NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JANUARY 2025

JANUARY CLUB MEETING

Tom Kaye will speak at the January 10th club meeting. The title of his talk is "Beyond Reflection: Exploring the Why and How of Optical Coatings".

Ever wondered how much those invisible coatings truly impact your telescope's performance? Tom Kaye's 1.1-meter telescope project was a battle for every photon. Hear his epic struggle to bring his massive telescope to life and then up to full speed. From the search for someone to coat a 1000-pound mirror, to the bus size vacuum chamber in Tucson, to the hand silvering in a barn, learn how the right optical coatings can make or break your astronomical ambitions. Don't miss this chance to learn from his triumphs (and near-disasters!) and discover the secrets of maximizing your own telescope's potential.

Tom Kaye is a non-professional astronomer who has spent the last 9 years as part of a research team studying debris disks around white dwarfs. The team has published numerous papers on this subject in journals including Nature. Prior to that, he implemented an exoplanet transit search project and is known as the first amateur astronomer to measure an exoplanet's radial velocity and calculate its orbital parameters.

Join the speaker for dinner prior to the meeting at 5pm at the Olive Garden in Sierra Vista.

The meeting is in room A102 in the Cochise College Downtown Campus, 2600 E Wilcox Drive, Sierra Vista.

Be sure to read the bonus article from NASA's Night Sky Network (NSN) titled "*Celebrating 20 Years: Night Sky Network*" at the end of the newsletter.

HAC DUES REMINDER

Thank you to everyone who has paid their 2025 dues. There are still several memberships that expired in December. If you're unclear about your due's status, please contact the treasurer, Ted Forte at tedforte511@gmail.com Dues are $35 Family and $25 Regular ($25 and $20 for active-duty military). Full time students pay $10. Here are the options to pay your dues:

1. You can pay your dues in person by cash or check made out to Huachuca Astronomy Club. See the treasurer, Ted Forte, at a meeting or event.
2. You can mail your dues check to the Huachuca Astronomy Club PO Box 922, Sierra Vista AZ 85636
3. You can pay online by visiting www.hacastronomy .org and pulling down the membership menu. You'll be directed to Pay Pal where you can use your Pay Pal account OR your credit card.
4. If you have a Pay Pal account, you can use PayPal Direct to send your payment to paypal@hacastronomy.org
5. If you have a Zelle account with your bank, you can make a dues payment by transferring funds to twforte@powerc.net

HAC 2025 SCHEDULE

HAC monthly meetings are scheduled each month on the Friday nearest the full moon. Meeting dates for 2025 are January 10, February 7, March 14, April 11, May 9, June 13, July 11, August 8, September 5, October 3, November 7, and December 5. The December meeting is usually superseded by a holiday party. Currently all meetings are held in room A102 in the Cochise College Downtown Campus, 2600 E Wilcox Drive, Sierra Vista. This location can change on short notice if it becomes necessary to bump us from the room for some student activity or class.

Patterson Public Nights are scheduled each month on the Thursday closest to first quarter moon and begin a half hour after sunset. Public Night is not held in July or August. Public Night dates for 2025 are January 2, February 6, March 6, April 3, May 1, June 5, September 25, October 30, November

13 and December 11. Public Night is weather dependent and will be canceled in the event of inclement weather. Guests are required to register at www.usfaz.org/patterson-observatory. HAC members do not need to register.

Solar Saturday events at the Sierra Vista library are scheduled for the second Saturday of each month (excluding July and August) and run from 10am until noon.

Mark your calendar for a special Astronomy Day celebration at Thompkins Park on Saturday, May 3rd from 3:00 PM until 8:00 PM. Set up is at 2:00 PM. Watch the HACAstro list for details closer to the event.

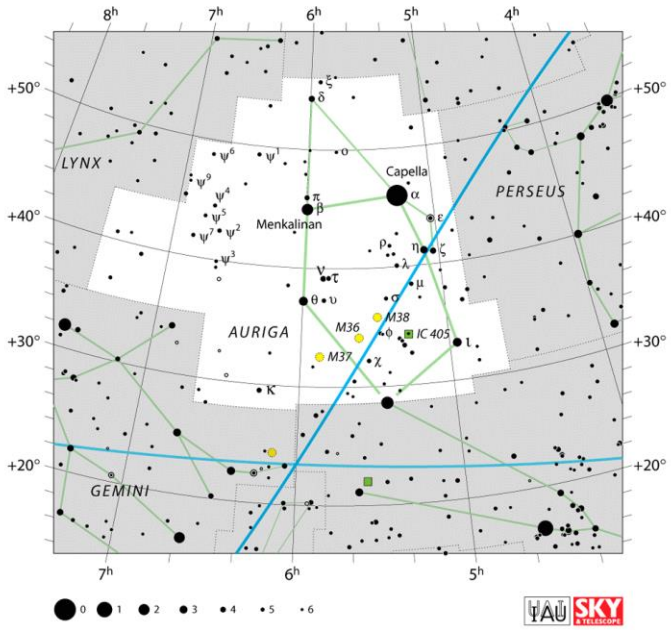
We will have two Kartchner Star Parties in 2025: April 19 and October 18.

