	240° 54.2	255° 54.3	90° 54.3	105° 54.3	120° 54.3	135° 54.3	150° 54.3	165° 54.3	+0.0
	18° 13.2	18° 13.8	18° 14.5	18° 15.1	18° 15.7	18° 16.3	18° 24.4	18° 25.0	18° 25.6	18° 26.2	18° 26.8	18° 27.4	+0.6
Чт 13	180° 54.3	195° 54.3	210° 54.3	225° 54.3	240° 54.4	255° 54.4	90° 54.3	105° 54.3	120° 54.3	135° 54.3	150° 54.3	165° 54.3	+0.0
	18° 28.1	18° 28.7	18° 29.3	18° 29.9	18° 30.5	18° 31.1	18° 39.0	18° 39.6	18° 40.2	18° 40.8	18° 41.4	18° 42.0	+0.6
Пт 14	180° 54.3	195° 54.3	210° 54.3	225° 54.3	240° 54.3	255° 54.3	90° 54.2	105° 54.2	120° 54.2	135° 54.2	150° 54.2	165° 54.2	-0.0
	18° 42.6	18° 43.2	18° 43.8	18° 44.4	18° 45.0	18° 45.6	18° 53.3	18° 53.9	18° 54.4	18° 55.0	18° 55.6	18° 56.2	+0.6
Сб 15	180° 54.2	195° 54.2	210° 54.2	225° 54.1	240° 54.1	255° 54.1	90° 54.0	105° 54.0	120° 53.9	135° 53.9	150° 53.9	165° 53.9	-0.0
	18° 56.8	18° 57.4	18° 58.0	18° 58.5	18° 59.1	18° 59.7	19° 07.2	19° 07.8	19° 08.4	19° 09.0	19° 09.5	19° 10.1	+0.6
Вс 16	180° 53.9	195° 53.9	210° 53.9	225° 53.8	240° 53.8	255° 53.8	90° 53.6	105° 53.6	120° 53.5	135° 53.5	150° 53.5	165° 53.5	-0.0
	19° 10.7	19° 11.3	19° 11.8	19° 12.4	19° 13.0	19° 13.5	19° 20.9	19° 21.4	19° 22.0	19° 22.6	19° 23.1	19° 23.7	+0.6
Пн 17	180° 53.5	195° 53.4	210° 53.4	225° 53.4	240° 53.4	255° 53.4	90° 53.1	105° 53.0	120° 53.0	135° 53.0	150° 53.0	165° 52.9	-0.0
	19° 24.2	19° 24.8	19° 25.4	19° 25.9	19° 26.5	19° 27.0	19° 34.2	19° 34.7	19° 35.3	19° 35.8	19° 36.4	19° 36.9	+0.6
Вт 18	180° 52.9	195° 52.9	210° 52.9	225° 52.8	240° 52.8	255° 52.8	90° 52.4	105° 52.4	120° 52.3	135° 52.3	150° 52.3	165° 52.2	-0.0
	19° 37.5	19° 38.0	19° 38.6	19° 39.1	19° 39.6	19° 40.2	19° 47.2	19° 47.7	19° 48.2	19° 48.8	19° 49.3	19° 49.8	+0.5
Ср 19	180° 52.2	195° 52.2	210° 52.2	225° 52.1	240° 52.1	255° 52.1	90° 51.6	105° 51.6	120° 51.5	135° 51.5	150° 51.5	165° 51.4	-0.0
	19° 50.4	19° 50.9	19° 51.4	19° 52.0	19° 52.5	19° 53.0	19° 59.8	20° 00.3	20° 00.9	20° 01.4	20° 01.9	20° 02.4	+0.5
Чт 20	180° 51.4	195° 51.4	210° 51.3	225° 51.3	240° 51.2	255° 51.2	90° 50.7	105° 50.6	120° 50.6	135° 50.6	150° 50.5	165° 50.5	-0.0
	20° 02.9	20° 03.4	20° 04.0	20° 04.5	20° 05.0	20° 05.5	20° 12.1	20° 12.6	20° 13.1	20° 13.6	20° 14.1	20° 14.6	+0.5
Пт 21	180° 50.4	195° 50.4	210° 50.4	225° 50.3	240° 50.3	255° 50.2	90° 49.6	105° 49.6	120° 49.5	135° 49.5	150° 49.5	165° 49.4	-0.0
	20° 15.1	20° 15.6	20° 16.2	20° 16.7	20° 17.2	20° 17.6	20° 24.1	20° 24.6	20° 25.1	20° 25.6	20° 26.0	20° 26.5	+0.5
Сб 22	180° 49.4	195° 49.3	210° 49.3	225° 49.2	240° 49.2	255° 49.1	90° 48.5	105° 48.4	120° 48.4	135° 48.3	150° 48.3	165° 48.2	-0.0
	20° 27.0	20° 27.5	20° 28.0	20° 28.5	20° 29.0	20° 29.4	20° 35.7	20° 36.2	20° 36.6	20° 37.1	20° 37.6	20° 38.1	+0.5
Вс 23	180° 48.1	195° 48.1	210° 48.0	225° 48.0	240° 47.9	255° 47.9	90° 47.2	105° 47.1	120° 47.0	135° 47.0	150° 46.9	165° 46.9	-0.1
	20° 38.5	20° 39.0	20° 39.5	20° 39.9	20° 40.4	20° 40.9	20° 46.9	20° 47.4	20° 47.9	20° 48.3	20° 48.8	20° 49.2	+0.5
Пн 24	180° 46.8	195° 46.8	210° 46.7	225° 46.6	240° 46.6	255° 46.5	90° 45.7	105° 45.7	120° 45.6	135° 45.5	150° 45.5	165° 45.4	-0.1
	20° 49.7	20° 50.2	20° 50.6	20° 51.1	20° 51.5	20° 52.0	20° 57.8	20° 58.3	20° 58.7	20° 59.2	20° 59.6	21° 00.1	+0.5
Вт 25	180° 45.4	195° 45.3	210° 45.2	225° 45.2	240° 45.1	255° 45.0	90° 44.2	105° 44.1	120° 44.0	135° 44.0	150° 43.9	165° 43.8	-0.1
	21° 00.5	21° 00.9	21° 01.4	21° 01.8	21° 02.3	21° 02.7	21° 08.4	21° 08.8	21° 09.2	21° 09.7	21° 10.1	21° 10.5	+0.4
Ср 26	180° 43.8	195° 43.7	210° 43.6	225° 43.6	240° 43.5	255° 43.4	90° 42.5	105° 42.4	120° 42.4	135° 42.3	150° 42.2	165° 42.2	-0.1
	21° 10.9	21° 11.4	21° 11.8	21° 12.2	21° 12.6	21° 13.1	21° 18.5	21° 18.9	21° 19.4	21° 19.8	21° 20.2	21° 20.6	+0.4
Чт 27	180° 42.1	195° 42.0	210° 41.9	225° 41.9	240° 41.8	255° 41.7	90° 40.7	105° 40.6	120° 40.6	135° 40.5	150° 40.4	165° 40.3	-0.1
	21° 21.0	21° 21.4	21° 21.8	21° 22.3	21° 22.7	21° 23.1	21° 28.3	21° 28.7	21° 29.1	21° 29.5	21° 29.9	21° 30.3	+0.4
Пт 28	180° 40.3	195° 40.2	210° 40.1	225° 40.0	240° 39.9	255° 39.9	90° 38.8	105° 38.7	120° 38.7	135° 38.6	150° 38.5	165° 38.4	-0.1
	21° 30.7	21° 31.1	21° 31.5	21° 31.9	21° 32.3	21° 32.7	21° 37.8	21° 38.1	21° 38.5	21° 38.9	21° 39.3	21° 39.7	+0.4
Сб 29	180° 38.3	195° 38.2	210° 38.2	225° 38.1	240° 38.0	255° 37.9	90° 36.8	105° 36.7	120° 36.6	135° 36.5	150° 36.4	165° 36.4	-0.1
	21° 40.1	21° 40.4	21° 40.8	21° 41.2	21° 41.6	21° 42.0	21° 46.8	21° 47.2	21° 47.6	21° 47.9	21° 48.3	21° 48.7	+0.4
Вс 30	180° 36.3	195° 36.2	210° 36.1	225° 36.0	240° 35.9	255° 35.8	90° 34.7	105° 34.6	120° 34.5	135° 34.4	150° 34.3	165° 34.2	-0.1
	21° 49.0	21° 49.4	21° 49.8	21° 50.1	21° 50.5	21° 50.8	21° 55.5	21° 55.8	21° 56.2	21° 56.5	21° 56.9	21° 57.3	+0.4
Пн 31	180° 34.1	195° 34.0	210° 33.9	225° 33.8	240° 33.7	255° 33.7	90° 32.4	105° 32.3	120° 32.2	135° 32.1	150° 32.0	165° 31.9	-0.1
	21° 57.6	21° 58.0	21° 58.3	21° 58.6	21° 59.0	21° 59.3	22° 03.8	22° 04.1	22° 04.5	22° 04.8	22° 05.1	22° 05.5	+0.3

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2032

Д	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	Δ'/h	R/p
Сб 1	73° 51.5 -16° 05.1	88° 18.1 -15° 58.0	102° 44.7 -15° 50.9	117° 11.3 -15° 43.7	131° 37.9 -15° 36.4	146° 04.6 -15° 28.9	160° 31.3 -15° 21.4	174° 58.1 -15° 13.8	189° 24.9 -15° 06.1	203° 51.7 -14° 58.3	218° 18.6 -14° 50.4	+26.7 +7.5	16.1 59.1
◑ Вс 2	75° 06.1 -12° 41.3	89° 33.5 -12° 32.0	104° 01.0 -12° 22.7	118° 28.5 -12° 13.3	132° 56.1 -12° 03.8	147° 23.7 -11° 54.2	161° 51.4 -11° 44.6	176° 19.0 -11° 34.8	190° 46.7 -11° 25.1	205° 14.5 -11° 15.2	219° 42.3 -11° 05.3	+27.6 +9.6	16.1 59.2
Пн 3	76° 43.1 -8° 29.0	91° 11.4 -8° 18.2	105° 39.7 -8° 07.3	120° 08.1 -7° 56.3	134° 36.4 -7° 45.3	149° 04.9 -7° 34.2	163° 33.3 -7° 23.1	178° 01.8 -7° 12.0	192° 30.3 -7° 00.8	206° 58.8 -6° 49.6	221° 27.4 -6° 38.3	+28.4 +11.1	16.2 59.3
Вт 4	78° 38.3 -3° 45.4	93° 07.1 -3° 33.6	107° 36.0 -3° 21.9	122° 04.9 -3° 10.1	136° 33.9 -2° 58.3	151° 02.8 -2° 46.5	165° 31.8 -2° 34.6	180° 00.7 -2° 22.8	194° 29.7 -2° 10.9	208° 58.7 -1° 59.1	223° 27.7 -1° 47.2	+28.9 +11.8	16.2 59.2
Ср 5	80° 43.5 1° 11.4	95° 12.6 1° 23.3	109° 41.7 1° 35.2	124° 10.8 1° 47.0	138° 39.9 1° 58.9	153° 09.0 2° 10.7	167° 38.1 2° 22.5	182° 07.2 2° 34.3	196° 36.2 2° 46.1	211° 05.3 2° 57.9	225° 34.4 3° 09.6	+29.1 +11.8	16.1 59.1
Чт 6	82° 49.7 6° 02.7	97° 18.6 6° 14.0	111° 47.6 6° 25.2	126° 16.5 6° 36.4	140° 45.4 6° 47.6	155° 14.3 6° 58.7	169° 43.2 7° 09.8	184° 12.0 7° 20.8	198° 40.9 7° 31.8	213° 09.7 7° 42.7	227° 38.6 7° 53.6	+28.9 +11.1	16.0 58.8
Пт 7	84° 49.0 10° 30.3	99° 17.5 10° 40.2	113° 46.1 10° 50.1	128° 14.6 11° 00.0	142° 43.1 11° 09.7	157° 11.6 11° 19.4	171° 40.0 11° 29.0	186° 08.5 11° 38.6	200° 36.9 11° 48.1	215° 05.3 11° 57.5	229° 33.7 12° 06.8	+28.5 +9.7	15.9 58.4
Сб 8	86° 37.4 14° 17.2	101° 05.5 14° 25.3	115° 33.6 14° 33.2	130° 01.7 14° 41.1	144° 29.8 14° 48.8	158° 57.8 14° 56.5	173° 25.9 15° 04.0	187° 53.9 15° 11.5	202° 21.9 15° 18.9	216° 49.9 15° 26.2	231° 17.9 15° 33.4	+28.0 +7.6	15.8 57.9
● Вс 9	88° 16.5 17° 09.7	102° 44.3 17° 15.3	117° 12.2 17° 20.8	131° 40.0 17° 26.2	146° 07.9 17° 31.5	160° 35.7 17° 36.7	175° 03.5 17° 41.8	189° 31.4 17° 46.7	203° 59.2 17° 51.6	218° 27.0 17° 56.4	232° 54.9 18° 01.1	+27.8 +5.1	15.6 57.3
Пн 10	89° 53.1 18° 58.1	104° 21.1 19° 01.0	118° 49.1 19° 03.8	133° 17.1 19° 06.5	147° 45.1 19° 09.1	162° 13.1 19° 11.6	176° 41.1 19° 14.0	191° 09.2 19° 16.3	205° 37.3 19° 18.4	220° 05.4 19° 20.5	234° 33.5 19° 22.4	+28.0 +2.4	15.4 56.6
Вт 11	91° 38.2 19° 38.6	106° 06.8 19° 38.8	120° 35.3 19° 39.0	135° 04.0 19° 39.0	149° 32.6 19° 38.9	164° 01.3 19° 38.7	178° 30.0 19° 38.4	192° 58.7 19° 37.9	207° 27.5 19° 37.4	221° 56.4 19° 36.8	236° 25.2 19° 36.1	+28.7 -0.3	15.3 56.0
Ср 12	93° 43.1 19° 13.1	108° 12.7 19° 10.8	122° 42.2 19° 08.4	137° 11.9 19° 05.9	151° 41.6 19° 03.3	166° 11.3 19° 00.6	180° 41.1 18° 57.8	195° 10.9 18° 55.0	209° 40.8 18° 52.0	224° 10.7 18° 48.9	238° 40.7 18° 45.8	+29.8 -2.7	15.1 55.3
Чт 13	96° 16.3 17° 47.9	110° 47.1 17° 43.4	125° 17.9 17° 38.8	139° 48.8 17° 34.1	154° 19.7 17° 29.3	168° 50.7 17° 24.5	183° 21.8 17° 19.6	197° 52.9 17° 14.5	212° 24.0 17° 09.5	226° 55.2 17° 04.3	241° 26.4 16° 59.1	+31.0 -4.9	14.9 54.8
Пт 14	99° 21.2 15° 31.8	113° 53.2 15° 25.5	128° 25.3 15° 19.0	142° 57.5 15° 12.5	157° 29.6 15° 06.0	172° 01.9 14° 59.4	186° 34.2 14° 52.7	201° 06.5 14° 45.9	215° 38.9 14° 39.1	230° 11.3 14° 32.2	244° 43.7 14° 25.3	+32.3 -6.7	14.8 54.4
Сб 15	113° 53.2 15° 25.5	128° 25.3 15° 19.0	142° 57.5 15° 12.5	157° 29.6 15° 06.0	172° 01.9 14° 59.4	186° 34.2 14° 52.7	201° 06.5 14° 45.9	215° 38.9 14° 39.1	230° 11.3 14° 32.2	244° 43.7 14° 25.3	259° 16.3 14° 18.3	+32.3 -6.7	14.8 54.4
Вс 16	117° 29.0 12° 26.7	132° 02.2 12° 18.8	146° 35.4 12° 10.9	161° 08.6 12° 02.9	175° 41.9 11° 54.9	190° 15.2 11° 46.8	204° 48.6 11° 38.7	219° 21.9 11° 30.6	233° 55.4 11° 22.4	248° 28.8 11° 14.1	263° 02.3 11° 05.8	+33.3 -8.1	14.8 54.2
◐ Пн 17	121° 28.0 8° 56.3	136° 02.0 8° 47.3	150° 35.9 8° 38.4	165° 09.9 8° 29.3	179° 43.8 8° 20.3	194° 17.8 8° 11.2	208° 51.9 8° 02.1	223° 25.9 7° 52.9	238° 00.0 7° 43.7	252° 34.0 7° 34.5	267° 08.1 7° 25.3	+34.0 -9.1	14.8 54.2
Вт 18	125° 40.9 5° 03.0	140° 15.2 4° 53.3	154° 49.5 4° 43.6	169° 23.7 4° 33.8	183° 58.0 4° 24.1	198° 32.2 4° 14.3	213° 06.5 4° 04.5	227° 40.8 3° 54.6	242° 15.0 3° 44.8	256° 49.3 3° 34.9	271° 23.5 3° 25.1	+34.3 -9.8	14.8 54.3
Ср 19	129° 56.6 0° 54.9	144° 30.7 0° 44.8	159° 04.8 0° 34.7	173° 38.8 0° 24.5	188° 12.9 0° 14.4	202° 46.9 0° 04.3	217° 21.0 -0° 05.9	231° 55.0 -0° 16.1	246° 28.9 -0° 26.2	261° 02.9 -0° 36.4	275° 36.8 -0° 46.6	+34.0 -10.2	14.9 54.7
Чт 20	134° 02.7 -3° 19.4	148° 36.2 -3° 29.6	163° 09.6 -3° 39.7	177° 43.0 -3° 49.9	192° 16.3 -4° 00.0	206° 49.7 -4° 10.2	221° 23.0 -4° 20.3	235° 56.2 -4° 30.4	250° 29.4 -4° 40.6	265° 02.6 -4° 50.7	279° 35.7 -5° 00.8	+33.3 -10.1	15.0 55.2
Пт 21	137° 46.9 -7° 30.3	152° 19.3 -7° 40.1	166° 51.6 -7° 49.9	181° 23.8 -7° 59.6	195° 56.0 -8° 09.3	210° 28.1 -8° 19.0	225° 00.2 -8° 28.7	239° 32.2 -8° 38.4	254° 04.2 -8° 48.0	268° 36.0 -8° 57.6	283° 07.9 -9° 07.1	+32.1 -9.7	15.2 55.8
Сб 22	140° 57.8 -11° 26.0	155° 28.6 -11° 35.0	169° 59.3 -11° 43.8	184° 30.0 -11° 52.7	199° 00.6 -12° 01.4	213° 31.1 -12° 10.2	228° 01.5 -12° 18.9	242° 31.9 -12° 27.5	257° 02.2 -12° 36.0	271° 32.4 -12° 44.6	286° 02.6 -12° 53.0	+30.5 -8.7	15.4 56.5
Вс 23	143° 26.2 -14° 52.6	157° 55.1 -15° 00.0	172° 24.0 -15° 07.4	186° 52.9 -15° 14.7	201° 21.6 -15° 21.9	215° 50.3 -15° 29.0	230° 18.9 -15° 36.1	244° 47.4 -15° 43.0	259° 15.8 -15° 49.9	273° 44.2 -15° 56.8	288° 12.5 -16° 03.5	+28.6 -7.1	15.6 57.3
Пн 24	145° 08.1 -17° 33.9	159° 35.3 -17° 39.2	174° 02.4 -17° 44.3	188° 29.4 -17° 49.4	202° 56.3 -17° 54.4	217° 23.2 -17° 59.3	231° 50.0 -18° 04.0	246° 16.7 -18° 08.7	260° 43.4 -18° 13.2	275° 10.0 -18° 17.7	289° 36.5 -18° 22.0	+26.8 -4.8	15.8 58.0
○ Вт 25	146° 07.6 -19° 13.7	160° 33.2 -19° 16.2	174° 58.8 -19° 18.6	189° 24.4 -19° 20.8	203° 49.9 -19° 23.0	218° 15.4 -19° 25.0	232° 40.8 -19° 26.9	247° 06.2 -19° 28.7	261° 31.5 -19° 30.3	275° 56.8 -19° 31.9	290° 22.1 -19° 33.3	+25.4 -2.0	16.0 58.6
Ср 26	146° 37.4 -19° 38.9	161° 02.3 -19° 38.3	175° 27.1 -19° 37.5	189° 51.9 -19° 36.5	204° 16.7 -19° 35.5	218° 41.5 -19° 34.3	233° 06.3 -19° 33.0	247° 31.1 -19° 31.6	261° 55.8 -19° 30.0	276° 20.6 -19° 28.3	290° 45.3 -19° 26.5	+24.8 +1.2	16.1 59.1
Чт 27	146° 57.3 -18° 43.4	161° 22.2 -18° 39.5	175° 47.1 -18° 35.5	190° 12.0 -18° 31.4	204° 36.9 -18° 27.1	219° 01.9 -18° 22.7	233° 26.9 -18° 18.2	247° 51.9 -18° 13.6	262° 17.0 -18° 08.8	276° 42.0 -18° 03.9	291° 07.1 -17° 58.9	+25.0 +4.5	16.2 59.4
Пт 28	147° 27.5 -16° 30.0	161° 53.2 -16° 23.1	176° 18.9 -16° 16.2	190° 44.6 -16° 09.2	205° 10.4 -16° 02.0	219° 36.3 -15° 54.8	234° 02.1 -15° 47.4	248° 28.1 -15° 40.0	262° 54.0 -15° 32.4	277° 20.0 -15° 24.8	291° 46.1 -15° 17.0	+25.9 +7.3	16.2 59.6
Сб 29	148° 22.7 -13° 09.7	162° 49.5 -13° 00.6	177° 16.4 -12° 51.3	191° 43.3 -12° 42.0	206° 10.3 -12° 32.6	220° 37.4 -12° 23.1	235° 04.4 -12° 13.5	249° 31.6 -12° 03.9	263° 58.7 -11° 54.2	278° 26.0 -11° 44.4	292° 53.3 -11° 34.6	+27.1 +9.5	16.2 59.6
Вс 30	149° 48.2 -8° 59.4	164° 16.2 -8° 48.6	178° 44.3 -8° 37.7	193° 12.4 -8° 26.8	207° 40.5 -8° 15.9	222° 08.7 -8° 04.9	236° 37.0 -7° 53.9	251° 05.3 -7° 42.8	265° 33.6 -7° 31.7	280° 02.0 -7° 20.6	294° 30.4 -7° 09.4	+28.2 +11.0	16.2 59.4
◑ Пн 31	151° 40.9 -4° 17.7	166° 09.9 -4° 06.0	180° 38.9 -3° 54.4	195° 07.9 -3° 42.7	209° 36.9 -3° 31.0	224° 06.0 -3° 19.3	238° 35.1 -3° 07.5	253° 04.3 -2° 55.8	267° 33.4 -2° 44.0	282° 02.6 -2° 32.3	296° 31.8 -2° 20.5	+29.1 +11.7	16.1 59.1

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Последняя четв.: 2 16h01 — Новолуние: 9 13h35 — Первая четв.: 17 09h43 — Полнолуние: 25 02h37 — Последняя четв.: 31 20h51

СОЛНЦЕ

Июнь 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	180° 31.8	195° 31.8	210° 31.7	225° 31.6	240° 31.5	255° 31.4	90° 30.1	105° 30.0	120° 29.9	135° 29.8	150° 29.7	165° 29.6	-0.1
	22° 05.8	22° 06.1	22° 06.5	22° 06.8	22° 07.1	22° 07.5	22° 11.7	22° 12.0	22° 12.3	22° 12.7	22° 13.0	22° 13.3	+0.3
Ср 2	180° 29.5	195° 29.4	210° 29.3	225° 29.2	240° 29.1	255° 29.0	90° 27.6	105° 27.5	120° 27.4	135° 27.3	150° 27.2	165° 27.1	-0.1
	22° 13.6	22° 13.9	22° 14.2	22° 14.6	22° 14.9	22° 15.2	22° 19.2	22° 19.5	22° 19.8	22° 20.1	22° 20.4	22° 20.7	+0.3
Чт 3	180° 27.0	195° 26.9	210° 26.8	225° 26.7	240° 26.6	255° 26.5	90° 25.1	105° 25.0	120° 24.9	135° 24.8	150° 24.7	165° 24.6	-0.1
	22° 21.0	22° 21.3	22° 21.6	22° 21.9	22° 22.2	22° 22.5	22° 26.3	22° 26.6	22° 26.9	22° 27.2	22° 27.5	22° 27.8	+0.3
Пт 4	180° 24.4	195° 24.3	210° 24.2	225° 24.1	240° 24.0	255° 23.9	90° 22.5	105° 22.4	120° 22.2	135° 22.1	150° 22.0	165° 21.9	-0.1
	22° 28.1	22° 28.4	22° 28.6	22° 28.9	22° 29.2	22° 29.5	22° 33.1	22° 33.4	22° 33.6	22° 33.9	22° 34.2	22° 34.4	+0.3
Сб 5	180° 21.8	195° 21.7	210° 21.6	225° 21.5	240° 21.3	255° 21.2	90° 19.8	105° 19.6	120° 19.5	135° 19.4	150° 19.3	165° 19.2	-0.1
	22° 34.7	22° 35.0	22° 35.2	22° 35.5	22° 35.8	22° 36.0	22° 39.4	22° 39.7	22° 39.9	22° 40.2	22° 40.4	22° 40.7	+0.3
Вс 6	180° 19.1	195° 18.9	210° 18.8	225° 18.7	240° 18.6	255° 18.5	90° 17.0	105° 16.8	120° 16.7	135° 16.6	150° 16.5	165° 16.4	-0.1
	22° 41.0	22° 41.2	22° 41.5	22° 41.7	22° 42.0	22° 42.2	22° 45.4	22° 45.6	22° 45.9	22° 46.1	22° 46.3	22° 46.6	+0.3
Пн 7	180° 16.3	195° 16.1	210° 16.0	225° 15.9	240° 15.8	255° 15.7	90° 14.1	105° 14.0	120° 13.9	135° 13.7	150° 13.6	165° 13.5	-0.1
	22° 46.8	22° 47.0	22° 47.3	22° 47.5	22° 47.7	22° 48.0	22° 50.9	22° 51.1	22° 51.4	22° 51.6	22° 51.8	22° 52.0	+0.2
Вт 8	180° 13.4	195° 13.2	210° 13.1	225° 13.0	240° 12.9	255° 12.8	90° 11.2	105° 11.0	120° 10.9	135° 10.8	150° 10.7	165° 10.5	-0.1
	22° 52.2	22° 52.5	22° 52.7	22° 52.9	22° 53.1	22° 53.3	22° 56.1	22° 56.3	22° 56.5	22° 56.7	22° 56.9	22° 57.1	+0.2
Ср 9	180° 10.4	195° 10.3	210° 10.2	225° 10.1	240° 09.9	255° 09.8	90° 08.2	105° 08.1	120° 07.9	135° 07.8	150° 07.7	165° 07.5	-0.1
	22° 57.3	22° 57.5	22° 57.7	22° 57.9	22° 58.1	22° 58.3	23° 00.8	23° 01.0	23° 01.2	23° 01.4	23° 01.6	23° 01.7	+0.2
Чт 10	180° 07.4	195° 07.3	210° 07.2	225° 07.0	240° 06.9	255° 06.8	90° 05.1	105° 05.0	120° 04.9	135° 04.7	150° 04.6	165° 04.5	-0.1
	23° 01.9	23° 02.1	23° 02.3	23° 02.5	23° 02.7	23° 02.8	23° 05.1	23° 05.3	23° 05.5	23° 05.7	23° 05.8	23° 06.0	+0.2
Пт 11	180° 04.4	195° 04.2	210° 04.1	225° 04.0	240° 03.8	255° 03.7	90° 02.0	105° 01.9	120° 01.8	135° 01.7	150° 01.5	165° 01.4	-0.1
	23° 06.2	23° 06.3	23° 06.5	23° 06.7	23° 06.8	23° 07.0	23° 09.1	23° 09.2	23° 09.4	23° 09.5	23° 09.7	23° 09.8	+0.2
Сб 12	180° 01.3	195° 01.1	210° 01.0	225° 00.9	240° 00.7	255° 00.6	89° 58.9	104° 58.8	119° 58.6	134° 58.5	149° 58.4	164° 58.2	-0.1
	23° 10.0	23° 10.1	23° 10.3	23° 10.4	23° 10.6	23° 10.7	23° 12.6	23° 12.7	23° 12.9	23° 13.0	23° 13.1	23° 13.3	+0.2
Вс 13	179° 58.1	194° 58.0	209° 57.9	224° 57.7	239° 57.6	254° 57.5	89° 55.7	104° 55.6	119° 55.5	134° 55.3	149° 55.2	164° 55.1	-0.1
	23° 13.4	23° 13.5	23° 13.7	23° 13.8	23° 13.9	23° 14.1	23° 15.7	23° 15.8	23° 16.0	23° 16.1	23° 16.2	23° 16.3	+0.1
Пн 14	179° 54.9	194° 54.8	209° 54.7	224° 54.5	239° 54.4	254° 54.3	89° 52.5	104° 52.4	119° 52.3	134° 52.1	149° 52.0	164° 51.9	-0.1
	23° 16.4	23° 16.5	23° 16.7	23° 16.8	23° 16.9	23° 17.0	23° 18.4	23° 18.5	23° 18.6	23° 18.7	23° 18.8	23° 18.9	+0.1
Вт 15	179° 51.7	194° 51.6	209° 51.5	224° 51.3	239° 51.2	254° 51.1	89° 49.3	104° 49.2	119° 49.1	134° 48.9	149° 48.8	164° 48.6	-0.1
	23° 19.0	23° 19.1	23° 19.2	23° 19.3	23° 19.4	23° 19.5	23° 20.7	23° 20.8	23° 20.9	23° 21.0	23° 21.0	23° 21.1	+0.1
Ср 16	179° 48.5	194° 48.4	209° 48.2	224° 48.1	239° 48.0	254° 47.8	89° 46.1	104° 45.9	119° 45.8	134° 45.7	149° 45.5	164° 45.4	-0.1
	23° 21.2	23° 21.3	23° 21.4	23° 21.5	23° 21.5	23° 21.6	23° 22.6	23° 22.7	23° 22.7	23° 22.8	23° 22.9	23° 22.9	+0.1
Чт 17	179° 45.3	194° 45.1	209° 45.0	224° 44.9	239° 44.7	254° 44.6	89° 42.8	104° 42.7	119° 42.6	134° 42.4	149° 42.3	164° 42.2	-0.1
	23° 23.0	23° 23.1	23° 23.1	23° 23.2	23° 23.2	23° 23.3	23° 24.1	23° 24.1	23° 24.2	23° 24.2	23° 24.3	23° 24.3	+0.1
Пт 18	179° 42.0	194° 41.9	209° 41.8	224° 41.6	239° 41.5	254° 41.3	89° 39.6	104° 39.4	119° 39.3	134° 39.2	149° 39.0	164° 38.9	-0.1
	23° 24.4	23° 24.4	23° 24.5	23° 24.5	23° 24.5	23° 24.6	23° 25.1	23° 25.1	23° 25.2	23° 25.2	23° 25.2	23° 25.3	+0.0
Сб 19	179° 38.8	194° 38.6	209° 38.5	224° 38.4	239° 38.2	254° 38.1	89° 36.3	104° 36.2	119° 36.1	134° 35.9	149° 35.8	164° 35.7	-0.1
	23° 25.3	23° 25.3	23° 25.4	23° 25.4	23° 25.4	23° 25.5	23° 25.7	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 25.8	+0.0
Вс 20	179° 35.5	194° 35.4	209° 35.2	224° 35.1	239° 35.0	254° 34.8	89° 33.1	104° 33.0	119° 32.8	134° 32.7	149° 32.5	164° 32.4	-0.1
	23° 25.8	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 26.0	+0.0
Пн 21	179° 32.3	194° 32.1	209° 32.0	224° 31.9	239° 31.7	254° 31.6	89° 29.9	104° 29.7	119° 29.6	134° 29.4	149° 29.3	164° 29.2	-0.1
	23° 26.0	23° 26.0	23° 26.0	23° 26.0	23° 25.9	23° 25.9	23° 25.8	23° 25.8	23° 25.8	23° 25.7	23° 25.7	23° 25.7	-0.0
Вт 22	179° 29.0	194° 28.9	209° 28.8	224° 28.6	239° 28.5	254° 28.4	89° 26.6	104° 26.5	119° 26.4	134° 26.2	149° 26.1	164° 26.0	-0.1
	23° 25.7	23° 25.7	23° 25.6	23° 25.6	23° 25.6	23° 25.6	23° 25.2	23° 25.2	23° 25.1	23° 25.1	23° 25.1	23° 25.0	-0.0
Ср 23	179° 25.8	194° 25.7	209° 25.6	224° 25.4	239° 25.3	254° 25.2	89° 23.4	104° 23.3	119° 23.2	134° 23.0	149° 22.9	164° 22.8	-0.1
	23° 25.0	23° 24.9	23° 24.9	23° 24.9	23° 24.8	23° 24.8	23° 24.2	23° 24.1	23° 24.1	23° 24.0	23° 24.0	23° 23.9	-0.0
Чт 24	179° 22.6	194° 22.5	209° 22.4	224° 22.2	239° 22.1	254° 22.0	89° 20.3	104° 20.1	119° 20.0	134° 19.9	149° 19.7	164° 19.6	-0.1
	23° 23.9	23° 23.8	23° 23.8	23° 23.7	23° 23.6	23° 23.6	23° 22.8	23° 22.7	23° 22.6	23° 22.6	23° 22.5	23° 22.4	-0.1
Пт 25	179° 19.5	194° 19.3	209° 19.2	224° 19.1	239° 18.9	254° 18.8	89° 17.1	104° 17.0	119° 16.9	134° 16.7	149° 16.6	164° 16.5	-0.1
	23° 22.3	23° 22.3	23° 22.2	23° 22.1	23° 22.0	23° 22.0	23° 20.9	23° 20.8	23° 20.8	23° 20.7	23° 20.6	23° 20.5	-0.1
Сб 26	179° 16.3	194° 16.2	209° 16.1	224° 15.9	239° 15.8	254° 15.7	89° 14.0	104° 13.9	119° 13.7	134° 13.6	149° 13.5	164° 13.4	-0.1
	23° 20.4	23° 20.3	23° 20.2	23° 20.1	23° 20.0	23° 19.9	23° 18.7	23° 18.6	23° 18.5	23° 18.4	23° 18.3	23° 18.2	-0.1
Вс 27	179° 13.2	194° 13.1	209° 13.0	224° 12.8	239° 12.7	254° 12.6	89° 10.9	104° 10.8	119° 10.7	134° 10.6	149° 10.4	164° 10.3	-0.1
	23° 18.1	23° 18.0	23° 17.8	23° 17.7	23° 17.6	23° 17.5	23° 16.0	23° 15.9	23° 15.8	23° 15.7	23° 15.5	23° 15.4	-0.1
Пн 28	179° 10.2	194° 10.0	209° 09.9	224° 09.8	239° 09.7	254° 09.5	89° 07.9	104° 07.8	119° 07.7	134° 07.5	149° 07.4	164° 07.3	-0.1
	23° 15.3	23° 15.2	23° 15.1	23° 14.9	23° 14.8	23° 14.7	23° 13.0	23° 12.8	23° 12.7	23° 12.6	23° 12.4	23° 12.3	-0.1
Вт 29	179° 07.2	194° 07.0	209° 06.9	224° 06.8	239° 06.7	254° 06.5	89° 04.9	104° 04.8	119° 04.7	134° 04.6	149° 04.4	164° 04.3	-0.1
	23° 12.1	23° 12.0	23° 11.9	23° 11.7	23° 11.6	23° 11.4	23° 09.5	23° 09.3	23° 09.2	23° 09.0	23° 08.9	23° 08.7	-0.1
Ср 30	179° 04.2	194° 04.1	209° 03.9	224° 03.8	239° 03.7	254° 03.6	89° 02.0	104° 01.9	119° 01.8	134° 01.6	149° 01.5	164° 01.4	-0.1
	23° 08.6	23° 08.4	23° 08.2	23° 08.1	23° 07.9	23° 07.8	23° 05.6	23° 05.4	23° 05.3	23° 05.1	23° 04.9	23° 04.8	-0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июнь 2032

Д	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	Δ°/h	R/p
Вт 1	66° 55.7	81° 25.1	95° 54.5	110° 24.0	124° 53.4	139° 22.9	153° 52.4	168° 21.9	182° 51.4	197° 20.9	211° 50.4	+29.5	16.1
	-0° 34.3	-0° 22.5	-0° 10.7	0° 01.1	0° 12.9	0° 24.7	0° 36.4	0° 48.2	1° 00.0	1° 11.7	1° 23.5	+11.8	58.9
Ср 2	69° 14.2	83° 43.8	98° 13.4	112° 43.0	127° 12.6	141° 42.2	156° 11.8	170° 41.4	185° 11.0	199° 40.6	214° 10.2	+29.6	16.0
	4° 17.3	4° 28.7	4° 40.1	4° 51.4	5° 02.7	5° 14.0	5° 25.3	5° 36.5	5° 47.6	5° 58.8	6° 09.8	+11.3	58.5
Чт 3	71° 32.9	86° 02.4	100° 31.8	115° 01.2	129° 30.6	143° 59.9	158° 29.3	172° 58.6	187° 27.9	201° 57.3	216° 26.6	+29.4	15.8
	8° 51.0	9° 01.3	9° 11.6	9° 21.8	9° 32.0	9° 42.1	9° 52.2	10° 02.2	10° 12.2	10° 22.0	10° 31.9	+10.1	58.1
Пт 4	73° 43.9	88° 12.9	102° 41.9	117° 10.8	131° 39.8	146° 08.7	160° 37.6	175° 06.5	189° 35.4	204° 04.2	218° 33.1	+28.9	15.7
	12° 51.2	12° 59.9	13° 08.5	13° 17.1	13° 25.6	13° 34.0	13° 42.3	13° 50.5	13° 58.7	14° 06.8	14° 14.8	+8.4	57.6
Сб 5	75° 43.5	90° 12.0	104° 40.6	119° 09.1	133° 37.6	148° 06.1	162° 34.6	177° 03.1	191° 31.6	206° 00.0	220° 28.4	+28.5	15.6
	16° 04.4	16° 10.9	16° 17.4	16° 23.8	16° 30.1	16° 36.3	16° 42.4	16° 48.5	16° 54.4	17° 00.2	17° 05.9	+6.2	57.1
Вс 6	77° 34.0	92° 02.3	106° 30.6	120° 58.9	135° 27.2	149° 55.6	164° 23.9	178° 52.2	193° 20.5	207° 48.8	222° 17.2	+28.3	15.4
	18° 19.7	18° 23.8	18° 27.8	18° 31.7	18° 35.5	18° 39.2	18° 42.8	18° 46.2	18° 49.6	18° 52.9	18° 56.0	+3.6	56.6
Пн 7	79° 23.0	93° 51.4	108° 19.9	122° 48.4	137° 17.0	151° 45.5	166° 14.1	180° 42.7	195° 11.3	209° 39.9	224° 08.6	+28.6	15.3
	19° 30.6	19° 32.0	19° 33.4	19° 34.6	19° 35.7	19° 36.8	19° 37.7	19° 38.5	19° 39.2	19° 39.8	19° 40.3	+1.0	56.0
● Вт 8	81° 21.5	95° 50.6	110° 19.7	124° 48.9	139° 18.1	153° 47.3	168° 16.6	182° 45.9	197° 15.3	211° 44.7	226° 14.1	+29.3	15.1
	19° 35.2	19° 34.0	19° 32.8	19° 31.4	19° 30.0	19° 28.4	19° 26.7	19° 25.0	19° 23.1	19° 21.2	19° 19.1	-1.6	55.5
Ср 9	83° 40.5	98° 10.7	112° 40.8	127° 11.0	141° 41.3	156° 11.6	170° 41.9	185° 12.3	199° 42.8	214° 13.3	228° 43.8	+30.3	15.0
	18° 36.9	18° 33.4	18° 29.7	18° 26.0	18° 22.2	18° 18.3	18° 14.3	18° 10.2	18° 06.1	18° 01.8	17° 57.5	-3.9	55.0
Чт 10	86° 27.8	100° 59.1	115° 30.5	130° 01.9	144° 33.4	159° 04.9	173° 36.5	188° 08.1	202° 39.8	217° 11.6	231° 43.3	+31.6	14.9
	16° 42.9	16° 37.3	16° 31.7	16° 25.9	16° 20.1	16° 14.3	16° 08.3	16° 02.3	15° 56.2	15° 50.0	15° 43.8	-5.9	54.6
Пт 11	89° 45.8	104° 18.3	118° 50.9	133° 23.5	147° 56.2	162° 28.9	177° 01.7	191° 34.5	206° 07.3	220° 40.2	235° 13.1	+32.7	14.8
	14° 02.7	13° 55.5	13° 48.2	13° 40.9	13° 33.5	13° 26.0	13° 18.5	13° 10.9	13° 03.3	12° 55.7	12° 47.9	-7.5	54.3
Сб 12	93° 31.9	108° 05.4	122° 39.0	137° 12.6	151° 46.3	166° 19.9	180° 53.7	195° 27.4	210° 01.2	224° 35.0	239° 08.8	+33.7	14.8
	10° 46.3	10° 37.9	10° 29.4	10° 20.8	10° 12.2	10° 03.6	9° 54.9	9° 46.2	9° 37.4	9° 28.7	9° 19.8	-8.7	54.1
Вс 13	97° 39.3	112° 13.5	126° 47.8	141° 22.0	155° 56.3	170° 30.5	185° 04.8	199° 39.2	214° 13.5	228° 47.8	243° 22.2	+34.3	14.8
	7° 03.4	6° 54.1	6° 44.7	6° 35.3	6° 25.9	6° 16.4	6° 07.0	5° 57.5	5° 47.9	5° 38.4	5° 28.8	-9.5	54.1
Пн 14	112° 13.5	126° 47.8	141° 22.0	155° 56.3	170° 30.5	185° 04.8	199° 39.2	214° 13.5	228° 47.8	243° 22.2	257° 56.5	+34.3	14.8
	6° 54.1	6° 44.7	6° 35.3	6° 25.9	6° 16.4	6° 07.0	5° 57.5	5° 47.9	5° 38.4	5° 28.8	5° 19.2	-9.5	54.1
Вт 15	116° 32.8	131° 07.3	145° 41.7	160° 16.1	174° 50.6	189° 25.0	203° 59.4	218° 33.9	233° 08.3	247° 42.7	262° 17.1	+34.4	14.8
	2° 52.9	2° 43.0	2° 33.1	2° 23.2	2° 13.3	2° 03.3	1° 53.4	1° 43.4	1° 33.4	1° 23.5	1° 13.5	-9.9	54.3
◐ Ср 16	120° 51.6	135° 25.8	150° 00.0	164° 34.1	179° 08.2	193° 42.2	208° 16.3	222° 50.3	237° 24.3	251° 58.3	266° 32.2	+34.1	14.9
	-1° 17.3	-1° 27.3	-1° 37.4	-1° 47.5	-1° 57.6	-2° 07.6	-2° 17.7	-2° 27.8	-2° 37.9	-2° 47.9	-2° 58.0	-10.1	54.7
Чт 17	124° 57.3	139° 30.7	154° 04.0	168° 37.3	183° 10.6	197° 43.8	212° 16.9	226° 50.0	241° 23.1	255° 56.1	270° 29.0	+33.2	15.1
	-5° 27.9	-5° 37.8	-5° 47.7	-5° 57.6	-6° 07.4	-6° 17.3	-6° 27.1	-6° 36.9	-6° 46.7	-6° 56.5	-7° 06.2	-9.8	55.2
Пт 18	128° 36.9	143° 09.0	157° 41.0	172° 12.9	186° 44.8	201° 16.6	215° 48.4	230° 20.0	244° 51.6	259° 23.2	273° 54.7	+31.8	15.2
	-9° 29.4	-9° 38.7	-9° 48.0	-9° 57.2	-10° 06.4	-10° 15.6	-10° 24.7	-10° 33.8	-10° 42.9	-10° 51.9	-11° 00.9	-9.2	55.9
Сб 19	131° 38.3	146° 08.6	160° 38.8	175° 09.0	189° 39.1	204° 09.1	218° 39.0	233° 08.8	247° 38.6	262° 08.3	276° 37.9	+30.0	15.5
	-13° 10.0	-13° 18.2	-13° 26.3	-13° 34.4	-13° 42.4	-13° 50.4	-13° 58.3	-14° 06.1	-14° 13.9	-14° 21.6	-14° 29.2	-7.9	56.7
Вс 20	133° 52.1	148° 20.4	162° 48.6	177° 16.7	191° 44.8	206° 12.7	220° 40.6	235° 08.4	249° 36.1	264° 03.8	278° 31.3	+27.9	15.7
	-16° 15.4	-16° 21.9	-16° 28.3	-16° 34.6	-16° 40.8	-16° 46.9	-16° 52.9	-16° 58.9	-17° 04.7	-17° 10.5	-17° 16.2	-6.1	57.6
Пн 21	135° 15.1	149° 41.4	164° 07.6	178° 33.8	192° 59.8	207° 25.9	221° 51.8	236° 17.7	250° 43.5	265° 09.2	279° 34.9	+26.0	15.9
	-18° 29.5	-18° 33.5	-18° 37.5	-18° 41.3	-18° 45.0	-18° 48.7	-18° 52.2	-18° 55.5	-18° 58.8	-19° 02.0	-19° 05.0	-3.6	58.5
Вт 22	135° 52.7	150° 17.5	164° 42.2	179° 06.9	193° 31.5	207° 56.1	222° 20.6	236° 45.1	251° 09.6	265° 34.0	279° 58.4	+24.6	16.2
	-19° 35.9	-19° 37.0	-19° 37.9	-19° 38.7	-19° 39.3	-19° 39.9	-19° 40.3	-19° 40.5	-19° 40.7	-19° 40.7	-19° 40.5	-0.5	59.3
○ Ср 23	136° 00.9	150° 24.9	164° 48.9	179° 12.9	193° 36.9	208° 00.9	222° 24.9	236° 48.9	251° 12.9	265° 36.9	280° 00.9	+24.0	16.3
	-19° 22.4	-19° 20.1	-19° 17.7	-19° 15.1	-19° 12.4	-19° 09.6	-19° 06.6	-19° 03.5	-19° 00.2	-18° 56.9	-18° 53.4	+2.9	59.9
Чт 24	136° 02.0	150° 26.2	164° 50.5	179° 14.7	193° 39.0	208° 03.4	222° 27.7	236° 52.1	251° 16.6	265° 41.0	280° 05.5	+24.4	16.4
	-17° 44.9	-17° 39.3	-17° 33.6	-17° 27.8	-17° 21.8	-17° 15.7	-17° 09.5	-17° 03.2	-16° 56.8	-16° 50.2	-16° 43.5	+6.1	60.3
Пт 25	136° 17.9	150° 43.1	165° 08.3	179° 33.6	193° 58.9	208° 24.3	222° 49.7	237° 15.2	251° 40.7	266° 06.3	280° 31.9	+25.4	16.5
	-14° 49.9	-14° 41.5	-14° 33.0	-14° 24.4	-14° 15.7	-14° 06.9	-13° 58.0	-13° 49.0	-13° 39.9	-13° 30.7	-13° 21.5	+8.8	60.4
Сб 26	137° 02.9	151° 29.4	165° 56.0	180° 22.6	194° 49.2	209° 16.0	223° 42.7	238° 09.5	252° 36.4	267° 03.4	281° 30.3	+26.7	16.4
	-10° 53.0	-10° 42.5	-10° 31.9	-10° 21.3	-10° 10.6	-9° 59.9	-9° 49.1	-9° 38.3	-9° 27.4	-9° 16.4	-9° 05.4	+10.8	60.3
Вс 27	138° 21.2	152° 49.0	167° 16.8	181° 44.7	196° 12.6	210° 40.6	225° 08.6	239° 36.7	254° 04.8	268° 32.9	283° 01.1	+28.0	16.3
	-6° 14.8	-6° 03.1	-5° 51.4	-5° 39.7	-5° 28.0	-5° 16.2	-5° 04.4	-4° 52.6	-4° 40.7	-4° 28.9	-4° 17.0	+11.8	59.9
Пн 28	140° 08.4	154° 37.2	169° 06.0	183° 34.8	198° 03.7	212° 32.6	227° 01.5	241° 30.4	255° 59.4	270° 28.4	284° 57.4	+28.9	16.2
	-1° 17.4	-1° 05.4	-0° 53.4	-0° 41.4	-0° 29.4	-0° 17.5	-0° 05.5	0° 06.5	0° 18.4	0° 30.4	0° 42.3	+12.0	59.4
Вт 29	142° 15.3	156° 44.6	171° 14.0	185° 43.3	200° 12.7	214° 42.1	229° 11.5	243° 40.9	258° 10.3	272° 39.7	287° 09.2	+29.4	16.0
	3° 38.9	3° 50.5	4° 02.0	4° 13.6	4° 25.0	4° 36.5	4° 47.9	4° 59.2	5° 10.6	5° 21.9	5° 33.1	+11.4	58.8
◑ Ср 30	144° 31.3	159° 00.8	173° 30.2	187° 59.7	202° 29.2	216° 58.7	231° 28.2	245° 57.6	260° 27.1	274° 56.6	289° 26.0	+29.5	15.9
	8° 16.5	8° 27.0	8° 37.5	8° 47.9	8° 58.2	9° 08.5	9° 18.7	9° 28.8	9° 38.9	9° 49.0	9° 58.9	+10.2	58.2

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 8 01h32 — Первая четв.: 16 02h59 — Полнолуние: 23 11h32 — Последняя четв.: 30 02h11

СОЛНЦЕ

Июль 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	179° 01.3	194° 01.2	209° 01.0	224° 00.9	239° 00.8	254° 00.7	88° 59.1	103° 59.0	118° 58.9	133° 58.8	148° 58.7	163° 58.6	-0.1
	23° 04.6	23° 04.4	23° 04.2	23° 04.1	23° 03.9	23° 03.7	23° 01.3	23° 01.1	23° 01.0	23° 00.8	23° 00.6	23° 00.4	-0.2
Пт 2	178° 58.4	193° 58.3	208° 58.2	223° 58.1	238° 58.0	253° 57.8	88° 56.3	103° 56.2	118° 56.1	133° 56.0	148° 55.9	163° 55.8	-0.1
	23° 00.2	23° 00.0	22° 59.8	22° 59.6	22° 59.4	22° 59.2	22° 56.6	22° 56.4	22° 56.2	22° 56.0	22° 55.8	22° 55.6	-0.2
Сб 3	178° 55.7	193° 55.5	208° 55.4	223° 55.3	238° 55.2	253° 55.1	88° 53.6	103° 53.5	118° 53.4	133° 53.3	148° 53.2	163° 53.1	-0.1
	22° 55.4	22° 55.2	22° 55.0	22° 54.8	22° 54.6	22° 54.4	22° 51.6	22° 51.3	22° 51.1	22° 50.9	22° 50.7	22° 50.5	-0.2
Вс 4	178° 52.9	193° 52.8	208° 52.7	223° 52.6	238° 52.5	253° 52.4	88° 51.0	103° 50.9	118° 50.7	133° 50.6	148° 50.5	163° 50.4	-0.1
	22° 50.2	22° 50.0	22° 49.8	22° 49.6	22° 49.3	22° 49.1	22° 46.1	22° 45.8	22° 45.6	22° 45.4	22° 45.1	22° 44.9	-0.2
Пн 5	178° 50.3	193° 50.2	208° 50.1	223° 50.0	238° 49.9	253° 49.8	88° 48.4	103° 48.3	118° 48.2	133° 48.1	148° 48.0	163° 47.9	-0.1
	22° 44.6	22° 44.4	22° 44.2	22° 43.9	22° 43.7	22° 43.4	22° 40.2	22° 39.9	22° 39.7	22° 39.4	22° 39.2	22° 38.9	-0.2
Вт 6	178° 47.8	193° 47.7	208° 47.6	223° 47.5	238° 47.4	253° 47.2	88° 45.9	103° 45.8	118° 45.7	133° 45.6	148° 45.5	163° 45.4	-0.1
	22° 38.7	22° 38.4	22° 38.2	22° 37.9	22° 37.6	22° 37.4	22° 33.9	22° 33.7	22° 33.4	22° 33.1	22° 32.8	22° 32.6	-0.3
Ср 7	178° 45.3	193° 45.2	208° 45.1	223° 45.0	238° 44.9	253° 44.8	88° 43.5	103° 43.4	118° 43.3	133° 43.2	148° 43.1	163° 43.0	-0.1
	22° 32.3	22° 32.0	22° 31.8	22° 31.5	22° 31.2	22° 30.9	22° 27.3	22° 27.0	22° 26.7	22° 26.4	22° 26.1	22° 25.8	-0.3
Чт 8	178° 43.0	193° 42.9	208° 42.8	223° 42.7	238° 42.6	253° 42.5	88° 41.2	103° 41.2	118° 41.1	133° 41.0	148° 40.9	163° 40.8	-0.1
	22° 25.5	22° 25.3	22° 25.0	22° 24.7	22° 24.4	22° 24.1	22° 20.2	22° 19.9	22° 19.6	22° 19.3	22° 19.0	22° 18.7	-0.3
Пт 9	178° 40.7	193° 40.6	208° 40.5	223° 40.4	238° 40.3	253° 40.2	88° 39.1	103° 39.0	118° 38.9	133° 38.8	148° 38.7	163° 38.6	-0.1
	22° 18.4	22° 18.1	22° 17.8	22° 17.5	22° 17.2	22° 16.9	22° 12.8	22° 12.5	22° 12.2	22° 11.8	22° 11.5	22° 11.2	-0.3
Сб 10	178° 38.5	193° 38.5	208° 38.4	223° 38.3	238° 38.2	253° 38.1	88° 37.0	103° 36.9	118° 36.8	133° 36.7	148° 36.7	163° 36.6	-0.1
	22° 10.9	22° 10.5	22° 10.2	22° 09.9	22° 09.6	22° 09.3	22° 05.0	22° 04.6	22° 04.3	22° 04.0	22° 03.6	22° 03.3	-0.3
Вс 11	178° 36.5	193° 36.4	208° 36.3	223° 36.3	238° 36.2	253° 36.1	88° 35.0	103° 35.0	118° 34.9	133° 34.8	148° 34.7	163° 34.7	-0.1
	22° 03.0	22° 02.6	22° 02.3	22° 01.9	22° 01.6	22° 01.3	21° 56.8	21° 56.4	21° 56.1	21° 55.7	21° 55.4	21° 55.0	-0.3
Пн 12	178° 34.6	193° 34.5	208° 34.4	223° 34.3	238° 34.3	253° 34.2	88° 33.2	103° 33.1	118° 33.1	133° 33.0	148° 32.9	163° 32.8	-0.1
	21° 54.7	21° 54.3	21° 54.0	21° 53.6	21° 53.3	21° 52.9	21° 48.2	21° 47.8	21° 47.5	21° 47.1	21° 46.7	21° 46.4	-0.4
Вт 13	178° 32.8	193° 32.7	208° 32.6	223° 32.6	238° 32.5	253° 32.4	88° 31.5	103° 31.4	118° 31.4	133° 31.3	148° 31.2	163° 31.2	-0.1
	21° 46.0	21° 45.6	21° 45.3	21° 44.9	21° 44.5	21° 44.2	21° 39.3	21° 38.9	21° 38.5	21° 38.1	21° 37.7	21° 37.4	-0.4
Ср 14	178° 31.1	193° 31.0	208° 31.0	223° 30.9	238° 30.8	253° 30.8	88° 29.9	103° 29.8	118° 29.8	133° 29.7	148° 29.7	163° 29.6	-0.1
	21° 37.0	21° 36.6	21° 36.2	21° 35.8	21° 35.4	21° 35.0	21° 30.0	21° 29.6	21° 29.2	21° 28.8	21° 28.4	21° 28.0	-0.4
Чт 15	178° 29.5	193° 29.5	208° 29.4	223° 29.4	238° 29.3	253° 29.2	88° 28.5	103° 28.4	118° 28.3	133° 28.3	148° 28.2	163° 28.2	-0.1
	21° 27.6	21° 27.2	21° 26.8	21° 26.4	21° 26.0	21° 25.6	21° 20.3	21° 19.9	21° 19.5	21° 19.0	21° 18.6	21° 18.2	-0.4
Пт 16	178° 28.1	193° 28.1	208° 28.0	223° 27.9	238° 27.9	253° 27.8	88° 27.1	103° 27.1	118° 27.0	133° 27.0	148° 26.9	163° 26.9	-0.1
	21° 17.8	21° 17.4	21° 17.0	21° 16.6	21° 16.1	21° 15.7	21° 10.2	21° 09.8	21° 09.4	21° 09.0	21° 08.5	21° 08.1	-0.4
Сб 17	178° 26.8	193° 26.8	208° 26.7	223° 26.7	238° 26.6	253° 26.6	88° 26.0	103° 25.9	118° 25.9	133° 25.8	148° 25.8	163° 25.7	-0.1
	21° 07.7	21° 07.2	21° 06.8	21° 06.4	21° 06.0	21° 05.5	20° 59.8	20° 59.4	20° 59.0	20° 58.5	20° 58.1	20° 57.6	-0.4
Вс 18	178° 25.7	193° 25.6	208° 25.6	223° 25.5	238° 25.5	253° 25.5	88° 24.9	103° 24.9	118° 24.8	133° 24.8	148° 24.8	163° 24.7	-0.0
	20° 57.2	20° 56.7	20° 56.3	20° 55.9	20° 55.4	20° 55.0	20° 49.1	20° 48.6	20° 48.2	20° 47.7	20° 47.3	20° 46.8	-0.4
Пн 19	178° 24.7	193° 24.6	208° 24.6	223° 24.6	238° 24.5	253° 24.5	88° 24.0	103° 24.0	118° 23.9	133° 23.9	148° 23.9	163° 23.8	-0.0
	20° 46.4	20° 45.9	20° 45.4	20° 45.0	20° 44.5	20° 44.1	20° 38.0	20° 37.5	20° 37.1	20° 36.6	20° 36.1	20° 35.6	-0.5
Вт 20	178° 23.8	193° 23.8	208° 23.7	223° 23.7	238° 23.7	253° 23.6	88° 23.3	103° 23.2	118° 23.2	133° 23.2	148° 23.1	163° 23.1	-0.0
	20° 35.2	20° 34.7	20° 34.2	20° 33.7	20° 33.3	20° 32.8	20° 26.6	20° 26.1	20° 25.6	20° 25.1	20° 24.6	20° 24.1	-0.5
Ср 21	178° 23.1	193° 23.1	208° 23.0	223° 23.0	238° 23.0	253° 23.0	88° 22.6	103° 22.6	118° 22.6	133° 22.6	148° 22.6	163° 22.5	-0.0
	20° 23.6	20° 23.2	20° 22.7	20° 22.2	20° 21.7	20° 21.2	20° 14.8	20° 14.3	20° 13.8	20° 13.3	20° 12.8	20° 12.3	-0.5
Чт 22	178° 22.5	193° 22.5	208° 22.5	223° 22.4	238° 22.4	253° 22.4	88° 22.2	103° 22.2	118° 22.1	133° 22.1	148° 22.1	163° 22.1	-0.0
	20° 11.8	20° 11.3	20° 10.8	20° 10.3	20° 09.8	20° 09.3	20° 02.6	20° 02.1	20° 01.6	20° 01.1	20° 00.6	20° 00.1	-0.5
Пт 23	178° 22.1	193° 22.1	208° 22.1	223° 22.0	238° 22.0	253° 22.0	88° 21.9	103° 21.8	118° 21.8	133° 21.8	148° 21.8	163° 21.8	-0.0
	19° 59.6	19° 59.0	19° 58.5	19° 58.0	19° 57.5	19° 57.0	19° 50.2	19° 49.7	19° 49.1	19° 48.6	19° 48.1	19° 47.5	-0.5
Сб 24	178° 21.8	193° 21.8	208° 21.8	223° 21.8	238° 21.8	253° 21.8	88° 21.7	103° 21.7	118° 21.7	133° 21.7	148° 21.7	163° 21.7	-0.0
	19° 47.0	19° 46.5	19° 46.0	19° 45.4	19° 44.9	19° 44.4	19° 37.4	19° 36.9	19° 36.3	19° 35.8	19° 35.2	19° 34.7	-0.5
Вс 25	178° 21.7	193° 21.7	208° 21.6	223° 21.6	238° 21.6	253° 21.6	88° 21.6	103° 21.6	118° 21.6	133° 21.7	148° 21.7	163° 21.7	-0.0
	19° 34.1	19° 33.6	19° 33.1	19° 32.5	19° 32.0	19° 31.4	19° 24.3	19° 23.7	19° 23.2	19° 22.6	19° 22.1	19° 21.5	-0.5
Пн 26	178° 21.7	193° 21.7	208° 21.7	223° 21.7	238° 21.7	253° 21.7	88° 21.8	103° 21.8	118° 21.8	133° 21.8	148° 21.8	163° 21.8	+0.0
	19° 20.9	19° 20.4	19° 19.8	19° 19.3	19° 18.7	19° 18.2	19° 10.8	19° 10.3	19° 09.7	19° 09.1	19° 08.6	19° 08.0	-0.6
Вт 27	178° 21.8	193° 21.8	208° 21.8	223° 21.8	238° 21.9	253° 21.9	88° 22.0	103° 22.0	118° 22.1	133° 22.1	148° 22.1	163° 22.1	+0.0
	19° 07.4	19° 06.9	19° 06.3	19° 05.7	19° 05.1	19° 04.6	18° 57.1	18° 56.5	18° 55.9	18° 55.3	18° 54.8	18° 54.2	-0.6
Ср 28	178° 22.1	193° 22.1	208° 22.1	223° 22.2	238° 22.2	253° 22.2	88° 22.4	103° 22.5	118° 22.5	133° 22.5	148° 22.5	163° 22.5	+0.0
	18° 53.6	18° 53.0	18° 52.4	18° 51.8	18° 51.3	18° 50.7	18° 43.0	18° 42.4	18° 41.8	18° 41.2	18° 40.6	18° 40.0	-0.6
Чт 29	178° 22.6	193° 22.6	208° 22.6	223° 22.6	238° 22.6	253° 22.7	88° 23.0	103° 23.0	118° 23.0	133° 23.1	148° 23.1	163° 23.1	+0.0
	18° 39.4	18° 38.9	18° 38.3	18° 37.7	18° 37.1	18° 36.5	18° 28.6	18° 28.0	18° 27.4	18° 26.8	18° 26.2	18° 25.6	-0.6
Пт 30	178° 23.1	193° 23.2	208° 23.2	223° 23.2	238° 23.3	253° 23.3	88° 23.7	103° 23.7	118° 23.8	133° 23.8	148° 23.8	163° 23.8	+0.0
	18° 25.0	18° 24.4	18° 23.8	18° 23.2	18° 22.6	18° 21.9	18° 14.0	18° 13.3	18° 12.7	18° 12.1	18° 11.5	18° 10.9	-0.6
Сб 31	178° 23.9	193° 23.9	208° 24.0	223° 24.0	238° 24.0	253° 24.1	88° 24.5	103° 24.6	118° 24.6	133° 24.6	148° 24.7	163° 24.7	+0.0
	18° 10.2	18° 09.6	18° 09.0	18° 08.4	18° 07.7	18° 07.1	17° 59.0	17° 58.3	17° 57.7	17° 57.1	17° 56.4	17° 55.8	-0.6

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2032

Д	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	Δ'/h	R/p
Чт 1	74° 20.3	88° 49.7	103° 19.1	117° 48.5	132° 17.8	146° 47.2	161° 16.5	175° 45.8	190° 15.2	204° 44.5	219° 13.8	+29.3	15.7
	11° 35.0	11° 44.3	11° 53.4	12° 02.5	12° 11.6	12° 20.5	12° 29.4	12° 38.2	12° 46.9	12° 55.6	13° 04.1	+8.9	57.6
Пт 2	76° 31.9	91° 01.0	105° 30.1	119° 59.2	134° 28.3	148° 57.4	163° 26.4	177° 55.5	192° 24.5	206° 53.5	221° 22.6	+29.1	15.5
	15° 03.1	15° 10.3	15° 17.5	15° 24.6	15° 31.6	15° 38.5	15° 45.3	15° 52.0	15° 58.7	16° 05.2	16° 11.6	+6.9	57.0
Сб 3	78° 36.7	93° 05.5	107° 34.4	122° 03.3	136° 32.2	151° 01.0	165° 29.9	179° 58.7	194° 27.6	208° 56.4	223° 25.2	+28.9	15.4
	17° 37.2	17° 42.1	17° 46.9	17° 51.7	17° 56.3	18° 00.8	18° 05.3	18° 09.6	18° 13.9	18° 18.0	18° 22.0	+4.5	56.4
Вс 4	80° 37.9	95° 06.8	109° 35.7	124° 04.5	138° 33.4	153° 02.3	167° 31.2	182° 00.2	196° 29.1	210° 58.0	225° 27.0	+28.9	15.2
	19° 10.3	19° 12.7	19° 15.0	19° 17.2	19° 19.3	19° 21.3	19° 23.2	19° 25.0	19° 26.6	19° 28.2	19° 29.7	+1.9	55.9
Пн 5	82° 43.1	97° 12.4	111° 41.6	126° 10.9	140° 40.2	155° 09.5	169° 38.9	184° 08.2	198° 37.6	213° 07.0	227° 36.5	+29.3	15.1
	19° 39.4	19° 39.2	19° 39.0	19° 38.6	19° 38.1	19° 37.5	19° 36.9	19° 36.1	19° 35.2	19° 34.2	19° 33.2	-0.6	55.4
Вт 6	85° 01.9	99° 31.9	114° 01.9	128° 31.9	143° 02.0	157° 32.1	172° 02.2	186° 32.4	201° 02.6	215° 32.9	230° 03.2	+30.1	15.0
	19° 05.4	19° 02.8	19° 00.1	18° 57.3	18° 54.4	18° 51.4	18° 48.4	18° 45.2	18° 41.9	18° 38.6	18° 35.2	-3.0	55.0
● Ср 7	87° 42.7	102° 13.6	116° 44.7	131° 15.7	145° 46.8	160° 18.0	174° 49.2	189° 20.4	203° 51.7	218° 23.0	232° 54.4	+31.2	14.9
	17° 33.4	17° 28.6	17° 23.8	17° 18.8	17° 13.8	17° 08.7	17° 03.6	16° 58.3	16° 53.0	16° 47.6	16° 42.1	-5.1	54.6
Чт 8	90° 50.5	105° 22.6	119° 54.7	134° 26.9	148° 59.1	163° 31.4	178° 03.7	192° 36.1	207° 08.5	221° 41.0	236° 13.5	+32.3	14.8
	15° 11.5	15° 04.9	14° 58.2	14° 51.5	14° 44.7	14° 37.9	14° 31.0	14° 24.0	14° 17.0	14° 09.9	14° 02.8	-6.9	54.3
Пт 9	94° 25.9	108° 59.1	123° 32.3	138° 05.5	152° 38.8	167° 12.1	181° 45.4	196° 18.8	210° 52.2	225° 25.6	239° 59.1	+33.3	14.7
	12° 09.1	12° 01.1	11° 53.1	11° 45.0	11° 36.9	11° 28.7	11° 20.5	11° 12.2	11° 03.9	10° 55.5	10° 47.1	-8.2	54.1
Сб 10	98° 25.3	112° 59.3	127° 33.3	142° 07.3	156° 41.4	171° 15.4	185° 49.6	200° 23.7	214° 57.8	229° 32.0	244° 06.2	+34.1	14.7
	8° 36.4	8° 27.4	8° 18.4	8° 09.3	8° 00.2	7° 51.1	7° 41.9	7° 32.7	7° 23.5	7° 14.3	7° 05.0	-9.1	54.0
Вс 11	102° 41.4	117° 15.9	131° 50.4	146° 24.9	160° 59.4	175° 33.9	190° 08.4	204° 42.9	219° 17.5	233° 52.0	248° 26.5	+34.5	14.7
	4° 42.9	4° 33.3	4° 23.6	4° 14.0	4° 04.3	3° 54.5	3° 44.8	3° 35.1	3° 25.3	3° 15.5	3° 05.8	-9.7	54.0
Пн 12	107° 04.9	121° 39.4	136° 13.9	150° 48.5	165° 23.0	179° 57.5	194° 32.0	209° 06.4	223° 40.9	238° 15.4	252° 49.8	+34.5	14.8
	0° 37.7	0° 27.8	0° 17.8	0° 07.9	-0° 02.1	-0° 12.0	-0° 22.0	-0° 31.9	-0° 41.9	-0° 51.8	-1° 01.8	-9.9	54.2
Вт 13	121° 39.4	136° 13.9	150° 48.5	165° 23.0	179° 57.5	194° 32.0	209° 06.4	223° 40.9	238° 15.4	252° 49.8	267° 24.3	+34.5	14.8
	0° 27.8	0° 17.8	0° 07.9	-0° 02.1	-0° 12.0	-0° 22.0	-0° 31.9	-0° 41.9	-0° 51.8	-1° 01.8	-1° 11.7	-9.9	54.2
Ср 14	125° 58.6	140° 32.7	155° 06.7	169° 40.8	184° 14.8	198° 48.8	213° 22.8	227° 56.7	242° 30.6	257° 04.5	271° 38.3	+34.0	14.9
	-3° 40.6	-3° 50.4	-4° 00.3	-4° 10.1	-4° 20.0	-4° 29.8	-4° 39.6	-4° 49.4	-4° 59.2	-5° 08.9	-5° 18.7	-9.8	54.6
◐ Чт 15	130° 01.2	144° 34.4	159° 07.6	173° 40.7	188° 13.7	202° 46.7	217° 19.7	231° 52.5	246° 25.4	260° 58.2	275° 30.9	+33.0	15.0
	-7° 42.8	-7° 52.2	-8° 01.6	-8° 11.0	-8° 20.4	-8° 29.7	-8° 39.0	-8° 48.2	-8° 57.5	-9° 06.7	-9° 15.8	-9.3	55.1
Пт 16	133° 35.1	148° 06.9	162° 38.6	177° 10.3	191° 41.9	206° 13.4	220° 44.9	235° 16.3	249° 47.6	264° 18.8	278° 50.0	+31.5	15.2
	-11° 29.1	-11° 37.7	-11° 46.2	-11° 54.6	-12° 03.1	-12° 11.4	-12° 19.8	-12° 28.1	-12° 36.3	-12° 44.5	-12° 52.6	-8.4	55.8
Сб 17	136° 28.9	150° 58.9	165° 28.8	179° 58.6	194° 28.4	208° 58.0	223° 27.6	237° 57.1	252° 26.6	266° 55.9	281° 25.2	+29.6	15.5
	-14° 47.8	-14° 54.9	-15° 02.1	-15° 09.1	-15° 16.1	-15° 23.0	-15° 29.8	-15° 36.6	-15° 43.3	-15° 49.9	-15° 56.5	-6.9	56.7
Вс 18	138° 34.4	153° 02.4	167° 30.2	181° 58.0	196° 25.7	210° 53.4	225° 20.9	239° 48.4	254° 15.8	268° 43.1	283° 10.3	+27.6	15.7
	-17° 25.0	-17° 30.2	-17° 35.3	-17° 40.3	-17° 45.3	-17° 50.1	-17° 54.8	-17° 59.5	-18° 04.0	-18° 08.5	-18° 12.8	-4.8	57.6
Пн 19	139° 49.5	154° 15.5	168° 41.4	183° 07.3	197° 33.1	211° 58.8	226° 24.5	240° 50.1	255° 15.7	269° 41.1	284° 06.5	+25.7	16.0
	-19° 05.3	-19° 08.0	-19° 10.4	-19° 12.8	-19° 15.1	-19° 17.2	-19° 19.3	-19° 21.2	-19° 23.0	-19° 24.6	-19° 26.2	-2.1	58.6
Вт 20	140° 20.8	154° 45.4	169° 09.9	183° 34.3	197° 58.7	212° 23.1	226° 47.4	241° 11.7	255° 36.0	270° 00.2	284° 24.4	+24.4	16.2
	-19° 34.1	-19° 33.6	-19° 33.0	-19° 32.2	-19° 31.3	-19° 30.3	-19° 29.1	-19° 27.8	-19° 26.3	-19° 24.8	-19° 23.1	+1.1	59.5
Ср 21	140° 24.4	154° 48.3	169° 12.2	183° 36.0	197° 59.9	212° 23.7	226° 47.5	241° 11.4	255° 35.2	269° 59.1	284° 22.9	+23.8	16.4
	-18° 41.1	-18° 37.2	-18° 33.2	-18° 29.1	-18° 24.8	-18° 20.4	-18° 15.8	-18° 11.1	-18° 06.3	-18° 01.4	-17° 56.3	+4.5	60.3
○ Чт 22	140° 21.8	154° 45.9	169° 10.0	183° 34.1	197° 58.3	212° 22.4	226° 46.6	241° 10.9	255° 35.1	269° 59.4	284° 23.7	+24.2	16.6
	-16° 24.7	-16° 17.6	-16° 10.4	-16° 03.1	-15° 55.6	-15° 48.1	-15° 40.4	-15° 32.6	-15° 24.7	-15° 16.7	-15° 08.5	+7.6	60.9
Пт 23	140° 33.0	154° 57.9	169° 22.9	183° 48.0	198° 13.0	212° 38.2	227° 03.3	241° 28.5	255° 53.8	270° 19.1	284° 44.4	+25.1	16.7
	-12° 54.1	-12° 44.4	-12° 34.5	-12° 24.6	-12° 14.6	-12° 04.6	-11° 54.4	-11° 44.1	-11° 33.8	-11° 23.4	-11° 12.9	+10.1	61.1
Сб 24	141° 10.4	155° 36.5	170° 02.7	184° 28.9	198° 55.2	213° 21.5	227° 47.8	242° 14.2	256° 40.7	271° 07.2	285° 33.7	+26.3	16.6
	-8° 27.6	-8° 16.1	-8° 04.5	-7° 52.9	-7° 41.3	-7° 29.6	-7° 17.9	-7° 06.1	-6° 54.3	-6° 42.4	-6° 30.5	+11.7	61.0
Вс 25	142° 17.2	156° 44.4	171° 11.7	185° 39.0	200° 06.4	214° 33.8	229° 01.2	243° 28.7	257° 56.2	272° 23.8	286° 51.4	+27.4	16.5
	-3° 28.7	-3° 16.4	-3° 04.1	-2° 51.8	-2° 39.5	-2° 27.2	-2° 14.9	-2° 02.5	-1° 50.2	-1° 37.9	-1° 25.6	+12.3	60.5
Пн 26	143° 49.2	158° 17.3	172° 45.4	187° 13.6	201° 41.7	216° 10.0	230° 38.2	245° 06.4	259° 34.7	274° 03.0	288° 31.3	+28.2	16.3
	1° 38.3	1° 50.4	2° 02.6	2° 14.6	2° 26.7	2° 38.7	2° 50.7	3° 02.7	3° 14.6	3° 26.5	3° 38.4	+12.0	59.9
Вт 27	145° 38.6	160° 07.2	174° 35.8	189° 04.5	203° 33.1	218° 01.8	232° 30.5	246° 59.1	261° 27.8	275° 56.6	290° 25.3	+28.7	16.1
	6° 31.7	6° 42.8	6° 54.0	7° 05.1	7° 16.1	7° 27.1	7° 38.0	7° 48.8	7° 59.6	8° 10.4	8° 21.0	+10.9	59.1
Ср 28	147° 37.0	162° 05.9	176° 34.7	191° 03.5	205° 32.4	220° 01.2	234° 30.1	248° 58.9	263° 27.8	277° 56.6	292° 25.5	+28.8	15.9
	10° 53.5	11° 03.1	11° 12.7	11° 22.1	11° 31.5	11° 40.9	11° 50.1	11° 59.3	12° 08.3	12° 17.3	12° 26.3	+9.3	58.2
◑ Чт 29	149° 38.4	164° 07.3	178° 36.1	193° 05.0	207° 33.9	222° 02.7	236° 31.6	251° 00.5	265° 29.3	279° 58.2	294° 27.0	+28.9	15.7
	14° 30.2	14° 37.8	14° 45.3	14° 52.7	15° 00.0	15° 07.3	15° 14.4	15° 21.4	15° 28.4	15° 35.2	15° 42.0	+7.2	57.4
Пт 30	151° 40.1	166° 09.0	180° 37.8	195° 06.7	209° 35.6	224° 04.5	238° 33.4	253° 02.3	267° 31.2	282° 00.1	296° 29.0	+28.9	15.4
	17° 12.1	17° 17.3	17° 22.4	17° 27.5	17° 32.4	17° 37.3	17° 42.0	17° 46.6	17° 51.2	17° 55.6	18° 00.0	+4.8	56.6
Сб 31	153° 43.6	168° 12.6	182° 41.7	197° 10.7	211° 39.8	226° 08.9	240° 38.0	255° 07.1	269° 36.2	284° 05.4	298° 34.5	+29.1	15.2
	18° 53.0	18° 55.7	18° 58.3	19° 00.8	19° 03.2	19° 05.6	19° 07.8	19° 09.9	19° 11.9	19° 13.8	19° 15.6	+2.3	55.9

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Новолуние: 7 14h41 — Первая четв.: 15 18h32 — Полнолуние: 22 18h51 — Последняя четв.: 29 09h25

СОЛНЦЕ

Август 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	178° 24.8	193° 24.8	208° 24.8	223° 24.9	238° 24.9	253° 25.0	88° 25.5	103° 25.6	118° 25.6	133° 25.7	148° 25.7	163° 25.8	+0.0
	17° 55.2	17° 54.5	17° 53.9	17° 53.3	17° 52.6	17° 52.0	17° 43.7	17° 43.1	17° 42.4	17° 41.8	17° 41.1	17° 40.5	-0.6
Пн 2	178° 25.8	193° 25.8	208° 25.9	223° 25.9	238° 26.0	253° 26.0	88° 26.7	103° 26.7	118° 26.8	133° 26.8	148° 26.9	163° 26.9	+0.0
	17° 39.8	17° 39.2	17° 38.5	17° 37.9	17° 37.2	17° 36.6	17° 28.1	17° 27.5	17° 26.8	17° 26.2	17° 25.5	17° 24.9	-0.6
Вт 3	178° 27.0	193° 27.0	208° 27.1	223° 27.1	238° 27.2	253° 27.2	88° 28.0	103° 28.0	118° 28.1	133° 28.1	148° 28.2	163° 28.3	+0.1
	17° 24.2	17° 23.5	17° 22.9	17° 22.2	17° 21.6	17° 20.9	17° 12.3	17° 11.6	17° 10.9	17° 10.3	17° 09.6	17° 08.9	-0.7
Ср 4	178° 28.3	193° 28.4	208° 28.4	223° 28.5	238° 28.5	253° 28.6	88° 29.4	103° 29.5	118° 29.5	133° 29.6	148° 29.7	163° 29.7	+0.1
	17° 08.3	17° 07.6	17° 06.9	17° 06.3	17° 05.6	17° 04.9	16° 56.2	16° 55.5	16° 54.8	16° 54.1	16° 53.4	16° 52.8	-0.7
Чт 5	178° 29.8	193° 29.9	208° 29.9	223° 30.0	238° 30.1	253° 30.1	88° 31.0	103° 31.1	118° 31.1	133° 31.2	148° 31.3	163° 31.3	+0.1
	16° 52.1	16° 51.4	16° 50.7	16° 50.0	16° 49.4	16° 48.7	16° 39.8	16° 39.1	16° 38.4	16° 37.7	16° 37.0	16° 36.3	-0.7
Пт 6	178° 31.4	193° 31.5	208° 31.6	223° 31.6	238° 31.7	253° 31.8	88° 32.7	103° 32.8	118° 32.9	133° 33.0	148° 33.0	163° 33.1	+0.1
	16° 35.6	16° 34.9	16° 34.2	16° 33.5	16° 32.8	16° 32.1	16° 23.1	16° 22.4	16° 21.7	16° 21.0	16° 20.3	16° 19.6	-0.7
Сб 7	178° 33.2	193° 33.3	208° 33.3	223° 33.4	238° 33.5	253° 33.6	88° 34.6	103° 34.7	118° 34.8	133° 34.9	148° 35.0	163° 35.0	+0.1
	16° 18.9	16° 18.2	16° 17.5	16° 16.8	16° 16.1	16° 15.4	16° 06.2	16° 05.4	16° 04.7	16° 04.0	16° 03.3	16° 02.6	-0.7
Вс 8	178° 35.1	193° 35.2	208° 35.3	223° 35.4	238° 35.5	253° 35.5	88° 36.7	103° 36.7	118° 36.8	133° 36.9	148° 37.0	163° 37.1	+0.1
	16° 01.9	16° 01.2	16° 00.5	15° 59.7	15° 59.0	15° 58.3	15° 49.0	15° 48.2	15° 47.5	15° 46.8	15° 46.1	15° 45.4	-0.7
Пн 9	178° 37.2	193° 37.3	208° 37.4	223° 37.5	238° 37.5	253° 37.6	88° 38.8	103° 38.9	118° 39.0	133° 39.1	148° 39.2	163° 39.3	+0.1
	15° 44.6	15° 43.9	15° 43.2	15° 42.5	15° 41.7	15° 41.0	15° 31.5	15° 30.8	15° 30.1	15° 29.3	15° 28.6	15° 27.9	-0.7
Вт 10	178° 39.4	193° 39.5	208° 39.6	223° 39.7	238° 39.8	253° 39.9	88° 41.2	103° 41.3	118° 41.4	133° 41.5	148° 41.6	163° 41.7	+0.1
	15° 27.1	15° 26.4	15° 25.7	15° 24.9	15° 24.2	15° 23.4	15° 13.8	15° 13.1	15° 12.4	15° 11.6	15° 10.9	15° 10.1	-0.7
Ср 11	178° 41.8	193° 41.9	208° 42.0	223° 42.1	238° 42.2	253° 42.3	88° 43.6	103° 43.7	118° 43.8	133° 44.0	148° 44.1	163° 44.2	+0.1
	15° 09.4	15° 08.6	15° 07.9	15° 07.1	15° 06.4	15° 05.6	14° 55.9	14° 55.2	14° 54.4	14° 53.6	14° 52.9	14° 52.1	-0.7
Чт 12	178° 44.3	193° 44.4	208° 44.5	223° 44.6	238° 44.7	253° 44.8	88° 46.3	103° 46.4	118° 46.5	133° 46.6	148° 46.7	163° 46.8	+0.1
	14° 51.4	14° 50.6	14° 49.9	14° 49.1	14° 48.4	14° 47.6	14° 37.7	14° 37.0	14° 36.2	14° 35.4	14° 34.7	14° 33.9	-0.8
Пт 13	178° 46.9	193° 47.0	208° 47.2	223° 47.3	238° 47.4	253° 47.5	88° 49.0	103° 49.1	118° 49.2	133° 49.4	148° 49.5	163° 49.6	+0.1
	14° 33.2	14° 32.4	14° 31.6	14° 30.9	14° 30.1	14° 29.3	14° 19.3	14° 18.6	14° 17.8	14° 17.0	14° 16.2	14° 15.5	-0.8
Сб 14	178° 49.7	193° 49.8	208° 50.0	223° 50.1	238° 50.2	253° 50.3	88° 51.9	103° 52.0	118° 52.2	133° 52.3	148° 52.4	163° 52.5	+0.1
	14° 14.7	14° 13.9	14° 13.2	14° 12.4	14° 11.6	14° 10.8	14° 00.7	13° 59.9	13° 59.1	13° 58.4	13° 57.6	13° 56.8	-0.8
Вс 15	178° 52.7	193° 52.8	208° 52.9	223° 53.0	238° 53.2	253° 53.3	88° 54.9	103° 55.1	118° 55.2	133° 55.3	148° 55.5	163° 55.6	+0.1
	13° 56.0	13° 55.2	13° 54.5	13° 53.7	13° 52.9	13° 52.1	13° 41.9	13° 41.1	13° 40.3	13° 39.5	13° 38.7	13° 37.9	-0.8
Пн 16	178° 55.7	193° 55.8	208° 56.0	223° 56.1	238° 56.2	253° 56.4	88° 58.1	103° 58.2	118° 58.4	133° 58.5	148° 58.6	163° 58.8	+0.1
	13° 37.1	13° 36.3	13° 35.5	13° 34.7	13° 33.9	13° 33.2	13° 22.8	13° 22.0	13° 21.2	13° 20.4	13° 19.6	13° 18.8	-0.8
Вт 17	178° 58.9	193° 59.1	208° 59.2	223° 59.3	238° 59.5	253° 59.6	89° 01.4	104° 01.5	119° 01.7	134° 01.8	149° 02.0	164° 02.1	+0.1
	13° 18.0	13° 17.2	13° 16.4	13° 15.6	13° 14.8	13° 14.0	13° 03.5	13° 02.7	13° 01.9	13° 01.1	13° 00.3	12° 59.5	-0.8
Ср 18	179° 02.3	194° 02.4	209° 02.5	224° 02.7	239° 02.8	254° 03.0	89° 04.8	104° 05.0	119° 05.1	134° 05.3	149° 05.4	164° 05.6	+0.1
	12° 58.7	12° 57.9	12° 57.1	12° 56.2	12° 55.4	12° 54.6	12° 44.0	12° 43.2	12° 42.4	12° 41.6	12° 40.8	12° 40.0	-0.8
Чт 19	179° 05.7	194° 05.9	209° 06.0	224° 06.2	239° 06.3	254° 06.5	89° 08.4	104° 08.5	119° 08.7	134° 08.8	149° 09.0	164° 09.1	+0.1
	12° 39.1	12° 38.3	12° 37.5	12° 36.7	12° 35.9	12° 35.1	12° 24.4	12° 23.5	12° 22.7	12° 21.9	12° 21.1	12° 20.2	-0.8
Пт 20	179° 09.3	194° 09.5	209° 09.6	224° 09.8	239° 09.9	254° 10.1	89° 12.1	104° 12.2	119° 12.4	134° 12.5	149° 12.7	164° 12.8	+0.2
	12° 19.4	12° 18.6	12° 17.8	12° 16.9	12° 16.1	12° 15.3	12° 04.5	12° 03.7	12° 02.8	12° 02.0	12° 01.2	12° 00.3	-0.8
Сб 21	179° 13.0	194° 13.2	209° 13.3	224° 13.5	239° 13.6	254° 13.8	89° 15.9	104° 16.0	119° 16.2	134° 16.3	149° 16.5	164° 16.7	+0.2
	11° 59.5	11° 58.7	11° 57.8	11° 57.0	11° 56.2	11° 55.3	11° 44.4	11° 43.6	11° 42.7	11° 41.9	11° 41.1	11° 40.2	-0.8
Вс 22	179° 16.8	194° 17.0	209° 17.1	224° 17.3	239° 17.5	254° 17.6	89° 19.8	104° 19.9	119° 20.1	134° 20.3	149° 20.4	164° 20.6	+0.2
	11° 39.4	11° 38.5	11° 37.7	11° 36.9	11° 36.0	11° 35.2	11° 24.2	11° 23.3	11° 22.5	11° 21.6	11° 20.8	11° 19.9	-0.8
Пн 23	179° 20.8	194° 20.9	209° 21.1	224° 21.3	239° 21.4	254° 21.6	89° 23.8	104° 23.9	119° 24.1	134° 24.3	149° 24.4	164° 24.6	+0.2
	11° 19.1	11° 18.2	11° 17.4	11° 16.5	11° 15.7	11° 14.8	11° 03.7	11° 02.9	11° 02.0	11° 01.2	11° 00.3	10° 59.5	-0.8
Вт 24	179° 24.8	194° 25.0	209° 25.1	224° 25.3	239° 25.5	254° 25.6	89° 27.9	104° 28.1	119° 28.2	134° 28.4	149° 28.6	164° 28.8	+0.2
	10° 58.6	10° 57.7	10° 56.9	10° 56.0	10° 55.2	10° 54.3	10° 43.1	10° 42.3	10° 41.4	10° 40.5	10° 39.7	10° 38.8	-0.9
Ср 25	179° 28.9	194° 29.1	209° 29.3	224° 29.5	239° 29.6	254° 29.8	89° 32.1	104° 32.3	119° 32.4	134° 32.6	149° 32.8	164° 33.0	+0.2
	10° 38.0	10° 37.1	10° 36.2	10° 35.4	10° 34.5	10° 33.6	10° 22.3	10° 21.5	10° 20.6	10° 19.7	10° 18.9	10° 18.0	-0.9
Чт 26	179° 33.2	194° 33.3	209° 33.5	224° 33.7	239° 33.9	254° 34.1	89° 36.4	104° 36.6	119° 36.8	134° 36.9	149° 37.1	164° 37.3	+0.2
	10° 17.1	10° 16.3	10° 15.4	10° 14.5	10° 13.6	10° 12.8	10° 01.4	10° 00.5	9° 59.6	9° 58.8	9° 57.9	9° 57.0	-0.9
Пт 27	179° 37.5	194° 37.7	209° 37.9	224° 38.0	239° 38.2	254° 38.4	89° 40.8	104° 41.0	119° 41.2	134° 41.3	149° 41.5	164° 41.7	+0.2
	9° 56.1	9° 55.3	9° 54.4	9° 53.5	9° 52.6	9° 51.7	9° 40.3	9° 39.4	9° 38.5	9° 37.6	9° 36.8	9° 35.9	-0.9
Сб 28	179° 41.9	194° 42.1	209° 42.3	224° 42.5	239° 42.6	254° 42.8	89° 45.3	104° 45.5	119° 45.6	134° 45.8	149° 46.0	164° 46.2	+0.2
	9° 35.0	9° 34.1	9° 33.2	9° 32.3	9° 31.5	9° 30.6	9° 19.0	9° 18.1	9° 17.3	9° 16.4	9° 15.5	9° 14.6	-0.9
Вс 29	179° 46.4	194° 46.6	209° 46.8	224° 47.0	239° 47.2	254° 47.4	89° 49.8	104° 50.0	119° 50.2	134° 50.4	149° 50.6	164° 50.8	+0.2
	9° 13.7	9° 12.8	9° 11.9	9° 11.0	9° 10.1	9° 09.2	8° 57.6	8° 56.7	8° 55.8	8° 54.9	8° 54.0	8° 53.1	-0.9
Пн 30	179° 51.0	194° 51.2	209° 51.4	224° 51.6	239° 51.8	254° 51.9	89° 54.5	104° 54.7	119° 54.9	134° 55.1	149° 55.3	164° 55.4	+0.2
	8° 52.2	8° 51.3	8° 50.4	8° 49.6	8° 48.7	8° 47.8	8° 36.1	8° 35.2	8° 34.3	8° 33.4	8° 32.5	8° 31.6	-0.9
Вт 31	179° 55.6	194° 55.8	209° 56.0	224° 56.2	239° 56.4	254° 56.6	89° 59.2	104° 59.4	119° 59.6	134° 59.8	150° 00.0	165° 00.2	+0.2
	8° 30.7	8° 29.7	8° 28.8	8° 27.9	8° 27.0	8° 26.1	8° 14.4	8° 13.5	8° 12.6	8° 11.6	8° 10.7	8° 09.8	-0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2032

Д	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	Δ'/h	R/p
Вс 1	68° 57.7	83° 27.0	97° 56.4	112° 25.7	126° 55.1	141° 24.5	155° 54.0	170° 23.4	184° 52.9	199° 22.4	213° 51.9	+29.4	15.1
	19° 27.3	19° 28.1	19° 28.8	19° 29.4	19° 29.9	19° 30.3	19° 30.6	19° 30.8	19° 30.9	19° 30.9	19° 30.7	+0.3	55.5
Пн 2	71° 17.9	85° 47.9	100° 17.9	114° 47.9	129° 18.0	143° 48.0	158° 18.2	172° 48.3	187° 18.5	201° 48.7	216° 19.0	+30.1	15.0
	19° 17.5	19° 15.8	19° 14.1	19° 12.2	19° 10.3	19° 08.2	19° 06.1	19° 03.9	19° 01.6	18° 59.2	18° 56.7	-2.1	55.0
Вт 3	73° 57.0	88° 27.9	102° 58.7	117° 29.6	132° 00.6	146° 31.6	161° 02.6	175° 33.7	190° 04.8	204° 35.9	219° 07.1	+31.0	14.9
	18° 08.7	18° 04.8	18° 00.8	17° 56.8	17° 52.7	17° 48.4	17° 44.1	17° 39.7	17° 35.3	17° 30.7	17° 26.1	-4.3	54.6
Ср 4	76° 59.8	91° 31.6	106° 03.5	120° 35.4	135° 07.4	149° 39.4	164° 11.4	178° 43.5	193° 15.7	207° 47.8	222° 20.0	+32.0	14.8
	16° 07.6	16° 01.8	15° 55.9	15° 50.0	15° 43.9	15° 37.8	15° 31.7	15° 25.5	15° 19.2	15° 12.8	15° 06.4	-6.1	54.2
Чт 5	80° 27.9	95° 00.7	109° 33.6	124° 06.5	138° 39.4	153° 12.4	167° 45.4	182° 18.5	196° 51.6	211° 24.7	225° 57.9	+33.0	14.7
	13° 22.6	13° 15.3	13° 07.8	13° 00.3	12° 52.8	12° 45.2	12° 37.5	12° 29.8	12° 22.1	12° 14.3	12° 06.4	-7.6	54.0
● Пт 6	84° 19.3	98° 53.0	113° 26.7	128° 00.5	142° 34.2	157° 08.0	171° 41.9	186° 15.7	200° 49.6	215° 23.5	229° 57.4	+33.8	14.7
	10° 03.2	9° 54.6	9° 46.0	9° 37.4	9° 28.7	9° 20.0	9° 11.2	9° 02.4	8° 53.6	8° 44.8	8° 35.9	-8.7	53.9
Сб 7	88° 29.2	103° 03.4	117° 37.7	132° 12.0	146° 46.4	161° 20.7	175° 55.1	190° 29.5	205° 03.8	219° 38.2	234° 12.7	+34.4	14.7
	6° 18.8	6° 09.5	6° 00.1	5° 50.7	5° 41.3	5° 31.8	5° 22.4	5° 12.9	5° 03.4	4° 53.8	4° 44.3	-9.5	53.9
Вс 8	92° 50.0	107° 24.6	121° 59.1	136° 33.7	151° 08.2	165° 42.8	180° 17.3	194° 51.9	209° 26.4	224° 01.0	238° 35.5	+34.5	14.7
	2° 19.2	2° 09.4	1° 59.6	1° 49.8	1° 40.0	1° 30.2	1° 20.4	1° 10.6	1° 00.7	0° 50.9	0° 41.1	-9.8	54.0
Пн 9	97° 12.9	111° 47.3	126° 21.7	140° 56.1	155° 30.5	170° 04.9	184° 39.2	199° 13.5	213° 47.8	228° 22.1	242° 56.4	+34.3	14.8
	-1° 46.7	-1° 56.5	-2° 06.3	-2° 16.2	-2° 26.0	-2° 35.8	-2° 45.6	-2° 55.4	-3° 05.2	-3° 14.9	-3° 24.7	-9.8	54.2
Вт 10	101° 27.7	116° 01.5	130° 35.4	145° 09.2	159° 43.0	174° 16.7	188° 50.4	203° 24.1	217° 57.7	232° 31.3	247° 04.9	+33.7	14.9
	-5° 49.6	-5° 59.1	-6° 08.6	-6° 18.1	-6° 27.6	-6° 37.0	-6° 46.4	-6° 55.8	-7° 05.2	-7° 14.5	-7° 23.8	-9.4	54.5
Ср 11	105° 23.7	119° 56.6	134° 29.4	149° 02.2	163° 35.0	178° 07.7	192° 40.3	207° 12.9	221° 45.5	236° 18.0	250° 50.4	+32.7	15.0
	-9° 40.1	-9° 49.0	-9° 57.7	-10° 06.5	-10° 15.2	-10° 23.9	-10° 32.5	-10° 41.1	-10° 49.7	-10° 58.2	-11° 06.6	-8.7	55.0
Чт 12	109° 56.6	134° 29.4	149° 02.2	163° 35.0	178° 07.7	192° 40.3	207° 12.9	221° 45.5	236° 18.0	250° 50.4	265° 22.8	+32.6	15.0
	-9° 49.0	-9° 57.7	-10° 06.5	-10° 15.2	-10° 23.9	-10° 32.5	-10° 41.1	-10° 49.7	-10° 58.2	-11° 06.6	-11° 15.1	-8.6	55.0
Пт 13	123° 21.9	137° 53.4	152° 24.8	166° 56.1	181° 27.4	195° 58.6	210° 29.8	225° 00.8	239° 31.8	254° 02.8	268° 33.7	+31.2	15.2
	-13° 15.8	-13° 23.5	-13° 31.0	-13° 38.6	-13° 46.0	-13° 53.4	-14° 00.8	-14° 08.1	-14° 15.3	-14° 22.5	-14° 29.6	-7.4	55.7
◐ Сб 14	126° 08.7	140° 38.5	155° 08.2	169° 37.8	184° 07.4	198° 36.9	213° 06.3	227° 35.6	242° 04.9	256° 34.1	271° 03.2	+29.4	15.4
	-16° 08.1	-16° 14.1	-16° 20.0	-16° 25.9	-16° 31.6	-16° 37.3	-16° 42.9	-16° 48.5	-16° 53.9	-16° 59.3	-17° 04.5	-5.6	56.5
Вс 15	128° 11.3	142° 39.2	157° 07.1	171° 35.0	186° 02.7	200° 30.4	214° 58.0	229° 25.5	243° 53.0	258° 20.4	272° 47.7	+27.6	15.6
	-18° 13.0	-18° 16.9	-18° 20.6	-18° 24.2	-18° 27.7	-18° 31.1	-18° 34.5	-18° 37.7	-18° 40.8	-18° 43.8	-18° 46.7	-3.4	57.4
Пн 16	129° 29.7	143° 56.0	158° 22.2	172° 48.4	187° 14.5	201° 40.5	216° 06.5	230° 32.5	244° 58.4	259° 24.2	273° 50.0	+26.0	15.9
	-19° 17.2	-19° 18.3	-19° 19.3	-19° 20.2	-19° 21.0	-19° 21.7	-19° 22.2	-19° 22.6	-19° 22.9	-19° 23.1	-19° 23.1	-0.6	58.4
Вт 17	130° 11.1	144° 36.1	159° 01.2	173° 26.2	187° 51.1	202° 16.1	216° 41.0	231° 05.8	245° 30.7	259° 55.5	274° 20.3	+24.9	16.2
	-19° 08.9	-19° 06.9	-19° 04.8	-19° 02.6	-19° 00.3	-18° 57.8	-18° 55.2	-18° 52.4	-18° 49.6	-18° 46.6	-18° 43.5	+2.5	59.3
Ср 18	130° 29.5	144° 54.0	159° 18.5	173° 42.9	188° 07.4	202° 31.9	216° 56.4	231° 20.8	245° 45.3	260° 09.8	274° 34.2	+24.5	16.4
	-17° 41.1	-17° 35.9	-17° 30.6	-17° 25.1	-17° 19.6	-17° 13.9	-17° 08.1	-17° 02.1	-16° 56.0	-16° 49.9	-16° 43.6	+5.8	60.2
Чт 19	130° 41.9	145° 06.5	159° 31.1	173° 55.8	188° 20.4	202° 45.1	217° 09.8	231° 34.5	245° 59.2	260° 23.9	274° 48.7	+24.7	16.6
	-14° 54.6	-14° 46.4	-14° 38.1	-14° 29.8	-14° 21.2	-14° 12.6	-14° 03.9	-13° 55.1	-13° 46.2	-13° 37.2	-13° 28.0	+8.7	60.9
Пт 20	131° 03.2	145° 28.4	159° 53.6	174° 18.9	188° 44.2	203° 09.5	217° 34.8	232° 00.2	246° 25.6	260° 51.0	275° 16.5	+25.3	16.7
	-10° 59.9	-10° 49.4	-10° 38.7	-10° 28.0	-10° 17.2	-10° 06.4	-9° 55.4	-9° 44.4	-9° 33.3	-9° 22.2	-9° 11.0	+10.9	61.3
○ Сб 21	131° 42.2	146° 08.2	160° 34.2	175° 00.2	189° 26.3	203° 52.4	218° 18.5	232° 44.7	247° 10.9	261° 37.1	276° 03.4	+26.1	16.7
	-6° 16.0	-6° 03.9	-5° 51.8	-5° 39.7	-5° 27.5	-5° 15.3	-5° 03.1	-4° 50.8	-4° 38.5	-4° 26.2	-4° 13.9	+12.2	61.3
Вс 22	132° 40.7	147° 07.4	161° 34.2	176° 00.9	190° 27.7	204° 54.5	219° 21.4	233° 48.3	248° 15.1	262° 42.1	277° 09.0	+26.8	16.6
	-1° 06.8	-0° 54.3	-0° 41.8	-0° 29.3	-0° 16.7	-0° 04.2	0° 08.3	0° 20.8	0° 33.2	0° 45.7	0° 58.1	+12.5	61.0
Пн 23	133° 55.6	148° 22.9	162° 50.2	177° 17.5	191° 44.8	206° 12.1	220° 39.5	235° 06.9	249° 34.2	264° 01.6	278° 29.1	+27.3	16.5
	4° 02.1	4° 14.1	4° 26.1	4° 38.0	4° 49.9	5° 01.8	5° 13.6	5° 25.3	5° 37.0	5° 48.7	6° 00.3	+11.8	60.4
Вт 24	135° 21.9	149° 49.5	164° 17.1	178° 44.8	193° 12.4	207° 40.1	222° 07.7	236° 35.4	251° 03.1	265° 30.8	279° 58.5	+27.7	16.2
	8° 47.8	8° 58.5	9° 09.1	9° 19.6	9° 30.1	9° 40.5	9° 50.8	10° 01.0	10° 11.2	10° 21.3	10° 31.3	+10.4	59.5
Ср 25	136° 55.1	151° 23.0	165° 50.8	180° 18.7	194° 46.6	209° 14.4	223° 42.3	238° 10.2	252° 38.1	267° 06.0	281° 33.9	+27.9	16.0
	12° 51.9	13° 00.6	13° 09.2	13° 17.7	13° 26.2	13° 34.5	13° 42.8	13° 50.9	13° 59.0	14° 06.9	14° 14.8	+8.3	58.6
Чт 26	138° 33.8	153° 01.9	167° 29.9	181° 58.0	196° 26.1	210° 54.2	225° 22.4	239° 50.5	254° 18.7	268° 46.8	283° 15.0	+28.1	15.7
	16° 01.4	16° 07.7	16° 14.0	16° 20.1	16° 26.1	16° 32.0	16° 37.8	16° 43.5	16° 49.1	16° 54.6	17° 00.0	+5.9	57.6
◑ Пт 27	140° 19.5	154° 47.9	169° 16.4	183° 44.8	198° 13.3	212° 41.8	227° 10.4	241° 38.9	256° 07.5	270° 36.1	285° 04.7	+28.5	15.5
	18° 08.7	18° 12.4	18° 16.1	18° 19.6	18° 23.0	18° 26.3	18° 29.6	18° 32.7	18° 35.7	18° 38.6	18° 41.4	+3.3	56.7
Сб 28	142° 16.8	156° 45.8	171° 14.8	185° 43.9	200° 13.0	214° 42.1	229° 11.3	243° 40.4	258° 09.7	272° 38.9	287° 08.2	+29.1	15.2
	19° 10.9	19° 12.1	19° 13.1	19° 14.1	19° 14.9	19° 15.6	19° 16.3	19° 16.8	19° 17.2	19° 17.6	19° 17.8	+0.7	55.9
Вс 29	144° 31.3	159° 01.2	173° 31.0	188° 00.9	202° 30.8	217° 00.8	231° 30.8	246° 00.9	260° 30.9	275° 01.1	289° 31.2	+30.0	15.1
	19° 09.5	19° 08.2	19° 06.8	19° 05.2	19° 03.6	19° 01.9	19° 00.1	18° 58.2	18° 56.3	18° 54.2	18° 52.0	-1.7	55.2
Пн 30	147° 08.4	161° 39.2	176° 10.0	190° 40.9	205° 11.8	219° 42.8	234° 13.8	248° 44.8	263° 15.9	277° 47.0	292° 18.2	+31.0	14.9
	18° 08.9	18° 05.3	18° 01.7	17° 58.0	17° 54.2	17° 50.3	17° 46.3	17° 42.2	17° 38.1	17° 33.9	17° 29.6	-3.9	54.7
Вт 31	150° 10.8	164° 42.6	179° 14.5	193° 46.4	208° 18.4	222° 50.4	237° 22.4	251° 54.5	266° 26.6	280° 58.8	295° 31.0	+32.0	14.8
	16° 15.9	16° 10.4	16° 04.8	15° 59.2	15° 53.5	15° 47.7	15° 41.9	15° 36.0	15° 30.0	15° 23.9	15° 17.8	-5.8	54.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 6 05h11 — Первая четв.: 14 07h51 — Полнолуние: 21 01h46 — Последняя четв.: 27 19h33

СОЛНЦЕ

Сентябрь 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	180° 00.4 8° 08.9	195° 00.6 8° 08.0	210° 00.8 8° 07.1	225° 01.0 8° 06.2	240° 01.2 8° 05.3	255° 01.4 8° 04.4	90° 04.0 7° 52.5	105° 04.2 7° 51.6	120° 04.4 7° 50.7	135° 04.6 7° 49.8	150° 04.8 7° 48.9	165° 05.0 7° 48.0	+0.2 -0.9
Чт 2	180° 05.2 7° 47.1	195° 05.4 7° 46.1	210° 05.6 7° 45.2	225° 05.8 7° 44.3	240° 06.0 7° 43.4	255° 06.2 7° 42.5	90° 08.8 7° 30.6	105° 09.0 7° 29.7	120° 09.2 7° 28.7	135° 09.4 7° 27.8	150° 09.6 7° 26.9	165° 09.8 7° 26.0	+0.2 -0.9
Пт 3	180° 10.0 7° 25.1	195° 10.3 7° 24.2	210° 10.5 7° 23.2	225° 10.7 7° 22.3	240° 10.9 7° 21.4	255° 11.1 7° 20.5	90° 13.7 7° 08.5	105° 13.9 7° 07.6	120° 14.2 7° 06.7	135° 14.4 7° 05.7	150° 14.6 7° 04.8	165° 14.8 7° 03.9	+0.2 -0.9
Сб 4	180° 15.0 7° 03.0	195° 15.2 7° 02.0	210° 15.4 7° 01.1	225° 15.6 7° 00.2	240° 15.8 6° 59.3	255° 16.0 6° 58.3	90° 18.7 6° 46.3	105° 18.9 6° 45.4	120° 19.1 6° 44.5	135° 19.3 6° 43.5	150° 19.6 6° 42.6	165° 19.8 6° 41.7	+0.2 -0.9
Вс 5	180° 20.0 6° 40.7	195° 20.2 6° 39.8	210° 20.4 6° 38.9	225° 20.6 6° 38.0	240° 20.8 6° 37.0	255° 21.0 6° 36.1	90° 23.8 6° 24.0	105° 24.0 6° 23.1	120° 24.2 6° 22.1	135° 24.4 6° 21.2	150° 24.6 6° 20.3	165° 24.8 6° 19.4	+0.2 -0.9
Пн 6	180° 25.0 6° 18.4	195° 25.2 6° 17.5	210° 25.4 6° 16.6	225° 25.7 6° 15.6	240° 25.9 6° 14.7	255° 26.1 6° 13.8	90° 28.8 6° 01.6	105° 29.1 6° 00.7	120° 29.3 5° 59.7	135° 29.5 5° 58.8	150° 29.7 5° 57.9	165° 29.9 5° 56.9	+0.2 -0.9
Вт 7	180° 30.1 5° 56.0	195° 30.3 5° 55.1	210° 30.5 5° 54.1	225° 30.8 5° 53.2	240° 31.0 5° 52.2	255° 31.2 5° 51.3	90° 34.0 5° 39.1	105° 34.2 5° 38.2	120° 34.4 5° 37.2	135° 34.6 5° 36.3	150° 34.8 5° 35.3	165° 35.1 5° 34.4	+0.2 -0.9
Ср 8	180° 35.3 5° 33.5	195° 35.5 5° 32.5	210° 35.7 5° 31.6	225° 35.9 5° 30.6	240° 36.1 5° 29.7	255° 36.3 5° 28.8	90° 39.2 5° 16.5	105° 39.4 5° 15.6	120° 39.6 5° 14.6	135° 39.8 5° 13.7	150° 40.0 5° 12.7	165° 40.2 5° 11.8	+0.2 -0.9
Чт 9	180° 40.5 5° 10.8	195° 40.7 5° 09.9	210° 40.9 5° 08.9	225° 41.1 5° 08.0	240° 41.3 5° 07.1	255° 41.5 5° 06.1	90° 44.4 4° 53.8	105° 44.6 4° 52.9	120° 44.8 4° 51.9	135° 45.0 4° 51.0	150° 45.3 4° 50.0	165° 45.5 4° 49.1	+0.2 -0.9
Пт 10	180° 45.7 4° 48.1	195° 45.9 4° 47.2	210° 46.1 4° 46.2	225° 46.3 4° 45.3	240° 46.6 4° 44.3	255° 46.8 4° 43.4	90° 49.6 4° 31.0	105° 49.9 4° 30.1	120° 50.1 4° 29.1	135° 50.3 4° 28.2	150° 50.5 4° 27.2	165° 50.7 4° 26.3	+0.2 -0.9
Сб 11	180° 51.0 4° 25.3	195° 51.2 4° 24.4	210° 51.4 4° 23.4	225° 51.6 4° 22.5	240° 51.8 4° 21.5	255° 52.1 4° 20.6	90° 54.9 4° 08.2	105° 55.1 4° 07.2	120° 55.4 4° 06.3	135° 55.6 4° 05.3	150° 55.8 4° 04.4	165° 56.0 4° 03.4	+0.2 -1.0
Вс 12	180° 56.3 4° 02.5	195° 56.5 4° 01.5	210° 56.7 4° 00.6	225° 56.9 3° 59.6	240° 57.1 3° 58.6	255° 57.4 3° 57.7	91° 00.2 3° 45.3	106° 00.5 3° 44.3	121° 00.7 3° 43.4	136° 00.9 3° 42.4	151° 01.1 3° 41.4	166° 01.4 3° 40.5	+0.2 -1.0
Пн 13	181° 01.6 3° 39.5	196° 01.8 3° 38.6	211° 02.0 3° 37.6	226° 02.2 3° 36.7	241° 02.5 3° 35.7	256° 02.7 3° 34.7	91° 05.6 3° 22.3	106° 05.8 3° 21.3	121° 06.0 3° 20.4	136° 06.3 3° 19.4	151° 06.5 3° 18.5	166° 06.7 3° 17.5	+0.2 -1.0
Вт 14	181° 06.9 3° 16.5	196° 07.2 3° 15.6	211° 07.4 3° 14.6	226° 07.6 3° 13.7	241° 07.8 3° 12.7	256° 08.0 3° 11.7	91° 10.9 2° 59.2	106° 11.2 2° 58.3	121° 11.4 2° 57.3	136° 11.6 2° 56.4	151° 11.8 2° 55.4	166° 12.1 2° 54.4	+0.2 -1.0
Ср 15	181° 12.3 2° 53.5	196° 12.5 2° 52.5	211° 12.7 2° 51.5	226° 13.0 2° 50.6	241° 13.2 2° 49.6	256° 13.4 2° 48.7	91° 16.3 2° 36.1	106° 16.5 2° 35.2	121° 16.8 2° 34.2	136° 17.0 2° 33.3	151° 17.2 2° 32.3	166° 17.4 2° 31.3	+0.2 -1.0
Чт 16	181° 17.7 2° 30.4	196° 17.9 2° 29.4	211° 18.1 2° 28.4	226° 18.3 2° 27.5	241° 18.6 2° 26.5	256° 18.8 2° 25.5	91° 21.7 2° 13.0	106° 21.9 2° 12.0	121° 22.2 2° 11.1	136° 22.4 2° 10.1	151° 22.6 2° 09.1	166° 22.8 2° 08.2	+0.2 -1.0
Пт 17	181° 23.1 2° 07.2	196° 23.3 2° 06.2	211° 23.5 2° 05.3	226° 23.7 2° 04.3	241° 24.0 2° 03.3	256° 24.2 2° 02.4	91° 27.1 1° 49.8	106° 27.3 1° 48.8	121° 27.5 1° 47.9	136° 27.8 1° 46.9	151° 28.0 1° 45.9	166° 28.2 1° 45.0	+0.2 -1.0
Сб 18	181° 28.4 1° 44.0	196° 28.7 1° 43.0	211° 28.9 1° 42.1	226° 29.1 1° 41.1	241° 29.3 1° 40.1	256° 29.6 1° 39.2	91° 32.5 1° 26.6	106° 32.7 1° 25.6	121° 32.9 1° 24.6	136° 33.1 1° 23.7	151° 33.4 1° 22.7	166° 33.6 1° 21.7	+0.2 -1.0
Вс 19	181° 33.8 1° 20.8	196° 34.0 1° 19.8	211° 34.3 1° 18.8	226° 34.5 1° 17.9	241° 34.7 1° 16.9	256° 34.9 1° 15.9	91° 37.8 1° 03.3	106° 38.1 1° 02.3	121° 38.3 1° 01.4	136° 38.5 1° 00.4	151° 38.7 0° 59.4	166° 39.0 0° 58.5	+0.2 -1.0
Пн 20	181° 39.2 0° 57.5	196° 39.4 0° 56.5	211° 39.6 0° 55.5	226° 39.9 0° 54.6	241° 40.1 0° 53.6	256° 40.3 0° 52.6	91° 43.2 0° 40.0	106° 43.4 0° 39.0	121° 43.6 0° 38.1	136° 43.9 0° 37.1	151° 44.1 0° 36.1	166° 44.3 0° 35.2	+0.2 -1.0
Вт 21	181° 44.5 0° 34.2	196° 44.8 0° 33.2	211° 45.0 0° 32.2	226° 45.2 0° 31.3	241° 45.4 0° 30.3	256° 45.6 0° 29.3	91° 48.5 0° 16.7	106° 48.8 0° 15.7	121° 49.0 0° 14.8	136° 49.2 0° 13.8	151° 49.4 0° 12.8	166° 49.6 0° 11.8	+0.2 -1.0
Ср 22	181° 49.9 0° 10.9	196° 50.1 0° 09.9	211° 50.3 0° 08.9	226° 50.5 0° 08.0	241° 50.7 0° 07.0	256° 51.0 0° 06.0	91° 53.8 -0° 06.6	106° 54.1 -0° 07.6	121° 54.3 -0° 08.6	136° 54.5 -0° 09.6	151° 54.7 -0° 10.5	166° 54.9 -0° 11.5	+0.2 -1.0
Чт 23	181° 55.2 -0° 12.5	196° 55.4 -0° 13.4	211° 55.6 -0° 14.4	226° 55.8 -0° 15.4	241° 56.0 -0° 16.4	256° 56.3 -0° 17.3	91° 59.1 -0° 30.0	106° 59.3 -0° 31.0	121° 59.5 -0° 31.9	136° 59.8 -0° 32.9	152° 00.0 -0° 33.9	167° 00.2 -0° 34.8	+0.2 -1.0
Пт 24	182° 00.4 -0° 35.8	197° 00.6 -0° 36.8	212° 00.9 -0° 37.8	227° 01.1 -0° 38.7	242° 01.3 -0° 39.7	257° 01.5 -0° 40.7	92° 04.3 -0° 53.3	107° 04.5 -0° 54.3	122° 04.8 -0° 55.3	137° 05.0 -0° 56.3	152° 05.2 -0° 57.2	167° 05.4 -0° 58.2	+0.2 -1.0
Сб 25	182° 05.6 -0° 59.2	197° 05.8 -1° 00.2	212° 06.1 -1° 01.1	227° 06.3 -1° 02.1	242° 06.5 -1° 03.1	257° 06.7 -1° 04.0	92° 09.5 -1° 16.7	107° 09.7 -1° 17.7	122° 09.9 -1° 18.6	137° 10.2 -1° 19.6	152° 10.4 -1° 20.6	167° 10.6 -1° 21.6	+0.2 -1.0
Вс 26	182° 10.8 -1° 22.5	197° 11.0 -1° 23.5	212° 11.2 -1° 24.5	227° 11.4 -1° 25.5	242° 11.7 -1° 26.4	257° 11.9 -1° 27.4	92° 14.6 -1° 40.0	107° 14.9 -1° 41.0	122° 15.1 -1° 42.0	137° 15.3 -1° 43.0	152° 15.5 -1° 43.9	167° 15.7 -1° 44.9	+0.2 -1.0
Пн 27	182° 15.9 -1° 45.9	197° 16.1 -1° 46.9	212° 16.3 -1° 47.8	227° 16.6 -1° 48.8	242° 16.8 -1° 49.8	257° 17.0 -1° 50.8	92° 19.7 -2° 03.4	107° 19.9 -2° 04.4	122° 20.1 -2° 05.3	137° 20.3 -2° 06.3	152° 20.6 -2° 07.3	167° 20.8 -2° 08.3	+0.2 -1.0
Вт 28	182° 21.0 -2° 09.2	197° 21.2 -2° 10.2	212° 21.4 -2° 11.2	227° 21.6 -2° 12.1	242° 21.8 -2° 13.1	257° 22.0 -2° 14.1	92° 24.7 -2° 26.7	107° 24.9 -2° 27.7	122° 25.1 -2° 28.7	137° 25.4 -2° 29.6	152° 25.6 -2° 30.6	167° 25.8 -2° 31.6	+0.2 -1.0
Ср 29	182° 26.0 -2° 32.5	197° 26.2 -2° 33.5	212° 26.4 -2° 34.5	227° 26.6 -2° 35.5	242° 26.8 -2° 36.4	257° 27.0 -2° 37.4	92° 29.7 -2° 50.0	107° 29.9 -2° 51.0	122° 30.1 -2° 52.0	137° 30.3 -2° 52.9	152° 30.5 -2° 53.9	167° 30.7 -2° 54.9	+0.2 -1.0
Чт 30	182° 30.9 -2° 55.8	197° 31.1 -2° 56.8	212° 31.3 -2° 57.8	227° 31.5 -2° 58.8	242° 31.7 -2° 59.7	257° 31.9 -3° 00.7	92° 34.6 -3° 13.3	107° 34.8 -3° 14.3	122° 35.0 -3° 15.2	137° 35.2 -3° 16.2	152° 35.4 -3° 17.2	167° 35.6 -3° 18.1	+0.2 -1.0

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2032

Д	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	Δ'/h	R/p
Ср 1	66°22.6 14°20.0	80°55.2 14°13.2	95°27.8 14°06.4	110°00.5 13°59.6	124°33.2 13°52.6	139°05.9 13°45.7	153°38.7 13°38.6	168°11.5 13°31.5	182°44.4 13°24.4	197°17.3 13°17.2	211°50.2 13°09.9	+32.8 -7.0	14.7 54.1
Чт 2	70°08.1 11°14.9	84°41.5 11°06.9	99°15.0 10°58.8	113°48.5 10°50.6	128°22.0 10°42.4	142°55.6 10°34.2	157°29.2 10°25.9	172°02.8 10°17.6	186°36.5 10°09.2	201°10.1 10°00.8	215°43.8 9°52.4	+33.6 -8.3	14.7 53.9
Пт 3	74°12.3 7°41.3	88°46.3 7°32.3	103°20.4 7°23.3	117°54.5 7°14.2	132°28.7 7°05.1	147°02.8 6°56.0	161°37.0 6°46.9	176°11.1 6°37.7	190°45.3 6°28.5	205°19.5 6°19.2	219°53.8 6°10.0	+34.2 -9.1	14.7 53.9
● Сб 4	78°28.6 3°48.4	93°03.0 3°38.9	107°37.4 3°29.3	122°11.8 3°19.6	136°46.2 3°10.0	151°20.6 3°00.4	165°55.0 2°50.7	180°29.5 2°41.0	195°03.9 2°31.4	209°38.3 2°21.7	224°12.7 2°12.0	+34.4 -9.7	14.7 53.9
Вс 5	82°49.0 -0°14.5	97°23.4 -0°24.3	111°57.8 -0°34.1	126°32.1 -0°43.9	141°06.5 -0°53.7	155°40.8 -1°03.5	170°15.2 -1°13.2	184°49.5 -1°23.0	199°23.8 -1°32.8	213°58.1 -1°42.6	228°32.4 -1°52.4	+34.3 -9.8	14.7 54.1
Пн 6	87°04.9 -4°18.0	101°38.9 -4°27.6	116°12.9 -4°37.2	130°46.8 -4°46.8	145°20.8 -4°56.4	159°54.7 -5°05.9	174°28.6 -5°15.5	189°02.4 -5°25.0	203°36.3 -5°34.5	218°10.1 -5°44.0	232°43.9 -5°53.4	+33.9 -9.5	14.8 54.3
Вт 7	91°07.1 -8°12.4	105°40.4 -8°21.4	120°13.6 -8°30.4	134°46.8 -8°39.4	149°20.0 -8°48.4	163°53.1 -8°57.3	178°26.2 -9°06.1	192°59.3 -9°15.0	207°32.3 -9°23.8	222°05.2 -9°32.6	236°38.2 -9°41.3	+33.1 -8.9	14.9 54.7
Ср 8	94°47.0 -11°47.3	109°19.2 -11°55.4	123°51.4 -12°03.4	138°23.5 -12°11.3	152°55.6 -12°19.2	167°27.6 -12°27.0	181°59.5 -12°34.8	196°31.5 -12°42.6	211°03.3 -12°50.2	225°35.1 -12°57.9	240°06.9 -13°05.4	+32.0 -7.8	15.0 55.1
Чт 9	97°56.9 -14°51.9	112°27.8 -14°58.5	126°58.7 -15°05.1	141°29.4 -15°11.5	156°00.2 -15°17.9	170°30.8 -15°24.2	185°01.4 -15°30.5	199°32.0 -15°36.7	214°02.5 -15°42.8	228°32.9 -15°48.8	243°03.3 -15°54.8	+30.6 -6.3	15.2 55.7
Пт 10	100°31.7 -17°14.8	115°01.1 -17°19.5	129°30.5 -17°24.1	143°59.8 -17°28.6	158°29.0 -17°33.0	172°58.2 -17°37.3	187°27.3 -17°41.6	201°56.4 -17°45.7	216°25.4 -17°49.8	230°54.4 -17°53.8	245°23.3 -17°57.7	+29.2 -4.3	15.4 56.3
Сб 11	115°01.1 -17°19.5	129°30.5 -17°24.1	143°59.8 -17°28.6	158°29.0 -17°33.0	172°58.2 -17°37.3	187°27.3 -17°41.6	201°56.4 -17°45.7	216°25.4 -17°49.8	230°54.4 -17°53.8	245°23.3 -17°57.7	259°52.1 -18°01.4	+29.1 -4.2	15.4 56.4
◐ Вс 12	116°57.7 -18°46.7	131°25.6 -18°48.9	145°53.5 -18°51.0	160°21.3 -18°53.0	174°49.1 -18°54.9	189°16.8 -18°56.7	203°44.5 -18°58.4	218°12.1 -19°00.0	232°39.7 -19°01.5	247°07.2 -19°02.8	261°34.7 -19°04.1	+27.7 -1.7	15.6 57.1
Пн 13	118°21.1 -19°09.7	132°47.8 -19°09.1	147°14.6 -19°08.5	161°41.2 -19°07.7	176°07.9 -19°06.8	190°34.5 -19°05.8	205°01.0 -19°04.7	219°27.5 -19°03.5	233°54.0 -19°02.1	248°20.5 -19°00.6	262°46.9 -18°59.1	+26.6 +1.1	15.8 58.0
Вт 14	119°19.6 -18°20.9	133°45.6 -18°17.4	148°11.6 -18°13.8	162°37.5 -18°10.1	177°03.4 -18°06.2	191°29.3 -18°02.2	205°55.2 -17°58.1	220°21.1 -17°53.9	234°46.9 -17°49.6	249°12.8 -17°45.1	263°38.6 -17°40.5	+25.9 +4.0	16.1 58.9
Ср 15	120°04.6 -16°17.8	134°30.3 -16°11.4	148°56.0 -16°04.8	163°21.7 -15°58.2	177°47.4 -15°51.4	192°13.0 -15°44.5	206°38.7 -15°37.5	221°04.4 -15°30.4	235°30.1 -15°23.2	249°55.8 -15°15.9	264°21.4 -15°08.4	+25.7 +6.9	16.3 59.7
Чт 16	120°47.3 -13°04.5	135°13.0 -12°55.5	149°38.8 -12°46.3	164°04.6 -12°37.1	178°30.4 -12°27.8	192°56.3 -12°18.3	207°22.1 -12°08.8	221°47.9 -11°59.2	236°13.8 -11°49.5	250°39.7 -11°39.8	265°05.5 -11°29.9	+25.8 +9.5	16.5 60.5
Пт 17	121°35.3 -8°52.6	136°01.3 -8°41.5	150°27.4 -8°30.4	164°53.6 -8°19.2	179°19.7 -8°08.0	193°45.8 -7°56.7	208°12.0 -7°45.3	222°38.2 -7°33.9	237°04.4 -7°22.4	251°30.6 -7°10.9	265°56.8 -6°59.3	+26.2 +11.3	16.6 61.0
Сб 18	122°31.6 -4°00.3	136°58.1 -3°48.1	151°24.5 -3°35.8	165°50.9 -3°23.5	180°17.4 -3°11.2	194°43.9 -2°58.9	209°10.4 -2°46.6	223°36.8 -2°34.2	238°03.3 -2°21.9	252°29.9 -2°09.5	266°56.4 -1°57.1	+26.5 +12.3	16.7 61.2
○ Вс 19	123°35.3 1°09.5	138°01.9 1°21.9	152°28.6 1°34.3	166°55.2 1°46.6	181°21.9 1°59.0	195°48.6 2°11.3	210°15.2 2°23.6	224°41.9 2°35.9	239°08.6 2°48.2	253°35.3 3°00.5	268°02.0 3°12.7	+26.7 +12.3	16.6 61.0
Пн 20	124°42.9 6°12.0	139°09.6 6°23.6	153°36.4 6°35.1	168°03.1 6°46.6	182°29.9 6°58.1	196°56.6 7°09.5	211°23.4 7°20.8	225°50.1 7°32.1	240°16.9 7°43.3	254°43.6 7°54.5	269°10.4 8°05.6	+26.8 +11.4	16.5 60.6
Вт 21	125°51.9 10°44.0	140°18.6 10°54.0	154°45.4 11°03.9	169°12.2 11°13.7	183°39.0 11°23.4	198°05.7 11°33.1	212°32.5 11°42.6	226°59.3 11°52.1	241°26.1 12°01.5	255°52.9 12°10.8	270°19.7 12°20.0	+26.8 +9.6	16.3 59.8
Ср 22	127°02.2 14°26.9	141°29.1 14°34.6	155°56.0 14°42.2	170°22.9 14°49.7	184°49.8 14°57.1	199°16.7 15°04.4	213°43.6 15°11.6	228°10.5 15°18.7	242°37.5 15°25.6	257°04.4 15°32.5	271°31.4 15°39.3	+26.9 +7.2	16.1 58.9
Чт 23	128°17.6 17°08.0	142°44.8 17°13.0	157°12.1 17°18.0	171°39.3 17°22.8	186°06.6 17°27.5	200°33.9 17°32.1	215°01.2 17°36.6	229°28.5 17°41.0	243°55.9 17°45.3	258°23.3 17°49.5	272°50.7 17°53.5	+27.3 +4.6	15.8 57.9
Пт 24	129°45.1 18°41.2	144°12.9 18°43.5	158°40.8 18°45.7	173°08.8 18°47.8	187°36.7 18°49.8	202°04.7 18°51.6	216°32.7 18°53.4	231°00.8 18°55.0	245°28.9 18°56.6	259°57.1 18°58.0	274°25.2 18°59.3	+28.0 +1.8	15.5 56.9
Сб 25	131°32.6 19°06.6	146°01.4 19°06.2	160°30.3 19°05.8	174°59.2 19°05.2	189°28.2 19°04.6	203°57.2 19°03.8	218°26.2 19°03.0	232°55.3 19°02.0	247°24.5 19°01.0	261°53.7 18°59.9	276°22.9 18°58.6	+29.0 -0.8	15.3 56.0
◑ Вс 26	133°47.1 18°28.6	148°17.1 18°25.9	162°47.1 18°23.1	177°17.2 18°20.2	191°47.4 18°17.2	206°17.6 18°14.1	220°47.8 18°10.9	235°18.1 18°07.6	249°48.5 18°04.3	264°18.9 18°00.9	278°49.3 17°57.4	+30.2 -3.1	15.1 55.3
Пн 27	136°32.1 16°54.8	151°03.4 16°50.0	165°34.6 16°45.2	180°06.0 16°40.2	194°37.4 16°35.2	209°08.8 16°30.1	223°40.3 16°25.0	238°11.9 16°19.7	252°43.4 16°14.4	267°15.1 16°09.0	281°46.7 16°03.6	+31.5 -5.1	14.9 54.7
Вт 28	139°47.5 14°33.8	154°19.9 14°27.4	168°52.3 14°20.8	183°24.8 14°14.2	197°57.3 14°07.5	212°29.9 14°00.8	227°02.5 13°54.0	241°35.2 13°47.1	256°07.9 13°40.2	270°40.6 13°33.3	285°13.4 13°26.3	+32.6 -6.8	14.8 54.3
Ср 29	143°29.5 11°34.7	158°02.9 11°26.9	172°36.3 11°19.0	187°09.7 11°11.0	201°43.1 11°03.1	216°16.6 10°55.1	230°50.1 10°47.0	245°23.7 10°38.9	259°57.2 10°30.7	274°30.8 10°22.6	289°04.4 10°14.3	+33.5 -8.0	14.7 54.0
Чт 30	147°31.9 8°06.2	162°05.9 7°57.4	176°40.0 7°48.5	191°14.0 7°39.6	205°48.1 7°30.7	220°22.2 7°21.8	234°56.3 7°12.8	249°30.4 7°03.8	264°04.5 6°54.7	278°38.7 6°45.7	293°12.9 6°36.6	+34.1 -9.0	14.7 54.0

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 4 20h56 — Первая четв.: 12 18h49 — Полнолуние: 19 09h30 — Последняя четв.: 26 09h12

СОЛНЦЕ

Октябрь 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	182° 35.8 -3° 19.1	197° 36.0 -3° 20.1	212° 36.2 -3° 21.1	227° 36.4 -3° 22.0	242° 36.6 -3° 23.0	257° 36.8 -3° 24.0	92° 39.4 -3° 36.5	107° 39.6 -3° 37.5	122° 39.7 -3° 38.5	137° 39.9 -3° 39.4	152° 40.1 -3° 40.4	167° 40.3 -3° 41.4	+0.2 -1.0
Сб 2	182° 40.5 -3° 42.3	197° 40.7 -3° 43.3	212° 40.9 -3° 44.3	227° 41.1 -3° 45.2	242° 41.3 -3° 46.2	257° 41.5 -3° 47.2	92° 44.1 -3° 59.7	107° 44.3 -4° 00.7	122° 44.5 -4° 01.7	137° 44.7 -4° 02.6	152° 44.9 -4° 03.6	167° 45.0 -4° 04.6	+0.2 -1.0
Вс 3	182° 45.2 -4° 05.5	197° 45.4 -4° 06.5	212° 45.6 -4° 07.5	227° 45.8 -4° 08.4	242° 46.0 -4° 09.4	257° 46.2 -4° 10.4	92° 48.7 -4° 22.9	107° 48.9 -4° 23.9	122° 49.1 -4° 24.8	137° 49.3 -4° 25.8	152° 49.5 -4° 26.8	167° 49.7 -4° 27.7	+0.2 -1.0
Пн 4	182° 49.9 -4° 28.7	197° 50.0 -4° 29.6	212° 50.2 -4° 30.6	227° 50.4 -4° 31.6	242° 50.6 -4° 32.5	257° 50.8 -4° 33.5	92° 53.3 -4° 46.0	107° 53.4 -4° 47.0	122° 53.6 -4° 47.9	137° 53.8 -4° 48.9	152° 54.0 -4° 49.8	167° 54.2 -4° 50.8	+0.2 -1.0
Вт 5	182° 54.4 -4° 51.8	197° 54.6 -4° 52.7	212° 54.8 -4° 53.7	227° 54.9 -4° 54.7	242° 55.1 -4° 55.6	257° 55.3 -4° 56.6	92° 57.7 -5° 09.0	107° 57.9 -5° 10.0	122° 58.1 -5° 11.0	137° 58.3 -5° 11.9	152° 58.4 -5° 12.9	167° 58.6 -5° 13.8	+0.2 -1.0
Ср 6	182° 58.8 -5° 14.8	197° 59.0 -5° 15.8	212° 59.2 -5° 16.7	227° 59.4 -5° 17.7	242° 59.5 -5° 18.6	257° 59.7 -5° 19.6	93° 02.1 -5° 32.0	108° 02.3 -5° 33.0	123° 02.4 -5° 33.9	138° 02.6 -5° 34.9	153° 02.8 -5° 35.8	168° 03.0 -5° 36.8	+0.2 -1.0
Чт 7	183° 03.2 -5° 37.8	198° 03.3 -5° 38.7	213° 03.5 -5° 39.7	228° 03.7 -5° 40.6	243° 03.9 -5° 41.6	258° 04.0 -5° 42.5	93° 06.3 -5° 54.9	108° 06.5 -5° 55.9	123° 06.7 -5° 56.8	138° 06.9 -5° 57.8	153° 07.0 -5° 58.7	168° 07.2 -5° 59.7	+0.2 -1.0
Пт 8	183° 07.4 -6° 00.6	198° 07.6 -6° 01.6	213° 07.7 -6° 02.6	228° 07.9 -6° 03.5	243° 08.1 -6° 04.5	258° 08.3 -6° 05.4	93° 10.5 -6° 17.8	108° 10.7 -6° 18.7	123° 10.8 -6° 19.7	138° 11.0 -6° 20.6	153° 11.2 -6° 21.6	168° 11.3 -6° 22.5	+0.2 -1.0
Сб 9	183° 11.5 -6° 23.5	198° 11.7 -6° 24.4	213° 11.8 -6° 25.4	228° 12.0 -6° 26.3	243° 12.2 -6° 27.3	258° 12.4 -6° 28.2	93° 14.5 -6° 40.5	108° 14.7 -6° 41.5	123° 14.9 -6° 42.4	138° 15.0 -6° 43.3	153° 15.2 -6° 44.3	168° 15.4 -6° 45.2	+0.2 -0.9
Вс 10	183° 15.5 -6° 46.2	198° 15.7 -6° 47.1	213° 15.9 -6° 48.1	228° 16.0 -6° 49.0	243° 16.2 -6° 50.0	258° 16.4 -6° 50.9	93° 18.5 -7° 03.2	108° 18.6 -7° 04.1	123° 18.8 -7° 05.0	138° 19.0 -7° 06.0	153° 19.1 -7° 06.9	168° 19.3 -7° 07.9	+0.2 -0.9
Пн 11	183° 19.4 -7° 08.8	198° 19.6 -7° 09.8	213° 19.8 -7° 10.7	228° 19.9 -7° 11.6	243° 20.1 -7° 12.6	258° 20.2 -7° 13.5	93° 22.3 -7° 25.7	108° 22.4 -7° 26.7	123° 22.6 -7° 27.6	138° 22.8 -7° 28.5	153° 22.9 -7° 29.5	168° 23.1 -7° 30.4	+0.2 -0.9
Вт 12	183° 23.2 -7° 31.3	198° 23.4 -7° 32.3	213° 23.5 -7° 33.2	228° 23.7 -7° 34.2	243° 23.8 -7° 35.1	258° 24.0 -7° 36.0	93° 26.0 -7° 48.2	108° 26.1 -7° 49.1	123° 26.3 -7° 50.0	138° 26.4 -7° 51.0	153° 26.6 -7° 51.9	168° 26.7 -7° 52.8	+0.2 -0.9
Ср 13	183° 26.9 -7° 53.8	198° 27.0 -7° 54.7	213° 27.2 -7° 55.6	228° 27.3 -7° 56.6	243° 27.5 -7° 57.5	258° 27.6 -7° 58.4	93° 29.5 -8° 10.5	108° 29.7 -8° 11.5	123° 29.8 -8° 12.4	138° 30.0 -8° 13.3	153° 30.1 -8° 14.2	168° 30.3 -8° 15.2	+0.2 -0.9
Чт 14	183° 30.4 -8° 16.1	198° 30.6 -8° 17.0	213° 30.7 -8° 18.0	228° 30.8 -8° 18.9	243° 31.0 -8° 19.8	258° 31.1 -8° 20.7	93° 33.0 -8° 32.8	108° 33.1 -8° 33.7	123° 33.3 -8° 34.6	138° 33.4 -8° 35.5	153° 33.5 -8° 36.5	168° 33.7 -8° 37.4	+0.1 -0.9
Пт 15	183° 33.8 -8° 38.3	198° 34.0 -8° 39.2	213° 34.1 -8° 40.1	228° 34.2 -8° 41.1	243° 34.4 -8° 42.0	258° 34.5 -8° 42.9	93° 36.3 -8° 54.9	108° 36.4 -8° 55.8	123° 36.6 -8° 56.7	138° 36.7 -8° 57.6	153° 36.8 -8° 58.5	168° 37.0 -8° 59.5	+0.1 -0.9
Сб 16	183° 37.1 -9° 00.4	198° 37.2 -9° 01.3	213° 37.4 -9° 02.2	228° 37.5 -9° 03.1	243° 37.6 -9° 04.0	258° 37.8 -9° 05.0	93° 39.4 -9° 16.9	108° 39.6 -9° 17.8	123° 39.7 -9° 18.7	138° 39.8 -9° 19.6	153° 40.0 -9° 20.5	168° 40.1 -9° 21.4	+0.1 -0.9
Вс 17	183° 40.2 -9° 22.3	198° 40.3 -9° 23.2	213° 40.5 -9° 24.2	228° 40.6 -9° 25.1	243° 40.7 -9° 26.0	258° 40.8 -9° 26.9	93° 42.5 -9° 38.7	108° 42.6 -9° 39.6	123° 42.7 -9° 40.5	138° 42.8 -9° 41.4	153° 42.9 -9° 42.3	168° 43.1 -9° 43.2	+0.1 -0.9
Пн 18	183° 43.2 -9° 44.1	198° 43.3 -9° 45.0	213° 43.4 -9° 46.0	228° 43.6 -9° 46.9	243° 43.7 -9° 47.8	258° 43.8 -9° 48.7	93° 45.3 -10° 00.4	108° 45.4 -10° 01.3	123° 45.6 -10° 02.2	138° 45.7 -10° 03.1	153° 45.8 -10° 04.0	168° 45.9 -10° 04.9	+0.1 -0.9
Вт 19	183° 46.0 -10° 05.8	198° 46.1 -10° 06.7	213° 46.2 -10° 07.6	228° 46.4 -10° 08.5	243° 46.5 -10° 09.4	258° 46.6 -10° 10.3	93° 48.0 -10° 22.0	108° 48.1 -10° 22.9	123° 48.3 -10° 23.8	138° 48.4 -10° 24.7	153° 48.5 -10° 25.6	168° 48.6 -10° 26.4	+0.1 -0.9
Ср 20	183° 48.7 -10° 27.3	198° 48.8 -10° 28.2	213° 48.9 -10° 29.1	228° 49.0 -10° 30.0	243° 49.1 -10° 30.9	258° 49.2 -10° 31.8	93° 50.6 -10° 43.4	108° 50.7 -10° 44.3	123° 50.8 -10° 45.2	138° 50.9 -10° 46.1	153° 51.0 -10° 46.9	168° 51.1 -10° 47.8	+0.1 -0.9
Чт 21	183° 51.2 -10° 48.7	198° 51.3 -10° 49.6	213° 51.4 -10° 50.5	228° 51.5 -10° 51.4	243° 51.6 -10° 52.3	258° 51.7 -10° 53.1	93° 53.0 -11° 04.6	108° 53.0 -11° 05.5	123° 53.1 -11° 06.4	138° 53.2 -11° 07.3	153° 53.3 -11° 08.2	168° 53.4 -11° 09.0	+0.1 -0.9
Пт 22	183° 53.5 -11° 09.9	198° 53.6 -11° 10.8	213° 53.7 -11° 11.7	228° 53.8 -11° 12.6	243° 53.9 -11° 13.4	258° 54.0 -11° 14.3	93° 55.2 -11° 25.7	108° 55.2 -11° 26.6	123° 55.3 -11° 27.5	138° 55.4 -11° 28.4	153° 55.5 -11° 29.2	168° 55.6 -11° 30.1	+0.1 -0.9
Сб 23	183° 55.7 -11° 31.0	198° 55.8 -11° 31.8	213° 55.9 -11° 32.7	228° 55.9 -11° 33.6	243° 56.0 -11° 34.5	258° 56.1 -11° 35.3	93° 57.2 -11° 46.6	108° 57.3 -11° 47.5	123° 57.4 -11° 48.4	138° 57.4 -11° 49.2	153° 57.5 -11° 50.1	168° 57.6 -11° 51.0	+0.1 -0.9
Вс 24	183° 57.7 -11° 51.8	198° 57.7 -11° 52.7	213° 57.8 -11° 53.6	228° 57.9 -11° 54.4	243° 58.0 -11° 55.3	258° 58.1 -11° 56.2	93° 59.0 -12° 07.4	108° 59.1 -12° 08.2	123° 59.2 -12° 09.1	138° 59.3 -12° 10.0	153° 59.3 -12° 10.8	168° 59.4 -12° 11.7	+0.1 -0.9
Пн 25	183° 59.5 -12° 12.5	198° 59.5 -12° 13.4	213° 59.6 -12° 14.3	228° 59.7 -12° 15.1	243° 59.8 -12° 16.0	258° 59.8 -12° 16.8	94° 00.7 -12° 27.9	109° 00.8 -12° 28.8	124° 00.8 -12° 29.6	139° 00.9 -12° 30.5	154° 01.0 -12° 31.3	169° 01.0 -12° 32.2	+0.1 -0.9
Вт 26	184° 01.1 -12° 33.1	199° 01.2 -12° 33.9	214° 01.2 -12° 34.8	229° 01.3 -12° 35.6	244° 01.3 -12° 36.5	259° 01.4 -12° 37.3	94° 02.2 -12° 48.3	109° 02.2 -12° 49.2	124° 02.3 -12° 50.0	139° 02.4 -12° 50.8	154° 02.4 -12° 51.7	169° 02.5 -12° 52.5	+0.1 -0.9
Ср 27	184° 02.5 -12° 53.4	199° 02.6 -12° 54.2	214° 02.6 -12° 55.1	229° 02.7 -12° 55.9	244° 02.7 -12° 56.7	259° 02.8 -12° 57.6	94° 03.5 -13° 08.5	109° 03.5 -13° 09.3	124° 03.6 -13° 10.1	139° 03.6 -13° 11.0	154° 03.7 -13° 11.8	169° 03.7 -13° 12.6	+0.1 -0.8
Чт 28	184° 03.8 -13° 13.5	199° 03.8 -13° 14.3	214° 03.9 -13° 15.2	229° 03.9 -13° 16.0	244° 03.9 -13° 16.8	259° 04.0 -13° 17.6	94° 04.6 -13° 28.4	109° 04.6 -13° 29.3	124° 04.6 -13° 30.1	139° 04.7 -13° 30.9	154° 04.7 -13° 31.7	169° 04.8 -13° 32.6	+0.0 -0.8
Пт 29	184° 04.8 -13° 33.4	199° 04.8 -13° 34.2	214° 04.9 -13° 35.0	229° 04.9 -13° 35.9	244° 05.0 -13° 36.7	259° 05.0 -13° 37.5	94° 05.5 -13° 48.2	109° 05.5 -13° 49.0	124° 05.5 -13° 49.8	139° 05.6 -13° 50.6	154° 05.6 -13° 51.5	169° 05.6 -13° 52.3	+0.0 -0.8
Сб 30	184° 05.7 -13° 53.1	199° 05.7 -13° 53.9	214° 05.7 -13° 54.7	229° 05.7 -13° 55.5	244° 05.8 -13° 56.4	259° 05.8 -13° 57.2	94° 06.2 -14° 07.7	109° 06.2 -14° 08.5	124° 06.2 -14° 09.3	139° 06.2 -14° 10.1	154° 06.3 -14° 11.0	169° 06.3 -14° 11.8	+0.0 -0.8
Вс 31	184° 06.3 -14° 12.6	199° 06.3 -14° 13.4	214° 06.3 -14° 14.2	229° 06.4 -14° 15.0	244° 06.4 -14° 15.8	259° 06.4 -14° 16.6	94° 06.7 -14° 27.0	109° 06.7 -14° 27.8	124° 06.7 -14° 28.6	139° 06.7 -14° 29.4	154° 06.7 -14° 30.2	169° 06.7 -14° 31.0	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2032

