

**May Special Events:**

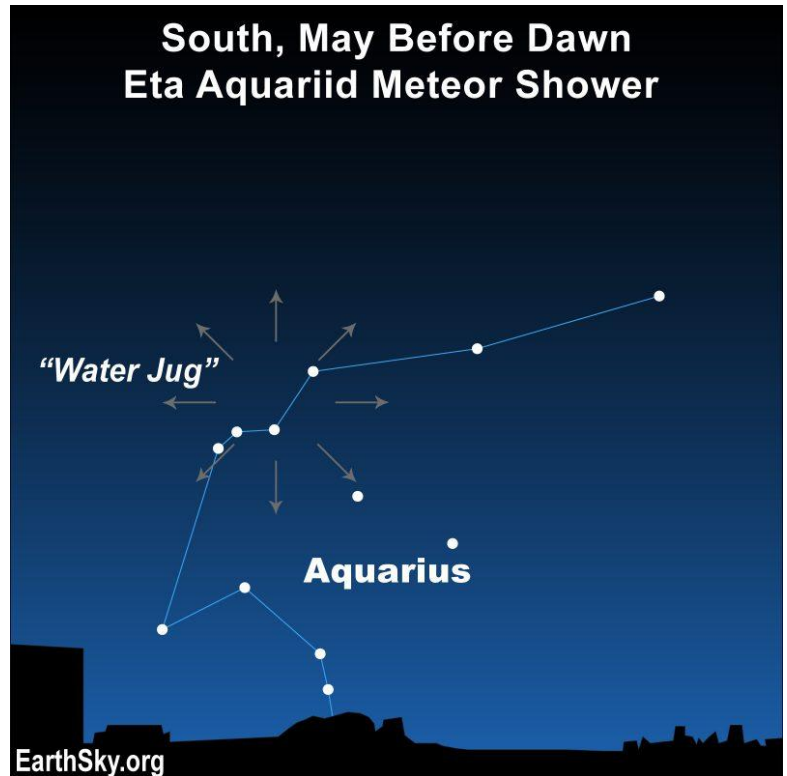
*Eta Aquariid Meteor Shower (updated from last year):*

The Eta Aquariid meteor shower is active from about April 19 through the end of May, peaking on the evening of May 5. This year, the Moon is not favorable. About the time that the radiant rises in the east, the waning gibbous Moon (halfway between Full and Last Quarter Moon) will be low in the south-southeast, about 50 or 60 degrees from the radiant. The maximum rate is about 50 meteors per hour. The rate given is based on what would be seen if the radiant were at the zenith, so the actual rate will be a little lower, about 20 per hour. Comet Halley is the source of this meteor shower (along with the Orionids in October). These are fast-moving meteors and tend to leave long and persistent trains. Comet Halley is in a retrograde orbit, so meteors approach us head-on at about 67 km/sec (the range for all meteors is 11 km/sec to 72 km/sec; 25,000 mph to 160,000 mph).

<https://earthsky.org/astronomy-essentials/everything-you-need-to-know-eta-aquariid-meteor-shower>

<https://www.timeanddate.com/astronomy/meteor-shower/eta-aquarids.html>

About five years ago, I found this image of the Eta Aquariid meteor shower. In this image the Moon is to the east of the radiant, while this year, the Moon will be somewhat fuller and to the west. “The 2013 Eta Aquariid meteor shower was fantastic as viewed from Earth’s Southern Hemisphere. Colin Legg of Australia created this composite of his experience. He wrote, ‘Composite of approximately 50 images containing 26 meteors, meteor train, 17% moon, zodiacal light and Pilbara desert.’” [From the EarthSky.com article]

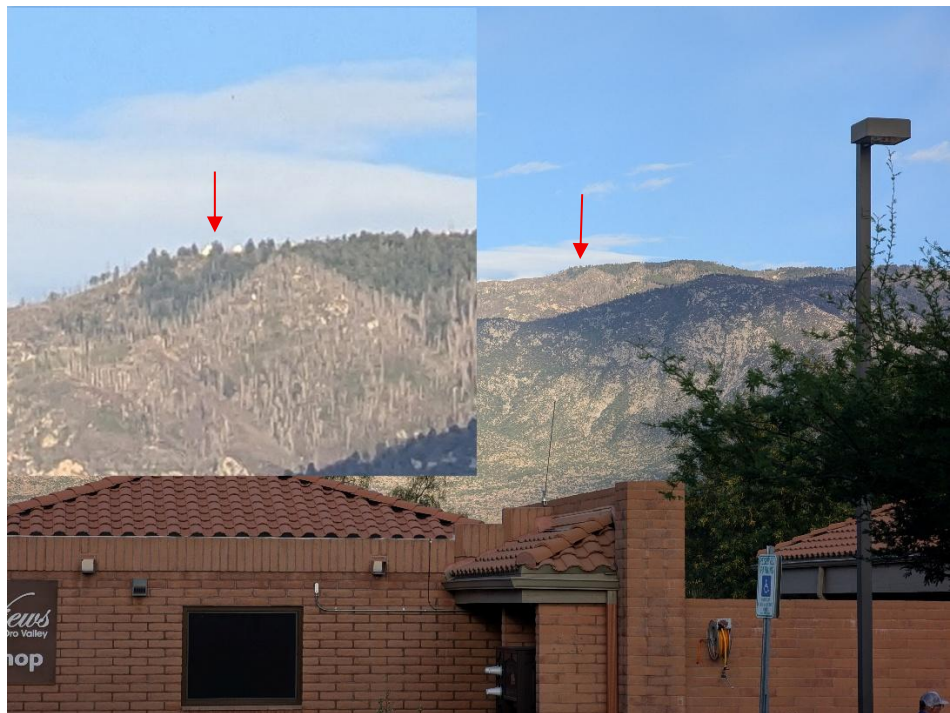


***Some Pictures:***

Thanks, again, to my friend Tim Hunter. Here is another picture that he took of Comet C/2025 R3 (PanSTARRS) on April 17. This was two days before its closest approach to the Sun. It is now primarily a southern hemisphere comet.



I helped out my friend Twink Monrad who gave a talk at the Oro Valley Astronomy Club. Before the talk, we had dinner and she pointed out the telescopes on Mt. Lemmon, in the center of the enlarged inset. I am not sure what domes can be seen, probably the 60-inch and maybe the radar dome.