Numerous outreach events are scheduled throughout the year. They will be advertised on the HACAstro group and will appear on the club calendar. The calendar is accessed here: https://hacastro.groups.io/g/main/calendar and is mirrored on the HAC home page: www.hacastronomy.org

President's Constellation Exploration – Auriga

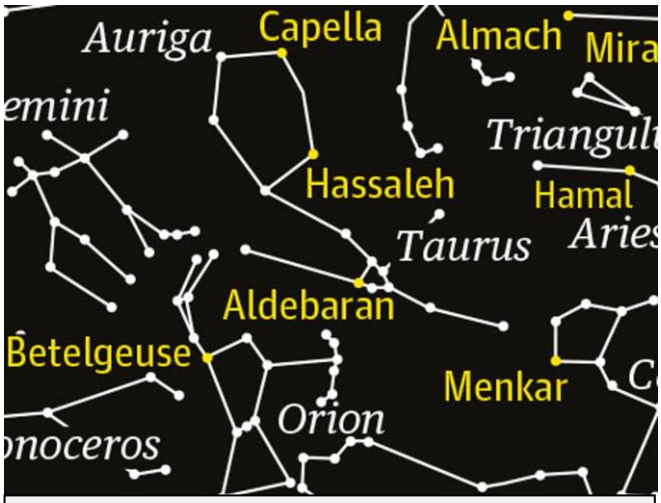
by Penny Brondum

Over the last several years I have explored the well-known constellations in this Night Sky Exploration space. In 2025, I am going to get to some constellations that get overlooked.



Auriga is a lesser-known constellation neighboring Gemini and Taurus that is visible in the northern hemisphere during the winter months. Auriga means "the charioteer" in Latin. The constellation got this name because its major stars form a pentagon, a shape like that of the pointed helmet of a charioteer. The mythological character Auriga is based on is often depicted holding a female goat and her kids, along with the reins of a chariot. Auriga was first catalogued by the Greek astronomer Ptolemy in his Almagest in the 2nd century CE.

Auriga is the 21st biggest constellation in the night sky, occupying 657 square degrees. It is located in the first quadrant of the northern hemisphere (NQ1) and can be seen



Shutterstock – Constellation Outline

at latitudes between +90° and -40°. Auriga belongs to the Perseus family of constellations, together with Andromeda, Cassiopeia, Cepheus, Cetus, Lacerta, Pegasus, Perseus, and Triangulum.

The constellation contains 10 named stars, eight of which are known to have planets. The brightest star in the constellation is Capella, Alpha Aurigae, which is also the sixth brightest star in the sky. The Auriga Constellation is also the site of the galactic anti-center, the point in the sky opposite to the center of the Milky Way Galaxy, which is located in the constellation Sagittarius, near the border with Scorpius. The nearest bright star to the galactic anti-center is Elnath, Beta Tauri.

The name Auriga simply means "charioteer" in Latin and there isn't full agreement on precisely which Greek or Roman myth the starry pattern is representing. The most popular interpretation is that the chariot driver is Erichthonius, a legendary Athenian king and son of Hephaestus, the god of fire and metalworking, according to Ian Ridpath's Star Tales, which chronicles the stories behind constellations.

Erichthonius was rejected by his father but raised by the goddess Athena, patron deity of Athens, who taught him how to tame horses. He then became the first person to tame and harness four horses to a chariot, imitating the chariot of the Sun god. Zeus was impressed and later placed Erichthonius among the stars. Erichthonius is usually credited for the invention of the four-horse chariot, the quadriga.

According to Space.com skywatching columnist Joe Rao, the oldest legends state that Auriga was a goatherd and a patron of shepherds. The constellation is especially prominent in the winter and spring months, a time when shepherds traditionally spent nights out in the fields with their flocks.

Urania Illustration

In another myth, Auriga represents Hephaestus himself, the lame god, who built the chariot so that he could travel anywhere he wanted, whenever he wanted, without difficulty.

Auriga, the charioteer is usually depicted holding the reins of a chariot with his right hand and carrying a goat and its two young on his left arm. The star Capella, Alpha Aurigae, is associated with Amalthea, the goat who suckled Zeus. The name Capella is Roman and means “she-goat.” The star is located on the Charioteer’s left shoulder.

Capella, Alpha Aurigae, is the brightest star in Auriga and the sixth brightest star in the sky. Capella is only 42.2 light years distant. Capella is a known source of X-rays. It is the closest first magnitude star to the north celestial pole. The Capella system belongs to the Hyades moving group, a large group of stars that share a similar trajectory with the Hyades cluster, an open star cluster in the constellation Taurus.

Capella is interesting in that it is actually four stars: two large binary stars, and two fainter binary dwarfs, located a cosmically close 43 light-years away. The main binary stars are both yellow and roughly the sun's temperature, though they're about 10 times larger in diameter than our central star with two faint red dwarf stars orbiting about a light year away from the binary pair.

