NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JULY 2022

PRESIDENT'S MESSAGE

I hope you all had a glorious 4th of July. For most of us, we spent the days around the holiday watching the clouds and rain roll thru our area that were a continuation of the June rains. For our visual astronomers the rains of late June proved a challenge to viewing both during the day and at night. But our Astro-photographers, I suspect, enjoyed the break in imaging to have time to process all of the images they have been capturing these past few months. When the clouds do dissipate, we are getting wonderful views of a very active sun.

For those who braved the early mornings to see our solar system planet lineup in June, it was very special. It will be almost 20 years before we have so many planets in a row to view all at once. In July, for those who prefer nighttime events the Delta Aquarids meteor shower starts mid-month. Hopefully we will have some cloud free nights to enjoy them.

Even though we are not hosting public viewing in July we do continue to support outreach especially for daytime events. See the note on the recent summer school field trip later in the newsletter. The June member star party in Hereford at Esther and Kavi McGee's was cancelled because of clouds. They have offered to host the July event on July 30. A notice will be sent out via the HAC group as we get closer to the date with contact info.

I hope the rains in July don't dampen your enthusiasm for astronomy. This month we have a very special event July 12th for the first images from the James Webb Space Telescope. (See note below). Based on the NASA news the images are spectacular and exceed the expectations. Let Ted Forte know if you are coming so we can have early morning goodies for all.

'Awe'- stronomy

Dean Frazeur, PHD, our speaker in Jun, helped us discover, that for most of us in HAC, Astronomy is an "avocation". It is something we do for fun rather than work. An avocation does not require or preclude expertise only interest that pulls at us and urges us to learn more. One of the most common responses to guests looking thru the telescope is Awe. Dean suggested we should call what we do "Awe"-stronomy since it brings wonder and enriches not only our lives but also those we interact with both formally and informally. We were challenged to see the avocation of Astronomy with a new perspective. Dean will return in August to complete his presentation.

Thanks to our VP Programs, Karen Madtes for finding such interesting speakers this year from both inside and outside of HAC. If you have an idea for a presentation, or a connection to a presenter you think might be of interest, let Karen know.

Permission to photograph minors

If you are bringing a minor to any HAC event where photos are taken, we need to have a photo release for any recognizable minors. You can find on HAC Astro a copy of the NASA photo release required for the JWST event, July 12th. NASA has asked for the releases before the event.

We always ask for parental permission when taking photos that HAC might use. For instance, this past week, Ted checked with the coordinator of the event and learned that all of the kids at Tuesday's event had photo releases on file with the program. At the Wednesday event there were three kids without and we therefore took no photos.

All of the families with kids in public schools here and all of the academies and youth programs that we are aware of are asked to fill out photo releases and they are kept on file at the school or program. Teachers are always very aware of which kids do not have them.

We never share photos of kids with the NASA Night Sky Network (we do record most of our events there) without a release, nor can we include them in the Solar System Ambassador reports. We typically send photos to the Planetary Science Institute when using the rock kits, but we always select the ones that only show little hands fondling the meteorites unless we have parental permission.

New Braille Constellation Activity premiered.

At June's member meeting Stacy Chitwood shared the Braille constellation plaques she had produced on her 3-D printer and painted. Karen Madtes took those plaques and devised a hands-on activity that Stacy and David premiered during the Accommodation School field trip in June.

It was a great hit with students of all ages, giving them an opportunity to "see" and "feel" constellations as well as learn about the Braille language. Elizabeth Wrozek, Hauser Museum, has already asked about using the activity at one of their future events.

Big kudos and thanks to Stacy, Karen and David for seeing a need and then taking action to expand and enhance our outreach program options.

The Accommodation School Field Trip:

Jun 28 and 29, HAC volunteers hosted about 175 students from various schools of the Accommodation school on the post. The kids visited the Discovery Gardens, and the Observatory.

