

# Астрономический календарь на 2017 год по месяцам для Москвы (без покрытий звезд и планет Луной)

(время московское)

Сгенерировано при помощи он-лайн календаря <https://www.calsky.com/>

## ЯНВАРЬ

Москва, Россия Lon: +38d00m00.00s Lat: +56d00m00.00s Alt: 194m Geoid Alt: 179m

Sunday 1 January 2017 Time (24-hour clock) Object (Link) Event  
9h37m Mars Conjunction in Right Ascension with Neptune: only 1.2' separated from center of Neptune, position angle=360.00° N  
9h53m Mars Conjunction with Neptune: only 1.1' separated from center of Neptune, position angle=337.82° N. Distance to earth: 1.642 AU  
9h53m Mars (0.9 mag) Close to Neptune: only 1.13' separated from center of Neptune, brightness: 7.9 mag, position angle=336.50° NW; Sun elongation=58.69° East (evening)

Tuesday 3 January 2017 Time (24-hour clock) Object (Link) Event  
13h54.6m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -5.923°, latitude: +0.985°)  
17h Meteor Maximum Quadrantids (QUA) ZHR=130 Velocity=42.9km/s (rather rapid)  
Radiant: RA=15.3h/230° Dec=49.6° (J2000) (in constellation Bootes/Boo)  
Solar longitude=283.2° (J2000)  
Stream active from 31. December to 6. January

Wednesday 4 January 2017 Time (24-hour clock) Object (Link) Event  
17h17.2m Sun Perihelion (distance to sun: 0.9833 AU)

Thursday 5 January 2017 Time (24-hour clock) Object (Link) Event  
4h23m Sun Rotation axis of the Sun is straight up (Position angle: 0.0°, heliographic latitude: -3.5°)  
22h47.0m Moon First Quarter (diameter: 31.9779', declination: +3.040°)

Friday 6 January 2017 Time (24-hour clock) Object (Link) Event  
0h01.7m Moon Topocentric First Quarter (Altitude= +6.0°, topocentric diameter: 32.051', topocentric airfree declination: 2.47°)

Saturday 7 January 2017 Time (24-hour clock) Object (Link) Event  
Pluto Conjunction, 1.0° separated from center of Sun. Distance to earth: 34.230 AU  
15h25.9m Moon Max. Libration (6.966°)

Sunday 8 January 2017 Time (24-hour clock) Object (Link) Event  
3.8h Moon Golden Handle visible on the Moon from 3.6h - 3.8h (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Monday 9 January 2017 Time (24-hour clock) Object (Link) Event  
8h42.6m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -1.052°, latitude: +6.646°)  
12h03m Mercury (0.2 mag) Close to Saturn: 6.8° separated from center of Saturn, brightness: 0.5 mag, position angle=257.00° W; Sun elongation=20.57° West (morning)

Tuesday 10 January 2017 Time (24-hour clock) Object (Link) Event  
9h08.6m Moon Perigee (distance moon center to earth center: 363257.1 km; closest point on earth ellipsoid with latitude 18.1° (WGS84), distance to moon center: 356881.0 km, apparent diameter: 33'29.1")  
12h08m Carrington Solar Rotation Begin of Carrington rotation number 2186

Wednesday 11 January 2017 Time (24-hour clock) Object (Link) Event  
11h Mercury Magnitude brightens to 0 mag  
12h30.0m Moon Max. Decl. North (declination: +18.934°)  
This is the 3rd lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 17.11.2016. Next lower northern northernmost moon position is at 7.2.2017 (calculated for the geocenter)

Thursday 12 January 2017 Time (24-hour clock) Object (Link) Event  
14h34.0m Moon Full Moon (diameter: 32.5597', declination: +18.188°)  
This is the northernmost full moon of the year. Former more northern full moon was at 14.12.2016. Next more northern full moon is at 2.1.2018 (calculated for the geocenter)  
14h43.3m Moon Topocentric Full Moon (Altitude=-12.0°, topocentric diameter: 32.444', topocentric airfree declination: 17.25°, maximum phase: 99.86%)  
16.3h Venus Greatest Elongation (47.1° East, in the evenings, brightness: -4.5 mag)

Friday 13 January 2017 Time (24-hour clock) Object (Link) Event  
0h04m Venus (-4.6 mag) Close to Neptune: only 21.8' separated from center of Neptune, brightness: 7.9 mag, position angle=152.34° SE; Sun elongation=47.14° East (evening)  
0h54m Venus Conjunction with Neptune: only 21.9' separated from center of Neptune, position angle=157.81° S. Distance to earth: 0.681 AU  
4h39m Venus Conjunction in Right Ascension with Neptune: only 24.6' separated from center of Neptune, position angle=180.00° S

Saturday 14 January 2017 Time (24-hour clock) Object (Link) Event  
1.2h Mercury Dichotomy/Half phase

16.5h Venus Dichotomy/Half phase

Sunday 15 January 2017 Time (24-hour clock) Object (Link) Event  
21h21.7m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 6.327°, latitude: -0.488°)

Monday 16 January 2017 Time (24-hour clock) Object (Link) Event  
2h Mars Magnitude dims to +1 mag

Thursday 19 January 2017 Time (24-hour clock) Object (Link) Event  
12.7h Mercury Greatest Elongation (24.1° West, in the mornings, brightness: -0.2 mag)  
23h57.9m Moon Topocentric Last Quarter (Altitude=-10.8°, topocentric diameter: 29.634', topocentric airfree declination: -7.98°)

Friday 20 January 2017 Time (24-hour clock) Object (Link) Event  
1h13.5m Moon Last Quarter (diameter: 29.7048', declination: -7.430°)

Sunday 22 January 2017 Time (24-hour clock) Object (Link) Event  
3h17.3m Moon Apogee (distance moon center to earth center: 404876.9 km; closest point on earth ellipsoid with latitude -13.9° (WGS84), distance to moon center: 398500.0 km, apparent diameter: 29'59.3")  
22h01.8m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: -0.228°, latitude: -6.782°)

Monday 23 January 2017 Time (24-hour clock) Object (Link) Event  
10h37.6m Moon Max. Libration (6.797°)

Wednesday 25 January 2017 Time (24-hour clock) Object (Link) Event  
15h01.7m Moon Max. Decl. South (declination: -18.902°)  
This is the 2nd lowest southernmost moon position of the next 10 years, and the 2nd lowest of the year. Former lower southern southernmost moon position was at 4.11.2016. Next lower southern southernmost moon position is at 21.2.2017 (calculated for the geocenter)

Saturday 28 January 2017 Time (24-hour clock) Object (Link) Event  
3h07.0m Moon New Moon (diameter: 30.6598', declination: -16.043°)  
3h18.0m Moon Topocentric New Moon (Altitude=-40.6°, topocentric diameter: 30.341', topocentric airfree declination: -16.65°, minimum phase: 0.02%)

Sunday 29 January 2017 Time (24-hour clock) Object (Link) Event  
19h39.6m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -4.987°, latitude: -0.439°)  
20h29m Mercury Conjunction in Right Ascension with Pluto (1.2° separated from center of Pluto), position angle=0.00° N  
21h07m Mercury (-0.2 mag) Close to Pluto: 1.2° separated from center of Pluto, brightness: 14.3 mag, position angle=358.30° N; Sun elongation=22.14° West (morning)  
23h21m Mercury Conjunction with Pluto, 1.2° separated from center of Pluto, position angle=352.39° N. Distance to earth: 1.175 AU

## ФЕВРАЛЬ

Wednesday 1 February 2017 Time (24-hour clock) Object (Link) Event  
16h08m Jupiter (-2.2 mag) Close to Spica, Alp Vir, SAO 157923 (Multiple star system): 3.6° separated, brightness: 1.0 mag, Position angle=185.94° S; Sun elongation=108.78° West (morning)

Thursday 2 February 2017 Time (24-hour clock) Object (Link) Event  
14h31m Venus (-4.8 mag) Close to Mars: 5.4° separated from center of Mars, brightness: 1.1 mag, position angle=92.15° E; Sun elongation=45.28° East (evening)

Saturday 4 February 2017 Time (24-hour clock) Object (Link) Event  
7h18.7m Moon Topocentric First Quarter (Altitude=-22.4°, topocentric diameter: 32.020', topocentric airfree declination: 10.79°)  
7h18.9m Moon First Quarter (diameter: 32.2308', declination: +11.694°)  
This is the 2nd biggest first quarter moon of the year. Former larger first quarter moon was at 16.1.2016. Next larger first quarter moon is at 5.3.2017 (calculated for the geocenter)

Sunday 5 February 2017 Time (24-hour clock) Object (Link) Event  
2h37.2m Moon Max. Libration (6.831°)  
13h52.8m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -0.673°, latitude: +6.771°)

Monday 6 February 2017 Time (24-hour clock) Object (Link) Event  
9.7h Jupiter Stationary: Getting Retrograde (relative to ecliptic)  
17h11.1m Moon Perigee (distance moon center to earth center: 368847.1 km; closest point on earth ellipsoid with latitude 18.0° (WGS84), distance to moon center: 362471.0 km, apparent diameter: 32'58.1")  
20h20m Carrington Solar Rotation Begin of Carrington rotation number 2187  
21.5h Moon Golden Handle visible on the Moon from 19.5h - 4.8h (htop=52° at S at 20.9h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)  
22.2h Jupiter Stationary: Getting Retrograde (relative to equator)

Tuesday 7 February 2017 Time (24-hour clock) Object (Link) Event

17.3h Mercury Aphelion (distance to sun: 0.4667 AU)  
21h39.3m Moon Max. Decl. North (declination: +18.867°)

This is the 2nd lowest northernmost moon position of the next 10 years, and the 2nd lowest of the year. Former lower northern northernmost moon position was at 17.11.2016. Next lower northern northernmost moon position is at 7.3.2017 (calculated for the geocenter)

Thursday 9 February 2017 Time (24-hour clock) Object (Link) Event  
Jupiter Apparent Diameter grows to 40 arcsec (Brightness: -2.3 mag)

Saturday 11 February 2017 Time (24-hour clock) Object (Link) Event  
3h32.9m Moon Full Moon (diameter: 31.6504', declination: +13.078°)  
3h43m53s Lunar Eclipse → graphical chart Greatest eclipse: Penumbral Lunar Eclipse  
Saros-Number: 114, Magnitude=1.014, Umbral Magnitude=-0.030, Position angle=13.4°, Position angle vertex=343.9°  
Brightness=-11.9mag, Diameter=31.95'  
Duration penumbral phase=263.2 minutes, ET-UT=68.6sec  
Altitude=33.8°, Azimuth=237.8° WSW, Sun altitude=-35.6°

3h50.0m Moon Topocentric Full Moon (Altitude=+33.1°, topocentric diameter: 31.944', topocentric airfree declination: 12.34°, maximum phase: 99.98%)  
4h16m Sun Equation of time is at minimum with -14.21 minutes (sundials are late). Today, the Sun culminates latest of the year

Sunday 12 February 2017 Time (24-hour clock) Object (Link) Event  
13h56.5m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 5.114°, latitude: -1.018°)

Saturday 18 February 2017 Time (24-hour clock) Object (Link) Event  
21h46.7m Moon Topocentric Last Quarter (Altitude=-35.1°, topocentric diameter: 29.281', topocentric airfree declination: -15.61°)  
22h33.1m Moon Last Quarter (diameter: 29.5407', declination: -15.053°)  
This is the 12th smallest last quarter moon of the last 1000 years, the 4th smallest of the last 100 years, the smallest of the last 10 years, the smallest of the next 100 years, the smallest of the year, the smallest of the decade, the smallest of the century, and the 17th smallest of the millenium. Former smaller last quarter moon was at 8.2.1999. Next smaller last quarter moon is at 31.12.2121 (calculated for the geocenter)