Д	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	Δ'/h	R/p
Пт 1	64° 20.9	78° 55.2	93° 29.5	108° 03.8	122° 38.1	137° 12.5	151° 46.8	166° 21.1	180° 55.5	195° 29.8	210° 04.1	+34.3	14.7
	5° 13.5	5° 04.2	4° 54.8	4° 45.4	4° 36.0	4° 26.6	4° 17.1	4° 07.7	3° 58.2	3° 48.7	3° 39.2	-9.4	54.0
Сб 2	68° 39.4	83° 13.7	97° 48.1	112° 22.4	126° 56.7	141° 31.0	156° 05.3	170° 39.6	185° 13.8	199° 48.1	214° 22.4	+34.3	14.8
	1° 14.7	1° 05.0	0° 55.2	0° 45.5	0° 35.8	0° 26.0	0° 16.3	0° 06.5	-0° 03.2	-0° 13.0	-0° 22.7	-9.7	54.1
Вс 3	72° 54.5	87° 28.6	102° 02.5	116° 36.5	131° 10.5	145° 44.4	160° 18.3	174° 52.2	189° 26.0	203° 59.9	218° 33.7	+33.9	14.8
	-2° 49.0	-2° 58.7	-3° 08.4	-3° 18.1	-3° 27.8	-3° 37.5	-3° 47.2	-3° 56.8	-4° 06.5	-4° 16.1	-4° 25.7	-9.7	54.4
● Пн 4	76° 57.4	91° 30.8	106° 04.1	120° 37.3	135° 10.6	149° 43.8	164° 16.9	178° 50.1	193° 23.2	207° 56.2	222° 29.2	+33.2	14.9
	-6° 47.9	-6° 57.2	-7° 06.4	-7° 15.7	-7° 24.9	-7° 34.1	-7° 43.3	-7° 52.4	-8° 01.6	-8° 10.6	-8° 19.7	-9.2	54.7
Вт 5	80° 39.7	95° 12.1	109° 44.4	124° 16.7	138° 48.9	153° 21.1	167° 53.2	182° 25.3	196° 57.4	211° 29.4	226° 01.3	+32.2	15.0
	-10° 31.3	-10° 39.7	-10° 48.1	-10° 56.5	-11° 04.8	-11° 13.1	-11° 21.3	-11° 29.5	-11° 37.7	-11° 45.8	-11° 53.8	-8.3	55.0
Ср 6	83° 54.8	98° 25.9	112° 57.0	127° 28.1	141° 59.1	156° 30.1	171° 01.0	185° 31.8	200° 02.6	214° 33.4	229° 04.1	+30.9	15.1
	-13° 47.9	-13° 55.1	-14° 02.1	-14° 09.2	-14° 16.1	-14° 23.0	-14° 29.8	-14° 36.6	-14° 43.3	-14° 49.9	-14° 56.4	-6.9	55.5
Чт 7	86° 38.3	101° 08.2	115° 38.0	130° 07.8	144° 37.5	159° 07.2	173° 36.8	188° 06.3	202° 35.9	217° 05.3	231° 34.7	+29.6	15.3
	-16° 26.0	-16° 31.4	-16° 36.6	-16° 41.8	-16° 46.9	-16° 52.0	-16° 56.9	-17° 01.8	-17° 06.5	-17° 11.2	-17° 15.8	-5.0	56.0
Пт 8	88° 50.0	103° 18.7	117° 47.2	132° 15.8	146° 44.3	161° 12.8	175° 41.2	190° 09.6	204° 37.9	219° 06.2	233° 34.5	+28.4	15.4
	-18° 14.0	-18° 17.2	-18° 20.2	-18° 23.1	-18° 26.0	-18° 28.7	-18° 31.3	-18° 33.9	-18° 36.3	-18° 38.7	-18° 40.9	-2.7	56.5
Сб 9	90° 33.7	105° 01.3	119° 29.0	133° 56.6	148° 24.1	162° 51.7	177° 19.2	191° 46.7	206° 14.1	220° 41.6	235° 09.0	+27.5	15.6
	-19° 02.0	-19° 02.5	-19° 03.0	-19° 03.3	-19° 03.6	-19° 03.7	-19° 03.7	-19° 03.6	-19° 03.4	-19° 03.1	-19° 02.6	-0.1	57.2
Вс 10	91° 57.2	106° 24.3	120° 51.3	135° 18.3	149° 45.4	164° 12.4	178° 39.4	193° 06.3	207° 33.3	222° 00.3	236° 27.2	+27.0	15.8
	-18° 42.8	-18° 40.6	-18° 38.2	-18° 35.8	-18° 33.2	-18° 30.5	-18° 27.8	-18° 24.9	-18° 21.9	-18° 18.7	-18° 15.5	+2.7	57.8
Пн 11	106° 24.3	120° 51.3	135° 18.3	149° 45.4	164° 12.4	178° 39.4	193° 06.3	207° 33.3	222° 00.3	236° 27.2	250° 54.1	+27.0	15.8
	-18° 40.6	-18° 38.2	-18° 35.8	-18° 33.2	-18° 30.5	-18° 27.8	-18° 24.9	-18° 21.9	-18° 18.7	-18° 15.5	-18° 12.1	+2.8	57.8
◐ Вт 12	107° 37.4	122° 04.2	136° 31.1	150° 57.9	165° 24.8	179° 51.6	194° 18.5	208° 45.4	223° 12.2	237° 39.1	252° 06.0	+26.9	16.0
	-17° 08.6	-17° 03.5	-16° 58.2	-16° 52.9	-16° 47.5	-16° 41.9	-16° 36.3	-16° 30.5	-16° 24.6	-16° 18.7	-16° 12.6	+5.6	58.5
Ср 13	108° 49.6	123° 16.6	137° 43.6	152° 10.5	166° 37.5	181° 04.5	195° 31.5	209° 58.6	224° 25.6	238° 52.6	253° 19.7	+27.0	16.1
	-14° 29.2	-14° 21.5	-14° 13.7	-14° 05.8	-13° 57.9	-13° 49.8	-13° 41.7	-13° 33.4	-13° 25.1	-13° 16.7	-13° 08.1	+8.1	59.2
Чт 14	110° 06.6	124° 33.8	139° 01.0	153° 28.2	167° 55.5	182° 22.7	196° 50.0	211° 17.2	225° 44.5	240° 11.8	254° 39.1	+27.2	16.3
	-10° 50.3	-10° 40.5	-10° 30.6	-10° 20.7	-10° 10.6	-10° 00.5	-9° 50.3	-9° 40.1	-9° 29.8	-9° 19.4	-9° 08.9	+10.1	59.8
Пт 15	111° 29.3	125° 56.7	140° 24.1	154° 51.5	169° 18.9	183° 46.3	198° 13.7	212° 41.1	227° 08.5	241° 35.9	256° 03.4	+27.4	16.4
	-6° 25.2	-6° 13.8	-6° 02.4	-5° 51.0	-5° 39.5	-5° 28.0	-5° 16.5	-5° 04.9	-4° 53.3	-4° 41.6	-4° 29.9	+11.5	60.2
Сб 16	112° 54.6	127° 22.0	141° 49.4	156° 16.8	170° 44.2	185° 11.6	199° 39.0	214° 06.3	228° 33.7	243° 01.0	257° 28.4	+27.4	16.5
	-1° 31.1	-1° 19.1	-1° 07.0	-0° 54.9	-0° 42.8	-0° 30.7	-0° 18.5	-0° 06.4	0° 05.7	0° 17.8	0° 30.0	+12.1	60.5
Вс 17	114° 17.5	128° 44.7	143° 11.8	157° 39.0	172° 06.2	186° 33.3	201° 00.4	215° 27.5	229° 54.6	244° 21.7	258° 48.7	+27.1	16.5
	3° 30.9	3° 42.9	3° 54.8	4° 06.6	4° 18.5	4° 30.3	4° 42.1	4° 53.9	5° 05.6	5° 17.3	5° 29.0	+11.8	60.5
○ Пн 18	115° 32.9	129° 59.7	144° 26.5	158° 53.3	173° 20.1	187° 46.9	202° 13.6	216° 40.3	231° 07.0	245° 33.7	260° 00.4	+26.7	16.4
	8° 18.6	8° 29.5	8° 40.3	8° 51.1	9° 01.8	9° 12.4	9° 23.0	9° 33.5	9° 44.0	9° 54.3	10° 04.6	+10.6	60.2
Вт 19	116° 38.9	131° 05.4	145° 31.9	159° 58.3	174° 24.8	188° 51.2	203° 17.6	217° 44.0	232° 10.4	246° 36.8	261° 03.2	+26.4	16.3
	12° 30.1	12° 39.2	12° 48.1	12° 57.0	13° 05.8	13° 14.4	13° 23.0	13° 31.5	13° 39.9	13° 48.2	13° 56.4	+8.6	59.6
Ср 20	117° 38.5	132° 04.8	146° 31.2	160° 57.6	175° 23.9	189° 50.3	204° 16.6	218° 43.0	233° 09.4	247° 35.8	262° 02.2	+26.4	16.1
	15° 47.5	15° 54.1	16° 00.6	16° 06.9	16° 13.2	16° 19.3	16° 25.4	16° 31.3	16° 37.1	16° 42.8	16° 48.4	+6.1	58.9
Чт 21	118° 39.8	133° 06.4	147° 33.1	161° 59.8	176° 26.5	190° 53.2	205° 20.0	219° 46.8	234° 13.6	248° 40.5	263° 07.4	+26.8	15.8
	17° 58.7	18° 02.4	18° 06.1	18° 09.6	18° 13.1	18° 16.4	18° 19.6	18° 22.7	18° 25.6	18° 28.5	18° 31.2	+3.3	58.0
Пт 22	119° 54.5	134° 21.9	148° 49.4	163° 16.9	177° 44.5	192° 12.1	206° 39.8	221° 07.5	235° 35.2	250° 03.0	264° 30.8	+27.6	15.6
	18° 58.7	18° 59.6	19° 00.4	19° 01.1	19° 01.7	19° 02.2	19° 02.6	19° 02.9	19° 03.1	19° 03.1	19° 03.1	+0.4	57.1
Сб 23	121° 34.3	136° 03.0	150° 31.7	165° 00.5	179° 29.3	193° 58.2	208° 27.1	222° 56.1	237° 25.1	251° 54.2	266° 23.4	+28.9	15.3
	18° 49.6	18° 47.9	18° 46.1	18° 44.2	18° 42.2	18° 40.1	18° 37.9	18° 35.6	18° 33.2	18° 30.7	18° 28.1	-2.2	56.2
Вс 24	123° 47.6	138° 17.7	152° 47.9	167° 18.1	181° 48.3	196° 18.7	210° 49.1	225° 19.5	239° 50.0	254° 20.6	268° 51.2	+30.4	15.1
	17° 38.5	17° 34.5	17° 30.4	17° 26.3	17° 22.0	17° 17.7	17° 13.3	17° 08.8	17° 04.2	16° 59.6	16° 54.8	-4.4	55.4
Пн 25	126° 37.3	141° 08.8	155° 40.4	170° 12.1	184° 43.8	199° 15.5	213° 47.3	228° 19.1	242° 51.0	257° 23.0	271° 55.0	+31.8	14.9
	15° 35.0	15° 29.1	15° 23.2	15° 17.2	15° 11.1	15° 04.9	14° 58.7	14° 52.4	14° 46.1	14° 39.7	14° 33.2	-6.2	54.8
◑ Вт 26	130° 01.1	144° 33.8	159° 06.7	173° 39.5	188° 12.4	202° 45.4	217° 18.4	231° 51.4	246° 24.5	260° 57.6	275° 30.8	+33.0	14.8
	12° 49.4	12° 42.0	12° 34.6	12° 27.1	12° 19.6	12° 12.1	12° 04.4	11° 56.8	11° 49.1	11° 41.3	11° 33.5	-7.6	54.4
Ср 27	133° 52.5	148° 26.2	162° 59.9	177° 33.7	192° 07.5	206° 41.3	221° 15.2	235° 49.1	250° 23.0	264° 56.9	279° 30.9	+33.8	14.8
	9° 31.4	9° 22.9	9° 14.4	9° 05.9	8° 57.3	8° 48.7	8° 40.0	8° 31.4	8° 22.6	8° 13.9	8° 05.1	-8.6	54.1
Чт 28	138° 02.7	152° 36.9	167° 11.2	181° 45.5	196° 19.8	210° 54.1	225° 28.4	240° 02.7	254° 37.1	269° 11.4	283° 45.8	+34.3	14.7
	5° 49.9	5° 40.7	5° 31.5	5° 22.2	5° 12.9	5° 03.6	4° 54.3	4° 44.9	4° 35.5	4° 26.1	4° 16.7	-9.3	54.1
Пт 29	142° 21.4	156° 55.8	171° 30.1	186° 04.5	200° 38.9	215° 13.2	229° 47.6	244° 21.9	258° 56.2	273° 30.6	288° 04.9	+34.3	14.8
	1° 53.5	1° 43.9	1° 34.2	1° 24.5	1° 14.9	1° 05.2	0° 55.5	0° 45.8	0° 36.1	0° 26.3	0° 16.6	-9.7	54.2
Сб 30	146° 37.9	161° 12.0	175° 46.0	190° 20.0	204° 54.0	219° 28.0	234° 02.0	248° 35.9	263° 09.8	277° 43.7	292° 17.5	+34.0	14.8
	-2° 09.5	-2° 19.2	-2° 28.9	-2° 38.7	-2° 48.4	-2° 58.1	-3° 07.8	-3° 17.5	-3° 27.2	-3° 36.9	-3° 46.5	-9.7	54.4
Вс 31	150° 41.7	165° 15.0	179° 48.3	194° 21.6	208° 54.9	223° 28.0	238° 01.2	252° 34.3	267° 07.4	281° 40.4	296° 13.4	+33.2	14.9
	-6° 10.0	-6° 19.4	-6° 28.8	-6° 38.2	-6° 47.6	-6° 56.9	-7° 06.2	-7° 15.5	-7° 24.8	-7° 34.1	-7° 43.3	-9.3	54.8

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 4 13h26 — Первая четв.: 12 03h47 — Полнолуние: 18 18h58 — Последняя четв.: 26 02h28

СОЛНЦЕ

Ноябрь 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	184° 06.8 -14° 31.8	199° 06.8 -14° 32.6	214° 06.8 -14° 33.4	229° 06.8 -14° 34.2	244° 06.8 -14° 35.0	259° 06.8 -14° 35.8	94° 07.0 -14° 46.1	109° 07.0 -14° 46.9	124° 07.0 -14° 47.7	139° 07.0 -14° 48.5	154° 07.0 -14° 49.3	169° 07.0 -14° 50.0	+0.0 -0.8
Вт 2	184° 07.0 -14° 50.8	199° 07.0 -14° 51.6	214° 07.0 -14° 52.4	229° 07.0 -14° 53.2	244° 07.0 -14° 54.0	259° 07.0 -14° 54.8	94° 07.0 -15° 04.9	109° 07.0 -15° 05.7	124° 07.0 -15° 06.5	139° 07.0 -15° 07.3	154° 07.0 -15° 08.1	169° 07.0 -15° 08.8	+0.0 -0.8
Ср 3	184° 07.0 -15° 09.6	199° 07.0 -15° 10.4	214° 07.0 -15° 11.2	229° 07.0 -15° 11.9	244° 07.0 -15° 12.7	259° 07.0 -15° 13.5	94° 06.9 -15° 23.5	109° 06.9 -15° 24.3	124° 06.9 -15° 25.1	139° 06.9 -15° 25.8	154° 06.9 -15° 26.6	169° 06.9 -15° 27.4	-0.0 -0.8
Чт 4	184° 06.9 -15° 28.1	199° 06.9 -15° 28.9	214° 06.9 -15° 29.7	229° 06.8 -15° 30.4	244° 06.8 -15° 31.2	259° 06.8 -15° 32.0	94° 06.6 -15° 41.9	109° 06.6 -15° 42.6	124° 06.6 -15° 43.4	139° 06.6 -15° 44.1	154° 06.6 -15° 44.9	169° 06.5 -15° 45.7	-0.0 -0.8
Пт 5	184° 06.5 -15° 46.4	199° 06.5 -15° 47.2	214° 06.5 -15° 47.9	229° 06.5 -15° 48.7	244° 06.4 -15° 49.4	259° 06.4 -15° 50.2	94° 06.1 -15° 59.9	109° 06.1 -16° 00.7	124° 06.0 -16° 01.4	139° 06.0 -16° 02.2	154° 06.0 -16° 02.9	169° 06.0 -16° 03.7	-0.0 -0.8
Сб 6	184° 05.9 -16° 04.4	199° 05.9 -16° 05.2	214° 05.9 -16° 05.9	229° 05.9 -16° 06.7	244° 05.8 -16° 07.4	259° 05.8 -16° 08.1	94° 05.4 -16° 17.8	109° 05.3 -16° 18.5	124° 05.3 -16° 19.2	139° 05.3 -16° 20.0	154° 05.2 -16° 20.7	169° 05.2 -16° 21.4	-0.0 -0.7
Вс 7	184° 05.2 -16° 22.2	199° 05.1 -16° 22.9	214° 05.1 -16° 23.6	229° 05.0 -16° 24.4	244° 05.0 -16° 25.1	259° 05.0 -16° 25.8	94° 04.4 -16° 35.3	109° 04.4 -16° 36.0	124° 04.4 -16° 36.7	139° 04.3 -16° 37.5	154° 04.3 -16° 38.2	169° 04.2 -16° 38.9	-0.0 -0.7
Пн 8	184° 04.2 -16° 39.6	199° 04.1 -16° 40.4	214° 04.1 -16° 41.1	229° 04.0 -16° 41.8	244° 04.0 -16° 42.5	259° 03.9 -16° 43.2	94° 03.3 -16° 52.6	109° 03.2 -16° 53.3	124° 03.2 -16° 54.0	139° 03.1 -16° 54.7	154° 03.1 -16° 55.4	169° 03.0 -16° 56.1	-0.0 -0.7
Вт 9	184° 03.0 -16° 56.8	199° 02.9 -16° 57.5	214° 02.9 -16° 58.2	229° 02.8 -16° 59.0	244° 02.8 -16° 59.7	259° 02.7 -17° 00.4	94° 01.9 -17° 09.5	109° 01.9 -17° 10.2	124° 01.8 -17° 10.9	139° 01.8 -17° 11.6	154° 01.7 -17° 12.3	169° 01.6 -17° 13.0	-0.1 -0.7
Ср 10	184° 01.6 -17° 13.7	199° 01.5 -17° 14.4	214° 01.5 -17° 15.1	229° 01.4 -17° 15.8	244° 01.3 -17° 16.5	259° 01.3 -17° 17.2	94° 00.4 -17° 26.2	109° 00.3 -17° 26.9	124° 00.3 -17° 27.6	139° 00.2 -17° 28.3	154° 00.1 -17° 29.0	169° 00.0 -17° 29.6	-0.1 -0.7
Чт 11	184° 00.0 -17° 30.3	198° 59.9 -17° 31.0	213° 59.8 -17° 31.7	228° 59.8 -17° 32.4	243° 59.7 -17° 33.1	258° 59.6 -17° 33.8	93° 58.6 -17° 42.6	108° 58.6 -17° 43.3	123° 58.5 -17° 43.9	138° 58.4 -17° 44.6	153° 58.3 -17° 45.3	168° 58.2 -17° 46.0	-0.1 -0.7
Пт 12	183° 58.2 -17° 46.6	198° 58.1 -17° 47.3	213° 58.0 -17° 48.0	228° 57.9 -17° 48.6	243° 57.8 -17° 49.3	258° 57.8 -17° 50.0	93° 56.7 -17° 58.7	108° 56.6 -17° 59.3	123° 56.5 -18° 00.0	138° 56.4 -18° 00.6	153° 56.3 -18° 01.3	168° 56.2 -18° 02.0	-0.1 -0.7
Сб 13	183° 56.1 -18° 02.6	198° 56.0 -18° 03.3	213° 56.0 -18° 03.9	228° 55.9 -18° 04.6	243° 55.8 -18° 05.3	258° 55.7 -18° 05.9	93° 54.5 -18° 14.4	108° 54.4 -18° 15.1	123° 54.3 -18° 15.7	138° 54.2 -18° 16.4	153° 54.1 -18° 17.0	168° 54.0 -18° 17.7	-0.1 -0.7
Вс 14	183° 53.9 -18° 18.3	198° 53.8 -18° 18.9	213° 53.7 -18° 19.6	228° 53.6 -18° 20.2	243° 53.5 -18° 20.9	258° 53.4 -18° 21.5	93° 52.1 -18° 29.8	108° 52.0 -18° 30.5	123° 51.9 -18° 31.1	138° 51.8 -18° 31.8	153° 51.7 -18° 32.4	168° 51.6 -18° 33.0	-0.1 -0.6
Пн 15	183° 51.5 -18° 33.7	198° 51.4 -18° 34.3	213° 51.3 -18° 34.9	228° 51.2 -18° 35.6	243° 51.0 -18° 36.2	258° 50.9 -18° 36.8	93° 49.5 -18° 45.0	108° 49.4 -18° 45.6	123° 49.3 -18° 46.2	138° 49.2 -18° 46.8	153° 49.1 -18° 47.4	168° 48.9 -18° 48.1	-0.1 -0.6
Вт 16	183° 48.8 -18° 48.7	198° 48.7 -18° 49.3	213° 48.6 -18° 49.9	228° 48.5 -18° 50.5	243° 48.4 -18° 51.2	258° 48.3 -18° 51.8	93° 46.7 -18° 59.7	108° 46.6 -19° 00.3	123° 46.5 -19° 01.0	138° 46.3 -19° 01.6	153° 46.2 -19° 02.2	168° 46.1 -19° 02.8	-0.1 -0.6
Ср 17	183° 46.0 -19° 03.4	198° 45.9 -19° 04.0	213° 45.7 -19° 04.6	228° 45.6 -19° 05.2	243° 45.5 -19° 05.8	258° 45.4 -19° 06.4	93° 43.7 -19° 14.2	108° 43.6 -19° 14.8	123° 43.4 -19° 15.4	138° 43.3 -19° 16.0	153° 43.2 -19° 16.5	168° 43.0 -19° 17.1	-0.1 -0.6
Чт 18	183° 42.9 -19° 17.7	198° 42.8 -19° 18.3	213° 42.7 -19° 18.9	228° 42.5 -19° 19.5	243° 42.4 -19° 20.1	258° 42.3 -19° 20.7	93° 40.5 -19° 28.3	108° 40.3 -19° 28.8	123° 40.2 -19° 29.4	138° 40.1 -19° 30.0	153° 39.9 -19° 30.6	168° 39.8 -19° 31.2	-0.1 -0.6
Пт 19	183° 39.6 -19° 31.7	198° 39.5 -19° 32.3	213° 39.4 -19° 32.9	228° 39.2 -19° 33.5	243° 39.1 -19° 34.0	258° 38.9 -19° 34.6	93° 37.1 -19° 42.0	108° 36.9 -19° 42.6	123° 36.8 -19° 43.1	138° 36.6 -19° 43.7	153° 36.5 -19° 44.3	168° 36.3 -19° 44.8	-0.1 -0.6
Сб 20	183° 36.2 -19° 45.4	198° 36.0 -19° 46.0	213° 35.9 -19° 46.5	228° 35.7 -19° 47.1	243° 35.6 -19° 47.6	258° 35.4 -19° 48.2	93° 33.4 -19° 55.4	108° 33.3 -19° 56.0	123° 33.1 -19° 56.5	138° 33.0 -19° 57.0	153° 32.8 -19° 57.6	168° 32.7 -19° 58.1	-0.1 -0.6
Вс 21	183° 32.5 -19° 58.7	198° 32.3 -19° 59.2	213° 32.2 -19° 59.8	228° 32.0 -20° 00.3	243° 31.9 -20° 00.9	258° 31.7 -20° 01.4	93° 29.6 -20° 08.4	108° 29.4 -20° 09.0	123° 29.3 -20° 09.5	138° 29.1 -20° 10.0	153° 28.9 -20° 10.6	168° 28.8 -20° 11.1	-0.2 -0.5
Пн 22	183° 28.6 -20° 11.6	198° 28.4 -20° 12.2	213° 28.3 -20° 12.7	228° 28.1 -20° 13.2	243° 27.9 -20° 13.7	258° 27.8 -20° 14.3	93° 25.6 -20° 21.1	108° 25.4 -20° 21.6	123° 25.2 -20° 22.1	138° 25.0 -20° 22.6	153° 24.9 -20° 23.2	168° 24.7 -20° 23.7	-0.2 -0.5
Вт 23	183° 24.5 -20° 24.2	198° 24.4 -20° 24.7	213° 24.2 -20° 25.2	228° 24.0 -20° 25.7	243° 23.8 -20° 26.2	258° 23.6 -20° 26.8	93° 21.3 -20° 33.4	108° 21.2 -20° 33.9	123° 21.0 -20° 34.4	138° 20.8 -20° 34.9	153° 20.6 -20° 35.4	168° 20.4 -20° 35.9	-0.2 -0.5
Ср 24	183° 20.2 -20° 36.4	198° 20.1 -20° 36.9	213° 19.9 -20° 37.4	228° 19.7 -20° 37.9	243° 19.5 -20° 38.4	258° 19.3 -20° 38.9	93° 16.9 -20° 45.3	108° 16.7 -20° 45.8	123° 16.5 -20° 46.2	138° 16.3 -20° 46.7	153° 16.1 -20° 47.2	168° 16.0 -20° 47.7	-0.2 -0.5
Чт 25	183° 15.8 -20° 48.2	198° 15.6 -20° 48.7	213° 15.4 -20° 49.1	228° 15.2 -20° 49.6	243° 15.0 -20° 50.1	258° 14.8 -20° 50.6	93° 12.3 -20° 56.8	108° 12.1 -20° 57.3	123° 11.9 -20° 57.7	138° 11.7 -20° 58.2	153° 11.5 -20° 58.7	168° 11.3 -20° 59.1	-0.2 -0.5
Пт 26	183° 11.1 -20° 59.6	198° 10.9 -21° 00.1	213° 10.7 -21° 00.5	228° 10.5 -21° 01.0	243° 10.3 -21° 01.5	258° 10.1 -21° 01.9	93° 07.5 -21° 07.9	108° 07.3 -21° 08.4	123° 07.1 -21° 08.8	138° 06.8 -21° 09.3	153° 06.6 -21° 09.7	168° 06.4 -21° 10.2	-0.2 -0.5
Сб 27	183° 06.2 -21° 10.6	198° 06.0 -21° 11.1	213° 05.8 -21° 11.5	228° 05.6 -21° 12.0	243° 05.4 -21° 12.4	258° 05.2 -21° 12.9	93° 02.5 -21° 18.6	108° 02.3 -21° 19.1	123° 02.0 -21° 19.5	138° 01.8 -21° 19.9	153° 01.6 -21° 20.4	168° 01.4 -21° 20.8	-0.2 -0.5
Вс 28	183° 01.2 -21° 21.3	198° 01.0 -21° 21.7	213° 00.8 -21° 22.1	228° 00.5 -21° 22.6	243° 00.3 -21° 23.0	258° 00.1 -21° 23.4	92° 57.3 -21° 29.0	107° 57.1 -21° 29.4	122° 56.8 -21° 29.8	137° 56.6 -21° 30.2	152° 56.4 -21° 30.6	167° 56.2 -21° 31.1	-0.2 -0.4
Пн 29	182° 56.0 -21° 31.5	197° 55.7 -21° 31.9	212° 55.5 -21° 32.3	227° 55.3 -21° 32.7	242° 55.1 -21° 33.1	257° 54.9 -21° 33.6	92° 51.9 -21° 38.9	107° 51.7 -21° 39.3	122° 51.5 -21° 39.7	137° 51.2 -21° 40.1	152° 51.0 -21° 40.5	167° 50.8 -21° 40.9	-0.2 -0.4
Вт 30	182° 50.6 -21° 41.3	197° 50.3 -21° 41.7	212° 50.1 -21° 42.1	227° 49.9 -21° 42.5	242° 49.6 -21° 42.9	257° 49.4 -21° 43.3	92° 46.4 -21° 48.4	107° 46.2 -21° 48.8	122° 45.9 -21° 49.2	137° 45.7 -21° 49.5	152° 45.5 -21° 49.9	167° 45.2 -21° 50.3	-0.2 -0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2032

Д	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	Δ'/h	R/p
Пн 1	67° 08.5 -9° 04.9	81° 41.0 -9° 13.8	96° 13.6 -9° 22.7	110° 46.0 -9° 31.5	125° 18.4 -9° 40.3	139° 50.8 -9° 49.1	154° 23.1 -9° 57.8	168° 55.4 -10° 06.5	183° 27.6 -10° 15.1	197° 59.8 -10° 23.7	212° 31.9 -10° 32.3	+32.3 -8.7	15.0 55.1
Вт 2	70° 27.7 -12° 35.3	84° 58.9 -12° 43.1	99° 30.2 -12° 50.8	114° 01.4 -12° 58.5	128° 32.5 -13° 06.2	143° 03.6 -13° 13.7	157° 34.6 -13° 21.2	172° 05.5 -13° 28.7	186° 36.4 -13° 36.1	201° 07.3 -13° 43.4	215° 38.1 -13° 50.7	+31.0 -7.5	15.2 55.6
● Ср 3	73° 13.1 -15° 31.8	87° 43.0 -15° 38.0	102° 12.8 -15° 44.1	116° 42.6 -15° 50.1	131° 12.3 -15° 56.1	145° 42.0 -16° 01.9	160° 11.6 -16° 07.7	174° 41.1 -16° 13.4	189° 10.6 -16° 19.0	203° 40.1 -16° 24.6	218° 09.5 -16° 30.0	+29.6 -5.8	15.3 56.1
Чт 4	75° 23.9 -17° 41.6	89° 52.5 -17° 45.6	104° 21.0 -17° 49.6	118° 49.5 -17° 53.5	133° 17.9 -17° 57.2	147° 46.2 -18° 00.9	162° 14.6 -18° 04.5	176° 42.8 -18° 07.9	191° 11.1 -18° 11.3	205° 39.3 -18° 14.6	220° 07.4 -18° 17.7	+28.3 -3.6	15.4 56.6
Пт 5	77° 04.7 -18° 53.0	91° 32.2 -18° 54.5	105° 59.7 -18° 55.9	120° 27.2 -18° 57.2	134° 54.6 -18° 58.4	149° 22.1 -18° 59.5	163° 49.4 -19° 00.5	178° 16.8 -19° 01.3	192° 44.1 -19° 02.1	207° 11.4 -19° 02.7	221° 38.7 -19° 03.2	+27.4 -1.0	15.6 57.1
Сб 6	78° 25.2 -18° 57.7	92° 52.2 -18° 56.4	107° 19.2 -18° 55.0	121° 46.1 -18° 53.5	136° 13.1 -18° 51.9	150° 40.0 -18° 50.2	165° 07.0 -18° 48.4	179° 33.9 -18° 46.4	194° 00.8 -18° 44.3	208° 27.7 -18° 42.2	222° 54.6 -18° 39.9	+26.9 +1.8	15.7 57.6
Вс 7	79° 38.2 -17° 52.1	94° 05.1 -17° 48.0	108° 32.1 -17° 43.9	122° 59.0 -17° 39.6	137° 26.0 -17° 35.2	151° 53.0 -17° 30.7	166° 19.9 -17° 26.1	180° 46.9 -17° 21.3	195° 14.0 -17° 16.5	209° 41.0 -17° 11.6	224° 08.0 -17° 06.5	+27.0 +4.6	15.8 58.1
Пн 8	80° 55.3 -15° 38.6	95° 22.6 -15° 32.0	109° 50.0 -15° 25.2	124° 17.3 -15° 18.4	138° 44.6 -15° 11.4	153° 12.0 -15° 04.4	167° 39.4 -14° 57.3	182° 06.9 -14° 50.0	196° 34.3 -14° 42.7	211° 01.8 -14° 35.3	225° 29.2 -14° 27.8	+27.4 +7.1	16.0 58.5
Вт 9	82° 24.2 -12° 25.0	96° 52.0 -12° 16.1	111° 19.9 -12° 07.2	125° 47.8 -11° 58.2	140° 15.7 -11° 49.2	154° 43.6 -11° 40.0	169° 11.5 -11° 30.8	183° 39.5 -11° 21.5	198° 07.5 -11° 12.2	212° 35.5 -11° 02.7	227° 03.5 -10° 53.2	+27.9 +9.2	16.1 58.9
◐ Ср 10	96° 52.0 -12° 16.1	111° 19.9 -12° 07.2	125° 47.8 -11° 58.2	140° 15.7 -11° 49.2	154° 43.6 -11° 40.0	169° 11.5 -11° 30.8	183° 39.5 -11° 21.5	198° 07.5 -11° 12.2	212° 35.5 -11° 02.7	227° 03.5 -10° 53.2	241° 31.6 -10° 43.7	+28.0 +9.3	16.1 58.9
Чт 11	98° 34.6 -8° 12.6	113° 03.0 -8° 02.1	127° 31.3 -7° 51.5	141° 59.7 -7° 40.9	156° 28.1 -7° 30.2	170° 56.5 -7° 19.5	185° 24.9 -7° 08.7	199° 53.3 -6° 57.9	214° 21.7 -6° 47.0	228° 50.2 -6° 36.1	243° 18.6 -6° 25.2	+28.4 +10.8	16.2 59.2
Пт 12	100° 26.5 -3° 36.5	114° 55.0 -3° 25.0	129° 23.6 -3° 13.5	143° 52.2 -3° 01.9	158° 20.7 -2° 50.4	172° 49.3 -2° 38.8	187° 17.9 -2° 27.2	201° 46.5 -2° 15.6	216° 15.0 -2° 03.9	230° 43.6 -1° 52.3	245° 12.2 -1° 40.6	+28.6 +11.6	16.2 59.5
Сб 13	102° 20.0 1° 15.2	116° 48.5 1° 26.9	131° 16.9 1° 38.6	145° 45.3 1° 50.3	160° 13.7 2° 02.0	174° 42.1 2° 13.7	189° 10.5 2° 25.4	203° 38.9 2° 37.0	218° 07.3 2° 48.7	232° 35.6 3° 00.3	247° 04.0 3° 12.0	+28.4 +11.7	16.3 59.6
Вс 14	104° 06.7 6° 03.5	118° 34.8 6° 14.7	133° 02.8 6° 25.8	147° 30.7 6° 36.9	161° 58.7 6° 48.0	176° 26.6 6° 59.0	190° 54.5 7° 10.0	205° 22.4 7° 20.9	219° 50.3 7° 31.8	234° 18.1 7° 42.7	248° 45.9 7° 53.5	+27.9 +11.0	16.2 59.6
Пн 15	105° 39.9 10° 29.0	120° 07.3 10° 38.9	134° 34.6 10° 48.7	149° 02.0 10° 58.4	163° 29.3 11° 08.1	177° 56.6 11° 17.7	192° 23.8 11° 27.2	206° 51.1 11° 36.7	221° 18.3 11° 46.0	235° 45.5 11° 55.3	250° 12.6 12° 04.6	+27.3 +9.6	16.2 59.4
Вт 16	106° 57.0 14° 13.0	121° 23.8 14° 20.8	135° 50.6 14° 28.6	150° 17.3 14° 36.3	164° 44.0 14° 43.8	179° 10.7 14° 51.3	193° 37.4 14° 58.7	208° 04.1 15° 06.0	222° 30.7 15° 13.1	236° 57.4 15° 20.2	251° 24.0 15° 27.2	+26.7 +7.4	16.1 59.0
○ Ср 17	108° 01.9 16° 59.5	122° 28.4 17° 04.8	136° 54.8 17° 10.0	151° 21.3 17° 15.1	165° 47.8 17° 20.1	180° 14.2 17° 24.9	194° 40.7 17° 29.7	209° 07.2 17° 34.3	223° 33.6 17° 38.8	238° 00.1 17° 43.2	252° 26.6 17° 47.5	+26.5 +4.8	15.9 58.4
Чт 18	109° 04.8 18° 38.2	123° 31.5 18° 40.6	137° 58.2 18° 43.0	152° 24.9 18° 45.2	166° 51.6 18° 47.3	181° 18.4 18° 49.3	195° 45.2 18° 51.2	210° 12.0 18° 52.9	224° 38.8 18° 54.6	239° 05.7 18° 56.1	253° 32.6 18° 57.6	+26.8 +1.9	15.7 57.7
Пт 19	110° 20.0 19° 05.3	124° 47.5 19° 04.9	139° 15.0 19° 04.5	153° 42.5 19° 03.9	168° 10.1 19° 03.2	182° 37.8 19° 02.4	197° 05.5 19° 01.5	211° 33.2 19° 00.4	226° 01.0 18° 59.3	240° 28.8 18° 58.1	254° 56.7 18° 56.7	+27.7 -0.9	15.5 56.9
Сб 20	112° 01.3 18° 24.4	126° 30.0 18° 21.4	140° 58.8 18° 18.4	155° 27.7 18° 15.2	169° 56.6 18° 12.0	184° 25.6 18° 08.7	198° 54.6 18° 05.3	213° 23.7 18° 01.8	227° 52.9 17° 58.2	242° 22.1 17° 54.5	256° 51.4 17° 50.7	+29.0 -3.4	15.3 56.2
Вс 21	114° 18.0 16° 43.8	128° 48.3 16° 38.7	143° 18.6 16° 33.5	157° 49.0 16° 28.2	172° 19.4 16° 22.9	186° 50.0 16° 17.5	201° 20.5 16° 12.0	215° 51.2 16° 06.4	230° 21.9 16° 00.8	244° 52.6 15° 55.1	259° 23.5 15° 49.3	+30.5 -5.5	15.1 55.5
Пн 22	117° 13.1 14° 14.6	131° 44.8 14° 07.8	146° 16.7 14° 00.9	160° 48.6 13° 54.0	175° 20.5 13° 47.0	189° 52.5 13° 39.9	204° 24.6 13° 32.8	218° 56.7 13° 25.7	233° 28.8 13° 18.4	248° 01.0 13° 11.2	262° 33.3 13° 03.8	+32.0 -7.1	15.0 54.9
Вт 23	120° 43.4 11° 08.1	135° 16.4 11° 00.0	149° 49.5 10° 51.9	164° 22.7 10° 43.7	178° 55.8 10° 35.5	193° 29.1 10° 27.2	208° 02.3 10° 18.9	222° 35.6 10° 10.6	237° 09.0 10° 02.2	251° 42.3 9° 53.8	266° 15.8 9° 45.4	+33.2 -8.3	14.9 54.5
◑ Ср 24	124° 41.3 7° 34.6	139° 15.3 7° 25.6	153° 49.3 7° 16.6	168° 23.3 7° 07.6	182° 57.3 6° 58.6	197° 31.4 6° 49.5	212° 05.4 6° 40.4	226° 39.5 6° 31.3	241° 13.7 6° 22.1	255° 47.8 6° 13.0	270° 22.0 6° 03.8	+34.1 -9.1	14.8 54.2
Чт 25	128° 56.6 3° 43.4	143° 31.1 3° 33.9	158° 05.5 3° 24.3	172° 39.9 3° 14.8	187° 14.3 3° 05.3	201° 48.8 2° 55.7	216° 23.2 2° 46.1	230° 57.7 2° 36.6	245° 32.1 2° 27.0	260° 06.6 2° 17.4	274° 41.0 2° 07.8	+34.4 -9.6	14.8 54.2
Пт 26	133° 17.7 -0° 17.4	147° 52.1 -0° 27.1	162° 26.4 -0° 36.8	177° 00.8 -0° 46.5	191° 35.2 -0° 56.2	206° 09.5 -1° 06.0	220° 43.8 -1° 15.7	235° 18.1 -1° 25.4	249° 52.4 -1° 35.1	264° 26.7 -1° 44.8	279° 01.0 -1° 54.5	+34.3 -9.7	14.8 54.3
Сб 27	137° 32.3 -4° 19.4	152° 06.2 -4° 29.0	166° 40.0 -4° 38.6	181° 13.9 -4° 48.2	195° 47.6 -4° 57.7	210° 21.4 -5° 07.3	224° 55.1 -5° 16.8	239° 28.8 -5° 26.3	254° 02.5 -5° 35.8	268° 36.1 -5° 45.2	283° 09.7 -5° 54.7	+33.7 -9.5	14.9 54.6
Вс 28	141° 28.7 -8° 14.0	156° 01.6 -8° 23.0	170° 34.4 -8° 32.1	185° 07.3 -8° 41.1	199° 40.0 -8° 50.1	214° 12.8 -8° 59.1	228° 45.4 -9° 08.0	243° 18.1 -9° 16.9	257° 50.6 -9° 25.8	272° 23.2 -9° 34.6	286° 55.6 -9° 43.4	+32.7 -8.9	15.0 55.1
Пн 29	144° 56.0 -11° 50.6	159° 27.6 -11° 58.8	173° 59.1 -12° 06.8	188° 30.5 -12° 14.9	203° 01.9 -12° 22.9	217° 33.3 -12° 30.8	232° 04.5 -12° 38.7	246° 35.7 -12° 46.5	261° 06.8 -12° 54.3	275° 37.9 -13° 02.0	290° 08.9 -13° 09.7	+31.3 -7.9	15.2 55.7
Вт 30	147° 46.3 -14° 57.4	162° 16.3 -15° 04.0	176° 46.2 -15° 10.6	191° 16.0 -15° 17.1	205° 45.8 -15° 23.6	220° 15.5 -15° 29.9	234° 45.1 -15° 36.2	249° 14.7 -15° 42.5	263° 44.2 -15° 48.6	278° 13.6 -15° 54.7	292° 43.0 -16° 00.7	+29.7 -6.3	15.4 56.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 3 05h44 — Первая четв.: 10 11h33 — Полнолуние: 17 06h42 — Последняя четв.: 24 22h47

СОЛНЦЕ

Декабрь 2032

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	182° 45.0 -21° 50.7	197° 44.8 -21° 51.1	212° 44.5 -21° 51.5	227° 44.3 -21° 51.8	242° 44.1 -21° 52.2	257° 43.8 -21° 52.6	92° 40.7 -21° 57.5	107° 40.5 -21° 57.8	122° 40.2 -21° 58.2	137° 40.0 -21° 58.6	152° 39.8 -21° 58.9	167° 39.5 -21° 59.3	-0.2 -0.4
Чт 2	182° 39.3 -21° 59.7	197° 39.0 -22° 00.0	212° 38.8 -22° 00.4	227° 38.5 -22° 00.8	242° 38.3 -22° 01.1	257° 38.1 -22° 01.5	92° 34.9 -22° 06.1	107° 34.6 -22° 06.5	122° 34.4 -22° 06.8	137° 34.1 -22° 07.2	152° 33.9 -22° 07.5	167° 33.6 -22° 07.9	-0.2 -0.4
Пт 3	182° 33.4 -22° 08.2	197° 33.1 -22° 08.6	212° 32.9 -22° 08.9	227° 32.6 -22° 09.3	242° 32.4 -22° 09.6	257° 32.1 -22° 10.0	92° 28.9 -22° 14.4	107° 28.6 -22° 14.7	122° 28.4 -22° 15.0	137° 28.1 -22° 15.4	152° 27.9 -22° 15.7	167° 27.6 -22° 16.0	-0.2 -0.3
Сб 4	182° 27.4 -22° 16.4	197° 27.1 -22° 16.7	212° 26.8 -22° 17.0	227° 26.6 -22° 17.4	242° 26.3 -22° 17.7	257° 26.1 -22° 18.0	92° 22.7 -22° 22.2	107° 22.5 -22° 22.5	122° 22.2 -22° 22.8	137° 22.0 -22° 23.1	152° 21.7 -22° 23.4	167° 21.4 -22° 23.8	-0.3 -0.3
Вс 5	182° 21.2 -22° 24.1	197° 20.9 -22° 24.4	212° 20.7 -22° 24.7	227° 20.4 -22° 25.0	242° 20.1 -22° 25.3	257° 19.9 -22° 25.6	92° 16.5 -22° 29.6	107° 16.2 -22° 29.9	122° 15.9 -22° 30.2	137° 15.7 -22° 30.5	152° 15.4 -22° 30.8	167° 15.1 -22° 31.0	-0.3 -0.3
Пн 6	182° 14.9 -22° 31.3	197° 14.6 -22° 31.6	212° 14.3 -22° 31.9	227° 14.1 -22° 32.2	242° 13.8 -22° 32.5	257° 13.5 -22° 32.8	92° 10.1 -22° 36.5	107° 09.8 -22° 36.8	122° 09.5 -22° 37.1	137° 09.2 -22° 37.3	152° 09.0 -22° 37.6	167° 08.7 -22° 37.9	-0.3 -0.3
Вт 7	182° 08.4 -22° 38.2	197° 08.2 -22° 38.4	212° 07.9 -22° 38.7	227° 07.6 -22° 39.0	242° 07.4 -22° 39.3	257° 07.1 -22° 39.5	92° 03.5 -22° 43.0	107° 03.3 -22° 43.3	122° 03.0 -22° 43.5	137° 02.7 -22° 43.8	152° 02.4 -22° 44.0	167° 02.2 -22° 44.3	-0.3 -0.3
Ср 8	182° 01.9 -22° 44.6	197° 01.6 -22° 44.8	212° 01.3 -22° 45.1	227° 01.1 -22° 45.3	242° 00.8 -22° 45.6	257° 00.5 -22° 45.8	91° 56.9 -22° 49.0	106° 56.6 -22° 49.3	121° 56.3 -22° 49.5	136° 56.1 -22° 49.8	151° 55.8 -22° 50.0	166° 55.5 -22° 50.3	-0.3 -0.3
Чт 9	181° 55.2 -22° 50.5	196° 54.9 -22° 50.7	211° 54.7 -22° 51.0	226° 54.4 -22° 51.2	241° 54.1 -22° 51.4	256° 53.8 -22° 51.7	91° 50.2 -22° 54.6	106° 49.9 -22° 54.9	121° 49.6 -22° 55.1	136° 49.3 -22° 55.3	151° 49.0 -22° 55.5	166° 48.7 -22° 55.8	-0.3 -0.2
Пт 10	181° 48.5 -22° 56.0	196° 48.2 -22° 56.2	211° 47.9 -22° 56.4	226° 47.6 -22° 56.6	241° 47.3 -22° 56.8	256° 47.0 -22° 57.1	91° 43.3 -22° 59.8	106° 43.0 -23° 00.0	121° 42.7 -23° 00.2	136° 42.5 -23° 00.4	151° 42.2 -23° 00.6	166° 41.9 -23° 00.8	-0.3 -0.2
Сб 11	181° 41.6 -23° 01.0	196° 41.3 -23° 01.2	211° 41.0 -23° 01.4	226° 40.7 -23° 01.6	241° 40.4 -23° 01.8	256° 40.2 -23° 02.0	91° 36.4 -23° 04.5	106° 36.1 -23° 04.7	121° 35.8 -23° 04.9	136° 35.5 -23° 05.0	151° 35.2 -23° 05.2	166° 34.9 -23° 05.4	-0.3 -0.2
Вс 12	181° 34.6 -23° 05.6	196° 34.3 -23° 05.8	211° 34.1 -23° 05.9	226° 33.8 -23° 06.1	241° 33.5 -23° 06.3	256° 33.2 -23° 06.5	91° 29.4 -23° 08.7	106° 29.1 -23° 08.9	121° 28.8 -23° 09.1	136° 28.5 -23° 09.2	151° 28.2 -23° 09.4	166° 27.9 -23° 09.5	-0.3 -0.2
Пн 13	181° 27.6 -23° 09.7	196° 27.3 -23° 09.9	211° 27.0 -23° 10.0	226° 26.7 -23° 10.2	241° 26.4 -23° 10.4	256° 26.1 -23° 10.5	91° 22.3 -23° 12.5	106° 22.0 -23° 12.6	121° 21.7 -23° 12.8	136° 21.4 -23° 12.9	151° 21.1 -23° 13.1	166° 20.8 -23° 13.2	-0.3 -0.2
Вт 14	181° 20.5 -23° 13.4	196° 20.2 -23° 13.5	211° 19.9 -23° 13.7	226° 19.6 -23° 13.8	241° 19.3 -23° 13.9	256° 19.0 -23° 14.1	91° 15.1 -23° 15.8	106° 14.8 -23° 15.9	121° 14.5 -23° 16.1	136° 14.2 -23° 16.2	151° 13.9 -23° 16.3	166° 13.6 -23° 16.4	-0.3 -0.1
Ср 15	181° 13.3 -23° 16.6	196° 13.0 -23° 16.7	211° 12.7 -23° 16.8	226° 12.4 -23° 16.9	241° 12.1 -23° 17.1	256° 11.8 -23° 17.2	91° 07.9 -23° 18.7	106° 07.6 -23° 18.8	121° 07.3 -23° 18.9	136° 07.0 -23° 19.0	151° 06.7 -23° 19.1	166° 06.4 -23° 19.2	-0.3 -0.1
Чт 16	181° 06.1 -23° 19.3	196° 05.8 -23° 19.4	211° 05.5 -23° 19.5	226° 05.2 -23° 19.6	241° 04.9 -23° 19.7	256° 04.6 -23° 19.8	91° 00.6 -23° 21.0	106° 00.3 -23° 21.1	121° 00.0 -23° 21.2	135° 59.7 -23° 21.3	150° 59.4 -23° 21.4	165° 59.1 -23° 21.5	-0.3 -0.1
Пт 17	180° 58.8 -23° 21.6	195° 58.5 -23° 21.6	210° 58.2 -23° 21.7	225° 57.9 -23° 21.8	240° 57.6 -23° 21.9	255° 57.3 -23° 22.0	90° 53.3 -23° 23.0	105° 53.0 -23° 23.0	120° 52.7 -23° 23.1	135° 52.4 -23° 23.2	150° 52.1 -23° 23.2	165° 51.8 -23° 23.3	-0.3 -0.1
Сб 18	180° 51.5 -23° 23.4	195° 51.2 -23° 23.4	210° 50.9 -23° 23.5	225° 50.5 -23° 23.6	240° 50.2 -23° 23.6	255° 49.9 -23° 23.7	90° 45.9 -23° 24.4	105° 45.6 -23° 24.5	120° 45.3 -23° 24.5	135° 45.0 -23° 24.6	150° 44.7 -23° 24.6	165° 44.4 -23° 24.6	-0.3 -0.1
Вс 19	180° 44.1 -23° 24.7	195° 43.8 -23° 24.7	210° 43.5 -23° 24.8	225° 43.2 -23° 24.8	240° 42.9 -23° 24.9	255° 42.6 -23° 24.9	90° 38.5 -23° 25.4	105° 38.2 -23° 25.4	120° 37.9 -23° 25.4	135° 37.6 -23° 25.5	150° 37.3 -23° 25.5	165° 37.0 -23° 25.5	-0.3 -0.0
Пн 20	180° 36.7 -23° 25.6	195° 36.4 -23° 25.6	210° 36.1 -23° 25.6	225° 35.8 -23° 25.6	240° 35.5 -23° 25.7	255° 35.1 -23° 25.7	90° 31.1 -23° 25.9	105° 30.8 -23° 25.9	120° 30.5 -23° 25.9	135° 30.2 -23° 25.9	150° 29.9 -23° 25.9	165° 29.6 -23° 25.9	-0.3 -0.0
Вт 21	180° 29.3 -23° 25.9	195° 28.9 -23° 25.9	210° 28.6 -23° 26.0	225° 28.3 -23° 26.0	240° 28.0 -23° 26.0	255° 27.7 -23° 26.0	90° 23.7 -23° 25.9	105° 23.4 -23° 25.9	120° 23.1 -23° 25.9	135° 22.7 -23° 25.9	150° 22.4 -23° 25.9	165° 22.1 -23° 25.9	-0.3 -0.0
Ср 22	180° 21.8 -23° 25.9	195° 21.5 -23° 25.8	210° 21.2 -23° 25.8	225° 20.9 -23° 25.8	240° 20.6 -23° 25.8	255° 20.3 -23° 25.8	90° 16.2 -23° 25.5	105° 15.9 -23° 25.5	120° 15.6 -23° 25.4	135° 15.3 -23° 25.4	150° 15.0 -23° 25.4	165° 14.7 -23° 25.3	-0.3 +0.0
Чт 23	180° 14.4 -23° 25.3	195° 14.1 -23° 25.3	210° 13.7 -23° 25.2	225° 13.4 -23° 25.2	240° 13.1 -23° 25.2	255° 12.8 -23° 25.1	90° 08.8 -23° 24.6	105° 08.5 -23° 24.5	120° 08.2 -23° 24.5	135° 07.8 -23° 24.4	150° 07.5 -23° 24.4	165° 07.2 -23° 24.3	-0.3 +0.0
Пт 24	180° 06.9 -23° 24.3	195° 06.6 -23° 24.2	210° 06.3 -23° 24.2	225° 06.0 -23° 24.1	240° 05.7 -23° 24.1	255° 05.4 -23° 24.0	90° 01.3 -23° 23.2	105° 01.0 -23° 23.1	120° 00.7 -23° 23.1	135° 00.4 -23° 23.0	150° 00.1 -23° 22.9	164° 59.8 -23° 22.9	-0.3 +0.1
Сб 25	179° 59.5 -23° 22.8	194° 59.2 -23° 22.7	209° 58.9 -23° 22.7	224° 58.5 -23° 22.6	239° 58.2 -23° 22.5	254° 57.9 -23° 22.4	89° 53.9 -23° 21.4	104° 53.6 -23° 21.3	119° 53.3 -23° 21.2	134° 53.0 -23° 21.1	149° 52.7 -23° 21.0	164° 52.4 -23° 20.9	-0.3 +0.1
Вс 26	179° 52.0 -23° 20.8	194° 51.7 -23° 20.7	209° 51.4 -23° 20.6	224° 51.1 -23° 20.6	239° 50.8 -23° 20.5	254° 50.5 -23° 20.4	89° 46.5 -23° 19.1	104° 46.2 -23° 18.9	119° 45.9 -23° 18.8	134° 45.6 -23° 18.7	149° 45.3 -23° 18.6	164° 45.0 -23° 18.5	-0.3 +0.1
Пн 27	179° 44.7 -23° 18.4	194° 44.3 -23° 18.3	209° 44.0 -23° 18.2	224° 43.7 -23° 18.1	239° 43.4 -23° 17.9	254° 43.1 -23° 17.8	89° 39.1 -23° 16.3	104° 38.8 -23° 16.1	119° 38.5 -23° 16.0	134° 38.2 -23° 15.9	149° 37.9 -23° 15.8	164° 37.6 -23° 15.6	-0.3 +0.1
Вт 28	179° 37.3 -23° 15.5	194° 37.0 -23° 15.4	209° 36.7 -23° 15.2	224° 36.4 -23° 15.1	239° 36.1 -23° 15.0	254° 35.8 -23° 14.8	89° 31.8 -23° 13.0	104° 31.5 -23° 12.9	119° 31.2 -23° 12.7	134° 30.9 -23° 12.6	149° 30.6 -23° 12.4	164° 30.3 -23° 12.3	-0.3 +0.1
Ср 29	179° 30.0 -23° 12.1	194° 29.7 -23° 12.0	209° 29.4 -23° 11.8	224° 29.1 -23° 11.7	239° 28.8 -23° 11.5	254° 28.4 -23° 11.4	89° 24.5 -23° 09.3	104° 24.2 -23° 09.1	119° 23.9 -23° 09.0	134° 23.6 -23° 08.8	149° 23.3 -23° 08.6	164° 23.0 -23° 08.5	-0.3 +0.2
Чт 30	179° 22.7 -23° 08.3	194° 22.4 -23° 08.1	209° 22.1 -23° 08.0	224° 21.8 -23° 07.8	239° 21.5 -23° 07.6	254° 21.2 -23° 07.4	89° 17.3 -23° 05.1	104° 17.0 -23° 04.9	119° 16.7 -23° 04.8	134° 16.4 -23° 04.6	149° 16.1 -23° 04.4	164° 15.8 -23° 04.2	-0.3 +0.2
Пт 31	179° 15.5 -23° 04.0	194° 15.2 -23° 03.8	209° 14.9 -23° 03.6	224° 14.6 -23° 03.4	239° 14.3 -23° 03.2	254° 14.0 -23° 03.0	89° 10.1 -23° 00.5	104° 09.8 -23° 00.3	119° 09.5 -23° 00.1	134° 09.2 -22° 59.9	149° 08.9 -22° 59.7	164° 08.6 -22° 59.5	-0.3 +0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Декабрь 2032

Д	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	Δ'/h	R/p
Ср 1	63° 04.4	77° 33.1	92° 01.8	106° 30.4	120° 58.9	135° 27.4	149° 55.8	164° 24.2	178° 52.5	193° 20.7	207° 48.9	+28.4	15.5
	-16° 51.0	-16° 56.1	-17° 01.2	-17° 06.2	-17° 11.1	-17° 15.9	-17° 20.7	-17° 25.3	-17° 29.8	-17° 34.3	-17° 38.6	-4.8	56.8
● Чт 2	64° 44.5	79° 11.8	93° 39.1	108° 06.2	122° 33.4	137° 00.5	151° 27.5	165° 54.5	180° 21.5	194° 48.4	209° 15.3	+27.1	15.7
	-18° 32.2	-18° 34.9	-18° 37.6	-18° 40.1	-18° 42.5	-18° 44.8	-18° 47.1	-18° 49.2	-18° 51.2	-18° 53.0	-18° 54.8	-2.3	57.4
Пт 3	65° 54.0	80° 20.3	94° 46.6	109° 12.9	123° 39.1	138° 05.4	152° 31.6	166° 57.8	181° 24.0	195° 50.1	210° 16.3	+26.2	15.8
	-19° 07.8	-19° 07.7	-19° 07.5	-19° 07.2	-19° 06.8	-19° 06.3	-19° 05.7	-19° 04.9	-19° 04.0	-19° 03.0	-19° 01.9	+0.6	58.0
Сб 4	66° 47.3	81° 13.3	95° 39.4	110° 05.4	124° 31.5	138° 57.5	153° 23.6	167° 49.7	182° 15.8	196° 41.9	211° 08.0	+26.1	15.9
	-18° 30.8	-18° 27.7	-18° 24.6	-18° 21.4	-18° 18.0	-18° 14.5	-18° 10.9	-18° 07.2	-18° 03.3	-17° 59.4	-17° 55.3	+3.5	58.5
Вс 5	67° 41.3	82° 07.7	96° 34.1	111° 00.6	125° 27.0	139° 53.5	154° 20.0	168° 46.6	183° 13.1	197° 39.7	212° 06.4	+26.5	16.0
	-16° 40.9	-16° 35.1	-16° 29.2	-16° 23.1	-16° 17.0	-16° 10.8	-16° 04.4	-15° 58.0	-15° 51.4	-15° 44.8	-15° 38.0	+6.3	58.8
Пн 6	68° 49.6	83° 16.7	97° 43.9	112° 11.1	126° 38.4	141° 05.7	155° 33.0	170° 00.4	184° 27.8	198° 55.2	213° 22.7	+27.3	16.1
	-13° 45.4	-13° 37.2	-13° 28.9	-13° 20.5	-13° 12.0	-13° 03.5	-12° 54.8	-12° 46.1	-12° 37.3	-12° 28.5	-12° 19.5	+8.6	59.0
Вт 7	70° 18.9	84° 46.9	99° 15.0	113° 43.1	128° 11.2	142° 39.3	157° 07.5	171° 35.7	186° 04.0	200° 32.2	215° 00.6	+28.2	16.1
	-9° 56.9	-9° 46.9	-9° 36.8	-9° 26.7	-9° 16.5	-9° 06.3	-8° 56.0	-8° 45.6	-8° 35.2	-8° 24.8	-8° 14.3	+10.3	59.2
Ср 8	72° 08.5	86° 37.2	101° 06.0	115° 34.8	130° 03.6	144° 32.4	159° 01.2	173° 30.1	187° 58.9	202° 27.8	216° 56.7	+28.8	16.1
	-5° 31.6	-5° 20.5	-5° 09.3	-4° 58.1	-4° 46.9	-4° 35.6	-4° 24.4	-4° 13.1	-4° 01.7	-3° 50.4	-3° 39.0	+11.3	59.2
◐ Чт 9	74° 12.0	88° 41.1	103° 10.2	117° 39.3	132° 08.4	146° 37.5	161° 06.6	175° 35.8	190° 04.9	204° 34.0	219° 03.2	+29.1	16.1
	-0° 46.8	-0° 35.2	-0° 23.7	-0° 12.1	-0° 00.6	0° 11.0	0° 22.5	0° 34.1	0° 45.6	0° 57.2	1° 08.7	+11.6	59.1
Пт 10	88° 41.1	103° 10.2	117° 39.3	132° 08.4	146° 37.5	161° 06.6	175° 35.8	190° 04.9	204° 34.0	219° 03.2	233° 32.3	+29.1	16.1
	-0° 35.2	-0° 23.7	-0° 12.1	-0° 00.6	0° 11.0	0° 22.5	0° 34.1	0° 45.6	0° 57.2	1° 08.7	1° 20.2	+11.5	59.1
Сб 11	90° 48.8	105° 17.9	119° 46.9	134° 15.9	148° 44.9	163° 13.9	177° 42.9	192° 11.9	206° 40.9	221° 09.8	235° 38.7	+29.0	16.1
	4° 11.3	4° 22.5	4° 33.7	4° 44.9	4° 56.1	5° 07.2	5° 18.3	5° 29.4	5° 40.4	5° 51.4	6° 02.4	+11.1	59.0
Вс 12	92° 50.7	107° 19.3	121° 47.9	136° 16.5	150° 45.1	165° 13.6	179° 42.1	194° 10.6	208° 39.1	223° 07.5	237° 36.0	+28.5	16.0
	8° 41.8	8° 52.1	9° 02.3	9° 12.4	9° 22.5	9° 32.5	9° 42.5	9° 52.4	10° 02.3	10° 12.1	10° 21.8	+10.0	58.7
Пн 13	94° 39.3	109° 07.3	123° 35.3	138° 03.2	152° 31.1	166° 59.1	181° 26.9	195° 54.8	210° 22.6	224° 50.4	239° 18.2	+27.9	15.9
	12° 39.8	12° 48.4	12° 56.9	13° 05.4	13° 13.8	13° 22.1	13° 30.3	13° 38.4	13° 46.5	13° 54.5	14° 02.4	+8.3	58.4
Вт 14	96° 12.1	110° 39.5	125° 06.9	139° 34.3	154° 01.7	168° 29.0	182° 56.3	197° 23.7	211° 50.9	226° 18.2	240° 45.5	+27.3	15.8
	15° 50.0	15° 56.4	16° 02.7	16° 09.0	16° 15.1	16° 21.1	16° 27.1	16° 32.9	16° 38.7	16° 44.3	16° 49.8	+6.0	58.0
Ср 15	97° 33.1	112° 00.2	126° 27.3	140° 54.5	155° 21.6	169° 48.7	184° 15.8	198° 42.9	213° 10.0	227° 37.2	242° 04.3	+27.1	15.7
	18° 00.2	18° 04.0	18° 07.8	18° 11.4	18° 14.9	18° 18.3	18° 21.6	18° 24.7	18° 27.8	18° 30.8	18° 33.6	+3.3	57.6
○ Чт 16	98° 52.3	113° 19.6	127° 47.0	142° 14.4	156° 41.7	171° 09.1	185° 36.6	200° 04.0	214° 31.5	228° 59.0	243° 26.6	+27.4	15.5
	19° 02.9	19° 03.9	19° 04.9	19° 05.7	19° 06.4	19° 07.0	19° 07.5	19° 07.9	19° 08.2	19° 08.4	19° 08.5	+0.6	57.0
Пт 17	100° 23.4	114° 51.5	129° 19.7	143° 47.8	158° 16.0	172° 44.3	187° 12.6	201° 40.9	216° 09.3	230° 37.8	245° 06.3	+28.3	15.4
	18° 56.5	18° 54.8	18° 53.1	18° 51.2	18° 49.2	18° 47.2	18° 45.0	18° 42.8	18° 40.4	18° 37.9	18° 35.4	-2.1	56.4
Сб 18	102° 19.5	116° 48.8	131° 18.2	145° 47.6	160° 17.0	174° 46.6	189° 16.1	203° 45.8	218° 15.5	232° 45.2	247° 15.0	+29.6	15.2
	17° 45.5	17° 41.4	17° 37.3	17° 33.0	17° 28.7	17° 24.3	17° 19.8	17° 15.2	17° 10.6	17° 05.8	17° 01.0	-4.5	55.8
Вс 19	104° 49.2	119° 19.9	133° 50.7	148° 21.6	162° 52.5	177° 23.5	191° 54.5	206° 25.6	220° 56.7	235° 27.9	249° 59.2	+31.0	15.1
	15° 39.1	15° 33.0	15° 26.9	15° 20.7	15° 14.4	15° 08.1	15° 01.7	14° 55.3	14° 48.7	14° 42.1	14° 35.5	-6.4	55.3
Пн 20	107° 54.9	122° 27.1	136° 59.3	151° 31.5	166° 03.8	180° 36.2	195° 08.6	209° 41.1	224° 13.6	238° 46.2	253° 18.8	+32.4	14.9
	12° 48.5	12° 41.0	12° 33.3	12° 25.7	12° 17.9	12° 10.2	12° 02.3	11° 54.5	11° 46.6	11° 38.6	11° 30.6	-7.8	54.8
Вт 21	111° 33.5	126° 06.9	140° 40.2	155° 13.6	169° 47.1	184° 20.6	198° 54.1	213° 27.7	228° 01.3	242° 34.9	257° 08.6	+33.5	14.8
	9° 25.5	9° 16.8	9° 08.2	8° 59.4	8° 50.7	8° 41.9	8° 33.1	8° 24.3	8° 15.4	8° 06.5	7° 57.6	-8.8	54.4
Ср 22	115° 37.4	130° 11.6	144° 45.7	159° 19.9	173° 54.1	188° 28.4	203° 02.6	217° 36.9	232° 11.2	246° 45.5	261° 19.8	+34.2	14.8
	5° 40.6	5° 31.3	5° 21.9	5° 12.6	5° 03.2	4° 53.8	4° 44.4	4° 35.0	4° 25.6	4° 16.1	4° 06.6	-9.4	54.2
Чт 23	119° 56.4	134° 30.9	149° 05.4	163° 40.0	178° 14.5	192° 49.0	207° 23.5	221° 58.1	236° 32.6	251° 07.1	265° 41.6	+34.5	14.8
	1° 43.2	1° 33.6	1° 23.9	1° 14.3	1° 04.6	0° 55.0	0° 45.3	0° 35.7	0° 26.0	0° 16.3	0° 06.7	-9.7	54.2
◑ Пт 24	124° 18.8	138° 53.2	153° 27.5	168° 01.9	182° 36.2	197° 10.6	211° 44.9	226° 19.1	240° 53.4	255° 27.7	270° 01.9	+34.3	14.8
	-2° 18.2	-2° 27.8	-2° 37.5	-2° 47.1	-2° 56.7	-3° 06.3	-3° 15.9	-3° 25.4	-3° 35.0	-3° 44.6	-3° 54.1	-9.6	54.3
Сб 25	128° 32.1	143° 05.9	157° 39.6	172° 13.3	186° 47.0	201° 20.6	215° 54.2	230° 27.8	245° 01.3	259° 34.8	274° 08.2	+33.6	14.9
	-6° 15.5	-6° 24.8	-6° 34.1	-6° 43.3	-6° 52.6	-7° 01.8	-7° 10.9	-7° 20.1	-7° 29.2	-7° 38.3	-7° 47.4	-9.2	54.6
Вс 26	132° 24.2	146° 56.9	161° 29.5	176° 02.1	190° 34.6	205° 07.1	219° 39.5	234° 11.8	248° 44.1	263° 16.4	277° 48.6	+32.4	15.0
	-10° 00.1	-10° 08.6	-10° 17.2	-10° 25.7	-10° 34.1	-10° 42.6	-10° 51.0	-10° 59.3	-11° 07.6	-11° 15.8	-11° 24.1	-8.4	55.1
Пн 27	135° 43.9	150° 15.0	164° 46.2	179° 17.2	193° 48.2	208° 19.1	222° 49.9	237° 20.7	251° 51.4	266° 22.0	280° 52.6	+30.9	15.2
	-13° 21.7	-13° 29.1	-13° 36.5	-13° 43.8	-13° 51.0	-13° 58.2	-14° 05.4	-14° 12.5	-14° 19.5	-14° 26.4	-14° 33.3	-7.2	55.8
Вт 28	138° 22.4	152° 51.9	167° 21.2	181° 50.5	196° 19.7	210° 48.8	225° 17.9	239° 46.8	254° 15.7	268° 44.6	283° 13.3	+29.1	15.4
	-16° 08.5	-16° 14.2	-16° 19.9	-16° 25.5	-16° 31.0	-16° 36.5	-16° 41.8	-16° 47.1	-16° 52.3	-16° 57.4	-17° 02.4	-5.4	56.6
Ср 29	140° 16.3	154° 44.0	169° 11.5	183° 39.0	198° 06.5	212° 33.9	227° 01.2	241° 28.5	255° 55.6	270° 22.8	284° 49.9	+27.4	15.7
	-18° 07.0	-18° 10.5	-18° 13.9	-18° 17.3	-18° 20.5	-18° 23.7	-18° 26.7	-18° 29.6	-18° 32.4	-18° 35.2	-18° 37.8	-3.1	57.4
Чт 30	141° 29.0	155° 55.2	170° 21.4	184° 47.5	199° 13.5	213° 39.5	228° 05.5	242° 31.4	256° 57.3	271° 23.2	285° 49.0	+26.0	15.9
	-19° 03.7	-19° 04.5	-19° 05.2	-19° 05.8	-19° 06.3	-19° 06.6	-19° 06.9	-19° 07.0	-19° 07.0	-19° 06.8	-19° 06.6	-0.3	58.2
Пт 31	142° 12.3	156° 37.7	171° 03.0	185° 28.4	199° 53.7	214° 19.0	228° 44.3	243° 09.5	257° 34.8	272° 00.0	286° 25.3	+25.3	16.1
	-18° 48.2	-18° 46.0	-18° 43.6	-18° 41.2	-18° 38.6	-18° 35.9	-18° 33.0	-18° 30.1	-18° 27.0	-18° 23.8	-18° 20.5	+2.8	58.9

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 2 20h52 — Первая четв.: 9 19h08 — Полнолуние: 16 20h49 — Последняя четв.: 24 20h39

СОЛНЦЕ

Январь 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	179° 08.4	194° 08.1	209° 07.8	224° 07.5	239° 07.2	254° 06.9	89° 03.1	104° 02.8	119° 02.5	134° 02.2	149° 01.9	164° 01.6	-0.3
	-22° 59.2	-22° 59.0	-22° 58.8	-22° 58.6	-22° 58.4	-22° 58.2	-22° 55.4	-22° 55.2	-22° 54.9	-22° 54.7	-22° 54.5	-22° 54.3	+0.2
Вс 2	179° 01.3	194° 01.0	209° 00.7	224° 00.4	239° 00.1	253° 59.8	88° 56.1	103° 55.8	118° 55.5	133° 55.2	148° 54.9	163° 54.6	-0.3
	-22° 54.0	-22° 53.8	-22° 53.6	-22° 53.3	-22° 53.1	-22° 52.9	-22° 49.8	-22° 49.6	-22° 49.3	-22° 49.1	-22° 48.9	-22° 48.6	+0.2
Пн 3	178° 54.3	193° 54.0	208° 53.7	223° 53.5	238° 53.2	253° 52.9	88° 49.2	103° 48.9	118° 48.6	133° 48.3	148° 48.0	163° 47.7	-0.3
	-22° 48.4	-22° 48.1	-22° 47.9	-22° 47.6	-22° 47.4	-22° 47.1	-22° 43.8	-22° 43.6	-22° 43.3	-22° 43.0	-22° 42.8	-22° 42.5	+0.2
Вт 4	178° 47.5	193° 47.2	208° 46.9	223° 46.6	238° 46.3	253° 46.0	88° 42.4	103° 42.1	118° 41.8	133° 41.5	148° 41.2	163° 41.0	-0.3
	-22° 42.2	-22° 42.0	-22° 41.7	-22° 41.4	-22° 41.2	-22° 40.9	-22° 37.3	-22° 37.1	-22° 36.8	-22° 36.5	-22° 36.2	-22° 35.9	+0.3
Ср 5	178° 40.7	193° 40.4	208° 40.1	223° 39.8	238° 39.6	253° 39.3	88° 35.7	103° 35.4	118° 35.1	133° 34.9	148° 34.6	163° 34.3	-0.3
	-22° 35.7	-22° 35.4	-22° 35.1	-22° 34.8	-22° 34.5	-22° 34.2	-22° 30.4	-22° 30.1	-22° 29.8	-22° 29.5	-22° 29.2	-22° 28.9	+0.3
Чт 6	178° 34.0	193° 33.8	208° 33.5	223° 33.2	238° 32.9	253° 32.7	88° 29.1	103° 28.8	118° 28.6	133° 28.3	148° 28.0	163° 27.8	-0.3
	-22° 28.6	-22° 28.3	-22° 28.0	-22° 27.7	-22° 27.4	-22° 27.1	-22° 23.1	-22° 22.8	-22° 22.5	-22° 22.1	-22° 21.8	-22° 21.5	+0.3
Пт 7	178° 27.5	193° 27.2	208° 27.0	223° 26.7	238° 26.4	253° 26.2	88° 22.7	103° 22.4	118° 22.2	133° 21.9	148° 21.6	163° 21.4	-0.3
	-22° 21.2	-22° 20.9	-22° 20.5	-22° 20.2	-22° 19.9	-22° 19.6	-22° 15.3	-22° 15.0	-22° 14.6	-22° 14.3	-22° 14.0	-22° 13.6	+0.3
Сб 8	178° 21.1	193° 20.8	208° 20.6	223° 20.3	238° 20.0	253° 19.8	88° 16.4	103° 16.1	118° 15.9	133° 15.6	148° 15.3	163° 15.1	-0.3
	-22° 13.3	-22° 12.9	-22° 12.6	-22° 12.3	-22° 11.9	-22° 11.6	-22° 07.1	-22° 06.7	-22° 06.4	-22° 06.0	-22° 05.7	-22° 05.3	+0.3
Вс 9	178° 14.8	193° 14.6	208° 14.3	223° 14.0	238° 13.8	253° 13.5	88° 10.2	103° 10.0	118° 09.7	133° 09.5	148° 09.2	163° 08.9	-0.3
	-22° 04.9	-22° 04.6	-22° 04.2	-22° 03.9	-22° 03.5	-22° 03.2	-21° 58.4	-21° 58.0	-21° 57.7	-21° 57.3	-21° 56.9	-21° 56.5	+0.4
Пн 10	178° 08.7	193° 08.4	208° 08.2	223° 07.9	238° 07.7	253° 07.4	88° 04.2	103° 03.9	118° 03.7	133° 03.5	148° 03.2	163° 03.0	-0.3
	-21° 56.2	-21° 55.8	-21° 55.4	-21° 55.0	-21° 54.7	-21° 54.3	-21° 49.3	-21° 48.9	-21° 48.5	-21° 48.1	-21° 47.8	-21° 47.4	+0.4
Вт 11	178° 02.7	193° 02.5	208° 02.2	223° 02.0	238° 01.7	253° 01.5	87° 58.3	102° 58.1	117° 57.8	132° 57.6	147° 57.4	162° 57.1	-0.2
	-21° 47.0	-21° 46.6	-21° 46.2	-21° 45.8	-21° 45.4	-21° 45.0	-21° 39.8	-21° 39.4	-21° 39.0	-21° 38.6	-21° 38.2	-21° 37.8	+0.4
Ср 12	177° 56.9	192° 56.6	207° 56.4	222° 56.2	237° 55.9	252° 55.7	87° 52.6	102° 52.4	117° 52.1	132° 51.9	147° 51.7	162° 51.4	-0.2
	-21° 37.4	-21° 36.9	-21° 36.5	-21° 36.1	-21° 35.7	-21° 35.3	-21° 29.9	-21° 29.4	-21° 29.0	-21° 28.6	-21° 28.2	-21° 27.7	+0.4
Чт 13	177° 51.2	192° 51.0	207° 50.7	222° 50.5	237° 50.3	252° 50.0	87° 47.1	102° 46.8	117° 46.6	132° 46.4	147° 46.1	162° 45.9	-0.2
	-21° 27.3	-21° 26.9	-21° 26.5	-21° 26.0	-21° 25.6	-21° 25.2	-21° 19.5	-21° 19.1	-21° 18.6	-21° 18.2	-21° 17.8	-21° 17.3	+0.4
Пт 14	177° 45.7	192° 45.5	207° 45.2	222° 45.0	237° 44.8	252° 44.6	87° 41.7	102° 41.4	117° 41.2	132° 41.0	147° 40.8	162° 40.6	-0.2
	-21° 16.9	-21° 16.4	-21° 16.0	-21° 15.5	-21° 15.1	-21° 14.6	-21° 08.8	-21° 08.3	-21° 07.8	-21° 07.4	-21° 06.9	-21° 06.5	+0.4
Сб 15	177° 40.3	192° 40.1	207° 39.9	222° 39.7	237° 39.5	252° 39.3	87° 36.4	102° 36.2	117° 36.0	132° 35.8	147° 35.6	162° 35.4	-0.2
	-21° 06.0	-21° 05.5	-21° 05.1	-21° 04.6	-21° 04.2	-21° 03.7	-20° 57.6	-20° 57.1	-20° 56.6	-20° 56.2	-20° 55.7	-20° 55.2	+0.5
Вс 16	177° 35.2	192° 35.0	207° 34.7	222° 34.5	237° 34.3	252° 34.1	87° 31.4	102° 31.2	117° 31.0	132° 30.8	147° 30.6	162° 30.4	-0.2
	-20° 54.7	-20° 54.3	-20° 53.8	-20° 53.3	-20° 52.8	-20° 52.3	-20° 46.0	-20° 45.5	-20° 45.0	-20° 44.6	-20° 44.1	-20° 43.6	+0.5
Пн 17	177° 30.2	192° 30.0	207° 29.7	222° 29.5	237° 29.3	252° 29.1	87° 26.5	102° 26.3	117° 26.1	132° 25.9	147° 25.7	162° 25.5	-0.2
	-20° 43.1	-20° 42.6	-20° 42.1	-20° 41.6	-20° 41.1	-20° 40.6	-20° 34.1	-20° 33.6	-20° 33.1	-20° 32.5	-20° 32.0	-20° 31.5	+0.5
Вт 18	177° 25.3	192° 25.1	207° 24.9	222° 24.7	237° 24.5	252° 24.3	87° 21.8	102° 21.6	117° 21.4	132° 21.2	147° 21.0	162° 20.9	-0.2
	-20° 31.0	-20° 30.5	-20° 30.0	-20° 29.5	-20° 29.0	-20° 28.5	-20° 21.7	-20° 21.2	-20° 20.7	-20° 20.1	-20° 19.6	-20° 19.1	+0.5
Ср 19	177° 20.7	192° 20.5	207° 20.3	222° 20.1	237° 19.9	252° 19.7	87° 17.3	102° 17.1	117° 16.9	132° 16.7	147° 16.6	162° 16.4	-0.2
	-20° 18.6	-20° 18.0	-20° 17.5	-20° 17.0	-20° 16.5	-20° 15.9	-20° 09.0	-20° 08.4	-20° 07.9	-20° 07.4	-20° 06.8	-20° 06.3	+0.5
Чт 20	177° 16.2	192° 16.0	207° 15.8	222° 15.6	237° 15.5	252° 15.3	87° 13.0	102° 12.8	117° 12.6	132° 12.4	147° 12.2	162° 12.1	-0.2
	-20° 05.7	-20° 05.2	-20° 04.7	-20° 04.1	-20° 03.6	-20° 03.0	-19° 55.9	-19° 55.3	-19° 54.8	-19° 54.2	-19° 53.7	-19° 53.1	+0.5
Пт 21	177° 11.9	192° 11.7	207° 11.5	222° 11.4	237° 11.2	252° 11.0	87° 08.8	102° 08.6	117° 08.5	132° 08.3	147° 08.1	162° 08.0	-0.2
	-19° 52.5	-19° 52.0	-19° 51.4	-19° 50.9	-19° 50.3	-19° 49.7	-19° 42.4	-19° 41.8	-19° 41.2	-19° 40.7	-19° 40.1	-19° 39.5	+0.6
Сб 22	177° 07.8	192° 07.6	207° 07.5	222° 07.3	237° 07.1	252° 07.0	87° 04.8	102° 04.7	117° 04.5	132° 04.4	147° 04.2	162° 04.0	-0.2
	-19° 39.0	-19° 38.4	-19° 37.8	-19° 37.2	-19° 36.7	-19° 36.1	-19° 28.5	-19° 27.9	-19° 27.4	-19° 26.8	-19° 26.2	-19° 25.6	+0.6
Вс 23	177° 03.9	192° 03.7	207° 03.6	222° 03.4	237° 03.2	252° 03.1	87° 01.1	102° 00.9	117° 00.8	132° 00.6	147° 00.4	162° 00.3	-0.2
	-19° 25.0	-19° 24.4	-19° 23.8	-19° 23.2	-19° 22.7	-19° 22.1	-19° 14.3	-19° 13.7	-19° 13.1	-19° 12.5	-19° 11.9	-19° 11.3	+0.6
Пн 24	177° 00.1	192° 00.0	206° 59.8	221° 59.7	236° 59.5	251° 59.4	86° 57.5	101° 57.3	116° 57.2	131° 57.0	146° 56.9	161° 56.8	-0.2
	-19° 10.7	-19° 10.1	-19° 09.5	-19° 08.9	-19° 08.3	-19° 07.7	-18° 59.7	-18° 59.1	-18° 58.5	-18° 57.9	-18° 57.3	-18° 56.7	+0.6
Вт 25	176° 56.6	191° 56.5	206° 56.3	221° 56.2	236° 56.0	251° 55.9	86° 54.1	101° 53.9	116° 53.8	131° 53.7	146° 53.5	161° 53.4	-0.1
	-18° 56.0	-18° 55.4	-18° 54.8	-18° 54.2	-18° 53.6	-18° 52.9	-18° 44.8	-18° 44.2	-18° 43.6	-18° 42.9	-18° 42.3	-18° 41.7	+0.6
Ср 26	176° 53.3	191° 53.1	206° 53.0	221° 52.9	236° 52.7	251° 52.6	86° 50.9	101° 50.8	116° 50.6	131° 50.5	146° 50.4	161° 50.2	-0.1
	-18° 41.0	-18° 40.4	-18° 39.8	-18° 39.1	-18° 38.5	-18° 37.9	-18° 29.6	-18° 28.9	-18° 28.3	-18° 27.6	-18° 27.0	-18° 26.3	+0.6
Чт 27	176° 50.1	191° 50.0	206° 49.9	221° 49.7	236° 49.6	251° 49.5	86° 47.9	101° 47.8	116° 47.6	131° 47.5	146° 47.4	161° 47.3	-0.1
	-18° 25.7	-18° 25.0	-18° 24.4	-18° 23.8	-18° 23.1	-18° 22.5	-18° 14.0	-18° 13.3	-18° 12.6	-18° 12.0	-18° 11.3	-18° 10.7	+0.6
Пт 28	176° 47.2	191° 47.1	206° 46.9	221° 46.8	236° 46.7	251° 46.6	86° 45.1	101° 45.0	116° 44.9	131° 44.8	146° 44.6	161° 44.5	-0.1
	-18° 10.0	-18° 09.4	-18° 08.7	-18° 08.0	-18° 07.4	-18° 06.7	-17° 58.0	-17° 57.4	-17° 56.7	-17° 56.0	-17° 55.3	-17° 54.7	+0.7
Сб 29	176° 44.4	191° 44.3	206° 44.2	221° 44.1	236° 44.0	251° 43.9	86° 42.5	101° 42.4	116° 42.3	131° 42.2	146° 42.1	161° 42.0	-0.1
	-17° 54.0	-17° 53.3	-17° 52.7	-17° 52.0	-17° 51.3	-17° 50.6	-17° 41.8	-17° 41.1	-17° 40.4	-17° 39.7	-17° 39.0	-17° 38.4	+0.7
Вс 30	176° 41.9	191° 41.8	206° 41.7	221° 41.6	236° 41.5	251° 41.4	86° 40.1	101° 40.0	116° 39.9	131° 39.8	146° 39.7	161° 39.6	-0.1
	-17° 37.7	-17° 37.0	-17° 36.3	-17° 35.6	-17° 34.9	-17° 34.2	-17° 25.2	-17° 24.5	-17° 23.8	-17° 23.1	-17° 22.4	-17° 21.7	+0.7
Пн 31	176° 39.5	191° 39.4	206° 39.3	221° 39.2	236° 39.2	251° 39.1	86° 37.9	101° 37.8	116° 37.7	131° 37.6	146° 37.6	161° 37.5	-0.1
	-17° 21.0	-17° 20.3	-17° 19.6	-17° 18.9	-17° 18.2	-17° 17.5	-17° 08.3	-17° 07.6	-17° 06.9	-17° 06.2	-17° 05.5	-17° 04.8	+0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2033

	Д	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	Δ'/h	R/p
●	Сб 1	56° 12.3	70° 37.6	85° 02.8	99° 28.0	113° 53.3	128° 18.5	142° 43.8	157° 09.1	171° 34.4	185° 59.7	200° 25.0	+25.3	16.2
		-17° 45.1	-17° 40.5	-17° 35.9	-17° 31.1	-17° 26.2	-17° 21.2	-17° 16.1	-17° 10.8	-17° 05.4	-17° 00.0	-16° 54.4	+5.1	59.4
	Вс 2	56° 47.1	71° 12.7	85° 38.4	100° 04.2	114° 29.9	128° 55.7	143° 21.5	157° 47.4	172° 13.2	186° 39.2	201° 05.1	+25.8	16.3
		-15° 17.1	-15° 09.8	-15° 02.3	-14° 54.8	-14° 47.1	-14° 39.4	-14° 31.6	-14° 23.6	-14° 15.6	-14° 07.5	-13° 59.2	+7.8	59.8
	Пн 3	57° 38.6	72° 05.1	86° 31.7	100° 58.3	115° 25.0	129° 51.7	144° 18.4	158° 45.2	173° 12.0	187° 38.8	202° 05.7	+26.7	16.3
		-11° 45.5	-11° 35.9	-11° 26.3	-11° 16.6	-11° 06.8	-10° 56.9	-10° 47.0	-10° 37.0	-10° 26.9	-10° 16.8	-10° 06.6	+9.9	59.9
	Вт 4	58° 53.8	73° 21.3	87° 48.8	102° 16.4	116° 44.1	131° 11.7	145° 39.4	160° 07.1	174° 34.9	189° 02.7	203° 30.5	+27.7	16.3
		-7° 27.1	-7° 16.0	-7° 05.0	-6° 53.9	-6° 42.7	-6° 31.5	-6° 20.3	-6° 09.0	-5° 57.7	-5° 46.4	-5° 35.1	+11.2	59.9
	Ср 5	60° 31.7	75° 00.0	89° 28.3	103° 56.7	118° 25.0	132° 53.5	147° 21.9	161° 50.3	176° 18.8	190° 47.3	205° 15.8	+28.4	16.3
		-2° 41.8	-2° 30.1	-2° 18.5	-2° 06.8	-1° 55.1	-1° 43.4	-1° 31.6	-1° 19.9	-1° 08.2	-0° 56.5	-0° 44.8	+11.7	59.7
	Чт 6	62° 25.6	76° 54.4	91° 23.2	105° 52.0	120° 20.8	134° 49.6	149° 18.4	163° 47.2	178° 16.0	192° 44.9	207° 13.7	+28.8	16.2
		2° 10.1	2° 21.7	2° 33.2	2° 44.7	2° 56.2	3° 07.6	3° 19.1	3° 30.5	3° 41.9	3° 53.2	4° 04.5	+11.4	59.3
	Пт 7	64° 26.6	78° 55.5	93° 24.3	107° 53.2	122° 22.0	136° 50.8	151° 19.7	165° 48.5	180° 17.3	194° 46.1	209° 14.9	+28.8	16.0
		6° 50.1	7° 00.9	7° 11.5	7° 22.1	7° 32.7	7° 43.2	7° 53.7	8° 04.1	8° 14.5	8° 24.8	8° 35.0	+10.5	58.8
◐	Сб 8	66° 25.8	80° 54.5	95° 23.1	109° 51.7	124° 20.3	138° 48.9	153° 17.4	167° 46.0	182° 14.5	196° 43.1	211° 11.6	+28.6	15.9
		11° 01.7	11° 10.9	11° 20.1	11° 29.3	11° 38.3	11° 47.3	11° 56.2	12° 05.0	12° 13.8	12° 22.5	12° 31.1	+8.9	58.3
	Вс 9	80° 54.5	95° 23.1	109° 51.7	124° 20.3	138° 48.9	153° 17.4	167° 46.0	182° 14.5	196° 43.1	211° 11.6	225° 40.1	+28.6	15.9
		11° 10.9	11° 20.1	11° 29.3	11° 38.3	11° 47.3	11° 56.2	12° 05.0	12° 13.8	12° 22.5	12° 31.1	12° 39.6	+8.9	58.3
	Пн 10	82° 45.6	97° 13.9	111° 42.1	126° 10.3	140° 38.5	155° 06.7	169° 34.9	184° 03.1	198° 31.2	212° 59.3	227° 27.5	+28.2	15.8
		14° 37.8	14° 45.0	14° 52.2	14° 59.2	15° 06.1	15° 13.0	15° 19.7	15° 26.4	15° 33.0	15° 39.5	15° 45.9	+6.8	57.8
	Вт 11	84° 27.8	98° 55.8	113° 23.7	127° 51.6	142° 19.5	156° 47.5	171° 15.4	185° 43.3	200° 11.2	214° 39.1	229° 07.0	+27.9	15.6
		17° 10.2	17° 15.0	17° 19.7	17° 24.4	17° 28.9	17° 33.3	17° 37.6	17° 41.9	17° 46.0	17° 50.0	17° 53.9	+4.4	57.3
	Ср 12	86° 05.4	100° 33.3	115° 01.2	129° 29.1	143° 57.1	158° 25.0	172° 53.0	187° 21.0	201° 49.0	216° 17.0	230° 45.0	+28.0	15.5
		18° 40.0	18° 42.2	18° 44.3	18° 46.4	18° 48.3	18° 50.1	18° 51.8	18° 53.3	18° 54.8	18° 56.2	18° 57.5	+1.7	56.8
	Чт 13	87° 47.2	102° 15.5	116° 43.8	131° 12.2	145° 40.6	160° 09.0	174° 37.4	189° 05.9	203° 34.4	218° 02.9	232° 31.5	+28.4	15.3
		19° 03.8	19° 03.3	19° 02.8	19° 02.2	19° 01.5	19° 00.6	18° 59.7	18° 58.7	18° 57.5	18° 56.3	18° 54.9	-0.9	56.3
	Пт 14	89° 44.0	104° 13.2	118° 42.4	133° 11.6	147° 40.8	162° 10.1	176° 39.5	191° 08.9	205° 38.3	220° 07.8	234° 37.3	+29.3	15.2
		18° 22.8	18° 19.9	18° 16.9	18° 13.8	18° 10.6	18° 07.4	18° 04.0	18° 00.5	17° 56.9	17° 53.3	17° 49.6	-3.3	55.8
○	Сб 15	92° 05.6	106° 35.9	121° 06.2	135° 36.6	150° 07.0	164° 37.5	179° 08.0	193° 38.5	208° 09.2	222° 39.8	237° 10.6	+30.5	15.1
		16° 43.2	16° 38.1	16° 32.9	16° 27.7	16° 22.3	16° 16.9	16° 11.5	16° 05.9	16° 00.3	15° 54.6	15° 48.8	-5.4	55.3
	Вс 16	94° 57.5	109° 29.0	124° 00.6	138° 32.2	153° 03.9	167° 35.6	182° 07.4	196° 39.3	211° 11.1	225° 43.1	240° 15.0	+31.8	15.0
		14° 13.9	14° 07.1	14° 00.2	13° 53.2	13° 46.2	13° 39.1	13° 32.0	13° 24.8	13° 17.5	13° 10.2	13° 02.8	-7.1	54.9
	Пн 17	98° 20.4	112° 53.1	127° 25.9	141° 58.7	156° 31.6	171° 04.5	185° 37.4	200° 10.4	214° 43.4	229° 16.5	243° 49.6	+32.9	14.9
		11° 06.2	10° 58.0	10° 49.8	10° 41.6	10° 33.3	10° 25.0	10° 16.6	10° 08.2	9° 59.8	9° 51.3	9° 42.8	-8.3	54.5
	Вт 18	102° 10.7	116° 44.3	131° 18.1	145° 51.8	160° 25.6	174° 59.4	189° 33.2	204° 07.1	218° 41.0	233° 14.9	247° 48.9	+33.8	14.8
		7° 31.0	7° 22.0	7° 12.9	7° 03.9	6° 54.8	6° 45.6	6° 36.5	6° 27.3	6° 18.1	6° 08.9	5° 59.7	-9.1	54.2
	Ср 19	106° 21.1	120° 55.4	135° 29.7	150° 04.1	164° 38.4	179° 12.8	193° 47.2	208° 21.6	222° 56.0	237° 30.4	252° 04.9	+34.4	14.7
		3° 39.0	3° 29.5	3° 20.0	3° 10.4	3° 00.9	2° 51.4	2° 41.8	2° 32.3	2° 22.7	2° 13.1	2° 03.6	-9.5	54.1
	Чт 20	110° 42.4	125° 16.9	139° 51.4	154° 26.0	169° 00.5	183° 35.0	198° 09.5	212° 44.1	227° 18.6	241° 53.1	256° 27.6	+34.5	14.7
		-0° 20.5	-0° 30.1	-0° 39.7	-0° 49.3	-0° 58.9	-1° 08.5	-1° 18.1	-1° 27.7	-1° 37.2	-1° 46.8	-1° 56.4	-9.6	54.1
	Пт 21	115° 03.9	129° 38.2	144° 12.5	158° 46.8	173° 21.0	187° 55.2	202° 29.4	217° 03.6	231° 37.8	246° 11.9	260° 46.0	+34.2	14.8
		-4° 18.6	-4° 28.0	-4° 37.4	-4° 46.7	-4° 56.0	-5° 05.4	-5° 14.7	-5° 23.9	-5° 33.2	-5° 42.4	-5° 51.6	-9.3	54.2
	Сб 22	119° 14.3	133° 48.0	148° 21.6	162° 55.1	177° 28.6	192° 02.1	206° 35.5	221° 08.9	235° 42.3	250° 15.6	264° 48.9	+33.5	14.9
		-8° 07.1	-8° 15.9	-8° 24.7	-8° 33.4	-8° 42.2	-8° 50.8	-8° 59.5	-9° 08.1	-9° 16.7	-9° 25.3	-9° 33.8	-8.7	54.5
◑	Вс 23	123° 02.5	137° 35.0	152° 07.5	166° 39.9	181° 12.2	195° 44.5	210° 16.8	224° 48.9	239° 21.1	253° 53.1	268° 25.1	+32.3	15.0
		-11° 37.1	-11° 45.0	-11° 52.8	-12° 00.6	-12° 08.3	-12° 16.0	-12° 23.7	-12° 31.3	-12° 38.8	-12° 46.3	-12° 53.8	-7.7	55.0
	Пн 24	126° 18.1	140° 49.1	155° 20.1	169° 51.0	184° 21.8	198° 52.6	213° 23.2	227° 53.9	242° 24.4	256° 54.9	271° 25.3	+30.7	15.2
		-14° 38.8	-14° 45.3	-14° 51.8	-14° 58.2	-15° 04.5	-15° 10.8	-15° 17.0	-15° 23.1	-15° 29.2	-15° 35.2	-15° 41.1	-6.2	55.7
	Вт 25	128° 53.4	143° 22.7	157° 51.9	172° 21.1	186° 50.2	201° 19.2	215° 48.1	230° 17.0	244° 45.8	259° 14.6	273° 43.2	+29.0	15.4
		-17° 01.0	-17° 05.7	-17° 10.3	-17° 14.8	-17° 19.3	-17° 23.6	-17° 27.9	-17° 32.1	-17° 36.2	-17° 40.2	-17° 44.1	-4.3	56.5
	Ср 26	130° 45.1	145° 12.6	159° 40.2	174° 07.6	188° 35.0	203° 02.3	217° 29.6	231° 56.8	246° 23.9	260° 51.0	275° 18.0	+27.3	15.7
		-18° 31.3	-18° 33.7	-18° 35.9	-18° 38.1	-18° 40.1	-18° 42.1	-18° 43.9	-18° 45.6	-18° 47.2	-18° 48.8	-18° 50.2	-1.9	57.5
	Чт 27	131° 56.5	146° 22.7	160° 48.8	175° 14.8	189° 40.8	204° 06.8	218° 32.7	232° 58.6	247° 24.4	261° 50.2	276° 16.0	+25.9	15.9
		-18° 57.7	-18° 57.2	-18° 56.7	-18° 56.0	-18° 55.3	-18° 54.4	-18° 53.3	-18° 52.2	-18° 50.9	-18° 49.6	-18° 48.1	+1.0	58.4
	Пт 28	132° 38.2	147° 03.5	161° 28.7	175° 54.0	190° 19.2	204° 44.3	219° 09.5	233° 34.7	247° 59.8	262° 24.9	276° 50.0	+25.2	16.2
		-18° 10.8	-18° 07.4	-18° 03.8	-18° 00.1	-17° 56.2	-17° 52.3	-17° 48.2	-17° 44.0	-17° 39.7	-17° 35.2	-17° 30.7	+4.0	59.3
	Сб 29	133° 05.9	147° 30.9	161° 56.0	176° 21.0	190° 46.1	205° 11.2	219° 36.3	234° 01.3	248° 26.4	262° 51.6	277° 16.7	+25.1	16.4
		-16° 07.8	-16° 01.3	-15° 54.8	-15° 48.1	-15° 41.3	-15° 34.4	-15° 27.3	-15° 20.2	-15° 13.0	-15° 05.6	-14° 58.1	+7.0	60.1
●	Вс 30	133° 35.5	148° 01.0	162° 26.4	176° 51.9	191° 17.3	205° 42.9	220° 08.4	234° 34.0	248° 59.6	263° 25.2	277° 50.8	+25.5	16.5
		-12° 54.0	-12° 44.9	-12° 35.8	-12° 26.5	-12° 17.2	-12° 07.8	-11° 58.3	-11° 48.7	-11° 39.1	-11° 29.3	-11° 19.5	+9.5	60.6
	Пн 31	134° 19.0	148° 45.1	163° 11.3	177° 37.4	192° 03.6	206° 29.9	220° 56.2	235° 22.5	249° 48.8	264° 15.2	278° 41.5	+26.3	16.6
		-8° 43.4	-8° 32.4	-8° 21.5	-8° 10.4	-7° 59.3	-7° 48.2	-7° 37.0	-7° 25.7	-7° 14.4	-7° 03.1	-6° 51.7	+11.2	60.8

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 1 10h17 — Первая четв.: 8 03h34 — Полнолуние: 15 13h07 — Последняя четв.: 23 17h45 — Новолуние: 30 21h59

СОЛНЦЕ

Февраль 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ’/h
Вт 1	176° 37.4 -17° 04.1	191° 37.3 -17° 03.4	206° 37.2 -17° 02.7	221° 37.1 -17° 01.9	236° 37.0 -17° 01.2	251° 37.0 -17° 00.5	86° 35.9 -16° 51.2	101° 35.8 -16° 50.4	116° 35.8 -16° 49.7	131° 35.7 -16° 49.0	146° 35.6 -16° 48.3	161° 35.5 -16° 47.6	-0.1 +0.7
Ср 2	176° 35.4 -16° 46.8	191° 35.4 -16° 46.1	206° 35.3 -16° 45.4	221° 35.2 -16° 44.7	236° 35.1 -16° 43.9	251° 35.1 -16° 43.2	86° 34.1 -16° 33.7	101° 34.1 -16° 33.0	116° 34.0 -16° 32.2	131° 33.9 -16° 31.5	146° 33.9 -16° 30.8	161° 33.8 -16° 30.0	-0.1 +0.7
Чт 3	176° 33.7 -16° 29.3	191° 33.6 -16° 28.6	206° 33.6 -16° 27.8	221° 33.5 -16° 27.1	236° 33.4 -16° 26.3	251° 33.4 -16° 25.6	86° 32.6 -16° 15.9	101° 32.5 -16° 15.2	116° 32.4 -16° 14.5	131° 32.4 -16° 13.7	146° 32.3 -16° 13.0	161° 32.3 -16° 12.2	-0.1 +0.7
Пт 4	176° 32.2 -16° 11.5	191° 32.1 -16° 10.7	206° 32.1 -16° 10.0	221° 32.0 -16° 09.2	236° 32.0 -16° 08.5	251° 31.9 -16° 07.7	86° 31.2 -15° 57.9	101° 31.1 -15° 57.1	116° 31.1 -15° 56.4	131° 31.0 -15° 55.6	146° 31.0 -15° 54.9	161° 30.9 -15° 54.1	-0.1 +0.7
Сб 5	176° 30.9 -15° 53.4	191° 30.8 -15° 52.6	206° 30.8 -15° 51.8	221° 30.7 -15° 51.1	236° 30.7 -15° 50.3	251° 30.6 -15° 49.5	86° 30.0 -15° 39.6	101° 30.0 -15° 38.8	116° 29.9 -15° 38.1	131° 29.9 -15° 37.3	146° 29.9 -15° 36.5	161° 29.8 -15° 35.7	-0.1 +0.8
Вс 6	176° 29.8 -15° 35.0	191° 29.7 -15° 34.2	206° 29.7 -15° 33.4	221° 29.6 -15° 32.7	236° 29.6 -15° 31.9	251° 29.6 -15° 31.1	86° 29.1 -15° 21.0	101° 29.0 -15° 20.2	116° 29.0 -15° 19.5	131° 29.0 -15° 18.7	146° 28.9 -15° 17.9	161° 28.9 -15° 17.1	-0.0 +0.8
Пн 7	176° 28.9 -15° 16.3	191° 28.8 -15° 15.5	206° 28.8 -15° 14.8	221° 28.8 -15° 14.0	236° 28.7 -15° 13.2	251° 28.7 -15° 12.4	86° 28.3 -15° 02.2	101° 28.3 -15° 01.4	116° 28.3 -15° 00.6	131° 28.2 -14° 59.8	146° 28.2 -14° 59.0	161° 28.2 -14° 58.2	-0.0 +0.8
Вт 8	176° 28.2 -14° 57.4	191° 28.1 -14° 56.6	206° 28.1 -14° 55.8	221° 28.1 -14° 55.0	236° 28.1 -14° 54.3	251° 28.0 -14° 53.5	86° 27.8 -14° 43.1	101° 27.8 -14° 42.3	116° 27.7 -14° 41.5	131° 27.7 -14° 40.7	146° 27.7 -14° 39.9	161° 27.7 -14° 39.1	-0.0 +0.8
Ср 9	176° 27.7 -14° 38.3	191° 27.6 -14° 37.5	206° 27.6 -14° 36.7	221° 27.6 -14° 35.9	236° 27.6 -14° 35.1	251° 27.6 -14° 34.3	86° 27.4 -14° 23.7	101° 27.4 -14° 22.9	116° 27.4 -14° 22.1	131° 27.4 -14° 21.3	146° 27.4 -14° 20.5	161° 27.4 -14° 19.7	-0.0 +0.8
Чт 10	176° 27.4 -14° 18.9	191° 27.4 -14° 18.1	206° 27.4 -14° 17.3	221° 27.3 -14° 16.4	236° 27.3 -14° 15.6	251° 27.3 -14° 14.8	86° 27.3 -14° 04.2	101° 27.3 -14° 03.4	116° 27.3 -14° 02.5	131° 27.3 -14° 01.7	146° 27.3 -14° 00.9	161° 27.3 -14° 00.1	-0.0 +0.8
Пт 11	176° 27.3 -13° 59.2	191° 27.3 -13° 58.4	206° 27.3 -13° 57.6	221° 27.3 -13° 56.8	236° 27.3 -13° 55.9	251° 27.3 -13° 55.1	86° 27.3 -13° 44.4	101° 27.3 -13° 43.5	116° 27.3 -13° 42.7	131° 27.3 -13° 41.9	146° 27.3 -13° 41.0	161° 27.4 -13° 40.2	-0.0 +0.8
Сб 12	176° 27.4 -13° 39.4	191° 27.4 -13° 38.5	206° 27.4 -13° 37.7	221° 27.4 -13° 36.9	236° 27.4 -13° 36.0	251° 27.4 -13° 35.2	86° 27.6 -13° 24.3	101° 27.6 -13° 23.5	116° 27.6 -13° 22.7	131° 27.6 -13° 21.8	146° 27.6 -13° 21.0	161° 27.6 -13° 20.1	+0.0 +0.8
Вс 13	176° 27.6 -13° 19.3	191° 27.7 -13° 18.4	206° 27.7 -13° 17.6	221° 27.7 -13° 16.8	236° 27.7 -13° 15.9	251° 27.7 -13° 15.1	86° 28.0 -13° 04.1	101° 28.0 -13° 03.2	116° 28.0 -13° 02.4	131° 28.0 -13° 01.5	146° 28.1 -13° 00.7	161° 28.1 -12° 59.8	+0.0 +0.8
Пн 14	176° 28.1 -12° 59.0	191° 28.1 -12° 58.1	206° 28.2 -12° 57.3	221° 28.2 -12° 56.4	236° 28.2 -12° 55.6	251° 28.2 -12° 54.7	86° 28.6 -12° 43.6	101° 28.6 -12° 42.8	116° 28.6 -12° 41.9	131° 28.7 -12° 41.0	146° 28.7 -12° 40.2	161° 28.7 -12° 39.3	+0.0 +0.9
Вт 15	176° 28.8 -12° 38.5	191° 28.8 -12° 37.6	206° 28.8 -12° 36.7	221° 28.9 -12° 35.9	236° 28.9 -12° 35.0	251° 28.9 -12° 34.2	86° 29.4 -12° 22.9	101° 29.4 -12° 22.1	116° 29.4 -12° 21.2	131° 29.5 -12° 20.3	146° 29.5 -12° 19.5	161° 29.6 -12° 18.6	+0.0 +0.9
Ср 16	176° 29.6 -12° 17.7	191° 29.6 -12° 16.9	206° 29.7 -12° 16.0	221° 29.7 -12° 15.1	236° 29.8 -12° 14.3	251° 29.8 -12° 13.4	86° 30.3 -12° 02.1	101° 30.4 -12° 01.2	116° 30.4 -12° 00.3	131° 30.5 -11° 59.4	146° 30.5 -11° 58.6	161° 30.6 -11° 57.7	+0.0 +0.9
Чт 17	176° 30.6 -11° 56.8	191° 30.7 -11° 55.9	206° 30.7 -11° 55.1	221° 30.7 -11° 54.2	236° 30.8 -11° 53.3	251° 30.8 -11° 52.4	86° 31.5 -11° 41.0	101° 31.5 -11° 40.1	116° 31.6 -11° 39.2	131° 31.6 -11° 38.4	146° 31.7 -11° 37.5	161° 31.7 -11° 36.6	+0.0 +0.9
Пт 18	176° 31.8 -11° 35.7	191° 31.8 -11° 34.8	206° 31.9 -11° 33.9	221° 31.9 -11° 33.1	236° 32.0 -11° 32.2	251° 32.1 -11° 31.3	86° 32.8 -11° 19.8	101° 32.8 -11° 18.9	116° 32.9 -11° 18.0	131° 33.0 -11° 17.1	146° 33.0 -11° 16.2	161° 33.1 -11° 15.3	+0.1 +0.9
Сб 19	176° 33.1 -11° 14.4	191° 33.2 -11° 13.5	206° 33.3 -11° 12.6	221° 33.3 -11° 11.7	236° 33.4 -11° 10.9	251° 33.4 -11° 10.0	86° 34.3 -10° 58.3	101° 34.3 -10° 57.4	116° 34.4 -10° 56.5	131° 34.5 -10° 55.6	146° 34.5 -10° 54.7	161° 34.6 -10° 53.8	+0.1 +0.9
Вс 20	176° 34.7 -10° 52.9	191° 34.7 -10° 52.0	206° 34.8 -10° 51.2	221° 34.9 -10° 50.3	236° 34.9 -10° 49.4	251° 35.0 -10° 48.5	86° 35.9 -10° 36.7	101° 36.0 -10° 35.8	116° 36.0 -10° 34.9	131° 36.1 -10° 34.0	146° 36.2 -10° 33.1	161° 36.3 -10° 32.2	+0.1 +0.9
Пн 21	176° 36.3 -10° 31.3	191° 36.4 -10° 30.4	206° 36.5 -10° 29.5	221° 36.5 -10° 28.6	236° 36.6 -10° 27.7	251° 36.7 -10° 26.8	86° 37.7 -10° 15.0	101° 37.8 -10° 14.1	116° 37.8 -10° 13.1	131° 37.9 -10° 12.2	146° 38.0 -10° 11.3	161° 38.1 -10° 10.4	+0.1 +0.9
Вт 22	176° 38.2 -10° 09.5	191° 38.2 -10° 08.6	206° 38.3 -10° 07.7	221° 38.4 -10° 06.8	236° 38.5 -10° 05.8	251° 38.6 -10° 04.9	86° 39.6 -9° 53.0	101° 39.7 -9° 52.1	116° 39.8 -9° 51.2	131° 39.9 -9° 50.3	146° 40.0 -9° 49.4	161° 40.1 -9° 48.5	+0.1 +0.9
Ср 23	176° 40.1 -9° 47.5	191° 40.2 -9° 46.6	206° 40.3 -9° 45.7	221° 40.4 -9° 44.8	236° 40.5 -9° 43.9	251° 40.6 -9° 42.9	86° 41.7 -9° 31.0	101° 41.8 -9° 30.0	116° 41.9 -9° 29.1	131° 42.0 -9° 28.2	146° 42.1 -9° 27.3	161° 42.2 -9° 26.3	+0.1 +0.9
Чт 24	176° 42.3 -9° 25.4	191° 42.4 -9° 24.5	206° 42.5 -9° 23.6	221° 42.5 -9° 22.6	236° 42.6 -9° 21.7	251° 42.7 -9° 20.8	86° 44.0 -9° 08.7	101° 44.1 -9° 07.8	116° 44.2 -9° 06.9	131° 44.2 -9° 06.0	146° 44.3 -9° 05.0	161° 44.4 -9° 04.1	+0.1 +0.9
Пт 25	176° 44.5 -9° 03.2	191° 44.6 -9° 02.2	206° 44.7 -9° 01.3	221° 44.8 -9° 00.4	236° 44.9 -8° 59.4	251° 45.0 -8° 58.5	86° 46.3 -8° 46.4	101° 46.4 -8° 45.4	116° 46.5 -8° 44.5	131° 46.6 -8° 43.6	146° 46.7 -8° 42.6	161° 46.8 -8° 41.7	+0.1 +0.9
Сб 26	176° 47.0 -8° 40.8	191° 47.1 -8° 39.8	206° 47.2 -8° 38.9	221° 47.3 -8° 38.0	236° 47.4 -8° 37.0	251° 47.5 -8° 36.1	86° 48.9 -8° 23.9	101° 49.0 -8° 23.0	116° 49.1 -8° 22.0	131° 49.2 -8° 21.1	146° 49.3 -8° 20.1	161° 49.4 -8° 19.2	+0.1 +0.9
Вс 27	176° 49.5 -8° 18.2	191° 49.6 -8° 17.3	206° 49.7 -8° 16.4	221° 49.8 -8° 15.4	236° 49.9 -8° 14.5	251° 50.0 -8° 13.5	86° 51.5 -8° 01.3	101° 51.6 -8° 00.3	116° 51.7 -7° 59.4	131° 51.8 -7° 58.4	146° 52.0 -7° 57.5	161° 52.1 -7° 56.5	+0.1 +0.9
Пн 28	176° 52.2 -7° 55.6	191° 52.3 -7° 54.7	206° 52.4 -7° 53.7	221° 52.5 -7° 52.8	236° 52.6 -7° 51.8	251° 52.8 -7° 50.9	86° 54.3 -7° 38.5	101° 54.4 -7° 37.6	116° 54.5 -7° 36.6	131° 54.6 -7° 35.7	146° 54.8 -7° 34.7	161° 54.9 -7° 33.8	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ’/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ’/h = изменение δ за час
Полудиаметр R: 16.2’

ЛУНА

Февраль 2033

Д	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	Δ’/h	R/p
Вт 1	63° 07.2 -4° 55.6	77° 33.9 -4° 43.8	92° 00.6 -4° 32.0	106° 27.4 -4° 20.1	120° 54.2 -4° 08.3	135° 21.1 -3° 56.4	149° 47.9 -3° 44.5	164° 14.8 -3° 32.5	178° 41.8 -3° 20.6	193° 08.7 -3° 08.6	207° 35.7 -2° 56.6	+26.9 +11.9	16.6 60.8
Ср 2	64° 23.3 0° 03.9	78° 50.7 0° 15.9	93° 18.1 0° 27.9	107° 45.5 0° 39.9	122° 12.9 0° 51.9	136° 40.3 1° 03.9	151° 07.8 1° 15.9	165° 35.3 1° 27.8	180° 02.8 1° 39.7	194° 30.3 1° 51.6	208° 57.8 2° 03.5	+27.4 +12.0	16.5 60.4
Чт 3	65° 52.6 4° 58.5	80° 20.3 5° 09.9	94° 48.1 5° 21.3	109° 15.9 5° 32.6	123° 43.7 5° 43.8	138° 11.5 5° 55.0	152° 39.3 6° 06.2	167° 07.1 6° 17.3	181° 34.9 6° 28.4	196° 02.7 6° 39.4	210° 30.5 6° 50.4	+27.8 +11.2	16.3 59.9
Пт 4	67° 28.7 9° 28.1	81° 56.6 9° 38.1	96° 24.5 9° 48.0	110° 52.4 9° 57.9	125° 20.3 10° 07.7	139° 48.2 10° 17.4	154° 16.2 10° 27.1	168° 44.1 10° 36.7	183° 12.0 10° 46.2	197° 39.9 10° 55.7	212° 07.8 11° 05.0	+27.9 +9.7	16.1 59.2
Сб 5	69° 06.5 13° 16.1	83° 34.4 13° 24.1	98° 02.4 13° 32.1	112° 30.3 13° 40.0	126° 58.2 13° 47.8	141° 26.1 13° 55.5	155° 54.0 14° 03.2	170° 21.9 14° 10.7	184° 49.8 14° 18.2	199° 17.7 14° 25.5	213° 45.6 14° 32.8	+27.9 +7.7	15.9 58.4
◐ Вс 6	70° 44.1 16° 10.4	85° 12.0 16° 16.1	99° 39.9 16° 21.8	114° 07.9 16° 27.3	128° 35.8 16° 32.7	143° 03.7 16° 38.1	157° 31.6 16° 43.3	171° 59.6 16° 48.4	186° 27.5 16° 53.5	200° 55.4 16° 58.4	215° 23.4 17° 03.2	+27.9 +5.3	15.7 57.6
Пн 7	85° 12.0 16° 16.1	99° 39.9 16° 21.8	114° 07.9 16° 27.3	128° 35.8 16° 32.7	143° 03.7 16° 38.1	157° 31.6 16° 43.3	171° 59.6 16° 48.4	186° 27.5 16° 53.5	200° 55.4 16° 58.4	215° 23.4 17° 03.2	229° 51.3 17° 07.9	+27.9 +5.2	15.7 57.6
Вт 8	86° 51.5 18° 06.5	101° 19.6 18° 09.5	115° 47.7 18° 12.5	130° 15.8 18° 15.4	144° 43.9 18° 18.1	159° 12.0 18° 20.8	173° 40.2 18° 23.3	188° 08.4 18° 25.8	202° 36.5 18° 28.1	217° 04.7 18° 30.4	231° 33.0 18° 32.5	+28.1 +2.6	15.5 56.9
Ср 9	88° 38.4 18° 51.9	103° 07.0 18° 52.4	117° 35.5 18° 52.8	132° 04.1 18° 53.0	146° 32.7 18° 53.2	161° 01.4 18° 53.3	175° 30.0 18° 53.2	189° 58.7 18° 53.1	204° 27.5 18° 52.8	218° 56.2 18° 52.5	233° 25.0 18° 52.1	+28.7 +0.0	15.3 56.2
Чт 10	90° 40.4 18° 33.5	105° 09.7 18° 31.5	119° 39.0 18° 29.4	134° 08.4 18° 27.2	148° 37.8 18° 24.9	163° 07.2 18° 22.5	177° 36.7 18° 20.1	192° 06.2 18° 17.5	206° 35.8 18° 14.8	221° 05.4 18° 12.1	235° 35.0 18° 09.2	+29.5 -2.4	15.2 55.7
Пт 11	93° 04.4 17° 16.0	107° 34.7 17° 11.7	122° 05.0 17° 07.4	136° 35.4 17° 03.0	151° 05.8 16° 58.6	165° 36.3 16° 54.0	180° 06.8 16° 49.4	194° 37.4 16° 44.6	209° 08.0 16° 39.9	223° 38.6 16° 35.0	238° 09.3 16° 30.0	+30.5 -4.6	15.0 55.2
Сб 12	95° 55.1 15° 06.9	110° 26.5 15° 00.8	124° 58.0 14° 54.6	139° 29.5 14° 48.4	154° 01.0 14° 42.1	168° 32.6 14° 35.7	183° 04.2 14° 29.3	197° 35.9 14° 22.8	212° 07.6 14° 16.3	226° 39.4 14° 09.6	241° 11.2 14° 03.0	+31.6 -6.4	14.9 54.8
Вс 13	99° 13.5 12° 15.8	113° 46.0 12° 08.3	128° 18.6 12° 00.6	142° 51.2 11° 53.0	157° 23.8 11° 45.3	171° 56.4 11° 37.5	186° 29.1 11° 29.7	201° 01.8 11° 21.8	215° 34.6 11° 13.9	230° 07.4 11° 05.9	244° 40.3 10° 57.9	+32.7 -7.8	14.8 54.4
○ Пн 14	102° 57.4 8° 53.0	117° 30.8 8° 44.4	132° 04.3 8° 35.7	146° 37.8 8° 27.0	161° 11.3 8° 18.3	175° 44.8 8° 09.6	190° 18.4 8° 00.8	204° 52.0 7° 52.0	219° 25.6 7° 43.1	233° 59.3 7° 34.2	248° 33.0 7° 25.3	+33.6 -8.8	14.8 54.2
Вт 15	107° 01.4 5° 08.8	121° 35.5 4° 59.5	136° 09.6 4° 50.3	150° 43.7 4° 40.9	165° 17.9 4° 31.6	179° 52.0 4° 22.3	194° 26.2 4° 12.9	209° 00.4 4° 03.6	223° 34.6 3° 54.2	238° 08.8 3° 44.8	252° 43.1 3° 35.4	+34.2 -9.3	14.7 54.0
Ср 16	111° 18.3 1° 13.1	125° 52.7 1° 03.6	140° 27.2 0° 54.1	155° 01.6 0° 44.5	169° 36.0 0° 35.0	184° 10.5 0° 25.5	198° 44.9 0° 15.9	213° 19.4 0° 06.4	227° 53.8 -0° 03.1	242° 28.3 -0° 12.7	257° 02.8 -0° 22.2	+34.4 -9.5	14.7 53.9
Чт 17	115° 39.5 -2° 44.6	130° 13.9 -2° 54.0	144° 48.3 -3° 03.4	159° 22.7 -3° 12.8	173° 57.1 -3° 22.2	188° 31.5 -3° 31.6	203° 05.8 -3° 40.9	217° 40.2 -3° 50.3	232° 14.5 -3° 59.6	246° 48.8 -4° 08.9	261° 23.1 -4° 18.2	+34.4 -9.4	14.7 54.0
Пт 18	119° 55.8 -6° 35.4	134° 29.8 -6° 44.3	149° 03.8 -6° 53.3	163° 37.8 -7° 02.2	178° 11.7 -7° 11.1	192° 45.6 -7° 19.9	207° 19.5 -7° 28.7	221° 53.4 -7° 37.5	236° 27.2 -7° 46.3	251° 01.0 -7° 55.1	265° 34.8 -8° 03.8	+33.9 -8.8	14.8 54.1
Сб 19	123° 57.7 -10° 10.3	138° 31.0 -10° 18.5	153° 04.2 -10° 26.6	167° 37.4 -10° 34.7	182° 10.5 -10° 42.7	196° 43.6 -10° 50.7	211° 16.6 -10° 58.6	225° 49.6 -11° 06.5	240° 22.6 -11° 14.3	254° 55.5 -11° 22.1	269° 28.4 -11° 29.9	+33.1 -8.0	14.8 54.4
Вс 20	127° 36.3 -13° 20.4	142° 08.5 -13° 27.3	156° 40.6 -13° 34.2	171° 12.6 -13° 41.1	185° 44.6 -13° 47.9	200° 16.6 -13° 54.6	214° 48.4 -14° 01.2	229° 20.3 -14° 07.8	243° 52.1 -14° 14.4	258° 23.8 -14° 20.9	272° 55.5 -14° 27.3	+31.9 -6.7	15.0 54.9
Пн 21	130° 44.0 -15° 55.8	145° 14.8 -16° 01.2	159° 45.5 -16° 06.5	174° 16.2 -16° 11.7	188° 46.8 -16° 16.8	203° 17.3 -16° 21.8	217° 47.8 -16° 26.8	232° 18.2 -16° 31.7	246° 48.6 -16° 36.6	261° 18.9 -16° 41.3	275° 49.2 -16° 46.0	+30.5 -5.0	15.1 55.5
◑ Вт 22	133° 15.7 -17° 46.3	147° 45.0 -17° 49.6	162° 14.2 -17° 52.8	176° 43.4 -17° 56.0	191° 12.5 -17° 59.1	205° 41.5 -18° 02.0	220° 10.5 -18° 04.9	234° 39.4 -18° 07.7	249° 08.3 -18° 10.4	263° 37.1 -18° 13.0	278° 05.9 -18° 15.5	+29.0 -2.9	15.4 56.3
Ср 23	135° 10.3 -18° 41.2	149° 38.1 -18° 42.1	164° 05.9 -18° 42.9	178° 33.7 -18° 43.6	193° 01.3 -18° 44.2	207° 29.0 -18° 44.7	221° 56.6 -18° 45.1	236° 24.1 -18° 45.3	250° 51.6 -18° 45.5	265° 19.0 -18° 45.6	279° 46.4 -18° 45.5	+27.6 -0.4	15.6 57.2
Чт 24	136° 31.7 -18° 31.3	150° 58.4 -18° 29.5	165° 25.0 -18° 27.5	179° 51.6 -18° 25.4	194° 18.2 -18° 23.2	208° 44.7 -18° 20.9	223° 11.2 -18° 18.5	237° 37.6 -18° 15.9	252° 04.1 -18° 13.3	266° 30.4 -18° 10.5	280° 56.8 -18° 07.6	+26.5 +2.4	15.9 58.2
Пт 25	137° 28.6 -17° 10.3	151° 54.5 -17° 05.5	166° 20.4 -17° 00.7	180° 46.3 -16° 55.7	195° 12.2 -16° 50.6	209° 38.0 -16° 45.4	224° 03.9 -16° 40.0	238° 29.7 -16° 34.6	252° 55.5 -16° 29.0	267° 21.3 -16° 23.3	281° 47.0 -16° 17.6	+25.8 +5.3	16.1 59.2
Сб 26	138° 12.4 -14° 37.4	152° 38.0 -14° 29.9	167° 03.6 -14° 22.2	181° 29.3 -14° 14.5	195° 54.9 -14° 06.6	210° 20.5 -13° 58.7	224° 46.2 -13° 50.6	239° 11.8 -13° 42.5	253° 37.4 -13° 34.2	268° 03.1 -13° 25.9	282° 28.7 -13° 17.4	+25.6 +4.8	16.4 60.1
Вс 27	138° 53.7 -10° 59.4	153° 19.4 -10° 49.5	167° 45.2 -10° 39.6	182° 10.9 -10° 29.5	196° 36.6 -10° 19.4	211° 02.4 -10° 09.2	225° 28.2 -9° 58.9	239° 53.9 -9° 48.5	254° 19.7 -9° 38.1	268° 45.5 -9° 27.6	283° 11.3 -9° 17.0	+25.8 +10.2	16.6 60.8
Пн 28	139° 39.8 -6° 30.8	154° 05.8 -6° 19.3	168° 31.8 -6° 07.7	182° 57.9 -5° 56.1	197° 23.9 -5° 44.4	211° 49.9 -5° 32.7	226° 16.0 -5° 21.0	240° 42.1 -5° 09.2	255° 08.1 -4° 57.4	269° 34.2 -4° 45.5	284° 00.3 -4° 33.6	+26.1 +11.7	16.7 61.2

Строка 1: $t_{гр}$, Δ’/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ’/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Первая четв.: 6 13h34 — Полнолуние: 14 07h04 — Последняя четв.: 22 11h53

СОЛНЦЕ

Март 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	176° 55.0 -7° 32.8	191° 55.1 -7° 31.9	206° 55.2 -7° 30.9	221° 55.4 -7° 30.0	236° 55.5 -7° 29.0	251° 55.6 -7° 28.1	86° 57.2 -7° 15.7	101° 57.3 -7° 14.7	116° 57.4 -7° 13.8	131° 57.6 -7° 12.8	146° 57.7 -7° 11.9	161° 57.8 -7° 10.9	+0.1 +1.0
Ср 2	176° 57.9 -7° 10.0	191° 58.1 -7° 09.0	206° 58.2 -7° 08.1	221° 58.3 -7° 07.1	236° 58.4 -7° 06.2	251° 58.6 -7° 05.2	87° 00.2 -6° 52.8	102° 00.3 -6° 51.8	117° 00.5 -6° 50.8	132° 00.6 -6° 49.9	147° 00.7 -6° 48.9	162° 00.9 -6° 48.0	+0.1 +1.0
Чт 3	177° 01.0 -6° 47.0	192° 01.1 -6° 46.0	207° 01.2 -6° 45.1	222° 01.4 -6° 44.1	237° 01.5 -6° 43.2	252° 01.6 -6° 42.2	87° 03.4 -6° 29.7	102° 03.5 -6° 28.7	117° 03.6 -6° 27.8	132° 03.8 -6° 26.8	147° 03.9 -6° 25.9	162° 04.0 -6° 24.9	+0.1 +1.0
Пт 4	177° 04.2 -6° 23.9	192° 04.3 -6° 23.0	207° 04.4 -6° 22.0	222° 04.6 -6° 21.0	237° 04.7 -6° 20.1	252° 04.8 -6° 19.1	87° 06.6 -6° 06.6	102° 06.8 -6° 05.6	117° 06.9 -6° 04.6	132° 07.0 -6° 03.7	147° 07.2 -6° 02.7	162° 07.3 -6° 01.7	+0.1 +1.0
Сб 5	177° 07.5 -6° 00.8	192° 07.6 -5° 59.8	207° 07.7 -5° 58.9	222° 07.9 -5° 57.9	237° 08.0 -5° 56.9	252° 08.2 -5° 55.9	87° 10.0 -5° 43.4	102° 10.1 -5° 42.4	117° 10.3 -5° 41.4	132° 10.4 -5° 40.5	147° 10.6 -5° 39.5	162° 10.7 -5° 38.5	+0.1 +1.0
Вс 6	177° 10.9 -5° 37.5	192° 11.0 -5° 36.6	207° 11.1 -5° 35.6	222° 11.3 -5° 34.6	237° 11.4 -5° 33.7	252° 11.6 -5° 32.7	87° 13.5 -5° 20.1	102° 13.6 -5° 19.1	117° 13.8 -5° 18.1	132° 13.9 -5° 17.2	147° 14.1 -5° 16.2	162° 14.2 -5° 15.2	+0.1 +1.0
Пн 7	177° 14.4 -5° 14.2	192° 14.5 -5° 13.3	207° 14.7 -5° 12.3	222° 14.8 -5° 11.3	237° 15.0 -5° 10.3	252° 15.1 -5° 09.4	87° 17.1 -4° 56.7	102° 17.2 -4° 55.7	117° 17.4 -4° 54.8	132° 17.5 -4° 53.8	147° 17.7 -4° 52.8	162° 17.8 -4° 51.8	+0.1 +1.0
Вт 8	177° 18.0 -4° 50.9	192° 18.1 -4° 49.9	207° 18.3 -4° 48.9	222° 18.4 -4° 47.9	237° 18.6 -4° 47.0	252° 18.7 -4° 46.0	87° 20.8 -4° 33.3	102° 20.9 -4° 32.3	117° 21.1 -4° 31.3	132° 21.2 -4° 30.4	147° 21.4 -4° 29.4	162° 21.5 -4° 28.4	+0.2 +1.0
Ср 9	177° 21.7 -4° 27.4	192° 21.9 -4° 26.4	207° 22.0 -4° 25.5	222° 22.2 -4° 24.5	237° 22.3 -4° 23.5	252° 22.5 -4° 22.5	87° 24.5 -4° 09.8	102° 24.7 -4° 08.8	117° 24.9 -4° 07.8	132° 25.0 -4° 06.9	147° 25.2 -4° 05.9	162° 25.3 -4° 04.9	+0.2 +1.0
Чт 10	177° 25.5 -4° 03.9	192° 25.7 -4° 02.9	207° 25.8 -4° 02.0	222° 26.0 -4° 01.0	237° 26.1 -4° 00.0	252° 26.3 -3° 59.0	87° 28.4 -3° 46.3	102° 28.6 -3° 45.3	117° 28.7 -3° 44.3	132° 28.9 -3° 43.3	147° 29.1 -3° 42.3	162° 29.2 -3° 41.4	+0.2 +1.0
Пт 11	177° 29.4 -3° 40.4	192° 29.6 -3° 39.4	207° 29.7 -3° 38.4	222° 29.9 -3° 37.4	237° 30.1 -3° 36.5	252° 30.2 -3° 35.5	87° 32.4 -3° 22.7	102° 32.5 -3° 21.7	117° 32.7 -3° 20.7	132° 32.9 -3° 19.8	147° 33.0 -3° 18.8	162° 33.2 -3° 17.8	+0.2 +1.0
Сб 12	177° 33.4 -3° 16.8	192° 33.5 -3° 15.8	207° 33.7 -3° 14.8	222° 33.9 -3° 13.8	237° 34.0 -3° 12.9	252° 34.2 -3° 11.9	87° 36.4 -2° 59.1	102° 36.6 -2° 58.1	117° 36.7 -2° 57.1	132° 36.9 -2° 56.1	147° 37.1 -2° 55.1	162° 37.2 -2° 54.2	+0.2 +1.0
Вс 13	177° 37.4 -2° 53.2	192° 37.6 -2° 52.2	207° 37.8 -2° 51.2	222° 37.9 -2° 50.2	237° 38.1 -2° 49.2	252° 38.3 -2° 48.3	87° 40.5 -2° 35.4	102° 40.7 -2° 34.5	117° 40.8 -2° 33.5	132° 41.0 -2° 32.5	147° 41.2 -2° 31.5	162° 41.4 -2° 30.5	+0.2 +1.0
Пн 14	177° 41.5 -2° 29.5	192° 41.7 -2° 28.5	207° 41.9 -2° 27.6	222° 42.1 -2° 26.6	237° 42.2 -2° 25.6	252° 42.4 -2° 24.6	87° 44.7 -2° 11.8	102° 44.8 -2° 10.8	117° 45.0 -2° 09.8	132° 45.2 -2° 08.8	147° 45.4 -2° 07.8	162° 45.5 -2° 06.8	+0.2 +1.0
Вт 15	177° 45.7 -2° 05.8	192° 45.9 -2° 04.9	207° 46.1 -2° 03.9	222° 46.3 -2° 02.9	237° 46.4 -2° 01.9	252° 46.6 -2° 00.9	87° 48.9 -1° 48.1	102° 49.1 -1° 47.1	117° 49.3 -1° 46.1	132° 49.4 -1° 45.1	147° 49.6 -1° 44.1	162° 49.8 -1° 43.1	+0.2 +1.0
Ср 16	177° 50.0 -1° 42.1	192° 50.1 -1° 41.2	207° 50.3 -1° 40.2	222° 50.5 -1° 39.2	237° 50.7 -1° 38.2	252° 50.9 -1° 37.2	87° 53.2 -1° 24.4	102° 53.4 -1° 23.4	117° 53.5 -1° 22.4	132° 53.7 -1° 21.4	147° 53.9 -1° 20.4	162° 54.1 -1° 19.4	+0.2 +1.0
Чт 17	177° 54.3 -1° 18.4	192° 54.4 -1° 17.4	207° 54.6 -1° 16.5	222° 54.8 -1° 15.5	237° 55.0 -1° 14.5	252° 55.2 -1° 13.5	87° 57.5 -1° 00.6	102° 57.7 -0° 59.7	117° 57.9 -0° 58.7	132° 58.1 -0° 57.7	147° 58.2 -0° 56.7	162° 58.4 -0° 55.7	+0.2 +1.0
Пт 18	177° 58.6 -0° 54.7	192° 58.8 -0° 53.7	207° 59.0 -0° 52.7	222° 59.2 -0° 51.8	237° 59.3 -0° 50.8	252° 59.5 -0° 49.8	88° 01.9 -0° 36.9	103° 02.1 -0° 35.9	118° 02.3 -0° 35.0	133° 02.4 -0° 34.0	148° 02.6 -0° 33.0	163° 02.8 -0° 32.0	+0.2 +1.0
Сб 19	178° 03.0 -0° 31.0	193° 03.2 -0° 30.0	208° 03.4 -0° 29.0	223° 03.5 -0° 28.0	238° 03.7 -0° 27.0	253° 03.9 -0° 26.1	88° 06.3 -0° 13.2	103° 06.5 -0° 12.2	118° 06.7 -0° 11.2	133° 06.9 -0° 10.2	148° 07.0 -0° 09.3	163° 07.2 -0° 08.3	+0.2 +1.0
Вс 20	178° 07.4 -0° 07.3	193° 07.6 -0° 06.3	208° 07.8 -0° 05.3	223° 08.0 -0° 04.3	238° 08.2 -0° 03.3	253° 08.3 -0° 02.3	88° 10.7 0° 10.5	103° 10.9 0° 11.5	118° 11.1 0° 12.5	133° 11.3 0° 13.5	148° 11.5 0° 14.4	163° 11.7 0° 15.4	+0.2 +1.0
Пн 21	178° 11.9 0° 16.4	193° 12.0 0° 17.4	208° 12.2 0° 18.4	223° 12.4 0° 19.4	238° 12.6 0° 20.4	253° 12.8 0° 21.4	88° 15.2 0° 34.2	103° 15.4 0° 35.2	118° 15.6 0° 36.2	133° 15.8 0° 37.1	148° 16.0 0° 38.1	163° 16.1 0° 39.1	+0.2 +1.0
Вт 22	178° 16.3 0° 40.1	193° 16.5 0° 41.1	208° 16.7 0° 42.1	223° 16.9 0° 43.1	238° 17.1 0° 44.1	253° 17.3 0° 45.0	88° 19.7 0° 57.9	103° 19.9 0° 58.8	118° 20.1 0° 59.8	133° 20.3 1° 00.8	148° 20.4 1° 01.8	163° 20.6 1° 02.8	+0.2 +1.0
Ср 23	178° 20.8 1° 03.8	193° 21.0 1° 04.8	208° 21.2 1° 05.7	223° 21.4 1° 06.7	238° 21.6 1° 07.7	253° 21.8 1° 08.7	88° 24.2 1° 21.5	103° 24.4 1° 22.5	118° 24.6 1° 23.5	133° 24.8 1° 24.5	148° 25.0 1° 25.4	163° 25.1 1° 26.4	+0.2 +1.0
Чт 24	178° 25.3 1° 27.4	193° 25.5 1° 28.4	208° 25.7 1° 29.4	223° 25.9 1° 30.4	238° 26.1 1° 31.3	253° 26.3 1° 32.3	88° 28.7 1° 45.1	103° 28.9 1° 46.1	118° 29.1 1° 47.1	133° 29.3 1° 48.1	148° 29.5 1° 49.1	163° 29.7 1° 50.0	+0.2 +1.0
Пт 25	178° 29.8 1° 51.0	193° 30.0 1° 52.0	208° 30.2 1° 53.0	223° 30.4 1° 54.0	238° 30.6 1° 54.9	253° 30.8 1° 55.9	88° 33.2 2° 08.7	103° 33.4 2° 09.7	118° 33.6 2° 10.7	133° 33.8 2° 11.6	148° 34.0 2° 12.6	163° 34.2 2° 13.6	+0.2 +1.0
Сб 26	178° 34.4 2° 14.6	193° 34.5 2° 15.6	208° 34.7 2° 16.5	223° 34.9 2° 17.5	238° 35.1 2° 18.5	253° 35.3 2° 19.5	88° 37.7 2° 32.2	103° 37.9 2° 33.2	118° 38.1 2° 34.2	133° 38.3 2° 35.2	148° 38.5 2° 36.1	163° 38.7 2° 37.1	+0.2 +1.0
Вс 27	178° 38.9 2° 38.1	193° 39.0 2° 39.1	208° 39.2 2° 40.1	223° 39.4 2° 41.0	238° 39.6 2° 42.0	253° 39.8 2° 43.0	88° 42.2 2° 55.7	103° 42.4 2° 56.7	118° 42.6 2° 57.7	133° 42.8 2° 58.6	148° 43.0 2° 59.6	163° 43.2 3° 00.6	+0.2 +1.0
Пн 28	178° 43.4 3° 01.6	193° 43.6 3° 02.5	208° 43.7 3° 03.5	223° 43.9 3° 04.5	238° 44.1 3° 05.5	253° 44.3 3° 06.4	88° 46.7 3° 19.1	103° 46.9 3° 20.1	118° 47.1 3° 21.1	133° 47.3 3° 22.1	148° 47.5 3° 23.0	163° 47.7 3° 24.0	+0.2 +1.0
Вт 29	178° 47.9 3° 25.0	193° 48.0 3° 25.9	208° 48.2 3° 26.9	223° 48.4 3° 27.9	238° 48.6 3° 28.9	253° 48.8 3° 29.8	88° 51.2 3° 42.5	103° 51.4 3° 43.5	118° 51.6 3° 44.4	133° 51.8 3° 45.4	148° 52.0 3° 46.4	163° 52.1 3° 47.3	+0.2 +1.0
Ср 30	178° 52.3 3° 48.3	193° 52.5 3° 49.3	208° 52.7 3° 50.3	223° 52.9 3° 51.2	238° 53.1 3° 52.2	253° 53.3 3° 53.2	88° 55.7 4° 05.8	103° 55.9 4° 06.7	118° 56.0 4° 07.7	133° 56.2 4° 08.7	148° 56.4 4° 09.7	163° 56.6 4° 10.6	+0.2 +1.0
Чт 31	178° 56.8 4° 11.6	193° 57.0 4° 12.6	208° 57.2 4° 13.5	223° 57.3 4° 14.5	238° 57.5 4° 15.5	253° 57.7 4° 16.4	89° 00.1 4° 29.0	104° 00.3 4° 30.0	119° 00.5 4° 30.9	134° 00.7 4° 31.9	149° 00.9 4° 32.9	164° 01.0 4° 33.8	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2033

	Д	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	Δ'/h	R/p
●	Вт 1	68° 22.0	82° 48.3	97° 14.5	111° 40.8	126° 07.0	140° 33.3	154° 59.6	169° 25.9	183° 52.2	198° 18.5	212° 44.8	+26.3	16.7
		-2° 33.2	-2° 21.1	-2° 08.9	-1° 56.7	-1° 44.5	-1° 32.3	-1° 20.1	-1° 07.9	-0° 55.6	-0° 43.4	-0° 31.2	+12.2	61.3
	Ср 2	69° 20.7	83° 47.1	98° 13.6	112° 40.0	127° 06.5	141° 33.0	155° 59.5	170° 25.9	184° 52.4	199° 18.9	213° 45.4	+26.5	16.7
		2° 31.6	2° 43.7	2° 55.7	3° 07.7	3° 19.7	3° 31.7	3° 43.6	3° 55.5	4° 07.4	4° 19.2	4° 31.0	+11.9	61.1
	Чт 3	70° 23.4	84° 49.9	99° 16.5	113° 43.0	128° 09.6	142° 36.2	157° 02.7	171° 29.3	185° 55.9	200° 22.4	214° 49.0	+26.6	16.5
		7° 22.5	7° 33.5	7° 44.5	7° 55.3	8° 06.2	8° 17.0	8° 27.7	8° 38.3	8° 48.9	8° 59.4	9° 09.8	+10.7	60.5
	Пт 4	71° 28.0	85° 54.6	100° 21.3	114° 47.9	129° 14.5	143° 41.2	158° 07.8	172° 34.4	187° 01.1	201° 27.7	215° 54.4	+26.6	16.3
		11° 37.5	11° 46.7	11° 55.8	12° 04.8	12° 13.7	12° 22.6	12° 31.3	12° 40.0	12° 48.6	12° 57.1	13° 05.5	+8.8	59.7
	Сб 5	72° 35.1	87° 01.8	101° 28.6	115° 55.4	130° 22.2	144° 49.1	159° 15.9	173° 42.7	188° 09.6	202° 36.4	217° 03.3	+26.8	16.0
		14° 59.8	15° 06.7	15° 13.4	15° 20.0	15° 26.5	15° 32.9	15° 39.3	15° 45.5	15° 51.6	15° 57.6	16° 03.4	+6.4	58.8
	Вс 6	73° 48.4	88° 15.5	102° 42.7	117° 09.9	131° 37.1	146° 04.3	160° 31.6	174° 58.9	189° 26.2	203° 53.5	218° 20.9	+27.2	15.8
		17° 19.0	17° 23.1	17° 27.2	17° 31.2	17° 35.0	17° 38.7	17° 42.3	17° 45.9	17° 49.3	17° 52.6	17° 55.8	+3.7	57.9
	Пн 7	75° 14.5	89° 42.3	104° 10.2	118° 38.1	133° 06.0	147° 34.0	162° 02.0	176° 30.0	190° 58.1	205° 26.2	219° 54.3	+28.0	15.5
		18° 30.5	18° 32.0	18° 33.3	18° 34.6	18° 35.7	18° 36.7	18° 37.6	18° 38.5	18° 39.2	18° 39.8	18° 40.3	+1.0	57.0
◐	Вт 8	89° 42.3	104° 10.2	118° 38.1	133° 06.0	147° 34.0	162° 02.0	176° 30.0	190° 58.1	205° 26.2	219° 54.3	234° 22.5	+28.0	15.5
		18° 32.0	18° 33.3	18° 34.6	18° 35.7	18° 36.7	18° 37.6	18° 38.5	18° 39.2	18° 39.8	18° 40.3	18° 40.7	+0.9	56.9
	Ср 9	91° 29.9	105° 58.7	120° 27.6	134° 56.5	149° 25.5	163° 54.5	178° 23.5	192° 52.6	207° 21.8	221° 50.9	236° 20.2	+29.0	15.3
		18° 34.4	18° 33.1	18° 31.8	18° 30.4	18° 28.9	18° 27.3	18° 25.6	18° 23.8	18° 21.9	18° 19.9	18° 17.8	-1.7	56.1
	Чт 10	93° 44.4	108° 14.4	122° 44.4	137° 14.5	151° 44.6	166° 14.8	180° 45.1	195° 15.4	209° 45.7	224° 16.1	238° 46.5	+30.2	15.1
		17° 35.6	17° 32.1	17° 28.5	17° 24.8	17° 21.0	17° 17.2	17° 13.2	17° 09.2	17° 05.1	17° 01.0	16° 56.7	-3.9	55.4
	Пт 11	96° 29.0	111° 00.2	125° 31.5	140° 02.8	154° 34.2	169° 05.6	183° 37.1	198° 08.6	212° 40.1	227° 11.7	241° 43.4	+31.4	15.0
		15° 43.6	15° 38.1	15° 32.6	15° 27.0	15° 21.3	15° 15.6	15° 09.8	15° 03.9	14° 58.0	14° 52.0	14° 45.9	-5.8	54.9
	Сб 12	99° 43.6	114° 15.9	128° 48.3	143° 20.8	157° 53.3	172° 25.8	186° 58.4	201° 31.0	216° 03.6	230° 36.3	245° 09.0	+32.6	14.9
		13° 07.6	13° 00.5	12° 53.5	12° 46.3	12° 39.1	12° 31.9	12° 24.6	12° 17.3	12° 09.9	12° 02.5	11° 55.0	-7.3	54.5
	Вс 13	103° 24.5	117° 57.8	132° 31.2	147° 04.5	161° 37.9	176° 11.4	190° 44.9	205° 18.4	219° 51.9	234° 25.5	248° 59.0	+33.5	14.8
		9° 57.2	9° 49.0	9° 40.7	9° 32.5	9° 24.2	9° 15.8	9° 07.4	8° 59.0	8° 50.6	8° 42.1	8° 33.6	-8.4	54.2
	Пн 14	107° 26.1	122° 00.1	136° 34.1	151° 08.1	165° 42.1	180° 16.2	194° 50.3	209° 24.4	223° 58.5	238° 32.7	253° 06.8	+34.1	14.7
		6° 22.1	6° 13.1	6° 04.1	5° 55.1	5° 46.0	5° 37.0	5° 27.9	5° 18.8	5° 09.6	5° 00.5	4° 51.3	-9.1	54.0
	Вт 15	111° 40.9	126° 15.3	140° 49.6	155° 24.0	169° 58.4	184° 32.8	199° 07.1	213° 41.5	228° 15.9	242° 50.3	257° 24.8	+34.4	14.7
		2° 31.9	2° 22.5	2° 13.1	2° 03.6	1° 54.2	1° 44.8	1° 35.4	1° 25.9	1° 16.5	1° 07.0	0° 57.6	-9.4	53.9
○	Ср 16	116° 00.9	130° 35.3	145° 09.7	159° 44.1	174° 18.4	188° 52.8	203° 27.1	218° 01.5	232° 35.8	247° 10.2	261° 44.5	+34.4	14.7
		-1° 24.3	-1° 33.7	-1° 43.2	-1° 52.6	-2° 02.0	-2° 11.4	-2° 20.8	-2° 30.2	-2° 39.6	-2° 49.0	-2° 58.3	-9.4	53.9
	Чт 17	120° 17.7	134° 51.8	149° 25.9	163° 59.9	178° 33.9	193° 08.0	207° 41.9	222° 15.9	236° 49.9	251° 23.8	265° 57.7	+34.0	14.7
		-5° 17.1	-5° 26.2	-5° 35.3	-5° 44.3	-5° 53.4	-6° 02.4	-6° 11.4	-6° 20.4	-6° 29.3	-6° 38.3	-6° 47.2	-9.0	54.0
	Пт 18	124° 23.1	138° 56.6	153° 30.0	168° 03.5	182° 36.8	197° 10.2	211° 43.5	226° 16.8	240° 50.0	255° 23.2	269° 56.4	+33.3	14.8
		-8° 57.2	-9° 05.6	-9° 13.9	-9° 22.3	-9° 30.6	-9° 38.8	-9° 47.1	-9° 55.2	-10° 03.4	-10° 11.5	-10° 19.5	-8.2	54.2
	Сб 19	128° 09.7	142° 42.3	157° 14.8	171° 47.3	186° 19.8	200° 52.2	215° 24.6	229° 56.9	244° 29.2	259° 01.5	273° 33.7	+32.4	14.9
		-12° 15.1	-12° 22.4	-12° 29.7	-12° 36.9	-12° 44.1	-12° 51.2	-12° 58.2	-13° 05.2	-13° 12.2	-13° 19.1	-13° 25.9	-7.1	54.5
	Вс 20	131° 31.4	146° 02.9	160° 34.3	175° 05.7	189° 37.1	204° 08.4	218° 39.6	233° 10.8	247° 42.0	262° 13.1	276° 44.1	+31.3	15.0
		-15° 01.2	-15° 07.1	-15° 12.9	-15° 18.6	-15° 24.2	-15° 29.8	-15° 35.3	-15° 40.7	-15° 46.1	-15° 51.4	-15° 56.6	-5.5	55.0
	Пн 21	134° 24.2	148° 54.5	163° 24.8	177° 55.0	192° 25.1	206° 55.2	221° 25.3	235° 55.3	250° 25.2	264° 55.1	279° 25.0	+30.1	15.1
		-17° 05.9	-17° 09.8	-17° 13.7	-17° 17.6	-17° 21.3	-17° 25.0	-17° 28.5	-17° 32.0	-17° 35.4	-17° 38.7	-17° 42.0	-3.6	55.5
	Вт 22	136° 47.3	151° 16.4	165° 45.5	180° 14.5	194° 43.5	209° 12.5	223° 41.4	238° 10.3	252° 39.1	267° 07.9	281° 36.6	+28.9	15.3
		-18° 19.7	-18° 21.4	-18° 23.1	-18° 24.7	-18° 26.2	-18° 27.6	-18° 28.9	-18° 30.1	-18° 31.2	-18° 32.2	-18° 33.1	-1.3	56.2
	Ср 23	138° 43.0	153° 11.2	167° 39.2	182° 07.3	196° 35.3	211° 03.3	225° 31.3	239° 59.2	254° 27.1	268° 55.0	283° 22.8	+28.0	15.5
		-18° 34.5	-18° 33.8	-18° 32.9	-18° 32.0	-18° 31.0	-18° 29.8	-18° 28.6	-18° 27.2	-18° 25.7	-18° 24.2	-18° 22.5	+1.2	57.0
◑	Чт 24	140° 17.0	154° 44.4	169° 11.7	183° 39.1	198° 06.4	212° 33.8	227° 01.1	241° 28.3	255° 55.6	270° 22.8	284° 50.0	+27.3	15.8
		-17° 44.5	-17° 41.1	-17° 37.6	-17° 34.0	-17° 30.3	-17° 26.4	-17° 22.5	-17° 18.5	-17° 14.3	-17° 10.0	-17° 05.7	+3.9	57.9
	Пт 25	141° 36.3	156° 03.3	170° 30.3	184° 57.2	199° 24.1	213° 51.1	228° 18.0	242° 44.9	257° 11.8	271° 38.7	286° 05.6	+26.9	16.0
		-15° 47.4	-15° 41.4	-15° 35.2	-15° 28.9	-15° 22.6	-15° 16.1	-15° 09.5	-15° 02.8	-14° 56.1	-14° 49.2	-14° 42.2	+6.5	58.8
	Сб 26	142° 47.9	157° 14.7	171° 41.4	186° 08.2	200° 35.0	215° 01.7	229° 28.5	243° 55.2	258° 22.0	272° 48.7	287° 15.4	+26.8	16.3
		-12° 45.9	-12° 37.4	-12° 28.8	-12° 20.1	-12° 11.4	-12° 02.5	-11° 53.6	-11° 44.6	-11° 35.4	-11° 26.2	-11° 17.0	+8.9	59.7
	Вс 27	143° 56.1	158° 22.8	172° 49.4	187° 16.1	201° 42.8	216° 09.5	230° 36.1	245° 02.8	259° 29.4	273° 56.1	288° 22.8	+26.7	16.5
		-8° 48.5	-8° 38.0	-8° 27.4	-8° 16.8	-8° 06.2	-7° 55.4	-7° 44.6	-7° 33.8	-7° 22.9	-7° 11.9	-7° 00.9	+10.8	60.5
	Пн 28	145° 02.0	159° 28.5	173° 55.1	188° 21.7	202° 48.2	217° 14.8	231° 41.3	246° 07.8	260° 34.3	275° 00.9	289° 27.4	+26.5	16.6
		-4° 09.6	-3° 57.8	-3° 46.0	-3° 34.2	-3° 22.4	-3° 10.5	-2° 58.6	-2° 46.7	-2° 34.7	-2° 22.7	-2° 10.7	+11.9	61.0
	Вт 29	146° 03.8	160° 30.2	174° 56.5	189° 22.9	203° 49.2	218° 15.5	232° 41.8	247° 08.0	261° 34.3	276° 00.6	290° 26.8	+26.3	16.7
		0° 50.8	1° 02.9	1° 15.1	1° 27.2	1° 39.3	1° 51.4	2° 03.5	2° 15.6	2° 27.7	2° 39.7	2° 51.8	+12.1	61.3
●	Ср 30	146° 58.9	161° 24.9	175° 50.9	190° 16.9	204° 42.9	219° 08.9	233° 34.8	248° 00.8	262° 26.7	276° 52.6	291° 18.5	+26.0	16.7
		5° 49.1	6° 00.6	6° 12.1	6° 23.6	6° 35.0	6° 46.3	6° 57.6	7° 08.9	7° 20.1	7° 31.2	7° 42.3	+11.3	61.2
	Чт 31	147° 45.5	162° 11.2	176° 36.9	191° 02.6	205° 28.3	219° 54.0	234° 19.6	248° 45.3	263° 10.9	277° 36.6	292° 02.2	+25.7	16.5
		10° 21.0	10° 31.0	10° 41.0	10° 50.8	11° 00.6	11° 10.3	11° 19.9	11° 29.4	11° 38.8	11° 48.2	11° 57.4	+9.6	60.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 1 08h23 — Первая четв.: 8 01h27 — Полнолуние: 16 01h37 — Последняя четв.: 24 01h49 — Новолуние: 30 17h51

