

**OBSERVING HIGHLIGHTS for March 6 to 22, 2025, a “bright Moon period”
Black Canyon Astronomical Society (BCAS), western Colorado, USA**

SUMMARY.

On the night of March 13-14, a total lunar eclipse is visible from the entire western hemisphere, as the full Moon moves through the Earth’s shadow. We in Colorado are especially lucky, because (if skies are clear) we can see the entire eclipse, which spans more than 6 hours! The Moon starts moving through the partial shade of Earth’s penumbral shadow on March 13 at 9:55 PM MDT, but the real action starts at 11:09 PM MDT, when the Moon first touches Earth’s darker umbral shadow. The eclipse is total from 12:25 AM to 1:32 AM MDT, when the entire Moon is within the umbra. During totality, the sky darkens, and faint stars appear. The totally eclipsed Moon typically shines with an ashen, reddish hue, due to sunlight that is refracted into the umbra by Earth’s atmosphere. But the color and darkness of lunar eclipses vary. The partial (umbral) eclipse ends at 2:48 AM MDT, and the Moon leaves Earth’s penumbral shadow at 4:01 AM MDT.

Four bright planets decorate our evening sky during the first part of this “bright Moon period.” Before March 14 you can find brilliant Venus and fainter Mercury in the west. Binoculars may help you spot Mercury. As twilight fades, bright Jupiter is high in the southwest, and reddish-tinted Mars is high in the south. After March 14, Venus and Mercury disappear rapidly before their respective solar conjunctions on March 22 and 24. **On March 11 between 8:32 PM and 10:50 PM MDT, set up a telescope and watch a double solar eclipse on Jupiter, as the shadows of its moons, Ganymede and Europa, cross the Giant Planet.**

The Moon reaches first quarter on March 6, and from March 7 to 12 we can watch a gibbous Moon wax. The Moon is full on the night of March 13-14, when we are treated to a total lunar eclipse, as noted above. A gibbous Moon wanes from March 15 to 21, reaching last quarter on March 22.

Spot the elusive and faint zodiacal light in the west from March 17 to 29 between 8:50 and 9:15 PM MDT, when moonlight is absent from the early evening sky.

The March equinox is on March 20 at 3:01 AM MDT, when the Sun shines directly on Earth’s equator. This marks the beginning of spring in the northern hemisphere and the beginning of fall in the southern hemisphere. In Colorado, daylight hours are rapidly lengthening, as nighttime hours diminish.

As of March 5, there are several active regions with sunspots on the Earth-facing side of the Sun. Moderate and even extreme, solar flares are possible, as are coronal mass ejections of charged particles. You can monitor solar activity safely in real time on the internet. **Never look at the Sun without safe, specialized solar filters.** This high solar activity is triggering geomagnetic storms, auroras (aka “northern lights”), and airglow. So, keep watching for these phenomena!