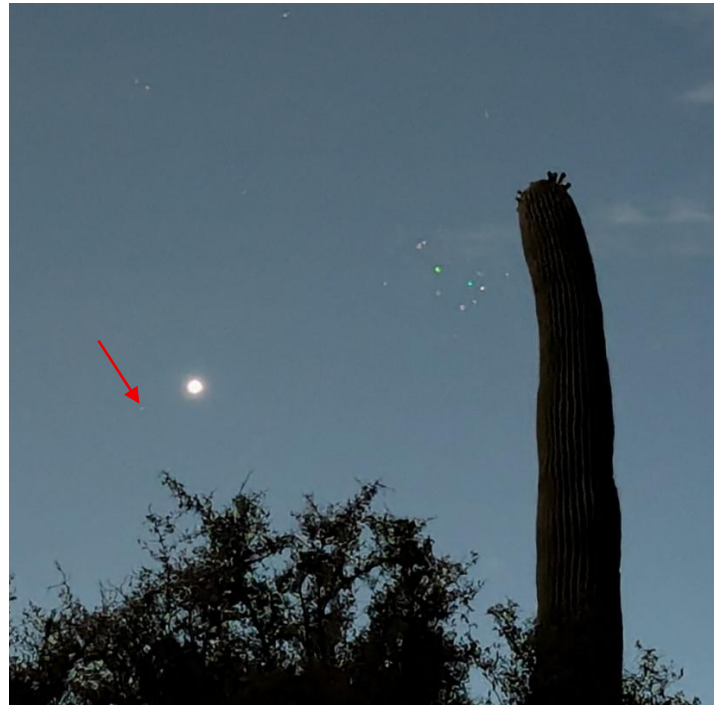


There are times when the writers who talk about what is up in the sky are a little optimistic. On April 15, the Moon was approaching Mercury and Mars in the morning sky. The left image is taken at 5:07 a.m. The arrow



points to Mercury. Mars was just rising and was a magnitude fainter, so I could not see it. The right image was taken at 8:00 p.m. on April 22. It is a 6-second exposure, so Venus is overexposed. The Pleiades is on the right and the arrow points to 6th magnitude Uranus (1 degree from Venus). There were thin clouds that did not make this easy! The star below and to the left of Venus is a fifth magnitude star in Taurus. Note: even though Venus is too far away to be resolved, it is still bright. It is 6 times as reflective as the Moon and is 30% closer to the Sun and so receives twice as much light from the Sun as the Earth and the Moon do. So, the surface brightness is more than 10 times that of the Moon (6 times as bright when the Moon is full due to the opposition surge).

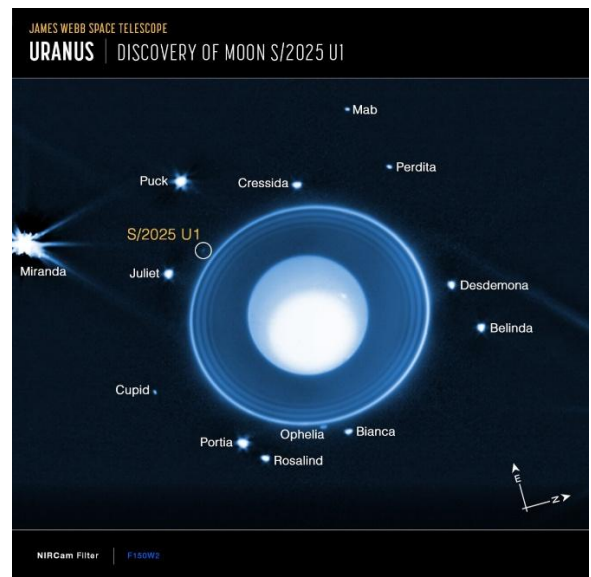
It was cloudy all day (again) on April 23, but it finally mostly cleared off after sunset. I had to be patient again, trading off clouds, darkness, and Venus eventually getting too low in the sky. I was able to capture the two planets and the Pleiades again. Venus had moved higher in the sky relative to Uranus and the Pleiades and was a little closer to Uranus.



## Astronomy in the News

### *JWST, Rings and Moons of Uranus:*

Uranus has 29 known moons and 13 known rings. Nine rings were discovered in 1977 by a stellar occultation, two rings were discovered in 1986 when Voyager 2 flew by Uranus, and two more were discovered in HST images in 2003-2005. The outer two rings are called the mu- and nu-rings and it was determined from the HST observations that the mu ring was bluer and the nu ring was redder, implying a compositional (and particle difference). It was eventually shown that the nu ring was compositionally similar to Uranus moon Mab, implying that Mab was the source of the material that made up the mu ring. The research reported here using infrared observations of both rings confirms that the mu ring is composed of small icy grains, while the nu ring is made up primarily of organic materials, what are called Tholins. The implication is that the nu ring is being maintained by material from an as yet unknown moon of Uranus.



**The inner moons of Uranus, from a Press Release for the discovery of a new moon in 2025.**

<https://www.space.com/astronomy/uranus/mysterious-rings-around-uranus-point-to-hidden-moons-orbiting-the-ice-giant>

### ***JWST, Possible Water Ice Clouds on Jupiter-Mass Exoplanet:***

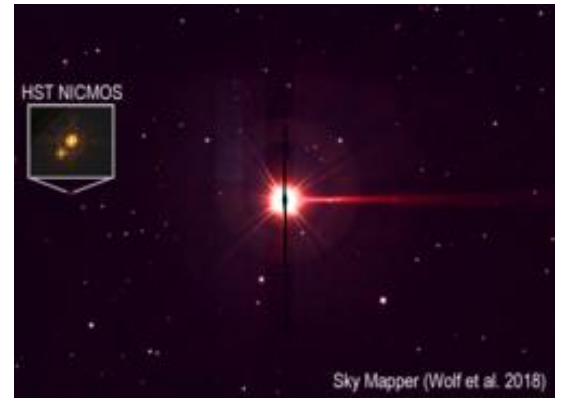
Epsilon Indi is a star system located 11.9 light-years from us. It is orbited by a binary system consisting of two brown dwarfs. The brown dwarfs orbit each other with a separation of about 2 AU and they orbit the primary (an orange, Main Sequence star that is about 0.8 times the mass of the Sun) at a distance of at least 1,500 AU. An exoplanet was confirmed in 2018 with a mass about 7 times that of Jupiter and at a distance of either 16 or AU. JWST directly imaged this exoplanet in 2023. The mass and orbital distance determined from the radial velocity and the JWST images differ which is why there are two different distances given. The observations reported here do not directly detect water ice clouds. The JWST observations are direct observations of the thermal emission from the exoplanet (it does not transit the star). Given the mass and temperature of Epsilon Indi Ab (still warm with the residual heat of formation), the authors detected far less ammonia in the atmosphere than atmospheric models predict. From this, the authors proposed that the exoplanet was water ice rich clouds at the top of its atmosphere that is preventing them from seeing the ammonia rich atmosphere that their models predict. Future observations may be able to confirm or disprove this model.

[https://www.spacewar.com/reports/JWST\\_reveals\\_water\\_ice\\_clouds\\_on\\_a\\_cold\\_Jupiter\\_mass\\_world\\_999.html](https://www.spacewar.com/reports/JWST_reveals_water_ice_clouds_on_a_cold_Jupiter_mass_world_999.html)

### ***JWST Observes Dying Star:***

Buckminsterfullerene, also known as buckyballs, was discovered in 1985 and is found in soot, but has been detected in planetary nebula and around some stars. It looks very similar to a soccer ball (football to most of the world) and is made up of 60 (or more) carbon atoms. It was named after the American architect R. Buckminster Fuller who designed geodesic domes that looked very similar to the carbon molecule. Tc 1 (IC 1266) is a planetary nebula about 12,000 light-years from us. I have tried to find out more about the central star, but I have not found consistent information. At the center of this nebula is either a white dwarf or an O-type super/hypergiant star that has been ejecting carbon in the form of the massive carbon molecules. The nebula obscures the central object. In this research, the authors used MIRI on JWST to map the structure of the material in this planetary nebula and have found carbon molecules with up to 70 carbon atoms. They are able to map the history of the periodic ejection of these molecules from the central object and how they evolve over time.