Sunday 19 February 2017 Time (24-hour clock) Object (Link) Event  
0h14.0m Moon Apogee (distance moon center to earth center: 404335.6 km; closest point on earth ellipsoid with latitude -15.2° (WGS84), distance to moon center: 397958.9 km, apparent diameter: 30'01.7")  
4h47.2m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: -0.385°, latitude: -6.865°)  
This is the 13th southernmost total libration of the last 1000 years, the 4th southernmost of the last 100 years, the southernmost of the last 10 years, the southernmost of the next 100 years, the southernmost of the year, the southernmost of the decade, the southernmost of the century, and the 7th southernmost of the millenium. Former more southern total libration was at 18.1.1963. Next more southern total libration is at 26.11.2784 (calculated for the geocenter)  
21.1h Venus Brilliancy (Brightness: -4.85 mag)

Monday 20 February 2017 Time (24-hour clock) Object (Link) Event  
5h05.1m Moon Max. Libration (6.913°)  
20.0h Venus Perihelion (distance to sun: 0.7185 AU)

Tuesday 21 February 2017 Time (24-hour clock) Object (Link) Event  
23h52.7m Moon Max. Decl. South (declination: -18.849°)  
This is the lowest southernmost moon position of the next 10 years, and the lowest of the year. Former lower southern southernmost moon position was at 4.11.2016. Next lower southern southernmost moon position is at 24.2.2033 (calculated for the geocenter)

Saturday 25 February 2017 Time (24-hour clock) Object (Link) Event  
11h03.8m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -5.349°, latitude: -1.506°)

Sunday 26 February 2017 Time (24-hour clock) Object (Link) Event  
15h10m49s Annular Solar Eclipse Solar Eclipse begins  
Contact at 95°04.1'W 33°05.8'S  
16h15m20s Annular Solar Eclipse Umbra eclipse begins  
Contact at 113°35.2'W 42°57.2'S  
17h53m24.0s Annular Solar Eclipse Greatest Solar Eclipse: annular, Saros-Number: 140, Gamma: -0.4578  
At 31°11.3'W 34°40.8'S, alt=62.7°, Width=27.3km, Duration=0m39.3s, Magnitude=99.3%, Obscuration=98.6%, ET-UT=68.7sec  
→ MapIt → Load path of the Annular Solar Eclipse into Google Earth  
17h58.4m Moon New Moon (diameter: 31.5854', declination: -8.904°)  
19h19.4m Moon Topocentric New Moon (Altitude=-13.0°, topocentric diameter: 31.488', topocentric airfree declination: -9.46°, minimum phase: 0.01%)  
19h31m35s Annular Solar Eclipse Umbra eclipse ends  
Contact at 26°54.6'E 10°45.3'S  
20h36m00s Annular Solar Eclipse Solar Eclipse ends  
Contact at 9°19.2'E 0°52.0'S

Monday 27 February 2017 Time (24-hour clock) Object (Link) Event  
2h57m Mars (1.3 mag) Close to Uranus: only 34.2' separated from center of Uranus, brightness: 5.9 mag, position angle=157.04° SE; Sun elongation=43.41° East (evening)  
3h19m Mars Conjunction with Uranus: only 34.2' separated from center of Uranus, position angle=158.10° S. Distance to earth: 2.023 AU  
11h23m Mars Conjunction in Right Ascension with Uranus: only 37.1' separated from center of Uranus, position angle=180.00° S

## MAPT

Thursday 2 March 2017 Time (24-hour clock) Object (Link) Event  
Neptune Conjunction: only 51.0' separated from center of Sun. Distance to earth: 30.942 AU

Friday 3 March 2017 Time (24-hour clock) Object (Link) Event  
10h24.8m Moon Perigee (distance moon center to earth center: 369095.0 km; closest point on earth ellipsoid with latitude 11.2° (WGS84), distance to moon center: 362717.7 km, apparent diameter: 32'56.8")

Saturday 4 March 2017 Time (24-hour clock) Object (Link) Event  
8h30m Mercury Conjunction in Right Ascension with Neptune (1.1° separated from center of Neptune), position angle=360.00° N  
14h10m Mercury Conjunction with Neptune, 1.0° separated from center of Neptune, position angle=337.52° N. Distance to earth: 1.374 AU  
14h38m Mercury (-1.6 mag) Close to Neptune: 1.0° separated from center of Neptune, brightness: 8.0 mag, position angle=335.50° NW; Sun elongation=2.44° West (morning)  
18h29.0m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: 0.584°, latitude: +6.785°)  
This is the 2nd northernmost total libration of the year. Former more northern total libration was at 25.8.2016. Next more northern total libration is at 15.8.2017 (calculated for the geocenter)

Sunday 5 March 2017 Time (24-hour clock) Object (Link) Event  
3h40.2m Moon Max. Libration (6.828°)  
13h26.8m Moon Topocentric First Quarter (Altitude=+21.4°, topocentric diameter: 32.453', topocentric airfree declination: 16.64°)  
14h32.4m Moon First Quarter (diameter: 32.2442', declination: +17.466°)  
This is the biggest first quarter moon of the year. Former larger first quarter moon was at 29.11.2014. Next larger first quarter moon is at 24.3.2018 (calculated for the geocenter)  
This is the 2nd northernmost first quarter moon of the year. Former more northern first quarter moon was at 15.3.2016. Next more northern first quarter moon is at 3.4.2017 (calculated for the geocenter)

Monday 6 March 2017 Time (24-hour clock) Object (Link) Event  
4h23m Carrington Solar Rotation Begin of Carrington rotation number 2188  
12h21m Sun Sun South Pole points towards us (maximum southern heliographic latitude of the Earth) (Position angle: -22.8°, heliographic latitude: -7.3°)

Tuesday 7 March 2017 Time (24-hour clock) Object (Link) Event  
3.5h Mercury Conjunction (superior), 1.7° separated from center of Sun. Distance to earth: 1.363 AU  
3h49.1m Moon Max. Decl. North (declination: +18.861°)  
This is the lowest northernmost moon position of the next 10 years, and the lowest of the year. Former lower northern northernmost moon position was at 17.11.2016. Next lower northern northernmost moon position is at 8.3.2033 (calculated for the geocenter)

Wednesday 8 March 2017 Time (24-hour clock) Object (Link) Event  
13.4h Moon Golden Handle visible on the Moon from 13.4h -21.0h (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Thursday 9 March 2017 Time (24-hour clock) Object (Link) Event  
Mars Dust storm season ends

Saturday 11 March 2017 Time (24-hour clock) Object (Link) Event  
6h52.8m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 4.695°, latitude: -0.034°)

Sunday 12 March 2017 Time (24-hour clock) Object (Link) Event  
16h09.3m Moon Topocentric Full Moon (Altitude=-16.2°, topocentric diameter: 30.604', topocentric airfree declination: 4.15°, maximum phase: 99.99%)  
17h53.8m Moon Full Moon (diameter: 30.7193', declination: +4.648°)

Friday 17 March 2017 Time (24-hour clock) Object (Link) Event  
2h21m Mercury Conjunction in Right Ascension with Venus (9.5° separated from center of Venus), position angle=0.00° N

Saturday 18 March 2017 Time (24-hour clock) Object (Link) Event  
7h Sun Equilux - equal length of day and night for this site (local spring)  
11h44.7m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: -0.543°, latitude: -6.810°)  
15h27m Mercury Conjunction with Venus (Mercury is farther away), 8.5° separated from center of Venus, position angle=336.83° NW. Distance to earth: 1.229 AU  
20h22.3m Moon Apogee (distance moon center to earth center: 404611.8 km; closest point on earth ellipsoid with latitude -16.3° (WGS84), distance to moon center: 398235.4 km, apparent diameter: 30'00.5")  
21h01m Mercury (-1.3 mag) Close to Venus (Mercury is farther away): 8.5° separated from center of Venus, brightness: -4.2 mag, position angle=333.03° NW; Sun elongation=11.22° East (evening)

Monday 20 March 2017 Time (24-hour clock) Object (Link) Event  
13h28.6m Sun March Equinox  
18h58.2m Moon Last Quarter (diameter: 29.6952', declination: -18.778°)  
This is the 2nd smallest last quarter moon of the year. Former smaller last quarter moon was at 18.2.2017. Next smaller last quarter moon is at 9.3.2018 (calculated for the geocenter)  
This is the southernmost last quarter moon of the year. Former more southern last quarter moon was at 4.3.2013. Next more southern last quarter moon is at 8.4.2018 (calculated for the geocenter)  
19h08.9m Moon Topocentric Last Quarter (Altitude=-52.8°, topocentric diameter: 29.330', topocentric airfree declination: -19.32°)

Tuesday 21 March 2017 Time (24-hour clock) Object (Link) Event  
 3h48.8m Moon Max. Libration (6.949°)  
 8h24.0m Moon Max. Decl. South (declination: -18.913°)  
 This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 21.2.2017. Next lower southern southernmost moon position is at 24.2.2033 (calculated for the geocenter)

Thursday 23 March 2017 Time (24-hour clock) Object (Link) Event  
 16.9h Mercury Perihelion (distance to sun: 0.3075 AU)

Saturday 25 March 2017 Time (24-hour clock) Object (Link) Event  
 2h23.6m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -6.412°, latitude: -1.063°)  
 4.9h Venus Closest Approach (distance to earth: 0.281 AU, brightness: -4.2 mag, diameter: 59.35")  
 13.3h Venus Conjunction (inferior), 8.3° separated from center of Sun. Distance to earth: 0.281 AU

Sunday 26 March 2017 Time (24-hour clock) Object (Link) Event  
 13h31m Mercury (-0.9 mag) Close to Uranus: 2.1° separated from center of Uranus, brightness: 5.9 mag, position angle=150.48° SE; Sun elongation=17.23° East (evening)  
 18h06m Mercury Conjunction with Uranus, 2.1° separated from center of Uranus, position angle=158.21° S. Distance to earth: 1.042 AU

Monday 27 March 2017 Time (24-hour clock) Object (Link) Event  
 8h56m Mercury Conjunction in Right Ascension with Uranus (2.4° separated from center of Uranus), position angle=180.00° S

Tuesday 28 March 2017 Time (24-hour clock) Object (Link) Event  
 4h54.1m Moon Topocentric New Moon (Altitude=-14.7°, topocentric diameter: 32.321', topocentric airfree declination: -0.71°, minimum phase: 0.11%)  
 5h57.2m Moon New Moon (diameter: 32.4721', declination: +0.314°)

Thursday 30 March 2017 Time (24-hour clock) Object (Link) Event  
 8.7h Mercury Dichotomy/Half phase  
 15h24.4m Moon Perigee (distance moon center to earth center: 363874.0 km; closest point on earth ellipsoid with latitude 10.9° (WGS84), distance to moon center: 357496.6 km, apparent diameter: 33'25.6")

Friday 31 March 2017 Time (24-hour clock) Object (Link) Event  
 23h36.1m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: 1.208°, latitude: +6.681°)

## АПРЕЛЬ

Saturday 1 April 2017 Time (24-hour clock) Object (Link) Event  
 13.3h Mercury Greatest Elongation (19.0° East, in the evenings, brightness: -0.1 mag)

Sunday 2 April 2017 Time (24-hour clock) Object (Link) Event  
 10h Mercury Magnitude dims to 0 mag  
 10h38.5m Moon Max. Libration (6.997°)  
 11h44m Carrington Solar Rotation Begin of Carrington rotation number 2189

Monday 3 April 2017 Time (24-hour clock) Object (Link) Event  
 9h14.0m Moon Max. Decl. North (declination: +18.983°)  
 This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 7.3.2017. Next lower northern northernmost moon position is at 9.2.2033 (calculated for the geocenter)  
 21h39.4m Moon First Quarter (diameter: 32.0216', declination: +18.826°)  
 This is the northernmost first quarter moon of the year. Former more northern first quarter moon was at 8.3.2014. Next more northern first quarter moon is at 24.3.2018 (calculated for the geocenter)  
 22h03.4m Moon Topocentric First Quarter (Altitude=+36.2°, topocentric diameter: 32.342', topocentric airfree declination: 18.15°)

Thursday 6 April 2017 Time (24-hour clock) Object (Link) Event  
 8h Saturn Stationary: Getting Retrograde (relative to ecliptic)  
 9h Saturn Stationary: Getting Retrograde (relative to equator)  
 13h16.2m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 5.582°, latitude: +1.380°)  
 19h30m Sun Sun rotation axis at maximum tilt (Position angle: -26.3°, heliographic latitude: -6.2°)

