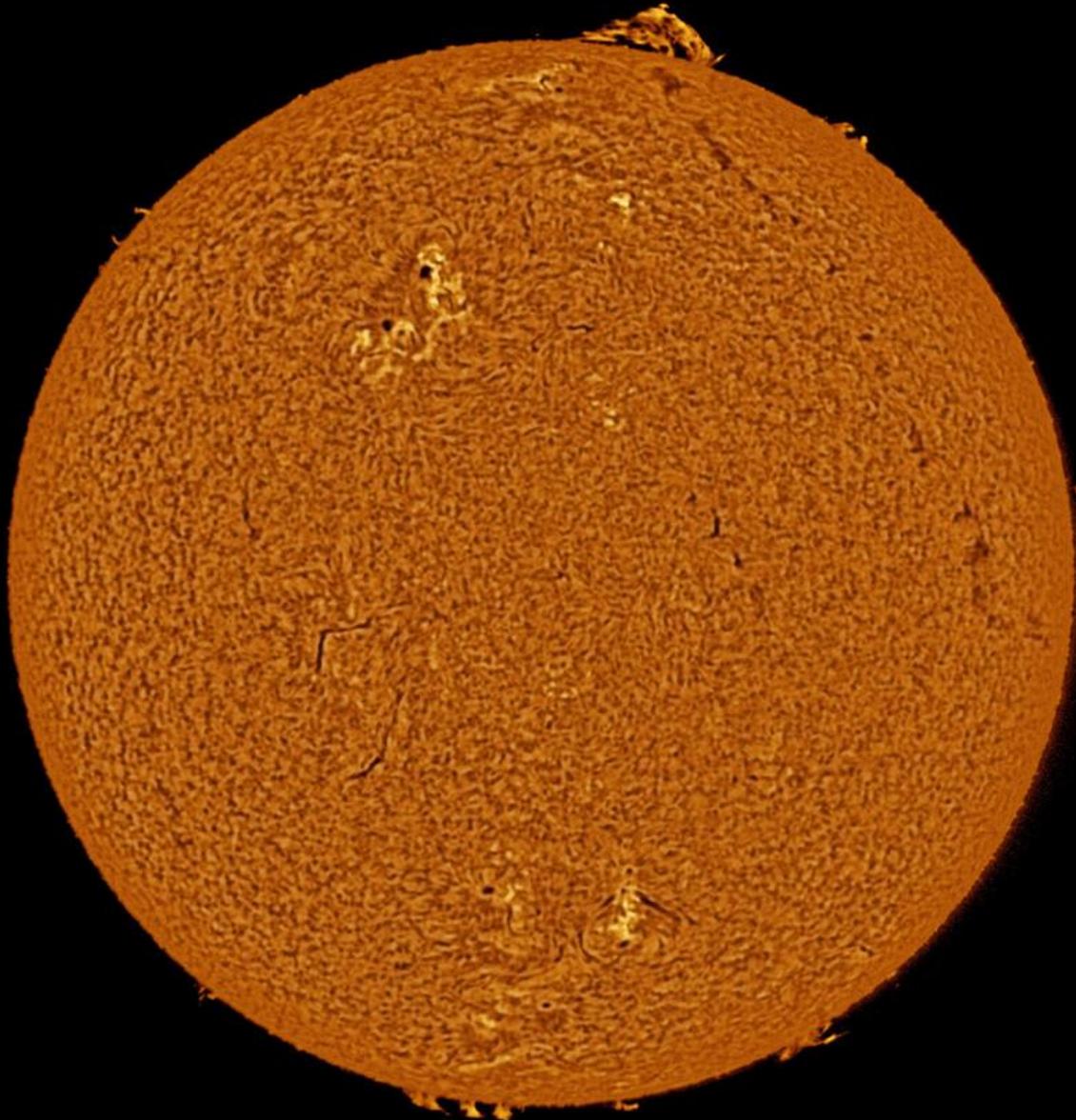




NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

SEPTEMBER, 2025



CLUB MEETING SPEAKER



The speaker at our September club meeting on the 5th of September is Dr. Sukrit Ranjan.

His topic is titled "Life as a planetary phenomenon."

Abstract: Telescopic facilities capable of searching for signs of life on exoplanets orbiting other stars are coming online just as experiments simulating the

emergence of life on Earth are making revolutionary discoveries. I will discuss recent progress towards both goals, with emphasis on new opportunities unveiled by the James Webb Space Telescope and the future planned Habitable Worlds Observatory.

