

**OBSERVING HIGHLIGHTS for April 15 to May 1, 2024, a “bright Moon” period
Black Canyon Astronomical Society (BCAS), western Colorado, USA**

SUMMARY. As twilight fades, during this “bright Moon” period, Jupiter is visible low in the west, only 5 to 10 degrees above the horizon. The Giant Planet sets at about 9:47 PM MDT on April 15 and at about 9:03 PM MDT on May 1. With a telescope, you can watch shadows of Jupiter’s moons, Io and Europa, cross the Giant Planet. Periodic Comet 12P/Pons-Brooks is closest to the Sun (at perihelion) on April 21. Try to spot this comet very low in the west on or after April 24 at about 8:45 PM MDT (find a spot with an unobstructed western horizon and use binoculars – this could be challenging!). Do not try to spot Comet 12P/ while the Sun is above the horizon.

Saturn (magnitude +1.1) rises before the Sun at about 5:05 AM MDT on April 15 and at about 4:06 AM MDT on May 1. Reddish Mars, also at magnitude +1.1, rises after Saturn in the pre-dawn sky, at about 5:10 AM MDT on April 15 and at about 4:37 AM MDT on May 1. Do not look for Saturn and Mars after sunrise: the Sun can be very dangerous to your eyes.

The Moon is at first quarter on April 15. From April 15 to 22, watch a gibbous Moon wax. On the evening of April 22, look for the gibbous (nearly full) Moon just a degree north from the first-magnitude star, Spica. The Moon is full on the night of April 23-24. From April 25 to 30, we can watch a gibbous Moon wane. The Moon reaches last quarter on May 1.

The Sun has been impressively active recently. Extreme (X-class) solar flares occurred in December, February, and on March 23 and 28. We can expect more solar flares and coronal mass ejections of charged particles. You can monitor solar activity safely in real time on the internet. High solar activity is triggering auroras (aka “northern lights”) and airglow, which have been photographed and seen from Colorado in the past year. So, keep watch for more of these phenomena! If auroras are not visible from Colorado, you may be able to view them online in real time from more northerly locations until the end of April.

From western Colorado, there are pre-dawn passes of the bright International Space Station (ISS) on April 18 and from April 20 to 30, and there are evening passes of the almost-as-bright Tiangong (Chinese) Space Station from April 15 to 29. Also “trains” of closely spaced, Starlink satellites from recent launches may be visible.

WESTERN SLOPE SKIES. Since 2011, BCAS and KVN Community Radio have been producing [Western Slope Skies](#) (WSS), a biweekly astronomy feature, which airs every two weeks at about 8:10 AM on Fridays and 7:00 PM on Wednesdays. On April 17, Gina Loewen tells us why stars scintillate, or twinkle, sometimes producing dramatic, rapidly changing colors in “The Wonder of a Twinkling Star.” Then on April 26 and May 1 Michael Williams discusses the “The Exotic Afterlife of Stars.”

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 is at **first quarter on April 15** (exactly at 1:13 PM MDT). From April 16 to 22, we can watch a gibbous Moon wax. **The Moon is full on the night of April 23-24** (exactly full at 5:49 PM MDT on April 23) From April 25 to 30, we can watch a gibbous Moon wane. The Moon reaches **last quarter on May 1** (exactly at 5:27 AM MDT). On the evening of April 22, look for the gibbous (nearly

full!) Moon just a degree north from the first-magnitude star, Spica. NASA has published a [stunning visualization of lunar phases for year 2024](#).

