BCAS OBSERVING HIGHLIGHTS for December 27, 2025 to January 10, 2026, a "bright Moon period"
Black Canyon Astronomical Society (BCAS), southwest-central Colorado, USA

DATES & TIMES (MST) FOR REGIONAL EVENTS AND EYE-CATCHING HAPPENINGS IN THE SKY:
December 26, 6:00 PM to 11:00 PM: "Fat" crescent Moon 4° above Saturn
December 27 & 28, 6:40 AM to 6:45 AM: Spot Mercury low in the southeast (use binoculars)
December 27 to 29, 2:30 AM to 5:50 AM: View our spring stars under a dark, moonless sky
January 2, 10:00 AM: Western Slope Skies on KVNF radio
January 2, 4:20 PM to 5:00 PM: Watch a full "supermoon" rise in the east southeast
January 2 to 3, all night long: Full Moon west of bright Jupiter
January 3, 7:20 AM to 8:00 AM: Watch a full "supermoon" set in the west southwest
January 3, 10 AM: Earth closest to Sun (at perihelion) – yes this is true!
January 3 to 4, all night long: Waning gibbous Moon east of Jupiter
January 3 to 4, 11 PM to 6 AM: Quadrantid Meteor Shower peaks (degraded by bright moonlight)
January 4 or 5, about 7:34 AM: Latest sunrise of 2026
January 5 to 6, 9 PM to 6:15 AM: Moon just west of first-magnitude star, Regulus, in Leo
January 7, 6:00 PM: Western Slope Skies on KVNF radio
January 8 to 10, 6:45 PM to 11:00 PM: Enjoy our winter stars under a dark, moonless sky
January 10, 1:30 AM to 6:15 AM: Moon just west of first-magnitude star, Spica, in Virgo

SUMMARY. This "bright Moon period" features several astronomical milestones. Earth is closest to the Sun on January 3 – during early winter in Colorado! Can you feel the heat? Probably not! Our seasons are caused by Earth's pronounced 23.4-degree axial tilt. Earth's orbit is only slightly elliptical (or "out of round"), so our distance from the Sun has little effect on seasons. On the night of January 3-4, bright moonlight may hinder viewing of the Quadrantid Meteor Shower, often one of the best of the annual showers under darker conditions. In western Colorado, our latest sunrise occurs on January 4 or 5 (the date varies, based on your latitude) at about 7:34 AM MST.

The Moon reaches first quarter on December 27. From December 28 to January 1, watch a gibbous Moon wax. The Moon is full on the night of January 2-3, 2026. Around sunset on January 2 from 4:20 PM to 5:00 PM MST, watch the full "supermoon" rise in the east northeast just 1 day before lunar perigee (the Moon's near point to Earth). Does the Moon look especially large to you? The January 2-3 full Moon is 222,000 miles distant, considerably closer than its average distance of 238,000 miles, making it appear about 7% larger than average. And the Moon illusion effect may make the Moon seem even larger when it's near the horizon. On January 3 between 7:20 AM and 8:00 AM MST, you can watch that full "supermoon" set in the west northwest, as the Sun rises in the east southeast. From January 4 to 9, the gibbous Moon wanes. The Moon reaches last quarter on January 10.

Saturn is well placed for evening viewing. You can spot the Ringed Planet more than 40 degrees above the south-southwestern horizon as the sky darkens, and it remains visible until after 10 PM MST. This is a great time to view brilliant Jupiter. Jupiter is above our horizon for more than 13 nighttime hours, rising in the east northeast as the sky darkens, culminating more than 70 degrees above the southern horizon just after midnight, and remaining visible in the west northwest into morning twilight. Jupiter is opposite the Sun in our sky on January 10. With a telescope, you can view the shadows of Jupiter's four largest moons, as they cross the "King of Planets." In the evenings with binoculars or telescopes, you can spot Neptune, which is conveniently near Saturn, and Uranus, about 4 degrees south of the Pleaides Star Cluster in Constellation Taurus. December 27 and 28 between 6:40 AM and 6:45 AM MST likely will be our last chances in 2025 to see Mercury as a morning star low in the southeast, before the Innermost Planet races toward a solar conjunction on January 21.

