

The Evening Sky Map

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

Sky Calendar – November 2019

Get Sky Calendar on Twitter
<http://twitter.com/skymaps>

- 2 **Moon near Saturn** (evening sky) at 8h UT. Mag. 0.6. Occ. Auckland, NZ.
- 4 **First Quarter Moon** at 10:22 UT.
- 7 **Moon at apogee** (farthest from Earth) at 9h UT (distance 405,058 km; angular size 29.5').
- 10 **Venus 3.9° N of Antares** (23° from Sun, evening sky) at 1h UT. Mags. -3.9 and 1.0.
- 10 **Mars 2.8° NNE of Spica** (24° from Sun, morning sky) at 9h UT. Mags. 1.8 and 1.0.
- 11 **Transit of Mercury across the Sun.** WARNING: NEVER LOOK AT THE SUN — it will instantly damage your eyes. Observers require a safe Sun filter attached securely to the front of their telescope to safely observe Mercury's tiny disk pass in front of the Sun. The event will be visible from most of Earth except central and eastern Asia, Japan, Indonesia and Australia. Transit begins at 12:35 UT; mid-transit at 15:20 UT; ends at 18:04 UT. The next transit of Mercury will occur on November 13 2032.
- 12 **Full Moon** at 13:36 UT.
- 13 **Moon near the Pleiades** (morning sky) at 11h UT.
- 17 **Leonid meteor shower peaks** at 23h UT. Arises from debris ejected by Comet Tempel-Tuttle. Produces very fast meteors (71 km/sec). Expect 10–15 meteors per hour under dark skies. Moonlight will interfere.
- 19 **Last Quarter Moon** at 21:12 UT.
- 23 **Moon at perigee** (closest to Earth) at 7:42 UT (366,716 km; angular size 32.6').
- 24 **Venus 1.4° S of Jupiter** (26° from Sun, evening sky) at 13h UT. Mags. -3.9 and -1.8.
- 26 **New Moon** at 15:07 UT. Start of lunation 1199.
- 28 **Mercury at greatest elongation west** (20° from Sun, morning sky) at 10h UT. Mag. -0.5.
- 28 **Moon, Venus and Jupiter** within a circle of diameter 4.3° (25° from Sun, evening sky) at 12h UT. Mags. -3.9 and -1.8.
- 28 **Moon near Venus** (27° from Sun, evening sky) at 20h UT. Mag. -3.9.
- 29 **Moon near Saturn** (evening sky) at 22h UT. Mag. 0.6.

More sky events and links at <http://Skymaps.com/skycalendar/>
 All times in Universal Time (UT). (USA Eastern Standard Time = UT - 5 hours.)



