TAAA Desert Skies Bulletin

Observing Our Desert Skies Since 1954

March 2025

www.tucsonastronomy.org

Membership Meeting

Friday, March 7, 2025 7:30PM

TAAA's next General Member Meeting is on Friday, March 7, 2025. **It starts at 7:30 PM** (rather than our usual 6:30 PM). This will be a hybrid meeting for TAAA members. They will receive a Zoom link should they wish to attend remotely. Members and the public may attend in person at **Steward Observatory Lecture Hall (Rm N210), 933 N Cherry Ave, Tucson** or watch the video at a later date on YouTube. No public live streaming this month. **The Steward Observatory 21" scope will be open after the meeting, weather permitting.**

Inside this issue:

Main Presentation at 7:30PM AZT

(Time Change for this month only)

Title: **The Accelerating Expanding Universe: Dark Matter, Dark Energy, And Einstein's Cosmological Constant**

Presentation: Dark energy is the leading candidate for the mechanism that is responsible for causing the cosmological expansion to accelerate. In this non-technical talk, Professor Bharat Ratra will describe the astronomical data which persuade cosmologists that (as yet undetected) dark energy and dark matter are by far the main components of the universe's current energy budget. He will review how these observations have led to the development of a quantitative "standard" model of cosmology that describes the evolution of the universe from an early epoch of inflation to the complex hierarchy of structure seen today. Professor Ratra will also discuss the basic physics, and the history of ideas, on which this model is based.

Biography: Bharat Ratra, distinguished professor of physics at Kansas State University, earned his Master of Science at the Indian Institute of Technology, Delhi, and his doctorate at Stanford University. In 1988, Ratra and Jim Peebles proposed the first dynamical dark energy model. Ratra joined Kansas State University in 1996. He is best known for his work on dynamical dark energy and on the quantum-mechanical generation of energy density and magnetic field fluctuations during inflation. Recipient of many awards, his most recent is the American Physical Society's 2025 Julius Edgar Lilenfeld Prize, which recognizes outstanding contributions to physics and exceptional skills in lecturing to diverse audiences.

Professor Bharat Ratra
Credit: Kansas State University

Notes From The President

January 2025

by Mae Smith

When things are frightening, or stressful, or the world seems to be going astray, it can be helpful to realize that often underneath it all there is much good happening. There are still good people quietly proceeding with great motivation and strength along paths designed to do good. Currently a path to look toward is sustainability efforts, where great effort is being expended to solve challenges and take steps forward toward resiliency and strength. Often, with steps such as this, there is no way to know for sure whether they are needed until the moment passes. But, in times of uncertainty, taking precautions could be a good plan.

In Tucson these days, two of the common words are "Heat Resiliency". These words are arising from and re-triggering the mobilization of a lot of activity in the Tucson/Flagstaff/Phoenix areas that re-energizes prior concerns and predictions regarding climate change in Arizona. As is typical of human populations, the 2015 and 2019 frightening predictions of heat escalation, long-severe drought, and accompanying rising rates in human deaths that people preferred to ignore is moving more toward being considered an emergency. While such effects have been occurring in California, relevant spikes are also seen in Arizona, and those occurrences are now considered by many informed citizens to be alerting us to an Arizona emergency.

TAAA is less influenced by these predictions than many organizations since our activities are not primarily summer-based, but many of our members live here through the summer and whatever affects our members, affects all of us. So, I decided it was best to share this information with all of our TAAA members.

In the last month, the groups "Physicians for Social Responsibility Arizona" and "Climate Tucson" sponsored a workshop at the University of Arizona, a city of Tucson meeting, a presentation by the Tucson Mayor, and other activities focused on one theme. They have launched a sustainability campaign to activate neighborhood community groups, organize neighborhood coalitions, and train citizens throughout Tucson to prepare communities to increase survival rates for anticipated upcoming heat waves accompanied by extended period breakdowns in electric systems, solar energy, and water systems. Anticipated months of concern include June, July and August (according to past records of when spikes in temperature occur in Tucson). In such heat waves, especially when they are extended over days and days (as is expected to occur), mortality of citizens increases significantly. It is not known how much accompanying fire might also occur during such times, but with limited water and over stressed manpower, firefighting will be much more difficult.

Also, we are told that Tucson may not have some of the natural resiliency of California in that the relationship between our water supply and our energy supply is quite different. This is known as the energy-water nexus. Producing and delivering energy typically uses water, and delivering and treating water uses a lot of energy. "In Tucson, our water is extremely energy-intensive because it's ALL PUMPED. Some of it is pumped uphill 336 miles via the Central Arizona Project (CAP), where it recharges the aquifer in the Avra Valley, west of Tucson. Then like the rest of our water, it's pumped out of the ground and delivered to users. Our water has two or three times more energy used to get it to us than most other cities."

Research has been indicating that "Tucson is heating even faster than Phoenix... Though Phoenix comes in close behind us." However, if you look on a map that has been developed of the anticipated highest temperatures in the United States, the highest US Temperatures are predicted for Phoenix. We will see...

Community leaders believe that groups of citizens in neighborhoods working together can form supportive coalitions that help their neighbors stay cool, mitigate the heat and the loss of energy, and arrange to have enough stored water supplies on hand. We may all have an opportunity to test those beliefs.

I hope that this information can be helpful to you. But most of all, I hope that it isn't proven true.

President Mae Smith

Mae Smith, TAAA President
president@tucsonastronomy.org
(520 850-7137)

Vice-President: Ed Foley
vice-president@tucsonastronomy.org

Secretary: Bob Reynolds
secretary@tucsonastronomy.org

Treasurer: Barbara Whitehead
treasurer@tucsonastronomy.org

BOD Members-At-Large:

Stephen Ferris mal1@tucsonastronomy.org

David Rossetter mal2@tucsonastronomy.org

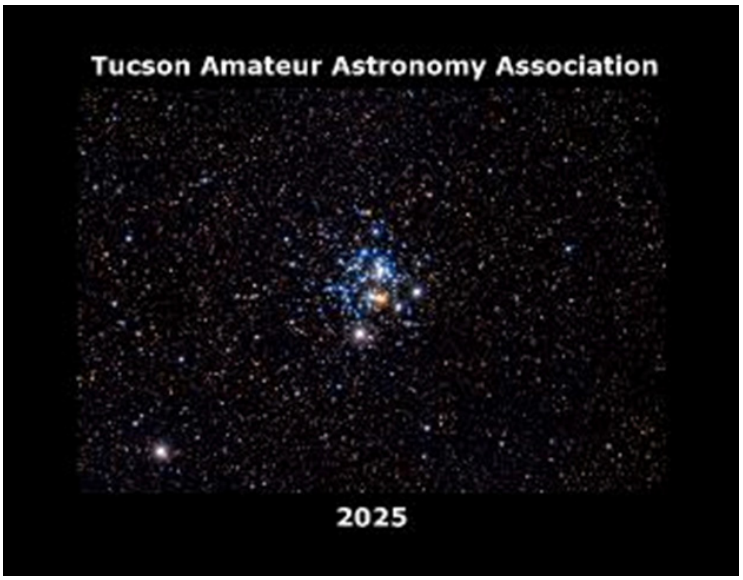
John Kalas mal3@tucsonastronomy.org

TAAA Board: taaabod@tucsonastronomy.org

The TAAA Board of Directors meets the second Wednesday of every month at 6:30pm. Members are welcome to attend Board meetings. If you would like to attend, you may email Mae Smith to receive a Zoom link for that meeting. Please send your email to Mae the Monday prior to the meeting (by 5:00pm) and you will receive an email with the link on either Tuesday evening or Wednesday. ALL MEMBERS ARE WELCOME.

Desert Skies Bulletin
Contributions to Editor: David Rossetter by the 24th.
Astro-Images to our Image Editor: Gregg Ruppel
Proofreaders: Terri Lappin, Jeff Rothstein, Jim Knoll

TAAA News & Activities



The 2025 TAAA Wall Calendars will be available at the general meetings.

The cost is $15 each, cash or check made out to TAAA.
Please contact Susan OConnor for alternative delivery.

TAAA Ladies' Night Out

by Susan O'Connor

Ladies' Night Out is a social interest group for women members of the club. The group meets once a month at a local restaurant for fellowship and conversation.

Thursday March 20, 6:30

Le Rendez-Vous

3844 Ft Lowell
(SW corner Ft Lowell & Avlernon), Parking in back

Preview the menu.

RSVP Susan 520-780-0136

The NVRC is seeking potential candidates for elected leader positions this upcoming May. Positions to be voted on include President, Vice President, 1 Board Member-At-Large and 2 members of the NVRC; all are 2-year terms that will commence June 1, 2025.

The NVRC is also seeking potential candidates to be appointed/selected as **interim TAAA Treasurer** until that position comes up for election in May of 2026. Last May, the post of Treasurer went vacant with no candidates stepping forward. Barbara Whitehead has continued in that role with the Board's consent and support, but has expressed her desire to move on, given her recent move back to Alabama. Barbara has steadfastly managed and monitored the club's finances over the past three years, and hopefully one of you will be able to step forward for at least the next 12 months, and perhaps longer to fulfill that important role. The club does have an Assistant Treasurer now, who will continue, handling much of the day-to-day activities (securing membership dues, checking mail, depositing checks, etc.), so that the Treasurer's main focus is maintaining the accounts and bookkeeping for the club's finances.