At the observatory they had an opportunity to do a space project in the classroom, view the sun through the foundation's H-alpha solar scope and Thomas Brondum's 8-inch SCT, do a constellation activity, a meteorite activity, and look at the 20-inch in the dome. Some of them got to view Jupiter and Mars through the 20-inch and do an additional activity identifying different telescope types.

A big thank you to Penny and Thomas Brondum, Stacy and David Chitwood, Vince Sempronio, Karen Madtes, and Marion Goode. Also, to Elizabeth Wrozek of the foundation and Jan Groth of the Cooperative Extension (Discovery Gardens) and her volunteers. Both days went rather well, thanks to the hard work of all our volunteers and the organizational skills of Elizabeth, Penny, and Karen who expertly shuffled the students between multiple "stations". Next week we'll see if they can herd cats. (It will probably be easier.)

HAC Logo Merchandise

For those who have wanted HAC logo items, an electronic file of our logo is now on file with Wicked Limitz Graphics 801 E Fry Blvd, Sierra Vista. They have several graphic services including: Sublimation printing, Heat Press and Embroidery. Wicked Limitz can provide the clothing item for decoration or in some instances, you can bring your own for a nominal charge. Ask for Gloria and mention you're from HAC.

Sublimation printing is done on polyester clothing, coins, mouse pads, nametags, etc. The Heat Press application works on any color fabric (preferably a cotton/poly blend, not Nylon). You can bring your own apparel but they will charge a "not bought here" fee. Heat press has a $10 labor + the cost of the apparel. For Embroidery there is a one-time setup fee to create a stitch file from our logo (~$65). After that each embroidered logo is $15 each. This technique can be applied to any fabric, and is the only method that can be applied on hats.

Thanks to Vince Sempronio for taking on this special project for HAC.

July 9 Rare Occultation event by V. Sempronio

On the morning of July 9 at 02:20:44am, the brightest moon of Saturn, Titan (mag 8.5) will occult the mag 8.9 star, SAO 164648.

From SW Arizona, the star will disappear behind Titan, about a 4th into the disc and the event will last up to 5.4minutes (probably around 2min for us). Since Titan is only 0.78" wide, it will appear as a tiny dot in all but the biggest scopes. As they get closer together, the combine brightness will rise to mag 7.8. If you start observing an hour earlier, the star and Titan will be separated by 8". By noting when you are unable to separate them, you can determine how good the seeing was that night using your equipment. Just before the star is covered by Titan, it will first pass-through Titan's atmosphere, causing the combined light to dim slightly. This probably won't be noticeable visually, but it should be measurable using an imaging camera.

I will be using the Patterson scope to maximize my image, but will have my C8 set up on the patio as a backup. You are welcome to join this viewing and imaging early morning rare Occultation event. See the Jun 29 HAC Astro thread for more details.

Webb First Images Community Event July 12

The Patterson Observatory will host a NASA-sponsored community event for the release of the first science images from the JWST on Tuesday, July 12. Doors open at 7a.m. The first images will be revealed in a live broadcast beginning at 7:30 a.m.

Our event at Patterson will be a part of the broadcast! At some time during the presentation, the world will get to “look into” Patterson and get a shout out from us.

Patterson will open again at 3 p.m. to view a special “expert panel” broadcast that will review and discuss the images,

Our event is open to the public and admission is free. Minors must have a signed photo release authorization on file with us to attend the event. You can get the form in the files section of the HacAstro group or by contacting Ted Forte (tedforte511@gmail.com) . The forms must be sent to NASA BEFORE the event, so get them in to Ted as soon as possible.

Anyone wishing to attend is asked to RSVP to Ted Forte (tedforte511@gmail.com) so we can get an accurate headcount. The club will provide coffee, tea and breakfast pastries.

July Meeting Speaker

Zane Landers is a 19-year-old science communicator and optical engineer from Tucson, AZ currently employed at Tucson Optical Research Corp. Zane has been building telescopes and manufacturing optics in his living room for 6 years, and has built instruments as large as 24”. Zane enjoys a mix of deep-sky and planetary observing and regularly conducts sidewalk astronomy outreach on the University of Arizona campus with John Dobson’s 8” telescope. Zane also writes reviews for a number of websites such as TelescopicWatch.com and Cloudy Nights.