Friday 7 April 2017 Time (24-hour clock) Object (Link) Event  
 3.5h Moon Golden Handle visible on the Moon from 1.5h - 4.7h (h<sub>top</sub>=10° at W at 3.5h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Saturday 8 April 2017 Time (24-hour clock) Object (Link) Event  
 0h39m Jupiter Opposition (distance to earth: 4.455 AU, brightness: -2.5 mag, diameter: 44.19")

Sunday 9 April 2017 Time (24-hour clock) Object (Link) Event  
 0h26m Jupiter Closest Approach (distance to earth: 4.455 AU, brightness: -2.5 mag, diameter: 44.19")

Tuesday 11 April 2017 Time (24-hour clock) Object (Link) Event  
8h37.4m Moon Topocentric Full Moon (Altitude=-21.6°, topocentric diameter: 29.792', topocentric airfree declination: -5.45°, maximum phase: 99.93%)  
9h08.1m Moon Full Moon (diameter: 29.9599', declination: -4.807°)

Friday 14 April 2017 Time (24-hour clock) Object (Link) Event  
Uranus Conjunction: only 33.6' separated from center of Sun. Distance to earth: 20.933 AU  
16h38.6m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: -0.255°, latitude: -6.673°)

Saturday 15 April 2017 Time (24-hour clock) Object (Link) Event  
12h21m Sun Equation of time is zero; the apparent solar time is now equal to the mean solar time  
12h57.3m Moon Apogee (distance moon center to earth center: 405445.4 km; closest point on earth ellipsoid with latitude -17.2° (WGS84), distance to moon center: 399069.1 km, apparent diameter: 29'56.7")

Sunday 16 April 2017 Time (24-hour clock) Object (Link) Event  
3h Meteor Shower April Lyrids (LYR) (active until 25.4., from constellation Hercules/Her), persistent trails.

Monday 17 April 2017 Time (24-hour clock) Object (Link) Event  
16h16.4m Moon Max. Decl. South (declination: -19.096°)  
This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 21.3.2017. Next lower southern southernmost moon position is at 10.10.2032 (calculated for the geocenter)

Wednesday 19 April 2017 Time (24-hour clock) Object (Link) Event  
12h56.7m Moon Last Quarter (diameter: 30.1191', declination: -17.595°)  
This is the 2nd southernmost last quarter moon of the year. Former more southern last quarter moon was at 20.3.2017. Next more southern last quarter moon is at 9.3.2018 (calculated for the geocenter)  
14h30.6m Moon Topocentric Last Quarter (Altitude=-29.9°, topocentric diameter: 29.907', topocentric airfree declination: -18.14°)

Thursday 20 April 2017 Time (24-hour clock) Object (Link) Event  
8.9h Mercury Conjunction (inferior), 1.6° separated from center of Sun. Distance to earth: 0.575 AU  
Pluto Stationary: Getting Retrograde (relative to ecliptic)  
Pluto Stationary: Getting Retrograde (relative to equator)

Saturday 22 April 2017 Time (24-hour clock) Object (Link) Event  
3h44.8m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -7.421°, latitude: +0.144°)  
9h02.2m Moon Max. Libration (7.425°)  
17h Meteor Maximum April Lyrids (LYR) ZHR=12.8 Velocity=47.9km/s (rather rapid)  
Radiant: RA=18.1h/271° Dec=33.2° (J2000) (in constellation Hercules/Her)  
Solar longitude=32.4° (J2000)  
Stream active from 16. to 25. April

Sunday 23 April 2017 Time (24-hour clock) Object (Link) Event  
11.6h Mercury Closest Approach (distance to earth: 0.568 AU, brightness: 5.3 mag, diameter: 11.83")

Wednesday 26 April 2017 Time (24-hour clock) Object (Link) Event  
15h16.2m Moon New Moon (diameter: 33.1320', declination: +9.331°)  
16h13.0m Moon Topocentric New Moon (Altitude=+26.2°, topocentric diameter: 33.404', topocentric airfree declination: 8.72°, minimum phase: 0.21%)  
18.2h Venus Brilliancy (Brightness: -4.75 mag)

Thursday 27 April 2017 Time (24-hour clock) Object (Link) Event  
19h08.0m Moon Perigee (distance moon center to earth center: 359337.3 km; closest point on earth ellipsoid with latitude 13.9° (WGS84), distance to moon center: 352960.4 km, apparent diameter: 33'51.4")

Friday 28 April 2017 Time (24-hour clock) Object (Link) Event  
5h42.5m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: 0.360°, latitude: +6.554°)  
15h18m Mercury (3.2 mag) Close to Uranus: only 5.6' separated from center of Uranus, brightness: 5.9 mag, position angle=308.17° NW; Sun elongation=13.09° West (morning)  
17h49m Mercury Conjunction with Uranus: only 6.5' separated from center of Uranus, position angle=338.64° N. Distance to earth: 0.585 AU  
20h49m Mercury Conjunction in Right Ascension with Uranus: only 9.2' separated from center of Uranus, position angle=360.00° N

Saturday 29 April 2017 Time (24-hour clock) Object (Link) Event  
18h04m Carrington Solar Rotation Begin of Carrington rotation number 2190

Sunday 30 April 2017 Time (24-hour clock) Object (Link) Event  
16h33.9m Moon Max. Decl. North (declination: +19.186°)  
This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 3.4.2017. Next lower northern northernmost moon position is at 25.9.2032 (calculated for the geocenter)

# МАЙ

Monday 1 May 2017 Time (24-hour clock) Object (Link) Event  
20h35.4m Moon Max. Libration (7.069°)

Wednesday 3 May 2017 Time (24-hour clock) Object (Link) Event  
5h21.8m Moon Topocentric First Quarter (Altitude=-17.4°, topocentric diameter: 31.439', topocentric airfree declination: 14.62°)  
5h46.9m Moon First Quarter (diameter: 31.5908', declination: +15.472°)

Thursday 4 May 2017 Time (24-hour clock) Object (Link) Event  
0h44.4m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 6.801°, latitude: +0.757°)

Friday 5 May 2017 Time (24-hour clock) Object (Link) Event  
14h52m Mars Begin of northern Spring

Saturday 6 May 2017 Time (24-hour clock) Object (Link) Event  
1h02m Mars (1.6 mag) Close to Aldebaran, Alp Tau, SAO 94027 (Multiple star system): 6.2° separated, brightness: 0.9 mag, Position angle=170.87° S; Sun elongation=24.38° East (evening)  
16.4h Moon Golden Handle visible on the Moon from 15.2h - 0.4h (htop=37° at S at 21.5h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)  
16.5h Mercury Aphelion (distance to sun: 0.4667 AU)

Monday 8 May 2017 Time (24-hour clock) Object (Link) Event  
2h27m Mercury Conjunction in Right Ascension with Uranus (2.2° separated from center of Uranus), position angle=0.00° N

Wednesday 10 May 2017 Time (24-hour clock) Object (Link) Event  
8h20m Mercury Conjunction with Uranus, 2.4° separated from center of Uranus, position angle=338.86° N. Distance to earth: 0.705 AU

Thursday 11 May 2017 Time (24-hour clock) Object (Link) Event  
0h42.5m Moon Full Moon (diameter: 29.5010', declination: -13.088°)  
This is the 2nd smallest full moon of the year. Former smaller full moon was at 22.4.2016. Next smaller full moon is at 9.6.2017 (calculated for the geocenter)  
1h00.1m Moon Topocentric Full Moon (Altitude=+19.8°, topocentric diameter: 29.662', topocentric airfree declination: -13.97°, maximum phase: 99.87%)  
18h57.5m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 0.614°, latitude: -6.577°)

Friday 12 May 2017 Time (24-hour clock) Object (Link) Event  
22h37.8m Moon Apogee (distance moon center to earth center: 406195.1 km; closest point on earth ellipsoid with latitude -17.5° (WGS84), distance to moon center: 399818.9 km, apparent diameter: 29'53.3")

Sunday 14 May 2017 Time (24-hour clock) Object (Link) Event  
4h20m Sun Equation of time is at maximum with 3.67 minutes (sundials are early). The equation of time reaches a minor maximum - the Sun culminates before the mean noon  
23h35.9m Moon Max. Decl. South (declination: -19.303°)  
This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 17.4.2017. Next lower southern southernmost moon position is at 12.9.2032 (calculated for the geocenter)

Thursday 18 May 2017 Time (24-hour clock) Object (Link) Event  
2.4h Mercury Greatest Elongation (25.8° West, in the mornings, brightness: 0.4 mag)

Friday 19 May 2017 Time (24-hour clock) Object (Link) Event  
3h32.8m Moon Last Quarter (diameter: 30.7024', declination: -12.043°)  
3h43.8m Moon Topocentric Last Quarter (Altitude=+11.7°, topocentric diameter: 30.815', topocentric airfree declination: -12.86°)

Saturday 20 May 2017 Time (24-hour clock) Object (Link) Event  
7h59.3m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -7.888°, latitude: +1.655°)  
This is the 2nd westernmost total libration of the year. Former more western total libration was at 13.2.2015. Next more western total libration is at 26.12.2017 (calculated for the geocenter)

Sunday 21 May 2017 Time (24-hour clock) Object (Link) Event  
14h23.6m Moon Max. Libration (8.258°)

Tuesday 23 May 2017 Time (24-hour clock) Object (Link) Event  
17.8h Mercury Dichotomy/Half phase

Thursday 25 May 2017 Time (24-hour clock) Object (Link) Event  
2h30m Mars (1.7 mag) Close to Alnath, Bet Tau, SAO 77168 (Multiple star system): 4.6° separated, brightness: 1.6 mag, Position angle=356.36° N; Sun elongation=18.90° East (evening)  
6h Saturn Summer begins on northern hemisphere  
12h31.6m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -1.551°, latitude: +6.519°)  
14h Mercury Magnitude brightens to 0 mag

22h44.5m Moon New Moon (diameter: 33.4363', declination: +16.192°)  
This is the nearest new moon of the year. Former closer new moon was at 7.4.2016. Next closer new moon is at 30.8.2019 (calculated for the geocenter)  
22h56.5m Moon Topocentric New Moon (Altitude=-16.2°, topocentric diameter: 33.275', topocentric airfree declination: 15.26°, minimum phase: 0.26%)

Friday 26 May 2017 Time (24-hour clock) Object (Link) Event  
4h14.5m Moon Perigee (distance moon center to earth center: 357209.8 km; closest point on earth ellipsoid with latitude 16.8° (WGS84), distance to moon center: 350833.4 km, apparent diameter: 34'03.7")  
This is the nearest perigee of the year. Former closer perigee was at 14.11.2016. Next closer perigee is at 1.1.2018 (calculated for the closest point on the Earth ellipsoid)  
23h25m Carrington Solar Rotation Begin of Carrington rotation number 2191

Sunday 28 May 2017 Time (24-hour clock) Object (Link) Event  
2h36.9m Moon Max. Decl. North (declination: +19.363°)  
This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 30.4.2017. Next lower northern northernmost moon position is at 29.8.2032 (calculated for the geocenter)

## ИЮНЬ

Thursday 1 June 2017 Time (24-hour clock) Object (Link) Event  
2h45.2m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 7.453°, latitude: -0.773°)  
This is the easternmost east libration of the year. Former more eastern east libration was at 18.12.2016. Next more eastern east libration is at 7.1.2018 (calculated for the geocenter)  
13h55.0m Moon Topocentric First Quarter (Altitude=+17.3°, topocentric diameter: 31.209', topocentric airfree declination: 8.00°)  
15h42.1m Moon First Quarter (diameter: 31.0205', declination: +8.462°)

Friday 2 June 2017 Time (24-hour clock) Object (Link) Event  
17h43m Venus Conjunction in Right Ascension with Uranus (1.8° separated from center of Uranus, position angle=0.00° N)  
20h46.0m Moon Max. Libration (7.619°)