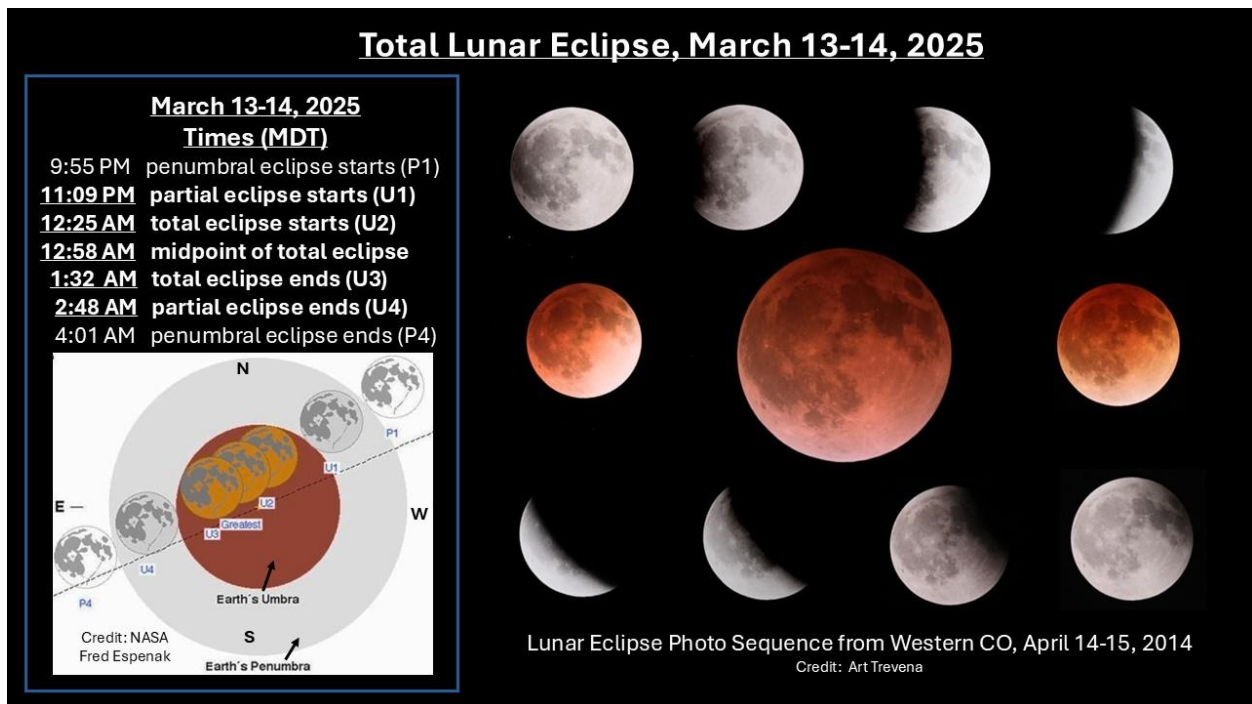
From western Colorado, view predicted passes of interesting satellites, including predawn passes of the very bright International Space Station (ISS) from March 6 to 8, and evening passes of the ISS from March 10 to 22. Predawn passes of the almost-as-bright Tiangong (Chinese) Space Station are predicted from March 17 to 22.

On Sunday March 9 at 2 AM, we in Colorado change from Mountain Standard Time (MST) to Mountain Daylight Time (MDT). Remember to move ahead by 1 hour all non-internet-connected watches, clocks, and devices.

THE MOON. The Moon reaches **first quarter on March 6** (exactly at 9:31 AM MST). From March 7 to 12, we can watch the gibbous Moon wax. **The Moon is full on the night of March 13-14** (exactly full at 12:55 AM MDT on March 14), when we are treated to a total lunar eclipse (see item below). From March 15 to March 21, watch a gibbous Moon wane. The Moon reaches **last quarter on March 22** (exactly at 5:29 AM MDT). On the night of March 5-6, the Moon, nearing first quarter, passes north of

Jupiter. On the night of March 8-9, the waxing, 76%-illuminated, gibbous Moon is a few degrees north and east of Mars. On the night of March 11-12, the waxing, 96%-illuminated Moon, passes 2 degrees north of the first-magnitude star, Regulus in Constellation Leo. On the morning of March 20, the waning, 69%-illuminated, gibbous Moon is a few degrees east of the red supergiant star, Antares, in Constellation Scorpius. NASA has published a [stunning visualization of lunar phases for year 2025](#). Another fun site is [NASA's daily Moon guide](#).

