Sky Guide 2026

BY MARTIN RATCLIFFE AND RICHARD TALCOTT

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Martin Ratcliffe *is a planetarium professional with Evans & Sutherland and enjoys observing from Salt Lake City.* **Richard Talcott** *is a contributing editor of* **Astronomy.**

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The afternoon of Aug. 12 brings a total solar eclipse to the sky above parts of Iceland and Spain. RICHARD TALCOTT

Astronomy magazine

JANUARY 2026

S	M	T	W	T	F	S
				1	2	●
4	5	6	7	8	9	◐
11	12	13	14	15	16	17
○	19	20	21	22	23	24
◑	26	27	28	29	30	31

- 3 Quadrantid meteor shower peaks
- The Moon passes 4° north of Jupiter, 5 P.M. EST
- 6 Venus is in superior conjunction, noon EST
- 9 Mars is in conjunction with the Sun, 7 A.M. EST
- 10 Jupiter is at opposition, 4 A.M. EST
- 21 Mercury is in superior conjunction, 11 A.M. EST
- 23 Pluto is in conjunction with the Sun, 5 A.M. EST
- The Moon passes 4° north of Saturn, 8 A.M. EST
- The Moon passes 4° north of Neptune, 11 A.M. EST
- 27 The Moon passes 5° north of Uranus, 2 P.M. EST
- 28 Asteroid Vesta is in conjunction with the Sun, 3 P.M. EST
- 30 The Moon passes 4° north of Jupiter, 9 P.M. EST

Jupiter gleams high in the sky

Jupiter reaches opposition and peak visibility Jan. 10, when it stays visible all night and shines brilliantly at magnitude –2.7. Perched high in the constellation Gemini the Twins, the giant planet is perfectly placed for Northern Hemisphere observers. But Jupiter is more than a one-night treat — it remains a spectacular sight all winter.

Swing your telescope toward the gas giant around opposition and you'll see a disk that spans 47". You'll enjoy seeing detail in its massive atmosphere, from the twin dark equatorial belts straddling a brighter equatorial zone to more subtle cloud features at higher latitudes.

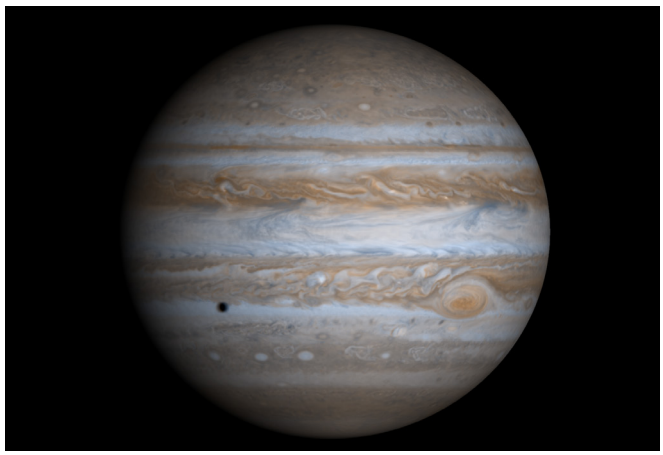
Jupiter's equatorial band rotates in 9 hours 51 minutes, while the rest of the planet takes five minutes longer. The interaction between the two regimes generates wild currents that produce intricate swirls, festoons, and white ovals. The rapid motion of these features means you'll notice changes in as little as 10 minutes with careful observations.

Jupiter's most famous feature is the Great Red Spot, which dominates the southern edge of the South Equatorial Belt. During these long winter nights, you're guaranteed a view of it either in the evening or morning hours.

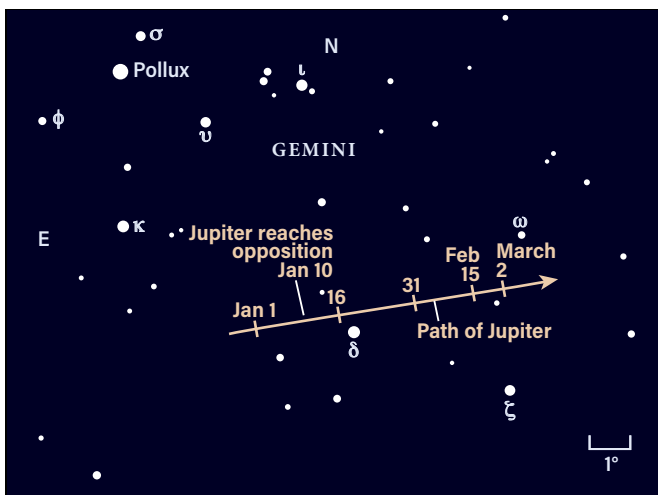
Jupiter's four largest moons — Io, Europa, Ganymede, and Callisto — change relative positions from night to night and often from hour to hour. The intricate dance arises from their different periods, which range from two days for Io to 16 days for Callisto. You can watch them disappear behind Jupiter's disk and then reemerge hours later on the opposite limb, or see them cast shadows onto the cloud tops as they pass in front of (transit) the planet.

Prior to opposition, a moon's shadow precedes the moon itself across Jupiter's disk, while after opposition, the situation reverses. This comes about because the aspect of the Sun's illumination on the jovian system changes with respect to our viewpoint from Earth.

With proper focus, collimation, and a cooperative atmosphere here on Earth, backyard observers can record stunning details — including small storms, cloud textures, and moon shadows — with high-speed video imaging. Free software allows users to stack the sharpest frames from each 30- to 40-second video capture.



The Cassini spacecraft captured the vibrant colors of Jupiter's cloud bands when it flew past in December 2000. NASA/JPL/UNIVERSITY OF ARIZONA



The solar system's largest planet reaches peak visibility among the stars of Gemini in early January. ALL ILLUSTRATIONS: *ASTRONOMY*: ROEN KELLY

Mercury's winter showcase

Mercury puts on its best evening show of the year in February for Northern Hemisphere observers. At its peak Feb. 19, it lies 18° east of the Sun and stands 11° high in the west 30 minutes after sunset. It then glows brightly at magnitude –0.4.

You can start looking for Mercury as early as Feb. 10, when the planet appears 7° above the horizon a half-hour after sundown and shines at magnitude –1.1. Sharp-eyed observers might glimpse Venus just 1° high. As the sky darkens, look for magnitude 1.0 Saturn well to Mercury's upper left.

By the 13th, the innermost planet has climbed higher and sets 80 minutes after the Sun. Grab binoculars and try to spot magnitude 3.7 Lambda (λ) Aquarii just 14' away.

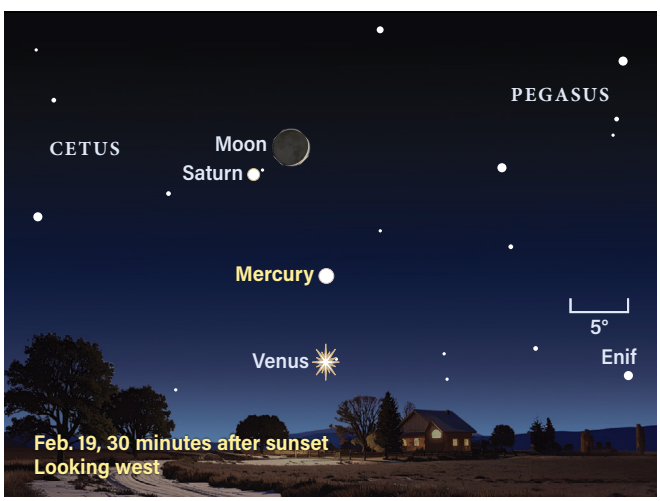
A thin crescent Moon joins Mercury on the 18th. Observers on the East Coast will see the planet above the Moon. But along the Gulf Coast, the Moon hides Mercury from view in an occultation. By dusk on the West Coast, the Moon is almost 1° past Mercury with Venus hanging well below them.

