

OBSERVING HIGHLIGHTS for June 2 to 18, 2025, a “bright Moon period”
Black Canyon Astronomical Society (BCAS), western Colorado, USA

SUMMARY

The Moon reaches first quarter on June 2. From June 3 to June 9, watch the gibbous Moon wax. Early evenings between June 3 and 6 are great times to explore the gibbous Moon with binoculars or a telescope! You can spot many craters near the terminator (the lunar “sunrise line”) and many dark maria (Latin for “seas”). Look for “rays” of bright material ejected from Tycho, a relatively young impact crater. The Moon is full on the night of June 10-11. From June 12 to 17, the gibbous Moon wanes. The Moon reaches last quarter on June 18. On the night of June 5 to 6, look for the 78%-illuminated, gibbous Moon a few degrees west of the first-magnitude star, Spica. On the night of June 9 to 10, a fat (99% illuminated!), waxing gibbous Moon passes less than 2 degrees south of the red supergiant star, Antares. On the morning of June 18, look for the waning, 54%-illuminated, gibbous Moon to the west of Saturn.

Double stars can be fun to explore with a telescope or binoculars, even in a bright, moonlit sky. Some dazzling double stars are high in the sky and easy to spot during this period, including Mizar/Alcor in the Big Dipper, Algieba in Leo, and Cor Caroli in Canes Venatici.

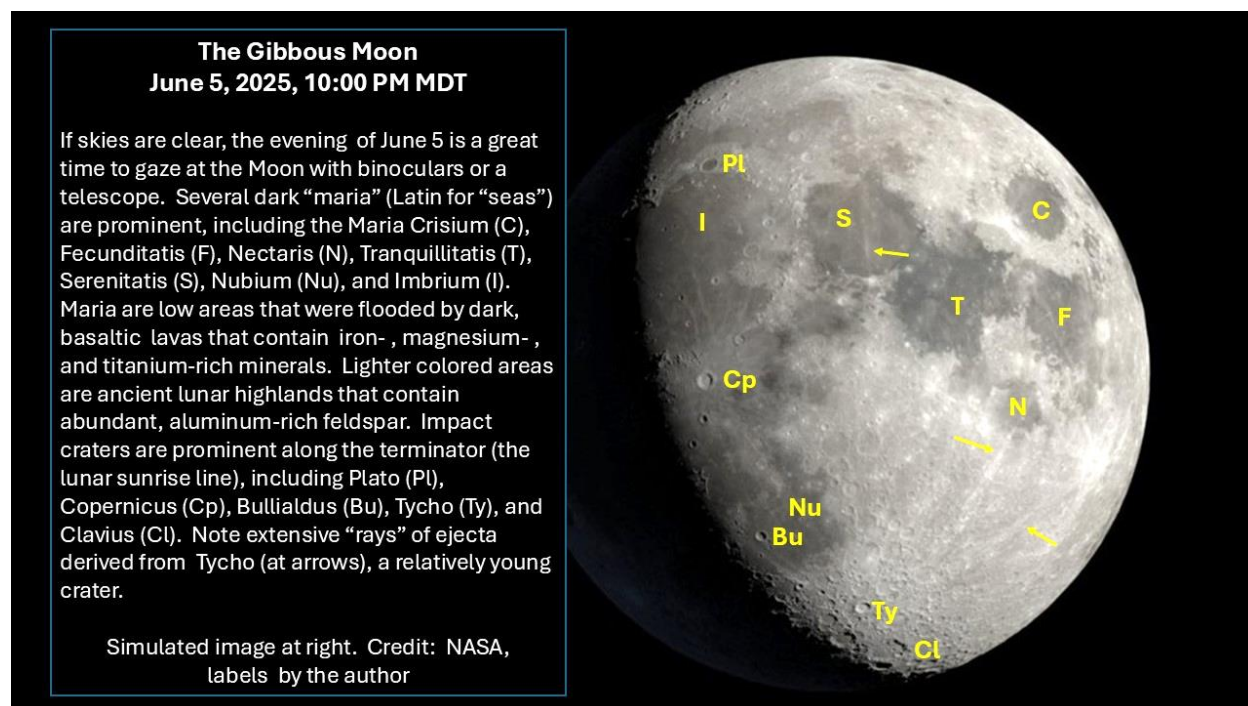
Jupiter shines brightly through evening twilight on June 2, but the Giant Planet soon disappears into solar glare before its June 24 conjunction with the Sun. From a place with an unobstructed, west-northwestern horizon on June 6 and June 7 at about 9:07 PM MDT (with the Sun 6 degrees below the horizon), you might be able to spot Jupiter a few degrees south of Mercury (binoculars may help). During this period, Mercury begins its second evening appearance of 2025. As noted above, your best chance to first spot Mercury in bright twilight may be on June 6 or 7 at about 9:07 PM MDT, when the Innermost Planet appears near Jupiter. Despite fading a bit, Mercury will get easier to spot on the following evenings, as it moves through less glaring twilight at greater angular distances from the Sun. As the sky darkens, reddish (or butterscotch-tinted?) Mars is about 35 to 30 degrees above the western horizon. Mars is moving eastward, amidst the stars of Leo. The Red Planet passes about 1 degree north of the first-magnitude star, Regulus, on June 16. Gaze at Mars and Regulus with binoculars and note their contrasting colors! Defocusing a bit may enhance color contrast. Brilliant Venus rises before 3:45 AM MDT, well ahead of morning twilight. Saturn rises even earlier, before 2:40 AM MDT. With a telescope, challenge yourself to spot the shadow of Titan, the Solar System’s second largest moon, as it crosses the Ringed Planet on the morning of June 16 (from the Western Slope, your best chance for spotting Titan’s shadow may be between 4 and 5 AM MDT).