Extreme solar flares have occurred in recent weeks and months, and some of these were associated with coronal mass ejections that caused geomagnetic storms and auroras on Earth. As of December 26, there are large active regions on the Earth-facing side of the Sun, so it's possible that auroras could be visible again from the Western Slope during this period.

Find times for local passes of bright satellites, including the International Space Station and Tiangong, the Chinese Space Station, at these links...

https://www.heavens-above.com/
https://www.n2yo.com/passes/?s=25544

Note: The apparent brightness of sky objects is measured in "magnitude" units. Many bright stars are magnitude +1, while the faintest stars easily visible to unaided eyes under dark skies are magnitude +6. Some of the brightest stars are 0 magnitude (e.g., Vega, Arcturus), while the brightest sky objects have negative magnitudes (e.g., Sirius at -1.5, Jupiter at -2 to -3, Venus at -4 to -5, the full Moon at -12 to -13, and the Sun at -26.7 magnitude). Angular distances on the sky are usually cited in degrees of arc (often abbreviated as "^{o}"). Helpful ways to estimate 1, 5, 10, 15, and 25 degrees of arc can be found here: https://www.timeanddate.com/astronomy/measuring-the-sky-by-hand.html

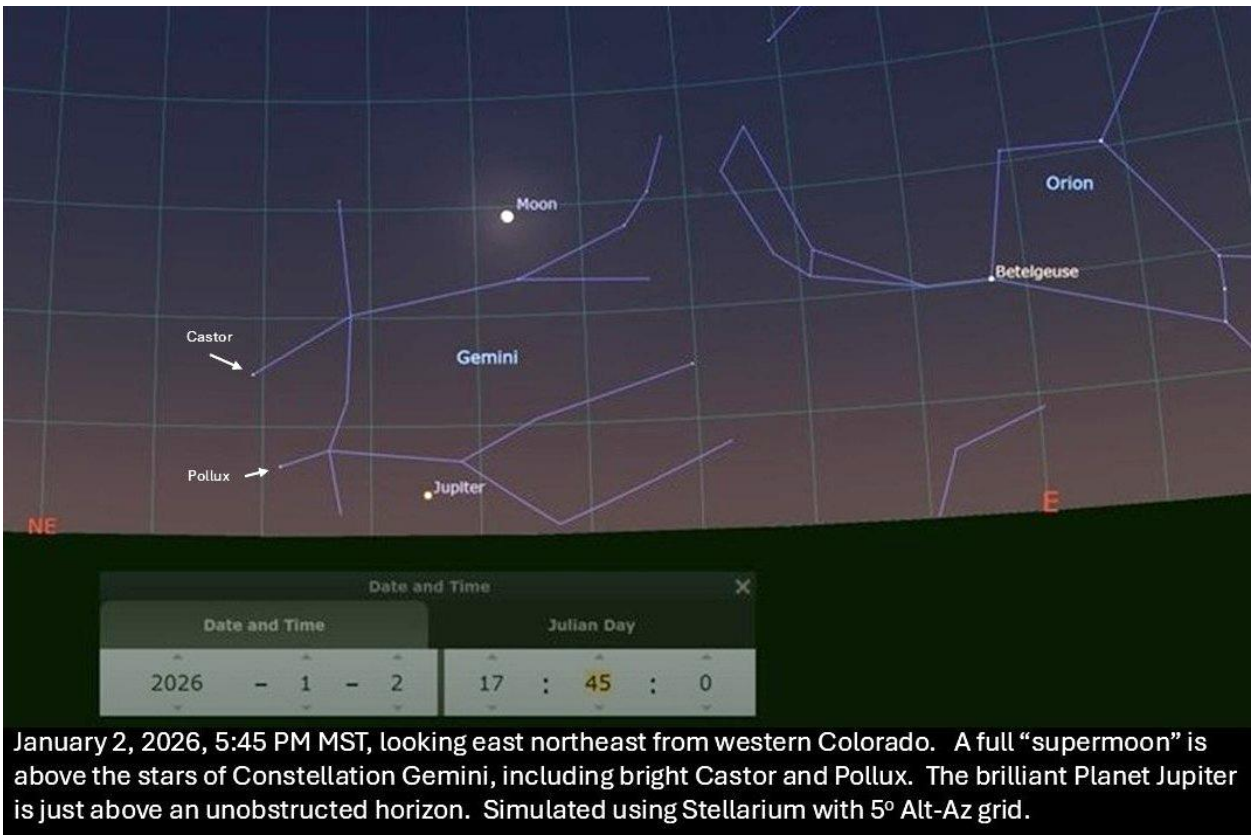
EARTH CLOSEST TO THE SUN ON JANUARY 3. In 2026 Earth is closest to the Sun ("at perihelion") on January 3 at about 10 AM MST. Really? Yes, it's true. Earth's orbit about the Sun is only slightly elliptical, or "out of round." Our seasons are controlled by the 23.4-degree inclination of Earth's rotation axis to its orbital plane, and not by Earth's distance from the Sun. Colorado and the rest of the northern hemisphere are now "tipped" away from the Sun and experiencing winter, while folks in Australia, New Zealand, Chile, Argentina, and southern Africa are "tipped" toward the Sun and enjoying summer.