Members may review the position descriptions for both elected and appointed leader positions through their Member Planet accounts – from the main Tucson Amateur Astronomy Association webpage (https://tucsonastronomy.org/) select the "MEMBERS ONLY" tab and log in. Click the "Leadership Position Descriptions" link on the right. In the middle of the next page find "Job Position Descriptions – TAAA Board..." or immediately below, "TAAA Position Descriptions – Leader Descriptions", which are the non-elected volunteer opportunities

Please contact the NVRC Chair (Pete Hermes) at nvrcchair@tucsonastronomy.org for additional information or if you have questions pertaining to a particular position.

TAAA 2nd Half 2024 Financials

The financial position of the Tucson Amateur Astronomy Association (TAAA) remains strong for the six months ended December 31, 2024, despite tremendous challenges resulting from ongoing projects. The TAAA achieved this through prudent management of expenses combined with strong support from members and the continued generosity of private citizens, foundations, and corporations. The data presented below is using the Tax Form 990 format to show income/expense items by program.

Treasurer - Barbara Whitehead

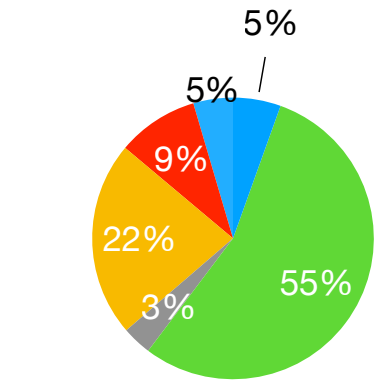
Statement of Financial Position

as of 12/31/24

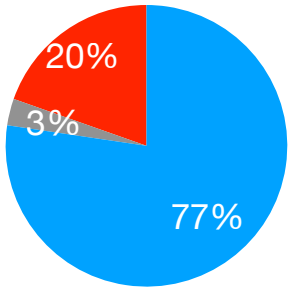
Assets	
Cash	$26,658
Savings	$227,838
Fixed Assets	$1,406,592
Endowment	$15,534
Other Assets	$3,759
Total Assets	**$1,680,381**

Liabilities	
Deferred Revenue	$150,836
Other Liabilities	$375
Total Liabilities	**$151,211**

Net Assets	
Unrestricted	$1,456,986
Permanently Restricted - Quasi Endowment	$14,344
Temporarily Restricted	$57,841
Total Net Assets	**$1,529,170**



- Membership Dues
- Contributions, Grants
- Investment Income
- CAC/TIMPA Dark Sites
- Private Star Parties
- Education/Library Telescopes
- Other Income



- CAC/TIMPA Dark Sites
- Private Star Parties
- Education/Library Telescopes
- Astronomy Camp
- Administrative Expenses

Statement of Activity

Fiscal YTD as of 12/31/24

Income	
Membership Dues	$7,767
Contributions, Grants	$77,612
Investment Income	$4,802
CAC/TIMPA Dark Sites	$31,769
Private Star Parties	$13,215
Education/Library Telescopes	$0
Other Income	$6,448
Total income	**$141,612**

Expenses	
CAC/TIMPA Dark Sites	$18,135
Private Star Parties	$0
Education/Library Telescopes	$720
Astronomy Camp	$0
Administrative Expenses	$4,597
Total expenses	**$23,451**

Net Income	
Income minus expenses	$118,161

Constellation Locating and Identification Workshop

Open for enrollment

Place: TIMPA **Date:** Thursday, March 27, 2025 **Time:** 6:30 PM until completed

Synopsis: This is another workshop in the practical astronomy workshop series. The students will be taught how to locate and identify the constellations without having to memorize the night sky. Each student will use the supplied equipment to locate several constellations. They will learn how to use a planisphere and star atlas to locate constellations without memorizing the sky. This program provides the methodology for the observing requirements of the Astronomical League's Constellation Observing Program (Northern and Southern).

PLEASE NOTE: due to equipment limitations there is a strict limit of 20 students for this workshop.

If interested: Contact the instructor, Douglas Smith: 520-396-3233, Email

Learn how to Record Observations and Sketch Objects Workshop

Open For Enrollment

Place: TIMPA
Date: Thursday, March 6, 2025
Time: 6:30 PM until completed

Synopsis: This is another workshop in the practical hands-on astronomy workshop series. Students will be taught proper recording techniques, what information to record, what sort of forms to use, etc. In addition students will be taught techniques for sketching objects. They will view, using a telescope, several different types of objects and perform recording activities and sketch different objects.

PLEASE NOTE: due to equipment limitations there is a strict limit of 20 students for this workshop.

If interested: Contact the instructor, Douglas Smith: 520-396-3233, Email

February 2025 Astronomy Camp

The Cochise County weather was a warm 70 degrees for this February's Astronomy Camp event. 14 students from the Pusch Ridge Christian Academy joined by two teachers and eight TAAA volunteers were in attendance for a 2-day visit. Their program consisted of numerous activities made possible by the facilities at our Chiricahua Astronomy Complex. Volunteers operated telescopes across the site. The volunteers included Gary Wells, Conrad Stolarski, Bob Rose, Sam Miller, Jim and Susan Knoll, Joe Jakoby, and Ed Foley. The telescopes they used were the 9.25" and 11" Celestron SCTs mounted on the Stinger Learning Pad, a 14" dobsonian, the 9" folded refractor and the 40" 'Big Boy' dobsonian on the Reynolds-Mitchell observatory deck. As part of the program, students learned about the various types of telescopes and in one exercise, they assembled 'Galileo' telescopes similar to the one used by that early scientist.

Queued up to Observe

The program was designed to introduce the students to methods of observation, and provide a survey of the types of objects one finds in the exploration of the sky. They viewed and sketched Jupiter and the positions of its moons as their first activity that night. Later, they would come back to Jupiter, repeat their observations and sketch. What they found was the moons were now in different positions. The other activities included a contest between the five student groups to use planispheres to identify the five brightest stars visible, name their constellation in the sky, and to describe them. The quickest group, with the most accurate information, won a prize which included a snack of 'Milky Way' bars.

Galileo Scope Project

These high school students, some of whom are in the middle of their astronomy semester, were then challenged to observe and describe seven deep sky objects which ranged from planetary nebula to globular clusters. Finally the volunteers took them on a tour of the sights available in the constellation Orion. Each telescope

Gathered at the Telescope under Orion

was used to view an object that was best suited for the object in question, such as the 9 inch refractor used to split the double star Rigel. The student groups moved from telescope to telescope noting on their worksheets what they saw each time. To supplement the visual observing, we also had two SeeStar smart telescopes to demonstrate the ability of this new technology to enhance our ability to view some of the dimmer objects. Those images were downloaded for the students to keep as reminders of the sights seen that night.

The sun also cooperated in another way during the camp, showing the group a very active surface. Using both the CAC solar telescope and volunteer-provided solar scopes from h-alpha to white light, students were able to view multiple sunspots and a huge prominence. Seeing a prominence reaching out more than 10 times the diameter of the earth is a sight many will remember!

The students' visit was supported by a TAAA grant from the Southwestern Foundation for Education and Preservation which provided funds for food, transportation, and supplies. This wonderful experience was made possible by donors, the wonderful facilities at the TAAA site and our dedicated volunteers. This should remind us of our Mission - to Share the Joy of Astronomy.

Any member who is a teacher, or who knows a teacher who may have an interest in joining a TAAA Astronomy Camp event should contact AstronomyCampDirector@tucsonastronomy.org

Pusch Ridge Students with Big Boy

The Lunar Eclipse 3D effect

Matthew B. Ota, former OCA Trustee

Although a lunar eclipse is rather common, and of little scientific value, it does have its attractions for its sheer beauty. As an amateur astronomer, I have learned of the most curious effect I have ever seen in naked-eye astronomy. This phenomenon is seen with regular binocular eye vision. No telescope or binoculars are needed for this.

The full Moon appears as a flat disk to the human eye. It has no limb darkening like Jupiter or other planets. The reason why was not answered until the Apollo moon landings of the 1960s.

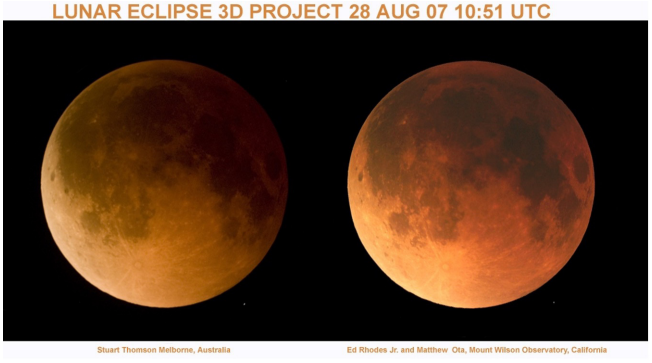
The Moon's surface is covered with a very fine powder, which is composed of rock that has been pulverized by billions of years of meteoroid impacts. This powdered regolith, commonly known as "moon dust", is as fine as talcum powder. It is not smooth in texture and is angular and faceted on a microscopic level. This is because there never was any flowing water on the moon to erode and smooth out rocks into rounded curved pebbles. This is an effect that was coined as "gardening" by lunar geologists.

