

JUNE 2008 ASTRONOMY CALENDAR BY DAVE MITSKY

All times, unless otherwise noted, are UT (subtract four hours and, when appropriate, one calendar day for EDT)

- 6/1 A double Galilean satellite shadow transit (Ganymede's shadow is followed by Europa's) begins at 17:20
- 6/3 The Moon is at perigee, subtending 33'27" from a distance of 357,251 km (221,986 miles), at 13:21 - high tides will result; New (Dark) Moon (lunation 1057) occurs at 19:23
- 6/7 Mercury is at aphelion today; Venus is at the ascending node today; the Moon is 0.4 degree south of the bright open cluster M44 (the Beehive or Praesepe) in Cancer at 11:00; Mercury is in inferior conjunction at 15:00
- 6/8 Mars is 1.1 degrees north of the Moon, with an occultation taking place in New Zealand, at 2:00; a double Galilean satellite shadow transit (Ganymede's shadow is followed by Europa's) begins at 19:54
- 6/9 The Moon is 1.4 degrees south of the first magnitude star Regulus (Alpha Leonis) at 3:00; Venus is in superior conjunction at 4:00; Saturn is 3 degrees north of the Moon at 9:00
- 6/10 First Quarter Moon occurs at 15:04
- 6/11 The Purbach Cross or Lunar X, an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 2:29
- 6/12 Asteroid 3 Juno (magnitude 10.0) is at opposition today
- 6/14 The earliest sunrise of 2008 occurs today
- 6/15 A double Galilean satellite shadow transit (Europa's shadow is followed by Ganymede's) begins at 22:42
- 6/16 The Moon is at apogee, subtending 29'25" from a distance of 406,228 km (252,419 miles), at 19:33
- 6/17 The earliest morning twilight of 2008 occurs today; the Moon is 0.2 degree south of the first magnitude star Antares (Alpha Scorpii), with an occultation taking place in southern South America and Polynesia, at 5:00
- 6/18 Full Moon (known as the Flower, Rose or Strawberry Moon) occurs at 17:30
- 6/19 Mercury is stationary at 19:15
- 6/20 Pluto (magnitude 13.9, size 0.1") is at opposition today; Jupiter is 2 degrees north of the Moon at 13:00; summer solstice in the northern hemisphere occurs at 23:59
- 6/23 A double Galilean satellite shadow transit (Europa's shadow is followed by Ganymede's) begins at 2:40; Neptune is 0.8 degree south of the Moon, with an occultation taking place in southern Greenland and most of North America, at 9:00
- 6/24 The latest evening twilight of 2008 occurs today
- 6/25 Uranus is 4 degrees south of the Moon at 16:00
- 6/26 Last Quarter Moon occurs at 12:10
- 6/27 The latest sunset of 2008 occurs today; Mercury is at its greatest heliocentric latitude south today; the Bootid meteor shower peaks at 2:30; the Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to occur at 2:36; Uranus is stationary at 8:00
- 6/28 Asteroid 1 Ceres is in conjunction with the Sun at 17:00
- 6/30 A slender crescent Moon occults some of the stars of M45 (the Pleiades) shortly before dawn

Beginning around 2:00 a.m. EDT on the morning of June 30, the rising crescent Moon passes through the Pleiades for a period of approximately two hours for observers in northeastern North America. The Moon is 26.5 days old on June 1 at 0:00 UT. The Moon is at its greatest northern declination of +28 degrees on June 4 and its greatest southern declination of -28 degrees on June 18. Longitudinal libration is at a maximum of +8 degrees on May 9 and a minimum of -7 degrees on May 25. Latitudinal libration is at a maximum of +7 degrees on May 15 and a minimum of -7 degrees on May 2 and May 29. Times and dates for the lunar light rays predicted to occur in June are available at <http://www.lunar-occultations.com/rlo/rays/rays.htm>

The Sun is located in Taurus on June 1. The longest day of the year occurs on June 20 when the Sun reaches its northernmost declination on the ecliptic. At latitude 40 degrees north, there are 15 hours and 1 minute of daylight. This is the earliest summer solstice to occur in 116 years.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on June 1: Mercury (magnitude 4.1, 11.7", 4% illuminated, 0.57 a.u., Taurus), Venus (magnitude -4.0, 9.6", 100% illuminated, 1.73 a.u., Taurus), Mars (magnitude 1.5, 4.9", 92% illuminated, 1.89 a.u., Cancer), Jupiter (magnitude -2.6, 45.0", 100% illuminated, 4.38 a.u., Sagittarius), Saturn (magnitude 0.7, 17.7", 100% illuminated, 9.40 a.u., Leo), Uranus (magnitude 5.8, 3.5", 100% illuminated, 20.03 a.u., Aquarius), Neptune (magnitude 7.9, 2.3", 100% illuminated, 29.50 a.u., Capricornus), and Pluto (magnitude 13.9, 0.1", 100% illuminated, 30.47 a.u., Sagittarius).

This month Venus, Mars, and Saturn are located in the western sky in the evening. Jupiter is in the southwest and Saturn in the west at midnight. Mercury can be found in the east-northeast, Jupiter in the south, Uranus in the southeast, and Neptune in the south in the morning sky.

During the last ten days of the month, Mercury is visible with difficulty in the east-northeast in morning twilight. By June 28, the speedy planet has brightened to magnitude 0.7 and outshines Aldebaran (magnitude 0.8) some 7 degrees to upper right of Mercury.

Venus is occulted by the Sun on June 9, which happens to be the midpoint between the 2004 and 2012 transits of the Sun, and will not be visible this month.