<https://www.space.com/astronomy/stars/james-webb-space-telescope-peers-into-a-dying-star-surrounded-by-mysterious-buckyballs-the-structures-were-seeing-now-are-breathhtaking>



**“Epsilon Indi with SkyMapper and a Hubble NICMOS image of the brown dwarf binary”**



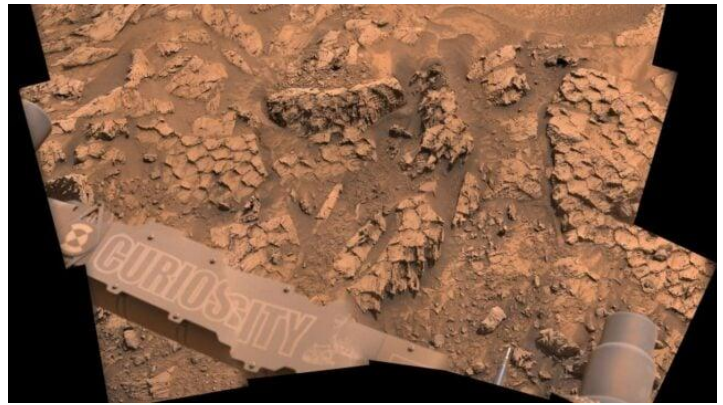
**“An image shows planetary nebula Tc 1 as observed by the James Webb Space Telescope's Mid-Infrared Instrument (MIRI), combining nine filters spanning wavelengths from 5.6 to 25.5 microns, well beyond what the human eye can detect. Blue tones represent hotter gas at shorter mid-infrared wavelengths; red tones trace cooler material at longer wavelengths. The image was processed by Katelyn Beecroft using PixInsight. (Image credit: NASA / ESA / CSA / Western University, J. Cami)”**

### **Curiosity: Mars Surface Features:**

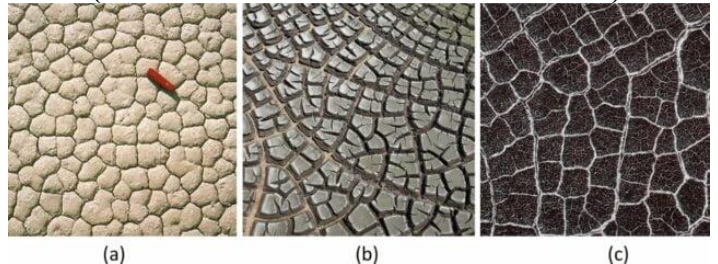
The Curiosity rover on Mars has seen an extensive region in the Gale Crater on Mars, near a 10-meter (30-foot) crater called Antofagasta crater. What they found was what the authors call a dragonscale-like pattern (right), similar to what was seen several years ago (below, right), but much more extensive. The original patterned feature was also found by Curiosity in Gale Crater. The new patterned region appears to imply extensive wet and dry periods, patterns that are similar to what is seen on Earth in dry lakes with desiccation crack patterns in mud. The second article covers several findings by Curiosity, including concentrations of minerals that are consistent with the presence of an ancient lake in Gale Crater.

<https://www.sciencealert.com/curiosity-found-strange-dragon-scale-rocks-on-mars-and-scientists-are-excited>

<https://earthsky.org/space/ancient-lake-on-mars-dragon-scales-curiosity-rover/>



**The dragonscale-like patterning on the surface of Mars. (NASA/JPL-Caltech/MSSS/Kevin M. Gill)**



**Polygonal ground patterns: (a) and (b) desiccation crack patterns in mud, (c) polygonal patterned ground on Mars. (Bálint et al., *J. Stat. Phys.*, 2023)**

## **May Night Sky**

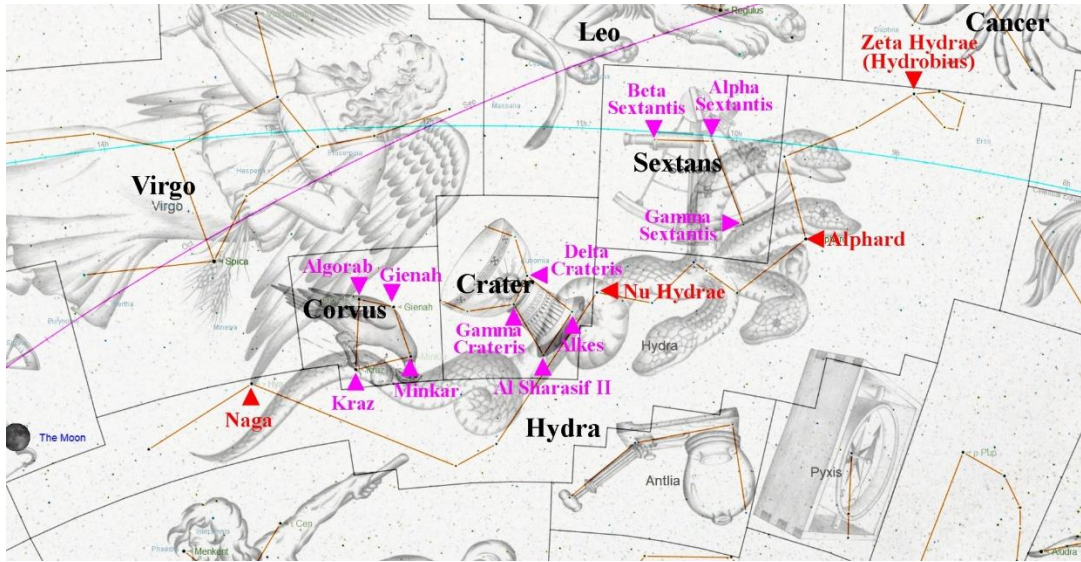
### **Sky Stories:**

The Featured Constellation this month is Hydra, the Sea Serpent ( or Water Snake). I copied a sky story, with credit, about Hydra five years ago. The story includes Corvus (the Crow) and Crater (the Beaker) that were the Featured Constellations last month. There are several Greek stories related to Hydra. Here is a short version of what I wrote (taken from *The New Patterns in the Sky* by Julius D W. Staal).

