

# JANUARY 2012 CELESTIAL CALENDAR BY DAVE MITSKY

All times are UT (subtract five hours, and one calendar day when appropriate, for EST)

1/1 First Quarter Moon occurs at 6:14; the Lunar X (the Purbach or Werner Cross), an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 8:19

1/2 The Moon is at apogee, subtending 29 arc minutes from a distance of 404,578 kilometers (251,393 miles), at 20:00

1/3 Jupiter is 5 degrees south of the Moon at 3:00

1/4 A double Galilean satellite shadow transit (Europa's shadow follows Ganymede's) begins at 6:28; the Quadrantid meteor shower (40 to 120 or more per hour) peaks at 7:00

1/5 The latest sunrise of 2011 at latitude 40 degrees north occurs today; the Earth is at perihelion (147,097,334 kilometers or 91,402,046 miles distant from the Sun) at 1:00

1/7 Mercury is in the descending node today

1/8 The latest onset of morning twilight of 2011 at latitude 40 degrees north occurs today; Mars is at its greatest heliocentric latitude north today

1/9 Full Moon (known as the Ice Moon, the Moon After Yule, the Old Moon, and the Wolf Moon) occurs at 7:30

1/11 A double Galilean satellite transit (Europa follows Ganymede) begins at 6:26; a double Galilean satellite shadow transit (Ganymede's shadow follows Europa's) begins at 10:11

1/13 Venus is 1.2 degree south of Neptune at 7:00

1/14 Mars is 9 degrees north of the Moon at 7:00

1/16 The Moon is 2 degrees south of the first-magnitude star Spica (Alpha Virginis) at 8:00; Last Quarter Moon occurs at 9:08; Saturn is 6 degrees north of the Moon at 19:00

1/17 The Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to occur at 11:06; the Moon is at perigee, subtending 32 arc minutes from a distance of 369,886 kilometers (229,836 miles), at 21:00

1/18 Mercury is at aphelion today; a double Galilean satellite transit (Europa follows Ganymede) begins at 9:00

1/23 New Moon (lunation 1102) occurs at 7:39

1/25 Mars is stationary at 1:00; Neptune is 6 degrees south of the Moon at 12:00; a double Galilean satellite transit (Ganymede follows Europa) begins at 12:40

1/26 Venus is 7 degrees south of the Moon at 19:00

1/28 Uranus is 6 degrees south of the Moon at 2:00

1/30 Jupiter is 5 degrees south of the Moon at 15:00; the Moon is at apogee, subtending 29 arc minutes from a distance of 404,323 kilometers (251,235 miles), at 18:00

1/31 Saturn is at its greatest heliocentric latitude north today; First Quarter Moon occurs at 4:10

Johannes Hevelius (1611-1687) was born this month.

The Quadrantid meteor shower peaks on the morning of January 4. This shower can sometimes reach zenithal hourly rates of more than 100 meteors per hour. The radiant of the Quadrantids lies at the junction of the constellations of Boötes, Hercules, and Draco in what was once called Quadrans Muralis. The near-Earth asteroid 2003 EH1, which may be an extinct comet, is believed to be the source of these meteors. An article on the Quadrantid meteor shower appears on pages 50 and 51 of the January issue of *Sky & Telescope*. Browse <http://meteorshoweronline.com/quadrantids.html> for more on the Quadrantids.

The Moon is 7.3 days old and is located in Pisces on January 1 at 0:00 UT. The Moon is at its greatest declination north of +22.6 degrees on January 6 and its greatest declination south of -22.5 degrees on January 20. Latitudinal libration is at a maximum of +4.9 degrees on January 24 and a minimum of -5.1 degrees on January 9. Longitudinal libration is at a maximum of +6.7 degrees on January 13 and -6.7 degrees on January 26. Visit <http://saberdoesthestars.wordpress.com/2011/07/05/saber-does-the-stars/> for tips on spotting extreme crescent Moons. Times and dates for the lunar light rays predicted to occur this month are available at <http://www.lunar-occultations.com/rlo/rays/rays.htm>

The Sun is located in Sagittarius on January 1.

Data (magnitude, apparent size, illumination, and distance from the Earth in astronomical units) for the planets and Pluto on January 1: Mercury (-0.4, 5.7", 80%, 1.18 a.u., Ophiuchus), Venus (-4.0, 12.9", 83%, 1.29 a.u., Capricornus), Mars (0.2, 9.0", 91%, 1.04 a.u., Leo), Jupiter (-2.6, 43.4", 99%, 4.54 a.u., Aries), Saturn (0.7, 16.7", 100%, 9.96 a.u., Virgo), Uranus (5.9, 3.4", 100%, 20.46 a.u. on January 16, Pisces), Neptune (8.0, 2.2", 100%, 30.81 a.u. on January 16, Aquarius), and Pluto (14.1, 0.1", 100%, 33.10 a.u. on January 16, Sagittarius).

