



October 2024 Astronomy Report



- **Moon:**
 - Phases
 - Lunar Pits

- **Planets:**
 - Evening sky
 - Mercury, Venus, Saturn
 - Morning sky
 - Neptune, Uranus, Jupiter, Mars

- **Comets/Asteroids/Meteor Showers:**
 - Comet C/2023 A3 - comet of the year
 - Orionid meteor shower

- **Public Viewing:**
 - Cub Lake, October 12

Moon - Phases

October 2 - New Moon

October 10 - First Quarter (Sagittarius)



October 17 - Full Moon (Aries)



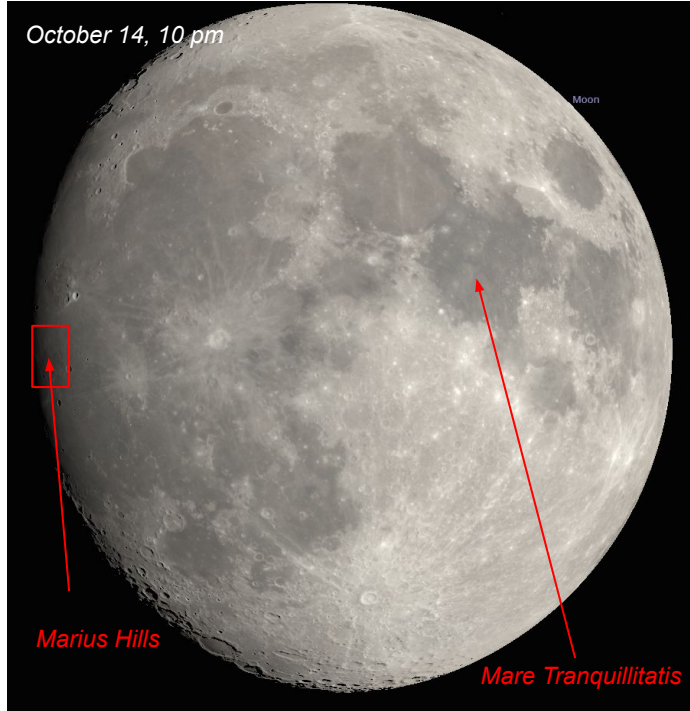
October 24 - Last Quarter (Cancer)



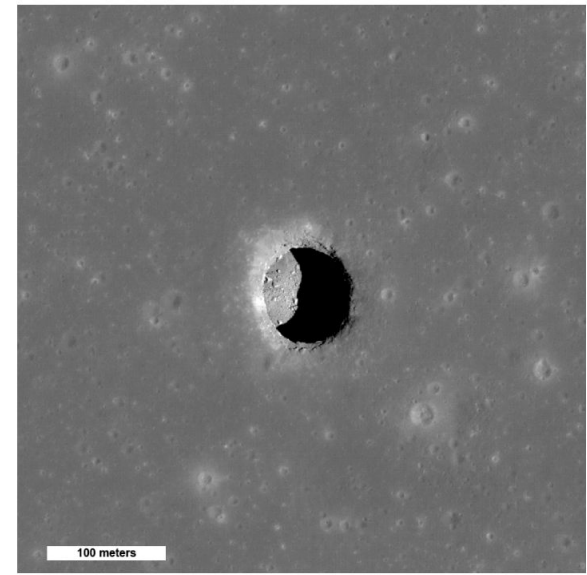
Apogee (253K miles) - 2nd, 29th
Perigee (222K miles) - 16th

Moon - lunar pits

First discovered in 2009 by the Lunar Reconnaissance Orbiter, believed to be collapsed lava tubes that could lead to pits which could provide lunar explorers thermally stable shelters and protection from cosmic radiation and micrometeorites

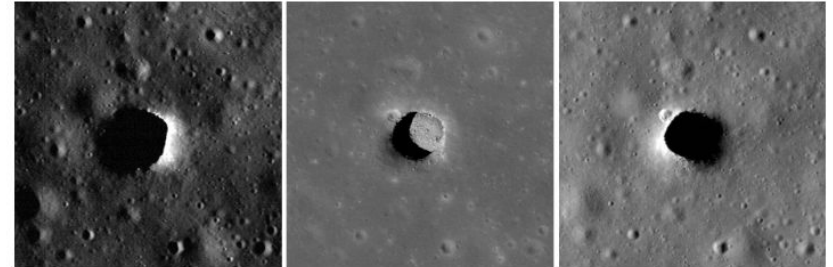


Mare Tranquillitatis



This is a spectacular high-Sun view of the Mare Tranquillitatis pit crater revealing boulders on an otherwise smooth floor. This image from LRO's Narrow Angle Camera is 400 meters (1,312 feet) wide, north is up.
NASA/Goddard/Arizona State University