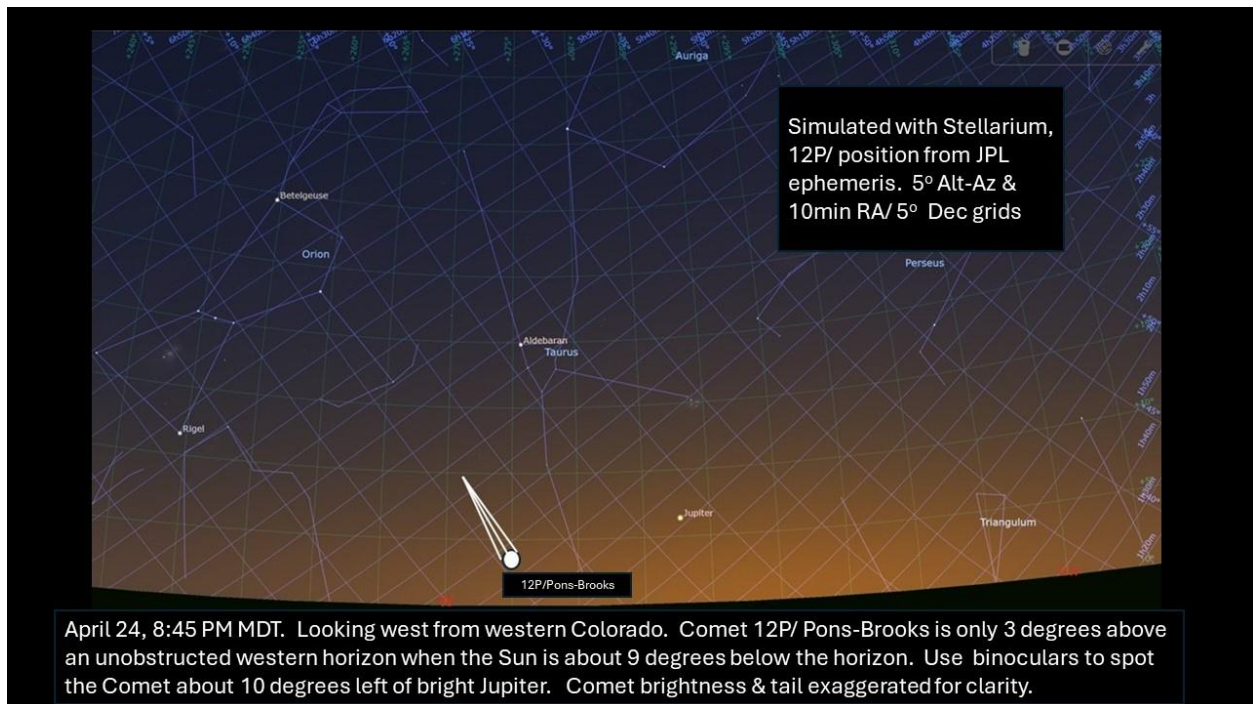
CHALLENGE YOURSELF TO SPOT AN EVENING COMET. In recent weeks Comet 12P/Pons-Brooks has been brightening, and it's closest to the Sun during this period. Using binoculars, you may be able to spot this Comet very low in the western, evening sky, but this could be challenging. Try to spot 12P/ on April 24 at about 8:45 PM MDT (before moonrise) or on evenings soon thereafter, when the Comet is only 3 degrees above an unobstructed western horizon and about 10 degrees below left from bright Jupiter (during [nautical twilight](#) with the Sun 9 degrees below the horizon). Refer to the finder chart below or the more detailed finder charts in the links provided. Can you see the Comet's tail, which likely extends up and to the left, away from the Sun? 12P/Pons-Brooks is a Halley-type comet with a 71-year orbital period. It's closest to the Sun (at 73 million miles) on April 21 and closest to Earth on June 2 (at 144 million miles). For detailed finder charts and more info, see these links...

<http://www.aerith.net/comet/catalog/0012P/2024.html>

12P/Pons-Brooks | astro.vanbuitenen.nl

<https://theskylive.com/12p-info>

<https://www.virtualtelescope.eu/2024/03/06/multiscale-imaging-of-comet-12p-pons-brooks-pictures-and-time-lapse-5-mar-2024/>



JUPITER IN THE EVENING. Not long after sunset, look for Jupiter about 5 to 10 degrees above the west-northwestern horizon. Between April 15 and May 1, the Giant Planet fades slightly (from magnitude -2.03 to -2.00), as its distance from Earth increases from 549 to 557 million miles. Jupiter sets in the west northwest at about 9:47 PM MDT on April 15 and during [nautical twilight](#) on May 1 at 9:03 PM MDT. Through telescopes or binoculars, the Giant Planet's apparent equatorial diameter decreases from 33.3 to 32.9 arc seconds during this period. On the evening of April 20 using binoculars or a telescope, look for Uranus, only 0.6 degrees north (above and to the right) of Jupiter. At magnitude

-2.0, Jupiter outshines +5.9-magnitude Uranus by almost 1500 times! Using a telescope, can you see a color contrast between Uranus and Jupiter? Most people perceive Uranus as blueish or blue green, whereas most see Jupiter as mostly white with darker brown/gray atmospheric belts.