The triangle of stars next to Capella are considered to be the goat's kids. The top point of the triangle, which is nearest to Capella, is called Epsilon Aurigae or Almaaz. It is a supergiant star with a companion that is enshrouded in a huge disk of gas and dust. Once every 27 years, the companion passes in front of Epsilon Aurigae and its brightness significantly drops. The other two stars in the triangle are called the Haedi and technically, they are Capella's only kids, but Epsilon Aurigae is so distinctive that it is often also considered an honorary kid, according to the Society for Popular Astronomy.

Auriga contains a number of interesting deep sky objects, including the open star clusters Messier 36, Messier 37, and Messier 38. They were first discovered by the Italian astronomer Giovanni Batista Hodierna in the 17th century, included by Charles Messier in his catalogue in 1764. Auriga also contains the emission/reflection nebula IC 405 (the Flaming Star Nebula).

Flaming Star Nebula
NASA APOD 24 Nov 2003

Messier 36 (M36, NGC 1960) is a bright open cluster located in the southern region of Auriga. M36 contains at least 60 stars and has an apparent magnitude of 6.3. The brightest

magnitude of 9. M36 is approximately 4,100 light years distant and about 14 light years in diameter. It resembles Messier 45 (the Pleiades) in , but is too distant to appear as conspicuous in the night sky.

Messier 37 (M37, NGC 2099) is another bright open star cluster in Auriga. The cluster is between 3,600 and 4,700 light years from Earth and contains some 500 stars, about 150 of which are brighter than magnitude 12.5. M37 contains about a dozen red giants and its estimated age is 300 million years. The hottest main sequence star in the cluster is of spectral type B9V.

Messier 38 (M38, NGC 1912) can be observed only 2.5 degrees northwest of M36. It is an open cluster, approximately 4,200 light years distant. The brightest stars in M38 form an oblique cross, or the letter Pi. The brightest member is a G0 class yellow giant with an apparent magnitude of 7.9, which at that distance translates into luminosity 900 times that of the Sun.

Flaming Star Nebula (IC 405, SH 2-229, and Caldwell 31) can be seen near the open cluster M38, the star Iota Aurigae, or the Tadpole Nebula emission nebula IC 410. The Flaming Star Nebula lies 1,500 light years from Earth and has an apparent magnitude of 6.0. The Tadpole Nebula (IC 410) slightly resembles the Rosette Nebula, in the constellation Monoceros. The nebula surrounds the open cluster NGC 1893. It is approximately 2,200 light years distant and has an apparent magnitude of 13.

There are two meteor showers associated with Auriga: The Alpha Aurigids (late August) and the Delta Aurigids (Mid-October).

Auriga can be found using the easily recognizable constellation Orion as a guide. At times when Auriga is high in the sky, especially around February, the two constellations will appear in the west-northwest sky a few hours after the sun sets. Immediately above Orion is Taurus, the bull, who is often depicted charging into the famous huntsman. Above that will be a pentagon shape of stars, one of which is the bright and golden star known as Capella. These stars make up the bulk of Auriga. Technically, the bottommost star in that pentagon is El-Nath and it belongs in Taurus. But in some star charts, Auriga and Taurus share the star.

I look forward to seeing images of Auriga from our astro-photographers and comments from members as they explore this little-known Constellation.

The Bucket List

by Vince Sempronio

This month we highlight a few interesting occultation events. The first involves a well-known star cluster and the Moon, the second is between a planet and the Moon, and the third is an almost naked eye star and an asteroid.

Three events in one minute

Starting around 4pm on Thursday, January 9th, the waxing gibbous moon will begin to pass through the Pleiades star cluster. It is possible that, with a large enough scope, some of the stars of the Pleiades can be seen before sunset. Their proximity to the moon will help locate them. Sunset that night in Sierra Vista occurs at 5:35pm. At 6:01pm, the dark edge of the moon will occult three stars within one minute of each other!

The first star, SAO 76216 (the single circled star on the diagram) at mag 7.0, disappears first, followed by Atlas (mag 3.6) about 20 seconds later. 30 seconds after that, Pleione (mag 5.1) disappears. All three stars have 2 or more companions, but it is unlikely that visually you will not notice any changes in the light intensity as they disappear, but recording the events can yield additional information.

Pleiades occultation on 1/9/24. Credit Stellarium

As a bonus, many dimmer stars will succumb to the "dark side" of the moon. Keep watching as each star approaches the limb and try to anticipate when you think it will vanish.

Stars that disappear will also reappear, but the bright side limb of the moon makes it very difficult to separate the star from the limb until they have some separation between them.

Look for the Moon and M45 in the east, halfway between the horizon and the zenith.