SAVE ON RECOMMENDED PRODUCTS • <http://Skymaps.com/store>

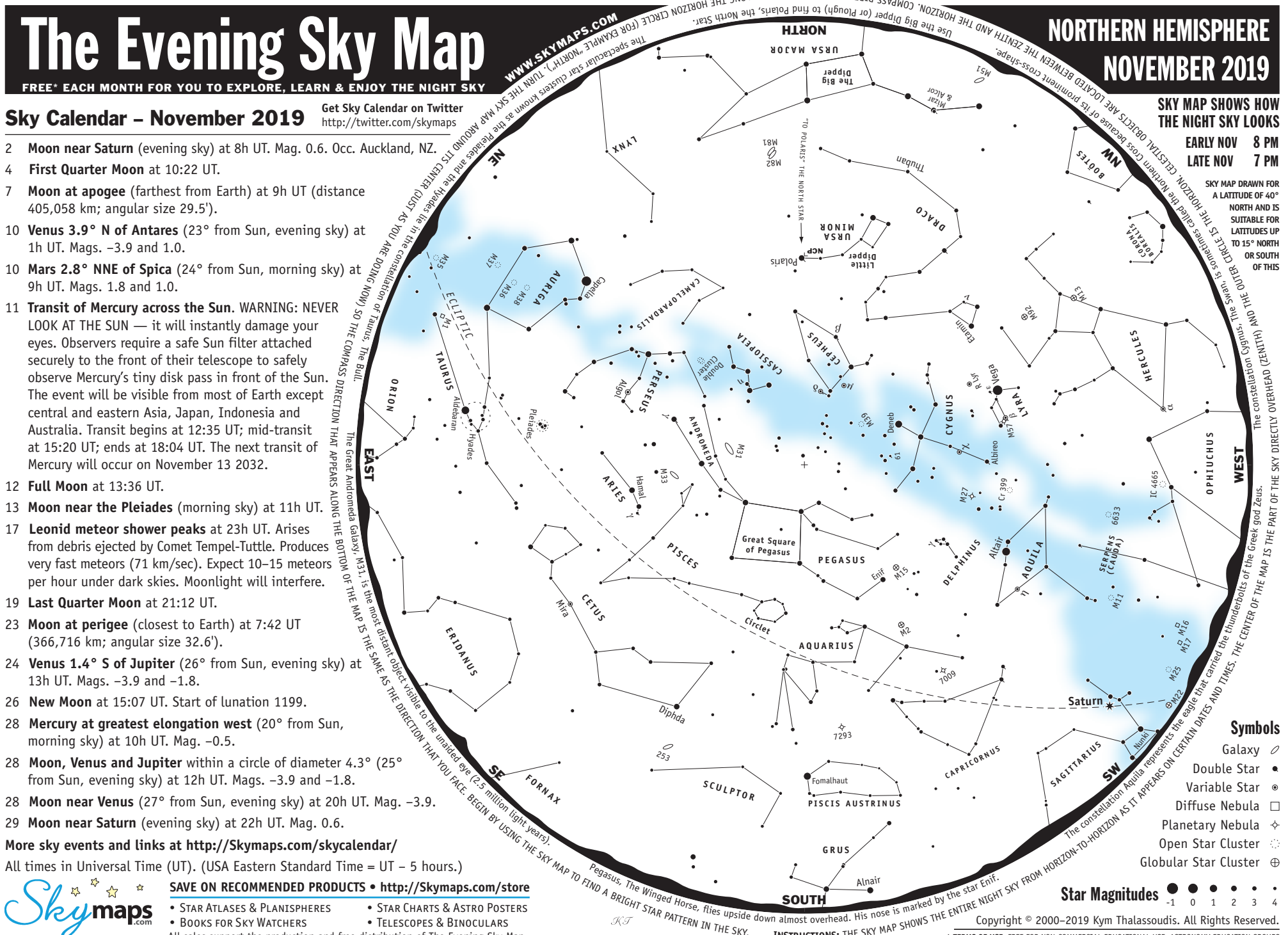
- STAR ATLASES & PLANISPHERES
 - STAR CHARTS & ASTRO POSTERS
 - BOOKS FOR SKY WATCHERS
 - TELESCOPES & BINOCULARS
- All sales support the production and free distribution of The Evening Sky Map.

NORTHERN HEMISPHERE NOVEMBER 2019

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY NOV 8 PM
 LATE NOV 7 PM

SKY MAP DRAWN FOR A LATITUDE OF 40° NORTH AND IS SUITABLE FOR LATITUDES UP TO 15° NORTH OR SOUTH OF THIS



Symbols

- Galaxy ☾
- Double Star ●●
- Variable Star ⊙
- Diffuse Nebula □
- Planetary Nebula ☆
- Open Star Cluster ○
- Globular Star Cluster ⊕

Star Magnitudes ● ● ● ● ● ●
 -1 0 1 2 3 4

Copyright © 2000–2019 Kym Thalassoudis. All Rights Reserved.

* TERMS OF USE: FREE FOR NON-COMMERCIAL EDUCATIONAL USE. ASTRONOMY EDUCATION GROUPS MAY FREELY DISTRIBUTE PRINTED HANDOUTS. FULL DETAILS AT <http://Skymaps.com/terms.html>

INSTRUCTIONS: THE SKY MAP SHOWS THE ENTIRE NIGHT SKY FROM HORIZON-TO-HORIZON AS IT APPEARS ON CERTAIN DATES AND TIMES. THE CENTER OF THE MAP IS THE PART OF THE SKY DIRECTLY OVERHEAD (ZENITH) AND THE OUTER CIRCLE IS THE HORIZON. CELESTIAL OBJECTS ARE LOCATED BETWEEN THE ZENITH AND THE HORIZON. COMPASS DIRECTIONS ARE INDICATED ALONG THE HORIZON CIRCLE (FOR EXAMPLE, "NORTH"). TO USE THE SKY MAP AROUND THE HORIZON, USE THE BIG DIPPER (OR PLOUGH) TO FIND POLARIS, THE NORTH STAR.