СОЛНЦЕ

Апрель 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	179° 01.2	194° 01.4	209° 01.6	224° 01.8	239° 02.0	254° 02.1	89° 04.5	104° 04.7	119° 04.9	134° 05.1	149° 05.3	164° 05.5	+0.2
	4° 34.8	4° 35.7	4° 36.7	4° 37.7	4° 38.6	4° 39.6	4° 52.1	4° 53.1	4° 54.0	4° 55.0	4° 56.0	4° 56.9	+1.0
Сб 2	179° 05.6	194° 05.8	209° 06.0	224° 06.2	239° 06.4	254° 06.6	89° 08.9	104° 09.1	119° 09.3	134° 09.5	149° 09.7	164° 09.8	+0.2
	4° 57.9	4° 58.9	4° 59.8	5° 00.8	5° 01.7	5° 02.7	5° 15.2	5° 16.1	5° 17.1	5° 18.0	5° 19.0	5° 20.0	+1.0
Вс 3	179° 10.0	194° 10.2	209° 10.4	224° 10.6	239° 10.7	254° 10.9	89° 13.3	104° 13.5	119° 13.6	134° 13.8	149° 14.0	164° 14.2	+0.2
	5° 20.9	5° 21.9	5° 22.8	5° 23.8	5° 24.7	5° 25.7	5° 38.1	5° 39.1	5° 40.0	5° 41.0	5° 41.9	5° 42.9	+1.0
Пн 4	179° 14.4	194° 14.5	209° 14.7	224° 14.9	239° 15.1	254° 15.3	89° 17.6	104° 17.8	119° 18.0	134° 18.1	149° 18.3	164° 18.5	+0.2
	5° 43.8	5° 44.8	5° 45.8	5° 46.7	5° 47.7	5° 48.6	6° 01.0	6° 01.9	6° 02.9	6° 03.8	6° 04.8	6° 05.7	+1.0
Вт 5	179° 18.7	194° 18.8	209° 19.0	224° 19.2	239° 19.4	254° 19.6	89° 21.9	104° 22.1	119° 22.2	134° 22.4	149° 22.6	164° 22.8	+0.2
	6° 06.7	6° 07.6	6° 08.6	6° 09.5	6° 10.5	6° 11.4	6° 23.7	6° 24.7	6° 25.6	6° 26.6	6° 27.5	6° 28.4	+0.9
Ср 6	179° 22.9	194° 23.1	209° 23.3	224° 23.5	239° 23.6	254° 23.8	89° 26.1	104° 26.3	119° 26.5	134° 26.6	149° 26.8	164° 27.0	+0.2
	6° 29.4	6° 30.3	6° 31.3	6° 32.2	6° 33.2	6° 34.1	6° 46.4	6° 47.3	6° 48.2	6° 49.2	6° 50.1	6° 51.1	+0.9
Чт 7	179° 27.2	194° 27.3	209° 27.5	224° 27.7	239° 27.9	254° 28.0	89° 30.3	104° 30.5	119° 30.6	134° 30.8	149° 31.0	164° 31.2	+0.2
	6° 52.0	6° 52.9	6° 53.9	6° 54.8	6° 55.8	6° 56.7	7° 08.9	7° 09.8	7° 10.7	7° 11.7	7° 12.6	7° 13.6	+0.9
Пт 8	179° 31.3	194° 31.5	209° 31.7	224° 31.8	239° 32.0	254° 32.2	89° 34.4	104° 34.6	119° 34.8	134° 34.9	149° 35.1	164° 35.3	+0.2
	7° 14.5	7° 15.4	7° 16.4	7° 17.3	7° 18.2	7° 19.2	7° 31.3	7° 32.2	7° 33.1	7° 34.1	7° 35.0	7° 35.9	+0.9
Сб 9	179° 35.4	194° 35.6	209° 35.8	224° 36.0	239° 36.1	254° 36.3	89° 38.5	104° 38.7	119° 38.8	134° 39.0	149° 39.2	164° 39.3	+0.2
	7° 36.9	7° 37.8	7° 38.7	7° 39.6	7° 40.6	7° 41.5	7° 53.5	7° 54.5	7° 55.4	7° 56.3	7° 57.2	7° 58.2	+0.9
Вс 10	179° 39.5	194° 39.7	209° 39.8	224° 40.0	239° 40.2	254° 40.3	89° 42.5	104° 42.7	119° 42.8	134° 43.0	149° 43.2	164° 43.3	+0.2
	7° 59.1	8° 00.0	8° 00.9	8° 01.9	8° 02.8	8° 03.7	8° 15.7	8° 16.6	8° 17.5	8° 18.4	8° 19.3	8° 20.3	+0.9
Пн 11	179° 43.5	194° 43.6	209° 43.8	224° 44.0	239° 44.1	254° 44.3	89° 46.4	104° 46.6	119° 46.8	134° 46.9	149° 47.1	164° 47.2	+0.2
	8° 21.2	8° 22.1	8° 23.0	8° 23.9	8° 24.9	8° 25.8	8° 37.7	8° 38.6	8° 39.5	8° 40.4	8° 41.3	8° 42.2	+0.9
Вт 12	179° 47.4	194° 47.6	209° 47.7	224° 47.9	239° 48.1	254° 48.2	89° 50.3	104° 50.5	119° 50.6	134° 50.8	149° 50.9	164° 51.1	+0.2
	8° 43.1	8° 44.1	8° 45.0	8° 45.9	8° 46.8	8° 47.7	8° 59.5	9° 00.4	9° 01.3	9° 02.2	9° 03.1	9° 04.0	+0.9
Ср 13	179° 51.2	194° 51.4	209° 51.6	224° 51.7	239° 51.9	254° 52.0	89° 54.1	104° 54.2	119° 54.4	134° 54.5	149° 54.7	164° 54.9	+0.2
	9° 05.0	9° 05.9	9° 06.8	9° 07.7	9° 08.6	9° 09.5	9° 21.2	9° 22.1	9° 23.0	9° 23.9	9° 24.8	9° 25.7	+0.9
Чт 14	179° 55.0	194° 55.2	209° 55.3	224° 55.5	239° 55.6	254° 55.8	89° 57.8	104° 57.9	119° 58.1	134° 58.2	149° 58.4	164° 58.5	+0.2
	9° 26.6	9° 27.5	9° 28.4	9° 29.3	9° 30.2	9° 31.1	9° 42.8	9° 43.7	9° 44.5	9° 45.4	9° 46.3	9° 47.2	+0.9
Пт 15	179° 58.7	194° 58.8	209° 59.0	224° 59.2	239° 59.3	254° 59.5	90° 01.4	105° 01.5	120° 01.7	135° 01.8	150° 02.0	165° 02.1	+0.2
	9° 48.1	9° 49.0	9° 49.9	9° 50.8	9° 51.7	9° 52.6	10° 04.1	10° 05.0	10° 05.9	10° 06.8	10° 07.7	10° 08.6	+0.9
Сб 16	180° 02.3	195° 02.4	210° 02.6	225° 02.7	240° 02.9	255° 03.0	90° 04.9	105° 05.1	120° 05.2	135° 05.4	150° 05.5	165° 05.6	+0.1
	10° 09.5	10° 10.3	10° 11.2	10° 12.1	10° 13.0	10° 13.9	10° 25.4	10° 26.2	10° 27.1	10° 28.0	10° 28.9	10° 29.8	+0.9
Вс 17	180° 05.8	195° 05.9	210° 06.1	225° 06.2	240° 06.4	255° 06.5	90° 08.4	105° 08.5	120° 08.6	135° 08.8	150° 08.9	165° 09.1	+0.1
	10° 30.6	10° 31.5	10° 32.4	10° 33.3	10° 34.1	10° 35.0	10° 46.4	10° 47.3	10° 48.1	10° 49.0	10° 49.9	10° 50.8	+0.9
Пн 18	180° 09.2	195° 09.3	210° 09.5	225° 09.6	240° 09.8	255° 09.9	90° 11.7	105° 11.8	120° 12.0	135° 12.1	150° 12.2	165° 12.4	+0.1
	10° 51.6	10° 52.5	10° 53.4	10° 54.2	10° 55.1	10° 56.0	11° 07.3	11° 08.1	11° 09.0	11° 09.9	11° 10.7	11° 11.6	+0.9
Вт 19	180° 12.5	195° 12.6	210° 12.8	225° 12.9	240° 13.0	255° 13.2	90° 14.9	105° 15.0	120° 15.2	135° 15.3	150° 15.4	165° 15.6	+0.1
	11° 12.5	11° 13.3	11° 14.2	11° 15.0	11° 15.9	11° 16.8	11° 28.0	11° 28.8	11° 29.7	11° 30.5	11° 31.4	11° 32.2	+0.9
Ср 20	180° 15.7	195° 15.8	210° 16.0	225° 16.1	240° 16.2	255° 16.3	90° 18.0	105° 18.1	120° 18.3	135° 18.4	150° 18.5	165° 18.6	+0.1
	11° 33.1	11° 33.9	11° 34.8	11° 35.7	11° 36.5	11° 37.4	11° 48.4	11° 49.3	11° 50.1	11° 51.0	11° 51.8	11° 52.7	+0.9
Чт 21	180° 18.8	195° 18.9	210° 19.0	225° 19.2	240° 19.3	255° 19.4	90° 21.0	105° 21.1	120° 21.3	135° 21.4	150° 21.5	165° 21.6	+0.1
	11° 53.5	11° 54.4	11° 55.2	11° 56.1	11° 56.9	11° 57.8	12° 08.8	12° 09.6	12° 10.4	12° 11.3	12° 12.1	12° 13.0	+0.8
Пт 22	180° 21.7	195° 21.9	210° 22.0	225° 22.1	240° 22.2	255° 22.3	90° 23.9	105° 24.0	120° 24.1	135° 24.2	150° 24.4	165° 24.5	+0.1
	12° 13.8	12° 14.6	12° 15.5	12° 16.3	12° 17.2	12° 18.0	12° 28.9	12° 29.7	12° 30.5	12° 31.4	12° 32.2	12° 33.0	+0.8
Сб 23	180° 24.6	195° 24.7	210° 24.8	225° 24.9	240° 25.1	255° 25.2	90° 26.7	105° 26.8	120° 26.9	135° 27.0	150° 27.1	165° 27.2	+0.1
	12° 33.9	12° 34.7	12° 35.5	12° 36.3	12° 37.2	12° 38.0	12° 48.8	12° 49.6	12° 50.4	12° 51.2	12° 52.1	12° 52.9	+0.8
Вс 24	180° 27.3	195° 27.4	210° 27.6	225° 27.7	240° 27.8	255° 27.9	90° 29.3	105° 29.4	120° 29.5	135° 29.6	150° 29.7	165° 29.8	+0.1
	12° 53.7	12° 54.5	12° 55.3	12° 56.2	12° 57.0	12° 57.8	13° 08.5	13° 09.3	13° 10.1	13° 10.9	13° 11.7	13° 12.5	+0.8
Пн 25	180° 29.9	195° 30.0	210° 30.2	225° 30.3	240° 30.4	255° 30.5	90° 31.8	105° 31.9	120° 32.0	135° 32.1	150° 32.2	165° 32.3	+0.1
	13° 13.3	13° 14.2	13° 15.0	13° 15.8	13° 16.6	13° 17.4	13° 27.9	13° 28.7	13° 29.5	13° 30.3	13° 31.2	13° 32.0	+0.8
Вт 26	180° 32.4	195° 32.5	210° 32.6	225° 32.7	240° 32.8	255° 32.9	90° 34.2	105° 34.3	120° 34.4	135° 34.5	150° 34.6	165° 34.7	+0.1
	13° 32.8	13° 33.6	13° 34.4	13° 35.2	13° 36.0	13° 36.8	13° 47.2	13° 48.0	13° 48.8	13° 49.6	13° 50.4	13° 51.2	+0.8
Ср 27	180° 34.8	195° 34.9	210° 35.0	225° 35.1	240° 35.2	255° 35.3	90° 36.5	105° 36.6	120° 36.6	135° 36.7	150° 36.8	165° 36.9	+0.1
	13° 52.0	13° 52.8	13° 53.5	13° 54.3	13° 55.1	13° 55.9	14° 06.2	14° 07.0	14° 07.8	14° 08.6	14° 09.4	14° 10.1	+0.8
Чт 28	180° 37.0	195° 37.1	210° 37.2	225° 37.3	240° 37.4	255° 37.5	90° 38.6	105° 38.7	120° 38.8	135° 38.9	150° 38.9	165° 39.0	+0.1
	14° 10.9	14° 11.7	14° 12.5	14° 13.3	14° 14.1	14° 14.9	14° 25.0	14° 25.8	14° 26.6	14° 27.3	14° 28.1	14° 28.9	+0.8
Пт 29	180° 39.1	195° 39.2	210° 39.3	225° 39.4	240° 39.4	255° 39.5	90° 40.6	105° 40.7	120° 40.8	135° 40.8	150° 40.9	165° 41.0	+0.1
	14° 29.7	14° 30.4	14° 31.2	14° 32.0	14° 32.8	14° 33.5	14° 43.6	14° 44.3	14° 45.1	14° 45.9	14° 46.6	14° 47.4	+0.8
Сб 30	180° 41.1	195° 41.2	210° 41.2	225° 41.3	240° 41.4	255° 41.5	90° 42.5	105° 42.5	120° 42.6	135° 42.7	150° 42.8	165° 42.8	+0.1
	14° 48.2	14° 48.9	14° 49.7	14° 50.5	14° 51.2	14° 52.0	15° 01.9	15° 02.6	15° 03.4	15° 04.1	15° 04.9	15° 05.7	+0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Апрель 2033

Д	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	Δ'/h	R/p
Пт 1	61° 52.6	76° 18.2	90° 43.7	105° 09.3	119° 34.9	134° 00.4	148° 26.0	162° 51.6	177° 17.2	191° 42.7	206° 08.3	+25.6	16.4
	13° 16.7	13° 25.0	13° 33.2	13° 41.3	13° 49.4	13° 57.3	14° 05.1	14° 12.9	14° 20.5	14° 28.0	14° 35.4	+7.9	60.1
Сб 2	62° 32.7	76° 58.4	91° 24.2	105° 49.9	120° 15.6	134° 41.4	149° 07.2	163° 33.0	177° 58.8	192° 24.7	206° 50.5	+25.8	16.2
	16° 13.6	16° 19.3	16° 24.8	16° 30.2	16° 35.6	16° 40.8	16° 45.8	16° 50.8	16° 55.7	17° 00.4	17° 05.0	+5.1	59.2
Вс 3	63° 21.5	77° 47.8	92° 14.2	106° 40.5	121° 07.0	135° 33.4	149° 59.9	164° 26.4	178° 52.9	193° 19.5	207° 46.2	+26.5	15.9
	18° 00.5	18° 03.3	18° 05.9	18° 08.4	18° 10.9	18° 13.2	18° 15.3	18° 17.4	18° 19.4	18° 21.2	18° 23.0	+2.2	58.2
Пн 4	64° 30.9	78° 58.3	93° 25.7	107° 53.1	122° 20.6	136° 48.2	151° 15.8	165° 43.5	180° 11.2	194° 39.0	209° 06.8	+27.6	15.6
	18° 35.4	18° 35.3	18° 35.2	18° 34.9	18° 34.5	18° 34.0	18° 33.4	18° 32.7	18° 31.9	18° 31.0	18° 30.0	-0.5	57.3
Вт 5	66° 11.0	80° 39.8	95° 08.6	109° 37.5	124° 06.4	138° 35.4	153° 04.4	167° 33.5	182° 02.7	196° 31.9	211° 01.2	+29.0	15.4
	18° 02.8	18° 00.2	17° 57.5	17° 54.7	17° 51.9	17° 48.9	17° 45.9	17° 42.7	17° 39.5	17° 36.2	17° 32.7	-3.0	56.3
◐ Ср 6	68° 27.8	82° 58.1	97° 28.4	111° 58.8	126° 29.2	140° 59.7	155° 30.3	170° 00.9	184° 31.6	199° 02.3	213° 33.1	+30.5	15.1
	16° 31.4	16° 26.7	16° 21.9	16° 17.0	16° 12.0	16° 07.0	16° 01.9	15° 56.7	15° 51.4	15° 46.1	15° 40.7	-5.1	55.5
Чт 7	82° 58.1	97° 28.4	111° 58.8	126° 29.2	140° 59.7	155° 30.3	170° 00.9	184° 31.6	199° 02.3	213° 33.1	228° 04.0	+30.6	15.1
	16° 26.7	16° 21.9	16° 17.0	16° 12.0	16° 07.0	16° 01.9	15° 56.7	15° 51.4	15° 46.1	15° 40.7	15° 35.2	-5.1	55.5
Пт 8	85° 53.6	100° 25.4	114° 57.2	129° 29.0	144° 01.0	158° 32.9	173° 04.9	187° 37.0	202° 09.1	216° 41.3	231° 13.5	+32.0	15.0
	14° 05.2	13° 58.7	13° 52.1	13° 45.5	13° 38.8	13° 32.1	13° 25.3	13° 18.4	13° 11.5	13° 04.6	12° 57.5	-6.8	54.9
Сб 9	89° 22.4	103° 55.3	118° 28.3	133° 01.4	147° 34.4	162° 07.5	176° 40.7	191° 13.9	205° 47.1	220° 20.4	234° 53.7	+33.1	14.8
	11° 06.3	10° 58.5	10° 50.7	10° 42.8	10° 34.9	10° 26.9	10° 18.9	10° 10.9	10° 02.8	9° 54.7	9° 46.5	-8.0	54.4
Вс 10	93° 17.3	107° 51.1	122° 24.9	136° 58.8	151° 32.7	166° 06.6	180° 40.6	195° 14.6	209° 48.6	224° 22.6	238° 56.6	+33.9	14.8
	7° 40.0	7° 31.3	7° 22.6	7° 13.8	7° 05.1	6° 56.3	6° 47.4	6° 38.6	6° 29.7	6° 20.8	6° 11.9	-8.8	54.1
Пн 11	97° 29.5	112° 03.8	126° 38.2	141° 12.5	155° 46.9	170° 21.2	184° 55.6	199° 30.0	214° 04.4	228° 38.8	243° 13.2	+34.4	14.7
	3° 55.5	3° 46.3	3° 37.0	3° 27.8	3° 18.5	3° 09.2	2° 59.9	2° 50.6	2° 41.3	2° 31.9	2° 22.6	-9.3	54.0
Вт 12	101° 49.7	116° 24.1	130° 58.6	145° 33.0	160° 07.4	174° 41.8	189° 16.2	203° 50.7	218° 25.1	232° 59.5	247° 33.8	+34.4	14.7
	0° 01.6	-0° 07.8	-0° 17.2	-0° 26.7	-0° 36.1	-0° 45.5	-0° 54.9	-1° 04.4	-1° 13.8	-1° 23.2	-1° 32.6	-9.4	53.9
Ср 13	106° 08.3	120° 42.5	135° 16.7	149° 50.8	164° 25.0	178° 59.1	193° 33.2	208° 07.3	222° 41.3	237° 15.3	251° 49.4	+34.1	14.7
	-3° 52.8	-4° 02.1	-4° 11.4	-4° 20.6	-4° 29.8	-4° 39.0	-4° 48.2	-4° 57.4	-5° 06.5	-5° 15.7	-5° 24.8	-9.2	54.0
○ Чт 14	110° 16.6	124° 50.2	139° 23.8	153° 57.3	168° 30.8	183° 04.3	197° 37.8	212° 11.2	226° 44.6	241° 17.9	255° 51.2	+33.5	14.8
	-7° 38.8	-7° 47.5	-7° 56.2	-8° 04.9	-8° 13.5	-8° 22.1	-8° 30.7	-8° 39.2	-8° 47.7	-8° 56.2	-9° 04.6	-8.6	54.2
Пт 15	114° 06.8	128° 39.5	143° 12.2	157° 44.9	172° 17.5	186° 50.1	201° 22.6	215° 55.1	230° 27.6	245° 00.0	259° 32.4	+32.6	14.9
	-11° 06.5	-11° 14.3	-11° 22.1	-11° 29.8	-11° 37.4	-11° 45.0	-11° 52.6	-12° 00.1	-12° 07.5	-12° 14.9	-12° 22.3	-7.6	54.5
Сб 16	117° 32.9	132° 04.6	146° 36.3	161° 07.9	175° 39.4	190° 10.9	204° 42.4	219° 13.8	233° 45.2	248° 16.5	262° 47.8	+31.5	15.0
	-14° 06.0	-14° 12.4	-14° 18.8	-14° 25.1	-14° 31.4	-14° 37.6	-14° 43.7	-14° 49.7	-14° 55.7	-15° 01.7	-15° 07.5	-6.2	54.8
Вс 17	120° 31.8	135° 02.3	149° 32.9	164° 03.3	178° 33.8	193° 04.2	207° 34.5	222° 04.9	236° 35.1	251° 05.4	265° 35.5	+30.4	15.1
	-16° 26.8	-16° 31.5	-16° 36.2	-16° 40.7	-16° 45.1	-16° 49.5	-16° 53.8	-16° 58.0	-17° 02.2	-17° 06.2	-17° 10.2	-4.3	55.3
Пн 18	123° 03.4	137° 32.9	152° 02.4	166° 31.8	181° 01.3	195° 30.7	210° 00.0	224° 29.3	238° 58.6	253° 27.9	267° 57.1	+29.4	15.2
	-17° 59.4	-18° 02.0	-18° 04.5	-18° 06.9	-18° 09.2	-18° 11.4	-18° 13.5	-18° 15.5	-18° 17.4	-18° 19.3	-18° 21.0	-2.2	55.8
Вт 19	125° 11.4	139° 40.1	154° 08.8	168° 37.4	183° 06.0	197° 34.7	212° 03.2	226° 31.8	241° 00.3	255° 28.9	269° 57.3	+28.6	15.4
	-18° 35.5	-18° 35.7	-18° 35.8	-18° 35.7	-18° 35.6	-18° 35.4	-18° 35.1	-18° 34.6	-18° 34.1	-18° 33.5	-18° 32.8	+0.3	56.3
Ср 20	127° 02.3	141° 30.4	155° 58.6	170° 26.8	184° 54.9	199° 23.1	213° 51.2	228° 19.3	242° 47.4	257° 15.5	271° 43.5	+28.1	15.5
	-18° 09.5	-18° 07.1	-18° 04.6	-18° 02.1	-17° 59.4	-17° 56.6	-17° 53.7	-17° 50.7	-17° 47.6	-17° 44.4	-17° 41.1	+2.8	57.0
Чт 21	128° 43.6	143° 11.6	157° 39.5	172° 07.5	186° 35.4	201° 03.4	215° 31.3	229° 59.3	244° 27.2	258° 55.1	273° 23.0	+27.9	15.7
	-16° 39.4	-16° 34.4	-16° 29.4	-16° 24.3	-16° 19.1	-16° 13.7	-16° 08.3	-16° 02.8	-15° 57.2	-15° 51.5	-15° 45.7	+5.4	57.7
◑ Пт 22	130° 21.9	144° 49.8	159° 17.7	173° 45.6	188° 13.6	202° 41.5	217° 09.4	231° 37.3	246° 05.3	260° 33.2	275° 01.1	+27.9	15.9
	-14° 07.1	-13° 59.8	-13° 52.4	-13° 45.0	-13° 37.4	-13° 29.7	-13° 22.0	-13° 14.2	-13° 06.3	-12° 58.3	-12° 50.2	+7.7	58.4
Сб 23	132° 00.2	146° 28.1	160° 56.1	175° 24.0	189° 51.9	204° 19.9	218° 47.8	233° 15.7	247° 43.7	262° 11.6	276° 39.5	+27.9	16.1
	-10° 39.3	-10° 29.9	-10° 20.5	-10° 11.0	-10° 01.5	-9° 51.9	-9° 42.2	-9° 32.4	-9° 22.6	-9° 12.7	-9° 02.7	+9.7	59.2
Вс 24	133° 37.9	148° 05.8	162° 33.6	177° 01.4	191° 29.3	205° 57.1	220° 24.9	234° 52.7	249° 20.5	263° 48.2	278° 16.0	+27.8	16.3
	-6° 26.3	-6° 15.5	-6° 04.5	-5° 53.6	-5° 42.6	-5° 31.6	-5° 20.5	-5° 09.3	-4° 58.2	-4° 47.0	-4° 35.7	+11.1	59.9
Пн 25	135° 10.9	149° 38.4	164° 06.0	178° 33.5	193° 00.9	207° 28.4	221° 55.8	236° 23.3	250° 50.7	265° 18.1	279° 45.4	+27.5	16.5
	-1° 43.1	-1° 31.4	-1° 19.7	-1° 08.0	-0° 56.2	-0° 44.5	-0° 32.7	-0° 20.9	-0° 09.1	0° 02.7	0° 14.5	+11.8	60.4
Вт 26	136° 33.1	151° 00.1	165° 27.0	179° 54.0	194° 20.9	208° 47.7	223° 14.6	237° 41.4	252° 08.2	266° 34.9	281° 01.7	+26.9	16.6
	3° 11.6	3° 23.3	3° 35.0	3° 46.7	3° 58.4	4° 10.0	4° 21.7	4° 33.3	4° 44.8	4° 56.4	5° 07.9	+11.6	60.7
Ср 27	137° 39.1	152° 05.3	166° 31.5	180° 57.7	195° 23.9	209° 50.0	224° 16.1	238° 42.2	253° 08.2	267° 34.2	282° 00.2	+26.1	16.6
	7° 56.2	8° 07.1	8° 17.9	8° 28.6	8° 39.3	8° 50.0	9° 00.5	9° 11.0	9° 21.5	9° 31.9	9° 42.2	+10.6	60.7
Чт 28	138° 26.6	152° 52.2	167° 17.7	181° 43.2	196° 08.7	210° 34.1	224° 59.6	239° 25.0	253° 50.4	268° 15.8	282° 41.1	+25.4	16.5
	12° 08.2	12° 17.3	12° 26.4	12° 35.3	12° 44.1	12° 52.9	13° 01.5	13° 10.1	13° 18.5	13° 26.9	13° 35.2	+8.7	60.4
● Пт 29	138° 59.6	153° 24.7	167° 49.8	182° 15.0	196° 40.1	211° 05.2	225° 30.3	239° 55.4	254° 20.6	268° 45.7	283° 10.8	+25.1	16.3
	15° 27.2	15° 33.8	15° 40.3	15° 46.7	15° 53.0	15° 59.2	16° 05.2	16° 11.2	16° 17.0	16° 22.7	16° 28.3	+6.1	59.9
Сб 30	139° 28.4	153° 53.7	168° 19.0	182° 44.3	197° 09.7	211° 35.0	226° 00.4	240° 25.8	254° 51.2	269° 16.7	283° 42.2	+25.4	16.1
	17° 38.2	17° 41.9	17° 45.5	17° 49.0	17° 52.3	17° 55.5	17° 58.6	18° 01.6	18° 04.5	18° 07.2	18° 09.8	+3.2	59.1

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Первая четв.: 6 15h13 — Полнолуние: 14 19h17 — Последняя четв.: 22 11h42 — Новолуние: 29 02h46

СОЛНЦЕ

Май 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	180° 42.9	195° 43.0	210° 43.1	225° 43.1	240° 43.2	255° 43.3	90° 44.2	105° 44.3	120° 44.3	135° 44.4	150° 44.5	165° 44.5	+0.1
	15° 06.4	15° 07.2	15° 07.9	15° 08.7	15° 09.4	15° 10.2	15° 19.9	15° 20.7	15° 21.4	15° 22.2	15° 22.9	15° 23.7	+0.8
Пн 2	180° 44.6	195° 44.7	210° 44.7	225° 44.8	240° 44.9	255° 45.0	90° 45.8	105° 45.9	120° 45.9	135° 46.0	150° 46.1	165° 46.1	+0.1
	15° 24.4	15° 25.2	15° 25.9	15° 26.7	15° 27.4	15° 28.1	15° 37.8	15° 38.5	15° 39.2	15° 40.0	15° 40.7	15° 41.4	+0.7
Вт 3	180° 46.2	195° 46.2	210° 46.3	225° 46.4	240° 46.4	255° 46.5	90° 47.3	105° 47.3	120° 47.4	135° 47.4	150° 47.5	165° 47.6	+0.1
	15° 42.2	15° 42.9	15° 43.6	15° 44.4	15° 45.1	15° 45.8	15° 55.3	15° 56.0	15° 56.8	15° 57.5	15° 58.2	15° 58.9	+0.7
Ср 4	180° 47.6	195° 47.7	210° 47.7	225° 47.8	240° 47.8	255° 47.9	90° 48.6	105° 48.7	120° 48.7	135° 48.8	150° 48.8	165° 48.9	+0.1
	15° 59.7	16° 00.4	16° 01.1	16° 01.8	16° 02.5	16° 03.3	16° 12.6	16° 13.3	16° 14.0	16° 14.7	16° 15.4	16° 16.2	+0.7
Чт 5	180° 48.9	195° 49.0	210° 49.0	225° 49.1	240° 49.1	255° 49.2	90° 49.8	105° 49.9	120° 49.9	135° 50.0	150° 50.0	165° 50.0	+0.1
	16° 16.9	16° 17.6	16° 18.3	16° 19.0	16° 19.7	16° 20.4	16° 29.6	16° 30.3	16° 31.0	16° 31.7	16° 32.4	16° 33.1	+0.7
Пт 6	180° 50.1	195° 50.1	210° 50.2	225° 50.2	240° 50.3	255° 50.3	90° 50.9	105° 50.9	120° 51.0	135° 51.0	150° 51.0	165° 51.1	+0.0
	16° 33.8	16° 34.5	16° 35.2	16° 35.9	16° 36.6	16° 37.3	16° 46.4	16° 47.0	16° 47.7	16° 48.4	16° 49.1	16° 49.8	+0.7
Сб 7	180° 51.1	195° 51.2	210° 51.2	225° 51.2	240° 51.3	255° 51.3	90° 51.8	105° 51.8	120° 51.9	135° 51.9	150° 52.0	165° 52.0	+0.0
	16° 50.5	16° 51.2	16° 51.9	16° 52.6	16° 53.2	16° 53.9	17° 02.8	17° 03.5	17° 04.2	17° 04.8	17° 05.5	17° 06.2	+0.7
Вс 8	180° 52.0	195° 52.1	210° 52.1	225° 52.1	240° 52.2	255° 52.2	90° 52.6	105° 52.6	120° 52.7	135° 52.7	150° 52.7	165° 52.8	+0.0
	17° 06.9	17° 07.6	17° 08.2	17° 08.9	17° 09.6	17° 10.3	17° 19.0	17° 19.7	17° 20.3	17° 21.0	17° 21.7	17° 22.3	+0.7
Пн 9	180° 52.8	195° 52.8	210° 52.8	225° 52.9	240° 52.9	255° 52.9	90° 53.3	105° 53.3	120° 53.3	135° 53.3	150° 53.4	165° 53.4	+0.0
	17° 23.0	17° 23.6	17° 24.3	17° 25.0	17° 25.6	17° 26.3	17° 34.9	17° 35.5	17° 36.2	17° 36.8	17° 37.5	17° 38.1	+0.7
Вт 10	180° 53.4	195° 53.4	210° 53.4	225° 53.5	240° 53.5	255° 53.5	90° 53.8	105° 53.8	120° 53.8	135° 53.8	150° 53.8	165° 53.9	+0.0
	17° 38.8	17° 39.4	17° 40.1	17° 40.7	17° 41.4	17° 42.1	17° 50.5	17° 51.1	17° 51.7	17° 52.4	17° 53.0	17° 53.7	+0.7
Ср 11	180° 53.9	195° 53.9	210° 53.9	225° 53.9	240° 53.9	255° 54.0	90° 54.1	105° 54.2	120° 54.2	135° 54.2	150° 54.2	165° 54.2	+0.0
	17° 54.3	17° 54.9	17° 55.6	17° 56.2	17° 56.9	17° 57.5	18° 05.7	18° 06.4	18° 07.0	18° 07.6	18° 08.3	18° 08.9	+0.6
Чт 12	180° 54.2	195° 54.2	210° 54.2	225° 54.2	240° 54.3	255° 54.3	90° 54.4	105° 54.4	120° 54.4	135° 54.4	150° 54.4	165° 54.4	+0.0
	18° 09.5	18° 10.1	18° 10.8	18° 11.4	18° 12.0	18° 12.7	18° 20.7	18° 21.3	18° 22.0	18° 22.6	18° 23.2	18° 23.8	+0.6
Пт 13	180° 54.4	195° 54.4	210° 54.4	225° 54.4	240° 54.4	255° 54.4	90° 54.5	105° 54.5	120° 54.5	135° 54.5	150° 54.5	165° 54.5	+0.0
	18° 24.4	18° 25.0	18° 25.7	18° 26.3	18° 26.9	18° 27.5	18° 35.4	18° 36.0	18° 36.6	18° 37.2	18° 37.8	18° 38.4	+0.6
Сб 14	180° 54.5	195° 54.5	210° 54.5	225° 54.5	240° 54.5	255° 54.5	90° 54.4	105° 54.4	120° 54.4	135° 54.4	150° 54.4	165° 54.4	-0.0
	18° 39.0	18° 39.6	18° 40.2	18° 40.8	18° 41.4	18° 42.0	18° 49.8	18° 50.4	18° 50.9	18° 51.5	18° 52.1	18° 52.7	+0.6
Вс 15	180° 54.4	195° 54.4	210° 54.4	225° 54.4	240° 54.4	255° 54.3	90° 54.2	105° 54.2	120° 54.2	135° 54.2	150° 54.2	165° 54.2	-0.0
	18° 53.3	18° 53.9	18° 54.5	18° 55.1	18° 55.7	18° 56.2	19° 03.8	19° 04.4	19° 05.0	19° 05.5	19° 06.1	19° 06.7	+0.6
Пн 16	180° 54.2	195° 54.1	210° 54.1	225° 54.1	240° 54.1	255° 54.1	90° 53.9	105° 53.9	120° 53.9	135° 53.8	150° 53.8	165° 53.8	-0.0
	19° 07.3	19° 07.8	19° 08.4	19° 09.0	19° 09.6	19° 10.1	19° 17.5	19° 18.1	19° 18.7	19° 19.2	19° 19.8	19° 20.3	+0.6
Вт 17	180° 53.8	195° 53.8	210° 53.8	225° 53.7	240° 53.7	255° 53.7	90° 53.4	105° 53.4	120° 53.4	135° 53.3	150° 53.3	165° 53.3	-0.0
	19° 20.9	19° 21.5	19° 22.0	19° 22.6	19° 23.1	19° 23.7	19° 30.9	19° 31.5	19° 32.0	19° 32.6	19° 33.1	19° 33.7	+0.6
Ср 18	180° 53.3	195° 53.3	210° 53.2	225° 53.2	240° 53.2	255° 53.2	90° 52.8	105° 52.8	120° 52.7	135° 52.7	150° 52.7	165° 52.7	-0.0
	19° 34.2	19° 34.8	19° 35.3	19° 35.9	19° 36.4	19° 37.0	19° 44.0	19° 44.5	19° 45.1	19° 45.6	19° 46.1	19° 46.7	+0.5
Чт 19	180° 52.6	195° 52.6	210° 52.6	225° 52.5	240° 52.5	255° 52.5	90° 52.0	105° 52.0	120° 52.0	135° 51.9	150° 51.9	165° 51.9	-0.0
	19° 47.2	19° 47.7	19° 48.3	19° 48.8	19° 49.3	19° 49.9	19° 56.7	19° 57.2	19° 57.8	19° 58.3	19° 58.8	19° 59.3	+0.5
Пт 20	180° 51.8	195° 51.8	210° 51.8	225° 51.7	240° 51.7	255° 51.7	90° 51.1	105° 51.1	120° 51.1	135° 51.0	150° 51.0	165° 50.9	-0.0
	19° 59.8	20° 00.4	20° 00.9	20° 01.4	20° 01.9	20° 02.4	20° 09.1	20° 09.6	20° 10.1	20° 10.6	20° 11.1	20° 11.6	+0.5
Сб 21	180° 50.9	195° 50.9	210° 50.8	225° 50.8	240° 50.7	255° 50.7	90° 50.1	105° 50.1	120° 50.0	135° 50.0	150° 49.9	165° 49.9	-0.0
	20° 12.1	20° 12.6	20° 13.1	20° 13.7	20° 14.2	20° 14.7	20° 21.1	20° 21.6	20° 22.1	20° 22.6	20° 23.1	20° 23.6	+0.5
Вс 22	180° 49.8	195° 49.8	210° 49.7	225° 49.7	240° 49.6	255° 49.6	90° 48.9	105° 48.9	120° 48.8	135° 48.8	150° 48.7	165° 48.7	-0.0
	20° 24.1	20° 24.6	20° 25.1	20° 25.6	20° 26.1	20° 26.5	20° 32.8	20° 33.3	20° 33.8	20° 34.3	20° 34.7	20° 35.2	+0.5
Пн 23	180° 48.6	195° 48.6	210° 48.5	225° 48.5	240° 48.4	255° 48.4	90° 47.6	105° 47.6	120° 47.5	135° 47.5	150° 47.4	165° 47.3	-0.1
	20° 35.7	20° 36.2	20° 36.7	20° 37.1	20° 37.6	20° 38.1	20° 44.2	20° 44.6	20° 45.1	20° 45.6	20° 46.0	20° 46.5	+0.5
Вт 24	180° 47.3	195° 47.2	210° 47.2	225° 47.1	240° 47.0	255° 47.0	90° 46.2	105° 46.1	120° 46.1	135° 46.0	150° 45.9	165° 45.9	-0.1
	20° 47.0	20° 47.4	20° 47.9	20° 48.3	20° 48.8	20° 49.3	20° 55.2	20° 55.6	20° 56.1	20° 56.5	20° 57.0	20° 57.4	+0.5
Ср 25	180° 45.8	195° 45.7	210° 45.7	225° 45.6	240° 45.6	255° 45.5	90° 44.6	105° 44.6	120° 44.5	135° 44.4	150° 44.4	165° 44.3	-0.1
	20° 57.8	20° 58.3	20° 58.7	20° 59.2	20° 59.6	21° 00.1	21° 05.8	21° 06.2	21° 06.7	21° 07.1	21° 07.5	21° 08.0	+0.4
Чт 26	180° 44.2	195° 44.1	210° 44.1	225° 44.0	240° 43.9	255° 43.9	90° 42.9	105° 42.9	120° 42.8	135° 42.7	150° 42.6	165° 42.6	-0.1
	21° 08.4	21° 08.8	21° 09.2	21° 09.7	21° 10.1	21° 10.5	21° 16.0	21° 16.5	21° 16.9	21° 17.3	21° 17.7	21° 18.1	+0.4
Пт 27	180° 42.5	195° 42.4	210° 42.3	225° 42.3	240° 42.2	255° 42.1	90° 41.1	105° 41.0	120° 41.0	135° 40.9	150° 40.8	165° 40.7	-0.1
	21° 18.6	21° 19.0	21° 19.4	21° 19.8	21° 20.2	21° 20.6	21° 25.9	21° 26.3	21° 26.7	21° 27.1	21° 27.6	21° 28.0	+0.4
Сб 28	180° 40.7	195° 40.6	210° 40.5	225° 40.4	240° 40.3	255° 40.3	90° 39.2	105° 39.1	120° 39.0	135° 38.9	150° 38.9	165° 38.8	-0.1
	21° 28.4	21° 28.8	21° 29.2	21° 29.6	21° 30.0	21° 30.3	21° 35.5	21° 35.9	21° 36.2	21° 36.6	21° 37.0	21° 37.4	+0.4
Вс 29	180° 38.7	195° 38.6	210° 38.5	225° 38.4	240° 38.4	255° 38.3	90° 37.2	105° 37.1	120° 37.0	135° 36.9	150° 36.8	165° 36.7	-0.1
	21° 37.8	21° 38.2	21° 38.6	21° 38.9	21° 39.3	21° 39.7	21° 44.6	21° 45.0	21° 45.4	21° 45.7	21° 46.1	21° 46.5	+0.4
Пн 30	180° 36.6	195° 36.5	210° 36.5	225° 36.4	240° 36.3	255° 36.2	90° 35.0	105° 34.9	120° 34.8	135° 34.7	150° 34.6	165° 34.6	-0.1
	21° 46.8	21° 47.2	21° 47.6	21° 47.9	21° 48.3	21° 48.7	21° 53.4	21° 53.7	21° 54.1	21° 54.5	21° 54.8	21° 55.2	+0.4
Вт 31	180° 34.5	195° 34.4	210° 34.3	225° 34.2	240° 34.1	255° 34.0	90° 32.8	105° 32.7	120° 32.6	135° 32.5	150° 32.4	165° 32.3	-0.1
	21° 55.5	21° 55.9	21° 56.2	21° 56.6	21° 56.9	21° 57.3	22° 01.8	22° 02.1	22° 02.5	22° 02.8	22° 03.1	22° 03.5	+0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2033

Д	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	Δ'/h	R/p
Вс 1	53° 33.0	67° 58.9	82° 24.7	96° 50.6	111° 16.6	125° 42.6	140° 08.6	154° 34.7	169° 00.8	183° 26.9	197° 53.1	+26.0	15.9
	18° 28.0	18° 29.4	18° 30.7	18° 31.9	18° 32.9	18° 33.9	18° 34.7	18° 35.4	18° 36.0	18° 36.4	18° 36.8	+0.9	58.4
Пн 2	54° 32.4	68° 59.5	83° 26.6	97° 53.8	112° 21.1	126° 48.4	141° 15.7	155° 43.2	170° 10.7	184° 38.2	199° 05.8	+27.3	15.7
	18° 28.5	18° 27.1	18° 25.6	18° 23.9	18° 22.2	18° 20.3	18° 18.3	18° 16.3	18° 14.1	18° 11.8	18° 09.4	-1.9	57.5
Вт 3	56° 08.0	70° 36.7	85° 05.5	99° 34.3	114° 03.2	128° 32.2	143° 01.2	157° 30.3	171° 59.5	186° 28.7	200° 58.0	+29.0	15.4
	17° 22.1	17° 18.2	17° 14.2	17° 10.2	17° 06.0	17° 01.7	16° 57.4	16° 53.0	16° 48.5	16° 43.9	16° 39.2	-4.3	56.5
Ср 4	58° 25.9	72° 56.3	87° 26.8	101° 57.4	116° 28.0	130° 58.6	145° 29.4	160° 00.2	174° 31.0	189° 02.0	203° 33.0	+30.7	15.2
	15° 19.9	15° 14.0	15° 08.0	15° 02.0	14° 55.9	14° 49.8	14° 43.6	14° 37.3	14° 30.9	14° 24.5	14° 18.1	-6.2	55.7
Чт 5	61° 25.4	75° 57.4	90° 29.4	105° 01.5	119° 33.6	134° 05.8	148° 38.1	163° 10.4	177° 42.7	192° 15.1	206° 47.6	+32.2	15.0
	12° 34.0	12° 26.7	12° 19.3	12° 11.8	12° 04.3	11° 56.7	11° 49.1	11° 41.4	11° 33.7	11° 26.0	11° 18.2	-7.6	55.1
◐ Пт 6	65° 00.3	79° 33.6	94° 06.8	108° 40.1	123° 13.4	137° 46.8	152° 20.2	166° 53.7	181° 27.2	196° 00.7	210° 34.2	+33.4	14.9
	9° 16.4	9° 08.0	8° 59.5	8° 51.0	8° 42.5	8° 34.0	8° 25.4	8° 16.8	8° 08.1	7° 59.5	7° 50.8	-8.6	54.5
Сб 7	79° 33.6	94° 06.8	108° 40.1	123° 13.4	137° 46.8	152° 20.2	166° 53.7	181° 27.2	196° 00.7	210° 34.2	225° 07.8	+33.4	14.9
	9° 08.0	8° 59.5	8° 51.0	8° 42.5	8° 34.0	8° 25.4	8° 16.8	8° 08.1	7° 59.5	7° 50.8	7° 42.0	-8.6	54.5
Вс 8	83° 35.5	98° 09.6	112° 43.7	127° 17.8	141° 51.9	156° 26.1	171° 00.3	185° 34.4	200° 08.7	214° 42.9	229° 17.1	+34.2	14.8
	5° 28.1	5° 19.0	5° 09.9	5° 00.7	4° 51.6	4° 42.4	4° 33.2	4° 24.0	4° 14.8	4° 05.5	3° 56.3	-9.2	54.2
Пн 9	87° 52.5	102° 26.9	117° 01.3	131° 35.8	146° 10.2	160° 44.7	175° 19.1	189° 53.6	204° 28.0	219° 02.5	233° 36.9	+34.4	14.7
	1° 36.1	1° 26.7	1° 17.3	1° 07.9	0° 58.5	0° 49.0	0° 39.6	0° 30.2	0° 20.7	0° 11.3	0° 01.8	-9.4	54.1
Вт 10	92° 13.2	106° 47.6	121° 21.9	135° 56.2	150° 30.6	165° 04.9	179° 39.1	194° 13.4	208° 47.7	223° 21.9	237° 56.1	+34.3	14.7
	-2° 19.5	-2° 28.9	-2° 38.3	-2° 47.7	-2° 57.0	-3° 06.4	-3° 15.7	-3° 25.1	-3° 34.4	-3° 43.7	-3° 53.0	-9.3	54.1
Ср 11	96° 27.0	111° 00.9	125° 34.7	140° 08.5	154° 42.3	169° 16.0	183° 49.8	198° 23.5	212° 57.1	227° 30.8	242° 04.3	+33.7	14.8
	-6° 10.5	-6° 19.5	-6° 28.5	-6° 37.5	-6° 46.4	-6° 55.3	-7° 04.2	-7° 13.1	-7° 21.9	-7° 30.8	-7° 39.5	-8.9	54.2
Чт 12	100° 24.1	114° 57.2	129° 30.1	144° 03.1	158° 36.0	173° 08.8	187° 41.6	202° 14.4	216° 47.1	231° 19.8	245° 52.5	+32.8	14.9
	-9° 47.7	-9° 55.9	-10° 04.2	-10° 12.4	-10° 20.5	-10° 28.6	-10° 36.7	-10° 44.7	-10° 52.7	-11° 00.6	-11° 08.5	-8.1	54.5
Пт 13	103° 56.7	118° 28.7	133° 00.5	147° 32.3	162° 04.1	176° 35.8	191° 07.5	205° 39.1	220° 10.7	234° 42.2	249° 13.7	+31.7	15.0
	-13° 01.2	-13° 08.3	-13° 15.4	-13° 22.4	-13° 29.3	-13° 36.2	-13° 43.0	-13° 49.7	-13° 56.4	-14° 03.1	-14° 09.6	-6.8	54.9
○ Сб 14	106° 59.8	121° 30.5	136° 01.1	150° 31.7	165° 02.3	179° 32.7	194° 03.2	208° 33.6	223° 03.9	237° 34.2	252° 04.4	+30.5	15.1
	-15° 40.4	-15° 45.9	-15° 51.3	-15° 56.7	-16° 02.0	-16° 07.2	-16° 12.3	-16° 17.3	-16° 22.3	-16° 27.2	-16° 32.0	-5.2	55.3
Вс 15	109° 32.4	124° 01.9	138° 31.4	153° 00.8	167° 30.2	181° 59.5	196° 28.8	210° 58.1	225° 27.3	239° 56.5	254° 25.6	+29.3	15.2
	-17° 34.4	-17° 37.9	-17° 41.3	-17° 44.6	-17° 47.8	-17° 50.9	-17° 53.9	-17° 56.9	-17° 59.7	-18° 02.4	-18° 05.1	-3.1	55.8
Пн 16	111° 38.2	126° 06.8	140° 35.4	155° 03.9	169° 32.4	184° 00.8	198° 29.3	212° 57.7	227° 26.1	241° 54.4	256° 22.8	+28.4	15.4
	-18° 33.5	-18° 34.6	-18° 35.6	-18° 36.5	-18° 37.3	-18° 38.0	-18° 38.6	-18° 39.1	-18° 39.5	-18° 39.8	-18° 40.0	-0.7	56.3
Вт 17	113° 25.3	127° 53.3	142° 21.4	156° 49.4	171° 17.4	185° 45.4	200° 13.3	214° 41.3	229° 09.3	243° 37.2	258° 05.2	+28.0	15.5
	-18° 30.6	-18° 29.2	-18° 27.6	-18° 25.9	-18° 24.2	-18° 22.3	-18° 20.3	-18° 18.2	-18° 16.0	-18° 13.7	-18° 11.3	+1.9	56.8
Ср 18	115° 03.9	129° 31.8	143° 59.7	158° 27.6	172° 55.5	187° 23.5	201° 51.4	216° 19.3	230° 47.3	245° 15.2	259° 43.2	+27.9	15.6
	-17° 22.9	-17° 18.8	-17° 14.7	-17° 10.4	-17° 06.1	-17° 01.6	-16° 57.1	-16° 52.4	-16° 47.7	-16° 42.8	-16° 37.9	+4.5	57.4
Чт 19	116° 43.5	131° 11.6	145° 39.7	160° 07.8	174° 36.0	189° 04.1	203° 32.3	218° 00.5	232° 28.7	246° 56.9	261° 25.1	+28.2	15.8
	-15° 12.1	-15° 05.6	-14° 59.1	-14° 52.4	-14° 45.7	-14° 38.9	-14° 31.9	-14° 24.9	-14° 17.9	-14° 10.7	-14° 03.4	+6.9	57.9
Пт 20	118° 30.0	132° 58.5	147° 26.9	161° 55.4	176° 23.8	190° 52.3	205° 20.8	219° 49.3	234° 17.9	248° 46.4	263° 14.9	+28.5	15.9
	-12° 04.7	-11° 56.1	-11° 47.5	-11° 38.8	-11° 30.1	-11° 21.2	-11° 12.3	-11° 03.4	-10° 54.3	-10° 45.2	-10° 36.0	+8.9	58.4
◑ Сб 21	120° 24.3	134° 53.0	149° 21.7	163° 50.4	178° 19.1	192° 47.8	207° 16.5	221° 45.3	236° 14.0	250° 42.7	265° 11.4	+28.7	16.1
	-8° 10.9	-8° 00.7	-7° 50.6	-7° 40.3	-7° 30.0	-7° 19.7	-7° 09.3	-6° 58.9	-6° 48.4	-6° 37.8	-6° 27.3	+10.4	58.9
Вс 22	122° 22.3	136° 51.0	151° 19.7	165° 48.4	180° 17.1	194° 45.8	209° 14.4	223° 43.1	238° 11.7	252° 40.4	267° 09.0	+28.7	16.2
	-3° 43.9	-3° 32.8	-3° 21.6	-3° 10.4	-2° 59.2	-2° 47.9	-2° 36.6	-2° 25.3	-2° 14.0	-2° 02.7	-1° 51.3	+11.3	59.4
Пн 23	124° 16.6	138° 45.0	153° 13.4	167° 41.7	182° 10.0	196° 38.3	211° 06.5	225° 34.8	240° 03.0	254° 31.2	268° 59.3	+28.3	16.3
	1° 00.4	1° 11.9	1° 23.4	1° 34.9	1° 46.4	1° 57.9	2° 09.4	2° 20.8	2° 32.3	2° 43.7	2° 55.2	+11.5	59.7
Вт 24	125° 58.5	140° 26.2	154° 53.9	169° 21.5	183° 49.1	198° 16.7	212° 44.2	227° 11.7	241° 39.2	256° 06.6	270° 34.0	+27.6	16.3
	5° 44.5	5° 55.5	6° 06.6	6° 17.6	6° 28.6	6° 39.5	6° 50.4	7° 01.3	7° 12.1	7° 22.9	7° 33.6	+10.9	59.9
Ср 25	127° 20.7	141° 47.5	156° 14.3	170° 41.0	185° 07.7	199° 34.4	214° 01.0	228° 27.6	242° 54.2	257° 20.7	271° 47.2	+26.7	16.3
	10° 08.6	10° 18.5	10° 28.3	10° 38.0	10° 47.7	10° 57.3	11° 06.8	11° 16.3	11° 25.7	11° 35.0	11° 44.3	+9.6	59.9
Чт 26	128° 20.3	142° 46.3	157° 12.2	171° 38.1	186° 03.9	200° 29.7	214° 55.5	229° 21.3	243° 47.1	258° 12.8	272° 38.5	+25.8	16.3
	13° 53.1	14° 01.0	14° 08.8	14° 16.5	14° 24.2	14° 31.7	14° 39.1	14° 46.4	14° 53.6	15° 00.7	15° 07.8	+7.5	59.7
Пт 27	129° 01.5	143° 26.9	157° 52.3	172° 17.7	186° 43.1	201° 08.4	215° 33.8	229° 59.1	244° 24.5	258° 49.9	273° 15.2	+25.4	16.2
	16° 40.4	16° 45.7	16° 50.8	16° 55.9	17° 00.9	17° 05.7	17° 10.4	17° 15.0	17° 19.5	17° 23.9	17° 28.2	+4.8	59.3
● Сб 28	129° 36.0	144° 01.4	158° 26.9	172° 52.4	187° 17.9	201° 43.5	216° 09.1	230° 34.7	245° 00.3	259° 25.9	273° 51.6	+25.6	16.0
	18° 17.8	18° 20.1	18° 22.4	18° 24.5	18° 26.4	18° 28.3	18° 30.1	18° 31.7	18° 33.2	18° 34.6	18° 35.8	+1.8	58.7
Вс 29	130° 20.6	144° 46.9	159° 13.2	173° 39.5	188° 05.9	202° 32.3	216° 58.8	231° 25.3	245° 51.9	260° 18.6	274° 45.3	+26.5	15.8
	18° 40.6	18° 39.9	18° 39.2	18° 38.4	18° 37.4	18° 36.3	18° 35.1	18° 33.8	18° 32.4	18° 30.9	18° 29.3	-1.1	58.0
Пн 30	131° 32.4	146° 00.0	160° 27.7	174° 55.5	189° 23.3	203° 51.2	218° 19.1	232° 47.2	247° 15.2	261° 43.4	276° 11.6	+27.9	15.6
	17° 52.1	17° 48.7	17° 45.3	17° 41.9	17° 38.3	17° 34.6	17° 30.8	17° 26.9	17° 22.9	17° 18.9	17° 14.7	-3.7	57.2
Вт 31	146° 00.0	160° 27.7	174° 55.5	189° 23.3	203° 51.2	218° 19.1	232° 47.2	247° 15.2	261° 43.4	276° 11.6	290° 39.9	+28.0	15.6
	17° 48.7	17° 45.3	17° 41.9	17° 38.3	17° 34.6	17° 30.8	17° 26.9	17° 22.9	17° 18.9	17° 14.7	17° 10.5	-3.8	57.1

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час $- 14^\circ$, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 6 06h45 — Полнолуние: 14 10h42 — Последняя четв.: 21 18h29 — Новолуние: 28 11h36

СОЛНЦЕ

Июнь 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	180° 32.2 22° 03.8	195° 32.1 22° 04.1	210° 32.0 22° 04.5	225° 31.9 22° 04.8	240° 31.8 22° 05.2	255° 31.7 22° 05.5	90° 30.4 22° 09.8	105° 30.3 22° 10.1	120° 30.2 22° 10.4	135° 30.1 22° 10.8	150° 30.0 22° 11.1	165° 29.9 22° 11.4	-0.1 +0.3
Чт 2	180° 29.8 22° 11.7	195° 29.7 22° 12.0	210° 29.6 22° 12.4	225° 29.5 22° 12.7	240° 29.4 22° 13.0	255° 29.3 22° 13.3	90° 28.0 22° 17.4	105° 27.9 22° 17.7	120° 27.8 22° 18.0	135° 27.7 22° 18.3	150° 27.6 22° 18.6	165° 27.5 22° 18.9	-0.1 +0.3
Пт 3	180° 27.4 22° 19.2	195° 27.3 22° 19.5	210° 27.2 22° 19.8	225° 27.1 22° 20.2	240° 27.0 22° 20.5	255° 26.9 22° 20.8	90° 25.5 22° 24.6	105° 25.4 22° 24.9	120° 25.3 22° 25.2	135° 25.2 22° 25.5	150° 25.1 22° 25.8	165° 24.9 22° 26.1	-0.1 +0.3
Сб 4	180° 24.8 22° 26.4	195° 24.7 22° 26.7	210° 24.6 22° 26.9	225° 24.5 22° 27.2	240° 24.4 22° 27.5	255° 24.3 22° 27.8	90° 22.9 22° 31.5	105° 22.8 22° 31.7	120° 22.7 22° 32.0	135° 22.6 22° 32.3	150° 22.4 22° 32.6	165° 22.3 22° 32.8	-0.1 +0.3
Вс 5	180° 22.2 22° 33.1	195° 22.1 22° 33.4	210° 22.0 22° 33.7	225° 21.9 22° 33.9	240° 21.8 22° 34.2	255° 21.7 22° 34.5	90° 20.2 22° 37.9	105° 20.1 22° 38.2	120° 20.0 22° 38.4	135° 19.9 22° 38.7	150° 19.8 22° 38.9	165° 19.6 22° 39.2	-0.1 +0.3
Пн 6	180° 19.5 22° 39.5	195° 19.4 22° 39.7	210° 19.3 22° 40.0	225° 19.2 22° 40.2	240° 19.1 22° 40.5	255° 19.0 22° 40.7	90° 17.5 22° 43.9	105° 17.3 22° 44.2	120° 17.2 22° 44.4	135° 17.1 22° 44.7	150° 17.0 22° 44.9	165° 16.9 22° 45.2	-0.1 +0.3
Вт 7	180° 16.8 22° 45.4	195° 16.6 22° 45.6	210° 16.5 22° 45.9	225° 16.4 22° 46.1	240° 16.3 22° 46.3	255° 16.2 22° 46.6	90° 14.6 22° 49.6	105° 14.5 22° 49.8	120° 14.4 22° 50.0	135° 14.3 22° 50.3	150° 14.2 22° 50.5	165° 14.0 22° 50.7	-0.1 +0.2
Ср 8	180° 13.9 22° 50.9	195° 13.8 22° 51.2	210° 13.7 22° 51.4	225° 13.6 22° 51.6	240° 13.4 22° 51.8	255° 13.3 22° 52.0	90° 11.8 22° 54.8	105° 11.6 22° 55.0	120° 11.5 22° 55.3	135° 11.4 22° 55.5	150° 11.3 22° 55.7	165° 11.1 22° 55.9	-0.1 +0.2
Чт 9	180° 11.0 22° 56.1	195° 10.9 22° 56.3	210° 10.8 22° 56.5	225° 10.7 22° 56.7	240° 10.5 22° 56.9	255° 10.4 22° 57.1	90° 08.8 22° 59.7	105° 08.7 22° 59.9	120° 08.6 23° 00.1	135° 08.4 23° 00.3	150° 08.3 23° 00.4	165° 08.2 23° 00.6	-0.1 +0.2
Пт 10	180° 08.1 23° 00.8	195° 07.9 23° 01.0	210° 07.8 23° 01.2	225° 07.7 23° 01.4	240° 07.6 23° 01.6	255° 07.5 23° 01.8	90° 05.8 23° 04.1	105° 05.7 23° 04.3	120° 05.6 23° 04.5	135° 05.4 23° 04.6	150° 05.3 23° 04.8	165° 05.2 23° 05.0	-0.1 +0.2
Сб 11	180° 05.1 23° 05.2	195° 04.9 23° 05.3	210° 04.8 23° 05.5	225° 04.7 23° 05.7	240° 04.6 23° 05.8	255° 04.4 23° 06.0	90° 02.8 23° 08.1	105° 02.7 23° 08.3	120° 02.5 23° 08.5	135° 02.4 23° 08.6	150° 02.3 23° 08.8	165° 02.1 23° 08.9	-0.1 +0.2
Вс 12	180° 02.0 23° 09.1	195° 01.9 23° 09.2	210° 01.8 23° 09.4	225° 01.6 23° 09.5	240° 01.5 23° 09.7	255° 01.4 23° 09.8	89° 59.7 23° 11.8	104° 59.6 23° 11.9	119° 59.4 23° 12.0	134° 59.3 23° 12.2	149° 59.2 23° 12.3	164° 59.0 23° 12.5	-0.1 +0.2
Пн 13	179° 58.9 23° 12.6	194° 58.8 23° 12.7	209° 58.7 23° 12.9	224° 58.5 23° 13.0	239° 58.4 23° 13.1	254° 58.3 23° 13.3	89° 56.6 23° 15.0	104° 56.4 23° 15.1	119° 56.3 23° 15.2	134° 56.2 23° 15.3	149° 56.0 23° 15.5	164° 55.9 23° 15.6	-0.1 +0.1
Вт 14	179° 55.8 23° 15.7	194° 55.6 23° 15.8	209° 55.5 23° 15.9	224° 55.4 23° 16.1	239° 55.3 23° 16.2	254° 55.1 23° 16.3	89° 53.4 23° 17.8	104° 53.3 23° 17.9	119° 53.1 23° 18.0	134° 53.0 23° 18.1	149° 52.9 23° 18.2	164° 52.7 23° 18.3	-0.1 +0.1
Ср 15	179° 52.6 23° 18.4	194° 52.5 23° 18.5	209° 52.3 23° 18.6	224° 52.2 23° 18.7	239° 52.1 23° 18.8	254° 51.9 23° 18.9	89° 50.2 23° 20.2	104° 50.1 23° 20.3	119° 49.9 23° 20.3	134° 49.8 23° 20.4	149° 49.7 23° 20.5	164° 49.5 23° 20.6	-0.1 +0.1
Чт 16	179° 49.4 23° 20.7	194° 49.3 23° 20.8	209° 49.1 23° 20.9	224° 49.0 23° 21.0	239° 48.9 23° 21.0	254° 48.7 23° 21.1	89° 47.0 23° 22.1	104° 46.9 23° 22.2	119° 46.7 23° 22.3	134° 46.6 23° 22.4	149° 46.5 23° 22.4	164° 46.3 23° 22.5	-0.1 +0.1
Пт 17	179° 46.2 23° 22.6	194° 46.1 23° 22.6	209° 45.9 23° 22.7	224° 45.8 23° 22.8	239° 45.6 23° 22.8	254° 45.5 23° 22.9	89° 43.8 23° 23.7	104° 43.6 23° 23.8	119° 43.5 23° 23.8	134° 43.3 23° 23.9	149° 43.2 23° 23.9	164° 43.1 23° 24.0	-0.1 +0.1
Сб 18	179° 42.9 23° 24.0	194° 42.8 23° 24.1	209° 42.7 23° 24.1	224° 42.5 23° 24.2	239° 42.4 23° 24.2	254° 42.3 23° 24.3	89° 40.5 23° 24.9	104° 40.4 23° 24.9	119° 40.2 23° 24.9	134° 40.1 23° 25.0	149° 40.0 23° 25.0	164° 39.8 23° 25.0	-0.1 +0.1
Вс 19	179° 39.7 23° 25.1	194° 39.5 23° 25.1	209° 39.4 23° 25.2	224° 39.3 23° 25.2	239° 39.1 23° 25.2	254° 39.0 23° 25.2	89° 37.2 23° 25.6	104° 37.1 23° 25.6	119° 37.0 23° 25.6	134° 36.8 23° 25.7	149° 36.7 23° 25.7	164° 36.5 23° 25.7	-0.1 +0.0
Пн 20	179° 36.4 23° 25.7	194° 36.3 23° 25.7	209° 36.1 23° 25.8	224° 36.0 23° 25.8	239° 35.9 23° 25.8	254° 35.7 23° 25.8	89° 34.0 23° 25.9	104° 33.8 23° 25.9	119° 33.7 23° 25.9	134° 33.5 23° 25.9	149° 33.4 23° 25.9	164° 33.3 23° 25.9	-0.1 +0.0
Вт 21	179° 33.1 23° 25.9	194° 33.0 23° 25.9	209° 32.9 23° 25.9	224° 32.7 23° 25.9	239° 32.6 23° 25.9	254° 32.5 23° 25.9	89° 30.7 23° 25.8	104° 30.6 23° 25.8	119° 30.4 23° 25.8	134° 30.3 23° 25.8	149° 30.1 23° 25.8	164° 30.0 23° 25.8	-0.1 +0.0
Ср 22	179° 29.9 23° 25.7	194° 29.7 23° 25.7	209° 29.6 23° 25.7	224° 29.5 23° 25.7	239° 29.3 23° 25.7	254° 29.2 23° 25.7	89° 27.4 23° 25.3	104° 27.3 23° 25.3	119° 27.2 23° 25.3	134° 27.0 23° 25.2	149° 26.9 23° 25.2	164° 26.7 23° 25.2	-0.1 -0.0
Чт 23	179° 26.6 23° 25.1	194° 26.5 23° 25.1	209° 26.3 23° 25.1	224° 26.2 23° 25.0	239° 26.1 23° 25.0	254° 25.9 23° 25.0	89° 24.2 23° 24.4	104° 24.0 23° 24.4	119° 23.9 23° 24.3	134° 23.8 23° 24.3	149° 23.6 23° 24.2	164° 23.5 23° 24.2	-0.1 -0.0
Пт 24	179° 23.4 23° 24.1	194° 23.2 23° 24.1	209° 23.1 23° 24.0	224° 23.0 23° 24.0	239° 22.8 23° 23.9	254° 22.7 23° 23.9	89° 20.9 23° 23.1	104° 20.8 23° 23.0	119° 20.7 23° 23.0	134° 20.5 23° 22.9	149° 20.4 23° 22.8	164° 20.3 23° 22.8	-0.1 -0.1
Сб 25	179° 20.1 23° 22.7	194° 20.0 23° 22.6	209° 19.9 23° 22.6	224° 19.7 23° 22.5	239° 19.6 23° 22.4	254° 19.5 23° 22.3	89° 17.7 23° 21.4	104° 17.6 23° 21.3	119° 17.5 23° 21.2	134° 17.3 23° 21.1	149° 17.2 23° 21.0	164° 17.1 23° 20.9	-0.1 -0.1
Вс 26	179° 16.9 23° 20.9	194° 16.8 23° 20.8	209° 16.7 23° 20.7	224° 16.5 23° 20.6	239° 16.4 23° 20.5	254° 16.3 23° 20.4	89° 14.6 23° 19.2	104° 14.4 23° 19.1	119° 14.3 23° 19.0	134° 14.2 23° 18.9	149° 14.0 23° 18.8	164° 13.9 23° 18.7	-0.1 -0.1
Пн 27	179° 13.8 23° 18.6	194° 13.7 23° 18.5	209° 13.5 23° 18.4	224° 13.4 23° 18.3	239° 13.3 23° 18.2	254° 13.1 23° 18.1	89° 11.4 23° 16.6	104° 11.3 23° 16.5	119° 11.2 23° 16.4	134° 11.1 23° 16.3	149° 10.9 23° 16.2	164° 10.8 23° 16.1	-0.1 -0.1
Вт 28	179° 10.7 23° 15.9	194° 10.5 23° 15.8	209° 10.4 23° 15.7	224° 10.3 23° 15.6	239° 10.2 23° 15.5	254° 10.0 23° 15.3	89° 08.4 23° 13.7	104° 08.2 23° 13.5	119° 08.1 23° 13.4	134° 08.0 23° 13.3	149° 07.9 23° 13.1	164° 07.7 23° 13.0	-0.1 -0.1
Ср 29	179° 07.6 23° 12.9	194° 07.5 23° 12.7	209° 07.4 23° 12.6	224° 07.2 23° 12.5	239° 07.1 23° 12.3	254° 07.0 23° 12.2	89° 05.3 23° 10.3	104° 05.2 23° 10.2	119° 05.1 23° 10.0	134° 05.0 23° 09.9	149° 04.8 23° 09.7	164° 04.7 23° 09.6	-0.1 -0.1
Чт 30	179° 04.6 23° 09.4	194° 04.5 23° 09.2	209° 04.4 23° 09.1	224° 04.2 23° 08.9	239° 04.1 23° 08.8	254° 04.0 23° 08.6	89° 02.4 23° 06.5	104° 02.3 23° 06.4	119° 02.1 23° 06.2	134° 02.0 23° 06.0	149° 01.9 23° 05.9	164° 01.8 23° 05.7	-0.1 -0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июнь 2033

Д	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	Δ'/h	R/p
Ср 1	48° 52.3 14° 04.8	63° 23.0 13° 58.0	77° 53.7 13° 51.1	92° 24.4 13° 44.1	106° 55.3 13° 37.1	121° 26.2 13° 30.1	135° 57.2 13° 22.9	150° 28.2 13° 15.7	164° 59.3 13° 08.5	179° 30.5 13° 01.2	194° 01.7 12° 53.9	+30.9 -7.1	15.2 55.8
Чт 2	51° 57.6 10° 57.6	66° 29.8 10° 49.5	81° 02.0 10° 41.3	95° 34.3 10° 33.1	110° 06.7 10° 24.9	124° 39.1 10° 16.6	139° 11.5 10° 08.3	153° 44.1 9° 59.9	168° 16.6 9° 51.6	182° 49.2 9° 43.1	197° 21.9 9° 34.7	+32.4 -8.3	15.0 55.1
Пт 3	55° 37.6 7° 23.9	70° 11.0 7° 15.0	84° 44.4 7° 06.0	99° 17.8 6° 57.0	113° 51.4 6° 48.0	128° 24.9 6° 39.0	142° 58.5 6° 29.9	157° 32.1 6° 20.8	172° 05.7 6° 11.7	186° 39.4 6° 02.6	201° 13.1 5° 53.4	+33.6 -9.0	14.9 54.6
Сб 4	59° 42.2 3° 34.3	74° 16.4 3° 24.9	88° 50.5 3° 15.5	103° 24.7 3° 06.1	117° 58.9 2° 56.7	132° 33.1 2° 47.3	147° 07.3 2° 37.9	161° 41.6 2° 28.5	176° 15.8 2° 19.0	190° 50.1 2° 09.6	205° 24.4 2° 00.1	+34.2 -9.4	14.8 54.3
Вс 5	63° 59.9 -0° 22.1	78° 34.3 -0° 31.6	93° 08.7 -0° 41.0	107° 43.1 -0° 50.5	122° 17.5 -1° 00.0	136° 51.9 -1° 09.5	151° 26.4 -1° 18.9	166° 00.8 -1° 28.4	180° 35.2 -1° 37.8	195° 09.5 -1° 47.3	209° 43.9 -1° 56.7	+34.4 -9.5	14.8 54.2
Пн 6	78° 34.3 -0° 31.6	93° 08.7 -0° 41.0	107° 43.1 -0° 50.5	122° 17.5 -1° 00.0	136° 51.9 -1° 09.5	151° 26.4 -1° 18.9	166° 00.8 -1° 28.4	180° 35.2 -1° 37.8	195° 09.5 -1° 47.3	209° 43.9 -1° 56.7	224° 18.3 -2° 06.1	+34.4 -9.5	14.8 54.2
Вт 7	82° 52.8 -4° 26.3	97° 27.0 -4° 35.6	112° 01.1 -4° 44.8	126° 35.3 -4° 54.0	141° 09.4 -5° 03.2	155° 43.5 -5° 12.4	170° 17.6 -5° 21.5	184° 51.7 -5° 30.7	199° 25.7 -5° 39.8	213° 59.7 -5° 48.9	228° 33.7 -5° 57.9	+34.1 -9.2	14.8 54.2
Ср 8	87° 00.2 -8° 11.2	101° 33.7 -8° 19.8	116° 07.2 -8° 28.5	130° 40.7 -8° 37.1	145° 14.1 -8° 45.6	159° 47.5 -8° 54.2	174° 20.8 -9° 02.7	188° 54.1 -9° 11.1	203° 27.3 -9° 19.6	218° 00.6 -9° 28.0	232° 33.7 -9° 36.3	+33.4 -8.5	14.8 54.4
Чт 9	90° 46.2 -11° 37.1	105° 18.7 -11° 44.8	119° 51.1 -11° 52.5	134° 23.5 -12° 00.1	148° 55.8 -12° 07.7	163° 28.1 -12° 15.2	178° 00.3 -12° 22.7	192° 32.5 -12° 30.1	207° 04.6 -12° 37.4	221° 36.7 -12° 44.8	236° 08.7 -12° 52.0	+32.2 -7.5	14.9 54.8
Пт 10	94° 02.6 -14° 34.2	108° 33.8 -14° 40.5	123° 04.9 -14° 46.8	137° 36.0 -14° 53.0	152° 06.9 -14° 59.1	166° 37.9 -15° 05.2	181° 08.8 -15° 11.2	195° 39.6 -15° 17.1	210° 10.4 -15° 23.0	224° 41.1 -15° 28.8	239° 11.7 -15° 34.5	+30.9 -6.0	15.1 55.3
Сб 11	96° 44.9 -16° 51.4	111° 14.7 -16° 55.9	125° 44.4 -17° 00.3	140° 14.0 -17° 04.6	154° 43.6 -17° 08.9	169° 13.2 -17° 13.0	183° 42.7 -17° 17.1	198° 12.1 -17° 21.1	212° 41.5 -17° 25.0	227° 10.9 -17° 28.8	241° 40.1 -17° 32.5	+29.5 -4.1	15.2 55.8
Вс 12	98° 53.5 -18° 17.5	113° 22.0 -18° 19.8	127° 50.5 -18° 21.9	142° 18.9 -18° 23.9	156° 47.3 -18° 25.9	171° 15.6 -18° 27.7	185° 43.9 -18° 29.5	200° 12.2 -18° 31.1	214° 40.4 -18° 32.7	229° 08.6 -18° 34.1	243° 36.8 -18° 35.5	+28.3 -1.8	15.4 56.4
Пн 13	100° 34.8 -18° 43.1	115° 02.4 -18° 42.8	129° 30.0 -18° 42.3	143° 57.6 -18° 41.8	158° 25.2 -18° 41.1	172° 52.7 -18° 40.3	187° 20.2 -18° 39.5	201° 47.7 -18° 38.5	216° 15.2 -18° 37.4	230° 42.6 -18° 36.2	245° 10.1 -18° 34.9	+27.5 +0.8	15.6 57.0
Вт 14	101° 59.9 -18° 02.3	116° 27.2 -17° 59.2	130° 54.4 -17° 56.1	145° 21.7 -17° 52.8	159° 48.9 -17° 49.4	174° 16.2 -17° 46.0	188° 43.4 -17° 42.4	203° 10.7 -17° 38.7	217° 37.9 -17° 34.9	232° 05.2 -17° 31.0	246° 32.4 -17° 27.0	+27.2 +3.5	15.7 57.6
Ср 15	103° 21.9 -16° 14.5	117° 49.3 -16° 08.9	132° 16.7 -16° 03.1	146° 44.1 -15° 57.3	161° 11.5 -15° 51.3	175° 38.9 -15° 45.3	190° 06.4 -15° 39.2	204° 33.9 -15° 32.9	219° 01.3 -15° 26.6	233° 28.9 -15° 20.2	247° 56.4 -15° 13.7	+27.4 +6.1	15.8 58.1
Чт 16	104° 51.5 -13° 25.3	119° 19.3 -13° 17.3	133° 47.2 -13° 09.3	148° 15.1 -13° 01.3	162° 43.0 -12° 53.1	177° 10.9 -12° 44.9	191° 38.9 -12° 36.6	206° 06.9 -12° 28.2	220° 34.9 -12° 19.7	235° 02.9 -12° 11.2	249° 30.9 -12° 02.6	+27.9 +8.3	15.9 58.5
Пт 17	106° 34.3 -9° 45.0	121° 02.8 -9° 35.3	135° 31.2 -9° 25.6	149° 59.6 -9° 15.8	164° 28.1 -9° 05.9	178° 56.6 -8° 56.0	193° 25.1 -8° 46.1	207° 53.6 -8° 36.1	222° 22.1 -8° 26.0	236° 50.7 -8° 15.9	251° 19.3 -8° 05.7	+28.5 +9.9	16.0 58.8
Сб 18	108° 30.0 -5° 27.8	122° 58.8 -5° 16.9	137° 27.6 -5° 06.1	151° 56.5 -4° 55.2	166° 25.3 -4° 44.2	180° 54.2 -4° 33.3	195° 23.1 -4° 22.3	209° 52.0 -4° 11.3	224° 20.9 -4° 00.2	238° 49.8 -3° 49.2	253° 18.7 -3° 38.1	+28.9 +11.0	16.1 59.0
Вс 19	110° 32.7 -0° 49.5	125° 01.7 -0° 38.2	139° 30.6 -0° 26.8	153° 59.5 -0° 15.5	168° 28.5 -0° 04.2	182° 57.4 0° 07.2	197° 26.3 0° 18.5	211° 55.2 0° 29.9	226° 24.1 0° 41.2	240° 53.0 0° 52.6	255° 21.9 1° 03.9	+28.9 +11.3	16.1 59.2
Пн 20	112° 33.9 3° 52.8	127° 02.6 4° 03.9	141° 31.3 4° 15.0	155° 59.9 4° 26.1	170° 28.6 4° 37.2	184° 57.2 4° 48.2	199° 25.8 4° 59.2	213° 54.3 5° 10.2	228° 22.9 5° 21.2	242° 51.4 5° 32.1	257° 19.9 5° 43.0	+28.6 +11.0	16.2 59.3
Вт 21	114° 24.4 8° 21.7	128° 52.5 8° 31.9	143° 20.5 8° 42.1	157° 48.6 8° 52.2	172° 16.6 9° 02.3	186° 44.5 9° 12.3	201° 12.4 9° 22.3	215° 40.3 9° 32.2	230° 08.2 9° 42.0	244° 36.0 9° 51.8	259° 03.9 10° 01.6	+27.9 +10.0	16.2 59.3
Ср 22	115° 57.0 12° 19.7	130° 24.3 12° 28.3	144° 51.5 12° 36.9	159° 18.8 12° 45.4	173° 45.9 12° 53.8	188° 13.1 13° 02.1	202° 40.2 13° 10.4	217° 07.3 13° 18.5	231° 34.3 13° 26.6	246° 01.4 13° 34.6	260° 28.3 13° 42.5	+27.1 +8.3	16.1 59.1
Чт 23	117° 09.5 15° 30.3	131° 36.0 15° 36.7	146° 02.5 15° 43.1	160° 29.0 15° 49.3	174° 55.5 15° 55.4	189° 21.9 16° 01.5	203° 48.3 16° 07.4	218° 14.7 16° 13.2	232° 41.0 16° 18.9	247° 07.4 16° 24.5	261° 33.7 16° 30.1	+26.4 +6.0	16.1 58.9
Пт 24	118° 06.5 17° 39.8	132° 32.6 17° 43.5	146° 58.7 17° 47.2	161° 24.8 17° 50.7	175° 50.9 17° 54.1	190° 17.0 17° 57.4	204° 43.0 18° 00.6	219° 09.1 18° 03.7	233° 35.2 18° 06.7	248° 01.3 18° 09.5	262° 27.4 18° 12.2	+26.1 +3.2	15.9 58.5
Сб 25	118° 59.5 18° 39.3	133° 25.7 18° 40.2	147° 52.0 18° 41.0	162° 18.3 18° 41.6	176° 44.6 18° 42.1	191° 10.9 18° 42.5	205° 37.3 18° 42.8	220° 03.7 18° 43.0	234° 30.1 18° 43.1	248° 56.5 18° 43.0	263° 23.0 18° 42.9	+26.3 +0.4	15.8 58.0
Вс 26	120° 04.0 18° 27.0	134° 31.1 18° 25.1	148° 58.2 18° 23.1	163° 25.3 18° 20.9	177° 52.5 18° 18.7	192° 19.7 18° 16.3	206° 47.0 18° 13.8	221° 14.3 18° 11.3	235° 41.7 18° 08.6	250° 09.1 18° 05.8	264° 36.6 18° 02.9	+27.3 -2.4	15.6 57.4
Пн 27	121° 35.2 17° 07.9	136° 03.5 17° 03.5	150° 32.0 16° 59.0	165° 00.4 16° 54.4	179° 29.0 16° 49.7	193° 57.6 16° 44.9	208° 26.3 16° 40.1	222° 55.0 16° 35.1	237° 23.8 16° 30.1	251° 52.6 16° 25.0	266° 21.5 16° 19.8	+28.6 -4.8	15.5 56.7
Вт 28	123° 42.9 14° 52.3	138° 12.8 14° 45.9	152° 42.8 14° 39.4	167° 12.9 14° 32.9	181° 43.0 14° 26.2	196° 13.2 14° 19.5	210° 43.5 14° 12.8	225° 13.8 14° 06.0	239° 44.2 13° 59.1	254° 14.7 13° 52.1	268° 45.2 13° 45.1	+30.2 -6.7	15.3 56.1
Ср 29	126° 30.3 11° 53.1	141° 01.8 11° 45.2	155° 33.4 11° 37.3	170° 05.0 11° 29.3	184° 36.7 11° 21.3	199° 08.4 11° 13.2	213° 40.2 11° 05.1	228° 12.0 10° 56.9	242° 43.9 10° 48.7	257° 15.8 10° 40.5	271° 47.9 10° 32.2	+31.8 -8.1	15.1 55.5
Чт 30	141° 01.8 11° 45.2	155° 33.4 11° 37.3	170° 05.0 11° 29.3	184° 36.7 11° 21.3	199° 08.4 11° 13.2	213° 40.2 11° 05.1	228° 12.0 10° 56.9	242° 43.9 10° 48.7	257° 15.8 10° 40.5	271° 47.9 10° 32.2	286° 19.9 10° 23.9	+31.8 -8.1	15.1 55.4

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 4 23h38 — Полнолуние: 12 23h19 — Последняя четв.: 19 23h29 — Новолуние: 26 21h07

СОЛНЦЕ

Июль 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	179° 01.7	194° 01.5	209° 01.4	224° 01.3	239° 01.2	254° 01.0	88° 59.5	103° 59.4	118° 59.3	133° 59.1	148° 59.0	163° 58.9	-0.1
	23° 05.5	23° 05.4	23° 05.2	23° 05.0	23° 04.8	23° 04.7	23° 02.3	23° 02.2	23° 02.0	23° 01.8	23° 01.6	23° 01.4	-0.2
Сб 2	178° 58.8	193° 58.7	208° 58.5	223° 58.4	238° 58.3	253° 58.2	88° 56.7	103° 56.6	118° 56.4	133° 56.3	148° 56.2	163° 56.1	-0.1
	23° 01.2	23° 01.1	23° 00.9	23° 00.7	23° 00.5	23° 00.3	22° 57.8	22° 57.6	22° 57.4	22° 57.2	22° 57.0	22° 56.8	-0.2
Вс 3	178° 56.0	193° 55.9	208° 55.7	223° 55.6	238° 55.5	253° 55.4	88° 53.9	103° 53.8	118° 53.7	133° 53.6	148° 53.5	163° 53.4	-0.1
	22° 56.6	22° 56.3	22° 56.1	22° 55.9	22° 55.7	22° 55.5	22° 52.8	22° 52.6	22° 52.3	22° 52.1	22° 51.9	22° 51.7	-0.2
Пн 4	178° 53.3	193° 53.1	208° 53.0	223° 52.9	238° 52.8	253° 52.7	88° 51.3	103° 51.2	118° 51.1	133° 50.9	148° 50.8	163° 50.7	-0.1
	22° 51.5	22° 51.2	22° 51.0	22° 50.8	22° 50.6	22° 50.4	22° 47.4	22° 47.2	22° 46.9	22° 46.7	22° 46.5	22° 46.2	-0.2
Вт 5	178° 50.6	193° 50.5	208° 50.4	223° 50.3	238° 50.2	253° 50.1	88° 48.7	103° 48.6	118° 48.5	133° 48.4	148° 48.3	163° 48.2	-0.1
	22° 46.0	22° 45.7	22° 45.5	22° 45.3	22° 45.0	22° 44.8	22° 41.6	22° 41.4	22° 41.1	22° 40.9	22° 40.6	22° 40.4	-0.2
Ср 6	178° 48.1	193° 48.0	208° 47.9	223° 47.8	238° 47.7	253° 47.6	88° 46.2	103° 46.1	118° 46.0	133° 45.9	148° 45.8	163° 45.7	-0.1
	22° 40.1	22° 39.9	22° 39.6	22° 39.3	22° 39.1	22° 38.8	22° 35.4	22° 35.2	22° 34.9	22° 34.6	22° 34.4	22° 34.1	-0.3
Чт 7	178° 45.6	193° 45.5	208° 45.4	223° 45.3	238° 45.2	253° 45.1	88° 43.9	103° 43.8	118° 43.7	133° 43.6	148° 43.5	163° 43.4	-0.1
	22° 33.8	22° 33.6	22° 33.3	22° 33.0	22° 32.8	22° 32.5	22° 28.9	22° 28.6	22° 28.3	22° 28.0	22° 27.7	22° 27.5	-0.3
Пт 8	178° 43.3	193° 43.2	208° 43.1	223° 43.0	238° 42.9	253° 42.8	88° 41.6	103° 41.5	118° 41.4	133° 41.3	148° 41.2	163° 41.1	-0.1
	22° 27.2	22° 26.9	22° 26.6	22° 26.3	22° 26.0	22° 25.7	22° 21.9	22° 21.6	22° 21.3	22° 21.0	22° 20.7	22° 20.4	-0.3
Сб 9	178° 41.0	193° 40.9	208° 40.8	223° 40.8	238° 40.7	253° 40.6	88° 39.4	103° 39.3	118° 39.2	133° 39.1	148° 39.1	163° 39.0	-0.1
	22° 20.1	22° 19.8	22° 19.5	22° 19.2	22° 18.9	22° 18.6	22° 14.6	22° 14.3	22° 14.0	22° 13.6	22° 13.3	22° 13.0	-0.3
Вс 10	178° 38.9	193° 38.8	208° 38.7	223° 38.6	238° 38.5	253° 38.5	88° 37.4	103° 37.3	118° 37.2	133° 37.1	148° 37.0	163° 36.9	-0.1
	22° 12.7	22° 12.4	22° 12.1	22° 11.7	22° 11.4	22° 11.1	22° 06.9	22° 06.5	22° 06.2	22° 05.9	22° 05.6	22° 05.2	-0.3
Пн 11	178° 36.9	193° 36.8	208° 36.7	223° 36.6	238° 36.5	253° 36.4	88° 35.4	103° 35.3	118° 35.2	133° 35.2	148° 35.1	163° 35.0	-0.1
	22° 04.9	22° 04.6	22° 04.2	22° 03.9	22° 03.5	22° 03.2	21° 58.8	21° 58.4	21° 58.1	21° 57.7	21° 57.4	21° 57.0	-0.3
Вт 12	178° 34.9	193° 34.9	208° 34.8	223° 34.7	238° 34.6	253° 34.6	88° 33.6	103° 33.5	118° 33.4	133° 33.4	148° 33.3	163° 33.2	-0.1
	21° 56.7	21° 56.3	21° 56.0	21° 55.6	21° 55.3	21° 54.9	21° 50.3	21° 49.9	21° 49.6	21° 49.2	21° 48.9	21° 48.5	-0.3
Ср 13	178° 33.1	193° 33.1	208° 33.0	223° 32.9	238° 32.8	253° 32.8	88° 31.9	103° 31.8	118° 31.7	133° 31.7	148° 31.6	163° 31.5	-0.1
	21° 48.1	21° 47.8	21° 47.4	21° 47.0	21° 46.7	21° 46.3	21° 41.5	21° 41.1	21° 40.7	21° 40.3	21° 39.9	21° 39.6	-0.4
Чт 14	178° 31.5	193° 31.4	208° 31.3	223° 31.3	238° 31.2	253° 31.1	88° 30.3	103° 30.2	118° 30.1	133° 30.1	148° 30.0	163° 30.0	-0.1
	21° 39.2	21° 38.8	21° 38.4	21° 38.0	21° 37.7	21° 37.3	21° 32.2	21° 31.8	21° 31.4	21° 31.1	21° 30.7	21° 30.3	-0.4
Пт 15	178° 29.9	193° 29.8	208° 29.8	223° 29.7	238° 29.6	253° 29.6	88° 28.8	103° 28.8	118° 28.7	133° 28.6	148° 28.6	163° 28.5	-0.1
	21° 29.9	21° 29.5	21° 29.1	21° 28.7	21° 28.3	21° 27.9	21° 22.6	21° 22.2	21° 21.8	21° 21.4	21° 21.0	21° 20.6	-0.4
Сб 16	178° 28.5	193° 28.4	208° 28.3	223° 28.3	238° 28.2	253° 28.2	88° 27.5	103° 27.4	118° 27.4	133° 27.3	148° 27.3	163° 27.2	-0.1
	21° 20.2	21° 19.8	21° 19.4	21° 19.0	21° 18.5	21° 18.1	21° 12.7	21° 12.3	21° 11.8	21° 11.4	21° 11.0	21° 10.6	-0.4
Вс 17	178° 27.2	193° 27.1	208° 27.0	223° 27.0	238° 26.9	253° 26.9	88° 26.3	103° 26.2	118° 26.2	133° 26.1	148° 26.1	163° 26.0	-0.1
	21° 10.2	21° 09.7	21° 09.3	21° 08.9	21° 08.4	21° 08.0	21° 02.4	21° 01.9	21° 01.5	21° 01.1	21° 00.6	21° 00.2	-0.4
Пн 18	178° 26.0	193° 25.9	208° 25.9	223° 25.8	238° 25.8	253° 25.7	88° 25.2	103° 25.1	118° 25.1	133° 25.0	148° 25.0	163° 25.0	-0.0
	20° 59.8	20° 59.3	20° 58.9	20° 58.4	20° 58.0	20° 57.5	20° 51.7	20° 51.3	20° 50.8	20° 50.4	20° 49.9	20° 49.4	-0.4
Вт 19	178° 24.9	193° 24.9	208° 24.8	223° 24.8	238° 24.8	253° 24.7	88° 24.2	103° 24.2	118° 24.1	133° 24.1	148° 24.1	163° 24.0	-0.0
	20° 49.0	20° 48.5	20° 48.1	20° 47.6	20° 47.2	20° 46.7	20° 40.7	20° 40.2	20° 39.8	20° 39.3	20° 38.8	20° 38.4	-0.5
Ср 20	178° 24.0	193° 24.0	208° 23.9	223° 23.9	238° 23.9	253° 23.8	88° 23.4	103° 23.4	118° 23.3	133° 23.3	148° 23.3	163° 23.2	-0.0
	20° 37.9	20° 37.4	20° 36.9	20° 36.5	20° 36.0	20° 35.5	20° 29.3	20° 28.8	20° 28.4	20° 27.9	20° 27.4	20° 26.9	-0.5
Чт 21	178° 23.2	193° 23.2	208° 23.1	223° 23.1	238° 23.1	253° 23.1	88° 22.7	103° 22.7	118° 22.7	133° 22.6	148° 22.6	163° 22.6	-0.0
	20° 26.4	20° 25.9	20° 25.5	20° 25.0	20° 24.5	20° 24.0	20° 17.6	20° 17.1	20° 16.6	20° 16.1	20° 15.6	20° 15.1	-0.5
Пт 22	178° 22.6	193° 22.5	208° 22.5	223° 22.5	238° 22.5	253° 22.4	88° 22.2	103° 22.1	118° 22.1	133° 22.1	148° 22.1	163° 22.1	-0.0
	20° 14.6	20° 14.1	20° 13.6	20° 13.1	20° 12.6	20° 12.1	20° 05.6	20° 05.0	20° 04.5	20° 04.0	20° 03.5	20° 03.0	-0.5
Сб 23	178° 22.0	193° 22.0	208° 22.0	223° 22.0	238° 22.0	253° 22.0	88° 21.8	103° 21.7	118° 21.7	133° 21.7	148° 21.7	163° 21.7	-0.0
	20° 02.5	20° 02.0	20° 01.5	20° 00.9	20° 00.4	19° 59.9	19° 53.2	19° 52.6	19° 52.1	19° 51.6	19° 51.1	19° 50.5	-0.5
Вс 24	178° 21.7	193° 21.7	208° 21.7	223° 21.6	238° 21.6	253° 21.6	88° 21.5	103° 21.5	118° 21.5	133° 21.5	148° 21.5	163° 21.5	-0.0
	19° 50.0	19° 49.5	19° 49.0	19° 48.4	19° 47.9	19° 47.4	19° 40.4	19° 39.9	19° 39.4	19° 38.8	19° 38.3	19° 37.8	-0.5
Пн 25	178° 21.5	193° 21.4	208° 21.4	223° 21.4	238° 21.4	253° 21.4	88° 21.4	103° 21.4	118° 21.4	133° 21.4	148° 21.4	163° 21.4	-0.0
	19° 37.2	19° 36.7	19° 36.1	19° 35.6	19° 35.0	19° 34.5	19° 27.4	19° 26.8	19° 26.3	19° 25.7	19° 25.2	19° 24.6	-0.5
Вт 26	178° 21.4	193° 21.4	208° 21.4	223° 21.4	238° 21.4	253° 21.4	88° 21.4	103° 21.4	118° 21.4	133° 21.4	148° 21.4	163° 21.4	-0.0
	19° 24.1	19° 23.5	19° 23.0	19° 22.4	19° 21.9	19° 21.3	19° 14.0	19° 13.5	19° 12.9	19° 12.3	19° 11.8	19° 11.2	-0.6
Ср 27	178° 21.5	193° 21.5	208° 21.5	223° 21.5	238° 21.5	253° 21.5	88° 21.6	103° 21.6	118° 21.6	133° 21.6	148° 21.7	163° 21.7	+0.0
	19° 10.6	19° 10.1	19° 09.5	19° 08.9	19° 08.4	19° 07.8	19° 00.3	18° 59.8	18° 59.2	18° 58.6	18° 58.0	18° 57.5	-0.6
Чт 28	178° 21.7	193° 21.7	208° 21.7	223° 21.7	238° 21.7	253° 21.7	88° 21.9	103° 22.0	118° 22.0	133° 22.0	148° 22.0	163° 22.0	+0.0
	18° 56.9	18° 56.3	18° 55.7	18° 55.1	18° 54.5	18° 54.0	18° 46.3	18° 45.8	18° 45.2	18° 44.6	18° 44.0	18° 43.4	-0.6
Пт 29	178° 22.1	193° 22.1	208° 22.1	223° 22.1	238° 22.1	253° 22.2	88° 22.4	103° 22.5	118° 22.5	133° 22.5	148° 22.5	163° 22.6	+0.0
	18° 42.8	18° 42.2	18° 41.6	18° 41.0	18° 40.4	18° 39.8	18° 32.0	18° 31.4	18° 30.8	18° 30.2	18° 29.6	18° 29.0	-0.6
Сб 30	178° 22.6	193° 22.6	208° 22.6	223° 22.7	238° 22.7	253° 22.7	88° 23.1	103° 23.1	118° 23.1	133° 23.2	148° 23.2	163° 23.2	+0.0
	18° 28.4	18° 27.8	18° 27.2	18° 26.6	18° 26.0	18° 25.4	18° 17.4	18° 16.8	18° 16.2	18° 15.6	18° 15.0	18° 14.3	-0.6
Вс 31	178° 23.3	193° 23.3	208° 23.3	223° 23.4	238° 23.4	253° 23.4	88° 23.9	103° 23.9	118° 24.0	133° 24.0	148° 24.0	163° 24.1	+0.0
	18° 13.7	18° 13.1	18° 12.5	18° 11.9	18° 11.2	18° 10.6	18° 02.5	18° 01.9	18° 01.3	18° 00.6	18° 00.0	17° 59.4	-0.6

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2033

Д	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	Δ'/h	R/p
Пт 1	46° 24.9	60° 58.5	75° 32.1	90° 05.7	104° 39.4	119° 13.1	133° 46.9	148° 20.6	162° 54.4	177° 28.2	192° 02.1	+33.7	14.9
	5° 31.0	5° 21.7	5° 12.4	5° 03.1	4° 53.8	4° 44.4	4° 35.1	4° 25.7	4° 16.3	4° 06.9	3° 57.5	-9.4	54.6
Сб 2	50° 32.6	65° 06.8	79° 41.0	94° 15.2	108° 49.5	123° 23.7	137° 58.0	152° 32.3	167° 06.5	181° 40.8	196° 15.1	+34.3	14.8
	1° 35.4	1° 25.9	1° 16.4	1° 06.9	0° 57.4	0° 47.8	0° 38.3	0° 28.8	0° 19.3	0° 09.8	0° 00.3	-9.5	54.3
Вс 3	54° 50.1	69° 24.5	83° 58.8	98° 33.1	113° 07.5	127° 41.8	142° 16.1	156° 50.4	171° 24.7	185° 59.0	200° 33.3	+34.3	14.8
	-2° 21.8	-2° 31.2	-2° 40.6	-2° 49.9	-2° 59.3	-3° 08.7	-3° 18.0	-3° 27.3	-3° 36.6	-3° 45.9	-3° 55.2	-9.3	54.2
◐ Пн 4	59° 05.7	73° 39.7	88° 13.7	102° 47.7	117° 21.6	131° 55.5	146° 29.4	161° 03.3	175° 37.1	190° 11.0	204° 44.7	+33.9	14.8
	-6° 12.3	-6° 21.3	-6° 30.2	-6° 39.2	-6° 48.1	-6° 56.9	-7° 05.8	-7° 14.6	-7° 23.4	-7° 32.2	-7° 40.9	-8.9	54.3
Вт 5	63° 07.8	77° 41.0	92° 14.2	106° 47.4	121° 20.5	135° 53.6	150° 26.7	164° 59.7	179° 32.6	194° 05.5	208° 38.4	+33.1	14.9
	-9° 48.1	-9° 56.3	-10° 04.5	-10° 12.6	-10° 20.7	-10° 28.8	-10° 36.8	-10° 44.8	-10° 52.7	-11° 00.6	-11° 08.4	-8.0	54.5
Ср 6	77° 41.0	92° 14.2	106° 47.4	121° 20.5	135° 53.6	150° 26.7	164° 59.7	179° 32.6	194° 05.5	208° 38.4	223° 11.2	+33.0	14.9
	-9° 56.3	-10° 04.5	-10° 12.6	-10° 20.7	-10° 28.8	-10° 36.8	-10° 44.8	-10° 52.7	-11° 00.6	-11° 08.4	-11° 16.2	-8.0	54.5
Чт 7	81° 18.0	95° 50.1	110° 22.1	124° 54.0	139° 25.9	153° 57.8	168° 29.6	183° 01.3	197° 33.0	212° 04.6	226° 36.1	+31.8	15.0
	-13° 07.5	-13° 14.5	-13° 21.5	-13° 28.4	-13° 35.3	-13° 42.1	-13° 48.8	-13° 55.5	-14° 02.1	-14° 08.6	-14° 15.1	-6.8	55.0
Пт 8	84° 22.7	98° 53.4	113° 24.0	127° 54.5	142° 24.9	156° 55.3	171° 25.7	185° 56.0	200° 26.2	214° 56.3	229° 26.4	+30.4	15.1
	-15° 45.0	-15° 50.4	-15° 55.8	-16° 01.1	-16° 06.3	-16° 11.5	-16° 16.6	-16° 21.6	-16° 26.5	-16° 31.3	-16° 36.1	-5.1	55.6
Сб 9	86° 50.9	101° 20.0	115° 49.1	130° 18.2	144° 47.2	159° 16.1	173° 45.0	188° 13.8	202° 42.6	217° 11.3	231° 39.9	+28.9	15.3
	-17° 37.9	-17° 41.3	-17° 44.7	-17° 47.9	-17° 51.1	-17° 54.1	-17° 57.1	-18° 00.0	-18° 02.8	-18° 05.5	-18° 08.1	-3.0	56.2
Вс 10	88° 43.6	103° 11.4	117° 39.2	132° 07.0	146° 34.7	161° 02.4	175° 30.1	189° 57.7	204° 25.2	218° 52.7	233° 20.2	+27.7	15.5
	-18° 35.4	-18° 36.4	-18° 37.3	-18° 38.1	-18° 38.8	-18° 39.4	-18° 39.9	-18° 40.3	-18° 40.5	-18° 40.7	-18° 40.8	-0.5	57.0
Пн 11	90° 08.2	104° 35.2	119° 02.1	133° 29.0	147° 55.9	162° 22.8	176° 49.7	191° 16.5	205° 43.3	220° 10.1	234° 36.9	+26.9	15.7
	-18° 28.5	-18° 26.8	-18° 25.0	-18° 23.1	-18° 21.1	-18° 18.9	-18° 16.7	-18° 14.3	-18° 11.8	-18° 09.2	-18° 06.5	+2.2	57.7
○ Вт 12	91° 17.0	105° 43.6	120° 10.2	134° 36.9	149° 03.5	163° 30.1	177° 56.7	192° 23.3	206° 49.9	221° 16.6	235° 43.2	+26.6	15.9
	-17° 12.6	-17° 08.1	-17° 03.5	-16° 58.8	-16° 54.0	-16° 49.1	-16° 44.1	-16° 39.0	-16° 33.7	-16° 28.4	-16° 23.0	+5.0	58.4
Ср 13	92° 23.6	106° 50.4	121° 17.2	135° 44.1	150° 10.9	164° 37.8	179° 04.6	193° 31.5	207° 58.4	222° 25.4	236° 52.3	+26.9	16.1
	-14° 49.0	-14° 42.0	-14° 34.8	-14° 27.6	-14° 20.3	-14° 12.8	-14° 05.3	-13° 57.7	-13° 50.0	-13° 42.2	-13° 34.3	+7.5	58.9
Чт 14	93° 39.1	108° 06.4	122° 33.7	137° 01.1	151° 28.4	165° 55.8	180° 23.3	194° 50.7	209° 18.2	223° 45.7	238° 13.2	+27.4	16.2
	-11° 26.1	-11° 17.0	-11° 07.7	-10° 58.4	-10° 49.0	-10° 39.6	-10° 30.1	-10° 20.5	-10° 10.8	-10° 01.1	-9° 51.3	+9.5	59.3
Пт 15	95° 08.8	109° 36.7	124° 04.6	138° 32.5	153° 00.5	167° 28.5	181° 56.5	196° 24.5	210° 52.5	225° 20.6	239° 48.7	+28.0	16.2
	-7° 17.8	-7° 07.1	-6° 56.4	-6° 45.7	-6° 34.9	-6° 24.1	-6° 13.3	-6° 02.4	-5° 51.5	-5° 40.5	-5° 29.5	+10.8	59.5
Сб 16	96° 51.9	111° 20.2	125° 48.6	140° 17.0	154° 45.3	169° 13.7	183° 42.1	198° 10.5	212° 38.9	227° 07.4	241° 35.8	+28.4	16.2
	-2° 41.3	-2° 30.0	-2° 18.6	-2° 07.2	-1° 55.7	-1° 44.3	-1° 32.9	-1° 21.4	-1° 10.0	-0° 58.6	-0° 47.1	+11.4	59.6
Вс 17	98° 42.9	113° 11.4	127° 39.9	142° 08.4	156° 36.9	171° 05.4	185° 33.9	200° 02.4	214° 30.9	228° 59.3	243° 27.8	+28.5	16.2
	2° 04.4	2° 15.7	2° 27.1	2° 38.4	2° 49.7	3° 01.0	3° 12.3	3° 23.5	3° 34.7	3° 45.9	3° 57.1	+11.3	59.5
Пн 18	100° 34.0	115° 02.3	129° 30.7	143° 59.0	158° 27.2	172° 55.5	187° 23.8	201° 52.0	216° 20.3	230° 48.5	245° 16.7	+28.3	16.2
	6° 40.8	6° 51.4	7° 02.0	7° 12.5	7° 23.0	7° 33.4	7° 43.8	7° 54.1	8° 04.4	8° 14.6	8° 24.8	+10.4	59.3
◑ Вт 19	102° 17.5	116° 45.4	131° 13.3	145° 41.2	160° 09.0	174° 36.8	189° 04.6	203° 32.4	218° 00.2	232° 27.9	246° 55.6	+27.8	16.1
	10° 50.5	10° 59.7	11° 08.8	11° 17.9	11° 26.9	11° 35.8	11° 44.6	11° 53.4	12° 02.1	12° 10.7	12° 19.3	+8.9	58.9
Ср 20	103° 48.7	118° 16.0	132° 43.4	147° 10.7	161° 38.0	176° 05.3	190° 32.6	204° 59.8	219° 27.1	233° 54.3	248° 21.5	+27.3	16.0
	14° 17.8	14° 25.0	14° 32.1	14° 39.1	14° 46.1	14° 52.9	14° 59.7	15° 06.4	15° 12.9	15° 19.4	15° 25.8	+6.8	58.6
Чт 21	105° 07.5	119° 34.4	134° 01.4	148° 28.3	162° 55.2	177° 22.1	191° 49.1	206° 16.0	220° 42.9	235° 09.7	249° 36.6	+26.9	15.9
	16° 49.7	16° 54.5	16° 59.1	17° 03.7	17° 08.2	17° 12.5	17° 16.8	17° 20.9	17° 25.0	17° 28.9	17° 32.7	+4.3	58.1
Пт 22	106° 19.7	120° 46.6	135° 13.5	149° 40.4	164° 07.3	178° 34.2	193° 01.2	207° 28.1	221° 55.1	236° 22.0	250° 49.0	+26.9	15.7
	18° 17.1	18° 19.1	18° 21.1	18° 23.0	18° 24.7	18° 26.3	18° 27.9	18° 29.3	18° 30.6	18° 31.8	18° 32.8	+1.6	57.7
Сб 23	107° 36.0	122° 03.3	136° 30.6	150° 58.0	165° 25.4	179° 52.8	194° 20.3	208° 47.8	223° 15.3	237° 42.9	252° 10.5	+27.4	15.6
	18° 35.8	18° 35.1	18° 34.4	18° 33.5	18° 32.5	18° 31.4	18° 30.2	18° 28.8	18° 27.4	18° 25.9	18° 24.3	-1.2	57.2
Вс 24	109° 08.9	123° 37.1	138° 05.4	152° 33.7	167° 02.1	181° 30.5	195° 58.9	210° 27.4	224° 56.0	239° 24.6	253° 53.2	+28.4	15.4
	17° 47.5	17° 44.3	17° 41.0	17° 37.5	17° 34.0	17° 30.4	17° 26.6	17° 22.8	17° 18.9	17° 14.9	17° 10.9	-3.7	56.7
Пн 25	111° 09.1	125° 38.6	140° 08.1	154° 37.7	169° 07.4	183° 37.1	198° 06.8	212° 36.7	227° 06.5	241° 36.4	256° 06.4	+29.7	15.3
	15° 59.1	15° 53.7	15° 48.2	15° 42.6	15° 36.9	15° 31.1	15° 25.3	15° 19.4	15° 13.4	15° 07.4	15° 01.2	-5.8	56.1
● Вт 26	113° 42.8	128° 13.7	142° 44.6	157° 15.6	171° 46.6	186° 17.7	200° 48.9	215° 20.1	229° 51.3	244° 22.6	258° 54.0	+31.1	15.2
	13° 21.2	13° 14.0	13° 06.8	12° 59.5	12° 52.2	12° 44.8	12° 37.3	12° 29.8	12° 22.2	12° 14.6	12° 06.9	-7.4	55.6
Ср 27	116° 50.6	131° 22.8	145° 55.0	160° 27.3	174° 59.6	189° 32.0	204° 04.4	218° 36.9	233° 09.4	247° 41.9	262° 14.5	+32.4	15.0
	10° 06.1	9° 57.7	9° 49.2	9° 40.8	9° 32.3	9° 23.7	9° 15.1	9° 06.5	8° 57.8	8° 49.1	8° 40.4	-8.6	55.1
Чт 28	120° 28.5	135° 01.7	149° 35.0	164° 08.3	178° 41.7	193° 15.0	207° 48.5	222° 21.9	236° 55.4	251° 28.9	266° 02.5	+33.4	14.9
	6° 26.1	6° 17.0	6° 07.8	5° 58.6	5° 49.4	5° 40.2	5° 30.9	5° 21.7	5° 12.4	5° 03.1	4° 53.8	-9.2	54.7
Пт 29	124° 29.0	139° 02.9	153° 36.9	168° 10.9	182° 44.9	197° 19.0	211° 53.0	226° 27.1	241° 01.2	255° 35.3	270° 09.4	+34.0	14.8
	2° 32.7	2° 23.2	2° 13.7	2° 04.2	1° 54.8	1° 45.3	1° 35.8	1° 26.3	1° 16.8	1° 07.3	0° 57.8	-9.5	54.3
Сб 30	139° 02.9	153° 36.9	168° 10.9	182° 44.9	197° 19.0	211° 53.0	226° 27.1	241° 01.2	255° 35.3	270° 09.4	284° 43.6	+34.1	14.8
	2° 23.2	2° 13.7	2° 04.2	1° 54.8	1° 45.3	1° 35.8	1° 26.3	1° 16.8	1° 07.3	0° 57.8	0° 48.3	-9.5	54.3
Вс 31	143° 17.0	157° 51.3	172° 25.6	186° 59.8	201° 34.1	216° 08.4	230° 42.7	245° 17.0	259° 51.3	274° 25.6	288° 59.9	+34.3	14.8
	-1° 33.7	-1° 43.1	-1° 52.5	-2° 01.9	-2° 11.3	-2° 20.6	-2° 30.0	-2° 39.3	-2° 48.7	-2° 58.0	-3° 07.3	-9.4	54.2

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Первая четв.: 4 17h12 — Полнолуние: 12 09h28 — Последняя четв.: 19 04h07 — Новолуние: 26 08h12

СОЛНЦЕ

Август 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	178° 24.1 17° 58.7	193° 24.2 17° 58.1	208° 24.2 17° 57.5	223° 24.2 17° 56.8	238° 24.3 17° 56.2	253° 24.3 17° 55.6	88° 24.8 17° 47.3	103° 24.9 17° 46.7	118° 24.9 17° 46.0	133° 25.0 17° 45.4	148° 25.0 17° 44.8	163° 25.1 17° 44.1	+0.0 -0.6
Вт 2	178° 25.1 17° 43.5	193° 25.2 17° 42.8	208° 25.2 17° 42.2	223° 25.2 17° 41.5	238° 25.3 17° 40.9	253° 25.3 17° 40.2	88° 26.0 17° 31.8	103° 26.0 17° 31.2	118° 26.1 17° 30.5	133° 26.1 17° 29.9	148° 26.2 17° 29.2	163° 26.2 17° 28.6	+0.0 -0.6
Ср 3	178° 26.3 17° 27.9	193° 26.3 17° 27.3	208° 26.4 17° 26.6	223° 26.4 17° 25.9	238° 26.5 17° 25.3	253° 26.5 17° 24.6	88° 27.2 17° 16.0	103° 27.3 17° 15.4	118° 27.3 17° 14.7	133° 27.4 17° 14.1	148° 27.5 17° 13.4	163° 27.5 17° 12.7	+0.1 -0.7
Чт 4	178° 27.6 17° 12.1	193° 27.6 17° 11.4	208° 27.7 17° 10.7	223° 27.8 17° 10.1	238° 27.8 17° 09.4	253° 27.9 17° 08.7	88° 28.7 17° 00.0	103° 28.7 16° 59.3	118° 28.8 16° 58.6	133° 28.8 16° 58.0	148° 28.9 16° 57.3	163° 29.0 16° 56.6	+0.1 -0.7
Пт 5	178° 29.0 16° 55.9	193° 29.1 16° 55.3	208° 29.2 16° 54.6	223° 29.2 16° 53.9	238° 29.3 16° 53.2	253° 29.4 16° 52.5	88° 30.2 16° 43.7	103° 30.3 16° 43.0	118° 30.4 16° 42.3	133° 30.4 16° 41.6	148° 30.5 16° 40.9	163° 30.6 16° 40.2	+0.1 -0.7
Сб 6	178° 30.7 16° 39.5	193° 30.7 16° 38.9	208° 30.8 16° 38.2	223° 30.9 16° 37.5	238° 30.9 16° 36.8	253° 31.0 16° 36.1	88° 32.0 16° 27.1	103° 32.1 16° 26.4	118° 32.1 16° 25.7	133° 32.2 16° 25.0	148° 32.3 16° 24.3	163° 32.4 16° 23.6	+0.1 -0.7
Вс 7	178° 32.4 16° 22.9	193° 32.5 16° 22.2	208° 32.6 16° 21.5	223° 32.7 16° 20.8	238° 32.7 16° 20.1	253° 32.8 16° 19.4	88° 33.9 16° 10.2	103° 33.9 16° 09.5	118° 34.0 16° 08.8	133° 34.1 16° 08.1	148° 34.2 16° 07.4	163° 34.3 16° 06.7	+0.1 -0.7
Пн 8	178° 34.4 16° 06.0	193° 34.4 16° 05.2	208° 34.5 16° 04.5	223° 34.6 16° 03.8	238° 34.7 16° 03.1	253° 34.8 16° 02.4	88° 35.9 15° 53.1	103° 36.0 15° 52.4	118° 36.1 15° 51.7	133° 36.2 15° 50.9	148° 36.3 15° 50.2	163° 36.3 15° 49.5	+0.1 -0.7
Вт 9	178° 36.4 15° 48.8	193° 36.5 15° 48.1	208° 36.6 15° 47.3	223° 36.7 15° 46.6	238° 36.8 15° 45.9	253° 36.9 15° 45.2	88° 38.1 15° 35.7	103° 38.2 15° 35.0	118° 38.3 15° 34.3	133° 38.4 15° 33.5	148° 38.5 15° 32.8	163° 38.6 15° 32.1	+0.1 -0.7
Ср 10	178° 38.6 15° 31.3	193° 38.7 15° 30.6	208° 38.8 15° 29.9	223° 38.9 15° 29.1	238° 39.0 15° 28.4	253° 39.1 15° 27.7	88° 40.4 15° 18.1	103° 40.5 15° 17.4	118° 40.6 15° 16.6	133° 40.7 15° 15.9	148° 40.8 15° 15.1	163° 40.9 15° 14.4	+0.1 -0.7
Чт 11	178° 41.0 15° 13.7	193° 41.1 15° 12.9	208° 41.2 15° 12.2	223° 41.3 15° 11.4	238° 41.4 15° 10.7	253° 41.5 15° 09.9	88° 42.9 15° 00.2	103° 43.0 14° 59.5	118° 43.1 14° 58.7	133° 43.2 14° 58.0	148° 43.3 14° 57.2	163° 43.4 14° 56.5	+0.1 -0.7
Пт 12	178° 43.5 14° 55.7	193° 43.6 14° 55.0	208° 43.7 14° 54.2	223° 43.8 14° 53.5	238° 43.9 14° 52.7	253° 44.1 14° 52.0	88° 45.5 14° 42.1	103° 45.6 14° 41.4	118° 45.7 14° 40.6	133° 45.8 14° 39.8	148° 45.9 14° 39.1	163° 46.0 14° 38.3	+0.1 -0.8
Сб 13	178° 46.2 14° 37.6	193° 46.3 14° 36.8	208° 46.4 14° 36.0	223° 46.5 14° 35.3	238° 46.6 14° 34.5	253° 46.7 14° 33.8	88° 48.2 14° 23.8	103° 48.4 14° 23.0	118° 48.5 14° 22.2	133° 48.6 14° 21.5	148° 48.7 14° 20.7	163° 48.8 14° 19.9	+0.1 -0.8
Вс 14	178° 48.9 14° 19.2	193° 49.1 14° 18.4	208° 49.2 14° 17.6	223° 49.3 14° 16.9	238° 49.4 14° 16.1	253° 49.5 14° 15.3	88° 51.1 14° 05.2	103° 51.2 14° 04.4	118° 51.4 14° 03.7	133° 51.5 14° 02.9	148° 51.6 14° 02.1	163° 51.7 14° 01.3	+0.1 -0.8
Пн 15	178° 51.9 14° 00.5	193° 52.0 13° 59.8	208° 52.1 13° 59.0	223° 52.2 13° 58.2	238° 52.3 13° 57.4	253° 52.5 13° 56.6	88° 54.1 13° 46.4	103° 54.2 13° 45.6	118° 54.4 13° 44.8	133° 54.5 13° 44.1	148° 54.6 13° 43.3	163° 54.8 13° 42.5	+0.1 -0.8
Вт 16	178° 54.9 13° 41.7	193° 55.0 13° 40.9	208° 55.1 13° 40.1	223° 55.3 13° 39.3	238° 55.4 13° 38.5	253° 55.5 13° 37.7	88° 57.2 13° 27.4	103° 57.4 13° 26.6	118° 57.5 13° 25.8	133° 57.7 13° 25.0	148° 57.8 13° 24.2	163° 57.9 13° 23.4	+0.1 -0.8
Ср 17	178° 58.1 13° 22.6	193° 58.2 13° 21.8	208° 58.3 13° 21.0	223° 58.5 13° 20.2	238° 58.6 13° 19.4	253° 58.7 13° 18.6	89° 00.5 13° 08.2	104° 00.6 13° 07.4	119° 00.8 13° 06.6	134° 00.9 13° 05.8	149° 01.1 13° 04.9	164° 01.2 13° 04.1	+0.1 -0.8
Чт 18	179° 01.3 13° 03.3	194° 01.5 13° 02.5	209° 01.6 13° 01.7	224° 01.8 13° 00.9	239° 01.9 13° 00.1	254° 02.0 12° 59.3	89° 03.9 12° 48.7	104° 04.0 12° 47.9	119° 04.2 12° 47.1	134° 04.3 12° 46.3	149° 04.5 12° 45.5	164° 04.6 12° 44.7	+0.1 -0.8
Пт 19	179° 04.7 12° 43.8	194° 04.9 12° 43.0	209° 05.0 12° 42.2	224° 05.2 12° 41.4	239° 05.3 12° 40.6	254° 05.5 12° 39.8	89° 07.4 12° 29.1	104° 07.5 12° 28.3	119° 07.7 12° 27.4	134° 07.8 12° 26.6	149° 08.0 12° 25.8	164° 08.1 12° 25.0	+0.1 -0.8
Сб 20	179° 08.3 12° 24.1	194° 08.4 12° 23.3	209° 08.6 12° 22.5	224° 08.7 12° 21.7	239° 08.9 12° 20.8	254° 09.0 12° 20.0	89° 11.0 12° 09.2	104° 11.1 12° 08.4	119° 11.3 12° 07.6	134° 11.4 12° 06.8	149° 11.6 12° 05.9	164° 11.8 12° 05.1	+0.1 -0.8
Вс 21	179° 11.9 12° 04.3	194° 12.1 12° 03.4	209° 12.2 12° 02.6	224° 12.4 12° 01.8	239° 12.5 12° 00.9	254° 12.7 12° 00.1	89° 14.7 11° 49.2	104° 14.9 11° 48.4	119° 15.0 11° 47.5	134° 15.2 11° 46.7	149° 15.3 11° 45.9	164° 15.5 11° 45.0	+0.2 -0.8
Пн 22	179° 15.7 11° 44.2	194° 15.8 11° 43.3	209° 16.0 11° 42.5	224° 16.1 11° 41.7	239° 16.3 11° 40.8	254° 16.4 11° 40.0	89° 18.5 11° 29.0	104° 18.7 11° 28.1	119° 18.9 11° 27.3	134° 19.0 11° 26.5	149° 19.2 11° 25.6	164° 19.4 11° 24.8	+0.2 -0.8
Вт 23	179° 19.5 11° 23.9	194° 19.7 11° 23.1	209° 19.8 11° 22.2	224° 20.0 11° 21.4	239° 20.2 11° 20.5	254° 20.3 11° 19.7	89° 22.5 11° 08.6	104° 22.6 11° 07.7	119° 22.8 11° 06.9	134° 23.0 11° 06.0	149° 23.1 11° 05.2	164° 23.3 11° 04.3	+0.2 -0.8
Ср 24	179° 23.5 11° 03.5	194° 23.6 11° 02.6	209° 23.8 11° 01.7	224° 24.0 11° 00.9	239° 24.2 11° 00.0	254° 24.3 10° 59.2	89° 26.5 10° 48.0	104° 26.7 10° 47.1	119° 26.9 10° 46.3	134° 27.0 10° 45.4	149° 27.2 10° 44.6	164° 27.4 10° 43.7	+0.2 -0.9
Чт 25	179° 27.6 10° 42.8	194° 27.7 10° 42.0	209° 27.9 10° 41.1	224° 28.1 10° 40.2	239° 28.2 10° 39.4	254° 28.4 10° 38.5	89° 30.7 10° 27.3	104° 30.8 10° 26.4	119° 31.0 10° 25.5	134° 31.2 10° 24.7	149° 31.4 10° 23.8	164° 31.6 10° 22.9	+0.2 -0.9
Пт 26	179° 31.7 10° 22.0	194° 31.9 10° 21.2	209° 32.1 10° 20.3	224° 32.3 10° 19.4	239° 32.4 10° 18.6	254° 32.6 10° 17.7	89° 34.9 10° 06.3	104° 35.1 10° 05.5	119° 35.3 10° 04.6	134° 35.5 10° 03.7	149° 35.6 10° 02.8	164° 35.8 10° 02.0	+0.2 -0.9
Сб 27	179° 36.0 10° 01.1	194° 36.2 10° 00.2	209° 36.4 9° 59.3	224° 36.5 9° 58.5	239° 36.7 9° 57.6	254° 36.9 9° 56.7	89° 39.3 9° 45.3	104° 39.5 9° 44.4	119° 39.6 9° 43.5	134° 39.8 9° 42.6	149° 40.0 9° 41.7	164° 40.2 9° 40.9	+0.2 -0.9
Вс 28	179° 40.4 9° 40.0	194° 40.6 9° 39.1	209° 40.7 9° 38.2	224° 40.9 9° 37.3	239° 41.1 9° 36.4	254° 41.3 9° 35.6	89° 43.7 9° 24.0	104° 43.9 9° 23.2	119° 44.1 9° 22.3	134° 44.3 9° 21.4	149° 44.5 9° 20.5	164° 44.6 9° 19.6	+0.2 -0.9
Пн 29	179° 44.8 9° 18.7	194° 45.0 9° 17.8	209° 45.2 9° 16.9	224° 45.4 9° 16.0	239° 45.6 9° 15.2	254° 45.8 9° 14.3	89° 48.2 9° 02.7	104° 48.4 9° 01.8	119° 48.6 9° 00.9	134° 48.8 9° 00.0	149° 49.0 8° 59.1	164° 49.2 8° 58.2	+0.2 -0.9
Вт 30	179° 49.4 8° 57.3	194° 49.6 8° 56.4	209° 49.8 8° 55.5	224° 50.0 8° 54.6	239° 50.1 8° 53.7	254° 50.3 8° 52.8	89° 52.9 8° 41.1	104° 53.0 8° 40.2	119° 53.2 8° 39.3	134° 53.4 8° 38.4	149° 53.6 8° 37.5	164° 53.8 8° 36.6	+0.2 -0.9
Ср 31	179° 54.0 8° 35.7	194° 54.2 8° 34.8	209° 54.4 8° 33.9	224° 54.6 8° 33.0	239° 54.8 8° 32.1	254° 55.0 8° 31.2	89° 57.6 8° 19.5	104° 57.7 8° 18.6	119° 57.9 8° 17.7	134° 58.1 8° 16.8	149° 58.3 8° 15.9	164° 58.5 8° 15.0	+0.2 -0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2033

Д	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	Δ'/h	R/p
Пн 1	49° 45.8	64° 19.6	78° 53.4	93° 27.1	108° 00.9	122° 34.6	137° 08.3	151° 41.9	166° 15.5	180° 49.1	195° 22.7	+33.7	14.8
	-8° 03.0	-8° 11.5	-8° 20.0	-8° 28.5	-8° 36.9	-8° 45.3	-8° 53.6	-9° 01.9	-9° 10.2	-9° 18.4	-9° 26.6	-8.4	54.2
Вт 2	53° 42.0	68° 15.0	82° 48.0	97° 20.9	111° 53.7	126° 26.6	140° 59.3	155° 32.1	170° 04.8	184° 37.4	199° 10.0	+32.8	14.9
	-11° 25.0	-11° 32.5	-11° 40.0	-11° 47.5	-11° 54.9	-12° 02.2	-12° 09.5	-12° 16.8	-12° 24.0	-12° 31.2	-12° 38.3	-7.3	54.5
◐ Ср 3	57° 13.5	71° 45.3	86° 17.1	100° 48.8	115° 20.5	129° 52.1	144° 23.7	158° 55.2	173° 26.7	187° 58.1	202° 29.4	+31.6	15.0
	-14° 18.5	-14° 24.7	-14° 30.8	-14° 36.9	-14° 43.0	-14° 48.9	-14° 54.8	-15° 00.7	-15° 06.4	-15° 12.2	-15° 17.8	-5.9	54.9
Чт 4	60° 13.0	74° 43.5	89° 13.9	103° 44.2	118° 14.5	132° 44.7	147° 14.8	161° 45.0	176° 15.0	190° 45.0	205° 14.9	+30.2	15.2
	-16° 34.1	-16° 38.6	-16° 43.0	-16° 47.3	-16° 51.6	-16° 55.8	-16° 59.9	-17° 03.9	-17° 07.8	-17° 11.7	-17° 15.5	-4.1	55.6
Пт 5	74° 43.5	89° 13.9	103° 44.2	118° 14.5	132° 44.7	147° 14.8	161° 45.0	176° 15.0	190° 45.0	205° 14.9	219° 44.8	+30.1	15.2
	-16° 38.6	-16° 43.0	-16° 47.3	-16° 51.6	-16° 55.8	-16° 59.9	-17° 03.9	-17° 07.8	-17° 11.7	-17° 15.5	-17° 19.2	-4.1	55.6
Сб 6	77° 06.0	91° 34.9	106° 03.8	120° 32.7	135° 01.5	149° 30.2	163° 58.9	178° 27.6	192° 56.1	207° 24.7	221° 53.1	+28.7	15.4
	-18° 04.2	-18° 06.5	-18° 08.7	-18° 10.7	-18° 12.7	-18° 14.6	-18° 16.4	-18° 18.2	-18° 19.8	-18° 21.3	-18° 22.7	-1.9	56.4
Вс 7	78° 54.3	93° 22.0	107° 49.7	122° 17.3	136° 44.8	151° 12.4	165° 39.9	180° 07.3	194° 34.7	209° 02.1	223° 29.4	+27.5	15.6
	-18° 31.8	-18° 31.6	-18° 31.2	-18° 30.8	-18° 30.3	-18° 29.6	-18° 28.8	-18° 28.0	-18° 27.0	-18° 25.9	-18° 24.7	+0.7	57.2
Пн 8	80° 15.2	94° 42.0	109° 08.8	123° 35.6	138° 02.3	152° 29.0	166° 55.7	181° 22.4	195° 49.0	210° 15.7	224° 42.3	+26.7	15.8
	-17° 53.6	-17° 50.7	-17° 47.6	-17° 44.4	-17° 41.1	-17° 37.7	-17° 34.2	-17° 30.6	-17° 26.8	-17° 23.0	-17° 19.0	+3.5	58.1
Вт 9	81° 19.6	95° 46.0	110° 12.4	124° 38.8	139° 05.2	153° 31.6	167° 58.0	182° 24.3	196° 50.7	211° 17.1	225° 43.5	+26.4	16.1
	-16° 06.4	-16° 00.7	-15° 54.9	-15° 48.9	-15° 42.9	-15° 36.8	-15° 30.5	-15° 24.2	-15° 17.7	-15° 11.2	-15° 04.5	+6.2	58.9
○ Ср 10	82° 19.4	96° 45.8	111° 12.2	125° 38.7	140° 05.2	154° 31.6	168° 58.1	183° 24.6	197° 51.1	212° 17.6	226° 44.2	+26.5	16.3
	-13° 12.9	-13° 04.7	-12° 56.4	-12° 48.0	-12° 39.6	-12° 31.0	-12° 22.4	-12° 13.6	-12° 04.8	-11° 55.9	-11° 47.0	+8.6	59.6
Чт 11	83° 23.8	97° 50.5	112° 17.3	126° 44.1	141° 10.9	155° 37.7	170° 04.5	184° 31.4	198° 58.2	213° 25.1	227° 52.0	+26.8	16.4
	-9° 23.1	-9° 13.0	-9° 02.8	-8° 52.5	-8° 42.1	-8° 31.7	-8° 21.3	-8° 10.8	-8° 00.2	-7° 49.6	-7° 38.9	+10.4	60.1
Пт 12	84° 37.3	99° 04.5	113° 31.6	127° 58.8	142° 26.0	156° 53.2	171° 20.4	185° 47.6	200° 14.9	214° 42.1	229° 09.4	+27.2	16.5
	-4° 53.2	-4° 41.8	-4° 30.4	-4° 19.0	-4° 07.6	-3° 56.1	-3° 44.6	-3° 33.1	-3° 21.5	-3° 10.0	-2° 58.4	+11.5	60.4
Сб 13	85° 59.6	100° 27.0	114° 54.4	129° 21.8	143° 49.3	158° 16.7	172° 44.2	187° 11.6	201° 39.1	216° 06.6	230° 34.0	+27.4	16.5
	-0° 03.2	0° 08.5	0° 20.2	0° 31.9	0° 43.6	0° 55.3	1° 07.0	1° 18.7	1° 30.3	1° 42.0	1° 53.6	+11.7	60.3
Вс 14	87° 26.4	101° 53.9	116° 21.4	130° 48.8	145° 16.3	159° 43.8	174° 11.3	188° 38.8	203° 06.3	217° 33.7	232° 01.2	+27.5	16.4
	4° 45.4	4° 56.6	5° 07.8	5° 18.9	5° 30.0	5° 41.1	5° 52.1	6° 03.1	6° 14.0	6° 24.9	6° 35.8	+11.0	60.1
Пн 15	88° 52.6	103° 19.9	117° 47.3	132° 14.7	146° 42.0	161° 09.4	175° 36.7	190° 04.0	204° 31.3	218° 58.6	233° 25.9	+27.3	16.3
	9° 12.1	9° 22.1	9° 31.9	9° 41.8	9° 51.5	10° 01.2	10° 10.8	10° 20.4	10° 29.8	10° 39.2	10° 48.6	+9.6	59.6
Вт 16	90° 14.3	104° 41.5	119° 08.6	133° 35.7	148° 02.9	162° 30.0	176° 57.1	191° 24.2	205° 51.3	220° 18.4	234° 45.5	+27.1	16.1
	12° 59.2	13° 07.2	13° 15.2	13° 23.1	13° 30.8	13° 38.5	13° 46.1	13° 53.7	14° 01.1	14° 08.4	14° 15.7	+7.6	59.0
◑ Ср 17	91° 31.0	105° 58.0	120° 25.0	134° 52.0	149° 19.0	163° 46.0	178° 13.0	192° 40.0	207° 07.0	221° 34.0	236° 01.0	+27.0	15.9
	15° 52.7	15° 58.4	16° 04.0	16° 09.5	16° 14.8	16° 20.1	16° 25.3	16° 30.3	16° 35.3	16° 40.1	16° 44.9	+5.2	58.4
Чт 18	92° 46.4	107° 13.5	121° 40.6	136° 07.7	150° 34.9	165° 02.0	179° 29.1	193° 56.3	208° 23.5	222° 50.7	237° 17.9	+27.1	15.8
	17° 43.4	17° 46.4	17° 49.4	17° 52.2	17° 54.9	17° 57.5	18° 00.0	18° 02.4	18° 04.7	18° 06.9	18° 08.9	+2.6	57.8
Пт 19	94° 08.2	108° 35.7	123° 03.3	137° 30.9	151° 58.5	166° 26.1	180° 53.8	195° 21.5	209° 49.2	224° 17.0	238° 44.8	+27.7	15.6
	18° 26.9	18° 27.2	18° 27.5	18° 27.6	18° 27.6	18° 27.5	18° 27.3	18° 27.0	18° 26.6	18° 26.1	18° 25.5	-0.1	57.1
Сб 20	95° 45.7	110° 14.0	124° 42.4	139° 10.9	153° 39.4	168° 07.9	182° 36.4	197° 05.0	211° 33.7	226° 02.4	240° 31.1	+28.5	15.4
	18° 04.1	18° 01.8	17° 59.5	17° 57.1	17° 54.5	17° 51.9	17° 49.2	17° 46.4	17° 43.5	17° 40.5	17° 37.4	-2.7	56.5
Вс 21	97° 47.5	112° 16.9	126° 46.4	141° 16.0	155° 45.6	170° 15.3	184° 45.0	199° 14.7	213° 44.5	228° 14.4	242° 44.3	+29.7	15.3
	16° 40.2	16° 35.7	16° 31.1	16° 26.4	16° 21.7	16° 16.8	16° 11.9	16° 06.9	16° 01.9	15° 56.7	15° 51.5	-4.9	56.0
Пн 22	100° 18.9	114° 49.6	129° 20.4	143° 51.2	158° 22.1	172° 53.0	187° 23.9	201° 54.9	216° 26.0	230° 57.1	245° 28.3	+30.9	15.1
	14° 24.1	14° 17.7	14° 11.3	14° 04.8	13° 58.2	13° 51.5	13° 44.8	13° 38.1	13° 31.2	13° 24.3	13° 17.4	-6.7	55.5
Вт 23	103° 21.4	117° 53.3	132° 25.3	146° 57.3	161° 29.3	176° 01.4	190° 33.6	205° 05.7	219° 38.0	234° 10.2	248° 42.6	+32.1	15.0
	11° 26.5	11° 18.7	11° 10.8	11° 02.9	10° 55.0	10° 47.0	10° 39.0	10° 30.9	10° 22.8	10° 14.6	10° 06.4	-8.0	55.1
● Ср 24	106° 52.2	121° 25.2	135° 58.1	150° 31.2	165° 04.2	179° 37.3	194° 10.5	208° 43.6	223° 16.8	237° 50.0	252° 23.3	+33.1	14.9
	7° 58.8	7° 50.1	7° 41.3	7° 32.4	7° 23.6	7° 14.7	7° 05.8	6° 56.9	6° 47.9	6° 38.9	6° 29.9	-8.9	54.7
Чт 25	110° 45.8	125° 19.5	139° 53.3	154° 27.1	169° 00.8	183° 34.7	198° 08.5	212° 42.3	227° 16.2	241° 50.1	256° 24.0	+33.8	14.8
	4° 12.4	4° 03.1	3° 53.8	3° 44.5	3° 35.2	3° 25.8	3° 16.5	3° 07.1	2° 57.8	2° 48.4	2° 39.0	-9.3	54.4
Пт 26	114° 54.7	129° 28.9	144° 03.1	158° 37.2	173° 11.4	187° 45.6	202° 19.8	216° 54.0	231° 28.3	246° 02.5	260° 36.7	+34.2	14.8
	0° 17.8	0° 08.4	-0° 01.0	-0° 10.5	-0° 19.9	-0° 29.3	-0° 38.7	-0° 48.1	-0° 57.4	-1° 06.8	-1° 16.2	-9.4	54.1
Сб 27	119° 10.4	133° 44.7	148° 18.9	162° 53.1	177° 27.4	192° 01.6	206° 35.8	221° 10.0	235° 44.2	250° 18.4	264° 52.6	+34.2	14.7
	-3° 35.4	-3° 44.6	-3° 53.7	-4° 02.9	-4° 12.0	-4° 21.1	-4° 30.1	-4° 39.2	-4° 48.2	-4° 57.3	-5° 06.3	-9.1	54.0
Вс 28	123° 23.9	137° 57.9	152° 31.8	167° 05.8	181° 39.7	196° 13.6	210° 47.4	225° 21.3	239° 55.1	254° 28.9	269° 02.7	+33.9	14.7
	-7° 18.2	-7° 26.8	-7° 35.3	-7° 43.8	-7° 52.3	-8° 00.8	-8° 09.2	-8° 17.6	-8° 25.9	-8° 34.2	-8° 42.5	-8.4	54.0
Пн 29	137° 57.9	152° 31.8	167° 05.8	181° 39.7	196° 13.6	210° 47.4	225° 21.3	239° 55.1	254° 28.9	269° 02.7	283° 36.5	+33.9	14.7
	-7° 26.8	-7° 35.3	-7° 43.8	-7° 52.3	-8° 00.8	-8° 09.2	-8° 17.6	-8° 25.9	-8° 34.2	-8° 42.5	-8° 50.8	-8.4	54.0
Вт 30	141° 59.8	156° 33.1	171° 06.4	185° 39.7	200° 12.9	214° 46.1	229° 19.3	243° 52.4	258° 25.5	272° 58.6	287° 31.6	+33.2	14.8
	-10° 49.8	-10° 57.4	-11° 05.0	-11° 12.5	-11° 20.0	-11° 27.4	-11° 34.8	-11° 42.1	-11° 49.4	-11° 56.6	-12° 03.8	-7.4	54.2
Ср 31	145° 42.4	160° 14.8	174° 47.2	189° 19.5	203° 51.8	218° 24.0	232° 56.2	247° 28.4	262° 00.5	276° 32.5	291° 04.6	+32.2	14.9
	-13° 45.3	-13° 51.7	-13° 57.9	-14° 04.1	-14° 10.3	-14° 16.4	-14° 22.4	-14° 28.4	-14° 34.3	-14° 40.1	-14° 45.9	-6.1	54.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Первая четв.: 3 10h25 — Полнолуние: 10 18h07 — Последняя четв.: 17 09h42 — Новолуние: 24 21h39

СОЛНЦЕ

Сентябрь 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	179° 58.7 8° 14.0	194° 58.9 8° 13.1	209° 59.1 8° 12.2	224° 59.3 8° 11.3	239° 59.5 8° 10.4	254° 59.7 8° 09.5	90° 02.3 7° 57.7	105° 02.5 7° 56.8	120° 02.7 7° 55.9	135° 02.9 7° 55.0	150° 03.1 7° 54.0	165° 03.3 7° 53.1	+0.2 -0.9
Пт 2	180° 03.5 7° 52.2	195° 03.7 7° 51.3	210° 03.9 7° 50.4	225° 04.1 7° 49.5	240° 04.3 7° 48.6	255° 04.5 7° 47.7	90° 07.2 7° 35.8	105° 07.4 7° 34.9	120° 07.6 7° 33.9	135° 07.8 7° 33.0	150° 08.0 7° 32.1	165° 08.2 7° 31.2	+0.2 -0.9
Сб 3	180° 08.4 7° 30.3	195° 08.6 7° 29.4	210° 08.8 7° 28.4	225° 09.0 7° 27.5	240° 09.2 7° 26.6	255° 09.4 7° 25.7	90° 12.1 7° 13.7	105° 12.3 7° 12.8	120° 12.5 7° 11.9	135° 12.7 7° 11.0	150° 12.9 7° 10.0	165° 13.1 7° 09.1	+0.2 -0.9
Вс 4	180° 13.4 7° 08.2	195° 13.6 7° 07.3	210° 13.8 7° 06.4	225° 14.0 7° 05.4	240° 14.2 7° 04.5	255° 14.4 7° 03.6	90° 17.1 6° 51.6	105° 17.3 6° 50.7	120° 17.5 6° 49.7	135° 17.7 6° 48.8	150° 17.9 6° 47.9	165° 18.1 6° 46.9	+0.2 -0.9
Пн 5	180° 18.4 6° 46.0	195° 18.6 6° 45.1	210° 18.8 6° 44.2	225° 19.0 6° 43.2	240° 19.2 6° 42.3	255° 19.4 6° 41.4	90° 22.2 6° 29.3	105° 22.4 6° 28.4	120° 22.6 6° 27.5	135° 22.8 6° 26.5	150° 23.0 6° 25.6	165° 23.2 6° 24.7	+0.2 -0.9
Вт 6	180° 23.4 6° 23.7	195° 23.6 6° 22.8	210° 23.9 6° 21.9	225° 24.1 6° 20.9	240° 24.3 6° 20.0	255° 24.5 6° 19.1	90° 27.3 6° 06.9	105° 27.5 6° 06.0	120° 27.7 6° 05.1	135° 27.9 6° 04.1	150° 28.1 6° 03.2	165° 28.3 6° 02.3	+0.2 -0.9
Ср 7	180° 28.6 6° 01.3	195° 28.8 6° 00.4	210° 29.0 5° 59.5	225° 29.2 5° 58.5	240° 29.4 5° 57.6	255° 29.6 5° 56.7	90° 32.4 5° 44.5	105° 32.6 5° 43.5	120° 32.9 5° 42.6	135° 33.1 5° 41.7	150° 33.3 5° 40.7	165° 33.5 5° 39.8	+0.2 -0.9
Чт 8	180° 33.7 5° 38.8	195° 33.9 5° 37.9	210° 34.2 5° 37.0	225° 34.4 5° 36.0	240° 34.6 5° 35.1	255° 34.8 5° 34.1	90° 37.6 5° 21.9	105° 37.9 5° 21.0	120° 38.1 5° 20.0	135° 38.3 5° 19.1	150° 38.5 5° 18.1	165° 38.7 5° 17.2	+0.2 -0.9
Пт 9	180° 38.9 5° 16.2	195° 39.2 5° 15.3	210° 39.4 5° 14.4	225° 39.6 5° 13.4	240° 39.8 5° 12.5	255° 40.0 5° 11.5	90° 42.9 4° 59.2	105° 43.1 4° 58.3	120° 43.3 4° 57.4	135° 43.5 4° 56.4	150° 43.8 4° 55.5	165° 44.0 4° 54.5	+0.2 -0.9
Сб 10	180° 44.2 4° 53.6	195° 44.4 4° 52.6	210° 44.6 4° 51.7	225° 44.9 4° 50.7	240° 45.1 4° 49.8	255° 45.3 4° 48.8	90° 48.2 4° 36.5	105° 48.4 4° 35.6	120° 48.6 4° 34.6	135° 48.8 4° 33.7	150° 49.0 4° 32.7	165° 49.3 4° 31.8	+0.2 -0.9
Вс 11	180° 49.5 4° 30.8	195° 49.7 4° 29.9	210° 49.9 4° 28.9	225° 50.2 4° 28.0	240° 50.4 4° 27.0	255° 50.6 4° 26.1	90° 53.5 4° 13.7	105° 53.7 4° 12.7	120° 53.9 4° 11.8	135° 54.1 4° 10.8	150° 54.4 4° 09.9	165° 54.6 4° 08.9	+0.2 -1.0
Пн 12	180° 54.8 4° 08.0	195° 55.0 4° 07.0	210° 55.2 4° 06.1	225° 55.5 4° 05.1	240° 55.7 4° 04.2	255° 55.9 4° 03.2	90° 58.8 3° 50.8	105° 59.0 3° 49.8	120° 59.3 3° 48.9	135° 59.5 3° 47.9	150° 59.7 3° 47.0	165° 59.9 3° 46.0	+0.2 -1.0
Вт 13	181° 00.1 3° 45.1	196° 00.4 3° 44.1	211° 00.6 3° 43.1	226° 00.8 3° 42.2	241° 01.0 3° 41.2	256° 01.3 3° 40.3	91° 04.2 3° 27.8	106° 04.4 3° 26.9	121° 04.6 3° 25.9	136° 04.8 3° 24.9	151° 05.0 3° 24.0	166° 05.3 3° 23.0	+0.2 -1.0
Ср 14	181° 05.5 3° 22.1	196° 05.7 3° 21.1	211° 05.9 3° 20.1	226° 06.2 3° 19.2	241° 06.4 3° 18.2	256° 06.6 3° 17.3	91° 09.5 3° 04.8	106° 09.7 3° 03.8	121° 10.0 3° 02.9	136° 10.2 3° 01.9	151° 10.4 3° 00.9	166° 10.6 3° 00.0	+0.2 -1.0
Чт 15	181° 10.9 2° 59.0	196° 11.1 2° 58.1	211° 11.3 2° 57.1	226° 11.5 2° 56.1	241° 11.7 2° 55.2	256° 12.0 2° 54.2	91° 14.9 2° 41.7	106° 15.1 2° 40.7	121° 15.3 2° 39.8	136° 15.5 2° 38.8	151° 15.8 2° 37.8	166° 16.0 2° 36.9	+0.2 -1.0
Пт 16	181° 16.2 2° 35.9	196° 16.4 2° 35.0	211° 16.7 2° 34.0	226° 16.9 2° 33.0	241° 17.1 2° 32.1	256° 17.3 2° 31.1	91° 20.2 2° 18.6	106° 20.5 2° 17.6	121° 20.7 2° 16.6	136° 20.9 2° 15.7	151° 21.1 2° 14.7	166° 21.4 2° 13.7	+0.2 -1.0
Сб 17	181° 21.6 2° 12.8	196° 21.8 2° 11.8	211° 22.0 2° 10.8	226° 22.2 2° 09.9	241° 22.5 2° 08.9	256° 22.7 2° 07.9	91° 25.6 1° 55.4	106° 25.8 1° 54.4	121° 26.0 1° 53.4	136° 26.3 1° 52.5	151° 26.5 1° 51.5	166° 26.7 1° 50.5	+0.2 -1.0
Вс 18	181° 26.9 1° 49.6	196° 27.2 1° 48.6	211° 27.4 1° 47.6	226° 27.6 1° 46.7	241° 27.8 1° 45.7	256° 28.1 1° 44.7	91° 30.9 1° 32.1	106° 31.2 1° 31.2	121° 31.4 1° 30.2	136° 31.6 1° 29.2	151° 31.8 1° 28.2	166° 32.1 1° 27.3	+0.2 -1.0
Пн 19	181° 32.3 1° 26.3	196° 32.5 1° 25.3	211° 32.7 1° 24.4	226° 33.0 1° 23.4	241° 33.2 1° 22.4	256° 33.4 1° 21.5	91° 36.3 1° 08.9	106° 36.5 1° 07.9	121° 36.7 1° 06.9	136° 37.0 1° 05.9	151° 37.2 1° 05.0	166° 37.4 1° 04.0	+0.2 -1.0
Вт 20	181° 37.6 1° 03.0	196° 37.8 1° 02.1	211° 38.1 1° 01.1	226° 38.3 1° 00.1	241° 38.5 0° 59.2	256° 38.7 0° 58.2	91° 41.6 0° 45.6	106° 41.8 0° 44.6	121° 42.0 0° 43.6	136° 42.3 0° 42.6	151° 42.5 0° 41.7	166° 42.7 0° 40.7	+0.2 -1.0
Ср 21	181° 42.9 0° 39.7	196° 43.2 0° 38.8	211° 43.4 0° 37.8	226° 43.6 0° 36.8	241° 43.8 0° 35.8	256° 44.0 0° 34.9	91° 46.9 0° 22.2	106° 47.1 0° 21.3	121° 47.3 0° 20.3	136° 47.6 0° 19.3	151° 47.8 0° 18.3	166° 48.0 0° 17.4	+0.2 -1.0
Чт 22	181° 48.2 0° 16.4	196° 48.4 0° 15.4	211° 48.7 0° 14.5	226° 48.9 0° 13.5	241° 49.1 0° 12.5	256° 49.3 0° 11.5	91° 52.2 -0° 01.1	106° 52.4 -0° 02.1	121° 52.6 -0° 03.1	136° 52.8 -0° 04.0	151° 53.0 -0° 05.0	166° 53.3 -0° 06.0	+0.2 -1.0
Пт 23	181° 53.5 -0° 06.9	196° 53.7 -0° 07.9	211° 53.9 -0° 08.9	226° 54.1 -0° 09.9	241° 54.4 -0° 10.8	256° 54.6 -0° 11.8	91° 57.4 -0° 24.5	106° 57.6 -0° 25.4	121° 57.8 -0° 26.4	136° 58.1 -0° 27.4	151° 58.3 -0° 28.4	166° 58.5 -0° 29.3	+0.2 -1.0
Сб 24	181° 58.7 -0° 30.3	196° 58.9 -0° 31.3	211° 59.2 -0° 32.3	226° 59.4 -0° 33.2	241° 59.6 -0° 34.2	256° 59.8 -0° 35.2	92° 02.6 -0° 47.8	107° 02.8 -0° 48.8	122° 03.1 -0° 49.8	137° 03.3 -0° 50.8	152° 03.5 -0° 51.7	167° 03.7 -0° 52.7	+0.2 -1.0
Вс 25	182° 03.9 -0° 53.7	197° 04.1 -0° 54.6	212° 04.3 -0° 55.6	227° 04.6 -0° 56.6	242° 04.8 -0° 57.6	257° 05.0 -0° 58.5	92° 07.8 -1° 11.2	107° 08.0 -1° 12.2	122° 08.2 -1° 13.1	137° 08.4 -1° 14.1	152° 08.6 -1° 15.1	167° 08.9 -1° 16.1	+0.2 -1.0
Пн 26	182° 09.1 -1° 17.0	197° 09.3 -1° 18.0	212° 09.5 -1° 19.0	227° 09.7 -1° 20.0	242° 09.9 -1° 20.9	257° 10.1 -1° 21.9	92° 12.9 -1° 34.6	107° 13.1 -1° 35.5	122° 13.3 -1° 36.5	137° 13.5 -1° 37.5	152° 13.8 -1° 38.4	167° 14.0 -1° 39.4	+0.2 -1.0
Вт 27	182° 14.2 -1° 40.4	197° 14.4 -1° 41.4	212° 14.6 -1° 42.3	227° 14.8 -1° 43.3	242° 15.0 -1° 44.3	257° 15.2 -1° 45.3	92° 18.0 -1° 57.9	107° 18.2 -1° 58.9	122° 18.4 -1° 59.8	137° 18.6 -2° 00.8	152° 18.8 -2° 01.8	167° 19.0 -2° 02.8	+0.2 -1.0
Ср 28	182° 19.2 -2° 03.7	197° 19.4 -2° 04.7	212° 19.7 -2° 05.7	227° 19.9 -2° 06.7	242° 20.1 -2° 07.6	257° 20.3 -2° 08.6	92° 23.0 -2° 21.2	107° 23.2 -2° 22.2	122° 23.4 -2° 23.2	137° 23.6 -2° 24.1	152° 23.8 -2° 25.1	167° 24.0 -2° 26.1	+0.2 -1.0
Чт 29	182° 24.2 -2° 27.1	197° 24.5 -2° 28.0	212° 24.7 -2° 29.0	227° 24.9 -2° 30.0	242° 25.1 -2° 30.9	257° 25.3 -2° 31.9	92° 28.0 -2° 44.5	107° 28.2 -2° 45.5	122° 28.4 -2° 46.5	137° 28.6 -2° 47.5	152° 28.8 -2° 48.4	167° 29.0 -2° 49.4	+0.2 -1.0
Пт 30	182° 29.2 -2° 50.4	197° 29.4 -2° 51.3	212° 29.6 -2° 52.3	227° 29.8 -2° 53.3	242° 30.0 -2° 54.2	257° 30.2 -2° 55.2	92° 32.9 -3° 07.8	107° 33.1 -3° 08.8	122° 33.3 -3° 09.8	137° 33.5 -3° 10.7	152° 33.7 -3° 11.7	167° 33.9 -3° 12.7	+0.2 -1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2033