Saturday 3 June 2017 Time (24-hour clock) Object (Link) Event  
8h08m Venus (-4.4 mag) Close to Uranus: 1.7° separated from center of Uranus, brightness: 5.9 mag, position angle=342.11° N; Sun elongation=45.74° West (morning)  
10h32m Venus Conjunction with Uranus, 1.7° separated from center of Uranus, position angle=339.03° N. Distance to earth: 0.699 AU  
15.5h Venus Greatest Elongation (45.9° West, in the mornings, brightness: -4.4 mag)

Sunday 4 June 2017 Time (24-hour clock) Object (Link) Event  
9.2h Venus Dichotomy/Half phase

Monday 5 June 2017 Time (24-hour clock) Object (Link) Event  
2.7h Moon Golden Handle visible on the Moon from 1.8h - 2.7h (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Tuesday 6 June 2017 Time (24-hour clock) Object (Link) Event  
15h25m Sun Earth crosses the equator of the Sun south to north

Wednesday 7 June 2017 Time (24-hour clock) Object (Link) Event  
Jupiter Apparent Diameter shrinks to 40 arcsec (Brightness: -2.3 mag)  
20h15.0m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 1.818°, latitude: -6.604°)

Friday 9 June 2017 Time (24-hour clock) Object (Link) Event  
1h05.3m Moon Apogee (distance moon center to earth center: 406405.5 km; closest point on earth ellipsoid with latitude -17.3° (WGS84), distance to moon center: 400029.2 km, apparent diameter: 29'52.4")  
This is the 2nd farthest apogee of the year. Former farther apogee was at 27.11.2016. Next farther apogee is at 19.12.2017 (calculated for the closest point on the Earth ellipsoid)  
15h54.9m Moon Topocentric Full Moon (Altitude=-36.9°, topocentric diameter: 29.130', topocentric airfree declination: -18.92°, maximum phase: 99.87%)  
16h09.6m Moon Full Moon (diameter: 29.4027', declination: -18.329°)  
This is the smallest full moon of the next 10 years, and the smallest of the year. Former smaller full moon was at 5.3.2015. Next smaller full moon is at 22.10.2029 (calculated for the geocenter)  
This is the 2nd southernmost full moon of the year. Former more southern full moon was at 20.6.2016. Next more southern full moon is at 9.7.2017 (calculated for the geocenter)  
17.0h Jupiter Stationary: Getting Prograde (relative to ecliptic)

Saturday 10 June 2017 Time (24-hour clock) Object (Link) Event  
7h33m Mars (1.7 mag) Close to Tejat Prior, Eta Gem, SAO 78135: 1.8° separated, brightness: 3.5 mag, Position angle=181.15° S; Sun elongation=14.19° East (evening)  
7.9h Jupiter Stationary: Getting Prograde (relative to equator)

Sunday 11 June 2017 Time (24-hour clock) Object (Link) Event  
6h40.3m Moon Max. Decl. South (declination: -19.428°)  
This is the 3rd lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 14.5.2017. Next lower southern southernmost moon position is at 4.8.2017 (calculated for the geocenter)  
23h56m Mercury (-1.2 mag) Close to Aldebaran, Alp Tau, SAO 94027 (Multiple star system): 4.9° separated, brightness: 0.9 mag, Position angle=166.22° S; Sun elongation=11.55° West (morning)



Tuesday 13 June 2017 Time (24-hour clock) Object (Link) Event  
0.2h Venus Aphelion (distance to sun: 0.7282 AU)  
3h19m Mars (1.7 mag) Close to Tejat Posterior, Mu Gem, SAO 78297 (Multiple star system): 1.8° separated, brightness: 2.9 mag, Position angle=181.97° S; Sun elongation=13.36° East (evening)  
4h15m Sun Equation of time is zero; the apparent solar time is now equal to the mean solar time

Thursday 15 June 2017 Time (24-hour clock) Object (Link) Event  
13h Saturn Opposition (distance to earth: 9.043 AU, brightness: 0.0 mag, diameter: 18.30")  
17h Saturn Closest Approach (distance to earth: 9.043 AU, brightness: 0.0 mag, diameter: 18.30")

Friday 16 June 2017 Time (24-hour clock) Object (Link) Event  
Neptune Stationary: Getting Retrograde (relative to ecliptic)

Saturday 17 June 2017 Time (24-hour clock) Object (Link) Event  
Neptune Stationary: Getting Retrograde (relative to equator)  
10h13.6m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -7.585°, latitude: +3.065°)  
14h32.7m Moon Last Quarter (diameter: 31.3098', declination: -3.781°)  
16h01.0m Moon Topocentric Last Quarter (Altitude=-29.7°, topocentric diameter: 31.086', topocentric airfree declination: -4.27°)

Sunday 18 June 2017 Time (24-hour clock) Object (Link) Event  
3h40.8m Sun Earliest Sunrise of the Year for this site  
20h13m Mars (1.7 mag) Close to A24 Geminorum, SAO 95912 (Multiple star system): 7.7° separated, brightness: 1.9 mag, Position angle=183.62° S; Sun elongation=11.68° East (evening)

Monday 19 June 2017 Time (24-hour clock) Object (Link) Event  
2h20.6m Moon Max. Libration (8.628°)  
16.2h Mercury Perihelion (distance to sun: 0.3075 AU)

Tuesday 20 June 2017 Time (24-hour clock) Object (Link) Event  
4h56m Mars (1.7 mag) Close to Meksuta, Eps Gem, SAO 78682: 1.1° separated, brightness: 3.1 mag, Position angle=4.01° N; Sun elongation=11.28° East (evening)

Wednesday 21 June 2017 Time (24-hour clock) Object (Link) Event  
7h24.2m Sun Northern Solstice (declination: +23.434°)  
17.2h Mercury Conjunction (superior), 1.1° separated from center of Sun. Distance to earth: 1.324 AU  
19h28.7m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -3.307°, latitude: +6.604°)

Friday 23 June 2017 Time (24-hour clock) Object (Link) Event  
4h13m Carrington Solar Rotation Begin of Carrington rotation number 2192  
13h45.2m Moon Perigee (distance moon center to earth center: 357931.5 km; closest point on earth ellipsoid with latitude 18.7° (WGS84), distance to moon center: 351555.5 km, apparent diameter: 33'59.5")

Saturday 24 June 2017 Time (24-hour clock) Object (Link) Event  
5h30.7m Moon New Moon (diameter: 33.3355', declination: +19.344°)  
This is the 2nd nearest new moon of the year. Former closer new moon was at 25.5.2017. Next closer new moon is at 13.7.2018 (calculated for the geocenter)  
5h36.9m Moon Topocentric New Moon (Altitude=+7.9°, topocentric diameter: 33.420', topocentric airfree declination: 18.51°, minimum phase: 0.19%)  
14h09.2m Moon Max. Decl. North (declination: +19.436°)  
21h18.7m Sun Latest Sunset of the Year for this site

Wednesday 28 June 2017 Time (24-hour clock) Object (Link) Event  
21h17m Mercury Conjunction in Right Ascension with Mars: only 46.7' separated from center of Mars, position angle=180.00° S  
22h24m Mercury (-1.4 mag) Close to Mars: only 46.5' separated from center of Mars, brightness: 1.7 mag, position angle=184.93° S; Sun elongation=8.69° East (evening)  
22h50m Mercury Conjunction with Mars: only 46.5' separated from center of Mars, position angle=186.87° S. Distance to earth: 1.298 AU

Thursday 29 June 2017 Time (24-hour clock) Object (Link) Event  
8h47.1m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 7.367°, latitude: -2.407°)

## ИЮЛЬ

Saturday 1 July 2017 Time (24-hour clock) Object (Link) Event  
3h36.5m Moon Topocentric First Quarter (Altitude=-25.1°, topocentric diameter: 30.215', topocentric airfree declination: -1.14°)  
3h51.1m Moon First Quarter (diameter: 30.4199', declination: -0.422°)  
13h20.5m Moon Max. Libration (8.229°)

Sunday 2 July 2017 Time (24-hour clock) Object (Link) Event  
16h46m Mercury (-1.0 mag) Close to P78 Geminorum, SAO 79666 (Multiple star system): 4.8° separated, brightness: 1.2 mag, Position angle=9.75° N; Sun elongation=12.74° East (evening)

Monday 3 July 2017 Time (24-hour clock) Object (Link) Event  
6h58m Mars (1.7 mag) Close to Wasat, Del Gem, SAO 79294 (Multiple star system): 1.2° separated, brightness: 3.5 mag, Position angle=187.65° S; Sun elongation=7.33° East (evening)  
23h11.6m Sun Aphelion (distance to sun: 1.0167 AU)

Tuesday 4 July 2017 Time (24-hour clock) Object (Link) Event  
16.4h Moon Golden Handle visible on the Moon from 16.4h -22.0h (htop=21° at S at 21.0h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)  
22h49.4m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 2.887°, latitude: -6.725°)

Thursday 6 July 2017 Time (24-hour clock) Object (Link) Event  
7h17.7m Moon Apogee (distance moon center to earth center: 405955.3 km; closest point on earth ellipsoid with latitude -17.2° (WGS84), distance to moon center: 399579.0 km, apparent diameter: 29'54.4")  
22h09m Sun Rotation axis of the Sun is straight up (Position angle: 0.0°, heliographic latitude: +3.5°)

Saturday 8 July 2017 Time (24-hour clock) Object (Link) Event  
13h48.7m Moon Max. Decl. South (declination: -19.439°)  
This is the 3rd lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 11.6.2017. Next lower southern southernmost moon position is at 4.8.2017 (calculated for the geocenter)

Sunday 9 July 2017 Time (24-hour clock) Object (Link) Event  
7h06.6m Moon Full Moon (diameter: 29.6690', declination: -19.209°)  
This is the southernmost full moon of the year. Former more southern full moon was at 23.6.2013. Next more southern full moon is at 28.6.2018 (calculated for the geocenter)  
8h17.8m Moon Topocentric Full Moon (Altitude=-31.0°, topocentric diameter: 29.439', topocentric airfree declination: -19.81°, maximum phase: 99.95%)

Monday 10 July 2017 Time (24-hour clock) Object (Link) Event  
Pluto Opposition (distance to earth: 32.347 AU, brightness: 14.2 mag, diameter: 0.13")  
13h34m Mars (1.7 mag) Close to P78 Geminorum, SAO 79666 (Multiple star system): 5.6° separated, brightness: 1.2 mag, Position angle=9.56° N; Sun elongation=5.22° East (evening)

Friday 14 July 2017 Time (24-hour clock) Object (Link) Event  
2h23m Venus (-4.1 mag) Close to Aldebaran, Alp Tau, SAO 94027 (Multiple star system): 3.1° separated, brightness: 0.9 mag, Position angle=169.94° S; Sun elongation=41.86° West (morning)

Saturday 15 July 2017 Time (24-hour clock) Object (Link) Event  
4h11.0m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -6.570°, latitude: +3.937°)

Sunday 16 July 2017 Time (24-hour clock) Object (Link) Event  
22h25.7m Moon Last Quarter (diameter: 31.8233', declination: +5.262°)  
22h25.8m Moon Topocentric Last Quarter (Altitude=-12.6°, topocentric diameter: 31.712', topocentric airfree declination: 4.44°)

Monday 17 July 2017 Time (24-hour clock) Object (Link) Event  
3h Meteor Shower Perseids (PER) (active until 24.8., from constellation Cassiopeia/Cas), 10-14 August numerous meteors.  
6h35.9m Moon Max. Libration (8.392°)

Wednesday 19 July 2017 Time (24-hour clock) Object (Link) Event  
1h53.9m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -3.892°, latitude: +6.733°)

Thursday 20 July 2017 Time (24-hour clock) Object (Link) Event  
9h03m Carrington Solar Rotation Begin of Carrington rotation number 2193  
15h Mercury Magnitude dims to 0 mag

Friday 21 July 2017 Time (24-hour clock) Object (Link) Event  
20h04.9m Moon Perigee (distance moon center to earth center: 361222.1 km; closest point on earth ellipsoid with latitude 19.4° (WGS84), distance to moon center: 354846.3 km, apparent diameter: 33'40.6")