Any light that hits a perpendicular flat surface of this powdered regolith is reflected straight back toward the viewer. As a result, no matter what the angle of incidence of the curved face of the moon, light is reflected straight back to your eye in a linear fashion, so equal amounts of photons strike your retina from not only the center of the Moon's face, but also the edges of the Moon's surface at the limb. Therefore, the moon appears to us as a disk as flat as a pizza pan, with no depth.

However, this effect is nullified during a total lunar eclipse. When a lunar eclipse occurs, the only sunlight that reaches the moon is refracted by the earth's atmosphere, striking it at an irregular and diffuse angle. From the moon's surface, you would be seeing all of the Earth's sunrises and sunsets at the same time, appearing as a red-orange ring illuminating the atmosphere all around the Earth.

The light striking the moon is coming to the moon from more than one angle. The light that is reflected back to your eyes is red colored, with the light levels falling off as you look towards the limb or edges of the lunar face. This is the only time that you can see a lunar limb darkening effect.

With this limb darkening in view, and especially when the moon's face is framed by clouds or terrestrial objects like trees or buildings or your fingers and hands, the eclipsed moon magically and spookily appears to you as a three-dimensional sphere hanging in the sky. The first time I saw this I was stunned. The light that reaches the moon in this manner is scattered in all directions, and the ruddy moon takes on an eerie three-dimensional appearance. We see it as a spherical natural satellite and not a flat dinner plate in the sky.



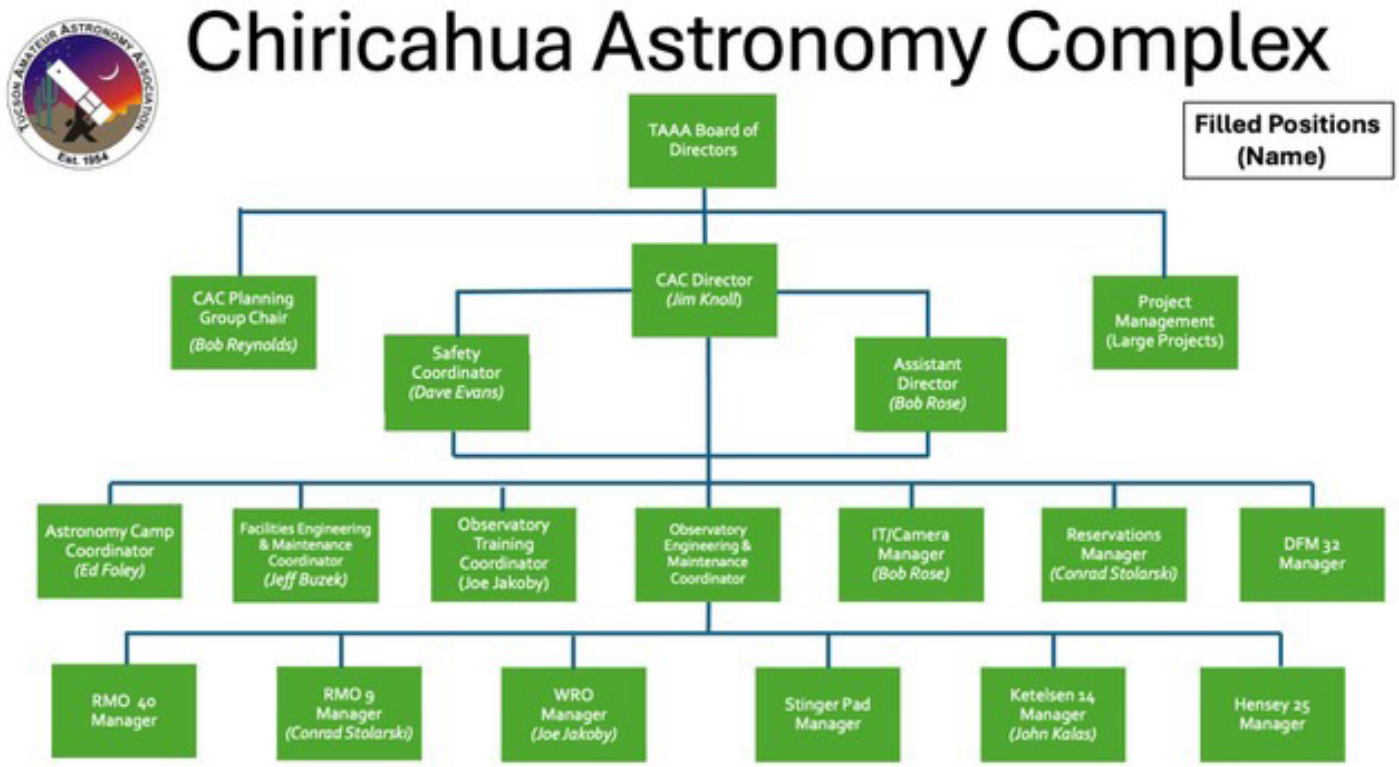
This was a view that was seen by the Apollo astronauts as they approached and receded from the Moon, and will be seen as well by the future Artemis and Lunar Gateway astronauts

Chiricahua Astronomy Complex Update

Jim Knoll
CAC Director

Want to get more involved in your Astronomy Association? We would love to have your help or your participation at our premier, world-class Chiricahua Astronomy Complex (CAC). We have many large telescopes ranging from a 40-Inch Dobsonian, a 25-Inch and 18-Inch Dobsonian, a 9-Inch Folded Refractor, a soon to be completed 32-inch Cassegrain, and quite a few Schmidt-Cassegrain Telescopes (SCTs) of various sizes. The telescopes are configured for either visual observing or imaging. You can get trained to operate any of these and observe or image from a dark Bortle 1-2 site only 2 hours from Tucson. We also have 10 sleeping rooms with heat and air conditioning, A Learning Center/Classroom, 7 RV sites with electricity, and a large tent camping area. We also need help with managing the site, from managing individual telescopes to maintenance of the site. Let me know if you can help with this vital mission of TAAA. Check out the CAC webpage. There you will find information on CAC, videos and images of the site, and how to make a reservation. We also expect to have an Open House soon, probably in the early Fall to showcase our latest additions to the site. If it is your first visit to CAC, we recommend coming on a CAC weekend (dates posted on the webpage) when other members are present. After your initial visit, you can get trained to open/close the site and use the site anytime with a reservation. See you at CAC!

Our current Organizational Chart is below, showing the extensive nature of CAC.



Observing Sites

TIMPA

by TIMPA Planning Group

TIMPA (Tucson International Modelplex Park Association) is TAAA's dark sky site west of the Tucson Mountains.

Location: The TIMPA observing site is located a few miles beyond the Desert Museum (3250 N. Reservation Road, Tucson, AZ 85743).

TIMPA Star Party Dates this month (Friday - Saturdays)

February 28-March 1; March 13 (Lunar Eclipse); March 28-29

The TIMPA Planning Group will be offering assistance with telescope usage and observing during the monthly TIMPA Star Parties. You are invited to bring your equipment and questions to TIMPA on Star Party dates for assistance. Be sure to register using the link below.

The TIMPA site is only partially improved. There are no inside buildings provided other than restrooms. TAAA provides very limited seating (members are welcome to bring folding chairs). Please note that members visiting the TIMPA site may encounter things commonly found in partially improved desert areas such as desert creatures and/or their remnants (such as gopher holes or ant hills), uneven terrain, weeds, and desert pollens. Members using the site are encouraged to bring red lights and to move cautiously taking appropriate safety measures. The site does not have potable water, so bring your own non-alcoholic drinks.

Reservations for the TIMPA Site are made on the TAAA website at TIMPA DARK SITE RESERVATIONS. Please fill out the form completely and be sure to indicate the date you desire to visit TIMPA.