The view of Mercury through a telescope changes dramatically during February. When you view it on the 10th, you'll find a disk measuring 6" across and appearing 82 percent lit. At greatest elongation on the 19th, Mercury spans 7" and shows a 50-percent-lit phase. Just a week later, the planet's diameter swells to 9" and the Sun illuminates 21 percent of its Earth-facing hemisphere.

It surprises many observers that Mercury's greatest elongations vary so much. For example, the one in February reaches just 18° while the one in April maxes out at 28°. The difference arises from the planet's highly eccentric orbit — its distance from the Sun varies from 29 million miles to 43 million miles. So why is Mercury easy to see now but nearly invisible in April? It's simply that the ecliptic — the apparent path of the Sun across the sky that the planets follow closely — makes a much steeper angle to the western horizon after sunset this time of year, so distance from the Sun translates into altitude.

Mercury has another fine evening appearance in early June, when it joins Venus and Jupiter in Gemini. Its best morning apparition of the year occurs in late November.

Mercury barely peeked through bright twilight to the left of a thin crescent Moon the evening of June 26, 2025. GIOVANNI PASSALACQUA



Look west after sunset Feb. 19 and you should see Mercury about halfway between Venus and a crescent Moon.

FEBRUARY 2026

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8	◐	10	11	12	13	14
15	16	○	18	19	20	21
22	23	◑	25	26	27	28

15 Saturn passes 0.9° south of Neptune, 11 P.M. EST

17 Annular solar eclipse, 7 A.M. EST

18 The Moon passes 1.7° north of Venus, 4 A.M. EST

The Moon passes 0.1° south of Mercury, 6 P.M. EST

19 Mercury is at greatest eastern elongation (18°), 1 P.M. EST

The Moon passes 4° north of Neptune, 7 P.M. EST

The Moon passes 5° north of Saturn, 7 P.M. EST

23 The Moon passes 6° north of Uranus, 8 P.M. EST

26 Mercury passes 5° north of Venus, 6 P.M. EST

27 The Moon passes 4° north of Jupiter, 1 A.M. EST

Moon Phases

- ◐ **First Quarter**
- ● **Full Moon**
- ◐ **Last Quarter**
- ○ **New Moon**

Events that can be viewed with **the naked eye**

Events that can be viewed with **binoculars**

Events that can be viewed with a **telescope**

MARCH 2026

S	M	T	W	T	F	S
1	2	●	4	5	6	7
8	9	10	◐	12	13	14
15	16	17	○	19	20	21
22	23	24	◑	26	27	28
29	30	31				

2 Asteroid Pallas is in conjunction with the Sun, 10 A.M. EST

3 Total lunar eclipse, 7 A.M. EST

7 Mercury is in inferior conjunction, 6 A.M. EST

17 The Moon passes 2° south of Mercury, 10 A.M. EDT

The Moon passes 1.5° north of Mars, 6 P.M. EDT

20 The Moon passes 5° north of Venus, 9 A.M. EDT

Equinox (northern spring/southern autumn begins), 11 A.M. EDT

22 Neptune is in conjunction with the Sun, 7 A.M. EDT

23 The Moon passes 5° north of Uranus, 4 A.M. EDT

25 Saturn is in conjunction with the Sun, 5 A.M. EDT

26 The Moon passes 4° north of Jupiter, 8 A.M. EDT

A Full Moon's vanishing act

The ruddy glow from all of Earth's sunrises and sunsets bathe the Moon's surface during the total eclipse of Dec. 20/21, 2010. ALAN DYER

Residents of North America and western South America will have front-row seats to a total lunar eclipse the morning of March 3. People in Australia, New Zealand, Eastern Asia, and Indonesia will see the same event on the evening of the 3rd.

Lunar eclipses occur when a Full Moon passes through Earth's shadow. The Moon's orbit tilts 5° to Earth's orbit around the Sun, so eclipses don't happen every month. They only occur when our satellite lies near one of the points where the two orbits cross, which takes place once every six months or so.

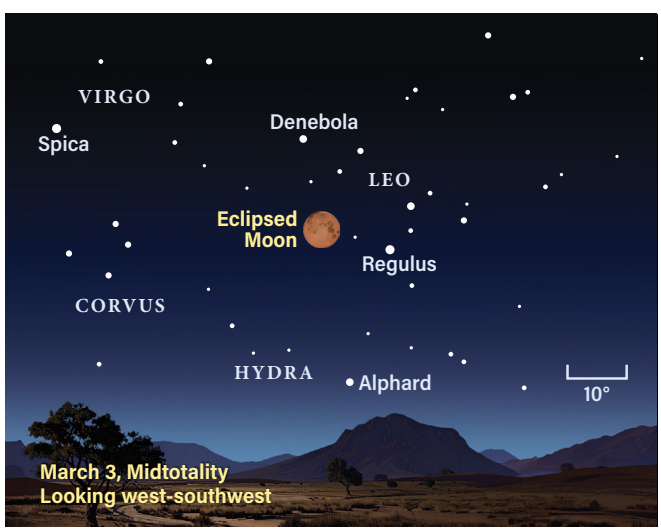
Across North America, skywatchers will see the Full Moon rise March 2 among the stars of Leo the Lion. But you'll need to stay up past midnight to witness the event's start. The Moon enters Earth's subtle penumbral shadow at 3:43 A.M. EST. Barely noticeable at first, the southwestern edge of the Moon slowly darkens until it finally enters the darker umbral shadow at 4:50 A.M. EST. For the next hour, the Moon moves deeper into Earth's shadow and more stars become visible.

As the shadow encroaches farther onto the Moon's disk, it starts to take on a deep orange to reddish hue. Totality begins at 6:04 A.M. EST and lasts for 59 minutes with the Moon traversing the southern part of Earth's shadow. Seeing the ruddy orb hanging in a star-studded sky will be one of the highlights of 2026.

Observers in the Eastern time zone witness totality during morning twilight as the Moon sets in the west. From the Central time zone, our satellite stands about 20° high in the west as totality commences and twilight starts to light up the sky.

The total eclipse occurs in a dark sky for observers in the Mountain and Pacific time zones. In the Rockies, the Moon passes through the partial phases as twilight intensifies. Luna leaves the umbral shadow at 6:18 A.M. MST. The West Coast is the best spot to watch the final stages play out. The penumbral shadow continues to darken the Moon's northeastern limb until the eclipse ends at 6:25 A.M. PST. The Moon will be low over the ocean, setting within 30 minutes of the eclipse's end.

To capture spectacular images of the eclipse, use a wide-angle lens and be sure to include some intriguing foreground objects. For the best results, use your camera's digital zoom to manually focus on stars. For photos through a telescope, set your tracking to lunar rate on your equatorial mount and use a wide range of exposures.



Viewers in the western half of North America witness a total eclipse of the Moon the morning of March 3.

Shooting stars streak the night

No one remembers the last return of Comet C/1861 G1 (Thatcher), a long-period object not seen in Earth's sky for more than 160 years. But every April, we get a reminder of its existence when our planet slams into its debris and we see the Lyrid meteor shower.

The shower remains active from April 14 to 30 but peaks in a fairly narrow window. Astronomers predict the 2026 Lyrids will reach their maximum on the North American afternoon of April 22, so your best chance to see meteors comes on the mornings of the 22nd and 23rd. First Quarter Moon occurs the night of April 23/24, so it won't shed much light when it's up and it departs the scene around 1 A.M. local daylight time on the 22nd and an hour later the following morning.