Pegasus, The Winged Horse, flies upside down almost overhead. His nose is marked by the star Enif.

KJ

About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary

Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

Constellation – A defined area of the sky containing a star pattern.

Diffuse Nebula – A cloud of gas illuminated by nearby stars.

Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

Ecliptic – The path of the Sun's center on the celestial sphere as seen from Earth.

Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

Galaxy – A mass of up to several billion stars held together by gravity.

Globular Star Cluster – A ball-shaped group of several thousand old stars.

Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.

Magnitude – The brightness of a celestial object as it appears in the sky.

Open Star Cluster – A group of tens or hundreds of relatively young stars.

Opposition – When a celestial body is opposite the Sun in the sky.

Planetary Nebula – The remnants of a shell of gas blown off by a star.

Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. USA Eastern Standard Time (for example, New York) is 5 hours behind UT.

Variable Star – A star that changes brightness over a period of time.

NORTHERN HEMISPHERE NOVEMBER 2019 CELESTIAL OBJECTS



Easily Seen with the Naked Eye

Altair	Aql	•	Brightest star in Aquila. Name means "the flying eagle". Dist=16.7 ly.
Capella	Aur	•	The 6th brightest star. Appears yellowish in color. Spectroscopic binary. Dist=42 ly.
δ Cephei	Cep	☾	Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
Deneb	Cygn	•	Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400±200 ly.
α Herculis	Her	☾	Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion.
Vega	Lyr	•	The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
Algol	Per	☾	Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days.
Fomalhaut	PsA	•	Brightest star in Piscis Austrinus. In Arabic the "fish's mouth". Dist=25 ly.
Pleiades	Tau	☾	The Seven Sisters. Spectacular cluster. Many more stars visible in binoculars. Dist=399 ly.
Hyades	Tau	☾	Large V-shaped star cluster. Binoculars reveal many more stars. Dist=152 ly.
Aldebaran	Tau	•	Brightest star in Taurus. It is not associated with the Hyades star cluster. Dist=66.7 ly.
Polaris	UMi	•	The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.

Easily Seen with Binoculars

M31	And	☾	The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.
M2	Aqr	☾	Resembles a fuzzy star in binoculars.
η Aquilae	Aql	☾	Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.
M38	Aur	☾	Stars appear arranged in "pi" or cross shape. Dist=4,300 ly.
M36	Aur	☾	About half size of M38. Located in rich Milky Way star field. Dist=4,100 ly.
M37	Aur	☾	Very fine star cluster. Discovered by Messier in 1764. Dist=4,400 ly.
μ Cephei	Cep	☾	Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
Mira	Cet	☾	Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days.
χ Cygni	Cyg	☾	Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
M39	Cyg	☾	May be visible to the naked eye under good conditions. Dist=900 ly.
ν Draconis	Dra	•	Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
M13	Her	☾	Best globular in northern skies. Discovered by Halley in 1714. Dist=23,000 ly.
M92	Her	☾	Fainter and smaller than M13. Use a telescope to resolve its stars.
ε Lyrae	Lyr	•	Famous Double Double. Binoculars show a double star. High power reveals each a double.
R Lyrae	Lyr	☾	Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
IC 4665	Oph	☾	Large, scattered open cluster. Visible with binoculars.
6633	Oph	☾	Scattered open cluster. Visible with binoculars.
M15	Peg	☾	Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly.
Double Cluster	Per	☾	Double Cluster in Perseus. NGC 869 & 884. Excellent in binoculars. Dist=7,300 ly.
M25	Sgr	☾	Bright cluster located about 6 deg N of "teapot's" lid. Dist=1,900 ly.
253	Scl	☾	Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.
Mizar & Alcor	UMa	•	Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.
Cr 399	Vul	☾	Coathanger asterism or "Brocchi's Cluster". Not a true star cluster. Dist=218 to 1,140 ly.