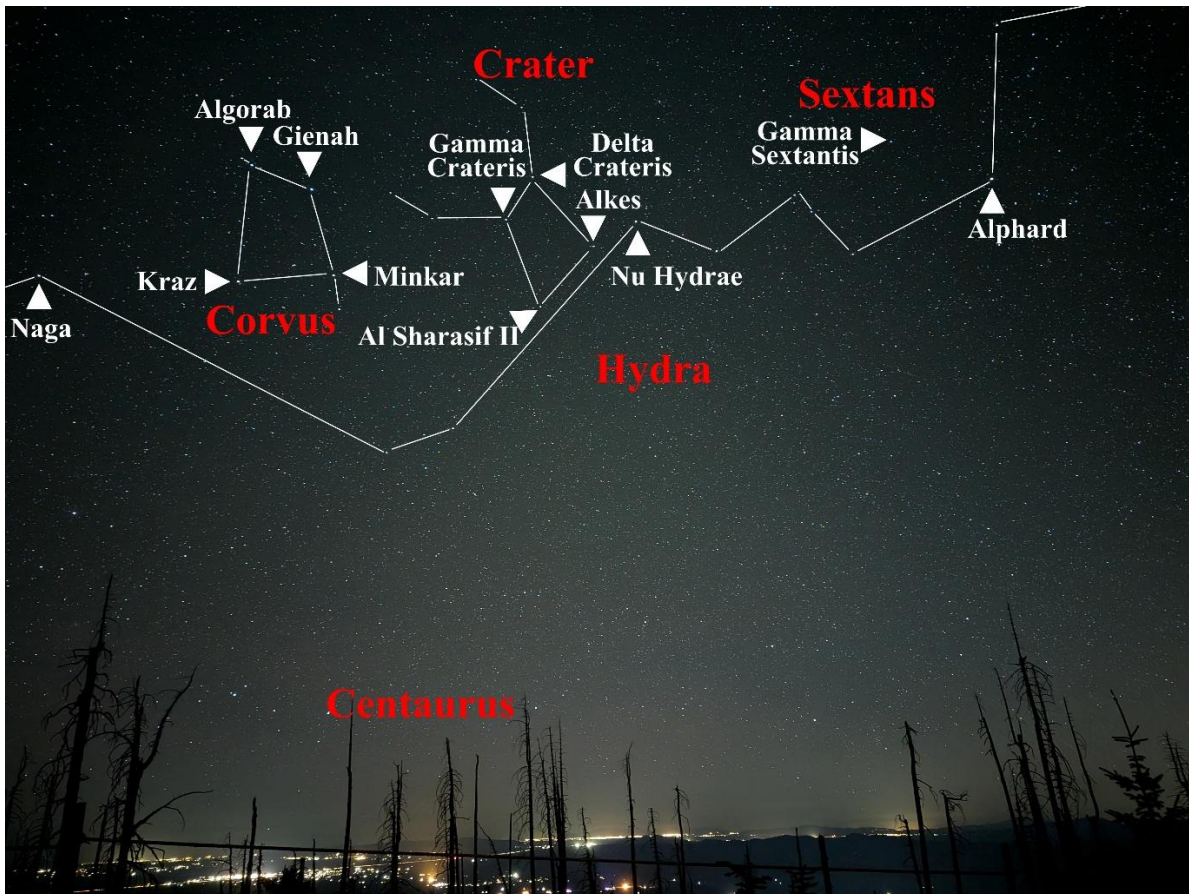
Above the long length of Hydra are Corvus (Apollo's once white-feathered bird) and Crater (the Beaker). Apollo sent Corvus to fetch him a beaker of water. However, on his way to get the water, Corvus passed a fig tree with its figs. Unfortunately, the figs were not yet ripe and juicy. Corvus decided to wait for the figs to ripen so that he could eat them. Only after the figs had ripened and Corvus had eaten them did he remember to fetch the water for Apollo. Corvus filled the beaker and brought the water back to Apollo. Corvus used the excuse that Hydra, the water snake, had hindered his fetching the water. Apollo was not fooled by this. As punishment, Apollo turned Corvus' feathers from white to black and changed the beautiful voice of Corvus to the crow's now familiar screech. Apollo then set Corvus, Crater the beaker, and Hydra, the water snake, in the night sky as an additional punishment and to remind others of what happens to you if you neglect your responsibilities.

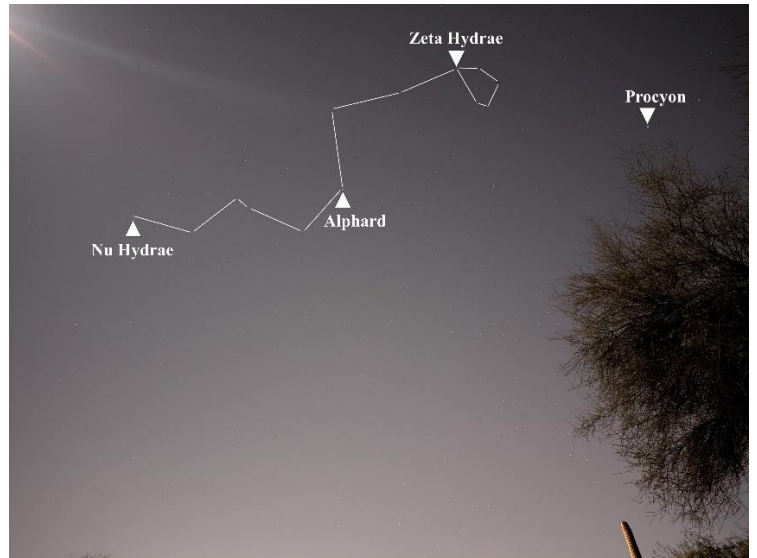
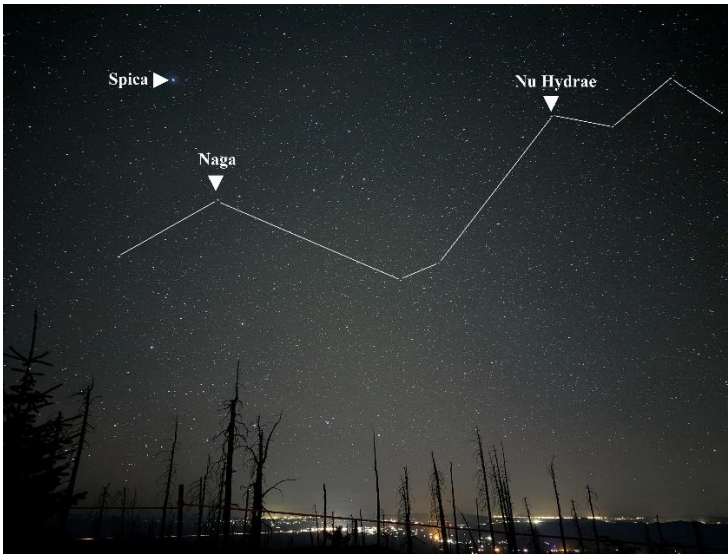
### **Featured Constellation for May, Hydra:**

Our featured constellation this month is Hydra, the Water Snake (or Sea Serpent). The Starry Night image on the below shows the usual stick figure. I have included an illustration of Hydra. Hydra was one of the 48 constellations listed by Ptolemy in the 2nd century and probably dates back to Babylonian times.



Hydra is too long for my camera's field of view. Unfortunately, when attempting to include it when I was also imaging Corvus and Crater, I cut off both the tail and the head. So, here is a modified version of the image I used for the April Newsletter as well as two images that include the tail and the head. I did not get the head while on Mt. Graham, so, for the moment, I only have an image taken from my house (dealing with clouds and then the Moon once it cleared). The images approximate what you would see in early May, looking south. With respect to the image with the head of Hydra (the lower image on the right), the previous nights were either cloudy to the south or had the Moon in the middle of Hydra. I had to deal with waxing gibbous Moon (just off the left of the image). After that, it was cloudy again. In the first image, the lights in the distance from Mt. Graham are likely from Bisbee, near the border with Mexico.





Hydra has two stars between magnitude 2.0 and 2.99, 10 stars between magnitude 3.0 and 3.99, and an additional 32 stars between magnitudes 4.0 and 4.99. It has 61 known stars with a total of 86 known exoplanets. Most of these are transiting exoplanets discovered by two survey programs. Ten of these stars are binary, one with two exoplanets orbiting it and one with three exoplanets. One additional object is in a binary system, a pulsar orbited by one exoplanet and one Main Sequence star.

The two brightest stars in Hydra are Alphard (Alpha Hydrae, magnitude 2.0) and Naga (Gamma Hydrae, magnitude 2.99). Alphard and Naga are the two stars in the constellation of Hydra represented on the flag of Brazil (26 stars in 9 constellations represented).