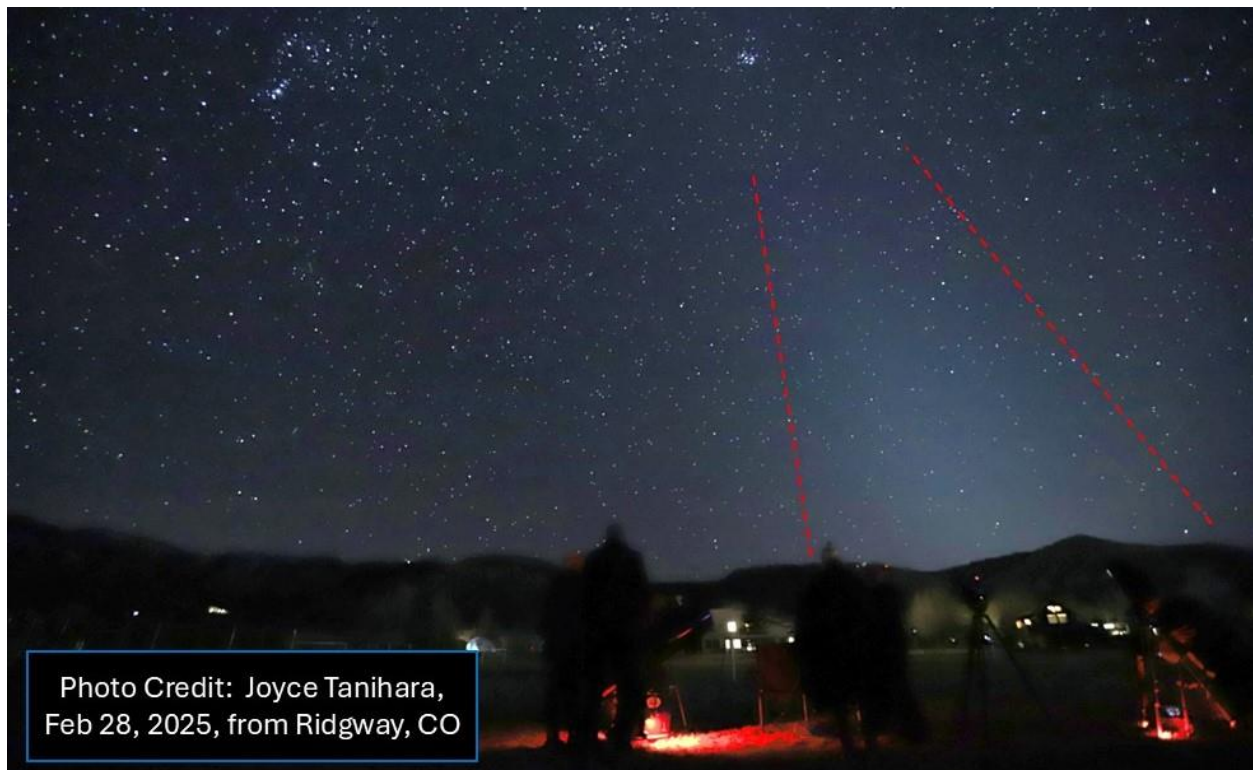
TOTAL LUNAR ECLIPSE – MARCH 13-14, 2025! On the night of March 13-14, Earth's western hemisphere experiences a total lunar eclipse, as the Moon moves through Earth's shadow. We in Colorado are lucky, because the entire eclipse (spanning more than 6 hours) is visible if our skies are clear. The Moon begins moving through the partial shade of Earth's penumbral shadow at 9:55 PM MDT, but the real action starts at 11:09 PM MDT, when the Moon first touches Earth's darker, umbral shadow. Through binoculars, the edge of the umbra appears ragged or diffuse, rather than sharp due to clouds and other features of Earth's atmosphere. The eclipse is total from 12:25 to 1:32 AM MDT, when the entire Moon is within the umbra. The partial (umbral) eclipse ends at 2:48 AM MDT, and the Moon leaves Earth's penumbral shadow at 4:01 AM MDT. The totally eclipsed Moon typically shines with an ashen, reddish hue, due to sunlight that is refracted into the umbra by Earth's atmosphere. During totality, we see the effects of countless reddish sunsets and sunrises around the periphery of the Earth as reflected from the Moon. The brightness and color of the Moon during lunar eclipses varies due to the state of Earth's atmosphere, eclipse geometry, and other factors. Some of the darkest lunar eclipses have occurred after volcanic eruptions lofted volcanic ash into Earth's stratosphere. From the Moon, recently arrived lunar landers may record a total eclipse of the Sun by the Earth! The chart below contains times for key events for the March 13-14 eclipse (from NASA/Fred Espenak) and a photo sequence from an earlier lunar eclipse that was visible from Colorado. Let's hope for clear skies!



CHANGE TO MDT – MARCH 9. On Sunday, March 9 at 2 AM MST, we in Colorado change from Mountain Standard Time (MST) to Mountain Daylight Time (MDT). Remember to set all non-internet-connected watches, clocks, and devices ahead by one hour.