Bio: I am a theorist and modeler focused on questions related to the origin of life on Earth and the search for life on other worlds. These questions are coupled: efforts to understand the origin of life on Earth helps guide our search for it elsewhere in the cosmos, while observations of other planets help us test our theories of the prebiotic environment and of abiogenesis. To understand abiogenesis, I work to constraining the palette of environmental conditions from which life arose on Earth, to constrain and guide experimental studies of the origin of life. To search for life elsewhere, I work to determine observational tests by which life on other worlds may be remotely discriminated. In collaboration with my experimental colleagues, I work to obtain the critical measurements of fundamental physico-chemical parameters required to build robust models in support of both goals.

I completed my PhD in Astronomy & Astrophysics at Harvard University, followed by a SCOL postdoctoral fellowship at MIT EAPS and a CIERA postdoctoral fellowship at Northwestern. I completed my undergraduate work at MIT, where I majored in physics and minored in astronomy and history.

The Speaker's dinner will be at the Olive Garden in Sierra Vista a 5pm.

WELCOME OUR NEW MEMBERS

We don't have any new members this month, but remember that all club members are ambassadors. The club has business cards that we hand out to perspective new members. They are available at the club meeting.

SEPTEMBER OUTREACH

With monsoon subsiding, we will resume our usual outreach schedule with Solar Saturday on September 13 at 10 a.m. at the Sierra Vista Library. The Patterson Public Night will be Thursday, September 25, at 6:30 pm.

DINE UNDER THE STARS

This year's Dine Under the Stars, the University South Foundation's annual scholarship fundraising gala, will be held on Saturday September 27. Adult tickets are \$85. 100% of the proceeds from Dine Under the Stars goes toward providing scholarships to Cochise County residents pursuing higher education.

The University South Foundation is the owner of the Patterson Observatory. The Huachuca Astronomy Club has a long-standing symbiotic relationship with the foundation; three HAC members serve on its board of directors.

Dine Under the Stars will feature a plated three course dinner from Pizzeria Mimosa, live music by Bi-Polar Weather, both a live and a silent auction and star gazing at the Patterson Observatory. The event will be emceed by Sheriff Mark Danells and radio personality Jeff Davenport.

HAC members are requested to support the event by volunteering at the observatory, buying a ticket and attending the event or both. By participating, you support the club, the observatory, the foundation and our Cochise County community.

You can purchase tickets by visiting the University South Foundation's website: www.usfaz.org pulling down the event's menu and selecting "Dine Under the Stars". Your ticket entitles you to dinner, two bar drinks (wine or beer) and your opportunity to participate in the auctions. HAC members are entitled to a \$10 discount on tickets. Contact Penny Brondum for the code to use to claim your discount.

2026 HAC SCHEDULE

The HAC board of directors has approved the following meeting dates for 2026.

January 2, February 6, March 6, April 3, May 1, June 5, July 10, August 28, September 25, October 23 and November 20. We will forgo a December meeting and schedule a holiday party at a yet to be determined date.

ACCESS TO THE PATTERSON OBSERVATORY (AN UPDATE FROM THE UNIVERSITY SOUTH FOUNDATION)

The following letter was received from Callie Groth, the president of the University South Foundation. It is included in its entirety.

Dear Friends and Supporters,

You may have seen the article featured in Wednesday's edition of The Herald regarding the status of the fire access road to the Patterson Observatory & Discovery Gardens located at the UA Sierra Vista Campus. We would like to address this matter directly and share with you the steps the University South Foundation has taken to ensure a clear path forward.

The campus is home to facilities owned by both the University South Foundation and the University of Arizona (through the Arizona Board of Regents). The Foundation owns Groth Hall, the Patterson Observatory, the Discovery Gardens, and a modular building previously leased by UA Cooperative Extension. The University of Arizona owns the Judy A. Gignac Education Center, Building ATB-A, and Building ATB-C.

For many years, the Foundation maintained a long-standing agreement with Cochise College that allowed access to the back portion of the property. Unfortunately, that agreement is no longer in place. Since then, we have worked diligently with our property neighbors to identify alternatives, but despite every effort to find collaborative solutions, none of the options have worked out.