Saturday 22 July 2017 Time (24-hour clock) Object (Link) Event  
1h07.0m Moon Max. Decl. North (declination: +19.413°)  
This is the 2nd lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 27.5.2017. Next lower northern northernmost moon position is at 18.8.2017 (calculated for the geocenter)

Sunday 23 July 2017 Time (24-hour clock) Object (Link) Event  
12h45.6m Moon New Moon (diameter: 32.8585', declination: +17.940°)  
12h46.8m Moon Topocentric New Moon (Altitude=+51.2°, topocentric diameter: 33.316', topocentric airfree declination: 17.31°, minimum phase: 0.06%)

Tuesday 25 July 2017 Time (24-hour clock) Object (Link) Event  
17h47m Venus (-4.0 mag) Close to Alnath, Bet Tau, SAO 77168 (Multiple star system): 7.3° separated, brightness: 1.6 mag, Position angle=354.76° N; Sun elongation=39.78° West (morning)

Wednesday 26 July 2017 Time (24-hour clock) Object (Link) Event  
0h58m Mercury (0.2 mag) Close to Regulus, Alp Leo, SAO 98967 (Multiple star system): only 57.0' separated, brightness: 1.4 mag, Position angle=29.43° NE; Sun elongation=26.79° East (evening)  
6h45m Sun Equation of time is at minimum with -6.53 minutes (sundials are late). The equation of time reaches a minor minimum - the Sun culminates after the mean noon

Thursday 27 July 2017 Time (24-hour clock) Object (Link) Event  
3h57m Mars Conjunction, 1.1° separated from center of Sun. Distance to earth: 2.655 AU  
9h40m Venus (-4.0 mag) Close to Zet Tau, SAO 77336 (Close double star): only 23.3' separated, brightness: 3.0 mag, Position angle=175.51° S; Sun elongation=39.46° West (morning)  
13h34.6m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 6.693°, latitude: -3.716°)

Friday 28 July 2017 Time (24-hour clock) Object (Link) Event  
2.5h Mercury Dichotomy/Half phase

Saturday 29 July 2017 Time (24-hour clock) Object (Link) Event  
18h06.3m Moon Max. Libration (8.344°)

Sunday 30 July 2017 Time (24-hour clock) Object (Link) Event  
7.6h Mercury Greatest Elongation (27.2° East, in the evenings, brightness: 0.3 mag)  
17h10.5m Moon Topocentric First Quarter (Altitude=+22.5°, topocentric diameter: 30.111', topocentric airfree declination: -9.93°)  
18h23.1m Moon First Quarter (diameter: 29.9121', declination: -9.285°)

## АВГУСТ

Tuesday 1 August 2017 Time (24-hour clock) Object (Link) Event  
3h53.7m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 3.432°, latitude: -6.839°)

Wednesday 2 August 2017 Time (24-hour clock) Object (Link) Event  
15.8h Mercury Aphelion (distance to sun: 0.4667 AU)  
20h49.5m Moon Apogee (distance moon center to earth center: 405058.0 km; closest point on earth ellipsoid with latitude -17.6° (WGS84), distance to moon center: 398681.8 km, apparent diameter: 29'58.5")  
23.6h Moon Golden Handle visible on the Moon from 21.6h - 0.9h (htop=8° at SW at 23.6h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Thursday 3 August 2017 Time (24-hour clock) Object (Link) Event  
Uranus Stationary: Getting Retrograde (relative to ecliptic)  
Uranus Stationary: Getting Retrograde (relative to equator)  
22h42m Venus (-4.0 mag) Close to Tejat Prior, Eta Gem, SAO 78135: only 32.7' separated, brightness: 3.5 mag, Position angle=359.03° N; Sun elongation=37.98° West (morning)

Friday 4 August 2017 Time (24-hour clock) Object (Link) Event  
21h14.6m Moon Max. Decl. South (declination: -19.392°)  
This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 14.5.2017. Next lower southern southernmost moon position is at 16.8.2032 (calculated for the geocenter)

Saturday 5 August 2017 Time (24-hour clock) Object (Link) Event  
13h18m Venus (-4.0 mag) Close to Tejat Posterior, Mu Gem, SAO 78297 (Multiple star system): only 31.7' separated, brightness: 2.9 mag, Position angle=359.80° N; Sun elongation=37.65° West (morning)  
13h51m Mars Fareast Distance (distance to earth: 2.658 AU, brightness: 1.7 mag, diameter: 3.52")

Monday 7 August 2017 Time (24-hour clock) Object (Link) Event  
20h22m17s Lunar Eclipse Partial lunar eclipse begins  
Position Angle=138.2°, Position angle vertex=168.2°, Altitude=1.1°, Azimuth=121.5° ESE, Sun altitude=-0.2°  
20h47.4m Moon Topocentric Full Moon (Altitude=+3.8°, topocentric diameter: 30.289', topocentric airfree declination: -16.29°, maximum phase: 100.00%)  
21h10.6m Moon Full Moon (diameter: 30.2574', declination: -15.439°)  
21h20m28s Lunar Eclipse → graphical chart Greatest eclipse: Partial Lunar Eclipse  
Saros-Number: 119, Magnitude=0.252, Position angle=168.5°, Position angle vertex=193.5°  
Brightness=-11.1 mag, Diameter=30.32'  
Duration partial phase=116.5 minutes,  
Duration penumbral phase=304.8 minutes, ET-UT=68.9sec  
Altitude=7.2°, Azimuth=133.5° SE, Sun altitude=-7.2°  
22h18m48s Lunar Eclipse Partial lunar eclipse ends  
Position Angle=198.8°, Position angle vertex=217.5°, Altitude=12.3°, Azimuth=146.3° SSE, Sun altitude=-12.4°

Tuesday 8 August 2017 Time (24-hour clock) Object (Link) Event  
13h57m Venus (-4.0 mag) Close to A24 Geminorum, SAO 95912 (Multiple star system): 5.6° separated, brightness: 1.9 mag, Position angle=181.25° S; Sun elongation=37.02° West (morning)

Friday 11 August 2017 Time (24-hour clock) Object (Link) Event

2h13.2m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -5.346°, latitude: +3.629°)

Sunday 13 August 2017 Time (24-hour clock) Object (Link) Event  
3h Meteor Maximum Perseids (PER) ZHR=100  
Local hour rate=52 Velocity=60.4km/s (rapid)  
Radiant: RA=3.2h/48° Dec=58.0° (J2000) (in constellation Cassiopeia/Cas)  
Solar longitude=140.2° (J2000)  
Stream active from 17. July to 24. August

Monday 14 August 2017 Time (24-hour clock) Object (Link) Event  
2h21.8m Moon Max. Libration (7.750°)

Tuesday 15 August 2017 Time (24-hour clock) Object (Link) Event  
4h15.1m Moon Last Quarter (diameter: 32.1653', declination: +13.259°)  
4h20.0m Moon Topocentric Last Quarter (Altitude=+40.8°, topocentric diameter: 32.537', topocentric airfree declination: 12.58°)  
7h17.6m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -3.168°, latitude: +6.798°)  
This is the northernmost total libration of the year. Former more northern total libration was at 15.3.2016. Next more northern total libration is at 25.1.2018 (calculated for the geocenter)

Wednesday 16 August 2017 Time (24-hour clock) Object (Link) Event  
14h22m Carrington Solar Rotation Begin of Carrington rotation number 2194  
20h26m Venus (-3.9 mag) Close to Wasat, Del Gem, SAO 79294 (Multiple star system): only 33.7' separated, brightness: 3.5 mag, Position angle=5.24° N; Sun elongation=35.25° West (morning)

Friday 18 August 2017 Time (24-hour clock) Object (Link) Event  
9h49.8m Moon Max. Decl. North (declination: +19.381°)  
This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 27.5.2017. Next lower northern northernmost moon position is at 29.8.2032 (calculated for the geocenter)  
16h10.4m Moon Perigee (distance moon center to earth center: 366096.5 km; closest point on earth ellipsoid with latitude 19.4° (WGS84), distance to moon center: 359720.7 km, apparent diameter: 33'13.2")

Monday 21 August 2017 Time (24-hour clock) Object (Link) Event  
1h57m Venus (-3.9 mag) Close to P78 Geminorum, SAO 79666 (Multiple star system): 7.2° separated, brightness: 1.2 mag, Position angle=7.25° N; Sun elongation=34.32° West (morning)  
18h46m52s Total Solar Eclipse Solar Eclipse begins  
Contact at 153°02.1'W 30°30.0'N  
19h48m34s Total Solar Eclipse Umbra eclipse begins  
Contact at 171°21.1'W 39°37.9'N  
21h25m31.3s Total Solar Eclipse Greatest Solar Eclipse: total, Saros-Number: 145, Gamma: 0.4367  
At 87°40.2'W 36°58.0'N, alt=64.1°, Width=117.9km, Duration=2m44.7s, Magnitude=103.1%, Obscuration=100.0%, ET-UT=68.9sec  
→MapIt →Load path of the Total Solar Eclipse into Google Earth  
21h30.2m Moon New Moon (diameter: 32.1016', declination: +12.264°)  
21h41.2m Moon Topocentric New Moon (Altitude=-14.0°, topocentric diameter: 31.970', topocentric airfree declination: 11.36°, minimum phase: 0.00%)  
23h02m35s Total Solar Eclipse Umbra eclipse ends  
Contact at 27°36.0'W 10°54.8'N

Tuesday 22 August 2017 Time (24-hour clock) Object (Link) Event  
0h04m22s Total Solar Eclipse Solar Eclipse ends  
Contact at 44°59.7'W 1°42.2'N

Wednesday 23 August 2017 Time (24-hour clock) Object (Link) Event  
21.7h Mercury Closest Approach (distance to earth: 0.617 AU, brightness: 4.4 mag, diameter: 10.89")

Thursday 24 August 2017 Time (24-hour clock) Object (Link) Event  
12h15.6m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 5.757°, latitude: -4.459°)

Friday 25 August 2017 Time (24-hour clock) Object (Link) Event  
15h Saturn Stationary: Getting Prograde (relative to ecliptic)  
18h Saturn Stationary: Getting Prograde (relative to equator)

Saturday 26 August 2017 Time (24-hour clock) Object (Link) Event  
17h15.3m Moon Max. Libration (8.088°)  
23.7h Mercury Conjunction (inferior), 4.2° separated from center of Sun. Distance to earth: 0.625 AU

Monday 28 August 2017 Time (24-hour clock) Object (Link) Event  
10h47.2m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 3.413°, latitude: -6.849°)  
This is the 2nd southernmost total libration of the year. Former more southern total libration was at 19.2.2017. Next more southern total libration is at 7.2.2018 (calculated for the geocenter)

Tuesday 29 August 2017 Time (24-hour clock) Object (Link) Event  
9h46.7m Moon Topocentric First Quarter (Altitude=-34.4°, topocentric diameter: 29.349', topocentric airfree declination: -16.75°)  
11h13.0m Moon First Quarter (diameter: 29.6056', declination: -16.252°)

This is the 2nd smallest first quarter moon of the year. Former smaller first quarter moon was at 10.8.2016. Next smaller first quarter moon is at 28.9.2017 (calculated for the geocenter)

Wednesday 30 August 2017 Time (24-hour clock) Object (Link) Event  
14h22.8m Moon Apogee (distance moon center to earth center: 404347.3 km; closest point on earth ellipsoid with latitude -18.3° (WGS84), distance to moon center: 397971.3 km, apparent diameter: 30'01.7")  
14h22.9m Moon Apogee (distance moon center to earth center: 404347.3 km; closest point on earth ellipsoid with latitude -18.3° (WGS84), distance to moon center: 397971.3 km, apparent diameter: 30'01.7")