Questions? Contact the TIMPA Director: Stephen Ferris

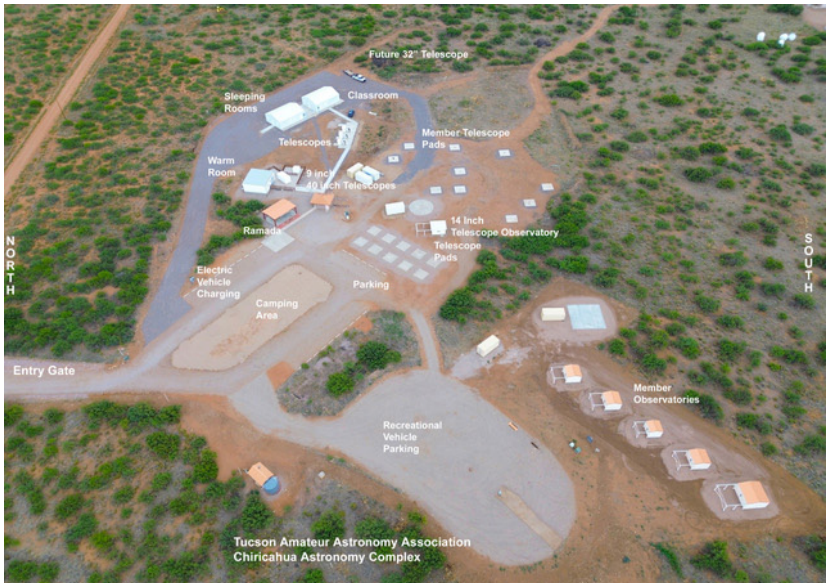
Chiricahua Astronomy Complex

by Jim Knoll

Upcoming CAC Weekend Dates (Thursday - Sunday)

February 27 - March 2 (New Moon February 27)
March 27 - 30 (New Moon March 29)

Chiricahua Astronomy Complex (CAC) is the club's dark sky observing site, located in Cochise County approximately 100 miles southeast of the center of Tucson. If you would like to attend, you must make a reservation on the CAC Web page at CAC Reservations.



Unless you are qualified to open and close the site, dates will be limited to those around the New Moon and are listed on the CAC web page. Hosted personnel are generally on site a few days before and after these dates. Those qualified to open & close the site can use it anytime but still need to reserve through the CAC Reservations process.

CAC Director: Jim Knoll

Observing Sites' 2025 (1st Half) Star Party Dates

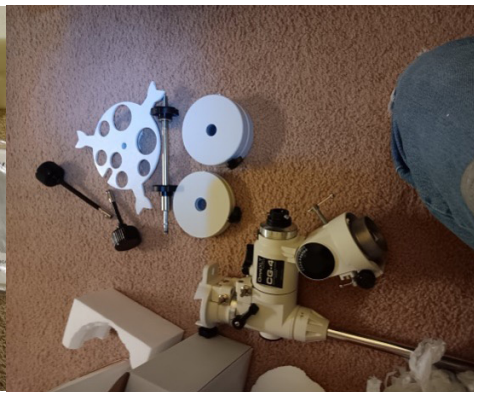
TIMPA	New Moon	CAC
February 28-March 1	February 27	February 27–March 2
March 13 (Lunar Eclipse)		
March 28-29	March 29	March 27–30
April 18-19		
April 25-26	April 27	April 24 – 27
May 16-17		
May 23-24	May 26	May 22 – 25
June 20-21		
June 27-28	June 25	June 26 – 29

TAAA Astronomy Equipment For Sale

TAAA has an assortment of astronomy related equipment for sale. This equipment is available for members only at this time.

Celestron 6" NexStar SE Tripod, eyepiece, finder, carrying case for scope and tripod. **$825**

Celestron 5" Omni XLT
Tripod, Celestron CG4 GEQ mount, 6x30 finder, diagonal, 1 eyepiece, user's manual. **$500**



Steal of the Month!

12" Dobsonian
Very large,
Homemade.
Crosshair finder
$500

Celestron 8" CPC
(no photo)
Dual fork arm mount, 9x50 finder, 2 eyepieces, telrad, finder rings, hand controller, user's manual, tripod, diagonal. Basically, new in original box.
$1,600

We also have an assortment of other items available at this time including: Finder rings, focusers, telescope rings of various sizes, mirror blanks of many sizes, a 6-inch Newtonian mirror set mounted in cells, several large mirrors and more.

To make inquiries about what is available or to express a desire to purchase one of items please contact: Douglas Smith; 520-396-3233

by Bernie Stinger

March 2025 Star Party Volunteer List

Thank you for volunteering your time and talents for our extremely important outreach mission. **Below is the current status of the Public/School Star Party list for March, 2025.**

Please let me know by email if you are interested in volunteering for any of the events listed below. First come – first served. I will let you know in return if you are on it or that it was already filled. Some events go fast!

If you are new to Star Party outreach, let me know and we'll be sure to help you get started. It is important you sign up for star parties if you plan to attend, whether you bring a scope or help in other ways, so I can manage who from TAAA will be on-site and for you to be included in any reminder or weather emails.

The PUBLIC Astronomy Events are also listed on the TAAA (tucsonastronomy.org) and Night Sky Network (NSN) (nightsky.jpl.nasa.gov) calendars. Also, all PUBLIC star parties will be listed on the TAAA Facebook events page and will be updated based on weather, etc. in real-time. You can follow any of these events and get a notification when I update each event but this is only for PUBLIC star parties listed on Facebook.

The requests have been updated as of February 24th. **The first section, in RED, is a list of events where we still need volunteers.** If you can help out please contact me at:
astronomy-events@tucsonastronomy.org

Thank you, Bernie Stinger
TAAA Public/School/Non-Profit Star Party Manager

March Events still in need of Volunteers

Thursday – March 6 -- N TUCSON/MARANA
Leman Academy of Excellence – North Campus
7720 N Silverbell Rd.
Age/Grade Level: K – 8th Grade
Participants: 100+
1 Additional Scope Needed
Setup Time: 6:30 pm.
Start Time: 6:45-7:00 pm.
End Time: 8:00 pm.

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Friday – March 7 -- EAST TUCSON
Leman Academy of Excellence – East Campus
10100 E Golf Links Rd.
Age/Grade Level: K – 8th Grade
Participants: 75 – 100
1 Additional Scope Needed
Setup Time: 6:30 pm.
Start Time: 7:00 pm. End Time: 8:00 pm

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Saturday / Sunday – March 15 & 16 -- (UofA TUCSON)
Tucson Festival of Books (TFOB)
On the Mall at the UofA
Age Group: All Ages
Estimated # Participants: 100's to 1000/ day
Additional Solar telescopes needed each shift – separate Morning/Afternoon shifts (white light or H-alpha)
Please specify: Saturday or Sunday & Morning or Afternoon
Setup Time: Morning: 8:30 am Start Time: 9:00 am End Time: 1:00 pm
Afternoon: 12:30 pm Start Time: 1:00 pm End Time: 5:00 pm

Friday – March 21 -- TUMACACORI AZ
Tumacacori National Historical Park
1891 E Frontage Rd, Tumacacori, AZ
Age/Grade Level: All Ages.
3 Additional Scopes Needed
Setup Time: 7:00 pm. Start Time:7:30 pm End Time: 9:30 pm

Saturday – March 29 –NORTHEAST TUCSON
St. Francis in the Foothills Church
4625 E. River Road
Age/Grade Level: All Ages
Participants: 25+
1 Additional Scope Needed
Setup Time: 6:45 pm Start Time: 7:15 pm End Time: 9:00 pm.

Saturday – March 22 -- CENTRAL TUCSON
Astronomy Festival @ Brandi Fenton Park
LOTS OF VOLUNTEERS REQUESTED!! (With or without telescopes to help)
3482 E River Road (River & Alvernon)
Age/Grade Level: All Ages
Scopes Needed: As many as possible for Night Observing – let me know!
Night Sky Network Toolkits: As many as possible for interactive projects with the public – inform Terri Lappin and copy me.
Extra volunteers: to help anyone bringing a personal telescope to learn how to use it.
NSN Toolkits: Setup Time: 2 pm. **Exhibits**: 3 pm – 6pm.
Evening Observing: Setup Time: 6:30 pm. Observing: 7:30 – 9 pm
Helping with personal telescopes 3 – 9 pm.
Please advise what activity you can support.

Sunday – March 30 -- EAST TUCSON – SOLAR
Saguaro National Park – EAST
Saguaro EAST is located at 3693 S Old Spanish Trail.
Age Group: All Ages
Estimated # Participants: 50
1-2 Additional Solar telescopes needed (white light or H-alpha)
Setup Time: 12:30 pm Start Time: 1:00 pm End Time: 3:00 pm

March Events Filled—No Volunteers Needed

Saturday – March 1 -- Organ Pipe, AZ
Organ Pipe Cactus National Monument
Age/Grade Level: All ages
Participants: 75 – 100
0 Scopes Needed
Setup Time: 6:30 – 7pm
Start Time: 7:30 pm End Time: 10:00 pm.

Tuesday – March 4 -- WEST TUCSON
Cooper Center for Environmental Learning
5403 W Trails End Rd
Age/Grade Level: Grade 5
Participants: 70
0 Scopes Needed
Setup Time: 6:30 pm. Start Time: 7:00 pm.
End Time: 8:30 pm.