Outline of the talk (by Zane):

In this talk I’ll be going over the basics of making thin meniscus mirrors for large aperture reflecting telescopes designed for both visual and imaging/research applications. Along with that, I’ll be covering the reasoning to build these telescopes, some current examples, and my own progress. My current project focus is on a pair of 20” (0.5-meter) instruments, designed as an ultra-low budget (<$1500), ultralight (<50 lbs.) and ultra-portable visual telescope, and a sister instrument designed for asteroid occultation, speckle interferometry and exoplanet transit observation and casual imaging. I am also preparing to work on a 32” ladder-free telescope and, funds permitting, a 1-meter and 1.5-meter to follow.

2023 Schedule

General Meetings: We set the date of the general meeting to the Friday closest to full moon so as not to interfere with any observing opportunities. Since, in 2023, it works out that that full moon falls close to the first Friday of each month for most of the year, we have set that as the standard. So, subject to room availability, the meeting schedule for 2023 is as follows:

- January 6
- February 3
- March 3
- April 7
- May 5
- June 2
- July 7
- August 4
- September 1
- October 6
- November 3
- December 1.

Meetings are held in room A102, Cochise College Downtown Campus at 2600 E. Wilcox Drive, Sierra Vista.

Patterson Public Nights: We schedule our public observing nights at the Patterson Observatory on Thursdays close to first quarter moon and have them start a half hour after

sunset. These events are weather dependent and attendees and guests are encouraged to watch the HacAstro group or check the recording at (520) 458-8278 extension 2214 for cancelation. We do not schedule observing events during July or August. The Public Night schedule for 2023 is as follows:

- Jan 26 start 6:30pm
- Feb 23 start 7:00pm
- Mar 23 start 7:30pm
- Apr 27 start 7:30pm
- May 25 start 8:00pm
- Jun 22 start 8:00pm
- Sep 21 start 7:00pm
- Oct 19 start 6:30pm
- Nov 16 start 6:00pm
- Dec 14 start 6:00pm

The Patterson Observatory is located on the campus of the University of Arizona, Sierra Vista at 1140 N Colombo Avenue. It is owned by the University South Foundation and operated by volunteers from the Huachuca Astronomy Club. HAC members that wish to get involved with the operation of the observatory should contact Ted Forte.

Solar Saturdays: New starting this September we will hold daytime, solar observing events at the Patterson Observatory every second Saturday, weather permitting. The start time will be announced. The October 2023 date will most likely shift (or be skipped) to accommodate the Kartchner Star Party.

Scholarship Sponsorship

The HAC board of directors voted to support this year's Dine Under the Stars scholarship fundraiser with a $2,000 donation to the University South Foundation. The money will go to award a scholarship in the club's name to a needs-based student attending classes in Sierra Vista to be presented at the 2023 scholarship reception held on campus.

This donation was funded by our successful telescope swap meet held earlier this year. Funding a scholarship was one of the stated objectives of the swap meet.

The University South Foundation is the owner of the Patterson Observatory. HAC has maintained a close relationship with the foundation since the observatory was constructed in 2004. We are the volunteer operators at the observatory, and currently, three HAC members serve on the foundation's board of directors.

HAC can be proud of supporting the foundation and our local community. Since 2011, the foundation has awarded over $675,000 to resident scholars.

N3P Committee

Sierra Vista is planning a new 28-acre park, tentatively named Roadrunner Park, which will essentially be a continuation of the Garden Canyon Linear Park on the South side of the city. HAC is looking for volunteers to support an "N3P" (New Park Proposal Plan) Committee. They would formulate a proposal to submit to the city planning commission for astronomy friendly features to be a part of this park. The more detailed with supporting data, means the less work the city would have to do and therefore a better chance of acceptance.