Д	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	Δ'/h	R/p
Чт 1	50° 14.4	64° 44.8	79° 15.1	93° 45.4	108° 15.6	122° 45.7	137° 15.9	151° 45.9	166° 16.0	180° 45.9	195° 15.8	+30.1	15.1
	-17° 18.0	-17° 21.3	-17° 24.5	-17° 27.7	-17° 30.7	-17° 33.7	-17° 36.6	-17° 39.4	-17° 42.2	-17° 44.8	-17° 47.4	-2.9	55.4
◐ Пт 2	52° 38.7	67° 07.9	81° 37.0	96° 06.0	110° 35.0	125° 04.0	139° 32.9	154° 01.8	168° 30.6	182° 59.3	197° 28.1	+28.9	15.3
	-18° 15.0	-18° 16.1	-18° 17.1	-18° 18.0	-18° 18.9	-18° 19.6	-18° 20.2	-18° 20.7	-18° 21.2	-18° 21.5	-18° 21.7	-0.7	56.2
Сб 3	54° 33.9	69° 02.0	83° 30.0	97° 58.0	112° 26.0	126° 53.9	141° 21.8	155° 49.6	170° 17.4	184° 45.2	199° 12.9	+27.9	15.6
	-18° 13.2	-18° 11.8	-18° 10.3	-18° 08.7	-18° 07.0	-18° 05.2	-18° 03.3	-18° 01.2	-17° 59.1	-17° 56.9	-17° 54.6	+1.9	57.1
Вс 4	69° 02.0	83° 30.0	97° 58.0	112° 26.0	126° 53.9	141° 21.8	155° 49.6	170° 17.4	184° 45.2	199° 12.9	213° 40.6	+27.9	15.6
	-18° 11.8	-18° 10.3	-18° 08.7	-18° 07.0	-18° 05.2	-18° 03.3	-18° 01.2	-17° 59.1	-17° 56.9	-17° 54.6	-17° 52.1	+2.0	57.1
Пн 5	70° 32.6	84° 59.9	99° 27.1	113° 54.3	128° 21.5	142° 48.6	157° 15.8	171° 42.9	186° 09.9	200° 37.0	215° 04.1	+27.1	15.8
	-17° 02.7	-16° 58.6	-16° 54.3	-16° 50.0	-16° 45.5	-16° 40.9	-16° 36.2	-16° 31.4	-16° 26.5	-16° 21.5	-16° 16.4	+4.6	58.1
Вт 6	71° 47.6	86° 14.4	100° 41.2	115° 08.0	129° 34.7	144° 01.5	158° 28.2	172° 54.9	187° 21.7	201° 48.4	216° 15.1	+26.7	16.1
	-14° 47.4	-14° 40.6	-14° 33.8	-14° 26.8	-14° 19.8	-14° 12.6	-14° 05.4	-13° 58.0	-13° 50.6	-13° 43.0	-13° 35.4	+7.2	59.1
Ср 7	72° 54.8	87° 21.4	101° 48.0	116° 14.6	130° 41.2	145° 07.8	159° 34.4	174° 01.0	188° 27.6	202° 54.2	217° 20.7	+26.6	16.4
	-11° 29.9	-11° 20.8	-11° 11.6	-11° 02.4	-10° 53.1	-10° 43.7	-10° 34.2	-10° 24.7	-10° 15.1	-10° 05.4	-9° 55.6	+9.4	60.0
Чт 8	73° 59.5	88° 26.0	102° 52.6	117° 19.2	131° 45.8	146° 12.3	160° 38.9	175° 05.5	189° 32.1	203° 58.6	218° 25.2	+26.6	16.5
	-7° 20.8	-7° 10.0	-6° 59.1	-6° 48.2	-6° 37.2	-6° 26.2	-6° 15.1	-6° 04.0	-5° 52.8	-5° 41.6	-5° 30.3	+11.1	60.6
○ Пт 9	75° 03.7	89° 30.3	103° 56.9	118° 23.4	132° 50.0	147° 16.5	161° 43.1	176° 09.6	190° 36.1	205° 02.7	219° 29.2	+26.5	16.6
	-2° 37.1	-2° 25.3	-2° 13.5	-2° 01.7	-1° 49.9	-1° 38.0	-1° 26.1	-1° 14.3	-1° 02.4	-0° 50.5	-0° 38.6	+11.9	61.0
Сб 10	76° 06.7	90° 33.1	104° 59.6	119° 26.0	133° 52.4	148° 18.9	162° 45.3	177° 11.7	191° 38.1	206° 04.5	220° 30.9	+26.4	16.7
	2° 19.8	2° 31.6	2° 43.4	2° 55.1	3° 06.9	3° 18.6	3° 30.3	3° 42.0	3° 53.7	4° 05.3	4° 16.9	+11.7	61.1
Вс 11	77° 05.8	91° 32.1	105° 58.3	120° 24.6	134° 50.8	149° 17.0	163° 43.3	178° 09.5	192° 35.7	207° 01.9	221° 28.0	+26.2	16.6
	7° 06.2	7° 17.1	7° 27.9	7° 38.8	7° 49.5	8° 00.2	8° 10.8	8° 21.4	8° 31.9	8° 42.3	8° 52.7	+10.7	60.8
Пн 12	77° 59.8	92° 25.9	106° 51.9	121° 18.0	135° 44.0	150° 10.1	164° 36.1	179° 02.1	193° 28.1	207° 54.2	222° 20.2	+26.0	16.4
	11° 19.8	11° 29.0	11° 38.1	11° 47.1	11° 56.1	12° 04.9	12° 13.7	12° 22.3	12° 30.9	12° 39.4	12° 47.8	+8.8	60.2
Вт 13	78° 50.1	93° 16.2	107° 42.2	122° 08.2	136° 34.2	151° 00.2	165° 26.2	179° 52.2	194° 18.3	208° 44.3	223° 10.4	+26.0	16.2
	14° 42.3	14° 49.1	14° 55.9	15° 02.5	15° 09.0	15° 15.4	15° 21.7	15° 27.9	15° 34.0	15° 40.0	15° 45.9	+6.4	59.5
Ср 14	79° 42.3	94° 08.6	108° 34.8	123° 01.1	137° 27.4	151° 53.7	166° 20.0	180° 46.4	195° 12.8	209° 39.2	224° 05.6	+26.3	16.0
	17° 01.1	17° 05.2	17° 09.2	17° 13.1	17° 16.9	17° 20.6	17° 24.2	17° 27.6	17° 31.0	17° 34.2	17° 37.3	+3.6	58.6
◑ Чт 15	80° 45.1	95° 12.0	109° 38.9	124° 05.8	138° 32.8	152° 59.8	167° 26.8	181° 53.9	196° 21.0	210° 48.2	225° 15.4	+27.0	15.8
	18° 10.5	18° 11.8	18° 13.0	18° 14.1	18° 15.1	18° 16.0	18° 16.7	18° 17.4	18° 18.0	18° 18.4	18° 18.7	+0.8	57.8
Пт 16	82° 08.3	96° 36.1	111° 04.1	125° 32.0	140° 00.0	154° 28.1	168° 56.2	183° 24.4	197° 52.6	212° 20.9	226° 49.2	+28.1	15.5
	18° 10.9	18° 09.6	18° 08.1	18° 06.6	18° 04.9	18° 03.2	18° 01.3	17° 59.4	17° 57.3	17° 55.2	17° 52.9	-1.8	57.0
Сб 17	84° 00.0	98° 29.1	112° 58.3	127° 27.5	141° 56.8	156° 26.2	170° 55.6	185° 25.1	199° 54.6	214° 24.2	228° 53.8	+29.4	15.3
	17° 08.0	17° 04.3	17° 00.5	16° 56.6	16° 52.6	16° 48.5	16° 44.4	16° 40.2	16° 35.9	16° 31.5	16° 27.0	-4.1	56.2
Вс 18	86° 24.7	100° 55.2	115° 25.7	129° 56.3	144° 27.0	158° 57.7	173° 28.4	187° 59.2	202° 30.1	217° 01.0	231° 32.0	+30.7	15.2
	15° 10.5	15° 04.8	14° 59.0	14° 53.2	14° 47.3	14° 41.3	14° 35.3	14° 29.2	14° 23.0	14° 16.8	14° 10.5	-6.0	55.6
Пн 19	89° 22.6	103° 54.3	118° 26.2	132° 58.0	147° 29.9	162° 01.9	176° 33.9	191° 05.9	205° 38.0	220° 10.2	234° 42.3	+32.0	15.0
	12° 28.7	12° 21.5	12° 14.2	12° 06.9	11° 59.5	11° 52.1	11° 44.6	11° 37.0	11° 29.4	11° 21.8	11° 14.1	-7.5	55.1
Вт 20	92° 50.2	107° 23.0	121° 55.9	136° 28.8	151° 01.8	165° 34.8	180° 07.8	194° 40.9	209° 14.0	223° 47.1	238° 20.3	+33.0	14.9
	9° 13.7	9° 05.4	8° 57.0	8° 48.6	8° 40.1	8° 31.6	8° 23.1	8° 14.6	8° 06.0	7° 57.4	7° 48.7	-8.5	54.7
Ср 21	96° 41.4	111° 15.1	125° 48.7	140° 22.4	154° 56.1	169° 29.9	184° 03.6	198° 37.4	213° 11.2	227° 45.1	242° 18.9	+33.7	14.8
	5° 36.0	5° 26.9	5° 17.9	5° 08.8	4° 59.7	4° 50.6	4° 41.5	4° 32.3	4° 23.2	4° 14.0	4° 04.8	-9.1	54.3
Чт 22	100° 48.8	115° 22.9	129° 57.0	144° 31.2	159° 05.3	173° 39.5	188° 13.6	202° 47.8	217° 22.0	231° 56.2	246° 30.4	+34.2	14.7
	1° 45.7	1° 36.4	1° 27.1	1° 17.7	1° 08.4	0° 59.0	0° 49.7	0° 40.4	0° 31.0	0° 21.7	0° 12.3	-9.3	54.1
● Пт 23	105° 04.0	119° 38.3	134° 12.6	148° 46.8	163° 21.1	177° 55.3	192° 29.6	207° 03.8	221° 38.1	236° 12.3	250° 46.5	+34.2	14.7
	-2° 07.3	-2° 16.6	-2° 25.8	-2° 35.0	-2° 44.3	-2° 53.5	-3° 02.7	-3° 11.8	-3° 21.0	-3° 30.1	-3° 39.3	-9.2	53.9
Сб 24	109° 19.0	123° 53.1	138° 27.2	153° 01.2	167° 35.3	182° 09.3	196° 43.3	211° 17.3	225° 51.3	240° 25.2	254° 59.2	+34.0	14.7
	-5° 54.0	-6° 02.8	-6° 11.5	-6° 20.3	-6° 29.0	-6° 37.7	-6° 46.4	-6° 55.0	-7° 03.7	-7° 12.2	-7° 20.8	-8.7	53.9
Вс 25	113° 26.0	127° 59.6	142° 33.2	157° 06.7	171° 40.3	186° 13.8	200° 47.3	215° 20.7	229° 54.1	244° 27.5	259° 00.9	+33.5	14.7
	-9° 25.2	-9° 33.2	-9° 41.2	-9° 49.1	-9° 57.0	-10° 04.8	-10° 12.6	-10° 20.4	-10° 28.1	-10° 35.8	-10° 43.4	-7.8	53.9
Пн 26	117° 18.1	131° 50.9	146° 23.8	160° 56.6	175° 29.4	190° 02.2	204° 34.9	219° 07.6	233° 40.2	248° 12.9	262° 45.5	+32.7	14.8
	-12° 32.2	-12° 39.1	-12° 45.9	-12° 52.7	-12° 59.4	-13° 06.0	-13° 12.6	-13° 19.1	-13° 25.6	-13° 32.0	-13° 38.4	-6.6	54.1
Вт 27	120° 49.9	135° 21.9	149° 53.8	164° 25.7	178° 57.6	193° 29.4	208° 01.2	222° 33.0	237° 04.7	251° 36.4	266° 08.1	+31.8	14.8
	-15° 06.6	-15° 11.9	-15° 17.2	-15° 22.5	-15° 27.7	-15° 32.8	-15° 37.8	-15° 42.8	-15° 47.7	-15° 52.5	-15° 57.2	-5.1	54.4
Ср 28	135° 21.9	149° 53.8	164° 25.7	178° 57.6	193° 29.4	208° 01.2	222° 33.0	237° 04.7	251° 36.4	266° 08.1	280° 39.7	+31.8	14.8
	-15° 11.9	-15° 17.2	-15° 22.5	-15° 27.7	-15° 32.8	-15° 37.8	-15° 42.8	-15° 47.7	-15° 52.5	-15° 57.2	-16° 01.9	-5.0	54.4
Чт 29	138° 28.9	152° 59.9	167° 30.8	182° 01.7	196° 32.5	211° 03.4	225° 34.1	240° 04.8	254° 35.5	269° 06.2	283° 36.8	+30.8	15.0
	-17° 03.4	-17° 06.9	-17° 10.3	-17° 13.6	-17° 16.9	-17° 20.1	-17° 23.2	-17° 26.2	-17° 29.1	-17° 31.9	-17° 34.7	-3.1	54.9
Пт 30	141° 11.2	155° 41.2	170° 11.2	184° 41.1	199° 11.0	213° 40.8	228° 10.6	242° 40.4	257° 10.1	271° 39.8	286° 09.5	+29.8	15.1
	-18° 05.9	-18° 07.3	-18° 08.5	-18° 09.7	-18° 10.9	-18° 11.9	-18° 12.8	-18° 13.6	-18° 14.4	-18° 15.0	-18° 15.6	-1.0	55.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Первая четв.: 2 02h23 — Полнолуние: 9 02h20 — Последняя четв.: 15 17h33 — Новолуние: 23 13h39

СОЛНЦЕ

Октябрь 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	182° 34.1 -3° 13.6	197° 34.3 -3° 14.6	212° 34.5 -3° 15.6	227° 34.7 -3° 16.5	242° 34.9 -3° 17.5	257° 35.1 -3° 18.5	92° 37.7 -3° 31.1	107° 37.9 -3° 32.0	122° 38.1 -3° 33.0	137° 38.3 -3° 34.0	152° 38.5 -3° 34.9	167° 38.7 -3° 35.9	+0.2 -1.0
Вс 2	182° 38.9 -3° 36.9	197° 39.1 -3° 37.8	212° 39.3 -3° 38.8	227° 39.5 -3° 39.8	242° 39.7 -3° 40.7	257° 39.9 -3° 41.7	92° 42.5 -3° 54.3	107° 42.7 -3° 55.2	122° 42.9 -3° 56.2	137° 43.1 -3° 57.2	152° 43.2 -3° 58.1	167° 43.4 -3° 59.1	+0.2 -1.0
Пн 3	182° 43.6 -4° 00.1	197° 43.8 -4° 01.0	212° 44.0 -4° 02.0	227° 44.2 -4° 03.0	242° 44.4 -4° 03.9	257° 44.6 -4° 04.9	92° 47.1 -4° 17.4	107° 47.3 -4° 18.4	122° 47.5 -4° 19.4	137° 47.7 -4° 20.3	152° 47.9 -4° 21.3	167° 48.1 -4° 22.2	+0.2 -1.0
Вт 4	182° 48.3 -4° 23.2	197° 48.5 -4° 24.2	212° 48.7 -4° 25.1	227° 48.9 -4° 26.1	242° 49.1 -4° 27.1	257° 49.3 -4° 28.0	92° 51.8 -4° 40.5	107° 51.9 -4° 41.5	122° 52.1 -4° 42.5	137° 52.3 -4° 43.4	152° 52.5 -4° 44.4	167° 52.7 -4° 45.3	+0.2 -1.0
Ср 5	182° 52.9 -4° 46.3	197° 53.1 -4° 47.3	212° 53.3 -4° 48.2	227° 53.5 -4° 49.2	242° 53.6 -4° 50.1	257° 53.8 -4° 51.1	92° 56.3 -5° 03.6	107° 56.5 -5° 04.5	122° 56.6 -5° 05.5	137° 56.8 -5° 06.5	152° 57.0 -5° 07.4	167° 57.2 -5° 08.4	+0.2 -1.0
Чт 6	182° 57.4 -5° 09.3	197° 57.6 -5° 10.3	212° 57.8 -5° 11.2	227° 57.9 -5° 12.2	242° 58.1 -5° 13.2	257° 58.3 -5° 14.1	93° 00.7 -5° 26.6	108° 00.9 -5° 27.5	123° 01.1 -5° 28.5	138° 01.2 -5° 29.4	153° 01.4 -5° 30.4	168° 01.6 -5° 31.3	+0.2 -1.0
Пт 7	183° 01.8 -5° 32.3	198° 02.0 -5° 33.2	213° 02.1 -5° 34.2	228° 02.3 -5° 35.2	243° 02.5 -5° 36.1	258° 02.7 -5° 37.1	93° 05.0 -5° 49.5	108° 05.2 -5° 50.4	123° 05.4 -5° 51.4	138° 05.6 -5° 52.3	153° 05.7 -5° 53.3	168° 05.9 -5° 54.2	+0.2 -1.0
Сб 8	183° 06.1 -5° 55.2	198° 06.3 -5° 56.1	213° 06.4 -5° 57.1	228° 06.6 -5° 58.0	243° 06.8 -5° 59.0	258° 07.0 -5° 59.9	93° 09.2 -6° 12.3	108° 09.4 -6° 13.3	123° 09.6 -6° 14.2	138° 09.8 -6° 15.2	153° 09.9 -6° 16.1	168° 10.1 -6° 17.1	+0.2 -1.0
Вс 9	183° 10.3 -6° 18.0	198° 10.5 -6° 19.0	213° 10.6 -6° 19.9	228° 10.8 -6° 20.8	243° 11.0 -6° 21.8	258° 11.1 -6° 22.7	93° 13.3 -6° 35.1	108° 13.5 -6° 36.0	123° 13.7 -6° 37.0	138° 13.9 -6° 37.9	153° 14.0 -6° 38.8	168° 14.2 -6° 39.8	+0.2 -0.9
Пн 10	183° 14.4 -6° 40.7	198° 14.5 -6° 41.7	213° 14.7 -6° 42.6	228° 14.9 -6° 43.6	243° 15.0 -6° 44.5	258° 15.2 -6° 45.5	93° 17.3 -6° 57.7	108° 17.5 -6° 58.7	123° 17.7 -6° 59.6	138° 17.8 -7° 00.6	153° 18.0 -7° 01.5	168° 18.2 -7° 02.4	+0.2 -0.9
Вт 11	183° 18.3 -7° 03.4	198° 18.5 -7° 04.3	213° 18.6 -7° 05.3	228° 18.8 -7° 06.2	243° 19.0 -7° 07.1	258° 19.1 -7° 08.1	93° 21.2 -7° 20.3	108° 21.4 -7° 21.2	123° 21.5 -7° 22.2	138° 21.7 -7° 23.1	153° 21.8 -7° 24.1	168° 22.0 -7° 25.0	+0.2 -0.9
Ср 12	183° 22.2 -7° 25.9	198° 22.3 -7° 26.9	213° 22.5 -7° 27.8	228° 22.6 -7° 28.7	243° 22.8 -7° 29.7	258° 22.9 -7° 30.6	93° 25.0 -7° 42.8	108° 25.1 -7° 43.7	123° 25.3 -7° 44.6	138° 25.4 -7° 45.6	153° 25.6 -7° 46.5	168° 25.7 -7° 47.5	+0.2 -0.9
Чт 13	183° 25.9 -7° 48.4	198° 26.0 -7° 49.3	213° 26.2 -7° 50.2	228° 26.3 -7° 51.2	243° 26.5 -7° 52.1	258° 26.6 -7° 53.0	93° 28.6 -8° 05.2	108° 28.7 -8° 06.1	123° 28.9 -8° 07.0	138° 29.0 -8° 07.9	153° 29.1 -8° 08.9	168° 29.3 -8° 09.8	+0.2 -0.9
Пт 14	183° 29.4 -8° 10.7	198° 29.6 -8° 11.7	213° 29.7 -8° 12.6	228° 29.9 -8° 13.5	243° 30.0 -8° 14.4	258° 30.2 -8° 15.4	93° 32.0 -8° 27.4	108° 32.2 -8° 28.3	123° 32.3 -8° 29.3	138° 32.4 -8° 30.2	153° 32.6 -8° 31.1	168° 32.7 -8° 32.0	+0.1 -0.9
Сб 15	183° 32.9 -8° 33.0	198° 33.0 -8° 33.9	213° 33.1 -8° 34.8	228° 33.3 -8° 35.7	243° 33.4 -8° 36.7	258° 33.6 -8° 37.6	93° 35.3 -8° 49.6	108° 35.5 -8° 50.5	123° 35.6 -8° 51.4	138° 35.8 -8° 52.3	153° 35.9 -8° 53.2	168° 36.0 -8° 54.2	+0.1 -0.9
Вс 16	183° 36.2 -8° 55.1	198° 36.3 -8° 56.0	213° 36.4 -8° 56.9	228° 36.6 -8° 57.8	243° 36.7 -8° 58.7	258° 36.8 -8° 59.7	93° 38.5 -9° 11.6	108° 38.7 -9° 12.5	123° 38.8 -9° 13.4	138° 38.9 -9° 14.3	153° 39.0 -9° 15.2	168° 39.2 -9° 16.1	+0.1 -0.9
Пн 17	183° 39.3 -9° 17.1	198° 39.4 -9° 18.0	213° 39.5 -9° 18.9	228° 39.7 -9° 19.8	243° 39.8 -9° 20.7	258° 39.9 -9° 21.6	93° 41.5 -9° 33.5	108° 41.7 -9° 34.4	123° 41.8 -9° 35.3	138° 41.9 -9° 36.2	153° 42.0 -9° 37.1	168° 42.2 -9° 38.0	+0.1 -0.9
Вт 18	183° 42.3 -9° 38.9	198° 42.4 -9° 39.8	213° 42.5 -9° 40.7	228° 42.6 -9° 41.6	243° 42.8 -9° 42.5	258° 42.9 -9° 43.4	93° 44.4 -9° 55.2	108° 44.5 -9° 56.1	123° 44.6 -9° 57.0	138° 44.8 -9° 57.9	153° 44.9 -9° 58.8	168° 45.0 -9° 59.7	+0.1 -0.9
Ср 19	183° 45.1 -10° 00.6	198° 45.2 -10° 01.5	213° 45.3 -10° 02.4	228° 45.5 -10° 03.3	243° 45.6 -10° 04.2	258° 45.7 -10° 05.1	93° 47.1 -10° 16.8	108° 47.2 -10° 17.7	123° 47.3 -10° 18.6	138° 47.5 -10° 19.5	153° 47.6 -10° 20.4	168° 47.7 -10° 21.3	+0.1 -0.9
Чт 20	183° 47.8 -10° 22.2	198° 47.9 -10° 23.1	213° 48.0 -10° 24.0	228° 48.1 -10° 24.9	243° 48.2 -10° 25.8	258° 48.3 -10° 26.7	93° 49.7 -10° 38.3	108° 49.8 -10° 39.2	123° 49.9 -10° 40.1	138° 50.0 -10° 40.9	153° 50.1 -10° 41.8	168° 50.2 -10° 42.7	+0.1 -0.9
Пт 21	183° 50.3 -10° 43.6	198° 50.4 -10° 44.5	213° 50.5 -10° 45.4	228° 50.6 -10° 46.3	243° 50.7 -10° 47.2	258° 50.8 -10° 48.1	93° 52.1 -10° 59.6	108° 52.1 -11° 00.5	123° 52.2 -11° 01.3	138° 52.3 -11° 02.2	153° 52.4 -11° 03.1	168° 52.5 -11° 04.0	+0.1 -0.9
Сб 22	183° 52.6 -11° 04.9	198° 52.7 -11° 05.8	213° 52.8 -11° 06.6	228° 52.9 -11° 07.5	243° 53.0 -11° 08.4	258° 53.1 -11° 09.3	93° 54.3 -11° 20.7	108° 54.4 -11° 21.6	123° 54.4 -11° 22.5	138° 54.5 -11° 23.3	153° 54.6 -11° 24.2	168° 54.7 -11° 25.1	+0.1 -0.9
Вс 23	183° 54.8 -11° 26.0	198° 54.9 -11° 26.8	213° 55.0 -11° 27.7	228° 55.0 -11° 28.6	243° 55.1 -11° 29.5	258° 55.2 -11° 30.3	93° 56.3 -11° 41.7	108° 56.4 -11° 42.6	123° 56.5 -11° 43.4	138° 56.5 -11° 44.3	153° 56.6 -11° 45.2	168° 56.7 -11° 46.0	+0.1 -0.9
Пн 24	183° 56.8 -11° 46.9	198° 56.9 -11° 47.8	213° 56.9 -11° 48.6	228° 57.0 -11° 49.5	243° 57.1 -11° 50.4	258° 57.2 -11° 51.2	93° 58.2 -12° 02.5	108° 58.2 -12° 03.3	123° 58.3 -12° 04.2	138° 58.4 -12° 05.1	153° 58.5 -12° 05.9	168° 58.5 -12° 06.8	+0.1 -0.9
Вт 25	183° 58.6 -12° 07.6	198° 58.7 -12° 08.5	213° 58.7 -12° 09.4	228° 58.8 -12° 10.2	243° 58.9 -12° 11.1	258° 59.0 -12° 11.9	93° 59.9 -12° 23.1	108° 59.9 -12° 23.9	124° 00.0 -12° 24.8	139° 00.1 -12° 25.6	154° 00.1 -12° 26.5	169° 00.2 -12° 27.3	+0.1 -0.9
Ср 26	184° 00.2 -12° 28.2	199° 00.3 -12° 29.0	214° 00.4 -12° 29.9	229° 00.4 -12° 30.8	244° 00.5 -12° 31.6	259° 00.6 -12° 32.5	94° 01.4 -12° 43.5	109° 01.4 -12° 44.3	124° 01.5 -12° 45.2	139° 01.5 -12° 46.0	154° 01.6 -12° 46.9	169° 01.7 -12° 47.7	+0.1 -0.9
Чт 27	184° 01.7 -12° 48.6	199° 01.8 -12° 49.4	214° 01.8 -12° 50.2	229° 01.9 -12° 51.1	244° 01.9 -12° 51.9	259° 02.0 -12° 52.8	94° 02.7 -13° 03.7	109° 02.7 -13° 04.5	124° 02.8 -13° 05.4	139° 02.8 -13° 06.2	154° 02.9 -13° 07.1	169° 02.9 -13° 07.9	+0.1 -0.8
Пт 28	184° 03.0 -13° 08.7	199° 03.0 -13° 09.6	214° 03.1 -13° 10.4	229° 03.1 -13° 11.2	244° 03.2 -13° 12.1	259° 03.2 -13° 12.9	94° 03.8 -13° 23.7	109° 03.9 -13° 24.5	124° 03.9 -13° 25.4	139° 04.0 -13° 26.2	154° 04.0 -13° 27.0	169° 04.0 -13° 27.9	+0.0 -0.8
Сб 29	184° 04.1 -13° 28.7	199° 04.1 -13° 29.5	214° 04.2 -13° 30.3	229° 04.2 -13° 31.2	244° 04.2 -13° 32.0	259° 04.3 -13° 32.8	94° 04.8 -13° 43.5	109° 04.8 -13° 44.3	124° 04.8 -13° 45.2	139° 04.9 -13° 46.0	154° 04.9 -13° 46.8	169° 04.9 -13° 47.6	+0.0 -0.8
Вс 30	184° 05.0 -13° 48.4	199° 05.0 -13° 49.3	214° 05.1 -13° 50.1	229° 05.1 -13° 50.9	244° 05.1 -13° 51.7	259° 05.1 -13° 52.5	94° 05.5 -14° 03.1	109° 05.6 -14° 03.9	124° 05.6 -14° 04.7	139° 05.6 -14° 05.5	154° 05.7 -14° 06.3	169° 05.7 -14° 07.2	+0.0 -0.8
Пн 31	184° 05.7 -14° 08.0	199° 05.7 -14° 08.8	214° 05.7 -14° 09.6	229° 05.8 -14° 10.4	244° 05.8 -14° 11.2	259° 05.8 -14° 12.0	94° 06.1 -14° 22.5	109° 06.1 -14° 23.3	124° 06.1 -14° 24.1	139° 06.2 -14° 24.9	154° 06.2 -14° 25.7	169° 06.2 -14° 26.5	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2033

	Д	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	Δ'/h	R/p
◐	Сб 1	58° 39.0	73° 07.6	87° 36.2	102° 04.7	116° 33.3	131° 01.8	145° 30.3	159° 58.7	174° 27.2	188° 55.6	203° 24.0	+28.5	15.5
		-17° 37.8	-17° 34.9	-17° 32.0	-17° 29.0	-17° 25.8	-17° 22.6	-17° 19.3	-17° 15.8	-17° 12.3	-17° 08.7	-17° 05.0	+3.3	56.9
	Вс 2	60° 27.3	74° 55.4	89° 23.4	103° 51.5	118° 19.5	132° 47.5	147° 15.5	161° 43.5	176° 11.4	190° 39.4	205° 07.3	+28.0	15.8
		-15° 57.1	-15° 51.7	-15° 46.3	-15° 40.8	-15° 35.2	-15° 29.5	-15° 23.7	-15° 17.8	-15° 11.8	-15° 05.7	-14° 59.5	+5.8	57.8
	Пн 3	74° 55.4	89° 23.4	103° 51.5	118° 19.5	132° 47.5	147° 15.5	161° 43.5	176° 11.4	190° 39.4	205° 07.3	219° 35.2	+28.0	15.8
		-15° 51.7	-15° 46.3	-15° 40.8	-15° 35.2	-15° 29.5	-15° 23.7	-15° 17.8	-15° 11.8	-15° 05.7	-14° 59.5	-14° 53.2	+5.9	57.8
	Вт 4	76° 32.0	90° 59.7	105° 27.4	119° 55.0	134° 22.7	148° 50.3	163° 17.9	177° 45.5	192° 13.1	206° 40.7	221° 08.2	+27.6	16.0
		-13° 07.7	-12° 59.9	-12° 52.1	-12° 44.1	-12° 36.1	-12° 28.0	-12° 19.8	-12° 11.5	-12° 03.1	-11° 54.7	-11° 46.2	+8.2	58.8
	Ср 5	78° 00.2	92° 27.6	106° 54.9	121° 22.3	135° 49.6	150° 16.9	164° 44.2	179° 11.5	193° 38.7	208° 06.0	222° 33.2	+27.3	16.3
		-9° 28.6	-9° 18.8	-9° 09.0	-8° 59.1	-8° 49.1	-8° 39.0	-8° 28.9	-8° 18.7	-8° 08.5	-7° 58.2	-7° 47.8	+10.1	59.8
	Чт 6	79° 20.1	93° 47.1	108° 14.1	122° 41.0	137° 08.0	151° 34.9	166° 01.8	180° 28.7	194° 55.6	209° 22.4	223° 49.3	+26.9	16.5
		-5° 05.6	-4° 54.4	-4° 43.1	-4° 31.8	-4° 20.5	-4° 09.1	-3° 57.7	-3° 46.2	-3° 34.7	-3° 23.2	-3° 11.7	+11.4	60.6
	Пт 7	80° 29.4	94° 55.9	109° 22.4	123° 48.9	138° 15.3	152° 41.7	167° 08.1	181° 34.5	196° 00.9	210° 27.2	224° 53.5	+26.4	16.7
		-0° 15.4	-0° 03.5	0° 08.3	0° 20.2	0° 32.1	0° 44.0	0° 55.9	1° 07.8	1° 19.7	1° 31.6	1° 43.5	+11.9	61.2
○	Сб 8	81° 25.0	95° 50.9	110° 16.8	124° 42.7	139° 08.5	153° 34.3	168° 00.1	182° 25.8	196° 51.5	211° 17.2	225° 42.9	+25.8	16.7
		4° 40.4	4° 52.0	5° 03.5	5° 15.1	5° 26.6	5° 38.1	5° 49.5	6° 00.9	6° 12.3	6° 23.6	6° 34.8	+11.5	61.4
	Вс 9	82° 05.0	96° 30.2	110° 55.5	125° 20.7	139° 45.9	154° 11.1	168° 36.3	183° 01.4	197° 26.6	211° 51.7	226° 16.7	+25.2	16.7
		9° 17.6	9° 27.9	9° 38.2	9° 48.4	9° 58.6	10° 08.7	10° 18.7	10° 28.6	10° 38.4	10° 48.2	10° 57.9	+10.0	61.2
	Пн 10	82° 31.0	96° 55.8	111° 20.6	125° 45.4	140° 10.2	154° 35.0	168° 59.8	183° 24.6	197° 49.4	212° 14.1	226° 38.9	+24.8	16.6
		13° 12.8	13° 21.0	13° 29.1	13° 37.2	13° 45.1	13° 53.0	14° 00.7	14° 08.3	14° 15.9	14° 23.3	14° 30.6	+7.8	60.7
	Вт 11	82° 50.4	97° 15.2	111° 40.0	126° 04.8	140° 29.6	154° 54.5	169° 19.3	183° 44.2	198° 09.1	212° 34.0	226° 58.9	+24.9	16.4
		16° 07.0	16° 12.6	16° 18.0	16° 23.2	16° 28.4	16° 33.5	16° 38.4	16° 43.2	16° 47.9	16° 52.4	16° 56.9	+5.0	60.0
	Ср 12	83° 15.6	97° 40.9	112° 06.3	126° 31.7	140° 57.2	155° 22.6	169° 48.2	184° 13.7	198° 39.3	213° 04.9	227° 30.6	+25.5	16.1
		17° 49.2	17° 51.7	17° 54.1	17° 56.4	17° 58.6	18° 00.6	18° 02.6	18° 04.4	18° 06.0	18° 07.6	18° 09.1	+2.0	59.0
	Чт 13	84° 01.2	98° 27.7	112° 54.2	127° 20.7	141° 47.3	156° 14.0	170° 40.7	185° 07.5	199° 34.3	214° 01.2	228° 28.2	+26.7	15.8
		18° 16.8	18° 16.4	18° 15.9	18° 15.2	18° 14.5	18° 13.7	18° 12.7	18° 11.6	18° 10.5	18° 09.2	18° 07.8	-0.9	58.1
	Пт 14	85° 19.8	99° 47.8	114° 15.8	128° 43.9	143° 12.0	157° 40.2	172° 08.5	186° 36.8	201° 05.2	215° 33.7	230° 02.3	+28.2	15.6
		17° 34.7	17° 31.7	17° 28.6	17° 25.4	17° 22.1	17° 18.7	17° 15.2	17° 11.7	17° 08.0	17° 04.3	17° 00.5	-3.4	57.1
◑	Сб 15	87° 18.5	101° 48.1	116° 17.8	130° 47.5	145° 17.3	159° 47.2	174° 17.1	188° 47.1	203° 17.2	217° 47.4	232° 17.6	+29.9	15.3
		15° 52.8	15° 47.6	15° 42.4	15° 37.1	15° 31.7	15° 26.2	15° 20.7	15° 15.1	15° 09.4	15° 03.7	14° 57.9	-5.5	56.2
	Вс 16	89° 58.2	104° 29.4	119° 00.6	133° 31.9	148° 03.3	162° 34.7	177° 06.2	191° 37.8	206° 09.4	220° 41.0	235° 12.7	+31.5	15.1
		13° 22.8	13° 16.0	13° 09.1	13° 02.2	12° 55.2	12° 48.2	12° 41.1	12° 33.9	12° 26.7	12° 19.4	12° 12.1	-7.1	55.5
	Пн 17	93° 14.7	107° 47.3	122° 19.8	136° 52.5	151° 25.1	165° 57.8	180° 30.6	195° 03.4	209° 36.2	224° 09.1	238° 42.0	+32.7	15.0
		10° 16.8	10° 08.8	10° 00.7	9° 52.6	9° 44.4	9° 36.2	9° 28.0	9° 19.8	9° 11.5	9° 03.1	8° 54.8	-8.2	54.9
	Вт 18	97° 00.6	111° 34.1	126° 07.6	140° 41.2	155° 14.8	169° 48.4	184° 22.1	198° 55.8	213° 29.5	228° 03.3	242° 37.0	+33.7	14.8
		6° 45.6	6° 36.8	6° 27.9	6° 19.1	6° 10.2	6° 01.2	5° 52.3	5° 43.4	5° 34.4	5° 25.4	5° 16.4	-8.9	54.4
	Ср 19	101° 06.5	115° 40.6	130° 14.7	144° 48.9	159° 23.0	173° 57.2	188° 31.4	203° 05.6	217° 39.8	232° 14.0	246° 48.3	+34.2	14.8
		2° 59.2	2° 50.0	2° 40.8	2° 31.5	2° 22.2	2° 13.0	2° 03.7	1° 54.4	1° 45.1	1° 35.8	1° 26.5	-9.3	54.1
	Чт 20	105° 22.8	119° 57.1	134° 31.4	149° 05.8	163° 40.1	178° 14.4	192° 48.8	207° 23.1	221° 57.4	236° 31.8	251° 06.1	+34.3	14.7
		-0° 53.0	-1° 02.3	-1° 11.6	-1° 20.9	-1° 30.2	-1° 39.4	-1° 48.7	-1° 57.9	-2° 07.2	-2° 16.4	-2° 25.6	-9.3	54.0
	Пт 21	109° 40.1	124° 14.3	138° 48.5	153° 22.7	167° 56.8	182° 31.0	197° 05.1	211° 39.2	226° 13.3	240° 47.4	255° 21.4	+34.1	14.7
		-4° 42.4	-4° 51.4	-5° 00.3	-5° 09.3	-5° 18.2	-5° 27.1	-5° 36.0	-5° 44.9	-5° 53.7	-6° 02.5	-6° 11.3	-8.9	53.9
	Сб 22	113° 50.1	128° 23.8	142° 57.6	157° 31.2	172° 04.9	186° 38.6	201° 12.2	215° 45.8	230° 19.3	244° 52.9	259° 26.4	+33.6	14.7
		-8° 19.9	-8° 28.2	-8° 36.5	-8° 44.8	-8° 53.0	-9° 01.2	-9° 09.3	-9° 17.4	-9° 25.5	-9° 33.6	-9° 41.6	-8.2	53.9
●	Вс 23	117° 45.6	132° 18.6	146° 51.6	161° 24.6	175° 57.6	190° 30.5	205° 03.3	219° 36.2	234° 09.0	248° 41.8	263° 14.5	+32.9	14.7
		-11° 36.5	-11° 43.8	-11° 51.1	-11° 58.3	-12° 05.5	-12° 12.6	-12° 19.6	-12° 26.6	-12° 33.6	-12° 40.5	-12° 47.3	-7.1	54.0
	Пн 24	121° 21.5	135° 53.6	150° 25.8	164° 57.9	179° 30.0	194° 02.0	208° 34.0	223° 06.0	237° 37.9	252° 09.8	266° 41.6	+32.0	14.8
		-14° 23.2	-14° 29.2	-14° 35.0	-14° 40.8	-14° 46.5	-14° 52.2	-14° 57.8	-15° 03.3	-15° 08.8	-15° 14.2	-15° 19.5	-5.6	54.3
	Вт 25	124° 35.0	139° 06.3	153° 37.5	168° 08.7	182° 39.9	197° 11.0	211° 42.1	226° 13.2	240° 44.2	255° 15.2	269° 46.2	+31.1	14.9
		-16° 31.2	-16° 35.3	-16° 39.5	-16° 43.5	-16° 47.5	-16° 51.4	-16° 55.2	-16° 58.9	-17° 02.5	-17° 06.1	-17° 09.6	-3.8	54.6
	Ср 26	127° 26.5	141° 56.9	156° 27.3	170° 57.7	185° 28.0	199° 58.3	214° 28.6	228° 58.9	243° 29.1	257° 59.3	272° 29.4	+30.3	15.0
		-17° 52.2	-17° 54.4	-17° 56.5	-17° 58.5	-18° 00.4	-18° 02.2	-18° 03.9	-18° 05.6	-18° 07.1	-18° 08.6	-18° 10.0	-1.8	55.0
	Чт 27	141° 56.9	156° 27.3	170° 57.7	185° 28.0	199° 58.3	214° 28.6	228° 58.9	243° 29.1	257° 59.3	272° 29.4	286° 59.6	+30.3	15.0
		-17° 54.4	-17° 56.5	-17° 58.5	-18° 00.4	-18° 02.2	-18° 03.9	-18° 05.6	-18° 07.1	-18° 08.6	-18° 10.0	-18° 11.3	-1.7	55.0
	Пт 28	144° 28.5	158° 58.2	173° 27.9	187° 57.6	202° 27.3	216° 57.0	231° 26.6	245° 56.2	260° 25.8	274° 55.3	289° 24.9	+29.6	15.1
		-18° 19.8	-18° 19.7	-18° 19.4	-18° 19.0	-18° 18.6	-18° 18.1	-18° 17.4	-18° 16.7	-18° 15.9	-18° 15.0	-18° 13.9	+0.6	55.5
	Сб 29	146° 46.0	161° 15.2	175° 44.5	190° 13.8	204° 43.0	219° 12.2	233° 41.5	248° 10.7	262° 39.8	277° 09.0	291° 38.2	+29.2	15.3
		-17° 47.4	-17° 44.9	-17° 42.3	-17° 39.5	-17° 36.7	-17° 33.8	-17° 30.8	-17° 27.7	-17° 24.5	-17° 21.2	-17° 17.8	+3.0	56.1
	Вс 30	148° 54.5	163° 23.6	177° 52.6	192° 21.6	206° 50.6	221° 19.6	235° 48.5	250° 17.5	264° 46.5	279° 15.4	293° 44.4	+29.0	15.5
		-16° 15.7	-16° 10.8	-16° 05.9	-16° 00.8	-15° 55.6	-15° 50.4	-15° 45.0	-15° 39.6	-15° 34.1	-15° 28.4	-15° 22.7	+5.3	56.9
◐	Пн 31	150° 58.0	165° 26.9	179° 55.7	194° 24.6	208° 53.4	223° 22.3	237° 51.1	252° 19.9	266° 48.7	281° 17.5	295° 46.3	+28.8	15.7
		-13° 46.5	-13° 39.4	-13° 32.2	-13° 24.9	-13° 17.6	-13° 10.2	-13° 02.6	-12° 55.0	-12° 47.4	-12° 39.6	-12° 31.7	+7.5	57.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 1 16h32 — Полнолуние: 8 10h58 — Последняя четв.: 15 04h47 — Новолуние: 23 07h28 — Первая четв.: 31 04h46

СОЛНЦЕ

Ноябрь 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	184° 06.2	199° 06.2	214° 06.3	229° 06.3	244° 06.3	259° 06.3	94° 06.5	109° 06.5	124° 06.5	139° 06.5	154° 06.5	169° 06.5	+0.0
	-14° 27.3	-14° 28.1	-14° 28.9	-14° 29.7	-14° 30.5	-14° 31.3	-14° 41.6	-14° 42.4	-14° 43.2	-14° 44.0	-14° 44.7	-14° 45.5	-0.8
Ср 2	184° 06.6	199° 06.6	214° 06.6	229° 06.6	244° 06.6	259° 06.6	94° 06.7	109° 06.7	124° 06.7	139° 06.7	154° 06.7	169° 06.7	+0.0
	-14° 46.3	-14° 47.1	-14° 47.9	-14° 48.7	-14° 49.5	-14° 50.3	-15° 00.5	-15° 01.2	-15° 02.0	-15° 02.8	-15° 03.6	-15° 04.4	-0.8
Чт 3	184° 06.7	199° 06.7	214° 06.7	229° 06.7	244° 06.7	259° 06.7	94° 06.7	109° 06.6	124° 06.6	139° 06.6	154° 06.6	169° 06.6	+0.0
	-15° 05.2	-15° 05.9	-15° 06.7	-15° 07.5	-15° 08.3	-15° 09.0	-15° 19.1	-15° 19.9	-15° 20.6	-15° 21.4	-15° 22.2	-15° 23.0	-0.8
Пт 4	184° 06.6	199° 06.6	214° 06.6	229° 06.6	244° 06.6	259° 06.6	94° 06.4	109° 06.4	124° 06.4	139° 06.4	154° 06.4	169° 06.4	-0.0
	-15° 23.7	-15° 24.5	-15° 25.3	-15° 26.0	-15° 26.8	-15° 27.6	-15° 37.5	-15° 38.3	-15° 39.0	-15° 39.8	-15° 40.5	-15° 41.3	-0.8
Сб 5	184° 06.3	199° 06.3	214° 06.3	229° 06.3	244° 06.3	259° 06.3	94° 06.0	109° 06.0	124° 06.0	139° 05.9	154° 05.9	169° 05.9	-0.0
	-15° 42.1	-15° 42.8	-15° 43.6	-15° 44.3	-15° 45.1	-15° 45.8	-15° 55.6	-15° 56.4	-15° 57.1	-15° 57.9	-15° 58.6	-15° 59.4	-0.8
Вс 6	184° 05.9	199° 05.8	214° 05.8	229° 05.8	244° 05.8	259° 05.7	94° 05.4	109° 05.3	124° 05.3	139° 05.3	154° 05.3	169° 05.2	-0.0
	-16° 00.1	-16° 00.9	-16° 01.6	-16° 02.4	-16° 03.1	-16° 03.8	-16° 13.5	-16° 14.2	-16° 15.0	-16° 15.7	-16° 16.4	-16° 17.2	-0.7
Пн 7	184° 05.2	199° 05.2	214° 05.1	229° 05.1	244° 05.1	259° 05.0	94° 04.5	109° 04.5	124° 04.5	139° 04.4	154° 04.4	169° 04.3	-0.0
	-16° 17.9	-16° 18.7	-16° 19.4	-16° 20.1	-16° 20.9	-16° 21.6	-16° 31.1	-16° 31.8	-16° 32.5	-16° 33.3	-16° 34.0	-16° 34.7	-0.7
Вт 8	184° 04.3	199° 04.3	214° 04.2	229° 04.2	244° 04.1	259° 04.1	94° 03.5	109° 03.4	124° 03.4	139° 03.3	154° 03.3	169° 03.2	-0.0
	-16° 35.4	-16° 36.2	-16° 36.9	-16° 37.6	-16° 38.3	-16° 39.1	-16° 48.4	-16° 49.1	-16° 49.8	-16° 50.5	-16° 51.3	-16° 52.0	-0.7
Ср 9	184° 03.2	199° 03.1	214° 03.1	229° 03.0	244° 03.0	259° 02.9	94° 02.2	109° 02.2	124° 02.1	139° 02.1	154° 02.0	169° 01.9	-0.1
	-16° 52.7	-16° 53.4	-16° 54.1	-16° 54.8	-16° 55.5	-16° 56.2	-17° 05.4	-17° 06.1	-17° 06.8	-17° 07.5	-17° 08.2	-17° 08.9	-0.7
Чт 10	184° 01.9	199° 01.8	214° 01.8	229° 01.7	244° 01.6	259° 01.6	94° 00.7	109° 00.7	124° 00.6	139° 00.5	154° 00.5	169° 00.4	-0.1
	-17° 09.6	-17° 10.3	-17° 11.0	-17° 11.7	-17° 12.4	-17° 13.1	-17° 22.2	-17° 22.9	-17° 23.6	-17° 24.2	-17° 24.9	-17° 25.6	-0.7
Пт 11	184° 00.3	199° 00.3	214° 00.2	229° 00.1	244° 00.1	259° 00.0	93° 59.0	108° 59.0	123° 58.9	138° 58.8	153° 58.7	168° 58.7	-0.1
	-17° 26.3	-17° 27.0	-17° 27.7	-17° 28.4	-17° 29.1	-17° 29.8	-17° 38.6	-17° 39.3	-17° 40.0	-17° 40.7	-17° 41.3	-17° 42.0	-0.7
Сб 12	183° 58.6	198° 58.5	213° 58.4	228° 58.4	243° 58.3	258° 58.2	93° 57.1	108° 57.1	123° 57.0	138° 56.9	153° 56.8	168° 56.7	-0.1
	-17° 42.7	-17° 43.4	-17° 44.0	-17° 44.7	-17° 45.4	-17° 46.1	-17° 54.8	-17° 55.4	-17° 56.1	-17° 56.8	-17° 57.4	-17° 58.1	-0.7
Вс 13	183° 56.6	198° 56.5	213° 56.4	228° 56.4	243° 56.3	258° 56.2	93° 55.0	108° 54.9	123° 54.8	138° 54.7	153° 54.6	168° 54.5	-0.1
	-17° 58.8	-17° 59.4	-18° 00.1	-18° 00.7	-18° 01.4	-18° 02.1	-18° 10.6	-18° 11.2	-18° 11.9	-18° 12.6	-18° 13.2	-18° 13.9	-0.7
Пн 14	183° 54.4	198° 54.3	213° 54.2	228° 54.2	243° 54.1	258° 54.0	93° 52.7	108° 52.6	123° 52.5	138° 52.4	153° 52.2	168° 52.1	-0.1
	-18° 14.5	-18° 15.2	-18° 15.8	-18° 16.5	-18° 17.1	-18° 17.7	-18° 26.1	-18° 26.7	-18° 27.4	-18° 28.0	-18° 28.7	-18° 29.3	-0.6
Вт 15	183° 52.0	198° 51.9	213° 51.8	228° 51.7	243° 51.6	258° 51.5	93° 50.1	108° 50.0	123° 49.9	138° 49.8	153° 49.6	168° 49.5	-0.1
	-18° 29.9	-18° 30.6	-18° 31.2	-18° 31.8	-18° 32.5	-18° 33.1	-18° 41.3	-18° 41.9	-18° 42.6	-18° 43.2	-18° 43.8	-18° 44.4	-0.6
Ср 16	183° 49.4	198° 49.3	213° 49.2	228° 49.1	243° 49.0	258° 48.9	93° 47.3	108° 47.2	123° 47.1	138° 47.0	153° 46.8	168° 46.7	-0.1
	-18° 45.0	-18° 45.7	-18° 46.3	-18° 46.9	-18° 47.5	-18° 48.2	-18° 56.2	-18° 56.8	-18° 57.4	-18° 58.0	-18° 58.6	-18° 59.2	-0.6
Чт 17	183° 46.6	198° 46.5	213° 46.3	228° 46.2	243° 46.1	258° 46.0	93° 44.3	108° 44.2	123° 44.1	138° 43.9	153° 43.8	168° 43.7	-0.1
	-18° 59.8	-19° 00.4	-19° 01.0	-19° 01.6	-19° 02.3	-19° 02.9	-19° 10.7	-19° 11.3	-19° 11.9	-19° 12.5	-19° 13.1	-19° 13.7	-0.6
Пт 18	183° 43.5	198° 43.4	213° 43.3	228° 43.2	243° 43.0	258° 42.9	93° 41.1	108° 41.0	123° 40.9	138° 40.7	153° 40.6	168° 40.4	-0.1
	-19° 14.3	-19° 14.9	-19° 15.5	-19° 16.0	-19° 16.6	-19° 17.2	-19° 24.9	-19° 25.4	-19° 26.0	-19° 26.6	-19° 27.2	-19° 27.8	-0.6
Сб 19	183° 40.3	198° 40.2	213° 40.0	228° 39.9	243° 39.7	258° 39.6	93° 37.7	108° 37.6	123° 37.4	138° 37.3	153° 37.1	168° 37.0	-0.1
	-19° 28.4	-19° 28.9	-19° 29.5	-19° 30.1	-19° 30.7	-19° 31.3	-19° 38.7	-19° 39.3	-19° 39.8	-19° 40.4	-19° 41.0	-19° 41.5	-0.6
Вс 20	183° 36.8	198° 36.7	213° 36.5	228° 36.4	243° 36.2	258° 36.1	93° 34.1	108° 34.0	123° 33.8	138° 33.6	153° 33.5	168° 33.3	-0.1
	-19° 42.1	-19° 42.7	-19° 43.2	-19° 43.8	-19° 44.4	-19° 44.9	-19° 52.2	-19° 52.7	-19° 53.3	-19° 53.8	-19° 54.4	-19° 54.9	-0.6
Пн 21	183° 33.2	198° 33.0	213° 32.9	228° 32.7	243° 32.5	258° 32.4	93° 30.3	108° 30.1	123° 30.0	138° 29.8	153° 29.6	168° 29.5	-0.2
	-19° 55.5	-19° 56.0	-19° 56.6	-19° 57.1	-19° 57.7	-19° 58.2	-20° 05.3	-20° 05.8	-20° 06.4	-20° 06.9	-20° 07.4	-20° 08.0	-0.6
Вт 22	183° 29.3	198° 29.1	213° 29.0	228° 28.8	243° 28.6	258° 28.5	93° 26.3	108° 26.1	123° 25.9	138° 25.8	153° 25.6	168° 25.4	-0.2
	-20° 08.5	-20° 09.0	-20° 09.6	-20° 10.1	-20° 10.6	-20° 11.2	-20° 18.0	-20° 18.6	-20° 19.1	-20° 19.6	-20° 20.1	-20° 20.7	-0.5
Ср 23	183° 25.2	198° 25.1	213° 24.9	228° 24.7	243° 24.5	258° 24.4	93° 22.1	108° 21.9	123° 21.7	138° 21.5	153° 21.3	168° 21.2	-0.2
	-20° 21.2	-20° 21.7	-20° 22.2	-20° 22.7	-20° 23.2	-20° 23.8	-20° 30.4	-20° 30.9	-20° 31.4	-20° 31.9	-20° 32.4	-20° 32.9	-0.5
Чт 24	183° 21.0	198° 20.8	213° 20.6	228° 20.4	243° 20.2	258° 20.1	93° 17.7	108° 17.5	123° 17.3	138° 17.1	153° 16.9	168° 16.7	-0.2
	-20° 33.5	-20° 34.0	-20° 34.5	-20° 35.0	-20° 35.5	-20° 36.0	-20° 42.4	-20° 42.9	-20° 43.4	-20° 43.9	-20° 44.4	-20° 44.9	-0.5
Пт 25	183° 16.5	198° 16.3	213° 16.1	228° 16.0	243° 15.8	258° 15.6	93° 13.1	108° 12.9	123° 12.7	138° 12.5	153° 12.3	168° 12.1	-0.2
	-20° 45.4	-20° 45.8	-20° 46.3	-20° 46.8	-20° 47.3	-20° 47.8	-20° 54.0	-20° 54.5	-20° 55.0	-20° 55.4	-20° 55.9	-20° 56.4	-0.5
Сб 26	183° 11.9	198° 11.7	213° 11.5	228° 11.3	243° 11.1	258° 10.9	93° 08.3	108° 08.1	123° 07.9	138° 07.7	153° 07.5	168° 07.3	-0.2
	-20° 56.9	-20° 57.3	-20° 57.8	-20° 58.3	-20° 58.7	-20° 59.2	-21° 05.2	-21° 05.7	-21° 06.2	-21° 06.6	-21° 07.1	-21° 07.5	-0.5
Вс 27	183° 07.1	198° 06.9	213° 06.7	228° 06.5	243° 06.3	258° 06.0	93° 03.3	108° 03.1	123° 02.9	138° 02.7	153° 02.5	168° 02.3	-0.2
	-21° 08.0	-21° 08.4	-21° 08.9	-21° 09.4	-21° 09.8	-21° 10.3	-21° 16.1	-21° 16.5	-21° 17.0	-21° 17.4	-21° 17.8	-21° 18.3	-0.5
Пн 28	183° 02.1	198° 01.9	213° 01.7	228° 01.4	243° 01.2	258° 01.0	92° 58.2	107° 58.0	122° 57.8	137° 57.6	152° 57.4	167° 57.1	-0.2
	-21° 18.7	-21° 19.2	-21° 19.6	-21° 20.0	-21° 20.5	-21° 20.9	-21° 26.5	-21° 26.9	-21° 27.3	-21° 27.8	-21° 28.2	-21° 28.6	-0.4
Вт 29	182° 56.9	197° 56.7	212° 56.5	227° 56.3	242° 56.0	257° 55.8	92° 52.9	107° 52.7	122° 52.5	137° 52.3	152° 52.0	167° 51.8	-0.2
	-21° 29.0	-21° 29.5	-21° 29.9	-21° 30.3	-21° 30.7	-21° 31.1	-21° 36.5	-21° 36.9	-21° 37.3	-21° 37.7	-21° 38.1	-21° 38.5	-0.4
Ср 30	182° 51.6	197° 51.4	212° 51.1	227° 50.9	242° 50.7	257° 50.5	92° 47.5	107° 47.3	122° 47.0	137° 46.8	152° 46.6	167° 46.3	-0.2
	-21° 38.9	-21° 39.4	-21° 39.8	-21° 40.2	-21° 40.6	-21° 41.0	-21° 46.1	-21° 46.5	-21° 46.9	-21° 47.3	-21° 47.7	-21° 48.1	-0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2033

Д	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	Δ'/h	R/p
Вт 1	53° 31.8 -7° 32.0	68° 00.2 -7° 21.9	82° 28.7 -7° 11.6	96° 57.1 -7° 01.3	111° 25.5 -6° 51.0	125° 53.9 -6° 40.6	140° 22.2 -6° 30.1	154° 50.6 -6° 19.6	169° 18.9 -6° 09.1	183° 47.2 -5° 58.5	198° 15.5 -5° 47.8	+28.4 +10.4	16.2 59.2
Ср 2	68° 00.2 -7° 21.9	82° 28.7 -7° 11.6	96° 57.1 -7° 01.3	111° 25.5 -6° 51.0	125° 53.9 -6° 40.6	140° 22.2 -6° 30.1	154° 50.6 -6° 19.6	169° 18.9 -6° 09.1	183° 47.2 -5° 58.5	198° 15.5 -5° 47.8	212° 43.8 -5° 37.1	+28.4 +10.5	16.2 59.3
Чт 3	69° 45.2 -2° 51.7	84° 13.1 -2° 40.4	98° 40.9 -2° 29.1	113° 08.8 -2° 17.7	127° 36.6 -2° 06.3	142° 04.4 -1° 54.9	156° 32.1 -1° 43.5	170° 59.9 -1° 32.0	185° 27.6 -1° 20.5	199° 55.2 -1° 09.0	214° 22.9 -0° 57.5	+27.8 +11.4	16.4 60.1
Пт 4	71° 13.4 1° 56.7	85° 40.5 2° 08.4	100° 07.6 2° 20.0	114° 34.6 2° 31.6	129° 01.6 2° 43.3	143° 28.5 2° 54.9	157° 55.4 3° 06.5	172° 22.2 3° 18.1	186° 49.1 3° 29.7	201° 15.8 3° 41.3	215° 42.6 3° 52.8	+26.9 +11.6	16.6 60.7
Сб 5	72° 18.6 6° 43.3	86° 44.7 6° 54.4	101° 10.7 7° 05.5	115° 36.7 7° 16.5	130° 02.6 7° 27.5	144° 28.5 7° 38.4	158° 54.3 7° 49.3	173° 20.1 8° 00.2	187° 45.9 8° 10.9	202° 11.6 8° 21.7	216° 37.3 8° 32.3	+25.9 +10.9	16.7 61.1
○ Вс 6	72° 57.3 11° 05.1	87° 22.3 11° 14.7	101° 47.3 11° 24.2	116° 12.2 11° 33.7	130° 37.1 11° 43.1	145° 01.9 11° 52.4	159° 26.8 12° 01.6	173° 51.5 12° 10.7	188° 16.3 12° 19.7	202° 41.0 12° 28.7	217° 05.7 12° 37.6	+24.8 +9.3	16.7 61.1
Пн 7	73° 12.1 14° 38.9	87° 36.4 14° 46.2	102° 00.6 14° 53.4	116° 24.8 15° 00.4	130° 48.9 15° 07.4	145° 13.1 15° 14.2	159° 37.2 15° 20.9	174° 01.3 15° 27.5	188° 25.4 15° 34.0	202° 49.5 15° 40.4	217° 13.6 15° 46.6	+24.1 +6.8	16.6 60.8
Вт 8	73° 14.0 17° 06.2	87° 38.0 17° 10.5	102° 02.1 17° 14.7	116° 26.1 17° 18.8	130° 50.2 17° 22.7	145° 14.3 17° 26.6	159° 38.4 17° 30.3	174° 02.5 17° 33.8	188° 26.6 17° 37.3	202° 50.7 17° 40.6	217° 14.9 17° 43.8	+24.1 +3.8	16.4 60.2
Ср 9	73° 20.5 18° 16.4	87° 45.1 18° 17.5	102° 09.8 18° 18.6	116° 34.5 18° 19.5	130° 59.3 18° 20.3	145° 24.1 18° 20.9	159° 48.9 18° 21.5	174° 13.8 18° 21.9	188° 38.8 18° 22.2	203° 03.8 18° 22.3	217° 28.8 18° 22.4	+24.8 +0.6	16.2 59.4
Чт 10	73° 51.3 18° 08.9	88° 17.3 18° 07.1	102° 43.3 18° 05.1	117° 09.4 18° 03.1	131° 35.6 18° 00.9	146° 01.8 17° 58.7	160° 28.2 17° 56.3	174° 54.5 17° 53.8	189° 21.0 17° 51.3	203° 47.5 17° 48.6	218° 14.1 17° 45.8	+26.3 -2.3	15.9 58.4
Пт 11	75° 01.9 16° 51.8	89° 29.7 16° 47.5	103° 57.6 16° 43.0	118° 25.5 16° 38.5	132° 53.5 16° 33.8	147° 21.6 16° 29.1	161° 49.8 16° 24.3	176° 18.0 16° 19.5	190° 46.4 16° 14.5	205° 14.8 16° 09.4	219° 43.3 16° 04.3	+28.1 -4.8	15.7 57.4
Сб 12	76° 59.8 14° 38.0	91° 29.5 14° 31.7	105° 59.3 14° 25.3	120° 29.2 14° 18.8	134° 59.1 14° 12.3	149° 29.1 14° 05.7	163° 59.2 13° 59.0	178° 29.4 13° 52.3	192° 59.6 13° 45.5	207° 29.9 13° 38.7	222° 00.3 13° 31.8	+30.0 -6.6	15.4 56.5
◑ Вс 13	79° 44.2 11° 41.6	94° 15.7 11° 33.9	108° 47.2 11° 26.1	123° 18.8 11° 18.2	137° 50.5 11° 10.4	152° 22.2 11° 02.4	166° 53.9 10° 54.5	181° 25.8 10° 46.4	195° 57.7 10° 38.4	210° 29.6 10° 30.3	225° 01.6 10° 22.2	+31.7 -7.9	15.2 55.6
Пн 14	83° 08.4 8° 15.8	97° 41.3 8° 07.1	112° 14.2 7° 58.4	126° 47.1 7° 49.7	141° 20.1 7° 40.9	155° 53.2 7° 32.2	170° 26.2 7° 23.3	184° 59.4 7° 14.5	199° 32.5 7° 05.6	214° 05.7 6° 56.8	228° 39.0 6° 47.9	+33.1 -8.8	15.0 55.0
Вт 15	87° 02.2 4° 31.9	101° 36.0 4° 22.7	116° 09.9 4° 13.5	130° 43.7 4° 04.3	145° 17.6 3° 55.0	159° 51.5 3° 45.8	174° 25.5 3° 36.5	188° 59.5 3° 27.3	203° 33.4 3° 18.0	218° 07.5 3° 08.7	232° 41.5 2° 59.4	+33.9 -9.2	14.9 54.5
Ср 16	91° 14.3 0° 39.4	105° 48.6 0° 30.1	120° 22.9 0° 20.7	134° 57.2 0° 11.4	149° 31.5 0° 02.0	164° 05.8 -0° 07.3	178° 40.2 -0° 16.7	193° 14.5 -0° 26.0	207° 48.9 -0° 35.3	222° 23.2 -0° 44.7	236° 57.6 -0° 54.0	+34.3 -9.3	14.8 54.2
Чт 17	95° 33.1 -3° 13.0	110° 07.5 -3° 22.1	124° 41.8 -3° 31.3	139° 16.1 -3° 40.4	153° 50.4 -3° 49.6	168° 24.8 -3° 58.7	182° 59.1 -4° 07.8	197° 33.3 -4° 16.9	212° 07.6 -4° 26.0	226° 41.9 -4° 35.0	241° 16.2 -4° 44.0	+34.3 -9.1	14.7 54.0
Пт 18	99° 48.2 -6° 57.0	114° 22.1 -7° 05.6	128° 56.1 -7° 14.3	143° 30.1 -7° 22.9	158° 04.0 -7° 31.5	172° 37.9 -7° 40.0	187° 11.7 -7° 48.6	201° 45.6 -7° 57.1	216° 19.4 -8° 05.5	230° 53.2 -8° 14.0	245° 27.0 -8° 22.4	+33.9 -8.5	14.7 54.0
Сб 19	103° 50.1 -10° 24.1	118° 23.4 -10° 31.9	132° 56.7 -10° 39.7	147° 29.9 -10° 47.4	162° 03.1 -10° 55.1	176° 36.3 -11° 02.7	191° 09.4 -11° 10.3	205° 42.5 -11° 17.9	220° 15.6 -11° 25.4	234° 48.6 -11° 32.9	249° 21.6 -11° 40.3	+33.1 -7.6	14.8 54.1
Вс 20	107° 32.0 -13° 25.4	122° 04.3 -13° 32.0	136° 36.7 -13° 38.5	151° 09.0 -13° 45.0	165° 41.2 -13° 51.4	180° 13.5 -13° 57.7	194° 45.6 -14° 04.0	209° 17.8 -14° 10.3	223° 49.9 -14° 16.4	238° 21.9 -14° 22.5	252° 54.0 -14° 28.6	+32.2 -6.3	14.8 54.3
Пн 21	110° 49.3 -15° 51.5	125° 20.7 -15° 56.4	139° 52.0 -16° 01.4	154° 23.3 -16° 06.2	168° 54.6 -16° 11.0	183° 25.8 -16° 15.6	197° 56.9 -16° 20.3	212° 28.1 -16° 24.8	226° 59.2 -16° 29.3	241° 30.2 -16° 33.7	256° 01.2 -16° 38.0	+31.2 -4.7	14.9 54.6
● Вт 22	113° 41.8 -17° 33.2	128° 12.2 -17° 36.2	142° 42.5 -17° 39.2	157° 12.9 -17° 42.0	171° 43.2 -17° 44.8	186° 13.5 -17° 47.5	200° 43.7 -17° 50.1	215° 13.9 -17° 52.6	229° 44.1 -17° 55.1	244° 14.2 -17° 57.4	258° 44.3 -17° 59.7	+30.3 -2.6	15.0 55.0
Ср 23	116° 12.5 -18° 22.7	130° 42.2 -18° 23.5	145° 11.8 -18° 24.3	159° 41.5 -18° 24.9	174° 11.1 -18° 25.4	188° 40.6 -18° 25.8	203° 10.2 -18° 26.2	217° 39.7 -18° 26.4	232° 09.2 -18° 26.6	246° 38.7 -18° 26.6	261° 08.2 -18° 26.6	+29.6 -0.4	15.1 55.4
Чт 24	118° 28.3 -18° 14.6	132° 57.5 -18° 13.0	147° 26.7 -18° 11.4	161° 55.9 -18° 09.6	176° 25.1 -18° 07.8	190° 54.3 -18° 05.8	205° 23.5 -18° 03.8	219° 52.7 -18° 01.6	234° 21.8 -17° 59.4	248° 51.0 -17° 57.1	263° 20.2 -17° 54.6	+29.2 +2.0	15.2 55.9
Пт 25	120° 37.0 -17° 06.7	135° 06.1 -17° 02.8	149° 35.2 -16° 58.8	164° 04.3 -16° 54.6	178° 33.4 -16° 50.4	193° 02.6 -16° 46.1	207° 31.7 -16° 41.7	222° 00.8 -16° 37.2	236° 29.9 -16° 32.6	250° 59.0 -16° 27.9	265° 28.2 -16° 23.1	+29.1 +4.4	15.4 56.4
Сб 26	135° 06.1 -17° 02.8	149° 35.2 -16° 58.8	164° 04.3 -16° 54.6	178° 33.4 -16° 50.4	193° 02.6 -16° 46.1	207° 31.7 -16° 41.7	222° 00.8 -16° 37.2	236° 29.9 -16° 32.6	250° 59.0 -16° 27.9	265° 28.2 -16° 23.1	279° 57.3 -16° 18.2	+29.1 +4.5	15.4 56.4
Вс 27	137° 14.9 -14° 54.6	151° 44.1 -14° 48.3	166° 13.4 -14° 42.0	180° 42.6 -14° 35.6	195° 11.8 -14° 29.0	209° 41.1 -14° 22.4	224° 10.3 -14° 15.8	238° 39.6 -14° 09.0	253° 08.9 -14° 02.1	267° 38.1 -13° 55.2	282° 07.4 -13° 48.2	+29.3 +6.6	15.5 57.0
Пн 28	139° 27.5 -11° 53.9	153° 56.9 -11° 45.7	168° 26.3 -11° 37.4	182° 55.7 -11° 29.0	197° 25.1 -11° 20.6	211° 54.5 -11° 12.1	226° 23.9 -11° 03.6	240° 53.3 -10° 54.9	255° 22.7 -10° 46.2	269° 52.2 -10° 37.5	284° 21.6 -10° 28.7	+29.4 +8.5	15.7 57.6
◐ Вт 29	141° 43.1 -8° 09.0	156° 12.5 -7° 59.3	170° 42.0 -7° 49.4	185° 11.4 -7° 39.6	199° 40.8 -7° 29.7	214° 10.2 -7° 19.7	228° 39.6 -7° 09.7	243° 09.0 -6° 59.6	257° 38.4 -6° 49.5	272° 07.8 -6° 39.3	286° 37.2 -6° 29.1	+29.4 +10.0	15.9 58.3
Ср 30	143° 56.7 -3° 51.1	158° 25.9 -3° 40.3	172° 55.1 -3° 29.5	187° 24.2 -3° 18.6	201° 53.4 -3° 07.7	216° 22.5 -2° 56.7	230° 51.6 -2° 45.8	245° 20.7 -2° 34.8	259° 49.8 -2° 23.8	274° 18.8 -2° 12.7	288° 47.8 -2° 01.7	+29.1 +10.9	16.1 58.9

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 6 20h32 — Последняя четв.: 13 20h08 — Новолуние: 22 01h39 — Первая четв.: 29 15h15

СОЛНЦЕ

Декабрь 2033

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	182° 46.1	197° 45.9	212° 45.6	227° 45.4	242° 45.2	257° 44.9	92° 41.9	107° 41.6	122° 41.4	137° 41.2	152° 40.9	167° 40.7	-0.2
	-21° 48.4	-21° 48.8	-21° 49.2	-21° 49.6	-21° 50.0	-21° 50.4	-21° 55.3	-21° 55.7	-21° 56.0	-21° 56.4	-21° 56.8	-21° 57.2	-0.4
Пт 2	182° 40.5	197° 40.2	212° 40.0	227° 39.7	242° 39.5	257° 39.3	92° 36.1	107° 35.9	122° 35.6	137° 35.4	152° 35.1	167° 34.9	-0.2
	-21° 57.5	-21° 57.9	-21° 58.3	-21° 58.6	-21° 59.0	-21° 59.4	-22° 04.1	-22° 04.4	-22° 04.8	-22° 05.1	-22° 05.5	-22° 05.8	-0.4
Сб 3	182° 34.7	197° 34.4	212° 34.2	227° 33.9	242° 33.7	257° 33.4	92° 30.2	107° 30.0	122° 29.7	137° 29.5	152° 29.2	167° 29.0	-0.2
	-22° 06.2	-22° 06.5	-22° 06.9	-22° 07.2	-22° 07.6	-22° 07.9	-22° 12.4	-22° 12.7	-22° 13.1	-22° 13.4	-22° 13.8	-22° 14.1	-0.4
Вс 4	182° 28.7	197° 28.5	212° 28.2	227° 28.0	242° 27.7	257° 27.5	92° 24.2	107° 23.9	122° 23.6	137° 23.4	152° 23.1	167° 22.9	-0.3
	-22° 14.4	-22° 14.8	-22° 15.1	-22° 15.4	-22° 15.8	-22° 16.1	-22° 20.3	-22° 20.6	-22° 21.0	-22° 21.3	-22° 21.6	-22° 21.9	-0.3
Пн 5	182° 22.6	197° 22.4	212° 22.1	227° 21.9	242° 21.6	257° 21.3	92° 18.0	107° 17.7	122° 17.5	137° 17.2	152° 16.9	167° 16.7	-0.3
	-22° 22.2	-22° 22.5	-22° 22.9	-22° 23.2	-22° 23.5	-22° 23.8	-22° 27.8	-22° 28.1	-22° 28.4	-22° 28.7	-22° 29.0	-22° 29.3	-0.3
Вт 6	182° 16.4	197° 16.1	212° 15.9	227° 15.6	242° 15.4	257° 15.1	92° 11.7	107° 11.4	122° 11.1	137° 10.9	152° 10.6	167° 10.3	-0.3
	-22° 29.6	-22° 29.9	-22° 30.2	-22° 30.5	-22° 30.8	-22° 31.1	-22° 34.8	-22° 35.1	-22° 35.4	-22° 35.7	-22° 36.0	-22° 36.2	-0.3
Ср 7	182° 10.1	197° 09.8	212° 09.5	227° 09.3	242° 09.0	257° 08.7	92° 05.2	107° 04.9	122° 04.7	137° 04.4	152° 04.1	167° 03.8	-0.3
	-22° 36.5	-22° 36.8	-22° 37.1	-22° 37.4	-22° 37.6	-22° 37.9	-22° 41.4	-22° 41.7	-22° 42.0	-22° 42.2	-22° 42.5	-22° 42.8	-0.3
Чт 8	182° 03.6	197° 03.3	212° 03.0	227° 02.8	242° 02.5	257° 02.2	91° 58.6	106° 58.4	121° 58.1	136° 57.8	151° 57.5	166° 57.3	-0.3
	-22° 43.0	-22° 43.3	-22° 43.5	-22° 43.8	-22° 44.1	-22° 44.3	-22° 47.6	-22° 47.8	-22° 48.1	-22° 48.3	-22° 48.6	-22° 48.8	-0.3
Пт 9	181° 57.0	196° 56.7	211° 56.4	226° 56.1	241° 55.9	256° 55.6	91° 52.0	106° 51.7	121° 51.4	136° 51.1	151° 50.8	166° 50.5	-0.3
	-22° 49.1	-22° 49.3	-22° 49.5	-22° 49.8	-22° 50.0	-22° 50.3	-22° 53.3	-22° 53.5	-22° 53.7	-22° 54.0	-22° 54.2	-22° 54.4	-0.2
Сб 10	181° 50.3	196° 50.0	211° 49.7	226° 49.4	241° 49.1	256° 48.9	91° 45.2	106° 44.9	121° 44.6	136° 44.3	151° 44.0	166° 43.7	-0.3
	-22° 54.6	-22° 54.9	-22° 55.1	-22° 55.3	-22° 55.5	-22° 55.8	-22° 58.5	-22° 58.8	-22° 59.0	-22° 59.2	-22° 59.4	-22° 59.6	-0.2
Вс 11	181° 43.4	196° 43.2	211° 42.9	226° 42.6	241° 42.3	256° 42.0	91° 38.3	106° 38.0	121° 37.7	136° 37.4	151° 37.1	166° 36.8	-0.3
	-22° 59.8	-23° 00.0	-23° 00.2	-23° 00.4	-23° 00.6	-23° 00.8	-23° 03.3	-23° 03.5	-23° 03.7	-23° 03.9	-23° 04.1	-23° 04.3	-0.2
Пн 12	181° 36.5	196° 36.2	211° 35.9	226° 35.7	241° 35.4	256° 35.1	91° 31.3	106° 31.0	121° 30.7	136° 30.4	151° 30.1	166° 29.8	-0.3
	-23° 04.5	-23° 04.7	-23° 04.8	-23° 05.0	-23° 05.2	-23° 05.4	-23° 07.7	-23° 07.9	-23° 08.0	-23° 08.2	-23° 08.4	-23° 08.5	-0.2
Вт 13	181° 29.5	196° 29.2	211° 28.9	226° 28.6	241° 28.3	256° 28.0	91° 24.2	106° 23.9	121° 23.6	136° 23.3	151° 23.0	166° 22.7	-0.3
	-23° 08.7	-23° 08.9	-23° 09.0	-23° 09.2	-23° 09.4	-23° 09.5	-23° 11.6	-23° 11.7	-23° 11.9	-23° 12.0	-23° 12.2	-23° 12.3	-0.2
Ср 14	181° 22.4	196° 22.1	211° 21.8	226° 21.5	241° 21.2	256° 20.9	91° 17.0	106° 16.7	121° 16.4	136° 16.1	151° 15.8	166° 15.5	-0.3
	-23° 12.5	-23° 12.6	-23° 12.8	-23° 12.9	-23° 13.1	-23° 13.2	-23° 15.0	-23° 15.1	-23° 15.3	-23° 15.4	-23° 15.5	-23° 15.7	-0.1
Чт 15	181° 15.2	196° 14.9	211° 14.6	226° 14.3	241° 14.0	256° 13.7	91° 09.8	106° 09.5	121° 09.2	136° 08.9	151° 08.6	166° 08.3	-0.3
	-23° 15.8	-23° 15.9	-23° 16.0	-23° 16.2	-23° 16.3	-23° 16.4	-23° 18.0	-23° 18.1	-23° 18.2	-23° 18.3	-23° 18.4	-23° 18.5	-0.1
Пт 16	181° 08.0	196° 07.7	211° 07.4	226° 07.1	241° 06.8	256° 06.5	91° 02.5	106° 02.2	121° 01.9	136° 01.6	151° 01.3	166° 01.0	-0.3
	-23° 18.6	-23° 18.7	-23° 18.8	-23° 19.0	-23° 19.1	-23° 19.2	-23° 20.5	-23° 20.6	-23° 20.6	-23° 20.7	-23° 20.8	-23° 20.9	-0.1
Сб 17	181° 00.7	196° 00.4	211° 00.1	225° 59.8	240° 59.5	255° 59.2	90° 55.2	105° 54.9	120° 54.6	135° 54.3	150° 54.0	165° 53.6	-0.3
	-23° 21.0	-23° 21.1	-23° 21.2	-23° 21.3	-23° 21.4	-23° 21.4	-23° 22.5	-23° 22.6	-23° 22.6	-23° 22.7	-23° 22.8	-23° 22.8	-0.1
Вс 18	180° 53.3	195° 53.0	210° 52.7	225° 52.4	240° 52.1	255° 51.8	90° 47.8	105° 47.5	120° 47.2	135° 46.9	150° 46.6	165° 46.2	-0.3
	-23° 22.9	-23° 23.0	-23° 23.1	-23° 23.1	-23° 23.2	-23° 23.3	-23° 24.0	-23° 24.1	-23° 24.2	-23° 24.2	-23° 24.3	-23° 24.3	-0.1
Пн 19	180° 45.9	195° 45.6	210° 45.3	225° 45.0	240° 44.7	255° 44.4	90° 40.4	105° 40.1	120° 39.7	135° 39.4	150° 39.1	165° 38.8	-0.3
	-23° 24.4	-23° 24.4	-23° 24.5	-23° 24.5	-23° 24.6	-23° 24.6	-23° 25.1	-23° 25.2	-23° 25.2	-23° 25.2	-23° 25.3	-23° 25.3	-0.1
Вт 20	180° 38.5	195° 38.2	210° 37.9	225° 37.6	240° 37.3	255° 37.0	90° 32.9	105° 32.6	120° 32.3	135° 32.0	150° 31.7	165° 31.4	-0.3
	-23° 25.3	-23° 25.4	-23° 25.4	-23° 25.4	-23° 25.5	-23° 25.5	-23° 25.8	-23° 25.8	-23° 25.8	-23° 25.8	-23° 25.8	-23° 25.8	-0.0
Ср 21	180° 31.0	195° 30.7	210° 30.4	225° 30.1	240° 29.8	255° 29.5	90° 25.4	105° 25.1	120° 24.8	135° 24.5	150° 24.2	165° 23.9	-0.3
	-23° 25.8	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.9	-0.0
Чт 22	180° 23.6	195° 23.3	210° 23.0	225° 22.6	240° 22.3	255° 22.0	90° 18.0	105° 17.7	120° 17.3	135° 17.0	150° 16.7	165° 16.4	-0.3
	-23° 25.9	-23° 25.9	-23° 25.9	-23° 25.8	-23° 25.8	-23° 25.8	-23° 25.6	-23° 25.6	-23° 25.5	-23° 25.5	-23° 25.5	-23° 25.5	+0.0
Пт 23	180° 16.1	195° 15.8	210° 15.5	225° 15.2	240° 14.9	255° 14.5	90° 10.5	105° 10.2	120° 09.9	135° 09.6	150° 09.2	165° 08.9	-0.3
	-23° 25.4	-23° 25.4	-23° 25.4	-23° 25.4	-23° 25.3	-23° 25.3	-23° 24.8	-23° 24.8	-23° 24.7	-23° 24.7	-23° 24.6	-23° 24.6	+0.0
Сб 24	180° 08.6	195° 08.3	210° 08.0	225° 07.7	240° 07.4	255° 07.1	90° 03.0	105° 02.7	120° 02.4	135° 02.1	150° 01.8	165° 01.5	-0.3
	-23° 24.5	-23° 24.5	-23° 24.4	-23° 24.4	-23° 24.3	-23° 24.3	-23° 23.5	-23° 23.5	-23° 23.4	-23° 23.4	-23° 23.3	-23° 23.2	+0.0
Вс 25	180° 01.2	195° 00.9	210° 00.5	225° 00.2	239° 59.9	254° 59.6	89° 55.6	104° 55.3	119° 55.0	134° 54.7	149° 54.3	164° 54.0	-0.3
	-23° 23.2	-23° 23.1	-23° 23.0	-23° 23.0	-23° 22.9	-23° 22.8	-23° 21.8	-23° 21.7	-23° 21.7	-23° 21.6	-23° 21.5	-23° 21.4	+0.1
Пн 26	179° 53.7	194° 53.4	209° 53.1	224° 52.8	239° 52.5	254° 52.2	89° 48.2	104° 47.9	119° 47.6	134° 47.2	149° 46.9	164° 46.6	-0.3
	-23° 21.3	-23° 21.2	-23° 21.1	-23° 21.0	-23° 21.0	-23° 20.9	-23° 19.6	-23° 19.5	-23° 19.4	-23° 19.3	-23° 19.2	-23° 19.1	+0.1
Вт 27	179° 46.3	194° 46.0	209° 45.7	224° 45.4	239° 45.1	254° 44.8	89° 40.8	104° 40.5	119° 40.2	134° 39.9	149° 39.6	164° 39.3	-0.3
	-23° 19.0	-23° 18.9	-23° 18.8	-23° 18.7	-23° 18.6	-23° 18.5	-23° 17.0	-23° 16.8	-23° 16.7	-23° 16.6	-23° 16.5	-23° 16.3	+0.1
Ср 28	179° 39.0	194° 38.7	209° 38.4	224° 38.0	239° 37.7	254° 37.4	89° 33.5	104° 33.2	119° 32.9	134° 32.6	149° 32.3	164° 32.0	-0.3
	-23° 16.2	-23° 16.1	-23° 16.0	-23° 15.8	-23° 15.7	-23° 15.6	-23° 13.8	-23° 13.7	-23° 13.5	-23° 13.4	-23° 13.3	-23° 13.1	+0.1
Чт 29	179° 31.7	194° 31.3	209° 31.0	224° 30.7	239° 30.4	254° 30.1	89° 26.2	104° 25.9	119° 25.6	134° 25.3	149° 25.0	164° 24.7	-0.3
	-23° 13.0	-23° 12.8	-23° 12.7	-23° 12.5	-23° 12.4	-23° 12.2	-23° 10.2	-23° 10.1	-23° 09.9	-23° 09.7	-23° 09.6	-23° 09.4	+0.1
Пт 30	179° 24.4	194° 24.1	209° 23.8	224° 23.5	239° 23.2	254° 22.9	89° 19.0	104° 18.7	119° 18.4	134° 18.1	149° 17.8	164° 17.5	-0.3
	-23° 09.3	-23° 09.1	-23° 08.9	-23° 08.8	-23° 08.6	-23° 08.4	-23° 06.2	-23° 06.0	-23° 05.8	-23° 05.6	-23° 05.4	-23° 05.3	+0.2
Сб 31	179° 17.2	194° 16.9	209° 16.6	224° 16.3	239° 16.0	254° 15.7	89° 11.9	104° 11.6	119° 11.3	134° 11.0	149° 10.7	164° 10.4	-0.3
	-23° 05.1	-23° 04.9	-23° 04.7	-23° 04.5	-23° 04.3	-23° 04.1	-23° 01.6	-23° 01.4	-23° 01.2	-23° 01.0	-23° 00.8	-23° 00.6	+0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Декабрь 2033

Д	23h	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	Δ'/h	R/p
Чт 1	73° 36.7	88° 05.5	102° 34.2	117° 02.9	131° 31.5	146° 00.2	160° 28.7	174° 57.3	189° 25.8	203° 54.3	218° 22.8	+28.6	16.2
	-0° 10.1	0° 01.2	0° 12.4	0° 23.7	0° 34.9	0° 46.2	0° 57.5	1° 08.7	1° 20.0	1° 31.3	1° 42.6	+11.3	59.4
Пт 2	75° 25.2	89° 53.1	104° 20.9	118° 48.6	133° 16.4	147° 44.0	162° 11.6	176° 39.2	191° 06.7	205° 34.2	220° 01.7	+27.6	16.4
	4° 31.1	4° 42.2	4° 53.3	5° 04.4	5° 15.4	5° 26.5	5° 37.5	5° 48.5	5° 59.4	6° 10.4	6° 21.3	+11.0	60.0
Сб 3	76° 47.4	91° 14.1	105° 40.7	120° 07.2	134° 33.7	149° 00.2	163° 26.6	177° 52.9	192° 19.2	206° 45.5	221° 11.7	+26.4	16.4
	9° 00.1	9° 10.3	9° 20.5	9° 30.6	9° 40.6	9° 50.6	10° 00.6	10° 10.5	10° 20.3	10° 30.0	10° 39.7	+10.0	60.3
Вс 4	77° 38.5	92° 03.9	106° 29.3	120° 54.6	135° 19.8	149° 45.0	164° 10.2	178° 35.3	193° 00.4	207° 25.5	221° 50.5	+25.2	16.5
	12° 56.4	13° 04.8	13° 13.2	13° 21.5	13° 29.7	13° 37.9	13° 45.9	13° 53.8	14° 01.7	14° 09.4	14° 17.1	+8.1	60.5
Пн 5	78° 00.9	92° 25.3	106° 49.7	121° 14.1	135° 38.5	150° 02.8	164° 27.1	178° 51.4	193° 15.7	207° 39.9	222° 04.2	+24.3	16.4
	15° 59.5	16° 05.5	16° 11.3	16° 17.1	16° 22.7	16° 28.2	16° 33.6	16° 38.8	16° 44.0	16° 49.0	16° 54.0	+5.4	60.3
○ Вт 6	78° 06.3	92° 30.4	106° 54.6	121° 18.7	135° 42.8	150° 07.0	164° 31.1	178° 55.3	193° 19.5	207° 43.7	222° 07.9	+24.2	16.3
	17° 53.0	17° 55.9	17° 58.8	18° 01.4	18° 04.0	18° 06.4	18° 08.7	18° 10.9	18° 13.0	18° 14.9	18° 16.7	+2.4	59.9
Ср 7	78° 14.1	92° 38.8	107° 03.5	121° 28.3	135° 53.1	150° 17.9	164° 42.8	179° 07.8	193° 32.7	207° 57.8	222° 22.8	+24.9	16.2
	18° 28.3	18° 28.1	18° 27.7	18° 27.2	18° 26.6	18° 25.9	18° 25.1	18° 24.1	18° 23.0	18° 21.8	18° 20.5	-0.8	59.3
Чт 8	78° 45.9	93° 11.9	107° 38.0	122° 04.1	136° 30.4	150° 56.7	165° 23.0	179° 49.5	194° 16.0	208° 42.6	223° 09.2	+26.3	15.9
	17° 46.6	17° 43.4	17° 40.2	17° 36.8	17° 33.3	17° 29.8	17° 26.1	17° 22.3	17° 18.4	17° 14.4	17° 10.3	-3.6	58.4
Пт 9	79° 58.1	94° 26.0	108° 53.9	123° 22.0	137° 50.1	152° 18.3	166° 46.6	181° 14.9	195° 43.3	210° 11.8	224° 40.4	+28.2	15.7
	15° 57.6	15° 52.1	15° 46.4	15° 40.7	15° 34.9	15° 29.0	15° 23.1	15° 17.0	15° 10.9	15° 04.7	14° 58.4	-5.9	57.5
Сб 10	81° 58.6	96° 28.5	110° 58.4	125° 28.4	139° 58.4	154° 28.6	168° 58.8	183° 29.1	197° 59.4	212° 29.8	227° 00.3	+30.2	15.4
	13° 16.0	13° 08.6	13° 01.2	12° 53.8	12° 46.3	12° 38.7	12° 31.1	12° 23.4	12° 15.7	12° 07.9	12° 00.1	-7.6	56.6
Вс 11	84° 46.2	99° 17.8	113° 49.5	128° 21.2	142° 53.0	157° 24.8	171° 56.7	186° 28.7	201° 00.7	215° 32.8	230° 04.9	+31.9	15.2
	9° 57.1	9° 48.6	9° 40.0	9° 31.4	9° 22.8	9° 14.1	9° 05.4	8° 56.7	8° 47.9	8° 39.1	8° 30.3	-8.7	55.8
Пн 12	88° 13.4	102° 46.3	117° 19.3	131° 52.4	146° 25.5	160° 58.6	175° 31.8	190° 05.0	204° 38.3	219° 11.6	233° 44.9	+33.2	15.0
	6° 14.9	6° 05.7	5° 56.5	5° 47.2	5° 38.0	5° 28.7	5° 19.4	5° 10.1	5° 00.8	4° 51.5	4° 42.2	-9.3	55.1
◑ Вт 13	92° 09.1	106° 43.0	121° 16.9	135° 50.8	150° 24.7	164° 58.7	179° 32.6	194° 06.6	208° 40.6	223° 14.7	237° 48.7	+34.0	14.9
	2° 21.0	2° 11.6	2° 02.1	1° 52.6	1° 43.2	1° 33.7	1° 24.3	1° 14.8	1° 05.3	0° 55.9	0° 46.4	-9.5	54.6
Ср 14	96° 21.3	110° 55.6	125° 29.8	140° 04.1	154° 38.3	169° 12.6	183° 46.9	198° 21.2	212° 55.4	227° 29.7	242° 04.0	+34.3	14.8
	-1° 35.0	-1° 44.3	-1° 53.7	-2° 03.0	-2° 12.4	-2° 21.7	-2° 31.0	-2° 40.3	-2° 49.6	-2° 58.8	-3° 08.1	-9.3	54.3
Чт 15	100° 37.7	115° 11.8	129° 46.0	144° 20.2	158° 54.3	173° 28.4	188° 02.5	202° 36.6	217° 10.7	231° 44.7	246° 18.8	+34.1	14.8
	-5° 24.8	-5° 33.7	-5° 42.7	-5° 51.6	-6° 00.5	-6° 09.3	-6° 18.2	-6° 27.0	-6° 35.8	-6° 44.5	-6° 53.2	-8.8	54.1
Пт 16	104° 46.8	119° 20.5	133° 54.1	148° 27.8	163° 01.3	177° 34.9	192° 08.4	206° 41.9	221° 15.4	235° 48.8	250° 22.2	+33.5	14.8
	-9° 00.6	-9° 08.8	-9° 17.0	-9° 25.2	-9° 33.3	-9° 41.4	-9° 49.4	-9° 57.4	-10° 05.4	-10° 13.3	-10° 21.2	-8.1	54.1
Сб 17	108° 39.0	123° 11.8	137° 44.6	152° 17.3	166° 50.0	181° 22.7	195° 55.3	210° 27.9	225° 00.4	239° 32.9	254° 05.3	+32.6	14.8
	-12° 14.2	-12° 21.4	-12° 28.5	-12° 35.6	-12° 42.6	-12° 49.5	-12° 56.4	-13° 03.3	-13° 10.1	-13° 16.8	-13° 23.5	-6.9	54.3
Вс 18	112° 06.7	126° 38.5	141° 10.2	155° 41.8	170° 13.4	184° 45.0	199° 16.5	213° 47.9	228° 19.3	242° 50.7	257° 22.0	+31.5	14.9
	-14° 56.9	-15° 02.6	-15° 08.3	-15° 13.9	-15° 19.4	-15° 24.9	-15° 30.3	-15° 35.6	-15° 40.9	-15° 46.0	-15° 51.2	-5.4	54.6
Пн 19	115° 06.2	129° 36.8	144° 07.3	158° 37.8	173° 08.3	187° 38.7	202° 09.1	216° 39.4	231° 09.6	245° 39.9	260° 10.1	+30.4	15.0
	-16° 59.2	-17° 03.1	-17° 07.0	-17° 10.7	-17° 14.4	-17° 18.0	-17° 21.5	-17° 25.0	-17° 28.3	-17° 31.6	-17° 34.8	-3.6	55.0
Вт 20	117° 38.0	132° 07.6	146° 37.1	161° 06.6	175° 36.1	190° 05.5	204° 34.9	219° 04.2	233° 33.5	248° 02.8	262° 32.1	+29.4	15.1
	-18° 12.1	-18° 13.9	-18° 15.6	-18° 17.2	-18° 18.7	-18° 20.1	-18° 21.4	-18° 22.6	-18° 23.8	-18° 24.8	-18° 25.7	-1.4	55.5
● Ср 21	119° 47.6	134° 16.4	148° 45.2	163° 14.0	177° 42.8	192° 11.6	206° 40.3	221° 09.0	235° 37.7	250° 06.4	264° 35.1	+28.8	15.3
	-18° 28.1	-18° 27.5	-18° 26.8	-18° 26.0	-18° 25.1	-18° 24.1	-18° 22.9	-18° 21.7	-18° 20.4	-18° 19.0	-18° 17.5	+1.1	56.0
Чт 22	121° 43.9	136° 12.5	150° 41.0	165° 09.5	179° 38.0	194° 06.5	208° 35.0	223° 03.6	237° 32.1	252° 00.6	266° 29.1	+28.5	15.4
	-17° 42.8	-17° 39.7	-17° 36.5	-17° 33.2	-17° 29.8	-17° 26.3	-17° 22.7	-17° 19.0	-17° 15.2	-17° 11.4	-17° 07.4	+3.5	56.6
Пт 23	123° 37.3	138° 05.9	152° 34.5	167° 03.1	181° 31.7	196° 00.4	210° 29.0	224° 57.7	239° 26.4	253° 55.1	268° 23.8	+28.6	15.6
	-15° 56.2	-15° 50.7	-15° 45.1	-15° 39.5	-15° 33.7	-15° 27.8	-15° 21.9	-15° 15.9	-15° 09.8	-15° 03.6	-14° 57.3	+5.9	57.1
Сб 24	125° 35.9	140° 04.8	154° 33.7	169° 02.7	183° 31.7	198° 00.7	212° 29.7	226° 58.7	241° 27.7	255° 56.8	270° 25.8	+29.0	15.7
	-13° 13.0	-13° 05.4	-12° 57.7	-12° 49.9	-12° 42.1	-12° 34.2	-12° 26.3	-12° 18.2	-12° 10.1	-12° 01.9	-11° 53.7	+7.9	57.6
Вс 25	140° 04.8	154° 33.7	169° 02.7	183° 31.7	198° 00.7	212° 29.7	226° 58.7	241° 27.7	255° 56.8	270° 25.8	284° 54.9	+29.0	15.7
	-13° 05.4	-12° 57.7	-12° 49.9	-12° 42.1	-12° 34.2	-12° 26.3	-12° 18.2	-12° 10.1	-12° 01.9	-11° 53.7	-11° 45.3	+8.0	57.6
Пн 26	142° 12.8	156° 42.1	171° 11.5	185° 40.8	200° 10.1	214° 39.5	229° 08.9	243° 38.2	258° 07.6	272° 37.0	287° 06.4	+29.4	15.8
	-9° 32.7	-9° 23.3	-9° 13.9	-9° 04.5	-8° 55.0	-8° 45.5	-8° 35.9	-8° 26.2	-8° 16.5	-8° 06.7	-7° 56.9	+9.6	58.0
Вт 27	144° 28.5	158° 58.0	173° 27.5	187° 57.0	202° 26.5	216° 56.0	231° 25.5	245° 55.1	260° 24.6	274° 54.1	289° 23.6	+29.5	15.9
	-5° 24.6	-5° 14.1	-5° 03.6	-4° 53.1	-4° 42.5	-4° 31.9	-4° 21.3	-4° 10.6	-3° 59.9	-3° 49.2	-3° 38.5	+10.6	58.4
Ср 28	146° 45.6	161° 15.0	175° 44.4	190° 13.8	204° 43.1	219° 12.5	233° 41.8	248° 11.1	262° 40.4	277° 09.7	291° 38.9	+29.3	16.0
	-0° 55.0	-0° 44.0	-0° 32.9	-0° 21.9	-0° 10.9	0° 00.2	0° 11.2	0° 22.3	0° 33.4	0° 44.4	0° 55.5	+11.0	58.8
◐ Чт 29	148° 55.3	163° 24.2	177° 53.1	192° 21.9	206° 50.8	221° 19.5	235° 48.3	250° 17.0	264° 45.7	279° 14.3	293° 43.0	+28.8	16.1
	3° 40.8	3° 51.7	4° 02.6	4° 13.5	4° 24.4	4° 35.2	4° 46.0	4° 56.9	5° 07.6	5° 18.4	5° 29.1	+10.8	59.1
Пт 30	150° 48.0	165° 16.0	179° 44.0	194° 11.9	208° 39.8	223° 07.7	237° 35.5	252° 03.3	266° 31.0	280° 58.7	295° 26.3	+27.8	16.2
	8° 06.2	8° 16.3	8° 26.4	8° 36.5	8° 46.5	8° 56.5	9° 06.4	9° 16.2	9° 26.0	9° 35.8	9° 45.5	+9.9	59.4
Сб 31	152° 15.7	166° 42.6	181° 09.5	195° 36.3	210° 03.1	224° 29.8	238° 56.5	253° 23.2	267° 49.8	282° 16.3	296° 42.8	+26.7	16.2
	12° 03.7	12° 12.4	12° 21.0	12° 29.5	12° 37.9	12° 46.3	12° 54.6	13° 02.8	13° 10.9	13° 19.0	13° 26.9	+8.3	59.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 6 07h22 — Последняя четв.: 13 15h28 — Новолуние: 21 18h46 — Первая четв.: 29 00h20

СОЛНЦЕ

Январь 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	179° 10.1 -23° 00.4	194° 09.8 -23° 00.2	209° 09.5 -23° 00.0	224° 09.2 -22° 59.8	239° 08.9 -22° 59.6	254° 08.6 -22° 59.4	89° 04.8 -22° 56.7	104° 04.5 -22° 56.4	119° 04.2 -22° 56.2	134° 04.0 -22° 56.0	149° 03.7 -22° 55.8	164° 03.4 -22° 55.6	-0.3 +0.2
Пн 2	179° 03.1 -22° 55.3	194° 02.8 -22° 55.1	209° 02.5 -22° 54.9	224° 02.2 -22° 54.7	239° 01.9 -22° 54.4	254° 01.6 -22° 54.2	88° 57.9 -22° 51.2	103° 57.6 -22° 51.0	118° 57.3 -22° 50.7	133° 57.0 -22° 50.5	148° 56.7 -22° 50.3	163° 56.4 -22° 50.0	-0.3 +0.2
Вт 3	178° 56.1 -22° 49.8	193° 55.9 -22° 49.5	208° 55.6 -22° 49.3	223° 55.3 -22° 49.1	238° 55.0 -22° 48.8	253° 54.7 -22° 48.6	88° 51.0 -22° 45.3	103° 50.7 -22° 45.1	118° 50.4 -22° 44.8	133° 50.2 -22° 44.6	148° 49.9 -22° 44.3	163° 49.6 -22° 44.0	-0.3 +0.2
Ср 4	178° 49.3 -22° 43.8	193° 49.0 -22° 43.5	208° 48.7 -22° 43.3	223° 48.5 -22° 43.0	238° 48.2 -22° 42.7	253° 47.9 -22° 42.5	88° 44.2 -22° 39.0	103° 44.0 -22° 38.7	118° 43.7 -22° 38.4	133° 43.4 -22° 38.1	148° 43.1 -22° 37.9	163° 42.8 -22° 37.6	-0.3 +0.3
Чт 5	178° 42.6 -22° 37.3	193° 42.3 -22° 37.0	208° 42.0 -22° 36.8	223° 41.7 -22° 36.5	238° 41.4 -22° 36.2	253° 41.2 -22° 35.9	88° 37.6 -22° 32.2	103° 37.3 -22° 31.9	118° 37.0 -22° 31.6	133° 36.8 -22° 31.3	148° 36.5 -22° 31.0	163° 36.2 -22° 30.7	-0.3 +0.3
Пт 6	178° 35.9 -22° 30.4	193° 35.7 -22° 30.1	208° 35.4 -22° 29.8	223° 35.1 -22° 29.5	238° 34.8 -22° 29.2	253° 34.6 -22° 28.9	88° 31.0 -22° 24.9	103° 30.8 -22° 24.6	118° 30.5 -22° 24.3	133° 30.2 -22° 24.0	148° 29.9 -22° 23.7	163° 29.7 -22° 23.4	-0.3 +0.3
Сб 7	178° 29.4 -22° 23.1	193° 29.1 -22° 22.7	208° 28.9 -22° 22.4	223° 28.6 -22° 22.1	238° 28.3 -22° 21.8	253° 28.1 -22° 21.5	88° 24.6 -22° 17.3	103° 24.3 -22° 16.9	118° 24.1 -22° 16.6	133° 23.8 -22° 16.3	148° 23.5 -22° 15.9	163° 23.3 -22° 15.6	-0.3 +0.3
Вс 8	178° 23.0 -22° 15.3	193° 22.7 -22° 14.9	208° 22.5 -22° 14.6	223° 22.2 -22° 14.3	238° 21.9 -22° 13.9	253° 21.7 -22° 13.6	88° 18.3 -22° 09.1	103° 18.0 -22° 08.8	118° 17.8 -22° 08.4	133° 17.5 -22° 08.1	148° 17.2 -22° 07.7	163° 17.0 -22° 07.4	-0.3 +0.3
Пн 9	178° 16.7 -22° 07.0	193° 16.5 -22° 06.7	208° 16.2 -22° 06.3	223° 16.0 -22° 06.0	238° 15.7 -22° 05.6	253° 15.4 -22° 05.3	88° 12.1 -22° 00.6	103° 11.8 -22° 00.2	118° 11.6 -21° 59.9	133° 11.3 -21° 59.5	148° 11.1 -21° 59.1	163° 10.8 -21° 58.7	-0.3 +0.4
Вт 10	178° 10.6 -21° 58.4	193° 10.3 -21° 58.0	208° 10.1 -21° 57.6	223° 09.8 -21° 57.3	238° 09.6 -21° 56.9	253° 09.3 -21° 56.5	88° 06.1 -21° 51.6	103° 05.8 -21° 51.2	118° 05.6 -21° 50.8	133° 05.3 -21° 50.4	148° 05.1 -21° 50.1	163° 04.8 -21° 49.7	-0.3 +0.4
Ср 11	178° 04.6 -21° 49.3	193° 04.3 -21° 48.9	208° 04.1 -21° 48.5	223° 03.8 -21° 48.1	238° 03.6 -21° 47.7	253° 03.3 -21° 47.3	88° 00.2 -21° 42.2	102° 59.9 -21° 41.8	117° 59.7 -21° 41.4	132° 59.4 -21° 41.0	147° 59.2 -21° 40.6	162° 58.9 -21° 40.2	-0.2 +0.4
Чт 12	177° 58.7 -21° 39.8	192° 58.5 -21° 39.4	207° 58.2 -21° 39.0	222° 58.0 -21° 38.5	237° 57.7 -21° 38.1	252° 57.5 -21° 37.7	87° 54.4 -21° 32.4	102° 54.2 -21° 31.9	117° 53.9 -21° 31.5	132° 53.7 -21° 31.1	147° 53.4 -21° 30.7	162° 53.2 -21° 30.3	-0.2 +0.4
Пт 13	177° 53.0 -21° 29.8	192° 52.7 -21° 29.4	207° 52.5 -21° 29.0	222° 52.3 -21° 28.6	237° 52.0 -21° 28.1	252° 51.8 -21° 27.7	87° 48.8 -21° 22.1	102° 48.5 -21° 21.7	117° 48.3 -21° 21.2	132° 48.1 -21° 20.8	147° 47.9 -21° 20.4	162° 47.6 -21° 19.9	-0.2 +0.4
Сб 14	177° 47.4 -21° 19.5	192° 47.2 -21° 19.0	207° 46.9 -21° 18.6	222° 46.7 -21° 18.1	237° 46.5 -21° 17.7	252° 46.3 -21° 17.3	87° 43.3 -21° 11.4	102° 43.1 -21° 11.0	117° 42.9 -21° 10.5	132° 42.7 -21° 10.1	147° 42.4 -21° 09.6	162° 42.2 -21° 09.2	-0.2 +0.4
Вс 15	177° 42.0 -21° 08.7	192° 41.8 -21° 08.2	207° 41.5 -21° 07.8	222° 41.3 -21° 07.3	237° 41.1 -21° 06.9	252° 40.9 -21° 06.4	87° 38.0 -21° 00.4	102° 37.8 -20° 59.9	117° 37.6 -20° 59.4	132° 37.4 -20° 59.0	147° 37.2 -20° 58.5	162° 36.9 -20° 58.0	-0.2 +0.5
Пн 16	177° 36.7 -20° 57.5	192° 36.5 -20° 57.1	207° 36.3 -20° 56.6	222° 36.1 -20° 56.1	237° 35.9 -20° 55.6	252° 35.7 -20° 55.2	87° 32.9 -20° 48.9	102° 32.7 -20° 48.4	117° 32.5 -20° 47.9	132° 32.3 -20° 47.4	147° 32.1 -20° 46.9	162° 31.9 -20° 46.5	-0.2 +0.5
Вт 17	177° 31.6 -20° 46.0	192° 31.4 -20° 45.5	207° 31.2 -20° 45.0	222° 31.0 -20° 44.5	237° 30.8 -20° 44.0	252° 30.6 -20° 43.5	87° 27.9 -20° 37.0	102° 27.7 -20° 36.5	117° 27.5 -20° 36.0	132° 27.3 -20° 35.5	147° 27.1 -20° 35.0	162° 26.9 -20° 34.5	-0.2 +0.5
Ср 18	177° 26.7 -20° 34.0	192° 26.5 -20° 33.5	207° 26.3 -20° 33.0	222° 26.1 -20° 32.5	237° 25.9 -20° 32.0	252° 25.7 -20° 31.5	87° 23.2 -20° 24.8	102° 23.0 -20° 24.2	117° 22.8 -20° 23.7	132° 22.6 -20° 23.2	147° 22.4 -20° 22.7	162° 22.2 -20° 22.2	-0.2 +0.5
Чт 19	177° 22.0 -20° 21.6	192° 21.8 -20° 21.1	207° 21.6 -20° 20.6	222° 21.4 -20° 20.1	237° 21.2 -20° 19.5	252° 21.0 -20° 19.0	87° 18.6 -20° 12.1	102° 18.4 -20° 11.6	117° 18.2 -20° 11.0	132° 18.0 -20° 10.5	147° 17.8 -20° 10.0	162° 17.6 -20° 09.4	-0.2 +0.5
Пт 20	177° 17.4 -20° 08.9	192° 17.2 -20° 08.4	207° 17.1 -20° 07.8	222° 16.9 -20° 07.3	237° 16.7 -20° 06.7	252° 16.5 -20° 06.2	87° 14.1 -19° 59.1	102° 14.0 -19° 58.5	117° 13.8 -19° 58.0	132° 13.6 -19° 57.4	147° 13.4 -19° 56.9	162° 13.2 -19° 56.3	-0.2 +0.5
Сб 21	177° 13.1 -19° 55.8	192° 12.9 -19° 55.2	207° 12.7 -19° 54.7	222° 12.5 -19° 54.1	237° 12.4 -19° 53.6	252° 12.2 -19° 53.0	87° 09.9 -19° 45.7	102° 09.7 -19° 45.1	117° 09.6 -19° 44.6	132° 09.4 -19° 44.0	147° 09.2 -19° 43.4	162° 09.1 -19° 42.9	-0.2 +0.6
Вс 22	177° 08.9 -19° 42.3	192° 08.7 -19° 41.7	207° 08.5 -19° 41.1	222° 08.4 -19° 40.6	237° 08.2 -19° 40.0	252° 08.0 -19° 39.4	87° 05.9 -19° 31.9	102° 05.7 -19° 31.3	117° 05.5 -19° 30.8	132° 05.4 -19° 30.2	147° 05.2 -19° 29.6	162° 05.1 -19° 29.0	-0.2 +0.6
Пн 23	177° 04.9 -19° 28.4	192° 04.7 -19° 27.8	207° 04.6 -19° 27.3	222° 04.4 -19° 26.7	237° 04.2 -19° 26.1	252° 04.1 -19° 25.5	87° 02.0 -19° 17.8	102° 01.9 -19° 17.2	117° 01.7 -19° 16.6	132° 01.6 -19° 16.0	147° 01.4 -19° 15.4	162° 01.3 -19° 14.8	-0.2 +0.6
Вт 24	177° 01.1 -19° 14.2	192° 00.9 -19° 13.6	207° 00.8 -19° 13.0	222° 00.6 -19° 12.4	237° 00.5 -19° 11.8	252° 00.3 -19° 11.2	86° 58.4 -19° 03.3	101° 58.2 -19° 02.7	116° 58.1 -19° 02.1	131° 57.9 -19° 01.5	146° 57.8 -19° 00.9	161° 57.7 -19° 00.3	-0.2 +0.6
Ср 25	176° 57.5 -18° 59.6	191° 57.4 -18° 59.0	206° 57.2 -18° 58.4	221° 57.1 -18° 57.8	236° 56.9 -18° 57.2	251° 56.8 -18° 56.6	86° 54.9 -18° 48.5	101° 54.8 -18° 47.9	116° 54.7 -18° 47.2	131° 54.5 -18° 46.6	146° 54.4 -18° 46.0	161° 54.3 -18° 45.4	-0.1 +0.6
Чт 26	176° 54.1 -18° 44.7	191° 54.0 -18° 44.1	206° 53.8 -18° 43.5	221° 53.7 -18° 42.8	236° 53.6 -18° 42.2	251° 53.4 -18° 41.6	86° 51.7 -18° 33.3	101° 51.6 -18° 32.7	116° 51.5 -18° 32.0	131° 51.3 -18° 31.4	146° 51.2 -18° 30.8	161° 51.1 -18° 30.2	-0.1 +0.6
Пт 27	176° 50.9 -18° 29.5	191° 50.8 -18° 28.8	206° 50.7 -18° 28.2	221° 50.6 -18° 27.5	236° 50.4 -18° 26.9	251° 50.3 -18° 26.3	86° 48.7 -18° 17.8	101° 48.6 -18° 17.2	116° 48.4 -18° 16.5	131° 48.3 -18° 15.8	146° 48.2 -18° 15.2	161° 48.1 -18° 14.5	-0.1 +0.6
Сб 28	176° 48.0 -18° 13.9	191° 47.8 -18° 13.2	206° 47.7 -18° 12.6	221° 47.6 -18° 11.9	236° 47.5 -18° 11.2	251° 47.4 -18° 10.6	86° 45.9 -18° 02.0	101° 45.8 -18° 01.3	116° 45.6 -18° 00.6	131° 45.5 -18° 00.0	146° 45.4 -17° 59.3	161° 45.3 -17° 58.6	-0.1 +0.7
Вс 29	176° 45.2 -17° 58.0	191° 45.1 -17° 57.3	206° 45.0 -17° 56.6	221° 44.9 -17° 55.9	236° 44.8 -17° 55.3	251° 44.6 -17° 54.6	86° 43.3 -17° 45.8	101° 43.1 -17° 45.1	116° 43.0 -17° 44.4	131° 42.9 -17° 43.8	146° 42.8 -17° 43.1	161° 42.7 -17° 42.4	-0.1 +0.7
Пн 30	176° 42.6 -17° 41.7	191° 42.5 -17° 41.0	206° 42.4 -17° 40.4	221° 42.3 -17° 39.7	236° 42.2 -17° 39.0	251° 42.1 -17° 38.3	86° 40.8 -17° 29.3	101° 40.8 -17° 28.6	116° 40.7 -17° 27.9	131° 40.6 -17° 27.3	146° 40.5 -17° 26.6	161° 40.4 -17° 25.9	-0.1 +0.7
Вт 31	176° 40.3 -17° 25.2	191° 40.2 -17° 24.5	206° 40.1 -17° 23.8	221° 40.0 -17° 23.1	236° 39.9 -17° 22.4	251° 39.8 -17° 21.7	86° 38.6 -17° 12.5	101° 38.6 -17° 11.8	116° 38.5 -17° 11.1	131° 38.4 -17° 10.4	146° 38.3 -17° 09.7	161° 38.2 -17° 09.0	-0.1 +0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2034

Д	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	Δ'/h	R/p
Вс 1	66° 39.5	81° 05.6	95° 31.6	109° 57.6	124° 23.6	138° 49.5	153° 15.4	167° 41.2	182° 07.0	196° 32.8	210° 58.5	+25.9	16.2
	14° 34.7	14° 41.8	14° 48.8	14° 55.7	15° 02.5	15° 09.2	15° 15.8	15° 22.3	15° 28.7	15° 35.0	15° 41.2	+6.7	59.5
Пн 2	67° 20.5	81° 45.8	96° 11.0	110° 36.2	125° 01.4	139° 26.5	153° 51.7	168° 16.8	182° 41.9	197° 07.0	211° 32.0	+25.1	16.2
	17° 01.5	17° 06.0	17° 10.4	17° 14.6	17° 18.8	17° 22.8	17° 26.7	17° 30.5	17° 34.1	17° 37.7	17° 41.1	+4.0	59.4
Вт 3	67° 47.1	82° 12.1	96° 37.1	111° 02.1	125° 27.2	139° 52.2	154° 17.2	168° 42.3	183° 07.4	197° 32.4	211° 57.5	+25.0	16.1
	18° 18.3	18° 19.8	18° 21.2	18° 22.4	18° 23.6	18° 24.6	18° 25.5	18° 26.2	18° 26.9	18° 27.4	18° 27.8	+1.0	59.1
○ Ср 4	68° 16.8	82° 42.3	97° 07.9	111° 33.5	125° 59.1	140° 24.8	154° 50.5	169° 16.3	183° 42.1	198° 07.9	212° 33.8	+25.7	16.0
	18° 19.5	18° 18.0	18° 16.3	18° 14.6	18° 12.7	18° 10.8	18° 08.7	18° 06.5	18° 04.2	18° 01.7	17° 59.2	-2.0	58.6
Чт 5	69° 08.4	83° 35.2	98° 02.0	112° 28.9	126° 55.8	141° 22.8	155° 49.9	170° 17.0	184° 44.2	199° 11.4	213° 38.8	+27.0	15.8
	17° 08.1	17° 03.9	16° 59.6	16° 55.1	16° 50.6	16° 46.0	16° 41.2	16° 36.4	16° 31.5	16° 26.5	16° 21.4	-4.7	58.0
Пт 6	70° 36.7	85° 05.1	99° 33.6	114° 02.1	128° 30.7	142° 59.4	157° 28.2	171° 57.0	186° 26.0	200° 54.9	215° 24.0	+28.7	15.6
	14° 54.5	14° 48.0	14° 41.5	14° 34.9	14° 28.2	14° 21.5	14° 14.7	14° 07.8	14° 00.8	13° 53.8	13° 46.7	-6.8	57.3
Сб 7	72° 48.2	87° 18.4	101° 48.6	116° 18.9	130° 49.3	145° 19.7	159° 50.2	174° 20.8	188° 51.5	203° 22.2	217° 52.9	+30.5	15.4
	11° 52.9	11° 44.9	11° 36.8	11° 28.7	11° 20.5	11° 12.2	11° 04.0	10° 55.6	10° 47.3	10° 38.8	10° 30.4	-8.3	56.5
Вс 8	75° 42.0	90° 13.7	104° 45.6	119° 17.4	133° 49.3	148° 21.3	162° 53.3	177° 25.4	191° 57.5	206° 29.7	221° 02.0	+32.0	15.2
	8° 18.9	8° 09.9	8° 00.8	7° 51.7	7° 42.6	7° 33.5	7° 24.3	7° 15.1	7° 05.9	6° 56.7	6° 47.4	-9.2	55.8
Пн 9	79° 11.2	93° 44.2	108° 17.2	122° 50.3	137° 23.4	151° 56.5	166° 29.7	181° 02.9	195° 36.1	210° 09.4	224° 42.7	+33.1	15.0
	4° 26.5	4° 17.0	4° 07.5	3° 58.0	3° 48.4	3° 38.9	3° 29.3	3° 19.8	3° 10.2	3° 00.7	2° 51.1	-9.5	55.2
Вт 10	83° 05.9	97° 39.7	112° 13.4	126° 47.2	141° 21.0	155° 54.9	170° 28.7	185° 02.6	199° 36.5	214° 10.4	228° 44.3	+33.8	14.9
	0° 27.5	0° 18.0	0° 08.4	-0° 01.1	-0° 10.6	-0° 20.2	-0° 29.7	-0° 39.2	-0° 48.7	-0° 58.2	-1° 07.7	-9.5	54.7
Ср 11	87° 14.5	101° 48.6	116° 22.7	130° 56.7	145° 30.8	160° 04.9	174° 39.0	189° 13.0	203° 47.1	218° 21.2	232° 55.3	+34.1	14.8
	-3° 28.3	-3° 37.5	-3° 46.7	-3° 55.9	-4° 05.1	-4° 14.3	-4° 23.4	-4° 32.6	-4° 41.7	-4° 50.7	-4° 59.8	-9.2	54.3
◑ Чт 12	91° 25.5	105° 59.4	120° 33.3	135° 07.2	149° 41.1	164° 15.0	178° 48.8	193° 22.6	207° 56.4	222° 30.2	237° 04.0	+33.9	14.8
	-7° 12.5	-7° 21.2	-7° 29.8	-7° 38.3	-7° 46.9	-7° 55.3	-8° 03.8	-8° 12.2	-8° 20.6	-8° 29.0	-8° 37.3	-8.5	54.2
Пт 13	95° 27.7	110° 01.1	124° 34.4	139° 07.8	153° 41.0	168° 14.3	182° 47.5	197° 20.7	211° 53.8	226° 26.9	241° 00.0	+33.2	14.8
	-10° 37.6	-10° 45.3	-10° 53.0	-11° 00.6	-11° 08.1	-11° 15.7	-11° 23.1	-11° 30.6	-11° 37.9	-11° 45.3	-11° 52.5	-7.5	54.2
Сб 14	99° 11.7	113° 44.2	128° 16.6	142° 49.0	157° 21.3	171° 53.6	186° 25.9	200° 58.1	215° 30.2	230° 02.4	244° 34.4	+32.3	14.8
	-13° 35.7	-13° 42.1	-13° 48.5	-13° 54.8	-14° 01.1	-14° 07.3	-14° 13.5	-14° 19.6	-14° 25.6	-14° 31.6	-14° 37.5	-6.2	54.5
Вс 15	102° 30.1	117° 01.4	131° 32.7	146° 03.9	160° 35.1	175° 06.2	189° 37.3	204° 08.4	218° 39.4	233° 10.3	247° 41.2	+31.1	15.0
	-15° 58.4	-16° 03.2	-16° 08.0	-16° 12.7	-16° 17.3	-16° 21.9	-16° 26.4	-16° 30.8	-16° 35.1	-16° 39.4	-16° 43.6	-4.5	54.8
Пн 16	105° 19.0	119° 49.1	134° 19.2	148° 49.2	163° 19.2	177° 49.2	192° 19.1	206° 48.9	221° 18.7	235° 48.5	250° 18.2	+29.9	15.1
	-17° 36.9	-17° 39.8	-17° 42.6	-17° 45.4	-17° 48.0	-17° 50.6	-17° 53.0	-17° 55.4	-17° 57.7	-17° 59.9	-18° 02.0	-2.5	55.4
Вт 17	107° 39.0	122° 08.1	136° 37.1	151° 06.1	165° 35.1	180° 04.0	194° 32.9	209° 01.7	223° 30.5	237° 59.3	252° 28.1	+28.9	15.3
	-18° 22.7	-18° 23.3	-18° 23.9	-18° 24.3	-18° 24.7	-18° 24.9	-18° 25.0	-18° 25.1	-18° 25.0	-18° 24.9	-18° 24.6	-0.2	56.0
Ср 18	109° 35.8	124° 04.1	138° 32.3	153° 00.6	167° 28.8	181° 57.1	196° 25.3	210° 53.5	225° 21.6	239° 49.8	254° 17.9	+28.2	15.5
	-18° 08.9	-18° 07.0	-18° 05.0	-18° 03.0	-18° 00.8	-17° 58.5	-17° 56.2	-17° 53.7	-17° 51.1	-17° 48.4	-17° 45.7	+2.3	56.7
Чт 19	111° 18.3	125° 46.3	140° 14.2	154° 42.2	169° 10.1	183° 38.1	198° 06.0	212° 33.9	227° 01.9	241° 29.8	255° 57.7	+27.9	15.6
	-16° 51.8	-16° 47.4	-16° 42.9	-16° 38.3	-16° 33.6	-16° 28.8	-16° 23.9	-16° 18.9	-16° 13.8	-16° 08.7	-16° 03.4	+4.8	57.3
● Пт 20	112° 57.0	127° 25.0	141° 53.0	156° 21.0	170° 49.1	185° 17.1	199° 45.1	214° 13.2	228° 41.2	243° 09.3	257° 37.4	+28.0	15.8
	-14° 32.8	-14° 26.1	-14° 19.2	-14° 12.3	-14° 05.2	-13° 58.1	-13° 50.9	-13° 43.6	-13° 36.2	-13° 28.8	-13° 21.2	+7.2	57.9
Сб 21	114° 40.2	129° 08.4	143° 36.8	158° 05.1	172° 33.4	187° 01.8	201° 30.1	215° 58.5	230° 26.9	244° 55.3	259° 23.7	+28.4	15.9
	-11° 18.7	-11° 09.9	-11° 01.1	-10° 52.2	-10° 43.2	-10° 34.2	-10° 25.1	-10° 15.9	-10° 06.7	-9° 57.4	-9° 48.1	+9.1	58.4
Вс 22	116° 31.7	131° 00.3	145° 29.0	159° 57.7	174° 26.3	188° 55.0	203° 23.7	217° 52.4	232° 21.1	246° 49.9	261° 18.6	+28.7	16.0
	-7° 21.0	-7° 10.8	-7° 00.6	-6° 50.3	-6° 39.9	-6° 29.5	-6° 19.1	-6° 08.6	-5° 58.1	-5° 47.6	-5° 37.0	+10.4	58.8
Пн 23	118° 30.7	132° 59.5	147° 28.4	161° 57.2	176° 26.1	190° 55.0	205° 23.8	219° 52.7	234° 21.6	248° 50.4	263° 19.3	+28.9	16.1
	-2° 54.8	-2° 43.8	-2° 32.8	-2° 21.7	-2° 10.7	-1° 59.6	-1° 48.5	-1° 37.4	-1° 26.3	-1° 15.2	-1° 04.1	+11.1	59.1
Вт 24	132° 59.5	147° 28.4	161° 57.2	176° 26.1	190° 55.0	205° 23.8	219° 52.7	234° 21.6	248° 50.4	263° 19.3	277° 48.2	+28.9	16.1
	-2° 43.8	-2° 32.8	-2° 21.7	-2° 10.7	-1° 59.6	-1° 48.5	-1° 37.4	-1° 26.3	-1° 15.2	-1° 04.1	-0° 52.9	+11.1	59.1
Ср 25	135° 00.7	149° 29.5	163° 58.3	178° 27.0	192° 55.8	207° 24.5	221° 53.3	236° 22.0	250° 50.7	265° 19.4	279° 48.1	+28.7	16.1
	1° 54.2	2° 05.3	2° 16.3	2° 27.4	2° 38.5	2° 49.5	3° 00.5	3° 11.5	3° 22.5	3° 33.5	3° 44.5	+11.0	59.2
Чт 26	136° 56.4	151° 24.8	165° 53.2	180° 21.5	194° 49.9	209° 18.2	223° 46.5	238° 14.7	252° 43.0	267° 11.2	281° 39.4	+28.3	16.1
	6° 25.5	6° 35.9	6° 46.4	6° 56.8	7° 07.1	7° 17.4	7° 27.7	7° 37.9	7° 48.1	7° 58.2	8° 08.3	+10.3	59.2
◐ Пт 27	138° 39.0	153° 06.8	167° 34.5	182° 02.2	196° 29.9	210° 57.5	225° 25.1	239° 52.7	254° 20.2	268° 47.7	283° 15.2	+27.6	16.1
	10° 32.9	10° 42.1	10° 51.2	11° 00.2	11° 09.2	11° 18.1	11° 26.9	11° 35.7	11° 44.4	11° 53.0	12° 01.5	+8.9	59.1
Сб 28	140° 03.6	154° 30.6	168° 57.6	183° 24.5	197° 51.4	212° 18.3	226° 45.1	241° 11.9	255° 38.7	270° 05.5	284° 32.2	+26.9	16.1
	14° 00.3	14° 07.5	14° 14.7	14° 21.8	14° 28.7	14° 35.6	14° 42.4	14° 49.1	14° 55.8	15° 02.3	15° 08.7	+6.8	59.0
Вс 29	141° 10.0	155° 36.3	170° 02.7	184° 29.0	198° 55.2	213° 21.5	227° 47.7	242° 14.0	256° 40.2	271° 06.4	285° 32.6	+26.3	16.0
	16° 33.3	16° 38.1	16° 42.9	16° 47.5	16° 52.0	16° 56.4	17° 00.7	17° 04.9	17° 08.9	17° 12.9	17° 16.8	+4.3	58.7
Пн 30	142° 04.1	156° 30.2	170° 56.2	185° 22.3	199° 48.3	214° 14.4	228° 40.5	243° 06.5	257° 32.6	271° 58.7	286° 24.8	+26.1	15.9
	18° 01.3	18° 03.4	18° 05.3	18° 07.1	18° 08.9	18° 10.5	18° 12.0	18° 13.3	18° 14.6	18° 15.8	18° 16.8	+1.6	58.4
Вт 31	142° 57.5	157° 23.8	171° 50.2	186° 16.6	200° 43.0	215° 09.4	229° 35.8	244° 02.3	258° 28.8	272° 55.3	287° 21.9	+26.4	15.8
	18° 18.6	18° 17.8	18° 16.9	18° 15.9	18° 14.8	18° 13.5	18° 12.2	18° 10.7	18° 09.1	18° 07.5	18° 05.7	-1.3	58.1

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 4 19h47 — Последняя четв.: 12 13h17 — Новолуние: 20 10h01 — Первая четв.: 27 08h32

СОЛНЦЕ

Февраль 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	176° 38.1 -17° 08.3	191° 38.0 -17° 07.6	206° 38.0 -17° 06.9	221° 37.9 -17° 06.2	236° 37.8 -17° 05.5	251° 37.7 -17° 04.8	86° 36.7 -16° 55.5	101° 36.6 -16° 54.7	116° 36.5 -16° 54.0	131° 36.4 -16° 53.3	146° 36.3 -16° 52.6	161° 36.3 -16° 51.9	-0.1 +0.7
Чт 2	176° 36.2 -16° 51.1	191° 36.1 -16° 50.4	206° 36.0 -16° 49.7	221° 36.0 -16° 49.0	236° 35.9 -16° 48.2	251° 35.8 -16° 47.5	86° 34.9 -16° 38.1	101° 34.8 -16° 37.3	116° 34.7 -16° 36.6	131° 34.7 -16° 35.9	146° 34.6 -16° 35.1	161° 34.5 -16° 34.4	-0.1 +0.7
Пт 3	176° 34.5 -16° 33.7	191° 34.4 -16° 32.9	206° 34.3 -16° 32.2	221° 34.3 -16° 31.5	236° 34.2 -16° 30.7	251° 34.1 -16° 30.0	86° 33.3 -16° 20.4	101° 33.2 -16° 19.7	116° 33.2 -16° 18.9	131° 33.1 -16° 18.2	146° 33.0 -16° 17.4	161° 33.0 -16° 16.7	-0.1 +0.7
Сб 4	176° 32.9 -16° 15.9	191° 32.9 -16° 15.2	206° 32.8 -16° 14.4	221° 32.8 -16° 13.7	236° 32.7 -16° 12.9	251° 32.6 -16° 12.2	86° 31.9 -16° 02.4	101° 31.9 -16° 01.7	116° 31.8 -16° 00.9	131° 31.8 -16° 00.2	146° 31.7 -15° 59.4	161° 31.7 -15° 58.7	-0.1 +0.7
Вс 5	176° 31.6 -15° 57.9	191° 31.5 -15° 57.1	206° 31.5 -15° 56.4	221° 31.4 -15° 55.6	236° 31.4 -15° 54.9	251° 31.3 -15° 54.1	86° 30.7 -15° 44.2	101° 30.7 -15° 43.4	116° 30.6 -15° 42.7	131° 30.6 -15° 41.9	146° 30.6 -15° 41.1	161° 30.5 -15° 40.4	-0.1 +0.8
Пн 6	176° 30.5 -15° 39.6	191° 30.4 -15° 38.8	206° 30.4 -15° 38.1	221° 30.3 -15° 37.3	236° 30.3 -15° 36.5	251° 30.3 -15° 35.7	86° 29.8 -15° 25.7	101° 29.7 -15° 24.9	116° 29.7 -15° 24.1	131° 29.6 -15° 23.4	146° 29.6 -15° 22.6	161° 29.6 -15° 21.8	-0.0 +0.8
Вт 7	176° 29.5 -15° 21.0	191° 29.5 -15° 20.2	206° 29.5 -15° 19.5	221° 29.4 -15° 18.7	236° 29.4 -15° 17.9	251° 29.4 -15° 17.1	86° 29.0 -15° 06.9	101° 28.9 -15° 06.1	116° 28.9 -15° 05.3	131° 28.9 -15° 04.6	146° 28.9 -15° 03.8	161° 28.8 -15° 03.0	-0.0 +0.8
Ср 8	176° 28.8 -15° 02.2	191° 28.8 -15° 01.4	206° 28.8 -15° 00.6	221° 28.7 -14° 59.8	236° 28.7 -14° 59.0	251° 28.7 -14° 58.2	86° 28.4 -14° 47.9	101° 28.4 -14° 47.1	116° 28.3 -14° 46.3	131° 28.3 -14° 45.5	146° 28.3 -14° 44.7	161° 28.3 -14° 43.9	-0.0 +0.8
Чт 9	176° 28.3 -14° 43.1	191° 28.2 -14° 42.3	206° 28.2 -14° 41.5	221° 28.2 -14° 40.7	236° 28.2 -14° 39.9	251° 28.2 -14° 39.1	86° 28.0 -14° 28.6	101° 28.0 -14° 27.8	116° 28.0 -14° 27.0	131° 27.9 -14° 26.2	146° 27.9 -14° 25.4	161° 27.9 -14° 24.6	-0.0 +0.8
Пт 10	176° 27.9 -14° 23.8	191° 27.9 -14° 22.9	206° 27.9 -14° 22.1	221° 27.9 -14° 21.3	236° 27.9 -14° 20.5	251° 27.9 -14° 19.7	86° 27.8 -14° 09.1	101° 27.8 -14° 08.3	116° 27.8 -14° 07.5	131° 27.8 -14° 06.6	146° 27.8 -14° 05.8	161° 27.8 -14° 05.0	-0.0 +0.8
Сб 11	176° 27.8 -14° 04.2	191° 27.8 -14° 03.4	206° 27.8 -14° 02.5	221° 27.7 -14° 01.7	236° 27.7 -14° 00.9	251° 27.7 -14° 00.1	86° 27.8 -13° 49.3	101° 27.8 -13° 48.5	116° 27.8 -13° 47.7	131° 27.8 -13° 46.9	146° 27.8 -13° 46.0	161° 27.8 -13° 45.2	-0.0 +0.8
Вс 12	176° 27.8 -13° 44.4	191° 27.8 -13° 43.5	206° 27.8 -13° 42.7	221° 27.8 -13° 41.9	236° 27.8 -13° 41.0	251° 27.8 -13° 40.2	86° 27.9 -13° 29.4	101° 27.9 -13° 28.5	116° 27.9 -13° 27.7	131° 28.0 -13° 26.8	146° 28.0 -13° 26.0	161° 28.0 -13° 25.2	+0.0 +0.8
Пн 13	176° 28.0 -13° 24.3	191° 28.0 -13° 23.5	206° 28.0 -13° 22.6	221° 28.0 -13° 21.8	236° 28.0 -13° 21.0	251° 28.1 -13° 20.1	86° 28.3 -13° 09.1	101° 28.3 -13° 08.3	116° 28.3 -13° 07.4	131° 28.3 -13° 06.6	146° 28.4 -13° 05.8	161° 28.4 -13° 04.9	+0.0 +0.8
Вт 14	176° 28.4 -13° 04.1	191° 28.4 -13° 03.2	206° 28.4 -13° 02.4	221° 28.5 -13° 01.5	236° 28.5 -13° 00.7	251° 28.5 -12° 59.8	86° 28.8 -12° 48.7	101° 28.8 -12° 47.9	116° 28.9 -12° 47.0	131° 28.9 -12° 46.2	146° 28.9 -12° 45.3	161° 28.9 -12° 44.4	+0.0 +0.8
Ср 15	176° 29.0 -12° 43.6	191° 29.0 -12° 42.7	206° 29.0 -12° 41.9	221° 29.0 -12° 41.0	236° 29.1 -12° 40.1	251° 29.1 -12° 39.3	86° 29.5 -12° 28.1	101° 29.5 -12° 27.2	116° 29.6 -12° 26.4	131° 29.6 -12° 25.5	146° 29.6 -12° 24.6	161° 29.7 -12° 23.8	+0.0 +0.9
Чт 16	176° 29.7 -12° 22.9	191° 29.8 -12° 22.0	206° 29.8 -12° 21.2	221° 29.8 -12° 20.3	236° 29.9 -12° 19.4	251° 29.9 -12° 18.6	86° 30.4 -12° 07.3	101° 30.4 -12° 06.4	116° 30.5 -12° 05.5	131° 30.5 -12° 04.6	146° 30.6 -12° 03.8	161° 30.6 -12° 02.9	+0.0 +0.9
Пт 17	176° 30.6 -12° 02.0	191° 30.7 -12° 01.1	206° 30.7 -12° 00.3	221° 30.8 -11° 59.4	236° 30.8 -11° 58.5	251° 30.9 -11° 57.6	86° 31.5 -11° 46.2	101° 31.5 -11° 45.3	116° 31.5 -11° 44.5	131° 31.6 -11° 43.6	146° 31.6 -11° 42.7	161° 31.7 -11° 41.8	+0.0 +0.9
Сб 18	176° 31.7 -11° 40.9	191° 31.8 -11° 40.1	206° 31.8 -11° 39.2	221° 31.9 -11° 38.3	236° 31.9 -11° 37.4	251° 32.0 -11° 36.5	86° 32.7 -11° 25.0	101° 32.7 -11° 24.1	116° 32.8 -11° 23.2	131° 32.8 -11° 22.3	146° 32.9 -11° 21.5	161° 33.0 -11° 20.6	+0.0 +0.9
Вс 19	176° 33.0 -11° 19.7	191° 33.1 -11° 18.8	206° 33.1 -11° 17.9	221° 33.2 -11° 17.0	236° 33.2 -11° 16.1	251° 33.3 -11° 15.2	86° 34.1 -11° 03.6	101° 34.1 -11° 02.7	116° 34.2 -11° 01.8	131° 34.3 -11° 00.9	146° 34.3 -11° 00.0	161° 34.4 -10° 59.1	+0.1 +0.9
Пн 20	176° 34.5 -10° 58.2	191° 34.5 -10° 57.3	206° 34.6 -10° 56.5	221° 34.6 -10° 55.6	236° 34.7 -10° 54.7	251° 34.8 -10° 53.8	86° 35.6 -10° 42.1	101° 35.7 -10° 41.2	116° 35.8 -10° 40.3	131° 35.8 -10° 39.3	146° 35.9 -10° 38.4	161° 36.0 -10° 37.5	+0.1 +0.9
Вт 21	176° 36.1 -10° 36.6	191° 36.1 -10° 35.7	206° 36.2 -10° 34.8	221° 36.3 -10° 33.9	236° 36.3 -10° 33.0	251° 36.4 -10° 32.1	86° 37.4 -10° 20.3	101° 37.4 -10° 19.4	116° 37.5 -10° 18.5	131° 37.6 -10° 17.6	146° 37.7 -10° 16.7	161° 37.7 -10° 15.8	+0.1 +0.9
Ср 22	176° 37.8 -10° 14.9	191° 37.9 -10° 14.0	206° 38.0 -10° 13.0	221° 38.1 -10° 12.1	236° 38.1 -10° 11.2	251° 38.2 -10° 10.3	86° 39.3 -9° 58.4	101° 39.3 -9° 57.5	116° 39.4 -9° 56.6	131° 39.5 -9° 55.7	146° 39.6 -9° 54.8	161° 39.7 -9° 53.9	+0.1 +0.9
Чт 23	176° 39.7 -9° 52.9	191° 39.8 -9° 52.0	206° 39.9 -9° 51.1	221° 40.0 -9° 50.2	236° 40.1 -9° 49.3	251° 40.2 -9° 48.4	86° 41.3 -9° 36.4	101° 41.4 -9° 35.5	116° 41.5 -9° 34.6	131° 41.6 -9° 33.6	146° 41.7 -9° 32.7	161° 41.7 -9° 31.8	+0.1 +0.9
Пт 24	176° 41.8 -9° 30.9	191° 41.9 -9° 29.9	206° 42.0 -9° 29.0	221° 42.1 -9° 28.1	236° 42.2 -9° 27.2	251° 42.3 -9° 26.2	86° 43.5 -9° 14.2	101° 43.6 -9° 13.3	116° 43.7 -9° 12.4	131° 43.8 -9° 11.4	146° 43.9 -9° 10.5	161° 44.0 -9° 09.6	+0.1 +0.9
Сб 25	176° 44.1 -9° 08.6	191° 44.2 -9° 07.7	206° 44.3 -9° 06.8	221° 44.4 -9° 05.9	236° 44.5 -9° 04.9	251° 44.6 -9° 04.0	86° 45.9 -8° 51.9	101° 46.0 -8° 51.0	116° 46.1 -8° 50.0	131° 46.2 -8° 49.1	146° 46.3 -8° 48.2	161° 46.4 -8° 47.2	+0.1 +0.9
Вс 26	176° 46.5 -8° 46.3	191° 46.6 -8° 45.4	206° 46.7 -8° 44.4	221° 46.8 -8° 43.5	236° 46.9 -8° 42.6	251° 47.0 -8° 41.6	86° 48.3 -8° 29.4	101° 48.5 -8° 28.5	116° 48.6 -8° 27.6	131° 48.7 -8° 26.6	146° 48.8 -8° 25.7	161° 48.9 -8° 24.7	+0.1 +0.9
Пн 27	176° 49.0 -8° 23.8	191° 49.1 -8° 22.9	206° 49.2 -8° 21.9	221° 49.3 -8° 21.0	236° 49.4 -8° 20.0	251° 49.5 -8° 19.1	86° 51.0 -8° 06.9	101° 51.1 -8° 05.9	116° 51.2 -8° 05.0	131° 51.3 -8° 04.0	146° 51.4 -8° 03.1	161° 51.6 -8° 02.1	+0.1 +0.9
Вт 28	176° 51.7 -8° 01.2	191° 51.8 -8° 00.3	206° 51.9 -7° 59.3	221° 52.0 -7° 58.4	236° 52.1 -7° 57.4	251° 52.2 -7° 56.5	86° 53.8 -7° 44.2	101° 53.9 -7° 43.2	116° 54.0 -7° 42.3	131° 54.1 -7° 41.3	146° 54.2 -7° 40.4	161° 54.4 -7° 39.4	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2034

Д	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	Δ°/h	R/p
Ср 1	71° 49.4	86° 16.3	100° 43.3	115° 10.4	129° 37.4	144° 04.5	158° 31.7	172° 58.9	187° 26.2	201° 53.4	216° 20.8	+27.1	15.7
	17° 41.8	17° 38.9	17° 35.8	17° 32.6	17° 29.3	17° 26.0	17° 22.5	17° 18.9	17° 15.2	17° 11.4	17° 07.6	-3.4	57.7
Чт 2	73° 16.7	87° 44.9	102° 13.1	116° 41.3	131° 09.6	145° 38.0	160° 06.4	174° 34.9	189° 03.4	203° 32.0	218° 00.7	+28.4	15.6
	15° 58.0	15° 52.6	15° 47.2	15° 41.7	15° 36.0	15° 30.3	15° 24.6	15° 18.7	15° 12.8	15° 06.7	15° 00.6	-5.7	57.2
○ Пт 3	75° 17.3	89° 46.9	104° 16.5	118° 46.2	133° 15.9	147° 45.8	162° 15.6	176° 45.6	191° 15.5	205° 45.6	220° 15.7	+29.8	15.4
	13° 20.2	13° 13.0	13° 05.6	12° 58.3	12° 50.8	12° 43.3	12° 35.8	12° 28.2	12° 20.5	12° 12.8	12° 05.0	-7.5	56.7
Сб 4	77° 54.1	92° 25.1	106° 56.2	121° 27.3	135° 58.5	150° 29.7	165° 01.0	179° 32.3	194° 03.7	208° 35.1	223° 06.6	+31.3	15.3
	10° 02.0	9° 53.5	9° 44.9	9° 36.2	9° 27.5	9° 18.8	9° 10.1	9° 01.3	8° 52.4	8° 43.6	8° 34.7	-8.7	56.1
Вс 5	81° 04.8	95° 37.0	110° 09.3	124° 41.7	139° 14.0	153° 46.5	168° 18.9	182° 51.4	197° 24.0	211° 56.5	226° 29.2	+32.4	15.1
	6° 17.7	6° 08.3	5° 59.0	5° 49.6	5° 40.2	5° 30.8	5° 21.4	5° 12.0	5° 02.5	4° 53.1	4° 43.6	-9.4	55.5
Пн 6	84° 42.8	99° 16.0	113° 49.2	128° 22.4	142° 55.7	157° 29.0	172° 02.3	186° 35.6	201° 09.0	215° 42.4	230° 15.8	+33.3	15.0
	2° 20.3	2° 10.7	2° 01.1	1° 51.5	1° 41.9	1° 32.3	1° 22.7	1° 13.1	1° 03.5	0° 53.9	0° 44.3	-9.6	55.0
Вт 7	88° 39.4	103° 13.2	117° 46.9	132° 20.6	146° 54.4	161° 28.2	176° 01.9	190° 35.7	205° 09.5	219° 43.3	234° 17.1	+33.8	14.9
	-1° 38.7	-1° 48.1	-1° 57.6	-2° 07.0	-2° 16.4	-2° 25.8	-2° 35.2	-2° 44.5	-2° 53.9	-3° 03.2	-3° 12.5	-9.4	54.6
Ср 8	92° 45.0	107° 18.8	121° 52.7	136° 26.5	151° 00.4	165° 34.2	180° 08.1	194° 41.9	209° 15.8	223° 49.6	238° 23.4	+33.8	14.8
	-5° 29.4	-5° 38.4	-5° 47.3	-5° 56.2	-6° 05.0	-6° 13.8	-6° 22.6	-6° 31.4	-6° 40.1	-6° 48.8	-6° 57.5	-8.8	54.3
Чт 9	96° 49.5	111° 23.1	125° 56.7	140° 30.3	155° 03.9	169° 37.4	184° 10.9	198° 44.4	213° 17.9	227° 51.4	242° 24.9	+33.5	14.8
	-9° 03.5	-9° 11.6	-9° 19.7	-9° 27.7	-9° 35.7	-9° 43.6	-9° 51.5	-9° 59.4	-10° 07.2	-10° 15.0	-10° 22.7	-7.9	54.2
Пт 10	100° 43.7	115° 16.7	129° 49.7	144° 22.7	158° 55.6	173° 28.5	188° 01.4	202° 34.3	217° 07.1	231° 39.8	246° 12.6	+32.9	14.8
	-12° 13.1	-12° 20.1	-12° 27.0	-12° 33.8	-12° 40.6	-12° 47.4	-12° 54.1	-13° 00.8	-13° 07.4	-13° 13.9	-13° 20.4	-6.7	54.2
◑ Сб 11	104° 19.5	118° 51.7	133° 23.8	147° 55.9	162° 27.9	176° 59.9	191° 31.9	206° 03.8	220° 35.7	235° 07.5	249° 39.3	+32.0	14.8
	-14° 50.6	-14° 56.2	-15° 01.6	-15° 07.0	-15° 12.4	-15° 17.6	-15° 22.8	-15° 28.0	-15° 33.0	-15° 38.0	-15° 43.0	-5.2	54.5
Вс 12	107° 31.1	122° 02.2	136° 33.3	151° 04.3	165° 35.2	180° 06.2	194° 37.0	209° 07.9	223° 38.7	238° 09.4	252° 40.1	+30.9	15.0
	-16° 48.4	-16° 52.2	-16° 55.9	-16° 59.5	-17° 03.0	-17° 06.5	-17° 09.9	-17° 13.2	-17° 16.4	-17° 19.6	-17° 22.6	-3.4	54.9
Пн 13	110° 15.4	124° 45.4	139° 15.3	153° 45.2	168° 15.1	182° 45.0	197° 14.7	211° 44.5	226° 14.2	240° 43.9	255° 13.5	+29.8	15.1
	-17° 58.6	-18° 00.3	-18° 01.9	-18° 03.5	-18° 04.9	-18° 06.3	-18° 07.5	-18° 08.7	-18° 09.8	-18° 10.8	-18° 11.7	-1.3	55.5
Вт 14	112° 33.1	127° 02.1	141° 31.1	156° 00.0	170° 28.9	184° 57.8	199° 26.6	213° 55.4	228° 24.2	242° 53.0	257° 21.7	+28.9	15.3
	-18° 13.9	-18° 13.3	-18° 12.6	-18° 11.8	-18° 10.9	-18° 09.9	-18° 08.8	-18° 07.6	-18° 06.3	-18° 04.9	-18° 03.4	+1.1	56.2
Ср 15	114° 28.8	128° 57.0	143° 25.3	157° 53.5	172° 21.7	186° 49.9	201° 18.0	215° 46.1	230° 14.3	244° 42.4	259° 10.4	+28.2	15.6
	-17° 28.8	-17° 25.7	-17° 22.5	-17° 19.2	-17° 15.8	-17° 12.3	-17° 08.7	-17° 04.9	-17° 01.1	-16° 57.2	-16° 53.2	+3.6	57.0
Чт 16	116° 09.6	130° 37.4	145° 05.2	159° 33.0	174° 00.8	188° 28.6	202° 56.4	217° 24.2	231° 52.0	246° 19.7	260° 47.5	+27.8	15.8
	-15° 41.0	-15° 35.4	-15° 29.7	-15° 23.9	-15° 18.0	-15° 12.0	-15° 05.9	-14° 59.7	-14° 53.4	-14° 47.1	-14° 40.6	+6.0	57.9
Пт 17	117° 43.3	132° 11.0	146° 38.7	161° 06.4	175° 34.0	190° 01.7	204° 29.4	218° 57.1	233° 24.8	247° 52.5	262° 20.2	+27.7	16.0
	-12° 52.8	-12° 44.9	-12° 36.9	-12° 28.8	-12° 20.7	-12° 12.5	-12° 04.2	-11° 55.8	-11° 47.3	-11° 38.8	-11° 30.2	+8.3	58.6
● Сб 18	119° 16.0	133° 43.7	148° 11.4	162° 39.2	177° 06.9	191° 34.7	206° 02.4	220° 30.2	234° 57.9	249° 25.7	263° 53.5	+27.8	16.2
	-9° 12.2	-9° 02.4	-8° 52.6	-8° 42.7	-8° 32.8	-8° 22.8	-8° 12.8	-8° 02.7	-7° 52.5	-7° 42.3	-7° 32.1	+10.0	59.3
Вс 19	120° 50.3	135° 18.1	149° 45.9	164° 13.7	178° 41.5	193° 09.4	207° 37.2	222° 05.0	236° 32.8	251° 00.6	265° 28.4	+27.8	16.3
	-4° 52.5	-4° 41.5	-4° 30.5	-4° 19.5	-4° 08.4	-3° 57.3	-3° 46.2	-3° 35.1	-3° 23.9	-3° 12.7	-3° 01.5	+11.1	59.8
Пн 20	122° 25.3	136° 53.1	151° 20.9	165° 48.6	180° 16.4	194° 44.1	209° 11.9	223° 39.6	238° 07.3	252° 35.0	267° 02.8	+27.7	16.4
	-0° 11.2	0° 00.2	0° 11.6	0° 23.0	0° 34.5	0° 45.9	0° 57.3	1° 08.7	1° 20.1	1° 31.5	1° 42.9	+11.4	60.0
Вт 21	123° 57.3	138° 24.9	152° 52.4	167° 20.0	181° 47.5	196° 15.0	210° 42.5	225° 09.9	239° 37.4	254° 04.8	268° 32.3	+27.5	16.4
	4° 31.7	4° 42.7	4° 53.8	5° 04.8	5° 15.7	5° 26.7	5° 37.6	5° 48.4	5° 59.2	6° 10.0	6° 20.7	+10.9	60.0
Ср 22	138° 24.9	152° 52.4	167° 20.0	181° 47.5	196° 15.0	210° 42.5	225° 09.9	239° 37.4	254° 04.8	268° 32.3	282° 59.7	+27.5	16.4
	4° 42.7	4° 53.8	5° 04.8	5° 15.7	5° 26.7	5° 37.6	5° 48.4	5° 59.2	6° 10.0	6° 20.7	6° 31.4	+10.9	60.0
Чт 23	139° 49.0	154° 16.1	168° 43.3	183° 10.4	197° 37.5	212° 04.6	226° 31.6	240° 58.7	255° 25.7	269° 52.7	284° 19.7	+27.1	16.3
	9° 06.0	9° 15.8	9° 25.6	9° 35.3	9° 45.0	9° 54.6	10° 04.2	10° 13.6	10° 23.0	10° 32.3	10° 41.6	+9.6	59.8
Пт 24	141° 02.4	155° 29.1	169° 55.8	184° 22.5	198° 49.1	213° 15.8	227° 42.4	242° 09.0	256° 35.6	271° 02.2	285° 28.7	+26.6	16.2
	12° 51.4	12° 59.4	13° 07.3	13° 15.1	13° 22.9	13° 30.5	13° 38.1	13° 45.5	13° 52.9	14° 00.2	14° 07.4	+7.6	59.4
◐ Сб 25	142° 05.6	156° 31.9	170° 58.3	185° 24.6	199° 51.0	214° 17.3	228° 43.6	243° 10.0	257° 36.3	272° 02.6	286° 28.9	+26.3	16.1
	15° 43.7	15° 49.4	15° 54.9	16° 00.3	16° 05.6	16° 10.8	16° 15.9	16° 20.9	16° 25.8	16° 30.6	16° 35.3	+5.2	58.9
Вс 26	143° 03.4	157° 29.8	171° 56.1	186° 22.4	200° 48.8	215° 15.1	229° 41.5	244° 07.8	258° 34.2	273° 00.6	287° 27.0	+26.4	15.9
	17° 32.3	17° 35.3	17° 38.1	17° 40.8	17° 43.4	17° 45.8	17° 48.2	17° 50.5	17° 52.6	17° 54.6	17° 56.5	+2.4	58.4
Пн 27	144° 05.1	158° 31.8	172° 58.5	187° 25.2	201° 52.0	216° 18.8	230° 45.6	245° 12.5	259° 39.4	274° 06.3	288° 33.2	+26.8	15.8
	18° 11.9	18° 12.0	18° 12.0	18° 11.9	18° 11.7	18° 11.4	18° 11.0	18° 10.5	18° 09.9	18° 09.1	18° 08.3	-0.4	57.9
Вт 28	145° 21.3	159° 48.8	174° 16.4	188° 44.0	203° 11.6	217° 39.3	232° 07.0	246° 34.7	261° 02.5	275° 30.4	289° 58.3	+27.7	15.6
	17° 42.8	17° 40.2	17° 37.6	17° 34.9	17° 32.0	17° 29.1	17° 26.1	17° 23.0	17° 19.7	17° 16.4	17° 13.0	-3.0	57.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Полнолуние: 3 10h04 — Последняя четв.: 11 11h09 — Новолуние: 18 23h10 — Первая четв.: 25 16h34