Marius Hills



NASA's Lunar Reconnaissance Orbiter Camera has now imaged the Marius Hills pit three times, each time with very different lighting. The center panel, with the Sun high above, gives scientists a great view of the Marius Hills pit floor. [The Marius pit is about 34 meters \(about 111 feet\) deep and 65 by 90 meters \(approximately 213 by 295 feet\) wide.](#)
NASA/GSFC/Arizona State University



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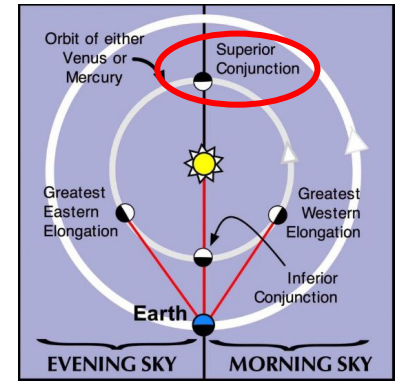
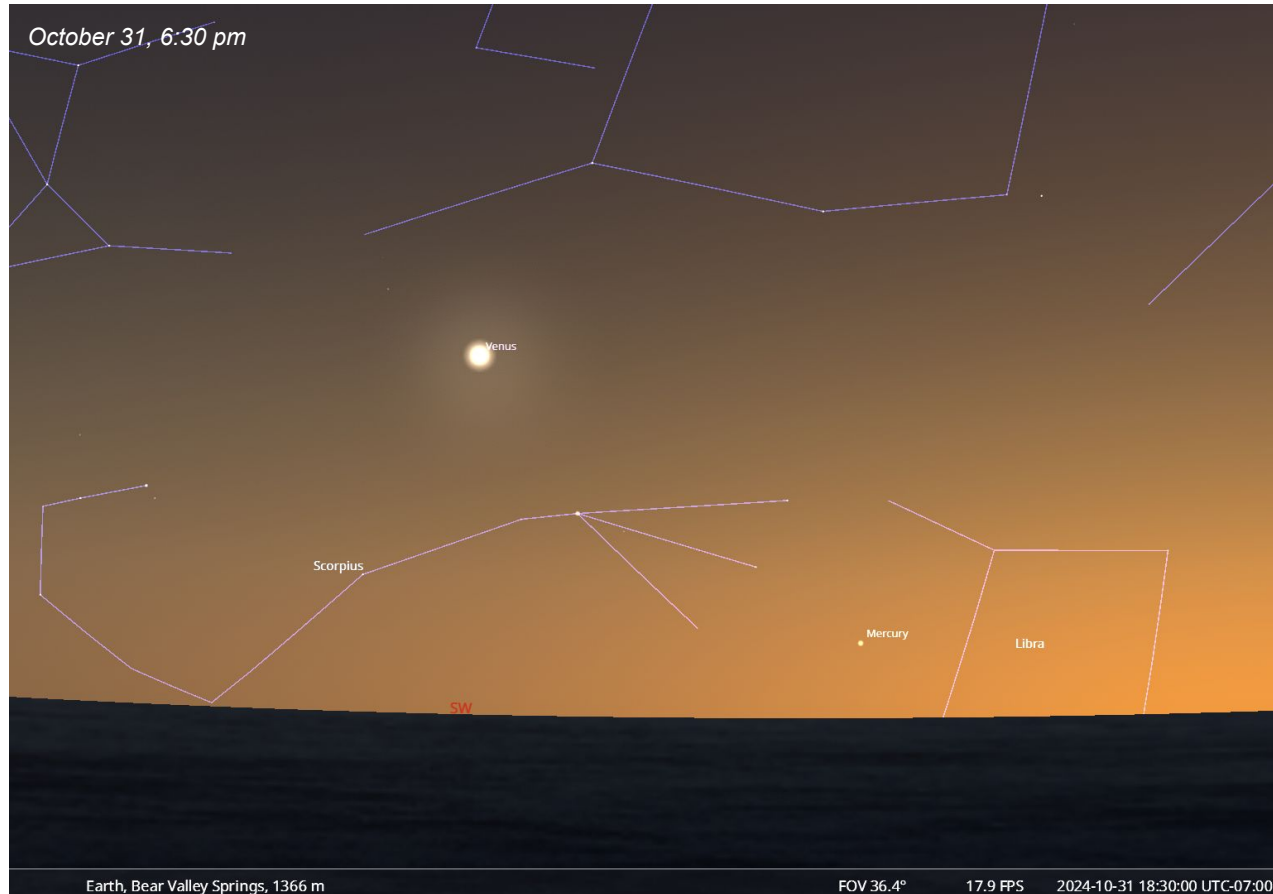
Evening Planets: Venus - (Libra)