Telescopic Objects

γ Andromedae	And	•	Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8".
7009	Aqr	✧	Saturn Nebula. Requires 8-inch telescope to see Saturn-like appendages.
7293	Aqr	✧	Helix Nebula. Spans nearly 1/4 deg. Requires dark sky. Dist=300 ly.
γ Arietis	Ari	•	Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8".
η Cassiopeiae	Cas	•	Yellow star mag 3.4 & orange star mag 7.5. Dist=19 ly. Orbit=480 years. Sep=12".
Albireo	Cyg	•	Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4".
61 Cygni	DwG	•	Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
γ Delphini	Del	•	Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.
β Lyrae	Lyr	☾	Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Fainter mag 7.2 blue star.
M57	Lyr	✧	Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
M17	Sgr	☐	Omega Nebula. Contains the star cluster NGC 6618. Dist=4,900 ly.
M11	Sct	☾	Wild Duck Cluster. Resembles a globular through binoculars. V-shaped. Dist=5,600 ly.
M16	Ser	☐	Eagle Nebula. Requires a telescope of large aperture. Dist=8,150 ly.
M1	Tau	☐	Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly.
M33	Tri	☾	Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million ly.
M81	UMa	☾	Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope.
M82	UMa	☾	Close to M81 but much fainter and smaller.
M27	Vul	✧	Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.

Calendario del Cielo -- Noviembre 2019

- 2 Luna cerca de Saturno (cielo nocturno) a las 8h TU. Mag. 0.6. Ocas. Auckland, NZ.
- 4 Luna en cuarto creciente a las 10:22 TU.
- 7 Luna en apogeo (la más alejada de la Tierra) a 9h TU (distancia 405.058 km; tamaño angular 29,5').
- 10 Venus 3.9° N de Antares (23° del Sol, cielo nocturno) a 1h TU. Mags. -3.9 y 1.0.
Marte 2.8° NNE de Spica (24° del Sol, cielo matutino) a 9h TU. Mags. 1.8 y 1.0.
- 11 Tránsito de Mercurio a través del Sol. ADVERTENCIA: NUNCA MIRE AL SOL -- esto dañará instantáneamente sus ojos. Los observadores requieren un filtro solar seguro conectado de forma segura a la parte frontal de su telescopio para observar con seguridad el diminuto paso de disco de Mercurio frente al Sol. El evento será visible en gran parte de la Tierra, excepto en Asia Central y Oriental, Japón, Indonesia y Australia. El tránsito comienza a las 12:35 TU; el tránsito medio a las 15:20 TU; termina a las 18:04 TU. El próximo tránsito de Mercurio tendrá lugar el 13 de noviembre de 2032.
- 11 Mercurio en conjunción inferior con el Sol a las 15h TU. Mercurio pasa en el cielo matutino.
- 12 Luna Llena a las 13:36 TU.
- 13 Luna cerca de las Pléyades (cielo matutino) a las 11h TU.
- 14 Luna cerca de Aldebarán (cielo matutino) a 4h TU.
- 17 La lluvia de meteoritos de las Leónidas alcanzará su punto máximo a las 23h TU. Procede de escombros expulsados por el cometa Tempel-Tuttle. Producirá meteoritos muy rápidos (71 km/seg). Se esperan de 10 a 15 meteoros por hora bajo cielos oscuros. La luz de la luna interferirá.
- 18 Luna cerca del cúmulo de Beehive M44 (cielo matutino) a las 12h TU.
- 19 Luna en cuarto menguante a las 21:12 TU.
- 20 Luna cerca de Regulus (cielo matutino) a las 2h TU.
- 23 Luna en perigeo (la más cercana a la Tierra) a las 7:42 TU (366.716 km; tamaño angular 32,6').
- 24 Venus 1.4° S de Júpiter (26° del Sol, cielo nocturno) a las 13h TU. Mags. -3,9 y -1,8.
Luna cerca de Marte (28° del Sol, cielo matutino) a las 13h TU. Mag. 1.8.
- 26 Luna Nueva a las 15:07 TU. Comienzo de la lunación 1199.
- 28 Mercurio en su máxima elongación hacia el oeste (20° desde el Sol, cielo matutino) a las 10h TU. Mag. -0.5.
- 28 Luna, Venus y Júpiter dentro de un círculo de 4,3° de diámetro (25° del Sol, cielo nocturno) a las 12h TU. Mags. -3,9 y -1,8.
Luna cerca de Venus (27° del Sol, cielo nocturno) a las 20h TU. Mag. -3.9.
- 29 Luna cerca de Saturno (cielo nocturno) a las 22h TU. Mag. 0.6.

Todas las horas son en Tiempo Universal (TU).