As Earth careens through the comet's orbital debris, meteors burn up in our atmosphere along parallel tracks. But perspective effects mean that from the ground, the "shooting stars" appear to emanate from a point in space. This radiant lies near the bright star Vega in Lyra, which rises in the northeast before 11 P.M. and climbs high as the night progresses. Meteor rates increase before dawn because Earth then faces directly into the debris stream.

The Lyrid shower produces up to 20 meteors per hour at the peak under ideal conditions — meaning a totally dark sky with the radiant overhead. In more typical conditions, expect about half that number. Keep alert for possible fireballs or a brief flurry of meteors.

To see the most meteors, choose an observing site far from artificial lights in an area where trees and buildings won't block much of the sky. And don't look at your smart phone's screen — it can take your eyes 15 minutes to dark adapt again to let you see fainter shower members. Meteors can appear anywhere in the sky. A good rule of thumb is to watch a region 40° to 60° away from the radiant and about halfway up the sky. Bring along a reclining outdoor chair and dress warmly. Even if the day is toasty, the night can get cool. Bring along a blanket and a thermos of hot coffee or tea to ward off the chill.

This year's two best meteor showers are August's Perseids and December's Geminids, which both peak with the Moon out of the sky. (See December for more details about the prolific Geminids.) November's Leonids also offer good prospects this year, while October's Orionids are decent for a couple hours before dawn. Unfortunately, bright moonlight interferes with both January's Quadrantids and May's Eta Aquariids.

A lone Lyrid meteor streaks above greenish auroral curtains in this scene from Marion, Iowa, at the peak of the 2023 shower. GREGG ALLISS

Meteor showers in 2026

Name	Peak date	Moon's phase	Prospects
Quadrantids	Jan. 3	Full Moon	Poor
Lyrids	April 22	Waxing crescent	Excellent
Eta Aquariids	May 6	Waning gibbous	Poor
Perseids	Aug. 12	New Moon	Excellent
Orionids	Oct. 21	Waxing gibbous	Fair
Leonids	Nov. 17	First Quarter Moon	Good
Geminids	Dec. 14	Waxing crescent	Excellent

APRIL 2026

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5	6	7	8	9	◐	11
12	13	14	15	16	○	18
19	20	21	22	◑	24	25
26	27	28	29	30		

- 3 Mercury is at greatest western elongation (28°), 7 P.M. EDT
- 13 Mars passes 0.3° north of Neptune, 6 A.M. EDT
- 15 The Moon passes 5° north of Mercury, 3 P.M. EDT
- The Moon passes 4° north of Neptune, 5 P.M. EDT
- The Moon passes 4° north of Mars, 9 P.M. EDT
- 16 The Moon passes 5° north of Saturn, 2 A.M. EDT
- Mercury passes 1.4° south of Neptune, noon EDT
- 19 The Moon passes 5° north of Venus, 5 A.M. EDT
- The Moon passes 5° north of Uranus, 2 P.M. EDT
- Mercury passes 1.8° south of Mars, 8 P.M. EDT
- 20 Mercury passes 0.5° south of Saturn, 4 A.M. EDT
- Mars passes 1.3° north of Saturn, 2 P.M. EDT
- 22 Lyrid meteor shower peaks
- The Moon passes 4° north of Jupiter, 6 P.M. EDT
- 24 Venus passes 0.8° north of Uranus, 1 A.M. EDT

MAY 2026

S	M	T	W	T	F	S
					●	2
3	4	5	6	7	8	◐
10	11	12	13	14	15	○
17	18	19	20	21	22	◑
24	25	26	27	28	29	30
●						

- **3** Venus passes 7° north of Aldebaran, 3 A.M. EDT
- **6** Eta Aquariid meteor shower peaks
- **13** The Moon passes 4° north of Neptune, 5 A.M. EDT
- The Moon passes 6° north of Saturn, 6 P.M. EDT
- **14** Mercury is in superior conjunction, 10 A.M. EDT
- The Moon passes 5° north of Mars, 9 P.M. EDT
- Dwarf planet Ceres is in conjunction with the Sun, 11 P.M. EDT
- **18** The Moon passes 3° north of Venus, 10 P.M. EDT
- **20** The Moon passes 3° north of Jupiter, 9 A.M. EDT
- **22** Uranus is in conjunction with the Sun, 10 A.M. EDT

Watch a giant wax and wane

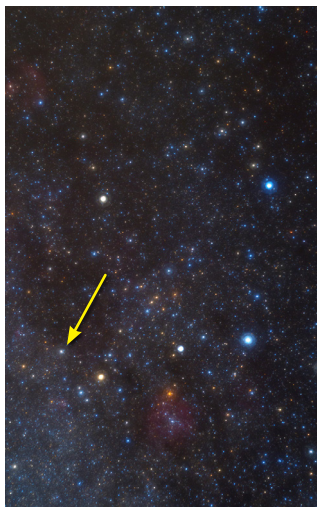
At first glance, the night sky's stars and constellations appear static. Sure, they change position as Earth rotates on its axis and revolves around the Sun, but their locations relative to one another and their brightnesses seemingly stay constant.

Perhaps that's why any changes draw astronomers' attention. Stars that vary in brightness pepper the sky, but most are fairly faint or don't change appreciably. Delta (δ) Cephei makes a notable exception, bright enough to see without optical aid and more than twice as bright at maximum light than at minimum.

Located in the circumpolar constellation Cepheus the King, Delta remains visible all night. It stands about 20° high in the northeast at midnight local daylight time in May and climbs higher through the morning hours. Delta varies from magnitude 3.5 at its brightest to 4.4 at its dimmest over a period of 5.366 days.

What makes observing the changes convenient are two nearby comparison stars that form an isosceles triangle with Delta. Magnitude 3.4 Zeta (ζ) Cep (slightly brighter than Delta at its brightest) and magnitude 4.2 Epsilon (ε) Cep (slightly brighter than Delta at its dimmest) help you quickly determine where the variable is in its cycle.

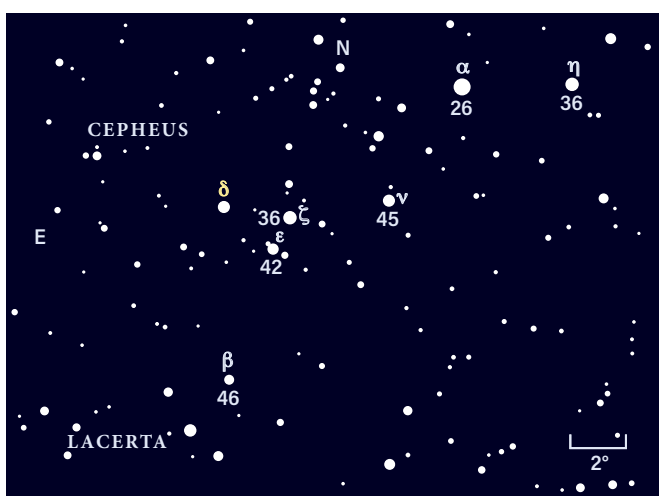
To gauge Delta's brightness and avoid any bias, mentally label Zeta with the letter *a* and Epsilon with the letter *e*. Then estimate what letter best represents the variable star's brightness. If you let *c* be the point halfway between those two, then *b* indicates a bit closer to *a* and *d* a bit closer to *e*. Each division on this alphabet scale amounts to about 0.2 magnitude.



Delta Cephei (arrow) lurks in the southeastern corner of Cepheus the King, a constellation whose shape resembles that of a child's drawing of a house. TONY HALLAS

Delta is the prototype Cepheid variable star — famous because their periods of variation scale with their intrinsic luminosities. Because Cepheids are yellow supergiant stars they can be seen in galaxies tens of millions of light-years away, allowing astronomers to make accurate distance measurements. This discovery allowed scientists in the 1920s to prove that the so-called spiral nebulae are actually galaxies.