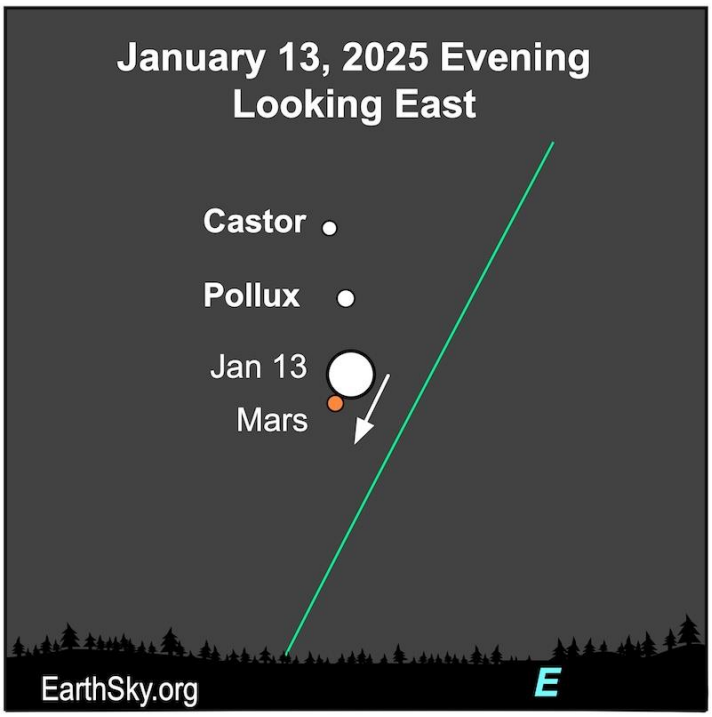
I've observed many Pleiades occultations over the decades and they still fascinate me. The motion of the moon is easily seen as it slowly drifts through the cluster. Even if you are only observing the events for enjoyment, don't miss this opportunity. For those with "go-to" capabilities, set your tracking to "Lunar" to keep the moon centered.

Occultations of double stars is a very accurate way to keep track of the positions of the components over time. Lunar occultations were very important back in the 60s, as the events were used to help model the orbit of the moon. If you want to send humans to the moon, you better make sure you know exactly where it is going to be! I will attempt to record some disappearance events. These days, lunar occultations are more aesthetic than scientific, except for double star observations and the occasional planetary moon.

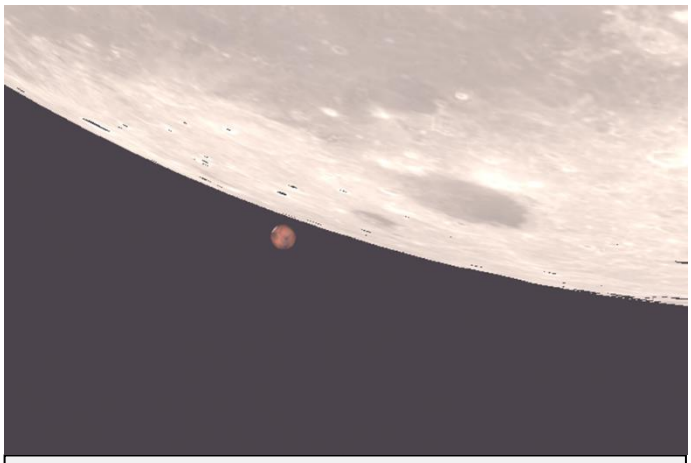
Queue the Gustav Holst music

On Monday, January 13th, around 6pm, look east and watch the Full Moon rise. Just below the Moon is the planet Mars. They will be almost touching. As the Moon gets higher in the

night sky, the pair get closer and closer together. Around 6:48pm, the Moon passes in front of Mars and an hour later, Mars will reappear on the opposite side. The brightness of the Moon might make it difficult to observe the events with the unaided eye, but through a telescope it is more enjoyable.



Look for Castor and Pollux above the pair once it is dark enough.



Moon/Mars on 1/13/24 at 6:47pm. Credit: Stellarium

The brightest and the dimmest

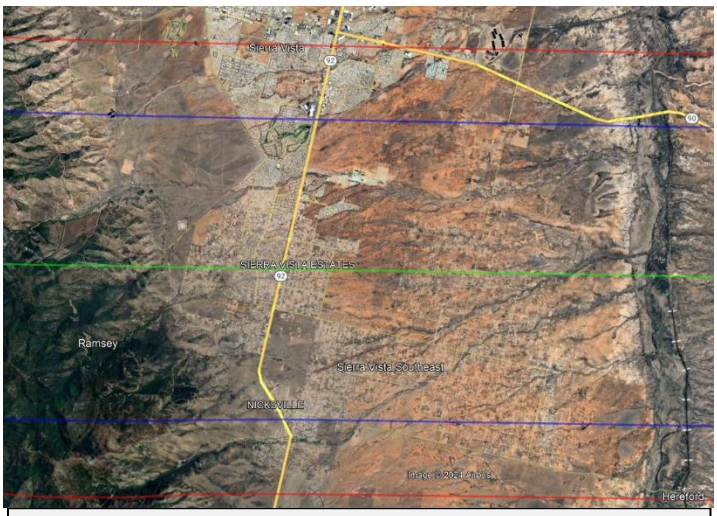
As the Earth moves around the Sun, the outer planets and stars appear to move further west each month. Saturn has been in our night sky for many months, but as it gets closer to the western horizon, the dimmest naked eye planet Saturn (not counting Uranus), and the brightest, Venus get together for a final farewell. The pair will be a couple of degrees apart in the southwest sky shortly after sunset on the 18th of the month. The pair will be a little over 2° apart.