The Sun is very interesting with many active regions and large sunspots. Moderate and even extreme solar flares may occur. There may also be coronal mass ejections (CMEs) that trigger more geomagnetic storms and auroras (aka, polar or northern lights). Auroras were observed and photographed from the Western Slope on the night of May 31-June 1, and more auroras may be visible. You can monitor the Sun safely on the internet. Do not look at the Sun directly without safe, specialized solar filters. Looking at the Sun can injure your eyes unless you take adequate precautions. Severe eye damage and even blindness can result.

Try to spot the bright Tiangong (Chinese) Space Station during evening passes between June 1 and June 10. As of this writing, a predawn pass of the even brighter, International Space Station (ISS) is predicted for June 17.

THE MOON. The Moon reaches **first quarter on June 2** (exactly at 9:41 PM AM MDT). From June 3 to June 9, watch the gibbous Moon wax. The early evenings of June 3 to 6 are great times to explore the gibbous Moon with binoculars or a telescope! You can see many craters near the terminator (the lunar

“sunrise line”) and several dark maria (Latin for “seas”), which are low areas that were flooded by basaltic lava. Look for “rays” of bright material ejected from Tycho, a relatively young impact crater. You can use the chart below to navigate. **The Moon is full on the night of June 10-11** (exactly full at 1:44 AM MDT on June 11). From June 12 to 17, the gibbous Moon wanes. The Moon reaches **last quarter on June 18** (exactly at 1:19 PM MDT). On the night of June 5 to 6, look for the 78%-illuminated, gibbous Moon a few degrees west of the first-magnitude star, Spica. On the night of June 9 to 10, a fat (99%- illuminated!), waxing gibbous Moon passes less than 2 degrees south of the red supergiant star, Antares. On the morning of June 18, look for the waning, 54%-illuminated, gibbous Moon just to the west of the Ringed Planet, Saturn. NASA has published a [stunning visualization of lunar phases for year 2025](#). Another fun site is [NASA’s daily Moon guide](#).



DOUBLE STARS IN LATE SPRING. Bright moonlight overwhelms faint galaxies and nebulae during much of this period, but you can use binoculars or a telescope to enjoy some dazzling double stars in our late spring sky! Use a planetarium app or the chart below to locate three of these gems.