СОЛНЦЕ

Март 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	176° 54.5 -7° 38.5	191° 54.6 -7° 37.5	206° 54.7 -7° 36.6	221° 54.8 -7° 35.6	236° 55.0 -7° 34.7	251° 55.1 -7° 33.7	86° 56.7 -7° 21.4	101° 56.8 -7° 20.4	116° 56.9 -7° 19.5	131° 57.1 -7° 18.5	146° 57.2 -7° 17.6	161° 57.3 -7° 16.6	+0.1 +0.9
Чт 2	176° 57.4 -7° 15.7	191° 57.6 -7° 14.7	206° 57.7 -7° 13.7	221° 57.8 -7° 12.8	236° 57.9 -7° 11.8	251° 58.1 -7° 10.9	86° 59.7 -6° 58.5	101° 59.8 -6° 57.5	117° 00.0 -6° 56.5	132° 00.1 -6° 55.6	147° 00.2 -6° 54.6	162° 00.4 -6° 53.7	+0.1 +1.0
Пт 3	177° 00.5 -6° 52.7	192° 00.6 -6° 51.8	207° 00.8 -6° 50.8	222° 00.9 -6° 49.8	237° 01.0 -6° 48.9	252° 01.1 -6° 47.9	87° 02.9 -6° 35.5	102° 03.0 -6° 34.5	117° 03.1 -6° 33.5	132° 03.3 -6° 32.6	147° 03.4 -6° 31.6	162° 03.5 -6° 30.6	+0.1 +1.0
Сб 4	177° 03.7 -6° 29.7	192° 03.8 -6° 28.7	207° 04.0 -6° 27.8	222° 04.1 -6° 26.8	237° 04.2 -6° 25.8	252° 04.4 -6° 24.9	87° 06.1 -6° 12.4	102° 06.3 -6° 11.4	117° 06.4 -6° 10.4	132° 06.6 -6° 09.5	147° 06.7 -6° 08.5	162° 06.8 -6° 07.5	+0.1 +1.0
Вс 5	177° 07.0 -6° 06.6	192° 07.1 -6° 05.6	207° 07.3 -6° 04.6	222° 07.4 -6° 03.7	237° 07.5 -6° 02.7	252° 07.7 -6° 01.7	87° 09.5 -5° 49.2	102° 09.7 -5° 48.2	117° 09.8 -5° 47.2	132° 10.0 -5° 46.3	147° 10.1 -5° 45.3	162° 10.3 -5° 44.3	+0.1 +1.0
Пн 6	177° 10.4 -5° 43.4	192° 10.5 -5° 42.4	207° 10.7 -5° 41.4	222° 10.8 -5° 40.5	237° 11.0 -5° 39.5	252° 11.1 -5° 38.5	87° 13.0 -5° 25.9	102° 13.2 -5° 24.9	117° 13.3 -5° 24.0	132° 13.5 -5° 23.0	147° 13.6 -5° 22.0	162° 13.8 -5° 21.1	+0.1 +1.0
Вт 7	177° 13.9 -5° 20.1	192° 14.1 -5° 19.1	207° 14.2 -5° 18.1	222° 14.4 -5° 17.2	237° 14.5 -5° 16.2	252° 14.7 -5° 15.2	87° 16.6 -5° 02.6	102° 16.8 -5° 01.6	117° 16.9 -5° 00.6	132° 17.1 -4° 59.7	147° 17.2 -4° 58.7	162° 17.4 -4° 57.7	+0.1 +1.0
Ср 8	177° 17.5 -4° 56.7	192° 17.7 -4° 55.8	207° 17.8 -4° 54.8	222° 18.0 -4° 53.8	237° 18.1 -4° 52.8	252° 18.3 -4° 51.9	87° 20.3 -4° 39.2	102° 20.4 -4° 38.2	117° 20.6 -4° 37.2	132° 20.8 -4° 36.2	147° 20.9 -4° 35.3	162° 21.1 -4° 34.3	+0.2 +1.0
Чт 9	177° 21.2 -4° 33.3	192° 21.4 -4° 32.3	207° 21.5 -4° 31.4	222° 21.7 -4° 30.4	237° 21.8 -4° 29.4	252° 22.0 -4° 28.4	87° 24.1 -4° 15.7	102° 24.2 -4° 14.7	117° 24.4 -4° 13.7	132° 24.5 -4° 12.8	147° 24.7 -4° 11.8	162° 24.9 -4° 10.8	+0.2 +1.0
Пт 10	177° 25.0 -4° 09.8	192° 25.2 -4° 08.8	207° 25.3 -4° 07.9	222° 25.5 -4° 06.9	237° 25.7 -4° 05.9	252° 25.8 -4° 04.9	87° 27.9 -3° 52.2	102° 28.1 -3° 51.2	117° 28.2 -3° 50.2	132° 28.4 -3° 49.2	147° 28.6 -3° 48.3	162° 28.7 -3° 47.3	+0.2 +1.0
Сб 11	177° 28.9 -3° 46.3	192° 29.0 -3° 45.3	207° 29.2 -3° 44.3	222° 29.4 -3° 43.4	237° 29.5 -3° 42.4	252° 29.7 -3° 41.4	87° 31.8 -3° 28.6	102° 32.0 -3° 27.6	117° 32.2 -3° 26.6	132° 32.3 -3° 25.7	147° 32.5 -3° 24.7	162° 32.7 -3° 23.7	+0.2 +1.0
Вс 12	177° 32.8 -3° 22.7	192° 33.0 -3° 21.7	207° 33.2 -3° 20.7	222° 33.3 -3° 19.8	237° 33.5 -3° 18.8	252° 33.7 -3° 17.8	87° 35.8 -3° 05.0	102° 36.0 -3° 04.0	117° 36.2 -3° 03.0	132° 36.3 -3° 02.0	147° 36.5 -3° 01.1	162° 36.7 -3° 00.1	+0.2 +1.0
Пн 13	177° 36.8 -2° 59.1	192° 37.0 -2° 58.1	207° 37.2 -2° 57.1	222° 37.4 -2° 56.1	237° 37.5 -2° 55.2	252° 37.7 -2° 54.2	87° 39.9 -2° 41.4	102° 40.1 -2° 40.4	117° 40.2 -2° 39.4	132° 40.4 -2° 38.4	147° 40.6 -2° 37.4	162° 40.8 -2° 36.4	+0.2 +1.0
Вт 14	177° 40.9 -2° 35.4	192° 41.1 -2° 34.5	207° 41.3 -2° 33.5	222° 41.4 -2° 32.5	237° 41.6 -2° 31.5	252° 41.8 -2° 30.5	87° 44.0 -2° 17.7	102° 44.2 -2° 16.7	117° 44.4 -2° 15.7	132° 44.5 -2° 14.7	147° 44.7 -2° 13.7	162° 44.9 -2° 12.7	+0.2 +1.0
Ср 15	177° 45.1 -2° 11.8	192° 45.2 -2° 10.8	207° 45.4 -2° 09.8	222° 45.6 -2° 08.8	237° 45.8 -2° 07.8	252° 45.9 -2° 06.8	87° 48.2 -1° 54.0	102° 48.4 -1° 53.0	117° 48.6 -1° 52.0	132° 48.7 -1° 51.0	147° 48.9 -1° 50.0	162° 49.1 -1° 49.0	+0.2 +1.0
Чт 16	177° 49.3 -1° 48.1	192° 49.4 -1° 47.1	207° 49.6 -1° 46.1	222° 49.8 -1° 45.1	237° 50.0 -1° 44.1	252° 50.1 -1° 43.1	87° 52.4 -1° 30.3	102° 52.6 -1° 29.3	117° 52.8 -1° 28.3	132° 53.0 -1° 27.3	147° 53.2 -1° 26.3	162° 53.3 -1° 25.3	+0.2 +1.0
Пт 17	177° 53.5 -1° 24.3	192° 53.7 -1° 23.3	207° 53.9 -1° 22.4	222° 54.0 -1° 21.4	237° 54.2 -1° 20.4	252° 54.4 -1° 19.4	87° 56.7 -1° 06.5	102° 56.9 -1° 05.5	117° 57.1 -1° 04.6	132° 57.3 -1° 03.6	147° 57.4 -1° 02.6	162° 57.6 -1° 01.6	+0.2 +1.0
Сб 18	177° 57.8 -1° 00.6	192° 58.0 -0° 59.6	207° 58.2 -0° 58.6	222° 58.3 -0° 57.6	237° 58.5 -0° 56.6	252° 58.7 -0° 55.7	88° 01.0 -0° 42.8	103° 01.2 -0° 41.8	118° 01.4 -0° 40.8	133° 01.6 -0° 39.8	148° 01.8 -0° 38.8	163° 02.0 -0° 37.9	+0.2 +1.0
Вс 19	178° 02.1 -0° 36.9	193° 02.3 -0° 35.9	208° 02.5 -0° 34.9	223° 02.7 -0° 33.9	238° 02.9 -0° 32.9	253° 03.0 -0° 31.9	88° 05.4 -0° 19.1	103° 05.6 -0° 18.1	118° 05.8 -0° 17.1	133° 06.0 -0° 16.1	148° 06.1 -0° 15.1	163° 06.3 -0° 14.1	+0.2 +1.0
Пн 20	178° 06.5 -0° 13.1	193° 06.7 -0° 12.1	208° 06.9 -0° 11.2	223° 07.0 -0° 10.2	238° 07.2 -0° 09.2	253° 07.4 -0° 08.2	88° 09.8 0° 04.7	103° 10.0 0° 05.6	118° 10.2 0° 06.6	133° 10.4 0° 07.6	148° 10.5 0° 08.6	163° 10.7 0° 09.6	+0.2 +1.0
Вт 21	178° 10.9 0° 10.6	193° 11.1 0° 11.6	208° 11.3 0° 12.6	223° 11.5 0° 13.5	238° 11.6 0° 14.5	253° 11.8 0° 15.5	88° 14.2 0° 28.4	103° 14.4 0° 29.4	118° 14.6 0° 30.3	133° 14.8 0° 31.3	148° 15.0 0° 32.3	163° 15.1 0° 33.3	+0.2 +1.0
Ср 22	178° 15.3 0° 34.3	193° 15.5 0° 35.3	208° 15.7 0° 36.3	223° 15.9 0° 37.2	238° 16.1 0° 38.2	253° 16.3 0° 39.2	88° 18.7 0° 52.1	103° 18.9 0° 53.0	118° 19.0 0° 54.0	133° 19.2 0° 55.0	148° 19.4 0° 56.0	163° 19.6 0° 57.0	+0.2 +1.0
Чт 23	178° 19.8 0° 58.0	193° 20.0 0° 59.0	208° 20.2 0° 59.9	223° 20.3 1° 00.9	238° 20.5 1° 01.9	253° 20.7 1° 02.9	88° 23.1 1° 15.7	103° 23.3 1° 16.7	118° 23.5 1° 17.7	133° 23.7 1° 18.7	148° 23.9 1° 19.7	163° 24.1 1° 20.6	+0.2 +1.0
Пт 24	178° 24.3 1° 21.6	193° 24.5 1° 22.6	208° 24.6 1° 23.6	223° 24.8 1° 24.6	238° 25.0 1° 25.6	253° 25.2 1° 26.5	88° 27.6 1° 39.3	103° 27.8 1° 40.3	118° 28.0 1° 41.3	133° 28.2 1° 42.3	148° 28.4 1° 43.3	163° 28.6 1° 44.3	+0.2 +1.0
Сб 25	178° 28.8 1° 45.2	193° 28.9 1° 46.2	208° 29.1 1° 47.2	223° 29.3 1° 48.2	238° 29.5 1° 49.2	253° 29.7 1° 50.2	88° 32.1 2° 02.9	103° 32.3 2° 03.9	118° 32.5 2° 04.9	133° 32.7 2° 05.9	148° 32.9 2° 06.9	163° 33.1 2° 07.8	+0.2 +1.0
Вс 26	178° 33.3 2° 08.8	193° 33.5 2° 09.8	208° 33.6 2° 10.8	223° 33.8 2° 11.8	238° 34.0 2° 12.7	253° 34.2 2° 13.7	88° 36.7 2° 26.5	103° 36.8 2° 27.4	118° 37.0 2° 28.4	133° 37.2 2° 29.4	148° 37.4 2° 30.4	163° 37.6 2° 31.4	+0.2 +1.0
Пн 27	178° 37.8 2° 32.3	193° 38.0 2° 33.3	208° 38.2 2° 34.3	223° 38.3 2° 35.3	238° 38.5 2° 36.3	253° 38.7 2° 37.2	88° 41.2 2° 50.0	103° 41.4 2° 50.9	118° 41.5 2° 51.9	133° 41.7 2° 52.9	148° 41.9 2° 53.9	163° 42.1 2° 54.8	+0.2 +1.0
Вт 28	178° 42.3 2° 55.8	193° 42.5 2° 56.8	208° 42.7 2° 57.8	223° 42.9 2° 58.7	238° 43.1 2° 59.7	253° 43.2 3° 00.7	88° 45.7 3° 13.4	103° 45.9 3° 14.4	118° 46.1 3° 15.3	133° 46.3 3° 16.3	148° 46.4 3° 17.3	163° 46.6 3° 18.3	+0.2 +1.0
Ср 29	178° 46.8 3° 19.2	193° 47.0 3° 20.2	208° 47.2 3° 21.2	223° 47.4 3° 22.2	238° 47.6 3° 23.1	253° 47.8 3° 24.1	88° 50.2 3° 36.8	103° 50.4 3° 37.7	118° 50.6 3° 38.7	133° 50.8 3° 39.7	148° 50.9 3° 40.6	163° 51.1 3° 41.6	+0.2 +1.0
Чт 30	178° 51.3 3° 42.6	193° 51.5 3° 43.6	208° 51.7 3° 44.5	223° 51.9 3° 45.5	238° 52.1 3° 46.5	253° 52.3 3° 47.4	88° 54.7 4° 00.1	103° 54.9 4° 01.0	118° 55.1 4° 02.0	133° 55.3 4° 03.0	148° 55.4 4° 03.9	163° 55.6 4° 04.9	+0.2 +1.0
Пт 31	178° 55.8 4° 05.9	193° 56.0 4° 06.8	208° 56.2 4° 07.8	223° 56.4 4° 08.8	238° 56.6 4° 09.7	253° 56.8 4° 10.7	88° 59.2 4° 23.3	103° 59.4 4° 24.2	118° 59.6 4° 25.2	133° 59.7 4° 26.2	148° 59.9 4° 27.1	164° 00.1 4° 28.1	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2034

Д	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	Δ'/h	R/p
Ср 1	60° 11.2 16° 38.0	74° 39.6 16° 33.7	89° 08.0 16° 29.2	103° 36.4 16° 24.7	118° 04.9 16° 20.1	132° 33.5 16° 15.4	147° 02.1 16° 10.6	161° 30.7 16° 05.7	175° 59.4 16° 00.8	190° 28.1 15° 55.7	204° 56.9 15° 50.6	+28.6 -4.7	15.5 56.9
Чт 2	62° 14.9 14° 24.2	76° 44.5 14° 17.8	91° 14.2 14° 11.4	105° 43.9 14° 04.9	120° 13.7 13° 58.3	134° 43.5 13° 51.7	149° 13.4 13° 45.0	163° 43.3 13° 38.2	178° 13.3 13° 31.4	192° 43.3 13° 24.5	207° 13.4 13° 17.5	+29.8 -6.7	15.4 56.4
Пт 3	64° 50.8 11° 25.8	79° 21.7 11° 17.9	93° 52.6 11° 09.9	108° 23.6 11° 01.9	122° 54.6 10° 53.9	137° 25.7 10° 45.8	151° 56.9 10° 37.7	166° 28.1 10° 29.5	180° 59.3 10° 21.3	195° 30.6 10° 13.0	210° 01.9 10° 04.7	+31.1 -8.1	15.3 55.9
Сб 4	67° 57.2 7° 55.3	82° 29.2 7° 46.4	97° 01.3 7° 37.4	111° 33.4 7° 28.5	126° 05.6 7° 19.5	140° 37.8 7° 10.5	155° 10.0 7° 01.4	169° 42.3 6° 52.3	184° 14.6 6° 43.2	198° 46.9 6° 34.1	213° 19.3 6° 25.0	+32.2 -9.0	15.1 55.5
○ Вс 5	71° 29.2 4° 05.4	86° 02.2 3° 55.9	100° 35.1 3° 46.5	115° 08.1 3° 37.0	129° 41.1 3° 27.6	144° 14.1 3° 18.1	158° 47.2 3° 08.6	173° 20.3 2° 59.1	187° 53.4 2° 49.6	202° 26.5 2° 40.1	216° 59.7 2° 30.6	+33.0 -9.5	15.0 55.0
Пн 6	75° 19.8 0° 07.8	89° 53.3 -0° 01.7	104° 26.8 -0° 11.2	119° 00.4 -0° 20.7	133° 33.9 -0° 30.2	148° 07.5 -0° 39.7	162° 41.0 -0° 49.2	177° 14.6 -0° 58.6	191° 48.2 -1° 08.1	206° 21.9 -1° 17.5	220° 55.5 -1° 27.0	+33.6 -9.5	14.9 54.7
Вт 7	79° 21.0 -3° 46.8	93° 54.7 -3° 55.9	108° 28.5 -4° 05.1	123° 02.2 -4° 14.2	137° 36.0 -4° 23.3	152° 09.7 -4° 32.4	166° 43.5 -4° 41.5	181° 17.3 -4° 50.5	195° 51.0 -4° 59.6	210° 24.8 -5° 08.6	224° 58.5 -5° 17.5	+33.8 -9.1	14.8 54.3
Ср 8	83° 24.5 -7° 28.7	97° 58.2 -7° 37.1	112° 31.8 -7° 45.6	127° 05.5 -7° 54.0	141° 39.1 -8° 02.4	156° 12.8 -8° 10.7	170° 46.4 -8° 19.0	185° 20.0 -8° 27.3	199° 53.6 -8° 35.6	214° 27.2 -8° 43.8	229° 00.8 -8° 51.9	+33.6 -8.3	14.8 54.1
Чт 9	87° 22.6 -10° 49.3	101° 55.9 -10° 56.7	116° 29.2 -11° 04.2	131° 02.5 -11° 11.5	145° 35.7 -11° 18.9	160° 08.9 -11° 26.1	174° 42.1 -11° 33.4	189° 15.3 -11° 40.5	203° 48.5 -11° 47.7	218° 21.6 -11° 54.7	232° 54.7 -12° 01.8	+33.2 -7.3	14.7 54.0
Пт 10	91° 08.4 -13° 40.7	105° 41.1 -13° 46.8	120° 13.8 -13° 52.9	134° 46.4 -13° 58.9	149° 19.0 -14° 04.9	163° 51.6 -14° 10.8	178° 24.2 -14° 16.6	192° 56.7 -14° 22.4	207° 29.2 -14° 28.1	222° 01.6 -14° 33.8	236° 34.0 -14° 39.4	+32.6 -5.9	14.8 54.1
Сб 11	94° 36.5 -15° 55.5	109° 08.4 -16° 00.0	123° 40.3 -16° 04.4	138° 12.1 -16° 08.8	152° 43.9 -16° 13.1	167° 15.7 -16° 17.4	181° 47.4 -16° 21.6	196° 19.1 -16° 25.6	210° 50.8 -16° 29.7	225° 22.4 -16° 33.6	239° 54.0 -16° 37.5	+31.7 -4.2	14.8 54.4
Вс 12	97° 43.4 -17° 26.5	112° 14.5 -17° 29.2	126° 45.4 -17° 31.7	141° 16.4 -17° 34.2	155° 47.3 -17° 36.6	170° 18.1 -17° 38.9	184° 49.0 -17° 41.1	199° 19.8 -17° 43.3	213° 50.5 -17° 45.3	228° 21.2 -17° 47.3	242° 51.9 -17° 49.2	+30.8 -2.3	14.9 54.8
◑ Пн 13	100° 28.0 -18° 07.4	114° 58.2 -18° 07.9	129° 28.3 -18° 08.3	143° 58.3 -18° 08.6	158° 28.4 -18° 08.9	172° 58.3 -18° 09.0	187° 28.3 -18° 09.1	201° 58.2 -18° 09.0	216° 28.1 -18° 08.9	230° 58.0 -18° 08.7	245° 27.8 -18° 08.4	+30.0 -0.1	15.1 55.4
Вт 14	102° 51.7 -17° 52.6	117° 21.0 -17° 50.8	131° 50.3 -17° 48.9	146° 19.6 -17° 46.9	160° 48.9 -17° 44.8	175° 18.1 -17° 42.6	189° 47.3 -17° 40.3	204° 16.5 -17° 37.9	218° 45.7 -17° 35.4	233° 14.8 -17° 32.9	247° 43.9 -17° 30.2	+29.2 +2.2	15.3 56.1
Ср 15	104° 57.7 -16° 38.6	119° 26.4 -16° 34.3	133° 55.1 -16° 30.0	148° 23.8 -16° 25.6	162° 52.5 -16° 21.1	177° 21.1 -16° 16.5	191° 49.7 -16° 11.8	206° 18.4 -16° 07.0	220° 47.0 -16° 02.2	235° 15.5 -15° 57.2	249° 44.1 -15° 52.1	+28.6 +4.6	15.5 57.0
Чт 16	106° 50.3 -14° 24.6	121° 18.6 -14° 18.1	135° 46.9 -14° 11.4	150° 15.1 -14° 04.7	164° 43.4 -13° 57.8	179° 11.6 -13° 50.9	193° 39.8 -13° 43.9	208° 08.0 -13° 36.8	222° 36.2 -13° 29.6	237° 04.4 -13° 22.3	251° 32.5 -13° 14.9	+28.2 +7.0	15.8 57.9
Пт 17	108° 33.4 -11° 14.2	123° 01.3 -11° 05.5	137° 29.3 -10° 56.7	151° 57.2 -10° 47.9	166° 25.1 -10° 39.0	180° 53.0 -10° 30.0	195° 20.9 -10° 20.9	209° 48.8 -10° 11.8	224° 16.7 -10° 02.6	238° 44.5 -9° 53.3	253° 12.4 -9° 43.9	+27.9 +9.0	16.1 58.9
Сб 18	110° 08.7 -7° 15.6	124° 36.4 -7° 05.2	139° 04.0 -6° 54.8	153° 31.6 -6° 44.3	167° 59.3 -6° 33.8	182° 26.9 -6° 23.2	196° 54.5 -6° 12.6	211° 22.0 -6° 01.9	225° 49.6 -5° 51.2	240° 17.1 -5° 40.4	254° 44.7 -5° 29.6	+27.6 +10.6	16.3 59.7
Вс 19	111° 35.9 -2° 42.5	126° 03.2 -2° 31.1	140° 30.5 -2° 19.7	154° 57.8 -2° 08.3	169° 25.0 -1° 56.8	183° 52.2 -1° 45.3	198° 19.4 -1° 33.8	212° 46.6 -1° 22.3	227° 13.8 -1° 10.8	241° 40.9 -0° 59.2	256° 08.0 -0° 47.7	+27.2 +11.5	16.5 60.4
● Пн 20	112° 52.6 2° 06.5	127° 19.4 2° 18.1	141° 46.2 2° 29.6	156° 13.0 2° 41.2	170° 39.7 2° 52.7	185° 06.4 3° 04.3	199° 33.1 3° 15.8	213° 59.8 3° 27.3	228° 26.4 3° 38.8	242° 53.0 3° 50.2	257° 19.6 4° 01.7	+26.7 +11.5	16.6 60.8
Вт 21	113° 55.8 6° 49.5	128° 22.1 7° 00.4	142° 48.2 7° 11.2	157° 14.4 7° 22.0	171° 40.6 7° 32.7	186° 06.7 7° 43.4	200° 32.8 7° 54.0	214° 58.9 8° 04.6	229° 24.9 8° 15.1	243° 50.9 8° 25.5	258° 17.0 8° 35.9	+26.1 +10.6	16.6 60.8
Ср 22	114° 44.3 11° 04.0	129° 09.9 11° 13.2	143° 35.6 11° 22.4	158° 01.2 11° 31.6	172° 26.8 11° 40.6	186° 52.3 11° 49.5	201° 17.9 11° 58.4	215° 43.4 12° 07.2	230° 08.9 12° 15.9	244° 34.4 12° 24.5	258° 59.9 12° 33.0	+25.6 +8.9	16.5 60.6
Чт 23	115° 20.3 14° 29.5	129° 45.6 14° 36.5	144° 10.9 14° 43.4	158° 36.1 14° 50.1	173° 01.4 14° 56.8	187° 26.6 15° 03.3	201° 51.9 15° 09.8	216° 17.1 15° 16.1	230° 42.3 15° 22.3	245° 07.6 15° 28.5	259° 32.8 15° 34.5	+25.2 +6.5	16.4 60.1
Пт 24	129° 45.6 14° 36.5	144° 10.9 14° 43.4	158° 36.1 14° 50.1	173° 01.4 14° 56.8	187° 26.6 15° 03.3	201° 51.9 15° 09.8	216° 17.1 15° 16.1	230° 42.3 15° 22.3	245° 07.6 15° 28.5	259° 32.8 15° 34.5	273° 58.0 15° 40.4	+25.2 +6.4	16.4 60.1
Сб 25	130° 16.6 16° 55.4	144° 41.9 16° 59.5	159° 07.2 17° 03.4	173° 32.5 17° 07.3	187° 57.9 17° 11.0	202° 23.2 17° 14.6	216° 48.6 17° 18.1	231° 14.0 17° 21.5	245° 39.4 17° 24.8	260° 04.8 17° 27.9	274° 30.2 17° 30.9	+25.4 +3.6	16.2 59.4
Вс 26	130° 54.5 18° 02.3	145° 20.3 18° 03.4	159° 46.2 18° 04.5	174° 12.1 18° 05.4	188° 38.0 18° 06.2	203° 04.0 18° 06.9	217° 30.0 18° 07.5	231° 56.1 18° 07.9	246° 22.1 18° 08.3	260° 48.3 18° 08.5	275° 14.4 18° 08.6	+26.0 +0.6	16.0 58.6
◐ Пн 27	131° 52.0 17° 57.0	146° 18.8 17° 55.4	160° 45.8 17° 53.6	175° 12.7 17° 51.8	189° 39.7 17° 49.8	204° 06.8 17° 47.8	218° 33.9 17° 45.6	233° 01.1 17° 43.3	247° 28.3 17° 41.0	261° 55.6 17° 38.5	276° 23.0 17° 35.9	+27.1 -2.1	15.8 57.8
Вт 28	133° 19.6 16° 45.6	147° 47.8 16° 41.5	162° 16.1 16° 37.3	176° 44.5 16° 33.0	191° 12.9 16° 28.6	205° 41.4 16° 24.2	220° 09.9 16° 19.6	234° 38.5 16° 15.0	249° 07.1 16° 10.3	263° 35.8 16° 05.5	278° 04.6 16° 00.6	+28.5 -4.5	15.6 57.1
Ср 29	135° 23.1 14° 37.8	149° 52.8 14° 31.7	164° 22.6 14° 25.5	178° 52.4 14° 19.3	193° 22.3 14° 12.9	207° 52.3 14° 06.5	222° 22.3 14° 00.1	236° 52.3 13° 53.6	251° 22.4 13° 47.0	265° 52.6 13° 40.3	280° 22.8 13° 33.6	+30.0 -6.4	15.4 56.4
Чт 30	138° 03.0 11° 45.6	152° 34.1 11° 38.0	167° 05.2 11° 30.3	181° 36.4 11° 22.5	196° 07.7 11° 14.8	210° 39.0 11° 06.9	225° 10.4 10° 59.0	239° 41.8 10° 51.1	254° 13.2 10° 43.1	268° 44.7 10° 35.1	283° 16.3 10° 27.0	+31.3 -7.9	15.2 55.8
Пт 31	141° 15.2 8° 21.1	155° 47.4 8° 12.4	170° 19.7 8° 03.7	184° 52.1 7° 55.0	199° 24.5 7° 46.2	213° 56.9 7° 37.4	228° 29.4 7° 28.6	243° 01.9 7° 19.7	257° 34.4 7° 10.8	272° 07.0 7° 01.9	286° 39.7 6° 52.9	+32.5 -8.8	15.1 55.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 5 02h10 — Последняя четв.: 13 06h44 — Новолуние: 20 10h14 — Первая четв.: 27 01h18

СОЛНЦЕ

Апрель 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	179° 00.3	194° 00.5	209° 00.7	224° 00.9	239° 01.0	254° 01.2	89° 03.6	104° 03.8	119° 04.0	134° 04.2	149° 04.4	164° 04.6	+0.2
	4° 29.1	4° 30.0	4° 31.0	4° 32.0	4° 32.9	4° 33.9	4° 46.4	4° 47.4	4° 48.3	4° 49.3	4° 50.3	4° 51.2	+1.0
Вс 2	179° 04.7	194° 04.9	209° 05.1	224° 05.3	239° 05.5	254° 05.7	89° 08.1	104° 08.3	119° 08.4	134° 08.6	149° 08.8	164° 09.0	+0.2
	4° 52.2	4° 53.2	4° 54.1	4° 55.1	4° 56.0	4° 57.0	5° 09.5	5° 10.4	5° 11.4	5° 12.4	5° 13.3	5° 14.3	+1.0
Пн 3	179° 09.2	194° 09.4	209° 09.5	224° 09.7	239° 09.9	254° 10.1	89° 12.5	104° 12.6	119° 12.8	134° 13.0	149° 13.2	164° 13.4	+0.2
	5° 15.2	5° 16.2	5° 17.1	5° 18.1	5° 19.1	5° 20.0	5° 32.4	5° 33.4	5° 34.4	5° 35.3	5° 36.3	5° 37.2	+1.0
Вт 4	179° 13.6	194° 13.7	209° 13.9	224° 14.1	239° 14.3	254° 14.5	89° 16.8	104° 17.0	119° 17.2	134° 17.4	149° 17.5	164° 17.7	+0.2
	5° 38.2	5° 39.1	5° 40.1	5° 41.0	5° 42.0	5° 42.9	5° 55.3	5° 56.3	5° 57.2	5° 58.2	5° 59.1	6° 00.1	+1.0
Ср 5	179° 17.9	194° 18.1	209° 18.3	224° 18.4	239° 18.6	254° 18.8	89° 21.1	104° 21.3	119° 21.5	134° 21.7	149° 21.8	164° 22.0	+0.2
	6° 01.0	6° 02.0	6° 02.9	6° 03.9	6° 04.8	6° 05.8	6° 18.1	6° 19.0	6° 20.0	6° 20.9	6° 21.9	6° 22.8	+0.9
Чт 6	179° 22.2	194° 22.4	209° 22.6	224° 22.7	239° 22.9	254° 23.1	89° 25.4	104° 25.6	119° 25.8	134° 25.9	149° 26.1	164° 26.3	+0.2
	6° 23.8	6° 24.7	6° 25.6	6° 26.6	6° 27.5	6° 28.5	6° 40.7	6° 41.7	6° 42.6	6° 43.6	6° 44.5	6° 45.4	+0.9
Пт 7	179° 26.5	194° 26.6	209° 26.8	224° 27.0	239° 27.2	254° 27.3	89° 29.6	104° 29.8	119° 30.0	134° 30.1	149° 30.3	164° 30.5	+0.2
	6° 46.4	6° 47.3	6° 48.3	6° 49.2	6° 50.1	6° 51.1	7° 03.3	7° 04.2	7° 05.2	7° 06.1	7° 07.0	7° 08.0	+0.9
Сб 8	179° 30.6	194° 30.8	209° 31.0	224° 31.2	239° 31.3	254° 31.5	89° 33.8	104° 33.9	119° 34.1	134° 34.3	149° 34.4	164° 34.6	+0.2
	7° 08.9	7° 09.8	7° 10.8	7° 11.7	7° 12.6	7° 13.6	7° 25.7	7° 26.6	7° 27.6	7° 28.5	7° 29.4	7° 30.4	+0.9
Вс 9	179° 34.8	194° 34.9	209° 35.1	224° 35.3	239° 35.5	254° 35.6	89° 37.8	104° 38.0	119° 38.2	134° 38.3	149° 38.5	164° 38.7	+0.2
	7° 31.3	7° 32.2	7° 33.1	7° 34.1	7° 35.0	7° 35.9	7° 48.0	7° 48.9	7° 49.9	7° 50.8	7° 51.7	7° 52.6	+0.9
Пн 10	179° 38.8	194° 39.0	209° 39.2	224° 39.3	239° 39.5	254° 39.7	89° 41.8	104° 42.0	119° 42.2	134° 42.3	149° 42.5	164° 42.7	+0.2
	7° 53.6	7° 54.5	7° 55.4	7° 56.3	7° 57.3	7° 58.2	8° 10.2	8° 11.1	8° 12.0	8° 12.9	8° 13.9	8° 14.8	+0.9
Вт 11	179° 42.8	194° 43.0	209° 43.2	224° 43.3	239° 43.5	254° 43.7	89° 45.8	104° 45.9	119° 46.1	134° 46.3	149° 46.4	164° 46.6	+0.2
	8° 15.7	8° 16.6	8° 17.5	8° 18.5	8° 19.4	8° 20.3	8° 32.2	8° 33.1	8° 34.0	8° 35.0	8° 35.9	8° 36.8	+0.9
Ср 12	179° 46.8	194° 46.9	209° 47.1	224° 47.2	239° 47.4	254° 47.6	89° 49.6	104° 49.8	119° 50.0	134° 50.1	149° 50.3	164° 50.4	+0.2
	8° 37.7	8° 38.6	8° 39.5	8° 40.4	8° 41.3	8° 42.3	8° 54.1	8° 55.0	8° 55.9	8° 56.8	8° 57.7	8° 58.6	+0.9
Чт 13	179° 50.6	194° 50.7	209° 50.9	224° 51.1	239° 51.2	254° 51.4	89° 53.4	104° 53.6	119° 53.7	134° 53.9	149° 54.0	164° 54.2	+0.2
	8° 59.6	9° 00.5	9° 01.4	9° 02.3	9° 03.2	9° 04.1	9° 15.8	9° 16.7	9° 17.7	9° 18.6	9° 19.5	9° 20.4	+0.9
Пт 14	179° 54.3	194° 54.5	209° 54.7	224° 54.8	239° 55.0	254° 55.1	89° 57.1	104° 57.2	119° 57.4	134° 57.6	149° 57.7	164° 57.9	+0.2
	9° 21.3	9° 22.2	9° 23.1	9° 24.0	9° 24.9	9° 25.8	9° 37.4	9° 38.3	9° 39.2	9° 40.1	9° 41.0	9° 41.9	+0.9
Сб 15	179° 58.0	194° 58.2	209° 58.3	224° 58.5	239° 58.6	254° 58.8	90° 00.7	105° 00.8	120° 01.0	135° 01.1	150° 01.3	165° 01.4	+0.2
	9° 42.8	9° 43.7	9° 44.6	9° 45.5	9° 46.4	9° 47.3	9° 58.9	9° 59.8	10° 00.7	10° 01.5	10° 02.4	10° 03.3	+0.9
Вс 16	180° 01.6	195° 01.7	210° 01.9	225° 02.0	240° 02.2	255° 02.3	90° 04.2	105° 04.3	120° 04.5	135° 04.6	150° 04.8	165° 04.9	+0.1
	10° 04.2	10° 05.1	10° 06.0	10° 06.9	10° 07.8	10° 08.6	10° 20.1	10° 21.0	10° 21.9	10° 22.8	10° 23.7	10° 24.6	+0.9
Пн 17	180° 05.1	195° 05.2	210° 05.3	225° 05.5	240° 05.6	255° 05.8	90° 07.6	105° 07.7	120° 07.9	135° 08.0	150° 08.2	165° 08.3	+0.1
	10° 25.4	10° 26.3	10° 27.2	10° 28.1	10° 29.0	10° 29.8	10° 41.2	10° 42.1	10° 43.0	10° 43.9	10° 44.7	10° 45.6	+0.9
Вт 18	180° 08.4	195° 08.6	210° 08.7	225° 08.9	240° 09.0	255° 09.1	90° 10.9	105° 11.0	120° 11.2	135° 11.3	150° 11.4	165° 11.6	+0.1
	10° 46.5	10° 47.4	10° 48.2	10° 49.1	10° 50.0	10° 50.9	11° 02.2	11° 03.0	11° 03.9	11° 04.8	11° 05.6	11° 06.5	+0.9
Ср 19	180° 11.7	195° 11.9	210° 12.0	225° 12.1	240° 12.3	255° 12.4	90° 14.1	105° 14.2	120° 14.4	135° 14.5	150° 14.6	165° 14.8	+0.1
	11° 07.4	11° 08.2	11° 09.1	11° 10.0	11° 10.8	11° 11.7	11° 22.9	11° 23.8	11° 24.6	11° 25.5	11° 26.3	11° 27.2	+0.9
Чт 20	180° 14.9	195° 15.0	210° 15.2	225° 15.3	240° 15.4	255° 15.5	90° 17.2	105° 17.3	120° 17.5	135° 17.6	150° 17.7	165° 17.8	+0.1
	11° 28.1	11° 28.9	11° 29.8	11° 30.6	11° 31.5	11° 32.4	11° 43.5	11° 44.3	11° 45.2	11° 46.0	11° 46.9	11° 47.7	+0.9
Пт 21	180° 18.0	195° 18.1	210° 18.2	225° 18.3	240° 18.5	255° 18.6	90° 20.2	105° 20.3	120° 20.5	135° 20.6	150° 20.7	165° 20.8	+0.1
	11° 48.6	11° 49.4	11° 50.3	11° 51.1	11° 52.0	11° 52.8	12° 03.8	12° 04.7	12° 05.5	12° 06.4	12° 07.2	12° 08.0	+0.9
Сб 22	180° 20.9	195° 21.1	210° 21.2	225° 21.3	240° 21.4	255° 21.5	90° 23.1	105° 23.2	120° 23.3	135° 23.5	150° 23.6	165° 23.7	+0.1
	12° 08.9	12° 09.7	12° 10.6	12° 11.4	12° 12.2	12° 13.1	12° 24.0	12° 24.8	12° 25.7	12° 26.5	12° 27.3	12° 28.2	+0.8
Вс 23	180° 23.8	195° 23.9	210° 24.0	225° 24.2	240° 24.3	255° 24.4	90° 25.9	105° 26.0	120° 26.1	135° 26.2	150° 26.3	165° 26.4	+0.1
	12° 29.0	12° 29.8	12° 30.7	12° 31.5	12° 32.3	12° 33.2	12° 43.9	12° 44.8	12° 45.6	12° 46.4	12° 47.2	12° 48.1	+0.8
Пн 24	180° 26.6	195° 26.7	210° 26.8	225° 26.9	240° 27.0	255° 27.1	90° 28.5	105° 28.7	120° 28.8	135° 28.9	150° 29.0	165° 29.1	+0.1
	12° 48.9	12° 49.7	12° 50.5	12° 51.4	12° 52.2	12° 53.0	13° 03.7	13° 04.5	13° 05.3	13° 06.1	13° 07.0	13° 07.8	+0.8
Вт 25	180° 29.2	195° 29.3	210° 29.4	225° 29.5	240° 29.6	255° 29.7	90° 31.1	105° 31.2	120° 31.3	135° 31.4	150° 31.5	165° 31.6	+0.1
	13° 08.6	13° 09.4	13° 10.2	13° 11.0	13° 11.8	13° 12.7	13° 23.2	13° 24.0	13° 24.8	13° 25.6	13° 26.4	13° 27.3	+0.8
Ср 26	180° 31.7	195° 31.8	210° 31.9	225° 32.0	240° 32.1	255° 32.2	90° 33.5	105° 33.6	120° 33.7	135° 33.8	150° 33.9	165° 34.0	+0.1
	13° 28.1	13° 28.9	13° 29.7	13° 30.5	13° 31.3	13° 32.1	13° 42.5	13° 43.3	13° 44.1	13° 44.9	13° 45.7	13° 46.5	+0.8
Чт 27	180° 34.1	195° 34.2	210° 34.3	225° 34.4	240° 34.5	255° 34.6	90° 35.8	105° 35.9	120° 36.0	135° 36.1	150° 36.2	165° 36.3	+0.1
	13° 47.3	13° 48.1	13° 48.9	13° 49.7	13° 50.5	13° 51.3	14° 01.6	14° 02.4	14° 03.2	14° 04.0	14° 04.8	14° 05.5	+0.8
Пт 28	180° 36.4	195° 36.5	210° 36.6	225° 36.7	240° 36.8	255° 36.9	90° 38.0	105° 38.1	120° 38.2	135° 38.3	150° 38.4	165° 38.5	+0.1
	14° 06.3	14° 07.1	14° 07.9	14° 08.7	14° 09.5	14° 10.3	14° 20.4	14° 21.2	14° 22.0	14° 22.8	14° 23.6	14° 24.3	+0.8
Сб 29	180° 38.6	195° 38.7	210° 38.7	225° 38.8	240° 38.9	255° 39.0	90° 40.1	105° 40.2	120° 40.3	135° 40.4	150° 40.4	165° 40.5	+0.1
	14° 25.1	14° 25.9	14° 26.7	14° 27.5	14° 28.2	14° 29.0	14° 39.1	14° 39.8	14° 40.6	14° 41.4	14° 42.1	14° 42.9	+0.8
Вс 30	180° 40.6	195° 40.7	210° 40.8	225° 40.8	240° 40.9	255° 41.0	90° 42.0	105° 42.1	120° 42.2	135° 42.3	150° 42.4	165° 42.4	+0.1
	14° 43.7	14° 44.4	14° 45.2	14° 46.0	14° 46.7	14° 47.5	14° 57.4	14° 58.2	14° 58.9	14° 59.7	15° 00.5	15° 01.2	+0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Апрель 2034

Д	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	Δ'/h	R/p
Сб 1	72° 07.7 5° 22.2	86° 40.7 5° 13.0	101° 13.8 5° 03.8	115° 46.8 4° 54.6	130° 19.9 4° 45.3	144° 53.0 4° 36.1	159° 26.1 4° 26.8	173° 59.3 4° 17.5	188° 32.5 4° 08.2	203° 05.7 3° 58.9	217° 38.9 3° 49.6	+33.1 -9.3	15.0 54.9
Вс 2	76° 00.3 1° 28.6	90° 33.8 1° 19.2	105° 07.4 1° 09.7	119° 41.0 1° 00.3	134° 14.7 0° 50.9	148° 48.3 0° 41.4	163° 22.0 0° 32.0	177° 55.6 0° 22.5	192° 29.3 0° 13.1	207° 03.0 0° 03.7	221° 36.7 -0° 05.8	+33.7 -9.4	14.9 54.6
○ Пн 3	80° 03.5 -2° 26.3	94° 37.3 -2° 35.6	109° 11.2 -2° 44.9	123° 45.0 -2° 54.1	138° 18.9 -3° 03.4	152° 52.7 -3° 12.6	167° 26.6 -3° 21.8	182° 00.4 -3° 31.0	196° 34.3 -3° 40.2	211° 08.1 -3° 49.3	225° 41.9 -3° 58.5	+33.8 -9.2	14.8 54.3
Вт 4	84° 09.3 -6° 12.9	98° 43.1 -6° 21.6	113° 16.9 -6° 30.4	127° 50.6 -6° 39.1	142° 24.4 -6° 47.7	156° 58.1 -6° 56.4	171° 31.8 -7° 05.0	186° 05.6 -7° 13.5	200° 39.3 -7° 22.1	215° 13.0 -7° 30.6	229° 46.7 -7° 39.1	+33.7 -8.6	14.7 54.1
Ср 5	88° 10.3 -9° 41.9	102° 43.8 -9° 49.8	117° 17.2 -9° 57.6	131° 50.6 -10° 05.4	146° 24.0 -10° 13.1	160° 57.4 -10° 20.8	175° 30.8 -10° 28.5	190° 04.1 -10° 36.1	204° 37.4 -10° 43.6	219° 10.7 -10° 51.2	233° 44.0 -10° 58.6	+33.4 -7.7	14.7 54.0
Чт 6	92° 00.5 -12° 44.7	106° 33.4 -12° 51.4	121° 06.3 -12° 58.0	135° 39.2 -13° 04.5	150° 12.0 -13° 11.0	164° 44.8 -13° 17.4	179° 17.6 -13° 23.8	193° 50.4 -13° 30.1	208° 23.1 -13° 36.4	222° 55.8 -13° 42.6	237° 28.5 -13° 48.7	+32.8 -6.4	14.7 54.0
Пт 7	95° 35.5 -15° 13.4	110° 07.7 -15° 18.5	124° 39.9 -15° 23.6	139° 12.1 -15° 28.6	153° 44.3 -15° 33.5	168° 16.4 -15° 38.4	182° 48.5 -15° 43.1	197° 20.6 -15° 47.9	211° 52.6 -15° 52.5	226° 24.6 -15° 57.1	240° 56.6 -16° 01.6	+32.1 -4.8	14.7 54.1
Сб 8	98° 52.8 -17° 00.5	113° 24.3 -17° 03.9	127° 55.8 -17° 07.1	142° 27.3 -17° 10.3	156° 58.7 -17° 13.4	171° 30.1 -17° 16.4	186° 01.5 -17° 19.4	200° 32.9 -17° 22.2	215° 04.2 -17° 25.0	229° 35.5 -17° 27.7	244° 06.7 -17° 30.3	+31.4 -3.0	14.8 54.3
Вс 9	101° 52.4 -17° 59.9	116° 23.2 -18° 01.2	130° 54.0 -18° 02.4	145° 24.8 -18° 03.6	159° 55.5 -18° 04.6	174° 26.3 -18° 05.6	188° 57.0 -18° 06.4	203° 27.6 -18° 07.2	217° 58.3 -18° 07.9	232° 28.9 -18° 08.6	246° 59.5 -18° 09.1	+30.7 -0.9	14.9 54.7
Пн 10	104° 35.7 -18° 06.5	119° 06.0 -18° 05.6	133° 36.2 -18° 04.6	148° 06.4 -18° 03.6	162° 36.6 -18° 02.4	177° 06.7 -18° 01.2	191° 36.9 -17° 59.8	206° 07.0 -17° 58.4	220° 37.1 -17° 56.9	235° 07.1 -17° 55.3	249° 37.2 -17° 53.6	+30.1 +1.3	15.1 55.2
◑ Вт 11	107° 05.8 -17° 17.1	121° 35.6 -17° 14.0	136° 05.3 -17° 10.7	150° 35.1 -17° 07.4	165° 04.8 -17° 03.9	179° 34.5 -17° 00.4	194° 04.2 -16° 56.8	208° 33.9 -16° 53.1	223° 03.5 -16° 49.3	237° 33.2 -16° 45.4	252° 02.8 -16° 41.4	+29.7 +3.6	15.3 55.9
Ср 12	109° 25.5 -15° 30.8	123° 54.9 -15° 25.4	138° 24.3 -15° 19.9	152° 53.6 -15° 14.3	167° 23.0 -15° 08.6	181° 52.3 -15° 02.8	196° 21.7 -14° 56.9	210° 51.0 -14° 51.0	225° 20.3 -14° 45.0	239° 49.6 -14° 38.8	254° 18.9 -14° 32.6	+29.3 +5.8	15.5 56.8
Чт 13	111° 36.5 -12° 49.3	126° 05.6 -12° 41.7	140° 34.6 -12° 34.1	155° 03.7 -12° 26.4	169° 32.7 -12° 18.6	184° 01.7 -12° 10.7	198° 30.7 -12° 02.7	212° 59.7 -11° 54.7	227° 28.6 -11° 46.6	241° 57.6 -11° 38.4	256° 26.5 -11° 30.2	+29.0 +7.9	15.7 57.8
Пт 14	113° 38.6 -9° 17.5	128° 07.3 -9° 08.1	142° 35.9 -8° 58.6	157° 04.6 -8° 49.1	171° 33.2 -8° 39.5	186° 01.8 -8° 29.9	200° 30.4 -8° 20.1	214° 58.9 -8° 10.4	229° 27.4 -8° 00.5	243° 56.0 -7° 50.6	258° 24.4 -7° 40.6	+28.6 +9.7	16.0 58.8
Сб 15	115° 29.1 -5° 04.6	129° 57.2 -4° 53.8	144° 25.3 -4° 43.0	158° 53.4 -4° 32.1	173° 21.4 -4° 21.2	187° 49.4 -4° 10.2	202° 17.4 -3° 59.2	216° 45.3 -3° 48.2	231° 13.3 -3° 37.1	245° 41.1 -3° 26.0	260° 09.0 -3° 14.9	+28.0 +11.0	16.3 59.7
Вс 16	117° 03.2 -0° 24.3	131° 30.5 -0° 12.8	145° 57.8 -0° 01.2	160° 25.1 0° 10.3	174° 52.3 0° 21.9	189° 19.5 0° 33.5	203° 46.7 0° 45.1	218° 13.8 0° 56.7	232° 40.9 1° 08.3	247° 08.0 1° 19.9	261° 35.0 1° 31.5	+27.2 +11.6	16.5 60.5
Пн 17	118° 15.4 4° 24.9	132° 41.8 4° 36.4	147° 08.1 4° 47.8	161° 34.4 4° 59.2	176° 00.7 5° 10.6	190° 26.9 5° 21.9	204° 53.0 5° 33.2	219° 19.1 5° 44.5	233° 45.2 5° 55.8	248° 11.3 6° 07.0	262° 37.2 6° 18.2	+26.2 +11.3	16.7 61.1
● Вт 18	119° 02.0 9° 00.6	133° 27.3 9° 11.0	147° 52.6 9° 21.3	162° 17.8 9° 31.6	176° 43.0 9° 41.8	191° 08.1 9° 52.0	205° 33.2 10° 02.0	219° 58.3 10° 12.1	234° 23.3 10° 22.0	248° 48.3 10° 31.9	263° 13.3 10° 41.7	+25.1 +10.1	16.7 61.3
Ср 19	119° 23.2 12° 58.8	133° 47.6 13° 07.2	148° 12.0 13° 15.6	162° 36.4 13° 23.8	177° 00.7 13° 31.9	191° 25.0 13° 40.0	205° 49.2 13° 47.9	220° 13.5 13° 55.8	234° 37.7 14° 03.5	249° 01.9 14° 11.1	263° 26.1 14° 18.6	+24.3 +8.0	16.7 61.2
Чт 20	119° 26.5 15° 58.3	133° 50.5 16° 04.0	148° 14.4 16° 09.6	162° 38.4 16° 15.1	177° 02.3 16° 20.4	191° 26.2 16° 25.7	205° 50.1 16° 30.8	220° 14.1 16° 35.8	234° 38.0 16° 40.7	249° 01.9 16° 45.4	263° 25.9 16° 50.0	+23.9 +5.2	16.5 60.7
Пт 21	119° 26.3 17° 44.4	133° 50.5 17° 47.0	148° 14.6 17° 49.5	162° 38.9 17° 51.9	177° 03.1 17° 54.1	191° 27.4 17° 56.2	205° 51.7 17° 58.2	220° 16.1 18° 00.1	234° 40.4 18° 01.8	249° 04.8 18° 03.4	263° 29.3 18° 04.9	+24.3 +2.0	16.3 60.0
Сб 22	133° 50.5 17° 47.0	148° 14.6 17° 49.5	162° 38.9 17° 51.9	177° 03.1 17° 54.1	191° 27.4 17° 56.2	205° 51.7 17° 58.2	220° 16.1 18° 00.1	234° 40.4 18° 01.8	249° 04.8 18° 03.4	263° 29.3 18° 04.9	277° 53.8 18° 06.2	+24.3 +1.9	16.3 59.9
Вс 23	134° 06.0 18° 11.7	148° 31.2 18° 11.1	162° 56.5 18° 10.4	177° 21.8 18° 09.5	191° 47.2 18° 08.6	206° 12.6 18° 07.5	220° 38.1 18° 06.3	235° 03.6 18° 05.0	249° 29.2 18° 03.6	263° 54.8 18° 02.0	278° 20.6 18° 00.4	+25.5 -1.1	16.1 59.0
Пн 24	134° 54.0 17° 22.5	149° 20.8 17° 19.1	163° 47.6 17° 15.6	178° 14.5 17° 12.0	192° 41.5 17° 08.4	207° 08.5 17° 04.6	221° 35.7 17° 00.7	236° 02.9 16° 56.8	250° 30.1 16° 52.7	264° 57.5 16° 48.6	279° 24.9 16° 44.3	+27.1 -3.8	15.8 58.1
◐ Вт 25	136° 24.8 15° 30.1	150° 53.4 15° 24.5	165° 22.1 15° 18.8	179° 50.8 15° 13.0	194° 19.6 15° 07.2	208° 48.5 15° 01.3	223° 17.5 14° 55.3	237° 46.5 14° 49.2	252° 15.6 14° 43.0	266° 44.8 14° 36.8	281° 14.0 14° 30.5	+28.9 -6.0	15.6 57.2
Ср 26	138° 41.1 12° 48.3	153° 11.5 12° 41.0	167° 41.9 12° 33.7	182° 12.4 12° 26.3	196° 42.9 12° 18.8	211° 13.6 12° 11.3	225° 44.2 12° 03.7	240° 15.0 11° 56.1	254° 45.8 11° 48.4	269° 16.7 11° 40.5	283° 47.6 11° 32.7	+30.7 -7.5	15.4 56.3
Чт 27	141° 38.8 9° 30.9	156° 10.7 9° 22.5	170° 42.6 9° 14.0	185° 14.5 9° 05.4	199° 46.6 8° 56.9	214° 18.6 8° 48.3	228° 50.7 8° 39.7	243° 22.9 8° 31.0	257° 55.1 8° 22.3	272° 27.4 8° 13.6	286° 59.7 8° 04.8	+32.1 -8.6	15.2 55.6
Пт 28	145° 09.7 5° 50.4	159° 42.7 5° 41.2	174° 15.8 5° 32.1	188° 48.8 5° 22.9	203° 21.9 5° 13.7	217° 55.0 5° 04.5	232° 28.2 4° 55.2	247° 01.4 4° 46.0	261° 34.6 4° 36.7	276° 07.9 4° 27.5	290° 41.2 4° 18.2	+33.1 -9.2	15.0 55.0
Сб 29	149° 03.9 1° 57.7	163° 37.6 1° 48.3	178° 11.3 1° 38.9	192° 45.1 1° 29.5	207° 18.8 1° 20.0	221° 52.6 1° 10.6	236° 26.4 1° 01.2	251° 00.2 0° 51.8	265° 34.1 0° 42.3	280° 07.9 0° 32.9	294° 41.8 0° 23.5	+33.8 -9.4	14.9 54.6
Вс 30	153° 10.9 -1° 57.2	167° 45.0 -2° 06.5	182° 19.0 -2° 15.8	196° 53.0 -2° 25.1	211° 27.0 -2° 34.4	226° 01.0 -2° 43.6	240° 35.0 -2° 52.9	255° 09.1 -3° 02.1	269° 43.1 -3° 11.3	284° 17.1 -3° 20.5	298° 51.1 -3° 29.7	+34.0 -9.3	14.8 54.2

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 3 19h18 — Последняя четв.: 11 22h45 — Новолуние: 18 19h25 — Первая четв.: 25 11h34

СОЛНЦЕ

Май 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	180° 42.5	195° 42.6	210° 42.7	225° 42.7	240° 42.8	255° 42.9	90° 43.8	105° 43.9	120° 44.0	135° 44.1	150° 44.1	165° 44.2	+0.1
	15° 02.0	15° 02.7	15° 03.5	15° 04.2	15° 05.0	15° 05.8	15° 15.5	15° 16.3	15° 17.0	15° 17.8	15° 18.5	15° 19.3	+0.8
Вт 2	180° 44.3	195° 44.4	210° 44.4	225° 44.5	240° 44.6	255° 44.6	90° 45.5	105° 45.6	120° 45.7	135° 45.7	150° 45.8	165° 45.9	+0.1
	15° 20.0	15° 20.8	15° 21.5	15° 22.3	15° 23.0	15° 23.8	15° 33.4	15° 34.1	15° 34.9	15° 35.6	15° 36.4	15° 37.1	+0.7
Ср 3	180° 45.9	195° 46.0	210° 46.0	225° 46.1	240° 46.2	255° 46.2	90° 47.1	105° 47.1	120° 47.2	135° 47.2	150° 47.3	165° 47.4	+0.1
	15° 37.8	15° 38.6	15° 39.3	15° 40.0	15° 40.8	15° 41.5	15° 51.0	15° 51.7	15° 52.5	15° 53.2	15° 53.9	15° 54.7	+0.7
Чт 4	180° 47.4	195° 47.5	210° 47.5	225° 47.6	240° 47.7	255° 47.7	90° 48.5	105° 48.5	120° 48.6	135° 48.6	150° 48.7	165° 48.7	+0.1
	15° 55.4	15° 56.1	15° 56.8	15° 57.6	15° 58.3	15° 59.0	16° 08.4	16° 09.1	16° 09.8	16° 10.5	16° 11.2	16° 11.9	+0.7
Пт 5	180° 48.8	195° 48.8	210° 48.9	225° 48.9	240° 49.0	255° 49.1	90° 49.7	105° 49.8	120° 49.8	135° 49.9	150° 49.9	165° 50.0	+0.1
	16° 12.7	16° 13.4	16° 14.1	16° 14.8	16° 15.5	16° 16.2	16° 25.4	16° 26.1	16° 26.9	16° 27.6	16° 28.3	16° 29.0	+0.7
Сб 6	180° 50.0	195° 50.1	210° 50.1	225° 50.2	240° 50.2	255° 50.2	90° 50.8	105° 50.9	120° 50.9	135° 51.0	150° 51.0	165° 51.0	+0.0
	16° 29.7	16° 30.4	16° 31.1	16° 31.8	16° 32.5	16° 33.2	16° 42.2	16° 42.9	16° 43.6	16° 44.3	16° 45.0	16° 45.7	+0.7
Вс 7	180° 51.1	195° 51.1	210° 51.2	225° 51.2	240° 51.3	255° 51.3	90° 51.8	105° 51.8	120° 51.9	135° 51.9	150° 52.0	165° 52.0	+0.0
	16° 46.4	16° 47.1	16° 47.8	16° 48.5	16° 49.2	16° 49.9	16° 58.8	16° 59.5	17° 00.1	17° 00.8	17° 01.5	17° 02.2	+0.7
Пн 8	180° 52.0	195° 52.1	210° 52.1	225° 52.1	240° 52.2	255° 52.2	90° 52.6	105° 52.7	120° 52.7	135° 52.7	150° 52.8	165° 52.8	+0.0
	17° 02.9	17° 03.5	17° 04.2	17° 04.9	17° 05.6	17° 06.3	17° 15.0	17° 15.7	17° 16.4	17° 17.0	17° 17.7	17° 18.4	+0.7
Вт 9	180° 52.8	195° 52.8	210° 52.9	225° 52.9	240° 52.9	255° 53.0	90° 53.3	105° 53.3	120° 53.4	135° 53.4	150° 53.4	165° 53.4	+0.0
	17° 19.0	17° 19.7	17° 20.4	17° 21.0	17° 21.7	17° 22.4	17° 31.0	17° 31.6	17° 32.3	17° 32.9	17° 33.6	17° 34.3	+0.7
Ср 10	180° 53.5	195° 53.5	210° 53.5	225° 53.5	240° 53.6	255° 53.6	90° 53.8	105° 53.9	120° 53.9	135° 53.9	150° 53.9	165° 53.9	+0.0
	17° 34.9	17° 35.6	17° 36.2	17° 36.9	17° 37.5	17° 38.2	17° 46.6	17° 47.3	17° 47.9	17° 48.6	17° 49.2	17° 49.9	+0.7
Чт 11	180° 54.0	195° 54.0	210° 54.0	225° 54.0	240° 54.0	255° 54.0	90° 54.2	105° 54.2	120° 54.3	135° 54.3	150° 54.3	165° 54.3	+0.0
	17° 50.5	17° 51.1	17° 51.8	17° 52.4	17° 53.1	17° 53.7	18° 02.0	18° 02.6	18° 03.3	18° 03.9	18° 04.5	18° 05.2	+0.6
Пт 12	180° 54.3	195° 54.3	210° 54.3	225° 54.3	240° 54.3	255° 54.4	90° 54.5	105° 54.5	120° 54.5	135° 54.5	150° 54.5	165° 54.5	+0.0
	18° 05.8	18° 06.4	18° 07.1	18° 07.7	18° 08.3	18° 08.9	18° 17.1	18° 17.7	18° 18.3	18° 18.9	18° 19.5	18° 20.2	+0.6
Сб 13	180° 54.5	195° 54.5	210° 54.5	225° 54.5	240° 54.5	255° 54.5	90° 54.6	105° 54.6	120° 54.6	135° 54.6	150° 54.6	165° 54.6	+0.0
	18° 20.8	18° 21.4	18° 22.0	18° 22.6	18° 23.2	18° 23.9	18° 31.8	18° 32.4	18° 33.0	18° 33.6	18° 34.2	18° 34.9	+0.6
Вс 14	180° 54.6	195° 54.6	210° 54.6	225° 54.6	240° 54.6	255° 54.5	90° 54.5	105° 54.5	120° 54.5	135° 54.5	150° 54.5	165° 54.5	-0.0
	18° 35.5	18° 36.1	18° 36.7	18° 37.3	18° 37.9	18° 38.5	18° 46.3	18° 46.9	18° 47.5	18° 48.0	18° 48.6	18° 49.2	+0.6
Пн 15	180° 54.5	195° 54.5	210° 54.4	225° 54.4	240° 54.4	255° 54.4	90° 54.3	105° 54.3	120° 54.3	135° 54.3	150° 54.2	165° 54.2	-0.0
	18° 49.8	18° 50.4	18° 51.0	18° 51.6	18° 52.2	18° 52.8	19° 00.4	19° 01.0	19° 01.6	19° 02.1	19° 02.7	19° 03.3	+0.6
Вт 16	180° 54.2	195° 54.2	210° 54.2	225° 54.2	240° 54.2	255° 54.2	90° 53.9	105° 53.9	120° 53.9	135° 53.9	150° 53.9	165° 53.9	-0.0
	19° 03.9	19° 04.5	19° 05.0	19° 05.6	19° 06.2	19° 06.8	19° 14.2	19° 14.8	19° 15.3	19° 15.9	19° 16.5	19° 17.0	+0.6
Ср 17	180° 53.8	195° 53.8	210° 53.8	225° 53.8	240° 53.8	255° 53.7	90° 53.5	105° 53.4	120° 53.4	135° 53.4	150° 53.4	165° 53.3	-0.0
	19° 17.6	19° 18.2	19° 18.7	19° 19.3	19° 19.9	19° 20.4	19° 27.7	19° 28.2	19° 28.8	19° 29.3	19° 29.9	19° 30.4	+0.6
Чт 18	180° 53.3	195° 53.3	210° 53.3	225° 53.2	240° 53.2	255° 53.2	90° 52.8	105° 52.8	120° 52.8	135° 52.7	150° 52.7	165° 52.7	-0.0
	19° 31.0	19° 31.5	19° 32.1	19° 32.6	19° 33.2	19° 33.7	19° 40.8	19° 41.4	19° 41.9	19° 42.4	19° 43.0	19° 43.5	+0.6
Пт 19	180° 52.7	195° 52.6	210° 52.6	225° 52.6	240° 52.5	255° 52.5	90° 52.1	105° 52.0	120° 52.0	135° 52.0	150° 51.9	165° 51.9	-0.0
	19° 44.1	19° 44.6	19° 45.1	19° 45.7	19° 46.2	19° 46.7	19° 53.6	19° 54.2	19° 54.7	19° 55.2	19° 55.7	19° 56.3	+0.5
Сб 20	180° 51.9	195° 51.8	210° 51.8	225° 51.7	240° 51.7	255° 51.7	90° 51.2	105° 51.1	120° 51.1	135° 51.0	150° 51.0	165° 51.0	-0.0
	19° 56.8	19° 57.3	19° 57.8	19° 58.4	19° 58.9	19° 59.4	20° 06.1	20° 06.6	20° 07.1	20° 07.7	20° 08.2	20° 08.7	+0.5
Вс 21	180° 50.9	195° 50.9	210° 50.8	225° 50.8	240° 50.8	255° 50.7	90° 50.1	105° 50.1	120° 50.0	135° 50.0	150° 50.0	165° 49.9	-0.0
	20° 09.2	20° 09.7	20° 10.2	20° 10.7	20° 11.2	20° 11.7	20° 18.3	20° 18.7	20° 19.2	20° 19.7	20° 20.2	20° 20.7	+0.5
Пн 22	180° 49.9	195° 49.8	210° 49.8	225° 49.7	240° 49.7	255° 49.6	90° 49.0	105° 48.9	120° 48.9	135° 48.8	150° 48.8	165° 48.7	-0.0
	20° 21.2	20° 21.7	20° 22.2	20° 22.7	20° 23.2	20° 23.7	20° 30.0	20° 30.5	20° 31.0	20° 31.5	20° 32.0	20° 32.4	+0.5
Вт 23	180° 48.7	195° 48.6	210° 48.6	225° 48.5	240° 48.5	255° 48.4	90° 47.7	105° 47.6	120° 47.6	135° 47.5	150° 47.5	165° 47.4	-0.1
	20° 32.9	20° 33.4	20° 33.9	20° 34.4	20° 34.8	20° 35.3	20° 41.5	20° 41.9	20° 42.4	20° 42.9	20° 43.3	20° 43.8	+0.5
Ср 24	180° 47.4	195° 47.3	210° 47.2	225° 47.2	240° 47.1	255° 47.1	90° 46.3	105° 46.2	120° 46.2	135° 46.1	150° 46.1	165° 46.0	-0.1
	20° 44.3	20° 44.7	20° 45.2	20° 45.7	20° 46.1	20° 46.6	20° 52.5	20° 53.0	20° 53.4	20° 53.9	20° 54.4	20° 54.8	+0.5
Чт 25	180° 45.9	195° 45.9	210° 45.8	225° 45.7	240° 45.7	255° 45.6	90° 44.8	105° 44.7	120° 44.6	135° 44.6	150° 44.5	165° 44.4	-0.1
	20° 55.3	20° 55.7	20° 56.2	20° 56.6	20° 57.0	20° 57.5	21° 03.3	21° 03.7	21° 04.1	21° 04.6	21° 05.0	21° 05.4	+0.5
Пт 26	180° 44.4	195° 44.3	210° 44.2	225° 44.2	240° 44.1	255° 44.0	90° 43.1	105° 43.1	120° 43.0	135° 42.9	150° 42.9	165° 42.8	-0.1
	21° 05.9	21° 06.3	21° 06.7	21° 07.2	21° 07.6	21° 08.0	21° 13.6	21° 14.0	21° 14.5	21° 14.9	21° 15.3	21° 15.7	+0.4
Сб 27	180° 42.7	195° 42.6	210° 42.6	225° 42.5	240° 42.4	255° 42.3	90° 41.4	105° 41.3	120° 41.2	135° 41.2	150° 41.1	165° 41.0	-0.1
	21° 16.1	21° 16.6	21° 17.0	21° 17.4	21° 17.8	21° 18.2	21° 23.6	21° 24.0	21° 24.4	21° 24.8	21° 25.2	21° 25.6	+0.4
Вс 28	180° 40.9	195° 40.9	210° 40.8	225° 40.7	240° 40.6	255° 40.5	90° 39.5	105° 39.4	120° 39.4	135° 39.3	150° 39.2	165° 39.1	-0.1
	21° 26.0	21° 26.4	21° 26.8	21° 27.2	21° 27.6	21° 28.0	21° 33.2	21° 33.6	21° 34.0	21° 34.4	21° 34.8	21° 35.2	+0.4
Пн 29	180° 39.0	195° 39.0	210° 38.9	225° 38.8	240° 38.7	255° 38.6	90° 37.5	105° 37.5	120° 37.4	135° 37.3	150° 37.2	165° 37.1	-0.1
	21° 35.5	21° 35.9	21° 36.3	21° 36.7	21° 37.1	21° 37.5	21° 42.4	21° 42.8	21° 43.2	21° 43.6	21° 43.9	21° 44.3	+0.4
Вт 30	180° 37.0	195° 37.0	210° 36.9	225° 36.8	240° 36.7	255° 36.6	90° 35.5	105° 35.4	120° 35.3	135° 35.2	150° 35.1	165° 35.0	-0.1
	21° 44.7	21° 45.1	21° 45.4	21° 45.8	21° 46.2	21° 46.5	21° 51.3	21° 51.7	21° 52.0	21° 52.4	21° 52.7	21° 53.1	+0.4
Ср 31	180° 34.9	195° 34.8	210° 34.8	225° 34.7	240° 34.6	255° 34.5	90° 33.3	105° 33.2	120° 33.1	135° 33.0	150° 32.9	165° 32.8	-0.1
	21° 53.4	21° 53.8	21° 54.2	21° 54.5	21° 54.9	21° 55.2	21° 59.8	22° 00.1	22° 00.5	22° 00.8	22° 01.1	22° 01.5	+0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2034

Д	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	Δ'/h	R/p
Пн 1	69° 57.3 -4° 51.6	84° 31.2 -5° 00.6	99° 05.2 -5° 09.6	113° 39.2 -5° 18.5	128° 13.2 -5° 27.4	142° 47.1 -5° 36.3	157° 21.1 -5° 45.2	171° 55.0 -5° 54.1	186° 29.0 -6° 02.9	201° 02.9 -6° 11.7	215° 36.8 -6° 20.5	+34.0 -8.9	14.7 54.1
Вт 2	74° 04.0 -8° 28.4	88° 37.7 -8° 36.7	103° 11.3 -8° 44.9	117° 45.0 -8° 53.1	132° 18.6 -9° 01.3	146° 52.2 -9° 09.4	161° 25.8 -9° 17.5	175° 59.4 -9° 25.5	190° 33.0 -9° 33.5	205° 06.5 -9° 41.5	219° 40.0 -9° 49.4	+33.6 -8.1	14.7 53.9
○ Ср 3	78° 00.0 -11° 43.0	92° 33.1 -11° 50.2	107° 06.3 -11° 57.3	121° 39.3 -12° 04.4	136° 12.4 -12° 11.5	150° 45.4 -12° 18.5	165° 18.4 -12° 25.4	179° 51.4 -12° 32.3	194° 24.4 -12° 39.1	208° 57.3 -12° 45.9	223° 30.2 -12° 52.6	+33.0 -7.0	14.7 53.9
Чт 4	81° 40.3 -14° 26.7	96° 12.7 -14° 32.5	110° 45.2 -14° 38.2	125° 17.5 -14° 43.9	139° 49.9 -14° 49.5	154° 22.2 -14° 55.0	168° 54.5 -15° 00.5	183° 26.8 -15° 05.9	197° 59.0 -15° 11.2	212° 31.2 -15° 16.5	227° 03.4 -15° 21.7	+32.3 -5.5	14.7 54.0
Пт 5	85° 02.5 -16° 31.5	99° 34.2 -16° 35.6	114° 05.9 -16° 39.6	128° 37.5 -16° 43.5	143° 09.1 -16° 47.4	157° 40.7 -16° 51.2	172° 12.3 -16° 54.9	186° 43.8 -16° 58.5	201° 15.3 -17° 02.1	215° 46.8 -17° 05.5	230° 18.3 -17° 08.9	+31.6 -3.7	14.8 54.1
Сб 6	88° 06.9 -17° 50.4	102° 38.0 -17° 52.5	117° 09.0 -17° 54.5	131° 40.0 -17° 56.5	146° 11.0 -17° 58.3	160° 41.9 -18° 00.1	175° 12.9 -18° 01.8	189° 43.8 -18° 03.4	204° 14.7 -18° 04.9	218° 45.5 -18° 06.4	233° 16.4 -18° 07.7	+30.9 -1.7	14.8 54.4
Вс 7	90° 56.6 -18° 17.8	105° 27.1 -18° 17.7	119° 57.7 -18° 17.6	134° 28.2 -18° 17.4	148° 58.7 -18° 17.1	163° 29.1 -18° 16.7	177° 59.6 -18° 16.2	192° 30.1 -18° 15.7	207° 00.5 -18° 15.0	221° 30.9 -18° 14.3	236° 01.3 -18° 13.5	+30.5 +0.4	14.9 54.8
Пн 8	93° 36.0 -17° 50.3	108° 06.2 -17° 48.1	122° 36.4 -17° 45.7	137° 06.6 -17° 43.3	151° 36.8 -17° 40.7	166° 07.0 -17° 38.1	180° 37.2 -17° 35.4	195° 07.4 -17° 32.6	209° 37.5 -17° 29.7	224° 07.7 -17° 26.8	238° 37.8 -17° 23.7	+30.2 +2.7	15.1 55.3
Вт 9	96° 09.5 -16° 27.2	110° 39.6 -16° 22.7	125° 09.6 -16° 18.1	139° 39.7 -16° 13.5	154° 09.8 -16° 08.8	168° 39.8 -16° 04.0	183° 09.9 -15° 59.1	197° 39.9 -15° 54.1	212° 10.0 -15° 49.0	226° 40.0 -15° 43.8	241° 10.1 -15° 38.6	+30.1 +4.9	15.2 55.9
Ср 10	98° 40.2 -14° 10.0	113° 10.2 -14° 03.5	127° 40.2 -13° 56.9	142° 10.2 -13° 50.1	156° 40.2 -13° 43.4	171° 10.1 -13° 36.5	185° 40.1 -13° 29.5	200° 10.0 -13° 22.5	214° 40.0 -13° 15.4	229° 09.9 -13° 08.2	243° 39.9 -13° 01.0	+30.0 +6.9	15.4 56.6
◑ Чт 11	101° 08.3 -11° 03.3	115° 38.1 -10° 54.9	130° 08.0 -10° 46.4	144° 37.8 -10° 37.9	159° 07.6 -10° 29.3	173° 37.4 -10° 20.6	188° 07.2 -10° 11.8	202° 36.9 -10° 03.0	217° 06.7 -9° 54.1	231° 36.5 -9° 45.2	246° 06.2 -9° 36.2	+29.8 +8.7	15.7 57.5
Пт 12	103° 30.6 -7° 14.0	118° 00.1 -7° 04.1	132° 29.5 -6° 54.1	146° 59.0 -6° 44.1	161° 28.4 -6° 34.0	175° 57.8 -6° 23.8	190° 27.2 -6° 13.7	204° 56.6 -6° 03.4	219° 25.9 -5° 53.2	233° 55.2 -5° 42.8	248° 24.5 -5° 32.5	+29.4 +10.2	15.9 58.4
Сб 13	105° 40.8 -2° 52.2	120° 09.6 -2° 41.2	134° 38.4 -2° 30.2	149° 07.2 -2° 19.2	163° 36.0 -2° 08.1	178° 04.7 -1° 57.0	192° 33.3 -1° 45.9	207° 02.0 -1° 34.8	221° 30.6 -1° 23.6	235° 59.1 -1° 12.5	250° 27.7 -1° 01.3	+28.7 +11.1	16.2 59.3
Вс 14	107° 30.7 1° 48.5	121° 58.5 1° 59.9	136° 26.3 2° 11.2	150° 54.1 2° 22.6	165° 21.8 2° 34.0	179° 49.5 2° 45.4	194° 17.1 2° 56.8	208° 44.6 3° 08.1	223° 12.2 3° 19.5	237° 39.6 3° 30.8	252° 07.0 3° 42.2	+27.6 +11.4	16.4 60.1
Пн 15	108° 51.9 6° 30.1	123° 18.4 6° 41.1	137° 44.9 6° 52.1	152° 11.4 7° 03.0	166° 37.7 7° 13.9	181° 04.1 7° 24.7	195° 30.3 7° 35.5	209° 56.5 7° 46.3	224° 22.7 7° 57.0	238° 48.8 8° 07.7	253° 14.8 8° 18.3	+26.3 +10.8	16.6 60.8
Вт 16	109° 38.5 10° 51.2	124° 03.6 11° 00.9	138° 28.7 11° 10.5	152° 53.7 11° 20.0	167° 18.7 11° 29.5	181° 43.6 11° 38.9	196° 08.4 11° 48.2	210° 33.2 11° 57.4	224° 58.0 12° 06.6	239° 22.7 12° 15.6	253° 47.3 12° 24.6	+24.9 +9.3	16.7 61.2
Ср 17	109° 51.0 14° 28.4	124° 14.9 14° 35.9	138° 38.8 14° 43.2	153° 02.6 14° 50.5	167° 26.4 14° 57.6	181° 50.1 15° 04.6	196° 13.8 15° 11.5	210° 37.5 15° 18.3	225° 01.1 15° 25.0	239° 24.7 15° 31.6	253° 48.3 15° 38.1	+23.7 +7.0	16.7 61.2
● Чт 18	109° 39.0 17° 00.7	124° 02.2 17° 05.2	138° 25.5 17° 09.6	152° 48.7 17° 13.8	167° 11.9 17° 18.0	181° 35.2 17° 22.0	195° 58.4 17° 25.8	210° 21.6 17° 29.6	224° 44.8 17° 33.2	239° 08.1 17° 36.7	253° 31.3 17° 40.0	+23.2 +3.9	16.6 60.9
Пт 19	109° 21.2 18° 14.3	123° 44.7 18° 15.6	138° 08.3 18° 16.7	152° 31.8 18° 17.6	166° 55.4 18° 18.5	181° 19.1 18° 19.2	195° 42.7 18° 19.7	210° 06.4 18° 20.2	224° 30.2 18° 20.5	238° 54.0 18° 20.7	253° 17.8 18° 20.7	+23.6 +0.6	16.4 60.3
Сб 20	109° 21.1 18° 06.2	123° 45.8 18° 04.3	138° 10.5 18° 02.2	152° 35.3 18° 00.0	167° 00.2 17° 57.7	181° 25.1 17° 55.3	195° 50.1 17° 52.7	210° 15.2 17° 50.1	224° 40.3 17° 47.3	239° 05.6 17° 44.4	253° 30.8 17° 41.4	+25.0 -2.5	16.2 59.4
Вс 21	109° 58.9 16° 43.6	124° 25.4 16° 38.9	138° 52.0 16° 34.1	153° 18.6 16° 29.3	167° 45.4 16° 24.3	182° 12.2 16° 19.2	196° 39.1 16° 14.1	211° 06.1 16° 08.9	225° 33.1 16° 03.6	240° 00.3 15° 58.1	254° 27.5 15° 52.6	+26.9 -5.1	15.9 58.5
Пн 22	124° 25.4 16° 38.9	138° 52.0 16° 34.1	153° 18.6 16° 29.3	167° 45.4 16° 24.3	182° 12.2 16° 19.2	196° 39.1 16° 14.1	211° 06.1 16° 08.9	225° 33.1 16° 03.6	240° 00.3 15° 58.1	254° 27.5 15° 52.6	268° 54.8 15° 47.1	+26.9 -5.2	15.9 58.4
Вт 23	125° 54.5 14° 13.6	140° 23.1 14° 06.8	154° 51.8 13° 59.9	169° 20.6 13° 52.9	183° 49.5 13° 45.9	198° 18.5 13° 38.8	212° 47.5 13° 31.6	227° 16.7 13° 24.4	241° 45.9 13° 17.1	256° 15.2 13° 09.8	270° 44.5 13° 02.3	+29.0 -7.1	15.7 57.4
◐ Ср 24	128° 14.2 11° 04.6	142° 44.8 10° 56.4	157° 15.4 10° 48.1	171° 46.1 10° 39.8	186° 16.9 10° 31.4	200° 47.7 10° 23.0	215° 18.7 10° 14.5	229° 49.6 10° 06.0	244° 20.7 9° 57.5	258° 51.8 9° 48.9	273° 23.0 9° 40.3	+30.9 -8.4	15.4 56.5
Чт 25	131° 18.2 7° 27.2	145° 50.3 7° 18.1	160° 22.5 7° 09.0	174° 54.8 6° 59.9	189° 27.1 6° 50.7	203° 59.4 6° 41.5	218° 31.8 6° 32.3	233° 04.3 6° 23.1	247° 36.8 6° 13.9	262° 09.3 6° 04.6	276° 41.9 5° 55.3	+32.4 -9.2	15.2 55.7
Пт 26	134° 56.0 3° 34.4	149° 29.3 3° 24.9	164° 02.6 3° 15.4	178° 35.9 3° 05.9	193° 09.2 2° 56.4	207° 42.6 2° 46.9	222° 16.0 2° 37.4	236° 49.5 2° 27.9	251° 23.0 2° 18.4	265° 56.5 2° 08.8	280° 30.0 1° 59.3	+33.4 -9.5	15.0 55.0
Сб 27	138° 55.8 -0° 23.3	153° 29.7 -0° 32.8	168° 03.6 -0° 42.2	182° 37.5 -0° 51.7	197° 11.5 -1° 01.1	211° 45.4 -1° 10.6	226° 19.3 -1° 20.0	240° 53.3 -1° 29.4	255° 27.3 -1° 38.8	270° 01.3 -1° 48.2	284° 35.2 -1° 57.6	+33.9 -9.4	14.9 54.5
Вс 28	143° 05.8 -4° 16.6	157° 39.8 -4° 25.7	172° 13.9 -4° 34.8	186° 47.9 -4° 43.9	201° 22.0 -4° 52.9	215° 56.0 -5° 02.0	230° 30.1 -5° 11.0	245° 04.1 -5° 20.0	259° 38.1 -5° 28.9	274° 12.1 -5° 37.9	288° 46.2 -5° 46.8	+34.0 -9.0	14.8 54.2
Пн 29	147° 15.1 -7° 57.1	161° 48.9 -8° 05.5	176° 22.8 -8° 14.0	190° 56.5 -8° 22.3	205° 30.3 -8° 30.7	220° 04.1 -8° 39.0	234° 37.8 -8° 47.2	249° 11.5 -8° 55.5	263° 45.2 -9° 03.6	278° 18.9 -9° 11.8	292° 52.6 -9° 19.9	+33.7 -8.3	14.7 54.0
Вт 30	151° 14.8 -11° 16.7	165° 48.0 -11° 24.1	180° 21.3 -11° 31.5	194° 54.5 -11° 38.8	209° 27.7 -11° 46.1	224° 00.9 -11° 53.4	238° 34.0 -12° 00.5	253° 07.1 -12° 07.7	267° 40.2 -12° 14.8	282° 13.3 -12° 21.8	296° 46.3 -12° 28.8	+33.2 -7.2	14.7 53.9
Ср 31	154° 58.0 -14° 07.0	169° 30.5 -14° 13.1	184° 03.0 -14° 19.1	198° 35.5 -14° 25.1	213° 07.9 -14° 31.0	227° 40.3 -14° 36.9	242° 12.7 -14° 42.6	256° 45.0 -14° 48.4	271° 17.3 -14° 54.0	285° 49.6 -14° 59.6	300° 21.8 -15° 05.1	+32.4 -5.8	14.7 54.0

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 3 12h15 — Последняя четв.: 11 10h56 — Новолуние: 18 03h12 — Первая четв.: 24 23h57

СОЛНЦЕ

Июнь 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	180° 32.7	195° 32.6	210° 32.5	225° 32.4	240° 32.4	255° 32.3	90° 31.0	105° 30.9	120° 30.8	135° 30.7	150° 30.6	165° 30.5	-0.1
	22° 01.8	22° 02.2	22° 02.5	22° 02.9	22° 03.2	22° 03.5	22° 07.9	22° 08.2	22° 08.5	22° 08.9	22° 09.2	22° 09.5	+0.3
Пт 2	180° 30.4	195° 30.3	210° 30.2	225° 30.1	240° 30.0	255° 29.9	90° 28.6	105° 28.5	120° 28.4	135° 28.3	150° 28.2	165° 28.1	-0.1
	22° 09.8	22° 10.2	22° 10.5	22° 10.8	22° 11.1	22° 11.4	22° 15.6	22° 15.9	22° 16.2	22° 16.5	22° 16.8	22° 17.1	+0.3
Сб 3	180° 28.0	195° 27.9	210° 27.8	225° 27.7	240° 27.6	255° 27.5	90° 26.2	105° 26.1	120° 26.0	135° 25.8	150° 25.7	165° 25.6	-0.1
	22° 17.4	22° 17.7	22° 18.1	22° 18.4	22° 18.7	22° 19.0	22° 22.9	22° 23.2	22° 23.5	22° 23.8	22° 24.1	22° 24.4	+0.3
Вс 4	180° 25.5	195° 25.4	210° 25.3	225° 25.2	240° 25.1	255° 25.0	90° 23.6	105° 23.5	120° 23.4	135° 23.3	150° 23.2	165° 23.1	-0.1
	22° 24.7	22° 25.0	22° 25.2	22° 25.5	22° 25.8	22° 26.1	22° 29.8	22° 30.1	22° 30.4	22° 30.7	22° 30.9	22° 31.2	+0.3
Пн 5	180° 23.0	195° 22.8	210° 22.7	225° 22.6	240° 22.5	255° 22.4	90° 21.0	105° 20.9	120° 20.7	135° 20.6	150° 20.5	165° 20.4	-0.1
	22° 31.5	22° 31.8	22° 32.0	22° 32.3	22° 32.6	22° 32.9	22° 36.4	22° 36.6	22° 36.9	22° 37.1	22° 37.4	22° 37.7	+0.3
Вт 6	180° 20.3	195° 20.2	210° 20.1	225° 20.0	240° 19.8	255° 19.7	90° 18.2	105° 18.1	120° 18.0	135° 17.9	150° 17.8	165° 17.7	-0.1
	22° 37.9	22° 38.2	22° 38.4	22° 38.7	22° 39.0	22° 39.2	22° 42.5	22° 42.7	22° 43.0	22° 43.2	22° 43.5	22° 43.7	+0.3
Ср 7	180° 17.5	195° 17.4	210° 17.3	225° 17.2	240° 17.1	255° 17.0	90° 15.4	105° 15.3	120° 15.2	135° 15.1	150° 15.0	165° 14.8	-0.1
	22° 44.0	22° 44.2	22° 44.5	22° 44.7	22° 44.9	22° 45.2	22° 48.2	22° 48.5	22° 48.7	22° 48.9	22° 49.2	22° 49.4	+0.2
Чт 8	180° 14.7	195° 14.6	210° 14.5	225° 14.4	240° 14.2	255° 14.1	90° 12.6	105° 12.4	120° 12.3	135° 12.2	150° 12.1	165° 12.0	-0.1
	22° 49.6	22° 49.8	22° 50.1	22° 50.3	22° 50.5	22° 50.7	22° 53.6	22° 53.8	22° 54.0	22° 54.2	22° 54.4	22° 54.6	+0.2
Пт 9	180° 11.8	195° 11.7	210° 11.6	225° 11.5	240° 11.3	255° 11.2	90° 09.6	105° 09.5	120° 09.4	135° 09.2	150° 09.1	165° 09.0	-0.1
	22° 54.8	22° 55.1	22° 55.3	22° 55.5	22° 55.7	22° 55.9	22° 58.5	22° 58.7	22° 58.9	22° 59.1	22° 59.3	22° 59.5	+0.2
Сб 10	180° 08.9	195° 08.8	210° 08.6	225° 08.5	240° 08.4	255° 08.3	90° 06.6	105° 06.5	120° 06.4	135° 06.2	150° 06.1	165° 06.0	-0.1
	22° 59.7	22° 59.9	23° 00.1	23° 00.3	23° 00.4	23° 00.6	23° 03.0	23° 03.2	23° 03.4	23° 03.6	23° 03.8	23° 03.9	+0.2
Вс 11	180° 05.9	195° 05.7	210° 05.6	225° 05.5	240° 05.3	255° 05.2	90° 03.6	105° 03.4	120° 03.3	135° 03.2	150° 03.0	165° 02.9	-0.1
	23° 04.1	23° 04.3	23° 04.5	23° 04.6	23° 04.8	23° 05.0	23° 07.2	23° 07.3	23° 07.5	23° 07.7	23° 07.8	23° 08.0	+0.2
Пн 12	180° 02.8	195° 02.6	210° 02.5	225° 02.4	240° 02.3	255° 02.1	90° 00.4	105° 00.3	120° 00.2	135° 00.0	149° 59.9	164° 59.8	-0.1
	23° 08.1	23° 08.3	23° 08.5	23° 08.6	23° 08.8	23° 08.9	23° 10.9	23° 11.0	23° 11.2	23° 11.3	23° 11.5	23° 11.6	+0.2
Вт 13	179° 59.6	194° 59.5	209° 59.4	224° 59.3	239° 59.1	254° 59.0	89° 57.3	104° 57.1	119° 57.0	134° 56.9	149° 56.7	164° 56.6	-0.1
	23° 11.8	23° 11.9	23° 12.0	23° 12.2	23° 12.3	23° 12.5	23° 14.2	23° 14.3	23° 14.5	23° 14.6	23° 14.7	23° 14.8	+0.1
Ср 14	179° 56.5	194° 56.3	209° 56.2	224° 56.1	239° 55.9	254° 55.8	89° 54.1	104° 53.9	119° 53.8	134° 53.7	149° 53.5	164° 53.4	-0.1
	23° 15.0	23° 15.1	23° 15.2	23° 15.3	23° 15.5	23° 15.6	23° 17.1	23° 17.2	23° 17.3	23° 17.4	23° 17.5	23° 17.7	+0.1
Чт 15	179° 53.3	194° 53.1	209° 53.0	224° 52.9	239° 52.7	254° 52.6	89° 50.8	104° 50.7	119° 50.6	134° 50.4	149° 50.3	164° 50.2	-0.1
	23° 17.8	23° 17.9	23° 18.0	23° 18.1	23° 18.2	23° 18.3	23° 19.6	23° 19.7	23° 19.8	23° 19.9	23° 20.0	23° 20.1	+0.1
Пт 16	179° 50.0	194° 49.9	209° 49.7	224° 49.6	239° 49.5	254° 49.3	89° 47.6	104° 47.4	119° 47.3	134° 47.2	149° 47.0	164° 46.9	-0.1
	23° 20.1	23° 20.2	23° 20.3	23° 20.4	23° 20.5	23° 20.6	23° 21.7	23° 21.7	23° 21.8	23° 21.9	23° 22.0	23° 22.1	+0.1
Сб 17	179° 46.8	194° 46.6	209° 46.5	224° 46.3	239° 46.2	254° 46.1	89° 44.3	104° 44.2	119° 44.0	134° 43.9	149° 43.7	164° 43.6	-0.1
	23° 22.1	23° 22.2	23° 22.3	23° 22.3	23° 22.4	23° 22.5	23° 23.3	23° 23.4	23° 23.5	23° 23.5	23° 23.6	23° 23.6	+0.1
Вс 18	179° 43.5	194° 43.3	209° 43.2	224° 43.1	239° 42.9	254° 42.8	89° 41.0	104° 40.9	119° 40.7	134° 40.6	149° 40.5	164° 40.3	-0.1
	23° 23.7	23° 23.7	23° 23.8	23° 23.9	23° 23.9	23° 24.0	23° 24.6	23° 24.6	23° 24.7	23° 24.7	23° 24.8	23° 24.8	+0.1
Пн 19	179° 40.2	194° 40.0	209° 39.9	224° 39.8	239° 39.6	254° 39.5	89° 37.7	104° 37.6	119° 37.4	134° 37.3	149° 37.2	164° 37.0	-0.1
	23° 24.8	23° 24.9	23° 24.9	23° 25.0	23° 25.0	23° 25.0	23° 25.4	23° 25.5	23° 25.5	23° 25.5	23° 25.5	23° 25.6	+0.0
Вт 20	179° 36.9	194° 36.8	209° 36.6	224° 36.5	239° 36.3	254° 36.2	89° 34.4	104° 34.3	119° 34.2	134° 34.0	149° 33.9	164° 33.7	-0.1
	23° 25.6	23° 25.6	23° 25.6	23° 25.6	23° 25.7	23° 25.7	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	+0.0
Ср 21	179° 33.6	194° 33.5	209° 33.3	224° 33.2	239° 33.1	254° 32.9	89° 31.1	104° 31.0	119° 30.9	134° 30.7	149° 30.6	164° 30.5	-0.1
	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.8	23° 25.8	23° 25.8	+0.0
Чт 22	179° 30.3	194° 30.2	209° 30.1	224° 29.9	239° 29.8	254° 29.6	89° 27.9	104° 27.7	119° 27.6	134° 27.5	149° 27.3	164° 27.2	-0.1
	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 25.7	23° 25.5	23° 25.5	23° 25.4	23° 25.4	23° 25.4	23° 25.3	-0.0
Пт 23	179° 27.1	194° 26.9	209° 26.8	224° 26.7	239° 26.5	254° 26.4	89° 24.6	104° 24.5	119° 24.4	134° 24.2	149° 24.1	164° 24.0	-0.1
	23° 25.3	23° 25.3	23° 25.3	23° 25.2	23° 25.2	23° 25.2	23° 24.7	23° 24.6	23° 24.6	23° 24.5	23° 24.5	23° 24.4	-0.0
Сб 24	179° 23.8	194° 23.7	209° 23.6	224° 23.4	239° 23.3	254° 23.2	89° 21.4	104° 21.3	119° 21.2	134° 21.0	149° 20.9	164° 20.8	-0.1
	23° 24.4	23° 24.4	23° 24.3	23° 24.3	23° 24.2	23° 24.2	23° 23.4	23° 23.4	23° 23.3	23° 23.3	23° 23.2	23° 23.1	-0.0
Вс 25	179° 20.6	194° 20.5	209° 20.4	224° 20.2	239° 20.1	254° 20.0	89° 18.2	104° 18.1	119° 18.0	134° 17.8	149° 17.7	164° 17.6	-0.1
	23° 23.1	23° 23.0	23° 22.9	23° 22.9	23° 22.8	23° 22.7	23° 21.8	23° 21.7	23° 21.7	23° 21.6	23° 21.5	23° 21.4	-0.1
Пн 26	179° 17.5	194° 17.3	209° 17.2	224° 17.1	239° 16.9	254° 16.8	89° 15.1	104° 15.0	119° 14.8	134° 14.7	149° 14.6	164° 14.5	-0.1
	23° 21.3	23° 21.3	23° 21.2	23° 21.1	23° 21.0	23° 20.9	23° 19.8	23° 19.7	23° 19.6	23° 19.5	23° 19.4	23° 19.3	-0.1
Вт 27	179° 14.3	194° 14.2	209° 14.1	224° 13.9	239° 13.8	254° 13.7	89° 12.0	104° 11.9	119° 11.7	134° 11.6	149° 11.5	164° 11.4	-0.1
	23° 19.2	23° 19.1	23° 19.0	23° 18.9	23° 18.8	23° 18.7	23° 17.3	23° 17.2	23° 17.1	23° 17.0	23° 16.9	23° 16.7	-0.1
Ср 28	179° 11.2	194° 11.1	209° 11.0	224° 10.9	239° 10.7	254° 10.6	89° 09.0	104° 08.8	119° 08.7	134° 08.6	149° 08.5	164° 08.3	-0.1
	23° 16.6	23° 16.5	23° 16.4	23° 16.3	23° 16.2	23° 16.0	23° 14.4	23° 14.3	23° 14.2	23° 14.1	23° 13.9	23° 13.8	-0.1
Чт 29	179° 08.2	194° 08.1	209° 08.0	224° 07.8	239° 07.7	254° 07.6	89° 06.0	104° 05.8	119° 05.7	134° 05.6	149° 05.5	164° 05.3	-0.1
	23° 13.7	23° 13.5	23° 13.4	23° 13.3	23° 13.1	23° 13.0	23° 11.2	23° 11.0	23° 10.9	23° 10.7	23° 10.6	23° 10.4	-0.1
Пт 30	179° 05.2	194° 05.1	209° 05.0	224° 04.9	239° 04.7	254° 04.6	89° 03.0	104° 02.9	119° 02.8	134° 02.7	149° 02.5	164° 02.4	-0.1
	23° 10.3	23° 10.1	23° 10.0	23° 09.8	23° 09.7	23° 09.5	23° 07.5	23° 07.3	23° 07.2	23° 07.0	23° 06.8	23° 06.7	-0.1

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

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Д	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	Δ'/h	R/p
Чт 1	71° 10.3 -15° 51.9	85° 42.2 -15° 56.7	100° 14.1 -16° 01.5	114° 45.9 -16° 06.2	129° 17.7 -16° 10.9	143° 49.5 -16° 15.4	158° 21.2 -16° 19.9	172° 52.9 -16° 24.3	187° 24.6 -16° 28.7	201° 56.2 -16° 33.0	216° 27.8 -16° 37.2	+31.7 -4.5	14.8 54.1
○ Пт 2	74° 18.0 -17° 31.1	88° 49.1 -17° 34.0	103° 20.1 -17° 36.9	117° 51.2 -17° 39.7	132° 22.2 -17° 42.4	146° 53.2 -17° 45.1	161° 24.2 -17° 47.6	175° 55.1 -17° 50.1	190° 26.0 -17° 52.5	204° 56.9 -17° 54.8	219° 27.7 -17° 57.0	+31.0 -2.6	14.8 54.4
Сб 3	77° 07.6 -18° 20.1	91° 38.1 -18° 21.0	106° 08.5 -18° 21.8	120° 39.0 -18° 22.4	135° 09.4 -18° 23.0	149° 39.8 -18° 23.5	164° 10.2 -18° 23.9	178° 40.5 -18° 24.2	193° 10.9 -18° 24.4	207° 41.2 -18° 24.6	222° 11.5 -18° 24.6	+30.4 -0.4	14.9 54.7
Вс 4	79° 44.6 -18° 14.5	94° 14.7 -18° 13.1	108° 44.8 -18° 11.6	123° 14.9 -18° 10.0	137° 45.0 -18° 08.3	152° 15.1 -18° 06.6	166° 45.2 -18° 04.7	181° 15.2 -18° 02.8	195° 45.3 -18° 00.7	210° 15.4 -17° 58.6	224° 45.4 -17° 56.4	+30.1 +1.8	15.0 55.1
Пн 5	82° 15.8 -17° 12.3	96° 45.8 -17° 08.7	111° 15.8 -17° 04.9	125° 45.8 -17° 01.1	140° 15.9 -16° 57.2	154° 45.9 -16° 53.2	169° 15.9 -16° 49.1	183° 45.9 -16° 44.9	198° 16.0 -16° 40.6	212° 46.0 -16° 36.3	227° 16.0 -16° 31.9	+30.0 +4.0	15.1 55.5
Вт 6	84° 47.0 -15° 15.1	99° 17.1 -15° 09.3	113° 47.2 -15° 03.5	128° 17.4 -14° 57.5	142° 47.5 -14° 51.5	157° 17.6 -14° 45.4	171° 47.8 -14° 39.2	186° 17.9 -14° 33.0	200° 48.0 -14° 26.6	215° 18.2 -14° 20.2	229° 48.4 -14° 13.7	+30.1 +6.1	15.3 56.1
Ср 7	87° 21.4 -12° 27.3	101° 51.7 -12° 19.7	116° 21.9 -12° 11.9	130° 52.2 -12° 04.1	145° 22.4 -11° 56.2	159° 52.7 -11° 48.3	174° 23.0 -11° 40.3	188° 53.2 -11° 32.2	203° 23.5 -11° 24.1	217° 53.8 -11° 15.9	232° 24.1 -11° 07.6	+30.3 +8.0	15.5 56.7
Чт 8	89° 58.2 -8° 56.1	104° 28.5 -8° 46.9	118° 58.8 -8° 37.6	133° 29.0 -8° 28.3	147° 59.3 -8° 18.9	162° 29.5 -8° 09.4	176° 59.8 -7° 59.9	191° 30.0 -7° 50.4	206° 00.2 -7° 40.8	220° 30.5 -7° 31.2	235° 00.7 -7° 21.5	+30.2 +9.5	15.7 57.4
◑ Пт 9	92° 32.6 -4° 50.8	107° 02.7 -4° 40.4	121° 32.7 -4° 30.0	136° 02.7 -4° 19.6	150° 32.6 -4° 09.1	165° 02.6 -3° 58.6	179° 32.5 -3° 48.1	194° 02.4 -3° 37.5	208° 32.3 -3° 26.9	223° 02.2 -3° 16.3	237° 32.0 -3° 05.6	+29.9 +10.5	15.9 58.1
Сб 10	94° 56.5 -0° 23.0	109° 25.9 -0° 12.0	123° 55.3 -0° 01.0	138° 24.6 0° 10.0	152° 53.9 0° 21.0	167° 23.2 0° 32.1	181° 52.4 0° 43.1	196° 21.6 0° 54.1	210° 50.7 1° 05.2	225° 19.8 1° 16.3	239° 48.9 1° 27.3	+29.2 +11.0	16.1 58.9
Вс 11	96° 59.8 4° 13.0	111° 28.2 4° 24.0	125° 56.5 4° 35.0	140° 24.8 4° 45.9	154° 53.0 4° 56.9	169° 21.1 5° 07.8	183° 49.2 5° 18.7	198° 17.3 5° 29.5	212° 45.3 5° 40.4	227° 13.2 5° 51.2	241° 41.1 6° 02.0	+28.1 +10.9	16.3 59.6
Пн 12	98° 32.7 8° 40.1	112° 59.7 8° 50.3	127° 26.6 9° 00.5	141° 53.5 9° 10.6	156° 20.3 9° 20.7	170° 47.0 9° 30.7	185° 13.6 9° 40.7	199° 40.2 9° 50.6	214° 06.8 10° 00.5	228° 33.3 10° 10.3	242° 59.7 10° 20.0	+26.7 +10.0	16.4 60.2
Вт 13	99° 28.5 12° 38.2	113° 53.9 12° 46.9	128° 19.3 12° 55.4	142° 44.6 13° 03.9	157° 09.9 13° 12.2	171° 35.1 13° 20.5	186° 00.2 13° 28.7	200° 25.3 13° 36.8	214° 50.3 13° 44.9	229° 15.3 13° 52.8	243° 40.2 14° 00.6	+25.2 +8.2	16.5 60.6
Ср 14	99° 47.4 15° 46.4	114° 11.5 15° 52.6	128° 35.5 15° 58.7	142° 59.5 16° 04.6	157° 23.5 16° 10.5	171° 47.4 16° 16.3	186° 11.3 16° 21.9	200° 35.2 16° 27.4	214° 59.0 16° 32.8	229° 22.8 16° 38.1	243° 46.5 16° 43.3	+23.9 +5.7	16.6 60.7
Чт 15	99° 39.5 17° 45.9	114° 02.9 17° 49.1	128° 26.3 17° 52.1	142° 49.7 17° 55.0	157° 13.0 17° 57.8	171° 36.4 18° 00.4	185° 59.7 18° 02.9	200° 23.1 18° 05.3	214° 46.4 18° 07.5	229° 09.8 18° 09.6	243° 33.1 18° 11.6	+23.4 +2.6	16.5 60.6
● Пт 16	99° 24.9 18° 25.4	113° 48.5 18° 25.2	128° 12.1 18° 24.9	142° 35.8 18° 24.5	156° 59.5 18° 24.0	171° 23.3 18° 23.4	185° 47.0 18° 22.6	200° 10.9 18° 21.6	214° 34.7 18° 20.6	228° 58.6 18° 19.4	243° 22.6 18° 18.1	+23.8 -0.7	16.4 60.1
Сб 17	99° 27.7 17° 43.7	113° 52.5 17° 40.4	128° 17.3 17° 37.1	142° 42.2 17° 33.6	157° 07.2 17° 30.0	171° 32.3 17° 26.3	185° 57.4 17° 22.5	200° 22.6 17° 18.5	214° 47.9 17° 14.5	229° 13.2 17° 10.3	243° 38.6 17° 06.1	+25.1 -3.8	16.2 59.4
Вс 18	100° 08.6 15° 50.0	114° 35.2 15° 44.2	129° 01.9 15° 38.2	143° 28.7 15° 32.2	157° 55.6 15° 26.1	172° 22.6 15° 19.9	186° 49.6 15° 13.7	201° 16.7 15° 07.3	215° 43.9 15° 00.9	230° 11.2 14° 54.4	244° 38.5 14° 47.8	+27.0 -6.2	16.0 58.6
Пн 19	101° 38.9 12° 59.9	116° 07.6 12° 52.2	130° 36.4 12° 44.4	145° 05.2 12° 36.6	159° 34.1 12° 28.6	174° 03.1 12° 20.7	188° 32.2 12° 12.7	203° 01.4 12° 04.6	217° 30.6 11° 56.5	232° 00.0 11° 48.3	246° 29.4 11° 40.0	+29.0 -8.0	15.7 57.6
Вт 20	103° 59.5 9° 30.9	118° 30.1 9° 22.0	133° 00.8 9° 13.0	147° 31.5 9° 04.0	162° 02.3 8° 55.0	176° 33.2 8° 45.9	191° 04.2 8° 36.8	205° 35.2 8° 27.7	220° 06.2 8° 18.5	234° 37.4 8° 09.4	249° 08.6 8° 00.1	+30.9 -9.1	15.5 56.7
Ср 21	118° 30.1 9° 22.0	133° 00.8 9° 13.0	147° 31.5 9° 04.0	162° 02.3 8° 55.0	176° 33.2 8° 45.9	191° 04.2 8° 36.8	205° 35.2 8° 27.7	220° 06.2 8° 18.5	234° 37.4 8° 09.4	249° 08.6 8° 00.1	263° 39.8 7° 50.9	+31.0 -9.1	15.5 56.7
Чт 22	121° 36.0 5° 29.6	136° 08.2 5° 20.0	150° 40.4 5° 10.5	165° 12.7 5° 00.9	179° 45.1 4° 51.3	194° 17.5 4° 41.7	208° 49.9 4° 32.0	223° 22.4 4° 22.4	237° 54.9 4° 12.8	252° 27.5 4° 03.1	267° 00.1 3° 53.5	+32.4 -9.6	15.2 55.8
◐ Пт 23	125° 14.3 1° 28.2	139° 47.5 1° 18.5	154° 20.8 1° 08.8	168° 54.1 0° 59.2	183° 27.4 0° 49.5	198° 00.8 0° 39.8	212° 34.2 0° 30.2	227° 07.6 0° 20.5	241° 41.0 0° 10.9	256° 14.5 0° 01.2	270° 48.0 -0° 08.4	+33.4 -9.7	15.0 55.1
Сб 24	129° 12.7 -2° 31.5	143° 46.5 -2° 40.9	158° 20.3 -2° 50.3	172° 54.1 -2° 59.7	187° 27.9 -3° 09.1	202° 01.8 -3° 18.4	216° 35.6 -3° 27.8	231° 09.4 -3° 37.1	245° 43.3 -3° 46.4	260° 17.1 -3° 55.6	274° 51.0 -4° 04.9	+33.8 -9.3	14.9 54.6
Вс 25	133° 19.2 -6° 20.7	147° 53.0 -6° 29.5	162° 26.9 -6° 38.3	177° 00.7 -6° 47.1	191° 34.6 -6° 55.8	206° 08.4 -7° 04.6	220° 42.2 -7° 13.2	235° 16.1 -7° 21.9	249° 49.9 -7° 30.5	264° 23.7 -7° 39.1	278° 57.5 -7° 47.6	+33.8 -8.7	14.8 54.3
Пн 26	137° 22.6 -9° 51.5	151° 56.1 -9° 59.4	166° 29.6 -10° 07.3	181° 03.1 -10° 15.2	195° 36.6 -10° 23.0	210° 10.0 -10° 30.7	224° 43.5 -10° 38.5	239° 16.9 -10° 46.1	253° 50.2 -10° 53.8	268° 23.6 -11° 01.4	282° 56.9 -11° 08.9	+33.4 -7.7	14.7 54.1
Вт 27	141° 13.7 -12° 56.2	155° 46.6 -13° 02.9	170° 19.5 -13° 09.6	184° 52.3 -13° 16.2	199° 25.1 -13° 22.8	213° 57.9 -13° 29.3	228° 30.6 -13° 35.7	243° 03.3 -13° 42.1	257° 35.9 -13° 48.5	272° 08.6 -13° 54.7	286° 41.2 -14° 01.0	+32.7 -6.5	14.7 54.1
Ср 28	144° 46.0 -15° 26.9	159° 18.1 -15° 32.1	173° 50.1 -15° 37.3	188° 22.1 -15° 42.3	202° 54.0 -15° 47.3	217° 25.9 -15° 52.3	231° 57.7 -15° 57.1	246° 29.6 -16° 01.9	261° 01.4 -16° 06.7	275° 33.1 -16° 11.3	290° 04.8 -16° 15.9	+31.9 -4.9	14.8 54.2
Чт 29	147° 56.3 -17° 15.9	162° 27.4 -17° 19.2	176° 58.5 -17° 22.5	191° 29.6 -17° 25.8	206° 00.6 -17° 28.9	220° 31.7 -17° 32.0	235° 02.6 -17° 35.0	249° 33.6 -17° 37.9	264° 04.5 -17° 40.7	278° 35.4 -17° 43.4	293° 06.2 -17° 46.1	+31.0 -3.0	14.9 54.5
Пт 30	150° 45.1 -18° 15.8	165° 15.5 -18° 17.0	179° 45.8 -18° 18.2	194° 16.1 -18° 19.4	208° 46.4 -18° 20.4	223° 16.7 -18° 21.3	237° 46.9 -18° 22.2	252° 17.1 -18° 22.9	266° 47.3 -18° 23.6	281° 17.5 -18° 24.1	295° 47.6 -18° 24.6	+30.2 -0.9	14.9 54.8

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Полнолуние: 2 03h54 — Последняя четв.: 9 19h43 — Новолуние: 16 10h25 — Первая четв.: 23 14h35

СОЛНЦЕ

Июль 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	179° 02.3	194° 02.2	209° 02.1	224° 01.9	239° 01.8	254° 01.7	89° 00.2	104° 00.0	118° 59.9	133° 59.8	148° 59.7	163° 59.6	-0.1
	23° 06.5	23° 06.3	23° 06.2	23° 06.0	23° 05.8	23° 05.7	23° 03.4	23° 03.2	23° 03.0	23° 02.9	23° 02.7	23° 02.5	-0.2
Вс 2	178° 59.4	193° 59.3	208° 59.2	223° 59.1	238° 59.0	253° 58.9	88° 57.3	103° 57.2	118° 57.1	133° 57.0	148° 56.9	163° 56.8	-0.1
	23° 02.3	23° 02.1	23° 02.0	23° 01.8	23° 01.6	23° 01.4	22° 58.9	22° 58.7	22° 58.5	22° 58.3	22° 58.1	22° 57.9	-0.2
Пн 3	178° 56.7	193° 56.5	208° 56.4	223° 56.3	238° 56.2	253° 56.1	88° 54.6	103° 54.5	118° 54.4	133° 54.3	148° 54.2	163° 54.1	-0.1
	22° 57.7	22° 57.5	22° 57.3	22° 57.1	22° 56.9	22° 56.7	22° 54.0	22° 53.8	22° 53.6	22° 53.4	22° 53.2	22° 53.0	-0.2
Вт 4	178° 53.9	193° 53.8	208° 53.7	223° 53.6	238° 53.5	253° 53.4	88° 52.0	103° 51.9	118° 51.7	133° 51.6	148° 51.5	163° 51.4	-0.1
	22° 52.7	22° 52.5	22° 52.3	22° 52.1	22° 51.9	22° 51.7	22° 48.7	22° 48.5	22° 48.3	22° 48.1	22° 47.8	22° 47.6	-0.2
Ср 5	178° 51.3	193° 51.2	208° 51.1	223° 51.0	238° 50.9	253° 50.8	88° 49.4	103° 49.3	118° 49.2	133° 49.1	148° 49.0	163° 48.9	-0.1
	22° 47.4	22° 47.1	22° 46.9	22° 46.7	22° 46.4	22° 46.2	22° 43.1	22° 42.8	22° 42.6	22° 42.3	22° 42.1	22° 41.8	-0.2
Чт 6	178° 48.8	193° 48.7	208° 48.5	223° 48.4	238° 48.3	253° 48.2	88° 46.9	103° 46.8	118° 46.7	133° 46.6	148° 46.5	163° 46.4	-0.1
	22° 41.6	22° 41.3	22° 41.1	22° 40.8	22° 40.6	22° 40.3	22° 37.0	22° 36.7	22° 36.5	22° 36.2	22° 35.9	22° 35.7	-0.2
Пт 7	178° 46.3	193° 46.2	208° 46.1	223° 46.0	238° 45.9	253° 45.8	88° 44.5	103° 44.4	118° 44.3	133° 44.2	148° 44.1	163° 44.0	-0.1
	22° 35.4	22° 35.1	22° 34.9	22° 34.6	22° 34.3	22° 34.1	22° 30.5	22° 30.2	22° 30.0	22° 29.7	22° 29.4	22° 29.1	-0.3
Сб 8	178° 43.9	193° 43.8	208° 43.7	223° 43.6	238° 43.5	253° 43.4	88° 42.2	103° 42.1	118° 42.0	133° 41.9	148° 41.8	163° 41.7	-0.1
	22° 28.8	22° 28.5	22° 28.3	22° 28.0	22° 27.7	22° 27.4	22° 23.6	22° 23.4	22° 23.1	22° 22.8	22° 22.5	22° 22.2	-0.3
Вс 9	178° 41.6	193° 41.5	208° 41.4	223° 41.3	238° 41.3	253° 41.2	88° 40.0	103° 39.9	118° 39.8	133° 39.7	148° 39.6	163° 39.5	-0.1
	22° 21.9	22° 21.6	22° 21.3	22° 21.0	22° 20.7	22° 20.4	22° 16.4	22° 16.1	22° 15.8	22° 15.5	22° 15.2	22° 14.8	-0.3
Пн 10	178° 39.4	193° 39.3	208° 39.3	223° 39.2	238° 39.1	253° 39.0	88° 37.9	103° 37.8	118° 37.7	133° 37.6	148° 37.5	163° 37.4	-0.1
	22° 14.5	22° 14.2	22° 13.9	22° 13.6	22° 13.3	22° 12.9	22° 08.8	22° 08.4	22° 08.1	22° 07.8	22° 07.5	22° 07.1	-0.3
Вт 11	178° 37.3	193° 37.3	208° 37.2	223° 37.1	238° 37.0	253° 36.9	88° 35.9	103° 35.8	118° 35.7	133° 35.6	148° 35.5	163° 35.4	-0.1
	22° 06.8	22° 06.5	22° 06.1	22° 05.8	22° 05.5	22° 05.1	22° 00.8	22° 00.4	22° 00.1	21° 59.7	21° 59.4	21° 59.0	-0.3
Ср 12	178° 35.4	193° 35.3	208° 35.2	223° 35.1	238° 35.0	253° 35.0	88° 34.0	103° 33.9	118° 33.8	133° 33.7	148° 33.7	163° 33.6	-0.1
	21° 58.7	21° 58.3	21° 58.0	21° 57.7	21° 57.3	21° 57.0	21° 52.4	21° 52.0	21° 51.6	21° 51.3	21° 50.9	21° 50.6	-0.3
Чт 13	178° 33.5	193° 33.4	208° 33.3	223° 33.3	238° 33.2	253° 33.1	88° 32.2	103° 32.1	118° 32.0	133° 32.0	148° 31.9	163° 31.8	-0.1
	21° 50.2	21° 49.8	21° 49.5	21° 49.1	21° 48.8	21° 48.4	21° 43.6	21° 43.2	21° 42.9	21° 42.5	21° 42.1	21° 41.7	-0.4
Пт 14	178° 31.7	193° 31.7	208° 31.6	223° 31.5	238° 31.5	253° 31.4	88° 30.5	103° 30.4	118° 30.4	133° 30.3	148° 30.2	163° 30.2	-0.1
	21° 41.3	21° 41.0	21° 40.6	21° 40.2	21° 39.8	21° 39.5	21° 34.5	21° 34.1	21° 33.7	21° 33.3	21° 32.9	21° 32.5	-0.4
Сб 15	178° 30.1	193° 30.0	208° 30.0	223° 29.9	238° 29.8	253° 29.8	88° 29.0	103° 28.9	118° 28.8	133° 28.8	148° 28.7	163° 28.7	-0.1
	21° 32.1	21° 31.7	21° 31.3	21° 30.9	21° 30.5	21° 30.2	21° 25.0	21° 24.6	21° 24.1	21° 23.7	21° 23.3	21° 22.9	-0.4
Вс 16	178° 28.6	193° 28.5	208° 28.5	223° 28.4	238° 28.4	253° 28.3	88° 27.6	103° 27.5	118° 27.4	133° 27.4	148° 27.3	163° 27.3	-0.1
	21° 22.5	21° 22.1	21° 21.7	21° 21.3	21° 20.9	21° 20.5	21° 15.1	21° 14.7	21° 14.3	21° 13.8	21° 13.4	21° 13.0	-0.4
Пн 17	178° 27.2	193° 27.2	208° 27.1	223° 27.1	238° 27.0	253° 26.9	88° 26.3	103° 26.2	118° 26.2	133° 26.1	148° 26.1	163° 26.0	-0.1
	21° 12.6	21° 12.1	21° 11.7	21° 11.3	21° 10.9	21° 10.4	21° 04.9	21° 04.4	21° 04.0	21° 03.6	21° 03.1	21° 02.7	-0.4
Вт 18	178° 26.0	193° 25.9	208° 25.9	223° 25.8	238° 25.8	253° 25.7	88° 25.1	103° 25.1	118° 25.0	133° 25.0	148° 24.9	163° 24.9	-0.0
	21° 02.3	21° 01.8	21° 01.4	21° 00.9	21° 00.5	21° 00.1	20° 54.3	20° 53.8	20° 53.4	20° 52.9	20° 52.5	20° 52.0	-0.4
Ср 19	178° 24.9	193° 24.8	208° 24.8	223° 24.7	238° 24.7	253° 24.6	88° 24.1	103° 24.1	118° 24.0	133° 24.0	148° 24.0	163° 23.9	-0.0
	20° 51.6	20° 51.1	20° 50.7	20° 50.2	20° 49.8	20° 49.3	20° 43.3	20° 42.9	20° 42.4	20° 42.0	20° 41.5	20° 41.0	-0.5
Чт 20	178° 23.9	193° 23.9	208° 23.8	223° 23.8	238° 23.7	253° 23.7	88° 23.3	103° 23.2	118° 23.2	133° 23.2	148° 23.1	163° 23.1	-0.0
	20° 40.6	20° 40.1	20° 39.6	20° 39.2	20° 38.7	20° 38.2	20° 32.1	20° 31.6	20° 31.1	20° 30.6	20° 30.1	20° 29.7	-0.5
Пт 21	178° 23.1	193° 23.0	208° 23.0	223° 23.0	238° 22.9	253° 22.9	88° 22.5	103° 22.5	118° 22.5	133° 22.5	148° 22.4	163° 22.4	-0.0
	20° 29.2	20° 28.7	20° 28.2	20° 27.7	20° 27.3	20° 26.8	20° 20.4	20° 19.9	20° 19.5	20° 19.0	20° 18.5	20° 18.0	-0.5
Сб 22	178° 22.4	193° 22.4	208° 22.3	223° 22.3	238° 22.3	253° 22.3	88° 22.0	103° 22.0	118° 21.9	133° 21.9	148° 21.9	163° 21.9	-0.0
	20° 17.5	20° 17.0	20° 16.5	20° 16.0	20° 15.5	20° 15.0	20° 08.5	20° 08.0	20° 07.5	20° 06.9	20° 06.4	20° 05.9	-0.5
Вс 23	178° 21.9	193° 21.8	208° 21.8	223° 21.8	238° 21.8	253° 21.8	88° 21.6	103° 21.5	118° 21.5	133° 21.5	148° 21.5	163° 21.5	-0.0
	20° 05.4	20° 04.9	20° 04.4	20° 03.9	20° 03.4	20° 02.9	19° 56.2	19° 55.6	19° 55.1	19° 54.6	19° 54.1	19° 53.6	-0.5
Пн 24	178° 21.5	193° 21.5	208° 21.4	223° 21.4	238° 21.4	253° 21.4	88° 21.3	103° 21.3	118° 21.3	133° 21.3	148° 21.3	163° 21.2	-0.0
	19° 53.0	19° 52.5	19° 52.0	19° 51.5	19° 50.9	19° 50.4	19° 43.5	19° 43.0	19° 42.5	19° 41.9	19° 41.4	19° 40.9	-0.5
Вт 25	178° 21.2	193° 21.2	208° 21.2	223° 21.2	238° 21.2	253° 21.2	88° 21.2	103° 21.2	118° 21.2	133° 21.2	148° 21.2	163° 21.2	-0.0
	19° 40.3	19° 39.8	19° 39.2	19° 38.7	19° 38.2	19° 37.6	19° 30.6	19° 30.0	19° 29.5	19° 28.9	19° 28.4	19° 27.8	-0.5
Ср 26	178° 21.2	193° 21.2	208° 21.2	223° 21.2	238° 21.2	253° 21.2	88° 21.2	103° 21.2	118° 21.2	133° 21.2	148° 21.2	163° 21.2	-0.0
	19° 27.3	19° 26.7	19° 26.2	19° 25.6	19° 25.1	19° 24.5	19° 17.3	19° 16.7	19° 16.2	19° 15.6	19° 15.0	19° 14.5	-0.6
Чт 27	178° 21.2	193° 21.2	208° 21.2	223° 21.3	238° 21.3	253° 21.3	88° 21.4	103° 21.4	118° 21.4	133° 21.4	148° 21.4	163° 21.5	+0.0
	19° 13.9	19° 13.3	19° 12.8	19° 12.2	19° 11.7	19° 11.1	19° 03.7	19° 03.1	19° 02.5	19° 02.0	19° 01.4	19° 00.8	-0.6
Пт 28	178° 21.5	193° 21.5	208° 21.5	223° 21.5	238° 21.5	253° 21.5	88° 21.7	103° 21.8	118° 21.8	133° 21.8	148° 21.8	163° 21.8	+0.0
	19° 00.2	18° 59.7	18° 59.1	18° 58.5	18° 57.9	18° 57.3	18° 49.8	18° 49.2	18° 48.6	18° 48.0	18° 47.4	18° 46.8	-0.6
Сб 29	178° 21.8	193° 21.9	208° 21.9	223° 21.9	238° 21.9	253° 21.9	88° 22.2	103° 22.3	118° 22.3	133° 22.3	148° 22.3	163° 22.4	+0.0
	18° 46.2	18° 45.6	18° 45.1	18° 44.5	18° 43.9	18° 43.3	18° 35.5	18° 34.9	18° 34.3	18° 33.7	18° 33.1	18° 32.5	-0.6
Вс 30	178° 22.4	193° 22.4	208° 22.4	223° 22.5	238° 22.5	253° 22.5	88° 22.9	103° 22.9	118° 22.9	133° 23.0	148° 23.0	163° 23.0	+0.0
	18° 31.9	18° 31.3	18° 30.7	18° 30.1	18° 29.5	18° 28.9	18° 21.0	18° 20.4	18° 19.8	18° 19.2	18° 18.6	18° 17.9	-0.6
Пн 31	178° 23.1	193° 23.1	208° 23.1	223° 23.2	238° 23.2	253° 23.2	88° 23.7	103° 23.7	118° 23.8	133° 23.8	148° 23.8	163° 23.9	+0.0
	18° 17.3	18° 16.7	18° 16.1	18° 15.5	18° 14.9	18° 14.2	18° 06.2	18° 05.6	18° 04.9	18° 04.3	18° 03.7	18° 03.0	-0.6

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2034

	Д	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	Δ'/h	R/p
○	Сб 1	66° 17.9	80° 47.8	95° 17.7	109° 47.6	124° 17.5	138° 47.4	153° 17.2	167° 47.0	182° 16.9	196° 46.7	211° 16.5	+29.9	15.0
		-18° 24.9	-18° 24.5	-18° 23.9	-18° 23.3	-18° 22.6	-18° 21.8	-18° 20.9	-18° 20.0	-18° 18.9	-18° 17.7	-18° 16.4	+0.8	55.1
	Вс 2	68° 42.0	83° 11.6	97° 41.3	112° 10.9	126° 40.5	141° 10.1	155° 39.7	170° 09.4	184° 39.0	199° 08.6	213° 38.2	+29.6	15.2
		-17° 46.4	-17° 43.6	-17° 40.8	-17° 37.8	-17° 34.8	-17° 31.7	-17° 28.5	-17° 25.2	-17° 21.8	-17° 18.3	-17° 14.7	+3.2	55.6
	Пн 3	71° 02.5	85° 32.1	100° 01.8	114° 31.4	129° 01.1	143° 30.8	158° 00.5	172° 30.1	186° 59.8	201° 29.5	215° 59.2	+29.7	15.3
		-16° 10.3	-16° 05.3	-16° 00.3	-15° 55.1	-15° 49.8	-15° 44.5	-15° 39.1	-15° 33.5	-15° 27.9	-15° 22.3	-15° 16.5	+5.4	56.1
	Вт 4	73° 25.9	87° 55.8	102° 25.6	116° 55.5	131° 25.4	145° 55.3	160° 25.2	174° 55.1	189° 25.0	203° 55.0	218° 24.9	+29.9	15.4
		-13° 40.4	-13° 33.3	-13° 26.2	-13° 19.1	-13° 11.8	-13° 04.5	-12° 57.1	-12° 49.6	-12° 42.1	-12° 34.5	-12° 26.8	+7.4	56.6
	Ср 5	75° 55.3	90° 25.4	104° 55.5	119° 25.6	133° 55.7	148° 25.9	162° 56.0	177° 26.1	191° 56.3	206° 26.4	220° 56.6	+30.1	15.6
		-10° 23.5	-10° 14.8	-10° 06.0	-9° 57.2	-9° 48.3	-9° 39.3	-9° 30.3	-9° 21.3	-9° 12.1	-9° 03.0	-8° 53.7	+9.0	57.2
	Чт 6	78° 29.4	92° 59.6	107° 29.8	122° 00.0	136° 30.2	151° 00.4	165° 30.6	180° 00.8	194° 31.0	209° 01.2	223° 31.3	+30.2	15.7
		-6° 29.5	-6° 19.6	-6° 09.6	-5° 59.5	-5° 49.4	-5° 39.3	-5° 29.2	-5° 19.0	-5° 08.7	-4° 58.5	-4° 48.2	+10.1	57.7
	Пт 7	81° 02.9	95° 33.0	110° 02.9	124° 32.9	139° 02.9	153° 32.9	168° 02.8	182° 32.7	197° 02.6	211° 32.5	226° 02.3	+29.9	15.9
		-2° 10.4	-1° 59.7	-1° 49.0	-1° 38.2	-1° 27.5	-1° 16.7	-1° 05.9	-0° 55.1	-0° 44.3	-0° 33.5	-0° 22.7	+10.8	58.2
	Сб 8	83° 27.3	97° 56.8	112° 26.2	126° 55.6	141° 24.9	155° 54.2	170° 23.5	184° 52.8	199° 22.0	213° 51.1	228° 20.3	+29.3	16.0
		2° 20.3	2° 31.2	2° 42.0	2° 52.9	3° 03.7	3° 14.5	3° 25.3	3° 36.1	3° 46.9	3° 57.7	4° 08.5	+10.8	58.7
◑	Вс 9	85° 32.6	100° 01.1	114° 29.6	128° 57.9	143° 26.3	157° 54.6	172° 22.8	186° 51.0	201° 19.2	215° 47.3	230° 15.3	+28.3	16.1
		6° 47.3	6° 57.6	7° 08.0	7° 18.3	7° 28.5	7° 38.8	7° 49.0	7° 59.1	8° 09.2	8° 19.3	8° 29.3	+10.2	59.2
	Пн 10	87° 09.8	101° 37.0	116° 04.1	130° 31.2	144° 58.2	159° 25.2	173° 52.1	188° 19.0	202° 45.8	217° 12.6	231° 39.3	+27.0	16.3
		10° 53.6	11° 02.8	11° 11.9	11° 20.9	11° 29.9	11° 38.8	11° 47.7	11° 56.4	12° 05.1	12° 13.8	12° 22.3	+8.9	59.6
	Вт 11	88° 13.2	102° 39.1	117° 04.8	131° 30.6	145° 56.2	160° 21.8	174° 47.4	189° 12.9	203° 38.4	218° 03.8	232° 29.2	+25.6	16.3
		14° 21.2	14° 28.4	14° 35.6	14° 42.6	14° 49.6	14° 56.5	15° 03.2	15° 09.9	15° 16.5	15° 22.9	15° 29.3	+6.8	59.9
	Ср 12	88° 44.5	103° 09.2	117° 33.8	131° 58.5	146° 23.1	160° 47.6	175° 12.2	189° 36.7	204° 01.2	218° 25.6	232° 50.0	+24.6	16.3
		16° 52.3	16° 56.9	17° 01.5	17° 05.9	17° 10.2	17° 14.4	17° 18.4	17° 22.4	17° 26.2	17° 29.9	17° 33.5	+4.1	60.0
	Чт 13	88° 54.1	103° 18.3	117° 42.5	132° 06.6	146° 30.8	160° 55.0	175° 19.1	189° 43.3	204° 07.5	218° 31.7	232° 55.9	+24.2	16.3
		18° 12.6	18° 14.2	18° 15.6	18° 17.0	18° 18.2	18° 19.3	18° 20.3	18° 21.1	18° 21.8	18° 22.4	18° 22.9	+1.0	59.8
	Пт 14	89° 00.6	103° 25.1	117° 49.7	132° 14.2	146° 38.8	161° 03.5	175° 28.1	189° 52.8	204° 17.6	218° 42.4	233° 07.2	+24.7	16.2
		18° 14.6	18° 13.0	18° 11.3	18° 09.5	18° 07.6	18° 05.6	18° 03.4	18° 01.1	17° 58.7	17° 56.2	17° 53.5	-2.1	59.5
●	Сб 15	89° 25.4	103° 51.0	118° 16.7	132° 42.5	147° 08.3	161° 34.2	176° 00.1	190° 26.1	204° 52.2	219° 18.3	233° 44.5	+25.9	16.1
		17° 00.1	16° 55.6	16° 51.1	16° 46.4	16° 41.7	16° 36.8	16° 31.8	16° 26.8	16° 21.6	16° 16.3	16° 11.0	-4.9	59.0
	Вс 16	90° 25.8	104° 53.1	119° 20.5	133° 47.9	148° 15.5	162° 43.1	177° 10.8	191° 38.5	206° 06.3	220° 34.2	235° 02.2	+27.6	15.9
		14° 39.5	14° 32.7	14° 25.8	14° 18.9	14° 11.8	14° 04.7	13° 57.6	13° 50.3	13° 43.0	13° 35.6	13° 28.1	-7.1	58.3
	Пн 17	92° 10.7	106° 39.9	121° 09.1	135° 38.4	150° 07.8	164° 37.2	179° 06.7	193° 36.3	208° 06.0	222° 35.7	237° 05.5	+29.5	15.7
		11° 28.5	11° 20.0	11° 11.5	11° 03.0	10° 54.4	10° 45.7	10° 37.1	10° 28.3	10° 19.5	10° 10.7	10° 01.8	-8.7	57.5
	Вт 18	94° 40.5	109° 11.3	123° 42.2	138° 13.2	152° 44.2	167° 15.3	181° 46.4	196° 17.7	210° 48.9	225° 20.2	239° 51.6	+31.1	15.5
		7° 44.3	7° 34.9	7° 25.5	7° 16.0	7° 06.5	6° 57.0	6° 47.4	6° 37.9	6° 28.3	6° 18.7	6° 09.1	-9.5	56.7
	Ср 19	97° 48.6	112° 20.8	126° 53.1	141° 25.3	155° 57.7	170° 30.0	185° 02.5	199° 34.9	214° 07.4	228° 39.9	243° 12.5	+32.4	15.2
		3° 43.0	3° 33.2	3° 23.4	3° 13.6	3° 03.8	2° 53.9	2° 44.1	2° 34.3	2° 24.4	2° 14.6	2° 04.8	-9.8	55.9
	Чт 20	101° 25.3	115° 58.4	130° 31.6	145° 04.7	159° 37.9	174° 11.1	188° 44.3	203° 17.6	217° 50.9	232° 24.2	246° 57.5	+33.2	15.1
		-0° 22.1	-0° 31.9	-0° 41.6	-0° 51.3	-1° 01.0	-1° 10.7	-1° 20.3	-1° 30.0	-1° 39.6	-1° 49.2	-1° 58.8	-9.7	55.2
	Пт 21	115° 58.4	130° 31.6	145° 04.7	159° 37.9	174° 11.1	188° 44.3	203° 17.6	217° 50.9	232° 24.2	246° 57.5	261° 30.8	+33.2	15.1
		-0° 31.9	-0° 41.6	-0° 51.3	-1° 01.0	-1° 10.7	-1° 20.3	-1° 30.0	-1° 39.6	-1° 49.2	-1° 58.8	-2° 08.4	-9.7	55.2
	Сб 22	119° 52.8	134° 26.3	148° 59.9	163° 33.5	178° 07.1	192° 40.7	207° 14.2	221° 47.8	236° 21.4	250° 55.1	265° 28.7	+33.6	14.9
		-4° 29.7	-4° 38.9	-4° 48.1	-4° 57.3	-5° 06.5	-5° 15.6	-5° 24.7	-5° 33.8	-5° 42.8	-5° 51.8	-6° 00.8	-9.1	54.7
◐	Вс 23	123° 52.6	138° 26.2	152° 59.7	167° 33.3	182° 06.8	196° 40.3	211° 13.8	225° 47.3	240° 20.8	254° 54.3	269° 27.7	+33.5	14.8
		-8° 11.5	-8° 20.0	-8° 28.3	-8° 36.7	-8° 45.0	-8° 53.3	-9° 01.5	-9° 09.7	-9° 17.9	-9° 26.0	-9° 34.0	-8.3	54.3
	Пн 24	127° 47.7	142° 20.8	156° 54.0	171° 27.1	186° 00.2	200° 33.3	215° 06.4	229° 39.4	244° 12.4	258° 45.4	273° 18.3	+33.1	14.8
		-11° 29.6	-11° 37.0	-11° 44.3	-11° 51.5	-11° 58.7	-12° 05.8	-12° 12.9	-12° 19.9	-12° 26.8	-12° 33.8	-12° 40.6	-7.1	54.2
	Вт 25	131° 29.4	146° 01.9	160° 34.3	175° 06.7	189° 39.1	204° 11.5	218° 43.8	233° 16.1	247° 48.4	262° 20.6	276° 52.8	+32.3	14.8
		-14° 16.8	-14° 22.7	-14° 28.6	-14° 34.4	-14° 40.1	-14° 45.8	-14° 51.5	-14° 57.0	-15° 02.5	-15° 07.9	-15° 13.3	-5.7	54.2
	Ср 26	134° 51.7	149° 23.3	163° 54.9	178° 26.5	192° 58.0	207° 29.5	222° 00.9	236° 32.4	251° 03.7	265° 35.1	280° 06.4	+31.5	14.8
		-16° 25.6	-16° 29.9	-16° 34.0	-16° 38.2	-16° 42.2	-16° 46.1	-16° 50.0	-16° 53.8	-16° 57.6	-17° 01.2	-17° 04.8	-3.9	54.4
	Чт 27	137° 51.8	152° 22.6	166° 53.3	181° 23.9	195° 54.6	210° 25.2	224° 55.8	239° 26.3	253° 56.8	268° 27.3	282° 57.8	+30.6	14.9
		-17° 49.0	-17° 51.3	-17° 53.5	-17° 55.6	-17° 57.6	-17° 59.6	-18° 01.5	-18° 03.2	-18° 04.9	-18° 06.5	-18° 08.1	-1.9	54.7
	Пт 28	140° 30.8	155° 00.8	169° 30.8	184° 00.7	198° 30.6	213° 00.5	227° 30.3	242° 00.1	256° 29.9	270° 59.7	285° 29.5	+29.9	15.1
		-18° 20.3	-18° 20.4	-18° 20.4	-18° 20.4	-18° 20.2	-18° 19.9	-18° 19.6	-18° 19.1	-18° 18.6	-18° 17.9	-18° 17.2	+0.3	55.2
	Сб 29	142° 53.4	157° 22.9	171° 52.3	186° 21.7	200° 51.1	215° 20.5	229° 49.9	244° 19.3	258° 48.7	273° 18.0	287° 47.3	+29.4	15.2
		-17° 54.9	-17° 52.7	-17° 50.4	-17° 48.0	-17° 45.4	-17° 42.8	-17° 40.1	-17° 37.3	-17° 34.4	-17° 31.4	-17° 28.4	+2.7	55.8
	Вс 30	145° 06.5	159° 35.7	174° 05.0	188° 34.2	203° 03.4	217° 32.6	232° 01.9	246° 31.1	261° 00.3	275° 29.5	289° 58.7	+29.2	15.4
		-16° 30.9	-16° 26.4	-16° 21.7	-16° 17.0	-16° 12.1	-16° 07.2	-16° 02.2	-15° 57.1	-15° 51.9	-15° 46.6	-15° 41.2	+5.0	56.3
○	Пн 31	147° 17.4	161° 46.6	176° 15.9	190° 45.2	205° 14.5	219° 43.8	234° 13.1	248° 42.4	263° 11.7	277° 41.0	292° 10.4	+29.3	15.5
		-14° 10.3	-14° 03.5	-13° 56.7	-13° 49.8	-13° 42.9	-13° 35.8	-13° 28.7	-13° 21.5	-13° 14.2	-13° 06.8	-12° 59.4	+7.1	56.9

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Полнолуние: 1 17h44 — Последняя четв.: 9 01h59 — Новолуние: 15 18h15 — Первая четв.: 23 07h05 — Полнолуние: 31 05h54

СОЛНЦЕ

Август 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	178° 23.9 18° 02.4	193° 24.0 18° 01.8	208° 24.0 18° 01.2	223° 24.0 18° 00.5	238° 24.1 17° 59.9	253° 24.1 17° 59.3	88° 24.6 17° 51.1	103° 24.7 17° 50.4	118° 24.7 17° 49.8	133° 24.8 17° 49.1	148° 24.8 17° 48.5	163° 24.9 17° 47.9	+0.0 -0.6
Ср 2	178° 24.9 17° 47.2	193° 25.0 17° 46.6	208° 25.0 17° 45.9	223° 25.0 17° 45.3	238° 25.1 17° 44.7	253° 25.1 17° 44.0	88° 25.7 17° 35.6	103° 25.8 17° 35.0	118° 25.8 17° 34.3	133° 25.9 17° 33.7	148° 25.9 17° 33.0	163° 26.0 17° 32.4	+0.0 -0.6
Чт 3	178° 26.0 17° 31.7	193° 26.1 17° 31.1	208° 26.2 17° 30.4	223° 26.2 17° 29.8	238° 26.3 17° 29.1	253° 26.3 17° 28.5	88° 27.0 17° 19.9	103° 27.1 17° 19.3	118° 27.1 17° 18.6	133° 27.2 17° 17.9	148° 27.2 17° 17.3	163° 27.3 17° 16.6	+0.1 -0.7
Пт 4	178° 27.3 17° 16.0	193° 27.4 17° 15.3	208° 27.5 17° 14.6	223° 27.5 17° 14.0	238° 27.6 17° 13.3	253° 27.6 17° 12.6	88° 28.4 17° 03.9	103° 28.5 17° 03.3	118° 28.5 17° 02.6	133° 28.6 17° 01.9	148° 28.7 17° 01.3	163° 28.7 17° 00.6	+0.1 -0.7
Сб 5	178° 28.8 16° 59.9	193° 28.8 16° 59.2	208° 28.9 16° 58.6	223° 29.0 16° 57.9	238° 29.0 16° 57.2	253° 29.1 16° 56.5	88° 30.0 16° 47.7	103° 30.0 16° 47.0	118° 30.1 16° 46.3	133° 30.2 16° 45.6	148° 30.2 16° 44.9	163° 30.3 16° 44.3	+0.1 -0.7
Вс 6	178° 30.4 16° 43.6	193° 30.4 16° 42.9	208° 30.5 16° 42.2	223° 30.6 16° 41.5	238° 30.6 16° 40.8	253° 30.7 16° 40.1	88° 31.6 16° 31.1	103° 31.7 16° 30.5	118° 31.8 16° 29.8	133° 31.9 16° 29.1	148° 31.9 16° 28.4	163° 32.0 16° 27.7	+0.1 -0.7
Пн 7	178° 32.1 16° 27.0	193° 32.2 16° 26.3	208° 32.2 16° 25.6	223° 32.3 16° 24.9	238° 32.4 16° 24.2	253° 32.5 16° 23.5	88° 33.5 16° 14.3	103° 33.6 16° 13.6	118° 33.6 16° 12.9	133° 33.7 16° 12.2	148° 33.8 16° 11.5	163° 33.9 16° 10.8	+0.1 -0.7
Вт 8	178° 34.0 16° 10.1	193° 34.0 16° 09.4	208° 34.1 16° 08.7	223° 34.2 16° 08.0	238° 34.3 16° 07.3	253° 34.4 16° 06.6	88° 35.5 15° 57.3	103° 35.5 15° 56.6	118° 35.6 15° 55.9	133° 35.7 15° 55.1	148° 35.8 15° 54.4	163° 35.9 15° 53.7	+0.1 -0.7
Ср 9	178° 36.0 15° 53.0	193° 36.1 15° 52.3	208° 36.1 15° 51.5	223° 36.2 15° 50.8	238° 36.3 15° 50.1	253° 36.4 15° 49.4	88° 37.6 15° 40.0	103° 37.7 15° 39.2	118° 37.8 15° 38.5	133° 37.9 15° 37.8	148° 37.9 15° 37.1	163° 38.0 15° 36.3	+0.1 -0.7
Чт 10	178° 38.1 15° 35.6	193° 38.2 15° 34.9	208° 38.3 15° 34.1	223° 38.4 15° 33.4	238° 38.5 15° 32.7	253° 38.6 15° 31.9	88° 39.8 15° 22.4	103° 39.9 15° 21.7	118° 40.0 15° 20.9	133° 40.1 15° 20.2	148° 40.2 15° 19.4	163° 40.3 15° 18.7	+0.1 -0.7
Пт 11	178° 40.4 15° 18.0	193° 40.5 15° 17.2	208° 40.6 15° 16.5	223° 40.7 15° 15.7	238° 40.8 15° 15.0	253° 40.9 15° 14.3	88° 42.2 15° 04.6	103° 42.3 15° 03.8	118° 42.4 15° 03.1	133° 42.5 15° 02.3	148° 42.6 15° 01.6	163° 42.7 15° 00.8	+0.1 -0.7
Сб 12	178° 42.8 15° 00.1	193° 43.0 14° 59.3	208° 43.1 14° 58.6	223° 43.2 14° 57.8	238° 43.3 14° 57.1	253° 43.4 14° 56.3	88° 44.8 14° 46.5	103° 44.9 14° 45.8	118° 45.0 14° 45.0	133° 45.1 14° 44.2	148° 45.2 14° 43.5	163° 45.3 14° 42.7	+0.1 -0.7
Вс 13	178° 45.4 14° 42.0	193° 45.5 14° 41.2	208° 45.6 14° 40.4	223° 45.7 14° 39.7	238° 45.9 14° 38.9	253° 46.0 14° 38.2	88° 47.4 14° 28.2	103° 47.5 14° 27.5	118° 47.7 14° 26.7	133° 47.8 14° 25.9	148° 47.9 14° 25.2	163° 48.0 14° 24.4	+0.1 -0.8
Пн 14	178° 48.1 14° 23.6	193° 48.2 14° 22.8	208° 48.4 14° 22.1	223° 48.5 14° 21.3	238° 48.6 14° 20.5	253° 48.7 14° 19.8	88° 50.2 14° 09.7	103° 50.4 14° 08.9	118° 50.5 14° 08.1	133° 50.6 14° 07.4	148° 50.7 14° 06.6	163° 50.8 14° 05.8	+0.1 -0.8
Вт 15	178° 51.0 14° 05.0	193° 51.1 14° 04.3	208° 51.2 14° 03.5	223° 51.3 14° 02.7	238° 51.5 14° 01.9	253° 51.6 14° 01.1	88° 53.2 13° 51.0	103° 53.3 13° 50.2	118° 53.4 13° 49.4	133° 53.6 13° 48.6	148° 53.7 13° 47.8	163° 53.8 13° 47.0	+0.1 -0.8
Ср 16	178° 53.9 13° 46.2	193° 54.1 13° 45.4	208° 54.2 13° 44.7	223° 54.3 13° 43.9	238° 54.4 13° 43.1	253° 54.6 13° 42.3	88° 56.3 13° 32.0	103° 56.4 13° 31.2	118° 56.5 13° 30.4	133° 56.7 13° 29.6	148° 56.8 13° 28.8	163° 56.9 13° 28.0	+0.1 -0.8
Чт 17	178° 57.0 13° 27.2	193° 57.2 13° 26.4	208° 57.3 13° 25.6	223° 57.4 13° 24.8	238° 57.6 13° 24.0	253° 57.7 13° 23.2	88° 59.5 13° 12.8	103° 59.6 13° 12.0	118° 59.7 13° 11.2	133° 59.9 13° 10.4	149° 00.0 13° 09.6	164° 00.1 13° 08.8	+0.1 -0.8
Пт 18	179° 00.3 13° 08.0	194° 00.4 13° 07.2	209° 00.6 13° 06.4	224° 00.7 13° 05.6	239° 00.8 13° 04.7	254° 01.0 13° 03.9	89° 02.8 12° 53.4	104° 02.9 12° 52.6	119° 03.1 12° 51.8	134° 03.2 12° 51.0	149° 03.4 12° 50.2	164° 03.5 12° 49.3	+0.1 -0.8
Сб 19	179° 03.7 12° 48.5	194° 03.8 12° 47.7	209° 03.9 12° 46.9	224° 04.1 12° 46.1	239° 04.2 12° 45.3	254° 04.4 12° 44.5	89° 06.3 12° 33.8	104° 06.4 12° 33.0	119° 06.6 12° 32.2	134° 06.7 12° 31.4	149° 06.9 12° 30.5	164° 07.0 12° 29.7	+0.1 -0.8
Вс 20	179° 07.1 12° 28.9	194° 07.3 12° 28.1	209° 07.4 12° 27.2	224° 07.6 12° 26.4	239° 07.7 12° 25.6	254° 07.9 12° 24.8	89° 09.8 12° 14.0	104° 10.0 12° 13.2	119° 10.2 12° 12.4	134° 10.3 12° 11.5	149° 10.5 12° 10.7	164° 10.6 12° 09.9	+0.1 -0.8
Пн 21	179° 10.8 12° 09.1	194° 10.9 12° 08.2	209° 11.1 12° 07.4	224° 11.2 12° 06.6	239° 11.4 12° 05.7	254° 11.5 12° 04.9	89° 13.6 11° 54.0	104° 13.7 11° 53.2	119° 13.9 11° 52.4	134° 14.0 11° 51.5	149° 14.2 11° 50.7	164° 14.3 11° 49.9	+0.2 -0.8
Вт 22	179° 14.5 11° 49.0	194° 14.7 11° 48.2	209° 14.8 11° 47.3	224° 15.0 11° 46.5	239° 15.1 11° 45.7	254° 15.3 11° 44.8	89° 17.4 11° 33.9	104° 17.5 11° 33.0	119° 17.7 11° 32.2	134° 17.9 11° 31.3	149° 18.0 11° 30.5	164° 18.2 11° 29.7	+0.2 -0.8
Ср 23	179° 18.4 11° 28.8	194° 18.5 11° 28.0	209° 18.7 11° 27.1	224° 18.8 11° 26.3	239° 19.0 11° 25.4	254° 19.2 11° 24.6	89° 21.3 11° 13.5	104° 21.5 11° 12.7	119° 21.7 11° 11.8	134° 21.8 11° 11.0	149° 22.0 11° 10.1	164° 22.2 11° 09.3	+0.2 -0.8
Чт 24	179° 22.3 11° 08.4	194° 22.5 11° 07.6	209° 22.7 11° 06.7	224° 22.8 11° 05.8	239° 23.0 11° 05.0	254° 23.2 11° 04.1	89° 25.4 10° 53.0	104° 25.5 10° 52.1	119° 25.7 10° 51.3	134° 25.9 10° 50.4	149° 26.1 10° 49.6	164° 26.2 10° 48.7	+0.2 -0.9
Пт 25	179° 26.4 10° 47.8	194° 26.6 10° 47.0	209° 26.8 10° 46.1	224° 26.9 10° 45.3	239° 27.1 10° 44.4	254° 27.3 10° 43.5	89° 29.5 10° 32.3	104° 29.7 10° 31.4	119° 29.9 10° 30.6	134° 30.1 10° 29.7	149° 30.2 10° 28.8	164° 30.4 10° 28.0	+0.2 -0.9
Сб 26	179° 30.6 10° 27.1	194° 30.8 10° 26.2	209° 30.9 10° 25.4	224° 31.1 10° 24.5	239° 31.3 10° 23.6	254° 31.5 10° 22.8	89° 33.8 10° 11.4	104° 34.0 10° 10.6	119° 34.2 10° 09.7	134° 34.3 10° 08.8	149° 34.5 10° 07.9	164° 34.7 10° 07.1	+0.2 -0.9
Вс 27	179° 34.9 10° 06.2	194° 35.1 10° 05.3	209° 35.2 10° 04.4	224° 35.4 10° 03.6	239° 35.6 10° 02.7	254° 35.8 10° 01.8	89° 38.2 9° 50.4	104° 38.3 9° 49.5	119° 38.5 9° 48.6	134° 38.7 9° 47.8	149° 38.9 9° 46.9	164° 39.1 9° 46.0	+0.2 -0.9
Пн 28	179° 39.3 9° 45.1	194° 39.5 9° 44.2	209° 39.6 9° 43.4	224° 39.8 9° 42.5	239° 40.0 9° 41.6	254° 40.2 9° 40.7	89° 42.6 9° 29.2	104° 42.8 9° 28.3	119° 43.0 9° 27.5	134° 43.2 9° 26.6	149° 43.4 9° 25.7	164° 43.6 9° 24.8	+0.2 -0.9
Вт 29	179° 43.7 9° 23.9	194° 43.9 9° 23.0	209° 44.1 9° 22.1	224° 44.3 9° 21.2	239° 44.5 9° 20.4	254° 44.7 9° 19.5	89° 47.2 9° 07.9	104° 47.4 9° 07.0	119° 47.5 9° 06.1	134° 47.7 9° 05.2	149° 47.9 9° 04.3	164° 48.1 9° 03.4	+0.2 -0.9
Ср 30	179° 48.3 9° 02.5	194° 48.5 9° 01.6	209° 48.7 9° 00.8	224° 48.9 8° 59.9	239° 49.1 8° 59.0	254° 49.3 8° 58.1	89° 51.8 8° 46.4	104° 52.0 8° 45.5	119° 52.2 8° 44.6	134° 52.4 8° 43.7	149° 52.6 8° 42.8	164° 52.8 8° 41.9	+0.2 -0.9
Чт 31	179° 53.0 8° 41.0	194° 53.2 8° 40.1	209° 53.4 8° 39.2	224° 53.6 8° 38.3	239° 53.7 8° 37.4	254° 53.9 8° 36.5	89° 56.5 8° 24.8	104° 56.7 8° 23.9	119° 56.9 8° 23.0	134° 57.1 8° 22.1	149° 57.3 8° 21.2	164° 57.5 8° 20.3	+0.2 -0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2034