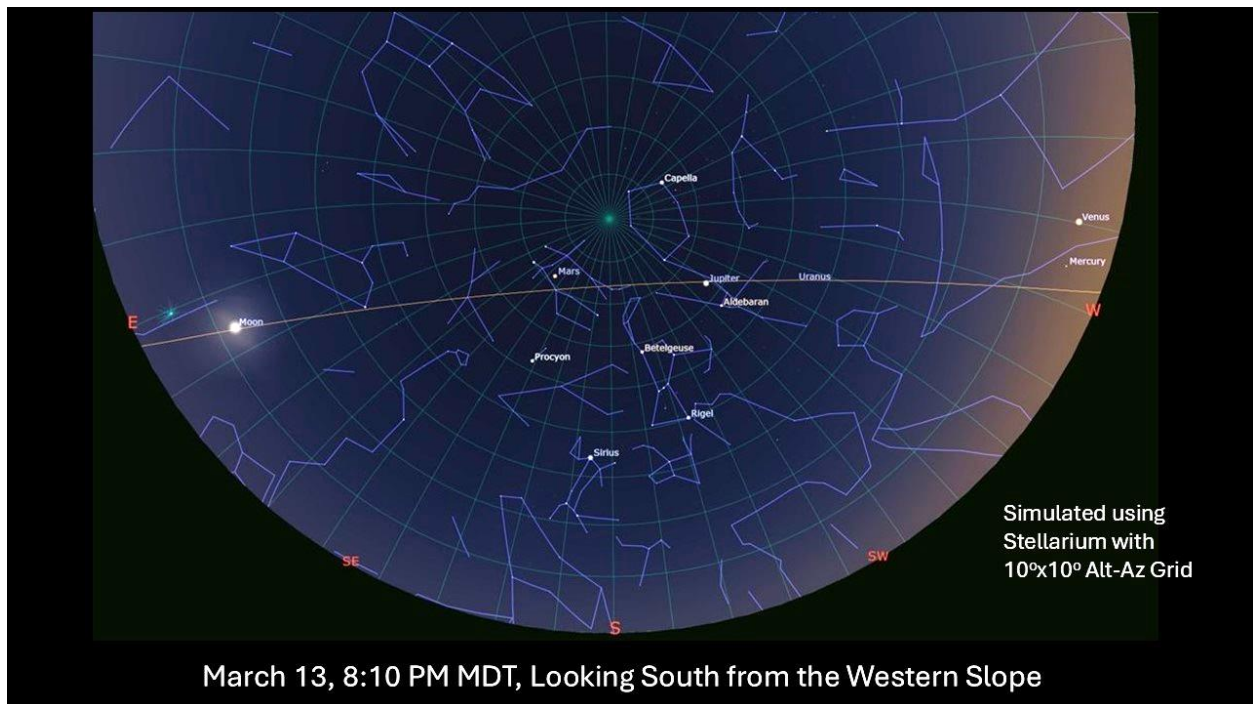
MARCH EQUINOX. On March 20 at 3:01 AM MDT, the March equinox, the Sun shines directly on Earth's equator. This is the beginning of spring in the northern hemisphere and the beginning of fall in the southern hemisphere. In Colorado, daylight hours are rapidly lengthening, as nighttime hours diminish.

EVENING ZODIACAL LIGHT. Moonlight is absent from the early evening sky from March 17 to 29, giving us a chance to spot the faint and elusive zodiacal light above the western horizon. Zodiacal light is sunlight that is scattered forward from dust particles orbiting the Sun in the plane of the Solar System. From the northern hemisphere, evening zodiacal light is best seen for a few weeks around the March equinox, when the ecliptic (the line tracing path of the Sun against background stars) makes a high angle with horizon. To see the zodiacal light from the Western Slope during this period, find a dark location that is free from urban light domes in the west. Then look west from March 17 to 29 (pick a clear night) between 8:50 and 9:15 PM MDT. Evening zodiacal light is a faint, diffuse cone of light that is broadest near the horizon and tapers to nearly a point 25 to 35 degrees high in the western sky (as depicted between red, dashed lines in the photo below).