Friday – March 7 -- FAR WEST TUCSON
Pima County Natural Resources Parks & Recreation (NRPR) – Juan Santa Cruz Picnic Area
2000 N Kinney Road
Age/Grade Level: All Ages
Participants: 75–100
0 Scopes Needed
Setup Time: 6:30 pm Start Time: 7:00 pm
End Time: 9:00 pm

Thursday – March 13 -- EAST TUCSON – Special Lunar Event
Saguaro National Park EAST
Saguaro EAST is at 3693 S Old Spanish Trail.
Age Group: All Ages
Estimated # Participants: 100
0 Scopes needed
Setup Time: 9 – 9:30pm
Start Time: 10:00 pm End Time: 1:00 am

Saturday – March 1 -- EAST TUCSON
Saguaro National Park EAST
Saguaro NP is at 3693 S Old Spanish Trail.
Age Group: All Ages
Estimated # Participants: 100+
0 Scopes needed
Setup Time: 6 – 6:30pm Start Time:7:00 pm
End Time: 9:00 pm

Thursday – March 6 – NORTHEAST TUCSON
John B. Wright Elementary School
4311 East Linden St
Age/Grade Level: 3 to 5
Participants: 100
0 Scopes Needed
Setup Time: 6:30 pm Start Time: 7:00 pm
End Time: 9:00 pm

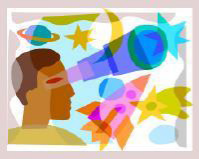
Thursday – March 13 – N TUCSON/MARANA
Leman Academy of Excellence – North Campus
7720 N Silverbell Rd.
Age/Grade Level: 3rd Grade + Families
Participants: 100
0 Scopes Needed
Setup Time: 6:00 pm Start Time: 6:30 pm
End Time: 8:00 pm

Thursday –March 20 -- WEST TUCSON
Cooper Center for Environmental Learning
5403 W Trails End Rd
Age/Grade Level: Grade 6/7/8
Participants: 40
0 Scopes Needed
Setup Time: 7:00 pm. Start Time: 7:30 pm.
End Time: 9:00 pm.

Friday – March 28 – Chiricahua Mountains
Chiricahua National Monument
12856 E Rhyolite Creek Rd, Willcox, AZ
Age/Grade Level: All Ages
Participants: 75
0 Scopes Needed
Setup Time: 7:00 pm Start Time:7:30 pm End Time: 9:30 pm.

Saturday – March 29 –- SOUTH TUCSON
Sunnyside Neighborhood Association 5901 S Fiesta Ave.
Age/Grade Level: All ages
Participants: 60
0 Scopes Needed
Setup Time: 6:45 pm Start Time: 7:15pm End Time: 9:00 pm.

Special Interest Groups



Starry Messengers Special Interest Group

Opening Minds to the Universe

We need help from all TAAA members with two big outreach events this month. The first event is the Tucson Festival of Books (TFOB), March 15 & 16, where we will have an exhibit featuring sun related activities. Many TAAA members have already signed up, but there are still openings in the schedule for Saturday, noon to 6pm and Sunday, 10am to 6pm. Sign up for a two hour shift, more if able. Exhibit volunteers will be talking to the public about astronomy and the TAAA. We also need a few solar scopes. We are looking for someone to spend a few hours at the event taking photos of our exhibits and scopes. This event takes place on the mall at the UofA. Volunteers will receive an email with details as to where our exhibit and telescope area will be located.

To volunteer for our exhibit at TFOB, please use these links.
Saturday: https://volunteersignup.org/A7DL8
Sunday: https://volunteersignup.org/3HF3C
For solar scope volunteers, see the event listing in the School/Public Star Party Requests section of this newsletter.

We also need help for the TAAA Tucson Astronomy Festival at Brandi Fenton Memorial Park on Saturday, March 22nd. The exhibit area will feature the same sun-related materials from the TFOB event, as well as other hands-on educational activities for families. To volunteer for the Tucson Astronomy Festival, use this link: https://volunteersignup.org/MA38D. Set up will be from 1pm to 3pm, the event takes place 3pm to 9pm, and take down is 9pm to 10pm. The park is located at River and Alvernon, we'll be at Ramada 1.

The SMSIG will meet by Zoom on Monday, March 10th at 7pm. We'll use this time to take care of last-minute details about these two March events. The Zoom link will be emailed to TAAA members.

SMSIG will also provide three judges for the Southern AZ science fair on March 4 & 5. This year's judges are Karen Liptak, Todd Hansen, and Terri Lappin.

We have requests for astronomy education activity requests on March 6 (Tom Sarko), March 7 (UNFILLED), April 2nd (Pete Hermes), and two requests on April 9 (Tom Sarko, second event is UNFILLED). Additional help is always appreciated at any of these events.

If you want to help with any of these events, or have questions about the Starry Messengers SIG, contact Terri Lappin: Email or 520-977-1290.

Astronomy Fundamentals SIG

by Connor Justice

Come join us for a presentation on the fundamentals of amateur astronomy. Learn your way around the night sky to add to your observing enjoyment. Meetings are on the second Thursday of each month.

The next AFSIG meeting is on **Thursday, March 13, 6:30pm to 8:30pm.**
Topics to be determined.

Contact Connor Justice for Zoom link and more information.

Access videos of previous meetings in the TAAA's YouTube Channel AFSIG on the Web

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Astro-Imaging SIG

by Gregg Ruppel

The next AISIG meeting will be **Monday, March 17 at 7:00 pm** via ZOOM.

Topics:
Beginners' Corner - Ask a Question
How to easily create Hubble Palette images in Pixinsight using Narrowband Normalization. - David Stearn
Image Sharing - Discussion

Email Gregg Ruppel for the ZOOM link or any other information. Gregg and the AISIG folks are very active on the TAAA groups.io forum. Check out all the helpful advice and amazing images there. For more information or instructions on how to join the forum, click here.

View previous AISIG meetings on the TAAA YouTube Channel.
Also, we now offer a mentoring program. For details, see the AISIG Web Pages.

Astronomical League

by Doug Smith

What's Up in March - April 2025

The following is a list of the objects for various AL observing programs that are well placed for observation during March and April 2025.

Constellation Hunter Program – Northern Sky
The following Northern Constellations are well placed for viewing during March and April: Orion, Gemini, Taurus, Auriga, Leo, Lynx, Perseus, Canis Minor, Camelopardalis, Monoceros

Messier Observing Program - The following Messier objects are well placed for viewing during March and April: M42, M43, M1, M35, M36, M37, M38, M41, M46, M47, M48, M79, M45

Urban Observing Program

The following **deep sky objects** are placed for observing in March and April: M45, Hyades, NGC 1647, NGC 1807, NGC 1817, M38, M36, M42, NGC 1981, M37, M35, NGC 2169

The following **non-deep sky objects** are favorably placed for viewing during March and April: Trapezium, Gamma Leo, Beta Monoceros

Astronomical League Continued

Lunar and Observing Program
The following is a list of dates for lunar phases in March and April:

New Moon: March 29, April 27
40 Hours waxing: March 1, 31, April 29
72 hours waxing: March 2, April 1, 30
4 days old: March 3, April 2
7 days old: March 6, April 5
10 days old: March 9, April 7
Full (14 days old): March 14, April 13
Gibbous: March 22, April 20
72 hours waning: March 26, April 24
40 hours waning:March 27, April 25

Solar System Observing Program
The following is a list of planets that can be observed during March and April.

Mercury is an early evening object for the first two weeks of March. It is an early morning object for the remainder of March and all of April. It reaches it greatest brightness on the morning of April 21. **Venus** is an early evening object until March 23. It then swings around the Sun becoming an early morning object for the remainder of March and all of April.
Mars is well placed for evening observation. On March 1 it transits around 8:30 PM. On April 30 it transits before sunset, but does not set until around 1:00 AM.
Jupiter sets earlier each night during March and April. It is still well placed for early evening observation, not setting until around 1:30 AM on March 1 and around 10 PM on April 30.
Saturn is too close to the Sun to observe during March. It becomes visible in the early morning sky by April 1. It rise about 45 minutes before the Sun on April 1 and about 2 hours before the Sun on April 30.
Uranus is still visible in the early evening sky during March and April. It sets around 11:30 PM on March 1 and around 8 PM on April 30.
Neptune is very close to the Sun in early March. By late March it is an early morning object. On March 31 it rises about 30 minutes before the Sun. On April 30 it rises 1.5 hours before the Sun.

SPECIAL EVENTS: April is a good month for observing Saturn's moons involved in mutual events (occultations and eclipses):
March 30, 2025: Dionne eclipses Tethys. Start: 11:51:46 UT, End: 11:54:39 UT
April 1, 2025: Mimas eclipses Enceladus. Start: 2:51:49 UT, End: 2:52:54 UT
April 8, 2025: Mimas eclipses Enceladus. Start: 7:36:39 UT, End: 7:37:57 UT
April 9, 2025: Mimas eclipses Tethys. Start: 8:01:14 UT, End: 8:02:35 UT
April 11, 2025: Mimas eclipses Tethys. Start: 5:17:50 UT, End: 5:19:18 UT
April 11, 2025: Mimas eclipses Dionne. Start: 9:58:04 UT, End: 9:59:25 UT
April 13, 2025: Mimas eclipses Tethys. Start: 2:34:28 UT, End: 2:35:53 UT
April 16, 2025: Mimas eclipses Enceladus. Start: 4:42:14 UT, End: 4:43:23 UT
April 18, 2025: Dionne eclipses Tethys. Start: 12:20:59 UT, End: 12:23:19 UT
April 26, 2025: Mimas eclipses Enceladus. Start: 3:08:41 UT, End: 3:12:38 UT

TOTAL LUNAR ECLIPSE March 13-14
Penumbral eclipse begins on March 13 at 8:58 PM Tucson Time
Umbral eclipse begins on March 13 at 10:10 PM Tucson time.
Totality begins on March 13 at 11:26 PM Tucson time.
Maximum eclipse occurs on March 13 at 11:59 PM Tucson time.
Totality ends on March 14 at 12:31 AM Tucson time.
Umbral eclipse ends on March 14 at 1:48 AM Tucson time.
Penumbral eclipse ends on March 14 at 3:00 AM Tucson time.