OUR LATEST SUNRISE FOR 2026: JANUARY 4 OR 5 AT ABOUT 7:34 AM MST. Our longest night of 2025 was December 20-21, just before the December solstice, which occurred on December 21 at 8:03 AM MST. But our earliest sunset occurred at about 4:26 PM MST on December 6, 7, or 8 and our latest sunrise is on January 4 or 5, 2026 at about 7:34 AM MST (the dates vary, depending on your latitude in western Colorado). So, why don't both our earliest sunset and latest sunrise occur on the December solstice? Relative to our standardized clock time (mean solar time, e.g., Mountain Time for Colorado), apparent solar time (as defined by the position of the Sun in the sky, as indicated by a Sun dial) can be either "fast" or "slow" at various times of the year, due to variations in the Sun's apparent speed against the background stars. This accounts for the earliest sunset having occurred on December 6, 7, or 8, 2025 in western Colorado, about two weeks before the solstice on December 21. It also accounts for our latest sunrise occurring on January 4 or 5, 2026 about 2 weeks after the solstice. The variations in apparent solar time are caused by Earth's orbital eccentricity and its axial tilt. The difference between apparent solar time and mean solar time (clock time) is called the equation of time.

THE MOON. The Moon reaches **first quarter on December 27** (exactly at 12:10 PM MST). From December 28 to January 1, watch a gibbous Moon wax. **The Moon is full on the night of January 2-3, 2026** (exactly full January 3 at 3:03 AM MST). Around sunset on January 2 from 4:20 PM to 5:00 PM MST, watch a full "supermoon" rise in the east northeast 1 day before lunar perigee (the Moon's near point to Earth). Does the Moon look especially large to you? The January 2-3 full Moon is 222,000 miles distant, considerably closer than its average distance of 238,000 miles, making it appear about 7% larger than usual. And the Moon illusion effect may make the Moon seem even larger when it's near the horizon. On January 3 between 7:20 AM and 8:00 AM MST, you can watch that full "supermoon" set in

the west northwest as the Sun rises in the east southeast. From January 4 to 9, the gibbous Moon wanes. The Moon reaches **last quarter on January 10** (exactly at 8:48 AM MST).

On the evening of December 26, the 42%-illuminated Moon passes about 3 degrees north of Saturn. On the night of January 2-3, the full Moon is west of the bright Planet, Jupiter. By the following night, January 3-4, the waning, gibbous Moon has moved to the east of Jupiter. On the night of January 5-6, look for the gibbous Moon just west of the first-magnitude star, Regulus. On the morning of January 10, the last quarter Moon is about 7 to 5 degrees west of first-magnitude Spica. NASA has published a stunning visualization of lunar phases for year 2025. Another fun site is NASA's daily Moon guide.



January 2, 2026, 5:45 PM MST, looking east northeast from western Colorado. A full "supermoon" is above the stars of Constellation Gemini, including bright Castor and Pollux. The brilliant Planet Jupiter is just above an unobstructed horizon. Simulated using Stellarium with 5° Alt-Az grid.