## СЕНТЯБРЬ

Friday 1 September 2017 Time (24-hour clock) Object (Link) Event  
5h02.5m Moon Max. Decl. South (declination: -19.393°)  
This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 4.8.2017. Next lower southern southernmost moon position is at 16.8.2032 (calculated for the geocenter)  
10h04m Sun Equation of time is zero; the apparent solar time is now equal to the mean solar time  
16.7h Moon Golden Handle visible on the Moon from 16.7h -17.4h (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Saturday 2 September 2017 Time (24-hour clock) Object (Link) Event  
3h08m Mercury Conjunction in Right Ascension with Mars (4.1° separated from center of Mars), position angle=0.00° N

Sunday 3 September 2017 Time (24-hour clock) Object (Link) Event  
12h38m Mercury Conjunction with Mars, 3.4° separated from center of Mars, position angle=20.18° N. Distance to earth: 0.716 AU

Tuesday 5 September 2017 Time (24-hour clock) Object (Link) Event  
3h05m Mercury (1.5 mag) Close to Mars: 3.2° separated from center of Mars, brightness: 1.8 mag, position angle=44.41° NE; Sun elongation=12.94° West (morning)  
Neptune Opposition (distance to earth: 28.939 AU, brightness: 7.8 mag, diameter: 2.32")  
15h04m Mars (1.8 mag) Close to Regulus, Alp Leo, SAO 98967 (Multiple star system): only 42.2' separated, brightness: 1.4 mag, Position angle=200.61° S; Sun elongation=13.06° West (morning)

Wednesday 6 September 2017 Time (24-hour clock) Object (Link) Event  
10h02.8m Moon Full Moon (diameter: 31.0774', declination: -7.972°)  
10h27.1m Moon Topocentric Full Moon (Altitude=-36.9°, topocentric diameter: 30.778', topocentric airfree declination: -8.61°, maximum phase: 99.96%)  
11h54.3m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -4.928°, latitude: +2.405°)

Friday 8 September 2017 Time (24-hour clock) Object (Link) Event  
14h26m Sun Sun North Pole points towards us (maximum northern heliographic latitude of the Earth) (Position angle: 22.8°, heliographic latitude: +7.3°)

Sunday 10 September 2017 Time (24-hour clock) Object (Link) Event  
5h Mercury Magnitude brightens to 0 mag  
12h11.9m Moon Max. Libration (7.143°)  
15h09m Mercury (-0.1 mag) Close to Regulus, Alp Leo, SAO 98967 (Multiple star system): only 35.6' separated, brightness: 1.4 mag, Position angle=0.52° N; Sun elongation=17.70° West (morning)

Monday 11 September 2017 Time (24-hour clock) Object (Link) Event  
11h48.0m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -1.908°, latitude: +6.746°)

Tuesday 12 September 2017 Time (24-hour clock) Object (Link) Event  
5h44m Jupiter (-1.7 mag) Close to Spica, Alp Vir, SAO 157923 (Multiple star system): 3.1° separated, brightness: 1.0 mag, Position angle=202.11° S; Sun elongation=34.59° East (evening)  
5h44m Jupiter (-1.7 mag) Close to Spica, Alp Vir, SAO 157923 (Multiple star system): 3.1° separated, brightness: 1.0 mag, Position angle=202.11° S; Sun elongation=34.59° East (evening)  
13.3h Mercury Greatest Elongation (17.9° West, in the mornings, brightness: -0.4 mag)  
20h24m Carrington Solar Rotation Begin of Carrington rotation number 2195

Wednesday 13 September 2017 Time (24-hour clock) Object (Link) Event  
6.7h Mercury Dichotomy/Half phase  
9h25.0m Moon Last Quarter (diameter: 32.2938', declination: +18.441°)  
This is the 3rd biggest last quarter moon of the next 10 years, and the biggest of the year. Former larger last quarter moon was at 26.7.2016. Next larger last quarter moon is at 12.5.2023 (calculated for the geocenter)  
This is the 2nd northernmost last quarter moon of the year. Former more northern last quarter moon was at 16.9.2014. Next more northern last quarter moon is at 12.10.2017 (calculated for the geocenter)  
10h40.4m Moon Topocentric Last Quarter (Altitude=+28.5°, topocentric diameter: 32.569', topocentric airfree declination: 17.82°)  
19h04.9m Moon Perigee (distance moon center to earth center: 369823.3 km; closest point on earth ellipsoid with latitude 19.0° (WGS84), distance to moon center: 363447.4 km, apparent diameter: 32'52.8")

Thursday 14 September 2017 Time (24-hour clock) Object (Link) Event  
16h02.2m Moon Max. Decl. North (declination: +19.436°)  
This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 18.8.2017. Next lower northern northernmost moon position is at 29.8.2032 (calculated for the geocenter)

Friday 15 September 2017 Time (24-hour clock) Object (Link) Event  
 15.4h Mercury Perihelion (distance to sun: 0.3075 AU)

Saturday 16 September 2017 Time (24-hour clock) Object (Link) Event  
 21h23m Mercury Conjunction in Right Ascension with Mars: only 3.4' separated from center of Mars, position angle=180.00° S  
 21h43m Mercury (-0.9 mag) Close to Mars: only 3.3' separated from center of Mars, brightness: 1.8 mag, position angle=191.12° S; Sun elongation=16.90° West (morning)  
 22h01m Mercury Conjunction with Mars: only 3.4' separated from center of Mars, position angle=201.86° S. Distance to earth: 1.059 AU

Wednesday 20 September 2017 Time (24-hour clock) Object (Link) Event  
 5h18m Venus (-3.9 mag) Close to Regulus, Alp Leo, SAO 98967 (Multiple star system): only 27.9' separated, brightness: 1.4 mag, Position angle=198.93° S; Sun elongation=27.26° West (morning)  
 6h31.0m Moon Topocentric New Moon (Altitude= +3.8°, topocentric diameter: 31.274', topocentric airfree declination: 3.22°, minimum phase: 0.04%)  
 8h29.9m Moon New Moon (diameter: 31.2106', declination: +3.648°)  
 21h11.9m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 5.043°, latitude: -4.445°)

Friday 22 September 2017 Time (24-hour clock) Object (Link) Event  
 23h01.8m Sun September Equinox

Saturday 23 September 2017 Time (24-hour clock) Object (Link) Event  
 9h08.5m Moon Max. Libration (7.725°)

Sunday 24 September 2017 Time (24-hour clock) Object (Link) Event  
 17h30.0m Moon Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 3.156°, latitude: -6.744°)

Monday 25 September 2017 Time (24-hour clock) Object (Link) Event  
 18h Sun Equinox - equal length of day and night for this site (local fall)

Wednesday 27 September 2017 Time (24-hour clock) Object (Link) Event  
 9h51.2m Moon Apogee (distance moon center to earth center: 404386.9 km; closest point on earth ellipsoid with latitude -19.0° (WGS84), distance to moon center: 398011.1 km, apparent diameter: 30'01.5")

Thursday 28 September 2017 Time (24-hour clock) Object (Link) Event  
 5h46.1m Moon Topocentric First Quarter (Altitude=-53.4°, topocentric diameter: 29.203', topocentric airfree declination: -20.00°)  
 5h53.5m Moon First Quarter (diameter: 29.5758', declination: -19.476°)  
 This is the smallest first quarter moon of the year. Former smaller first quarter moon was at 7.5.2014. Next smaller first quarter moon is at 4.12.2019 (calculated for the geocenter)  
 This is the southernmost first quarter moon of the year. Former more southern first quarter moon was at 12.9.2013. Next more southern first quarter moon is at 16.9.2018 (calculated for the geocenter)  
 Pluto Stationary: Getting Prograde (relative to equator)  
 13h06.9m Moon Max. Decl. South (declination: -19.515°)  
 This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 1.9.2017. Next lower southern southernmost moon position is at 16.8.2032 (calculated for the geocenter)  
 Pluto Stationary: Getting Prograde (relative to ecliptic)

Saturday 30 September 2017 Time (24-hour clock) Object (Link) Event  
 20.2h Moon Golden Handle visible on the Moon from 18.2h - 0.7h (htop=17° at S at 20.5h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

## ОКТАБРЬ

Monday 2 October 2017 Time (24-hour clock) Object (Link) Event  
 3h Meteor Shower Draconids (Giacobinids, DRA) (active until 16.10., from constellation Draco/Dra), irregular maximum, some years with outbursts, yellow meteors.  
 3h Meteor Shower Orionids (ORI) (active until 7.11., from constellation Orion/Ori), meteors with no distinct color.

Tuesday 3 October 2017 Time (24-hour clock) Object (Link) Event  
 8.7h Venus Perihelion (distance to sun: 0.7184 AU)  
 15h54.9m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -5.588°, latitude: +2.176°)

Thursday 5 October 2017 Time (24-hour clock) Object (Link) Event  
 16h26m Venus Conjunction in Right Ascension with Mars: only 13.2' separated from center of Mars, position angle=180.00° S  
 19h36m Venus (-3.9 mag) Close to Mars: only 12.3' separated from center of Mars, brightness: 1.8 mag, position angle=201.16° S; Sun elongation=23.45° West (morning)  
 19h53m Venus Conjunction with Mars: only 12.3' separated from center of Mars, position angle=203.11° SW. Distance to earth: 1.515 AU  
 21h40.1m Moon Full Moon (diameter: 31.9900', declination: +1.434°)  
 21h54.2m Moon Topocentric Full Moon (Altitude=+27.0°, topocentric diameter: 32.247', topocentric airfree declination: 0.68°, maximum phase: 99.83%)

Saturday 7 October 2017 Time (24-hour clock) Object (Link) Event  
 1h53.4m Moon Max. Libration (6.974°)

Sunday 8 October 2017 Time (24-hour clock)      Object (Link)      Event  
16h17.0m Moon      Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -1.351°, latitude: +6.616°)  
21h      Meteor Maximum      Draconids (Giacobinids, DRA) ZHR=20.0  
Local hour rate=9.7      Velocity=23.7km/s (slow)  
Radiant: RA=17.6h/263°      Dec=55.8° (J2000) (in constellation Draco/Dra)  
Solar longitude=195.4° (J2000)  
Stream active from 2. to 16. October  
23.9h      Mercury      Conjunction (superior), 1.1° separated from center of Sun. Distance to earth: 1.408 AU

Monday 9 October 2017 Time (24-hour clock)      Object (Link)      Event  
9h03.3m Moon      Perigee (distance moon center to earth center: 366829.4 km; closest point on earth ellipsoid with latitude 15.7° (WGS84), distance to moon center: 360452.8 km, apparent diameter: 33'09.2")

Tuesday 10 October 2017 Time (24-hour clock)      Object (Link)      Event  
3h03m      Carrington Solar Rotation      Begin of Carrington rotation number 2196  
7h26m      Sun      Sun rotation axis at maximum tilt (Position angle: 26.3°, heliographic latitude: +6.2°)

Wednesday 11 October 2017 Time (24-hour clock)      Object (Link)      Event  
21h22.6m Moon      Max. Decl. North (declination: +19.611°)  
This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 14.9.2017. Next lower northern northernmost moon position is at 1.8.2032 (calculated for the geocenter)

Thursday 12 October 2017 Time (24-hour clock)      Object (Link)      Event  
15h25.4m Moon      Last Quarter (diameter: 32.1872', declination: +19.262°)  
This is the 2nd biggest last quarter moon of the year. Former larger last quarter moon was at 13.9.2017. Next larger last quarter moon is at 31.10.2018 (calculated for the geocenter)  
This is the northernmost last quarter moon of the year. Former more northern last quarter moon was at 8.9.2012. Next more northern last quarter moon is at 2.10.2018 (calculated for the geocenter)  
16h02.2m Moon      Topocentric Last Quarter (Altitude= -9.8°, topocentric diameter: 32.095', topocentric airfree declination: 18.33°)

Friday 13 October 2017 Time (24-hour clock)      Object (Link)      Event  
23h32m      Mercury (-1.3 mag)      Close to Spica, Alp Vir, SAO 157923 (Multiple star system): 2.7° separated, brightness: 1.0 mag, Position angle=205.25° SW; Sun elongation=3.61° East (evening)

Tuesday 17 October 2017 Time (24-hour clock)      Object (Link)      Event  
2h58.4m Moon      Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 5.207°, latitude: -3.165°)