Because of the split ownership of the campus, we have also faced increased challenges in developing the access road. The UA-owned buildings are subject to different height and code requirements than Foundation-owned structures, adding further complexity to an already difficult process.

To move forward responsibly, the Foundation contracted a civil engineering firm to develop three possible access routes. Each option carried a cost ranging from \$350,000 to \$560,000. As a nonprofit organization with a limited operating budget, we have a fiduciary responsibility to ensure every dollar we spend delivers maximum value. After exhausting all possibilities, the Foundation has made the difficult decision to move forward with an access road through the Rose Garden at the center of campus. While this will inevitably impact the beauty of the campus, it is the only viable solution that ensures dependable access for emergency services to Foundation facilities and for the many volunteers who sustain the Patterson Observatory and Discovery Gardens on a routine basis.

It is important to emphasize that the Patterson Observatory and Discovery Gardens welcome more visitors and engage more volunteers than any other program on campus. From astronomy nights to gardening workshops and school field trips, these facilities provide invaluable learning experiences for our community year-round. Ensuring that volunteers from the Huachuca Astronomy Club, Cochise County Master Gardeners, and the volunteer Board of Directors of the University South Foundation can continue to support these offerings is our highest priority.

We are deeply grateful for your continued partnership and support as we move forward with this project. Together, we can preserve the mission of the Foundation while ensuring safe access for the programs that bring the greatest benefit to our community.

Sincerely,

*Callie Groth
President*

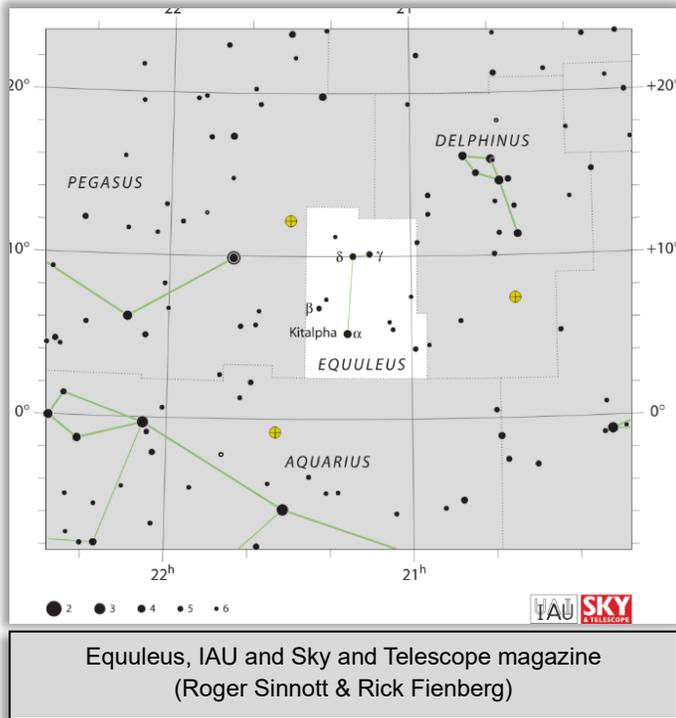
PRESIDENT'S CONSTELLATION EXPLORATION – EQUULEUS BY PENNY BRONDUM

Over the next several months I want to bring to your attention some small or "hidden" constellations. They are not "standouts" like [Pegasus](#) or [Orion](#) so can be challenging targets for visual viewers but could be excellent challenges for astrophotographers.

We will start with [Equuleus](#) a faint constellation located just north of the celestial equator. Its name is Latin for "little horse", a foal. It was one of the 48 constellations listed by the 2nd century astronomer [Ptolemy](#) and remains one of the 88 modern constellations. It is the second smallest of the modern constellations (after [Crux](#)), spanning only 72 square degrees

Equuleus is not too difficult to find but can be challenging to spot from light-polluted areas because its stars are relatively faint. The constellation lies between [Enif](#), the brightest star in the other horse constellation (Pegasus), and [Altair](#), the luminary of [Aquila](#), near the distinctive diamond-shaped pattern of [Delphinus](#). It is very faint, having no stars brighter than the fourth magnitude.

Equuleus, is best viewed in Fall during the month of September. It is sometimes also known as Equus Primus, or the First Horse, because it rises just before the constellation Pegasus. The neighboring constellations are [Aquarius](#), [Delphinus](#) and [Pegasus](#). Equuleus is an equatorial constellation, which means its bulk intersects the celestial equator or comes within 10-15 degrees of doing so.



