

**OBSERVING HIGHLIGHTS for February 5 to 20, 2025, a “bright Moon period”
Black Canyon Astronomical Society (BCAS), western Colorado, USA**

SUMMARY.

There’s an increasingly interesting parade of planets in the evening sky during this “bright Moon” period! From west to east, Saturn, brilliant Venus, bright Jupiter and reddish Mars become visible as the sky darkens. And Mercury, shining through bright, evening twilight, joins this group by about February 20. The Moon reaches first quarter on February 5. With the Moon absent from the early evening sky after February 14 and Venus at its very brightest, you likely can see shadows cast by Venus from dark locations after the end of twilight!

From February 6 to 11 watch the gibbous Moon wax. The Moon is full on February 12. From February 13 to 19, watch a gibbous Moon wane. The Moon reaches last quarter on February 20. After midnight on the night of February 5-6, the Moon occults (moves in front of) some bright stars in the Pleiades Star Cluster. On the night of February 6-7, the 70%-illuminated, gibbous Moon passes about 5 degrees north of Jupiter. Then on the night of February 9-10, the 94%-illuminated, gibbous Moon is about 5 degrees east of Mars. On a clear evening near first quarter (February 4 to 6), view the Moon with binoculars or a telescope. Take in the dark maria (the Latin word for “seas”), the lighter colored Southern Highlands, and the many craters that stand out in stark relief near the terminator (the lunar sunrise line, where Sun angles are low).

As of February 3, there are many active regions with sunspots on the Earth-facing side of the Sun. Moderate and even extreme solar flares are likely, as are coronal mass ejections of charged particles. You can monitor solar activity safely in real time on the internet. This high solar activity is triggering geomagnetic storms, auroras (aka “northern lights”), and airglow. So, keep watch for these phenomena!

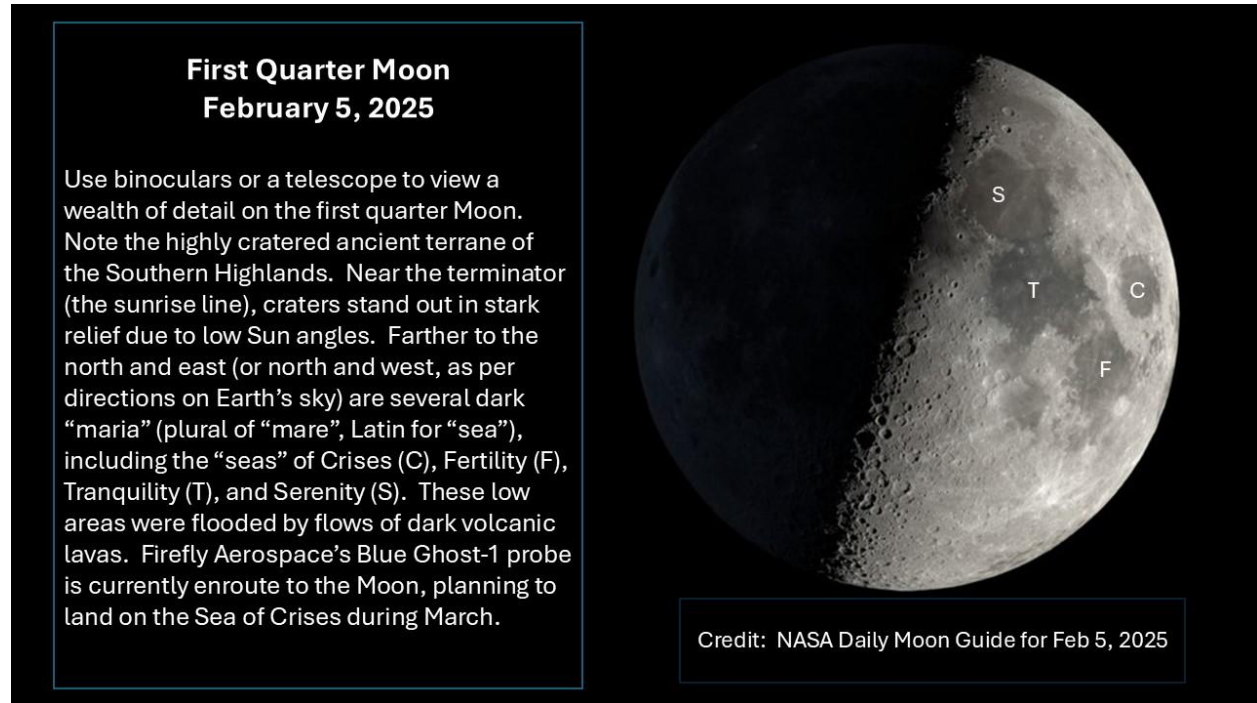
From western Colorado, view predicted passes of interesting satellites, including predawn passes of the bright, Tiangong (Chinese) Space Station from February 4 to 9 and evening passes of Tiangong from February 15 to 20. There is a predicted evening pass of the very bright International Space Station (ISS) on February 3, and there are predicted predawn passes of the ISS from February 10 to 20. There are predicted evening passes of NASA’s Advanced Composite Solar Sail System (ACS3) between February 3 and 20. ACS3 has been tumbling. This results in large changes in brightness over a period of about 6 seconds (from as bright as magnitude +1 to fainter than magnitude +5), as this satellite crosses the sky.