Member Astro-Images

M1 Crab Nebula

C11 Edge + ZWO 2600mc pro Duo, 3 min subs over a couple hours, no filters used, 1x drizzle processed.

Tom Eby

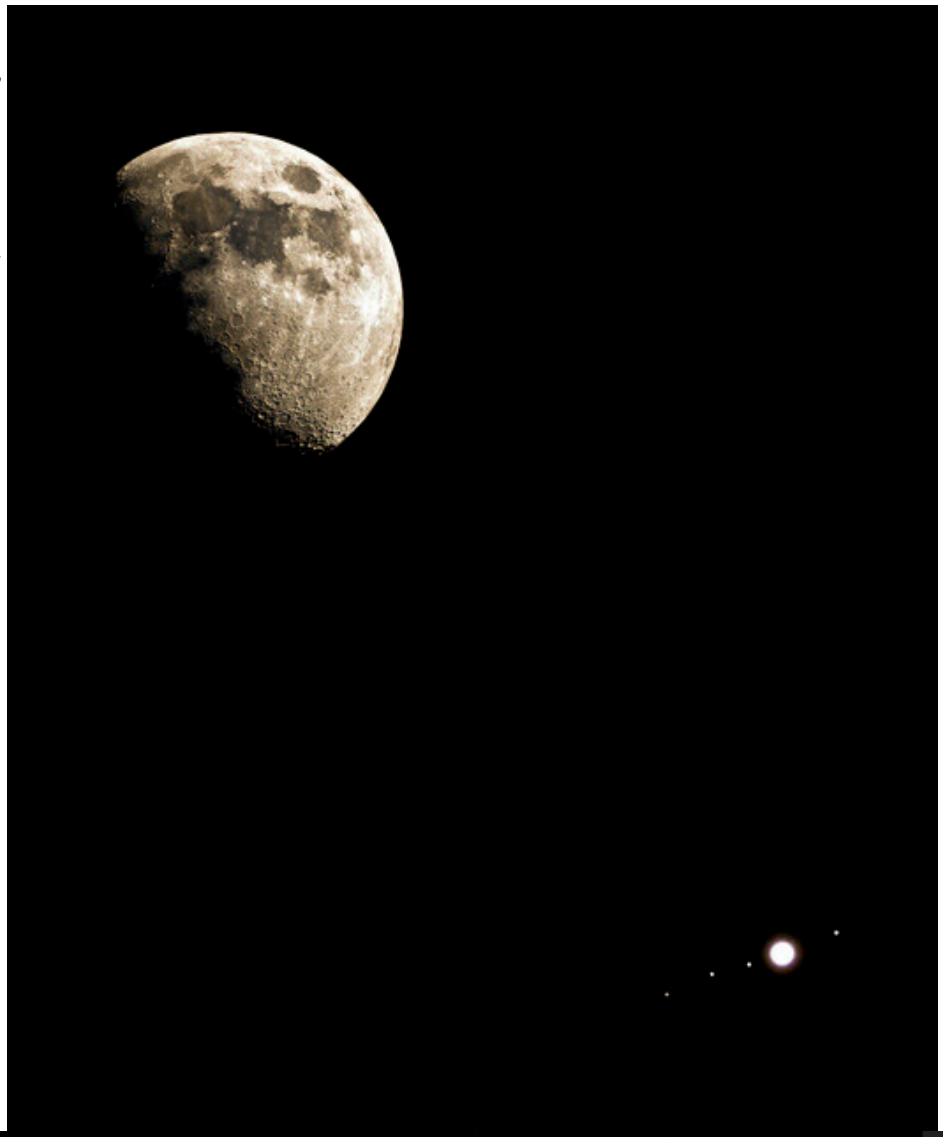
Dolphin Head Nebula Sh2-308

ZWO 2600mc pro OSC, Gain 100 Offset 40 -3C, CEM70ec mount unguided, 2 min subs.

Richard Spitzer

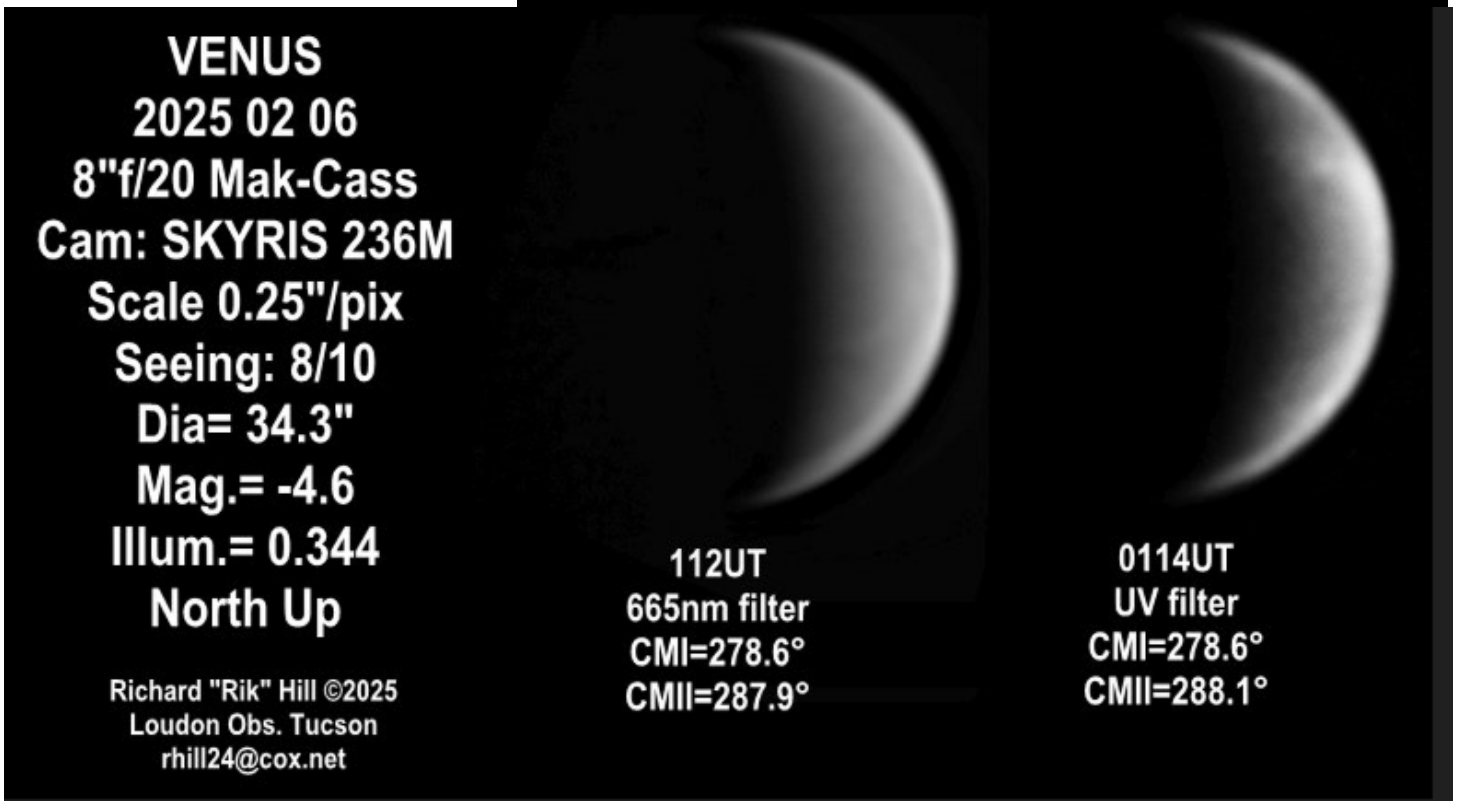
Moon Jupiter conjunction

Seestar S50 photo of the moon and Jupiter, 2/6/25 about 7:20 PM.