Mizar and Alcor ([“horse and rider”](#)), in the middle of the “handle” of the Big Dipper, are easy to find and can be resolved with eyes unaided, if you have good vision. Try using binoculars, if you can’t split them with your eyes alone. A small telescope reveals that Mizar itself consists of two stars, Mizar A and Mizar B. Through [spectroscopy](#), astronomers have discovered that Mizar A, Mizar B, and Alcor each have a close companion. So, [Mizar/Alcor is a gravitationally bound, six-star system!](#)

Algieba (“the forehead” in Arabic), a second-magnitude star in Constellation Leo, is a double star that can be resolved easily at 90x magnification in most telescopes. [Algieba A and B are red giant stars that shine brightly with a distinct orange tint.](#)

Cor Caroli (meaning “the heart of Charles” in Latin), [the brightest star in Constellation Canes Venatici](#), is actually a binary, consisting of two white stars that can be resolved in small telescopes.

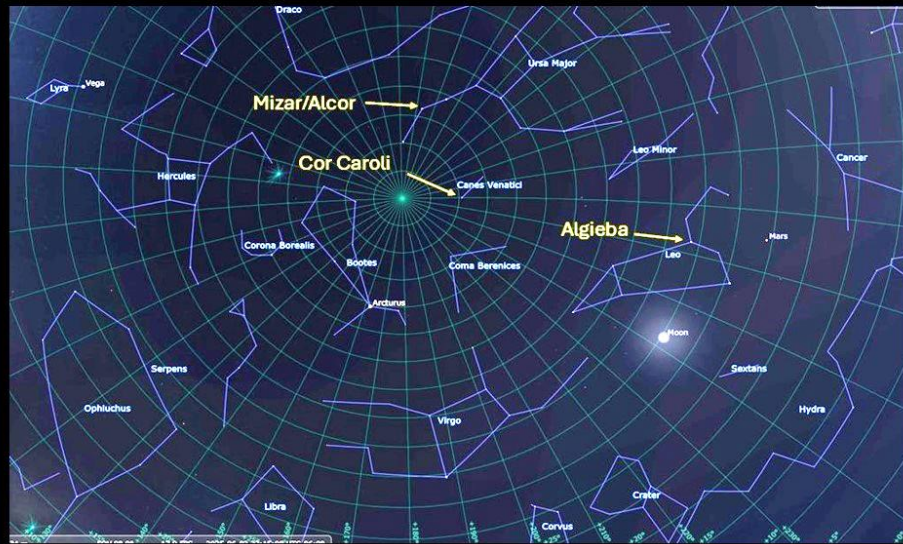
Springtime Double Stars

June 2, 2025,
10:15 PM MDT

Looking South from
Colorado's Western
Slope

It's easy to find
Mizar/Alcor in the handle
of The Big Dipper within
Constellation Ursa Major.
Look for Algieba in Leo and
Cor Caroli in Canes
Venatici.

Simulated using
Stellarium
with 10° x 10° Alt-Az grid



FAREWELL TO JUPITER. On June 2, Jupiter, shining at magnitude -1.9, sets in the west northwest during bright twilight at about 9:41 PM MDT and becomes harder to spot in glaring twilight thereafter. With a telescope on June 5 at about 9:04 PM MDT (the Sun being 6 degrees below the horizon and Jupiter 5 degrees above the horizon), you may be able to spot the shadow of Jupiter's large moon, Ganymede, on the southeast side of Jupiter's disk. On June 6 and June 7 at about 9:07 PM MDT with the Sun 6 degrees below the horizon, you might spot Jupiter just a few degrees south of Mercury from a place with an unobstructed, west-northwestern horizon (binoculars may help). Jupiter is in conjunction with the Sun on June 24. The Giant Planet will reappear in predawn twilight by the middle of July. **Please do your Jupiter spotting after sunset. NEVER chance looking at the Sun without taking proper precautions. Serious eye damage can result.**