PLANETS IN THE EVENING. Four bright planets decorate our evening sky during the first part of this “bright Moon period.” Before March 14 you can find brilliant Venus and fainter Mercury low in the west. From March 10 to 14 between 8:00 and 8:20 PM MDT, use Venus (brighter than magnitude -4!) as a guide for spotting fainter Mercury (fading from magnitude 0 to +1) about 6 to 8 degrees to the left of Venus. Binoculars may help you spot Mercury. As twilight fades, bright Jupiter is high in the southwest,

and reddish-tinted Mars is high in the south. Use a planetarium app or the chart below to help navigate. If you have a telescope, you can [find Uranus](#) between Mercury and Jupiter. **Please do your planet spotting after sunset. NEVER chance looking at the Sun directly; serious eye damage can result.**



VENUS – LAST CALL IN THE EVENING! Brilliant Venus rapidly retrogrades (moves westward against the stars) and then disappears from the evening sky before its March 22 solar conjunction. On March 6, Venus is still prominent, setting in a dark sky at about 8:17 PM MST. But “Our Sister Planet” descends into evening twilight soon thereafter. From March 10 to 14 between 8:00 and 8:20 PM MDT on the Western Slope, look for Venus to the right of fainter Mercury in bright twilight just above an unobstructed western horizon. Between March 6 and 14, Venus fades slightly (from magnitude -4.65 to magnitude -4.25), as its crescent phase wanes from 9% to only 3% illuminated. Venus is 29.2 million miles distant on March 6, 26.9 million miles distant on March 14, and only 26.1 million miles distant on March 22, when at [inferior solar conjunction](#), passing about 8 degrees north of the Sun. That’s closer to Earth than any other planet can get! Venus’ apparent diameter is 53 arc seconds on March 6, increasing to 58 arc seconds on March 14. Try to spot Venus’ crescent phase with just binoculars (it may be easiest to resolve during bright twilight, when your eyes are not overwhelmed by Venus’ brightness). Venus will reappear in the predawn sky by early April. **Please do your Venus spotting after sunset. NEVER chance looking at the Sun directly; serious eye damage can result.**

MERCURY IN THE EVENING SKY UNTIL ABOUT MARCH 14. On March 6 around 7:05 PM MST, Mercury, shining at magnitude -0.45, is easy to spot, 6 degrees above the western horizon at the end of [nautical twilight](#). On March 8, Mercury may be even easier to locate in the western evening twilight, as it attains its greatest angular separation east of the Sun. After March 11, Mercury retrogrades and fades, as it sinks rapidly into brighter twilight before its March 24 conjunction with the Sun. Between March 10 and 14 between 7:55 and 8:25 PM MDT, use brilliant Venus as a guide for finding Mercury, which is just above the horizon and 5 to 6 degrees to the left of Venus. You will need an unobstructed western horizon and perhaps binoculars to spot Mercury. Mercury is 88 million miles distant on March 6 and 69