Equuleus is visible from most places on Earth. The boundary of the Equuleus constellation contains 3 stars that host known exoplanets. Equuleus does not contain any [Messier](#) objects and no meteor showers are associated with the constellation. Equuleus belongs to the Heavenly Waters [constellation family](#), along with Carina, Columba, Delphinus, Eridanus, Piscis Austrinus, Puppis, Pyxis, and Vela.



The Equuleus constellation or foal constellation is associated with several Greek myths. Equuleus is associated with the foal Celeris (meaning "swiftness" or "speed"), who was the offspring or brother of the winged horse Pegasus. Celeris was given to Castor by Mercury.

In another myth, Equuleus is associated with Hippe, the daughter of the centaur Chiron in Greek mythology. In

Greek lore, Hippe was seduced by Aeolus and became pregnant with his child. Too ashamed to tell her father, she hid the pregnancy from Chiron. She escaped to the mountains and stayed there until she gave birth to the child, named Melanippe. When Chiron came looking for Hippe, she prayed to the gods that he doesn't find her, and they turned her into a mare. In one version of the tale, it was the goddess Artemis who placed Hippe among the constellations. She still appears to be hiding from Chiron, with only her head showing behind Pegasus. (Chiron is represented by the constellation Centaurus.)

Still another myth says that Equuleus is the horse struck from Poseidon's trident, during the contest between him and Athena when deciding which would be the superior. Equuleus is also linked to the story of Philyra and Saturn

Equuleus is rather devoid of deep sky objects such as star clusters and nebulae. It hosts a few faint galaxies such as [NGC 7015](#), [NGC 7040](#), [NGC 7046](#), and [NGC 7045](#) (*), but these are extremely faint and challenging to observe, even with substantial telescopes:

NGC 7015 is a spiral galaxy with a visual magnitude of 13.25 and an apparent size of 1.9 x 1.6'. It lies at a distance of 203.2 million light years. It was discovered by French astronomer Édouard Stephan in 1878.

NGC 7040 is another spiral galaxy in Equuleus. It has an apparent magnitude of 14.9 and lies 257.5 million light years away. It was discovered by American astronomer Mark Harrington in 1882.

NGC 7046 is a barred spiral galaxy with an apparent magnitude of 13.75 and an apparent size of 1.9 x 1.3'. It lies at a distance of 176 million light years from Earth. The galaxy was discovered by William Herschel in October 1790.

(*) NGC 7045 is a triple star that was mistaken as a nebula by its discoverer, John Herschel in July 1827 and included on the list of NGC objects. The magnitudes of these objects vary from 14.5 to 15.5, making them hard to see in even the largest amateur telescopes.

While Equuleus may not have played as prominent a role in astronomy's history as some other constellations, it has its own unique distinctions. For instance, it's one of the few constellations that ancient astronomers recognized, and it continues to be acknowledged today. Despite its small size and dim stars, Equuleus's resilience over centuries of astronomical observation highlights its subtle but enduring role in our understanding of the cosmos.

Due to the constellation's low brightness and lack of standout features, finding and viewing it can pose a significant challenge, particularly for amateur stargazers. Those with a serious interest in astronomy, however, may appreciate the challenge of finding this 'hidden' constellation.

THE BUCKET LIST

BY VINCE SEMPRONIO

There are a couple of Lunar occultations this month involving fairly bright stars. The first is on the evening of September 2nd, just after midnight at 12:58 AM. The



waxing gibbous moon will cover Tau Sagittarius (Namalsadirah II) only 4° above the southwest horizon. This might be more of a photo opportunity rather than a scientific one, though. The

moon's brightness will be dimmed and reddened by its low altitude so a well framed photo might catch both the star, Moon, and the horizon.

At 5:22 AM in the morning on the 14th of September, the second brightest star (Elnath) in the Constellation Taurus



will reappear from behind the Moon. The diagram shows the location where the star will reappear, but it is always a surprise to see a reappearance. These events can be tricky for both visual and scientific observations unless the FOV is wide

enough to guarantee the location of the reappearance is visible.

NASA NIGHT SKY NOTES



This article is distributed by [NASA's Night Sky Network \(NSN\)](https://nightsky.jpl.nasa.org/)

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!

The NASA contribution to our newsletter is on hiatus this month. Their column should return next month.