Richard Hill

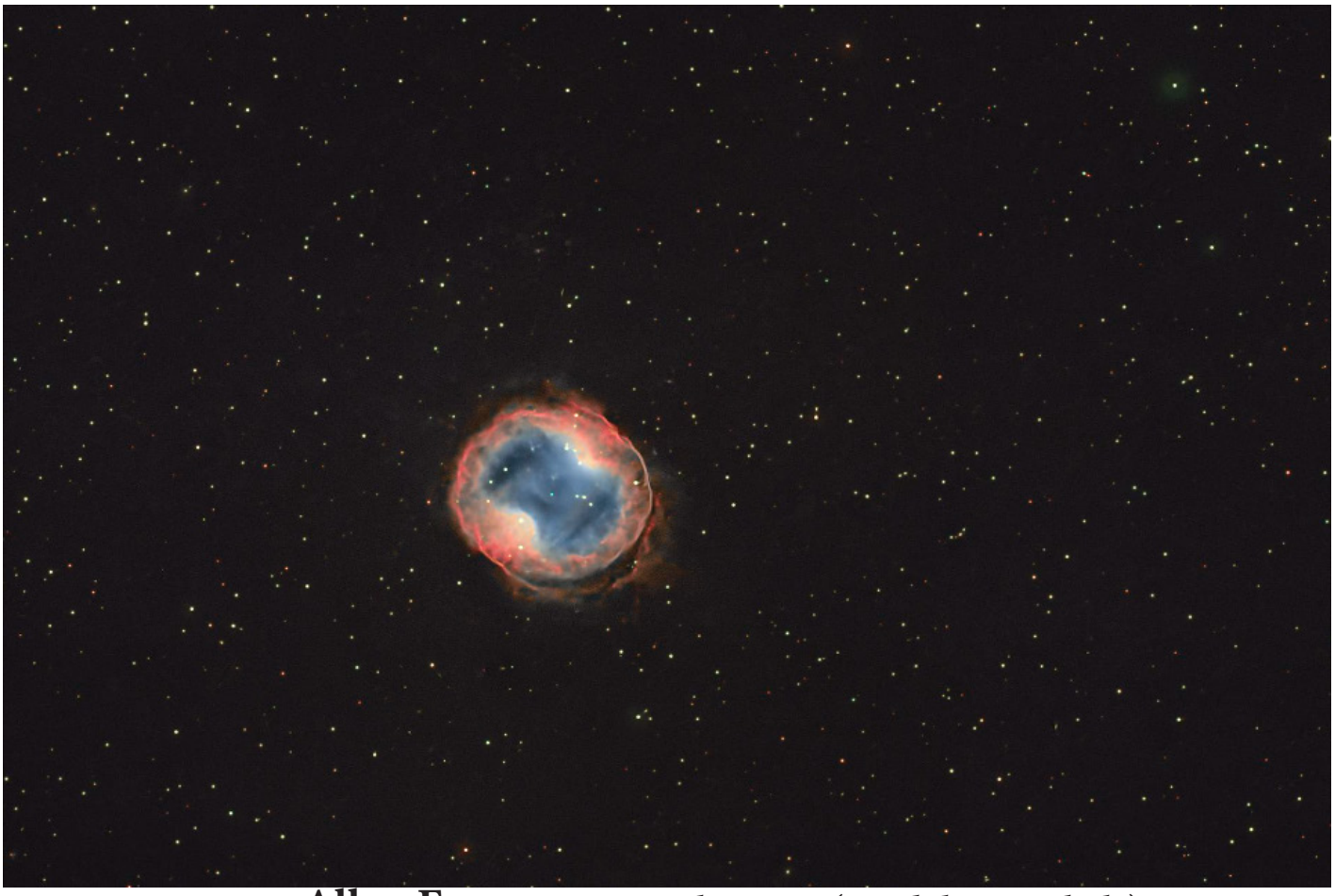
Venus



Craig Harding

LBN 762 ASI 6200 full frame camera

LDN 1584 Cederblad 51 Astro-Tech 130EDT refractor, 0.8 reducer, ASI2600mc Duo on an AM5N mount



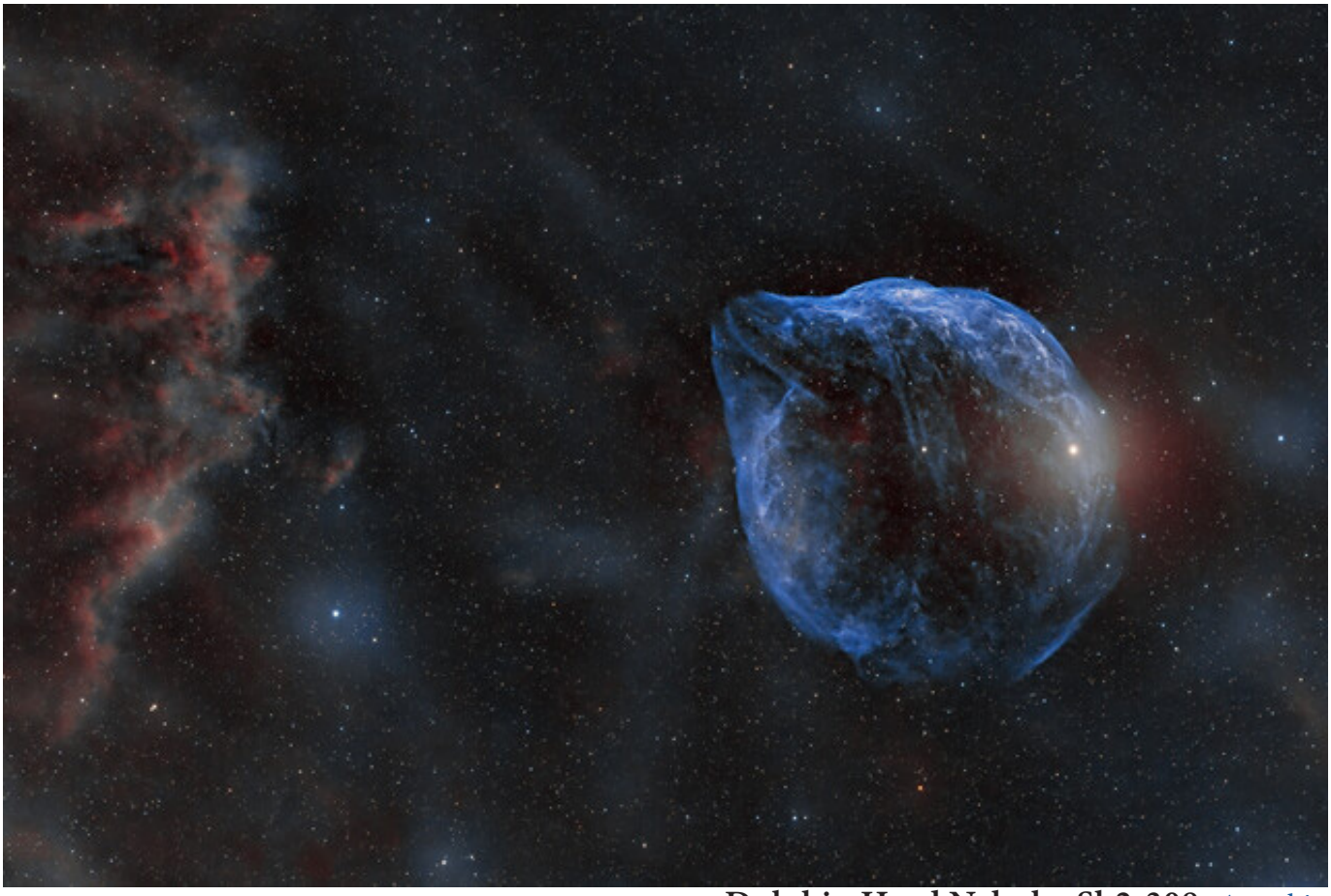
Allen Force **Jones-Emberson 1 (Headphone Nebula)** Astrobin

Randy Smith

NGC 2335 Seagull Nebula with NGC 2359 Thor's Helmet

Askar FMA 180 2600 MM Antlia SHO 3 nm filters 144x180 (7 hours) using Foraxx pallet with a little Hubble palette blended in.

Astrobin



Dolphin Head Nebula, Sh2-308 [Astrobin]

David Stearn

Seagull Nebula [Astrobin]

Alan Rockowitz **Horsehead nebula** 140mm iStar scope with an Optolong Ha filter, 580 subs of 60 seconds each.

Jeff Rothstein **NGC 1333** Astrobin

Mike Mulcahy

NGC 2264
Cone, Christmas Tree and Fox Fur Nebulae

HaRGB

Sh2-284

HOORGB

College of Science

2025 Lecture Series

Join us for the 20th annual College of Science Lecture Series at Centennial Hall! Web Site

This four-part series will run throughout the month of March as we explore various aspects of communication — from dog-human communication, to bilingual communication, to A.I. and computer communication, and what extraterrestrial communication from the cosmos might look like. Learn more about our four lectures below.