My, that's a bright one

On the evening of Tuesday, the 28th of January at 8:19pm, the asteroid (8683) Sjolander occults the star HIP 6061. At magnitude 5.1, though not quite naked eye, this event is considered a bright occultation. The event is visible through any telescope. The asteroid will pass in front of the star for up to 0.4 seconds. The map below shows the path of observability over the Sierra Vista area. If you live between the blue lines, then the event is visible. The closer you are to the central green line, the longer the duration of the event. The star is 37° above the western horizon in the constellation Pisces. The star, also known as f-Psc, 89-Psc, HR 378, HD 7804, and TYC 23-1341. HIP 6061 is 245 Lys away. It is a hot A-type star around 44 times more luminous than our Sun.

The asteroid Sjolander is an Outer Main-Belt asteroid is almost 9km in diameter, roughly the size of San Francisco Bay. Even though 9km doesn't seem that big, it puts the asteroid into the 1% club, meaning it is larger than 99% of all the known asteroids. Sjolander orbits the Sun every 2,090 days and never comes closer than 1.73 AU from Earth. It has never been previously observed in an occultation. At the time of the occultation, it will appear as magnitude 19.8, totally invisible. It was discovered on March 2nd, 1992, at the European Southern Observatory as part of the Uppsala-ESO Survey of Asteroids and Comets. It is named after Nils Göran Sjölander (b. 1951), who was a librarian at Uppsala Observatory and studied dwarf galaxies.

To find the star (remember the asteroid is too dim to see), point your scope at (RA) 01h 17m 47s and (Dec) +03° 36' 47". Coordinates are epoch (J2000). It might be difficult to star hop to this star as there aren't any nearby bright stars.



Path of (8683) Sjolander over Sierra Vista.
Credit: Google Earth

Richard Lighthill and I will record this event. Richard will use an 8" SCT at his home observatory which is very close to the centerline. Unfortunately, my home location is slightly north of the northern blue line, so I will travel to a site further south so that I'm in the path. I will also use an 8" SCT.

Even if you aren't observing the event for science, please attempt an observation because who can say they saw a star disappear right in front of their eyes!

For those of you who want to geek out, check out the details of the event by clicking here.

NASA Night Sky Notes

This article is distributed by [NASA Night Sky Network]

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.org] to find local clubs, events, and more!

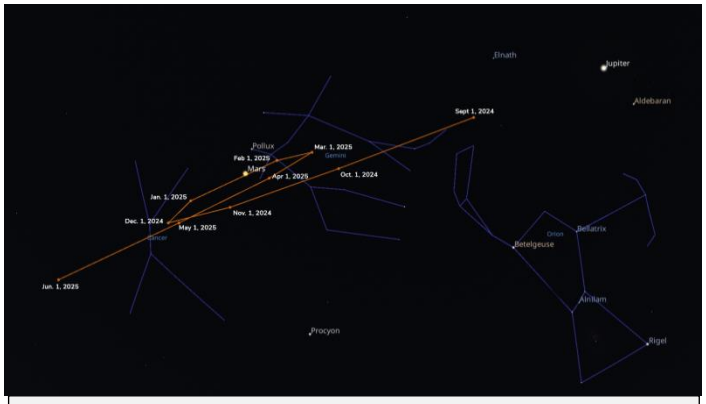
January's Night Sky Notes: The Red Planet

Kat Troche of the Astronomical Society of the Pacific

Have you looked up at the night sky this season and noticed a bright object sporting a reddish hue to the left of Orion? This is none other than the planet Mars! January will be an excellent opportunity to spot this planet and some of its details with a medium-sized telescope. Be sure to catch these three events this month.

Martian Retrograde

Mars entered retrograde (or backward movement relative to its usual direction) on December 7, 2024, and will continue throughout January into February 23, 2025. You can track the planet's progress by sketching or photographing Mars' position relative to nearby stars. Be consistent with your observations, taking them every few nights or so as the weather permits. You can use free software like Stellarium or Stellarium Web (the browser version) to help you navigate the night as Mars treks around the sky. You can find Mars above the eastern horizon after 8:00 PM local time.