Wednesday 18 October 2017 Time (24-hour clock)      Object (Link)      Event  
10h38m      Mercury (-0.9 mag)      Close to Jupiter: only 55.8' separated from center of Jupiter, brightness: -1.7 mag, position angle=24.84° NE; Sun elongation=6.49° East (evening)  
11h54m      Mercury      Conjunction with Jupiter: only 56.0' separated from center of Jupiter, position angle=20.24° N. Distance to earth: 1.425 AU  
17h56m      Mercury      Conjunction in Right Ascension with Jupiter (1.0° separated from center of Jupiter), position angle=360.00° N

Thursday 19 October 2017 Time (24-hour clock)      Object (Link)      Event  
Uranus      Opposition (distance to earth: 18.915 AU, brightness: 5.7 mag, diameter: 3.70")  
21h27.1m Moon      Topocentric New Moon (Altitude=-30.4°, topocentric diameter: 30.121', topocentric airfree declination: -6.60°, minimum phase: 0.11%)  
22h12.1m Moon      New Moon (diameter: 30.3567', declination: -6.006°)

Friday 20 October 2017 Time (24-hour clock)      Object (Link)      Event  
14h21.1m Moon      Max. Libration (7.570°)

Saturday 21 October 2017 Time (24-hour clock)      Object (Link)      Event  
22h07.3m Moon      Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 3.143°, latitude: -6.608°)

Sunday 22 October 2017 Time (24-hour clock)      Object (Link)      Event  
4h      Meteor Maximum      Orionids (ORI) ZHR=23  
Local hour rate=8.9      Velocity=67.1km/s (very rapid)  
Radiant: RA=6.4h/95°      Dec=15.9° (J2000) (in constellation Orion/Ori)  
Solar longitude=208.6° (J2000)  
Stream active from 2. October to 7. November  
21h33m      Venus (-3.9 mag)      Close to Porrima, Gam Vir, SAO 138917 (Multiple star system): 1.2° separated, brightness: 2.8 mag, Position angle=23.08° NE; Sun elongation=19.23° West (morning)  
21h37m      Venus (-3.9 mag)      Close to g29 Virginis (Multiple star system): 1.2° separated, brightness: 3.5 mag, Position angle=23.08° NE; Sun elongation=19.23° West (morning)

Wednesday 25 October 2017 Time (24-hour clock)      Object (Link)      Event  
1h24m      Jupiter      Farest Distance (distance to earth: 6.435 AU, brightness: -1.7 mag, diameter: 30.59")  
5h30.9m Moon      Apogee (distance moon center to earth center: 405188.7 km; closest point on earth ellipsoid with latitude -19.6° (WGS84), distance to moon center: 398812.9 km, apparent diameter: 29'57.9")  
21h13.9m Moon      Max. Decl. South (declination: -19.740°)  
This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 28.9.2017. Next lower southern southernmost moon position is at 1.4.2032 (calculated for the geocenter)

Thursday 26 October 2017 Time (24-hour clock) Object (Link) Event  
21h09m Jupiter Conjunction, 1.0° separated from center of Sun. Distance to earth: 6.435 AU

Saturday 28 October 2017 Time (24-hour clock) Object (Link) Event  
1h22.1m Moon First Quarter (diameter: 29.8442', declination: -17.695°)  
This is the 2nd southernmost first quarter moon of the year. Former more southern first quarter moon was at 28.9.2017. Next more southern first quarter moon is at 16.9.2018 (calculated for the geocenter)  
2h19.5m Moon Topocentric First Quarter (Altitude=-30.4°, topocentric diameter: 29.615', topocentric airfree declination: -18.26°)

Sunday 29 October 2017 Time (24-hour clock) Object (Link) Event  
15.1h Mercury Aphelion (distance to sun: 0.4667 AU)

Monday 30 October 2017 Time (24-hour clock) Object (Link) Event  
15.4h Moon Golden Handle visible on the Moon from 15.4h -16.5h (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Tuesday 31 October 2017 Time (24-hour clock) Object (Link) Event  
11h39.7m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -6.729°, latitude: +2.951°)

## НОЯБРЬ

Wednesday 1 November 2017 Time (24-hour clock) Object (Link) Event  
3h Meteor Shower Nov. Iota-Aurigids (IAR) (active until 23.11., from constellation Auriga/Aur)

Thursday 2 November 2017 Time (24-hour clock) Object (Link) Event  
6h32.4m Moon Max. Libration (7.842°)  
21h48m Venus (-3.9 mag) Close to Spica, Alp Vir, SAO 157923 (Multiple star system): 3.5° separated, brightness: 1.0 mag, Position angle=202.10° S; Sun elongation=16.49° West (morning)

Friday 3 November 2017 Time (24-hour clock) Object (Link) Event  
9h00m Sun Equation of time is at maximum with 16.43 minutes (sundials are early). Today, the Sun culminates earliest of the year

Saturday 4 November 2017 Time (24-hour clock) Object (Link) Event  
8h22.9m Moon Full Moon (diameter: 32.8171', declination: +10.709°)  
This is the 2nd biggest full moon of the year. Former larger full moon was at 14.12.2016. Next larger full moon is at 3.12.2017 (calculated for the geocenter)  
8h45.7m Moon Topocentric Full Moon (Altitude=-11.0°, topocentric diameter: 32.716', topocentric airfree declination: 9.90°, maximum phase: 99.76%)  
21h47.0m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -2.341°, latitude: +6.524°)

Monday 6 November 2017 Time (24-hour clock) Object (Link) Event  
3h17.2m Moon Perigee (distance moon center to earth center: 361423.3 km; closest point on earth ellipsoid with latitude 17.0° (WGS84), distance to moon center: 355047.0 km, apparent diameter: 33'39.5")  
10h10m Carrington Solar Rotation Begin of Carrington rotation number 2197

Wednesday 8 November 2017 Time (24-hour clock) Object (Link) Event  
4h27.8m Moon Max. Decl. North (declination: +19.842°)  
This is the 2nd northernmost moon position of the year. Former more northern moon position was at 2.8.2013. Next more northern moon position is at 5.12.2017 (calculated for the geocenter)  
This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 11.10.2017. Next lower northern northernmost moon position is at 18.3.2032 (calculated for the geocenter)  
7h55m Mars (1.8 mag) Close to Porrima, Gam Vir, SAO 138917 (Multiple star system): 1.7° separated, brightness: 2.8 mag, Position angle=23.27° NE; Sun elongation=35.62° West (morning)  
8h03m Mars (1.8 mag) Close to g29 Virginis (Multiple star system): 1.7° separated, brightness: 3.5 mag, Position angle=23.27° NE; Sun elongation=35.62° West (morning)

Friday 10 November 2017 Time (24-hour clock) Object (Link) Event  
3h Meteor Shower Leonids (LEO) (active until 23.11., from constellation Leo/Leo), persistent trails.  
22h32.1m Moon Topocentric Last Quarter (Altitude=-3.6°, topocentric diameter: 31.835', topocentric airfree declination: 14.43°)  
23h36.4m Moon Last Quarter (diameter: 31.8454', declination: +15.138°)

Sunday 12 November 2017 Time (24-hour clock) Object (Link) Event  
17h26.8m Moon Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 6.392°, latitude: -2.533°)

Monday 13 November 2017 Time (24-hour clock) Object (Link) Event  
1h11m Mercury (-0.3 mag) Close to Antares, Alp Sco, SAO 184415 (Double star, separation <10"): 2.2° separated, brightness: 1.1 mag, Position angle=190.79° S; Sun elongation=19.51° East (evening)  
9h10m Venus Conjunction in Right Ascension with Jupiter: only 16.8' separated from center of Jupiter, position angle=180.00° S  
11h16m Venus Conjunction with Jupiter: only 15.7' separated from center of Jupiter, position angle=198.92° S. Distance to earth: 1.642 AU  
11h24m Venus (-3.9 mag) Close to Jupiter: only 15.7' separated from center of Jupiter, brightness: -1.7 mag, position angle=200.21° S; Sun elongation=13.84° West (morning)



Thursday 16 November 2017 Time (24-hour clock)    Object (Link)    Event  
4h28.7m Moon    Max. Libration (7.960°)  
4h    Meteor Maximum    Nov. Iota-Aurigids (IAR) ZHR=8.2  
Local hour rate=3.6    Velocity=35.8km/s (medium speed)  
Radiant: RA=5.1h/76°    Dec=33.3° (J2000) (in constellation Auriga/Aur)  
Solar longitude=233.6° (J2000)  
Stream active from 1. to 23. November

Friday 17 November 2017 Time (24-hour clock)    Object (Link)    Event  
19h    Meteor Maximum    Leonids (LEO) ZHR=15.0    Velocity=22.9km/s (very slow)  
Radiant: RA=10.3h/155°    Dec=21.4° (J2000) (in constellation Leo/Leo)  
Solar longitude=235.3° (J2000)  
Stream active from 10. to 23. November

Saturday 18 November 2017 Time (24-hour clock)    Object (Link)    Event  
0h20.3m Moon    Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 3.733°, latitude: -6.566°)  
14h42.1m Moon    New Moon (diameter: 29.7066', declination: -14.508°)  
This is the 2nd farthest new moon of the year. Former farther new moon was at 29.11.2016. Next farther new moon is at 18.12.2017 (calculated for the geocenter)  
15h08.1m Moon    Topocentric New Moon (Altitude=+10.2°, topocentric diameter: 29.791', topocentric airfree declination: -15.38°, minimum phase: 0.13%)

Sunday 19 November 2017 Time (24-hour clock)    Object (Link)    Event  
20h14m Venus (-3.9 mag)    Close to Zuben Elgenubi, Alp2 Lib, SAO 158840 (Multiple star system): only 46.5' separated, brightness: 2.8 mag, Position angle=198.17° S; Sun elongation=12.25° West (morning)

Monday 20 November 2017 Time (24-hour clock)    Object (Link)    Event  
4h49m Mars    Summer begins on northern hemisphere

Tuesday 21 November 2017 Time (24-hour clock)    Object (Link)    Event  
22h03.4m Moon    Apogee (distance moon center to earth center: 406155.2 km; closest point on earth ellipsoid with latitude -19.9° (WGS84), distance to moon center: 399779.6 km, apparent diameter: 29'53.5")

Wednesday 22 November 2017 Time (24-hour clock)    Object (Link)    Event  
5h06.2m Moon    Max. Decl. South (declination: -19.958°)  
This is the 2nd southernmost moon position of the year. Former more southern moon position was at 20.7.2013. Next more southern moon position is at 19.12.2017 (calculated for the geocenter)  
This is the lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 25.10.2017. Next lower southern southernmost moon position is at 5.3.2032 (calculated for the geocenter)  
Neptune    Stationary: Getting Prograde (relative to ecliptic)  
Neptune    Stationary: Getting Prograde (relative to equator)

Friday 24 November 2017 Time (24-hour clock)    Object (Link)    Event  
3.5h    Mercury    Greatest Elongation (22.0° East, in the evenings, brightness: -0.4 mag)

Sunday 26 November 2017 Time (24-hour clock)    Object (Link)    Event  
20h02.9m Moon    First Quarter (diameter: 30.3548', declination: -11.165°)  
20h58.4m Moon    Topocentric First Quarter (Altitude=+15.8°, topocentric diameter: 30.505', topocentric airfree declination: -11.86°)

Tuesday 28 November 2017 Time (24-hour clock)    Object (Link)    Event  
9h58m Mercury    Conjunction with Saturn, 3.1° separated from center of Saturn, position angle=1.12° N. Distance to earth: 0.921 AU  
12.2h Mercury    Dichotomy/Half phase  
12h28m Mercury    Conjunction in Right Ascension with Saturn (3.1° separated from center of Saturn), position angle=0.00° N  
15h25.4m Moon    Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -7.687°, latitude: +4.194°)  
22.5h Moon    Golden Handle visible on the Moon from 20.5h - 2.0h (htop=26° at SW at 22.5h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Wednesday 29 November 2017 Time (24-hour clock)    Object (Link)    Event  
21h52.0m Moon    Max. Libration (9.114°)  
This is the 2nd largest total libration of the year. Former larger total libration was at 21.10.2016. Next larger total libration is at 27.12.2017 (calculated for the geocenter)