During the evening, Venus, Uranus, and Neptune lie in the southwest and Jupiter in the south. At midnight, Mars is in the east and Jupiter is the west. Mercury can be seen in the southeast, Mars in the southwest, and Saturn in the south in the morning.

Mercury is visible during morning twilight in early January, Venus sets at 8:00 p.m., Mars rises at 10:00 p.m. and culminates at 4:00 a.m., Jupiter culminates at 6:00 p.m. and sets at 1:00 a.m., and Saturn rises at 1:00 a.m. and culminates at 6:00 a.m. local time for observers at 40 degrees latitude north at midmonth.

Mercury is best seen about 30 minutes before dawn in the first part of the month. On January 1, the speediest planet shines at magnitude -0.4 some eight degrees above the southeastern horizon. It disappears into the glare of the Sun by midmonth.

Venus shines at magnitude -4.0 in central Capricornus as January begins. It enters Aquarius on January 11. On the evening of January 12, Venus passes a bit more than one degree south of Neptune.

Earth is at perihelion on January 5. On that date, it is about 3% (5.0 million kilometers or 3.1 million miles) closer to the Sun than at aphelion.

Mars increases in brightness from magnitude 0.2 to magnitude -0.5 and in apparent size from 9.0 to 11.7 arc seconds during January. The Red Planet enters Virgo in the middle of the month and begins retrograde (western) motion on January 25. Information on the 2012 apparition of Mars can be found at <http://www.curtrenz.com/mars>

Jupiter's disk shrinks from 43 to 39 arc seconds during January. The Moon passes five degrees north of Jupiter on the night of January 2. Jupiter departs Aries and enters Pisces on January 8. It reaches eastern quadrature on January 22. Transits by Io's shadow take place on January 4 at 11:07 p.m. EST, January 13 at 7:32 p.m. EST, January 20 at 9:28 p.m. EST, and January 27 at 11:24 p.m. EST. Callisto is due north of Jupiter on the evening of January 21. Galileo Galilei discovered Io, Europa, and Callisto on January 7, 1610. Browse [http://skyandtelescope.com/observing/objects/planets/article\\_107\\_1.asp](http://skyandtelescope.com/observing/objects/planets/article_107_1.asp) in order to determine transit times of Jupiter's central meridian by the Great Red Spot. Data on the Galilean satellites is available at <http://skytonight.com/observing/objects/javascript/3307071.html#>

Saturn is located nine degrees south of the celestial equator this month; the ring tilt angle is fifteen degrees. The northern side of Saturn's rings is visible this year. The gap between Saturn and the first-magnitude star Spica increases from six to seven degrees during January. For information on the satellites of Saturn, browse <http://www.skyandtelescope.com/observing/objects/javascript/3308506.html>

Uranus is located in southern Pisces, about ten degrees to the east-southeast of the Circlet of Pisces. Uranus lies six degrees south of the waxing crescent Moon on the evening of January 27.

Neptune is situated approximately one degree north of Venus on the evening of January 12. At that time, Venus is located about one half of a degree to the west of the fourth-magnitude star Iota Aquarii. Neptune can no longer be seen by the end of January.

The dwarf planet Pluto is not visible this month.

For more on the planets and how to locate them, browse <http://www.nakedeyepianets.com/>

The S-type asteroid 433 Eros travels southward from Leo into Sextans this month. Shining at magnitude 8.5, the second largest NEA (near-Earth asteroid) is unusually bright during this apparition. On January 31, 433 Eros passes 26.7 million kilometers (16.6 million miles) from the Earth. The following asteroids will occult stars from certain regions of North America: 75 Eurydike on the evening of January 8, 911 Agamemnon on the morning of January 19, and 1746 Brouwer on the evening of January 29. Browse [http://asteroidoccultation.com/2012\\_01\\_si.htm](http://asteroidoccultation.com/2012_01_si.htm) for additional information on these events. Giuseppe Piazzi discovered the first asteroid, 1 Ceres, on January 1, 1801.

Comet C/2009 P1 (Garradd) rises in the early morning in Hercules. Visit <http://cometchasing.skyhound.com/> for information on this month's comets.