G.O.A.L.

BY KAREN MADTES

It's always good to have a goal. Zig Ziglar said, "If you aim at nothing, you'll hit it every time!" G.O.A.L. stands for, Get Out And Look, whether that's naked eye or with

optical support. Even if it's cloudy, you could get lucky and see something in a sucker hole. Sometimes it's a challenge to figure out what you're seeing, but it's almost always worth the time it takes to look. G.O.A.L. to reinforce what knowledge you have or create the curiosity to build new knowledge on that foundation.

G.O.A.L. is stress relief therapy if you think about the bigger picture of all the wonders in space and how small our problems really are in perspective. It can be comforting to think about how constant the stars and planets are and continue to be, when we're bombarded with so many changes in our world.

Please make an effort to take the time to arrange a G.O.A.L. soon and enjoy!!

A LOOK BACK

BY VINCE SEMPRONIO

Our club's web site (<https://www.hacastronomy.org/>), is maintained by our fellow club member Ken Kirchner. On the site one can find, among other items, is a calendar of upcoming events. We also maintain the same calendar on our online [forum](#) as well as in our monthly newsletter.

Another resource on the website is the repository of previous HAC Nightfall newsletters stored as PDF files. The Nightfall newsletter has been published monthly going back years, even during the COVID pandemic. The individual issues are available to download for free. The collection isn't complete, but I don't know if missing issues are because they just weren't published that month, or because nobody had an e-copy to upload. One such example is the December issue of 2019. If someone has a copy (PDF), please contact Ken so that he can add it to the collection. Other missing issues include April 2015, July – December 2013, January & February 2012, all of 2011, and January – March, June – August 2010. There aren't any newsletters prior to 2010, but I'm not sure when the newsletters first were published.

Let's look back 15 years to the September 2010 issue. The direct link is [here](#).

The issue was 8 pages, much the same as most of our modern issues. The first page logo is completely different, as shown here.



Some elements of the newsletter between then and now haven't changed that much. The club back then had a monthly speaker, with a description of their talk in the newsletter. The club president had a column called "President's Perspective" which we now call President's Constellation Exploration, at least until Penny is no longer our president or until she runs out of constellations. The

president then was Wayne Johnson. The issue had a write-up about the club's participation at a Karchner Caverns Star Party, but I am not sure if it was held only once a year. The article mentions that they had 6 scopes setup and ~200 people showed up. I believe we are doing about the same now. The club had a website, and Del Gordon was the webmaster. There was a write up about the Astronomical League's expo and convention (ALCON) in Tucson that year, ALCON is now called AstroCon. The newsletter editor was Mark Meanings who contributed articles to the newsletter (that sounds very familiar!). There was a lengthy article about Hyperstar. Wow, has it been that long since it has been available? An interesting article was published regarding the "Astronomers Inn" facility in Benson being reopened as the San Pedro Valley Observatory. This project didn't survive, but perhaps its story is a good topic for a future newsletter article. The newsletter then had a small list of calendar events (it is now expanded to a full page), and a classified section which we have now and then. So, much of the content has survived today, I presume if it isn't broken, don't fix it, but if anyone has ideas for new columns, please pass them along.

And remember, the newsletter relies on articles, and they don't write themselves! I might have to hire an AI!

FOR SALE

Zane Landers has several scopes and equipment for sale. If you are interested in any of the items, please contact him via email (zdlanders@gmail.com).

- Criterion Dynamax 6" f/10 SCT with motor drive - Excellent optics and rapid cooldown. Very light weight. Can include tripod or will fit any standard surveyor or SCT tripod. Comes with 25mm/10mm Plossl eyepieces, 1.25" diagonal, 6x30 finder, equatorial wedge. Takes AC power. Asking \$350 with tripod or \$280 without, take another \$20 off if you don't want eyepieces.
- Meade #312 80mm f/11 refractor with EQ mount and clock drive - Really nice scope, very little false color. Wooden tripod, no plastic parts other than an improved spreader I made for the legs. Can resolve Europa as a disk. Made by Mizar Japan. Includes polar scope, 1.25" diagonal, 25mm and 10mm eyepieces, 6x30 finder scope. Drive takes a 9V battery. Very nice beginner scope. Asking \$350 or \$330 without eyepieces.
- SarBlue Mak70, Hadleys, 9x50 - can reuse description, Mak70 lowered to \$100

Eric Alen, a former member of HAC, currently living in Benson has two large Dobsonians for sale. For further information, call him at 520-720-6177 (land line). Visit the HAC online forum to see photos of these two scopes.