MERCURY REAPPEARS IN THE EVENING SKY. Mercury becomes visible shortly after sunset in early June, marking the start of the Innermost Planet's second evening appearance of 2025. You might first spot Mercury in bright twilight on June 6 or 7 at about 9:07 PM MDT, when the "Speedster Planet" appears just a few degrees north of brighter Jupiter with the Sun 6 degrees below the horizon (binoculars will help). Despite fading a bit, Mercury may become easier to spot on the following evenings, as it appears in less glaring twilight at greater angular distances from the Sun. On June 12 at 9:22 PM MDT, Mercury appears 5 degrees above an unobstructed, west-northwestern horizon when the Sun is 8 degrees below that horizon. And on June 18 at 9:39 PM MDT, you may spot the "Speedster Planet" 5 degrees above the horizon in a darker sky with the Sun 10 degrees below the horizon. Mercury fades from magnitude -1.40 on June 6 to magnitude -0.32 on June 18, as its gibbous phase, as seen through telescopes, wanes from 92% to 68% illuminated. Mercury's distance from Earth decreases from 118 million miles on June 6 to 101 million miles on June 18, as its angular diameter increases from 5.3 to 6.2 arc seconds. **Please do your Mercury spotting after sunset. NEVER chance looking at the Sun without taking proper precautions. Serious eye damage can result.**

MARS MEETS UP WITH REGULUS! As the sky darkens, reddish (or butterscotch-tinted?) Mars is about 35 to 30 degrees above the western horizon. The Red Planet is moving eastward, amidst the stars of Leo, passing about 1 degree north of the first-magnitude star, Regulus, on June 16. Mars' rapid eastward motion against the stars will keep the Red Planet in our evening sky through the middle of fall. Mars remains visible until after midnight, setting in the west northwest at about 1:00 AM MDT on June 2 and 12:20 AM MDT on June 18. The Red Planet fades from magnitude +1.21 on June 2 to magnitude +1.40 on June 18, as its distance from Earth increases from 159 million to 171 million miles. During their close encounter on June 16, reddish Mars and blue-white Regulus are about equal in brightness (at magnitude +1.35). View the pair through binoculars or a wide-field telescope. You can enhance the color contrast between Mars and Regulus by slightly defocusing the image. Through telescopes, Mars' 91%- to 92%-illuminated, gibbous disk decreases from 5.5 to 5.1 arc seconds in diameter during this period. Due to its small apparent size, it's now extremely challenging to spot features on the Red Planet. Find more info on observing Mars here:

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

VENUS – A BRILLIANT “MORNING STAR”! Brilliant Venus rises at about 3:38 AM MDT on June 2 and 3:22 AM MDT on June 18, before the start of morning twilight. During this period, Venus fades slightly from magnitude -4.40 to -4.24, as its distance from Earth increases from 66 million to 78 million miles. As seen through telescopes, Venus' phase waxes from a half-illuminated disk on June 2 to a 58%-illuminated, gibbous disk on June 18, while its apparent diameter shrinks from 23.5 to 19.9 arc seconds. **Please do your Venus spotting before sunrise. NEVER chance looking at the Sun without taking proper precautions. Serious eye damage can result.**