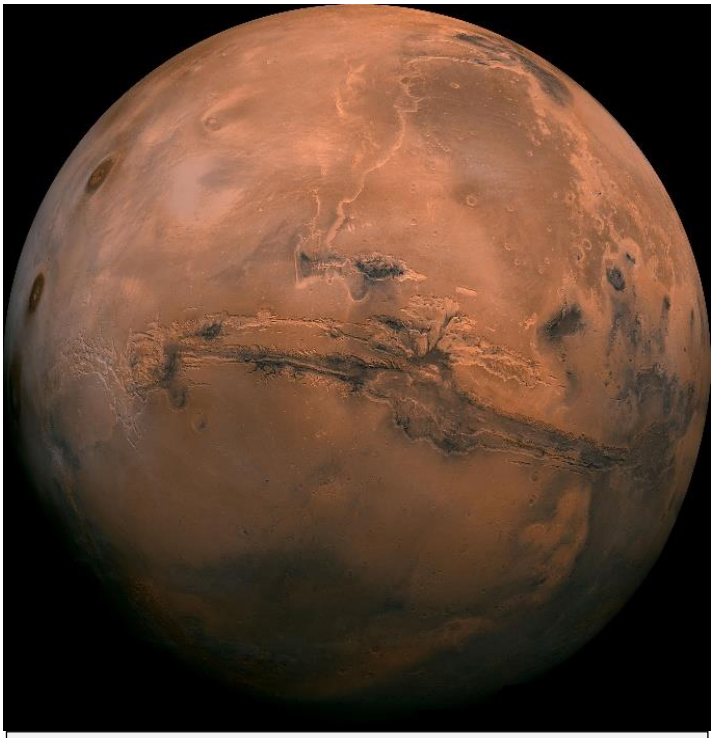


This mid-January chart shows the path of Mars from September 2024 to June 2025 as it enters and then exits in retrograde motion. Mars appears to change its direction of motion in the sky because Earth is passing the slower-moving Mars in its orbit. Credit: Stellarium

Hide and Seek

On the night of January 13th, you can watch Mars 'disappear' behind the Moon during an occultation. An occultation is when one celestial object passes directly in front of another, hiding the background object from view. This can happen with planets and stars in our night sky, depending on the orbit of an object and where you are on Earth, similar to eclipses.

Depending on where you are within the contiguous United States, you can watch this event with the naked eye, binoculars, or a small telescope. The occultation will happen for over an hour in some parts of the US. You can use websites like Stellarium Web or the Astronomical League's 'Moon Occults Mars' chart to calculate the best time to see this event.



A mosaic of the Valles Marineris hemisphere of Mars projected into point perspective, a view similar to that which one would see from a spacecraft. The mosaic is composed of 102 Viking Orbiter images of Mars. Credit: NASA/JPL-Caltech

Closer and Closer

A simulated view of the Moon as Mars begins its occultation on January 13, 2025. Credit: Stellarium

As you observe Mars this month to track its retrograde movement, you will notice that it will increase in brightness. This is because Mars will reach opposition by the evening of January 16th. Opposition happens when a planet is directly opposite the Sun, as seen from Earth. You don't need to be in any specific city to observe this event; you only need clear skies to observe that it gets brighter. It's also when Mars is closest to Earth, so you'll see more details in a telescope.

Want a quick and easy way to illustrate what opposition is for Jupiter, Saturn, Mars, or other outer worlds? Follow the instructions on our Toolkit Hack: Illustrating Opposition with

Exploring the Solar System page using our Exploring Our Solar System activity!

Mars has fascinated humanity for centuries, with its earliest recorded observations dating back to the Bronze Age. By the 17th century, astronomers were able to identify features of the Martian surface, such as its ice caps and darker regions. Since the 1960s, exploration of the Red Planet has intensified with robotic missions from various space organizations. Currently, NASA has five active missions, including rovers and orbiters, with the future focused on

human exploration and habitation. Mars will always fill us with a sense of wonder and adventure as we reach for its soil through initiatives such as the Moon to Mars Architecture and the Mars Sample Return campaign.

NASA Night Sky Notes

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The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Celebrating 20 Years: Night Sky Network

By Vivian White and Kat Troche

NASA's Night Sky Network is one of the most successful and longstanding grassroots initiatives for public engagement in astronomy education. Started in 2004 with the PlanetQuest program out of the Jet Propulsion Laboratory and currently supported by NASA's Science Activation, the Night Sky Network (NSN) is critical in fostering science literacy through astronomy.

International Observe the Moon Night, September 2024. Credit: Oklahoma City Astronomy Club/Dave Huntz

By connecting NASA *science* and missions to support amateur astronomy clubs, NSN leverages the expertise and enthusiasm of club members, who bring this knowledge to schools, museums, observatories, and other organizations, bridging the gap between NASA science and the public. Now in its 20th year, NSN supports over 400 astronomy clubs dedicated to bringing the wonder of the night sky to their communities across the U.S. and connecting with 7.4 million people across the United States and its territories since its inception.

Humble Beginnings

It all started with an idea – astronomy clubs already do significant outreach, and club members know a lot about astronomy (shown definitively by founder Marni Berendsen's research), and they love to talk with the public. How could NASA support these astronomy clubs in sharing current research and ideas through informal activities designed for use in the places where amateur astronomers conduct outreach? Thanks to funding through NASA JPL's PlanetQuest public engagement program, the Night Sky Network was born in 2004, with more than 100 clubs joining in the first year.