SATURN IN THE EVENINGS. As the sky darkens, the Ringed Planet is more than 40 degrees above the south-southwestern horizon. View Saturn with telescopes while it is still high in the sky, just after the end of bright evening twilight. Saturn sets in the west at about 11:23 PM MST on December 27 and 10:32 PM MST on January 10. During this period, Saturn fades slightly from magnitude +1.00 to +1.02, as its distance from Earth increases from 897 million to 918 million miles. Through telescopes, Saturn's disk appears 17 arc seconds wide, and its rings span 40 arc seconds. During 2025 and early 2026, Saturn's thin rings (150,000 miles wide but only about 1000 ft thick!) appear nearly "edge-on" from our perspective on Earth. Saturn's rings are not as striking as they have been in the past few years (and will be a few years from now). When seen nearly edge-on, the rings are dimmer, making it easier to spot some of Saturn's mid-sized moons, like Tethys, Dione, Rhea, and Enceladus. Titan, Saturn's largest moon, is bright enough to see with just binoculars. You can follow the changing positions of Saturn's moons by using various planetarium apps.

NEPTUNE – NEAR SATURN. Neptune, shining at magnitude +7.8, is about 3 degrees northeast of Saturn. Like Saturn, we can observe Neptune best just after the end of evening twilight. You'll need binoculars

or a telescope to spot Neptune, moving slowly against the stars of southwestern Pisces during this period. A telescope may reveal Neptune's 2.3 arc second-wide, blue disk. Neptune is 2.80 billion miles distant during this period. You can use this link to find Neptune:
https://theskylive.com/neptune-info

URANUS. Uranus is well placed for viewing through much of the night. Uranus is moving slowly against the stars of Constellation Taurus, about 4 degrees south of the Pleiades Star Cluster. You can use this link to find Uranus: https://theskylive.com/uranus-info
At magnitude +5.66, you can see the 7th Planet easily with binoculars, and perhaps even with eyes unaided when the Moon is below the horizon. But you'll need a telescope to resolve Uranus' 3.8 arc second-wide disk and to detect color easily. Most people perceive Uranus as either blue or green. How does it appear to you? The best times to view the 7th Planet may be between 7:30 PM and 10:30 PM MST, when Uranus is more than 60 degrees above the horizon. Uranus is 1.74 billion miles from Earth during this period.

JUPITER AND ITS MOONS AT THEIR BEST! This is a great time to view Jupiter and its four large "Galilean" moons! The Giant Planet rises in the early evening and remains visible into morning twilight, spending more than 13 hours above our horizon between sunset and sunrise. Jupiter rises at about 6:01 PM MST on December 27 during late twilight and at 4:59 PM MST on January 10, a few minutes before sunset. Jupiter is more than 50 degrees high in our sky between 10 PM and 2 AM, culminating more than 70 degrees above the southern horizon between 1:22 AM and 12:20 AM MST. Between December 27 and January 10, the Giant Planet brightens from magnitude -2.66 to -2.68, as its distance from Earth decreases from 396 million to 393 million miles, and its apparent diameter increases from 46.3 to 46.6 arc seconds. Jupiter is opposite the Sun in our sky ("at opposition") on January 10.

Use a telescope or binoculars to spot Jupiter's four bright "Galilean" moons. You can identify them by their changing positions and referring to various planetarium apps. Use a telescope to view shadows of the Galilean moons crossing the Giant Planet. These are total solar eclipses on Jupiter! Ganymede, the largest moon in the Solar System, casts the largest shadow of Jupiter's moons, and its shadow is usually the easiest to spot. There's a "prime time" transit of Ganymede's shadow on January 6, 2026 from 6:58 PM to 10:18 PM MST. Due to their smaller diameters, the shadows of Callisto, Io, and Europa are smaller than Ganymede's shadow. But shadows of all 4 Galilean moons can be observed transiting Jupiter with telescopes having apertures as small as 3 inches. Shadow transits of Io and Europa occur frequently, because Io orbits Jupiter every 1.8 Earth days, and Europa every 3.6 days. Ganymede and Callisto have longer orbital periods (around Jupiter), 7.2 and 16.7 Earth days, respectively, so their shadows cross Jupiter less frequently.