Items to consider include:

- How HAC and other astronomers would utilize the park to support Sierra Vista's night sky vision
- Space enough to set up enough scopes to support a good-sized crowd.
- A concrete pad for the safety and convenience of both scope providers and visitors.
- Minimal and Red lighting.
- Power pads for telescopes
- Light blocking landscaping,
- Seating (benches).
- Easy access for scope providers to drop off equipment (service road, round about, etc.).

Besides monitoring the Planning and Zoning Commission pages on the city's website and submitting input. The committee would formulate letters to the editor of our local newspaper and to city council members so they will know that we are here,vocal, active and interested.

Please consider serving on the N3P Special Committee. Contact K. Madtes for more info!

HAC PixInsight Workshop by Mark Orvek

8 people (including Glen and me) attended the first HAC PixInsight Workshop on Tuesday, June 21st at the Patterson Observatory.

The original intend of the workshop was to allow attendees to process one of their own datasets with help as needed. Instead, we ended up walking through some example steps using my recent M101 data and discussed questions along the way. The general flow of this workshop was:

- Reviewed WBPP script settings
- Perform Automatic and Dynamic Background Extraction
- Perform Noise Reduction using MultiScaleLinearTransform, MultiMedianTransform and NoiseXTerminator
- Perform CurvesTransformation and ColorSaturation
- Discussed the agenda for another workshop

Although we didn't get to processing individual datasets, we did get a good understanding of everyone's skill level. We agreed on having another workshop and decided to choose

an image dataset and process it together. Glen or I will demonstrate at the front and others can either follow along on their own laptop or watch the demonstration and ask questions along the way.

By the way, one misconception Glen and I would like to correct is that astrophotography and image processing is just "photoshopping" images to make them pretty. "Photoshopping" implies creating something that isn't there. Image processing is about enhancing what is actually present in the data but not always visible. We use binoculars and telescopes to extend our view of the night sky. Astrophotography and image processing are additional tools to do the same (that is, extend and enrich our view of objects in the night sky). It is a challenging aspect of our astronomy hobby but we feel it is well worth the time and energy invested. Although, it may not be for everyone. The astronomy hobby has lots of challenge to go around! Modifying a statement from a former US President - we choose to do astronomy, not because it is easy but because it is hard ☺.

The next HAC PixInsight Workshop is scheduled for Monday, July 11th from 6-9pm at the Patterson Observatory. Everyone interested is welcome to attend. Please contact me (morvek@yahoo.com) if you are planning, or would like, to attend.

Starblast Telescope

An additional StarBlast 4.5" 144mm tabletop telescope was donated by the Astronomy Club to Sierra Vista Library July 7th. The intent is for more of the library members will enjoy the wonders of the night sky. Susan also received brochures, outreach cards and stickers to include in the bag with the telescopes.

Susan Abend, Librarian said "This is so fantastic, the community loves these telescopes. Most telescopes that are checked out from the library get renewed at least once which means the library always has a waiting list. In addition, the hardest part of lending out telescopes is the user's expectation of seeing images in both categories of scopes that match what is seen in magazines or the internet in both color and definition."

The Sierra Vista library has 2 classifications of scopes for use: The Starblast/tabletop scopes are called "Moon" scopes because of their size and ease to use and because they are best for the moon and planets plus great for beginner/novices. The SV library also has "Star" scopes which are larger and require more experienced users. The Star scopes work better for viewing deep sky objects (galaxies and nebula).

NASA Night Sky Notes July 2022

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!

Find Hercules and His Mighty Globular Clusters

David Prosper

Hercules is one of the standout heroes of Greek mythology, but his namesake constellation can be surprisingly hard to find - despite being one of the largest star patterns in our night skies! Once you find the stars of Hercules, look deeper; barely hidden in the space around his massive limbs and "Keystone" asterism are two beautiful globular star clusters: M13 and M92!