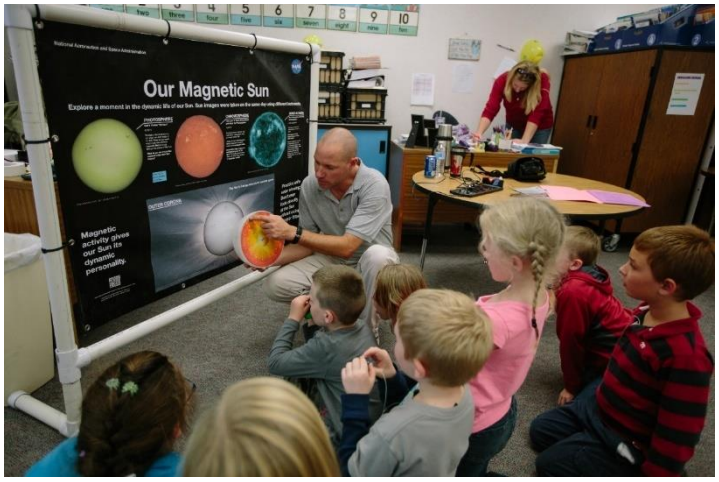
Raynham Public Observing Night, February 2004. Credit: Astronomical Society of Southern New England/Mark Gibson

As quoted from the first NSN news article, "NASA is very excited to be working closely with the amateur astronomy community," said Michael Greene, current Director of Communications and Education and former head of public engagement for JPL's Navigator Program and PlanetQuest initiatives. "Amateurs want more people to look at the sky and understand astronomy, and so do we. Connecting what we do with our missions to the sense of wonder that comes when you look up at the stars and the planets is one of our long-term objectives. We have a strong commitment to inspiring the next generation of explorers. Lending support to the energy that the amateur astronomy community brings to students and the public will allow NASA to reach many more people."

Taking off like a rocket, Night Sky Network had over 100 clubs registered on their website within the first year.

The Toolkits

Outreach Toolkits were developed to assist clubs with their endeavors. These kits include educational materials, hands-on activities, and guides for explaining topics in an accessible way. So far, 13 toolkits have been created on topics ranging from the scale of the universe to how telescopes work. To qualify for these free Toolkits, clubs must be active in their communities, hosting two outreach events every three months or five outreach events within a calendar year. Supplemental toolkits were also created based on special events like the solar eclipses and the 50th anniversary of Apollo's Moon landing. A new toolkit is being developed to teach audiences about solar science, and NSN is on track to support clubs well into the future.



Rye Science Day, October 2014. Credit: Southern Colorado Astronomical Society/Malissa Pacheco

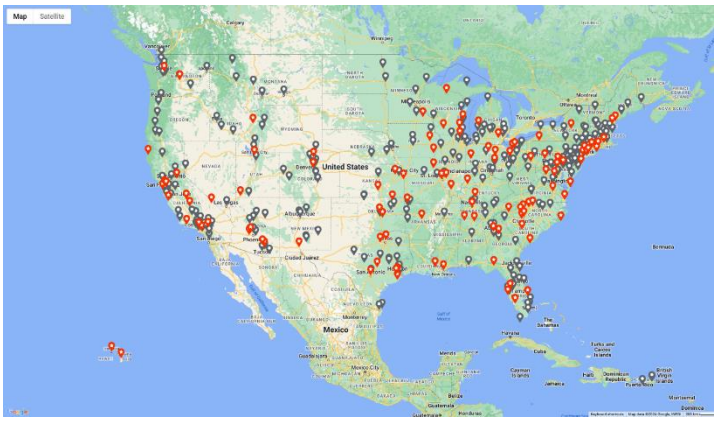
NSN also hosts archived video trainings on these toolkits and other topics via its YouTube channel and a monthly webinar series with scientists from various institutions worldwide. Lastly, a monthly segment called *Night Sky Notes* is produced for clubs to share with their audiences via newsletters and mailing lists.

Sharing the Universe

In 2007, a National Science Foundation grant funded further research into astronomy club needs. From that came three club resources: the Growing Your Astronomy Club and Getting Started with Outreach video series, an updated website with a national calendar, and club and event coordination. Now, you can find hundreds of monthly events nationwide, including virtual events you can join from anywhere.

Night Sky Network: Current and Future

As of November 2024, NSN has over 400 clubs as far north as Washington State, west as Hawaii, and south as far as Puerto Rico. Astronomy clubs worldwide share the wonder of the day and night sky with their communities, and the Night Sky Network is happy to support US clubs with public engagement tools. Through their outreach efforts, member clubs have reached more than 7 million people to date, and the community is still going strong. Find an upcoming star party near you on our new public website.



Map of Night Sky Network clubs within the United States as of November 2024

For Sale

Deb Browy is selling a 22" Dobsonian that once belonged to HAC member Bob Kepple. It had a new mirror installed (not sure when or why). Deb is open to all offers. She can be contacted at dbrowy @ yaoo.com, or by phone at 928 – 920 – 3815.