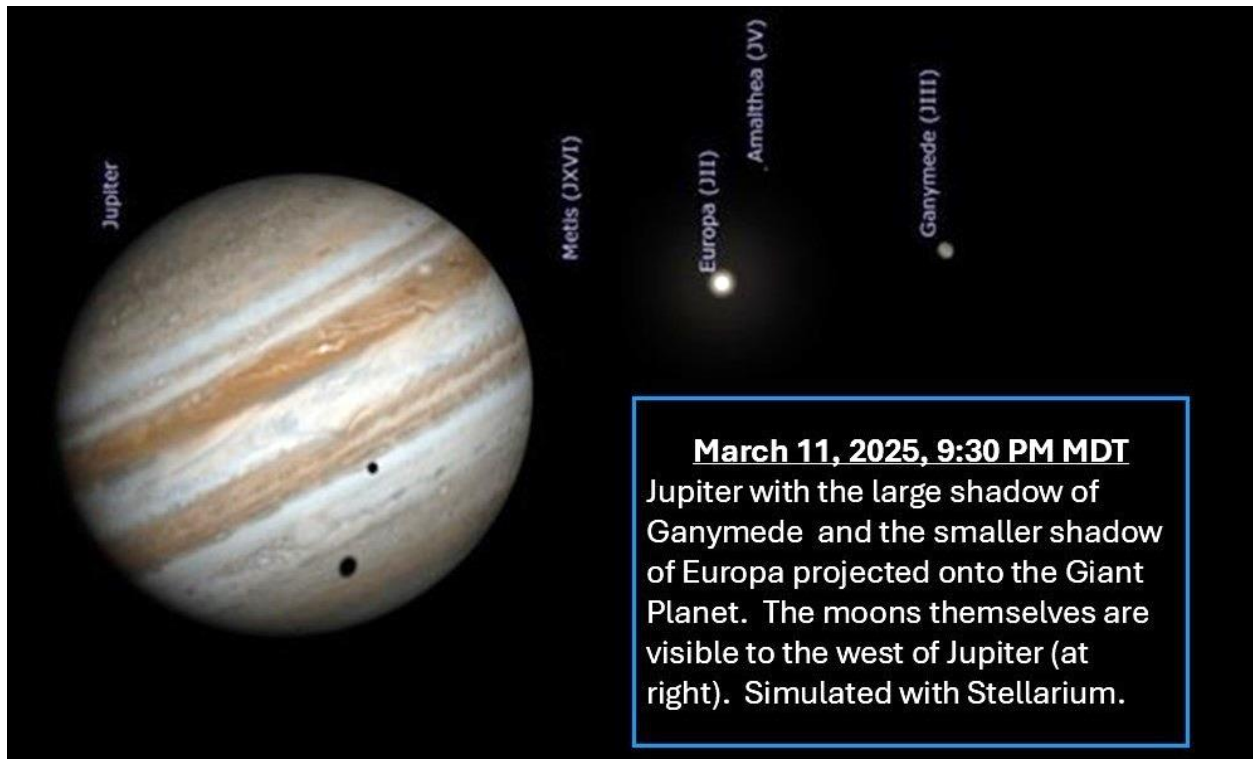
million miles distant on March 14. The Innermost Planet will be only 56 million miles distant (but invisible) when at [inferior solar conjunction](#) on March 24. Mercury fades from magnitude -0.45 on March 6, to magnitude +0.14 on March 10, to magnitude +1.13 on March 14, as its phase wanes from 51%, to 34%, to 18% illuminated. Through telescopes, Mercury's apparent diameter increases from 7.1 arc seconds on March 6, to 8.0 arc seconds on March 10, to 9.1 arc seconds on March 14. **Please do your Mercury spotting after sunset. NEVER chance looking at the Sun directly; serious eye damage can result.**

BRIGHT JUPITER AND ITS MOONS IN THE EVENING. As twilight fades, bright Jupiter is more than 60 degrees above the southwestern horizon. Jupiter is moving against the stars of Taurus, about 5 degrees north from the red giant star, Aldebaran, and the Hyades Star Cluster. The Giant Planet sets in the west northwest at about 1:18 AM MST on March 6 and 1:21 AM MDT on March 22. During this period Jupiter fades slightly from magnitude -2.26 to -2.15, but it's still bright. Jupiter is 471 million miles distant on March 6 and 495 million miles distant on March 22. Through telescopes or binoculars, the Giant Planet's apparent equatorial diameter decreases from 39 to 37 arc seconds.

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 or this website:

https://skyandtelescope.org/wp-content/plugins/observing-tools/jupiter_moons/jupiter.html

Use a telescope to view Jupiter's cloud belts and zones and shadow transits (total solar eclipses on Jupiter!) by Jupiter's large moons (see details below). 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 crossing the Giant Planet. Io's shadow is larger than Europa's, but smaller than Ganymede's shadow. **On March 11 from 8:32 PM to 10:50 PM MDT, you can watch the shadows of Ganymede and Europa cross the Giant Planet simultaneously during "prime time"!**



March 10-11, 2025, 11:00 PM to 1:16 AM MDT, Io's shadow crosses Jupiter (Locally, this event begins with Jupiter 33 degrees high in the western sky but ends with Jupiter only 8 degrees above the west-northwestern horizon).

March 11, 2025, 8:12 PM to 10:50 PM MDT, Europa's shadow crosses Jupiter (Locally, this event begins with Jupiter 64 degrees above the west-southwestern horizon and ends with Jupiter 34 degrees above the western horizon).

March 11, 2025, 8:32 PM to 11:16 PM MDT, Ganymede's shadow crosses Jupiter at high latitude in Jupiter's southern hemisphere (Locally, this event begins with Jupiter 61 degrees above the west-southwestern horizon and ends with Jupiter still 29 degrees above the western horizon).

March 12, 2025, 5:28 PM to 7:44 PM MDT, Io's shadow crosses Jupiter (Locally, this event begins in daylight and ends in bright twilight with the Sun only 6 degrees below the horizon).