December 27-28, 2025, 10:30 PM to 12:46 AM MST, Io's shadow crosses Jupiter with Jupiter more than 50 degrees high in our local sky.

December 28, 2025, 5:44 AM to 8:34 AM MST, Europa's shadow crosses Jupiter (Locally, this event begins with Jupiter 31 degrees above the western horizon, and it ends just as Jupiter sets after sunrise).

December 29, 2025, 4:58 PM to 7:14 PM MST, Io's shadow crosses Jupiter (Locally, this event begins before Jupiter rises and ends with Jupiter 14 degrees above the east-northeastern horizon).

December 30, 2025, 4:02 PM to 6:20 PM MST, Ganymede's shadow crosses Jupiter (Locally, this event begins before Jupiter rises and ends with Jupiter 5 degrees above the east-northeastern horizon).

December 31, 2025, 7:04 PM to 9:52 PM MST, Europa's shadow crosses Jupiter (Locally, this event begins with Jupiter 14 degrees above the east-northeastern horizon and ends with Jupiter 46 degrees high in the east).

January 2, 2026, 5:54 AM to 8:10 AM MST, Io's shadow crosses Jupiter (Locally, this event begins with Jupiter 25 degrees above the western horizon and ends with Jupiter less than 1 degree above the west-northwestern horizon after sunrise).

January 4, 2026, 12:24 AM to 2:40 AM MST, Io's shadow crosses Jupiter with Jupiter more than 60 degrees high in our local sky.

January 5, 2026, 6:52 PM to 9:08 PM MST, Io's shadow crosses Jupiter (Locally, this event begins with Jupiter 18 degrees above the east-northeastern horizon and ends with Jupiter 42 degrees high in the east).

January 6, 2026, 6:58 PM to 10:18 PM MST, Ganymede's shadow crosses Jupiter (Locally this event begins with Jupiter 18 degrees above the east-northeastern horizon and ends with Jupiter 57 degrees high in the east).

January 7-8, 2026, 9:40 PM to 12:28 AM MST, Europa's shadow crosses Jupiter with Jupiter more than 50 degrees high in our local sky.

January 10, 2026, 12:20 AM to 3:46 AM MST, Callisto's shadow crosses Jupiter. Locally this event begins with Jupiter 73 degrees high in the south and ends with Jupiter 43 degrees high in the west. This transit occurs when Jupiter is exactly opposite the Sun in our sky, and from our perspective Callisto's shadow is projected right behind the disk of Callisto itself. Callisto may contrast poorly with Jupiter's bright disk, and Callisto may mostly block its own dark shadow! Consequently, this event could be challenging (but very interesting!) to observe.

MERCURY DISAPPEARS AS A "MORNING STAR." On December 27 and 28 between 6:40 AM and 6:45 AM MST, look for Mercury less than 3 degrees above an unobstructed southeastern horizon. Binoculars may help. The Innermost planet shines brightly at magnitude -0.5 but glaring morning twilight may hinder the view. After December 28 it gets challenging and even dangerous to search for Mercury, as it descends toward superior solar conjunction on January 21. On December 27, Mercury is 124 million miles distant, and its 92%-illuminated, gibbous disk is 5.0 arc seconds wide, as seen through telescopes. While at solar conjunction on January 21, Mercury will be 132 million miles distant but invisible in the glare of the Sun. Mercury will reappear as an "evening star" in early February 2026. **Please do your Mercury spotting before sunrise. NEVER chance looking at the Sun without taking proper precautions. Serious eye damage can result.**

WILL A BRIGHT NOVA ("NEW" STAR) APPEAR SOON? Will there be a bright "new" star in Constellation Corona Borealis sometime soon, at least briefly? Corona Borealis rises above the east-northeastern horizon by 2:30 AM MST, and the Constellation is more than 40 degrees above the eastern horizon by 6 AM MST. T Coronae Borealis (T CrB) is a recurrent nova that (based on past behavior) may rapidly increase in brightness 1500-fold (to second magnitude) to become the brightest star (or 2nd brightest star) in Corona Borealis between now and sometime in 2026. Then this "new star" may fade rapidly below naked-eye visibility in about a week. As of 5 AM (MST) on December 26, T CrB had not yet erupted. Astronomer Jean Schneider of Paris Observatory stated that an eruption is most likely on