Trivia Question of the Month

On January 3rd, 1888, a refracting telescope, measuring 91cm in diameter, is used for the first time. It was the largest telescope in the world at the time. At what famous observatory was it located? (answer at end of newsletter)

Club Officers and Contacts

President: *Penny Brondum* ***Vice President:*** *Mark Orvek*
Secretary: *Del Gordon* ***Treasurer:*** *Ted Forte*
Past President: *David Roemer*

Board Members-at-Large
Vince Sempronio Mike Morrison Gary Grue Richard Lighthill

Nightfall Editor: *Vince Sempronio* *nightfall@hacastronomy.org*
Webmaster: *Ken Kirchner*
Facebook Editor: *Richard Lighthill*

Website: *http://www.hacastronomy.org*
Facebook: *http://www.facebook.com/HuachucaAstronomyClub*
Email: *info@hacastronomy.org*

Club Meetings: Monthly at 7pm at the Cochise College Downtown Center at 2600 E Wilcox Drive, Sierra Vista, AZ in Room A102. Refer to the calendar for specific dates.

Astro Images
by HAC Members & Friends

I bought one of my son's a SeeStar for Christmas 2023. He was visiting us this Christmas and took an image of the California Nebula with his SeeStar. The image is 10 second stacked subframes for a total exposure time of 20 minutes. I used PixInsight to process the image, attached is the result. I am impressed with the imaging capabilities of this small (relatively inexpensive) telescope.

"In my studies of astronomy and philosophy I hold this opinion about the universe, that the Sun remains fixed in the center of the circle of heavenly bodies, without changing its place; and the Earth, turning upon itself, moves round the Sun." - Galileo Galilei

This is a composite image of NGC 925 in the constellation of Triangulum, the Triangle. It is a barred spiral classified as an SB(s)d galaxy. It is inclined to our line of sight by 55° and is a member of the NGC 1023 group. According to NED/IPAC/Simbad/CDS portal it has a redshift of 0.001846 and an angular size of 10.47 x 5.75 arcmin. The light travel time is about 15 million years, and it has a diameter of 85-90 thousand light years making it somewhat smaller than our Milky Way. As you can see the central bar is blue-white rather than yellow and some "pinkish" H2 regions can be found in both spiral arms. The galaxy was imaged last month, and 63 x 12-minute images were stacked totaling about 12.5 hours of exposures with the ZWO ASI533MC-Pro camera thru a ZWO dual band filter. All processing was done with Pixinsight using wbpp to start then stretching followed by non-linear processing including luminance stretching, luminance HDR transformation, luminance sharpening, local histogram equalization, and dark structure enhancement. This NGC galaxy does not seem to be imaged very often but I found it fun to do.

This Month in Astronomy History

Announced – 1st - 1925 - Edwin Hubble announces the discovery of galaxies outside the Milky Way

Discovered – 1st – 1601 - The dwarf planet Ceres is discovered by Giuseppe Piazzi

Born - 8th – Steven Hawking (1942 – 2018)

Died - 8th – 1642 - Galileo Galilei (b. 1564)

Born - 10th - Robert Woodrow Wilson (1936)

Born - 19th - Johann Elert Bode (1747 – 1826)

Discovery – 30th – 1996 - Comet Hyakutake is discovered by Japanese amateur astronomer Yuji Hyakutake

HAC Calendar of Events (January - February '25)

SU	MO	TU	WE	TH	FR	SA
Dec 29	**30** **3:27 PM**	**31**	**JAN 1,2025** New Year's Day	**2** Public Nigh at Patterson 6 PM	**3** Quadrantid Meteors	**4** Saturn/Moon Evening 0.7º Quadrantid Meteors
5 Neptune/Moon 1.1º	**6** **4:56 PM**	**7**	**8**	**9** Uranus/Moon 4º	**10** HAC Meeting 7 PM Room A102	11 Solar Saturday S.V. Library 10 AM
12	**13** **3:27 PM** Mars/Moon Evening Occultation	**14**	**15** Mars at opposition	**16**	**17**	**18** Venus/Saturn Evening 2º
19	**20**	**21** **1:31 PM**	**22**	**23**	**24** Antares/Moon 3º	**25**
26 Group from Surprise AZ at Patterson 6:30 PM	**27**	**28**	**29** **5:36 AM**	**30**	**31** Army Unit Family Group at Patterson 6:30 PM	**FEB 1**
2	**3** Venus/Neptune 4º	**4**	**5** **1:02 AM** Uranus/Moon 5 º	**6** Public Night at Patterson 6:30 PM Jupiter/Moon 5º	**7** HAC Meeting 7 PM Room A102	**8** Solar Saturday S.V. Library 10 AM
9 Mars/Moon 0.8º	**10**	**11**	**12** **6:53 AM**	**13**	**14** Valentine's Day	**15**
16	**17** Spica/Moon 0.3º President's Day	**18**	**19**	**20** **10:33 AM**	**21** Antares/Moon 0.4º	

All dates and times are local MST
Join the HAC Astro forum to keep up to date with all the Huachuca Astronomy Club events
Send an email to: HACAstro+subscribe@groups.io

From the Editor: Embedded links are provided to give the reader a place to delve deeper into a topic or phrase. To save research time, Wikipedia (love it or hate it) is the source for most additional information. If you wish to opine, use the email address found above in the Club Officers and Contacts Information section.

Answer to trivia question: Lick Observatory. The James Lick refractor was superseded in size by the 40" refractor at the Yerkes Observatory in 1987. An even larger refractor, the Great Paris Exhibition Telescope of 1900 was built but never used as a telescope.