March 18, 2025, 12:56 AM to 3:12 AM MDT, Io's shadow crosses Jupiter (Locally, this event begins with Jupiter only 7 degrees above the west-northwestern horizon and ends long after Jupiter sets at 1:32 AM MDT).

March 18-19, 2025, 10:46 PM to 1:26 AM MDT, Europa's shadow crosses Jupiter (Locally, this event begins with Jupiter 31 degrees high in the west and ends with Jupiter just 1 degree above the west-northwestern horizon).

March 19, 2025, 12:34 AM to 3:18 AM MDT, Ganymede's shadow crosses Jupiter at high latitude in Jupiter's southern hemisphere (Locally, this event begins with Jupiter only 10 degrees above the west-northwestern horizon and ends long after Jupiter sets at 1:34 AM MDT. Shadows of both Ganymede and Europa may be visible simultaneously from 12:34 AM to 1:26 AM MDT, but Jupiter's low altitude may compromise viewing).

March 19, 2025, 7:24 PM to 9:40 PM MDT, Io's shadow crosses Jupiter (Locally, this event begins just after sunset with Jupiter high in the southwestern sky and ends with Jupiter 43 degrees above the western horizon).

MARS THROUGH MUCH OF THE NIGHT. Reddish (or butterscotch-tinted?) Mars is more than 60 degrees above the southeastern horizon in Constellation Gemini as the sky darkens. Mars has now ceased retrograding (moving westward against the starry background) and has resumed its "normal" eastward motion. Mars is still prominent through much of the night, setting in the northwest at about 4:01 AM MST on March 6 and 4:13 MDT on March 22.

After Earth's close approach to Mars on January 12, the Red Planet continues to fade, from magnitude -0.1 on March 6 to magnitude +0.2 on March 22, as its distance from Earth increases from 85.0 million miles to 97.5 million miles. Mars rises more than 70 degrees high in the Western Slope's evening skies during this period. Through telescopes Mars' apparent diameter decreases from 10.3 to 8.9 arc seconds. This still may be large enough for spotting interesting features on the Red Planet. When Mars rises high in our sky, as is the case recently, we see it through a relatively thin cross section of Earth's turbulent atmosphere. This may allow for good views of Martian surface features such as Syrtis Major, Mare Acidalius, and the north polar ice cap and/or clouds of the "north polar hood." You can identify Martian surface features for any date and time by using the interactive chart at the following link...

https://skyandtelescope.org/wp-content/plugins/observing-tools/mars_profiler/mars.html

Find more info on observing Mars here:

https://www.alpo-astronomy.org/jbeish/2025_MARS.htm

DON'T GIVE UP - KEEP WATCHING THE NORTHERN CROWN! Better late than never? Will there soon be a bright “new” star in Constellation Corona Borealis (“The Northern Crown”), at least briefly? During this period, you can find Corona Borealis high in the eastern sky before morning twilight. T Coronae Borealis (T CrB) is a recurrent nova that (based on its 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 2025 or 2026. Then this “new star” may fade rapidly below naked-eye visibility in about a week. As of early on March 5, T CrB had not yet exploded. For more about T CrB, read the article, “Get Ready for a Nova’s Bright Return”, by astrophysicist Brad Schaefer in the March 2024 issue of Sky & Telescopes Magazine, p. 34-40. 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://skyandtelescope.org/astronomy-news/is-the-blaze-star-about-to-blow-you-may-be-the-first-to-know/>

https://en.wikipedia.org/wiki/T_Coronae_Borealis

<https://ui.adsabs.harvard.edu/abs/2023ATel16107....1S/abstract>

https://www.aanda.org/articles/aa/full_html/2023/12/aa48372-23/aa48372-23.html

THE SUN. The Sun has been very active over the past year, when solar active regions have unleashed numerous flares and coronal mass ejections (CMEs) of charged particles. There have been M-class (moderate) solar flares each week for the past year, and there have been many X-class (extreme) solar flares, including X-class flares on January 3 and 4, and February 23. There also have been CMEs that have triggered geomagnetic storms that caused auroras. As of March 5, there are several active regions with sunspots on the Earth-facing side of the Sun. So, we may experience more M- and possibly X-class flares and powerful CMEs. [Airglow](#) and [SAR arcs](#) result from high solar activity, and these phenomena also have been photographed and/or observed from Colorado. You can monitor sunspots, solar flares, CMEs, and other solar activity safely and in “real time” at the following sites:

<https://sdo.gsfc.nasa.gov/data/>

<https://stereo.gsfc.nasa.gov/beacon/>

<http://halpha.nso.edu/>

<https://www.swpc.noaa.gov/>

<https://sohowww.nascom.nasa.gov/data/realtime-images.html>

<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”). It can be challenging to spot auroras from Colorado’s mid-northern latitudes. But on the nights of May 10-11 and October 10-11 in 2024, many people were able to see and/or photograph some amazing auroras from Colorado! Coronal mass ejections (CMEs) from the Sun were aimed at our planet. Charged particles from CMEs were captured by Earth’s magnetic field, energizing the ionosphere, thereby triggering geomagnetic storms and widespread auroras. As of March 5, there are several active regions with sunspots on the Earth-facing side of the Sun. So, the chances for geomagnetic storms are good and spotting auroras may be possible. You can 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. We can watch auroras in real-time from Yellowknife, Northwest Territories on an all-sky camera at the [Canadian Space Agency's AuroraMax website](https://www.youtube.com/watch?v=O52zDyXg5QI). 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>

EARTH SATELLITE HIGHLIGHTS. The following predictions are for western Colorado, specifically Montrose. Numerous Earth satellites are visible every clear night. Brighter satellites have smaller magnitude numbers, and the brightest (e.g., the International and Tiangong Space Stations) may have negative magnitudes. These predictions are for selected passes of some bright and/or interesting satellites (as summarized from heavens-above.com). Satellite orbits can change. These predictions may be inaccurate. This is especially true for the International Space Station (ISS) and the Chinese Space Station, Tiangong, and we no longer show satellite predictions more than 5 days beyond the distribution date of the current "BCAS Observing Highlights" edition. Orbits of both space stations change frequently, due to periodic re-boosting and avoidance maneuvers (to prevent collisions with other orbiting objects). For accurate predictions of the ISS, Tiangong, and other satellites beyond March 10, check heavens-above.com or other satellite prediction sites for updates on the nights you wish to observe. Be sure to set application(s) for your location and time zone.

March 6, 2025. International Space Station (ISS). 4:56 to 4:59 AM MST. NE to SE. The ISS appears from Earth's shadow 78 deg above NE, max altitude 79 deg above NE, max magnitude -3.8 (Passing through Hercules, Aquila, and Sagittarius). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

March 7, 2025. International Space Station (ISS). 5:43 to 5:44 to 5:46 AM MST. WSW to SW to S. The ISS appears from Earth's shadow 16 deg above WSW, max altitude 18 deg above SW, max magnitude -2.1 (Passing through Virgo/Corvus, Hydra, Lupus, and Scorpius). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

March 8, 2025. International Space Station (ISS). 4:58 to 4:59 AM MST. S to SSE. The ISS appears from Earth's shadow at max altitude 20 deg above S, max magnitude -1.9 (Passing through Scorpius and Corona Australis). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

March 10, 2025. International Space Station (ISS). 8:58 to 8:59 PM MDT. SW to SSW. Disappears into Earth's shadow at max altitude 27 deg above SSW, max magnitude -2.2 (Passing through Eridanus and Lepus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

Additional evening passes for the very bright ISS are predicted from March 11 to March 22. Predawn passes of the almost-as-bright Tiangong (Chinese) Space Station (ISS) are predicted for March 17 to 22. These predictions are subject to change. For updates on times, check heavens-above (or other prediction websites) shortly before you want to observe. Be sure to enter your location and time zone info when using prediction websites.

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. 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>

WESTERN SLOPE SKIES. Since 2011, KVN Community Radio has aired [Western Slope Skies](#) (WSS), a biweekly astronomy feature every two weeks on Friday mornings and on the following Wednesday evenings. On March 5 Art Trevena tells us about [the total lunar eclipse that is visible from Colorado](#) on the night of March 13-14. Then on March 14 and 19, Jamie Schultz of the Western Slope Dark Sky Coalition discusses “Circadian Rhythm.”

HAPPY OBSERVING!