All lectures are free and open to the public. Doors will open at Centennial Hall at 6:15 p.m. The lecture presentation begins at 7:00 p.m. **The lectures will also be livestreamed on YouTube.**

March 6, 2025 | Emily Bray and Evan MacLean
Sit, Stay, Speak: Unleashing the Science of Dog-Human Communication

March 13, 2025 | Genesis Arizmendi
Two Languages, One Mind: What Science Reveals About Bilingual Communication

March 20, 2025 | Ellen Riloff
Following Your Heart: Recognizing Emotions in Human-Computer Communication

March 27, 2025 | Daniel Apai and Chris Impey
Cosmic Conversations: Communicating with the Unknown

ARIZONA | DEPARTMENT OF ASTRONOMY AND STEWARD OBSERVATORY

Public Evening Lecture Series
Spring 2025

Public Evening Lectures will **begin at 7:30 p.m. Steward Observatory Room N210 or on Zoom.**

Spring 2025 Lectures

Mar. 7 (Fr) Dr. Bharat Ratra Kansas State University
"The Accelerating, Expanding Universe: Dark Matter, Dark Energy, and Einstein's Cosmological Constant"

Mar. 17 Dr. Irina Panyushkina Laboratory of Tree Ring Research
"Using Tree Ring Data to Find Solar Explosions"

Mar. 31 Dr. Jacob Isbell Steward Observatory
"Science with Extremely Large Telescopes: Direct Imaging of Active Galactic Nuclei"

Apr. 14 Dr. Mathieu Renzo Steward Observatory
"The Explosive Life of Massive Stellar Binaries"

Public Evening Lecture Series Page **Videos of Previous Public Evening Lectures**

New Vistas Returns January-April 2025

Whipple Observatory's immensely popular New Vistas in Astronomy lecture series returns for its 56th year with a tribute to the groundbreaking science happening right here in Arizona. From Mt. Hopkins to Mt. Graham, and how light pollution impacts not only the night sky but everything (and everyone) living on the ground, this year's series will uncover the wonders of the night.

New Vistas in Astronomy occurs at Green Valley Rec Center West but is FREE AND OPEN TO THE PUBLIC.

LECTURE SCHEDULE FOR 2025

Thursday, February 27 @ 9am

Dr. Grant Williams, PhD

Director - MMT Observatory
Astronomer - Steward Observatory, University of Arizona

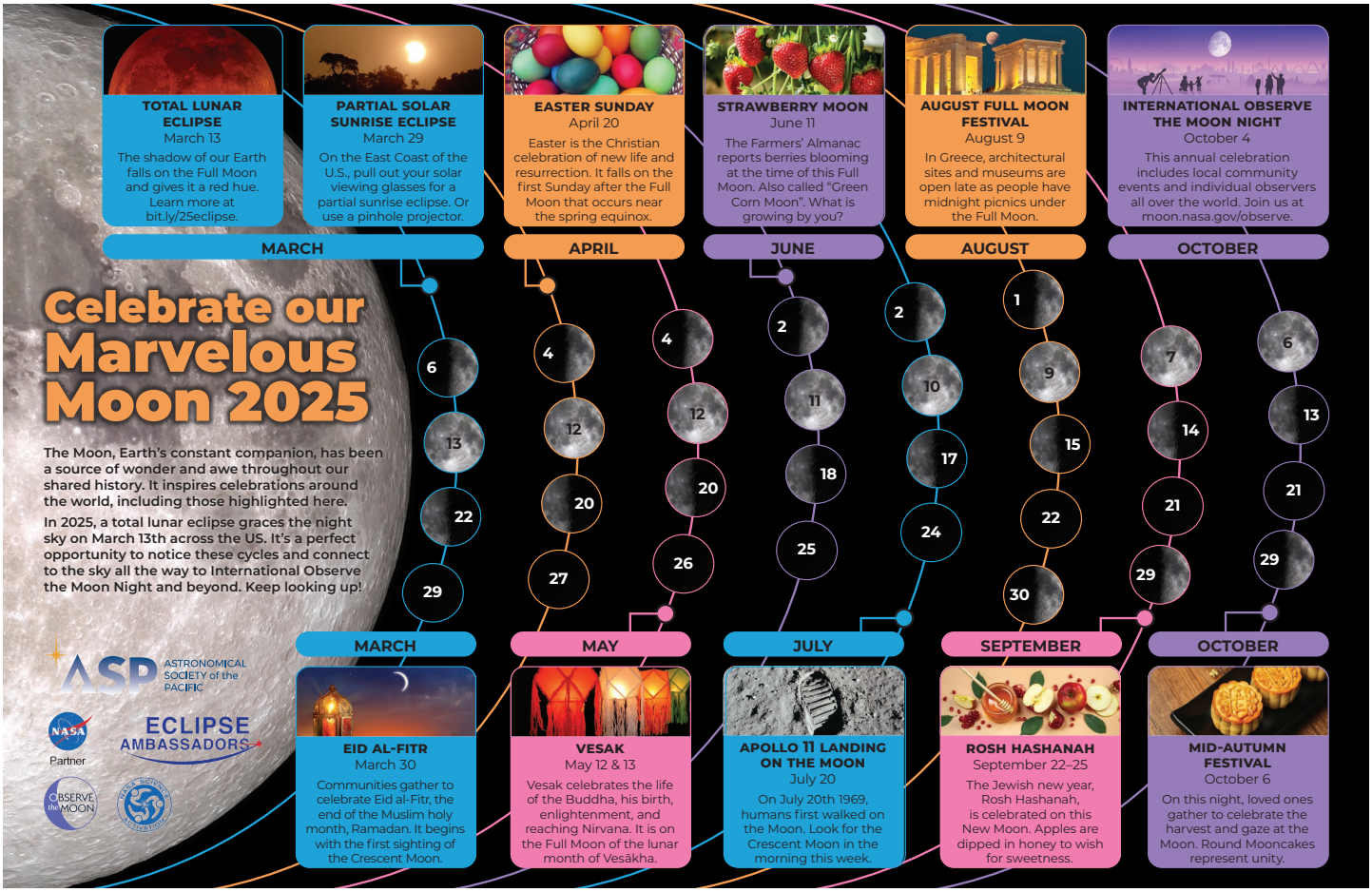
Watch Livestream

Thursday, March 27 @ 9am **Dr. Joannah Hinz, PhD**
Deputy Director - Large Binocular Telescope Observatory (LBTO)
Associate Research Professor - University of Arizona

Thursday, April 24 @ 9am **Amy C. Oliver, FRAS**
Public Affairs Officer - Fred Lawrence Whipple Observatory Smithsonian Astrophysical Observatory
Principal Investigator - Dark SkyNet Project GLOWWORM

New Vistas Landing Page

Location:
Green Valley Rec West, 1111 So. GVR Dr. in Green Valley, Arizona



The Moon, Earth's constant companion, has been a source of wonder and awe throughout our shared history. It inspires celebrations around the world, including those highlighted here.

In 2025, a total lunar eclipse graces the night sky on March 13th across the US. It's a perfect opportunity to notice these cycles and connect to the sky all the way to International Observe the Moon Night and beyond. Keep looking up!

Download this poster in many different formats from [this page.]

Skyward

By Dr. David H. Levy

March 2025

Shakespeare and the Night Sky

If we begin this month by trying to find the best line Shakespeare ever wrote, that may not be an easy task, or it could be quite easy. I could open my Shakespeare and pretty much point at random to almost any line in the canon. But today I do have something specific in mind. It is a simple prose passage from Hamlet, and it could be one of the finest passages he ever committed to paper:

> I will tell you why; so shall my anticipation prevent your discovery, and your secrecy to the King and Queen molt no feather. I have of late, but wherefore I know not, lost all my mirth, forgone all custom of exercises, and, indeed, it goes so heavily with my disposition that this goodly frame, the Earth, seems to me a sterile promontory; this most excellent canopy, the air, look you, this brave o'erhanging firmament, this majestical roof, fretted with golden fire—why, it appeareth nothing to me but a foul and pestilent congregation of vapors. What a piece of work is a man, how noble in reason, how infinite in faculties, in form and moving how express and admirable; in action how like an angel, in apprehension how like a god: the beauty of the world, the paragon of animals—and yet, to me, what is this quintessence of dust?
>
> -Hamlet.2.2. 292-306.

The magic of this passage begins with the "goodly frame". Hamlet is speaking of the planet on which he lives as almost a consecrated thing. It is surrounded by a most excellent and protective canopy, the air; without it we would never be here or could have evolved here as a species. But the lines reach their zenith with the "brave o'erhanging firmament", a reference to the night sky in a way virtually none of us could even imagine. It gets better: "this majestical roof, fretted with golden fire." I can think of no more appropriate way to characterize the night sky. Shakespeare is ready to call the magnificence of the night sky, on any night, a holy thing and experience. I have heard the night sky described in many ways during my lifetime, but never so exquisitely.

William Shakespeare's birthplace in Stratford-upon-Avon, England. Photo by Doveed Levy

Many readers of this column take advantage the night sky as a target of their cameras; I am one of those who does not. I am primarily a visual observer, and from night to night, season past season, and year after year, I am still spellbound by the simple joy of the night sky. It is not that I have never photographed. I used to be quite the celestial shutterbug. And between 1989 and 1996 I took literally thousands of pictures of the sky, mostly using the 18-inch Schmidt camera at Palomar Mountain Observatory. Just two of those images, recorded on March 23, 1993, began an adventure with a comet that eventually collided with Jupiter. Perhaps that was enough. In a sense, it is time for me to give my camera a rest, open my eyes, and simply enjoy the night sky's golden fire.

Dr. David H. Levy is a long-time member and former President of the TAAA. He is a well known astronomy writer and discoverer of comets. He writes this monthly "Skyward" column for the Vail Voice and generously