WESTERN SLOPE SKIES. Since 2011, KVNF Community Radio has produced [Western Slope Skies](#) (WSS), a biweekly astronomy feature, which has aired every two weeks on Friday mornings and on following Wednesday evenings. On January 31 and February 5, Dr. Catherine Whiting, Assistant Professor of Physics and Astronomy at Colorado Mesa University (CMU), discusses “The Fermi Paradox.” Then on February 14 and 19 we will have a feature by Jaxon Potts, President of the CMU Astronomy Club.

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>

THE MOON. The Moon reaches **first quarter on February 5** (exactly at 1:02 AM MST). From February 6 to 11 watch the gibbous Moon wax. **The Moon is full on the morning of February 12** (exactly full at 6:53 AM MST). From February 13 to 19, we can watch a gibbous Moon wane. The Moon reaches **last quarter on February 20** (exactly at 11:32 AM MST). Just after midnight on February 6, the just-past-first-quarter Moon occults stars in the Pleiades Star Cluster (see item below). On the night of February 6-7, the waxing, 70%-illuminated, gibbous Moon passes about 5 degrees north of Jupiter. Then on the night of February 9-10, the waxing, 94%-illuminated, gibbous Moon is about 5 degrees east of Mars. NASA has published a [stunning visualization of lunar phases for year 2025](#). Another fun site is [NASA's daily Moon guide](#).



THE MOON OCCULTS THE PLEIADES – NIGHT OF FEBRUARY 5-6! After midnight on February 6, the just-past-first-quarter Moon occults (moves in front of) some bright stars in the famous Pleiades (aka “Seven Sisters”) Star Cluster. From the Western Slope, the Moon is at low altitudes for these events, descending toward the west-northwestern horizon. Disappearances occur along the dark, eastern edge of the Moon, while reappearances occur along the bright western edge. Times posted below are for western Colorado; they can vary by several minutes, based on your location. Disappearances are easier to observe than reappearances, because disappearances occur higher in our sky, along the dark edge of the waxing Moon. It’s best to view these events through binoculars, or better yet, a telescope.

<u>Star</u>	<u>star mag.</u>	<u>Disapp. (AM MST)</u>	<u>Disapp. alt. (deg.)</u>	<u>Reapp. (AM MST)</u>	<u>Reapp. alt. (deg.)</u>
Electra	3.7	12:20	21	1:17	10
Maia	3.9	12:57	14	1:33	8
Merope	4.1	1:08	12	1:35	7
Alcyone	2.9	1:26	9	2:13	1
Pleione	5.1	2:05	3	after moonset	
Atlas	3.6	2:10	2	after moonset	

AN EVENING PARADE OF BRIGHT PLANETS AND WINTER STARS! During this “bright Moon” period, Saturn, Venus, Jupiter, and Mars are visible in the evening sky, and Mercury joins this group by about February 20. Use a planetarium app or the chart below to navigate. The planets (positions indicated within the red ellipses on chart below) appear near the ecliptic, shown as the orange line. The ecliptic is the apparent path of the Sun against background stars. These planets always appear near the ecliptic, because their orbits are inclined by only a few degrees from Earth’s orbit.

As the sky darkens, the constellations and stars of winter are “front and center.” Orion with reddish Betelgeuse and blue-white Rigel is high in the south. Follow the three stars of Orion’s belt to the southeast, where you will find Sirius, the night sky’s brightest star. Yellow-white Capella shines brightly in Constellation Auriga, which is nearly overhead. Reddish Aldebaran is just below Jupiter in the south, and the “twin stars” of Gemini, Pollux and Castor, are rising high in the east, near bright, reddish Mars. Not to be forgotten, Procyon, “the Little Dog Star” in Canis Minor, is rising high in the southeastern sky.