Since the constellation itself is relatively dim but bordered by brighter constellations, you can find the stars of Hercules by looking between the bright stars Vega and Arcturus. They are fairly easy to identify, and we have tips on how to do so in previous articles. Vega is the brightest star in the constellation Lyra and one of the three stars that make up the Summer Triangle (June 2020: Summer Triangle Corner: Vega). Arcturus is the brightest star in the constellation Boötes, and can be found by "arcing to Arcturus" from the handle of the Big Dipper (May 2021: Virgo's Galactic Harvest). You may be able to Hercules's "Keystone" asterism first; this distinct pattern of four stars is traditionally shown as the torso of the great hero, though some illustrators prefer marking the Keystone as the head of Hercules. What pattern do you see in the stars of Hercules?

Globular star clusters appear "fluffy," round, and dense with stars, similar to a dandelion gone to seed, in contrast to the more scattered and decentralized patterns of open clusters. Open clusters are generally made up of young stars that are gradually spreading apart and found inside our Milky Way

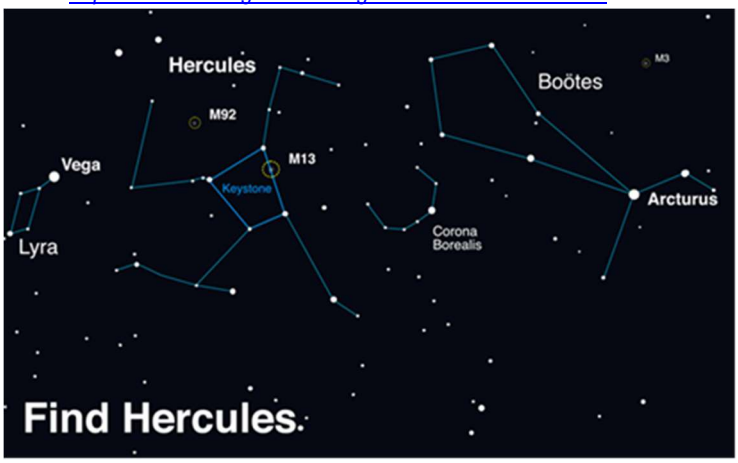
galaxy, while globular clusters are ancient clusters of stars that are compact, billions of years old, bound to each other and orbit around our galaxy. Due to their considerable distance, globular clusters are usually only visible in telescopes, but one notable exception is M13, also known as the Great Cluster or Hercules Cluster. During very clear dark nights, skilled observers may be able to spot M13 without optical aid along the border of the Keystone, in between the stars Zeta and Eta Herculis - and a bit closer to Eta. Readily visible as a fuzzy "star" in binoculars, in telescopes M13 explodes with stars and can fill up an eyepiece view with its sparkling stars, measuring a little over half the diameter of a full Moon in appearance! When viewed through small telescopes, globular clusters can appear orblike and without discernable member stars, similar in appearance to the fuzzy comae of distant comets. That's why comet hunters Edmund Halley and Charles Messier discovered and then catalogued M13, in 1714 and 1764 respectively, marking this faint fuzzy as a "not-comet" so as to avoid future confusion.

While enjoying your view of M13, don't forget to also look for M92! This is another bright and bold globular cluster, and if M13 wasn't so spectacular, M92 would be known as the top celestial sight in Hercules. M92 also lies on the edge of naked-eye visibility, but again, binoculars and especially a telescope are needed to really make it "pop." Even though M92 and M13 appear fairly close together in the sky, in actuality they are rather far apart: M13's distance is estimated at about 25,000 light years from Earth, and M92's at approximately 27,000 light years distant. Since M13 and M92 appear so close together in our skies and relatively easy to spot, switching between these two clusters in your scope makes for excellent star-hopping practice. Can you observe any differences between these two ancient clusters of stars?

Globular clusters are closely studied by astronomers for hints about the formation of stars and galaxies. The clusters of Hercules have even been studied by NASA's space telescopes to reveal the secrets of their dense cores of hundreds of thousands of stars. Find their latest observations of globular clusters - and the universe - at nasa.gov.

Composite image of the dense starry core of M92 imaged in multiple wavelengths. While your own views of these globular clusters won't be nearly as crisp and detailed, you might be able to count some of its member stars. How far into their dense cores can you count individual stars? Credits: ESA/Hubble & NASA; Acknowledgment: Gilles Chapdelaine.