Free star maps for January can be downloaded at <http://www.skymaps.com/downloads.html> and <http://www.telescope.com/content.jsp?pageName=Monthly-Star-Chart>

The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in magnitude from 2.1 to 3.4, on January 2, 5, 8, 11, 14, 17, 20, 23, 25, 28, and 31. Consult [http://www.skyandtelescope.com/observing/objects/variablestars/Minima\\_of\\_Algol.html](http://www.skyandtelescope.com/observing/objects/variablestars/Minima_of_Algol.html) for the times of the eclipses. For more on Algol, see <http://stars.astro.illinois.edu/sow/Algol.html> and <http://www.solstation.com/stars2/algol3.htm>

One hundred and five binary and multiple stars for January: Omega Aurigae, 5 Aurigae, Struve 644, 14 Aurigae, Struve 698, Struve 718, 26 Aurigae, Struve 764, Struve 796, Struve 811, Theta Aurigae (Auriga); Struve 485, 1 Camelopardalis, Struve 587, Beta Camelopardalis, 11 & 12 Camelopardalis, Struve 638, Struve 677, 29 Camelopardalis, Struve 780 (Camelopardalis); h3628, Struve 560, Struve 570, Struve 571, Struve 576, 55 Eridani, Struve 596, Struve 631, Struve 636, 66 Eridani, Struve 649 (Eridanus); Kappa Leporis, South 473, South 476, h3750, h3752, h3759, Beta Leporis, Alpha Leporis, h3780, Lallande 1, h3788, Gamma Leporis (Lepus); Struve 627, Struve 630, Struve 652, Phi Orionis, Otto Struve 517, Beta Orionis (Rigel), Struve 664, Tau Orionis, Burnham 189, h697, Struve 701, Eta Orionis, h2268, 31 Orionis, 33 Orionis, Delta Orionis (Mintaka), Struve 734, Struve 747, Lambda Orionis, Theta-1 Orionis (the Trapezium), Theta-2 Orionis, Iota Orionis, Struve 750, Struve 754, Sigma Orionis, Zeta Orionis (Alnitak), Struve 790, 52 Orionis, Struve 816, 59 Orionis, 60 Orionis (Orion); Struve 476, Espin 878, Struve 521, Struve 533, 56 Persei, Struve 552, 57 Persei (Perseus); Struve 479, Otto Struve 70, Struve 495, Otto Struve 72, Struve 510, 47 Tauri, Struve 517, Struve 523, Phi Tauri, Burnham 87, Xi Tauri, 62 Tauri, Kappa & 67 Tauri, Struve 548, Otto Struve 84, Struve 562, 88 Tauri, Struve 572, Tau Tauri, Struve 598, Struve 623, Struve 645, Struve 670, Struve 674, Struve 680, 111 Tauri, 114 Tauri, 118 Tauri, Struve 730, Struve 742, 133 Tauri (Taurus)

Notable carbon star for January: R Leporis (Hind's Crimson Star)

Seventy deep-sky objects for January: B26-28, B29, M36, M37, M38, NGC 1664, NGC 1778, NGC 1857, NGC 1893, NGC 1907, NGC 1931 (Auriga); IC 361, Kemble 1 (Kemble's Cascade asterism), NGC 1501, NGC 1502, NGC 1530, NGC 1569 (Camelopardalis); NGC 1507, NGC 1518, NGC 1531, NGC 1532, NGC 1535, NGC 1537, NGC 1600, NGC 1637, NGC 1659, NGC 1700 (Eridanus); IC 418, M79, NGC 1832, NGC 1888, NGC 1964 (Lepus); B33, Cr65, Cr69, Cr70, IC 434, M42, M43, M78, NGC 1662, NGC 1973-75-77, NGC 1981, NGC 1999, NGC 2022, NGC 2023, NGC 2024, NGC 2112 (Orion); Be11, NGC 1491, NGC 1496, NGC 1499, NGC 1513, NGC 1528, NGC 1545, NGC 1548, NGC 1579, NGC 1582, NGC 1605, NGC 1624 (Perseus); DoDz3, DoDz4, M1, Mel 25, NGC 1514, NGC 1587, NGC 1647, NGC 1746, NGC 1807, NGC 1817 (Taurus)

Top ten binocular deep-sky objects for January: Kemble 1, M36, M37, M38, M42, NGC 1528, NGC 1647, NGC 1746, NGC 1981

Top ten deep-sky objects for January: M1, M36, M37, M38, M42, M43, M78, M79, NGC 1501, NGC 2024

Challenge deep-sky object for January: IC 2118 (Eridanus)

The objects listed above are located between 4:00 and 6:00 hours of right ascension.