Venus dominates early evening skies, shining at magnitude -3.9 and more than 30° east of the Sun.



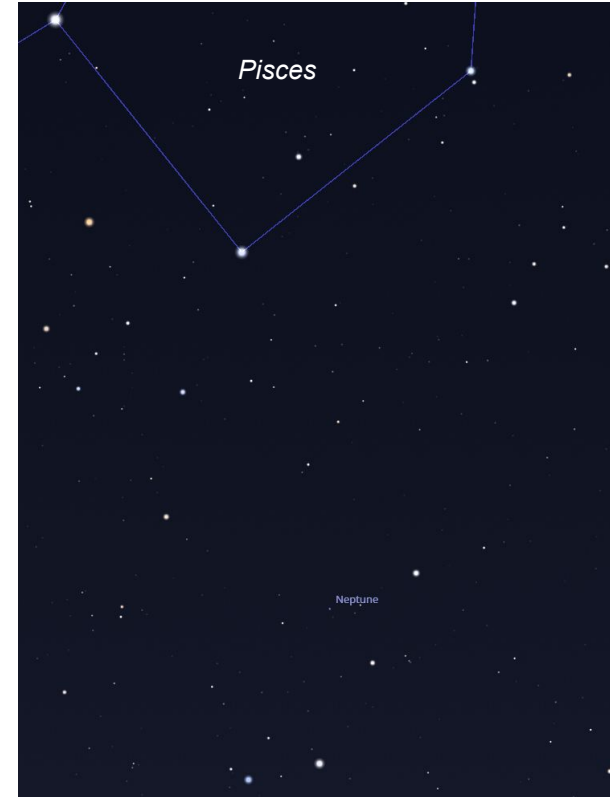
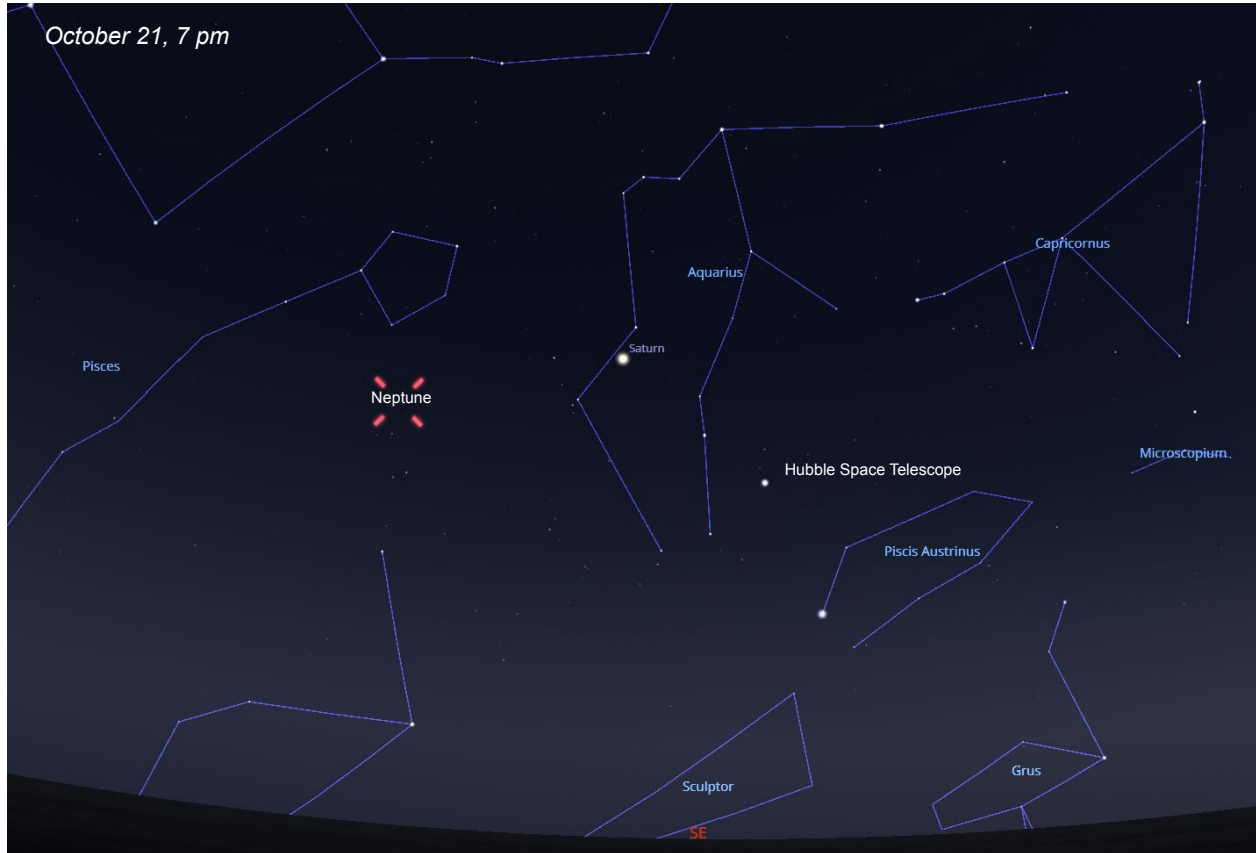
Evening Planets: Venus, Mercury - (Libra)