Use a telescope or binoculars to spot Jupiter's four bright 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

If you have a telescope, view shadow transits (Jovian solar eclipses!) of Jupiter's moons on the nights listed below. Jupiter is setting not long after the Sun, and only parts of three of these events are visible from western Colorado during this period. 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 western Colorado. Europa's small shadow can be challenging to spot, but Io's shadow is larger than Europa's shadow.

April 15, 2024, 6:20 PM to 8:30 PM MDT. Io's shadow crosses Jupiter. (Locally, the Sun sets at about 7:51 PM MDT. This event begins in daylight and ends in evening twilight with the Sun only 8 degrees below the horizon).



April 18, 2024, 8:20 to 10:46 PM MDT. Europa's shadow crosses Jupiter. (Locally this event begins in bright twilight with the Sun only 6 degrees below the horizon and ends more than an hour after Jupiter sets at about 9:38 PM MDT).

April 22, 2024, 8:16 to 10:26 PM MDT. Io's shadow crosses Jupiter. (Locally this event begins in bright twilight with the Sun only 4 degrees below the horizon and ends about an hour after Jupiter sets at about 9:27 PM MDT).

CELEBRATE OUR DARK SKY PLACES IN RIDGWAY ON APRIL 25, 2024 (from Val Szwarc)

Dark Sky Jewels in Colorado
Current, and New Gems* for 2024
Thursday April 25, 2024 at 7pm
(Doors open at 6pm)

- ❖ Current Dark Sky Jewels of Colorado – (Val Szwarc)
- ❖ *Six New Candidates on a Fast Track for 2024 - (Aaron Watson - Former Chair of DarkSky.Colorado)
- ❖ *Becoming a Certified Dark Sky Park – Status and Challenges – (Erin Vogel, Senior Ranger, Ridgway State Park)


Decker Community Room

675 Clinton St Ridgway
More info can be found at
<https://www.ridgwayfuse.org/Decker>



This Free Family Friendly Event
Presented
by
ROCC's Dark Sky Committee
Town of Ridgway Colorado

Photo credit: Val Szwarc and Top of the Pines, Ouray County, CO

KEEP WATCHING THE NORTHERN CROWN! Will there soon be a bright “new” star in Constellation Corona Borealis (the “Northern Crown”), at least briefly? T Coronae Borealis (T CrB) is a recurrent nova that may rapidly increase in brightness 1500-fold (to second magnitude) to become the brightest star in Corona Borealis sometime between now and next September. Then it may fade rapidly below naked-eye visibility in about a week. As of 6 AM MDT on April 14, T CrB had not yet detonated. 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://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

<https://skyyandtelescope.org/observing/whats-up-with-t-crb04202016/>

SATURN IN THE MORNING. On April 15 Saturn rises during early morning twilight at about 5:05 AM MDT, but by May 1 the Ringed Planet rises before twilight at around 4:06 AM MDT. Saturn is still on the far side of the Sun from our perspective, but it’s drawing a bit nearer, from 971 million miles from Earth on April 15 to 952 million miles distant on May 1. Saturn shines at magnitude +1.07. Through telescopes, the Ringed Planet appears 16 arc seconds wide, and its rings span 37 arc seconds. We are now viewing Saturn’s rings at a very low angle. From Earth during 2024 and 2025, Saturn’s rings appear nearly “edge-on”, and they are not quite as “eye catching” as they have been during the past several years. **Please do your Saturn spotting before sunrise. NEVER chance looking at the Sun directly; serious eye damage can result.**