VENUS AT ITS BRIGHTEST! Wow! As the sky darkens, Venus is a brilliant beacon high in the west. On February 5, our “Sister Planet” shines at magnitude -4.80 and then brightens slightly to magnitude -4.87 between February 15 and 22. That’s as bright as any planet can appear from Earth!

Venus sets after twilight’s end, at about 9:19 PM MST on February 5 and 9:03 PM MST on February 20.

With the Moon absent after February 14 at around 7:15 to 7:30 PM MST and Venus still fairly high in the western sky, you may be able to see shadows cast by Venus from dark locations after the end of twilight! To see a Venus-cast shadow, try placing a small object directly in front of a white surface, aligned toward Venus. Our “Sister Planet” is 45 million miles distant on February 5 and only 36 million miles distant on February 20. Through telescopes, Venus’ crescent phase wanes from 34% illuminated on February 5 to 22% illuminated on February 20, as Venus’ apparent diameter increases from 34.3 to 43.1 arc seconds. **Please do your Venus spotting after sunset. NEVER chance looking at the Sun directly; serious eye damage can result.**

SATURN IN THE EARLY EVENING. Saturn is less than 20 degrees above the southwestern horizon as the sky darkens, and this period will afford our last good chance to see Saturn in the evenings until late summer. The Ringed Planet sets in the west at about 8:06 PM MST on February 5 and 7:15 PM MST on February 20. Saturn is 972 million miles distant on February 5 and 981 million miles distant on February 20. Saturn now shines at magnitude +1.1. Try to view Saturn through telescopes early in this period, before the view gets compromised by Saturn's low altitude and glaring twilight. The Ringed Planet appears 16 arc seconds wide, and its rings span 37 arc seconds. With a telescope or high-magnification binoculars, it's possible to spot Titan, Saturn's largest moon.

Telescopes with apertures 5 inches or larger may reveal several other moons of the Ringed Planet. Saturn's rings now appear nearly "edge-on", so they may seem less impressive in telescopes than they did during the past several years. These thin rings will nearly disappear from our perspective during 2025. Because Saturn's rings now appear less inclined, and dimmer, than in past years, it may be easier to spot some of Saturn's mid-sized moons through telescopes. 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 2024 and 2025 and phenomena associated with Saturn's moons, see this article...

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

Please do your Saturn spotting after sunset. NEVER chance looking at the Sun directly; serious eye damage can result.

MERCURY – A CHALLENGE IN EVENING TWILIGHT ON FEBRUARY 20. At about 6:22 PM MST on February 20, you may be able to spot Mercury in bright twilight, just 3 degrees above an unobstructed western horizon. This will be challenging, and you may need binoculars to see the Innermost Planet before the end of February. The "Speedster Planet" is emerging into our evening sky from the far side of the Sun, after its solar conjunction on February 9 (February 8 in the Mountain Time Zone). On February 20 at 6:22 PM MST, Mercury shines at magnitude -1.34, but its brightness is masked by glaring twilight with the Sun just 6 degrees below the horizon. Through telescopes Mercury's 94%-illuminated, gibbous disk spans 5.3 arc seconds. Mercury is 119 million miles distant on February 20. This is the beginning of Mercury's best evening appearance of 2025. It will get much easier to spot Mercury by early March. **Please do your Mercury spotting after sunset. NEVER chance looking at the Sun directly; serious eye damage can result.**

BRIGHT JUPITER IN THE EVENING SKY. As twilight fades, spot bright Jupiter near maximum altitude, 65 to 70 degrees above the southern horizon. After the Moon and Venus, Jupiter is the third brightest object in the early evening sky. Jupiter is currently moving against the stars of the Constellation 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 3:05 AM MST on February 5 and 2:08 AM MST on February 20. During this period Jupiter fades slightly from magnitude -2.48 to -2.36, but it's still very bright. Jupiter is 428 million miles distant on February 5 and 451 million miles distant on February 20. Through telescopes or binoculars, the Giant Planet's apparent equatorial diameter is 42 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 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. Unfortunately, there are no transits of Ganymede's shadow during this period that are visible from Colorado. Io's shadow is larger than Europa's, but smaller than Ganymede's shadow. Callisto's shadow does not cross Jupiter during this period.

February 7, 2025, 1:18 AM to 3:34 AM MST, Io's shadow crosses Jupiter (Locally this event begins with Jupiter 18 degrees above the west-northwestern horizon and ends long after Jupiter has set).

February 7, 2025, 7:32 PM to 10:10 PM MST, Europa's shadow crosses Jupiter.

February 8, 2025, 7:48 PM to 10:02 PM MST, Io's shadow crosses Jupiter.