Thursday 30 November 2017 Time (24-hour clock)    Object (Link)    Event  
2h47m Mars (1.7 mag)    Close to Spica, Alp Vir, SAO 157923 (Multiple star system): 3.1° separated, brightness: 1.0 mag, Position angle=201.86° S; Sun elongation=43.87° West (morning)

## ДЕКАБРЬ

Day	Time (24-hour clock)	Object (Link)	Event
Friday 1 December 2017	16h	Mercury	Magnitude dims to 0 mag
Saturday 2 December 2017	4h43.7m	Moon	Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -4.464°, latitude: +6.565°)
Sunday 3 December 2017	17h38m	Carrington Solar Rotation	Begin of Carrington rotation number 2198
	18h47.0m	Moon	Full Moon (diameter: 33.3689', declination: +17.620°) This is the biggest full moon of the year. Former larger full moon was at 14.11.2016. Next larger full moon is at 2.1.2018 (calculated for the geocenter) This is the 2nd northernmost full moon of the year. Former more northern full moon was at 12.1.2017. Next more northern full moon is at 2.1.2018 (calculated for the geocenter)
	19h07.7m	Moon	Topocentric Full Moon (Altitude=+20.1°, topocentric diameter: 33.580', topocentric airfree declination: 16.88°, maximum phase: 99.77%)
Monday 4 December 2017	5h31m	Venus (-3.9 mag)	Close to Graffias, Bet1 Sco, SAO 159682 (Multiple star system): only 22.8' separated, brightness: 2.6 mag, Position angle=12.63° N; Sun elongation=8.73° West (morning)
	11h52.2m	Moon	Perigee (distance moon center to earth center: 357486.0 km; closest point on earth ellipsoid with latitude 19.1° (WGS84), distance to moon center: 351110.2 km, apparent diameter: 34'02.1") This is the 2nd nearest perigee of the year. Former closer perigee was at 26.5.2017. Next closer perigee is at 1.1.2018 (calculated for the closest point on the Earth ellipsoid)
Tuesday 5 December 2017	14h42.0m	Moon	Max. Decl. North (declination: +20.013°) This is the northernmost moon position of the year. Former more northern moon position was at 2.8.2013. Next more northern moon position is at 1.1.2018 (calculated for the geocenter) This is the lowest northernmost moon position of the next 10 years. Former lower northern northernmost moon position was at 8.11.2017. Next lower northern northernmost moon position is at 19.2.2032 (calculated for the geocenter)
Wednesday 6 December 2017	14h32m	Mercury	Conjunction in Right Ascension with Saturn (1.3° separated from center of Saturn), position angle=0.00° N
	15h06m	Mercury	Conjunction with Saturn, 1.3° separated from center of Saturn, position angle=0.70° N. Distance to earth: 0.742 AU
Thursday 7 December 2017	3h	Meteor Shower	Geminids (GEM) (active until 17.12., from constellation Gemini/Gem), yellowish, bright meteors.
	5h22m	Mercury (1.6 mag)	Close to Saturn: 1.2° separated from center of Saturn, brightness: 0.5 mag, position angle=22.05° N; Sun elongation=12.86° East (evening)
Friday 8 December 2017	1h03m	Sun	Earth crosses the equator of the Sun north to south
Saturday 9 December 2017	14h06m	Venus (-3.9 mag)	Close to Antares, Alp Sco, SAO 184415 (Double star, separation <10"): 5.0° separated, brightness: 1.1 mag, Position angle=190.12° S; Sun elongation=7.41° West (morning)
Sunday 10 December 2017	10h51.4m	Moon	Last Quarter (diameter: 31.3106', declination: +7.033°)
	11h29.3m	Moon	Topocentric Last Quarter (Altitude=+13.9°, topocentric diameter: 31.431', topocentric airfree declination: 6.15°)
	15h50.3m	Moon	Max. Libration East: Mare Crisium limb is tipped into view (Earth's selenographic longitude: 7.414°, latitude: -3.752°) This is the 2nd easternmost east libration of the year. Former more eastern east libration was at 31.5.2017. Next more eastern east libration is at 7.1.2018 (calculated for the geocenter)
Tuesday 12 December 2017	14.7h	Mercury	Perihelion (distance to sun: 0.3075 AU)
	17h29.0m	Sun	Earliest Dusk (sun at -12°) of the Year for this site
	19h27.2m	Moon	Max. Libration (8.923°)
Wednesday 13 December 2017	4.8h	Mercury	Conjunction (inferior), 1.7° separated from center of Sun. Distance to earth: 0.678 AU
	5.7h	Mercury	Closest Approach (distance to earth: 0.678 AU, brightness: 5.9 mag, diameter: 9.91")
Thursday 14 December 2017	6h	Meteor Maximum	Geminids (GEM) ZHR=88
			Local hour rate=32 Velocity=36.2km/s (medium speed)
			Radiant: RA=7.5h/113° Dec=32.5° (J2000) (in constellation Gemini/Gem)
			Solar longitude=262.1° (J2000)
			Stream active from 7. to 17. December
	15h52.9m	Sun	Earliest Sunset of the Year for this site
Friday 15 December 2017	1h53.8m	Moon	Max. Libration South: South Pole is tipped into view (Earth's selenographic longitude: 4.872°, latitude: -6.662°)
	15h00m	Mercury (3.9 mag)	Close to Venus: 2.2° separated from center of Venus, brightness: -3.9 mag, position angle=190.94° S; Sun elongation=5.95° West (morning)
	17h09m	Mercury	Conjunction with Venus, 2.2° separated from center of Venus, position angle=185.12° S. Distance to earth: 0.688 AU
	19h04m	Mercury	Conjunction in Right Ascension with Venus (2.2° separated from center of Venus), position angle=180.00° S
Sunday 17 December 2017	3h	Meteor Shower	Ursae Minorids (Ursids, URS) (active until 26.12., from constellation Ursa Minor/UMi), sharp maximum, white and yellow meteors.
Monday 18 December 2017	9h30.4m	Moon	New Moon (diameter: 29.3932', declination: -19.503°)

This is the 2nd farthest new moon of the last 10 years, the farthest of the year, and the 2nd farthest of the decade. Former farther new moon was at 27.12.2008. Next farther new moon is at 4.2.2019 (calculated for the geocenter)

9h56.2m Moon Topocentric New Moon (Altitude=+7.4°, topocentric diameter: 29.455', topocentric airfree declination: -20.36°, minimum phase: 0.07%)  
18h08m Venus (-3.9 mag) Close to The Oph, SAO 185320 (Close double star): 1.9° separated, brightness: 3.3 mag, Position angle=185.41° S; Sun elongation=5.19° West (morning)

Tuesday 19 December 2017Time (24-hour clock) Object (Link) Event

4h42.8m Moon Apogee (distance moon center to earth center: 406608.6 km; closest point on earth ellipsoid with latitude -20.0° (WGS84), distance to moon center: 400233.0 km, apparent diameter: 29'51.5")

This is the 3rd farthest apogee of the last 10 years, the farthest of the year, and the 3rd farthest of the decade. Former farther apogee was at 31.10.2016. Next farther apogee is at 24.3.2020 (calculated for the closest point on the Earth ellipsoid)

12h31.5m Moon Max. Decl. South (declination: -20.062°)

This is the southernmost moon position of the year. Former more southern moon position was at 20.7.2013. Next more southern moon position is at 11.3.2018 (calculated for the geocenter)

This is the 3rd lowest southernmost moon position of the next 10 years. Former lower southern southernmost moon position was at 22.11.2017. Next lower southern southernmost moon position is at 15.1.2018 (calculated for the geocenter)

Thursday 21 December 2017Time (24-hour clock) Object (Link) Event

19h27.9m Sun Southern Solstice (declination: -23.435°)

20h Saturn Farrest Distance (distance to earth: 11.048 AU, brightness: 0.4 mag, diameter: 14.98")

Friday 22 December 2017Time (24-hour clock) Object (Link) Event

0h Saturn Conjunction: only 54.4' separated from center of Sun. Distance to earth: 11.048 AU

22h33m Jupiter (-1.8 mag) Close to Zuben Elgenubi, Alp2 Lib, SAO 158840 (Multiple star system): only 42.4' separated, brightness: 2.8 mag, Position angle=196.46° S; Sun elongation=45.83° West (morning)

Saturday 23 December 2017Time (24-hour clock) Object (Link) Event

1h Meteor Maximum Ursae Minorids (Ursids, URS) ZHR=12.0

Local hour rate=4.1 Velocity=34.8km/s (medium speed)

Radiant: RA=14.6h/219° Dec=75.3° (J2000) (in constellation Ursa Minor/UMi)

Solar longitude=271.0° (J2000)

Stream active from 17. to 26. December

Sunday 24 December 2017Time (24-hour clock) Object (Link) Event

3h52m Mercury (0.1 mag) Close to Antares, Alp Sco, SAO 184415 (Double star, separation <10"): 8.1° separated, brightness: 1.1 mag, Position angle=209.41° SW; Sun elongation=19.53° West (morning)

24h Mercury Magnitude brightens to 0 mag

Monday 25 December 2017Time (24-hour clock) Object (Link) Event

6h28m Sun Equation of time is zero; the apparent solar time is now equal to the mean solar time

20h07m Venus (-4.0 mag) Close to Saturn: 1.1° separated from center of Saturn, brightness: 0.5 mag, position angle=1.67° N; Sun elongation=3.50° West (morning)

20h48m Venus Conjunction in Right Ascension with Saturn (1.1° separated from center of Saturn), position angle=360.00° N

20h55m Venus Conjunction with Saturn, 1.1° separated from center of Saturn, position angle=359.72° N. Distance to earth: 1.706 AU

Tuesday 26 December 2017Time (24-hour clock) Object (Link) Event

11h41.9m Moon Topocentric First Quarter (Altitude=-9.2°, topocentric diameter: 30.885', topocentric airfree declination: -2.59°)

12h20.1m Moon First Quarter (diameter: 30.9784', declination: -1.701°)

21h09.4m Moon Max. Libration West: Crater Grimaldi is tipped into view (Earth's selenographic longitude: -7.939°, latitude: +5.396°)

This is the westernmost total libration of the year. Former more western total libration was at 13.2.2015. Next more western total libration is at 1.4.2020 (calculated for the geocenter)

Wednesday 27 December 2017Time (24-hour clock) Object (Link) Event

22h01.3m Moon Max. Libration (9.862°)

This is the largest total libration of the year. Former larger total libration was at 31.3.2016. Next larger total libration is at 7.7.2018 (calculated for the geocenter)

Thursday 28 December 2017Time (24-hour clock) Object (Link) Event

2.5h Mercury Dichotomy/Half phase

13.9h Moon Golden Handle visible on the Moon from 13.4h -21.9h (htop=42° at S at 20.2h) (sun rises on the Jura mountains, while Sinus Iridum is still in shadow)

Friday 29 December 2017Time (24-hour clock) Object (Link) Event

8h59.6m Sun Latest Sunrise of the Year for this site

12h23.9m Moon Max. Libration North: North Pole and Mare Frigoris are tipped into view (Earth's selenographic longitude: -6.268°, latitude: +6.706°)

Saturday 30 December 2017Time (24-hour clock) Object (Link) Event

14h31m Venus (-4.0 mag) Close to Kaus Borealis, Lam Sgr, SAO 186841 (Double star, separation >10"): 1.7° separated, brightness: 2.8 mag, Position angle=178.87° S; Sun elongation=2.38° West (morning)

Sunday 31 December 2017Time (24-hour clock) Object (Link) Event

1h27m Carrington Solar Rotation Begin of Carrington rotation number 2199

3h Meteor Shower Quadrantids (QUA) (active until 6.1., from constellation Bootes/Boo), sharp maximum, meteors show long trails.

7h23.6m Sun Latest Dawn (sun at -12°) of the Year for this site

Monday 1 January 2018Time (24-hour clock) Object (Link) Event

23.0h Mercury Greatest Elongation (22.7° West, in the mornings, brightness: -0.4 mag)