Mars departs Cancer and enters Leo on June 10 and rapidly approaches Saturn and Regulus. The Red Planet is located 12 degrees from Regulus on the 10th, 6 degrees on June 21, and less than 3 degrees on the 26th. On the night of June 30, Mars (magnitude 1.6) passes just 43 arc minutes north of slightly brighter Regulus (magnitude 1.4).

Jupiter is rather poorly positioned in southern Sagittarius this year. When it reaches culmination at approximately 2:00 a.m. EDT, the planet is not much more than 20 degrees above the horizon. On the night of June 28, a magnitude 5.6 star is some 6 arc minutes south of the planet and Callisto is at its maximum distance of 10 arc minutes to the east of Jupiter. Click on http://skyandtelescope.com/observing/objects/planets/article_107_1.asp to determine transit times of the central meridian by the Great Red Spot. Data on the Galilean satellites is available at <http://skytoneight.com/observing/objects/javascript/3307071.html>

During June and July, Saturn's rings have an inclination of just 9 degrees. Saturn (magnitude 0.8) lies 5 degrees to the east of Mars and Regulus on the night of June 30. Titan (magnitude 8.4), Saturn's brightest satellite, is due north of Saturn on the nights of June 13 and June 29 and due south of it on the nights of June 5 and June 21. The Ringed Planet's other notable moons - Rhea, Dione, Tethys, and Enceladus - shine at magnitudes 9.7, 10.4, 10.3, and 11.8 respectively. Iapetus decreases in magnitude to 11.9 when it reaches eastern elongation on June 27. The position of this peculiar satellite in relation to Saturn at 0:00 UT is as follows: June 1 (15" west), June 5 (4" west), June 7 (1" east), June 13 (16" east), June 17 (25" west), June 23 (33" east), and June 29 (34" east). For further information on Saturn's satellites, browse <http://skytoneight.com/observing/objects/javascript/3308506.html>

Uranus lies 5 degrees to the east of Phi Aquarii (magnitude 4.2), which is located south of the Circlet of Pisces.

Neptune rises before midnight by the end of the month. It's situated to the north of the second magnitude star Delta Capricorni and forms a triangle with two fifth magnitude stars, 42 and 44 Capricorni.

On June 1, the dwarf planet Pluto is located 0.2 degree northwest of the star 6 Sagittarii (magnitude 6.2). By the end of June, Pluto's westward retrograde motion places it nearly a degree away from 6 Sagittarii. A finder chart is available on page 67 of the June issue of Sky and Telescope.

Comet C/2007 G1 (LINEAR) shines dimly at 11.9 magnitude as it traverses Ophiuchus and enters Scorpius this month. Along the way, the comet passes south of the globular cluster M9 (magnitude 7.9) and north of the globular cluster NGC 6342 (magnitude 9.8) on June 6.

Asteroid 3 Juno also travels westward through Ophiuchus during June. The 244 kilometer-sized "vermin of the skies" passes about two degrees south of the globular cluster M14 during the first week of the month.

Forty binary and multiple stars for June: Struve 1812, Kappa Bootis, Otto Struve 279, Iota Bootis, Struve 1825, Struve 1835, Pi Bootis, Epsilon Bootis, Struve 1889, 39 Bootis, Xi Bootis, Struve 1910, Delta Bootis, Mu Bootis (Bootes); Struve 1803 (Canes Venatici); Struve 1932, Struve 1964, Zeta Coronae Borealis, Struve 1973, Otto Struve 302 (Corona Borealis); Struve 1927, Struve 1984, Struve 2054, Eta Draconis, 17-16 Draconis, 17 Draconis (Draco); 54 Hydrae (Hydra); Struve 1919, 5 Serpentis, 6 Serpentis, Struve 1950, Delta Serpentis, Otto Struve 300, Beta Serpentis, Struve 1985 (Serpens Caput); Struve 1831 (Ursa Major); Pi-1 Ursae Minoris (Ursa Minor); Struve 1802, Struve 1833, Phi Virginis (Virgo)

Challenge binary star for June: Gamma Coronae Borealis

Notable variable star for June: V Bootis (see <http://www.britastro.org/vss/00042a.html> for further information)

Notable carbon star for June: V Coronae Borealis

Fifty deep-sky objects for June: NGC 5466, NGC 5676, NGC 5689 (Bootes); M102 (NGC 5866), NGC 5678, NGC 5879, NGC 5905, NGC 5907, NGC 5908, NGC 5949, NGC 5963, NGC 5965, NGC 5982, NGC 5985, NGC 6015 (Draco); NGC 5694 (Hydra); NGC 5728, NGC 5791, NGC 5796, NGC 5812, NGC 5861, NGC 5878, NGC 5897 (Libra); M5, NGC 5921, NGC 5957, NGC 5962, NGC 5970, NGC 5984 (Serpens Caput); M101, NGC 5473, NGC 5474, NGC 5485, NGC 5585, NGC 5631 (Ursa Major); NGC 5566, NGC 5634, NGC 5701, NGC 5713, NGC 5746, NGC 5750, NGC 5775, NGC 5806, NGC 5813, NGC 5831, NGC 5838, NGC 5846, NGC 5850, NGC 5854, NGC 5864 (Virgo)

Top ten deep-sky objects for June: M5, M101, M102, NGC 5566, NGC 5585, NGC 5689, NGC 5746, NGC 5813, NGC 5838, NGC 5907

Top five deep-sky binocular objects for June: M5, M101, M102, NGC 5466, NGC 5907

Challenge deep-sky object for June: Abell 2065

The objects listed above are located between 14:00 and 16:00 hours of right ascension.