Mercury only visible late in the month, very low on the western horizon. Comes out of superior conjunction early in the month.



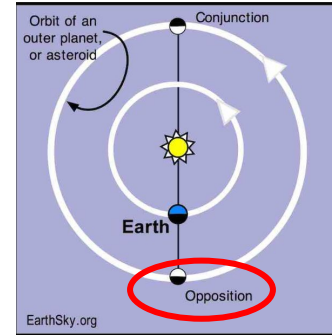
Evening Planets: Neptune, Saturn - (Pisces, Aquarius)

Saturn & Neptune both rise before sunset. Saturn spends most of the month at magnitude 0.7 outshining everything in its vicinity. Neptune forms a triangle with 24 and 20 Piscium by mid-October.



Morning Planets: Jupiter/Mars/Uranus - (Gemini, Taurus)

Mars rises shortly before midnight and improves its viewing conditions throughout October as it approaches opposition in January 2025. Jupiter is located in Taurus and brightens to magnitude -2.7 this month. Uranus stands about 6° southwest of the Pleiades all month.





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Comet Search C/2023 A3 (Tsuchinshan-ATLAS)

Visible with binoculars, small telescope, or unaided eyes



On the 9th, scan the sky with binoculars shortly after sunset - if TA gets as bright as Venus (unlikely), it will be visible. An hour later, the blue ion tail stretches up to Arcturus like an auroral spike.

On the 10th, the comet's head glows brightly in the deep twilight with the ion tail straight up. The dust tail should be super bright because of the forward-scattering effect when it lies between us and the Sun.

Comet Search C/2023 A3 (Tsuchinshan-ATLAS)

Visible with binoculars, small telescope, or unaided eyes

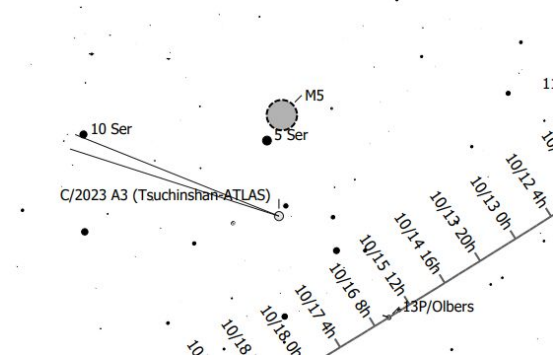


Source: theskylive.com

October 13th to 21st will be the best timeframe to observe TA

By the 13th, a sunward-pointing anti-tail should be forming. It's a trick of perspective as Earth passes through the comet's orbital plane on the 14th (shown here), the dust fan edge-on toward us.