Д	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	Δ'/h	R/p
Вт 1	62° 34.6	77° 04.1	91° 33.5	106° 02.9	120° 32.3	135° 01.8	149° 31.2	164° 00.6	178° 30.1	192° 59.6	207° 29.1	+29.4	15.6
	-11° 49.2	-11° 41.0	-11° 32.8	-11° 24.5	-11° 16.1	-11° 07.7	-10° 59.2	-10° 50.6	-10° 42.0	-10° 33.3	-10° 24.5	+8.5	57.4
Ср 2	64° 52.0	79° 21.6	93° 51.2	108° 20.8	122° 50.4	137° 20.0	151° 49.6	166° 19.2	180° 48.8	195° 18.5	209° 48.1	+29.6	15.8
	-8° 06.2	-7° 56.5	-7° 46.8	-7° 37.1	-7° 27.3	-7° 17.4	-7° 07.6	-6° 57.6	-6° 47.6	-6° 37.6	-6° 27.6	+9.9	57.9
Чт 3	67° 12.5	81° 42.1	96° 11.8	110° 41.4	125° 11.0	139° 40.6	154° 10.2	168° 39.8	183° 09.4	197° 39.0	212° 08.5	+29.6	15.9
	-3° 52.3	-3° 41.7	-3° 31.1	-3° 20.5	-3° 09.8	-2° 59.1	-2° 48.4	-2° 37.7	-2° 26.9	-2° 16.2	-2° 05.4	+10.7	58.3
Пт 4	69° 31.0	84° 00.4	98° 29.8	112° 59.1	127° 28.5	141° 57.8	156° 27.1	170° 56.4	185° 25.7	199° 54.9	214° 24.2	+29.3	16.0
	0° 37.8	0° 48.7	0° 59.6	1° 10.5	1° 21.4	1° 32.4	1° 43.3	1° 54.2	2° 05.1	2° 15.9	2° 26.8	+10.9	58.7
Сб 5	71° 40.0	86° 08.8	100° 37.6	115° 06.4	129° 35.2	144° 03.9	158° 32.6	173° 01.3	187° 29.9	201° 58.5	216° 27.1	+28.7	16.1
	5° 08.1	5° 18.7	5° 29.3	5° 39.8	5° 50.3	6° 00.8	6° 11.2	6° 21.6	6° 32.0	6° 42.3	6° 52.6	+10.5	59.0
Вс 6	73° 31.5	87° 59.5	102° 27.4	116° 55.4	131° 23.2	145° 51.1	160° 18.9	174° 46.6	189° 14.4	203° 42.0	218° 09.7	+27.8	16.1
	9° 22.0	9° 31.6	9° 41.1	9° 50.6	10° 00.0	10° 09.3	10° 18.6	10° 27.8	10° 37.0	10° 46.1	10° 55.1	+9.3	59.2
◑ Пн 7	74° 59.3	89° 26.2	103° 53.2	118° 20.1	132° 46.9	147° 13.7	161° 40.5	176° 07.2	190° 33.9	205° 00.5	219° 27.1	+26.8	16.2
	13° 02.4	13° 10.3	13° 18.1	13° 25.9	13° 33.5	13° 41.1	13° 48.5	13° 55.9	14° 03.2	14° 10.4	14° 17.6	+7.5	59.3
Вт 8	76° 01.4	90° 27.4	104° 53.3	119° 19.3	133° 45.1	148° 11.0	162° 36.8	177° 02.6	191° 28.4	205° 54.1	220° 19.8	+25.8	16.2
	15° 53.3	15° 58.9	16° 04.4	16° 09.8	16° 15.1	16° 20.3	16° 25.4	16° 30.4	16° 35.2	16° 40.0	16° 44.7	+5.1	59.3
Ср 9	76° 42.3	91° 07.7	105° 33.0	119° 58.3	134° 23.6	148° 48.9	163° 14.2	177° 39.4	192° 04.7	206° 29.9	220° 55.2	+25.3	16.1
	17° 41.1	17° 44.0	17° 46.7	17° 49.3	17° 51.8	17° 54.2	17° 56.5	17° 58.6	18° 00.7	18° 02.6	18° 04.4	+2.3	59.2
Чт 10	77° 13.5	91° 38.8	106° 04.1	120° 29.4	134° 54.7	149° 20.0	163° 45.3	178° 10.7	192° 36.0	207° 01.4	221° 26.8	+25.3	16.1
	18° 16.9	18° 16.8	18° 16.6	18° 16.2	18° 15.7	18° 15.1	18° 14.4	18° 13.5	18° 12.6	18° 11.5	18° 10.3	-0.7	59.0
Пт 11	77° 50.9	92° 16.8	106° 42.7	121° 08.6	135° 34.6	150° 00.6	164° 26.7	178° 52.8	193° 18.9	207° 45.1	222° 11.3	+26.0	16.0
	17° 38.5	17° 35.5	17° 32.3	17° 29.1	17° 25.7	17° 22.3	17° 18.7	17° 15.0	17° 11.2	17° 07.3	17° 03.3	-3.5	58.7
Сб 12	78° 50.5	93° 17.5	107° 44.6	122° 11.7	136° 38.9	151° 06.1	165° 33.4	180° 00.8	194° 28.2	208° 55.7	223° 23.2	+27.3	15.9
	15° 51.2	15° 45.6	15° 39.9	15° 34.1	15° 28.3	15° 22.3	15° 16.3	15° 10.2	15° 04.0	14° 57.7	14° 51.3	-6.0	58.2
Вс 13	80° 23.5	94° 52.0	109° 20.5	123° 49.2	138° 17.9	152° 46.6	167° 15.4	181° 44.3	196° 13.2	210° 42.2	225° 11.3	+28.8	15.7
	13° 06.3	12° 58.7	12° 51.1	12° 43.4	12° 35.6	12° 27.8	12° 19.9	12° 11.9	12° 03.9	11° 55.8	11° 47.6	-7.9	57.6
● Пн 14	82° 34.6	97° 04.6	111° 34.7	126° 04.8	140° 35.1	155° 05.3	169° 35.6	184° 06.0	198° 36.4	213° 06.9	227° 37.5	+30.3	15.5
	9° 39.1	9° 30.2	9° 21.2	9° 12.1	9° 03.1	8° 54.0	8° 44.8	8° 35.7	8° 26.5	8° 17.2	8° 07.9	-9.1	57.0
Вт 15	85° 22.1	99° 53.4	114° 24.9	128° 56.3	143° 27.9	157° 59.4	172° 31.0	187° 02.7	201° 34.4	216° 06.1	230° 37.9	+31.6	15.4
	5° 45.4	5° 35.7	5° 26.0	5° 16.3	5° 06.6	4° 56.9	4° 47.1	4° 37.3	4° 27.5	4° 17.7	4° 07.9	-9.8	56.3
Ср 16	88° 39.7	103° 12.1	117° 44.5	132° 17.0	146° 49.5	161° 22.1	175° 54.6	190° 27.2	204° 59.9	219° 32.5	234° 05.2	+32.6	15.2
	1° 40.2	1° 30.3	1° 20.4	1° 10.6	1° 00.7	0° 50.9	0° 41.0	0° 31.2	0° 21.4	0° 11.6	0° 01.7	-9.8	55.7
Чт 17	92° 18.7	106° 51.8	121° 24.9	135° 58.0	150° 31.1	165° 04.2	179° 37.4	194° 10.6	208° 43.7	223° 16.9	237° 50.2	+33.1	15.0
	-2° 23.9	-2° 33.5	-2° 43.1	-2° 52.6	-3° 02.1	-3° 11.6	-3° 21.1	-3° 30.6	-3° 40.0	-3° 49.4	-3° 58.8	-9.5	55.1
Пт 18	96° 09.5	110° 42.9	125° 16.2	139° 49.6	154° 22.9	168° 56.3	183° 29.6	198° 03.0	212° 36.3	227° 09.7	241° 43.0	+33.4	14.9
	-6° 16.2	-6° 25.2	-6° 34.0	-6° 42.9	-6° 51.7	-7° 00.5	-7° 09.2	-7° 17.9	-7° 26.6	-7° 35.2	-7° 43.8	-8.8	54.6
Сб 19	100° 02.8	114° 36.0	129° 09.2	143° 42.5	158° 15.7	172° 48.9	187° 22.1	201° 55.3	216° 28.4	231° 01.6	245° 34.7	+33.2	14.8
	-9° 47.9	-9° 55.9	-10° 03.7	-10° 11.6	-10° 19.4	-10° 27.1	-10° 34.8	-10° 42.4	-10° 50.0	-10° 57.6	-11° 05.1	-7.7	54.3
Вс 20	114° 36.0	129° 09.2	143° 42.5	158° 15.7	172° 48.9	187° 22.1	201° 55.3	216° 28.4	231° 01.6	245° 34.7	260° 07.9	+33.2	14.8
	-9° 55.9	-10° 03.7	-10° 11.6	-10° 19.4	-10° 27.1	-10° 34.8	-10° 42.4	-10° 50.0	-10° 57.6	-11° 05.1	-11° 12.5	-7.7	54.3
Пн 21	118° 22.6	132° 55.5	147° 28.3	162° 01.0	176° 33.8	191° 06.5	205° 39.2	220° 11.9	234° 44.6	249° 17.2	263° 49.8	+32.7	14.8
	-12° 58.0	-13° 04.6	-13° 11.1	-13° 17.6	-13° 24.0	-13° 30.4	-13° 36.7	-13° 42.9	-13° 49.1	-13° 55.2	-14° 01.3	-6.3	54.2
◐ Вт 22	121° 55.8	136° 28.0	151° 00.2	165° 32.3	180° 04.4	194° 36.4	209° 08.4	223° 40.4	238° 12.4	252° 44.3	267° 16.2	+32.0	14.8
	-15° 24.6	-15° 29.7	-15° 34.6	-15° 39.5	-15° 44.3	-15° 49.1	-15° 53.8	-15° 58.4	-16° 03.0	-16° 07.4	-16° 11.8	-4.7	54.2
Ср 23	125° 11.0	139° 42.3	154° 13.7	168° 45.0	183° 16.3	197° 47.6	212° 18.8	226° 50.0	241° 21.2	255° 52.3	270° 23.4	+31.2	14.9
	-17° 09.1	-17° 12.3	-17° 15.4	-17° 18.5	-17° 21.5	-17° 24.4	-17° 27.2	-17° 29.9	-17° 32.6	-17° 35.2	-17° 37.7	-2.9	54.5
Чт 24	128° 06.0	142° 36.6	157° 07.2	171° 37.7	186° 08.2	200° 38.7	215° 09.2	229° 39.6	244° 10.0	258° 40.3	273° 10.6	+30.5	15.0
	-18° 05.2	-18° 06.3	-18° 07.4	-18° 08.4	-18° 09.3	-18° 10.1	-18° 10.8	-18° 11.5	-18° 12.0	-18° 12.5	-18° 12.8	-0.8	54.9
Пт 25	130° 42.2	145° 12.1	159° 42.0	174° 11.9	188° 41.7	203° 11.5	217° 41.3	232° 11.0	246° 40.8	261° 10.5	275° 40.2	+29.8	15.1
	-18° 07.6	-18° 06.5	-18° 05.3	-18° 04.0	-18° 02.7	-18° 01.2	-17° 59.7	-17° 58.0	-17° 56.3	-17° 54.5	-17° 52.6	+1.5	55.4
Сб 26	133° 03.3	147° 32.7	162° 02.0	176° 31.4	191° 00.8	205° 30.1	219° 59.4	234° 28.7	248° 58.0	263° 27.3	277° 56.6	+29.3	15.3
	-17° 12.7	-17° 09.2	-17° 05.7	-17° 02.1	-16° 58.5	-16° 54.7	-16° 50.8	-16° 46.8	-16° 42.8	-16° 38.6	-16° 34.4	+3.8	56.1
Вс 27	135° 14.4	149° 43.5	164° 12.6	178° 41.7	193° 10.8	207° 39.9	222° 09.0	236° 38.1	251° 07.1	265° 36.2	280° 05.3	+29.1	15.5
	-15° 19.7	-15° 14.0	-15° 08.2	-15° 02.4	-14° 56.4	-14° 50.3	-14° 44.2	-14° 38.0	-14° 31.7	-14° 25.3	-14° 18.8	+6.1	56.9
Пн 28	137° 20.7	151° 49.7	166° 18.7	180° 47.7	195° 16.7	209° 45.7	224° 14.7	238° 43.7	253° 12.7	267° 41.7	282° 10.6	+29.0	15.7
	-12° 31.7	-12° 23.9	-12° 16.1	-12° 08.1	-12° 00.1	-11° 52.1	-11° 43.9	-11° 35.7	-11° 27.4	-11° 19.0	-11° 10.6	+8.1	57.6
○ Вт 29	139° 25.3	153° 54.3	168° 23.2	182° 52.2	197° 21.1	211° 50.1	226° 19.0	240° 48.0	255° 16.9	269° 45.9	284° 14.8	+29.0	15.9
	-8° 55.9	-8° 46.4	-8° 36.9	-8° 27.3	-8° 17.6	-8° 07.9	-7° 58.2	-7° 48.4	-7° 38.5	-7° 28.6	-7° 18.6	+9.7	58.3
Ср 30	141° 28.5	155° 57.4	170° 26.2	184° 55.1	199° 23.9	213° 52.8	228° 21.6	242° 50.4	257° 19.2	271° 48.0	286° 16.8	+28.8	16.1
	-4° 43.7	-4° 33.1	-4° 22.4	-4° 11.7	-4° 01.0	-3° 50.2	-3° 39.4	-3° 28.6	-3° 17.8	-3° 06.9	-2° 56.0	+10.8	58.9
Чт 31	143° 27.5	157° 56.2	172° 24.8	186° 53.3	201° 21.9	215° 50.5	230° 19.0	244° 47.5	259° 16.0	273° 44.5	288° 13.0	+28.5	16.2
	-0° 10.4	0° 00.7	0° 11.8	0° 23.0	0° 34.1	0° 45.3	0° 56.4	1° 07.5	1° 18.7	1° 29.8	1° 40.9	+11.1	59.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 7 06h50 — Новолуние: 14 03h53 — Первая четв.: 22 00h43 — Полнолуние: 29 16h49

СОЛНЦЕ

Сентябрь 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	179° 57.7 8° 19.4	194° 57.9 8° 18.5	209° 58.1 8° 17.6	224° 58.3 8° 16.7	239° 58.5 8° 15.8	254° 58.7 8° 14.8	90° 01.3 8° 03.1	105° 01.5 8° 02.1	120° 01.7 8° 01.2	135° 01.9 8° 00.3	150° 02.1 7° 59.4	165° 02.3 7° 58.5	+0.2 -0.9
Сб 2	180° 02.5 7° 57.6	195° 02.7 7° 56.7	210° 02.9 7° 55.8	225° 03.1 7° 54.9	240° 03.3 7° 53.9	255° 03.5 7° 53.0	90° 06.1 7° 41.2	105° 06.3 7° 40.3	120° 06.6 7° 39.3	135° 06.8 7° 38.4	150° 07.0 7° 37.5	165° 07.2 7° 36.6	+0.2 -0.9
Вс 3	180° 07.4 7° 35.7	195° 07.6 7° 34.8	210° 07.8 7° 33.8	225° 08.0 7° 32.9	240° 08.2 7° 32.0	255° 08.4 7° 31.1	90° 11.1 7° 19.2	105° 11.3 7° 18.2	120° 11.5 7° 17.3	135° 11.7 7° 16.4	150° 11.9 7° 15.5	165° 12.1 7° 14.6	+0.2 -0.9
Пн 4	180° 12.3 7° 13.6	195° 12.5 7° 12.7	210° 12.7 7° 11.8	225° 12.9 7° 10.9	240° 13.1 7° 10.0	255° 13.3 7° 09.0	90° 16.0 6° 57.0	105° 16.2 6° 56.1	120° 16.5 6° 55.2	135° 16.7 6° 54.3	150° 16.9 6° 53.3	165° 17.1 6° 52.4	+0.2 -0.9
Вт 5	180° 17.3 6° 51.5	195° 17.5 6° 50.6	210° 17.7 6° 49.6	225° 17.9 6° 48.7	240° 18.1 6° 47.8	255° 18.3 6° 46.8	90° 21.1 6° 34.8	105° 21.3 6° 33.9	120° 21.5 6° 32.9	135° 21.7 6° 32.0	150° 21.9 6° 31.1	165° 22.1 6° 30.1	+0.2 -0.9
Ср 6	180° 22.3 6° 29.2	195° 22.5 6° 28.3	210° 22.8 6° 27.3	225° 23.0 6° 26.4	240° 23.2 6° 25.5	255° 23.4 6° 24.6	90° 26.1 6° 12.4	105° 26.4 6° 11.5	120° 26.6 6° 10.6	135° 26.8 6° 09.6	150° 27.0 6° 08.7	165° 27.2 6° 07.8	+0.2 -0.9
Чт 7	180° 27.4 6° 06.8	195° 27.6 6° 05.9	210° 27.8 6° 05.0	225° 28.1 6° 04.0	240° 28.3 6° 03.1	255° 28.5 6° 02.2	90° 31.3 5° 50.0	105° 31.5 5° 49.0	120° 31.7 5° 48.1	135° 31.9 5° 47.2	150° 32.1 5° 46.2	165° 32.3 5° 45.3	+0.2 -0.9
Пт 8	180° 32.6 5° 44.3	195° 32.8 5° 43.4	210° 33.0 5° 42.5	225° 33.2 5° 41.5	240° 33.4 5° 40.6	255° 33.6 5° 39.7	90° 36.4 5° 27.4	105° 36.6 5° 26.5	120° 36.9 5° 25.5	135° 37.1 5° 24.6	150° 37.3 5° 23.7	165° 37.5 5° 22.7	+0.2 -0.9
Сб 9	180° 37.7 5° 21.8	195° 37.9 5° 20.8	210° 38.2 5° 19.9	225° 38.4 5° 18.9	240° 38.6 5° 18.0	255° 38.8 5° 17.1	90° 41.6 5° 04.8	105° 41.8 5° 03.8	120° 42.1 5° 02.9	135° 42.3 5° 01.9	150° 42.5 5° 01.0	165° 42.7 5° 00.0	+0.2 -0.9
Вс 10	180° 42.9 4° 59.1	195° 43.2 4° 58.2	210° 43.4 4° 57.2	225° 43.6 4° 56.3	240° 43.8 4° 55.3	255° 44.0 4° 54.4	90° 46.9 4° 42.0	105° 47.1 4° 41.1	120° 47.3 4° 40.1	135° 47.5 4° 39.2	150° 47.7 4° 38.2	165° 48.0 4° 37.3	+0.2 -0.9
Пн 11	180° 48.2 4° 36.3	195° 48.4 4° 35.4	210° 48.6 4° 34.4	225° 48.8 4° 33.5	240° 49.1 4° 32.5	255° 49.3 4° 31.6	90° 52.1 4° 19.2	105° 52.3 4° 18.3	120° 52.6 4° 17.3	135° 52.8 4° 16.4	150° 53.0 4° 15.4	165° 53.2 4° 14.5	+0.2 -0.9
Вт 12	180° 53.4 4° 13.5	195° 53.7 4° 12.6	210° 53.9 4° 11.6	225° 54.1 4° 10.7	240° 54.3 4° 09.7	255° 54.5 4° 08.7	90° 57.4 3° 56.3	105° 57.6 3° 55.4	120° 57.9 3° 54.4	135° 58.1 3° 53.5	150° 58.3 3° 52.5	165° 58.5 3° 51.6	+0.2 -1.0
Ср 13	180° 58.7 3° 50.6	195° 59.0 3° 49.6	210° 59.2 3° 48.7	225° 59.4 3° 47.7	240° 59.6 3° 46.8	255° 59.8 3° 45.8	91° 02.7 3° 33.4	106° 02.9 3° 32.4	121° 03.2 3° 31.5	136° 03.4 3° 30.5	151° 03.6 3° 29.5	166° 03.8 3° 28.6	+0.2 -1.0
Чт 14	181° 04.1 3° 27.6	196° 04.3 3° 26.7	211° 04.5 3° 25.7	226° 04.7 3° 24.7	241° 04.9 3° 23.8	256° 05.2 3° 22.8	91° 08.1 3° 10.4	106° 08.3 3° 09.4	121° 08.5 3° 08.4	136° 08.7 3° 07.5	151° 08.9 3° 06.5	166° 09.2 3° 05.5	+0.2 -1.0
Пт 15	181° 09.4 3° 04.6	196° 09.6 3° 03.6	211° 09.8 3° 02.7	226° 10.1 3° 01.7	241° 10.3 3° 00.7	256° 10.5 2° 59.8	91° 13.4 2° 47.3	106° 13.6 2° 46.3	121° 13.8 2° 45.3	136° 14.1 2° 44.4	151° 14.3 2° 43.4	166° 14.5 2° 42.5	+0.2 -1.0
Сб 16	181° 14.7 2° 41.5	196° 15.0 2° 40.5	211° 15.2 2° 39.6	226° 15.4 2° 38.6	241° 15.6 2° 37.6	256° 15.8 2° 36.7	91° 18.7 2° 24.1	106° 19.0 2° 23.2	121° 19.2 2° 22.2	136° 19.4 2° 21.2	151° 19.6 2° 20.3	166° 19.9 2° 19.3	+0.2 -1.0
Вс 17	181° 20.1 2° 18.3	196° 20.3 2° 17.4	211° 20.5 2° 16.4	226° 20.7 2° 15.4	241° 21.0 2° 14.5	256° 21.2 2° 13.5	91° 24.1 2° 01.0	106° 24.3 2° 00.0	121° 24.5 1° 59.0	136° 24.8 1° 58.1	151° 25.0 1° 57.1	166° 25.2 1° 56.1	+0.2 -1.0
Пн 18	181° 25.4 1° 55.2	196° 25.7 1° 54.2	211° 25.9 1° 53.2	226° 26.1 1° 52.2	241° 26.3 1° 51.3	256° 26.5 1° 50.3	91° 29.4 1° 37.7	106° 29.7 1° 36.8	121° 29.9 1° 35.8	136° 30.1 1° 34.8	151° 30.3 1° 33.9	166° 30.6 1° 32.9	+0.2 -1.0
Вт 19	181° 30.8 1° 31.9	196° 31.0 1° 30.9	211° 31.2 1° 30.0	226° 31.5 1° 29.0	241° 31.7 1° 28.0	256° 31.9 1° 27.1	91° 34.8 1° 14.5	106° 35.0 1° 13.5	121° 35.2 1° 12.5	136° 35.5 1° 11.6	151° 35.7 1° 10.6	166° 35.9 1° 09.6	+0.2 -1.0
Ср 20	181° 36.1 1° 08.7	196° 36.4 1° 07.7	211° 36.6 1° 06.7	226° 36.8 1° 05.7	241° 37.0 1° 04.8	256° 37.2 1° 03.8	91° 40.1 0° 51.2	106° 40.4 0° 50.2	121° 40.6 0° 49.2	136° 40.8 0° 48.3	151° 41.0 0° 47.3	166° 41.2 0° 46.3	+0.2 -1.0
Чт 21	181° 41.5 0° 45.4	196° 41.7 0° 44.4	211° 41.9 0° 43.4	226° 42.1 0° 42.4	241° 42.4 0° 41.5	256° 42.6 0° 40.5	91° 45.5 0° 27.9	106° 45.7 0° 26.9	121° 45.9 0° 25.9	136° 46.1 0° 25.0	151° 46.3 0° 24.0	166° 46.6 0° 23.0	+0.2 -1.0
Пт 22	181° 46.8 0° 22.0	196° 47.0 0° 21.1	211° 47.2 0° 20.1	226° 47.5 0° 19.1	241° 47.7 0° 18.2	256° 47.9 0° 17.2	91° 50.8 0° 04.5	106° 51.0 0° 03.6	121° 51.2 0° 02.6	136° 51.4 0° 01.6	151° 51.6 0° 00.6	166° 51.9 -0° 00.3	+0.2 -1.0
Сб 23	181° 52.1 -0° 01.3	196° 52.3 -0° 02.3	211° 52.5 -0° 03.2	226° 52.7 -0° 04.2	241° 53.0 -0° 05.2	256° 53.2 -0° 06.2	91° 56.0 -0° 18.8	106° 56.3 -0° 19.8	121° 56.5 -0° 20.7	136° 56.7 -0° 21.7	151° 56.9 -0° 22.7	166° 57.1 -0° 23.7	+0.2 -1.0
Вс 24	181° 57.4 -0° 24.6	196° 57.6 -0° 25.6	211° 57.8 -0° 26.6	226° 58.0 -0° 27.6	241° 58.2 -0° 28.5	256° 58.5 -0° 29.5	92° 01.3 -0° 42.2	107° 01.5 -0° 43.1	122° 01.7 -0° 44.1	137° 02.0 -0° 45.1	152° 02.2 -0° 46.0	167° 02.4 -0° 47.0	+0.2 -1.0
Пн 25	182° 02.6 -0° 48.0	197° 02.8 -0° 49.0	212° 03.0 -0° 49.9	227° 03.3 -0° 50.9	242° 03.5 -0° 51.9	257° 03.7 -0° 52.9	92° 06.5 -1° 05.5	107° 06.7 -1° 06.5	122° 06.9 -1° 07.5	137° 07.2 -1° 08.4	152° 07.4 -1° 09.4	167° 07.6 -1° 10.4	+0.2 -1.0
Вт 26	182° 07.8 -1° 11.3	197° 08.0 -1° 12.3	212° 08.2 -1° 13.3	227° 08.5 -1° 14.3	242° 08.7 -1° 15.2	257° 08.9 -1° 16.2	92° 11.7 -1° 28.9	107° 11.9 -1° 29.8	122° 12.1 -1° 30.8	137° 12.3 -1° 31.8	152° 12.5 -1° 32.7	167° 12.8 -1° 33.7	+0.2 -1.0
Ср 27	182° 13.0 -1° 34.7	197° 13.2 -1° 35.7	212° 13.4 -1° 36.6	227° 13.6 -1° 37.6	242° 13.8 -1° 38.6	257° 14.0 -1° 39.6	92° 16.8 -1° 52.2	107° 17.0 -1° 53.2	122° 17.2 -1° 54.1	137° 17.4 -1° 55.1	152° 17.7 -1° 56.1	167° 17.9 -1° 57.1	+0.2 -1.0
Чт 28	182° 18.1 -1° 58.0	197° 18.3 -1° 59.0	212° 18.5 -2° 00.0	227° 18.7 -2° 00.9	242° 18.9 -2° 01.9	257° 19.1 -2° 02.9	92° 21.9 -2° 15.5	107° 22.1 -2° 16.5	122° 22.3 -2° 17.5	137° 22.5 -2° 18.4	152° 22.7 -2° 19.4	167° 22.9 -2° 20.4	+0.2 -1.0
Пт 29	182° 23.1 -2° 21.3	197° 23.3 -2° 22.3	212° 23.6 -2° 23.3	227° 23.8 -2° 24.3	242° 24.0 -2° 25.2	257° 24.2 -2° 26.2	92° 26.9 -2° 38.8	107° 27.1 -2° 39.8	122° 27.3 -2° 40.8	137° 27.5 -2° 41.7	152° 27.7 -2° 42.7	167° 27.9 -2° 43.7	+0.2 -1.0
Сб 30	182° 28.1 -2° 44.6	197° 28.3 -2° 45.6	212° 28.5 -2° 46.6	227° 28.8 -2° 47.6	242° 29.0 -2° 48.5	257° 29.2 -2° 49.5	92° 31.8 -3° 02.1	107° 32.0 -3° 03.1	122° 32.2 -3° 04.0	137° 32.4 -3° 05.0	152° 32.6 -3° 06.0	167° 32.9 -3° 06.9	+0.2 -1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2034

Д	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	Δ'/h	R/p
Пт 1	72° 56.6 3° 31.7	87° 24.9 3° 42.7	101° 53.1 3° 53.6	116° 21.3 4° 04.6	130° 49.5 4° 15.5	145° 17.6 4° 26.4	159° 45.8 4° 37.3	174° 13.9 4° 48.2	188° 42.0 4° 59.0	203° 10.1 5° 09.8	217° 38.1 5° 20.6	+28.2 +10.9	16.2 59.5
Сб 2	74° 35.7 7° 57.8	89° 03.3 8° 07.9	103° 30.9 8° 18.0	117° 58.4 8° 28.0	132° 25.9 8° 38.0	146° 53.4 8° 48.0	161° 20.9 8° 57.8	175° 48.4 9° 07.7	190° 15.8 9° 17.4	204° 43.1 9° 27.1	219° 10.5 9° 36.8	+27.5 +9.9	16.2 59.6
Вс 3	75° 57.1 11° 53.7	90° 24.0 12° 02.2	104° 50.8 12° 10.7	119° 17.6 12° 19.1	133° 44.4 12° 27.4	148° 11.1 12° 35.7	162° 37.8 12° 43.8	177° 04.5 12° 51.9	191° 31.2 12° 59.9	205° 57.8 13° 07.8	220° 24.4 13° 15.7	+26.7 +8.2	16.2 59.5
Пн 4	76° 59.9 15° 02.3	91° 26.1 15° 08.7	105° 52.3 15° 14.9	120° 18.4 15° 21.1	134° 44.5 15° 27.1	149° 10.5 15° 33.1	163° 36.6 15° 38.9	178° 02.6 15° 44.7	192° 28.6 15° 50.3	206° 54.6 15° 55.9	221° 20.6 16° 01.3	+26.1 +5.9	16.2 59.3
◑ Вт 5	77° 48.1 17° 10.0	92° 13.8 17° 13.7	106° 39.5 17° 17.3	121° 05.2 17° 20.8	135° 31.0 17° 24.1	149° 56.7 17° 27.4	164° 22.4 17° 30.5	178° 48.0 17° 33.5	193° 13.7 17° 36.4	207° 39.4 17° 39.2	222° 05.1 17° 41.9	+25.7 +3.2	16.1 59.1
Ср 6	78° 30.6 18° 08.1	92° 56.4 18° 08.9	107° 22.2 18° 09.7	121° 47.9 18° 10.2	136° 13.7 18° 10.7	150° 39.6 18° 11.1	165° 05.4 18° 11.3	179° 31.2 18° 11.4	193° 57.1 18° 11.4	208° 23.0 18° 11.3	222° 48.9 18° 11.1	+25.8 +0.3	16.0 58.7
Чт 7	79° 20.2 17° 54.1	93° 46.5 17° 52.0	108° 12.9 17° 49.9	122° 39.3 17° 47.6	137° 05.7 17° 45.3	151° 32.2 17° 42.8	165° 58.6 17° 40.2	180° 25.2 17° 37.5	194° 51.7 17° 34.8	209° 18.3 17° 31.9	223° 45.0 17° 28.9	+26.5 -2.5	15.9 58.3
Пт 8	80° 29.6 16° 31.5	94° 56.9 16° 26.9	109° 24.3 16° 22.2	123° 51.7 16° 17.4	138° 19.2 16° 12.5	152° 46.7 16° 07.6	167° 14.3 16° 02.5	181° 41.9 15° 57.3	196° 09.6 15° 52.1	210° 37.3 15° 46.7	225° 05.1 15° 41.3	+27.6 -5.0	15.8 57.8
Сб 9	82° 08.1 14° 09.7	96° 36.7 14° 03.0	111° 05.4 13° 56.1	125° 34.1 13° 49.3	140° 02.9 13° 42.3	154° 31.8 13° 35.3	169° 00.7 13° 28.2	183° 29.6 13° 21.0	197° 58.6 13° 13.8	212° 27.7 13° 06.5	226° 56.8 12° 59.1	+28.9 -7.1	15.6 57.4
Вс 10	84° 20.0 11° 01.1	98° 49.9 10° 52.8	113° 20.0 10° 44.4	127° 50.1 10° 36.0	142° 20.2 10° 27.5	156° 50.4 10° 19.0	171° 20.6 10° 10.4	185° 50.9 10° 01.8	200° 21.2 9° 53.2	214° 51.6 9° 44.5	229° 22.0 9° 35.7	+30.2 -8.5	15.5 56.8
Пн 11	87° 04.3 7° 20.0	101° 35.5 7° 10.6	116° 06.8 7° 01.3	130° 38.0 6° 51.9	145° 09.4 6° 42.5	159° 40.7 6° 33.1	174° 12.1 6° 23.6	188° 43.6 6° 14.2	203° 15.1 6° 04.7	217° 46.6 5° 55.1	232° 18.2 5° 45.6	+31.4 -9.4	15.4 56.3
● Вт 12	90° 16.4 3° 20.5	104° 48.5 3° 10.7	119° 20.7 3° 00.9	133° 53.0 2° 51.1	148° 25.2 2° 41.3	162° 57.5 2° 31.5	177° 29.8 2° 21.7	192° 02.2 2° 11.9	206° 34.6 2° 02.1	221° 07.0 1° 52.3	235° 39.4 1° 42.5	+32.3 -9.8	15.2 55.8
Ср 13	93° 49.1 -0° 44.2	108° 21.9 -0° 54.0	122° 54.7 -1° 03.7	137° 27.6 -1° 13.4	152° 00.5 -1° 23.1	166° 33.4 -1° 32.7	181° 06.3 -1° 42.4	195° 39.2 -1° 52.0	210° 12.2 -2° 01.7	224° 45.1 -2° 11.3	239° 18.1 -2° 20.9	+32.9 -9.7	15.1 55.3
Чт 14	97° 34.4 -4° 42.4	112° 07.6 -4° 51.6	126° 40.7 -5° 00.8	141° 13.9 -5° 10.0	155° 47.1 -5° 19.2	170° 20.3 -5° 28.3	184° 53.5 -5° 37.4	199° 26.7 -5° 46.5	213° 59.9 -5° 55.5	228° 33.1 -6° 04.5	243° 06.3 -6° 13.5	+33.2 -9.1	14.9 54.8
Пт 15	101° 24.5 -8° 23.8	115° 57.7 -8° 32.2	130° 30.9 -8° 40.6	145° 04.0 -8° 48.9	159° 37.2 -8° 57.1	174° 10.4 -9° 05.3	188° 43.6 -9° 13.5	203° 16.7 -9° 21.6	217° 49.9 -9° 29.7	232° 23.0 -9° 37.7	246° 56.2 -9° 45.7	+33.2 -8.2	14.8 54.4
Сб 16	105° 12.0 -11° 39.8	119° 45.0 -11° 47.0	134° 17.9 -11° 54.2	148° 50.8 -12° 01.3	163° 23.8 -12° 08.3	177° 56.7 -12° 15.3	192° 29.5 -12° 22.2	207° 02.4 -12° 29.1	221° 35.3 -12° 35.9	236° 08.1 -12° 42.7	250° 40.9 -12° 49.4	+32.9 -7.0	14.8 54.2
Вс 17	108° 51.0 -14° 22.8	123° 23.5 -14° 28.6	137° 56.0 -14° 34.2	152° 28.4 -14° 39.8	167° 00.9 -14° 45.4	181° 33.3 -14° 50.9	196° 05.7 -14° 56.3	210° 38.1 -15° 01.6	225° 10.5 -15° 06.9	239° 42.8 -15° 12.1	254° 15.1 -15° 17.2	+32.4 -5.4	14.7 54.1
Пн 18	123° 23.5 -14° 28.6	137° 56.0 -14° 34.2	152° 28.4 -14° 39.8	167° 00.9 -14° 45.4	181° 33.3 -14° 50.9	196° 05.7 -14° 56.3	210° 38.1 -15° 01.6	225° 10.5 -15° 06.9	239° 42.8 -15° 12.1	254° 15.1 -15° 17.2	268° 47.4 -15° 22.3	+32.4 -5.4	14.7 54.1
Вт 19	126° 48.9 -16° 30.1	141° 20.8 -16° 34.1	155° 52.7 -16° 37.9	170° 24.5 -16° 41.7	184° 56.3 -16° 45.5	199° 28.1 -16° 49.1	213° 59.9 -16° 52.7	228° 31.7 -16° 56.2	243° 03.4 -16° 59.6	257° 35.1 -17° 02.9	272° 06.8 -17° 06.2	+31.8 -3.6	14.8 54.2
◐ Ср 20	129° 58.8 -17° 45.9	144° 30.1 -17° 47.9	159° 01.3 -17° 49.8	173° 32.5 -17° 51.6	188° 03.7 -17° 53.4	202° 34.9 -17° 55.1	217° 06.0 -17° 56.7	231° 37.1 -17° 58.2	246° 08.2 -17° 59.6	260° 39.3 -18° 00.9	275° 10.3 -18° 02.2	+31.2 -1.6	14.8 54.4
Чт 21	132° 53.0 -18° 10.9	147° 23.6 -18° 10.8	161° 54.3 -18° 10.6	176° 24.9 -18° 10.3	190° 55.5 -18° 09.9	205° 26.0 -18° 09.5	219° 56.6 -18° 08.9	234° 27.1 -18° 08.3	248° 57.6 -18° 07.6	263° 28.1 -18° 06.7	277° 58.5 -18° 05.8	+30.6 +0.5	15.0 54.9
Пт 22	135° 32.8 -17° 41.6	150° 03.0 -17° 39.2	164° 33.1 -17° 36.8	179° 03.2 -17° 34.3	193° 33.3 -17° 31.7	208° 03.3 -17° 29.0	222° 33.4 -17° 26.2	237° 03.4 -17° 23.3	251° 33.4 -17° 20.3	266° 03.4 -17° 17.3	280° 33.4 -17° 14.1	+30.1 +2.7	15.1 55.5
Сб 23	138° 01.0 -16° 16.0	152° 30.7 -16° 11.4	167° 00.4 -16° 06.7	181° 30.1 -16° 01.9	195° 59.8 -15° 57.1	210° 29.5 -15° 52.1	224° 59.1 -15° 47.1	239° 28.8 -15° 42.0	253° 58.4 -15° 36.7	268° 28.0 -15° 31.4	282° 57.6 -15° 26.1	+29.7 +5.0	15.3 56.2
Вс 24	140° 20.1 -13° 54.8	154° 49.5 -13° 48.1	169° 18.9 -13° 41.2	183° 48.3 -13° 34.3	198° 17.6 -13° 27.3	212° 47.0 -13° 20.2	227° 16.3 -13° 13.1	241° 45.7 -13° 05.8	256° 15.0 -12° 58.5	270° 44.3 -12° 51.1	285° 13.6 -12° 43.6	+29.3 +7.1	15.6 57.1
Пн 25	142° 31.6 -10° 42.1	157° 00.7 -10° 33.4	171° 29.8 -10° 24.6	185° 58.9 -10° 15.8	200° 28.0 -10° 06.9	214° 57.0 -9° 57.9	229° 26.1 -9° 48.9	243° 55.1 -9° 39.8	258° 24.1 -9° 30.6	272° 53.1 -9° 21.4	287° 22.1 -9° 12.1	+29.0 +9.0	15.8 58.0
Вт 26	144° 35.2 -6° 45.6	159° 03.9 -6° 35.4	173° 32.7 -6° 25.1	188° 01.4 -6° 14.8	202° 30.1 -6° 04.4	216° 58.8 -5° 54.0	231° 27.4 -5° 43.6	245° 56.1 -5° 33.1	260° 24.7 -5° 22.5	274° 53.3 -5° 12.0	289° 21.9 -5° 01.3	+28.7 +10.4	16.1 58.9
Ср 27	146° 28.3 -2° 17.6	160° 56.5 -2° 06.5	175° 24.7 -1° 55.3	189° 52.9 -1° 44.1	204° 21.1 -1° 32.9	218° 49.3 -1° 21.7	233° 17.4 -1° 10.4	247° 45.5 -0° 59.2	262° 13.6 -0° 47.9	276° 41.6 -0° 36.6	291° 09.6 -0° 25.3	+28.1 +11.2	16.3 59.6
○ Чт 28	148° 06.7 2° 25.1	162° 34.3 2° 36.5	177° 01.8 2° 47.8	191° 29.3 2° 59.1	205° 56.8 3° 10.4	220° 24.2 3° 21.7	234° 51.6 3° 33.0	249° 19.0 3° 44.3	263° 46.4 3° 55.5	278° 13.7 4° 06.8	292° 40.9 4° 18.0	+27.4 +11.3	16.4 60.1
Пт 29	149° 26.1 7° 02.7	163° 52.9 7° 13.4	178° 19.6 7° 24.0	192° 46.3 7° 34.7	207° 12.9 7° 45.2	221° 39.5 7° 55.7	236° 06.1 8° 06.2	250° 32.6 8° 16.6	264° 59.1 8° 26.9	279° 25.5 8° 37.2	293° 52.0 8° 47.5	+26.6 +10.5	16.5 60.4
Сб 30	150° 24.2 11° 13.6	164° 50.0 11° 22.8	179° 15.9 11° 31.9	193° 41.7 11° 40.9	208° 07.5 11° 49.9	222° 33.2 11° 58.8	236° 59.0 12° 07.5	251° 24.6 12° 16.3	265° 50.3 12° 24.9	280° 15.9 12° 33.4	294° 41.5 12° 41.9	+25.7 +8.8	16.5 60.4

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 5 11h41 — Новолуние: 12 16h13 — Первая четв.: 20 18h39 — Полнолуние: 28 02h56

СОЛНЦЕ

Октябрь 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	182° 33.1	197° 33.3	212° 33.5	227° 33.7	242° 33.9	257° 34.1	92° 36.7	107° 36.9	122° 37.1	137° 37.3	152° 37.5	167° 37.7	+0.2
	-3° 07.9	-3° 08.9	-3° 09.8	-3° 10.8	-3° 11.8	-3° 12.8	-3° 25.3	-3° 26.3	-3° 27.3	-3° 28.2	-3° 29.2	-3° 30.2	-1.0
Пн 2	182° 37.9	197° 38.1	212° 38.3	227° 38.5	242° 38.7	257° 38.9	92° 41.5	107° 41.7	122° 41.9	137° 42.1	152° 42.3	167° 42.5	+0.2
	-3° 31.1	-3° 32.1	-3° 33.1	-3° 34.1	-3° 35.0	-3° 36.0	-3° 48.6	-3° 49.5	-3° 50.5	-3° 51.5	-3° 52.4	-3° 53.4	-1.0
Вт 3	182° 42.7	197° 42.9	212° 43.1	227° 43.3	242° 43.5	257° 43.7	92° 46.2	107° 46.4	122° 46.6	137° 46.8	152° 47.0	167° 47.2	+0.2
	-3° 54.4	-3° 55.3	-3° 56.3	-3° 57.2	-3° 58.2	-3° 59.2	-4° 11.7	-4° 12.7	-4° 13.7	-4° 14.6	-4° 15.6	-4° 16.5	-1.0
Ср 4	182° 47.4	197° 47.6	212° 47.8	227° 47.9	242° 48.1	257° 48.3	92° 50.8	107° 51.0	122° 51.2	137° 51.4	152° 51.6	167° 51.8	+0.2
	-4° 17.5	-4° 18.5	-4° 19.4	-4° 20.4	-4° 21.4	-4° 22.3	-4° 34.8	-4° 35.8	-4° 36.8	-4° 37.7	-4° 38.7	-4° 39.7	-1.0
Чт 5	182° 52.0	197° 52.1	212° 52.3	227° 52.5	242° 52.7	257° 52.9	92° 55.3	107° 55.5	122° 55.7	137° 55.9	152° 56.1	167° 56.3	+0.2
	-4° 40.6	-4° 41.6	-4° 42.5	-4° 43.5	-4° 44.5	-4° 45.4	-4° 57.9	-4° 58.9	-4° 59.8	-5° 00.8	-5° 01.7	-5° 02.7	-1.0
Пт 6	182° 56.5	197° 56.6	212° 56.8	227° 57.0	242° 57.2	257° 57.4	92° 59.8	107° 59.9	123° 00.1	138° 00.3	153° 00.5	168° 00.7	+0.2
	-5° 03.7	-5° 04.6	-5° 05.6	-5° 06.5	-5° 07.5	-5° 08.5	-5° 20.9	-5° 21.9	-5° 22.8	-5° 23.8	-5° 24.7	-5° 25.7	-1.0
Сб 7	183° 00.9	198° 01.0	213° 01.2	228° 01.4	243° 01.6	258° 01.8	93° 04.1	108° 04.3	123° 04.4	138° 04.6	153° 04.8	168° 05.0	+0.2
	-5° 26.7	-5° 27.6	-5° 28.6	-5° 29.5	-5° 30.5	-5° 31.4	-5° 43.9	-5° 44.8	-5° 45.8	-5° 46.7	-5° 47.7	-5° 48.6	-1.0
Вс 8	183° 05.1	198° 05.3	213° 05.5	228° 05.7	243° 05.8	258° 06.0	93° 08.3	108° 08.5	123° 08.6	138° 08.8	153° 09.0	168° 09.2	+0.2
	-5° 49.6	-5° 50.5	-5° 51.5	-5° 52.4	-5° 53.4	-5° 54.3	-6° 06.7	-6° 07.7	-6° 08.6	-6° 09.6	-6° 10.5	-6° 11.5	-1.0
Пн 9	183° 09.3	198° 09.5	213° 09.7	228° 09.8	243° 10.0	258° 10.2	93° 12.4	108° 12.6	123° 12.7	138° 12.9	153° 13.1	168° 13.2	+0.2
	-6° 12.4	-6° 13.4	-6° 14.3	-6° 15.3	-6° 16.2	-6° 17.2	-6° 29.5	-6° 30.5	-6° 31.4	-6° 32.3	-6° 33.3	-6° 34.2	-1.0
Вт 10	183° 13.4	198° 13.6	213° 13.7	228° 13.9	243° 14.1	258° 14.2	93° 16.4	108° 16.5	123° 16.7	138° 16.9	153° 17.0	168° 17.2	+0.2
	-6° 35.2	-6° 36.1	-6° 37.1	-6° 38.0	-6° 39.0	-6° 39.9	-6° 52.2	-6° 53.2	-6° 54.1	-6° 55.0	-6° 56.0	-6° 56.9	-0.9
Ср 11	183° 17.3	198° 17.5	213° 17.7	228° 17.8	243° 18.0	258° 18.2	93° 20.2	108° 20.4	123° 20.5	138° 20.7	153° 20.9	168° 21.0	+0.2
	-6° 57.9	-6° 58.8	-6° 59.8	-7° 00.7	-7° 01.6	-7° 02.6	-7° 14.8	-7° 15.8	-7° 16.7	-7° 17.6	-7° 18.6	-7° 19.5	-0.9
Чт 12	183° 21.2	198° 21.3	213° 21.5	228° 21.6	243° 21.8	258° 22.0	93° 24.0	108° 24.1	123° 24.3	138° 24.4	153° 24.6	168° 24.7	+0.2
	-7° 20.5	-7° 21.4	-7° 22.3	-7° 23.3	-7° 24.2	-7° 25.1	-7° 37.3	-7° 38.3	-7° 39.2	-7° 40.1	-7° 41.1	-7° 42.0	-0.9
Пт 13	183° 24.9	198° 25.0	213° 25.2	228° 25.3	243° 25.5	258° 25.6	93° 27.6	108° 27.7	123° 27.9	138° 28.0	153° 28.2	168° 28.3	+0.2
	-7° 42.9	-7° 43.9	-7° 44.8	-7° 45.7	-7° 46.7	-7° 47.6	-7° 59.7	-8° 00.7	-8° 01.6	-8° 02.5	-8° 03.5	-8° 04.4	-0.9
Сб 14	183° 28.5	198° 28.6	213° 28.7	228° 28.9	243° 29.0	258° 29.2	93° 31.0	108° 31.2	123° 31.3	138° 31.5	153° 31.6	168° 31.8	+0.1
	-8° 05.3	-8° 06.2	-8° 07.2	-8° 08.1	-8° 09.0	-8° 10.0	-8° 22.0	-8° 23.0	-8° 23.9	-8° 24.8	-8° 25.7	-8° 26.7	-0.9
Вс 15	183° 31.9	198° 32.0	213° 32.2	228° 32.3	243° 32.5	258° 32.6	93° 34.4	108° 34.5	123° 34.7	138° 34.8	153° 34.9	168° 35.1	+0.1
	-8° 27.6	-8° 28.5	-8° 29.4	-8° 30.4	-8° 31.3	-8° 32.2	-8° 44.2	-8° 45.1	-8° 46.1	-8° 47.0	-8° 47.9	-8° 48.8	-0.9
Пн 16	183° 35.2	198° 35.3	213° 35.5	228° 35.6	243° 35.7	258° 35.9	93° 37.6	108° 37.7	123° 37.8	138° 38.0	153° 38.1	168° 38.2	+0.1
	-8° 49.7	-8° 50.7	-8° 51.6	-8° 52.5	-8° 53.4	-8° 54.3	-9° 06.3	-9° 07.2	-9° 08.1	-9° 09.0	-9° 09.9	-9° 10.8	-0.9
Вт 17	183° 38.4	198° 38.5	213° 38.6	228° 38.7	243° 38.9	258° 39.0	93° 40.6	108° 40.8	123° 40.9	138° 41.0	153° 41.1	168° 41.3	+0.1
	-9° 11.8	-9° 12.7	-9° 13.6	-9° 14.5	-9° 15.4	-9° 16.3	-9° 28.2	-9° 29.1	-9° 30.0	-9° 30.9	-9° 31.8	-9° 32.7	-0.9
Ср 18	183° 41.4	198° 41.5	213° 41.6	228° 41.7	243° 41.9	258° 42.0	93° 43.5	108° 43.7	123° 43.8	138° 43.9	153° 44.0	168° 44.1	+0.1
	-9° 33.6	-9° 34.6	-9° 35.5	-9° 36.4	-9° 37.3	-9° 38.2	-9° 50.0	-9° 50.9	-9° 51.8	-9° 52.7	-9° 53.6	-9° 54.5	-0.9
Чт 19	183° 44.3	198° 44.4	213° 44.5	228° 44.6	243° 44.7	258° 44.8	93° 46.3	108° 46.4	123° 46.5	138° 46.6	153° 46.8	168° 46.9	+0.1
	-9° 55.4	-9° 56.3	-9° 57.2	-9° 58.1	-9° 59.0	-9° 59.9	-10° 11.6	-10° 12.5	-10° 13.4	-10° 14.3	-10° 15.2	-10° 16.1	-0.9
Пт 20	183° 47.0	198° 47.1	213° 47.2	228° 47.3	243° 47.4	258° 47.5	93° 48.9	108° 49.0	123° 49.1	138° 49.2	153° 49.3	168° 49.4	+0.1
	-10° 17.0	-10° 17.9	-10° 18.8	-10° 19.7	-10° 20.6	-10° 21.5	-10° 33.1	-10° 34.0	-10° 34.9	-10° 35.8	-10° 36.7	-10° 37.6	-0.9
Сб 21	183° 49.5	198° 49.6	213° 49.7	228° 49.8	243° 49.9	258° 50.0	93° 51.4	108° 51.5	123° 51.6	138° 51.6	153° 51.7	168° 51.8	+0.1
	-10° 38.5	-10° 39.3	-10° 40.2	-10° 41.1	-10° 42.0	-10° 42.9	-10° 54.4	-10° 55.3	-10° 56.2	-10° 57.1	-10° 58.0	-10° 58.9	-0.9
Вс 22	183° 51.9	198° 52.0	213° 52.1	228° 52.2	243° 52.3	258° 52.4	93° 53.6	108° 53.7	123° 53.8	138° 53.9	153° 54.0	168° 54.1	+0.1
	-10° 59.7	-11° 00.6	-11° 01.5	-11° 02.4	-11° 03.3	-11° 04.2	-11° 15.6	-11° 16.5	-11° 17.4	-11° 18.2	-11° 19.1	-11° 20.0	-0.9
Пн 23	183° 54.2	198° 54.3	213° 54.4	228° 54.5	243° 54.5	258° 54.6	93° 55.8	108° 55.8	123° 55.9	138° 56.0	153° 56.1	168° 56.2	+0.1
	-11° 20.9	-11° 21.8	-11° 22.6	-11° 23.5	-11° 24.4	-11° 25.3	-11° 36.6	-11° 37.5	-11° 38.3	-11° 39.2	-11° 40.1	-11° 41.0	-0.9
Вт 24	183° 56.3	198° 56.3	213° 56.4	228° 56.5	243° 56.6	258° 56.7	93° 57.7	108° 57.8	123° 57.9	138° 57.9	153° 58.0	168° 58.1	+0.1
	-11° 41.8	-11° 42.7	-11° 43.6	-11° 44.4	-11° 45.3	-11° 46.2	-11° 57.4	-11° 58.3	-11° 59.2	-12° 00.0	-12° 00.9	-12° 01.7	-0.9
Ср 25	183° 58.2	198° 58.2	213° 58.3	228° 58.4	243° 58.5	258° 58.5	93° 59.5	108° 59.5	123° 59.6	138° 59.7	153° 59.7	168° 59.8	+0.1
	-12° 02.6	-12° 03.5	-12° 04.3	-12° 05.2	-12° 06.1	-12° 06.9	-12° 18.1	-12° 18.9	-12° 19.8	-12° 20.6	-12° 21.5	-12° 22.3	-0.9
Чт 26	183° 59.9	199° 00.0	214° 00.0	229° 00.1	244° 00.2	259° 00.2	94° 01.1	109° 01.1	124° 01.2	139° 01.2	154° 01.3	169° 01.4	+0.1
	-12° 23.2	-12° 24.1	-12° 24.9	-12° 25.8	-12° 26.6	-12° 27.5	-12° 38.5	-12° 39.4	-12° 40.2	-12° 41.1	-12° 41.9	-12° 42.8	-0.9
Пт 27	184° 01.4	199° 01.5	214° 01.6	229° 01.6	244° 01.7	259° 01.7	94° 02.5	109° 02.5	124° 02.6	139° 02.6	154° 02.7	169° 02.7	+0.1
	-12° 43.6	-12° 44.4	-12° 45.3	-12° 46.1	-12° 47.0	-12° 47.8	-12° 58.8	-12° 59.6	-13° 00.4	-13° 01.3	-13° 02.1	-13° 03.0	-0.8
Сб 28	184° 02.8	199° 02.8	214° 02.9	229° 03.0	244° 03.0	259° 03.1	94° 03.7	109° 03.7	124° 03.8	139° 03.8	154° 03.9	169° 03.9	+0.1
	-13° 03.8	-13° 04.6	-13° 05.5	-13° 06.3	-13° 07.2	-13° 08.0	-13° 18.8	-13° 19.7	-13° 20.5	-13° 21.3	-13° 22.1	-13° 23.0	-0.8
Вс 29	184° 04.0	199° 04.0	214° 04.1	229° 04.1	244° 04.1	259° 04.2	94° 04.7	109° 04.8	124° 04.8	139° 04.8	154° 04.9	169° 04.9	+0.0
	-13° 23.8	-13° 24.6	-13° 25.5	-13° 26.3	-13° 27.1	-13° 27.9	-13° 38.7	-13° 39.5	-13° 40.3	-13° 41.1	-13° 42.0	-13° 42.8	-0.8
Пн 30	184° 04.9	199° 05.0	214° 05.0	229° 05.1	244° 05.1	259° 05.1	94° 05.6	109° 05.6	124° 05.6	139° 05.6	154° 05.7	169° 05.7	+0.0
	-13° 43.6	-13° 44.4	-13° 45.2	-13° 46.1	-13° 46.9	-13° 47.7	-13° 58.3	-13° 59.1	-13° 59.9	-14° 00.7	-14° 01.5	-14° 02.4	-0.8
Вт 31	184° 05.7	199° 05.8	214° 05.8	229° 05.8	244° 05.8	259° 05.9	94° 06.2	109° 06.2	124° 06.2	139° 06.3	154° 06.3	169° 06.3	+0.0
	-14° 03.2	-14° 04.0	-14° 04.8	-14° 05.6	-14° 06.4	-14° 07.2	-14° 17.7	-14° 18.5	-14° 19.3	-14° 20.1	-14° 20.9	-14° 21.7	-0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2034

Д	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	Δ'/h	R/p
Вс 1	64° 30.7	78° 56.0	93° 21.3	107° 46.6	122° 11.8	136° 37.1	151° 02.3	165° 27.5	179° 52.7	194° 17.8	208° 43.0	+25.2	16.4
	13° 53.8	14° 01.4	14° 08.8	14° 16.1	14° 23.4	14° 30.5	14° 37.5	14° 44.5	14° 51.3	14° 58.0	15° 04.6	+7.1	60.2
Пн 2	64° 58.2	79° 23.1	93° 48.1	108° 13.0	122° 37.9	137° 02.8	151° 27.7	165° 52.6	180° 17.6	194° 42.5	209° 07.4	+24.9	16.3
	16° 30.9	16° 35.7	16° 40.4	16° 45.1	16° 49.6	16° 53.9	16° 58.2	17° 02.4	17° 06.4	17° 10.3	17° 14.1	+4.3	59.8
Вт 3	65° 22.0	79° 47.1	94° 12.2	108° 37.3	123° 02.5	137° 27.6	151° 52.8	166° 18.0	180° 43.2	195° 08.5	209° 33.8	+25.2	16.2
	17° 56.7	17° 58.6	18° 00.3	18° 02.0	18° 03.5	18° 04.9	18° 06.1	18° 07.3	18° 08.3	18° 09.2	18° 10.0	+1.3	59.3
◑ Ср 4	65° 56.7	80° 22.5	94° 48.3	109° 14.2	123° 40.2	138° 06.1	152° 32.2	166° 58.2	181° 24.4	195° 50.5	210° 16.7	+26.0	16.0
	18° 07.7	18° 06.6	18° 05.4	18° 04.1	18° 02.7	18° 01.1	17° 59.5	17° 57.7	17° 55.8	17° 53.8	17° 51.7	-1.6	58.7
Чт 5	66° 55.8	81° 22.8	95° 49.9	110° 17.0	124° 44.2	139° 11.5	153° 38.8	168° 06.1	182° 33.5	197° 01.0	211° 28.6	+27.3	15.8
	17° 07.5	17° 03.7	16° 59.8	16° 55.8	16° 51.8	16° 47.6	16° 43.3	16° 39.0	16° 34.5	16° 30.0	16° 25.3	-4.2	58.0
Пт 6	68° 28.7	82° 57.2	97° 25.7	111° 54.3	126° 23.0	140° 51.7	155° 20.5	169° 49.3	184° 18.2	198° 47.2	213° 16.2	+28.8	15.6
	15° 05.1	14° 59.1	14° 53.0	14° 46.9	14° 40.6	14° 34.3	14° 27.9	14° 21.4	14° 14.9	14° 08.3	14° 01.6	-6.4	57.4
Сб 7	70° 38.6	85° 08.6	99° 38.6	114° 08.7	128° 38.8	143° 09.0	157° 39.2	172° 09.5	186° 39.8	201° 10.2	215° 40.7	+30.2	15.5
	12° 13.1	12° 05.4	11° 57.6	11° 49.8	11° 41.9	11° 34.0	11° 26.0	11° 17.9	11° 09.8	11° 01.6	10° 53.4	-8.0	56.7
Вс 8	73° 23.5	87° 54.8	102° 26.1	116° 57.4	131° 28.8	146° 00.2	160° 31.7	175° 03.2	189° 34.8	204° 06.4	218° 38.0	+31.5	15.3
	8° 44.9	8° 36.0	8° 27.1	8° 18.1	8° 09.1	8° 00.1	7° 51.0	7° 41.9	7° 32.8	7° 23.7	7° 14.5	-9.0	56.2
Пн 9	76° 37.4	91° 09.7	105° 41.9	120° 14.3	134° 46.6	149° 19.0	163° 51.4	178° 23.8	192° 56.3	207° 28.8	222° 01.3	+32.4	15.2
	4° 53.7	4° 44.2	4° 34.6	4° 25.0	4° 15.4	4° 05.8	3° 56.2	3° 46.6	3° 37.0	3° 27.3	3° 17.6	-9.6	55.7
Вт 10	80° 12.4	94° 45.3	109° 18.2	123° 51.2	138° 24.2	152° 57.2	167° 30.2	182° 03.2	196° 36.3	211° 09.3	225° 42.4	+33.0	15.1
	0° 52.0	0° 42.3	0° 32.6	0° 22.9	0° 13.2	0° 03.5	-0° 06.2	-0° 15.9	-0° 25.6	-0° 35.3	-0° 44.9	-9.7	55.2
Ср 11	84° 00.0	98° 33.3	113° 06.6	127° 39.8	142° 13.1	156° 46.4	171° 19.7	185° 52.9	200° 26.2	214° 59.5	229° 32.8	+33.3	14.9
	-3° 08.6	-3° 18.0	-3° 27.5	-3° 36.9	-3° 46.3	-3° 55.7	-4° 05.0	-4° 14.3	-4° 23.6	-4° 32.9	-4° 42.2	-9.4	54.8
● Чт 12	87° 52.4	102° 25.7	116° 58.9	131° 32.2	146° 05.5	160° 38.8	175° 12.0	189° 45.3	204° 18.5	218° 51.8	233° 25.0	+33.3	14.8
	-6° 57.7	-7° 06.5	-7° 15.2	-7° 23.9	-7° 32.6	-7° 41.3	-7° 49.9	-7° 58.4	-8° 07.0	-8° 15.4	-8° 23.9	-8.6	54.4
Пт 13	91° 42.4	106° 15.5	120° 48.6	135° 21.6	149° 54.7	164° 27.7	179° 00.7	193° 33.7	208° 06.7	222° 39.6	237° 12.6	+33.0	14.8
	-10° 25.6	-10° 33.4	-10° 41.1	-10° 48.8	-10° 56.4	-11° 03.9	-11° 11.4	-11° 18.9	-11° 26.3	-11° 33.7	-11° 41.0	-7.5	54.2
Сб 14	95° 24.9	109° 57.6	124° 30.2	139° 02.9	153° 35.5	168° 08.1	182° 40.7	197° 13.3	211° 45.8	226° 18.3	240° 50.9	+32.6	14.7
	-13° 23.9	-13° 30.3	-13° 36.7	-13° 42.9	-13° 49.2	-13° 55.3	-14° 01.4	-14° 07.4	-14° 13.4	-14° 19.3	-14° 25.2	-6.1	54.0
Вс 15	98° 56.2	113° 28.4	128° 00.6	142° 32.7	157° 04.8	171° 37.0	186° 09.0	200° 41.1	215° 13.2	229° 45.2	244° 17.2	+32.1	14.7
	-15° 44.9	-15° 49.7	-15° 54.4	-15° 59.0	-16° 03.6	-16° 08.1	-16° 12.5	-16° 16.8	-16° 21.1	-16° 25.3	-16° 29.4	-4.5	53.9
Пн 16	102° 14.9	116° 46.6	131° 18.3	145° 49.9	160° 21.6	174° 53.2	189° 24.8	203° 56.3	218° 27.9	232° 59.4	247° 30.9	+31.6	14.7
	-17° 22.3	-17° 25.3	-17° 28.1	-17° 30.9	-17° 33.5	-17° 36.1	-17° 38.6	-17° 41.1	-17° 43.4	-17° 45.7	-17° 47.9	-2.6	54.0
Вт 17	105° 21.5	119° 52.8	134° 24.0	148° 55.2	163° 26.4	177° 57.5	192° 28.7	206° 59.8	221° 30.9	236° 02.0	250° 33.1	+31.2	14.8
	-18° 11.1	-18° 12.0	-18° 12.8	-18° 13.5	-18° 14.2	-18° 14.7	-18° 15.2	-18° 15.6	-18° 15.9	-18° 16.1	-18° 16.2	-0.5	54.3
Ср 18	119° 52.8	134° 24.0	148° 55.2	163° 26.4	177° 57.5	192° 28.7	206° 59.8	221° 30.9	236° 02.0	250° 33.1	265° 04.2	+31.1	14.8
	-18° 12.0	-18° 12.8	-18° 13.5	-18° 14.2	-18° 14.7	-18° 15.2	-18° 15.6	-18° 15.9	-18° 16.1	-18° 16.2	-18° 16.2	-0.4	54.3
Чт 19	122° 48.6	137° 19.5	151° 50.3	166° 21.2	180° 52.0	195° 22.8	209° 53.6	224° 24.4	238° 55.2	253° 25.9	267° 56.7	+30.8	14.9
	-18° 06.5	-18° 05.2	-18° 03.8	-18° 02.3	-18° 00.7	-17° 59.0	-17° 57.2	-17° 55.4	-17° 53.4	-17° 51.4	-17° 49.3	+1.7	54.7
◐ Пт 20	125° 36.6	140° 07.2	154° 37.8	169° 08.3	183° 38.9	198° 09.4	212° 40.0	227° 10.5	241° 41.0	256° 11.5	270° 42.0	+30.5	15.1
	-17° 07.1	-17° 03.6	-17° 00.0	-16° 56.3	-16° 52.6	-16° 48.7	-16° 44.8	-16° 40.8	-16° 36.7	-16° 32.5	-16° 28.2	+3.9	55.3
Сб 21	128° 18.4	142° 48.7	157° 19.1	171° 49.4	186° 19.7	200° 50.0	215° 20.3	229° 50.6	244° 20.9	258° 51.2	273° 21.4	+30.3	15.3
	-15° 13.9	-15° 08.3	-15° 02.6	-14° 56.8	-14° 50.9	-14° 45.0	-14° 38.9	-14° 32.8	-14° 26.6	-14° 20.3	-14° 14.0	+6.0	56.1
Вс 22	130° 54.0	145° 24.1	159° 54.1	174° 24.2	188° 54.2	203° 24.3	217° 54.3	232° 24.3	246° 54.2	261° 24.2	275° 54.2	+30.0	15.5
	-12° 29.2	-12° 21.6	-12° 14.0	-12° 06.2	-11° 58.4	-11° 50.5	-11° 42.6	-11° 34.5	-11° 26.4	-11° 18.2	-11° 10.0	+7.9	57.0
Пн 23	133° 21.4	147° 51.1	162° 20.7	176° 50.4	191° 20.0	205° 49.6	220° 19.1	234° 48.7	249° 18.2	263° 47.7	278° 17.2	+29.6	15.8
	-8° 58.1	-8° 48.8	-8° 39.4	-8° 30.0	-8° 20.5	-8° 10.9	-8° 01.3	-7° 51.6	-7° 41.9	-7° 32.1	-7° 22.3	+9.6	57.9
Вт 24	135° 36.2	150° 05.2	164° 34.2	179° 03.2	193° 32.2	208° 01.1	222° 30.0	236° 58.8	251° 27.6	265° 56.4	280° 25.2	+28.9	16.1
	-4° 48.6	-4° 38.0	-4° 27.3	-4° 16.6	-4° 05.9	-3° 55.1	-3° 44.3	-3° 33.4	-3° 22.5	-3° 11.6	-3° 00.6	+10.8	58.9
Ср 25	137° 32.0	152° 00.1	166° 28.2	180° 56.2	195° 24.2	209° 52.2	224° 20.1	238° 48.0	253° 15.9	267° 43.6	282° 11.4	+27.9	16.3
	-0° 13.0	-0° 01.6	0° 09.7	0° 21.1	0° 32.5	0° 43.9	0° 55.3	1° 06.7	1° 18.1	1° 29.6	1° 41.0	+11.4	59.9
Чт 26	139° 01.9	153° 28.8	167° 55.7	182° 22.6	196° 49.4	211° 16.2	225° 42.9	240° 09.6	254° 36.2	269° 02.7	283° 29.2	+26.7	16.5
	4° 32.0	4° 43.3	4° 54.6	5° 05.9	5° 17.2	5° 28.4	5° 39.6	5° 50.7	6° 01.9	6° 13.0	6° 24.1	+11.2	60.6
○ Пт 27	140° 00.5	154° 26.1	168° 51.7	183° 17.3	197° 42.8	212° 08.3	226° 33.6	240° 59.0	255° 24.3	269° 49.5	284° 14.7	+25.4	16.6
	9° 05.4	9° 15.8	9° 26.1	9° 36.3	9° 46.5	9° 56.6	10° 06.7	10° 16.7	10° 26.6	10° 36.4	10° 46.2	+10.1	61.0
Сб 28	140° 26.9	154° 51.3	169° 15.7	183° 40.1	198° 04.4	212° 28.7	226° 52.9	241° 17.1	255° 41.3	270° 05.4	284° 29.5	+24.3	16.7
	13° 03.7	13° 12.2	13° 20.5	13° 28.8	13° 37.0	13° 45.1	13° 53.1	14° 01.0	14° 08.8	14° 16.5	14° 24.1	+8.0	61.2
Вс 29	140° 27.3	154° 51.0	169° 14.6	183° 38.3	198° 01.9	212° 25.5	226° 49.1	241° 12.6	255° 36.2	269° 59.8	284° 23.3	+23.6	16.6
	16° 04.7	16° 10.5	16° 16.2	16° 21.7	16° 27.2	16° 32.5	16° 37.7	16° 42.7	16° 47.7	16° 52.5	16° 57.2	+5.2	60.9
Пн 30	140° 16.5	154° 40.1	169° 03.8	183° 27.4	197° 51.1	212° 14.8	226° 38.5	241° 02.2	255° 25.9	269° 49.7	284° 13.5	+23.7	16.5
	17° 52.2	17° 54.8	17° 57.3	17° 59.7	18° 01.9	18° 04.0	18° 06.0	18° 07.8	18° 09.5	18° 11.1	18° 12.6	+2.0	60.4
Вт 31	140° 14.6	154° 39.0	169° 03.4	183° 27.9	197° 52.5	212° 17.1	226° 41.7	241° 06.4	255° 31.2	269° 56.0	284° 20.9	+24.6	16.3
	18° 19.0	18° 18.4	18° 17.7	18° 16.8	18° 15.8	18° 14.8	18° 13.6	18° 12.2	18° 10.8	18° 09.2	18° 07.5	-1.1	59.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 4 18h04 — Новолуние: 12 07h32 — Первая четв.: 20 12h03 — Полнолуние: 27 12h42

СОЛНЦЕ

Ноябрь 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	184° 06.3	199° 06.3	214° 06.4	229° 06.4	244° 06.4	259° 06.4	94° 06.6	109° 06.6	124° 06.6	139° 06.7	154° 06.7	169° 06.7	+0.0
	-14° 22.5	-14° 23.3	-14° 24.1	-14° 24.9	-14° 25.7	-14° 26.5	-14° 36.9	-14° 37.7	-14° 38.5	-14° 39.3	-14° 40.1	-14° 40.8	-0.8
Чт 2	184° 06.7	199° 06.7	214° 06.7	229° 06.7	244° 06.7	259° 06.7	94° 06.8	109° 06.8	124° 06.9	139° 06.9	154° 06.9	169° 06.9	+0.0
	-14° 41.6	-14° 42.4	-14° 43.2	-14° 44.0	-14° 44.8	-14° 45.6	-14° 55.8	-14° 56.6	-14° 57.4	-14° 58.2	-14° 59.0	-14° 59.7	-0.8
Пт 3	184° 06.9	199° 06.9	214° 06.9	229° 06.9	244° 06.9	259° 06.9	94° 06.9	109° 06.9	124° 06.8	139° 06.8	154° 06.8	169° 06.8	+0.0
	-15° 00.5	-15° 01.3	-15° 02.1	-15° 02.9	-15° 03.6	-15° 04.4	-15° 14.5	-15° 15.3	-15° 16.1	-15° 16.8	-15° 17.6	-15° 18.4	-0.8
Сб 4	184° 06.8	199° 06.8	214° 06.8	229° 06.8	244° 06.8	259° 06.8	94° 06.7	109° 06.7	124° 06.6	139° 06.6	154° 06.6	169° 06.6	-0.0
	-15° 19.2	-15° 19.9	-15° 20.7	-15° 21.5	-15° 22.2	-15° 23.0	-15° 33.0	-15° 33.7	-15° 34.5	-15° 35.3	-15° 36.0	-15° 36.8	-0.8
Вс 5	184° 06.6	199° 06.6	214° 06.6	229° 06.5	244° 06.5	259° 06.5	94° 06.3	109° 06.2	124° 06.2	139° 06.2	154° 06.2	169° 06.1	-0.0
	-15° 37.6	-15° 38.3	-15° 39.1	-15° 39.8	-15° 40.6	-15° 41.4	-15° 51.2	-15° 51.9	-15° 52.7	-15° 53.4	-15° 54.2	-15° 54.9	-0.8
Пн 6	184° 06.1	199° 06.1	214° 06.1	229° 06.1	244° 06.0	259° 06.0	94° 05.6	109° 05.6	124° 05.6	139° 05.6	154° 05.5	169° 05.5	-0.0
	-15° 55.7	-15° 56.4	-15° 57.2	-15° 57.9	-15° 58.7	-15° 59.4	-16° 09.1	-16° 09.9	-16° 10.6	-16° 11.3	-16° 12.1	-16° 12.8	-0.8
Вт 7	184° 05.5	199° 05.4	214° 05.4	229° 05.4	244° 05.3	259° 05.3	94° 04.8	109° 04.8	124° 04.7	139° 04.7	154° 04.7	169° 04.6	-0.0
	-16° 13.6	-16° 14.3	-16° 15.0	-16° 15.8	-16° 16.5	-16° 17.3	-16° 26.8	-16° 27.5	-16° 28.3	-16° 29.0	-16° 29.7	-16° 30.4	-0.7
Ср 8	184° 04.6	199° 04.5	214° 04.5	229° 04.4	244° 04.4	259° 04.4	94° 03.8	109° 03.7	124° 03.7	139° 03.6	154° 03.6	169° 03.5	-0.0
	-16° 31.2	-16° 31.9	-16° 32.6	-16° 33.3	-16° 34.1	-16° 34.8	-16° 44.2	-16° 44.9	-16° 45.6	-16° 46.3	-16° 47.1	-16° 47.8	-0.7
Чт 9	184° 03.5	199° 03.4	214° 03.4	229° 03.3	244° 03.3	259° 03.2	94° 02.5	109° 02.5	124° 02.4	139° 02.3	154° 02.3	169° 02.2	-0.1
	-16° 48.5	-16° 49.2	-16° 49.9	-16° 50.6	-16° 51.3	-16° 52.1	-17° 01.3	-17° 02.0	-17° 02.7	-17° 03.4	-17° 04.1	-17° 04.8	-0.7
Пт 10	184° 02.2	199° 02.1	214° 02.0	229° 02.0	244° 01.9	259° 01.9	94° 01.0	109° 01.0	124° 00.9	139° 00.8	154° 00.8	169° 00.7	-0.1
	-17° 05.5	-17° 06.2	-17° 06.9	-17° 07.6	-17° 08.3	-17° 09.0	-17° 18.1	-17° 18.8	-17° 19.5	-17° 20.2	-17° 20.9	-17° 21.6	-0.7
Сб 11	184° 00.6	199° 00.6	214° 00.5	229° 00.4	244° 00.4	259° 00.3	93° 59.4	108° 59.3	123° 59.2	138° 59.1	153° 59.1	168° 59.0	-0.1
	-17° 22.3	-17° 23.0	-17° 23.7	-17° 24.3	-17° 25.0	-17° 25.7	-17° 34.6	-17° 35.3	-17° 36.0	-17° 36.7	-17° 37.4	-17° 38.0	-0.7
Вс 12	183° 58.9	198° 58.8	213° 58.8	228° 58.7	243° 58.6	258° 58.5	93° 57.5	108° 57.4	123° 57.3	138° 57.2	153° 57.1	168° 57.1	-0.1
	-17° 38.7	-17° 39.4	-17° 40.1	-17° 40.8	-17° 41.4	-17° 42.1	-17° 50.9	-17° 51.5	-17° 52.2	-17° 52.9	-17° 53.5	-17° 54.2	-0.7
Пн 13	183° 57.0	198° 56.9	213° 56.8	228° 56.7	243° 56.6	258° 56.5	93° 55.4	108° 55.3	123° 55.2	138° 55.1	153° 55.0	168° 54.9	-0.1
	-17° 54.9	-17° 55.5	-17° 56.2	-17° 56.9	-17° 57.5	-17° 58.2	-18° 06.8	-18° 07.4	-18° 08.1	-18° 08.7	-18° 09.4	-18° 10.1	-0.7
Вт 14	183° 54.8	198° 54.7	213° 54.6	228° 54.5	243° 54.4	258° 54.3	93° 53.1	108° 53.0	123° 52.9	138° 52.8	153° 52.6	168° 52.5	-0.1
	-18° 10.7	-18° 11.4	-18° 12.0	-18° 12.7	-18° 13.3	-18° 14.0	-18° 22.4	-18° 23.0	-18° 23.7	-18° 24.3	-18° 24.9	-18° 25.6	-0.7
Ср 15	183° 52.4	198° 52.3	213° 52.2	228° 52.1	243° 52.0	258° 51.9	93° 50.5	108° 50.4	123° 50.3	138° 50.2	153° 50.1	168° 50.0	-0.1
	-18° 26.2	-18° 26.9	-18° 27.5	-18° 28.1	-18° 28.8	-18° 29.4	-18° 37.7	-18° 38.3	-18° 38.9	-18° 39.5	-18° 40.2	-18° 40.8	-0.6
Чт 16	183° 49.9	198° 49.8	213° 49.6	228° 49.5	243° 49.4	258° 49.3	93° 47.8	108° 47.7	123° 47.6	138° 47.4	153° 47.3	168° 47.2	-0.1
	-18° 41.4	-18° 42.0	-18° 42.7	-18° 43.3	-18° 43.9	-18° 44.5	-18° 52.6	-18° 53.2	-18° 53.8	-18° 54.4	-18° 55.1	-18° 55.7	-0.6
Пт 17	183° 47.1	198° 47.0	213° 46.8	228° 46.7	243° 46.6	258° 46.5	93° 44.9	108° 44.7	123° 44.6	138° 44.5	153° 44.4	168° 44.2	-0.1
	-18° 56.3	-18° 56.9	-18° 57.5	-18° 58.1	-18° 58.7	-18° 59.3	-19° 07.2	-19° 07.8	-19° 08.4	-19° 09.0	-19° 09.6	-19° 10.2	-0.6
Сб 18	183° 44.1	198° 44.0	213° 43.8	228° 43.7	243° 43.6	258° 43.5	93° 41.7	108° 41.6	123° 41.5	138° 41.3	153° 41.2	168° 41.1	-0.1
	-19° 10.8	-19° 11.4	-19° 12.0	-19° 12.6	-19° 13.2	-19° 13.8	-19° 21.5	-19° 22.1	-19° 22.6	-19° 23.2	-19° 23.8	-19° 24.4	-0.6
Вс 19	183° 40.9	198° 40.8	213° 40.6	228° 40.5	243° 40.4	258° 40.2	93° 38.4	108° 38.3	123° 38.1	138° 38.0	153° 37.8	168° 37.7	-0.1
	-19° 25.0	-19° 25.6	-19° 26.1	-19° 26.7	-19° 27.3	-19° 27.9	-19° 35.4	-19° 36.0	-19° 36.5	-19° 37.1	-19° 37.7	-19° 38.2	-0.6
Пн 20	183° 37.5	198° 37.4	213° 37.2	228° 37.1	243° 36.9	258° 36.8	93° 34.9	108° 34.7	123° 34.6	138° 34.4	153° 34.2	168° 34.1	-0.1
	-19° 38.8	-19° 39.4	-19° 39.9	-19° 40.5	-19° 41.1	-19° 41.6	-19° 49.0	-19° 49.5	-19° 50.1	-19° 50.6	-19° 51.2	-19° 51.7	-0.6
Вт 21	183° 33.9	198° 33.8	213° 33.6	228° 33.5	243° 33.3	258° 33.2	93° 31.1	108° 31.0	123° 30.8	138° 30.6	153° 30.5	168° 30.3	-0.2
	-19° 52.3	-19° 52.8	-19° 53.4	-19° 53.9	-19° 54.5	-19° 55.0	-20° 02.2	-20° 02.7	-20° 03.2	-20° 03.8	-20° 04.3	-20° 04.9	-0.6
Ср 22	183° 30.2	198° 30.0	213° 29.8	228° 29.7	243° 29.5	258° 29.3	93° 27.2	108° 27.0	123° 26.9	138° 26.7	153° 26.5	168° 26.4	-0.2
	-20° 05.4	-20° 05.9	-20° 06.5	-20° 07.0	-20° 07.5	-20° 08.1	-20° 15.0	-20° 15.5	-20° 16.0	-20° 16.6	-20° 17.1	-20° 17.6	-0.5
Чт 23	183° 26.2	198° 26.0	213° 25.8	228° 25.7	243° 25.5	258° 25.3	93° 23.1	108° 22.9	123° 22.7	138° 22.5	153° 22.4	168° 22.2	-0.2
	-20° 18.1	-20° 18.7	-20° 19.2	-20° 19.7	-20° 20.2	-20° 20.7	-20° 27.4	-20° 28.0	-20° 28.5	-20° 29.0	-20° 29.5	-20° 30.0	-0.5
Пт 24	183° 22.0	198° 21.8	213° 21.7	228° 21.5	243° 21.3	258° 21.1	93° 18.8	108° 18.6	123° 18.4	138° 18.2	153° 18.0	168° 17.8	-0.2
	-20° 30.5	-20° 31.0	-20° 31.5	-20° 32.0	-20° 32.5	-20° 33.0	-20° 39.5	-20° 40.0	-20° 40.5	-20° 41.0	-20° 41.5	-20° 42.0	-0.5
Сб 25	183° 17.7	198° 17.5	213° 17.3	228° 17.1	243° 16.9	258° 16.7	93° 14.3	108° 14.1	123° 13.9	138° 13.7	153° 13.5	168° 13.3	-0.2
	-20° 42.5	-20° 43.0	-20° 43.5	-20° 44.0	-20° 44.4	-20° 44.9	-20° 51.2	-20° 51.7	-20° 52.2	-20° 52.7	-20° 53.1	-20° 53.6	-0.5
Вс 26	183° 13.1	198° 12.9	213° 12.7	228° 12.5	243° 12.3	258° 12.1	93° 09.6	108° 09.4	123° 09.2	138° 09.0	153° 08.8	168° 08.6	-0.2
	-20° 54.1	-20° 54.6	-20° 55.0	-20° 55.5	-20° 56.0	-20° 56.5	-21° 02.5	-21° 03.0	-21° 03.5	-21° 03.9	-21° 04.4	-21° 04.8	-0.5
Пн 27	183° 08.4	198° 08.2	213° 08.0	228° 07.8	243° 07.6	258° 07.4	93° 04.7	108° 04.5	123° 04.3	138° 04.1	153° 03.9	168° 03.7	-0.2
	-21° 05.3	-21° 05.8	-21° 06.2	-21° 06.7	-21° 07.1	-21° 07.6	-21° 13.4	-21° 13.9	-21° 14.3	-21° 14.8	-21° 15.2	-21° 15.7	-0.5
Вт 28	183° 03.5	198° 03.2	213° 03.0	228° 02.8	243° 02.6	258° 02.4	92° 59.7	107° 59.4	122° 59.2	137° 59.0	152° 58.8	167° 58.6	-0.2
	-21° 16.1	-21° 16.6	-21° 17.0	-21° 17.4	-21° 17.9	-21° 18.3	-21° 24.0	-21° 24.4	-21° 24.8	-21° 25.3	-21° 25.7	-21° 26.1	-0.4
Ср 29	182° 58.4	197° 58.1	212° 57.9	227° 57.7	242° 57.5	257° 57.3	92° 54.4	107° 54.2	122° 54.0	137° 53.8	152° 53.5	167° 53.3	-0.2
	-21° 26.5	-21° 27.0	-21° 27.4	-21° 27.8	-21° 28.2	-21° 28.6	-21° 34.1	-21° 34.5	-21° 34.9	-21° 35.3	-21° 35.7	-21° 36.1	-0.4
Чт 30	182° 53.1	197° 52.9	212° 52.6	227° 52.4	242° 52.2	257° 52.0	92° 49.0	107° 48.8	122° 48.6	137° 48.3	152° 48.1	167° 47.9	-0.2
	-21° 36.5	-21° 36.9	-21° 37.4	-21° 37.8	-21° 38.2	-21° 38.6	-21° 43.8	-21° 44.2	-21° 44.6	-21° 45.0	-21° 45.4	-21° 45.7	-0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2034

Д	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	Δ'/h	R/p
Ср 1	68° 32.8	82° 58.3	97° 24.0	111° 49.6	126° 15.4	140° 41.2	155° 07.0	169° 33.0	183° 59.0	198° 25.1	212° 51.2	+25.8	16.1
	17° 44.1	17° 41.2	17° 38.1	17° 34.9	17° 31.6	17° 28.2	17° 24.7	17° 21.1	17° 17.4	17° 13.6	17° 09.6	-3.5	59.0
Чт 2	69° 32.3	83° 59.6	98° 27.0	112° 54.5	127° 22.0	141° 49.7	156° 17.4	170° 45.2	185° 13.0	199° 41.0	214° 09.0	+27.7	15.8
	15° 58.9	15° 53.4	15° 47.9	15° 42.2	15° 36.5	15° 30.7	15° 24.8	15° 18.9	15° 12.8	15° 06.7	15° 00.5	-5.8	58.1
◑ Пт 3	71° 18.0	85° 47.2	100° 16.5	114° 45.8	129° 15.2	143° 44.7	158° 14.3	172° 43.9	187° 13.6	201° 43.3	216° 13.1	+29.5	15.6
	13° 18.4	13° 11.0	13° 03.6	12° 56.2	12° 48.6	12° 41.0	12° 33.4	12° 25.6	12° 17.9	12° 10.0	12° 02.2	-7.6	57.2
Сб 4	73° 48.4	88° 19.2	102° 50.1	117° 21.1	131° 52.1	146° 23.2	160° 54.3	175° 25.5	189° 56.8	204° 28.1	218° 59.5	+31.1	15.4
	9° 57.9	9° 49.3	9° 40.6	9° 31.8	9° 23.1	9° 14.3	9° 05.4	8° 56.6	8° 47.7	8° 38.7	8° 29.7	-8.8	56.5
Вс 5	76° 56.0	91° 28.2	106° 00.4	120° 32.6	135° 04.9	149° 37.2	164° 09.5	178° 41.9	193° 14.4	207° 46.8	222° 19.4	+32.3	15.2
	6° 11.6	6° 02.2	5° 52.8	5° 43.4	5° 33.9	5° 24.4	5° 14.9	5° 05.4	4° 55.9	4° 46.4	4° 36.8	-9.5	55.8
Пн 6	80° 31.1	95° 04.1	109° 37.1	124° 10.2	138° 43.3	153° 16.4	167° 49.6	182° 22.7	196° 55.9	211° 29.1	226° 02.4	+33.1	15.1
	2° 12.2	2° 02.5	1° 52.8	1° 43.1	1° 33.4	1° 23.7	1° 14.0	1° 04.3	0° 54.6	0° 44.9	0° 35.2	-9.7	55.2
Вт 7	84° 22.9	98° 56.4	113° 29.9	128° 03.4	142° 36.9	157° 10.4	171° 43.9	186° 17.4	200° 51.0	215° 24.5	229° 58.0	+33.5	14.9
	-1° 49.4	-1° 58.9	-2° 08.5	-2° 18.0	-2° 27.5	-2° 37.0	-2° 46.5	-2° 56.0	-3° 05.5	-3° 14.9	-3° 24.3	-9.5	54.8
Ср 8	88° 21.5	102° 55.1	117° 28.6	132° 02.2	146° 35.7	161° 09.2	175° 42.8	190° 16.3	204° 49.8	219° 23.3	233° 56.8	+33.5	14.8
	-5° 43.1	-5° 52.1	-6° 01.2	-6° 10.2	-6° 19.1	-6° 28.1	-6° 37.0	-6° 45.8	-6° 54.7	-7° 03.5	-7° 12.3	-8.9	54.4
Чт 9	92° 18.3	106° 51.6	121° 24.9	135° 58.2	150° 31.5	165° 04.8	179° 38.0	194° 11.3	208° 44.5	223° 17.7	237° 50.9	+33.3	14.8
	-9° 19.6	-9° 27.8	-9° 36.0	-9° 44.0	-9° 52.1	-10° 00.1	-10° 08.1	-10° 16.0	-10° 23.9	-10° 31.7	-10° 39.5	-8.0	54.1
Пт 10	96° 06.7	110° 39.6	125° 12.4	139° 45.3	154° 18.1	168° 50.9	183° 23.7	197° 56.5	212° 29.2	227° 02.0	241° 34.7	+32.8	14.7
	-12° 30.2	-12° 37.2	-12° 44.1	-12° 51.0	-12° 57.7	-13° 04.5	-13° 11.2	-13° 17.8	-13° 24.4	-13° 30.9	-13° 37.3	-6.7	54.0
● Сб 11	99° 42.6	114° 14.9	128° 47.2	143° 19.5	157° 51.8	172° 24.1	186° 56.3	201° 28.5	216° 00.7	230° 32.9	245° 05.0	+32.2	14.7
	-15° 06.6	-15° 12.1	-15° 17.4	-15° 22.7	-15° 28.0	-15° 33.1	-15° 38.2	-15° 43.3	-15° 48.2	-15° 53.1	-15° 57.9	-5.1	53.9
Вс 12	103° 04.6	117° 36.5	132° 08.2	146° 40.0	161° 11.8	175° 43.5	190° 15.2	204° 46.9	219° 18.6	233° 50.2	248° 21.8	+31.7	14.7
	-17° 01.6	-17° 05.2	-17° 08.8	-17° 12.3	-17° 15.7	-17° 19.0	-17° 22.3	-17° 25.5	-17° 28.6	-17° 31.6	-17° 34.5	-3.3	53.9
Пн 13	106° 14.3	120° 45.6	135° 17.0	149° 48.3	164° 19.7	178° 51.0	193° 22.3	207° 53.6	222° 24.8	236° 56.1	251° 27.4	+31.3	14.7
	-18° 09.1	-18° 10.7	-18° 12.3	-18° 13.8	-18° 15.2	-18° 16.5	-18° 17.7	-18° 18.9	-18° 20.0	-18° 20.9	-18° 21.8	-1.3	54.0
Вт 14	109° 14.8	123° 45.9	138° 17.0	152° 48.1	167° 19.2	181° 50.2	196° 21.3	210° 52.4	225° 23.4	239° 54.4	254° 25.5	+31.1	14.8
	-18° 25.2	-18° 24.7	-18° 24.2	-18° 23.5	-18° 22.8	-18° 22.0	-18° 21.1	-18° 20.1	-18° 19.1	-18° 17.9	-18° 16.7	+0.8	54.2
Ср 15	112° 10.6	126° 41.6	141° 12.5	155° 43.5	170° 14.5	184° 45.5	199° 16.5	213° 47.4	228° 18.4	242° 49.4	257° 20.4	+31.0	14.9
	-17° 47.9	-17° 45.3	-17° 42.6	-17° 39.9	-17° 37.0	-17° 34.1	-17° 31.0	-17° 27.9	-17° 24.7	-17° 21.5	-17° 18.1	+3.0	54.6
Чт 16	126° 41.6	141° 12.5	155° 43.5	170° 14.5	184° 45.5	199° 16.5	213° 47.4	228° 18.4	242° 49.4	257° 20.4	271° 51.3	+31.0	14.9
	-17° 45.3	-17° 42.6	-17° 39.9	-17° 37.0	-17° 34.1	-17° 31.0	-17° 27.9	-17° 24.7	-17° 21.5	-17° 18.1	-17° 14.7	+3.1	54.6
Пт 17	129° 36.0	144° 07.0	158° 38.0	173° 09.0	187° 39.9	202° 10.9	216° 41.9	231° 12.9	245° 43.9	260° 14.9	274° 45.9	+31.0	15.0
	-16° 13.0	-16° 08.3	-16° 03.4	-15° 58.5	-15° 53.5	-15° 48.4	-15° 43.3	-15° 38.0	-15° 32.7	-15° 27.3	-15° 21.8	+5.1	55.2
Сб 18	132° 30.6	147° 01.6	161° 32.6	176° 03.6	190° 34.5	205° 05.5	219° 36.5	234° 07.4	248° 38.4	263° 09.3	277° 40.3	+31.0	15.2
	-13° 50.4	-13° 43.7	-13° 37.0	-13° 30.1	-13° 23.2	-13° 16.2	-13° 09.2	-13° 02.0	-12° 54.8	-12° 47.6	-12° 40.2	+7.0	55.9
◐ Вс 19	135° 23.8	149° 54.6	164° 25.5	178° 56.3	193° 27.1	207° 57.9	222° 28.7	236° 59.4	251° 30.2	266° 00.9	280° 31.7	+30.8	15.5
	-10° 41.9	-10° 33.5	-10° 25.1	-10° 16.5	-10° 07.9	-9° 59.3	-9° 50.6	-9° 41.8	-9° 32.9	-9° 24.0	-9° 15.1	+8.7	56.7
Пн 20	138° 10.6	152° 41.1	167° 11.5	181° 41.9	196° 12.3	210° 42.6	225° 12.9	239° 43.2	254° 13.5	268° 43.7	283° 13.9	+30.3	15.7
	-6° 54.1	-6° 44.2	-6° 34.4	-6° 24.5	-6° 14.5	-6° 04.5	-5° 54.4	-5° 44.3	-5° 34.2	-5° 24.0	-5° 13.8	+10.0	57.6
Вт 21	140° 43.4	155° 13.1	169° 42.7	184° 12.3	198° 41.9	213° 11.4	227° 40.9	242° 10.3	256° 39.7	271° 09.1	285° 38.4	+29.5	16.0
	-2° 35.7	-2° 24.9	-2° 14.0	-2° 03.2	-1° 52.3	-1° 41.4	-1° 30.4	-1° 19.4	-1° 08.5	-0° 57.4	-0° 46.4	+10.9	58.6
Ср 22	142° 52.4	157° 20.9	171° 49.3	186° 17.8	200° 46.1	215° 14.4	229° 42.6	244° 10.8	258° 38.9	273° 07.0	287° 35.0	+28.3	16.3
	2° 01.0	2° 12.3	2° 23.5	2° 34.7	2° 46.0	2° 57.2	3° 08.5	3° 19.7	3° 30.9	3° 42.1	3° 53.4	+11.2	59.6
Чт 23	144° 27.6	158° 54.6	173° 21.5	187° 48.3	202° 15.1	216° 41.8	231° 08.5	245° 35.1	260° 01.6	274° 28.0	288° 54.4	+26.7	16.5
	6° 39.8	6° 50.7	7° 01.6	7° 12.5	7° 23.3	7° 34.1	7° 44.8	7° 55.5	8° 06.2	8° 16.8	8° 27.4	+10.8	60.5
Пт 24	145° 21.6	159° 46.8	174° 12.0	188° 37.1	203° 02.2	217° 27.2	231° 52.1	246° 16.9	260° 41.7	275° 06.4	289° 31.0	+24.9	16.7
	11° 00.0	11° 09.7	11° 19.4	11° 28.9	11° 38.4	11° 47.8	11° 57.1	12° 06.4	12° 15.6	12° 24.7	12° 33.7	+9.4	61.1
○ Сб 25	145° 33.1	159° 56.8	174° 20.4	188° 43.9	203° 07.4	217° 30.9	231° 54.3	246° 17.6	260° 41.0	275° 04.2	289° 27.4	+23.4	16.8
	14° 38.2	14° 45.7	14° 53.1	15° 00.4	15° 07.6	15° 14.7	15° 21.7	15° 28.5	15° 35.3	15° 41.9	15° 48.4	+7.0	61.4
Вс 26	145° 11.1	159° 33.7	173° 56.4	188° 19.0	202° 41.6	217° 04.2	231° 26.8	245° 49.4	260° 11.9	274° 34.5	288° 57.0	+22.6	16.7
	17° 11.6	17° 16.2	17° 20.6	17° 24.8	17° 29.0	17° 33.0	17° 36.9	17° 40.6	17° 44.2	17° 47.7	17° 51.0	+3.9	61.4
Пн 27	144° 35.3	158° 58.0	173° 20.7	187° 43.4	202° 06.1	216° 28.9	230° 51.6	245° 14.4	259° 37.3	274° 00.2	288° 23.1	+22.8	16.6
	18° 24.4	18° 25.5	18° 26.5	18° 27.3	18° 28.0	18° 28.6	18° 29.0	18° 29.3	18° 29.5	18° 29.6	18° 29.4	+0.5	60.9
Вт 28	144° 12.3	158° 36.0	172° 59.7	187° 23.6	201° 47.5	216° 11.4	230° 35.4	244° 59.5	259° 23.7	273° 47.9	288° 12.2	+24.0	16.4
	18° 11.5	18° 09.3	18° 06.9	18° 04.4	18° 01.8	17° 59.1	17° 56.2	17° 53.3	17° 50.2	17° 47.0	17° 43.6	-2.8	60.2
Ср 29	144° 25.8	158° 51.3	173° 16.9	187° 42.7	202° 08.5	216° 34.3	231° 00.3	245° 26.4	259° 52.5	274° 18.7	288° 45.0	+25.9	16.2
	16° 40.0	16° 34.9	16° 29.7	16° 24.4	16° 19.0	16° 13.5	16° 07.9	16° 02.2	15° 56.4	15° 50.5	15° 44.6	-5.5	59.3
Чт 30	145° 30.2	159° 57.9	174° 25.7	188° 53.5	203° 21.5	217° 49.6	232° 17.7	246° 45.9	261° 14.3	275° 42.6	290° 11.1	+28.1	15.9
	14° 04.9	13° 57.7	13° 50.3	13° 42.9	13° 35.4	13° 27.9	13° 20.3	13° 12.6	13° 04.9	12° 57.1	12° 49.2	-7.6	58.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 3 03h27 — Новолуние: 11 01h16 — Первая четв.: 19 04h01 — Полнолуние: 25 22h32

СОЛНЦЕ

Декабрь 2034

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	182° 47.6 -21° 46.1	197° 47.4 -21° 46.5	212° 47.2 -21° 46.9	227° 47.0 -21° 47.3	242° 46.7 -21° 47.7	257° 46.5 -21° 48.1	92° 43.5 -21° 53.1	107° 43.2 -21° 53.4	122° 43.0 -21° 53.8	137° 42.7 -21° 54.2	152° 42.5 -21° 54.6	167° 42.3 -21° 54.9	-0.2 -0.4
Сб 2	182° 42.0 -21° 55.3	197° 41.8 -21° 55.7	212° 41.6 -21° 56.1	227° 41.3 -21° 56.4	242° 41.1 -21° 56.8	257° 40.8 -21° 57.2	92° 37.7 -22° 01.9	107° 37.5 -22° 02.3	122° 37.2 -22° 02.7	137° 37.0 -22° 03.0	152° 36.7 -22° 03.4	167° 36.5 -22° 03.7	-0.2 -0.4
Вс 3	182° 36.3 -22° 04.1	197° 36.0 -22° 04.4	212° 35.8 -22° 04.8	227° 35.5 -22° 05.2	242° 35.3 -22° 05.5	257° 35.0 -22° 05.9	92° 31.8 -22° 10.4	107° 31.6 -22° 10.7	122° 31.3 -22° 11.1	137° 31.1 -22° 11.4	152° 30.8 -22° 11.7	167° 30.6 -22° 12.1	-0.2 -0.4
Пн 4	182° 30.3 -22° 12.4	197° 30.1 -22° 12.8	212° 29.8 -22° 13.1	227° 29.6 -22° 13.4	242° 29.3 -22° 13.8	257° 29.1 -22° 14.1	92° 25.8 -22° 18.4	107° 25.5 -22° 18.7	122° 25.3 -22° 19.0	137° 25.0 -22° 19.4	152° 24.8 -22° 19.7	167° 24.5 -22° 20.0	-0.3 -0.3
Вт 5	182° 24.2 -22° 20.3	197° 24.0 -22° 20.7	212° 23.7 -22° 21.0	227° 23.5 -22° 21.3	242° 23.2 -22° 21.6	257° 23.0 -22° 21.9	92° 19.6 -22° 26.0	107° 19.3 -22° 26.3	122° 19.1 -22° 26.6	137° 18.8 -22° 26.9	152° 18.5 -22° 27.2	167° 18.3 -22° 27.5	-0.3 -0.3
Ср 6	182° 18.0 -22° 27.8	197° 17.8 -22° 28.1	212° 17.5 -22° 28.4	227° 17.2 -22° 28.7	242° 17.0 -22° 29.0	257° 16.7 -22° 29.3	92° 13.3 -22° 33.1	107° 13.0 -22° 33.4	122° 12.7 -22° 33.7	137° 12.5 -22° 34.0	152° 12.2 -22° 34.3	167° 11.9 -22° 34.6	-0.3 -0.3
Чт 7	182° 11.7 -22° 34.8	197° 11.4 -22° 35.1	212° 11.1 -22° 35.4	227° 10.8 -22° 35.7	242° 10.6 -22° 36.0	257° 10.3 -22° 36.3	92° 06.8 -22° 39.8	107° 06.5 -22° 40.1	122° 06.3 -22° 40.4	137° 06.0 -22° 40.6	152° 05.7 -22° 40.9	167° 05.4 -22° 41.2	-0.3 -0.3
Пт 8	182° 05.2 -22° 41.4	197° 04.9 -22° 41.7	212° 04.6 -22° 42.0	227° 04.3 -22° 42.2	242° 04.1 -22° 42.5	257° 03.8 -22° 42.8	92° 00.2 -22° 46.1	106° 59.9 -22° 46.4	121° 59.7 -22° 46.6	136° 59.4 -22° 46.9	151° 59.1 -22° 47.1	166° 58.8 -22° 47.4	-0.3 -0.3
Сб 9	181° 58.5 -22° 47.6	196° 58.3 -22° 47.8	211° 58.0 -22° 48.1	226° 57.7 -22° 48.3	241° 57.4 -22° 48.6	256° 57.2 -22° 48.8	91° 53.5 -22° 51.9	106° 53.2 -22° 52.2	121° 52.9 -22° 52.4	136° 52.7 -22° 52.6	151° 52.4 -22° 52.8	166° 52.1 -22° 53.1	-0.3 -0.2
Вс 10	181° 51.8 -22° 53.3	196° 51.5 -22° 53.5	211° 51.3 -22° 53.8	226° 51.0 -22° 54.0	241° 50.7 -22° 54.2	256° 50.4 -22° 54.4	91° 46.7 -22° 57.3	106° 46.4 -22° 57.5	121° 46.1 -22° 57.7	136° 45.8 -22° 57.9	151° 45.6 -22° 58.1	166° 45.3 -22° 58.3	-0.3 -0.2
Пн 11	181° 45.0 -22° 58.6	196° 44.7 -22° 58.8	211° 44.4 -22° 59.0	226° 44.1 -22° 59.2	241° 43.8 -22° 59.4	256° 43.5 -22° 59.6	91° 39.8 -23° 02.2	106° 39.5 -23° 02.4	121° 39.2 -23° 02.6	136° 38.9 -23° 02.8	151° 38.6 -23° 03.0	166° 38.3 -23° 03.2	-0.3 -0.2
Вт 12	181° 38.1 -23° 03.4	196° 37.8 -23° 03.6	211° 37.5 -23° 03.7	226° 37.2 -23° 03.9	241° 36.9 -23° 04.1	256° 36.6 -23° 04.3	91° 32.8 -23° 06.7	106° 32.5 -23° 06.8	121° 32.2 -23° 07.0	136° 31.9 -23° 07.2	151° 31.6 -23° 07.4	166° 31.3 -23° 07.5	-0.3 -0.2
Ср 13	181° 31.0 -23° 07.7	196° 30.7 -23° 07.9	211° 30.4 -23° 08.0	226° 30.1 -23° 08.2	241° 29.9 -23° 08.4	256° 29.6 -23° 08.6	91° 25.7 -23° 10.7	106° 25.4 -23° 10.8	121° 25.1 -23° 11.0	136° 24.8 -23° 11.1	151° 24.5 -23° 11.3	166° 24.2 -23° 11.4	-0.3 -0.2
Чт 14	181° 23.9 -23° 11.6	196° 23.6 -23° 11.7	211° 23.3 -23° 11.9	226° 23.0 -23° 12.0	241° 22.7 -23° 12.2	256° 22.4 -23° 12.3	91° 18.6 -23° 14.2	106° 18.3 -23° 14.3	121° 18.0 -23° 14.5	136° 17.7 -23° 14.6	151° 17.4 -23° 14.7	166° 17.1 -23° 14.9	-0.3 -0.2
Пт 15	181° 16.8 -23° 15.0	196° 16.5 -23° 15.1	211° 16.2 -23° 15.3	226° 15.9 -23° 15.4	241° 15.5 -23° 15.5	256° 15.2 -23° 15.7	91° 11.3 -23° 17.3	106° 11.0 -23° 17.4	121° 10.7 -23° 17.5	136° 10.4 -23° 17.6	151° 10.1 -23° 17.7	166° 09.8 -23° 17.9	-0.3 -0.1
Сб 16	181° 09.5 -23° 18.0	196° 09.2 -23° 18.1	211° 08.9 -23° 18.2	226° 08.6 -23° 18.3	241° 08.3 -23° 18.4	256° 08.0 -23° 18.5	91° 04.1 -23° 19.9	106° 03.7 -23° 20.0	121° 03.4 -23° 20.1	136° 03.1 -23° 20.2	151° 02.8 -23° 20.3	166° 02.5 -23° 20.4	-0.3 -0.1
Вс 17	181° 02.2 -23° 20.5	196° 01.9 -23° 20.6	211° 01.6 -23° 20.7	226° 01.3 -23° 20.7	241° 01.0 -23° 20.8	256° 00.7 -23° 20.9	90° 56.7 -23° 22.0	105° 56.4 -23° 22.1	120° 56.1 -23° 22.2	135° 55.8 -23° 22.3	150° 55.5 -23° 22.3	165° 55.2 -23° 22.4	-0.3 -0.1
Пн 18	180° 54.9 -23° 22.5	195° 54.6 -23° 22.6	210° 54.3 -23° 22.6	225° 54.0 -23° 22.7	240° 53.7 -23° 22.8	255° 53.4 -23° 22.9	90° 49.4 -23° 23.7	105° 49.1 -23° 23.8	120° 48.7 -23° 23.8	135° 48.4 -23° 23.9	150° 48.1 -23° 23.9	165° 47.8 -23° 24.0	-0.3 -0.1
Вт 19	180° 47.5 -23° 24.1	195° 47.2 -23° 24.1	210° 46.9 -23° 24.2	225° 46.6 -23° 24.2	240° 46.3 -23° 24.3	255° 46.0 -23° 24.3	90° 42.0 -23° 24.9	105° 41.7 -23° 25.0	120° 41.3 -23° 25.0	135° 41.0 -23° 25.0	150° 40.7 -23° 25.1	165° 40.4 -23° 25.1	-0.3 -0.1
Ср 20	180° 40.1 -23° 25.1	195° 39.8 -23° 25.2	210° 39.5 -23° 25.2	225° 39.2 -23° 25.3	240° 38.9 -23° 25.3	255° 38.6 -23° 25.3	90° 34.6 -23° 25.7	105° 34.2 -23° 25.7	120° 33.9 -23° 25.7	135° 33.6 -23° 25.7	150° 33.3 -23° 25.7	165° 33.0 -23° 25.8	-0.3 -0.0
Чт 21	180° 32.7 -23° 25.8	195° 32.4 -23° 25.8	210° 32.1 -23° 25.8	225° 31.8 -23° 25.8	240° 31.5 -23° 25.8	255° 31.1 -23° 25.8	90° 27.1 -23° 25.9	105° 26.8 -23° 25.9	120° 26.5 -23° 25.9	135° 26.2 -23° 25.9	150° 25.9 -23° 25.9	165° 25.6 -23° 25.9	-0.3 -0.0
Пт 22	180° 25.3 -23° 25.9	195° 25.0 -23° 25.9	210° 24.6 -23° 25.9	225° 24.3 -23° 25.9	240° 24.0 -23° 25.9	255° 23.7 -23° 25.9	90° 19.7 -23° 25.7	105° 19.4 -23° 25.7	120° 19.1 -23° 25.7	135° 18.8 -23° 25.7	150° 18.5 -23° 25.6	165° 18.1 -23° 25.6	-0.3 +0.0
Сб 23	180° 17.8 -23° 25.6	195° 17.5 -23° 25.6	210° 17.2 -23° 25.5	225° 16.9 -23° 25.5	240° 16.6 -23° 25.5	255° 16.3 -23° 25.5	90° 12.3 -23° 25.0	105° 12.0 -23° 25.0	120° 11.6 -23° 25.0	135° 11.3 -23° 24.9	150° 11.0 -23° 24.9	165° 10.7 -23° 24.8	-0.3 +0.0
Вс 24	180° 10.4 -23° 24.8	195° 10.1 -23° 24.8	210° 09.8 -23° 24.7	225° 09.5 -23° 24.7	240° 09.2 -23° 24.6	255° 08.9 -23° 24.6	90° 04.8 -23° 23.9	105° 04.5 -23° 23.8	120° 04.2 -23° 23.8	135° 03.9 -23° 23.7	150° 03.6 -23° 23.7	165° 03.3 -23° 23.6	-0.3 +0.0
Пн 25	180° 03.0 -23° 23.5	195° 02.7 -23° 23.5	210° 02.4 -23° 23.4	225° 02.1 -23° 23.3	240° 01.8 -23° 23.3	255° 01.4 -23° 23.2	89° 57.4 -23° 22.3	104° 57.1 -23° 22.2	119° 56.8 -23° 22.1	134° 56.5 -23° 22.0	149° 56.2 -23° 22.0	164° 55.9 -23° 21.9	-0.3 +0.1
Вт 26	179° 55.6 -23° 21.8	194° 55.3 -23° 21.7	209° 55.0 -23° 21.6	224° 54.7 -23° 21.6	239° 54.4 -23° 21.5	254° 54.0 -23° 21.4	89° 50.1 -23° 20.2	104° 49.7 -23° 20.1	119° 49.4 -23° 20.0	134° 49.1 -23° 19.9	149° 48.8 -23° 19.8	164° 48.5 -23° 19.7	-0.3 +0.1
Ср 27	179° 48.2 -23° 19.6	194° 47.9 -23° 19.5	209° 47.6 -23° 19.4	224° 47.3 -23° 19.3	239° 47.0 -23° 19.2	254° 46.7 -23° 19.1	89° 42.7 -23° 17.6	104° 42.4 -23° 17.5	119° 42.1 -23° 17.4	134° 41.8 -23° 17.3	149° 41.5 -23° 17.2	164° 41.2 -23° 17.1	-0.3 +0.1
Чт 28	179° 40.9 -23° 16.9	194° 40.6 -23° 16.8	209° 40.3 -23° 16.7	224° 40.0 -23° 16.6	239° 39.7 -23° 16.4	254° 39.3 -23° 16.3	89° 35.4 -23° 14.6	104° 35.1 -23° 14.5	119° 34.8 -23° 14.4	134° 34.5 -23° 14.2	149° 34.2 -23° 14.1	164° 33.9 -23° 13.9	-0.3 +0.1
Пт 29	179° 33.6 -23° 13.8	194° 33.3 -23° 13.7	209° 33.0 -23° 13.5	224° 32.7 -23° 13.4	239° 32.4 -23° 13.2	254° 32.1 -23° 13.1	89° 28.1 -23° 11.1	104° 27.8 -23° 11.0	119° 27.5 -23° 10.8	134° 27.2 -23° 10.7	149° 26.9 -23° 10.5	164° 26.6 -23° 10.4	-0.3 +0.1
Сб 30	179° 26.3 -23° 10.2	194° 26.0 -23° 10.0	209° 25.7 -23° 09.9	224° 25.4 -23° 09.7	239° 25.1 -23° 09.5	254° 24.8 -23° 09.4	89° 20.9 -23° 07.2	104° 20.6 -23° 07.0	119° 20.3 -23° 06.8	134° 20.0 -23° 06.7	149° 19.7 -23° 06.5	164° 19.4 -23° 06.3	-0.3 +0.2
Вс 31	179° 19.1 -23° 06.1	194° 18.8 -23° 05.9	209° 18.5 -23° 05.8	224° 18.2 -23° 05.6	239° 17.9 -23° 05.4	254° 17.6 -23° 05.2	89° 13.8 -23° 02.8	104° 13.5 -23° 02.6	119° 13.2 -23° 02.4	134° 12.9 -23° 02.2	149° 12.6 -23° 02.0	164° 12.3 -23° 01.8	-0.3 +0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Декабрь 2034

Д	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	Δ'/h	R/p
Пт 1	60° 31.2 11° 35.8	75° 00.5 11° 27.4	89° 29.9 11° 18.9	103° 59.4 11° 10.4	118° 28.9 11° 01.8	132° 58.5 10° 53.2	147° 28.2 10° 44.5	161° 58.0 10° 35.8	176° 27.9 10° 27.0	190° 57.8 10° 18.2	205° 27.8 10° 09.4	+29.7 -8.6	15.7 57.5
◑ Сб 2	63° 06.4 7° 52.4	77° 37.5 7° 43.1	92° 08.7 7° 33.7	106° 39.9 7° 24.2	121° 11.2 7° 14.8	135° 42.6 7° 05.3	150° 14.0 6° 55.8	164° 45.5 6° 46.3	179° 17.1 6° 36.7	193° 48.6 6° 27.2	208° 20.3 6° 17.6	+31.4 -9.5	15.4 56.6
Вс 3	66° 21.4 3° 52.1	80° 53.9 3° 42.3	95° 26.4 3° 32.5	109° 58.9 3° 22.7	124° 31.5 3° 12.9	139° 04.1 3° 03.1	153° 36.8 2° 53.3	168° 09.5 2° 43.5	182° 42.2 2° 33.7	197° 15.0 2° 23.8	211° 47.8 2° 14.0	+32.6 -9.8	15.2 55.8
Пн 4	70° 03.9 -0° 12.9	84° 37.2 -0° 22.7	99° 10.5 -0° 32.4	113° 43.9 -0° 42.2	128° 17.2 -0° 51.9	142° 50.6 -1° 01.6	157° 24.0 -1° 11.3	171° 57.4 -1° 21.0	186° 30.9 -1° 30.6	201° 04.3 -1° 40.3	215° 37.8 -1° 49.9	+33.4 -9.7	15.0 55.1
Вт 5	74° 01.5 -4° 12.4	88° 35.2 -4° 21.8	103° 08.9 -4° 31.1	117° 42.5 -4° 40.4	132° 16.2 -4° 49.6	146° 49.9 -4° 58.9	161° 23.5 -5° 08.1	175° 57.2 -5° 17.3	190° 30.9 -5° 26.4	205° 04.6 -5° 35.6	219° 38.3 -5° 44.7	+33.7 -9.2	14.9 54.6
Ср 6	78° 03.1 -7° 57.6	92° 36.7 -8° 06.1	107° 10.3 -8° 14.7	121° 43.9 -8° 23.2	136° 17.4 -8° 31.7	150° 51.0 -8° 40.1	165° 24.5 -8° 48.5	179° 58.1 -8° 56.9	194° 31.6 -9° 05.2	209° 05.1 -9° 13.5	223° 38.6 -9° 21.7	+33.6 -8.4	14.8 54.2
Чт 7	81° 59.2 -11° 20.1	96° 32.4 -11° 27.6	111° 05.6 -11° 35.0	125° 38.8 -11° 42.5	140° 12.0 -11° 49.8	154° 45.1 -11° 57.1	169° 18.3 -12° 04.4	183° 51.4 -12° 11.6	198° 24.5 -12° 18.8	212° 57.5 -12° 25.9	227° 30.5 -12° 32.9	+33.1 -7.3	14.7 54.0
Пт 8	85° 43.2 -14° 12.0	100° 15.9 -14° 18.1	114° 48.5 -14° 24.2	129° 21.1 -14° 30.2	143° 53.6 -14° 36.1	158° 26.2 -14° 42.0	172° 58.7 -14° 47.8	187° 31.2 -14° 53.6	202° 03.6 -14° 59.3	216° 36.1 -15° 04.9	231° 08.5 -15° 10.4	+32.5 -5.8	14.7 53.9
Сб 9	89° 11.5 -16° 25.6	103° 43.5 -16° 30.1	118° 15.4 -16° 34.5	132° 47.4 -16° 38.8	147° 19.3 -16° 43.0	161° 51.2 -16° 47.2	176° 23.0 -16° 51.2	190° 54.9 -16° 55.2	205° 26.7 -16° 59.2	219° 58.5 -17° 03.0	234° 30.2 -17° 06.8	+31.9 -4.1	14.7 53.9
● Вс 10	92° 23.9 -17° 54.2	106° 55.3 -17° 56.7	121° 26.7 -17° 59.1	135° 58.1 -18° 01.5	150° 29.4 -18° 03.8	165° 00.7 -18° 06.0	179° 32.0 -18° 08.1	194° 03.3 -18° 10.1	208° 34.6 -18° 12.1	223° 05.8 -18° 13.9	237° 37.1 -18° 15.7	+31.3 -2.2	14.7 54.0
Пн 11	95° 23.7 -18° 32.2	109° 54.7 -18° 32.7	124° 25.7 -18° 33.0	138° 56.7 -18° 33.2	153° 27.6 -18° 33.4	167° 58.6 -18° 33.5	182° 29.6 -18° 33.5	197° 00.5 -18° 33.4	211° 31.4 -18° 33.2	226° 02.4 -18° 32.9	240° 33.3 -18° 32.5	+31.0 -0.0	14.8 54.2
Вт 12	98° 16.4 -18° 16.7	112° 47.2 -18° 14.9	127° 18.1 -18° 13.1	141° 48.9 -18° 11.2	156° 19.7 -18° 09.1	170° 50.6 -18° 07.0	185° 21.4 -18° 04.9	199° 52.3 -18° 02.6	214° 23.1 -18° 00.2	228° 54.0 -17° 57.8	243° 24.8 -17° 55.3	+30.8 +2.1	14.8 54.4
Ср 13	101° 08.0 -17° 07.1	115° 38.9 -17° 03.2	130° 09.8 -16° 59.3	144° 40.8 -16° 55.2	159° 11.7 -16° 51.1	173° 42.6 -16° 46.9	188° 13.6 -16° 42.6	202° 44.5 -16° 38.2	217° 15.5 -16° 33.8	231° 46.5 -16° 29.2	246° 17.5 -16° 24.6	+30.9 +4.3	14.9 54.8
Чт 14	104° 03.2 -15° 05.9	118° 34.3 -15° 00.0	133° 05.4 -14° 54.1	147° 36.6 -14° 48.1	162° 07.7 -14° 42.0	176° 38.9 -14° 35.9	191° 10.0 -14° 29.6	205° 41.2 -14° 23.3	220° 12.4 -14° 16.9	234° 43.6 -14° 10.5	249° 14.8 -14° 04.0	+31.2 +6.2	15.1 55.2
Пт 15	107° 03.6 -12° 17.8	121° 34.9 -12° 10.2	136° 06.2 -12° 02.6	150° 37.6 -11° 54.8	165° 08.9 -11° 47.0	179° 40.2 -11° 39.2	194° 11.5 -11° 31.3	208° 42.9 -11° 23.3	223° 14.2 -11° 15.2	237° 45.6 -11° 07.1	252° 16.9 -10° 58.9	+31.3 +7.9	15.2 55.8
Сб 16	121° 34.9 -12° 10.2	136° 06.2 -12° 02.6	150° 37.6 -11° 54.8	165° 08.9 -11° 47.0	179° 40.2 -11° 39.2	194° 11.5 -11° 31.3	208° 42.9 -11° 23.3	223° 14.2 -11° 15.2	237° 45.6 -11° 07.1	252° 16.9 -10° 58.9	266° 48.2 -10° 50.7	+31.3 +8.0	15.2 55.8
Вс 17	124° 38.4 -8° 40.6	139° 09.7 -8° 31.5	153° 41.0 -8° 22.3	168° 12.4 -8° 13.1	182° 43.7 -8° 03.9	197° 15.0 -7° 54.6	211° 46.2 -7° 45.2	226° 17.5 -7° 35.8	240° 48.8 -7° 26.4	255° 20.1 -7° 16.9	269° 51.3 -7° 07.4	+31.3 +9.3	15.4 56.5
◐ Пн 18	127° 38.6 -4° 39.4	142° 09.6 -4° 29.2	156° 40.6 -4° 19.0	171° 11.6 -4° 08.8	185° 42.5 -3° 58.5	200° 13.4 -3° 48.2	214° 44.4 -3° 37.9	229° 15.2 -3° 27.6	243° 46.1 -3° 17.2	258° 16.9 -3° 06.8	272° 47.7 -2° 56.3	+30.9 +10.3	15.6 57.3
Вт 19	130° 26.2 -0° 16.9	144° 56.5 -0° 06.1	159° 26.7 0° 04.7	173° 56.9 0° 15.5	188° 27.1 0° 26.3	202° 57.2 0° 37.1	217° 27.3 0° 48.0	231° 57.4 0° 58.8	246° 27.4 1° 09.7	260° 57.3 1° 20.5	275° 27.2 1° 31.4	+30.1 +10.8	15.9 58.2
Ср 20	132° 50.0 4° 14.5	147° 19.1 4° 25.3	161° 48.1 4° 36.1	176° 17.1 4° 47.0	190° 46.0 4° 57.7	205° 14.8 5° 08.5	219° 43.6 5° 19.3	234° 12.4 5° 30.0	248° 41.0 5° 40.8	263° 09.6 5° 51.5	277° 38.2 6° 02.1	+28.8 +10.8	16.1 59.0
Чт 21	134° 38.5 8° 39.1	149° 05.9 8° 49.3	163° 33.3 8° 59.5	178° 00.6 9° 09.6	192° 27.9 9° 19.6	206° 55.1 9° 29.6	221° 22.2 9° 39.6	235° 49.2 9° 49.5	250° 16.1 9° 59.3	264° 43.0 10° 09.2	279° 09.8 10° 18.9	+27.1 +10.0	16.3 59.9
Пт 22	135° 42.8 12° 37.9	150° 08.4 12° 46.6	164° 34.0 12° 55.3	178° 59.4 13° 03.8	193° 24.8 13° 12.3	207° 50.1 13° 20.7	222° 15.3 13° 29.0	236° 40.4 13° 37.2	251° 05.5 13° 45.4	265° 30.5 13° 53.4	279° 55.4 14° 01.4	+25.3 +8.4	16.5 60.6
Сб 23	136° 01.0 15° 49.3	150° 24.8 15° 55.7	164° 48.6 16° 01.9	179° 12.4 16° 08.0	193° 36.0 16° 14.1	207° 59.6 16° 20.0	222° 23.2 16° 25.8	236° 46.7 16° 31.5	251° 10.1 16° 37.0	265° 33.5 16° 42.5	279° 56.8 16° 47.8	+23.6 +5.9	16.6 61.0
Вс 24	135° 41.6 17° 52.6	150° 04.3 17° 55.9	164° 27.0 17° 59.0	178° 49.6 18° 02.1	193° 12.2 18° 04.9	207° 34.8 18° 07.7	221° 57.4 18° 10.3	236° 20.0 18° 12.7	250° 42.5 18° 15.1	265° 05.1 18° 17.3	279° 27.6 18° 19.3	+22.6 +2.7	16.7 61.2
○ Пн 25	135° 05.2 18° 33.4	149° 27.7 18° 33.3	163° 50.3 18° 33.0	178° 12.9 18° 32.5	192° 35.6 18° 31.9	206° 58.2 18° 31.2	221° 20.9 18° 30.3	235° 43.6 18° 29.3	250° 06.4 18° 28.2	264° 29.2 18° 26.9	278° 52.0 18° 25.5	+22.7 -0.8	16.6 61.0
Вт 26	134° 39.3 17° 48.3	149° 02.9 17° 44.8	163° 26.5 17° 41.2	177° 50.2 17° 37.4	192° 13.9 17° 33.6	206° 37.8 17° 29.6	221° 01.6 17° 25.4	235° 25.6 17° 21.2	249° 49.6 17° 16.9	264° 13.7 17° 12.4	278° 37.9 17° 07.8	+23.9 -4.1	16.5 60.4
Ср 27	134° 49.2 15° 45.9	149° 14.6 15° 39.6	163° 40.1 15° 33.2	178° 05.7 15° 26.7	192° 31.3 15° 20.2	206° 57.1 15° 13.5	221° 22.9 15° 06.8	235° 48.8 14° 59.9	250° 14.8 14° 53.0	264° 40.9 14° 46.0	279° 07.0 14° 38.9	+25.8 -6.7	16.3 59.6
Чт 28	135° 50.0 12° 43.2	150° 17.6 12° 34.9	164° 45.2 12° 26.6	179° 13.0 12° 18.2	193° 40.8 12° 09.7	208° 08.7 12° 01.2	222° 36.7 11° 52.6	237° 04.8 11° 44.0	251° 33.0 11° 35.3	266° 01.3 11° 26.5	280° 29.6 11° 17.7	+28.0 -8.6	16.0 58.7
Пт 29	137° 44.7 9° 00.2	152° 14.3 8° 50.7	166° 44.1 8° 41.2	181° 13.9 8° 31.7	195° 43.7 8° 22.1	210° 13.7 8° 12.5	224° 43.7 8° 02.8	239° 13.8 7° 53.2	253° 44.0 7° 43.5	268° 14.2 7° 33.8	282° 44.5 7° 24.0	+30.0 -9.6	15.7 57.7
Сб 30	140° 27.2 4° 55.5	154° 58.5 4° 45.5	169° 29.9 4° 35.5	184° 01.4 4° 25.4	198° 32.9 4° 15.4	213° 04.5 4° 05.3	227° 36.1 3° 55.3	242° 07.8 3° 45.2	256° 39.5 3° 35.2	271° 11.3 3° 25.1	285° 43.2 3° 15.0	+31.6 -10.0	15.5 56.7
Вс 31	143° 46.4 0° 44.2	158° 19.0 0° 34.2	172° 51.6 0° 24.2	187° 24.2 0° 14.2	201° 56.9 0° 04.2	216° 29.6 -0° 05.7	231° 02.3 -0° 15.7	245° 35.1 -0° 25.6	260° 07.9 -0° 35.5	274° 40.7 -0° 45.5	289° 13.6 -0° 55.4	+32.7 -10.0	15.2 55.8

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 2 16h46 — Новолуние: 10 20h14 — Первая четв.: 18 17h44 — Полнолуние: 25 08h54

СОЛНЦЕ

Январь 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	179° 12.0 -23° 01.6	194° 11.7 -23° 01.4	209° 11.4 -23° 01.2	224° 11.1 -23° 01.0	239° 10.8 -23° 00.8	254° 10.5 -23° 00.6	89° 06.7 -22° 57.9	104° 06.4 -22° 57.7	119° 06.1 -22° 57.5	134° 05.8 -22° 57.3	149° 05.5 -22° 57.0	164° 05.2 -22° 56.8	-0.3 +0.2
Вт 2	179° 04.9 -22° 56.6	194° 04.6 -22° 56.4	209° 04.3 -22° 56.2	224° 04.0 -22° 56.0	239° 03.7 -22° 55.7	254° 03.5 -22° 55.5	88° 59.7 -22° 52.6	103° 59.4 -22° 52.3	118° 59.1 -22° 52.1	133° 58.8 -22° 51.9	148° 58.5 -22° 51.6	163° 58.2 -22° 51.4	-0.3 +0.2
Ср 3	178° 57.9 -22° 51.2	193° 57.6 -22° 50.9	208° 57.4 -22° 50.7	223° 57.1 -22° 50.4	238° 56.8 -22° 50.2	253° 56.5 -22° 50.0	88° 52.7 -22° 46.8	103° 52.5 -22° 46.5	118° 52.2 -22° 46.3	133° 51.9 -22° 46.0	148° 51.6 -22° 45.8	163° 51.3 -22° 45.5	-0.3 +0.2
Чт 4	178° 51.0 -22° 45.3	193° 50.7 -22° 45.0	208° 50.5 -22° 44.7	223° 50.2 -22° 44.5	238° 49.9 -22° 44.2	253° 49.6 -22° 44.0	88° 45.9 -22° 40.5	103° 45.6 -22° 40.3	118° 45.4 -22° 40.0	133° 45.1 -22° 39.7	148° 44.8 -22° 39.5	163° 44.5 -22° 39.2	-0.3 +0.3
Пт 5	178° 44.2 -22° 38.9	193° 43.9 -22° 38.6	208° 43.7 -22° 38.4	223° 43.4 -22° 38.1	238° 43.1 -22° 37.8	253° 42.8 -22° 37.5	88° 39.2 -22° 33.8	103° 38.9 -22° 33.6	118° 38.6 -22° 33.3	133° 38.4 -22° 33.0	148° 38.1 -22° 32.7	163° 37.8 -22° 32.4	-0.3 +0.3
Сб 6	178° 37.5 -22° 32.1	193° 37.2 -22° 31.8	208° 37.0 -22° 31.5	223° 36.7 -22° 31.2	238° 36.4 -22° 30.9	253° 36.1 -22° 30.6	88° 32.6 -22° 26.7	103° 32.3 -22° 26.4	118° 32.0 -22° 26.1	133° 31.7 -22° 25.8	148° 31.5 -22° 25.5	163° 31.2 -22° 25.2	-0.3 +0.3
Вс 7	178° 30.9 -22° 24.9	193° 30.7 -22° 24.5	208° 30.4 -22° 24.2	223° 30.1 -22° 23.9	238° 29.8 -22° 23.6	253° 29.6 -22° 23.3	88° 26.1 -22° 19.1	103° 25.8 -22° 18.8	118° 25.5 -22° 18.5	133° 25.3 -22° 18.2	148° 25.0 -22° 17.8	163° 24.7 -22° 17.5	-0.3 +0.3
Пн 8	178° 24.5 -22° 17.2	193° 24.2 -22° 16.8	208° 23.9 -22° 16.5	223° 23.7 -22° 16.2	238° 23.4 -22° 15.8	253° 23.1 -22° 15.5	88° 19.7 -22° 11.1	103° 19.4 -22° 10.8	118° 19.2 -22° 10.4	133° 18.9 -22° 10.1	148° 18.6 -22° 09.7	163° 18.4 -22° 09.4	-0.3 +0.3
Вт 9	178° 18.1 -22° 09.0	193° 17.8 -22° 08.7	208° 17.6 -22° 08.3	223° 17.3 -22° 08.0	238° 17.1 -22° 07.6	253° 16.8 -22° 07.3	88° 13.4 -22° 02.7	103° 13.2 -22° 02.3	118° 12.9 -22° 01.9	133° 12.7 -22° 01.6	148° 12.4 -22° 01.2	163° 12.1 -22° 00.8	-0.3 +0.3
Ср 10	178° 11.9 -22° 00.5	193° 11.6 -22° 00.1	208° 11.4 -21° 59.7	223° 11.1 -21° 59.4	238° 10.9 -21° 59.0	253° 10.6 -21° 58.6	88° 07.3 -21° 53.8	103° 07.1 -21° 53.4	118° 06.8 -21° 53.0	133° 06.6 -21° 52.6	148° 06.3 -21° 52.3	163° 06.0 -21° 51.9	-0.3 +0.4
Чт 11	178° 05.8 -21° 51.5	193° 05.5 -21° 51.1	208° 05.3 -21° 50.7	223° 05.0 -21° 50.3	238° 04.8 -21° 49.9	253° 04.5 -21° 49.6	88° 01.3 -21° 44.5	103° 01.1 -21° 44.1	118° 00.8 -21° 43.7	133° 00.6 -21° 43.3	148° 00.4 -21° 42.9	163° 00.1 -21° 42.5	-0.3 +0.4
Пт 12	177° 59.9 -21° 42.1	192° 59.6 -21° 41.7	207° 59.4 -21° 41.3	222° 59.1 -21° 40.9	237° 58.9 -21° 40.5	252° 58.6 -21° 40.1	87° 55.5 -21° 34.7	102° 55.3 -21° 34.3	117° 55.0 -21° 33.9	132° 54.8 -21° 33.5	147° 54.6 -21° 33.1	162° 54.3 -21° 32.7	-0.2 +0.4
Сб 13	177° 54.1 -21° 32.2	192° 53.8 -21° 31.8	207° 53.6 -21° 31.4	222° 53.4 -21° 31.0	237° 53.1 -21° 30.6	252° 52.9 -21° 30.1	87° 49.8 -21° 24.6	102° 49.6 -21° 24.2	117° 49.4 -21° 23.7	132° 49.1 -21° 23.3	147° 48.9 -21° 22.9	162° 48.7 -21° 22.4	-0.2 +0.4
Вс 14	177° 48.5 -21° 22.0	192° 48.2 -21° 21.5	207° 48.0 -21° 21.1	222° 47.8 -21° 20.7	237° 47.5 -21° 20.2	252° 47.3 -21° 19.8	87° 44.3 -21° 14.0	102° 44.1 -21° 13.6	117° 43.9 -21° 13.1	132° 43.7 -21° 12.7	147° 43.4 -21° 12.2	162° 43.2 -21° 11.8	-0.2 +0.4
Пн 15	177° 43.0 -21° 11.3	192° 42.8 -21° 10.9	207° 42.5 -21° 10.4	222° 42.3 -21° 10.0	237° 42.1 -21° 09.5	252° 41.9 -21° 09.0	87° 39.0 -21° 03.1	102° 38.8 -21° 02.6	117° 38.6 -21° 02.1	132° 38.4 -21° 01.7	147° 38.1 -21° 01.2	162° 37.9 -21° 00.7	-0.2 +0.5
Вт 16	177° 37.7 -21° 00.2	192° 37.5 -20° 59.8	207° 37.3 -20° 59.3	222° 37.1 -20° 58.8	237° 36.8 -20° 58.4	252° 36.6 -20° 57.9	87° 33.9 -20° 51.7	102° 33.6 -20° 51.2	117° 33.4 -20° 50.7	132° 33.2 -20° 50.2	147° 33.0 -20° 49.7	162° 32.8 -20° 49.3	-0.2 +0.5
Ср 17	177° 32.6 -20° 48.8	192° 32.4 -20° 48.3	207° 32.2 -20° 47.8	222° 32.0 -20° 47.3	237° 31.8 -20° 46.8	252° 31.5 -20° 46.3	87° 28.9 -20° 39.9	102° 28.7 -20° 39.4	117° 28.5 -20° 38.9	132° 28.3 -20° 38.4	147° 28.1 -20° 37.9	162° 27.9 -20° 37.4	-0.2 +0.5
Чт 18	177° 27.7 -20° 36.9	192° 27.5 -20° 36.4	207° 27.3 -20° 35.9	222° 27.0 -20° 35.4	237° 26.8 -20° 34.9	252° 26.6 -20° 34.4	87° 24.1 -20° 27.7	102° 23.9 -20° 27.2	117° 23.7 -20° 26.7	132° 23.5 -20° 26.2	147° 23.3 -20° 25.7	162° 23.1 -20° 25.2	-0.2 +0.5
Пт 19	177° 22.9 -20° 24.6	192° 22.7 -20° 24.1	207° 22.5 -20° 23.6	222° 22.3 -20° 23.1	237° 22.1 -20° 22.6	252° 21.9 -20° 22.0	87° 19.5 -20° 15.2	102° 19.3 -20° 14.7	117° 19.1 -20° 14.1	132° 18.9 -20° 13.6	147° 18.7 -20° 13.1	162° 18.5 -20° 12.5	-0.2 +0.5
Сб 20	177° 18.3 -20° 12.0	192° 18.2 -20° 11.5	207° 18.0 -20° 10.9	222° 17.8 -20° 10.4	237° 17.6 -20° 09.9	252° 17.4 -20° 09.3	87° 15.0 -20° 02.3	102° 14.9 -20° 01.7	117° 14.7 -20° 01.2	132° 14.5 -20° 00.6	147° 14.3 -20° 00.1	162° 14.1 -19° 59.5	-0.2 +0.5
Вс 21	177° 14.0 -19° 59.0	192° 13.8 -19° 58.4	207° 13.6 -19° 57.9	222° 13.4 -19° 57.3	237° 13.3 -19° 56.8	252° 13.1 -19° 56.2	87° 10.8 -19° 49.0	102° 10.6 -19° 48.4	117° 10.5 -19° 47.8	132° 10.3 -19° 47.3	147° 10.1 -19° 46.7	162° 09.9 -19° 46.2	-0.2 +0.6
Пн 22	177° 09.8 -19° 45.6	192° 09.6 -19° 45.0	207° 09.4 -19° 44.5	222° 09.3 -19° 43.9	237° 09.1 -19° 43.3	252° 08.9 -19° 42.8	87° 06.8 -19° 35.3	102° 06.6 -19° 34.7	117° 06.4 -19° 34.1	132° 06.3 -19° 33.6	147° 06.1 -19° 33.0	162° 05.9 -19° 32.4	-0.2 +0.6
Вт 23	177° 05.8 -19° 31.8	192° 05.6 -19° 31.2	207° 05.5 -19° 30.7	222° 05.3 -19° 30.1	237° 05.1 -19° 29.5	252° 05.0 -19° 28.9	87° 02.9 -19° 21.3	102° 02.8 -19° 20.7	117° 02.6 -19° 20.1	132° 02.5 -19° 19.5	147° 02.3 -19° 18.9	162° 02.1 -19° 18.3	-0.2 +0.6
Ср 24	177° 02.0 -19° 17.7	192° 01.8 -19° 17.1	207° 01.7 -19° 16.5	222° 01.5 -19° 15.9	237° 01.4 -19° 15.3	252° 01.2 -19° 14.7	86° 59.3 -19° 06.9	101° 59.1 -19° 06.3	116° 59.0 -19° 05.7	131° 58.8 -19° 05.1	146° 58.7 -19° 04.4	161° 58.5 -19° 03.8	-0.2 +0.6
Чт 25	176° 58.4 -19° 03.2	191° 58.2 -19° 02.6	206° 58.1 -19° 02.0	221° 58.0 -19° 01.4	236° 57.8 -19° 00.8	251° 57.7 -19° 00.2	86° 55.8 -18° 52.1	101° 55.7 -18° 51.5	116° 55.5 -18° 50.9	131° 55.4 -18° 50.3	146° 55.3 -18° 49.6	161° 55.1 -18° 49.0	-0.1 +0.6
Пт 26	176° 55.0 -18° 48.4	191° 54.8 -18° 47.8	206° 54.7 -18° 47.1	221° 54.6 -18° 46.5	236° 54.4 -18° 45.9	251° 54.3 -18° 45.3	86° 52.6 -18° 37.1	101° 52.4 -18° 36.4	116° 52.3 -18° 35.8	131° 52.2 -18° 35.1	146° 52.0 -18° 34.5	161° 51.9 -18° 33.9	-0.1 +0.6
Сб 27	176° 51.8 -18° 33.2	191° 51.6 -18° 32.6	206° 51.5 -18° 31.9	221° 51.4 -18° 31.3	236° 51.3 -18° 30.7	251° 51.1 -18° 30.0	86° 49.5 -18° 21.6	101° 49.4 -18° 21.0	116° 49.3 -18° 20.3	131° 49.1 -18° 19.7	146° 49.0 -18° 19.0	161° 48.9 -18° 18.4	-0.1 +0.6
Вс 28	176° 48.8 -18° 17.7	191° 48.6 -18° 17.1	206° 48.5 -18° 16.4	221° 48.4 -18° 15.8	236° 48.3 -18° 15.1	251° 48.2 -18° 14.4	86° 46.6 -18° 05.9	101° 46.5 -18° 05.2	116° 46.4 -18° 04.5	131° 46.3 -18° 03.9	146° 46.2 -18° 03.2	161° 46.1 -18° 02.5	-0.1 +0.7
Пн 29	176° 46.0 -18° 01.9	191° 45.8 -18° 01.2	206° 45.7 -18° 00.5	221° 45.6 -17° 59.9	236° 45.5 -17° 59.2	251° 45.4 -17° 58.5	86° 44.0 -17° 49.8	101° 43.9 -17° 49.1	116° 43.8 -17° 48.4	131° 43.7 -17° 47.7	146° 43.6 -17° 47.1	161° 43.4 -17° 46.4	-0.1 +0.7
Вт 30	176° 43.3 -17° 45.7	191° 43.2 -17° 45.0	206° 43.1 -17° 44.3	221° 43.0 -17° 43.7	236° 42.9 -17° 43.0	251° 42.8 -17° 42.3	86° 41.5 -17° 33.4	101° 41.4 -17° 32.7	116° 41.3 -17° 32.0	131° 41.2 -17° 31.3	146° 41.1 -17° 30.6	161° 41.0 -17° 29.9	-0.1 +0.7
Ср 31	176° 40.9 -17° 29.2	191° 40.8 -17° 28.5	206° 40.7 -17° 27.8	221° 40.6 -17° 27.1	236° 40.5 -17° 26.5	251° 40.5 -17° 25.8	86° 39.2 -17° 16.7	101° 39.2 -17° 16.0	116° 39.1 -17° 15.3	131° 39.0 -17° 14.5	146° 38.9 -17° 13.8	161° 38.8 -17° 13.1	-0.1 +0.7

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.3'

ЛУНА

Январь 2035

	Д	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	Δ'/h	R/p
◑	Пн 1	60° 10.6	74° 43.7	89° 16.9	103° 50.0	118° 23.2	132° 56.4	147° 29.7	162° 02.9	176° 36.2	191° 09.5	205° 42.8	+33.2	15.1
		-2° 23.7	-2° 33.4	-2° 43.1	-2° 52.8	-3° 02.5	-3° 12.1	-3° 21.7	-3° 31.3	-3° 40.9	-3° 50.4	-3° 59.9	-9.6	55.3
	Вт 2	64° 03.7	78° 37.2	93° 10.6	107° 44.1	122° 17.6	136° 51.1	151° 24.5	165° 58.0	180° 31.5	195° 04.9	209° 38.4	+33.5	14.9
		-6° 19.3	-6° 28.3	-6° 37.3	-6° 46.3	-6° 55.2	-7° 04.1	-7° 13.0	-7° 21.8	-7° 30.6	-7° 39.4	-7° 48.1	-8.9	54.7
	Ср 3	67° 59.9	82° 33.3	97° 06.6	111° 40.0	126° 13.3	140° 46.6	155° 19.9	169° 53.2	184° 26.5	198° 59.7	213° 33.0	+33.3	14.8
		-9° 54.0	-10° 02.1	-10° 10.1	-10° 18.0	-10° 26.0	-10° 33.8	-10° 41.6	-10° 49.4	-10° 57.1	-11° 04.8	-11° 12.4	-7.8	54.3
	Чт 4	71° 49.6	86° 22.6	100° 55.5	115° 28.4	130° 01.3	144° 34.1	159° 07.0	173° 39.8	188° 12.6	202° 45.3	217° 18.1	+32.8	14.7
		-13° 00.6	-13° 07.3	-13° 14.1	-13° 20.7	-13° 27.3	-13° 33.9	-13° 40.3	-13° 46.8	-13° 53.1	-13° 59.4	-14° 05.7	-6.5	54.0
	Пт 5	75° 26.1	89° 58.4	104° 30.7	119° 03.0	133° 35.3	148° 07.5	162° 39.7	177° 11.8	191° 44.0	206° 16.1	220° 48.1	+32.2	14.7
		-15° 31.8	-15° 37.0	-15° 42.1	-15° 47.2	-15° 52.2	-15° 57.2	-16° 02.0	-16° 06.8	-16° 11.6	-16° 16.2	-16° 20.8	-4.9	54.0
	Сб 6	78° 46.0	93° 17.7	107° 49.3	122° 20.9	136° 52.4	151° 24.0	165° 55.5	180° 26.9	194° 58.4	209° 29.8	224° 01.3	+31.5	14.7
		-17° 20.9	-17° 24.2	-17° 27.6	-17° 30.8	-17° 34.0	-17° 37.1	-17° 40.1	-17° 43.0	-17° 45.8	-17° 48.6	-17° 51.3	-3.0	54.0
	Вс 7	81° 49.6	96° 20.6	110° 51.6	125° 22.6	139° 53.6	154° 24.6	168° 55.5	183° 26.5	197° 57.4	212° 28.3	226° 59.1	+31.0	14.8
		-18° 21.7	-18° 23.0	-18° 24.3	-18° 25.5	-18° 26.6	-18° 27.6	-18° 28.5	-18° 29.4	-18° 30.1	-18° 30.8	-18° 31.4	-1.0	54.2
	Пн 8	84° 40.5	99° 11.2	113° 41.8	128° 12.5	142° 43.1	157° 13.7	171° 44.4	186° 15.0	200° 45.6	215° 16.2	229° 46.7	+30.6	14.9
		-18° 29.7	-18° 28.8	-18° 27.9	-18° 26.9	-18° 25.8	-18° 24.7	-18° 23.4	-18° 22.1	-18° 20.6	-18° 19.1	-18° 17.5	+1.2	54.5
●	Вт 9	87° 25.1	101° 55.6	116° 26.2	130° 56.7	145° 27.3	159° 57.8	174° 28.4	188° 58.9	203° 29.5	218° 00.1	232° 30.6	+30.6	15.0
		-17° 42.6	-17° 39.6	-17° 36.5	-17° 33.3	-17° 30.0	-17° 26.6	-17° 23.2	-17° 19.6	-17° 16.0	-17° 12.3	-17° 08.5	+3.4	54.8
	Ср 10	90° 09.8	104° 40.5	119° 11.2	133° 41.8	148° 12.5	162° 43.3	177° 14.0	191° 44.7	206° 15.4	220° 46.2	235° 16.9	+30.7	15.1
		-16° 01.4	-15° 56.3	-15° 51.1	-15° 45.8	-15° 40.5	-15° 35.0	-15° 29.5	-15° 23.9	-15° 18.2	-15° 12.4	-15° 06.6	+5.5	55.2
	Чт 11	92° 59.6	107° 30.6	122° 01.5	136° 32.5	151° 03.4	165° 34.4	180° 05.4	194° 36.4	209° 07.4	223° 38.4	238° 09.5	+31.0	15.2
		-13° 30.1	-13° 23.1	-13° 16.0	-13° 08.9	-13° 01.7	-12° 54.4	-12° 47.1	-12° 39.7	-12° 32.2	-12° 24.6	-12° 17.0	+7.3	55.7
	Пт 12	95° 56.2	110° 27.4	124° 58.5	139° 29.7	154° 00.9	168° 32.2	183° 03.4	197° 34.6	212° 05.8	226° 37.1	241° 08.3	+31.2	15.3
		-10° 15.5	-10° 06.9	-9° 58.3	-9° 49.7	-9° 40.9	-9° 32.1	-9° 23.3	-9° 14.4	-9° 05.5	-8° 56.5	-8° 47.5	+8.8	56.2
	Сб 13	98° 57.1	113° 28.4	127° 59.6	142° 30.9	157° 02.1	171° 33.4	186° 04.6	200° 35.8	215° 07.1	229° 38.3	244° 09.5	+31.2	15.5
		-6° 26.5	-6° 16.8	-6° 07.0	-5° 57.2	-5° 47.4	-5° 37.5	-5° 27.6	-5° 17.7	-5° 07.7	-4° 57.7	-4° 47.6	+9.9	56.7
	Вс 14	101° 56.4	116° 27.4	130° 58.4	145° 29.4	160° 00.4	174° 31.3	189° 02.2	203° 33.1	218° 04.0	232° 34.9	247° 05.7	+30.9	15.6
		-2° 13.8	-2° 03.3	-1° 52.9	-1° 42.4	-1° 31.9	-1° 21.4	-1° 10.9	-1° 00.4	-0° 49.8	-0° 39.2	-0° 28.7	+10.5	57.3
	Пн 15	116° 27.4	130° 58.4	145° 29.4	160° 00.4	174° 31.3	189° 02.2	203° 33.1	218° 04.0	232° 34.9	247° 05.7	261° 36.5	+30.9	15.6
		-2° 03.3	-1° 52.9	-1° 42.4	-1° 31.9	-1° 21.4	-1° 10.9	-1° 00.4	-0° 49.8	-0° 39.2	-0° 28.7	-0° 18.1	+10.5	57.4
	Вт 16	119° 15.3	133° 45.7	148° 16.0	162° 46.2	177° 16.5	191° 46.6	206° 16.8	220° 46.9	235° 17.0	249° 47.0	264° 17.0	+30.2	15.8
		2° 21.4	2° 32.0	2° 42.7	2° 53.3	3° 03.9	3° 14.5	3° 25.1	3° 35.7	3° 46.3	3° 56.9	4° 07.5	+10.6	58.0
◐	Ср 17	121° 41.3	136° 10.6	150° 39.8	165° 08.9	179° 37.9	194° 07.0	208° 35.9	223° 04.8	237° 33.7	252° 02.5	266° 31.2	+29.0	16.0
		6° 43.8	6° 54.0	7° 04.2	7° 14.4	7° 24.5	7° 34.6	7° 44.7	7° 54.7	8° 04.7	8° 14.7	8° 24.6	+10.1	58.6
	Чт 18	123° 34.9	138° 02.7	152° 30.4	166° 58.0	181° 25.5	195° 53.0	210° 20.4	224° 47.8	239° 15.1	253° 42.3	268° 09.5	+27.5	16.2
		10° 48.2	10° 57.4	11° 06.5	11° 15.5	11° 24.5	11° 33.4	11° 42.3	11° 51.1	11° 59.8	12° 08.5	12° 17.1	+8.9	59.2
	Пт 19	124° 48.6	139° 14.7	153° 40.7	168° 06.7	182° 32.5	196° 58.3	211° 24.1	225° 49.8	240° 15.4	254° 40.9	269° 06.4	+25.8	16.3
		14° 17.2	14° 24.5	14° 31.8	14° 39.0	14° 46.1	14° 53.1	15° 00.0	15° 06.8	15° 13.6	15° 20.2	15° 26.7	+7.0	59.8
	Сб 20	125° 21.4	139° 46.0	154° 10.5	168° 34.9	182° 59.3	197° 23.7	211° 47.9	226° 12.2	240° 36.4	255° 00.6	269° 24.7	+24.3	16.4
		16° 52.4	16° 57.2	17° 01.9	17° 06.5	17° 11.0	17° 15.4	17° 19.7	17° 23.8	17° 27.9	17° 31.8	17° 35.5	+4.3	60.2
	Вс 21	125° 22.0	139° 45.5	154° 09.1	168° 32.6	182° 56.2	197° 19.7	211° 43.2	226° 06.7	240° 30.1	254° 53.6	269° 17.0	+23.5	16.5
		18° 17.3	18° 19.1	18° 20.7	18° 22.2	18° 23.6	18° 24.8	18° 26.0	18° 26.9	18° 27.8	18° 28.5	18° 29.1	+1.2	60.4
	Пн 22	125° 08.7	139° 32.3	153° 55.8	168° 19.3	182° 42.9	197° 06.5	211° 30.1	225° 53.8	240° 17.5	254° 41.2	269° 04.9	+23.6	16.4
		18° 21.8	18° 20.2	18° 18.5	18° 16.7	18° 14.8	18° 12.7	18° 10.5	18° 08.2	18° 05.7	18° 03.2	18° 00.5	-2.1	60.3
○	Вт 23	125° 05.5	139° 29.9	153° 54.4	168° 18.9	182° 43.5	197° 08.1	211° 32.8	225° 57.5	240° 22.3	254° 47.2	269° 12.1	+24.7	16.4
		17° 04.9	17° 00.3	16° 55.5	16° 50.6	16° 45.6	16° 40.5	16° 35.3	16° 29.9	16° 24.5	16° 18.9	16° 13.3	-5.2	60.0
	Ср 24	125° 33.7	139° 59.7	154° 25.8	168° 51.9	183° 18.1	197° 44.2	212° 10.8	226° 37.2	241° 03.7	255° 30.3	269° 57.0	+26.3	16.2
		14° 36.4	14° 29.2	14° 21.9	14° 14.5	14° 07.1	13° 59.5	13° 51.9	13° 44.2	13° 36.4	13° 28.5	13° 20.6	-7.6	59.4
	Чт 25	126° 46.0	141° 13.9	155° 41.9	170° 09.9	184° 38.0	199° 06.2	213° 34.4	228° 02.8	242° 31.2	256° 59.7	271° 28.2	+28.2	16.0
		11° 13.2	11° 04.2	10° 55.1	10° 46.0	10° 36.9	10° 27.7	10° 18.4	10° 09.1	9° 59.8	9° 50.4	9° 41.0	-9.2	58.6
	Пт 26	128° 45.2	143° 14.9	157° 44.6	172° 14.4	186° 44.3	201° 14.3	215° 44.3	230° 14.4	244° 44.5	259° 14.7	273° 45.0	+30.0	15.8
		7° 14.9	7° 04.9	6° 54.9	6° 44.9	6° 34.8	6° 24.7	6° 14.6	6° 04.5	5° 54.4	5° 44.2	5° 34.1	-10.1	57.8
	Сб 27	131° 26.0	145° 57.2	160° 28.4	174° 59.7	189° 31.0	204° 02.4	218° 33.8	233° 05.3	247° 36.8	262° 08.4	276° 40.0	+31.4	15.5
		3° 00.2	2° 49.9	2° 39.6	2° 29.3	2° 19.0	2° 08.8	1° 58.5	1° 48.2	1° 37.9	1° 27.6	1° 17.4	-10.3	56.9
	Вс 28	134° 39.1	149° 11.3	163° 43.6	178° 15.9	192° 48.2	207° 20.6	221° 53.0	236° 25.4	250° 57.9	265° 30.3	280° 02.9	+32.4	15.3
		-1° 15.3	-1° 25.4	-1° 35.4	-1° 45.4	-1° 55.4	-2° 05.4	-2° 15.3	-2° 25.3	-2° 35.2	-2° 45.1	-2° 54.9	-10.0	56.0
	Пн 29	138° 13.2	152° 46.1	167° 18.9	181° 51.8	196° 24.7	210° 57.6	225° 30.5	240° 03.4	254° 36.4	269° 09.3	283° 42.3	+32.9	15.1
		-5° 19.5	-5° 28.9	-5° 38.3	-5° 47.6	-5° 56.9	-6° 06.1	-6° 15.3	-6° 24.5	-6° 33.7	-6° 42.8	-6° 51.8	-9.2	55.3
	Вт 30	141° 57.4	156° 30.4	171° 03.5	185° 36.5	200° 09.5	214° 42.6	229° 15.6	243° 48.6	258° 21.6	272° 54.6	287° 27.6	+33.0	14.9
		-9° 02.9	-9° 11.3	-9° 19.7	-9° 27.9	-9° 36.2	-9° 44.4	-9° 52.6	-10° 00.7	-10° 08.7	-10° 16.7	-10° 24.7	-8.2	54.7
◑	Ср 31	145° 41.8	160° 14.6	174° 47.5	189° 20.3	203° 53.1	218° 25.9	232° 58.7	247° 31.5	262° 04.3	276° 37.0	291° 09.7	+32.8	14.8
		-12° 17.8	-12° 24.9	-12° 32.0	-12° 38.9	-12° 45.9	-12° 52.8	-12° 59.6	-13° 06.3	-13° 13.0	-13° 19.7	-13° 26.3	-6.8	54.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 1 10h01 — Новолуние: 9 15h03 — Первая четв.: 17 04h45 — Полнолуние: 23 20h16 — Последняя четв.: 31 06h02