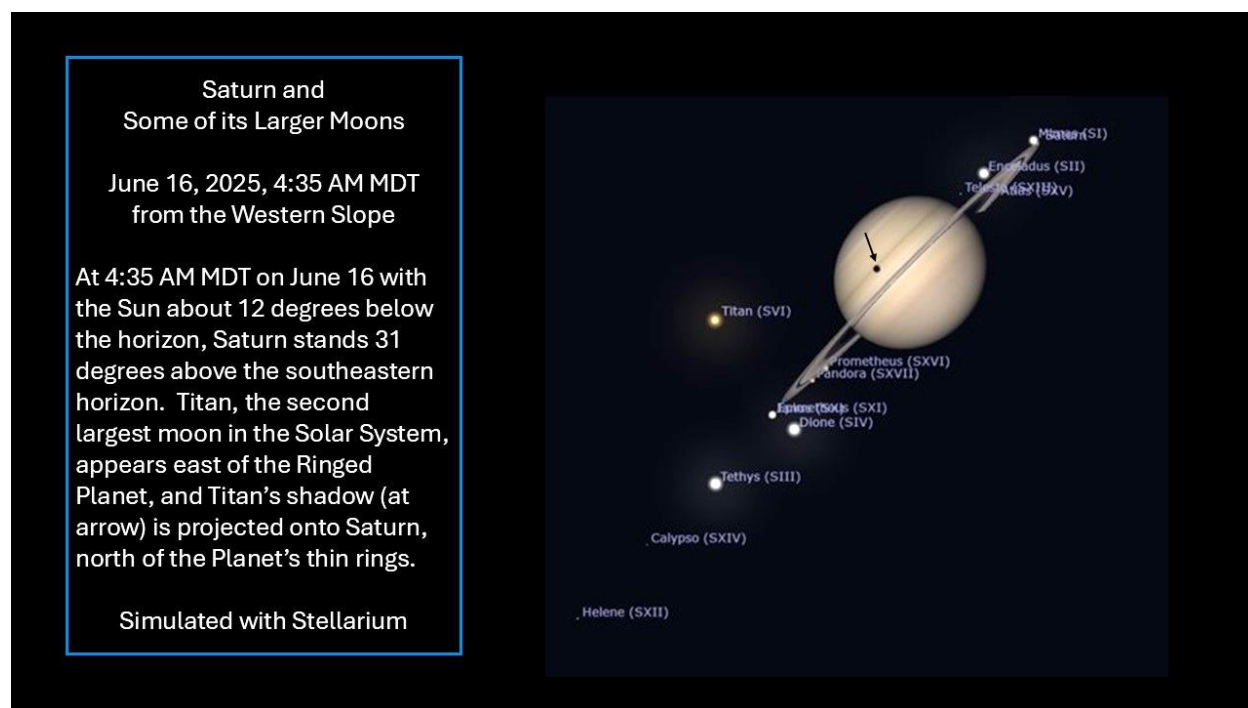
SATURN BEFORE DAWN. Saturn is visible in the predawn sky, rising at about 2:36 AM MDT on June 2 and 1:35 AM MDT on June 18. Saturn brightens from magnitude +1.08 on June 2 to magnitude +1.01 on June 18, as its distance from Earth decreases from 916 million to 892 million miles. Through telescopes Saturn's disk appears 17 arc seconds wide, and its rings span 40 arc seconds. During 2025, Saturn's thin rings (150,000 miles wide but only 1000 ft thick!) are 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 and/or logging onto this site: <https://skyandtelescope.org/observing/interactive-sky-watching-tools/saturns-moons-javascript-utility/>

For more info on the appearance of Saturn's rings in 2025 and phenomena associated with Saturn's moons, see this article...

<https://skyandtelescope.org/astronomy-news/observing-news/see-mutual-events-close-approaches-of-saturns-moons/>

TITAN'S SHADOW MOVES ACROSS SATURN – JUNE 16, AM! Use a telescope to watch the rare sight of Titan's shadow moving across the Ringed Planet on the morning of June 16! This is a total solar eclipse on Saturn! Titan is Saturn's largest moon, and the second largest moon in the Solar System. Titan has a larger diameter than the Planet Mercury! The June 16 transit begins at 2:21 AM MDT, after Saturn rises on the Western Slope at about 1:43 AM MDT. Locally, you might see Titan's shadow best between 4:00 AM and 5:00 AM MDT, when Saturn is more than 25 to 35 degrees above the southeastern horizon and before bright twilight starts to interfere. On June 16, Titan's shadow is cast north of Saturn's thin ring system (see simulation, below).