On this night, casual observers will discover another "comet" with their binoculars: the large globular cluster M5. Imagers can observe fainter comet 13P/Olbers in the same field.

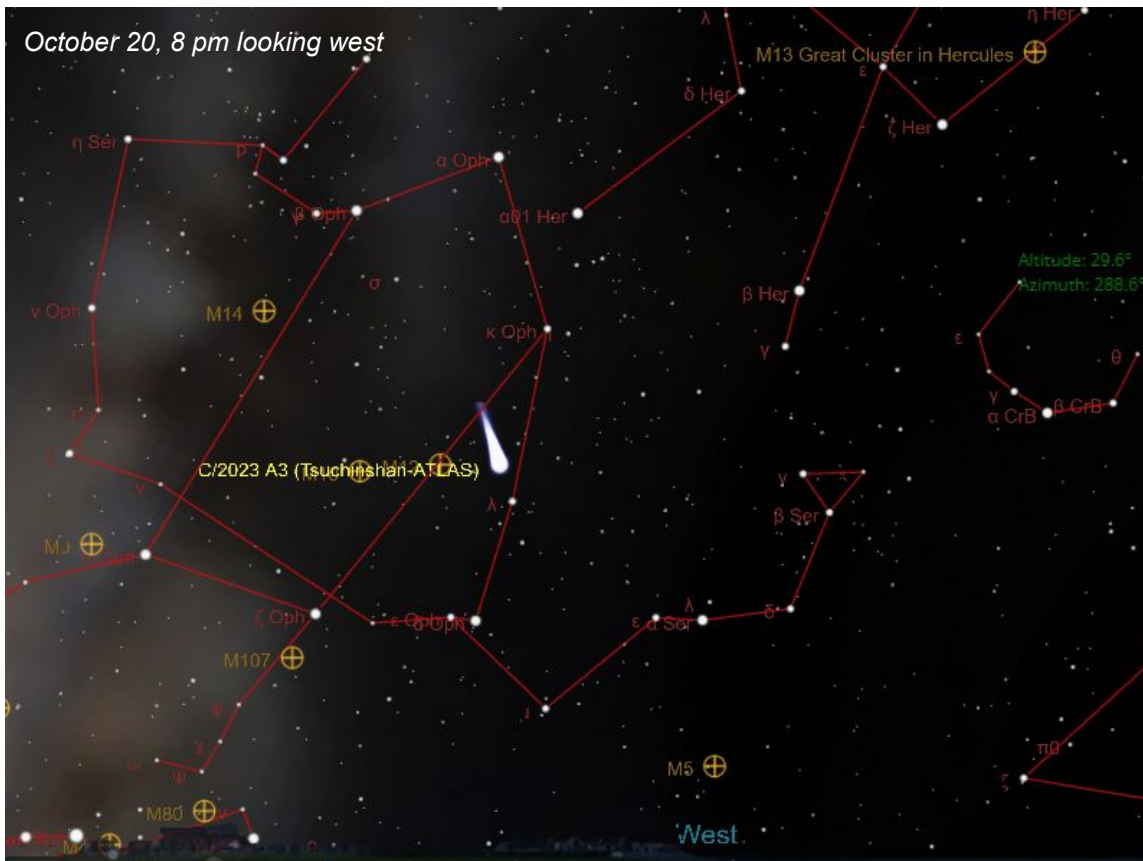


Source: cometchasing.skyhound.com

Comet Search C/2023 A3 (Tsuchinshan-ATLAS)

Visible with binoculars, small telescope, or unaided eyes

October 20, 8 pm looking west



Source: theskylive.com

From the 20th onward, the Moon rises after the sky is fully dark, maximizing the contrast between the tails and the sky. The comet is gaining altitude yet fading, but is still visible to the unaided eye from a dark site.



October 31, 8 pm looking west

Meteor Shower

Orionid

Remnants of Halley's Comet

October 21, 6 am looking SW high in sky



Orionids are active from October 2 through November 7, with the peak occurring on October 21.

A bright waning gibbous Moon will strongly affect the appearance of Orionid meteors, but brighter meteors may still be visible.

The shower has a maximum rate of 20 meteors/hour between 2 am and dawn.