СОЛНЦЕ

Февраль 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	176° 38.7 -17° 12.4	191° 38.6 -17° 11.7	206° 38.5 -17° 11.0	221° 38.5 -17° 10.3	236° 38.4 -17° 09.6	251° 38.3 -17° 08.9	86° 37.2 -16° 59.6	101° 37.1 -16° 58.9	116° 37.0 -16° 58.2	131° 36.9 -16° 57.5	146° 36.9 -16° 56.8	161° 36.8 -16° 56.1	-0.1 +0.7
Пт 2	176° 36.7 -16° 55.3	191° 36.6 -16° 54.6	206° 36.5 -16° 53.9	221° 36.5 -16° 53.2	236° 36.4 -16° 52.5	251° 36.3 -16° 51.7	86° 35.3 -16° 42.3	101° 35.2 -16° 41.6	116° 35.2 -16° 40.9	131° 35.1 -16° 40.1	146° 35.0 -16° 39.4	161° 35.0 -16° 38.7	-0.1 +0.7
Сб 3	176° 34.9 -16° 37.9	191° 34.8 -16° 37.2	206° 34.7 -16° 36.5	221° 34.7 -16° 35.7	236° 34.6 -16° 35.0	251° 34.5 -16° 34.3	86° 33.6 -16° 24.7	101° 33.6 -16° 24.0	116° 33.5 -16° 23.2	131° 33.5 -16° 22.5	146° 33.4 -16° 21.7	161° 33.3 -16° 21.0	-0.1 +0.7
Вс 4	176° 33.3 -16° 20.2	191° 33.2 -16° 19.5	206° 33.1 -16° 18.8	221° 33.1 -16° 18.0	236° 33.0 -16° 17.3	251° 33.0 -16° 16.5	86° 32.2 -16° 06.8	101° 32.1 -16° 06.0	116° 32.1 -16° 05.3	131° 32.0 -16° 04.5	146° 32.0 -16° 03.8	161° 31.9 -16° 03.0	-0.1 +0.7
Пн 5	176° 31.8 -16° 02.3	191° 31.8 -16° 01.5	206° 31.7 -16° 00.8	221° 31.7 -16° 00.0	236° 31.6 -15° 59.3	251° 31.6 -15° 58.5	86° 30.9 -15° 48.6	101° 30.9 -15° 47.9	116° 30.8 -15° 47.1	131° 30.8 -15° 46.3	146° 30.7 -15° 45.6	161° 30.7 -15° 44.8	-0.1 +0.8
Вт 6	176° 30.6 -15° 44.0	191° 30.6 -15° 43.3	206° 30.5 -15° 42.5	221° 30.5 -15° 41.7	236° 30.4 -15° 41.0	251° 30.4 -15° 40.2	86° 29.8 -15° 30.2	101° 29.8 -15° 29.4	116° 29.8 -15° 28.6	131° 29.7 -15° 27.8	146° 29.7 -15° 27.1	161° 29.6 -15° 26.3	-0.0 +0.8
Ср 7	176° 29.6 -15° 25.5	191° 29.6 -15° 24.7	206° 29.5 -15° 24.0	221° 29.5 -15° 23.2	236° 29.5 -15° 22.4	251° 29.4 -15° 21.6	86° 29.0 -15° 11.4	101° 28.9 -15° 10.7	116° 28.9 -15° 09.9	131° 28.9 -15° 09.1	146° 28.8 -15° 08.3	161° 28.8 -15° 07.5	-0.0 +0.8
Чт 8	176° 28.8 -15° 06.7	191° 28.8 -15° 05.9	206° 28.7 -15° 05.2	221° 28.7 -15° 04.4	236° 28.7 -15° 03.6	251° 28.6 -15° 02.8	86° 28.3 -14° 52.5	101° 28.3 -14° 51.7	116° 28.2 -14° 50.9	131° 28.2 -14° 50.1	146° 28.2 -14° 49.3	161° 28.2 -14° 48.5	-0.0 +0.8
Пт 9	176° 28.2 -14° 47.7	191° 28.1 -14° 46.9	206° 28.1 -14° 46.1	221° 28.1 -14° 45.3	236° 28.1 -14° 44.5	251° 28.1 -14° 43.7	86° 27.8 -14° 33.2	101° 27.8 -14° 32.4	116° 27.8 -14° 31.6	131° 27.8 -14° 30.8	146° 27.8 -14° 30.0	161° 27.7 -14° 29.2	-0.0 +0.8
Сб 10	176° 27.7 -14° 28.4	191° 27.7 -14° 27.6	206° 27.7 -14° 26.8	221° 27.7 -14° 26.0	236° 27.7 -14° 25.2	251° 27.7 -14° 24.4	86° 27.5 -14° 13.8	101° 27.5 -14° 13.0	116° 27.5 -14° 12.1	131° 27.5 -14° 11.3	146° 27.5 -14° 10.5	161° 27.5 -14° 09.7	-0.0 +0.8
Вс 11	176° 27.5 -14° 08.9	191° 27.5 -14° 08.1	206° 27.5 -14° 07.2	221° 27.5 -14° 06.4	236° 27.5 -14° 05.6	251° 27.5 -14° 04.8	86° 27.5 -13° 54.1	101° 27.5 -13° 53.3	116° 27.5 -13° 52.4	131° 27.5 -13° 51.6	146° 27.5 -13° 50.8	161° 27.5 -13° 49.9	-0.0 +0.8
Пн 12	176° 27.5 -13° 49.1	191° 27.5 -13° 48.3	206° 27.5 -13° 47.5	221° 27.5 -13° 46.6	236° 27.5 -13° 45.8	251° 27.5 -13° 45.0	86° 27.6 -13° 34.1	101° 27.6 -13° 33.3	116° 27.6 -13° 32.5	131° 27.6 -13° 31.6	146° 27.6 -13° 30.8	161° 27.6 -13° 30.0	+0.0 +0.8
Вт 13	176° 27.6 -13° 29.1	191° 27.6 -13° 28.3	206° 27.6 -13° 27.5	221° 27.7 -13° 26.6	236° 27.7 -13° 25.8	251° 27.7 -13° 24.9	86° 27.9 -13° 14.0	101° 27.9 -13° 13.1	116° 27.9 -13° 12.3	131° 27.9 -13° 11.5	146° 27.9 -13° 10.6	161° 27.9 -13° 09.8	+0.0 +0.8
Ср 14	176° 28.0 -13° 08.9	191° 28.0 -13° 08.1	206° 28.0 -13° 07.2	221° 28.0 -13° 06.4	236° 28.0 -13° 05.5	251° 28.1 -13° 04.7	86° 28.4 -12° 53.6	101° 28.4 -12° 52.8	116° 28.4 -12° 51.9	131° 28.4 -12° 51.1	146° 28.5 -12° 50.2	161° 28.5 -12° 49.3	+0.0 +0.8
Чт 15	176° 28.5 -12° 48.5	191° 28.5 -12° 47.6	206° 28.6 -12° 46.8	221° 28.6 -12° 45.9	236° 28.6 -12° 45.1	251° 28.6 -12° 44.2	86° 29.0 -12° 33.0	101° 29.1 -12° 32.2	116° 29.1 -12° 31.3	131° 29.1 -12° 30.5	146° 29.2 -12° 29.6	161° 29.2 -12° 28.7	+0.0 +0.9
Пт 16	176° 29.2 -12° 27.9	191° 29.3 -12° 27.0	206° 29.3 -12° 26.1	221° 29.3 -12° 25.3	236° 29.4 -12° 24.4	251° 29.4 -12° 23.5	86° 29.9 -12° 12.3	101° 29.9 -12° 11.4	116° 30.0 -12° 10.5	131° 30.0 -12° 09.7	146° 30.1 -12° 08.8	161° 30.1 -12° 07.9	+0.0 +0.9
Сб 17	176° 30.1 -12° 07.0	191° 30.2 -12° 06.2	206° 30.2 -12° 05.3	221° 30.3 -12° 04.4	236° 30.3 -12° 03.5	251° 30.3 -12° 02.7	86° 30.9 -11° 51.3	101° 31.0 -11° 50.4	116° 31.0 -11° 49.5	131° 31.1 -11° 48.7	146° 31.1 -11° 47.8	161° 31.2 -11° 46.9	+0.0 +0.9
Вс 18	176° 31.2 -11° 46.0	191° 31.3 -11° 45.1	206° 31.3 -11° 44.3	221° 31.4 -11° 43.4	236° 31.4 -11° 42.5	251° 31.5 -11° 41.6	86° 32.2 -11° 30.1	101° 32.2 -11° 29.2	116° 32.3 -11° 28.4	131° 32.3 -11° 27.5	146° 32.4 -11° 26.6	161° 32.4 -11° 25.7	+0.0 +0.9
Пн 19	176° 32.5 -11° 24.8	191° 32.5 -11° 23.9	206° 32.6 -11° 23.0	221° 32.7 -11° 22.1	236° 32.7 -11° 21.3	251° 32.8 -11° 20.4	86° 33.6 -11° 08.8	101° 33.6 -11° 07.9	116° 33.7 -11° 07.0	131° 33.7 -11° 06.1	146° 33.8 -11° 05.2	161° 33.9 -11° 04.3	+0.1 +0.9
Вт 20	176° 33.9 -11° 03.4	191° 34.0 -11° 02.5	206° 34.1 -11° 01.6	221° 34.1 -11° 00.7	236° 34.2 -10° 59.8	251° 34.3 -10° 59.0	86° 35.1 -10° 47.3	101° 35.2 -10° 46.4	116° 35.3 -10° 45.5	131° 35.3 -10° 44.6	146° 35.4 -10° 43.7	161° 35.5 -10° 42.8	+0.1 +0.9
Ср 21	176° 35.5 -10° 41.9	191° 35.6 -10° 41.0	206° 35.7 -10° 40.1	221° 35.7 -10° 39.2	236° 35.8 -10° 38.3	251° 35.9 -10° 37.4	86° 36.8 -10° 25.6	101° 36.9 -10° 24.7	116° 37.0 -10° 23.8	131° 37.1 -10° 22.9	146° 37.2 -10° 22.0	161° 37.2 -10° 21.1	+0.1 +0.9
Чт 22	176° 37.3 -10° 20.2	191° 37.4 -10° 19.2	206° 37.5 -10° 18.3	221° 37.5 -10° 17.4	236° 37.6 -10° 16.5	251° 37.7 -10° 15.6	86° 38.7 -10° 03.8	101° 38.8 -10° 02.8	116° 38.9 -10° 01.9	131° 39.0 -10° 01.0	146° 39.1 -10° 00.1	161° 39.2 -9° 59.2	+0.1 +0.9
Пт 23	176° 39.2 -9° 58.3	191° 39.3 -9° 57.4	206° 39.4 -9° 56.4	221° 39.5 -9° 55.5	236° 39.6 -9° 54.6	251° 39.7 -9° 53.7	86° 40.8 -9° 41.8	101° 40.9 -9° 40.8	116° 41.0 -9° 39.9	131° 41.0 -9° 39.0	146° 41.1 -9° 38.1	161° 41.2 -9° 37.2	+0.1 +0.9
Сб 24	176° 41.3 -9° 36.2	191° 41.4 -9° 35.3	206° 41.5 -9° 34.4	221° 41.6 -9° 33.5	236° 41.7 -9° 32.6	251° 41.8 -9° 31.6	86° 43.0 -9° 19.6	101° 43.1 -9° 18.7	116° 43.2 -9° 17.8	131° 43.3 -9° 16.8	146° 43.4 -9° 15.9	161° 43.4 -9° 15.0	+0.1 +0.9
Вс 25	176° 43.5 -9° 14.1	191° 43.6 -9° 13.1	206° 43.7 -9° 12.2	221° 43.8 -9° 11.3	236° 43.9 -9° 10.4	251° 44.0 -9° 09.4	86° 45.3 -8° 57.3	101° 45.4 -8° 56.4	116° 45.5 -8° 55.5	131° 45.6 -8° 54.5	146° 45.7 -8° 53.6	161° 45.8 -8° 52.7	+0.1 +0.9
Пн 26	176° 45.9 -8° 51.8	191° 46.0 -8° 50.8	206° 46.1 -8° 49.9	221° 46.2 -8° 49.0	236° 46.3 -8° 48.0	251° 46.4 -8° 47.1	86° 47.8 -8° 34.9	101° 47.9 -8° 34.0	116° 48.0 -8° 33.1	131° 48.1 -8° 32.1	146° 48.2 -8° 31.2	161° 48.3 -8° 30.2	+0.1 +0.9
Вт 27	176° 48.4 -8° 29.3	191° 48.5 -8° 28.4	206° 48.6 -8° 27.4	221° 48.8 -8° 26.5	236° 48.9 -8° 25.5	251° 49.0 -8° 24.6	86° 50.4 -8° 12.4	101° 50.5 -8° 11.4	116° 50.6 -8° 10.5	131° 50.7 -8° 09.6	146° 50.8 -8° 08.6	161° 51.0 -8° 07.7	+0.1 +0.9
Ср 28	176° 51.1 -8° 06.7	191° 51.2 -8° 05.8	206° 51.3 -8° 04.8	221° 51.4 -8° 03.9	236° 51.5 -8° 02.9	251° 51.6 -8° 02.0	86° 53.1 -7° 49.7	101° 53.3 -7° 48.8	116° 53.4 -7° 47.8	131° 53.5 -7° 46.9	146° 53.6 -7° 45.9	161° 53.7 -7° 45.0	+0.1 +0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Февраль 2035

Д	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	Δ'/h	R/p
Чт 1	76° 36.0 -14° 28.7	91° 08.6 -14° 34.6	105° 41.1 -14° 40.4	120° 13.6 -14° 46.1	134° 46.0 -14° 51.8	149° 18.5 -14° 57.5	163° 50.9 -15° 03.0	178° 23.3 -15° 08.5	192° 55.7 -15° 14.0	207° 28.0 -15° 19.3	222° 00.4 -15° 24.6	+32.4 -5.6	14.8 54.1
Пт 2	80° 02.6 -16° 35.7	94° 34.6 -16° 39.9	109° 06.5 -16° 43.9	123° 38.4 -16° 48.0	138° 10.3 -16° 51.9	152° 42.2 -16° 55.8	167° 14.0 -16° 59.6	181° 45.8 -17° 03.3	196° 17.6 -17° 06.9	210° 49.4 -17° 10.5	225° 21.1 -17° 13.9	+31.8 -3.8	14.7 54.1
Сб 3	83° 14.2 -17° 56.8	97° 45.6 -17° 59.0	112° 16.9 -18° 01.1	126° 48.2 -18° 03.2	141° 19.5 -18° 05.2	155° 50.7 -18° 07.0	170° 22.0 -18° 08.8	184° 53.2 -18° 10.6	199° 24.4 -18° 12.2	213° 55.5 -18° 13.8	228° 26.7 -18° 15.2	+31.2 -1.8	14.8 54.2
Вс 4	86° 11.3 -18° 27.0	100° 42.1 -18° 27.1	115° 12.9 -18° 27.1	129° 43.7 -18° 27.0	144° 14.5 -18° 26.9	158° 45.2 -18° 26.6	173° 15.9 -18° 26.3	187° 46.6 -18° 25.9	202° 17.3 -18° 25.3	216° 48.0 -18° 24.7	231° 18.7 -18° 24.0	+30.7 +0.3	14.9 54.5
Пн 5	88° 57.1 -18° 03.0	103° 27.6 -18° 00.9	117° 58.1 -17° 58.7	132° 28.5 -17° 56.4	146° 59.0 -17° 54.0	161° 29.4 -17° 51.5	175° 59.8 -17° 49.0	190° 30.3 -17° 46.3	205° 00.7 -17° 43.6	219° 31.1 -17° 40.8	234° 01.5 -17° 37.8	+30.4 +2.5	15.0 54.9
Вт 6	91° 37.0 -16° 43.6	106° 07.3 -16° 39.3	120° 37.7 -16° 34.9	135° 08.0 -16° 30.4	149° 38.4 -16° 25.9	164° 08.7 -16° 21.2	178° 39.1 -16° 16.5	193° 09.4 -16° 11.7	207° 39.8 -16° 06.8	222° 10.1 -16° 01.8	236° 40.5 -15° 56.7	+30.3 +4.7	15.1 55.3
Ср 7	94° 16.2 -14° 30.9	108° 46.6 -14° 24.6	123° 17.0 -14° 18.2	137° 47.4 -14° 11.7	152° 17.9 -14° 05.1	166° 48.3 -13° 58.4	181° 18.7 -13° 51.7	195° 49.2 -13° 44.9	210° 19.6 -13° 38.0	224° 50.1 -13° 31.0	239° 20.6 -13° 24.0	+30.4 +6.7	15.2 55.9
● Чт 8	96° 58.3 -11° 30.2	111° 28.9 -11° 22.1	125° 59.5 -11° 13.9	140° 30.1 -11° 05.7	155° 00.7 -10° 57.4	169° 31.3 -10° 49.0	184° 01.9 -10° 40.6	198° 32.5 -10° 32.1	213° 03.1 -10° 23.6	227° 33.7 -10° 15.0	242° 04.3 -10° 06.3	+30.6 +8.4	15.4 56.4
Пт 9	99° 44.2 -7° 49.9	114° 14.9 -7° 40.4	128° 45.6 -7° 30.9	143° 16.3 -7° 21.3	157° 47.0 -7° 11.7	172° 17.7 -7° 02.0	186° 48.4 -6° 52.3	201° 19.1 -6° 42.6	215° 49.8 -6° 32.8	230° 20.5 -6° 23.0	244° 51.2 -6° 13.1	+30.7 +9.7	15.5 56.9
Сб 10	102° 31.2 -3° 41.0	117° 01.8 -3° 30.6	131° 32.5 -3° 20.2	146° 03.1 -3° 09.8	160° 33.7 -2° 59.4	175° 04.3 -2° 48.9	189° 34.9 -2° 38.4	204° 05.4 -2° 27.9	218° 36.0 -2° 17.4	233° 06.5 -2° 06.9	247° 37.1 -1° 56.3	+30.6 +10.5	15.7 57.4
Вс 11	105° 13.5 0° 43.4	119° 43.8 0° 54.1	134° 14.1 1° 04.8	148° 44.3 1° 15.5	163° 14.5 1° 26.2	177° 44.8 1° 36.9	192° 14.9 1° 47.6	206° 45.1 1° 58.3	221° 15.2 2° 09.0	235° 45.3 2° 19.7	250° 15.4 2° 30.4	+30.2 +10.7	15.8 57.9
Пн 12	107° 43.3 5° 08.9	122° 12.9 5° 19.4	136° 42.5 5° 29.8	151° 12.1 5° 40.1	165° 41.6 5° 50.5	180° 11.0 6° 00.8	194° 40.5 6° 11.1	209° 09.9 6° 21.4	223° 39.2 6° 31.6	238° 08.6 6° 41.8	252° 37.8 6° 52.0	+29.5 +10.3	15.9 58.3
Вт 13	122° 12.9 5° 19.4	136° 42.5 5° 29.8	151° 12.1 5° 40.1	165° 41.6 5° 50.5	180° 11.0 6° 00.8	194° 40.5 6° 11.1	209° 09.9 6° 21.4	223° 39.2 6° 31.6	238° 08.6 6° 41.8	252° 37.8 6° 52.0	267° 07.1 7° 02.1	+29.4 +10.3	15.9 58.3
Ср 14	124° 20.8 9° 29.5	138° 49.3 9° 38.9	153° 17.8 9° 48.3	167° 46.3 9° 57.7	182° 14.7 10° 07.0	196° 43.1 10° 16.2	211° 11.4 10° 25.4	225° 39.7 10° 34.6	240° 07.9 10° 43.6	254° 36.1 10° 52.6	269° 04.2 11° 01.6	+28.3 +9.2	16.0 58.7
◐ Чт 15	126° 00.2 13° 08.1	140° 27.5 13° 16.0	154° 54.8 13° 23.8	169° 22.0 13° 31.5	183° 49.2 13° 39.1	198° 16.3 13° 46.6	212° 43.4 13° 54.1	227° 10.4 14° 01.5	241° 37.4 14° 08.8	256° 04.3 14° 16.0	270° 31.1 14° 23.1	+27.1 +7.5	16.1 59.0
Пт 16	127° 08.1 15° 59.2	141° 34.2 16° 04.8	156° 00.2 16° 10.4	170° 26.2 16° 15.8	184° 52.2 16° 21.2	199° 18.1 16° 26.4	213° 43.9 16° 31.5	228° 09.7 16° 36.5	242° 35.5 16° 41.4	257° 01.2 16° 46.3	271° 26.9 16° 51.0	+25.9 +5.2	16.2 59.3
Сб 17	127° 47.7 17° 48.2	142° 12.8 17° 51.1	156° 37.9 17° 53.8	171° 03.0 17° 56.5	185° 28.0 17° 59.0	199° 53.0 18° 01.5	214° 18.0 18° 03.8	228° 43.0 18° 05.9	243° 07.9 18° 08.0	257° 32.9 18° 10.0	271° 57.8 18° 11.8	+25.0 +2.4	16.2 59.4
Вс 18	128° 09.6 18° 24.4	142° 34.3 18° 24.2	156° 59.1 18° 24.0	171° 23.8 18° 23.6	185° 48.5 18° 23.0	200° 13.3 18° 22.4	214° 38.0 18° 21.6	229° 02.7 18° 20.7	243° 27.5 18° 19.7	257° 52.2 18° 18.6	272° 17.0 18° 17.3	+24.7 -0.7	16.2 59.5
Пн 19	128° 30.2 17° 43.8	142° 55.3 17° 40.6	157° 20.3 17° 37.3	171° 45.4 17° 33.8	186° 10.6 17° 30.3	200° 35.7 17° 26.6	215° 00.9 17° 22.9	229° 26.2 17° 19.0	243° 51.4 17° 15.0	258° 16.7 17° 10.8	272° 42.1 17° 06.6	+25.2 -3.7	16.2 59.4
Вт 20	129° 07.0 15° 50.2	143° 33.1 15° 44.3	157° 59.1 15° 38.3	172° 25.3 15° 32.2	186° 51.4 15° 26.0	201° 17.7 15° 19.7	215° 44.0 15° 13.3	230° 10.3 15° 06.8	244° 36.7 15° 00.2	259° 03.1 14° 53.5	273° 29.6 14° 46.7	+26.3 -6.4	16.1 59.1
Ср 21	130° 13.8 12° 55.1	144° 41.2 12° 47.0	159° 08.7 12° 38.9	173° 36.2 12° 30.7	188° 03.8 12° 22.4	202° 31.4 12° 14.0	216° 59.1 12° 05.6	231° 26.9 11° 57.1	245° 54.7 11° 48.6	260° 22.6 11° 40.0	274° 50.6 11° 31.3	+27.7 -8.4	16.0 58.7
○ Чт 22	131° 57.1 9° 14.5	146° 26.0 9° 05.0	160° 55.0 8° 55.5	175° 24.0 8° 45.9	189° 53.1 8° 36.2	204° 22.2 8° 26.5	218° 51.4 8° 16.8	233° 20.7 8° 07.1	247° 50.0 7° 57.3	262° 19.4 7° 47.5	276° 48.8 7° 37.6	+29.2 -9.7	15.8 58.1
Пт 23	134° 16.8 5° 06.5	148° 47.1 4° 56.2	163° 17.4 4° 46.0	177° 47.8 4° 35.7	192° 18.2 4° 25.4	206° 48.7 4° 15.1	221° 19.2 4° 04.8	235° 49.8 3° 54.5	250° 20.4 3° 44.2	264° 51.0 3° 33.8	279° 21.8 3° 23.5	+30.5 -10.3	15.6 57.4
Сб 24	137° 07.5 0° 48.1	151° 38.9 0° 37.8	166° 10.3 0° 27.5	180° 41.7 0° 17.2	195° 13.2 0° 06.9	209° 44.7 -0° 03.4	224° 16.3 -0° 13.7	238° 47.8 -0° 24.0	253° 19.5 -0° 34.2	267° 51.1 -0° 44.5	282° 22.8 -0° 54.7	+31.5 -10.3	15.4 56.7
Вс 25	140° 21.4 -3° 25.7	154° 53.5 -3° 35.6	169° 25.6 -3° 45.5	183° 57.8 -3° 55.3	198° 29.9 -4° 05.1	213° 02.1 -4° 14.9	227° 34.3 -4° 24.6	242° 06.6 -4° 34.3	256° 38.8 -4° 44.0	271° 11.1 -4° 53.6	285° 43.4 -5° 03.2	+32.2 -9.8	15.3 55.9
Пн 26	143° 49.4 -7° 23.0	158° 21.9 -7° 32.0	172° 54.4 -7° 41.0	187° 26.9 -7° 49.9	201° 59.5 -7° 58.8	216° 32.0 -8° 07.6	231° 04.5 -8° 16.4	245° 37.1 -8° 25.1	260° 09.6 -8° 33.8	274° 42.1 -8° 42.5	289° 14.7 -8° 51.1	+32.5 -8.8	15.1 55.3
Вт 27	147° 23.2 -10° 54.1	161° 55.8 -11° 01.9	176° 28.3 -11° 09.6	191° 00.9 -11° 17.3	205° 33.4 -11° 24.9	220° 06.0 -11° 32.5	234° 38.5 -11° 40.0	249° 11.1 -11° 47.4	263° 43.6 -11° 54.8	278° 16.1 -12° 02.1	292° 48.6 -12° 09.4	+32.5 -7.5	14.9 54.8
Ср 28	150° 55.4 -13° 51.2	165° 27.8 -13° 57.5	180° 00.2 -14° 03.8	194° 32.5 -14° 09.9	209° 04.8 -14° 16.0	223° 37.2 -14° 22.0	238° 09.5 -14° 28.0	252° 41.8 -14° 33.9	267° 14.0 -14° 39.7	281° 46.3 -14° 45.5	296° 18.6 -14° 51.2	+32.3 -6.0	14.8 54.4

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24
Новолуние: 8 08h22 — Первая четв.: 15 13h17 — Полнолуние: 22 08h53

СОЛНЦЕ

Март 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	176° 53.8 -7° 44.0	191° 54.0 -7° 43.1	206° 54.1 -7° 42.1	221° 54.2 -7° 41.2	236° 54.3 -7° 40.2	251° 54.4 -7° 39.3	86° 56.0 -7° 26.9	101° 56.1 -7° 26.0	116° 56.3 -7° 25.0	131° 56.4 -7° 24.1	146° 56.5 -7° 23.1	161° 56.6 -7° 22.2	+0.1 +0.9
Пт 2	176° 56.7 -7° 21.2	191° 56.9 -7° 20.3	206° 57.0 -7° 19.3	221° 57.1 -7° 18.4	236° 57.2 -7° 17.4	251° 57.4 -7° 16.5	86° 59.0 -7° 04.0	101° 59.1 -7° 03.1	116° 59.2 -7° 02.1	131° 59.4 -7° 01.2	146° 59.5 -7° 00.2	161° 59.6 -6° 59.3	+0.1 +1.0
Сб 3	176° 59.8 -6° 58.3	191° 59.9 -6° 57.3	207° 00.0 -6° 56.4	222° 00.1 -6° 55.4	237° 00.3 -6° 54.5	252° 00.4 -6° 53.5	87° 02.1 -6° 41.0	102° 02.2 -6° 40.1	117° 02.4 -6° 39.1	132° 02.5 -6° 38.2	147° 02.6 -6° 37.2	162° 02.8 -6° 36.2	+0.1 +1.0
Вс 4	177° 02.9 -6° 35.3	192° 03.0 -6° 34.3	207° 03.2 -6° 33.4	222° 03.3 -6° 32.4	237° 03.4 -6° 31.4	252° 03.6 -6° 30.5	87° 05.3 -6° 18.0	102° 05.5 -6° 17.0	117° 05.6 -6° 16.0	132° 05.7 -6° 15.1	147° 05.9 -6° 14.1	162° 06.0 -6° 13.1	+0.1 +1.0
Пн 5	177° 06.1 -6° 12.2	192° 06.3 -6° 11.2	207° 06.4 -6° 10.2	222° 06.5 -6° 09.3	237° 06.7 -6° 08.3	252° 06.8 -6° 07.4	87° 08.6 -5° 54.8	102° 08.8 -5° 53.8	117° 08.9 -5° 52.9	132° 09.1 -5° 51.9	147° 09.2 -5° 50.9	162° 09.3 -5° 49.9	+0.1 +1.0
Вт 6	177° 09.5 -5° 49.0	192° 09.6 -5° 48.0	207° 09.8 -5° 47.0	222° 09.9 -5° 46.1	237° 10.1 -5° 45.1	252° 10.2 -5° 44.1	87° 12.1 -5° 31.5	102° 12.2 -5° 30.6	117° 12.4 -5° 29.6	132° 12.5 -5° 28.6	147° 12.6 -5° 27.6	162° 12.8 -5° 26.7	+0.1 +1.0
Ср 7	177° 12.9 -5° 25.7	192° 13.1 -5° 24.7	207° 13.2 -5° 23.8	222° 13.4 -5° 22.8	237° 13.5 -5° 21.8	252° 13.7 -5° 20.8	87° 15.6 -5° 08.2	102° 15.7 -5° 07.2	117° 15.9 -5° 06.3	132° 16.0 -5° 05.3	147° 16.2 -5° 04.3	162° 16.3 -5° 03.3	+0.1 +1.0
Чт 8	177° 16.5 -5° 02.4	192° 16.6 -5° 01.4	207° 16.8 -5° 00.4	222° 16.9 -4° 59.4	237° 17.1 -4° 58.5	252° 17.2 -4° 57.5	87° 19.2 -4° 44.8	102° 19.4 -4° 43.8	117° 19.5 -4° 42.8	132° 19.7 -4° 41.9	147° 19.8 -4° 40.9	162° 20.0 -4° 39.9	+0.1 +1.0
Пт 9	177° 20.1 -4° 38.9	192° 20.3 -4° 38.0	207° 20.4 -4° 37.0	222° 20.6 -4° 36.0	237° 20.7 -4° 35.0	252° 20.9 -4° 34.1	87° 22.9 -4° 21.3	102° 23.1 -4° 20.4	117° 23.2 -4° 19.4	132° 23.4 -4° 18.4	147° 23.5 -4° 17.4	162° 23.7 -4° 16.4	+0.2 +1.0
Сб 10	177° 23.9 -4° 15.5	192° 24.0 -4° 14.5	207° 24.2 -4° 13.5	222° 24.3 -4° 12.5	237° 24.5 -4° 11.5	252° 24.6 -4° 10.6	87° 26.7 -3° 57.8	102° 26.9 -3° 56.8	117° 27.0 -3° 55.9	132° 27.2 -3° 54.9	147° 27.4 -3° 53.9	162° 27.5 -3° 52.9	+0.2 +1.0
Вс 11	177° 27.7 -3° 51.9	192° 27.8 -3° 50.9	207° 28.0 -3° 50.0	222° 28.2 -3° 49.0	237° 28.3 -3° 48.0	252° 28.5 -3° 47.0	87° 30.6 -3° 34.3	102° 30.8 -3° 33.3	117° 30.9 -3° 32.3	132° 31.1 -3° 31.3	147° 31.2 -3° 30.3	162° 31.4 -3° 29.3	+0.2 +1.0
Пн 12	177° 31.6 -3° 28.4	192° 31.7 -3° 27.4	207° 31.9 -3° 26.4	222° 32.1 -3° 25.4	237° 32.2 -3° 24.4	252° 32.4 -3° 23.4	87° 34.5 -3° 10.6	102° 34.7 -3° 09.7	117° 34.9 -3° 08.7	132° 35.0 -3° 07.7	147° 35.2 -3° 06.7	162° 35.4 -3° 05.7	+0.2 +1.0
Вт 13	177° 35.6 -3° 04.7	192° 35.7 -3° 03.7	207° 35.9 -3° 02.8	222° 36.1 -3° 01.8	237° 36.2 -3° 00.8	252° 36.4 -2° 59.8	87° 38.6 -2° 47.0	102° 38.8 -2° 46.0	117° 38.9 -2° 45.0	132° 39.1 -2° 44.0	147° 39.3 -2° 43.1	162° 39.4 -2° 42.1	+0.2 +1.0
Ср 14	177° 39.6 -2° 41.1	192° 39.8 -2° 40.1	207° 39.9 -2° 39.1	222° 40.1 -2° 38.1	237° 40.3 -2° 37.1	252° 40.5 -2° 36.2	87° 42.7 -2° 23.3	102° 42.9 -2° 22.3	117° 43.0 -2° 21.4	132° 43.2 -2° 20.4	147° 43.4 -2° 19.4	162° 43.5 -2° 18.4	+0.2 +1.0
Чт 15	177° 43.7 -2° 17.4	192° 43.9 -2° 16.4	207° 44.1 -2° 15.4	222° 44.2 -2° 14.4	237° 44.4 -2° 13.5	252° 44.6 -2° 12.5	87° 46.9 -1° 59.6	102° 47.0 -1° 58.6	117° 47.2 -1° 57.7	132° 47.4 -1° 56.7	147° 47.6 -1° 55.7	162° 47.7 -1° 54.7	+0.2 +1.0
Пт 16	177° 47.9 -1° 53.7	192° 48.1 -1° 52.7	207° 48.3 -1° 51.7	222° 48.4 -1° 50.7	237° 48.6 -1° 49.8	252° 48.8 -1° 48.8	87° 51.1 -1° 35.9	102° 51.3 -1° 34.9	117° 51.4 -1° 33.9	132° 51.6 -1° 33.0	147° 51.8 -1° 32.0	162° 52.0 -1° 31.0	+0.2 +1.0
Сб 17	177° 52.1 -1° 30.0	192° 52.3 -1° 29.0	207° 52.5 -1° 28.0	222° 52.7 -1° 27.0	237° 52.9 -1° 26.0	252° 53.0 -1° 25.0	87° 55.4 -1° 12.2	102° 55.5 -1° 11.2	117° 55.7 -1° 10.2	132° 55.9 -1° 09.2	147° 56.1 -1° 08.2	162° 56.3 -1° 07.3	+0.2 +1.0
Вс 18	177° 56.4 -1° 06.3	192° 56.6 -1° 05.3	207° 56.8 -1° 04.3	222° 57.0 -1° 03.3	237° 57.2 -1° 02.3	252° 57.4 -1° 01.3	87° 59.7 -0° 48.5	102° 59.9 -0° 47.5	118° 00.1 -0° 46.5	133° 00.3 -0° 45.5	148° 00.4 -0° 44.5	163° 00.6 -0° 43.5	+0.2 +1.0
Пн 19	178° 00.8 -0° 42.5	193° 01.0 -0° 41.5	208° 01.2 -0° 40.6	223° 01.3 -0° 39.6	238° 01.5 -0° 38.6	253° 01.7 -0° 37.6	88° 04.1 -0° 24.7	103° 04.3 -0° 23.8	118° 04.5 -0° 22.8	133° 04.6 -0° 21.8	148° 04.8 -0° 20.8	163° 05.0 -0° 19.8	+0.2 +1.0
Вт 20	178° 05.2 -0° 18.8	193° 05.4 -0° 17.8	208° 05.6 -0° 16.8	223° 05.7 -0° 15.9	238° 05.9 -0° 14.9	253° 06.1 -0° 13.9	88° 08.5 -0° 01.0	103° 08.7 -0° 00.0	118° 08.9 0° 00.9	133° 09.1 0° 01.9	148° 09.3 0° 02.9	163° 09.4 0° 03.9	+0.2 +1.0
Ср 21	178° 09.6 0° 04.9	193° 09.8 0° 05.9	208° 10.0 0° 06.9	223° 10.2 0° 07.9	238° 10.4 0° 08.8	253° 10.6 0° 09.8	88° 13.0 0° 22.7	103° 13.2 0° 23.7	118° 13.3 0° 24.6	133° 13.5 0° 25.6	148° 13.7 0° 26.6	163° 13.9 0° 27.6	+0.2 +1.0
Чт 22	178° 14.1 0° 28.6	193° 14.3 0° 29.6	208° 14.5 0° 30.6	223° 14.6 0° 31.6	238° 14.8 0° 32.5	253° 15.0 0° 33.5	88° 17.5 0° 46.3	103° 17.6 0° 47.3	118° 17.8 0° 48.3	133° 18.0 0° 49.3	148° 18.2 0° 50.3	163° 18.4 0° 51.3	+0.2 +1.0
Пт 23	178° 18.6 0° 52.3	193° 18.8 0° 53.3	208° 19.0 0° 54.2	223° 19.1 0° 55.2	238° 19.3 0° 56.2	253° 19.5 0° 57.2	88° 22.0 1° 10.0	103° 22.1 1° 11.0	118° 22.3 1° 12.0	133° 22.5 1° 13.0	148° 22.7 1° 13.9	163° 22.9 1° 14.9	+0.2 +1.0
Сб 24	178° 23.1 1° 15.9	193° 23.3 1° 16.9	208° 23.5 1° 17.9	223° 23.7 1° 18.9	238° 23.8 1° 19.9	253° 24.0 1° 20.8	88° 26.5 1° 33.6	103° 26.7 1° 34.6	118° 26.9 1° 35.6	133° 27.0 1° 36.6	148° 27.2 1° 37.6	163° 27.4 1° 38.5	+0.2 +1.0
Вс 25	178° 27.6 1° 39.5	193° 27.8 1° 40.5	208° 28.0 1° 41.5	223° 28.2 1° 42.5	238° 28.4 1° 43.5	253° 28.6 1° 44.4	88° 31.0 1° 57.2	103° 31.2 1° 58.2	118° 31.4 1° 59.2	133° 31.6 2° 00.2	148° 31.8 2° 01.1	163° 32.0 2° 02.1	+0.2 +1.0
Пн 26	178° 32.1 2° 03.1	193° 32.3 2° 04.1	208° 32.5 2° 05.1	223° 32.7 2° 06.0	238° 32.9 2° 07.0	253° 33.1 2° 08.0	88° 35.5 2° 20.8	103° 35.7 2° 21.7	118° 35.9 2° 22.7	133° 36.1 2° 23.7	148° 36.3 2° 24.7	163° 36.5 2° 25.7	+0.2 +1.0
Вт 27	178° 36.7 2° 26.6	193° 36.9 2° 27.6	208° 37.1 2° 28.6	223° 37.2 2° 29.6	238° 37.4 2° 30.6	253° 37.6 2° 31.5	88° 40.1 2° 44.3	103° 40.3 2° 45.2	118° 40.5 2° 46.2	133° 40.6 2° 47.2	148° 40.8 2° 48.2	163° 41.0 2° 49.1	+0.2 +1.0
Ср 28	178° 41.2 2° 50.1	193° 41.4 2° 51.1	208° 41.6 2° 52.1	223° 41.8 2° 53.1	238° 42.0 2° 54.0	253° 42.2 2° 55.0	88° 44.6 3° 07.7	103° 44.8 3° 08.7	118° 45.0 3° 09.6	133° 45.2 3° 10.6	148° 45.4 3° 11.6	163° 45.6 3° 12.6	+0.2 +1.0
Чт 29	178° 45.7 3° 13.5	193° 45.9 3° 14.5	208° 46.1 3° 15.5	223° 46.3 3° 16.5	238° 46.5 3° 17.4	253° 46.7 3° 18.4	88° 49.1 3° 31.1	103° 49.3 3° 32.1	118° 49.5 3° 33.0	133° 49.7 3° 34.0	148° 49.9 3° 35.0	163° 50.1 3° 35.9	+0.2 +1.0
Пт 30	178° 50.2 3° 36.9	193° 50.4 3° 37.9	208° 50.6 3° 38.9	223° 50.8 3° 39.8	238° 51.0 3° 40.8	253° 51.2 3° 41.8	88° 53.6 3° 54.4	103° 53.8 3° 55.4	118° 54.0 3° 56.3	133° 54.2 3° 57.3	148° 54.4 3° 58.3	163° 54.6 3° 59.2	+0.2 +1.0
Сб 31	178° 54.7 4° 00.2	193° 54.9 4° 01.2	208° 55.1 4° 02.2	223° 55.3 4° 03.1	238° 55.5 4° 04.1	253° 55.7 4° 05.1	88° 58.1 4° 17.6	103° 58.3 4° 18.6	118° 58.5 4° 19.6	133° 58.6 4° 20.5	148° 58.8 4° 21.5	163° 59.0 4° 22.5	+0.2 +1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.1'

ЛУНА

Март 2035

Д	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	Δ'/h	R/p
Чт 1	67° 08.2 -15° 39.3	81° 40.3 -15° 44.3	96° 12.4 -15° 49.2	110° 44.4 -15° 54.0	125° 16.5 -15° 58.8	139° 48.5 -16° 03.5	154° 20.5 -16° 08.2	168° 52.5 -16° 12.7	183° 24.5 -16° 17.2	197° 56.5 -16° 21.6	212° 28.4 -16° 26.0	+32.0 -4.7	14.8 54.2
◑ Пт 2	70° 25.5 -17° 22.0	84° 57.2 -17° 25.1	99° 28.8 -17° 28.2	114° 00.5 -17° 31.1	128° 32.1 -17° 34.0	143° 03.7 -17° 36.8	157° 35.2 -17° 39.5	172° 06.8 -17° 42.2	186° 38.3 -17° 44.7	201° 09.8 -17° 47.2	215° 41.3 -17° 49.6	+31.6 -2.8	14.8 54.2
Сб 3	73° 31.5 -18° 15.8	88° 02.7 -18° 16.8	102° 33.9 -18° 17.8	117° 05.1 -18° 18.7	131° 36.2 -18° 19.6	146° 07.4 -18° 20.3	160° 38.5 -18° 20.9	175° 09.6 -18° 21.5	189° 40.7 -18° 22.0	204° 11.7 -18° 22.4	218° 42.8 -18° 22.7	+31.1 -0.7	14.8 54.3
Вс 4	76° 26.8 -18° 17.0	90° 57.6 -18° 16.0	105° 28.4 -18° 14.8	119° 59.2 -18° 13.6	134° 30.0 -18° 12.2	149° 00.8 -18° 10.8	163° 31.5 -18° 09.3	178° 02.3 -18° 07.7	192° 33.0 -18° 06.0	207° 03.7 -18° 04.2	221° 34.4 -18° 02.4	+30.8 +1.5	14.9 54.6
Пн 5	79° 13.8 -17° 23.9	93° 44.4 -17° 20.6	108° 14.9 -17° 17.3	122° 45.5 -17° 13.8	137° 16.0 -17° 10.3	151° 46.5 -17° 06.7	166° 17.0 -17° 03.0	180° 47.5 -16° 59.2	195° 18.1 -16° 55.3	209° 48.5 -16° 51.4	224° 19.0 -16° 47.3	+30.5 +3.7	15.0 55.1
Вт 6	81° 55.7 -15° 36.5	96° 26.2 -15° 31.1	110° 56.6 -15° 25.6	125° 27.0 -15° 20.0	139° 57.4 -15° 14.4	154° 27.8 -15° 08.7	168° 58.2 -15° 02.9	183° 28.6 -14° 57.0	197° 58.9 -14° 51.0	212° 29.3 -14° 45.0	226° 59.7 -14° 38.8	+30.4 +5.8	15.2 55.7
Ср 7	84° 35.2 -12° 57.6	99° 05.5 -12° 50.3	113° 35.9 -12° 42.8	128° 06.2 -12° 35.3	142° 36.6 -12° 27.8	157° 06.9 -12° 20.1	171° 37.2 -12° 12.4	186° 07.6 -12° 04.6	200° 37.9 -11° 56.8	215° 08.2 -11° 48.9	229° 38.5 -11° 40.9	+30.3 +7.7	15.4 56.4
Чт 8	87° 13.1 -9° 33.2	101° 43.4 -9° 24.2	116° 13.6 -9° 15.2	130° 43.9 -9° 06.1	145° 14.2 -8° 56.9	159° 44.4 -8° 47.7	174° 14.7 -8° 38.4	188° 44.9 -8° 29.1	203° 15.2 -8° 19.7	217° 45.4 -8° 10.2	232° 15.6 -8° 00.7	+30.3 +9.3	15.6 57.1
● Пт 9	89° 48.1 -5° 32.6	104° 18.2 -5° 22.4	118° 48.3 -5° 12.2	133° 18.4 -5° 01.9	147° 48.5 -4° 51.6	162° 18.5 -4° 41.2	176° 48.6 -4° 30.8	191° 18.6 -4° 20.4	205° 48.6 -4° 09.9	220° 18.6 -3° 59.5	234° 48.6 -3° 48.9	+30.0 +10.4	15.7 57.7
Сб 10	92° 16.6 -1° 08.2	106° 46.3 -0° 57.4	121° 16.0 -0° 46.5	135° 45.7 -0° 35.6	150° 15.4 -0° 24.7	164° 45.0 -0° 13.8	179° 14.6 -0° 02.9	193° 44.2 0° 08.0	208° 13.8 0° 19.0	222° 43.4 0° 29.9	237° 12.9 0° 40.8	+29.6 +10.9	15.9 58.3
Вс 11	94° 32.9 3° 24.7	109° 02.0 3° 35.6	123° 31.1 3° 46.4	138° 00.2 3° 57.3	152° 29.2 4° 08.1	166° 58.2 4° 18.9	181° 27.1 4° 29.6	195° 56.1 4° 40.4	210° 25.0 4° 51.1	224° 53.8 5° 01.8	239° 22.6 5° 12.5	+29.0 +10.8	16.0 58.8
Пн 12	96° 31.0 7° 49.1	110° 59.2 7° 59.2	125° 27.4 8° 09.3	139° 55.6 8° 19.4	154° 23.8 8° 29.4	168° 51.9 8° 39.3	183° 20.0 8° 49.3	197° 48.0 8° 59.1	212° 16.0 9° 08.9	226° 43.9 9° 18.7	241° 11.8 9° 28.4	+28.1 +9.9	16.1 59.1
Вт 13	98° 05.7 11° 46.8	112° 32.9 11° 55.5	127° 00.2 12° 04.1	141° 27.3 12° 12.6	155° 54.5 12° 21.1	170° 21.6 12° 29.5	184° 48.6 12° 37.9	199° 15.7 12° 46.1	213° 42.6 12° 54.3	228° 09.6 13° 02.4	242° 36.5 13° 10.4	+27.1 +8.4	16.2 59.2
Ср 14	99° 15.2 15° 00.3	113° 41.5 15° 06.9	128° 07.8 15° 13.4	142° 34.0 15° 19.8	157° 00.2 15° 26.1	171° 26.3 15° 32.3	185° 52.4 15° 38.4	200° 18.5 15° 44.4	214° 44.5 15° 50.3	229° 10.6 15° 56.1	243° 36.5 16° 01.8	+26.1 +6.2	16.2 59.3
Чт 15	113° 41.5 15° 06.9	128° 07.8 15° 13.4	142° 34.0 15° 19.8	157° 00.2 15° 26.1	171° 26.3 15° 32.3	185° 52.4 15° 38.4	200° 18.5 15° 44.4	214° 44.5 15° 50.3	229° 10.6 15° 56.1	243° 36.5 16° 01.8	258° 02.5 16° 07.4	+26.1 +6.1	16.2 59.3
◐ Пт 16	114° 28.4 17° 18.5	128° 53.9 17° 22.3	143° 19.4 17° 26.1	157° 44.9 17° 29.7	172° 10.4 17° 33.2	186° 35.9 17° 36.6	201° 01.3 17° 39.9	215° 26.8 17° 43.1	229° 52.2 17° 46.1	244° 17.6 17° 49.1	258° 43.0 17° 51.9	+25.5 +3.3	16.1 59.2
Сб 17	115° 02.8 18° 19.9	129° 28.1 18° 20.8	143° 53.4 18° 21.6	158° 18.7 18° 22.3	172° 44.0 18° 22.8	187° 09.3 18° 23.3	201° 34.6 18° 23.6	216° 00.0 18° 23.8	230° 25.3 18° 23.8	244° 50.6 18° 23.8	259° 16.0 18° 23.6	+25.3 +0.4	16.1 59.1
Вс 18	115° 38.2 18° 06.8	130° 03.8 18° 04.7	144° 29.5 18° 02.5	158° 55.2 18° 00.3	173° 20.9 17° 57.8	187° 46.7 17° 55.3	202° 12.4 17° 52.7	216° 38.3 17° 49.9	231° 04.1 17° 47.1	245° 30.0 17° 44.1	259° 55.9 17° 41.0	+25.8 -2.6	16.0 58.8
Пн 19	116° 28.8 16° 41.7	130° 55.3 16° 36.9	145° 21.9 16° 32.0	159° 48.5 16° 27.0	174° 15.1 16° 21.9	188° 41.8 16° 16.7	203° 08.6 16° 11.4	217° 35.4 16° 06.0	232° 02.2 16° 00.5	246° 29.1 15° 54.9	260° 56.0 15° 49.2	+26.7 -5.2	16.0 58.6
Вт 20	117° 45.8 14° 13.2	132° 13.5 14° 06.2	146° 41.3 13° 59.0	161° 09.1 13° 51.8	175° 37.0 13° 44.4	190° 04.9 13° 37.0	204° 32.9 13° 29.6	219° 00.9 13° 22.0	233° 29.0 13° 14.4	247° 57.2 13° 06.7	262° 25.4 12° 59.0	+28.0 -7.4	15.9 58.2
Ср 21	119° 34.6 10° 54.6	134° 03.6 10° 45.8	148° 32.7 10° 37.0	163° 01.9 10° 28.1	177° 31.0 10° 19.2	192° 00.3 10° 10.2	206° 29.6 10° 01.1	220° 58.9 9° 52.0	235° 28.3 9° 42.9	249° 57.7 9° 33.7	264° 27.2 9° 24.5	+29.3 -9.0	15.7 57.8
Чт 22	121° 55.2 7° 01.1	136° 25.5 6° 51.3	150° 55.8 6° 41.4	165° 26.1 6° 31.5	179° 56.4 6° 21.6	194° 26.9 6° 11.7	208° 57.3 6° 01.7	223° 27.8 5° 51.7	237° 58.3 5° 41.7	252° 28.9 5° 31.6	266° 59.5 5° 21.6	+30.4 -10.0	15.6 57.3
○ Пт 23	124° 43.3 2° 48.7	139° 14.5 2° 38.4	153° 45.7 2° 28.1	168° 17.0 2° 17.8	182° 48.3 2° 07.5	197° 19.6 1° 57.2	211° 51.0 1° 47.0	226° 22.4 1° 36.7	240° 53.8 1° 26.4	255° 25.3 1° 16.1	269° 56.8 1° 05.8	+31.3 -10.3	15.5 56.7
Сб 24	127° 52.1 -1° 27.8	142° 23.9 -1° 37.9	156° 55.8 -1° 48.1	171° 27.7 -1° 58.2	185° 59.7 -2° 08.3	200° 31.6 -2° 18.4	215° 03.6 -2° 28.4	229° 35.6 -2° 38.5	244° 07.6 -2° 48.5	258° 39.6 -2° 58.5	273° 11.7 -3° 08.5	+32.0 -10.1	15.3 56.1
Вс 25	131° 13.9 -5° 34.9	145° 46.2 -5° 44.4	160° 18.4 -5° 53.9	174° 50.7 -6° 03.4	189° 22.9 -6° 12.8	203° 55.2 -6° 22.2	218° 27.5 -6° 31.5	232° 59.8 -6° 40.8	247° 32.1 -6° 50.1	262° 04.4 -6° 59.3	276° 36.7 -7° 08.5	+32.3 -9.4	15.2 55.6
Пн 26	134° 41.7 -9° 21.1	149° 14.0 -9° 29.6	163° 46.3 -9° 38.0	178° 18.7 -9° 46.4	192° 51.0 -9° 54.7	207° 23.3 -10° 03.0	221° 55.7 -10° 11.2	236° 28.0 -10° 19.4	251° 00.3 -10° 27.5	265° 32.7 -10° 35.6	280° 05.0 -10° 43.6	+32.3 -8.2	15.0 55.1
Вт 27	138° 09.2 -12° 36.9	152° 41.4 -12° 44.0	167° 13.7 -12° 51.0	181° 45.9 -12° 58.0	196° 18.1 -13° 04.9	210° 50.3 -13° 11.7	225° 22.5 -13° 18.5	239° 54.6 -13° 25.2	254° 26.8 -13° 31.8	268° 59.0 -13° 38.4	283° 31.1 -13° 44.9	+32.2 -6.8	14.9 54.6
Ср 28	141° 32.2 -15° 14.5	156° 04.1 -15° 20.0	170° 36.1 -15° 25.3	185° 08.1 -15° 30.6	199° 40.0 -15° 35.8	214° 11.9 -15° 40.9	228° 43.9 -15° 46.0	243° 15.8 -15° 51.0	257° 47.7 -15° 55.9	272° 19.6 -16° 00.7	286° 51.4 -16° 05.5	+31.9 -5.1	14.8 54.3
Чт 29	144° 48.0 -17° 07.9	159° 19.7 -17° 11.4	173° 51.3 -17° 14.9	188° 23.0 -17° 18.3	202° 54.6 -17° 21.6	217° 26.2 -17° 24.8	231° 57.8 -17° 27.9	246° 29.4 -17° 31.0	261° 01.0 -17° 34.0	275° 32.6 -17° 36.9	290° 04.2 -17° 39.7	+31.6 -3.2	14.8 54.2
Пт 30	147° 56.1 -18° 12.3	162° 27.5 -18° 13.9	176° 58.8 -18° 15.3	191° 30.2 -18° 16.6	206° 01.5 -18° 17.9	220° 32.9 -18° 19.1	235° 04.2 -18° 20.2	249° 35.5 -18° 21.2	264° 06.8 -18° 22.1	278° 38.1 -18° 23.0	293° 09.4 -18° 23.7	+31.3 -1.1	14.8 54.2
◑ Сб 31	150° 57.4 -18° 24.9	165° 28.5 -18° 24.3	179° 59.7 -18° 23.6	194° 30.8 -18° 22.8	209° 01.9 -18° 22.0	223° 33.0 -18° 21.0	238° 04.1 -18° 20.0	252° 35.2 -18° 18.9	267° 06.2 -18° 17.7	281° 37.3 -18° 16.4	296° 08.4 -18° 15.0	+31.1 +1.0	14.8 54.4

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Последняя четв.: 2 03h01 — Новолуние: 9 23h09 — Первая четв.: 16 20h15 — Полнолуние: 23 22h42 — Последняя четв.: 31 23h06

СОЛНЦЕ

Апрель 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	178° 59.2	193° 59.4	208° 59.6	223° 59.8	238° 59.9	254° 00.1	89° 02.5	104° 02.7	119° 02.9	134° 03.1	149° 03.3	164° 03.5	+0.2
	4° 23.4	4° 24.4	4° 25.4	4° 26.3	4° 27.3	4° 28.3	4° 40.8	4° 41.8	4° 42.7	4° 43.7	4° 44.7	4° 45.6	+1.0
Пн 2	179° 03.6	194° 03.8	209° 04.0	224° 04.2	239° 04.4	254° 04.6	89° 06.9	104° 07.1	119° 07.3	134° 07.5	149° 07.7	164° 07.9	+0.2
	4° 46.6	4° 47.6	4° 48.5	4° 49.5	4° 50.4	4° 51.4	5° 03.9	5° 04.9	5° 05.8	5° 06.8	5° 07.7	5° 08.7	+1.0
Вт 3	179° 08.0	194° 08.2	209° 08.4	224° 08.6	239° 08.8	254° 09.0	89° 11.3	104° 11.5	119° 11.7	134° 11.9	149° 12.0	164° 12.2	+0.2
	5° 09.7	5° 10.6	5° 11.6	5° 12.5	5° 13.5	5° 14.4	5° 26.9	5° 27.8	5° 28.8	5° 29.8	5° 30.7	5° 31.7	+1.0
Ср 4	179° 12.4	194° 12.6	209° 12.8	224° 12.9	239° 13.1	254° 13.3	89° 15.6	104° 15.8	119° 16.0	134° 16.2	149° 16.4	164° 16.5	+0.2
	5° 32.6	5° 33.6	5° 34.5	5° 35.5	5° 36.4	5° 37.4	5° 49.8	5° 50.7	5° 51.7	5° 52.7	5° 53.6	5° 54.6	+1.0
Чт 5	179° 16.7	194° 16.9	209° 17.1	224° 17.3	239° 17.4	254° 17.6	89° 19.9	104° 20.1	119° 20.3	134° 20.5	149° 20.6	164° 20.8	+0.2
	5° 55.5	5° 56.5	5° 57.4	5° 58.4	5° 59.3	6° 00.3	6° 12.6	6° 13.5	6° 14.5	6° 15.4	6° 16.4	6° 17.3	+1.0
Пт 6	179° 21.0	194° 21.2	209° 21.4	224° 21.5	239° 21.7	254° 21.9	89° 24.2	104° 24.3	119° 24.5	134° 24.7	149° 24.9	164° 25.0	+0.2
	6° 18.3	6° 19.2	6° 20.2	6° 21.1	6° 22.1	6° 23.0	6° 35.3	6° 36.2	6° 37.2	6° 38.1	6° 39.1	6° 40.0	+0.9
Сб 7	179° 25.2	194° 25.4	209° 25.6	224° 25.7	239° 25.9	254° 26.1	89° 28.3	104° 28.5	119° 28.7	134° 28.9	149° 29.0	164° 29.2	+0.2
	6° 41.0	6° 41.9	6° 42.8	6° 43.8	6° 44.7	6° 45.7	6° 57.9	6° 58.8	6° 59.8	7° 00.7	7° 01.6	7° 02.6	+0.9
Вс 8	179° 29.4	194° 29.6	209° 29.7	224° 29.9	239° 30.1	254° 30.2	89° 32.5	104° 32.6	119° 32.8	134° 33.0	149° 33.2	164° 33.3	+0.2
	7° 03.5	7° 04.4	7° 05.4	7° 06.3	7° 07.3	7° 08.2	7° 20.3	7° 21.3	7° 22.2	7° 23.1	7° 24.1	7° 25.0	+0.9
Пн 9	179° 33.5	194° 33.7	209° 33.8	224° 34.0	239° 34.2	254° 34.3	89° 36.5	104° 36.7	119° 36.9	134° 37.0	149° 37.2	164° 37.4	+0.2
	7° 25.9	7° 26.9	7° 27.8	7° 28.7	7° 29.7	7° 30.6	7° 42.7	7° 43.6	7° 44.5	7° 45.5	7° 46.4	7° 47.3	+0.9
Вт 10	179° 37.5	194° 37.7	209° 37.9	224° 38.0	239° 38.2	254° 38.4	89° 40.5	104° 40.7	119° 40.9	134° 41.0	149° 41.2	164° 41.4	+0.2
	7° 48.3	7° 49.2	7° 50.1	7° 51.0	7° 52.0	7° 52.9	8° 04.9	8° 05.8	8° 06.7	8° 07.7	8° 08.6	8° 09.5	+0.9
Ср 11	179° 41.5	194° 41.7	209° 41.9	224° 42.0	239° 42.2	254° 42.3	89° 44.5	104° 44.6	119° 44.8	134° 45.0	149° 45.1	164° 45.3	+0.2
	8° 10.4	8° 11.4	8° 12.3	8° 13.2	8° 14.1	8° 15.0	8° 27.0	8° 27.9	8° 28.8	8° 29.7	8° 30.6	8° 31.6	+0.9
Чт 12	179° 45.4	194° 45.6	209° 45.8	224° 45.9	239° 46.1	254° 46.2	89° 48.3	104° 48.5	119° 48.6	134° 48.8	149° 49.0	164° 49.1	+0.2
	8° 32.5	8° 33.4	8° 34.3	8° 35.2	8° 36.1	8° 37.0	8° 48.9	8° 49.8	8° 50.7	8° 51.6	8° 52.5	8° 53.5	+0.9
Пт 13	179° 49.3	194° 49.4	209° 49.6	224° 49.8	239° 49.9	254° 50.1	89° 52.1	104° 52.3	119° 52.4	134° 52.6	149° 52.7	164° 52.9	+0.2
	8° 54.4	8° 55.3	8° 56.2	8° 57.1	8° 58.0	8° 58.9	9° 10.7	9° 11.6	9° 12.5	9° 13.4	9° 14.3	9° 15.2	+0.9
Сб 14	179° 53.1	194° 53.2	209° 53.4	224° 53.5	239° 53.7	254° 53.8	89° 55.8	104° 56.0	119° 56.1	134° 56.3	149° 56.4	164° 56.6	+0.2
	9° 16.1	9° 17.0	9° 17.9	9° 18.8	9° 19.7	9° 20.6	9° 32.3	9° 33.2	9° 34.1	9° 35.0	9° 35.9	9° 36.8	+0.9
Вс 15	179° 56.7	194° 56.9	209° 57.1	224° 57.2	239° 57.4	254° 57.5	89° 59.5	104° 59.6	119° 59.8	134° 59.9	150° 00.1	165° 00.2	+0.2
	9° 37.7	9° 38.6	9° 39.5	9° 40.4	9° 41.3	9° 42.2	9° 53.8	9° 54.7	9° 55.6	9° 56.5	9° 57.4	9° 58.2	+0.9
Пн 16	180° 00.4	195° 00.5	210° 00.7	225° 00.8	240° 01.0	255° 01.1	90° 03.0	105° 03.2	120° 03.3	135° 03.4	150° 03.6	165° 03.7	+0.1
	9° 59.1	10° 00.0	10° 00.9	10° 01.8	10° 02.7	10° 03.6	10° 15.1	10° 16.0	10° 16.9	10° 17.8	10° 18.6	10° 19.5	+0.9
Вт 17	180° 03.9	195° 04.0	210° 04.2	225° 04.3	240° 04.5	255° 04.6	90° 06.5	105° 06.6	120° 06.8	135° 06.9	150° 07.0	165° 07.2	+0.1
	10° 20.4	10° 21.3	10° 22.2	10° 23.0	10° 23.9	10° 24.8	10° 36.2	10° 37.1	10° 38.0	10° 38.9	10° 39.7	10° 40.6	+0.9
Ср 18	180° 07.3	195° 07.5	210° 07.6	225° 07.7	240° 07.9	255° 08.0	90° 09.8	105° 10.0	120° 10.1	135° 10.3	150° 10.4	165° 10.5	+0.1
	10° 41.5	10° 42.4	10° 43.2	10° 44.1	10° 45.0	10° 45.9	10° 57.2	10° 58.1	10° 58.9	10° 59.8	11° 00.7	11° 01.5	+0.9
Чт 19	180° 10.7	195° 10.8	210° 10.9	225° 11.1	240° 11.2	255° 11.3	90° 13.1	105° 13.2	120° 13.4	135° 13.5	150° 13.6	165° 13.8	+0.1
	11° 02.4	11° 03.3	11° 04.1	11° 05.0	11° 05.9	11° 06.7	11° 18.0	11° 18.8	11° 19.7	11° 20.6	11° 21.4	11° 22.3	+0.9
Пт 20	180° 13.9	195° 14.0	210° 14.2	225° 14.3	240° 14.4	255° 14.6	90° 16.3	105° 16.4	120° 16.5	135° 16.7	150° 16.8	165° 16.9	+0.1
	11° 23.1	11° 24.0	11° 24.9	11° 25.7	11° 26.6	11° 27.4	11° 38.6	11° 39.4	11° 40.3	11° 41.1	11° 42.0	11° 42.8	+0.9
Сб 21	180° 17.1	195° 17.2	210° 17.3	225° 17.4	240° 17.6	255° 17.7	90° 19.3	105° 19.5	120° 19.6	135° 19.7	150° 19.8	165° 20.0	+0.1
	11° 43.7	11° 44.5	11° 45.4	11° 46.2	11° 47.1	11° 47.9	11° 59.0	11° 59.8	12° 00.6	12° 01.5	12° 02.3	12° 03.2	+0.9
Вс 22	180° 20.1	195° 20.2	210° 20.3	225° 20.5	240° 20.6	255° 20.7	90° 22.3	105° 22.4	120° 22.5	135° 22.7	150° 22.8	165° 22.9	+0.1
	12° 04.0	12° 04.9	12° 05.7	12° 06.5	12° 07.4	12° 08.2	12° 19.1	12° 20.0	12° 20.8	12° 21.7	12° 22.5	12° 23.3	+0.8
Пн 23	180° 23.0	195° 23.1	210° 23.3	225° 23.4	240° 23.5	255° 23.6	90° 25.1	105° 25.2	120° 25.4	135° 25.5	150° 25.6	165° 25.7	+0.1
	12° 24.2	12° 25.0	12° 25.8	12° 26.7	12° 27.5	12° 28.3	12° 39.1	12° 40.0	12° 40.8	12° 41.6	12° 42.5	12° 43.3	+0.8
Вт 24	180° 25.8	195° 25.9	210° 26.1	225° 26.2	240° 26.3	255° 26.4	90° 27.9	105° 28.0	120° 28.1	135° 28.2	150° 28.3	165° 28.4	+0.1
	12° 44.1	12° 44.9	12° 45.8	12° 46.6	12° 47.4	12° 48.2	12° 58.9	12° 59.8	13° 00.6	13° 01.4	13° 02.2	13° 03.0	+0.8
Ср 25	180° 28.5	195° 28.6	210° 28.7	225° 28.8	240° 29.0	255° 29.1	90° 30.5	105° 30.6	120° 30.7	135° 30.8	150° 30.9	165° 31.0	+0.1
	13° 03.8	13° 04.7	13° 05.5	13° 06.3	13° 07.1	13° 07.9	13° 18.5	13° 19.3	13° 20.1	13° 20.9	13° 21.7	13° 22.6	+0.8
Чт 26	180° 31.1	195° 31.2	210° 31.3	225° 31.4	240° 31.5	255° 31.6	90° 32.9	105° 33.0	120° 33.1	135° 33.2	150° 33.3	165° 33.4	+0.1
	13° 23.4	13° 24.2	13° 25.0	13° 25.8	13° 26.6	13° 27.4	13° 37.9	13° 38.7	13° 39.5	13° 40.3	13° 41.1	13° 41.9	+0.8
Пт 27	180° 33.5	195° 33.6	210° 33.7	225° 33.8	240° 33.9	255° 34.0	90° 35.3	105° 35.4	120° 35.5	135° 35.6	150° 35.7	165° 35.8	+0.1
	13° 42.7	13° 43.5	13° 44.3	13° 45.1	13° 45.9	13° 46.7	13° 57.0	13° 57.8	13° 58.6	13° 59.4	14° 00.2	14° 00.9	+0.8
Сб 28	180° 35.8	195° 35.9	210° 36.0	225° 36.1	240° 36.2	255° 36.3	90° 37.5	105° 37.6	120° 37.7	135° 37.8	150° 37.9	165° 37.9	+0.1
	14° 01.7	14° 02.5	14° 03.3	14° 04.1	14° 04.9	14° 05.7	14° 15.9	14° 16.7	14° 17.5	14° 18.2	14° 19.0	14° 19.8	+0.8
Вс 29	180° 38.0	195° 38.1	210° 38.2	225° 38.3	240° 38.4	255° 38.5	90° 39.6	105° 39.7	120° 39.8	135° 39.8	150° 39.9	165° 40.0	+0.1
	14° 20.6	14° 21.4	14° 22.1	14° 22.9	14° 23.7	14° 24.5	14° 34.6	14° 35.3	14° 36.1	14° 36.9	14° 37.6	14° 38.4	+0.8
Пн 30	180° 40.1	195° 40.2	210° 40.3	225° 40.3	240° 40.4	255° 40.5	90° 41.5	105° 41.6	120° 41.7	135° 41.8	150° 41.9	165° 41.9	+0.1
	14° 39.2	14° 40.0	14° 40.7	14° 41.5	14° 42.3	14° 43.0	14° 53.0	14° 53.8	14° 54.5	14° 55.3	14° 56.0	14° 56.8	+0.8

Строка 1: $t_{\text{гр}}$ (гринвичский часовой угол), Δ'/h = изменение $t_{\text{гр}}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Апрель 2035

Д	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	Δ'/h	R/p
Вс 1	66° 47.7	81° 18.7	95° 49.7	110° 20.7	124° 51.7	139° 22.6	153° 53.6	168° 24.6	182° 55.6	197° 26.5	211° 57.5	+31.0	14.9
	-17° 58.7	-17° 56.5	-17° 54.1	-17° 51.7	-17° 49.2	-17° 46.7	-17° 44.0	-17° 41.2	-17° 38.4	-17° 35.5	-17° 32.5	+2.6	54.7
Пн 2	69° 41.2	84° 12.1	98° 43.0	113° 13.9	127° 44.8	142° 15.6	156° 46.5	171° 17.4	185° 48.2	200° 19.1	214° 49.9	+30.9	15.0
	-16° 37.2	-16° 32.8	-16° 28.4	-16° 23.9	-16° 19.2	-16° 14.6	-16° 09.8	-16° 04.9	-16° 00.0	-15° 55.0	-15° 49.9	+4.7	55.2
Вт 3	72° 32.1	87° 02.9	101° 33.7	116° 04.5	130° 35.2	145° 06.0	159° 36.7	174° 07.5	188° 38.2	203° 09.0	217° 39.7	+30.8	15.2
	-14° 23.7	-14° 17.4	-14° 10.9	-14° 04.4	-13° 57.8	-13° 51.1	-13° 44.4	-13° 37.5	-13° 30.6	-13° 23.6	-13° 16.6	+6.7	55.8
Ср 4	75° 19.8	89° 50.4	104° 21.0	118° 51.6	133° 22.2	147° 52.8	162° 23.3	176° 53.9	191° 24.4	205° 54.9	220° 25.5	+30.6	15.4
	-11° 22.1	-11° 14.0	-11° 05.7	-10° 57.4	-10° 49.0	-10° 40.5	-10° 32.0	-10° 23.5	-10° 14.8	-10° 06.1	-9° 57.3	+8.5	56.6
Чт 5	78° 01.7	92° 32.0	107° 02.3	121° 32.5	136° 02.8	150° 33.0	165° 03.2	179° 33.4	194° 03.6	208° 33.7	223° 03.8	+30.2	15.7
	-7° 38.8	-7° 29.1	-7° 19.3	-7° 09.6	-6° 59.7	-6° 49.8	-6° 39.9	-6° 29.9	-6° 19.9	-6° 09.8	-5° 59.7	+9.9	57.5
Пт 6	80° 33.2	95° 02.9	109° 32.7	124° 02.4	138° 32.0	153° 01.7	167° 31.3	182° 00.9	196° 30.5	211° 00.0	225° 29.5	+29.6	15.9
	-3° 23.1	-3° 12.4	-3° 01.6	-2° 50.9	-2° 40.1	-2° 29.2	-2° 18.4	-2° 07.5	-1° 56.5	-1° 45.6	-1° 34.6	+10.9	58.3
Сб 7	82° 48.1	97° 17.1	111° 46.0	126° 14.9	140° 43.7	155° 12.5	169° 41.3	184° 10.0	198° 38.7	213° 07.4	227° 36.0	+28.8	16.1
	1° 11.7	1° 22.8	1° 34.0	1° 45.2	1° 56.3	2° 07.5	2° 18.7	2° 29.9	2° 41.0	2° 52.2	3° 03.3	+11.2	59.0
● Вс 8	84° 40.0	99° 07.9	113° 35.8	128° 03.6	142° 31.4	156° 59.1	171° 26.8	185° 54.4	200° 22.0	214° 49.5	229° 17.0	+27.7	16.3
	5° 48.9	5° 59.8	6° 10.6	6° 21.4	6° 32.2	6° 43.0	6° 53.7	7° 04.4	7° 15.0	7° 25.6	7° 36.2	+10.7	59.6
Пн 9	86° 03.6	100° 30.3	114° 57.0	129° 23.6	143° 50.2	158° 16.7	172° 43.2	187° 09.6	201° 36.0	216° 02.3	230° 28.6	+26.5	16.4
	10° 09.0	10° 18.8	10° 28.5	10° 38.1	10° 47.7	10° 57.2	11° 06.6	11° 15.9	11° 25.2	11° 34.4	11° 43.6	+9.5	60.0
Вт 10	86° 57.4	101° 23.0	115° 48.5	130° 14.0	144° 39.5	159° 04.9	173° 30.3	187° 55.6	202° 20.9	216° 46.2	231° 11.4	+25.4	16.4
	13° 51.2	13° 59.1	14° 06.8	14° 14.4	14° 22.0	14° 29.4	14° 36.7	14° 44.0	14° 51.1	14° 58.2	15° 05.1	+7.4	60.1
Ср 11	87° 26.0	101° 50.7	116° 15.4	130° 40.2	145° 04.8	159° 29.5	173° 54.2	188° 18.8	202° 43.4	217° 08.0	231° 32.6	+24.7	16.4
	16° 36.6	16° 41.8	16° 46.9	16° 51.8	16° 56.7	17° 01.4	17° 06.1	17° 10.6	17° 14.9	17° 19.2	17° 23.4	+4.7	60.0
Чт 12	87° 40.5	102° 05.0	116° 29.6	130° 54.1	145° 18.6	159° 43.2	174° 07.7	188° 32.3	202° 56.8	217° 21.4	231° 46.0	+24.5	16.3
	18° 10.9	18° 13.1	18° 15.1	18° 17.0	18° 18.8	18° 20.5	18° 22.0	18° 23.5	18° 24.8	18° 25.9	18° 27.0	+1.6	59.7
Пт 13	87° 57.5	102° 22.4	116° 47.4	131° 12.5	145° 37.6	160° 02.7	174° 27.8	188° 53.0	203° 18.2	217° 43.5	232° 08.8	+25.1	16.2
	18° 27.6	18° 26.7	18° 25.6	18° 24.4	18° 23.1	18° 21.7	18° 20.2	18° 18.5	18° 16.7	18° 14.8	18° 12.8	-1.5	59.3
Сб 14	102° 22.4	116° 47.4	131° 12.5	145° 37.6	160° 02.7	174° 27.8	188° 53.0	203° 18.2	217° 43.5	232° 08.8	246° 34.1	+25.2	16.2
	18° 26.7	18° 25.6	18° 24.4	18° 23.1	18° 21.7	18° 20.2	18° 18.5	18° 16.7	18° 14.8	18° 12.8	18° 10.6	-1.6	59.2
◐ Вс 15	102° 59.6	117° 25.7	131° 51.9	146° 18.1	160° 44.3	175° 10.7	189° 37.0	204° 03.5	218° 29.9	232° 56.5	247° 23.1	+26.3	16.0
	17° 24.8	17° 20.8	17° 16.8	17° 12.6	17° 08.4	17° 04.0	16° 59.5	16° 55.0	16° 50.3	16° 45.5	16° 40.7	-4.4	58.7
Пн 16	104° 09.0	118° 36.5	133° 04.1	147° 31.8	161° 59.5	176° 27.3	190° 55.1	205° 23.1	219° 51.0	234° 19.1	248° 47.1	+27.8	15.9
	15° 16.2	15° 09.9	15° 03.4	14° 56.9	14° 50.3	14° 43.6	14° 36.9	14° 30.0	14° 23.1	14° 16.1	14° 09.0	-6.7	58.2
Вт 17	105° 55.8	120° 24.8	134° 53.9	149° 23.1	163° 52.3	178° 21.6	192° 51.0	207° 20.4	221° 49.8	236° 19.3	250° 48.9	+29.3	15.7
	12° 14.2	12° 06.1	11° 57.8	11° 49.5	11° 41.2	11° 32.7	11° 24.3	11° 15.7	11° 07.1	10° 58.5	10° 49.8	-8.4	57.6
Ср 18	108° 18.8	122° 49.2	137° 19.6	151° 50.1	166° 20.7	180° 51.2	195° 21.9	209° 52.6	224° 23.3	238° 54.1	253° 24.9	+30.6	15.6
	8° 33.7	8° 24.3	8° 14.9	8° 05.4	7° 55.9	7° 46.3	7° 36.7	7° 27.1	7° 17.4	7° 07.8	6° 58.1	-9.6	57.0
Чт 19	111° 12.0	125° 43.5	140° 14.9	154° 46.4	169° 18.0	183° 49.6	198° 21.2	212° 52.8	227° 24.5	241° 56.2	256° 27.9	+31.6	15.4
	4° 29.5	4° 19.4	4° 09.4	3° 59.3	3° 49.2	3° 39.1	3° 28.9	3° 18.8	3° 08.7	2° 58.5	2° 48.3	-10.1	56.5
Пт 20	114° 27.2	128° 59.3	143° 31.5	158° 03.6	172° 35.8	187° 08.0	201° 40.3	216° 12.5	230° 44.8	245° 17.1	259° 49.4	+32.2	15.3
	0° 15.6	0° 05.4	-0° 04.8	-0° 14.9	-0° 25.1	-0° 35.2	-0° 45.4	-0° 55.5	-1° 05.6	-1° 15.7	-1° 25.8	-10.1	56.0
Сб 21	117° 55.4	132° 27.9	147° 00.4	161° 32.8	176° 05.3	190° 37.9	205° 10.4	219° 42.9	234° 15.4	248° 47.9	263° 20.5	+32.5	15.1
	-3° 55.2	-4° 05.0	-4° 14.8	-4° 24.6	-4° 34.3	-4° 44.0	-4° 53.6	-5° 03.3	-5° 12.9	-5° 22.5	-5° 32.0	-9.7	55.5
○ Вс 22	121° 28.5	136° 01.0	150° 33.6	165° 06.1	179° 38.6	194° 11.1	208° 43.6	223° 16.1	237° 48.6	252° 21.1	266° 53.6	+32.5	15.0
	-7° 51.2	-8° 00.2	-8° 09.2	-8° 18.1	-8° 26.9	-8° 35.7	-8° 44.5	-8° 53.2	-9° 01.9	-9° 10.5	-9° 19.1	-8.8	55.1
Пн 23	124° 59.9	139° 32.3	154° 04.6	168° 37.0	183° 09.3	197° 41.6	212° 13.9	226° 46.2	241° 18.4	255° 50.7	270° 23.0	+32.3	14.9
	-11° 22.0	-11° 29.8	-11° 37.5	-11° 45.2	-11° 52.8	-12° 00.3	-12° 07.8	-12° 15.3	-12° 22.6	-12° 29.9	-12° 37.2	-7.5	54.7
Вт 24	128° 25.2	142° 57.3	157° 29.3	172° 01.3	186° 33.3	201° 05.3	215° 37.3	230° 09.3	244° 41.2	259° 13.2	273° 45.1	+32.0	14.8
	-14° 18.5	-14° 24.7	-14° 30.9	-14° 37.0	-14° 43.0	-14° 49.0	-14° 54.9	-15° 00.7	-15° 06.5	-15° 12.1	-15° 17.8	-5.9	54.4
Ср 25	131° 42.4	146° 14.1	160° 45.8	175° 17.5	189° 49.2	204° 20.8	218° 52.5	233° 24.1	247° 55.7	262° 27.4	276° 59.0	+31.7	14.8
	-16° 33.2	-16° 37.6	-16° 42.0	-16° 46.2	-16° 50.4	-16° 54.5	-16° 58.6	-17° 02.6	-17° 06.4	-17° 10.2	-17° 14.0	-4.1	54.1
Чт 26	134° 51.7	149° 23.2	163° 54.6	178° 26.0	192° 57.5	207° 28.9	222° 00.3	236° 31.7	251° 03.0	265° 34.4	280° 05.8	+31.4	14.7
	-18° 00.3	-18° 02.7	-18° 05.0	-18° 07.3	-18° 09.5	-18° 11.6	-18° 13.6	-18° 15.6	-18° 17.4	-18° 19.2	-18° 20.9	-2.1	54.0
Пт 27	137° 55.6	152° 26.9	166° 58.1	181° 29.4	196° 00.7	210° 32.0	225° 03.2	239° 34.5	254° 05.7	268° 37.0	283° 08.3	+31.3	14.7
	-18° 36.0	-18° 36.3	-18° 36.6	-18° 36.7	-18° 36.8	-18° 36.8	-18° 36.7	-18° 36.5	-18° 36.2	-18° 35.9	-18° 35.4	+0.1	54.1
Сб 28	140° 57.0	155° 28.2	169° 59.5	184° 30.7	199° 02.0	213° 33.2	228° 04.5	242° 35.8	257° 07.0	271° 38.3	286° 09.5	+31.3	14.8
	-18° 18.6	-18° 16.8	-18° 14.9	-18° 12.9	-18° 10.9	-18° 08.7	-18° 06.5	-18° 04.2	-18° 01.8	-17° 59.3	-17° 56.7	+2.2	54.3
Вс 29	143° 58.7	158° 30.0	173° 01.3	187° 32.6	202° 03.9	216° 35.2	231° 06.6	245° 37.9	260° 09.2	274° 40.5	289° 11.8	+31.3	14.9
	-17° 08.3	-17° 04.4	-17° 00.4	-16° 56.3	-16° 52.2	-16° 48.0	-16° 43.7	-16° 39.3	-16° 34.8	-16° 30.3	-16° 25.7	+4.3	54.7
◑ Пн 30	147° 02.0	161° 33.3	176° 04.7	190° 36.0	205° 07.4	219° 38.7	234° 10.1	248° 41.5	263° 12.8	277° 44.2	292° 15.5	+31.4	15.1
	-15° 06.9	-15° 01.1	-14° 55.1	-14° 49.1	-14° 43.0	-14° 36.8	-14° 30.6	-14° 24.3	-14° 17.9	-14° 11.4	-14° 04.9	+6.2	55.2

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 8 10h57 — Первая четв.: 15 02h54 — Полнолуние: 22 13h20 — Последняя четв.: 30 16h53

СОЛНЦЕ

Май 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вт 1	180° 42.0	195° 42.1	210° 42.2	225° 42.2	240° 42.3	255° 42.4	90° 43.4	105° 43.4	120° 43.5	135° 43.6	150° 43.6	165° 43.7	+0.1
	14° 57.6	14° 58.3	14° 59.1	14° 59.8	15° 00.6	15° 01.4	15° 11.2	15° 11.9	15° 12.7	15° 13.4	15° 14.2	15° 14.9	+0.8
Ср 2	180° 43.8	195° 43.9	210° 43.9	225° 44.0	240° 44.1	255° 44.1	90° 45.0	105° 45.1	120° 45.2	135° 45.2	150° 45.3	165° 45.4	+0.1
	15° 15.7	15° 16.4	15° 17.2	15° 17.9	15° 18.7	15° 19.4	15° 29.1	15° 29.8	15° 30.6	15° 31.3	15° 32.1	15° 32.8	+0.7
Чт 3	180° 45.4	195° 45.5	210° 45.6	225° 45.6	240° 45.7	255° 45.8	90° 46.6	105° 46.6	120° 46.7	135° 46.7	150° 46.8	165° 46.9	+0.1
	15° 33.6	15° 34.3	15° 35.0	15° 35.8	15° 36.5	15° 37.2	15° 46.8	15° 47.5	15° 48.2	15° 49.0	15° 49.7	15° 50.4	+0.7
Пт 4	180° 46.9	195° 47.0	210° 47.0	225° 47.1	240° 47.2	255° 47.2	90° 48.0	105° 48.0	120° 48.1	135° 48.1	150° 48.2	165° 48.2	+0.1
	15° 51.2	15° 51.9	15° 52.6	15° 53.3	15° 54.1	15° 54.8	16° 04.2	16° 04.9	16° 05.6	16° 06.4	16° 07.1	16° 07.8	+0.7
Сб 5	180° 48.3	195° 48.3	210° 48.4	225° 48.4	240° 48.5	255° 48.5	90° 49.2	105° 49.3	120° 49.3	135° 49.4	150° 49.4	165° 49.4	+0.1
	16° 08.5	16° 09.2	16° 09.9	16° 10.7	16° 11.4	16° 12.1	16° 21.4	16° 22.1	16° 22.8	16° 23.5	16° 24.2	16° 24.9	+0.7
Вс 6	180° 49.5	195° 49.5	210° 49.6	225° 49.6	240° 49.7	255° 49.7	90° 50.3	105° 50.4	120° 50.4	135° 50.4	150° 50.5	165° 50.5	+0.0
	16° 25.6	16° 26.3	16° 27.0	16° 27.7	16° 28.4	16° 29.1	16° 38.2	16° 38.9	16° 39.6	16° 40.3	16° 41.0	16° 41.7	+0.7
Пн 7	180° 50.6	195° 50.6	210° 50.7	225° 50.7	240° 50.7	255° 50.8	90° 51.3	105° 51.3	120° 51.4	135° 51.4	150° 51.4	165° 51.5	+0.0
	16° 42.4	16° 43.1	16° 43.8	16° 44.5	16° 45.2	16° 45.9	16° 54.8	16° 55.5	16° 56.2	16° 56.9	16° 57.6	16° 58.3	+0.7
Вт 8	180° 51.5	195° 51.5	210° 51.6	225° 51.6	240° 51.6	255° 51.7	90° 52.1	105° 52.1	120° 52.2	135° 52.2	150° 52.2	165° 52.3	+0.0
	16° 58.9	16° 59.6	17° 00.3	17° 01.0	17° 01.7	17° 02.3	17° 11.2	17° 11.8	17° 12.5	17° 13.2	17° 13.8	17° 14.5	+0.7
Ср 9	180° 52.3	195° 52.3	210° 52.3	225° 52.4	240° 52.4	255° 52.4	90° 52.8	105° 52.8	120° 52.8	135° 52.9	150° 52.9	165° 52.9	+0.0
	17° 15.2	17° 15.9	17° 16.5	17° 17.2	17° 17.9	17° 18.5	17° 27.2	17° 27.9	17° 28.5	17° 29.2	17° 29.8	17° 30.5	+0.7
Чт 10	180° 52.9	195° 53.0	210° 53.0	225° 53.0	240° 53.0	255° 53.1	90° 53.3	105° 53.3	120° 53.4	135° 53.4	150° 53.4	165° 53.4	+0.0
	17° 31.2	17° 31.8	17° 32.5	17° 33.1	17° 33.8	17° 34.4	17° 42.9	17° 43.6	17° 44.2	17° 44.9	17° 45.5	17° 46.2	+0.7
Пт 11	180° 53.4	195° 53.5	210° 53.5	225° 53.5	240° 53.5	255° 53.5	90° 53.7	105° 53.7	120° 53.8	135° 53.8	150° 53.8	165° 53.8	+0.0
	17° 46.8	17° 47.5	17° 48.1	17° 48.8	17° 49.4	17° 50.0	17° 58.4	17° 59.0	17° 59.6	18° 00.3	18° 00.9	18° 01.6	+0.6
Сб 12	180° 53.8	195° 53.8	210° 53.8	225° 53.8	240° 53.9	255° 53.9	90° 54.0	105° 54.0	120° 54.0	135° 54.0	150° 54.0	165° 54.0	+0.0
	18° 02.2	18° 02.8	18° 03.5	18° 04.1	18° 04.7	18° 05.4	18° 13.5	18° 14.1	18° 14.8	18° 15.4	18° 16.0	18° 16.6	+0.6
Вс 13	180° 54.0	195° 54.0	210° 54.1	225° 54.1	240° 54.1	255° 54.1	90° 54.1	105° 54.1	120° 54.1	135° 54.1	150° 54.1	165° 54.1	+0.0
	18° 17.3	18° 17.9	18° 18.5	18° 19.1	18° 19.7	18° 20.4	18° 28.3	18° 29.0	18° 29.6	18° 30.2	18° 30.8	18° 31.4	+0.6
Пн 14	180° 54.1	195° 54.1	210° 54.1	225° 54.1	240° 54.1	255° 54.1	90° 54.1	105° 54.1	120° 54.1	135° 54.1	150° 54.1	165° 54.1	+0.0
	18° 32.0	18° 32.6	18° 33.2	18° 33.8	18° 34.4	18° 35.0	18° 42.9	18° 43.5	18° 44.1	18° 44.7	18° 45.3	18° 45.9	+0.6
Вт 15	180° 54.1	195° 54.1	210° 54.1	225° 54.1	240° 54.1	255° 54.1	90° 54.0	105° 54.0	120° 53.9	135° 53.9	150° 53.9	165° 53.9	-0.0
	18° 46.5	18° 47.0	18° 47.6	18° 48.2	18° 48.8	18° 49.4	18° 57.1	18° 57.7	18° 58.2	18° 58.8	18° 59.4	19° 00.0	+0.6
Ср 16	180° 53.9	195° 53.9	210° 53.9	225° 53.9	240° 53.9	255° 53.9	90° 53.7	105° 53.7	120° 53.7	135° 53.6	150° 53.6	165° 53.6	-0.0
	19° 00.6	19° 01.2	19° 01.7	19° 02.3	19° 02.9	19° 03.5	19° 11.0	19° 11.5	19° 12.1	19° 12.7	19° 13.2	19° 13.8	+0.6
Чт 17	180° 53.6	195° 53.6	210° 53.6	225° 53.5	240° 53.5	255° 53.5	90° 53.3	105° 53.2	120° 53.2	135° 53.2	150° 53.2	165° 53.2	-0.0
	19° 14.4	19° 14.9	19° 15.5	19° 16.1	19° 16.6	19° 17.2	19° 24.5	19° 25.1	19° 25.6	19° 26.2	19° 26.7	19° 27.3	+0.6
Пт 18	180° 53.1	195° 53.1	210° 53.1	225° 53.1	240° 53.0	255° 53.0	90° 52.7	105° 52.7	120° 52.7	135° 52.6	150° 52.6	165° 52.6	-0.0
	19° 27.8	19° 28.4	19° 29.0	19° 29.5	19° 30.1	19° 30.6	19° 37.7	19° 38.3	19° 38.8	19° 39.4	19° 39.9	19° 40.4	+0.6
Сб 19	180° 52.5	195° 52.5	210° 52.5	225° 52.5	240° 52.4	255° 52.4	90° 52.0	105° 52.0	120° 52.0	135° 51.9	150° 51.9	165° 51.9	-0.0
	19° 41.0	19° 41.5	19° 42.1	19° 42.6	19° 43.1	19° 43.7	19° 50.6	19° 51.1	19° 51.7	19° 52.2	19° 52.7	19° 53.3	+0.5
Вс 20	180° 51.8	195° 51.8	210° 51.8	225° 51.7	240° 51.7	255° 51.7	90° 51.2	105° 51.2	120° 51.1	135° 51.1	150° 51.0	165° 51.0	-0.0
	19° 53.8	19° 54.3	19° 54.8	19° 55.4	19° 55.9	19° 56.4	20° 03.2	20° 03.7	20° 04.2	20° 04.7	20° 05.2	20° 05.7	+0.5
Пн 21	180° 51.0	195° 50.9	210° 50.9	225° 50.9	240° 50.8	255° 50.8	90° 50.2	105° 50.2	120° 50.2	135° 50.1	150° 50.1	165° 50.0	-0.0
	20° 06.3	20° 06.8	20° 07.3	20° 07.8	20° 08.3	20° 08.8	20° 15.4	20° 15.9	20° 16.4	20° 16.9	20° 17.4	20° 17.9	+0.5
Вт 22	180° 50.0	195° 49.9	210° 49.9	225° 49.8	240° 49.8	255° 49.8	90° 49.2	105° 49.1	120° 49.1	135° 49.0	150° 49.0	165° 48.9	-0.0
	20° 18.4	20° 18.9	20° 19.4	20° 19.9	20° 20.4	20° 20.9	20° 27.2	20° 27.7	20° 28.2	20° 28.7	20° 29.2	20° 29.7	+0.5
Ср 23	180° 48.9	195° 48.8	210° 48.8	225° 48.7	240° 48.7	255° 48.6	90° 47.9	105° 47.9	120° 47.8	135° 47.8	150° 47.7	165° 47.7	-0.0
	20° 30.1	20° 30.6	20° 31.1	20° 31.6	20° 32.1	20° 32.6	20° 38.7	20° 39.2	20° 39.7	20° 40.2	20° 40.6	20° 41.1	+0.5
Чт 24	180° 47.6	195° 47.6	210° 47.5	225° 47.4	240° 47.4	255° 47.3	90° 46.6	105° 46.5	120° 46.5	135° 46.4	150° 46.4	165° 46.3	-0.1
	20° 41.6	20° 42.0	20° 42.5	20° 43.0	20° 43.4	20° 43.9	20° 49.9	20° 50.4	20° 50.8	20° 51.3	20° 51.7	20° 52.2	+0.5
Пт 25	180° 46.2	195° 46.2	210° 46.1	225° 46.0	240° 46.0	255° 45.9	90° 45.1	105° 45.0	120° 45.0	135° 44.9	150° 44.9	165° 44.8	-0.1
	20° 52.6	20° 53.1	20° 53.5	20° 54.0	20° 54.4	20° 54.9	21° 00.7	21° 01.1	21° 01.6	21° 02.0	21° 02.5	21° 02.9	+0.5
Сб 26	180° 44.7	195° 44.7	210° 44.6	225° 44.5	240° 44.5	255° 44.4	90° 43.5	105° 43.4	120° 43.4	135° 43.3	150° 43.2	165° 43.2	-0.1
	21° 03.3	21° 03.8	21° 04.2	21° 04.6	21° 05.1	21° 05.5	21° 11.1	21° 11.6	21° 12.0	21° 12.4	21° 12.8	21° 13.3	+0.4
Вс 27	180° 43.1	195° 43.0	210° 43.0	225° 42.9	240° 42.8	255° 42.7	90° 41.8	105° 41.7	120° 41.6	135° 41.6	150° 41.5	165° 41.4	-0.1
	21° 13.7	21° 14.1	21° 14.5	21° 14.9	21° 15.4	21° 15.8	21° 21.2	21° 21.6	21° 22.0	21° 22.4	21° 22.8	21° 23.2	+0.4
Пн 28	180° 41.3	195° 41.3	210° 41.2	225° 41.1	240° 41.0	255° 41.0	90° 40.0	105° 39.9	120° 39.8	135° 39.7	150° 39.6	165° 39.6	-0.1
	21° 23.7	21° 24.1	21° 24.5	21° 24.9	21° 25.3	21° 25.7	21° 30.9	21° 31.3	21° 31.7	21° 32.1	21° 32.5	21° 32.9	+0.4
Вт 29	180° 39.5	195° 39.4	210° 39.3	225° 39.2	240° 39.2	255° 39.1	90° 38.0	105° 37.9	120° 37.8	135° 37.7	150° 37.7	165° 37.6	-0.1
	21° 33.3	21° 33.7	21° 34.0	21° 34.4	21° 34.8	21° 35.2	21° 40.2	21° 40.6	21° 41.0	21° 41.4	21° 41.7	21° 42.1	+0.4
Ср 30	180° 37.5	195° 37.4	210° 37.3	225° 37.2	240° 37.1	255° 37.1	90° 35.9	105° 35.8	120° 35.7	135° 35.7	150° 35.6	165° 35.5	-0.1
	21° 42.5	21° 42.9	21° 43.2	21° 43.6	21° 44.0	21° 44.4	21° 49.2	21° 49.5	21° 49.9	21° 50.3	21° 50.6	21° 51.0	+0.4
Чт 31	180° 35.4	195° 35.3	210° 35.2	225° 35.1	240° 35.0	255° 34.9	90° 33.7	105° 33.6	120° 33.6	135° 33.5	150° 33.4	165° 33.3	-0.1
	21° 51.3	21° 51.7	21° 52.1	21° 52.4	21° 52.8	21° 53.1	21° 57.7	21° 58.1	21° 58.4	21° 58.8	21° 59.1	21° 59.5	+0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Май 2035

Д	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	Δ'/h	R/p
Вт 1	62° 57.7	77° 29.0	92° 00.3	106° 31.7	121° 03.0	135° 34.3	150° 05.6	164° 36.9	179° 08.2	193° 39.5	208° 10.8	+31.3	15.2
	-13° 02.8	-12° 55.5	-12° 48.2	-12° 40.8	-12° 33.3	-12° 25.8	-12° 18.2	-12° 10.6	-12° 02.8	-11° 55.0	-11° 47.2	+7.6	55.8
Ср 2	65° 59.2	80° 30.3	95° 01.4	109° 32.5	124° 03.6	138° 34.7	153° 05.8	167° 36.8	182° 07.9	196° 38.9	211° 09.9	+31.1	15.4
	-9° 41.5	-9° 32.7	-9° 23.8	-9° 14.8	-9° 05.7	-8° 56.6	-8° 47.5	-8° 38.3	-8° 29.0	-8° 19.7	-8° 10.3	+9.1	56.6
Чт 3	68° 52.5	83° 23.2	97° 53.8	112° 24.4	126° 55.0	141° 25.6	155° 56.1	170° 26.6	184° 57.0	199° 27.5	213° 57.9	+30.5	15.7
	-5° 43.8	-5° 33.6	-5° 23.4	-5° 13.2	-5° 02.9	-4° 52.6	-4° 42.2	-4° 31.9	-4° 21.4	-4° 11.0	-4° 00.5	+10.3	57.5
Пт 4	71° 29.8	85° 59.6	100° 29.4	114° 59.1	129° 28.8	143° 58.5	158° 28.1	172° 57.7	187° 27.2	201° 56.7	216° 26.1	+29.6	15.9
	-1° 19.0	-1° 08.1	-0° 57.1	-0° 46.0	-0° 35.0	-0° 23.9	-0° 12.9	-0° 01.8	0° 09.3	0° 20.5	0° 31.6	+11.1	58.5
Сб 5	73° 41.8	88° 10.4	102° 38.9	117° 07.5	131° 35.9	146° 04.3	160° 32.7	175° 00.9	189° 29.2	203° 57.3	218° 25.4	+28.4	16.2
	3° 19.5	3° 30.7	3° 41.9	3° 53.1	4° 04.2	4° 15.4	4° 26.6	4° 37.7	4° 48.8	4° 59.9	5° 11.0	+11.2	59.4
Вс 6	75° 19.7	89° 46.8	104° 13.9	118° 40.9	133° 07.8	147° 34.6	162° 01.4	176° 28.1	190° 54.8	205° 21.4	219° 47.9	+26.8	16.4
	7° 54.6	8° 05.2	8° 15.8	8° 26.4	8° 36.9	8° 47.4	8° 57.8	9° 08.2	9° 18.5	9° 28.8	9° 39.0	+10.5	60.1
● Пн 7	76° 18.0	90° 43.5	105° 08.9	119° 34.3	133° 59.6	148° 24.8	162° 50.0	177° 15.1	191° 40.1	206° 05.1	220° 30.1	+25.2	16.5
	12° 05.2	12° 14.4	12° 23.6	12° 32.6	12° 41.6	12° 50.4	12° 59.2	13° 08.0	13° 16.6	13° 25.1	13° 33.6	+8.8	60.7
Вт 8	76° 37.4	91° 01.5	105° 25.5	119° 49.5	134° 13.4	148° 37.3	163° 01.2	177° 25.0	191° 48.7	206° 12.5	220° 36.2	+23.9	16.6
	15° 28.8	15° 35.7	15° 42.4	15° 49.1	15° 55.6	16° 02.0	16° 08.3	16° 14.5	16° 20.5	16° 26.5	16° 32.3	+6.4	60.9
Ср 9	76° 28.0	90° 51.2	105° 14.5	119° 37.7	134° 01.0	148° 24.2	162° 47.4	177° 10.6	191° 33.8	205° 57.0	220° 20.2	+23.2	16.6
	17° 45.0	17° 48.8	17° 52.5	17° 56.0	17° 59.5	18° 02.8	18° 05.9	18° 09.0	18° 11.9	18° 14.6	18° 17.2	+3.2	60.8
Чт 10	76° 09.0	90° 32.3	104° 55.7	119° 19.2	133° 42.6	148° 06.1	162° 29.6	176° 53.1	191° 16.7	205° 40.3	220° 04.0	+23.5	16.5
	18° 40.4	18° 40.9	18° 41.2	18° 41.4	18° 41.5	18° 41.4	18° 41.2	18° 40.9	18° 40.4	18° 39.8	18° 39.0	-0.1	60.4
Пт 11	76° 03.8	90° 28.2	104° 52.6	119° 17.2	133° 41.7	148° 06.3	162° 31.0	176° 55.8	191° 20.6	205° 45.5	220° 10.4	+24.7	16.3
	18° 12.4	18° 09.7	18° 06.8	18° 03.7	18° 00.6	17° 57.3	17° 54.0	17° 50.5	17° 46.9	17° 43.1	17° 39.3	-3.3	59.8
Сб 12	76° 32.7	90° 58.7	105° 24.9	119° 51.1	134° 17.3	148° 43.7	163° 10.1	177° 36.6	192° 03.2	206° 29.9	220° 56.6	+26.4	16.1
	16° 28.5	16° 22.9	16° 17.3	16° 11.5	16° 05.7	15° 59.7	15° 53.7	15° 47.6	15° 41.4	15° 35.1	15° 28.7	-6.0	59.0
Вс 13	77° 46.8	92° 14.8	106° 42.8	121° 10.9	135° 39.1	150° 07.4	164° 35.7	179° 04.1	193° 32.6	208° 01.1	222° 29.8	+28.3	15.9
	13° 42.8	13° 35.1	13° 27.4	13° 19.6	13° 11.7	13° 03.8	12° 55.8	12° 47.7	12° 39.5	12° 31.3	12° 23.1	-8.0	58.2
◐ Пн 14	92° 14.8	106° 42.8	121° 10.9	135° 39.1	150° 07.4	164° 35.7	179° 04.1	193° 32.6	208° 01.1	222° 29.8	236° 58.5	+28.4	15.9
	13° 35.1	13° 27.4	13° 19.6	13° 11.7	13° 03.8	12° 55.8	12° 47.7	12° 39.5	12° 31.3	12° 23.1	12° 14.7	-8.0	58.2
Вт 15	94° 17.4	108° 47.2	123° 17.1	137° 47.0	152° 17.0	166° 47.1	181° 17.2	195° 47.4	210° 17.6	224° 47.9	239° 18.3	+30.1	15.7
	10° 03.3	9° 54.2	9° 45.0	9° 35.8	9° 26.5	9° 17.2	9° 07.8	8° 58.4	8° 49.0	8° 39.5	8° 30.0	-9.3	57.4
Ср 16	97° 00.4	111° 31.7	126° 02.9	140° 34.3	155° 05.6	169° 37.0	184° 08.5	198° 40.0	213° 11.6	227° 43.1	242° 14.8	+31.4	15.5
	6° 03.9	5° 54.0	5° 44.0	5° 34.0	5° 24.0	5° 14.0	5° 04.0	4° 54.0	4° 43.9	4° 33.8	4° 23.7	-10.0	56.7
Чт 17	100° 13.9	114° 46.1	129° 18.3	143° 50.6	158° 22.9	172° 55.2	187° 27.6	201° 59.9	216° 32.3	231° 04.8	245° 37.2	+32.3	15.3
	1° 51.4	1° 41.2	1° 31.1	1° 20.9	1° 10.7	1° 00.5	0° 50.3	0° 40.2	0° 30.0	0° 19.8	0° 09.7	-10.2	56.0
Пт 18	103° 46.5	118° 19.2	132° 52.0	147° 24.8	161° 57.6	176° 30.4	191° 03.2	205° 36.0	220° 08.8	234° 41.7	249° 14.5	+32.8	15.1
	-2° 21.5	-2° 31.5	-2° 41.4	-2° 51.3	-3° 01.3	-3° 11.1	-3° 21.0	-3° 30.9	-3° 40.7	-3° 50.5	-4° 00.3	-9.9	55.5
Сб 19	107° 27.7	122° 00.6	136° 33.5	151° 06.4	165° 39.3	180° 12.2	194° 45.1	209° 18.0	223° 50.8	238° 23.7	252° 56.6	+32.9	15.0
	-6° 23.8	-6° 33.1	-6° 42.4	-6° 51.7	-7° 00.9	-7° 10.1	-7° 19.2	-7° 28.3	-7° 37.4	-7° 46.4	-7° 55.4	-9.2	55.0
Вс 20	111° 08.7	125° 41.4	140° 14.1	154° 46.8	169° 19.5	183° 52.2	198° 24.9	212° 57.5	227° 30.2	242° 02.8	256° 35.4	+32.7	14.9
	-10° 05.4	-10° 13.7	-10° 21.9	-10° 30.1	-10° 38.3	-10° 46.4	-10° 54.4	-11° 02.4	-11° 10.4	-11° 18.3	-11° 26.1	-8.1	54.6
Пн 21	114° 42.8	129° 15.2	143° 47.5	158° 19.9	172° 52.2	187° 24.5	201° 56.8	216° 29.0	231° 01.3	245° 33.5	260° 05.7	+32.3	14.8
	-13° 17.1	-13° 24.0	-13° 30.9	-13° 37.7	-13° 44.4	-13° 51.1	-13° 57.7	-14° 04.3	-14° 10.7	-14° 17.2	-14° 23.5	-6.6	54.3
○ Вт 22	118° 06.6	132° 38.5	147° 10.4	161° 42.3	176° 14.2	190° 46.0	205° 17.9	219° 49.7	234° 21.5	248° 53.3	263° 25.0	+31.8	14.8
	-15° 50.7	-15° 55.9	-16° 01.1	-16° 06.2	-16° 11.2	-16° 16.2	-16° 21.0	-16° 25.8	-16° 30.6	-16° 35.2	-16° 39.8	-4.9	54.1
Ср 23	121° 19.7	135° 51.2	150° 22.7	164° 54.2	179° 25.7	193° 57.2	208° 28.7	223° 00.1	237° 31.6	252° 03.0	266° 34.4	+31.5	14.7
	-17° 39.2	-17° 42.5	-17° 45.7	-17° 48.9	-17° 52.0	-17° 55.0	-17° 57.9	-18° 00.7	-18° 03.5	-18° 06.1	-18° 08.7	-3.0	54.0
Чт 24	124° 24.6	138° 55.9	153° 27.1	167° 58.4	182° 29.7	197° 01.0	211° 32.2	226° 03.5	240° 34.7	255° 06.0	269° 37.2	+31.3	14.7
	-18° 37.5	-18° 38.7	-18° 39.8	-18° 40.9	-18° 41.9	-18° 42.8	-18° 43.6	-18° 44.3	-18° 45.0	-18° 45.5	-18° 46.0	-0.9	53.9
Пт 25	127° 25.8	141° 57.0	156° 28.3	170° 59.5	185° 30.8	200° 02.0	214° 33.3	229° 04.6	243° 35.8	258° 07.1	272° 38.4	+31.3	14.7
	-18° 42.7	-18° 41.8	-18° 40.8	-18° 39.7	-18° 38.5	-18° 37.3	-18° 35.9	-18° 34.5	-18° 33.0	-18° 31.4	-18° 29.7	+1.3	54.0
Сб 26	130° 28.2	144° 59.6	159° 31.0	174° 02.4	188° 33.8	203° 05.2	217° 36.6	232° 08.1	246° 39.5	261° 10.9	275° 42.4	+31.4	14.8
	-17° 54.4	-17° 51.4	-17° 48.3	-17° 45.1	-17° 41.8	-17° 38.5	-17° 35.0	-17° 31.5	-17° 27.9	-17° 24.3	-17° 20.5	+3.4	54.2
Вс 27	133° 35.5	148° 07.1	162° 38.7	177° 10.3	191° 42.0	206° 13.6	220° 45.3	235° 17.0	249° 48.6	264° 20.3	278° 52.0	+31.7	14.9
	-16° 14.5	-16° 09.5	-16° 04.4	-15° 59.2	-15° 54.0	-15° 48.7	-15° 43.3	-15° 37.8	-15° 32.2	-15° 26.6	-15° 20.9	+5.4	54.6
Пн 28	136° 48.5	151° 20.3	165° 52.2	180° 24.0	194° 55.8	209° 27.7	223° 59.5	238° 31.4	253° 03.2	267° 35.1	282° 06.9	+31.8	15.0
	-13° 46.8	-13° 40.0	-13° 33.1	-13° 26.1	-13° 19.1	-13° 12.0	-13° 04.8	-12° 57.5	-12° 50.2	-12° 42.9	-12° 35.4	+7.1	55.1
Вт 29	140° 05.0	154° 36.9	169° 08.7	183° 40.6	198° 12.4	212° 44.3	227° 16.1	241° 48.0	256° 19.8	270° 51.6	285° 23.4	+31.8	15.2
	-10° 36.5	-10° 28.1	-10° 19.6	-10° 11.1	-10° 02.5	-9° 53.9	-9° 45.2	-9° 36.4	-9° 27.6	-9° 18.8	-9° 09.9	+8.7	55.8
◑ Ср 30	143° 19.3	157° 50.9	172° 22.5	186° 54.0	201° 25.6	215° 57.1	230° 28.6	245° 00.1	259° 31.6	274° 03.0	288° 34.5	+31.5	15.4
	-6° 50.2	-6° 40.5	-6° 30.8	-6° 21.0	-6° 11.2	-6° 01.3	-5° 51.4	-5° 41.5	-5° 31.5	-5° 21.4	-5° 11.4	+9.9	56.6
Чт 31	146° 22.6	160° 53.5	175° 24.4	189° 55.3	204° 26.2	218° 57.0	233° 27.8	247° 58.5	262° 29.2	276° 59.8	291° 30.5	+30.8	15.7
	-2° 36.2	-2° 25.6	-2° 15.0	-2° 04.3	-1° 53.6	-1° 42.9	-1° 32.2	-1° 21.5	-1° 10.7	-0° 59.9	-0° 49.1	+10.7	57.6

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24

Новолуние: 7 20h03 — Первая четв.: 14 10h28 — Полнолуние: 22 04h25 — Последняя четв.: 30 07h30

СОЛНЦЕ

Июнь 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пт 1	180° 33.2	195° 33.1	210° 33.0	225° 32.9	240° 32.8	255° 32.7	90° 31.4	105° 31.4	120° 31.3	135° 31.2	150° 31.1	165° 31.0	-0.1
	21° 59.8	22° 00.2	22° 00.5	22° 00.9	22° 01.2	22° 01.5	22° 05.9	22° 06.3	22° 06.6	22° 06.9	22° 07.3	22° 07.6	+0.3
Сб 2	180° 30.9	195° 30.8	210° 30.7	225° 30.6	240° 30.5	255° 30.4	90° 29.1	105° 29.0	120° 28.9	135° 28.8	150° 28.7	165° 28.5	-0.1
	22° 07.9	22° 08.2	22° 08.6	22° 08.9	22° 09.2	22° 09.6	22° 13.7	22° 14.1	22° 14.4	22° 14.7	22° 15.0	22° 15.3	+0.3
Вс 3	180° 28.4	195° 28.3	210° 28.2	225° 28.1	240° 28.0	255° 27.9	90° 26.6	105° 26.5	120° 26.4	135° 26.3	150° 26.1	165° 26.0	-0.1
	22° 15.6	22° 15.9	22° 16.2	22° 16.6	22° 16.9	22° 17.2	22° 21.2	22° 21.5	22° 21.8	22° 22.1	22° 22.3	22° 22.6	+0.3
Пн 4	180° 25.9	195° 25.8	210° 25.7	225° 25.6	240° 25.5	255° 25.4	90° 24.0	105° 23.9	120° 23.8	135° 23.7	150° 23.6	165° 23.4	-0.1
	22° 22.9	22° 23.2	22° 23.5	22° 23.8	22° 24.1	22° 24.4	22° 28.2	22° 28.5	22° 28.7	22° 29.0	22° 29.3	22° 29.6	+0.3
Вт 5	180° 23.3	195° 23.2	210° 23.1	225° 23.0	240° 22.9	255° 22.8	90° 21.3	105° 21.2	120° 21.1	135° 21.0	150° 20.9	165° 20.8	-0.1
	22° 29.9	22° 30.2	22° 30.4	22° 30.7	22° 31.0	22° 31.3	22° 34.8	22° 35.1	22° 35.3	22° 35.6	22° 35.9	22° 36.1	+0.3
Ср 6	180° 20.6	195° 20.5	210° 20.4	225° 20.3	240° 20.2	255° 20.1	90° 18.6	105° 18.5	120° 18.3	135° 18.2	150° 18.1	165° 18.0	-0.1
	22° 36.4	22° 36.7	22° 36.9	22° 37.2	22° 37.5	22° 37.7	22° 41.0	22° 41.3	22° 41.5	22° 41.8	22° 42.0	22° 42.3	+0.3
Чт 7	180° 17.9	195° 17.8	210° 17.6	225° 17.5	240° 17.4	255° 17.3	90° 15.8	105° 15.6	120° 15.5	135° 15.4	150° 15.3	165° 15.2	-0.1
	22° 42.5	22° 42.8	22° 43.0	22° 43.3	22° 43.5	22° 43.8	22° 46.9	22° 47.1	22° 47.4	22° 47.6	22° 47.8	22° 48.1	+0.2
Пт 8	180° 15.0	195° 14.9	210° 14.8	225° 14.7	240° 14.6	255° 14.4	90° 12.9	105° 12.7	120° 12.6	135° 12.5	150° 12.4	165° 12.3	-0.1
	22° 48.3	22° 48.5	22° 48.7	22° 49.0	22° 49.2	22° 49.4	22° 52.3	22° 52.5	22° 52.8	22° 53.0	22° 53.2	22° 53.4	+0.2
Сб 9	180° 12.1	195° 12.0	210° 11.9	225° 11.8	240° 11.6	255° 11.5	90° 09.9	105° 09.8	120° 09.7	135° 09.5	150° 09.4	165° 09.3	-0.1
	22° 53.6	22° 53.8	22° 54.1	22° 54.3	22° 54.5	22° 54.7	22° 57.4	22° 57.6	22° 57.8	22° 58.0	22° 58.2	22° 58.4	+0.2
Вс 10	180° 09.2	195° 09.0	210° 08.9	225° 08.8	240° 08.7	255° 08.5	90° 06.9	105° 06.8	120° 06.7	135° 06.5	150° 06.4	165° 06.3	-0.1
	22° 58.6	22° 58.8	22° 59.0	22° 59.2	22° 59.3	22° 59.5	23° 02.0	23° 02.2	23° 02.4	23° 02.6	23° 02.7	23° 02.9	+0.2
Пн 11	180° 06.2	195° 06.0	210° 05.9	225° 05.8	240° 05.7	255° 05.5	90° 03.9	105° 03.7	120° 03.6	135° 03.5	150° 03.4	165° 03.2	-0.1
	23° 03.1	23° 03.3	23° 03.5	23° 03.6	23° 03.8	23° 04.0	23° 06.2	23° 06.4	23° 06.6	23° 06.7	23° 06.9	23° 07.1	+0.2
Вт 12	180° 03.1	195° 03.0	210° 02.8	225° 02.7	240° 02.6	255° 02.5	90° 00.8	105° 00.6	120° 00.5	135° 00.4	150° 00.3	165° 00.1	-0.1
	23° 07.2	23° 07.4	23° 07.5	23° 07.7	23° 07.9	23° 08.0	23° 10.0	23° 10.2	23° 10.3	23° 10.5	23° 10.6	23° 10.8	+0.2
Ср 13	180° 00.0	194° 59.9	209° 59.7	224° 59.6	239° 59.5	254° 59.3	89° 57.6	104° 57.5	119° 57.4	134° 57.2	149° 57.1	164° 57.0	-0.1
	23° 10.9	23° 11.1	23° 11.2	23° 11.4	23° 11.5	23° 11.7	23° 13.5	23° 13.6	23° 13.7	23° 13.9	23° 14.0	23° 14.1	+0.1
Чт 14	179° 56.9	194° 56.7	209° 56.6	224° 56.5	239° 56.3	254° 56.2	89° 54.5	104° 54.3	119° 54.2	134° 54.1	149° 53.9	164° 53.8	-0.1
	23° 14.2	23° 14.4	23° 14.5	23° 14.6	23° 14.8	23° 14.9	23° 16.5	23° 16.6	23° 16.7	23° 16.8	23° 16.9	23° 17.0	+0.1
Пт 15	179° 53.7	194° 53.5	209° 53.4	224° 53.3	239° 53.1	254° 53.0	89° 51.3	104° 51.2	119° 51.0	134° 50.9	149° 50.8	164° 50.6	-0.1
	23° 17.1	23° 17.3	23° 17.4	23° 17.5	23° 17.6	23° 17.7	23° 19.0	23° 19.1	23° 19.2	23° 19.3	23° 19.4	23° 19.5	+0.1
Сб 16	179° 50.5	194° 50.3	209° 50.2	224° 50.1	239° 49.9	254° 49.8	89° 48.1	104° 47.9	119° 47.8	134° 47.7	149° 47.5	164° 47.4	-0.1
	23° 19.6	23° 19.7	23° 19.8	23° 19.9	23° 20.0	23° 20.1	23° 21.2	23° 21.3	23° 21.4	23° 21.5	23° 21.5	23° 21.6	+0.1
Вс 17	179° 47.3	194° 47.1	209° 47.0	224° 46.9	239° 46.7	254° 46.6	89° 44.8	104° 44.7	119° 44.6	134° 44.4	149° 44.3	164° 44.2	-0.1
	23° 21.7	23° 21.8	23° 21.9	23° 21.9	23° 22.0	23° 22.1	23° 23.0	23° 23.1	23° 23.1	23° 23.2	23° 23.2	23° 23.3	+0.1
Пн 18	179° 44.0	194° 43.9	209° 43.8	224° 43.6	239° 43.5	254° 43.4	89° 41.6	104° 41.5	119° 41.3	134° 41.2	149° 41.1	164° 40.9	-0.1
	23° 23.4	23° 23.4	23° 23.5	23° 23.5	23° 23.6	23° 23.7	23° 24.3	23° 24.4	23° 24.4	23° 24.5	23° 24.5	23° 24.6	+0.1
Вт 19	179° 40.8	194° 40.7	209° 40.5	224° 40.4	239° 40.3	254° 40.1	89° 38.4	104° 38.2	119° 38.1	134° 37.9	149° 37.8	164° 37.7	-0.1
	23° 24.6	23° 24.7	23° 24.7	23° 24.7	23° 24.8	23° 24.8	23° 25.3	23° 25.3	23° 25.3	23° 25.4	23° 25.4	23° 25.4	+0.0
Ср 20	179° 37.5	194° 37.4	209° 37.3	224° 37.1	239° 37.0	254° 36.9	89° 35.1	104° 35.0	119° 34.8	134° 34.7	149° 34.6	164° 34.4	-0.1
	23° 25.5	23° 25.5	23° 25.5	23° 25.5	23° 25.5	23° 25.6	23° 25.8	23° 25.8	23° 25.8	23° 25.8	23° 25.9	23° 25.9	+0.0
Чт 21	179° 34.3	194° 34.2	209° 34.0	224° 33.9	239° 33.8	254° 33.6	89° 31.9	104° 31.7	119° 31.6	134° 31.5	149° 31.3	164° 31.2	-0.1
	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.9	+0.0
Пт 22	179° 31.1	194° 30.9	209° 30.8	224° 30.6	239° 30.5	254° 30.4	89° 28.6	104° 28.5	119° 28.4	134° 28.2	149° 28.1	164° 28.0	-0.1
	23° 25.9	23° 25.9	23° 25.9	23° 25.9	23° 25.8	23° 25.8	23° 25.6	23° 25.6	23° 25.5	23° 25.5	23° 25.5	23° 25.5	-0.0
Сб 23	179° 27.8	194° 27.7	209° 27.6	224° 27.4	239° 27.3	254° 27.1	89° 25.4	104° 25.3	119° 25.1	134° 25.0	149° 24.9	164° 24.7	-0.1
	23° 25.5	23° 25.5	23° 25.4	23° 25.4	23° 25.4	23° 25.3	23° 24.9	23° 24.9	23° 24.8	23° 24.8	23° 24.7	23° 24.7	-0.0
Вс 24	179° 24.6	194° 24.5	209° 24.3	224° 24.2	239° 24.1	254° 23.9	89° 22.2	104° 22.1	119° 21.9	134° 21.8	149° 21.7	164° 21.5	-0.1
	23° 24.7	23° 24.6	23° 24.6	23° 24.5	23° 24.5	23° 24.4	23° 23.8	23° 23.7	23° 23.7	23° 23.6	23° 23.5	23° 23.5	-0.0
Пн 25	179° 21.4	194° 21.3	209° 21.1	224° 21.0	239° 20.9	254° 20.7	89° 19.0	104° 18.9	119° 18.8	134° 18.6	149° 18.5	164° 18.4	-0.1
	23° 23.4	23° 23.4	23° 23.3	23° 23.2	23° 23.2	23° 23.1	23° 22.2	23° 22.2	23° 22.1	23° 22.0	23° 21.9	23° 21.9	-0.1
Вт 26	179° 18.2	194° 18.1	209° 18.0	224° 17.8	239° 17.7	254° 17.6	89° 15.9	104° 15.7	119° 15.6	134° 15.5	149° 15.4	164° 15.2	-0.1
	23° 21.8	23° 21.7	23° 21.6	23° 21.6	23° 21.5	23° 21.4	23° 20.3	23° 20.2	23° 20.1	23° 20.0	23° 19.9	23° 19.8	-0.1
Ср 27	179° 15.1	194° 15.0	209° 14.8	224° 14.7	239° 14.6	254° 14.4	89° 12.8	104° 12.6	119° 12.5	134° 12.4	149° 12.2	164° 12.1	-0.1
	23° 19.7	23° 19.6	23° 19.5	23° 19.4	23° 19.4	23° 19.3	23° 17.9	23° 17.8	23° 17.7	23° 17.6	23° 17.5	23° 17.4	-0.1
Чт 28	179° 12.0	194° 11.9	209° 11.7	224° 11.6	239° 11.5	254° 11.3	89° 09.7	104° 09.6	119° 09.4	134° 09.3	149° 09.2	164° 09.1	-0.1
	23° 17.3	23° 17.2	23° 17.0	23° 16.9	23° 16.8	23° 16.7	23° 15.2	23° 15.0	23° 14.9	23° 14.8	23° 14.7	23° 14.5	-0.1
Пт 29	179° 08.9	194° 08.8	209° 08.7	224° 08.5	239° 08.4	254° 08.3	89° 06.7	104° 06.5	119° 06.4	134° 06.3	149° 06.2	164° 06.0	-0.1
	23° 14.4	23° 14.3	23° 14.1	23° 14.0	23° 13.9	23° 13.8	23° 12.0	23° 11.8	23° 11.7	23° 11.6	23° 11.4	23° 11.3	-0.1
Сб 30	179° 05.9	194° 05.8	209° 05.7	224° 05.5	239° 05.4	254° 05.3	89° 03.7	104° 03.6	119° 03.4	134° 03.3	149° 03.2	164° 03.1	-0.1
	23° 11.1	23° 11.0	23° 10.8	23° 10.7	23° 10.5	23° 10.4	23° 08.4	23° 08.2	23° 08.1	23° 07.9	23° 07.8	23° 07.6	-0.1

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июнь 2035

Д	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	Δ'/h	R/p
Пт 1	62° 04.0	76° 34.1	91° 04.2	105° 34.3	120° 04.3	134° 34.2	149° 04.1	163° 34.0	178° 03.8	192° 33.5	207° 03.2	+29.9	15.9
	0° 49.0	1° 00.0	1° 10.9	1° 21.9	1° 32.9	1° 43.9	1° 54.9	2° 06.0	2° 17.0	2° 28.0	2° 39.0	+11.0	58.3
Сб 2	64° 21.2	78° 49.9	93° 18.6	107° 47.1	122° 15.6	136° 44.0	151° 12.4	165° 40.7	180° 08.9	194° 37.0	209° 05.1	+28.4	16.2
	5° 24.0	5° 34.9	5° 45.8	5° 56.7	6° 07.6	6° 18.4	6° 29.2	6° 40.0	6° 50.8	7° 01.6	7° 12.3	+10.8	59.3
Вс 3	65° 57.1	80° 24.0	94° 50.8	109° 17.5	123° 44.1	138° 10.6	152° 37.1	167° 03.5	181° 29.8	195° 56.0	210° 22.2	+26.5	16.4
	9° 48.9	9° 59.0	10° 09.0	10° 19.0	10° 29.0	10° 38.8	10° 48.7	10° 58.4	11° 08.1	11° 17.8	11° 27.4	+9.9	60.2
Пн 4	66° 44.9	81° 09.8	95° 34.6	109° 59.4	124° 24.0	138° 48.6	153° 13.1	167° 37.6	182° 02.0	196° 26.3	210° 50.5	+24.6	16.6
	13° 42.6	13° 51.0	13° 59.3	14° 07.4	14° 15.6	14° 23.6	14° 31.5	14° 39.3	14° 47.0	14° 54.7	15° 02.2	+8.0	60.9
Вт 5	66° 46.1	81° 09.3	95° 32.5	109° 55.6	124° 18.7	138° 41.7	153° 04.7	167° 27.6	181° 50.5	196° 13.3	210° 36.1	+23.0	16.7
	16° 42.2	16° 47.9	16° 53.6	16° 59.1	17° 04.4	17° 09.7	17° 14.8	17° 19.8	17° 24.7	17° 29.5	17° 34.1	+5.2	61.2
● Ср 6	66° 14.1	80° 36.5	94° 58.8	109° 21.1	123° 43.4	138° 05.7	152° 28.0	166° 50.3	181° 12.6	195° 34.9	209° 57.2	+22.3	16.7
	18° 27.2	18° 29.7	18° 31.9	18° 34.1	18° 36.1	18° 38.0	18° 39.7	18° 41.3	18° 42.8	18° 44.1	18° 45.2	+1.8	61.3
Чт 7	65° 33.3	79° 55.9	94° 18.5	108° 41.2	123° 03.9	137° 26.6	151° 49.4	166° 12.3	180° 35.1	194° 58.0	209° 21.0	+22.8	16.6
	18° 45.6	18° 44.5	18° 43.2	18° 41.8	18° 40.3	18° 38.7	18° 36.9	18° 34.9	18° 32.8	18° 30.6	18° 28.3	-1.7	60.9
Пт 8	65° 12.0	79° 36.0	93° 59.9	108° 24.0	122° 48.1	137° 12.3	151° 36.6	166° 00.9	180° 25.3	194° 49.8	209° 14.4	+24.2	16.4
	17° 37.5	17° 33.2	17° 28.6	17° 24.0	17° 19.3	17° 14.4	17° 09.5	17° 04.4	16° 59.2	16° 53.9	16° 48.5	-4.9	60.3
Сб 9	65° 32.7	79° 58.6	94° 24.6	108° 50.6	123° 16.8	137° 43.0	152° 09.4	166° 35.8	181° 02.3	195° 28.8	209° 55.5	+26.3	16.2
	15° 14.8	15° 07.8	15° 00.7	14° 53.5	14° 46.2	14° 38.9	14° 31.4	14° 23.9	14° 16.3	14° 08.6	14° 00.8	-7.4	59.5
Вс 10	66° 45.9	81° 14.0	95° 42.1	110° 10.3	124° 38.6	139° 06.9	153° 35.4	168° 03.9	182° 32.5	197° 01.2	211° 30.0	+28.4	16.0
	11° 55.9	11° 47.0	11° 38.1	11° 29.2	11° 20.1	11° 11.1	11° 02.0	10° 52.8	10° 43.6	10° 34.3	10° 25.0	-9.1	58.6
Пн 11	68° 50.7	83° 20.7	97° 50.7	112° 20.8	126° 51.0	141° 21.2	155° 51.5	170° 21.9	184° 52.3	199° 22.8	213° 53.3	+30.3	15.7
	8° 00.5	7° 50.6	7° 40.7	7° 30.7	7° 20.7	7° 10.7	7° 00.7	6° 50.6	6° 40.5	6° 30.4	6° 20.3	-10.0	57.6
◐ Вт 12	71° 38.6	86° 10.0	100° 41.5	115° 13.1	129° 44.7	144° 16.3	158° 48.0	173° 19.7	187° 51.5	202° 23.3	216° 55.2	+31.7	15.5
	3° 46.6	3° 36.3	3° 25.9	3° 15.6	3° 05.3	2° 54.9	2° 44.6	2° 34.2	2° 23.9	2° 13.5	2° 03.2	-10.3	56.7
Ср 13	86° 10.0	100° 41.5	115° 13.1	129° 44.7	144° 16.3	158° 48.0	173° 19.7	187° 51.5	202° 23.3	216° 55.2	231° 27.1	+31.7	15.5
	3° 36.3	3° 25.9	3° 15.6	3° 05.3	2° 54.9	2° 44.6	2° 34.2	2° 23.9	2° 13.5	2° 03.2	1° 52.9	-10.3	56.7
Чт 14	89° 30.0	104° 02.4	118° 34.9	133° 07.4	147° 39.9	162° 12.5	176° 45.1	191° 17.7	205° 50.3	220° 23.0	234° 55.6	+32.6	15.2
	-0° 41.5	-0° 51.7	-1° 01.9	-1° 12.1	-1° 22.3	-1° 32.4	-1° 42.6	-1° 52.7	-2° 02.8	-2° 12.9	-2° 22.9	-10.1	55.9
Пт 15	93° 07.8	107° 40.7	122° 13.7	136° 46.6	151° 19.6	165° 52.5	180° 25.5	194° 58.4	209° 31.4	224° 04.4	238° 37.4	+33.0	15.1
	-4° 51.0	-5° 00.7	-5° 10.3	-5° 19.9	-5° 29.5	-5° 39.1	-5° 48.6	-5° 58.1	-6° 07.5	-6° 16.9	-6° 26.3	-9.5	55.3
Сб 16	96° 52.2	111° 25.2	125° 58.2	140° 31.1	155° 04.1	169° 37.0	184° 10.0	198° 42.9	213° 15.8	227° 48.7	242° 21.6	+32.9	14.9
	-8° 42.4	-8° 51.2	-8° 59.9	-9° 08.6	-9° 17.2	-9° 25.8	-9° 34.3	-9° 42.8	-9° 51.2	-9° 59.6	-10° 07.9	-8.6	54.7
Вс 17	100° 33.9	115° 06.6	129° 39.3	144° 12.0	158° 44.6	173° 17.3	187° 49.9	202° 22.5	216° 55.1	231° 27.7	246° 00.2	+32.6	14.8
	-12° 07.0	-12° 14.5	-12° 22.0	-12° 29.4	-12° 36.7	-12° 44.0	-12° 51.2	-12° 58.4	-13° 05.5	-13° 12.5	-13° 19.5	-7.3	54.4
Пн 18	104° 06.4	118° 38.6	133° 10.9	147° 43.1	162° 15.3	176° 47.5	191° 19.6	205° 51.8	220° 23.9	234° 56.0	249° 28.0	+32.2	14.8
	-14° 56.8	-15° 02.7	-15° 08.6	-15° 14.4	-15° 20.2	-15° 25.9	-15° 31.5	-15° 37.0	-15° 42.5	-15° 47.9	-15° 53.3	-5.7	54.1
Вт 19	107° 26.8	121° 58.5	136° 30.3	151° 02.0	165° 33.7	180° 05.4	194° 37.1	209° 08.7	223° 40.4	238° 12.0	252° 43.6	+31.7	14.7
	-17° 04.5	-17° 08.7	-17° 12.7	-17° 16.7	-17° 20.6	-17° 24.5	-17° 28.2	-17° 31.9	-17° 35.5	-17° 39.0	-17° 42.4	-3.8	53.9
○ Ср 20	110° 35.7	125° 07.1	139° 38.4	154° 09.8	168° 41.1	183° 12.4	197° 43.7	212° 15.0	226° 46.3	241° 17.6	255° 48.8	+31.3	14.7
	-18° 24.2	-18° 26.4	-18° 28.4	-18° 30.3	-18° 32.2	-18° 34.0	-18° 35.7	-18° 37.3	-18° 38.9	-18° 40.3	-18° 41.7	-1.7	53.9
Чт 21	113° 37.0	128° 08.1	142° 39.3	157° 10.5	171° 41.6	186° 12.8	200° 43.9	215° 15.1	229° 46.2	244° 17.4	258° 48.6	+31.2	14.7
	-18° 51.7	-18° 51.7	-18° 51.6	-18° 51.4	-18° 51.1	-18° 50.8	-18° 50.3	-18° 49.8	-18° 49.2	-18° 48.4	-18° 47.6	+0.4	53.9
Пт 22	116° 36.2	131° 07.4	145° 38.7	160° 09.9	174° 41.1	189° 12.4	203° 43.6	218° 14.9	232° 46.2	247° 17.4	261° 48.7	+31.2	14.7
	-18° 25.3	-18° 23.1	-18° 20.8	-18° 18.5	-18° 16.0	-18° 13.5	-18° 10.9	-18° 08.2	-18° 05.5	-18° 02.6	-17° 59.7	+2.6	54.1
Сб 23	119° 39.3	134° 10.7	148° 42.2	163° 13.7	177° 45.2	192° 16.7	206° 48.3	221° 19.8	235° 51.4	250° 22.9	264° 54.5	+31.5	14.8
	-17° 05.7	-17° 01.5	-16° 57.1	-16° 52.7	-16° 48.3	-16° 43.7	-16° 39.1	-16° 34.4	-16° 29.6	-16° 24.7	-16° 19.7	+4.6	54.3
Вс 24	122° 50.0	137° 21.8	151° 53.6	166° 25.4	180° 57.3	195° 29.1	210° 01.0	224° 32.9	239° 04.8	253° 36.7	268° 08.6	+31.9	14.9
	-14° 56.6	-14° 50.4	-14° 44.2	-14° 38.0	-14° 31.6	-14° 25.2	-14° 18.7	-14° 12.2	-14° 05.6	-13° 58.9	-13° 52.2	+6.4	54.7
Пн 25	126° 08.9	140° 41.0	155° 13.1	169° 45.3	184° 17.4	198° 49.5	213° 21.7	227° 53.8	242° 26.0	256° 58.1	271° 30.3	+32.1	15.0
	-12° 03.2	-11° 55.5	-11° 47.7	-11° 39.8	-11° 31.9	-11° 23.9	-11° 15.8	-11° 07.7	-10° 59.5	-10° 51.3	-10° 43.1	+8.0	55.2
Вт 26	129° 33.1	144° 05.3	158° 37.5	173° 09.7	187° 41.9	202° 14.1	216° 46.3	231° 18.4	245° 50.6	260° 22.8	274° 54.9	+32.2	15.2
	-8° 32.7	-8° 23.6	-8° 14.5	-8° 05.3	-7° 56.1	-7° 46.8	-7° 37.5	-7° 28.2	-7° 18.8	-7° 09.3	-6° 59.8	+9.3	55.8
Ср 27	132° 55.9	147° 27.9	161° 59.8	176° 31.7	191° 03.6	205° 35.5	220° 07.3	234° 39.2	249° 11.0	263° 42.7	278° 14.5	+31.9	15.4
	-4° 33.1	-4° 23.0	-4° 12.9	-4° 02.8	-3° 52.6	-3° 42.4	-3° 32.2	-3° 22.0	-3° 11.7	-3° 01.4	-2° 51.1	+10.2	56.5
◑ Чт 28	136° 07.5	150° 38.8	165° 10.0	179° 41.2	194° 12.4	208° 43.5	223° 14.6	237° 45.6	252° 16.6	266° 47.6	281° 18.5	+31.1	15.6
	-0° 13.7	-0° 03.1	0° 07.5	0° 18.2	0° 28.9	0° 39.5	0° 50.2	1° 00.9	1° 11.6	1° 22.4	1° 33.1	+10.7	57.3
Пт 29	138° 56.3	153° 26.4	167° 56.4	182° 26.4	196° 56.3	211° 26.2	225° 56.0	240° 25.7	254° 55.4	269° 25.0	283° 54.6	+29.8	15.9
	4° 14.0	4° 24.7	4° 35.4	4° 46.1	4° 56.7	5° 07.4	5° 18.0	5° 28.6	5° 39.3	5° 49.8	6° 00.4	+10.6	58.2
Сб 30	141° 09.8	155° 38.2	170° 06.6	184° 34.9	199° 03.1	213° 31.3	227° 59.3	242° 27.3	256° 55.2	271° 23.1	285° 50.8	+28.1	16.1
	8° 36.1	8° 46.3	8° 56.4	9° 06.4	9° 16.4	9° 26.4	9° 36.3	9° 46.2	9° 56.1	10° 05.9	10° 15.6	+10.0	59.1

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 6 03h20 — Первая четв.: 12 19h50 — Полнолуние: 20 19h37 — Последняя четв.: 28 18h42

СОЛНЦЕ

Июль 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Вс 1	179° 02.9	194° 02.8	209° 02.7	224° 02.6	239° 02.5	254° 02.3	89° 00.8	104° 00.6	119° 00.5	134° 00.4	149° 00.3	164° 00.2	-0.1
	23° 07.4	23° 07.3	23° 07.1	23° 06.9	23° 06.8	23° 06.6	23° 04.4	23° 04.2	23° 04.1	23° 03.9	23° 03.7	23° 03.5	-0.2
Пн 2	179° 00.0	193° 59.9	208° 59.8	223° 59.7	238° 59.6	253° 59.4	88° 57.9	103° 57.8	118° 57.7	133° 57.5	148° 57.4	163° 57.3	-0.1
	23° 03.3	23° 03.2	23° 03.0	23° 02.8	23° 02.6	23° 02.4	23° 00.0	22° 59.8	22° 59.6	22° 59.4	22° 59.2	22° 59.0	-0.2
Вт 3	178° 57.2	193° 57.1	208° 57.0	223° 56.8	238° 56.7	253° 56.6	88° 55.1	103° 55.0	118° 54.9	133° 54.8	148° 54.6	163° 54.5	-0.1
	22° 58.9	22° 58.7	22° 58.5	22° 58.3	22° 58.1	22° 57.9	22° 55.2	22° 55.0	22° 54.8	22° 54.6	22° 54.4	22° 54.2	-0.2
Ср 4	178° 54.4	193° 54.3	208° 54.2	223° 54.1	238° 54.0	253° 53.9	88° 52.4	103° 52.3	118° 52.2	133° 52.1	148° 51.9	163° 51.8	-0.1
	22° 54.0	22° 53.7	22° 53.5	22° 53.3	22° 53.1	22° 52.9	22° 50.0	22° 49.8	22° 49.6	22° 49.3	22° 49.1	22° 48.9	-0.2
Чт 5	178° 51.7	193° 51.6	208° 51.5	223° 51.4	238° 51.3	253° 51.2	88° 49.8	103° 49.6	118° 49.5	133° 49.4	148° 49.3	163° 49.2	-0.1
	22° 48.7	22° 48.4	22° 48.2	22° 48.0	22° 47.7	22° 47.5	22° 44.4	22° 44.2	22° 44.0	22° 43.7	22° 43.5	22° 43.2	-0.2
Пт 6	178° 49.1	193° 49.0	208° 48.9	223° 48.8	238° 48.7	253° 48.6	88° 47.2	103° 47.1	118° 47.0	133° 46.9	148° 46.8	163° 46.7	-0.1
	22° 43.0	22° 42.7	22° 42.5	22° 42.2	22° 42.0	22° 41.7	22° 38.5	22° 38.2	22° 37.9	22° 37.7	22° 37.4	22° 37.2	-0.2
Сб 7	178° 46.6	193° 46.5	208° 46.4	223° 46.3	238° 46.2	253° 46.1	88° 44.7	103° 44.6	118° 44.5	133° 44.4	148° 44.3	163° 44.2	-0.1
	22° 36.9	22° 36.6	22° 36.4	22° 36.1	22° 35.8	22° 35.6	22° 32.1	22° 31.8	22° 31.5	22° 31.3	22° 31.0	22° 30.7	-0.3
Вс 8	178° 44.1	193° 44.1	208° 44.0	223° 43.9	238° 43.8	253° 43.7	88° 42.4	103° 42.3	118° 42.2	133° 42.1	148° 42.0	163° 41.9	-0.1
	22° 30.4	22° 30.1	22° 29.9	22° 29.6	22° 29.3	22° 29.0	22° 25.3	22° 25.0	22° 24.7	22° 24.4	22° 24.1	22° 23.9	-0.3
Пн 9	178° 41.8	193° 41.7	208° 41.6	223° 41.5	238° 41.4	253° 41.3	88° 40.1	103° 40.1	118° 40.0	133° 39.9	148° 39.8	163° 39.7	-0.1
	22° 23.6	22° 23.3	22° 23.0	22° 22.7	22° 22.4	22° 22.1	22° 18.2	22° 17.9	22° 17.5	22° 17.2	22° 16.9	22° 16.6	-0.3
Вт 10	178° 39.6	193° 39.5	208° 39.4	223° 39.3	238° 39.2	253° 39.1	88° 38.0	103° 37.9	118° 37.8	133° 37.7	148° 37.7	163° 37.6	-0.1
	22° 16.3	22° 16.0	22° 15.7	22° 15.4	22° 15.1	22° 14.8	22° 10.6	22° 10.3	22° 10.0	22° 09.7	22° 09.3	22° 09.0	-0.3
Ср 11	178° 37.5	193° 37.4	208° 37.3	223° 37.2	238° 37.1	253° 37.1	88° 36.0	103° 35.9	118° 35.8	133° 35.7	148° 35.7	163° 35.6	-0.1
	22° 08.7	22° 08.4	22° 08.0	22° 07.7	22° 07.4	22° 07.0	22° 02.7	22° 02.4	22° 02.0	22° 01.7	22° 01.3	22° 01.0	-0.3
Чт 12	178° 35.5	193° 35.4	208° 35.3	223° 35.2	238° 35.2	253° 35.1	88° 34.1	103° 34.0	118° 33.9	133° 33.8	148° 33.8	163° 33.7	-0.1
	22° 00.7	22° 00.3	22° 00.0	21° 59.6	21° 59.3	21° 58.9	21° 54.4	21° 54.1	21° 53.7	21° 53.3	21° 53.0	21° 52.6	-0.3
Пт 13	178° 33.6	193° 33.5	208° 33.5	223° 33.4	238° 33.3	253° 33.2	88° 32.3	103° 32.2	118° 32.1	133° 32.1	148° 32.0	163° 31.9	-0.1
	21° 52.3	21° 51.9	21° 51.6	21° 51.2	21° 50.8	21° 50.5	21° 45.7	21° 45.4	21° 45.0	21° 44.6	21° 44.3	21° 43.9	-0.4
Сб 14	178° 31.9	193° 31.8	208° 31.7	223° 31.6	238° 31.6	253° 31.5	88° 30.6	103° 30.6	118° 30.5	133° 30.4	148° 30.4	163° 30.3	-0.1
	21° 43.5	21° 43.1	21° 42.8	21° 42.4	21° 42.0	21° 41.6	21° 36.7	21° 36.3	21° 35.9	21° 35.5	21° 35.2	21° 34.8	-0.4
Вс 15	178° 30.2	193° 30.2	208° 30.1	223° 30.0	238° 30.0	253° 29.9	88° 29.1	103° 29.0	118° 29.0	133° 28.9	148° 28.9	163° 28.8	-0.1
	21° 34.4	21° 34.0	21° 33.6	21° 33.2	21° 32.8	21° 32.4	21° 27.3	21° 26.9	21° 26.5	21° 26.1	21° 25.7	21° 25.3	-0.4
Пн 16	178° 28.7	193° 28.7	208° 28.6	223° 28.6	238° 28.5	253° 28.4	88° 27.7	103° 27.6	118° 27.6	133° 27.5	148° 27.5	163° 27.4	-0.1
	21° 24.9	21° 24.5	21° 24.1	21° 23.7	21° 23.3	21° 22.8	21° 17.5	21° 17.1	21° 16.7	21° 16.3	21° 15.8	21° 15.4	-0.4
Вт 17	178° 27.4	193° 27.3	208° 27.3	223° 27.2	238° 27.2	253° 27.1	88° 26.4	103° 26.4	118° 26.3	133° 26.3	148° 26.2	163° 26.2	-0.1
	21° 15.0	21° 14.6	21° 14.2	21° 13.8	21° 13.3	21° 12.9	21° 07.4	21° 06.9	21° 06.5	21° 06.1	21° 05.7	21° 05.2	-0.4
Ср 18	178° 26.1	193° 26.1	208° 26.0	223° 26.0	238° 25.9	253° 25.9	88° 25.3	103° 25.3	118° 25.2	133° 25.2	148° 25.1	163° 25.1	-0.0
	21° 04.8	21° 04.4	21° 03.9	21° 03.5	21° 03.0	21° 02.6	20° 56.9	20° 56.4	20° 56.0	20° 55.5	20° 55.1	20° 54.7	-0.4
Чт 19	178° 25.0	193° 25.0	208° 24.9	223° 24.9	238° 24.9	253° 24.8	88° 24.3	103° 24.3	118° 24.2	133° 24.2	148° 24.1	163° 24.1	-0.0
	20° 54.2	20° 53.8	20° 53.3	20° 52.9	20° 52.4	20° 52.0	20° 46.0	20° 45.6	20° 45.1	20° 44.7	20° 44.2	20° 43.7	-0.4
Пт 20	178° 24.1	193° 24.0	208° 24.0	223° 24.0	238° 23.9	253° 23.9	88° 23.4	103° 23.4	118° 23.4	133° 23.3	148° 23.3	163° 23.3	-0.0
	20° 43.3	20° 42.8	20° 42.3	20° 41.9	20° 41.4	20° 40.9	20° 34.8	20° 34.4	20° 33.9	20° 33.4	20° 32.9	20° 32.5	-0.5
Сб 21	178° 23.3	193° 23.2	208° 23.2	223° 23.2	238° 23.1	253° 23.1	88° 22.7	103° 22.7	118° 22.7	133° 22.6	148° 22.6	163° 22.6	-0.0
	20° 32.0	20° 31.5	20° 31.0	20° 30.6	20° 30.1	20° 29.6	20° 23.3	20° 22.8	20° 22.3	20° 21.8	20° 21.3	20° 20.9	-0.5
Вс 22	178° 22.6	193° 22.5	208° 22.5	223° 22.5	238° 22.5	253° 22.4	88° 22.2	103° 22.1	118° 22.1	133° 22.1	148° 22.1	163° 22.1	-0.0
	20° 20.4	20° 19.9	20° 19.4	20° 18.9	20° 18.4	20° 17.9	20° 11.4	20° 10.9	20° 10.4	20° 09.9	20° 09.4	20° 08.9	-0.5
Пн 23	178° 22.0	193° 22.0	208° 22.0	223° 22.0	238° 22.0	253° 21.9	88° 21.7	103° 21.7	118° 21.7	133° 21.7	148° 21.7	163° 21.7	-0.0
	20° 08.4	20° 07.9	20° 07.4	20° 06.9	20° 06.4	20° 05.9	19° 59.2	19° 58.7	19° 58.2	19° 57.6	19° 57.1	19° 56.6	-0.5
Вт 24	178° 21.6	193° 21.6	208° 21.6	223° 21.6	238° 21.6	253° 21.6	88° 21.4	103° 21.4	118° 21.4	133° 21.4	148° 21.4	163° 21.4	-0.0
	19° 56.1	19° 55.6	19° 55.0	19° 54.5	19° 54.0	19° 53.5	19° 46.6	19° 46.1	19° 45.6	19° 45.1	19° 44.5	19° 44.0	-0.5
Ср 25	178° 21.4	193° 21.4	208° 21.4	223° 21.4	238° 21.4	253° 21.4	88° 21.3	103° 21.3	118° 21.3	133° 21.3	148° 21.3	163° 21.3	-0.0
	19° 43.5	19° 42.9	19° 42.4	19° 41.9	19° 41.3	19° 40.8	19° 33.8	19° 33.2	19° 32.7	19° 32.1	19° 31.6	19° 31.0	-0.5
Чт 26	178° 21.3	193° 21.3	208° 21.3	223° 21.3	238° 21.3	253° 21.3	88° 21.3	103° 21.3	118° 21.3	133° 21.3	148° 21.3	163° 21.3	-0.0
	19° 30.5	19° 29.9	19° 29.4	19° 28.8	19° 28.3	19° 27.7	19° 20.6	19° 20.0	19° 19.4	19° 18.9	19° 18.3	19° 17.8	-0.5
Пт 27	178° 21.3	193° 21.3	208° 21.3	223° 21.3	238° 21.3	253° 21.3	88° 21.4	103° 21.4	118° 21.5	133° 21.5	148° 21.5	163° 21.5	+0.0
	19° 17.2	19° 16.6	19° 16.1	19° 15.5	19° 15.0	19° 14.4	19° 07.0	19° 06.5	19° 05.9	19° 05.3	19° 04.7	19° 04.2	-0.6
Сб 28	178° 21.5	193° 21.5	208° 21.5	223° 21.5	238° 21.5	253° 21.6	88° 21.7	103° 21.7	118° 21.8	133° 21.8	148° 21.8	163° 21.8	+0.0
	19° 03.6	19° 03.0	19° 02.4	19° 01.9	19° 01.3	19° 00.7	18° 53.2	18° 52.6	18° 52.0	18° 51.4	18° 50.8	18° 50.3	-0.6
Вс 29	178° 21.8	193° 21.8	208° 21.9	223° 21.9	238° 21.9	253° 21.9	88° 22.2	103° 22.2	118° 22.2	133° 22.2	148° 22.3	163° 22.3	+0.0
	18° 49.7	18° 49.1	18° 48.5	18° 47.9	18° 47.3	18° 46.7	18° 39.0	18° 38.4	18° 37.8	18° 37.2	18° 36.6	18° 36.0	-0.6
Пн 30	178° 22.3	193° 22.3	208° 22.3	223° 22.4	238° 22.4	253° 22.4	88° 22.7	103° 22.8	118° 22.8	133° 22.8	148° 22.9	163° 22.9	+0.0
	18° 35.4	18° 34.8	18° 34.2	18° 33.6	18° 33.0	18° 32.4	18° 24.6	18° 24.0	18° 23.3	18° 22.7	18° 22.1	18° 21.5	-0.6
Вт 31	178° 22.9	193° 22.9	208° 23.0	223° 23.0	238° 23.0	253° 23.1	88° 23.5	103° 23.5	118° 23.5	133° 23.6	148° 23.6	163° 23.6	+0.0
	18° 20.9	18° 20.3	18° 19.7	18° 19.1	18° 18.4	18° 17.8	18° 09.8	18° 09.2	18° 08.6	18° 07.9	18° 07.3	18° 06.7	-0.6

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.7'