February 14-15, 2025, 10:10 PM to 12:46 AM MST, Europa's shadow crosses Jupiter (Locally this event begins with Jupiter high 48 degrees high in the western sky and ends with Jupiter 18 degrees above the west-northwestern horizon).

February 15, 2025, 9:44 PM to 11:58 PM MST, Io's shadow crosses Jupiter.

February 17, 4:12 PM to 6:28 PM MST, Io's shadow crosses Jupiter (Locally, this event begins and daylight with Jupiter 50 degrees above the horizon and ends during nautical twilight with Jupiter 72 degrees high, but the Sun only 8 degrees below the horizon).

MARS – FADING, BUT STILL BRIGHT - NEARLY ALL NIGHT LONG! Reddish (or butterscotch-tinted?) Mars is well above the eastern horizon as the sky darkens. Mars sets in the west northwest in astronomical twilight at 6:07 AM MST on February 5 (with the Sun still 13 degrees below the horizon) and at 5:00 AM MST on February 20, before twilight begins. Mars is still retrograding (moving westward) against the stars of central Gemini during this period. However, Mars' westward motion starts slowing around February 20. Mars will resume its "normal" eastward motion by early March.

After Earth's close approach to Mars on January 12, the Red Planet continues to fade, from magnitude -1.0 on February 5 to magnitude -0.5 on February 20, as its distance from Earth increases from 65.7 million miles to 74.5 million miles. Although it's fading, Mars is still brighter than all the stars in our night sky, except Sirius. Mars rises more than 70 degrees high in the Western Slope's skies between 9:30 and 10:30 PM MST. Through telescopes Mars' apparent diameter decreases from 13.2 to 11.7 arc seconds during this period, but that's still large enough for spotting interesting features on the Red Planet. When Mars rises this high in our sky, we see it through a relatively thin cross section of Earth's turbulent atmosphere, which 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 February 3, 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, and intensely so in the past several months, 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 November 6 and 10, December 8 and 30, and January 3 and 4. There also have been CMEs that have triggered geomagnetic storms that caused auroras. Many folks in Colorado and elsewhere viewed and/or photographed striking auroras during the nights of May 10-11 and October 10-11. As of February 3, there are several active regions with many 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://halph.nso.edu/>

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

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

<http://www.sidc.be/silso/ssngraphics>

Note: Near-real-time images from SDO and SOHO sites are again available, after more than 40 days of down time caused by damage from a water main burst at Stanford University. 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, many of us 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 February 3, there are several active regions with many 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](#). 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 ISS and Tiangong 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 February 9, 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. On April 23, 2024, Rocket Lab launched a NASA satellite, the Advanced Solar Sail System (ACS3), to test propulsion from the solar wind. There are optimal passes of ACS3 over the Western Slope during the next two weeks. The [Advanced Composite Solar Sail System \(ACS3\) has been tumbling](#), resulting in big variations in its brightness. I observed ACS3 pass high in the sky on the evenings of December 24, 31, January 2, 17, and 18, when it varied from as bright as magnitude +1 to fainter than +5 over a period of about 6 seconds.

February 3, 2025. Advanced Composite Solar Sail System (ACS3), 6:21 to 6:27 to 6:33 PM MST. SSE to ENE to N. Max altitude 72 deg above ENE max magnitude +1.9 (Passing through Eridanus, Taurus, Auriga, Camelopardalis, Ursa Minor-near Polaris, and Draco). **Brightness may vary hugely over a period of several seconds due to tumbling. Predictions for ACS3 are subject to change due to orbital changes from the solar wind. Also, NASA plans to control attitude and halt tumbling, which would impact its brightness. Check for updated predictions.**

February 3, 2025. International Space Station (ISS). 6:31 to 6:32 to 6:33 PM MST. WSW to SW to S. Maximum altitude 11 deg above SW, max magnitude -0.2 (Passing through Aquarius, Sculptor, and Eridanus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

February 4, 2025. Tiangong (Chinese Space Station). 5:19 to 5:21 AM MST. ENE to E. Emerges from Earth’s shadow at max altitude 39 deg above ENE, max magnitude -0.8 (Passing through Lyra and Aquila). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

February 4, 2025. Advanced Composite Solar Sail System (ACS3), 6:47 to 6:53 to 7:00 PM MST. S to W to NNW. Max altitude 71 deg above W, max magnitude +2.2 (Passing through Eridanus, Cetus, Aries, Triangulum, Andromeda, Cassiopeia, Cepheus, and Draco). **Brightness may vary hugely over a period of several seconds due to tumbling. Predictions for ACS3 are subject to change due to orbital changes from the solar wind. Also, NASA plans to control attitude and halt tumbling, which would impact its brightness. Check for updated predictions.**