Alphard is a K3 III star (orange giant) that has evolved off the Main Sequence and is no longer burning hydrogen in its core. Its temperature (visible surface) is 4,100 K. It is nearly 1,000 times as luminous as the Sun with a mass about 3 times that of the Sun and is nearly 60 times the diameter of the Sun. It is about 180 light-years from us and is estimated to be about 400 million years old. Naga is a G8 III star (yellow giant) that has evolved off the Main Sequence and is no longer burning hydrogen in its core. Its temperature (surface temperature) is about 5,100 K, about 700 K cooler than the Sun. It is about 100 times as luminous as the Sun with a mass about 3 times that of the Sun and is about 12 times the diameter of the Sun. It is about 135 light-years from us and is estimated to be about 370 million years old. Naga is a binary star system. The secondary star is about 0.6 times the mass of the Sun and orbits around the primary at a distance estimated to be either 70 AU or 160 AU.

#### ***Telescope, Binocular, and Camera Targets:***

Even though they are getting lower in the evening sky, Jupiter and its four Galilean moons are nice evening objects in the southwest. Lower in the sky, but continuing to get higher in the evening, is bright Venus. Late in the month, they will be joined by Mercury. The crescent Moon will be near Venus and Jupiter the third week of May; see *Where are the Planets*, below. I will remind you of the sites that can assist you planning your nights under the sky. They usually come out either weekly or monthly:

<https://www.astronomy.com/tags/sky-this-week/>

<https://skyandtelescope.org/> There is a link to the sky this week

<https://www.planetary.org/night-sky/night-sky-what-to-see-this-month>

#### ***Moon and Planets:***

Full Moon, the Flower Moon, is on May 1. Last Quarter Moon is on May 9. New Moon is on May 16. Last Quarter Moon is on May 23. There is another Full Moon on May 31. This is a Blue Moon, the second Full Moon in a month. This is a *monthly Blue Moon*! There is another definition of a Blue Moon, a *seasonal Blue Moon*, the third Full Moon in a season in which there are four Full Moons. The next seasonal Blue Moon is May 20, 2027. I will describe the reasoning behind the seasonal Full Moon below.

*From Timeanddate.com:*

“The Full Moon in May is known as the Flower Moon. Other names include the Planting Moon, and the Milk Moon, while some named it the Hare Moon.

“The Full Moon of May is known as Flower Moon to signify the flowers that bloom during this month. Native Americans called it Budding Moon, Egg Laying Moon, and Planting Moon.

“The Anglo-Saxon name for May’s brightest Moon phase is Milk Moon from the Old English *Rimilcemon*. It means three-milkings-month in modern English because cows were milked three times a day during this time of year. The Celtic and Old English names are Mothers’ Moon, Bright Moon, Hare Moon, and Grass Moon.

“Many wildflowers bloom in May in the Northern Hemisphere, where these traditional Full Moon names originated. For example, many types of anemone, wild garlic, indigo, bluebells, lupine, sundrops, and violets, to name just a few. It is no wonder that the colorful displays these flowers create in nature have inspired people to call this time after them.”

*From Space.com:*

“Flowers are abundant everywhere. It was also known as the Full Corn Planting Moon or the Milk Moon.”

It is probably best to use *Timeanddate.com* for an explanation of a seasonal Blue Moon.

### **Origins of the Seasonal Full Moon**

“The definition of a seasonal Blue Moon, the third Full Moon in an astronomical season with four Full Moons, can be traced back to the now-defunct Maine Farmer's Almanac. According to the Almanac, the appearance of a 13th Full Moon in a year ‘upset the arrangement of Church festivals.’ The unlucky status of the number 13 and the difficulties of calculating the occurrence of such a Full Moon led to the extra Full Moon being named a Blue Moon.

“We can thank the Christian ecclesiastical calendar for the reason why the third Full Moon of the season is called the Blue Moon. The calendar uses the phases of the Moon to determine the exact dates for holidays like Lent and Easter.

“The month of Lent contains the final Full Moon of winter, Lenten Moon. The first Full Moon of spring—also known as the Easter Moon or the Paschal Moon—falls just before Easter. Naming the third Moon of the season as the Blue Moon ensured that Lent and Easter coincided with the right Moon phases, and other celebrations and customs would still fall during their ‘proper’ times.”

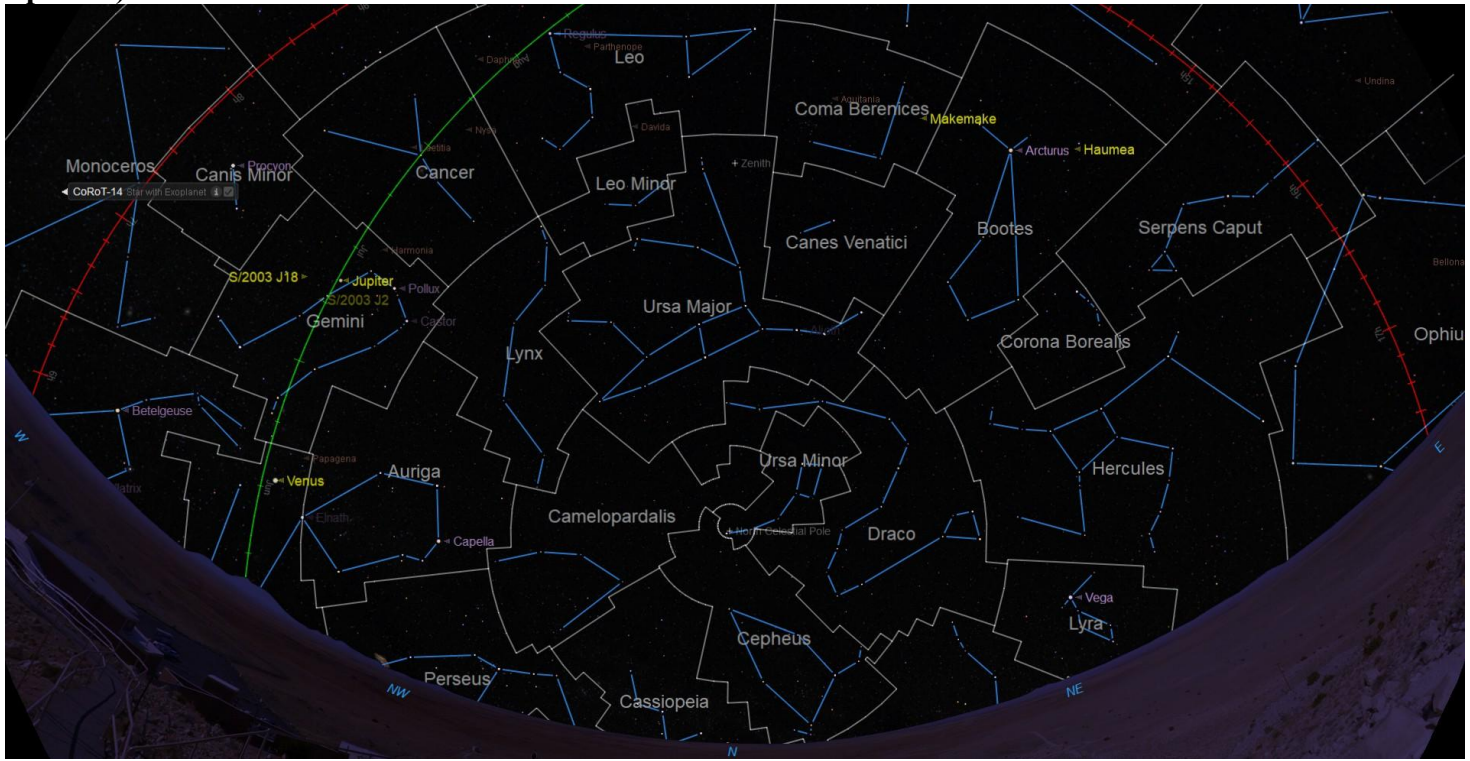
The Moon is at perigee (358,077 km [221,952 miles] from Earth) on May 17. The Moon is at apogee (405,839 km [252, 177 miles] from the Earth) on May 4. There is another lunar apogee (406,366 km [252,504 miles] on May 31 (June 1 EDT).