MARS IN THE MORNING. Reddish Mars rises in the east during [astronomical twilight](#) at about 5:10 AM MDT on April 15 and 4:37 AM MDT on May 1. On the morning of April 15, Mars is 189 million miles distant, drawing a bit closer by May 1, when the Red Planet is 184 million miles distant. Mars is still on the far side of the Sun from our perspective, shining at an anemic magnitude of +1.1. Through telescopes, its disk appears tiny, less than 5 arc seconds wide. Mars appears close to the Planet Neptune on the mornings of April 28 and 29. The two planets will appear less than half a degree apart! Look for Mars about 7 degrees above the eastern horizon at about 5:20 AM MDT on those dates. If you have a telescope, try to spot Neptune east (below and left) from Mars on April 28 and west (up and to the right) from Mars on April 29. Can you detect a color contrast between Neptune and Mars? **Please do your Mars spotting before sunrise. NEVER chance looking at the Sun directly; serious eye damage can result.**

THE SUN. The Sun has been very active over the past year and a half. There have been M-class (moderate) solar flares each week, and even X-class (extreme) solar flares, as recently as March 23 and March 28. There also have been many coronal mass ejections (“CMEs”) of charged particles that have triggered auroras. [Airglow](#) also results from [high solar activity](#), and this phenomenon has been photographed and observed from Colorado. As of April 14, there are many active regions that contain sunspots on the Earth-facing side of the Sun. M-class (moderate) and even X-class (extreme) solar flares are likely during this period. Some flares may be associated with CMEs. 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>

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 in the past year auroras were photographed and seen from Colorado and even farther south in Arizona! Solar magnetic storms, when directed toward Earth, can cause auroras. With current, high solar activity, chances for auroras are good. 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/>.

<https://www.swpc.noaa.gov/products/aurora-viewline-tonight-and-tomorrow-night-experimental>

Until the end of April, we can watch aurora 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. Other aurora webcams also may be operating. See this review article...

<https://www.space.com/northern-lights-webcams-watch-aurora-online>

EARTH SATELLITE HIGHLIGHTS. The following predictions are for western Colorado, specifically Montrose, in Mountain Daylight Time (MDT). 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 for satellite passes may be inaccurate by up to several minutes, especially after April 18. For more accurate predictions of these 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.

Starlink satellite “trains”, when viewed from less than 1 day to about 4 days after launch, can be very eye-catching! Check Heavens-Above.com (or other sites) for updated, local predictions of “trains” of Starlink satellites. Starlink satellites are launched often, typically once or twice per week.

April 15, 2024. Tiangong (Chinese Space Station). 9:29 to 9:30 PM MDT. SW to SSW. Disappears into Earth’s shadow at max altitude 17 degrees above SSW, max magnitude +0.1 (Passing through Canis Major). **Tiangong’s orbit may change frequently. Check for updates.**

April 16, 2024. Tiangong (Chinese Space Station). 8:28 to 8:30 to 8:32 PM MDT. SSW to SSE to ESE. Max altitude 18 deg above SSE, disappears into Earth’s shadow 12 degrees above ESE, max magnitude -0.6 (Passing through Puppis, Antlia, Hydra, Corvus, and Virgo. This pass may be difficult to see with the Sun only 8 to 9 degrees below the horizon). **Tiangong’s orbit may change frequently. Check for updates.**

April 17, 2024. Tiangong (Chinese Space Station). 9:01 to 9:04 to 9:05 PM MDT. SW to SSE to E. Max altitude 54 deg above SSE, disappears into Earth’s shadow 32 degrees above E, max magnitude -2.1 (Passing through Canis Major, Puppis, Hydra, Sextans, Virgo/Leo, and Coma Berenices/Boötes). **Tiangong’s orbit may change frequently. Check for updates.**