February 5, 2025. Tiangong (Chinese Space Station). 5:56 to 5:57 to 6:00 AM MST. W to SSW to ESE. Emerges from Earth’s shadow 38 deg above W, max altitude 74 deg above SSW, max magnitude -2.2 (Passing through Leo/Leo Minor, Coma Berenices, Boötes, Serpens, Hercules/Serpens, Ophiuchus, and

Scutum). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

February 5, 2025. Advanced Composite Solar Sail System (ACS3), 7:13 to 7:19 to 7:25 PM MST. SSW to W to NNW. Max altitude 43 deg above W, max magnitude +3.1 (Passing through Eridanus, Fornax, Cetus, Pisces, Lacerta, and Cepheus/Cygnus). **Brightness may vary hugely over a period of several seconds due to tumbling. Predictions for ACS3 are subject to change due to orbital changes from the solar wind. Also, NASA plans to control attitude and halt tumbling, which would impact its brightness. Check for updated predictions.**

February 6, 2025. Tiangong (Chinese Space Station). 6:33 to 6:36 to 6:39 AM MST. W to SSW to SSE. Emerges from Earth's shadow 10 deg above W, max altitude 24 deg above SSW, max magnitude -0.6 (Passing through Sextans, Virgo/Corvus, Centaurus, Scorpius, and Sagittarius. This pass occurs in bright twilight and may be difficult to observe). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

February 7, 2025. Tiangong (Chinese Space Station). 5:38 to 5:41 AM MST. SSW to SE. Emerges from Earth's shadow at max altitude 41 deg above SSW, max magnitude -1.4 (Passing through Virgo, Libra, Scorpius, and Sagittarius). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

February 7, 2025. Advanced Composite Solar Sail System (ACS3), 6:22 to 6:28 to 6:34 PM MST. SSE to ENE to N. Max altitude 78 deg above ENE, max magnitude +1.8 (Passing through Eridanus/Lepus, Taurus, Perseus/Auriga, Camelopardalis, Ursa Minor, and Draco). **Brightness may vary hugely over a period of several seconds due to tumbling. Predictions for ACS3 are subject to change due to orbital changes from the solar wind. Also, NASA plans to control attitude and halt tumbling, which would impact its brightness. Check for updated predictions.**

February 8, 2025. Tiangong (Chinese Space Station). 6:16 to 6:17 to 6:18 AM MST. WSW to SW to S. Emerges from Earth's shadow 11 deg above WSW, max altitude 13 deg above SW, max magnitude +0.2 (Passing through Crater, Corvus, Hydra, Centaurus, Lupus, and Scorpius). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

February 8, 2025. Advanced Composite Solar Sail System (ACS3), 6:48 to 6:54 to 7:01 PM MST. S to W to NNW. Max altitude 65 deg above W, max magnitude +2.3 (Passing through Eridanus, Cetus, Triangulum, Andromeda, Cassiopea, Cepheus, and Draco). **Brightness may vary hugely over a period of several seconds due to tumbling. Predictions for ACS3 are subject to change due to orbital changes from the solar wind. Also, NASA plans to control attitude and halt tumbling, which would impact its brightness. Check for updated predictions.**

February 9, 2025. Tiangong (Chinese Space Station). 5:20 to 5:22 AM MST. S to SSE. Emerges from Earth's shadow at max altitude 15 deg above S, max magnitude +0.4 (Passing through Centaurus, Lupus, and Scorpius). **Predictions for Tiangong are subject to change due to orbital adjustments. Check for updated predictions.**

February 9, 2025. Advanced Composite Solar Sail System (ACS3), 7:15 to 7:21 to 7:26 PM MST. SSW to W to NNW. Max altitude 39 deg above W, max magnitude +3.3 (Passing through Eridanus, Cetus, Pisces, Andromeda, Lacerta, and Cepheus/Cygnus). **Brightness may vary hugely over a period of several**

seconds due to tumbling. Predictions for ACS3 are subject to change due to orbital changes from the solar wind. Also, NASA plans to control attitude and halt tumbling, which would impact its brightness. Check for updated predictions.

There are predicted evening passes for Tiangong from February 15 to 20. There are predicted predawn passes of the bright International Space Station (ISS) from February 10 to 20. More evening passes for the Advanced Composite Solar Sail System (ACS3) are predicted from February 10 to 20. 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.

HAPPY OBSERVING!