While the shadows of 3 of Jupiter's large moons currently transit Jupiter every several days, transits of Titan's shadow across Saturn are relatively rare. These occur in groups during "transit seasons" around Saturn's equinoxes every 15 years. So, we'll have to wait a long time to see the next series of these events! The current "transit season" began in November 2024, but transits from November 4 to April 13 were not visible from Colorado. That changed on April 29, when the first of 11 shadow transits was visible from the Western Slope. Titan's orbital period of Saturn is just short of 16 Earth days, so transits are now occurring every 16 days. Locally on June 16, Saturn will appear above the southeastern horizon in the predawn sky, and the shadow transit will end in daylight, more than two hours after sunrise. Through this summer, local circumstances for viewing Titan's shadow transits will improve (see table, below), because Saturn will be rising earlier and getting higher in our sky. Approximate times for Saturn's rise and sunrise on the Western Slope are shown in the table. Titan's shadow is large. But Saturn is on average about twice the distance of Jupiter. So, the size of Titan's shadow appears roughly the same size as the shadow of Jupiter's moon, Europa, which is smaller than Titan.



Transits of Titan's shadow across Saturn

<u>Date UTC</u>	<u>Date MDT</u>	<u>start MDT</u>	<u>middle MDT</u>	<u>end MDT</u>	<u>Saturn rises MDT</u>	<u>Sunrise MDT</u>
6/16/2025	6/16/2025	2:21 AM	5:24 AM	8:00 AM	1:43 AM	5:44 AM
7/2/2025	7/2/2025	1:40 AM	4:35 AM	7:03 AM	12:42 AM	5:49 AM
7/18/2025	7/18/2025	1:00 AM	3:44 AM	6:05 AM	17Jul, 11:39 PM	6:03 AM
8/3/2025	8/3/2025	12:25 AM	2:52 AM	5:04 AM	2Aug, 10:36 PM	6:13 AM
8/19/2025	8/18-19/2025	11:52 PM	2:01 AM	4:00 AM	18Aug, 8:26 PM	NA
9/4/2025	9/3-4/2025	11:25 PM	1:09 AM	2:50 AM	3Sep, 8:26 PM	NA
9/20/2025	9/19-20/2025	11:09 PM	12:20 AM	1:34 AM	19Sep, 7:21 PM	NA
10/6/2025	10/5/2025		11:32 PM		NA	NA
transit times from Sky & Telescope (converted to MDT by author)						
times for local Saturn rise and sunrise from Stellarium						

Find more info on Titan shadow transits at this link...

<https://skyandtelescope.org/astronomy-news/observing-news/titan-shadow-transit-season-underway/>

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, Corona Borealis rises high in the east before the end of evening twilight and remains visible through the rest of the night. 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 2025 or 2026. Then this “new star” may fade rapidly below naked-eye visibility in about a week. As of early on June 1, T CrB had not yet erupted. There was a prediction that T CrB might erupt around March 27. That did not happen. Astronomer [Jean Schneider of Paris Observatory states that eruptions are most likely every 228 days](#), a period corresponding with the orbital period of T CrB’s red giant and white dwarf components. Schneider suggests that eruptions are now most likely around November 10, 2025 or June 25, 2026. 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 interesting lately, because solar active regions have unleashed numerous flares and coronal mass ejections (CMEs) of charged particles. There have been M-class (moderate) solar flares during recent weeks, and there have been X-class (extreme) solar flares on January 3 and 4, February 23, March 28, and May 13, 14, and 25. Also there have been CMEs that triggered geomagnetic storms that caused auroras. We may experience more M- and possibly X-class flares and powerful CMEs during the current period. [Airglow](#) and [SAR arcs](#) also result from high solar activity, and these phenomena have been photographed and/or observed from Colorado. As of 6 AM on June 1, there are active regions containing large sunspots on the Earth-facing side of the Sun. The safest 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://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”). Auroras were observed and photographed locally on the night of May 31-June 1 and are possible for the night of June 1-2, due to a coronal mass ejection (CME) from a solar active region that is facing Earth. With continuing high solar activity, additional

geomagnetic storms may occur, and we may be able to see more auroras. 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. But, during late spring and early summer (in respective hemispheres), it's not possible to see auroras from latitudes above 60 degrees, because it never gets dark there! During this time, the Western Slope may be a good place for spotting strong auroras!