April 18, 2024. International Space Station (ISS). 5:18 to 5:20 to 5:21 AM MDT. SSE to SE to ESE. Max altitude 12 deg above SE, max magnitude -0.8 (Passing through Corona Australis, Sagittarius, Capricornus, Aquarius, and Pisces). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 18, 2024. Tiangong (Chinese Space Station). 9:35 to 9:38 PM MDT. W to NNW to N. Disappears into Earth's shadow at max altitude 65 deg above N, max magnitude -2.0 (Passing through Orion, Gemini/Auriga, and Ursa Major). **Tiangong's orbit may change frequently. Check for updates.**

April 19, 2024. Tiangong (Chinese Space Station). 8:33 to 8:36 to 8:39 PM MDT. 1st PM Tiangong Pass of April 19. WSW to SSE to ENE. Max altitude 83 deg above SSE, disappears into Earth's shadow 8 degrees above ENE, max magnitude -2.3 (Passing through Orion, Gemini, Leo Minor, Canes Venatici/Coma Berenices, and Boötes. This pass may be difficult to see with the Sun only 8 to 9 degrees below the horizon). **Tiangong's orbit may change frequently. Check for updates.**

April 19, 2024. Tiangong (Chinese Space Station). 9:54 to 9:57 PM MDT. 2nd PM Tiangong Pass of April 19. In WNW. Disappears into Earth shadow at max altitude 25 deg above WNW, max magnitude +0.1 (Passing through Taurus and Auriga). **Tiangong's orbit may change frequently. Check for updates.**

April 20, 2024. International Space Station (ISS). 5:16 to 5:19 to 5:22 AM MDT. SSW to SE to ENE. Appears from Earth's shadow 16 deg above SSW, max altitude 34 deg above SE, max magnitude -2.5 (Passing through Scorpius, Sagittarius, Capricornus, Aquarius, and Pegasus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 20, 2024. Tiangong (Chinese Space Station). 9:07 to 9:10 to 9:12 PM MDT. W to N to ENE. Max altitude 52 deg above N, disappears into Earth's shadow 20 degrees above ENE, max magnitude -1.5 (Passing through Taurus, Auriga, Camelopardalis, Draco, and Corona Borealis/Hercules). **Tiangong's orbit may change frequently. Check for updates.**

April 21, 2024. International Space Station (ISS). 4:30 to 4:33 AM MDT. SE to E. Appears from Earth's shadow near max altitude 19 deg above SE, max magnitude -1.7 (Passing through Capricornus, Aquarius, and Pegasus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 21, 2024. Tiangong (Chinese Space Station). 9:41 to 9:44 to 9:45 PM MDT. WNW to N. Disappears into Earth's shadow at max altitude 45 deg above N, max magnitude -1.4 (Passing through Taurus, Auriga/Perseus, Camelopardalis, and Ursa Minor). **Tiangong's orbit may change frequently. Check for updates.**

April 22, 2024. International Space Station (ISS). 5:16 to 5:18 to 5:21 AM MDT. WSW to NW to NE. Appears from Earth's shadow 25 deg above WSW, max altitude 73 deg above NW, max magnitude -3.8 (Passing through Virgo/Libra, Corona Borealis, Hercules, Draco, Cepheus, Cassiopeia, and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 22, 2024. Tiangong (Chinese Space Station). 8:39 to 8:42 to 8:45 PM MDT. W to N to ENE. Max altitude 46 deg above N, disappears into Earth's shadow 9 deg above ENE, max magnitude -1.3 (Passing through Taurus, Perseus, Camelopardalis, Draco, and Corona Borealis. This pass could be challenging to

spot with the Sun only 9 to 10 degrees below the horizon). **Tiangong's orbit may change frequently. Check for updates.**

April 23, 2024. International Space Station (ISS). 4:29 to 4:32 AM MDT. ESE to ENE. Appears from Earth's shadow at max altitude 58 deg above ESE, max magnitude -3.4 (Passing through Sagitta, Vulpecula, Cygnus, Pegasus, and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 23, 2024. Tiangong (Chinese Space Station). 9:13 to 9:16 to 9:18 PM MDT. WNW to N to ENE. Max altitude 50 deg above N, disappears into Earth's shadow 27 degrees above ENE, max magnitude -1.6 (Passing through Taurus, Perseus/Auriga, Camelopardalis, Draco, and Corona Borealis/Boötes). **Tiangong's orbit may change frequently. Check for updates.**