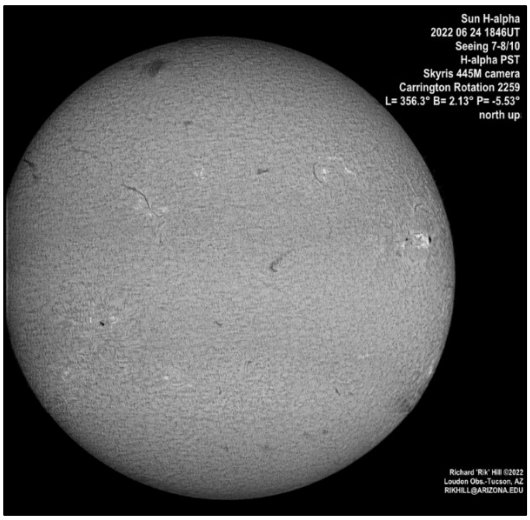
Source: https://www.nasa.gov/feature/goddard/2017/messier-92



Look up after sunset during summer months to find Hercules! Scan between Vega and Arcturus, near the distinct pattern of Corona Borealis. Once you find its stars, use binoculars or a telescope to hunt down the globular clusters M13 and M92. If you enjoy your views of these globular clusters, you're in luck - look for another great globular, M3, in the nearby constellation of Boötes. Image created with assistance from Stellarium: stellarium.org

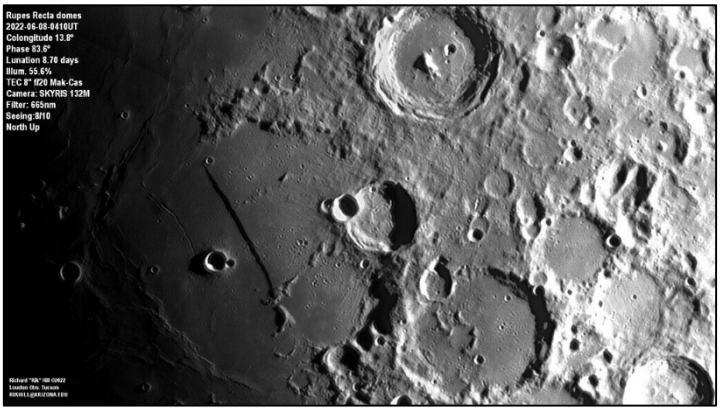
Pictures from HACAstro

Sun in H-alpha by Rik Hill



Sunspots by Rik Hill

Rupes Recta (Moon) by Rik Hill



Pictures from Ft Huachuca Accommodation Schools at Patterson

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HAC Jul- Aug 2022 Calendar of Events

SU	MO	TU	WE	TH	FR	SA
3 Jul Earth at aphelion	**4** 	**5**	**6** 10:55AM	**7**	**8**	**9**
10	**11**	**12** Webb First Images Community Event 7AM and 3PM	**13** 11:37 AM Moon at perigee	**14**	**15** HAC Meeting 7PM Room A102	**16**
17	**18** Jupiter 2 d north of moon	**19**	**20** 7:18AM	**21**	**22**	**23**
24	**25**	**26**	**27**	**28** 10:55AM Delta aquarid meteors	**29** Delta aquarid meteors	**30**
31	**1 Aug**	**2**	**3**	**4**	**5** 4:06AM	**6**
7	**8**	**9**	**10**	**11** 6:36PM	**12** HAC Meeting 7PM Room A102 Perseid meteors	**13** Perseid meteors
14 Saturn opposition	**15** Jupiter/Moon 2° apart	**16**	**17**	**18** 9:36PM	**19** Mars/Moon 3° apart	**20**
21	**22**	**23**	**24**	**25**	**26**	

All times local MST

Join **HacAstro** to keep up to date with all of the Huachuca Astronomy Club events

Send an email to: HACAstro+subscribe@groups.io