You'll also want to keep an eye on Corona Borealis this year. The horseshoe-shaped constellation lies near the bright star Arcturus in Boötes and climbs high in the east during the early evening hours. Astronomers anticipate the recurrent nova T Coronae Borealis, also called the "Blaze Star," may erupt. It suddenly brightens from magnitude 10 to 2 once every 80 years or so, and its last outburst came in 1946. Be aware that the timing is not precise, and the star may have erupted by the time you read this. If T CrB does go nova, the nice arc of Corona Borealis will look like it has a little hook.



Delta (δ) Cephei changes brightness by 0.9 magnitude every 5.4 days. (Numbers are magnitudes with their decimal points omitted.)

It takes two (planets) to tango

A stunning conjunction between Jupiter and Venus, the solar system's two brightest planets, highlights June's evening sky. They appear closest June 9 among the background stars of Gemini the Twins, forming a nice contrast with the twin stars Castor and Pollux. The Moon and Mercury briefly join the scene to add to the spectacle.

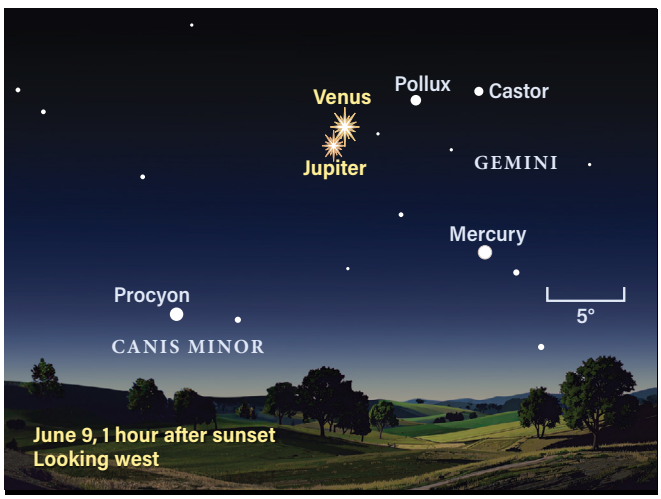
The two planets stand 8° apart June 1 and shine brightly enough to see in the western sky soon after sunset. Venus shines at magnitude –4.0 and Jupiter at magnitude –1.9. By 10 P.M. local daylight time, they dazzle against a darkening sky. The bright star Procyon lies 16° to Jupiter's lower left while Castor and Pollux form a triangle with Venus.

Watch the planets pull closer night after night as they approach their June 9 conjunction, when only 1.6° (three widths of the Full Moon) separates them. Venus then lies to Jupiter's upper right and 5° south of Pollux.

Following the conjunction, Venus' eastward motion carries it from Gemini into Cancer on June 11. It reaches the famous Beehive star cluster (M44) on the 19th. Two nights earlier, a thin crescent Moon joins the scene.

Be sure to check out Venus and Jupiter through a telescope. At the time of their conjunction, Venus spans 14" and appears 77 percent lit. Jupiter's disk measure 33" across and is fully illuminated, with its family of four bright moons adding to the appeal.

Few sights surpass a meeting of the two brightest planets. In this scene from February 2023, Venus blazes below Jupiter. GREGG ALLISS



Just 1.6° separate Venus and Jupiter when they encounter each other after the Sun sets June 9.

Although the two planets are the stars of the evening show, they aren't the only actors. A third solar system member crashes the stage during the first half of June. On the 1st, Mercury shines at magnitude –0.5 and appears 16° to Venus' lower right.

As Mercury continues to ascend, a waxing crescent Moon enters the arena, passing 3° above the planet on the 16th. Although Mercury has dimmed significantly to magnitude 0.6, it's easy to spot if you have a clear horizon.

Jupiter then stands 5° east of the Moon while Venus lies another 7° farther east and the Beehive Cluster appears 4° east of Venus. Castor and Pollux lie 7° and 4° north of the Moon, respectively, adding to the stunning display spreading across the horizon. This should be a photographer's dream, so pick out some fine foreground scenes and grab some great images.

JUNE 2026

S	M	T	W	T	F	S
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7	◐ 9	9	10	11	12	13
○	15	16	17	18	19	20
◑	22	23	24	25	26	27
28	●	30				

- 4 Jupiter passes 6° south of Pollux, 7 A.M. EDT
- 8 Venus passes 5° south of Pollux, noon EDT
- 9 Venus passes 1.6° north of Jupiter, 8 A.M. EDT
- The Moon passes 4° north of Neptune, 3 P.M. EDT
- 10 The Moon passes 6° north of Saturn, 8 A.M. EDT
- 12 The Moon passes 6° north of Mars, 5 P.M. EDT
- 13 The Moon passes 5° north of Uranus, 3 P.M. EDT
- 15 Mercury is at greatest eastern elongation (25°), 4 P.M. EDT
- 16 The Moon passes 3° north of Mercury, 4 P.M. EDT
- 17 The Moon passes 3° north of Jupiter, 3 A.M. EDT
- The Moon passes 0.3° north of Venus, 4 P.M. EDT
- 21 Solstice (northern summer/southern winter begins), 4 A.M. EDT
- 23 Mercury passes 7° south of Pollux, 3 P.M. EDT

JULY 2026

S	M	T	W	T	F	S
			1	2	3	4
5	6	◐	8	9	10	11
12	13	○	15	16	17	18
19	20	◑	22	23	24	25
26	27	28	●	30	31	

4 Mars passes 0.1° south of Uranus, 1 A.M. EDT

Mercury passes 10° south of Pollux, 7 A.M. EDT

6 The Moon passes 5° north of Neptune, 11 P.M. EDT

7 The Moon passes 7° north of Saturn, 6 P.M. EDT

9 Venus passes 1.1° north of Regulus, 10 A.M. EDT

11 The Moon passes 5° north of Uranus, 3 A.M. EDT

The Moon passes 5° north of Mars, 11 A.M. EDT

12 Mercury is in inferior conjunction, 9 P.M. EDT

14 Mars passes 5° north of Aldebaran, 3 A.M. EDT

The Moon passes 2° north of Jupiter, 11 P.M. EDT

17 The Moon passes 2° south of Venus, 1 P.M. EDT

26 Asteroid Juno is at opposition, 1 P.M. EDT

27 Pluto is at opposition, 3 A.M. EDT

29 Jupiter is in conjunction with the Sun, 8 A.M. EDT

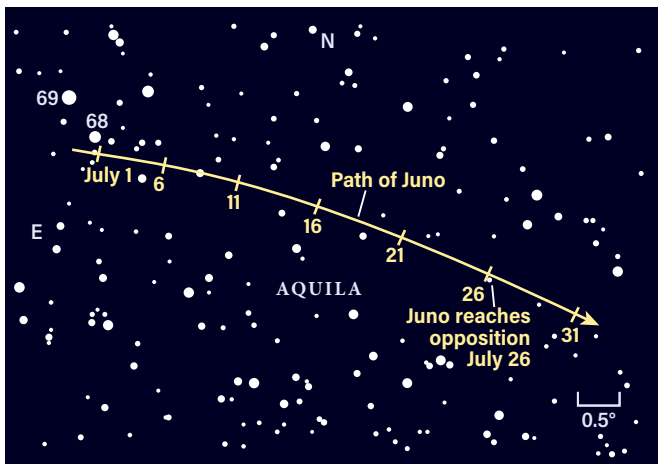
Juno soars with the Eagle

The early 1800s were a period of dramatic discovery. In 1801, Giuseppe Piazzi discovered an object between the orbits of Mars and Jupiter that astronomers later named Ceres. The following year, Heinrich Olbers found another object, Pallas, in the same region. Karl Ludwig Harding discovered the third body in this expanse, Juno, on Sept. 1, 1804. We now call the million or so known objects in this region "asteroids."