- 17.5" f/4.5 big box Dob for sale. Has 1/13 wave PVW custom refigured Coulter primary with 9-pt. aluminum flotation designed with PLOP software. Tube assy. breaks down into 3 sections. Tube assy. can be locked to rocker so scope can be rolled as a unit on wheels attached to rocker. Has 3.75" f/6.5 reflector finder. Has custom made cover. Not used recently but in good shape. Undriven. Can be Ronchi tested with tester or on a star, weather permitting. In Benson. Asking \$5000.
- 24" f/4 homemade big box/Truss Dob for sale. 24" f/4. Custom primary 1/20 wave PVW. Aluminum 18-point flotation was designed with PLOP software. Undriven. Custom made scissor-jack style focuser. Tube assy. breaks down into four sections. Tube assy. can be locked to rocker so scope can be moved as a unit on wheels attached to the rocker. Will fit (barely) in my Toyota Tacoma with camper shell. Comes with loading ramps. Not used for several years and mount has suffered some water damage to 1/4" oak plywood. Optics are in good shape. Can be Ronchi tested with Ronchi tester or on star, weather permitting. Asking \$7000

ABOUT THE COVER

This month's cover is provided by Michael Borland.

He used a Lunt 80-mm Universal Telescope with dual H-alpha etalons, an 18-mm blocking filter, a ZWO ASI174MM mono camera, and a ZWO electronic focuser. The etalons are tuned using a home-built digital pressure control system, which saves quite a bit of money compared to Lunt's system (which is hard to get in addition to being expensive).

The scope is mounted on an iOptron CEM60. For guiding, He used a Hinode Solar Guider, which keeps the sun fairly well centered over the span of several hours. It's also helpful as a solar finder, which helps him get centered in the morning and after a meridian flip.

He used SharpCap Pro for data collection. It allows him to make a simple sequence program that includes periodically refocusing to compensate for thermal drift. SharpCap also has a seeing-based frame selection feature, which reduces the video file sizes from truly enormous to merely huge. He takes 100 video frames every 3 minutes.

For processing, He starts with AutoStakkert!3 to do stacking of the best 8 the frames from each 100-frame video. He then uses a python script he developed using ChatGPT to align, crop, correct backgrounds, and correct gradients. After that, he uses the Solar Toolbox script in PixInsight for sharpening, contrast enhancement, and to add color.

HAC Calendar of Events (September & October 2025)

SUN	MON	TUE	WED	THU	FRI	SAT
Aug 31	Sep 1 Aurigid Meteor Shower Labor Day	2	3	4	5 HAC Meeting Room A102 7Pm	6
7  11:09 AM	8	9	10	11 Patriot Day	12 School Field Trip at Patterson 9-11 AM	13 Solar Saturday at SV Library 10 AM to 12 PM
14  3:33 AM	15	16	17	18	19 Moon near Venus and Regulus (Morning)	20
21  12:54 PM Saturn at Opposition	22 Southward Equinox (*) 11:19 AM	23 Neptune at Opposition (1)	24	25 Public Night at Patterson 6:30 PM	26	27 Dine Under the Stars (DUTS) 6 PM.
28	29  4:54 PM	30	Oct 1	2	3 HAC Meeting Room A102 7 PM	4
5	6  8:48 PM	7 Draconids Meteor Shower (Evening)	8	9	10	11 Solar Saturday 10A to 12P
12	13  11:13 AM Columbus Day	14	15	16	17	18 Kartchner Star Party Noon to 9 PM
19	20	21  5:25 AM Orionids Meteor Shower	22 Orionids Meteor Shower	23	24	

All dates and times are local MST
Astronomy events listed are those visible in the Southwestern, USA

(*) – Equinoxes are now defined as Northward (March) or Southward (September) in order not to appear biased toward northern observers.

(1) – Neptune was discovered on this day in 1846 by French astronomer Urbain Jean Joseph Le Verrier and British astronomer John Couch Adams; the discovery is verified by German astronomer Johann Gottfried Galle

Join the [HAC Astro](#) forum to keep up to date with all the Huachuca Astronomy Club events
To join, send an email to: HACAstro+subscribe@groups.io