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1 - M15, Pegasus Cluster 8 pm

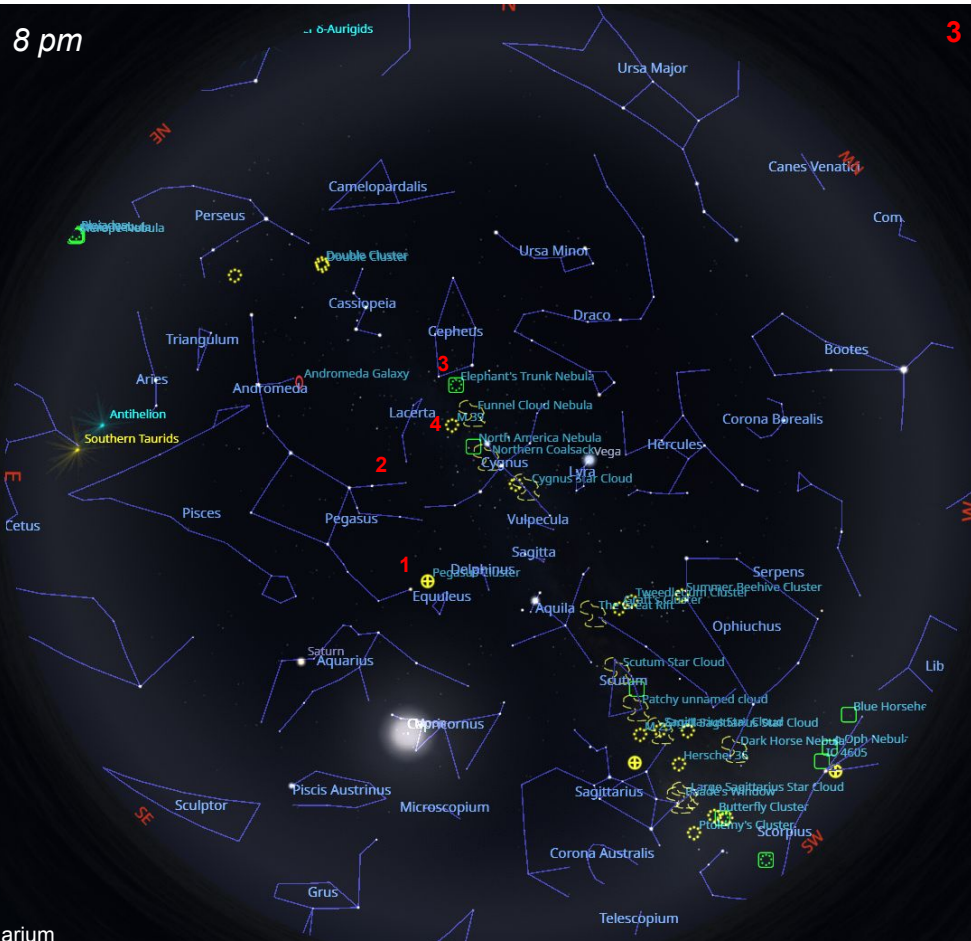


Globular cluster in Pegasus constellation
35,000 light years from Earth
12 billion years old
Binoculars, small telescopes

2 - NGC 7331



Spiral galaxy in Pegasus constellation
40 million light years from Earth
small telescopes



3 - Elephant's Trunk Nebula



Emission nebula in Cepheus constellation
2400 light years from Earth
small telescopes

4 - M39, Pyramid Cluster



Open star cluster in Cygnus constellation
1000 light years from Earth
Binoculars, small telescopes

October 2024 Viewing Chronology

- 2 - New Moon
- 3 - Tsuchinshan-ATLAS (TA) comet (*6 am*)
- 5 - Venus (*7:30 pm*)
- 9 - TA comet (*6:40 pm*)
- 10 - First Quarter Moon
- 12 - Public Viewing
- 14 - TA comet (*7 pm*); Moon lunar pits (*10 pm*)
- 15 - Jupiter/Mars/Uranus (*5 am*)
- 17 - Full Moon
- 20 - TA comet (*8 pm*)
- 21 - Orionid meteor shower (*6 am*); Neptune/Saturn (*7 pm*)
- 24 - Last Quarter Moon
- 31 - Venus/Mercury (*6:30 pm*)