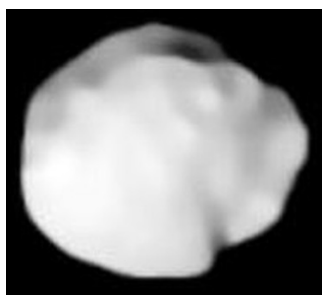
Harding worked at the Lilienthal Observatory near Bremen, Germany. At the time, it housed a 20-inch telescope and was considered Europe's finest observatory. It was here that a group calling themselves *Himmelspolizei* (the celestial police) set about discovering objects between the orbits of Mars and Jupiter, and Juno was one of its great successes. About 20 astronomers across Europe divided the constellations along the ecliptic among them for the search.

Juno ranks around 12th in size among the asteroids and has an odd shape, measuring about 200 by 165 by 125 miles. It has an unusually high reflectivity, which is the main reason astronomers found it sooner than some of its larger cousins. Astronomers classify Juno as an S-type asteroid, a type composed of magnesium and iron silicates.

Juno reaches opposition and peak visibility July 26, when it glows at magnitude 9.0 against the backdrop of Aquila the Eagle. This constellation lies well away from the typical path of planets and large asteroids; Juno ends up here because its orbit inclines 13° to the ecliptic.



June reaches opposition in late July against the background stars of southern Aquila the Eagle.



No spacecraft has ever visited the asteroid Juno, though ESO's Very Large Telescope with adaptive optics revealed its rough shape in 2021. ESO/VLT/SPHERE/ZIMPOL TEAM

There aren't a lot of bright stars in this part of the Eagle, though faint ones abound thanks to the Milky Way background. Late June and early July find Juno making close passes to a decent pair, 68 and 69 Aquilae. The asteroid slides 37′ south of 5th-magnitude 69 Aql on June 29 and 12′ south of its 6th-magnitude neighbor, 68 Aql, on July 1.

In mid-July, Juno lines up with three of Aquila's brightest stars. Start with magnitude 0.9 Altair (Alpha [α] Aql), the Eagle's brightest star. Then locate the two bright stars on either side: magnitude 2.7 Tarazed (Gamma [γ] Aql) and magnitude 3.7 Alshain (Beta [β] Aql). Draw a line from Tarazed through Altair and Alshain, then extend it 12° past Alshain. On the 14th, that puts you in Juno's vicinity.

Alternately, you can drop 4° south-southeast of magnitude 3.2 Theta (θ) Aql. At opposition July 26, the asteroid lies 4° due south of the star. To confirm a Juno sighting, use binoculars or a telescope to plot its star field on consecutive nights. The asteroid reveals itself by changing its position relative to the stars.

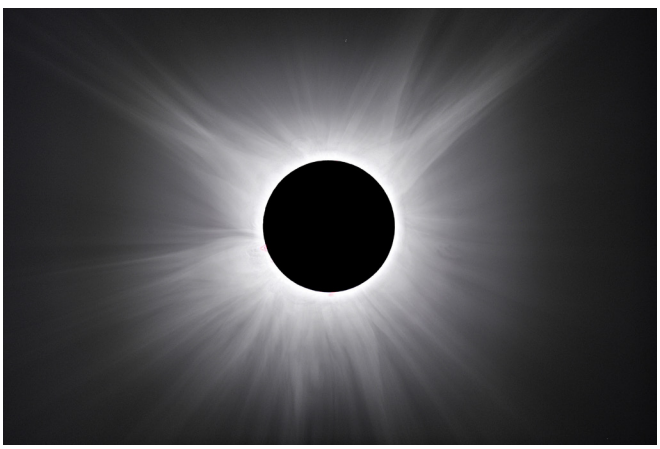
Because Juno has a highly eccentric orbit, its distance from Earth at opposition varies significantly. This also means its brightness changes considerably with each apparition. The next favorable opposition occurs when Juno lies near perihelion in October 2031, when it will peak at 7th magnitude.

Europe's brush with totality

Aug. 12 brings the first total solar eclipse since the April 2024 event that swept across the U.S. The path of the Moon's shadow lies mainly over ocean, but it does touch land in a few places in Europe that are bound to entice shadow chasers. Views of the diamond ring and solar corona are sure to dazzle even the most seasoned observer.

The total eclipse first contacts Earth in northern Russia. The track then crosses the Arctic Ocean, passing near the North Pole before heading south along the eastern coast of Greenland. The eclipse reaches its longest duration off the west coast of Iceland. The shadow's path then swings southeast, reaching northern Spain in late afternoon.

Those on cruise ships off Iceland can see up to 2 minutes 18 seconds of totality. The capital city, Reykjavík, experiences totality for 59 seconds, though you can gain more time if you head toward the airport at Keflavik. The closest spot to the greatest eclipse is Látrabjarg, the westernmost point in Iceland, which will witness 2 minutes 13 seconds of totality. Millions of sea birds — including puffins, northern gannets, guillemots, and razorbills — call the cliffs here home. Plan ahead if you seek this adventure because local officials may close the road to Látrabjarg and transport people by bus.



Delicate streamers highlighted the solar corona during the April 8, 2024, eclipse, seen here from Sherman, Maine. RATHIJIT BANERJEE

Eastern Greenland, western Iceland, and northern Spain are the places to be if you want to witness the Aug. 12 total solar eclipse.

Spain's northwestern coast offers observers a view of the eclipse above the ocean. The center line makes landfall in the picturesque fishing village of Luarca, but many other sites in the path of totality should be prime real estate that day. The totally eclipsed Sun lies 11° above the horizon. The risk, as always, is the weather, but the potential for spectacular photographs would make the journey worthwhile.

The Moon's shadow races across the Iberian Peninsula in just four minutes, reaching the Mediterranean coast just north of the attractive historical city Castellón de la Plana. If you travel to southeastern Spain for the eclipse, make sure you stay well east of mountains, because the eclipsed Sun stands only 4° high.

A deep partial lunar eclipse follows two weeks after the total solar eclipse. On the night of Aug. 27/28, 94 percent of the Moon will lie in Earth's umbral shadow, and viewers across the Americas can witness the entire event. Maximum eclipse occurs at 12:13 A.M. EDT.

AUGUST 2026

S	M	T	W	T	F	S
						1
2	3	4	◐	6	7	8
9	10	11	○	13	14	15
16	17	18	◑	20	21	22
23	24	25	26	27	●	29
30	31					

- **2** Mercury is at greatest western elongation (19°), 4 A.M. EDT
- **3** The Moon passes 5° north of Neptune, 4 A.M. EDT
- The Moon passes 7° north of Saturn, midnight EDT
- **5** Mercury passes 8° south of Pollux, midnight EDT
- **7** The Moon passes 5° north of Uranus, 1 P.M. EDT
- **9** The Moon passes 4° north of Mars, 2 A.M. EDT
- **11** The Moon passes 2° north of Mercury, 9 A.M. EDT
- **12** Total solar eclipse, 2 P.M. EDT
- Perseid meteor shower peaks
- **15** Venus is at greatest eastern elongation (46°), 2 A.M. EDT
- Mercury passes 0.6° north of Jupiter, 5 A.M. EDT
- **16** The Moon passes 2° south of Venus, 5 A.M. EDT
- **27** Mercury is in superior conjunction, 1 P.M. EDT
- Partial lunar eclipse, midnight EDT
- **30** The Moon passes 5° north of Neptune, 9 A.M. EDT
- **31** The Moon passes 7° north of Saturn, 4 A.M. EDT