April 24, 2024. International Space Station (ISS). 5:15 to 5:17 to 5:20 AM MDT. W to NNW to NNE. Appears from Earth's shadow 17 deg above W, max altitude 28 deg above NNW, max magnitude -2.4 (Passing through Coma Berenices, Ursa Major-Big Dipper, Draco, Camelopardalis, and Perseus/Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 24, 2024. Tiangong (Chinese Space Station). 9:47 to 9:50 PM MDT. In WNW. Disappears into Earth's shadow at max altitude 63 deg above WNW, max magnitude -1.8 (Passing through Taurus, Auriga, and Lynx/Gemini). **Tiangong's orbit may change frequently. Check for updates.**

April 25, 2024. International Space Station (ISS). 4:28 to 4:31 AM MDT. NNW to NE. Appears from Earth's shadow at max altitude 45 deg above NNW, max magnitude -3.1 (Passing through Draco, Ursa Minor, Cepheus, Cassiopeia, and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 26, 2024. International Space Station (ISS). 5:14 to 5:16 to 5:18 AM MDT. WNW to NNW to NNE. Appears from Earth's shadow 9 deg above WNW, max altitude 15 deg above NNW, max magnitude -1.4 (Passing through Ursa Major, Camelopardalis, and Perseus). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 26, 2024. Tiangong (Chinese Space Station). 9:19 to 9:22 to 9:23 PM MDT. WNW to SSW to SE. Max altitude 60 deg above SSW, disappears into Earth's shadow at 41 deg above SE, max magnitude -2.1 (Passing through Taurus, Gemini, Cancer, Leo/Sextans, and Virgo). **Tiangong's orbit may change frequently. Check for updates.**

April 27, 2024. International Space Station (ISS). 4:27 to 4:30 AM MDT. NW to NNW to NNE. Appears from Earth's shadow near max altitude 21 deg above NW, max magnitude -1.9 (Passing through Ursa Major, Camelopardalis, Perseus, and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 27, 2024. Tiangong (Chinese Space Station). 9:54 to 9:56 PM MDT. W to SW. Disappears into Earth's shadow 19 deg above SW, max magnitude -0.1 (Passing through Orion and Monoceros/Canis Major). **Tiangong's orbit may change frequently. Check for updates.**

April 28, 2024. International Space Station (ISS). 3:39 to 3:41 AM MDT. NNE to NE. Appears from Earth's shadow at max altitude 22 deg above NNE, max magnitude -1.4 (Passing through Cassiopeia and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 28, 2024. Tiangong (Chinese Space Station). 8:51 to 8:54 to 8:56 PM MDT. W to SSW to SE. Disappears into Earth's shadow at 15 deg above SE, max magnitude -1.2 (Passing through Orion-near Betelgeuse, Monoceros, and Hydra/Corvus). **Tiangong's orbit may change frequently. Check for updates.**

April 29, 2024. International Space Station (ISS). 4:25 to 4:26 to 4:28 AM MDT. NW to NNW to NE. Appears from Earth's shadow 11 deg above NW, max altitude 13 deg above NNW, max magnitude -1.1 (Passing through Leo Minor, Camelopardalis, Perseus, and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

April 29, 2024. Tiangong (Chinese Space Station). 9:26 to 9:27 to 9:29 PM MDT. WSW to SW to SSW. Max altitude 13 deg above SW, disappears into Earth's shadow at 11 deg above SSW, max magnitude +0.3 (Passing through Orion-near "belt", Monoceros, Canis Major, Puppis, and Pyxis). **Tiangong's orbit may change frequently. Check for updates.**

April 30, 2024. International Space Station (ISS). 3:37 to 3:39 AM MDT. N to NNE. Appears from Earth's shadow at max altitude 16 deg above N, max magnitude -1.1 (Passing through Camelopardalis, Perseus, and Andromeda). **Predictions for the ISS are subject to change due to orbital adjustments. Check for updated predictions.**

HAPPY OBSERVING!