November 10, 2025 or June 25, 2026. There was no eruption on November 10, 2025, but keep watch - an eruption could happen at any time! You can find additional info at these sites…
https://blogs.nasa.gov/Watch_the_Skies/2024/02/27/view-nova-explosion-new-star-in-northern-crown/
https://www.aanda.org/articles/aa/full_html/2023/12/aa48372-23/aa48372-23.html

THE SUN. The Sun has been very dynamic lately, as solar active regions containing sunspots have unleashed numerous flares and coronal mass ejections (CMEs) of charged particles. There have been many M-class (moderate) solar flares during recent weeks. And there were X-class (extreme) flares on November 4 (two!), 9, 10, and 14 and on December 1 and 8! Also, CMEs have triggered geomagnetic storms that caused auroras. As of December 26, there are active regions on the earth-facing side of the Sun, so we may experience more M- and possibly X-class (extreme) flares and powerful CMEs. The best way to monitor sunspots, solar flares, CMEs, and other solar activity safely (and in "real time") is by using the internet. Check out the following sites…
https://sohowww.nascom.nasa.gov/data/realtime-images.html
https://sdo.gsfc.nasa.gov/data/
https://stereo.gsfc.nasa.gov/beacon/
http://halpha.nso.edu/
https://www.swpc.noaa.gov/
http://www.sidc.be/silso/ssngraphics
Do not look at the Sun directly without safe, specialized solar filters. Looking at the Sun can be very dangerous unless you take adequate precautions. Severe eye damage and even blindness can result.

AURORAS (aka "polar lights" or "northern lights"). With continuing high solar activity and associated coronal mass ejections, there may be geomagnetic storms that trigger auroras that could become visible from the Western Slope. Get predictions and updates for auroras, their intensity, and geographic extent from NOAA's Space Weather Prediction Center:
https://www.swpc.noaa.gov/products/aurora-viewline-tonight-and-tomorrow-night-experimental
Auroras are most frequently seen from high latitudes, e.g., from Canada, Alaska, Iceland, northernmost Europe, southern New Zealand, and Antarctica. But many people have seen and photographed auroras from Colorado several times in 2024 and 2025, including a spectacular aurora on November 11, 2025. Also, we can watch auroras in real-time from Yellowknife, Northwest Territories on an all-sky camera at the Canadian Space Agency's AuroraMax website. Like Colorado, Yellowknife is in the Mountain Time Zone. An aurora webcam at the University of Alaska-Fairbanks is two hours behind the Mountain Time Zone…
https://www.youtube.com/watch?v=O52zDyxg5QI
Airglow and SAR arcs also result from high solar activity, and these phenomena have been photographed and/or observed from Colorado.

EARTH SATELLITES. Numerous Earth satellites are visible every clear night. Satellites are visible only when they reflect sunlight during twilight or nighttime hours. We see satellites most often during late evening twilight and for an hour or so afterwards, and before and during early morning twilight. The brightest satellites are the International Space Station (ISS) and Tiangong, the Chinese Space Station. Both space stations can appear brighter than any star in the sky, and at times even brighter than the Planet Jupiter. Predictions for space station passes can change quickly, and it's best to get predictions for passes within 24 hours of when you want to see the satellites. In low Earth orbit, both the ISS and Tiangong are subject to atmospheric drag, and they undergo frequent re-boosting. Re-boosting slightly slows orbital speed, resulting in later passes. Also, both space stations frequently alter their orbits to

avoid collisions with other satellites and space debris. Some popular sites for predicting local passes of the space stations are the following (be sure to set applications to your location and time zone):
https://www.heavens-above.com/
https://www.n2yo.com/passes/?s=25544
For ISS passes, you can use NASA's "Spot the Station" app for mobile devices …
https://www.nasa.gov/spot-the-station/
Starlink satellite "trains" can be striking sights for a few days after their launch. For predictions of SpaceX's Starlink satellites, try using this site:
https://findstarlink.com/#5431710;3

HAPPY OBSERVING!