SEPTEMBER 2026

S	M	T	W	T	F	S
		1	2	3	◐	5
6	7	8	9	○	11	12
13	14	15	16	17	◑	19
20	21	22	23	24	25	●
27	28	29	30			

- **2** Venus passes 1.7° south of Spica, 11 P.M. EDT
- **3** The Moon passes 5° north of Uranus, 7 P.M. EDT
- **6** The Moon passes 3° north of Mars, 2 P.M. EDT
- **8** The Moon passes 0.8° north of Jupiter, 2 P.M. EDT
- **14** The Moon passes 0.5° north of Venus, 7 A.M. EDT
- **18** Venus is at greatest brilliancy, 9 P.M. EDT
- Mars passes 6° south of Pollux, midnight EDT
- **22** Equinox (northern autumn/southern spring begins), 8 P.M. EDT
- **25** Mercury passes 1.0° north of Spica, 9 P.M. EDT
- Neptune is at opposition, 10 P.M. EDT
- **26** The Moon passes 5° north of Neptune, 3 P.M. EDT
- **27** The Moon passes 7° north of Saturn, 8 A.M. EDT
- **30** The Moon passes 5° north of Uranus, midnight EDT

An ice giant swims with the Fish

Distant Neptune lies opposite the Sun in our sky in late September. This means it rises at sunset, traverses the sky all night, and sets at sunrise. Opposition also brings the ice giant world closest to Earth, so it shines brightest and shows its largest disk when viewed through a telescope. This is the best time of the year to see it.

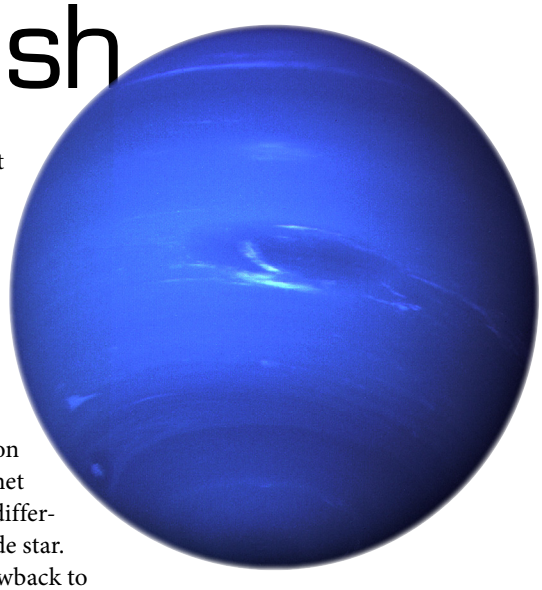
Neptune resides in a sparse region of Pisces the Fish. At opposition Sept. 25, the planet glows at magnitude 7.7, so you'll need binoculars or a telescope to spot it. Conveniently, Neptune lies only 9° west of magnitude 0.3 Saturn, which is located in the adjacent constellation Cetus the Whale.

Another way to find Neptune is to use the left (eastern) side of the Great Square of Pegasus. Draw a line from the star Alpheratz (Alpha [α] Andromedae) south to Algenib (Gamma [γ] Pegasi) and extend it an equal distance. The distant planet lies within 3° of this spot.

On Sept. 1, Neptune stands 4' from a 9th-magnitude star; it passes 1.3' due north of this star on the 4th. And on the 23rd, the planet passes 1' from a different 9th-magnitude star.

The main drawback to Neptune's opposition this year is that the Full Moon arrives one day later, on the 26th, and its bright glare makes seeing the planet a challenge. Fortunately, Neptune moves slowly relative to the background stars, so you can use the finder chart (below) to find it for several days either side of opposition.

To confirm a sighting of the ice giant, point your telescope toward the suspected object and crank up the power. Only Neptune displays a disk, which spans 2.4" and shows a subtle blue-gray color.

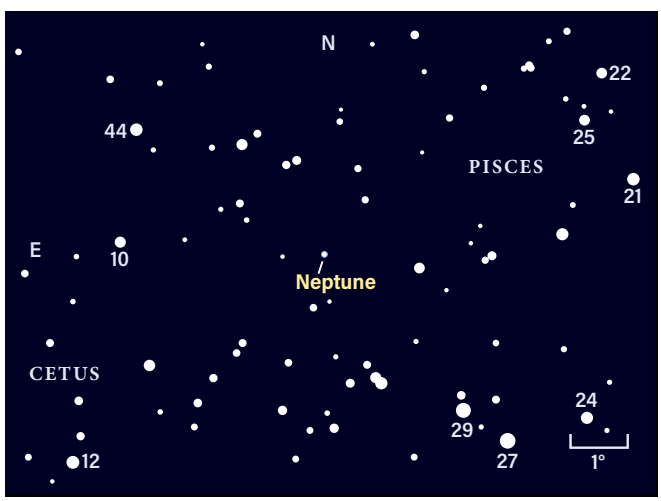


Neptune and its Great Dark Spot posed for Voyager 2 when it flew past the ice giant in August 1989. NASA/JPL

The discovery of Neptune radically changed our view of the solar system. All previous planets were either known in prehistory or, in the case of Uranus, were discovered accidentally. Neptune was the first one deduced by applying Isaac Newton's theory of gravity.

By the early 1800s, astronomers realized that Uranus wasn't following the motion Newton's theory predicted. Instead of assuming faulty observations, researchers did the math and determined where a more distant object would have to be to perturb Uranus' orbit.

French mathematician Urbain Leverrier calculated the suspected planet's position and sent the results to his colleagues. German observational astronomer Johann Galle simply pointed the Berlin Observatory's 9-inch telescope at that location two days later, the night of Sept. 23/24, 1846, and voilà! The new planet turned up within 1° of its expected position.



Neptune lies in southern Pisces, not far from that constellation's border with Cetus, when it comes to opposition Sept. 25.

The ringed planet opens up

Saturn reaches opposition Oct. 4 among the background stars of Cetus the Whale. The ringed planet remains visible all night and offers observers stunning views of its ring system and family of moons.

Saturn peaks at magnitude 0.3, making it by far the brightest object in this region except for when the Moon passes through. It lies 15° south-southeast of 2nd-magnitude Algenib (Gamma [γ] Pegasi), the southeasternmost star in the Great Square of Pegasus.

Through a telescope, Saturn displays a yellowish disk that measures 20" across the equator and about 10 percent less through the poles, a flattening caused by the planet's rapid rotation. When seeing conditions are good, check the disk for subtle banding and rare spots.

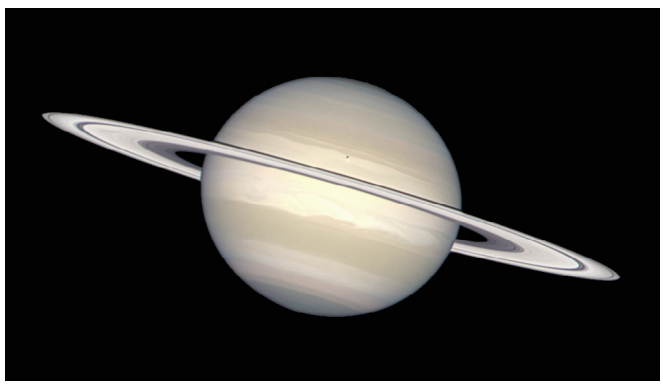
Saturn's ring system spans 45" and tilts 7° to our line of sight. The tilt varies from month to month thanks to the planet's 2.5° orbital inclination relative to Earth's. The ring tilt peaks at 9° in July and August and drops to 6° in December.

Saturn's larger moons show up nicely in small telescopes. The biggest, 8th-magnitude Titan, orbits the planet once every 16 days. Skywatchers also might see the 10th-magnitude trio of Tethys, Dione, and Rhea. Iapetus lies much farther out, well beyond Titan. This two-faced moon varies from 10th to 12th magnitude depending on where it is in its orbit. Harder to see is 12th-magnitude Enceladus, which orbits just outside the ring system.