ЛУНА

Июль 2035

Д	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	Δ'/h	R/p
Вс 1	70° 23.9	84° 50.8	99° 17.6	113° 44.3	128° 10.9	142° 37.4	157° 03.9	171° 30.2	185° 56.5	200° 22.7	214° 48.8	+26.5	16.3
	11° 50.2	11° 59.3	12° 08.4	12° 17.4	12° 26.3	12° 35.2	12° 44.0	12° 52.7	13° 01.4	13° 10.0	13° 18.5	+8.8	59.8
Пн 2	71° 10.7	85° 35.5	100° 00.3	114° 24.9	128° 49.5	143° 14.0	157° 38.4	172° 02.8	186° 27.1	200° 51.3	215° 15.4	+24.5	16.5
	15° 16.1	15° 23.2	15° 30.2	15° 37.2	15° 44.0	15° 50.7	15° 57.3	16° 03.8	16° 10.2	16° 16.5	16° 22.7	+6.7	60.6
Вт 3	71° 09.4	85° 32.5	99° 55.6	114° 18.6	128° 41.5	143° 04.4	157° 27.3	171° 50.1	186° 12.9	200° 35.6	214° 58.3	+22.9	16.6
	17° 41.4	17° 45.7	17° 49.8	17° 53.8	17° 57.7	18° 01.5	18° 05.1	18° 08.6	18° 11.9	18° 15.2	18° 18.2	+3.7	61.1
Ср 4	70° 34.9	84° 57.2	99° 19.5	113° 41.7	128° 04.0	142° 26.2	156° 48.4	171° 10.7	185° 32.9	199° 55.2	214° 17.4	+22.2	16.7
	18° 47.9	18° 48.7	18° 49.4	18° 50.0	18° 50.4	18° 50.7	18° 50.8	18° 50.8	18° 50.6	18° 50.3	18° 49.9	+0.2	61.2
● Чт 5	69° 53.2	84° 15.8	98° 38.4	113° 01.1	127° 23.8	141° 46.5	156° 09.3	170° 32.2	184° 55.1	199° 18.0	213° 41.0	+22.8	16.6
	18° 26.2	18° 23.5	18° 20.7	18° 17.7	18° 14.6	18° 11.3	18° 08.0	18° 04.5	18° 00.8	17° 57.0	17° 53.1	-3.3	61.1
Пт 6	69° 32.9	83° 56.9	98° 20.9	112° 45.0	127° 09.2	141° 33.5	155° 57.9	170° 22.3	184° 46.8	199° 11.4	213° 36.0	+24.3	16.5
	16° 39.6	16° 33.7	16° 27.8	16° 21.7	16° 15.5	16° 09.2	16° 02.8	15° 56.3	15° 49.7	15° 43.0	15° 36.2	-6.3	60.5
Сб 7	69° 55.7	84° 21.7	98° 47.8	113° 13.9	127° 40.2	142° 06.5	156° 32.9	170° 59.4	185° 26.0	199° 52.7	214° 19.4	+26.4	16.3
	13° 42.6	13° 34.4	13° 26.0	13° 17.6	13° 09.1	13° 00.6	12° 51.9	12° 43.2	12° 34.5	12° 25.6	12° 16.7	-8.6	59.8
Вс 8	71° 11.0	85° 39.1	100° 07.3	114° 35.6	129° 03.9	143° 32.3	158° 00.8	172° 29.4	186° 58.1	201° 26.8	215° 55.6	+28.5	16.0
	9° 56.1	9° 46.3	9° 36.4	9° 26.6	9° 16.7	9° 06.7	8° 56.7	8° 46.7	8° 36.6	8° 26.5	8° 16.4	-10.0	58.8
Пн 9	73° 16.7	87° 46.6	102° 16.7	116° 46.8	131° 16.9	145° 47.1	160° 17.4	174° 47.8	189° 18.2	203° 48.6	218° 19.2	+30.3	15.8
	5° 41.2	5° 30.7	5° 20.2	5° 09.7	4° 59.1	4° 48.5	4° 38.0	4° 27.4	4° 16.8	4° 06.2	3° 55.6	-10.6	57.8
Вт 10	76° 03.7	90° 35.0	105° 06.4	119° 37.9	134° 09.4	148° 41.0	163° 12.6	177° 44.2	192° 15.9	206° 47.6	221° 19.3	+31.6	15.5
	1° 16.6	1° 06.0	0° 55.5	0° 44.9	0° 34.4	0° 23.8	0° 13.3	0° 02.8	-0° 07.7	-0° 18.1	-0° 28.6	-10.5	56.9
Ср 11	79° 19.8	93° 52.1	108° 24.4	122° 56.7	137° 29.0	152° 01.4	166° 33.8	181° 06.2	195° 38.6	210° 11.1	224° 43.6	+32.4	15.3
	-3° 03.2	-3° 13.3	-3° 23.4	-3° 33.5	-3° 43.5	-3° 53.5	-4° 03.5	-4° 13.4	-4° 23.4	-4° 33.2	-4° 43.1	-10.0	56.0
◐ Чт 12	93° 52.1	108° 24.4	122° 56.7	137° 29.0	152° 01.4	166° 33.8	181° 06.2	195° 38.6	210° 11.1	224° 43.6	239° 16.1	+32.4	15.3
	-3° 13.3	-3° 23.4	-3° 33.5	-3° 43.5	-3° 53.5	-4° 03.5	-4° 13.4	-4° 23.4	-4° 33.2	-4° 43.1	-4° 52.9	-10.0	56.0
Пт 13	97° 25.3	111° 58.0	126° 30.7	141° 03.5	155° 36.2	170° 08.9	184° 41.6	199° 14.4	213° 47.1	228° 19.9	242° 52.6	+32.7	15.1
	-7° 16.0	-7° 25.3	-7° 34.4	-7° 43.6	-7° 52.7	-8° 01.8	-8° 10.8	-8° 19.7	-8° 28.7	-8° 37.6	-8° 46.4	-9.0	55.3
Сб 14	101° 03.8	115° 36.5	130° 09.2	144° 41.9	159° 14.6	173° 47.3	188° 20.0	202° 52.6	217° 25.3	231° 57.9	246° 30.6	+32.7	14.9
	-10° 53.1	-11° 01.2	-11° 09.2	-11° 17.1	-11° 25.0	-11° 32.8	-11° 40.6	-11° 48.3	-11° 55.9	-12° 03.5	-12° 11.1	-7.8	54.7
Вс 15	104° 38.7	119° 11.2	133° 43.6	148° 16.0	162° 48.4	177° 20.7	191° 53.1	206° 25.4	220° 57.7	235° 30.0	250° 02.3	+32.4	14.8
	-13° 57.0	-14° 03.6	-14° 10.1	-14° 16.5	-14° 22.9	-14° 29.2	-14° 35.5	-14° 41.6	-14° 47.7	-14° 53.8	-14° 59.7	-6.3	54.3
Пн 16	108° 04.4	122° 36.4	137° 08.4	151° 40.3	166° 12.3	180° 44.2	195° 16.1	209° 48.0	224° 19.8	238° 51.7	253° 23.5	+31.9	14.7
	-16° 20.9	-16° 25.7	-16° 30.5	-16° 35.2	-16° 39.8	-16° 44.3	-16° 48.8	-16° 53.2	-16° 57.5	-17° 01.7	-17° 05.9	-4.5	54.1
Вт 17	111° 18.7	125° 50.2	140° 21.7	154° 53.2	169° 24.7	183° 56.2	198° 27.6	212° 59.1	227° 30.5	242° 01.9	256° 33.3	+31.5	14.7
	-17° 58.8	-18° 01.7	-18° 04.5	-18° 07.2	-18° 09.9	-18° 12.4	-18° 14.9	-18° 17.3	-18° 19.6	-18° 21.8	-18° 24.0	-2.5	53.9
Ср 18	114° 22.7	128° 53.9	143° 25.1	157° 56.3	172° 27.5	186° 58.7	201° 29.8	216° 01.0	230° 32.1	245° 03.3	259° 34.4	+31.2	14.7
	-18° 46.0	-18° 46.7	-18° 47.4	-18° 48.0	-18° 48.6	-18° 49.0	-18° 49.3	-18° 49.6	-18° 49.8	-18° 49.9	-18° 49.9	-0.4	54.0
Чт 19	117° 20.8	131° 51.9	146° 23.0	160° 54.1	175° 25.2	189° 56.2	204° 27.3	218° 58.4	233° 29.5	248° 00.6	262° 31.7	+31.1	14.8
	-18° 39.5	-18° 38.1	-18° 36.6	-18° 35.0	-18° 33.4	-18° 31.6	-18° 29.8	-18° 27.9	-18° 25.9	-18° 23.8	-18° 21.6	+1.8	54.1
○ Пт 20	120° 18.7	134° 49.9	149° 21.1	163° 52.3	178° 23.5	192° 54.7	207° 26.0	221° 57.2	236° 28.5	250° 59.7	265° 31.0	+31.2	14.8
	-17° 38.9	-17° 35.3	-17° 31.7	-17° 28.0	-17° 24.3	-17° 20.4	-17° 16.5	-17° 12.4	-17° 08.3	-17° 04.2	-16° 59.9	+3.9	54.3
Сб 21	123° 21.6	137° 53.1	152° 24.6	166° 56.1	181° 27.6	195° 59.1	210° 30.7	225° 02.3	239° 33.8	254° 05.4	268° 37.0	+31.5	14.9
	-15° 46.4	-15° 40.9	-15° 35.3	-15° 29.7	-15° 23.9	-15° 18.1	-15° 12.3	-15° 06.3	-15° 00.3	-14° 54.2	-14° 48.0	+5.8	54.6
Вс 22	126° 32.8	141° 04.6	155° 36.5	170° 08.3	184° 40.2	199° 12.1	213° 44.0	228° 15.9	242° 47.8	257° 19.7	271° 51.7	+31.9	15.0
	-13° 07.1	-12° 59.9	-12° 52.6	-12° 45.2	-12° 37.7	-12° 30.2	-12° 22.7	-12° 15.0	-12° 07.3	-11° 59.6	-11° 51.8	+7.5	55.0
Пн 23	129° 52.1	144° 24.2	158° 56.3	173° 28.4	188° 00.5	202° 32.7	217° 04.8	231° 36.9	246° 09.1	260° 41.2	275° 13.4	+32.1	15.1
	-9° 47.9	-9° 39.3	-9° 30.5	-9° 21.7	-9° 12.9	-9° 04.0	-8° 55.1	-8° 46.2	-8° 37.1	-8° 28.1	-8° 19.0	+8.9	55.5
Вт 24	133° 15.8	147° 47.9	162° 20.0	176° 52.2	191° 24.3	205° 56.4	220° 28.6	235° 00.7	249° 32.8	264° 04.9	278° 37.0	+32.1	15.3
	-5° 57.5	-5° 47.8	-5° 38.0	-5° 28.2	-5° 18.4	-5° 08.5	-4° 58.6	-4° 48.7	-4° 38.7	-4° 28.7	-4° 18.7	+9.9	56.0
Ср 25	136° 36.7	151° 08.6	165° 40.4	180° 12.2	194° 44.0	209° 15.8	223° 47.5	238° 19.2	252° 50.9	267° 22.6	281° 54.2	+31.8	15.4
	-1° 45.6	-1° 35.3	-1° 24.9	-1° 14.5	-1° 04.1	-0° 53.6	-0° 43.2	-0° 32.7	-0° 22.3	-0° 11.8	-0° 01.3	+10.4	56.6
Чт 26	139° 45.3	154° 16.4	168° 47.5	183° 18.6	197° 49.6	212° 20.5	226° 51.5	241° 22.4	255° 53.2	270° 24.0	284° 54.8	+30.9	15.6
	2° 36.6	2° 47.1	2° 57.7	3° 08.2	3° 18.7	3° 29.2	3° 39.7	3° 50.2	4° 00.7	4° 11.2	4° 21.6	+10.5	57.3
Пт 27	142° 30.2	157° 00.2	171° 30.1	185° 59.9	200° 29.7	214° 59.4	229° 29.0	243° 58.6	258° 28.1	272° 57.6	287° 27.0	+29.7	15.8
	6° 56.6	7° 06.7	7° 16.9	7° 27.0	7° 37.0	7° 47.1	7° 57.1	8° 07.1	8° 17.0	8° 26.9	8° 36.8	+10.0	58.0
◑ Сб 28	144° 40.3	159° 08.6	173° 36.9	188° 05.1	202° 33.2	217° 01.3	231° 29.3	245° 57.2	260° 25.0	274° 52.8	289° 20.4	+28.0	16.0
	10° 59.7	11° 08.9	11° 18.0	11° 27.0	11° 36.0	11° 44.9	11° 53.7	12° 02.5	12° 11.3	12° 19.9	12° 28.6	+8.9	58.8
Вс 29	146° 06.7	160° 33.2	174° 59.6	189° 26.0	203° 52.2	218° 18.4	232° 44.5	247° 10.5	261° 36.5	276° 02.4	290° 28.2	+26.1	16.2
	14° 29.1	14° 36.5	14° 43.9	14° 51.1	14° 58.2	15° 05.3	15° 12.3	15° 19.2	15° 26.0	15° 32.7	15° 39.3	+7.0	59.5
Пн 30	146° 46.8	161° 11.5	175° 36.2	190° 00.7	204° 25.2	218° 49.7	233° 14.1	247° 38.4	262° 02.7	276° 26.9	290° 51.0	+24.4	16.4
	17° 06.3	17° 11.2	17° 16.0	17° 20.8	17° 25.4	17° 29.8	17° 34.2	17° 38.5	17° 42.6	17° 46.6	17° 50.5	+4.4	60.1
Вт 31	146° 47.4	161° 10.8	175° 34.2	189° 57.5	204° 20.9	218° 44.1	233° 07.4	247° 30.6	261° 53.8	276° 17.0	290° 40.2	+23.3	16.5
	18° 33.7	18° 35.6	18° 37.3	18° 38.9	18° 40.3	18° 41.7	18° 42.8	18° 43.9	18° 44.8	18° 45.6	18° 46.2	+1.2	60.5

Строка 1: $t_{тр}$, Δ'/h = изменение $t_{тр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 5 09h59 — Первая четв.: 12 07h32 — Полнолуние: 20 10h36 — Последняя четв.: 28 02h55

СОЛНЦЕ

Август 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Ср 1	178° 23.7 18° 06.1	193° 23.7 18° 05.4	208° 23.8 18° 04.8	223° 23.8 18° 04.2	238° 23.8 18° 03.6	253° 23.9 18° 02.9	88° 24.4 17° 54.7	103° 24.4 17° 54.1	118° 24.4 17° 53.5	133° 24.5 17° 52.8	148° 24.5 17° 52.2	163° 24.6 17° 51.6	+0.0 -0.6
Чт 2	178° 24.6 17° 50.9	193° 24.6 17° 50.3	208° 24.7 17° 49.6	223° 24.7 17° 49.0	238° 24.8 17° 48.4	253° 24.8 17° 47.7	88° 25.4 17° 39.4	103° 25.4 17° 38.7	118° 25.5 17° 38.1	133° 25.5 17° 37.4	148° 25.6 17° 36.8	163° 25.6 17° 36.1	+0.0 -0.6
Пт 3	178° 25.7 17° 35.5	193° 25.7 17° 34.8	208° 25.8 17° 34.2	223° 25.8 17° 33.5	238° 25.9 17° 32.9	253° 25.9 17° 32.2	88° 26.6 17° 23.7	103° 26.6 17° 23.1	118° 26.7 17° 22.4	133° 26.7 17° 21.8	148° 26.8 17° 21.1	163° 26.8 17° 20.4	+0.0 -0.6
Сб 4	178° 26.9 17° 19.8	193° 26.9 17° 19.1	208° 27.0 17° 18.5	223° 27.0 17° 17.8	238° 27.1 17° 17.1	253° 27.2 17° 16.5	88° 27.9 17° 07.8	103° 28.0 17° 07.1	118° 28.0 17° 06.5	133° 28.1 17° 05.8	148° 28.1 17° 05.1	163° 28.2 17° 04.5	+0.1 -0.7
Вс 5	178° 28.2 17° 03.8	193° 28.3 17° 03.1	208° 28.4 17° 02.4	223° 28.4 17° 01.8	238° 28.5 17° 01.1	253° 28.6 17° 00.4	88° 29.4 16° 51.6	103° 29.4 16° 50.9	118° 29.5 16° 50.3	133° 29.6 16° 49.6	148° 29.6 16° 48.9	163° 29.7 16° 48.2	+0.1 -0.7
Пн 6	178° 29.8 16° 47.5	193° 29.8 16° 46.8	208° 29.9 16° 46.2	223° 30.0 16° 45.5	238° 30.0 16° 44.8	253° 30.1 16° 44.1	88° 31.0 16° 35.1	103° 31.1 16° 34.5	118° 31.2 16° 33.8	133° 31.2 16° 33.1	148° 31.3 16° 32.4	163° 31.4 16° 31.7	+0.1 -0.7
Вт 7	178° 31.4 16° 31.0	193° 31.5 16° 30.3	208° 31.6 16° 29.6	223° 31.7 16° 28.9	238° 31.7 16° 28.2	253° 31.8 16° 27.5	88° 32.8 16° 18.4	103° 32.9 16° 17.7	118° 33.0 16° 17.0	133° 33.0 16° 16.3	148° 33.1 16° 15.6	163° 33.2 16° 14.9	+0.1 -0.7
Ср 8	178° 33.3 16° 14.2	193° 33.3 16° 13.5	208° 33.4 16° 12.8	223° 33.5 16° 12.1	238° 33.6 16° 11.4	253° 33.7 16° 10.6	88° 34.7 16° 01.4	103° 34.8 16° 00.7	118° 34.9 16° 00.0	133° 35.0 15° 59.3	148° 35.1 15° 58.6	163° 35.2 15° 57.8	+0.1 -0.7
Чт 9	178° 35.2 15° 57.1	193° 35.3 15° 56.4	208° 35.4 15° 55.7	223° 35.5 15° 55.0	238° 35.6 15° 54.3	253° 35.7 15° 53.5	88° 36.8 15° 44.2	103° 36.9 15° 43.4	118° 37.0 15° 42.7	133° 37.1 15° 42.0	148° 37.2 15° 41.3	163° 37.3 15° 40.5	+0.1 -0.7
Пт 10	178° 37.4 15° 39.8	193° 37.5 15° 39.1	208° 37.6 15° 38.3	223° 37.6 15° 37.6	238° 37.7 15° 36.9	253° 37.8 15° 36.2	88° 39.1 15° 26.6	103° 39.2 15° 25.9	118° 39.3 15° 25.2	133° 39.4 15° 24.4	148° 39.4 15° 23.7	163° 39.5 15° 23.0	+0.1 -0.7
Сб 11	178° 39.6 15° 22.2	193° 39.7 15° 21.5	208° 39.8 15° 20.8	223° 39.9 15° 20.0	238° 40.0 15° 19.3	253° 40.1 15° 18.5	88° 41.4 15° 08.9	103° 41.5 15° 08.2	118° 41.7 15° 07.4	133° 41.8 15° 06.7	148° 41.9 15° 05.9	163° 42.0 15° 05.2	+0.1 -0.7
Вс 12	178° 42.1 15° 04.4	193° 42.2 15° 03.7	208° 42.3 15° 02.9	223° 42.4 15° 02.2	238° 42.5 15° 01.4	253° 42.6 15° 00.7	88° 44.0 14° 50.9	103° 44.1 14° 50.1	118° 44.2 14° 49.4	133° 44.3 14° 48.6	148° 44.4 14° 47.9	163° 44.5 14° 47.1	+0.1 -0.7
Пн 13	178° 44.6 14° 46.4	193° 44.7 14° 45.6	208° 44.9 14° 44.9	223° 45.0 14° 44.1	238° 45.1 14° 43.3	253° 45.2 14° 42.6	88° 46.6 14° 32.7	103° 46.8 14° 31.9	118° 46.9 14° 31.1	133° 47.0 14° 30.4	148° 47.1 14° 29.6	163° 47.2 14° 28.8	+0.1 -0.8
Вт 14	178° 47.3 14° 28.1	193° 47.5 14° 27.3	208° 47.6 14° 26.5	223° 47.7 14° 25.8	238° 47.8 14° 25.0	253° 47.9 14° 24.2	88° 49.5 14° 14.2	103° 49.6 14° 13.4	118° 49.7 14° 12.7	133° 49.8 14° 11.9	148° 49.9 14° 11.1	163° 50.1 14° 10.3	+0.1 -0.8
Ср 15	178° 50.2 14° 09.6	193° 50.3 14° 08.8	208° 50.4 14° 08.0	223° 50.6 14° 07.2	238° 50.7 14° 06.5	253° 50.8 14° 05.7	88° 52.4 13° 55.5	103° 52.5 13° 54.7	118° 52.7 13° 54.0	133° 52.8 13° 53.2	148° 52.9 13° 52.4	163° 53.0 13° 51.6	+0.1 -0.8
Чт 16	178° 53.2 13° 50.8	193° 53.3 13° 50.0	208° 53.4 13° 49.3	223° 53.6 13° 48.5	238° 53.7 13° 47.7	253° 53.8 13° 46.9	88° 55.5 13° 36.6	103° 55.6 13° 35.8	118° 55.8 13° 35.0	133° 55.9 13° 34.2	148° 56.0 13° 33.5	163° 56.2 13° 32.7	+0.1 -0.8
Пт 17	178° 56.3 13° 31.9	193° 56.4 13° 31.1	208° 56.6 13° 30.3	223° 56.7 13° 29.5	238° 56.8 13° 28.7	253° 57.0 13° 27.9	88° 58.7 13° 17.5	103° 58.9 13° 16.7	118° 59.0 13° 15.9	133° 59.1 13° 15.1	148° 59.3 13° 14.3	163° 59.4 13° 13.5	+0.1 -0.8
Сб 18	178° 59.5 13° 12.7	193° 59.7 13° 11.9	208° 59.8 13° 11.1	224° 00.0 13° 10.3	239° 00.1 13° 09.5	254° 00.2 13° 08.7	89° 02.1 12° 58.2	104° 02.2 12° 57.4	119° 02.3 12° 56.6	134° 02.5 12° 55.7	149° 02.6 12° 54.9	164° 02.8 12° 54.1	+0.1 -0.8
Вс 19	179° 02.9 12° 53.3	194° 03.1 12° 52.5	209° 03.2 12° 51.7	224° 03.4 12° 50.9	239° 03.5 12° 50.1	254° 03.6 12° 49.3	89° 05.5 12° 38.6	104° 05.7 12° 37.8	119° 05.8 12° 37.0	134° 06.0 12° 36.2	149° 06.1 12° 35.4	164° 06.3 12° 34.5	+0.1 -0.8
Пн 20	179° 06.4 12° 33.7	194° 06.6 12° 32.9	209° 06.7 12° 32.1	224° 06.9 12° 31.3	239° 07.0 12° 30.4	254° 07.2 12° 29.6	89° 09.1 12° 18.9	104° 09.3 12° 18.1	119° 09.4 12° 17.3	134° 09.6 12° 16.4	149° 09.7 12° 15.6	164° 09.9 12° 14.8	+0.1 -0.8
Вт 21	179° 10.0 12° 13.9	194° 10.2 12° 13.1	209° 10.3 12° 12.3	224° 10.5 12° 11.5	239° 10.7 12° 10.6	254° 10.8 12° 09.8	89° 12.8 11° 59.0	104° 13.0 11° 58.1	119° 13.1 11° 57.3	134° 13.3 11° 56.5	149° 13.5 11° 55.6	164° 13.6 11° 54.8	+0.2 -0.8
Ср 22	179° 13.8 11° 54.0	194° 13.9 11° 53.1	209° 14.1 11° 52.3	224° 14.3 11° 51.5	239° 14.4 11° 50.6	254° 14.6 11° 49.8	89° 16.6 11° 38.9	104° 16.8 11° 38.0	119° 17.0 11° 37.2	134° 17.1 11° 36.3	149° 17.3 11° 35.5	164° 17.5 11° 34.6	+0.2 -0.8
Чт 23	179° 17.6 11° 33.8	194° 17.8 11° 33.0	209° 17.9 11° 32.1	224° 18.1 11° 31.3	239° 18.3 11° 30.4	254° 18.4 11° 29.6	89° 20.6 11° 18.6	104° 20.7 11° 17.7	119° 20.9 11° 16.9	134° 21.1 11° 16.0	149° 21.2 11° 15.2	164° 21.4 11° 14.3	+0.2 -0.8
Пт 24	179° 21.6 11° 13.5	194° 21.7 11° 12.6	209° 21.9 11° 11.8	224° 22.1 11° 10.9	239° 22.2 11° 10.0	254° 22.4 11° 09.2	89° 24.6 10° 58.1	104° 24.8 10° 57.2	119° 24.9 10° 56.4	134° 25.1 10° 55.5	149° 25.3 10° 54.6	164° 25.5 10° 53.8	+0.2 -0.9
Сб 25	179° 25.6 10° 52.9	194° 25.8 10° 52.1	209° 26.0 10° 51.2	224° 26.1 10° 50.3	239° 26.3 10° 49.5	254° 26.5 10° 48.6	89° 28.7 10° 37.4	104° 28.9 10° 36.6	119° 29.1 10° 35.7	134° 29.3 10° 34.8	149° 29.4 10° 34.0	164° 29.6 10° 33.1	+0.2 -0.9
Вс 26	179° 29.8 10° 32.2	194° 30.0 10° 31.4	209° 30.1 10° 30.5	224° 30.3 10° 29.6	239° 30.5 10° 28.8	254° 30.7 10° 27.9	89° 33.0 10° 16.6	104° 33.1 10° 15.7	119° 33.3 10° 14.8	134° 33.5 10° 14.0	149° 33.7 10° 13.1	164° 33.9 10° 12.2	+0.2 -0.9
Пн 27	179° 34.0 10° 11.4	194° 34.2 10° 10.5	209° 34.4 10° 09.6	224° 34.6 10° 08.7	239° 34.8 10° 07.9	254° 34.9 10° 07.0	89° 37.3 9° 55.6	104° 37.5 9° 54.7	119° 37.6 9° 53.8	134° 37.8 9° 53.0	149° 38.0 9° 52.1	164° 38.2 9° 51.2	+0.2 -0.9
Вт 28	179° 38.4 9° 50.3	194° 38.6 9° 49.4	209° 38.7 9° 48.6	224° 38.9 9° 47.7	239° 39.1 9° 46.8	254° 39.3 9° 45.9	89° 41.7 9° 34.4	104° 41.9 9° 33.6	119° 42.1 9° 32.7	134° 42.2 9° 31.8	149° 42.4 9° 30.9	164° 42.6 9° 30.0	+0.2 -0.9
Ср 29	179° 42.8 9° 29.1	194° 43.0 9° 28.2	209° 43.2 9° 27.4	224° 43.4 9° 26.5	239° 43.6 9° 25.6	254° 43.7 9° 24.7	89° 46.2 9° 13.1	104° 46.4 9° 12.3	119° 46.6 9° 11.4	134° 46.7 9° 10.5	149° 46.9 9° 09.6	164° 47.1 9° 08.7	+0.2 -0.9
Чт 30	179° 47.3 9° 07.8	194° 47.5 9° 06.9	209° 47.7 9° 06.0	224° 47.9 9° 05.1	239° 48.1 9° 04.2	254° 48.3 9° 03.3	89° 50.8 8° 51.7	104° 50.9 8° 50.8	119° 51.1 8° 49.9	134° 51.3 8° 49.0	149° 51.5 8° 48.1	164° 51.7 8° 47.2	+0.2 -0.9
Пт 31	179° 51.9 8° 46.3	194° 52.1 8° 45.4	209° 52.3 8° 44.5	224° 52.5 8° 43.6	239° 52.7 8° 42.7	254° 52.9 8° 41.8	89° 55.4 8° 30.1	104° 55.6 8° 29.2	119° 55.8 8° 28.3	134° 56.0 8° 27.4	149° 56.2 8° 26.5	164° 56.4 8° 25.6	+0.2 -0.9

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.8'

ЛУНА

Август 2035

Д	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	Δ'/h	R/p
Ср 1	74° 30.9	88° 54.0	103° 17.0	117° 40.0	132° 03.0	146° 26.0	160° 49.1	175° 12.1	189° 35.2	203° 58.2	218° 21.3	+23.0	16.6
	18° 45.0	18° 44.1	18° 43.1	18° 41.9	18° 40.7	18° 39.2	18° 37.7	18° 36.0	18° 34.1	18° 32.2	18° 30.0	-1.5	60.7
Чт 2	74° 09.7	88° 33.1	102° 56.6	117° 20.2	131° 43.7	146° 07.4	160° 31.0	174° 54.7	189° 18.5	203° 42.3	218° 06.1	+23.6	16.5
	17° 42.3	17° 38.1	17° 33.8	17° 29.3	17° 24.7	17° 20.0	17° 15.1	17° 10.1	17° 05.0	16° 59.8	16° 54.5	-4.8	60.7
● Пт 3	74° 10.4	88° 35.2	103° 00.0	117° 24.9	131° 49.9	146° 14.9	160° 40.0	175° 05.2	189° 30.4	203° 55.7	218° 21.1	+25.1	16.4
	15° 20.8	15° 13.7	15° 06.5	14° 59.2	14° 51.9	14° 44.4	14° 36.8	14° 29.1	14° 21.3	14° 13.5	14° 05.5	-7.5	60.3
Сб 4	74° 50.4	89° 17.0	103° 43.6	118° 10.3	132° 37.1	147° 03.9	161° 30.8	175° 57.8	190° 24.9	204° 52.0	219° 19.3	+26.9	16.3
	11° 56.4	11° 47.2	11° 37.9	11° 28.6	11° 19.2	11° 09.8	11° 00.3	10° 50.7	10° 41.1	10° 31.4	10° 21.6	-9.5	59.7
Вс 5	76° 16.4	90° 44.8	105° 13.2	119° 41.8	134° 10.4	148° 39.0	163° 07.7	177° 36.5	192° 05.4	206° 34.3	221° 03.3	+28.7	16.1
	7° 50.0	7° 39.5	7° 29.1	7° 18.6	7° 08.1	6° 57.5	6° 47.0	6° 36.4	6° 25.8	6° 15.1	6° 04.5	-10.6	58.9
Пн 6	78° 25.8	92° 55.8	107° 25.8	121° 55.9	136° 26.0	150° 56.2	165° 26.4	179° 56.7	194° 27.1	208° 57.5	223° 27.9	+30.2	15.8
	3° 22.8	3° 11.9	3° 01.1	2° 50.2	2° 39.4	2° 28.5	2° 17.7	2° 06.8	1° 56.0	1° 45.2	1° 34.3	-10.8	57.9
Вт 7	81° 10.3	95° 41.4	110° 12.6	124° 43.9	139° 15.1	153° 46.4	168° 17.8	182° 49.2	197° 20.6	211° 52.0	226° 23.5	+31.3	15.5
	-1° 06.8	-1° 17.4	-1° 28.0	-1° 38.5	-1° 49.1	-1° 59.6	-2° 10.1	-2° 20.6	-2° 31.0	-2° 41.4	-2° 51.8	-10.5	57.0
Ср 8	84° 19.2	98° 51.1	113° 23.0	127° 55.0	142° 26.9	156° 58.9	171° 30.9	186° 02.9	200° 35.0	215° 07.0	229° 39.1	+32.0	15.3
	-5° 24.0	-5° 33.8	-5° 43.7	-5° 53.4	-6° 03.2	-6° 12.9	-6° 22.6	-6° 32.2	-6° 41.8	-6° 51.3	-7° 00.8	-9.7	56.1
Чт 9	87° 41.8	102° 14.0	116° 46.3	131° 18.5	145° 50.8	160° 23.1	174° 55.3	189° 27.6	203° 59.9	218° 32.2	233° 04.5	+32.3	15.1
	-9° 17.7	-9° 26.4	-9° 35.1	-9° 43.7	-9° 52.3	-10° 00.8	-10° 09.3	-10° 17.7	-10° 26.1	-10° 34.4	-10° 42.6	-8.5	55.4
◐ Пт 10	102° 14.0	116° 46.3	131° 18.5	145° 50.8	160° 23.1	174° 55.3	189° 27.6	203° 59.9	218° 32.2	233° 04.5	247° 36.7	+32.3	15.1
	-9° 26.4	-9° 35.1	-9° 43.7	-9° 52.3	-10° 00.8	-10° 09.3	-10° 17.7	-10° 26.1	-10° 34.4	-10° 42.6	-10° 50.8	-8.4	55.4
Сб 11	105° 40.9	120° 13.1	134° 45.4	149° 17.6	163° 49.8	178° 22.1	192° 54.3	207° 26.5	221° 58.7	236° 30.9	251° 03.1	+32.2	14.9
	-12° 46.6	-12° 53.9	-13° 01.0	-13° 08.1	-13° 15.2	-13° 22.2	-13° 29.1	-13° 35.9	-13° 42.7	-13° 49.4	-13° 56.1	-6.9	54.8
Вс 12	109° 04.6	123° 36.6	138° 08.6	152° 40.6	167° 12.6	181° 44.5	196° 16.5	210° 48.4	225° 20.3	239° 52.2	254° 24.1	+32.0	14.8
	-15° 27.6	-15° 33.1	-15° 38.6	-15° 44.0	-15° 49.3	-15° 54.6	-15° 59.7	-16° 04.8	-16° 09.9	-16° 14.8	-16° 19.7	-5.2	54.4
Пн 13	112° 20.8	126° 52.4	141° 24.1	155° 55.7	170° 27.3	184° 58.9	199° 30.5	214° 02.1	228° 33.7	243° 05.2	257° 36.7	+31.6	14.8
	-17° 23.7	-17° 27.3	-17° 30.9	-17° 34.3	-17° 37.7	-17° 41.1	-17° 44.3	-17° 47.5	-17° 50.5	-17° 53.5	-17° 56.4	-3.3	54.1
Вт 14	115° 28.1	129° 59.5	144° 30.8	159° 02.1	173° 33.4	188° 04.7	202° 35.9	217° 07.2	231° 38.5	246° 09.7	260° 40.9	+31.3	14.7
	-18° 30.2	-18° 31.8	-18° 33.3	-18° 34.7	-18° 36.0	-18° 37.3	-18° 38.4	-18° 39.5	-18° 40.5	-18° 41.4	-18° 42.2	-1.2	54.1
Ср 15	118° 28.4	132° 59.5	147° 30.6	162° 01.7	176° 32.8	191° 03.9	205° 34.9	220° 06.0	234° 37.1	249° 08.2	263° 39.3	+31.1	14.8
	-18° 44.0	-18° 43.4	-18° 42.8	-18° 42.0	-18° 41.2	-18° 40.3	-18° 39.3	-18° 38.2	-18° 37.0	-18° 35.7	-18° 34.4	+1.0	54.2
Чт 16	121° 25.2	135° 56.2	150° 27.3	164° 58.4	179° 29.4	194° 00.5	208° 31.6	223° 02.7	237° 33.8	252° 04.9	266° 35.9	+31.1	14.8
	-18° 03.6	-18° 00.9	-17° 58.0	-17° 55.1	-17° 52.1	-17° 49.0	-17° 45.9	-17° 42.6	-17° 39.3	-17° 35.9	-17° 32.4	+3.1	54.4
Пт 17	124° 23.0	138° 54.2	153° 25.4	167° 56.6	182° 27.9	196° 59.1	211° 30.3	226° 01.6	240° 32.8	255° 04.1	269° 35.3	+31.2	14.9
	-16° 29.9	-16° 25.0	-16° 20.1	-16° 15.2	-16° 10.1	-16° 05.0	-15° 59.8	-15° 54.5	-15° 49.1	-15° 43.6	-15° 38.1	+5.2	54.7
Сб 18	127° 25.6	141° 57.0	156° 28.5	170° 59.9	185° 31.4	200° 02.9	214° 34.4	229° 05.8	243° 37.4	258° 08.9	272° 40.4	+31.5	15.0
	-14° 06.3	-13° 59.6	-13° 52.8	-13° 45.9	-13° 39.0	-13° 32.0	-13° 25.0	-13° 17.9	-13° 10.7	-13° 03.4	-12° 56.1	+7.0	55.1
○ Вс 19	130° 34.4	145° 06.1	159° 37.8	174° 09.4	188° 41.1	203° 12.8	217° 44.6	232° 16.3	246° 48.0	261° 19.7	275° 51.5	+31.7	15.2
	-10° 58.8	-10° 50.5	-10° 42.2	-10° 33.8	-10° 25.3	-10° 16.8	-10° 08.2	-9° 59.6	-9° 50.9	-9° 42.2	-9° 33.4	+8.5	55.6
Пн 20	133° 48.0	148° 19.8	162° 51.6	177° 23.4	191° 55.2	206° 26.9	220° 58.7	235° 30.5	250° 02.3	264° 34.1	279° 05.9	+31.8	15.3
	-7° 15.9	-7° 06.4	-6° 56.8	-6° 47.2	-6° 37.6	-6° 27.9	-6° 18.2	-6° 08.5	-5° 58.7	-5° 48.9	-5° 39.0	+9.7	56.1
Вт 21	137° 01.9	151° 33.6	166° 05.3	180° 36.9	195° 08.5	209° 40.2	224° 11.8	238° 43.4	253° 15.0	267° 46.5	282° 18.1	+31.6	15.4
	-3° 07.7	-2° 57.4	-2° 47.1	-2° 36.8	-2° 26.4	-2° 16.0	-2° 05.6	-1° 55.2	-1° 44.8	-1° 34.3	-1° 23.9	+10.4	56.6
Ср 22	140° 09.1	154° 40.3	169° 11.6	183° 42.7	198° 13.9	212° 45.0	227° 16.1	241° 47.2	256° 18.2	270° 49.2	285° 20.2	+31.1	15.6
	1° 14.1	1° 24.6	1° 35.2	1° 45.8	1° 56.4	2° 06.9	2° 17.5	2° 28.0	2° 38.6	2° 49.1	2° 59.7	+10.6	57.1
Чт 23	143° 00.8	157° 31.2	172° 01.5	186° 31.9	201° 02.2	215° 32.4	230° 02.6	244° 32.7	259° 02.9	273° 32.9	288° 02.9	+30.2	15.7
	5° 36.3	5° 46.6	5° 56.8	6° 07.1	6° 17.3	6° 27.5	6° 37.7	6° 47.8	6° 57.9	7° 08.0	7° 18.1	+10.2	57.6
Пт 24	145° 27.5	159° 56.7	174° 25.9	188° 55.0	203° 24.0	217° 53.1	232° 22.0	246° 50.9	261° 19.7	275° 48.5	290° 17.3	+29.0	15.9
	9° 44.5	9° 53.9	10° 03.2	10° 12.6	10° 21.8	10° 31.1	10° 40.2	10° 49.3	10° 58.4	11° 07.4	11° 16.4	+9.2	58.2
Сб 25	147° 21.1	161° 48.9	176° 16.6	190° 44.2	205° 11.8	219° 39.4	234° 06.8	248° 34.3	263° 01.6	277° 28.9	291° 56.1	+27.5	16.0
	13° 23.1	13° 31.0	13° 38.8	13° 46.5	13° 54.2	14° 01.8	14° 09.3	14° 16.7	14° 24.1	14° 31.4	14° 38.6	+7.6	58.7
◑ Вс 26	148° 37.2	163° 03.5	177° 29.7	191° 55.9	206° 21.9	220° 48.0	235° 14.0	249° 39.9	264° 05.8	278° 31.6	292° 57.4	+26.0	16.1
	16° 15.8	16° 21.5	16° 27.2	16° 32.7	16° 38.1	16° 43.4	16° 48.7	16° 53.8	16° 58.8	17° 03.7	17° 08.5	+5.3	59.1
Пн 27	149° 17.8	163° 42.8	178° 07.8	192° 32.7	206° 57.6	221° 22.4	235° 47.2	250° 12.0	264° 36.7	279° 01.4	293° 26.1	+24.8	16.2
	18° 07.1	18° 10.1	18° 12.9	18° 15.7	18° 18.3	18° 20.8	18° 23.2	18° 25.4	18° 27.6	18° 29.6	18° 31.5	+2.4	59.5
Вт 28	149° 32.9	163° 57.2	178° 21.5	192° 45.8	207° 10.1	221° 34.3	235° 58.6	250° 22.8	264° 47.0	279° 11.3	293° 35.5	+24.3	16.3
	18° 44.6	18° 44.5	18° 44.2	18° 43.8	18° 43.3	18° 42.6	18° 41.8	18° 40.9	18° 39.8	18° 38.6	18° 37.3	-0.7	59.8
Ср 29	149° 39.6	164° 03.9	178° 28.3	192° 52.7	207° 17.1	221° 41.6	236° 06.1	250° 30.6	264° 55.1	279° 19.7	293° 44.2	+24.5	16.3
	18° 02.3	17° 59.0	17° 55.5	17° 51.9	17° 48.2	17° 44.3	17° 40.4	17° 36.3	17° 32.1	17° 27.7	17° 23.3	-3.9	59.9
Чт 30	149° 57.1	164° 22.2	178° 47.5	193° 12.7	207° 38.0	222° 03.4	236° 28.8	250° 54.2	265° 19.7	279° 45.3	294° 10.9	+25.4	16.3
	16° 02.7	15° 56.4	15° 50.1	15° 43.6	15° 37.0	15° 30.3	15° 23.6	15° 16.7	15° 09.7	15° 02.6	14° 55.5	-6.7	59.8
Пт 31	150° 41.3	165° 07.8	179° 34.4	194° 00.9	208° 27.6	222° 54.3	237° 21.1	251° 47.9	266° 14.8	280° 41.7	295° 08.7	+26.7	16.2
	12° 56.9	12° 48.3	12° 39.7	12° 30.9	12° 22.1	12° 13.3	12° 04.3	11° 55.3	11° 46.2	11° 37.0	11° 27.8	-8.9	59.5

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 3 17h11 — Первая четв.: 10 21h52 — Полнолуние: 19 01h00 — Последняя четв.: 26 09h08

СОЛНЦЕ

Сентябрь 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Сб 1	179° 56.6 8° 24.7	194° 56.8 8° 23.8	209° 57.0 8° 22.9	224° 57.2 8° 22.0	239° 57.4 8° 21.1	254° 57.6 8° 20.2	90° 00.1 8° 08.4	105° 00.3 8° 07.5	120° 00.5 8° 06.5	135° 00.7 8° 05.6	150° 00.9 8° 04.7	165° 01.1 8° 03.8	+0.2 -0.9
Вс 2	180° 01.3 8° 02.9	195° 01.5 8° 02.0	210° 01.7 8° 01.1	225° 01.9 8° 00.2	240° 02.1 7° 59.3	255° 02.3 7° 58.4	90° 04.9 7° 46.5	105° 05.1 7° 45.6	120° 05.3 7° 44.7	135° 05.5 7° 43.8	150° 05.7 7° 42.8	165° 05.9 7° 41.9	+0.2 -0.9
Пн 3	180° 06.1 7° 41.0	195° 06.4 7° 40.1	210° 06.6 7° 39.2	225° 06.8 7° 38.3	240° 07.0 7° 37.4	255° 07.2 7° 36.4	90° 09.8 7° 24.5	105° 10.0 7° 23.6	120° 10.2 7° 22.7	135° 10.4 7° 21.8	150° 10.6 7° 20.8	165° 10.8 7° 19.9	+0.2 -0.9
Вт 4	180° 11.0 7° 19.0	195° 11.2 7° 18.1	210° 11.4 7° 17.2	225° 11.7 7° 16.2	240° 11.9 7° 15.3	255° 12.1 7° 14.4	90° 14.7 7° 02.4	105° 15.0 7° 01.5	120° 15.2 7° 00.6	135° 15.4 6° 59.6	150° 15.6 6° 58.7	165° 15.8 6° 57.8	+0.2 -0.9
Ср 5	180° 16.0 6° 56.9	195° 16.2 6° 55.9	210° 16.4 6° 55.0	225° 16.6 6° 54.1	240° 16.8 6° 53.2	255° 17.0 6° 52.2	90° 19.7 6° 40.2	105° 20.0 6° 39.3	120° 20.2 6° 38.3	135° 20.4 6° 37.4	150° 20.6 6° 36.5	165° 20.8 6° 35.5	+0.2 -0.9
Чт 6	180° 21.0 6° 34.6	195° 21.2 6° 33.7	210° 21.4 6° 32.8	225° 21.6 6° 31.8	240° 21.8 6° 30.9	255° 22.1 6° 30.0	90° 24.8 6° 17.9	105° 25.0 6° 16.9	120° 25.2 6° 16.0	135° 25.4 6° 15.1	150° 25.7 6° 14.1	165° 25.9 6° 13.2	+0.2 -0.9
Пт 7	180° 26.1 6° 12.3	195° 26.3 6° 11.3	210° 26.5 6° 10.4	225° 26.7 6° 09.5	240° 26.9 6° 08.5	255° 27.1 6° 07.6	90° 29.9 5° 55.4	105° 30.1 5° 54.5	120° 30.3 5° 53.6	135° 30.6 5° 52.6	150° 30.8 5° 51.7	165° 31.0 5° 50.7	+0.2 -0.9
Сб 8	180° 31.2 5° 49.8	195° 31.4 5° 48.9	210° 31.6 5° 47.9	225° 31.8 5° 47.0	240° 32.1 5° 46.1	255° 32.3 5° 45.1	90° 35.1 5° 32.9	105° 35.3 5° 32.0	120° 35.5 5° 31.0	135° 35.7 5° 30.1	150° 35.9 5° 29.1	165° 36.2 5° 28.2	+0.2 -0.9
Вс 9	180° 36.4 5° 27.3	195° 36.6 5° 26.3	210° 36.8 5° 25.4	225° 37.0 5° 24.4	240° 37.2 5° 23.5	255° 37.5 5° 22.5	90° 40.3 5° 10.3	105° 40.5 5° 09.3	120° 40.7 5° 08.4	135° 40.9 5° 07.5	150° 41.2 5° 06.5	165° 41.4 5° 05.6	+0.2 -0.9
Пн 10	180° 41.6 5° 04.6	195° 41.8 5° 03.7	210° 42.0 5° 02.7	225° 42.3 5° 01.8	240° 42.5 5° 00.8	255° 42.7 4° 59.9	90° 45.5 4° 47.6	105° 45.8 4° 46.6	120° 46.0 4° 45.7	135° 46.2 4° 44.7	150° 46.4 4° 43.8	165° 46.6 4° 42.8	+0.2 -0.9
Вт 11	180° 46.9 4° 41.9	195° 47.1 4° 40.9	210° 47.3 4° 40.0	225° 47.5 4° 39.0	240° 47.7 4° 38.1	255° 48.0 4° 37.1	90° 50.8 4° 24.8	105° 51.0 4° 23.8	120° 51.3 4° 22.9	135° 51.5 4° 21.9	150° 51.7 4° 21.0	165° 51.9 4° 20.0	+0.2 -0.9
Ср 12	180° 52.1 4° 19.1	195° 52.4 4° 18.1	210° 52.6 4° 17.2	225° 52.8 4° 16.2	240° 53.0 4° 15.3	255° 53.3 4° 14.3	90° 56.1 4° 01.9	105° 56.4 4° 01.0	120° 56.6 4° 00.0	135° 56.8 3° 59.1	150° 57.0 3° 58.1	165° 57.3 3° 57.2	+0.2 -1.0
Чт 13	180° 57.5 3° 56.2	195° 57.7 3° 55.2	210° 57.9 3° 54.3	225° 58.1 3° 53.3	240° 58.4 3° 52.4	255° 58.6 3° 51.4	91° 01.5 3° 39.0	106° 01.7 3° 38.0	121° 01.9 3° 37.1	136° 02.2 3° 36.1	151° 02.4 3° 35.2	166° 02.6 3° 34.2	+0.2 -1.0
Пт 14	181° 02.8 3° 33.3	196° 03.0 3° 32.3	211° 03.3 3° 31.3	226° 03.5 3° 30.4	241° 03.7 3° 29.4	256° 03.9 3° 28.5	91° 06.8 3° 16.0	106° 07.1 3° 15.0	121° 07.3 3° 14.1	136° 07.5 3° 13.1	151° 07.7 3° 12.2	166° 08.0 3° 11.2	+0.2 -1.0
Сб 15	181° 08.2 3° 10.2	196° 08.4 3° 09.3	211° 08.6 3° 08.3	226° 08.9 3° 07.4	241° 09.1 3° 06.4	256° 09.3 3° 05.4	91° 12.2 2° 52.9	106° 12.4 2° 52.0	121° 12.7 2° 51.0	136° 12.9 2° 50.1	151° 13.1 2° 49.1	166° 13.3 2° 48.1	+0.2 -1.0
Вс 16	181° 13.6 2° 47.2	196° 13.8 2° 46.2	211° 14.0 2° 45.2	226° 14.2 2° 44.3	241° 14.5 2° 43.3	256° 14.7 2° 42.4	91° 17.6 2° 29.8	106° 17.8 2° 28.9	121° 18.1 2° 27.9	136° 18.3 2° 26.9	151° 18.5 2° 26.0	166° 18.7 2° 25.0	+0.2 -1.0
Пн 17	181° 19.0 2° 24.0	196° 19.2 2° 23.1	211° 19.4 2° 22.1	226° 19.6 2° 21.2	241° 19.9 2° 20.2	256° 20.1 2° 19.2	91° 23.0 2° 06.7	106° 23.2 2° 05.7	121° 23.5 2° 04.7	136° 23.7 2° 03.8	151° 23.9 2° 02.8	166° 24.1 2° 01.8	+0.2 -1.0
Вт 18	181° 24.4 2° 00.9	196° 24.6 1° 59.9	211° 24.8 1° 58.9	226° 25.0 1° 58.0	241° 25.2 1° 57.0	256° 25.5 1° 56.0	91° 28.4 1° 43.5	106° 28.6 1° 42.5	121° 28.8 1° 41.5	136° 29.1 1° 40.6	151° 29.3 1° 39.6	166° 29.5 1° 38.6	+0.2 -1.0
Ср 19	181° 29.7 1° 37.7	196° 30.0 1° 36.7	211° 30.2 1° 35.7	226° 30.4 1° 34.8	241° 30.6 1° 33.8	256° 30.9 1° 32.8	91° 33.8 1° 20.2	106° 34.0 1° 19.3	121° 34.2 1° 18.3	136° 34.4 1° 17.3	151° 34.7 1° 16.4	166° 34.9 1° 15.4	+0.2 -1.0
Чт 20	181° 35.1 1° 14.4	196° 35.3 1° 13.5	211° 35.6 1° 12.5	226° 35.8 1° 11.5	241° 36.0 1° 10.5	256° 36.2 1° 09.6	91° 39.1 0° 57.0	106° 39.4 0° 56.0	121° 39.6 0° 55.0	136° 39.8 0° 54.1	151° 40.0 0° 53.1	166° 40.3 0° 52.1	+0.2 -1.0
Пт 21	181° 40.5 0° 51.1	196° 40.7 0° 50.2	211° 40.9 0° 49.2	226° 41.1 0° 48.2	241° 41.4 0° 47.3	256° 41.6 0° 46.3	91° 44.5 0° 33.7	106° 44.7 0° 32.7	121° 44.9 0° 31.7	136° 45.1 0° 30.7	151° 45.4 0° 29.8	166° 45.6 0° 28.8	+0.2 -1.0
Сб 22	181° 45.8 0° 27.8	196° 46.0 0° 26.9	211° 46.3 0° 25.9	226° 46.5 0° 24.9	241° 46.7 0° 23.9	256° 46.9 0° 23.0	91° 49.8 0° 10.3	106° 50.0 0° 09.4	121° 50.2 0° 08.4	136° 50.5 0° 07.4	151° 50.7 0° 06.5	166° 50.9 0° 05.5	+0.2 -1.0
Вс 23	181° 51.1 0° 04.5	196° 51.3 0° 03.5	211° 51.6 0° 02.6	226° 51.8 0° 01.6	241° 52.0 0° 00.6	256° 52.2 -0° 00.4	91° 55.1 -0° 13.0	106° 55.3 -0° 14.0	121° 55.5 -0° 14.9	136° 55.7 -0° 15.9	151° 56.0 -0° 16.9	166° 56.2 -0° 17.9	+0.2 -1.0
Пн 24	181° 56.4 -0° 18.8	196° 56.6 -0° 19.8	211° 56.8 -0° 20.8	226° 57.1 -0° 21.8	241° 57.3 -0° 22.7	256° 57.5 -0° 23.7	92° 00.3 -0° 36.4	107° 00.5 -0° 37.3	122° 00.8 -0° 38.3	137° 01.0 -0° 39.3	152° 01.2 -0° 40.2	167° 01.4 -0° 41.2	+0.2 -1.0
Вт 25	182° 01.6 -0° 42.2	197° 01.9 -0° 43.2	212° 02.1 -0° 44.1	227° 02.3 -0° 45.1	242° 02.5 -0° 46.1	257° 02.7 -0° 47.1	92° 05.5 -0° 59.7	107° 05.8 -1° 00.7	122° 06.0 -1° 01.7	137° 06.2 -1° 02.6	152° 06.4 -1° 03.6	167° 06.6 -1° 04.6	+0.2 -1.0
Ср 26	182° 06.8 -1° 05.5	197° 07.0 -1° 06.5	212° 07.3 -1° 07.5	227° 07.5 -1° 08.5	242° 07.7 -1° 09.4	257° 07.9 -1° 10.4	92° 10.7 -1° 23.1	107° 10.9 -1° 24.0	122° 11.1 -1° 25.0	137° 11.3 -1° 26.0	152° 11.5 -1° 27.0	167° 11.8 -1° 27.9	+0.2 -1.0
Чт 27	182° 12.0 -1° 28.9	197° 12.2 -1° 29.9	212° 12.4 -1° 30.9	227° 12.6 -1° 31.8	242° 12.8 -1° 32.8	257° 13.0 -1° 33.8	92° 15.8 -1° 46.4	107° 16.0 -1° 47.4	122° 16.2 -1° 48.4	137° 16.4 -1° 49.3	152° 16.6 -1° 50.3	167° 16.9 -1° 51.3	+0.2 -1.0
Пт 28	182° 17.1 -1° 52.3	197° 17.3 -1° 53.2	212° 17.5 -1° 54.2	227° 17.7 -1° 55.2	242° 17.9 -1° 56.1	257° 18.1 -1° 57.1	92° 20.8 -2° 09.8	107° 21.1 -2° 10.7	122° 21.3 -2° 11.7	137° 21.5 -2° 12.7	152° 21.7 -2° 13.6	167° 21.9 -2° 14.6	+0.2 -1.0
Сб 29	182° 22.1 -2° 15.6	197° 22.3 -2° 16.6	212° 22.5 -2° 17.5	227° 22.7 -2° 18.5	242° 22.9 -2° 19.5	257° 23.1 -2° 20.4	92° 25.8 -2° 33.1	107° 26.0 -2° 34.0	122° 26.2 -2° 35.0	137° 26.4 -2° 36.0	152° 26.7 -2° 37.0	167° 26.9 -2° 37.9	+0.2 -1.0
Вс 30	182° 27.1 -2° 38.9	197° 27.3 -2° 39.9	212° 27.5 -2° 40.8	227° 27.7 -2° 41.8	242° 27.9 -2° 42.8	257° 28.1 -2° 43.8	92° 30.8 -2° 56.4	107° 31.0 -2° 57.3	122° 31.2 -2° 58.3	137° 31.4 -2° 59.3	152° 31.6 -3° 00.3	167° 31.8 -3° 01.2	+0.2 -1.0

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 15.9'

ЛУНА

Сентябрь 2035

Д	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	Δ'/h	R/p
Сб 1	65° 14.4	79° 42.0	94° 09.7	108° 37.4	123° 05.2	137° 33.0	152° 00.9	166° 28.9	180° 56.9	195° 25.0	209° 53.1	+27.9	16.1
	10° 02.0	9° 52.1	9° 42.3	9° 32.3	9° 22.4	9° 12.3	9° 02.2	8° 52.1	8° 42.0	8° 31.7	8° 21.5	-10.1	59.2
● Вс 2	67° 01.8	81° 30.8	95° 59.9	110° 29.0	124° 58.2	139° 27.4	153° 56.7	168° 26.0	182° 55.4	197° 24.8	211° 54.3	+29.3	16.0
	5° 43.5	5° 32.7	5° 22.0	5° 11.2	5° 00.4	4° 49.5	4° 38.7	4° 27.8	4° 16.9	4° 06.0	3° 55.1	-10.8	58.5
Пн 3	69° 22.0	83° 52.2	98° 22.5	112° 52.8	127° 23.1	141° 53.4	156° 23.8	170° 54.3	185° 24.7	199° 55.2	214° 25.8	+30.4	15.7
	1° 11.0	1° 00.1	0° 49.2	0° 38.3	0° 27.4	0° 16.5	0° 05.6	-0° 05.3	-0° 16.1	-0° 27.0	-0° 37.8	-10.9	57.8
Вт 4	72° 07.9	86° 39.0	101° 10.0	115° 41.1	130° 12.3	144° 43.4	159° 14.6	173° 45.8	188° 17.0	202° 48.3	217° 19.5	+31.2	15.5
	-3° 17.8	-3° 28.3	-3° 38.7	-3° 49.1	-3° 59.5	-4° 09.8	-4° 20.1	-4° 30.4	-4° 40.6	-4° 50.9	-5° 01.0	-10.3	56.9
Ср 5	75° 10.9	89° 42.5	104° 14.0	118° 45.6	133° 17.2	147° 48.8	162° 20.4	176° 52.1	191° 23.7	205° 55.4	220° 27.0	+31.6	15.3
	-7° 28.7	-7° 38.2	-7° 47.6	-7° 57.0	-8° 06.4	-8° 15.7	-8° 24.9	-8° 34.1	-8° 43.2	-8° 52.3	-9° 01.4	-9.3	56.1
Чт 6	78° 22.9	92° 54.6	107° 26.4	121° 58.2	136° 29.9	151° 01.7	165° 33.5	180° 05.3	194° 37.0	209° 08.8	223° 40.6	+31.8	15.1
	-11° 10.3	-11° 18.5	-11° 26.5	-11° 34.5	-11° 42.5	-11° 50.4	-11° 58.2	-12° 05.9	-12° 13.6	-12° 21.3	-12° 28.8	-7.9	55.4
Пт 7	81° 37.1	96° 08.9	110° 40.6	125° 12.3	139° 44.1	154° 15.8	168° 47.5	183° 19.2	197° 50.9	212° 22.6	226° 54.3	+31.7	15.0
	-14° 14.3	-14° 20.7	-14° 27.1	-14° 33.5	-14° 39.7	-14° 45.9	-14° 52.0	-14° 58.1	-15° 04.1	-15° 10.0	-15° 15.8	-6.2	54.9
Сб 8	84° 49.0	99° 20.6	113° 52.1	128° 23.7	142° 55.3	157° 26.8	171° 58.4	186° 29.9	201° 01.4	215° 32.9	230° 04.4	+31.5	14.8
	-16° 34.1	-16° 38.7	-16° 43.2	-16° 47.7	-16° 52.0	-16° 56.3	-17° 00.5	-17° 04.6	-17° 08.7	-17° 12.7	-17° 16.5	-4.2	54.4
◐ Вс 9	99° 20.6	113° 52.1	128° 23.7	142° 55.3	157° 26.8	171° 58.4	186° 29.9	201° 01.4	215° 32.9	230° 04.4	244° 35.9	+31.5	14.8
	-16° 38.7	-16° 43.2	-16° 47.7	-16° 52.0	-16° 56.3	-17° 00.5	-17° 04.6	-17° 08.7	-17° 12.7	-17° 16.5	-17° 20.4	-4.2	54.4
Пн 10	102° 27.5	116° 58.9	131° 30.2	146° 01.6	160° 33.0	175° 04.3	189° 35.6	204° 07.0	218° 38.3	233° 09.6	247° 40.9	+31.3	14.8
	-18° 07.6	-18° 10.1	-18° 12.5	-18° 14.8	-18° 17.1	-18° 19.2	-18° 21.3	-18° 23.3	-18° 25.2	-18° 27.0	-18° 28.7	-2.1	54.2
Вт 11	105° 29.8	120° 01.0	134° 32.2	149° 03.4	163° 34.6	178° 05.8	192° 37.0	207° 08.2	221° 39.3	236° 10.5	250° 41.7	+31.2	14.8
	-18° 44.4	-18° 44.7	-18° 45.0	-18° 45.2	-18° 45.3	-18° 45.3	-18° 45.2	-18° 45.1	-18° 44.8	-18° 44.5	-18° 44.0	+0.0	54.2
Ср 12	108° 29.1	123° 00.3	137° 31.4	152° 02.6	166° 33.7	181° 04.9	195° 36.0	210° 07.2	224° 38.3	239° 09.5	253° 40.6	+31.2	14.8
	-18° 27.3	-18° 25.5	-18° 23.6	-18° 21.6	-18° 19.5	-18° 17.4	-18° 15.1	-18° 12.8	-18° 10.4	-18° 07.9	-18° 05.3	+2.2	54.3
Чт 13	111° 28.2	125° 59.4	140° 30.6	155° 01.8	169° 33.0	184° 04.2	198° 35.4	213° 06.6	227° 37.8	242° 09.1	256° 40.3	+31.2	14.9
	-17° 16.4	-17° 12.4	-17° 08.4	-17° 04.3	-17° 00.1	-16° 55.9	-16° 51.5	-16° 47.1	-16° 42.6	-16° 38.0	-16° 33.3	+4.3	54.6
Пт 14	114° 29.3	129° 00.6	143° 32.0	158° 03.3	172° 34.6	187° 05.9	201° 37.3	216° 08.6	230° 40.0	245° 11.3	259° 42.7	+31.3	15.0
	-15° 13.8	-15° 07.8	-15° 01.8	-14° 55.8	-14° 49.6	-14° 43.4	-14° 37.1	-14° 30.7	-14° 24.2	-14° 17.7	-14° 11.1	+6.3	55.0
Сб 15	117° 33.6	132° 05.0	146° 36.5	161° 07.9	175° 39.3	190° 10.8	204° 42.2	219° 13.7	233° 45.1	248° 16.6	262° 48.0	+31.4	15.2
	-12° 23.7	-12° 16.0	-12° 08.3	-12° 00.4	-11° 52.6	-11° 44.6	-11° 36.6	-11° 28.5	-11° 20.3	-11° 12.1	-11° 03.9	+8.0	55.6
Вс 16	120° 39.9	135° 11.4	149° 42.8	164° 14.3	178° 45.7	193° 17.2	207° 48.6	222° 20.1	236° 51.5	251° 22.9	265° 54.4	+31.4	15.3
	-8° 53.0	-8° 43.8	-8° 34.6	-8° 25.4	-8° 16.1	-8° 06.7	-7° 57.3	-7° 47.9	-7° 38.4	-7° 28.8	-7° 19.2	+9.4	56.2
○ Пн 17	123° 44.9	138° 16.2	152° 47.5	167° 18.8	181° 50.0	196° 21.3	210° 52.5	225° 23.8	239° 55.0	254° 26.2	268° 57.3	+31.2	15.5
	-4° 50.6	-4° 40.4	-4° 30.2	-4° 19.9	-4° 09.6	-3° 59.3	-3° 48.9	-3° 38.6	-3° 28.2	-3° 17.7	-3° 07.3	+10.3	56.8
Вт 18	126° 43.0	141° 13.9	155° 44.7	170° 15.6	184° 46.4	199° 17.2	213° 47.9	228° 18.7	242° 49.4	257° 20.1	271° 50.7	+30.8	15.6
	-0° 28.0	-0° 17.3	-0° 06.5	0° 04.2	0° 15.0	0° 25.7	0° 36.5	0° 47.3	0° 58.1	1° 08.9	1° 19.7	+10.8	57.3
Ср 19	129° 27.1	143° 57.3	158° 27.4	172° 57.5	187° 27.6	201° 57.6	216° 27.6	230° 57.6	245° 27.5	259° 57.3	274° 27.2	+30.0	15.8
	4° 01.0	4° 11.7	4° 22.4	4° 33.0	4° 43.7	4° 54.3	5° 04.9	5° 15.5	5° 26.0	5° 36.5	5° 47.0	+10.6	57.9
Чт 20	131° 49.8	146° 19.0	160° 48.1	175° 17.2	189° 46.2	204° 15.2	218° 44.1	233° 13.0	247° 41.8	262° 10.6	276° 39.4	+29.0	15.9
	8° 21.1	8° 31.0	8° 41.0	8° 50.9	9° 00.7	9° 10.5	9° 20.3	9° 30.0	9° 39.7	9° 49.3	9° 58.8	+9.8	58.3
Пт 21	133° 44.6	148° 12.6	162° 40.5	177° 08.3	191° 36.1	206° 03.9	220° 31.6	234° 59.2	249° 26.8	263° 54.4	278° 21.9	+27.7	16.0
	12° 15.4	12° 24.0	12° 32.5	12° 40.9	12° 49.3	12° 57.6	13° 05.9	13° 14.0	13° 22.1	13° 30.1	13° 38.1	+8.3	58.7
Сб 22	135° 08.3	149° 35.0	164° 01.7	178° 28.3	192° 54.9	207° 21.4	221° 47.8	236° 14.3	250° 40.7	265° 07.0	279° 33.3	+26.5	16.1
	15° 27.0	15° 33.5	15° 40.0	15° 46.4	15° 52.6	15° 58.8	16° 04.9	16° 10.8	16° 16.7	16° 22.5	16° 28.1	+6.1	58.9
Вс 23	136° 02.8	150° 28.5	164° 54.1	179° 19.7	193° 45.3	208° 10.9	222° 36.4	237° 01.9	251° 27.3	265° 52.7	280° 18.1	+25.5	16.1
	17° 40.5	17° 44.4	17° 48.3	17° 52.0	17° 55.6	17° 59.1	18° 02.4	18° 05.7	18° 08.8	18° 11.8	18° 14.7	+3.4	59.1
◑ Пн 24	136° 36.5	151° 01.6	165° 26.7	179° 51.8	194° 16.9	208° 41.9	223° 07.0	237° 32.0	251° 57.1	266° 22.1	280° 47.2	+25.1	16.1
	18° 43.8	18° 44.8	18° 45.6	18° 46.3	18° 46.9	18° 47.4	18° 47.7	18° 47.9	18° 48.0	18° 48.0	18° 47.9	+0.4	59.2
Вт 25	137° 03.2	151° 28.3	165° 53.5	180° 18.7	194° 43.8	209° 09.1	223° 34.3	237° 59.5	252° 24.8	266° 50.1	281° 15.4	+25.2	16.2
	18° 30.7	18° 28.5	18° 26.3	18° 23.9	18° 21.4	18° 18.8	18° 16.0	18° 13.2	18° 10.2	18° 07.1	18° 03.9	-2.7	59.2
Ср 26	137° 38.5	152° 04.3	166° 30.1	180° 56.0	195° 21.9	209° 47.8	224° 13.8	238° 39.8	253° 05.9	267° 32.0	281° 58.1	+26.0	16.1
	17° 01.8	16° 56.7	16° 51.6	16° 46.3	16° 41.0	16° 35.5	16° 29.9	16° 24.2	16° 18.5	16° 12.6	16° 06.6	-5.5	59.2
Чт 27	138° 35.6	153° 02.5	167° 29.4	181° 56.4	196° 23.4	210° 50.4	225° 17.6	239° 44.7	254° 11.9	268° 39.2	283° 06.5	+27.1	16.1
	14° 25.0	14° 17.5	14° 10.0	14° 02.3	13° 54.5	13° 46.7	13° 38.7	13° 30.7	13° 22.7	13° 14.5	13° 06.2	-7.9	59.0
Пт 28	140° 02.1	154° 30.3	168° 58.4	183° 26.6	197° 54.9	212° 23.2	226° 51.5	241° 20.0	255° 48.4	270° 16.9	284° 45.5	+28.3	16.0
	10° 53.9	10° 44.6	10° 35.2	10° 25.7	10° 16.2	10° 06.6	9° 57.0	9° 47.3	9° 37.6	9° 27.8	9° 18.0	-9.6	58.7
Сб 29	141° 59.3	156° 28.6	170° 57.9	185° 27.3	199° 56.7	214° 26.2	228° 55.7	243° 25.2	257° 54.8	272° 24.4	286° 54.1	+29.5	15.9
	6° 45.2	6° 34.8	6° 24.3	6° 13.7	6° 03.2	5° 52.6	5° 41.9	5° 31.3	5° 20.6	5° 09.9	4° 59.2	-10.6	58.2
Вс 30	144° 23.5	158° 53.7	173° 24.0	187° 54.3	202° 24.6	216° 55.0	231° 25.4	245° 55.8	260° 26.3	274° 56.8	289° 27.3	+30.4	15.7
	2° 16.8	2° 05.9	1° 55.0	1° 44.1	1° 33.2	1° 22.2	1° 11.3	1° 00.4	0° 49.5	0° 38.6	0° 27.7	-10.9	57.7

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 2 01h59 — Первая четв.: 9 14h47 — Полнолуние: 17 14h23 — Последняя четв.: 24 14h39

СОЛНЦЕ

Октябрь 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Пн 1	182° 32.0 -3° 02.2	197° 32.2 -3° 03.2	212° 32.4 -3° 04.1	227° 32.6 -3° 05.1	242° 32.8 -3° 06.1	257° 33.0 -3° 07.0	92° 35.6 -3° 19.6	107° 35.8 -3° 20.6	122° 36.0 -3° 21.6	137° 36.2 -3° 22.5	152° 36.4 -3° 23.5	167° 36.6 -3° 24.5	+0.2 -1.0
Вт 2	182° 36.8 -3° 25.5	197° 37.0 -3° 26.4	212° 37.2 -3° 27.4	227° 37.4 -3° 28.4	242° 37.6 -3° 29.3	257° 37.8 -3° 30.3	92° 40.4 -3° 42.9	107° 40.6 -3° 43.8	122° 40.8 -3° 44.8	137° 41.0 -3° 45.8	152° 41.2 -3° 46.7	167° 41.4 -3° 47.7	+0.2 -1.0
Ср 3	182° 41.6 -3° 48.7	197° 41.8 -3° 49.6	212° 42.0 -3° 50.6	227° 42.2 -3° 51.6	242° 42.3 -3° 52.5	257° 42.5 -3° 53.5	92° 45.1 -4° 06.1	107° 45.3 -4° 07.0	122° 45.5 -4° 08.0	137° 45.7 -4° 09.0	152° 45.9 -4° 09.9	167° 46.0 -4° 10.9	+0.2 -1.0
Чт 4	182° 46.2 -4° 11.9	197° 46.4 -4° 12.8	212° 46.6 -4° 13.8	227° 46.8 -4° 14.7	242° 47.0 -4° 15.7	257° 47.2 -4° 16.7	92° 49.7 -4° 29.2	107° 49.9 -4° 30.2	122° 50.1 -4° 31.1	137° 50.3 -4° 32.1	152° 50.5 -4° 33.1	167° 50.6 -4° 34.0	+0.2 -1.0
Пт 5	182° 50.8 -4° 35.0	197° 51.0 -4° 35.9	212° 51.2 -4° 36.9	227° 51.4 -4° 37.9	242° 51.6 -4° 38.8	257° 51.8 -4° 39.8	92° 54.2 -4° 52.3	107° 54.4 -4° 53.2	122° 54.6 -4° 54.2	137° 54.8 -4° 55.2	152° 55.0 -4° 56.1	167° 55.2 -4° 57.1	+0.2 -1.0
Сб 6	182° 55.3 -4° 58.0	197° 55.5 -4° 59.0	212° 55.7 -5° 00.0	227° 55.9 -5° 00.9	242° 56.1 -5° 01.9	257° 56.3 -5° 02.8	92° 58.7 -5° 15.3	107° 58.9 -5° 16.3	122° 59.0 -5° 17.2	137° 59.2 -5° 18.2	152° 59.4 -5° 19.1	167° 59.6 -5° 20.1	+0.2 -1.0
Вс 7	182° 59.8 -5° 21.1	197° 59.9 -5° 22.0	213° 00.1 -5° 23.0	228° 00.3 -5° 23.9	243° 00.5 -5° 24.9	258° 00.7 -5° 25.8	93° 03.0 -5° 38.3	108° 03.2 -5° 39.2	123° 03.4 -5° 40.2	138° 03.6 -5° 41.1	153° 03.7 -5° 42.1	168° 03.9 -5° 43.0	+0.2 -1.0
Пн 8	183° 04.1 -5° 44.0	198° 04.3 -5° 45.0	213° 04.4 -5° 45.9	228° 04.6 -5° 46.9	243° 04.8 -5° 47.8	258° 05.0 -5° 48.8	93° 07.3 -6° 01.2	108° 07.4 -6° 02.1	123° 07.6 -6° 03.1	138° 07.8 -6° 04.0	153° 08.0 -6° 05.0	168° 08.1 -6° 05.9	+0.2 -1.0
Вт 9	183° 08.3 -6° 06.9	198° 08.5 -6° 07.8	213° 08.7 -6° 08.8	228° 08.8 -6° 09.7	243° 09.0 -6° 10.7	258° 09.2 -6° 11.6	93° 11.4 -6° 24.0	108° 11.6 -6° 24.9	123° 11.7 -6° 25.9	138° 11.9 -6° 26.8	153° 12.1 -6° 27.7	168° 12.3 -6° 28.7	+0.2 -1.0
Ср 10	183° 12.4 -6° 29.6	198° 12.6 -6° 30.6	213° 12.8 -6° 31.5	228° 12.9 -6° 32.5	243° 13.1 -6° 33.4	258° 13.3 -6° 34.4	93° 15.4 -6° 46.7	108° 15.6 -6° 47.6	123° 15.8 -6° 48.6	138° 15.9 -6° 49.5	153° 16.1 -6° 50.5	168° 16.3 -6° 51.4	+0.2 -0.9
Чт 11	183° 16.4 -6° 52.3	198° 16.6 -6° 53.3	213° 16.8 -6° 54.2	228° 16.9 -6° 55.2	243° 17.1 -6° 56.1	258° 17.2 -6° 57.1	93° 19.4 -7° 09.3	108° 19.5 -7° 10.2	123° 19.7 -7° 11.2	138° 19.8 -7° 12.1	153° 20.0 -7° 13.1	168° 20.2 -7° 14.0	+0.2 -0.9
Пт 12	183° 20.3 -7° 14.9	198° 20.5 -7° 15.9	213° 20.6 -7° 16.8	228° 20.8 -7° 17.8	243° 21.0 -7° 18.7	258° 21.1 -7° 19.6	93° 23.2 -7° 31.8	108° 23.3 -7° 32.8	123° 23.5 -7° 33.7	138° 23.6 -7° 34.6	153° 23.8 -7° 35.6	168° 23.9 -7° 36.5	+0.2 -0.9
Сб 13	183° 24.1 -7° 37.4	198° 24.2 -7° 38.4	213° 24.4 -7° 39.3	228° 24.5 -7° 40.2	243° 24.7 -7° 41.2	258° 24.9 -7° 42.1	93° 26.8 -7° 54.3	108° 27.0 -7° 55.2	123° 27.1 -7° 56.1	138° 27.3 -7° 57.0	153° 27.4 -7° 58.0	168° 27.6 -7° 58.9	+0.2 -0.9
Вс 14	183° 27.7 -7° 59.8	198° 27.9 -8° 00.8	213° 28.0 -8° 01.7	228° 28.2 -8° 02.6	243° 28.3 -8° 03.6	258° 28.5 -8° 04.5	93° 30.4 -8° 16.6	108° 30.5 -8° 17.5	123° 30.7 -8° 18.4	138° 30.8 -8° 19.3	153° 31.0 -8° 20.3	168° 31.1 -8° 21.2	+0.1 -0.9
Пн 15	183° 31.2 -8° 22.1	198° 31.4 -8° 23.0	213° 31.5 -8° 24.0	228° 31.7 -8° 24.9	243° 31.8 -8° 25.8	258° 32.0 -8° 26.8	93° 33.8 -8° 38.8	108° 33.9 -8° 39.7	123° 34.1 -8° 40.6	138° 34.2 -8° 41.5	153° 34.3 -8° 42.4	168° 34.5 -8° 43.4	+0.1 -0.9
Вт 16	183° 34.6 -8° 44.3	198° 34.8 -8° 45.2	213° 34.9 -8° 46.1	228° 35.0 -8° 47.0	243° 35.2 -8° 48.0	258° 35.3 -8° 48.9	93° 37.1 -9° 00.8	108° 37.2 -9° 01.7	123° 37.3 -9° 02.7	138° 37.5 -9° 03.6	153° 37.6 -9° 04.5	168° 37.7 -9° 05.4	+0.1 -0.9
Ср 17	183° 37.9 -9° 06.3	198° 38.0 -9° 07.2	213° 38.1 -9° 08.2	228° 38.3 -9° 09.1	243° 38.4 -9° 10.0	258° 38.5 -9° 10.9	93° 40.2 -9° 22.8	108° 40.3 -9° 23.7	123° 40.4 -9° 24.6	138° 40.6 -9° 25.5	153° 40.7 -9° 26.4	168° 40.8 -9° 27.3	+0.1 -0.9
Чт 18	183° 40.9 -9° 28.2	198° 41.1 -9° 29.1	213° 41.2 -9° 30.1	228° 41.3 -9° 31.0	243° 41.4 -9° 31.9	258° 41.6 -9° 32.8	93° 43.2 -9° 44.6	108° 43.3 -9° 45.5	123° 43.4 -9° 46.4	138° 43.5 -9° 47.3	153° 43.6 -9° 48.2	168° 43.8 -9° 49.1	+0.1 -0.9
Пт 19	183° 43.9 -9° 50.0	198° 44.0 -9° 50.9	213° 44.1 -9° 51.8	228° 44.2 -9° 52.7	243° 44.4 -9° 53.6	258° 44.5 -9° 54.5	93° 46.0 -10° 06.3	108° 46.1 -10° 07.2	123° 46.2 -10° 08.0	138° 46.3 -10° 08.9	153° 46.4 -10° 09.8	168° 46.6 -10° 10.7	+0.1 -0.9
Сб 20	183° 46.7 -10° 11.6	198° 46.8 -10° 12.5	213° 46.9 -10° 13.4	228° 47.0 -10° 14.3	243° 47.1 -10° 15.2	258° 47.2 -10° 16.1	93° 48.6 -10° 27.8	108° 48.8 -10° 28.7	123° 48.9 -10° 29.6	138° 49.0 -10° 30.5	153° 49.1 -10° 31.3	168° 49.2 -10° 32.2	+0.1 -0.9
Вс 21	183° 49.3 -10° 33.1	198° 49.4 -10° 34.0	213° 49.5 -10° 34.9	228° 49.6 -10° 35.8	243° 49.7 -10° 36.7	258° 49.8 -10° 37.6	93° 51.1 -10° 49.1	108° 51.2 -10° 50.0	123° 51.3 -10° 50.9	138° 51.4 -10° 51.8	153° 51.5 -10° 52.7	168° 51.6 -10° 53.6	+0.1 -0.9
Пн 22	183° 51.7 -10° 54.5	198° 51.8 -10° 55.3	213° 51.9 -10° 56.2	228° 52.0 -10° 57.1	243° 52.1 -10° 58.0	258° 52.2 -10° 58.9	93° 53.5 -11° 10.3	108° 53.6 -11° 11.2	123° 53.6 -11° 12.1	138° 53.7 -11° 13.0	153° 53.8 -11° 13.9	168° 53.9 -11° 14.7	+0.1 -0.9
Вт 23	183° 54.0 -11° 15.6	198° 54.1 -11° 16.5	213° 54.2 -11° 17.4	228° 54.3 -11° 18.3	243° 54.4 -11° 19.1	258° 54.5 -11° 20.0	93° 55.6 -11° 31.4	108° 55.7 -11° 32.3	123° 55.8 -11° 33.1	138° 55.9 -11° 34.0	153° 56.0 -11° 34.9	168° 56.0 -11° 35.8	+0.1 -0.9
Ср 24	183° 56.1 -11° 36.6	198° 56.2 -11° 37.5	213° 56.3 -11° 38.4	228° 56.4 -11° 39.2	243° 56.5 -11° 40.1	258° 56.5 -11° 41.0	93° 57.6 -11° 52.3	108° 57.7 -11° 53.1	123° 57.7 -11° 54.0	138° 57.8 -11° 54.9	153° 57.9 -11° 55.7	168° 58.0 -11° 56.6	+0.1 -0.9
Чт 25	183° 58.0 -11° 57.5	198° 58.1 -11° 58.3	213° 58.2 -11° 59.2	228° 58.3 -12° 00.0	243° 58.3 -12° 00.9	258° 58.4 -12° 01.8	93° 59.4 -12° 13.0	108° 59.4 -12° 13.8	123° 59.5 -12° 14.7	138° 59.6 -12° 15.5	153° 59.6 -12° 16.4	168° 59.7 -12° 17.2	+0.1 -0.9
Пт 26	183° 59.8 -12° 18.1	198° 59.9 -12° 19.0	213° 59.9 -12° 19.8	229° 00.0 -12° 20.7	244° 00.1 -12° 21.5	259° 00.1 -12° 22.4	94° 01.0 -12° 33.5	109° 01.0 -12° 34.3	124° 01.1 -12° 35.2	139° 01.2 -12° 36.0	154° 01.2 -12° 36.9	169° 01.3 -12° 37.7	+0.1 -0.9
Сб 27	184° 01.3 -12° 38.6	199° 01.4 -12° 39.4	214° 01.5 -12° 40.3	229° 01.5 -12° 41.1	244° 01.6 -12° 41.9	259° 01.6 -12° 42.8	94° 02.4 -12° 53.8	109° 02.4 -12° 54.6	124° 02.5 -12° 55.5	139° 02.5 -12° 56.3	154° 02.6 -12° 57.1	169° 02.7 -12° 58.0	+0.1 -0.8
Вс 28	184° 02.7 -12° 58.8	199° 02.8 -12° 59.7	214° 02.8 -13° 00.5	229° 02.9 -13° 01.3	244° 02.9 -13° 02.2	259° 03.0 -13° 03.0	94° 03.6 -13° 13.9	109° 03.7 -13° 14.7	124° 03.7 -13° 15.6	139° 03.7 -13° 16.4	154° 03.8 -13° 17.2	169° 03.8 -13° 18.1	+0.1 -0.8
Пн 29	184° 03.9 -13° 18.9	199° 03.9 -13° 19.7	214° 04.0 -13° 20.5	229° 04.0 -13° 21.4	244° 04.1 -13° 22.2	259° 04.1 -13° 23.0	94° 04.6 -13° 33.8	109° 04.7 -13° 34.6	124° 04.7 -13° 35.4	139° 04.8 -13° 36.3	154° 04.8 -13° 37.1	169° 04.8 -13° 37.9	+0.0 -0.8
Вт 30	184° 04.9 -13° 38.7	199° 04.9 -13° 39.6	214° 04.9 -13° 40.4	229° 05.0 -13° 41.2	244° 05.0 -13° 42.0	259° 05.0 -13° 42.8	94° 05.5 -13° 53.5	109° 05.5 -13° 54.3	124° 05.5 -13° 55.1	139° 05.6 -13° 55.9	154° 05.6 -13° 56.7	169° 05.6 -13° 57.6	+0.0 -0.8
Ср 31	184° 05.7 -13° 58.4	199° 05.7 -13° 59.2	214° 05.7 -14° 00.0	229° 05.7 -14° 00.8	244° 05.8 -14° 01.6	259° 05.8 -14° 02.4	94° 06.1 -14° 13.0	109° 06.1 -14° 13.8	124° 06.2 -14° 14.6	139° 06.2 -14° 15.4	154° 06.2 -14° 16.2	169° 06.2 -14° 17.0	+0.0 -0.8

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.0'

ЛУНА

Октябрь 2035

	Д	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	Δ'/h	R/p
●	Пн 1	60° 03.1	74° 33.9	89° 04.7	103° 35.5	118° 06.4	132° 37.2	147° 08.1	161° 39.0	176° 10.0	190° 40.9	205° 11.9	+30.9	15.6
		-1° 09.9	-1° 20.6	-1° 31.4	-1° 42.2	-1° 52.9	-2° 03.6	-2° 14.3	-2° 25.0	-2° 35.6	-2° 46.2	-2° 56.8	-10.7	57.2
	Вт 2	62° 58.5	77° 29.7	92° 00.9	106° 32.2	121° 03.4	135° 34.7	150° 06.0	164° 37.3	179° 08.6	193° 39.9	208° 11.2	+31.3	15.4
		-5° 32.5	-5° 42.6	-5° 52.7	-6° 02.7	-6° 12.7	-6° 22.7	-6° 32.6	-6° 42.5	-6° 52.3	-7° 02.1	-7° 11.8	-9.9	56.6
	Ср 3	66° 01.8	80° 33.2	95° 04.6	109° 36.0	124° 07.5	138° 38.9	153° 10.3	167° 41.7	182° 13.2	196° 44.6	211° 16.0	+31.4	15.2
		-9° 32.3	-9° 41.3	-9° 50.2	-9° 59.0	-10° 07.8	-10° 16.5	-10° 25.2	-10° 33.8	-10° 42.4	-10° 50.8	-10° 59.3	-8.7	55.9
	Чт 4	69° 07.5	83° 38.9	98° 10.4	112° 41.8	127° 13.2	141° 44.6	156° 16.0	170° 47.4	185° 18.8	199° 50.2	214° 21.6	+31.4	15.1
		-12° 58.3	-13° 05.7	-13° 13.0	-13° 20.3	-13° 27.5	-13° 34.6	-13° 41.7	-13° 48.7	-13° 55.6	-14° 02.4	-14° 09.2	-7.1	55.3
	Пт 5	72° 12.1	86° 43.4	101° 14.7	115° 46.1	130° 17.4	144° 48.7	159° 20.0	173° 51.3	188° 22.6	202° 53.9	217° 25.2	+31.3	14.9
		-15° 41.9	-15° 47.5	-15° 53.0	-15° 58.4	-16° 03.8	-16° 09.0	-16° 14.2	-16° 19.3	-16° 24.3	-16° 29.3	-16° 34.1	-5.2	54.8
	Сб 6	75° 14.1	89° 45.3	104° 16.5	118° 47.8	133° 19.0	147° 50.2	162° 21.4	176° 52.6	191° 23.8	205° 55.0	220° 26.2	+31.2	14.8
		-17° 37.3	-17° 40.8	-17° 44.3	-17° 47.7	-17° 51.0	-17° 54.2	-17° 57.3	-18° 00.3	-18° 03.3	-18° 06.2	-18° 09.0	-3.2	54.4
	Вс 7	78° 14.1	92° 45.2	107° 16.4	121° 47.6	136° 18.8	150° 50.0	165° 21.2	179° 52.3	194° 23.5	208° 54.7	223° 25.9	+31.2	14.8
		-18° 40.5	-18° 41.9	-18° 43.2	-18° 44.4	-18° 45.6	-18° 46.6	-18° 47.6	-18° 48.5	-18° 49.3	-18° 50.0	-18° 50.7	-1.0	54.2
	Пн 8	81° 13.9	95° 45.2	110° 16.4	124° 47.6	139° 18.9	153° 50.1	168° 21.3	182° 52.6	197° 23.9	211° 55.1	226° 26.4	+31.2	14.8
		-18° 49.6	-18° 48.9	-18° 48.0	-18° 47.1	-18° 46.1	-18° 44.9	-18° 43.8	-18° 42.5	-18° 41.1	-18° 39.6	-18° 38.1	+1.2	54.2
◐	Вт 9	95° 45.2	110° 16.4	124° 47.6	139° 18.9	153° 50.1	168° 21.3	182° 52.6	197° 23.9	211° 55.1	226° 26.4	240° 57.6	+31.2	14.8
		-18° 48.9	-18° 48.0	-18° 47.1	-18° 46.1	-18° 44.9	-18° 43.8	-18° 42.5	-18° 41.1	-18° 39.6	-18° 38.1	-18° 36.5	+1.2	54.2
	Ср 10	98° 47.3	113° 18.7	127° 50.0	142° 21.4	156° 52.8	171° 24.2	185° 55.6	200° 27.0	214° 58.4	229° 29.8	244° 01.2	+31.4	14.8
		-18° 01.8	-17° 58.9	-17° 55.8	-17° 52.6	-17° 49.4	-17° 46.1	-17° 42.7	-17° 39.2	-17° 35.6	-17° 32.0	-17° 28.2	+3.4	54.4
	Чт 11	101° 53.3	116° 24.8	130° 56.3	145° 27.8	159° 59.4	174° 30.9	189° 02.5	203° 34.0	218° 05.6	232° 37.2	247° 08.8	+31.6	14.9
		-16° 22.5	-16° 17.5	-16° 12.4	-16° 07.2	-16° 01.9	-15° 56.6	-15° 51.2	-15° 45.7	-15° 40.1	-15° 34.5	-15° 28.8	+5.4	54.7
	Пт 12	105° 03.0	119° 34.6	134° 06.3	148° 37.9	163° 09.6	177° 41.2	192° 12.9	206° 44.5	221° 16.2	235° 47.8	250° 19.5	+31.7	15.1
		-13° 54.1	-13° 47.2	-13° 40.2	-13° 33.2	-13° 26.1	-13° 18.9	-13° 11.7	-13° 04.4	-12° 57.0	-12° 49.6	-12° 42.1	+7.2	55.2
	Сб 13	108° 14.3	122° 46.0	137° 17.6	151° 49.2	166° 20.8	180° 52.5	195° 24.1	209° 55.7	224° 27.3	238° 58.9	253° 30.5	+31.6	15.2
		-10° 41.7	-10° 33.1	-10° 24.6	-10° 15.9	-10° 07.2	-9° 58.5	-9° 49.7	-9° 40.8	-9° 31.9	-9° 22.9	-9° 13.8	+8.8	55.9
	Вс 14	111° 23.1	125° 54.5	140° 25.9	154° 57.3	169° 28.6	184° 00.0	198° 31.3	213° 02.6	227° 33.9	242° 05.2	256° 36.5	+31.3	15.4
		-6° 52.2	-6° 42.3	-6° 32.5	-6° 22.5	-6° 12.6	-6° 02.6	-5° 52.5	-5° 42.5	-5° 32.3	-5° 22.2	-5° 12.0	+10.0	56.6
	Пн 15	114° 22.9	128° 53.8	143° 24.7	157° 55.5	172° 26.4	186° 57.1	201° 27.9	215° 58.6	230° 29.3	245° 00.0	259° 30.7	+30.8	15.6
		-2° 34.9	-2° 24.2	-2° 13.5	-2° 02.7	-1° 51.9	-1° 41.1	-1° 30.3	-1° 19.5	-1° 08.6	-0° 57.8	-0° 46.9	+10.8	57.4
	Вт 16	117° 06.2	131° 36.3	146° 06.3	160° 36.3	175° 06.3	189° 36.2	204° 06.1	218° 35.9	233° 05.7	247° 35.4	262° 05.1	+29.9	15.8
		1° 57.9	2° 08.9	2° 20.0	2° 31.0	2° 42.0	2° 53.0	3° 04.1	3° 15.1	3° 26.1	3° 37.1	3° 48.1	+11.0	58.1
○	Ср 17	119° 25.1	133° 54.0	148° 22.9	162° 51.7	177° 20.5	191° 49.3	206° 17.9	220° 46.6	235° 15.2	249° 43.7	264° 12.2	+28.7	16.0
		6° 31.0	6° 41.7	6° 52.4	7° 03.0	7° 13.6	7° 24.1	7° 34.7	7° 45.2	7° 55.6	8° 06.0	8° 16.4	+10.5	58.7
	Чт 18	121° 12.8	135° 40.4	150° 07.9	164° 35.4	179° 02.9	193° 30.3	207° 57.6	222° 24.8	236° 52.1	251° 19.2	265° 46.3	+27.4	16.1
		10° 46.5	10° 56.1	11° 05.6	11° 15.1	11° 24.5	11° 33.8	11° 43.1	11° 52.2	12° 01.4	12° 10.4	12° 19.4	+9.3	59.2
	Пт 19	122° 26.4	136° 52.6	151° 18.8	165° 44.9	180° 11.0	194° 37.1	209° 03.1	223° 29.0	237° 54.9	252° 20.8	266° 46.6	+26.0	16.2
		14° 25.0	14° 32.6	14° 40.3	14° 47.8	14° 55.2	15° 02.5	15° 09.7	15° 16.9	15° 23.9	15° 30.9	15° 37.7	+7.3	59.5
	Сб 20	123° 08.6	137° 33.7	151° 58.9	166° 24.0	180° 49.0	195° 14.0	209° 39.0	224° 04.0	238° 28.9	252° 53.9	267° 18.7	+25.0	16.3
		17° 07.7	17° 12.9	17° 17.9	17° 22.8	17° 27.6	17° 32.2	17° 36.8	17° 41.2	17° 45.5	17° 49.7	17° 53.8	+4.6	59.6
	Вс 21	123° 29.6	137° 54.2	152° 18.8	166° 43.4	181° 08.0	195° 32.6	209° 57.2	224° 21.8	238° 46.4	253° 11.0	267° 35.6	+24.6	16.2
		18° 40.1	18° 42.2	18° 44.2	18° 46.0	18° 47.7	18° 49.3	18° 50.8	18° 52.1	18° 53.3	18° 54.4	18° 55.3	+1.5	59.6
	Пн 22	123° 45.6	138° 10.3	152° 35.2	167° 00.0	181° 24.8	195° 49.7	210° 14.6	224° 39.6	239° 04.5	253° 29.5	267° 54.5	+24.9	16.2
		18° 54.1	18° 53.0	18° 51.8	18° 50.5	18° 49.0	18° 47.4	18° 45.7	18° 43.8	18° 41.8	18° 39.8	18° 37.5	-1.7	59.4
◑	Вт 23	124° 14.2	138° 39.8	153° 05.5	167° 31.2	181° 56.9	196° 22.8	210° 48.6	225° 14.5	239° 40.5	254° 06.5	268° 32.5	+25.8	16.1
		17° 49.9	17° 45.8	17° 41.6	17° 37.3	17° 32.8	17° 28.3	17° 23.6	17° 18.8	17° 14.0	17° 09.0	17° 03.9	-4.6	59.1
	Ср 24	125° 09.7	139° 36.6	154° 03.5	168° 30.5	182° 57.6	197° 24.8	211° 51.9	226° 19.2	240° 46.5	255° 13.8	269° 41.3	+27.2	16.0
		15° 35.3	15° 28.6	15° 21.8	15° 15.0	15° 08.0	15° 01.0	14° 53.9	14° 46.7	14° 39.4	14° 32.0	14° 24.5	-7.1	58.7
	Чт 25	126° 39.3	141° 07.6	155° 36.0	170° 04.4	184° 32.9	199° 01.5	213° 30.0	227° 58.7	242° 27.4	256° 56.1	271° 25.0	+28.6	15.9
		12° 23.3	12° 14.6	12° 05.9	11° 57.1	11° 48.2	11° 39.3	11° 30.4	11° 21.3	11° 12.2	11° 03.1	10° 53.9	-8.9	58.3
	Пт 26	128° 43.2	143° 12.8	157° 42.4	172° 12.1	186° 41.9	201° 11.7	215° 41.5	230° 11.4	244° 41.3	259° 11.3	273° 41.3	+29.8	15.8
		8° 29.5	8° 19.5	8° 09.5	7° 59.4	7° 49.3	7° 39.2	7° 29.0	7° 18.8	7° 08.5	6° 58.3	6° 48.0	-10.2	57.9
	Сб 27	131° 16.0	145° 46.6	160° 17.3	174° 48.0	189° 18.7	203° 49.4	218° 20.2	232° 51.0	247° 21.8	261° 52.6	276° 23.5	+30.8	15.6
		4° 10.3	3° 59.6	3° 48.9	3° 38.2	3° 27.5	3° 16.8	3° 06.0	2° 55.3	2° 44.5	2° 33.8	2° 23.0	-10.7	57.4
	Вс 28	134° 09.8	148° 41.0	163° 12.3	177° 43.6	192° 14.9	206° 46.3	221° 17.6	235° 49.0	250° 20.3	264° 51.7	279° 23.1	+31.3	15.5
		-0° 18.7	-0° 29.4	-0° 40.1	-0° 50.9	-1° 01.6	-1° 12.3	-1° 23.0	-1° 33.7	-1° 44.3	-1° 55.0	-2° 05.6	-10.7	56.9
	Пн 29	137° 15.6	151° 47.2	166° 18.8	180° 50.4	195° 22.0	209° 53.6	224° 25.1	238° 56.7	253° 28.4	268° 00.0	282° 31.6	+31.6	15.4
		-4° 42.6	-4° 52.9	-5° 03.1	-5° 13.3	-5° 23.5	-5° 33.6	-5° 43.7	-5° 53.8	-6° 03.8	-6° 13.8	-6° 23.8	-10.1	56.4
	Вт 30	140° 25.8	154° 57.4	169° 29.0	184° 00.6	198° 32.2	213° 03.8	227° 35.4	242° 06.9	256° 38.5	271° 10.1	285° 41.6	+31.6	15.2
		-8° 48.2	-8° 57.5	-9° 06.7	-9° 15.9	-9° 25.0	-9° 34.1	-9° 43.1	-9° 52.1	-10° 01.0	-10° 09.8	-10° 18.7	-9.0	55.8
●	Ср 31	143° 34.3	158° 05.8	172° 37.2	187° 08.7	201° 40.1	216° 11.5	230° 42.9	245° 14.3	259° 45.7	274° 17.1	288° 48.5	+31.4	15.1
		-12° 23.8	-12° 31.6	-12° 39.4	-12° 47.1	-12° 54.8	-13° 02.4	-13° 09.9	-13° 17.4	-13° 24.8	-13° 32.1	-13° 39.3	-7.6	55.3

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Новолуние: 1 13h06 — Первая четв.: 9 09h49 — Полнолуние: 17 02h35 — Последняя четв.: 23 20h56 — Новолуние: 31 02h58

СОЛНЦЕ

Ноябрь 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ'/h
Чт 1	184° 06.2	199° 06.3	214° 06.3	229° 06.3	244° 06.3	259° 06.3	94° 06.6	109° 06.6	124° 06.6	139° 06.6	154° 06.6	169° 06.6	+0.0
	-14° 17.8	-14° 18.6	-14° 19.4	-14° 20.2	-14° 21.0	-14° 21.8	-14° 32.2	-14° 33.0	-14° 33.8	-14° 34.6	-14° 35.4	-14° 36.2	-0.8
Пт 2	184° 06.6	199° 06.7	214° 06.7	229° 06.7	244° 06.7	259° 06.7	94° 06.8	109° 06.8	124° 06.8	139° 06.8	154° 06.8	169° 06.8	+0.0
	-14° 37.0	-14° 37.8	-14° 38.6	-14° 39.4	-14° 40.2	-14° 41.0	-14° 51.2	-14° 52.0	-14° 52.8	-14° 53.6	-14° 54.4	-14° 55.2	-0.8
Сб 3	184° 06.8	199° 06.8	214° 06.8	229° 06.9	244° 06.9	259° 06.9	94° 06.9	109° 06.9	124° 06.9	139° 06.8	154° 06.8	169° 06.8	+0.0
	-14° 55.9	-14° 56.7	-14° 57.5	-14° 58.3	-14° 59.1	-14° 59.9	-15° 10.0	-15° 10.8	-15° 11.5	-15° 12.3	-15° 13.1	-15° 13.9	-0.8
Вс 4	184° 06.8	199° 06.8	214° 06.8	229° 06.8	244° 06.8	259° 06.8	94° 06.7	109° 06.7	124° 06.7	139° 06.7	154° 06.7	169° 06.6	-0.0
	-15° 14.6	-15° 15.4	-15° 16.2	-15° 17.0	-15° 17.7	-15° 18.5	-15° 28.5	-15° 29.3	-15° 30.0	-15° 30.8	-15° 31.6	-15° 32.3	-0.8
Пн 5	184° 06.6	199° 06.6	214° 06.6	229° 06.6	244° 06.6	259° 06.6	94° 06.3	109° 06.3	124° 06.3	139° 06.3	154° 06.3	169° 06.2	-0.0
	-15° 33.1	-15° 33.9	-15° 34.6	-15° 35.4	-15° 36.2	-15° 36.9	-15° 46.8	-15° 47.5	-15° 48.3	-15° 49.0	-15° 49.8	-15° 50.6	-0.8
Вт 6	184° 06.2	199° 06.2	214° 06.2	229° 06.2	244° 06.1	259° 06.1	94° 05.8	109° 05.8	124° 05.7	139° 05.7	154° 05.7	169° 05.6	-0.0
	-15° 51.3	-15° 52.1	-15° 52.8	-15° 53.6	-15° 54.3	-15° 55.1	-16° 04.8	-16° 05.5	-16° 06.3	-16° 07.0	-16° 07.8	-16° 08.5	-0.8
Ср 7	184° 05.6	199° 05.6	214° 05.5	229° 05.5	244° 05.5	259° 05.5	94° 05.0	109° 05.0	124° 04.9	139° 04.9	154° 04.9	169° 04.8	-0.0
	-16° 09.2	-16° 10.0	-16° 10.7	-16° 11.5	-16° 12.2	-16° 13.0	-16° 22.5	-16° 23.3	-16° 24.0	-16° 24.7	-16° 25.5	-16° 26.2	-0.7
Чт 8	184° 04.8	199° 04.8	214° 04.7	229° 04.7	244° 04.6	259° 04.6	94° 04.0	109° 04.0	124° 04.0	139° 03.9	154° 03.9	169° 03.8	-0.0
	-16° 26.9	-16° 27.6	-16° 28.4	-16° 29.1	-16° 29.8	-16° 30.6	-16° 40.0	-16° 40.7	-16° 41.4	-16° 42.1	-16° 42.9	-16° 43.6	-0.7
Пт 9	184° 03.8	199° 03.7	214° 03.7	229° 03.6	244° 03.6	259° 03.5	94° 02.9	109° 02.8	124° 02.8	139° 02.7	154° 02.6	169° 02.6	-0.0
	-16° 44.3	-16° 45.0	-16° 45.7	-16° 46.5	-16° 47.2	-16° 47.9	-16° 57.2	-16° 57.9	-16° 58.6	-16° 59.3	-17° 00.0	-17° 00.7	-0.7
Сб 10	184° 02.5	199° 02.5	214° 02.4	229° 02.4	244° 02.3	259° 02.3	94° 01.5	109° 01.4	124° 01.4	139° 01.3	154° 01.2	169° 01.2	-0.1
	-17° 01.4	-17° 02.1	-17° 02.8	-17° 03.5	-17° 04.2	-17° 04.9	-17° 14.1	-17° 14.8	-17° 15.4	-17° 16.1	-17° 16.8	-17° 17.5	-0.7
Вс 11	184° 01.1	199° 01.0	214° 01.0	229° 00.9	244° 00.8	259° 00.8	93° 59.9	108° 59.8	123° 59.7	138° 59.7	153° 59.6	168° 59.5	-0.1
	-17° 18.2	-17° 18.9	-17° 19.6	-17° 20.3	-17° 21.0	-17° 21.7	-17° 30.6	-17° 31.3	-17° 32.0	-17° 32.7	-17° 33.4	-17° 34.1	-0.7
Пн 12	183° 59.5	198° 59.4	213° 59.3	228° 59.2	243° 59.2	258° 59.1	93° 58.1	108° 58.0	123° 57.9	138° 57.8	153° 57.8	168° 57.7	-0.1
	-17° 34.7	-17° 35.4	-17° 36.1	-17° 36.8	-17° 37.5	-17° 38.2	-17° 46.9	-17° 47.6	-17° 48.3	-17° 49.0	-17° 49.6	-17° 50.3	-0.7
Вт 13	183° 57.6	198° 57.5	213° 57.4	228° 57.3	243° 57.3	258° 57.2	93° 56.1	108° 56.0	123° 55.9	138° 55.8	153° 55.7	168° 55.6	-0.1
	-17° 51.0	-17° 51.6	-17° 52.3	-17° 53.0	-17° 53.6	-17° 54.3	-18° 02.9	-18° 03.6	-18° 04.2	-18° 04.9	-18° 05.6	-18° 06.2	-0.7
Ср 14	183° 55.5	198° 55.4	213° 55.4	228° 55.3	243° 55.2	258° 55.1	93° 53.8	108° 53.7	123° 53.7	138° 53.6	153° 53.5	168° 53.4	-0.1
	-18° 06.9	-18° 07.5	-18° 08.2	-18° 08.8	-18° 09.5	-18° 10.1	-18° 18.6	-18° 19.2	-18° 19.9	-18° 20.5	-18° 21.2	-18° 21.8	-0.7
Чт 15	183° 53.3	198° 53.2	213° 53.1	228° 53.0	243° 52.9	258° 52.8	93° 51.4	108° 51.3	123° 51.2	138° 51.1	153° 51.0	168° 50.9	-0.1
	-18° 22.4	-18° 23.1	-18° 23.7	-18° 24.4	-18° 25.0	-18° 25.7	-18° 33.9	-18° 34.6	-18° 35.2	-18° 35.8	-18° 36.5	-18° 37.1	-0.6
Пт 16	183° 50.8	198° 50.7	213° 50.6	228° 50.4	243° 50.3	258° 50.2	93° 48.8	108° 48.7	123° 48.5	138° 48.4	153° 48.3	168° 48.2	-0.1
	-18° 37.7	-18° 38.3	-18° 39.0	-18° 39.6	-18° 40.2	-18° 40.9	-18° 48.9	-18° 49.6	-18° 50.2	-18° 50.8	-18° 51.4	-18° 52.0	-0.6
Сб 17	183° 48.1	198° 48.0	213° 47.8	228° 47.7	243° 47.6	258° 47.5	93° 45.9	108° 45.8	123° 45.7	138° 45.5	153° 45.4	168° 45.3	-0.1
	-18° 52.6	-18° 53.3	-18° 53.9	-18° 54.5	-18° 55.1	-18° 55.7	-19° 03.6	-19° 04.2	-19° 04.8	-19° 05.4	-19° 06.0	-19° 06.6	-0.6
Вс 18	183° 45.2	198° 45.0	213° 44.9	228° 44.8	243° 44.7	258° 44.5	93° 42.8	108° 42.7	123° 42.6	138° 42.5	153° 42.3	168° 42.2	-0.1
	-19° 07.2	-19° 07.8	-19° 08.4	-19° 09.0	-19° 09.6	-19° 10.2	-19° 18.0	-19° 18.6	-19° 19.2	-19° 19.7	-19° 20.3	-19° 20.9	-0.6
Пн 19	183° 42.1	198° 41.9	213° 41.8	228° 41.6	243° 41.5	258° 41.4	93° 39.6	108° 39.4	123° 39.3	138° 39.1	153° 39.0	168° 38.9	-0.1
	-19° 21.5	-19° 22.1	-19° 22.7	-19° 23.3	-19° 23.8	-19° 24.4	-19° 32.0	-19° 32.5	-19° 33.1	-19° 33.7	-19° 34.3	-19° 34.8	-0.6
Вт 20	183° 38.7	198° 38.6	213° 38.4	228° 38.3	243° 38.1	258° 38.0	93° 36.1	108° 35.9	123° 35.8	138° 35.6	153° 35.5	168° 35.3	-0.1
	-19° 35.4	-19° 36.0	-19° 36.6	-19° 37.1	-19° 37.7	-19° 38.3	-19° 45.6	-19° 46.2	-19° 46.7	-19° 47.3	-19° 47.9	-19° 48.4	-0.6
Ср 21	183° 35.2	198° 35.0	213° 34.9	228° 34.7	243° 34.6	258° 34.4	93° 32.4	108° 32.2	123° 32.1	138° 31.9	153° 31.8	168° 31.6	-0.2
	-19° 49.0	-19° 49.5	-19° 50.1	-19° 50.6	-19° 51.2	-19° 51.8	-19° 58.9	-19° 59.5	-20° 00.0	-20° 00.5	-20° 01.1	-20° 01.6	-0.6
Чт 22	183° 31.4	198° 31.3	213° 31.1	228° 31.0	243° 30.8	258° 30.6	93° 28.5	108° 28.3	123° 28.2	138° 28.0	153° 27.8	168° 27.7	-0.2
	-20° 02.2	-20° 02.7	-20° 03.3	-20° 03.8	-20° 04.3	-20° 04.9	-20° 11.8	-20° 12.4	-20° 12.9	-20° 13.4	-20° 14.0	-20° 14.5	-0.5
Пт 23	183° 27.5	198° 27.3	213° 27.2	228° 27.0	243° 26.8	258° 26.6	93° 24.4	108° 24.2	123° 24.0	138° 23.9	153° 23.7	168° 23.5	-0.2
	-20° 15.0	-20° 15.5	-20° 16.1	-20° 16.6	-20° 17.1	-20° 17.6	-20° 24.4	-20° 24.9	-20° 25.4	-20° 25.9	-20° 26.4	-20° 27.0	-0.5
Сб 24	183° 23.3	198° 23.2	213° 23.0	228° 22.8	243° 22.6	258° 22.4	93° 20.1	108° 19.9	123° 19.7	138° 19.5	153° 19.4	168° 19.2	-0.2
	-20° 27.5	-20° 28.0	-20° 28.5	-20° 29.0	-20° 29.5	-20° 30.0	-20° 36.6	-20° 37.1	-20° 37.6	-20° 38.1	-20° 38.6	-20° 39.1	-0.5
Вс 25	183° 19.0	198° 18.8	213° 18.6	228° 18.4	243° 18.2	258° 18.1	93° 15.6	108° 15.4	123° 15.2	138° 15.0	153° 14.8	168° 14.6	-0.2
	-20° 39.6	-20° 40.1	-20° 40.5	-20° 41.0	-20° 41.5	-20° 42.0	-20° 48.4	-20° 48.9	-20° 49.3	-20° 49.8	-20° 50.3	-20° 50.8	-0.5
Пн 26	183° 14.4	198° 14.3	213° 14.1	228° 13.9	243° 13.7	258° 13.5	93° 10.9	108° 10.7	123° 10.5	138° 10.3	153° 10.1	168° 09.9	-0.2
	-20° 51.3	-20° 51.7	-20° 52.2	-20° 52.7	-20° 53.2	-20° 53.6	-20° 59.8	-21° 00.2	-21° 00.7	-21° 01.2	-21° 01.6	-21° 02.1	-0.5
Вт 27	183° 09.7	198° 09.5	213° 09.3	228° 09.1	243° 08.9	258° 08.7	93° 06.0	108° 05.8	123° 05.6	138° 05.4	153° 05.2	168° 05.0	-0.2
	-21° 02.6	-21° 03.0	-21° 03.5	-21° 04.0	-21° 04.4	-21° 04.9	-21° 10.8	-21° 11.2	-21° 11.7	-21° 12.1	-21° 12.6	-21° 13.0	-0.5
Ср 28	183° 04.8	198° 04.6	213° 04.4	228° 04.2	243° 04.0	258° 03.7	93° 01.0	108° 00.8	123° 00.6	138° 00.3	153° 00.1	167° 59.9	-0.2
	-21° 13.5	-21° 13.9	-21° 14.4	-21° 14.8	-21° 15.3	-21° 15.7	-21° 21.4	-21° 21.9	-21° 22.3	-21° 22.7	-21° 23.2	-21° 23.6	-0.4
Чт 29	182° 59.7	197° 59.5	212° 59.3	227° 59.0	242° 58.8	257° 58.6	92° 55.8	107° 55.5	122° 55.3	137° 55.1	152° 54.9	167° 54.6	-0.2
	-21° 24.0	-21° 24.4	-21° 24.9	-21° 25.3	-21° 25.7	-21° 26.2	-21° 31.6	-21° 32.1	-21° 32.5	-21° 32.9	-21° 33.3	-21° 33.7	-0.4
Пт 30	182° 54.4	197° 54.2	212° 54.0	227° 53.7	242° 53.5	257° 53.3	92° 50.4	107° 50.1	122° 49.9	137° 49.7	152° 49.4	167° 49.2	-0.2
	-21° 34.1	-21° 34.5	-21° 35.0	-21° 35.4	-21° 35.8	-21° 36.2	-21° 41.4	-21° 41.8	-21° 42.2	-21° 42.6	-21° 43.0	-21° 43.4	-0.4

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ'/h = изменение $t_{гр}$ за час − 15°
Строка 2: δ (склонение, − = южное), Δ'/h = изменение δ за час
Полудиаметр R: 16.2'

ЛУНА

Ноябрь 2035

Д	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	Δ°/h	R/p
Чт 1	59° 30.5	74° 01.8	88° 33.1	103° 04.4	117° 35.6	132° 06.9	146° 38.1	161° 09.4	175° 40.6	190° 11.8	204° 43.0	+31.3	15.0
	-14° 41.4	-14° 47.9	-14° 54.4	-15° 00.8	-15° 07.1	-15° 13.3	-15° 19.5	-15° 25.6	-15° 31.6	-15° 37.5	-15° 43.3	-6.2	55.0
Пт 2	62° 30.3	77° 01.4	91° 32.5	106° 03.6	120° 34.7	135° 05.8	149° 36.8	164° 07.9	178° 39.0	193° 10.0	207° 41.1	+31.1	14.9
	-17° 01.6	-17° 06.2	-17° 10.7	-17° 15.1	-17° 19.4	-17° 23.6	-17° 27.8	-17° 31.8	-17° 35.8	-17° 39.7	-17° 43.5	-4.2	54.6
Сб 3	65° 26.6	79° 57.6	94° 28.6	108° 59.7	123° 30.7	138° 01.7	152° 32.7	167° 03.8	181° 34.8	196° 05.8	210° 36.9	+31.0	14.8
	-18° 30.4	-18° 32.8	-18° 35.2	-18° 37.4	-18° 39.6	-18° 41.7	-18° 43.7	-18° 45.6	-18° 47.4	-18° 49.1	-18° 50.8	-2.0	54.3
Вс 4	68° 22.9	82° 54.0	97° 25.1	111° 56.3	126° 27.4	140° 58.5	155° 29.7	170° 00.9	184° 32.0	199° 03.2	213° 34.4	+31.1	14.8
	-19° 04.8	-19° 05.0	-19° 05.1	-19° 05.2	-19° 05.2	-19° 05.0	-19° 04.8	-19° 04.5	-19° 04.1	-19° 03.7	-19° 03.1	+0.2	54.1
Пн 5	71° 23.4	85° 54.7	100° 26.1	114° 57.5	129° 28.9	144° 00.3	158° 31.7	173° 03.1	187° 34.6	202° 06.0	216° 37.5	+31.4	14.7
	-18° 44.2	-18° 42.3	-18° 40.3	-18° 38.1	-18° 35.9	-18° 33.6	-18° 31.3	-18° 28.8	-18° 26.3	-18° 23.7	-18° 21.0	+2.3	54.1
Вт 6	74° 31.2	89° 02.9	103° 34.6	118° 06.3	132° 38.0	147° 09.8	161° 41.5	176° 13.3	190° 45.1	205° 16.9	219° 48.7	+31.7	14.8
	-17° 30.4	-17° 26.4	-17° 22.3	-17° 18.1	-17° 13.9	-17° 09.5	-17° 05.1	-17° 00.6	-16° 56.1	-16° 51.4	-16° 46.7	+4.4	54.3
Ср 7	77° 47.3	92° 19.3	106° 51.3	121° 23.3	135° 55.4	150° 27.4	164° 59.5	179° 31.5	194° 03.6	208° 35.7	223° 07.8	+32.0	14.9
	-15° 26.7	-15° 20.7	-15° 14.7	-15° 08.7	-15° 02.5	-14° 56.3	-14° 50.0	-14° 43.6	-14° 37.2	-14° 30.7	-14° 24.1	+6.3	54.6
◐ Чт 8	92° 19.3	106° 51.3	121° 23.3	135° 55.4	150° 27.4	164° 59.5	179° 31.5	194° 03.6	208° 35.7	223° 07.8	237° 39.9	+32.1	14.9
	-15° 20.7	-15° 14.7	-15° 08.7	-15° 02.5	-14° 56.3	-14° 50.0	-14° 43.6	-14° 37.2	-14° 30.7	-14° 24.1	-14° 17.5	+6.3	54.6
Пт 9	95° 42.1	110° 14.3	124° 46.5	139° 18.7	153° 50.9	168° 23.0	182° 55.2	197° 27.4	211° 59.6	226° 31.8	241° 04.0	+32.2	15.0
	-12° 29.9	-12° 22.2	-12° 14.4	-12° 06.6	-11° 58.7	-11° 50.7	-11° 42.7	-11° 34.7	-11° 26.5	-11° 18.4	-11° 10.1	+8.0	55.2
Сб 10	99° 06.4	113° 38.6	128° 10.7	142° 42.7	157° 14.8	171° 46.9	186° 18.9	200° 51.0	215° 23.0	229° 55.0	244° 27.0	+32.1	15.2
	-8° 59.6	-8° 50.4	-8° 41.2	-8° 32.0	-8° 22.7	-8° 13.4	-8° 04.0	-7° 54.5	-7° 45.0	-7° 35.5	-7° 25.9	+9.4	55.9
Вс 11	102° 24.9	116° 56.6	131° 28.3	145° 59.9	160° 31.5	175° 03.1	189° 34.7	204° 06.2	218° 37.7	233° 09.2	247° 40.6	+31.6	15.5
	-4° 57.0	-4° 46.7	-4° 36.4	-4° 26.1	-4° 15.7	-4° 05.3	-3° 54.9	-3° 44.4	-3° 34.0	-3° 23.4	-3° 12.9	+10.4	56.7
Пн 12	105° 28.2	119° 59.0	134° 29.8	149° 00.6	163° 31.4	178° 02.1	192° 32.7	207° 03.3	221° 33.9	236° 04.4	250° 34.8	+30.7	15.7
	-0° 31.3	-0° 20.4	-0° 09.4	0° 01.6	0° 12.5	0° 23.6	0° 34.6	0° 45.6	0° 56.7	1° 07.7	1° 18.8	+11.0	57.6
Вт 13	108° 05.7	122° 35.3	137° 04.9	151° 34.4	166° 03.8	180° 33.2	195° 02.5	209° 31.8	224° 01.0	238° 30.1	252° 59.2	+29.4	16.0
	4° 05.2	4° 16.2	4° 27.3	4° 38.4	4° 49.4	5° 00.4	5° 11.5	5° 22.5	5° 33.5	5° 44.4	5° 55.4	+11.0	58.5
Ср 14	110° 07.5	124° 35.5	139° 03.4	153° 31.3	167° 59.1	182° 26.8	196° 54.5	211° 22.1	225° 49.6	240° 17.0	254° 44.4	+27.7	16.2
	8° 36.6	8° 47.1	8° 57.6	9° 08.0	9° 18.3	9° 28.7	9° 38.9	9° 49.2	9° 59.3	10° 09.5	10° 19.5	+10.3	59.4
○ Чт 15	111° 26.4	125° 52.6	140° 18.8	154° 44.8	169° 10.9	183° 36.8	198° 02.7	212° 28.5	226° 54.2	241° 19.9	255° 45.5	+25.9	16.4
	12° 43.5	12° 52.5	13° 01.5	13° 10.4	13° 19.2	13° 28.0	13° 36.6	13° 45.2	13° 53.7	14° 02.1	14° 10.4	+8.7	60.0
Пт 16	112° 01.5	126° 26.1	140° 50.6	155° 15.1	169° 39.5	184° 03.9	198° 28.2	212° 52.4	227° 16.6	241° 40.8	256° 04.9	+24.3	16.5
	16° 03.9	16° 10.7	16° 17.3	16° 23.8	16° 30.3	16° 36.6	16° 42.8	16° 48.8	16° 54.8	17° 00.7	17° 06.4	+6.3	60.4
Сб 17	112° 01.4	126° 24.9	140° 48.4	155° 11.8	169° 35.3	183° 58.7	198° 22.0	212° 45.4	227° 08.7	241° 32.1	255° 55.4	+23.4	16.5
	18° 17.5	18° 21.3	18° 24.9	18° 28.3	18° 31.6	18° 34.8	18° 37.9	18° 40.8	18° 43.6	18° 46.3	18° 48.8	+3.1	60.5
Вс 18	111° 44.6	126° 07.9	140° 31.2	154° 54.5	169° 17.9	183° 41.3	198° 04.7	212° 28.1	226° 51.5	241° 15.0	255° 38.5	+23.4	16.5
	19° 10.1	19° 10.4	19° 10.5	19° 10.6	19° 10.5	19° 10.3	19° 09.9	19° 09.4	19° 08.7	19° 07.9	19° 07.0	-0.3	60.4
Пн 19	111° 35.0	125° 59.1	140° 23.3	154° 47.5	169° 11.7	183° 36.0	198° 00.4	212° 24.8	226° 49.3	241° 13.8	255° 38.4	+24.3	16.4
	18° 37.2	18° 34.2	18° 31.0	18° 27.7	18° 24.3	18° 20.8	18° 17.1	18° 13.3	18° 09.4	18° 05.4	18° 01.3	-3.6	60.0
Вт 20	111° 54.7	126° 20.3	140° 46.0	155° 11.7	169° 37.6	184° 03.5	198° 29.4	212° 55.5	227° 21.6	241° 47.8	256° 14.0	+25.9	16.2
	16° 45.3	16° 39.4	16° 33.4	16° 27.2	16° 21.0	16° 14.7	16° 08.2	16° 01.7	15° 55.1	15° 48.3	15° 41.5	-6.4	59.4
Ср 21	112° 56.7	127° 24.1	141° 51.6	156° 19.2	170° 46.9	185° 14.6	199° 42.4	214° 10.2	228° 38.2	243° 06.2	257° 34.3	+27.8	16.0
	13° 48.7	13° 40.6	13° 32.3	13° 24.0	13° 15.6	13° 07.2	12° 58.7	12° 50.1	12° 41.4	12° 32.7	12° 23.9	-8.5	58.8
◑ Чт 22	114° 43.7	129° 12.9	143° 42.1	158° 11.4	172° 40.8	187° 10.2	201° 39.7	216° 09.2	230° 38.8	245° 08.4	259° 38.1	+29.4	15.8
	10° 05.0	9° 55.3	9° 45.6	9° 35.9	9° 26.1	9° 16.2	9° 06.3	8° 56.4	8° 46.4	8° 36.4	8° 26.3	-9.9	58.1
Пт 23	117° 10.4	131° 41.0	146° 11.6	160° 42.2	175° 12.9	189° 43.7	204° 14.5	218° 45.3	233° 16.2	247° 47.1	262° 18.0	+30.8	15.7
	5° 51.9	5° 41.3	5° 30.8	5° 20.3	5° 09.7	4° 59.1	4° 48.5	4° 37.9	4° 27.3	4° 16.7	4° 06.0	-10.6	57.4
Сб 24	120° 06.8	134° 38.3	149° 09.9	163° 41.4	178° 13.0	192° 44.6	207° 16.3	221° 48.0	236° 19.7	250° 51.4	265° 23.1	+31.6	15.5
	1° 25.3	1° 14.5	1° 03.8	0° 53.1	0° 42.3	0° 31.6	0° 20.9	0° 10.2	-0° 00.5	-0° 11.2	-0° 21.9	-10.7	56.8
Вс 25	123° 21.5	137° 53.6	152° 25.6	166° 57.6	181° 29.7	196° 01.7	210° 33.8	225° 05.9	239° 37.9	254° 10.0	268° 42.1	+32.1	15.3
	-3° 00.6	-3° 11.1	-3° 21.5	-3° 31.9	-3° 42.2	-3° 52.6	-4° 02.9	-4° 13.2	-4° 23.5	-4° 33.7	-4° 43.9	-10.3	56.2
Пн 26	126° 43.9	141° 16.0	155° 48.2	170° 20.3	184° 52.4	199° 24.5	213° 56.6	228° 28.7	243° 00.8	257° 32.9	272° 05.0	+32.1	15.2
	-7° 13.3	-7° 23.0	-7° 32.6	-7° 42.2	-7° 51.8	-8° 01.3	-8° 10.7	-8° 20.2	-8° 29.5	-8° 38.9	-8° 48.2	-9.5	55.7
Вт 27	130° 05.2	144° 37.1	159° 09.1	173° 41.0	188° 12.9	202° 44.8	217° 16.6	231° 48.5	246° 20.4	260° 52.2	275° 24.0	+31.9	15.1
	-11° 01.6	-11° 10.1	-11° 18.5	-11° 26.9	-11° 35.2	-11° 43.4	-11° 51.6	-11° 59.8	-12° 07.8	-12° 15.8	-12° 23.8	-8.2	55.2
Ср 28	133° 19.6	147° 51.2	162° 22.8	176° 54.4	191° 25.9	205° 57.4	220° 28.9	235° 00.4	249° 31.9	264° 03.4	278° 34.9	+31.5	15.0
	-14° 15.4	-14° 22.3	-14° 29.1	-14° 35.9	-14° 42.6	-14° 49.2	-14° 55.8	-15° 02.2	-15° 08.6	-15° 15.0	-15° 21.2	-6.6	54.8
● Чт 29	136° 25.0	150° 56.2	165° 27.4	179° 58.7	194° 29.8	209° 01.0	223° 32.2	238° 03.4	252° 34.5	267° 05.7	281° 36.8	+31.2	14.9
	-16° 45.9	-16° 51.0	-16° 55.9	-17° 00.7	-17° 05.5	-17° 10.2	-17° 14.8	-17° 19.4	-17° 23.8	-17° 28.2	-17° 32.5	-4.7	54.5
Пт 30	139° 22.7	153° 53.7	168° 24.7	182° 55.7	197° 26.7	211° 57.7	226° 28.7	240° 59.7	255° 30.7	270° 01.7	284° 32.6	+31.0	14.8
	-18° 26.5	-18° 29.4	-18° 32.3	-18° 35.0	-18° 37.6	-18° 40.2	-18° 42.7	-18° 45.1	-18° 47.4	-18° 49.6	-18° 51.7	-2.5	54.2

Строка 1: $t_{\text{гр}}$, Δ'/h = изменение $t_{\text{гр}}$ за час — 14°, R/p = полудиаметр R
Строка 2: δ (— = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC — число) mod 24

Первая четв.: 8 05h50 — Полнолуние: 15 13h48 — Последняя четв.: 22 05h16 — Новолуние: 29 19h37

СОЛНЦЕ

Декабрь 2035

Д	0h	1h	2h	3h	4h	5h	18h	19h	20h	21h	22h	23h	Δ’/h
Сб 1	182° 49.0 -21° 43.8	197° 48.7 -21° 44.2	212° 48.5 -21° 44.6	227° 48.3 -21° 45.0	242° 48.1 -21° 45.4	257° 47.8 -21° 45.8	92° 44.8 -21° 50.8	107° 44.6 -21° 51.2	122° 44.3 -21° 51.6	137° 44.1 -21° 52.0	152° 43.8 -21° 52.4	167° 43.6 -21° 52.7	-0.2 -0.4
Вс 2	182° 43.4 -21° 53.1	197° 43.1 -21° 53.5	212° 42.9 -21° 53.9	227° 42.7 -21° 54.3	242° 42.4 -21° 54.6	257° 42.2 -21° 55.0	92° 39.1 -21° 59.8	107° 38.8 -22° 00.2	122° 38.6 -22° 00.6	137° 38.3 -22° 00.9	152° 38.1 -22° 01.3	167° 37.9 -22° 01.6	-0.2 -0.4
Пн 3	182° 37.6 -22° 02.0	197° 37.4 -22° 02.4	212° 37.1 -22° 02.7	227° 36.9 -22° 03.1	242° 36.6 -22° 03.4	257° 36.4 -22° 03.8	92° 33.2 -22° 08.4	107° 32.9 -22° 08.7	122° 32.7 -22° 09.1	137° 32.4 -22° 09.4	152° 32.2 -22° 09.8	167° 31.9 -22° 10.1	-0.2 -0.4
Вт 4	182° 31.7 -22° 10.4	197° 31.4 -22° 10.8	212° 31.2 -22° 11.1	227° 30.9 -22° 11.5	242° 30.7 -22° 11.8	257° 30.4 -22° 12.2	92° 27.2 -22° 16.5	107° 26.9 -22° 16.8	122° 26.7 -22° 17.2	137° 26.4 -22° 17.5	152° 26.1 -22° 17.8	167° 25.9 -22° 18.1	-0.2 -0.3
Ср 5	182° 25.6 -22° 18.5	197° 25.4 -22° 18.8	212° 25.1 -22° 19.1	227° 24.9 -22° 19.4	242° 24.6 -22° 19.8	257° 24.4 -22° 20.1	92° 21.0 -22° 24.2	107° 20.7 -22° 24.5	122° 20.5 -22° 24.8	137° 20.2 -22° 25.1	152° 20.0 -22° 25.4	167° 19.7 -22° 25.7	-0.3 -0.3
Чт 6	182° 19.4 -22° 26.1	197° 19.2 -22° 26.4	212° 18.9 -22° 26.7	227° 18.7 -22° 27.0	242° 18.4 -22° 27.3	257° 18.1 -22° 27.6	92° 14.7 -22° 31.5	107° 14.4 -22° 31.7	122° 14.2 -22° 32.0	137° 13.9 -22° 32.3	152° 13.7 -22° 32.6	167° 13.4 -22° 32.9	-0.3 -0.3
Пт 7	182° 13.1 -22° 33.2	197° 12.9 -22° 33.5	212° 12.6 -22° 33.8	227° 12.3 -22° 34.1	242° 12.1 -22° 34.4	257° 11.8 -22° 34.6	92° 08.3 -22° 38.3	107° 08.0 -22° 38.5	122° 07.8 -22° 38.8	137° 07.5 -22° 39.1	152° 07.2 -22° 39.4	167° 06.9 -22° 39.6	-0.3 -0.3
Сб 8	182° 06.7 -22° 39.9	197° 06.4 -22° 40.2	212° 06.1 -22° 40.4	227° 05.9 -22° 40.7	242° 05.6 -22° 41.0	257° 05.3 -22° 41.3	92° 01.8 -22° 44.6	107° 01.5 -22° 44.9	122° 01.2 -22° 45.2	137° 00.9 -22° 45.4	152° 00.7 -22° 45.7	167° 00.4 -22° 45.9	-0.3 -0.3
Вс 9	182° 00.1 -22° 46.2	196° 59.8 -22° 46.4	211° 59.6 -22° 46.7	226° 59.3 -22° 46.9	241° 59.0 -22° 47.2	256° 58.7 -22° 47.4	91° 55.1 -22° 50.6	106° 54.8 -22° 50.8	121° 54.6 -22° 51.1	136° 54.3 -22° 51.3	151° 54.0 -22° 51.5	166° 53.7 -22° 51.8	-0.3 -0.3
Пн 10	181° 53.4 -22° 52.0	196° 53.2 -22° 52.2	211° 52.9 -22° 52.5	226° 52.6 -22° 52.7	241° 52.3 -22° 52.9	256° 52.0 -22° 53.1	91° 48.4 -22° 56.1	106° 48.1 -22° 56.3	121° 47.8 -22° 56.5	136° 47.5 -22° 56.7	151° 47.2 -22° 56.9	166° 46.9 -22° 57.1	-0.3 -0.2
Вт 11	181° 46.7 -22° 57.4	196° 46.4 -22° 57.6	211° 46.1 -22° 57.8	226° 45.8 -22° 58.0	241° 45.5 -22° 58.2	256° 45.2 -22° 58.4	91° 41.5 -23° 01.1	106° 41.2 -23° 01.3	121° 40.9 -23° 01.5	136° 40.7 -23° 01.7	151° 40.4 -23° 01.9	166° 40.1 -23° 02.1	-0.3 -0.2
Ср 12	181° 39.8 -23° 02.3	196° 39.5 -23° 02.5	211° 39.2 -23° 02.6	226° 38.9 -23° 02.8	241° 38.6 -23° 03.0	256° 38.4 -23° 03.2	91° 34.6 -23° 05.6	106° 34.3 -23° 05.8	121° 34.0 -23° 06.0	136° 33.7 -23° 06.2	151° 33.4 -23° 06.4	166° 33.1 -23° 06.5	-0.3 -0.2
Чт 13	181° 32.8 -23° 06.7	196° 32.5 -23° 06.9	211° 32.3 -23° 07.1	226° 32.0 -23° 07.2	241° 31.7 -23° 07.4	256° 31.4 -23° 07.6	91° 27.6 -23° 09.8	106° 27.3 -23° 09.9	121° 27.0 -23° 10.1	136° 26.7 -23° 10.2	151° 26.4 -23° 10.4	166° 26.1 -23° 10.5	-0.3 -0.2
Пт 14	181° 25.8 -23° 10.7	196° 25.5 -23° 10.9	211° 25.2 -23° 11.0	226° 24.9 -23° 11.2	241° 24.6 -23° 11.3	256° 24.3 -23° 11.5	91° 20.5 -23° 13.4	106° 20.2 -23° 13.5	121° 19.9 -23° 13.7	136° 19.6 -23° 13.8	151° 19.3 -23° 14.0	166° 19.0 -23° 14.1	-0.3 -0.2
Сб 15	181° 18.7 -23° 14.2	196° 18.4 -23° 14.4	211° 18.1 -23° 14.5	226° 17.8 -23° 14.6	241° 17.5 -23° 14.8	256° 17.2 -23° 14.9	91° 13.3 -23° 16.6	106° 13.0 -23° 16.7	121° 12.7 -23° 16.8	136° 12.4 -23° 17.0	151° 12.1 -23° 17.1	166° 11.8 -23° 17.2	-0.3 -0.1
Вс 16	181° 11.5 -23° 17.3	196° 11.2 -23° 17.4	211° 10.9 -23° 17.5	226° 10.6 -23° 17.7	241° 10.3 -23° 17.8	256° 10.0 -23° 17.9	91° 06.1 -23° 19.3	106° 05.8 -23° 19.4	121° 05.5 -23° 19.5	136° 05.2 -23° 19.6	151° 04.9 -23° 19.7	166° 04.6 -23° 19.8	-0.3 -0.1
Пн 17	181° 04.3 -23° 19.9	196° 04.0 -23° 20.0	211° 03.6 -23° 20.1	226° 03.3 -23° 20.2	241° 03.0 -23° 20.3	256° 02.7 -23° 20.4	90° 58.8 -23° 21.6	105° 58.5 -23° 21.6	120° 58.2 -23° 21.7	135° 57.9 -23° 21.8	150° 57.6 -23° 21.9	165° 57.3 -23° 22.0	-0.3 -0.1
Вт 18	180° 57.0 -23° 22.1	195° 56.7 -23° 22.1	210° 56.3 -23° 22.2	225° 56.0 -23° 22.3	240° 55.7 -23° 22.4	255° 55.4 -23° 22.4	90° 51.5 -23° 23.4	105° 51.1 -23° 23.4	120° 50.8 -23° 23.5	135° 50.5 -23° 23.5	150° 50.2 -23° 23.6	165° 49.9 -23° 23.7	-0.3 -0.1
Ср 19	180° 49.6 -23° 23.7	195° 49.3 -23° 23.8	210° 49.0 -23° 23.8	225° 48.7 -23° 23.9	240° 48.4 -23° 24.0	255° 48.1 -23° 24.0	90° 44.1 -23° 24.7	105° 43.8 -23° 24.7	120° 43.5 -23° 24.8	135° 43.1 -23° 24.8	150° 42.8 -23° 24.8	165° 42.5 -23° 24.9	-0.3 -0.1
Чт 20	180° 42.2 -23° 24.9	195° 41.9 -23° 25.0	210° 41.6 -23° 25.0	225° 41.3 -23° 25.0	240° 41.0 -23° 25.1	255° 40.7 -23° 25.1	90° 36.7 -23° 25.5	105° 36.4 -23° 25.5	120° 36.0 -23° 25.6	135° 35.7 -23° 25.6	150° 35.4 -23° 25.6	165° 35.1 -23° 25.6	-0.3 -0.0
Пт 21	180° 34.8 -23° 25.7	195° 34.5 -23° 25.7	210° 34.2 -23° 25.7	225° 33.9 -23° 25.7	240° 33.6 -23° 25.7	255° 33.3 -23° 25.8	90° 29.2 -23° 25.9	105° 28.9 -23° 25.9	120° 28.6 -23° 25.9	135° 28.3 -23° 25.9	150° 28.0 -23° 25.9	165° 27.7 -23° 25.9	-0.3 -0.0
Сб 22	180° 27.4 -23° 25.9	195° 27.1 -23° 25.9	210° 26.7 -23° 25.9	225° 26.4 -23° 25.9	240° 26.1 -23° 25.9	255° 25.8 -23° 25.9	90° 21.8 -23° 25.8	105° 21.5 -23° 25.8	120° 21.1 -23° 25.8	135° 20.8 -23° 25.8	150° 20.5 -23° 25.8	165° 20.2 -23° 25.7	-0.3 -0.0
Вс 23	180° 19.9 -23° 25.7	195° 19.6 -23° 25.7	210° 19.3 -23° 25.7	225° 19.0 -23° 25.7	240° 18.7 -23° 25.6	255° 18.4 -23° 25.6	90° 14.3 -23° 25.3	105° 14.0 -23° 25.2	120° 13.7 -23° 25.2	135° 13.4 -23° 25.1	150° 13.1 -23° 25.1	165° 12.8 -23° 25.1	-0.3 +0.0
Пн 24	180° 12.4 -23° 25.0	195° 12.1 -23° 25.0	210° 11.8 -23° 25.0	225° 11.5 -23° 24.9	240° 11.2 -23° 24.9	255° 10.9 -23° 24.8	90° 06.8 -23° 24.2	105° 06.5 -23° 24.2	120° 06.2 -23° 24.1	135° 05.9 -23° 24.1	150° 05.6 -23° 24.0	165° 05.3 -23° 23.9	-0.3 +0.0
Вт 25	180° 05.0 -23° 23.9	195° 04.7 -23° 23.8	210° 04.4 -23° 23.8	225° 04.0 -23° 23.7	240° 03.7 -23° 23.7	255° 03.4 -23° 23.6	89° 59.4 -23° 22.7	104° 59.1 -23° 22.6	119° 58.8 -23° 22.6	134° 58.5 -23° 22.5	149° 58.2 -23° 22.4	164° 57.8 -23° 22.3	-0.3 +0.1
Ср 26	179° 57.5 -23° 22.3	194° 57.2 -23° 22.2	209° 56.9 -23° 22.1	224° 56.6 -23° 22.0	239° 56.3 -23° 22.0	254° 56.0 -23° 21.9	89° 52.0 -23° 20.7	104° 51.6 -23° 20.7	119° 51.3 -23° 20.6	134° 51.0 -23° 20.5	149° 50.7 -23° 20.4	164° 50.4 -23° 20.3	-0.3 +0.1
Чт 27	179° 50.1 -23° 20.2	194° 49.8 -23° 20.1	209° 49.5 -23° 20.0	224° 49.2 -23° 19.9	239° 48.9 -23° 19.8	254° 48.6 -23° 19.7	89° 44.6 -23° 18.3	104° 44.2 -23° 18.2	119° 43.9 -23° 18.1	134° 43.6 -23° 18.0	149° 43.3 -23° 17.9	164° 43.0 -23° 17.7	-0.3 +0.1
Пт 28	179° 42.7 -23° 17.6	194° 42.4 -23° 17.5	209° 42.1 -23° 17.4	224° 41.8 -23° 17.3	239° 41.5 -23° 17.2	254° 41.2 -23° 17.0	89° 37.2 -23° 15.4	104° 36.9 -23° 15.3	119° 36.6 -23° 15.1	134° 36.3 -23° 15.0	149° 36.0 -23° 14.9	164° 35.7 -23° 14.7	-0.3 +0.1
Сб 29	179° 35.4 -23° 14.6	194° 35.0 -23° 14.5	209° 34.7 -23° 14.3	224° 34.4 -23° 14.2	239° 34.1 -23° 14.1	254° 33.8 -23° 13.9	89° 29.9 -23° 12.0	104° 29.6 -23° 11.9	119° 29.3 -23° 11.7	134° 29.0 -23° 11.6	149° 28.7 -23° 11.4	164° 28.3 -23° 11.3	-0.3 +0.1
Вс 30	179° 28.0 -23° 11.1	194° 27.7 -23° 11.0	209° 27.4 -23° 10.8	224° 27.1 -23° 10.6	239° 26.8 -23° 10.5	254° 26.5 -23° 10.3	89° 22.6 -23° 08.2	104° 22.3 -23° 08.0	119° 22.0 -23° 07.9	134° 21.7 -23° 07.7	149° 21.4 -23° 07.5	164° 21.1 -23° 07.3	-0.3 +0.2
Пн 31	179° 20.8 -23° 07.2	194° 20.5 -23° 07.0	209° 20.2 -23° 06.8	224° 19.9 -23° 06.6	239° 19.6 -23° 06.5	254° 19.3 -23° 06.3	89° 15.4 -23° 03.9	104° 15.1 -23° 03.7	119° 14.8 -23° 03.5	134° 14.5 -23° 03.3	149° 14.2 -23° 03.1	164° 13.9 -23° 02.9	-0.3 +0.2

Строка 1: $t_{гр}$ (гринвичский часовой угол), Δ’/h = изменение $t_{гр}$ за час — 15°
Строка 2: δ (склонение, — = южное), Δ’/h = изменение δ за час
Полудиаметр R: 16.2’

ЛУНА

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Д	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	Δ'/h	R/p
Сб 1	55° 11.4	69° 42.4	84° 13.4	98° 44.4	113° 15.4	127° 46.4	142° 17.4	156° 48.4	171° 19.4	185° 50.4	200° 21.4	+31.0	14.7
	-19° 06.8	-19° 08.1	-19° 09.2	-19° 10.3	-19° 11.2	-19° 12.1	-19° 12.9	-19° 13.6	-19° 14.2	-19° 14.7	-19° 15.2	-0.8	54.1
Вс 2	58° 07.7	72° 38.9	87° 10.1	101° 41.3	116° 12.5	130° 43.7	145° 14.9	159° 46.2	174° 17.4	188° 48.7	203° 20.0	+31.2	14.7
	-19° 11.0	-19° 10.0	-19° 08.9	-19° 07.7	-19° 06.5	-19° 05.1	-19° 03.7	-19° 02.2	-19° 00.6	-18° 58.9	-18° 57.2	+1.4	53.9
Пн 3	61° 11.3	75° 42.8	90° 14.4	104° 46.0	119° 17.6	133° 49.3	148° 20.9	162° 52.6	177° 24.3	191° 56.0	206° 27.7	+31.6	14.7
	-18° 20.4	-18° 17.2	-18° 14.0	-18° 10.8	-18° 07.4	-18° 03.9	-18° 00.4	-17° 56.8	-17° 53.1	-17° 49.3	-17° 45.5	+3.5	54.0
Вт 4	64° 26.1	78° 58.2	93° 30.3	108° 02.3	122° 34.5	137° 06.6	151° 38.7	166° 10.9	180° 43.1	195° 15.3	209° 47.5	+32.1	14.8
	-16° 38.3	-16° 33.2	-16° 28.0	-16° 22.8	-16° 17.4	-16° 12.1	-16° 06.6	-16° 01.1	-15° 55.5	-15° 49.8	-15° 44.0	+5.4	54.1
Ср 5	67° 53.1	82° 25.6	96° 58.1	111° 30.6	126° 03.2	140° 35.7	155° 08.3	169° 40.9	184° 13.5	198° 46.1	213° 18.7	+32.6	14.9
	-14° 09.5	-14° 02.7	-13° 55.8	-13° 48.8	-13° 41.8	-13° 34.7	-13° 27.6	-13° 20.3	-13° 13.1	-13° 05.7	-12° 58.3	+7.1	54.5
Чт 6	71° 29.2	86° 02.0	100° 34.8	115° 07.5	129° 40.3	144° 13.1	158° 45.9	173° 18.6	187° 51.4	202° 24.2	216° 57.0	+32.8	15.0
	-11° 00.2	-10° 51.8	-10° 43.5	-10° 35.0	-10° 26.5	-10° 18.0	-10° 09.4	-10° 00.8	-9° 52.1	-9° 43.3	-9° 34.5	+8.6	55.0
Пт 7	75° 08.3	89° 41.0	104° 13.7	118° 46.3	133° 19.0	147° 51.7	162° 24.3	176° 56.9	191° 29.5	206° 02.1	220° 34.7	+32.6	15.2
	-7° 16.9	-7° 07.4	-6° 57.8	-6° 48.2	-6° 38.5	-6° 28.8	-6° 19.1	-6° 09.3	-5° 59.5	-5° 49.6	-5° 39.7	+9.7	55.6
◐ Сб 8	89° 41.0	104° 13.7	118° 46.3	133° 19.0	147° 51.7	162° 24.3	176° 56.9	191° 29.5	206° 02.1	220° 34.7	235° 07.3	+32.6	15.2
	-7° 07.4	-6° 57.8	-6° 48.2	-6° 38.5	-6° 28.8	-6° 19.1	-6° 09.3	-5° 59.5	-5° 49.6	-5° 39.7	-5° 29.8	+9.8	55.7
Вс 9	93° 13.1	107° 45.3	122° 17.4	136° 49.5	151° 21.6	165° 53.7	180° 25.7	194° 57.7	209° 29.7	224° 01.6	238° 33.5	+32.0	15.4
	-2° 56.9	-2° 46.4	-2° 36.0	-2° 25.5	-2° 15.0	-2° 04.4	-1° 53.9	-1° 43.3	-1° 32.7	-1° 22.1	-1° 11.4	+10.6	56.5
Пн 10	96° 26.7	110° 57.9	125° 29.0	140° 00.1	154° 31.1	169° 02.1	183° 33.0	198° 03.9	212° 34.7	227° 05.4	241° 36.1	+30.9	15.7
	1° 30.4	1° 41.2	1° 52.1	2° 03.0	2° 13.9	2° 24.8	2° 35.7	2° 46.7	2° 57.6	3° 08.5	3° 19.4	+10.9	57.5
Вт 11	99° 09.1	113° 38.7	128° 08.3	142° 37.9	157° 07.3	171° 36.7	186° 06.0	200° 35.2	215° 04.4	229° 33.4	244° 02.4	+29.3	15.9
	6° 02.5	6° 13.3	6° 24.0	6° 34.8	6° 45.5	6° 56.2	7° 06.9	7° 17.6	7° 28.2	7° 38.8	7° 49.4	+10.7	58.5
Ср 12	101° 07.9	115° 35.6	130° 03.3	144° 30.8	158° 58.2	173° 25.6	187° 52.9	202° 20.1	216° 47.2	231° 14.2	245° 41.1	+27.3	16.2
	10° 24.0	10° 33.9	10° 43.9	10° 53.7	11° 03.5	11° 13.3	11° 23.0	11° 32.7	11° 42.3	11° 51.8	12° 01.3	+9.7	59.5
Чт 13	102° 14.6	116° 40.2	131° 05.6	145° 31.0	159° 56.2	174° 21.4	188° 46.6	203° 11.6	217° 36.5	232° 01.4	246° 26.2	+25.2	16.4
	14° 15.0	14° 23.3	14° 31.5	14° 39.7	14° 47.7	14° 55.6	15° 03.5	15° 11.2	15° 18.9	15° 26.5	15° 33.9	+7.9	60.3
Пт 14	102° 28.4	116° 52.0	131° 15.5	145° 38.9	160° 02.3	174° 25.6	188° 48.8	203° 12.0	217° 35.2	231° 58.2	246° 21.2	+23.3	16.6
	17° 13.2	17° 18.9	17° 24.5	17° 30.0	17° 35.3	17° 40.5	17° 45.6	17° 50.6	17° 55.4	18° 00.1	18° 04.7	+5.2	60.9
○ Сб 15	102° 00.8	116° 23.1	130° 45.4	145° 07.7	159° 30.0	173° 52.2	188° 14.4	202° 36.6	216° 58.8	231° 21.0	245° 43.2	+22.2	16.7
	18° 57.2	18° 59.6	19° 01.8	19° 03.9	19° 05.8	19° 07.6	19° 09.3	19° 10.8	19° 12.2	19° 13.4	19° 14.5	+1.7	61.2
Вс 16	101° 15.7	115° 37.9	130° 00.2	144° 22.5	158° 44.8	173° 07.2	187° 29.6	201° 52.0	216° 14.4	230° 36.9	244° 59.5	+22.4	16.7
	19° 13.0	19° 11.7	19° 10.3	19° 08.8	19° 07.1	19° 05.2	19° 03.2	19° 01.1	18° 58.8	18° 56.4	18° 53.8	-1.9	61.1
Пн 17	100° 43.0	115° 06.4	129° 29.8	143° 53.3	158° 16.8	172° 40.4	187° 04.1	201° 27.8	215° 51.6	230° 15.5	244° 39.5	+23.6	16.6
	17° 59.0	17° 54.3	17° 49.5	17° 44.5	17° 39.4	17° 34.2	17° 28.9	17° 23.5	17° 17.9	17° 12.2	17° 06.4	-5.3	60.7
Вт 18	100° 48.2	115° 13.4	129° 38.7	144° 04.1	158° 29.6	172° 55.2	187° 20.8	201° 46.5	216° 12.4	230° 38.3	245° 04.3	+25.6	16.4
	15° 26.2	15° 18.7	15° 11.1	15° 03.5	14° 55.7	14° 47.8	14° 39.9	14° 31.8	14° 23.7	14° 15.5	14° 07.2	-7.9	60.1
Ср 19	101° 44.4	116° 11.7	130° 39.2	145° 06.7	159° 34.3	174° 02.0	188° 29.7	202° 57.6	217° 25.5	231° 53.5	246° 21.6	+27.7	16.2
	11° 53.8	11° 44.4	11° 34.9	11° 25.3	11° 15.7	11° 06.1	10° 56.3	10° 46.6	10° 36.7	10° 26.9	10° 17.0	-9.7	59.3
Чт 20	103° 32.1	118° 01.4	132° 30.8	147° 00.2	161° 29.7	175° 59.2	190° 28.9	204° 58.6	219° 28.3	233° 58.1	248° 28.0	+29.6	15.9
	7° 43.2	7° 32.7	7° 22.1	7° 11.5	7° 00.9	6° 50.3	6° 39.6	6° 28.9	6° 18.2	6° 07.5	5° 56.8	-10.6	58.4
◑ Пт 21	106° 03.3	120° 34.1	135° 04.9	149° 35.8	164° 06.7	178° 37.7	193° 08.7	207° 39.8	222° 10.9	236° 42.1	251° 13.3	+31.0	15.7
	3° 14.1	3° 03.2	2° 52.3	2° 41.3	2° 30.4	2° 19.5	2° 08.6	1° 57.7	1° 46.8	1° 35.9	1° 25.0	-10.9	57.5
Сб 22	109° 05.7	123° 37.5	138° 09.3	152° 41.1	167° 12.9	181° 44.8	196° 16.7	210° 48.6	225° 20.6	239° 52.5	254° 24.5	+31.9	15.4
	-1° 17.3	-1° 28.0	-1° 38.7	-1° 49.3	-2° 00.0	-2° 10.6	-2° 21.2	-2° 31.8	-2° 42.4	-2° 52.9	-3° 03.4	-10.6	56.6
Вс 23	112° 26.4	126° 58.7	141° 30.9	156° 03.2	170° 35.4	185° 07.7	199° 40.0	214° 12.3	228° 44.6	243° 16.9	257° 49.2	+32.3	15.2
	-5° 37.7	-5° 47.8	-5° 57.8	-6° 07.7	-6° 17.6	-6° 27.5	-6° 37.4	-6° 47.2	-6° 57.0	-7° 06.7	-7° 16.4	-9.9	55.9
Пн 24	115° 53.8	130° 26.1	144° 58.4	159° 30.7	174° 03.0	188° 35.2	203° 07.5	217° 39.7	232° 12.0	246° 44.2	261° 16.5	+32.3	15.1
	-9° 36.4	-9° 45.4	-9° 54.3	-10° 03.2	-10° 12.0	-10° 20.7	-10° 29.4	-10° 38.1	-10° 46.7	-10° 55.2	-11° 03.7	-8.7	55.3
Вт 25	119° 18.7	133° 50.8	148° 22.8	162° 54.8	177° 26.8	191° 58.8	206° 30.8	221° 02.8	235° 34.7	250° 06.7	264° 38.6	+32.0	15.0
	-13° 04.0	-13° 11.5	-13° 19.0	-13° 26.4	-13° 33.8	-13° 41.0	-13° 48.2	-13° 55.4	-14° 02.5	-14° 09.5	-14° 16.4	-7.2	54.8
Ср 26	122° 35.4	137° 07.1	151° 38.7	166° 10.4	180° 42.0	195° 13.6	209° 45.2	224° 16.7	238° 48.3	253° 19.8	267° 51.3	+31.6	14.8
	-15° 52.1	-15° 57.9	-16° 03.6	-16° 09.3	-16° 14.9	-16° 20.4	-16° 25.8	-16° 31.1	-16° 36.4	-16° 41.6	-16° 46.7	-5.5	54.4
Чт 27	125° 42.2	140° 13.5	154° 44.8	169° 16.0	183° 47.3	198° 18.5	212° 49.7	227° 20.9	241° 52.1	256° 23.3	270° 54.5	+31.2	14.8
	-17° 53.7	-17° 57.5	-18° 01.2	-18° 04.8	-18° 08.4	-18° 11.9	-18° 15.3	-18° 18.6	-18° 21.8	-18° 24.9	-18° 28.0	-3.4	54.2
Пт 28	128° 41.2	143° 12.3	157° 43.3	172° 14.4	186° 45.4	201° 16.5	215° 47.5	230° 18.6	244° 49.6	259° 20.7	273° 51.7	+31.1	14.7
	-19° 03.2	-19° 04.9	-19° 06.4	-19° 07.9	-19° 09.3	-19° 10.6	-19° 11.8	-19° 12.9	-19° 13.9	-19° 14.9	-19° 15.7	-1.2	54.0
● Сб 29	131° 37.7	146° 08.8	160° 39.9	175° 11.0	189° 42.2	204° 13.3	218° 44.5	233° 15.6	247° 46.8	262° 18.0	276° 49.1	+31.1	14.7
	-19° 17.8	-19° 17.2	-19° 16.5	-19° 15.8	-19° 14.9	-19° 14.0	-19° 13.0	-19° 11.9	-19° 10.7	-19° 09.4	-19° 08.0	+1.0	53.9
Вс 30	134° 38.5	149° 09.9	163° 41.3	178° 12.8	192° 44.2	207° 15.7	221° 47.2	236° 18.7	250° 50.3	265° 21.8	279° 53.4	+31.5	14.7
	-18° 37.0	-18° 34.3	-18° 31.4	-18° 28.5	-18° 25.5	-18° 22.4	-18° 19.3	-18° 16.0	-18° 12.7	-18° 09.3	-18° 05.8	+3.1	53.9
Пн 31	137° 49.5	152° 21.4	166° 53.3	181° 25.3	195° 57.2	210° 29.2	225° 01.3	239° 33.3	254° 05.4	268° 37.5	283° 09.6	+32.0	14.7
	-17° 03.7	-16° 58.9	-16° 54.1	-16° 49.1	-16° 44.1	-16° 39.1	-16° 33.9	-16° 28.7	-16° 23.4	-16° 18.1	-16° 12.6	+5.1	54.0

Строка 1: $t_{гр}$, Δ'/h = изменение $t_{гр}$ за час − 14°, R/p = полудиаметр R
Строка 2: δ (− = южное), Δ'/h = изменение δ за час, R/p = горизонтальный параллакс p
Столбец = (час UTC − число) mod 24
Первая четв.: 8 01h05 — Полнолуние: 15 00h33 — Последняя четв.: 21 16h28 — Новолуние: 29 14h30