On May 13, the waning crescent Moon passes 4 degrees north of Neptune at 5:00 a.m. EDT (2:00 a.m. in Arizona and the West Coast), and then, that evening, 5 degrees north of Saturn (Saturn will not be up, so best seen when you observe Neptune). On May 14, the waning crescent Moon passes 5 degrees north of Mars (again this is in the evening, so observe the morning before the event). On May 18 at 10:00 p.m. EDT, the waxing crescent Moon passes 3 degrees north of Venus. Venus will be low in the sky at that hour. On the West Coast, this will be near sunset, so you will have to wait for the sky to get dark. On May 20, the Moon passes 3 degrees north of Jupiter at 9:00 a.m., so observe this event that evening.

### **Early Evening Sky Viewing:**

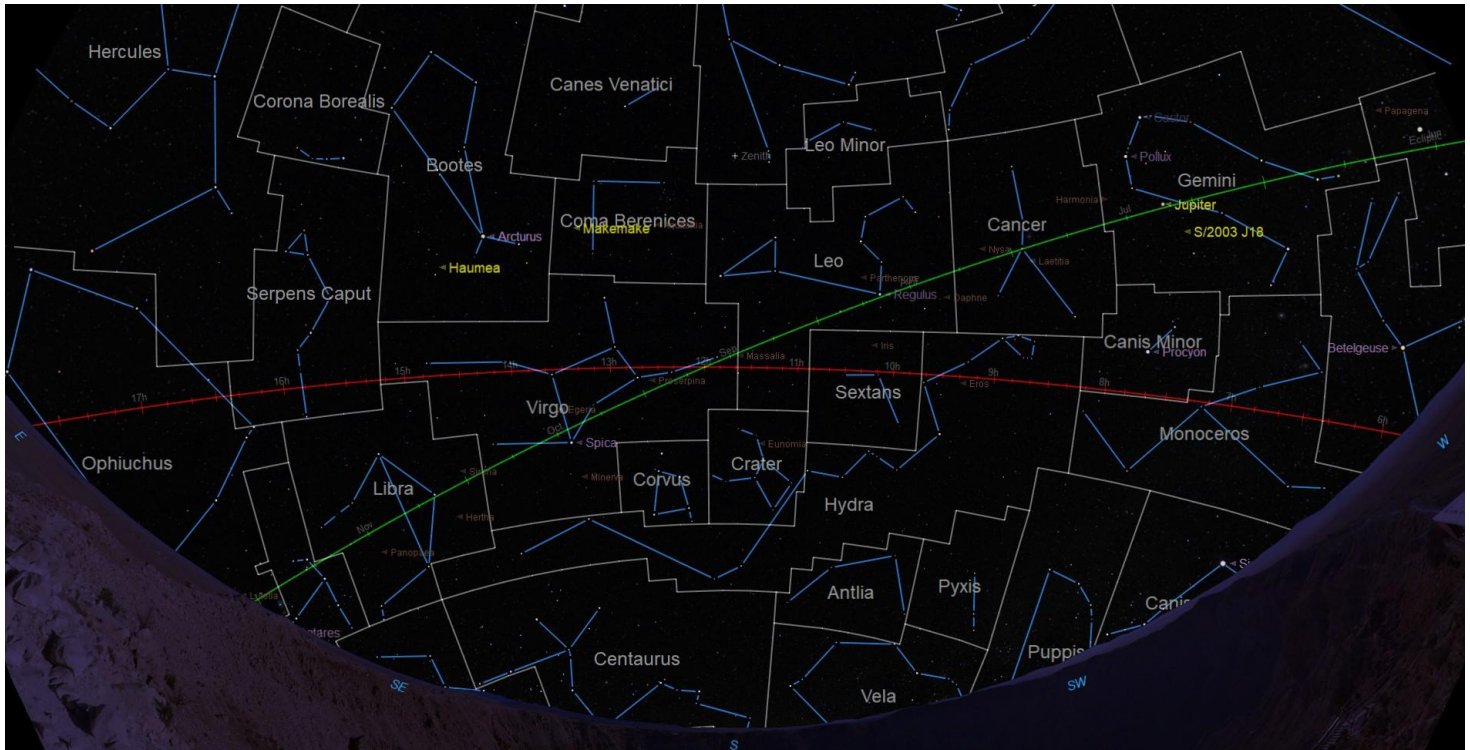
**All times in this paragraph are for Tucson (Standard Time), so, since the rest of the country is now on Daylight Saving Time, we are now in the same zone as California. Any other differences will be related only to your latitude and location in your time zone.** In Tucson, on the evening of May 15, 2026, sunset is at 7:14 p.m. (21 minutes later than on April 15), Civil Twilight is at 7:41 p.m. (23 minutes later), Nautical Twilight is at 8:14 p.m. (26 minutes later), and Astronomical Twilight is at 8:48 p.m. (29 minute later). You may see a few of the brightest stars and planets after Civil Twilight. You start seeing fainter stars and planets by around Nautical

Twilight and the sky is darkest by Astronomical Twilight. The length of the day in Tucson is 13 hours and 49 minutes on May 15 (50 minutes longer than on April 15). **Times will also vary depending on where you are in your time zone and your latitude. In New York, sunset is at 8:06 p.m. on May 15 (31 minutes later than on April 15). The length of the day in New York is 14 hours 27 minutes on May 15 (69 minutes longer than on April 15).**



**May 15, 2026, looking North at 9:30 p.m. DST (an hour earlier in Arizona and Hawaii). The + marks the Zenith (overhead). This is between Nautical Twilight and Astronomical Twilight, so the sky is dark. The red line is the celestial equator, the projection of Earth's equator onto the sky and the green line is the ecliptic, the path of the Sun through the sky.**