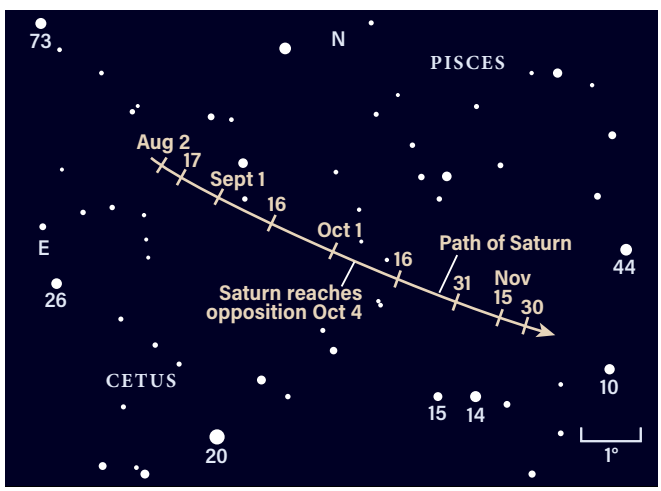
Two major asteroids join Saturn in Cetus this month. Pallas reaches opposition Oct. 6, and Vesta follows on the night of Oct. 12/13. Both lie southeast of the ringed planet and are within reach of binoculars.

Vesta peaks at magnitude 6.4 — barely visible to the naked eye under perfect conditions. Use 4th-magnitude Theta (θ) Ceti as a guide. At opposition, the asteroid lies 5° north-northeast of this star. And on the 18th, it stands 4.4° due north of Theta. Several 6th-magnitude stars dot this region, but a quick sketch of the field from night to night easily reveals the interloper.

Pallas appears considerably fainter than Vesta, glowing at magnitude 8.2 at opposition. It lies about 12° south of Vesta, well off the beaten path because its orbit inclines 35° to the ecliptic. At opposition, Pallas appears 6° due south of Theta. Or, perhaps more conveniently, just 1.0° northwest of 5th-magnitude 46 Cet.



Hubble has photographed Saturn and the changing aspect of its rings throughout the observatory's 35 years in orbit. THE HUBBLE HERITAGE TEAM (AURA/STSCI/NASA/ESA)



The ringed planet crosses from Pisces into Cetus during this year's apparition, reaching magnitude 0.3 at its early October peak.

OCTOBER 2026

S	M	T	W	T	F	S
				1	2	◐
4	5	6	7	8	9	○
11	12	13	14	15	16	17
◑	19	20	21	22	23	24
25	●	27	28	29	30	31

- 4 Saturn is at opposition, 8 A.M. EDT
- 5 The Moon passes 1.2° north of Mars, 2 A.M. EDT
- Mercury passes 5° north of Venus, 11 A.M. EDT
- 6 The Moon passes 0.2° north of Jupiter, 6 A.M. EDT
- Asteroid Pallas is at opposition, 7 P.M. EDT
- 11 The Moon passes 3° north of Venus, 11 P.M. EDT
- 12 Mercury is at greatest eastern elongation (25°), 6 A.M. EDT
- The Moon passes 2° south of Mercury, 4 P.M. EDT
- 13 Asteroid Vesta is at opposition, 2 A.M. EDT
- 21 Orionid meteor shower peaks
- 23 The Moon passes 5° north of Neptune, 11 P.M. EDT
- Venus is in inferior conjunction, midnight EDT
- 24 The Moon passes 7° north of Saturn, 2 P.M. EDT
- 28 The Moon passes 5° north of Uranus, 6 A.M. EDT

NOVEMBER 2026

S	M	T	W	T	F	S
◐	2	3	4	5	6	7
8	○	10	11	12	13	14
15	16	◑	18	19	20	21
22	23	●	25	26	27	28
29	30					

2 The Moon passes 1.1° south of Mars, 9 A.M. EST

The Moon passes 0.5° south of Jupiter, 6 P.M. EST

3 Venus passes 2° south of Spica, 8 A.M. EST

4 Mercury is in inferior conjunction, 9 A.M. EST

7 The Moon passes 1.1° south of Venus, 7 A.M. EST

14 Mars passes 1.2° north of Jupiter, 10 P.M. EST

17 Leonid meteor shower peaks

19 Venus passes 1.8° north of Spica, 6 P.M. EST

20 The Moon passes 5° north of Neptune, 8 A.M. EST

Mercury is at greatest western elongation (20°), 7 P.M. EST

The Moon passes 7° north of Saturn, 8 P.M. EST

24 The Moon passes 5° north of Uranus, 2 P.M. EST

25 Uranus is at opposition, 6 P.M. EST

29 Venus is at greatest brilliancy, 2 P.M. EST

30 The Moon passes 1.2° south of Jupiter, 4 A.M. EST

The Moon passes 3° south of Mars, 3 P.M. EST

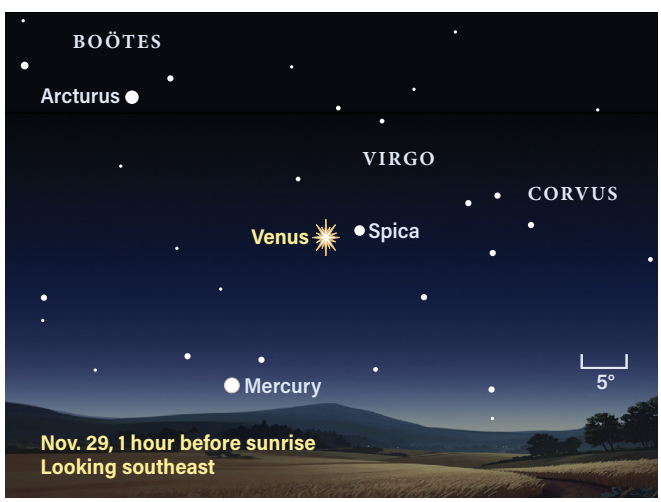
Venus stands out before dawn

Venus passes between the Sun and Earth in late October and then shoots into view before dawn in early November. It reaches greatest brilliancy — a startlingly bright magnitude –4.9 — at month's end. Venus' daily motion forges a nice arc around the 1st-magnitude star Spica, Virgo's brightest. It remains within 3° of Spica until Nov. 26.

You can start viewing the inner planet on the 4th. Venus then stands 17° west of the Sun and rises 85 minutes before our star. Start looking for Venus before 6 A.M. local time and you should see Spica 2° due north.

A waning crescent Moon passes within 2° of magnitude –4.5 Venus on the 7th. The Sun illuminates only 3 percent of our satellite, but the other 97 percent still shows up thanks to earthshine. The two solar system objects make an elegant and beautiful sight in the predawn twilight.

Only the Sun and Moon outshine Venus, which shone brilliantly in evening twilight during early March 2025. JAMIE COOPER



Venus reaches greatest brilliancy Nov. 29, when it shines six magnitudes brighter than its neighbor, 1st-magnitude Spica.

A telescope reveals Venus' large but thin crescent. The planet's disk spans 56" but appears only 7 percent lit. It's big enough that you might see its crescent shape through tripod-mounted binoculars.

Venus brightens as its crescent fattens and its disk shrinks. All the while, its elongation from the Sun grows and it appears higher in a darker sky.

Watch Venus over the coming weeks as it swings around Spica. The planet passes 1.2° due west of the star on the 10th, when the pair rises two hours before the Sun. At magnitude –4.7, Venus is bright enough that you might be able to see it cast shadows. You'll need to be in a dark location, and it won't hurt if a blanket of snow coats the ground.

The planet brightens to magnitude –4.9 on the 19th, when it slides 1.8° due north of Spica. Although Venus maintains this brightness until Dec. 4, it officially achieves greatest brilliancy on the 29th. Venus then rises more than three hours before the Sun, at around 3:30 A.M. local time, and stands almost 20° high in the south as twilight begins. A telescope reveals the planet's 40"-diameter disk and 27-percent-lit crescent.