EARTH SATELLITE HIGHLIGHTS. The following predictions are for western Colorado, specifically Montrose. Numerous Earth satellites are visible every clear night. Satellites are visible when they reflect sunlight. During May through July, space above Earth's northern reaches is awash in sunlight, and it's possible to see satellites all night long, especially in the northern sky. Brighter satellites have smaller magnitude numbers, and the brightest (e.g., the International and Chinese 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 change and these predictions may be inaccurate. This is especially true for the International Space Station (ISS) and the Tiangong Space Station, because they undergo frequent orbital changes. We do not show satellite predictions more than 5 days beyond the distribution date of the current "BCAS Observing Highlights" edition. For accurate predictions of the ISS, Tiangong, and other satellites, 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.

June 1, 2025. Tiangong (Chinese Space Station). 9:33 to 9:36 to 9:39 PM MDT. 1st PM Tiangong pass of June 1. W to N to ENE. Max altitude 51 deg above N, max magnitude -1.1 (Passing through Gemini, Lynx, Ursa Major/Camelopardalis, Draco, Ursa Minor, Draco again, and Lyra). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 1, 2025. Tiangong (Chinese Space Station). 11:10 to 11:12 PM MDT. 2nd PM Tiangong pass of June 1. In WNW. Disappears into Earth shadow at max altitude 34 deg above WNW, max magnitude -0.5 (Passing through Cancer and Ursa Major). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 2, 2025. Tiangong (Chinese Space Station). 10:13 to 10:16 to 10:18 PM MDT. WNW to N to ENE. Max altitude 53 deg above N, max magnitude -1.5 (Passing through Gemini, Lynx, Ursa Major, Draco, Ursa Minor, Draco again, and Lyra-near Vega). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 3, 2025. Tiangong (Chinese Space Station). 9:16 to 9:19 to 9:22 PM MDT. 1st PM Tiangong pass of June 3. WNW to N to E. Max altitude 47 deg above N, disappears into Earth's shadow 5 deg above E, max magnitude -1.2 (Passing through Gemini, Lynx/Camelopardalis, Ursa Minor, Draco, and Lyra). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 3, 2025. Tiangong (Chinese Space Station). 10:53 to 10:55 PM MDT. 2nd PM Tiangong pass of June 3. WNW to W. Disappears into Earth's shadow at max altitude 46 deg above W, max magnitude -1.2 (Passing through Cancer, Leo Minor/Leo). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 4, 2025. Tiangong (Chinese Space Station). 9:56 to 9:59 to 10:01 PM MDT. WNW to NNE to E. Max altitude 74 deg above NNE, disappears into Earth's shadow 26 deg above E, max magnitude -2.0 (Passing through Gemini, Ursa Major-Big Dipper, and Hercules). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 5, 2025. Tiangong (Chinese Space Station). 8:59 to 9:02 to 9:05 PM MDT. 1st PM Tiangong pass of June 5. WNW to N to E. Max altitude 56 deg above N, disappears into Earth shadow 5 deg above E, max magnitude -1.6 (Passing through Gemini, Ursa Major, Draco, and Hercules. This pass may be difficult to see in bright twilight). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 5, 2025. Tiangong (Chinese Space Station). 10:36 to 10:38 PM MDT. 2nd PM Tiangong pass of June 5. W to SW. Disappears into Earth's shadow at max altitude 39 deg above SW, max magnitude -1.2 (Passing through Cancer, Leo, and Virgo). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

June 6, 2025. Tiangong (Chinese Space Station). 9:39 to 9:42 to 9:44 PM MDT. WNW to SSW to ESE. Max altitude 68 deg above SSW, disappears into Earth's shadow 21 deg above ESE, max magnitude -2.1 (Passing through Cancer, Leo, Coma Berenices, Boötes/Virgo, Serpens, and Ophiuchus). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

Additional evening passes of Tiangong, the bright Chinese Space Station, are predicted for June 7 to 10. A predawn pass of the very bright International Space Station (ISS) is predicted for June 17. 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 June 6 and 11, Jaqui Whirl and Dr. Catherine Whiting of Colorado Mesa University present on "Archeoastronomy."

HAPPY OBSERVING!