Looking North at about 9:30 p.m. (8:30 p.m. in Arizona and Hawaii) in mid-May, many of the constellations that were low in the West last month have set or are setting as the constellations and their stars rise earlier/set earlier. The Sun is setting later (and rising earlier), so the nights are getting shorter. Do not forget that most of you are on Daylight Saving Time, so times have been corrected for you to take that into account. Cassiopea (the Queen) is a circumpolar constellation and is low in the north. If one is far enough north and have a clear horizon, this constellation will not set. For us in the south, Perseus (the Hero, who rescued Andromeda from Cetus, the Sea Monster) is mostly below the northwest horizon. Taurus (the Bull) and Orion (the Hunter) are now setting early in the evening. Low in the west is Monoceros (the Unicorn). Low in the northwest is Auriga (the Charioteer). A little higher in northwest/west are Gemini (the twins), with Jupiter and Venus, and Canis Minor (the Lessor Dog). Above Cassiopeia left (west) of Polaris, the North Star, is Camelopardalis (the Giraffe). Above Camelopardalis is Ursa Major (the Great Bear), on his back and just west of due north. Just west of Ursa Major is Lynx (the Lynx). Above Ursa Major and just west of north are Cancer (the Crab), Leo Minor (the Lesser Lion), and Leo (the Lion). Leo is best seen from the south and he will not be on his back! Low in the northeast is Cepheus (the King). Above Cepheus and east of Polaris are Draco (the Dragon) and Ursa Minor (the Lessor Bear). Above Ursa Minor and just west of north are Canes Venatici (the Hunting Dogs of Boötes), Coma Berenices (Berenice's Hair), and Boötes (the Herdsman or Plowman). High in the east are Corona Borealis (the Northern Crown) and Serpens Caput (the Serpent's Head). Lower in the northeast/east is Hercules (the Hero). Below Hercules and almost completely above the horizon is Lyra (the Lyre). Just starting to rise in the northeast is Cygnus (the Swan). We are beginning to see the Summer Triangle! Just rising in the east is Ophiuchus (the Serpent-Bearer).



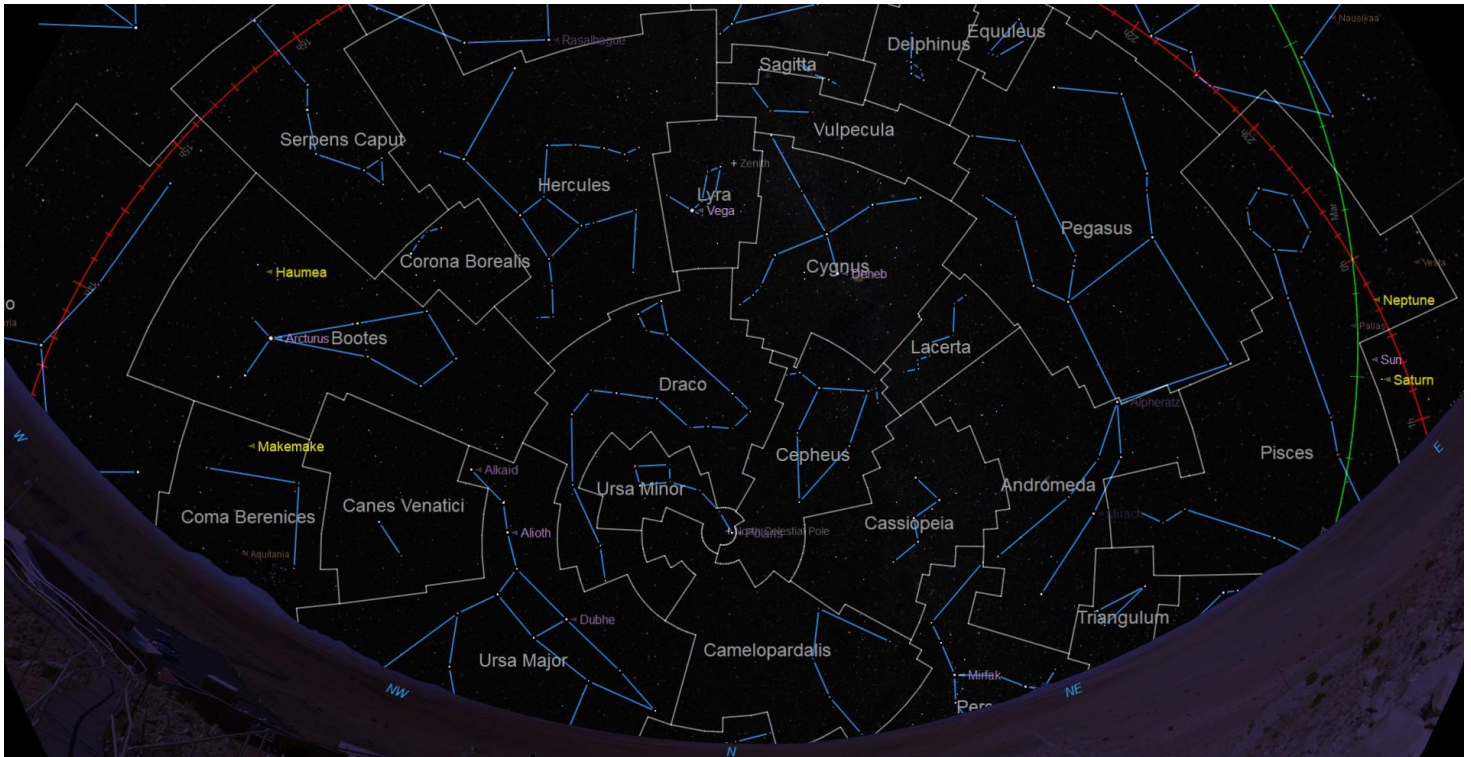
**May 15, 2026, looking South at 9:30 p.m. DST. The + marks the Zenith (overhead).**

Describing constellations not discussed above, looking South, at 9:30 p.m., by mid-May, we have lost a few of the constellations that were very low in the south/southwest. Setting in the southwest are Vela (the Sails) and Puppis (the Stern of Jason’s ship the Argo). Above Vela and Puppis are Antlia (the Pump) and Pyxis (the Mariner’s Compass). All of the other constellations visible in the west were mentioned above. Stretching across the south, from east to west is Hydra (the Water Snake or Sea Serpent), our *Featured Constellation*. On the back of Hydra are Corvus (the Crow), Crater (the Cup), and Sextans (the Astronomical Sextant), last month’s *Featured Constellations*. East of south and above Corvus is Virgo (the Maiden). Low in the south/southeast is Centaurus (the Centaur). This constellation may not be visible to those of you in the North. Just rising in the southeast is Lupus (the Wolf). East of Lupus and just starting to rise is Scorpius (the Scorpion). Above Lupus and Scorpius is Libra (the Scales).

Looking South, by mid-May Scorpius begins to move along the southern sky in late evening. In the western sky, you will still see some of the Winter Hexagon constellations setting over the next few weeks. Some of you might remember the tradition about the end of storytelling season (I have not talked about this in several years). Animals come out of hibernation, ice cracks on the streams, birds begin to return, and we begin to see the Rabbit Tracks or Three Ducks Swimming, in other words, the tail of Scorpius.