A crescent Moon joins Venus again Dec. 5, passing 7° north of the planet. As 2026 comes to a close, Venus rises nearly four hours ahead of the Sun, though it has dimmed slightly to magnitude –4.6. When viewed through a telescope, the planet spans 40" and shows a 48-percent-illuminated phase.

The year's best meteor shower?

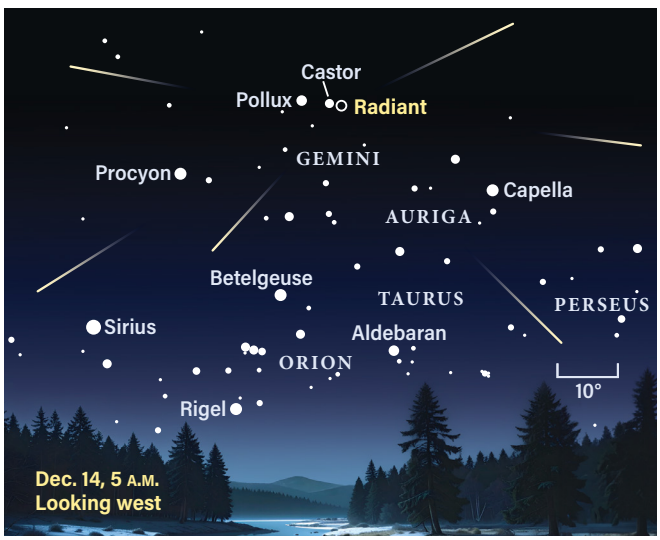
Although the Perseid meteor shower gets all the glory (it does peak on warm August nights after all), the Geminids produce more meteors. The shower runs from Dec. 4 to 20, peaking on the 14th. With a waxing crescent Moon setting well before midnight, this year's prospects look excellent.

The shower's radiant lies in the constellation Gemini the Twins, not far from the magnitude 1.6 star Castor. The radiant climbs 60° high in the east by midnight local time and passes nearly overhead around 2 A.M. With the radiant near the zenith, meteor rates can spike to 150 per hour under a dark sky from a site without major obstructions.

Although the meteors emanate from Gemini, they can appear anywhere in the sky. If you stare at the Twins, you'll see meteors arriving nearly head on. This perspective reduces their trail lengths significantly. To see longer trails, direct your attention 40° to 60° away from the constellation. Also be on the lookout for particularly bright meteors. The Geminids tend to produce a lot of them, and even some fireballs — those brighter than magnitude –4.

The weather this time of year means you'll want to dress warmly and bring extra blankets and a warm beverage. And be sure you cover your head — not to ward off impacting meteors, they typically burn up more than 50 miles above you — but to reduce heat loss.

Snow-covered trees in northern Sweden frame a bright aurora and five Geminid meteors in this view of the 2023 shower. FELIPE MENZELLA



A waxing crescent Moon won't interfere with the peak of the 2025 Geminid shower, which could produce up to 150 meteors per hour.

Keep your eyes dark adapted for the best experience. Even a brief glance at your phone screen immediately reduces the number of fainter meteors you would otherwise see. Give your eyes 15 minutes to get dark adapted and maintain a no-lights policy for the best show.

Astronomers suspect the Geminids arise from the debris 3200 Phaethon ejected. The Infrared Astronomical Satellite discovered this asteroid Oct. 11, 1983. It measures only 4 miles across and orbits the Sun once every 1.4 years. Its highly eccentric orbit inclines steeply to the ecliptic, suggesting that it is the solid remains of a comet nucleus that has lost all its ices.

While the Geminids put on a great show, don't ignore winter's stellar canvas. The bright stars of Orion, Taurus, Auriga, and Canis Major add to the beauty of the year's finest meteor shower.

DECEMBER 2026

S	M	T	W	T	F	S
			2	3	4	5
6	7		9	10	11	12
13	14	15	16		18	19
20	21	22		24	25	26
27	28	29		31		

5	The Moon passes 7° south of Venus, 6 A.M. EST	
12	Mercury passes 5° north of Antares, 8 A.M. EST	
14	Geminid meteor shower peaks	
17	The Moon passes 5° north of Neptune, 4 P.M. EST	
18	The Moon passes 7° north of Saturn, 5 A.M. EST	
21	Solstice (northern winter/southern summer begins), 4 P.M. EST	
	The Moon passes 5° north of Uranus, 11 P.M. EST	
27	The Moon passes 1.5° south of Jupiter, 1 P.M. EST	
28	The Moon passes 5° south of Mars, 1 P.M. EST	

2027 Preview

Looking ahead to next year …

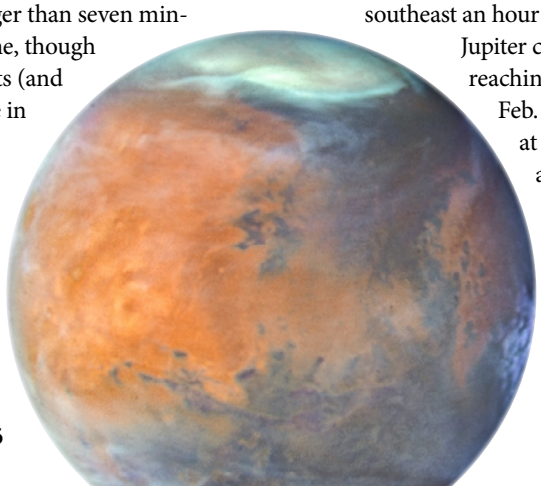
More than six minutes of totality await eclipse chasers who flock to the center line in Egypt on Aug. 2, 2027. TUNÇ TEZEL

SKYWATCHERS HAVE HAD THEIR EYES SET ON 2027 for years. The longest total solar eclipse since 2009 cuts a wide swath across North Africa on Aug. 2, delivering up to 6 minutes 23 seconds of totality in Egypt, not far from the temple complex at Luxor. The total eclipse lasts at least five minutes everywhere on the center line in Africa. And just as important, this entire region rarely sees a hint of clouds at this time of year.

The year's other eclipses take an obvious back seat. A nice annular eclipse occurs Feb. 6 in parts of Chile, Argentina, and the coasts of Uruguay and Brazil before touching a sliver of Africa as the Sun starts to set. Annularity lasts longer than seven minutes on the center line, though the weather prospects (and visual splendor) pale in comparison to the August eclipse. Three lunar eclipses take place in 2027, but all are unimpressive penumbral events.

For those who prefer more leisurely observing, planet viewing peaks in January and February. Venus starts the parade, reaching greatest elongation Jan. 3. The inner planet then shines at magnitude –4.5, lies 47° west of the Sun, and stands 25° high in the southeast an hour before sunrise. Jupiter comes next, reaching opposition Feb. 10. It then shines at magnitude –2.6 against the backdrop of Leo the Lion. A telescope will show its 45"-diameter disk. Mars also lies in Leo and comes to opposition Feb. 19, when it shines at magnitude –1.3 and sports a disk spanning 14". Saturn lags well behind the other three, achieving its peak Oct. 17. It then shines at magnitude 0.0, brighter than the past few years because its ring system tilts a substantial 13° to our line of sight.

Chile, Argentina, and the coasts of Uruguay and Brazil are the places to be Feb. 6, 2027, to witness a long annular solar eclipse. FELIPE MENZELLA



Telescopes will reveal delicate surface markings on Mars when it peaks in February 2027 among the background stars of Leo the Lion. NASA, ESA, STSCI

Of the major 2027 meteor showers, only May's Eta Aquariids peak at New Moon. Moonlight interferes with the others, though January's Quadrantids appear to have the best prospects.

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