***Early Morning Sky Viewing:***

**All times in this paragraph are for Tucson (Standard Time), so, since the rest of the country is now on Daylight Saving Time, we are now in the same zone as California. Any other differences will be related only to your latitude and location in your time zone.** In Tucson, on May 15, in the morning, Astronomical Twilight is at 3:51 a.m. (37 minutes earlier than on April 15), Nautical Twilight is at 4:26 a.m. (33 minutes earlier), Civil Twilight is at 4:58 a.m. (31 minutes earlier), and sunrise is at 5:25 a.m. (28 minutes earlier). You start losing your fainter stars by around Nautical Twilight and lose all but the very brightest stars and planets before Civil Twilight. Times will also vary depending on where you are in your time zone and your latitude. Times will also vary depending on where you are in your time zone and your latitude. **Times will also vary depending on where you are in your time zone and your latitude. In New York, sunrise is at 5:38 a.m. on May 15 (39 minutes earlier than on April 15).**



**May 15, 2026, looking North at 5:00 a.m. DST (an hour earlier in Arizona and Hawaii). The + marks the Zenith (overhead). This is at Nautical Twilight, so the sky is still fairly dark.**

Looking North at 5:00 a.m. DST in mid-May, the constellations that are just rising in the evening are the ones that are setting in the west and northwest before dawn. The constellations that are in the east before dawn were evening constellations one or two months ago (if they are not circumpolar). We have “lost” (have already set at this time) a number of morning constellations as the season progresses. These eventually become evening constellations! Ursa Major (the Great Bear) is low in the northwest and is partially below the northern horizon for those of us in the southern part of the US. He is now almost on his feet. Setting in the west are Virgo (the Maiden) and Coma Berenices (Berenice's Hair). A little higher in the northwest/west are Canes Venatici (the Hunting Dogs) and Boötes (the Herdsman). Canes Venatici are his hunting dogs. Above Canes Venatici and Boötes are Corona Borealis (the Northern Crown), Hercules (the Hero), and some of Serpens Caput (the Serpent's Head). Just west and above Polaris (the North Star) are Draco (the Dragon) and Ursa Minor (the Little Bear). Above Draco and due north is Lyra (the Lyre). Due north but below Polaris is Camelopardalis (the Giraffe), on its feet. East (right) of Draco are Cepheus (the King) and Cygnus (the Swan). Lyre and Cygnus are two of the three constellations that make up the Summer Triangle. Above Cygnus are Vulpecula (the Little Fox) and Sagitta (the Arrow). East of Camelopardalis and Cepheus and high in the northeast is Cassiopeia (the Queen). Above Cassiopeia is Lacerta (the Lizard). To the east of Cassiopeia and Lacerta, lower in the east, are Andromeda (the daughter of Cassiopea and Perseus) and Pegasus (the Winged Horse). Just rising in the northeast are Perseus (the Hero) and Triangulum (the Triangle). In the east Pisces (the Fishes) is rising along with Neptune. Mars is in Pisces but has not yet risen. Saturn is above the horizon, but very little of the Cetus (the Whale or Sea Monster) is above the horizon.



**May 15, 2026 looking South at 5:00 a.m. DST. The + marks the Zenith (overhead).**

Looking South in mid-May at 5:00 a.m., for the constellations that are not mentioned looking North, there are constellations that are low in the south and low on the horizon, so they may not be visible for those in the northern US. Setting low in the southwest is Lupus (the Wolf). Setting in the west is Virgo (the Maiden). Between them and just starting to set is Libra (the Scales). Left of Libra and low in the south/southwest is Scorpius (the Scorpion). Above Scorpius is Ophiuchus (the Serpent-Bearer). On either side of Ophiuchus are Serpens Caput (the Serpent's Head, mentioned above) and Serpens Cauda (the Serpent's Tail). Due south and going higher in the sky are Telescopium (the Telescope) and Ara (the Alter, almost set), Corona Australis (the Southern Crown), Sagittarius (the Archer), and Scutum (the Shield). Low in the southeast are Microscopium (the Microscope) and Piscis Austrinus (the Southern Fish). Above these constellations is Capricornus (the Horned Goat). Just east of due south is Aquila (the Eagle). We now have the stars of the Summer Triangle Altair in Aquila, Deneb in Cygnus, and Vega in Lyra. To the left (east) of Aquila are Delphinus (the Dolphin) and Equuleus (the Little Horse). Lower in the southeast is Aquarius (the Water Bearer). Just rising in the south/southeast (left of Telescopium) are Indus (the Indian) Grus, (the Crane [bird]), and Sculptor (the Sculptor).

### ***Where are the Planets?***

The morning planets are moving farther from the Sun (except Mercury) and so are more visible in the morning.

**Mercury** is at superior conjunction (far side of the Sun) on May 14. It is moving from a morning object to an evening object. By May 25, Mercury is 6 degrees above the western horizon 30 minutes after sunset. It will get higher in the sky over the next week. By the end of the month, Mercury will be setting 1.5 hours after sunset. Even though it will be getting closer to us, it fades from magnitude -1.1 to magnitude -0.6 over this period. This is because we are seeing less and less of the illuminated side.

**Venus** continues to move higher in the evening sky. Venus starts out in Taurus at magnitude -3.9 on May 1. Venus moves into Gemini around May 18-19, about the same time the Moon is passing it. By the end of the month, Venus is still in Gemini and still at magnitude -3.9. At the end of May, Venus, Mercury, and Jupiter are all in Gemini and getting closer together.

By the middle of May, **Mars** will finally be rising long enough before the Sun to be easily visible in the morning twilight. Around this time Mars will be moving from Pisces into Aries. Mars will be at magnitude 1.3. On May 14-15, the crescent Moon will pass by Mars.

**Jupiter** is in Gemini all month and is visible all night, setting after midnight. Jupiter starts out the month at magnitude -2.0 and ends the month at magnitude -1.9. Jupiter is getting lower in the evening sky and by the end of the month is setting before 11:30 p.m. DST, 10:30 in Arizona and Hawaii. The waxing crescent Moon passes close to Jupiter on May 19/20.

**Saturn** becomes more easily visible in the morning sky and is at magnitude 0.9 all month. It is in Cetus all month, moving into Pisces the first day of June. The waning crescent Moon passes Saturn on May 13/14.

**Uranus** is very low in west after sunset and is in conjunction with the Sun on May 22, so will not be visible this month.

**Neptune** is in Pisces all month at magnitude 7.9. The waning crescent Moon passes Neptune on May 13.

## Connecting with the (Human) Orrery

A note from Larry: In 2009, I got the idea of the Human Orrery (and Tabletop Orrery) from an article about a Human Orrery at the Armagh Observatory (<https://armagh.space/planetarium/attractions/human-orrery>). Theirs is more elaborate and a little more accurate (uses elliptical orbits) than the portable and tabletop one we developed in collaboration with the Girl Scouts of Southern Arizona. This month, I am trying an experiment. I am using the orbital positions from one of the sites I use for looking at the orbits of Near-Earth Asteroids, the JPL Small-Body Database Lookup. Using this gives me the opportunity to show the positions at the beginning, middle, and end of the month and the Orrery has more accurate positions for the planets (I can even show the orbits of individual asteroids and comets).

Using the Orrery, it is easy to model the positions of the planets relative to each other and to the Sun. The scale for the Inner Solar System is now about 1.65 cm = 1 AU (was 1.5 cm). The first image is for the entire Solar System, including Pluto, on May 15, 2026. The next three images are for the Inner Solar System on April 30, May 15, and May 31, 2026.

Using the Orrery dated May 15, the third image below, if you are on the Earth, as you (the Earth) rotate in a counterclockwise direction (to your left), just after the Sun sets (over your right shoulder as you stand on the Earth), you will first come to **Mercury**. It is just one day after superior conjunction, so it is not visible from Earth. If you go to the May 31 Orrery image, you will see that Mercury becomes an evening object later in the month. The next planet you come to is **Venus**. It is higher in the sky than last month, and it is setting about 2.5 hours after sunset (in Tucson). If you look farther to your left, you can see **Jupiter** higher in the southwest. At midnight, with the Sun is at your back, Jupiter is no longer visible over your right shoulder—it has set. Continuing to rotate to your left, just before sunrise, **Saturn and Mars** will be rising. It may be hard to tell from the three Orrery images, but Mars does not get farther from the Sun as fast as Saturn does.

