# TAAA DESERT SKIES BULLETIN

**Observing Our** 

Since

**Desert Skies** 

1954



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### **Membership Meeting**

September 2022

TAAA's next general member meeting will be held on **Friday, September 2, 2022**. The Main Presentation starts at 6:30 PM (AZT), followed by a Members Only meeting.

This will be a **hybrid meeting** (both in person and online). TAAA members will receive a Zoom link should they wish to attend remotely. The public may attend in person at the **Steward Observatory Lecture Hall (Rm N210), 933 N Cherry Ave., Tucson** or online through our **Facebook page** at <u>https://www.facebook.com/</u> <u>TucsonAstronomy/</u>.

### Main Presentation at 6:30PM AZT

*Title:* The James Webb Space Telescope: observing from the Solar System to the Earliest Universe

*Presentation:* This talk will describe the James Webb Space Telescope (JWST), its instruments, and what we have learned so far in its mission. The 10-billion-dollar telescope, now situated a million miles from Earth, was launched on December 25, 2021. With its sensitivity in the infrared spectrum, (which can't be seen by the human eye), it promises to reveal much valuable new information about the universe in which we live. Its first images, released to the public on July 12, 2022, give a hint of what's to come. Learn about them, JWST's future, and how to keep up on JWST news.

### September 2 @ 6:30 pm - 9:00

**Inside this issue:** Notes from the President - <u>Page 2</u> Book of the Month - <u>Page 3</u> Special Interest Groups - <u>Page 4</u> "Monsoon Challenge" - <u>Page 6</u> Observing Sites and Updates - <u>Page 10</u> Connecting Astronomy with the Public - <u>Page 12</u> Astronomy League Convention Report - <u>Page 14</u> Other TAAA News/GCSP Reports - <u>Page 15</u> Astronomical League Observing Programs - <u>Page 20</u> Public Astronomy Events - <u>Page 22</u> Skyward - By David Levy - <u>Page 24</u>



*Biography:* Christopher Willmer, Ph.D. is an astronomer at Steward Observatory (University of Arizona). He's been part of the JWST Near Infrared Camera (NIRcam) team since 2007. His professional interest is mapping the distribution of galaxies in space and understanding how these systems evolve over time.

TAAA Desert Skies Bulletin <u>David Rossetter</u> – Editor Terri Lappin & Jim Knoll - Proofreading Greg Ruppel -Images; Ken Bertschy - Graphics

### August 2022

Some General Comments:

1) We are requesting additional support for running Monthly First Friday Member Meetings. Holding the meetings via Zoom, Facebook and in person requires at least 3 people operating technology functions. We are exhausting our great team by needing all three to be working the entire time for each monthly meeting. There are some smaller tasks that do not need to be done in person that would provide relief. In addition we need alternate persons to be able to substitute for one or two of our team members to give them an occasional break. If you can assist, please contact Jim Knoll or Terri Lappin.

2) Thanks to NVRC for immediately upon taking office getting so organized and conducting a very smooth both in-person and Zoom voting process on changing Member Dues. The dues change did pass and takes effect September 1.

3) Explore Scientific has donated a raffle item for the September Member Meeting. Our tech team is determining a raffle process that will allow both in-person and Zoom meeting attendees to participate.

4) We have had some minor wind damage and the return of the mouse to TIMPA. Strategies are being pursued. Also, increased maintenance at TIMPA is in process to deter weeds.

5) Our Treasurer is updating inventories and exploring future insurance costs. Please respond promptly if you receive inquiries from her.

The TAAA Board met on August 9th. Results of that meeting include: no COVID policy changes; passing an updated TAAA Donor Policy dealing with the process of receiving gifts; a report on the Grand Canyon Star Party 2022 including thank you letters to be

### by Mae Smith

published in the TAAA Bulletin from the GCSP National Park Service Ranger who coordinates with TAAA and the new GC Superintendent as well as the many successes this year; approval of a TAAA letterhead format for CAC documents and establishing a committee for consideration of a consistent TAAA document format; and overview of the TAAA Webmaster position description.

We had a very successful year at the Grand Canyon Star Party 2022. Please read the letters included in this issue of the Bulletin from Rader Lane and from the new Superintendent of the Grand Canyon who spent about half of the evenings with us and was very pleased. Rader's letter gives the official statistics and indicates that in spite of wind, rain, hail and lightening, we still accomplished a lot of astronomy outreach. We also introduced a new Star Guide program directed by Susan Knoll that was very successful in managing crowd flow on the telescope field. We made some changes in the free campsite program and added a new Social Director - both seemed to go well. TAAA was very appreciative that this year the Grand Canyon Conservancy supplied a free lunch for the astronomers, expanded our free admission to the IMAX to as many visits as we wished, and provided an additional preparation free night in the campground. Note that Jim O'Connor, TAAA Director of GCSP for the last 12 years, received the Dark Ranger Award from the National Park Service. That award typically is only given to National Park Service personnel so it was a very special honor for Jim to receive it. We wish to thank Jim and Susan O'Connor and their family members for their 12 years of dedication to and administrative efforts on behalf of TAAA and the GCSP.

President Mae Smith

# From The Editor - David Rossetter

This issue of the TAAA Desert Skies Bulletin is packed with lots of great stories and articles after a slow monsoon season. I hope you enjoy all the club information published for your benefit.

Please keep in mind, this bulletin is the official monthly communication of the Association. We are trying to centralize almost all membership information from the TAAA in this publication. Only immediate, time-critical information will be emailed separately. Longer-term, more static information will be on the web site. As always, you can access this issue through the MEMBERS ONLY tab on the web site (<u>www.tucsonastronomy.org</u>) and logging into MemberPlanet. Then select the "TAAA Links to Docs and Videos" link on the right. From the new page, select "Monthly Bulletins - Current".

As always, I welcome your contributions and stories.

# **Book Of the Month** By Douglas Smith (TAAA Librarian)

*Book:* The Sun and How to Observe It First published in 2009, the author is Jamey Jenkins.

This book is extremely useful for anyone interested in observing the Sun. The book is well written and contains numerous useful illustrations. It covers a variety of topics including all the various solar features that are visible and how to classify them. Well documented examples of all the features are given as reference. It covers all the different types of equipment that might be used for viewing the sun, from simple projection to Hydrogen Alpha scopes. Covers a variety of solar photographic techniques as well. I found this book extremely useful when I worked both of the Astronomical Leagues solar observing programs (Sunspotter and Hydrogen Alpha). I would recommend that anyone choosing to work on either of those programs or anyone who may be interested in doing solar observations should purchase this book. Currently going for between \$30 and \$40 on eBay.

# **TAAA Dues Increase Vote Results**

On August 5, 2022, the TAAA Nominations and Volunteer Resource Committee, at the direction of the Board of Directors, conducted a member vote at the General Membership Meeting on the proposed increase to the annual dues. The vote was conducted using a combination of Zoom and In-person procedures.

### The proposed dues increase passed.

Membership dues, effective September1, 2022, are as follows:

Membership Category	Dues
Individual	\$30
Senior	\$25
Teacher (K-12) or College Student	\$18
Family	\$35
Family/Senior	\$30
Family/Teacher (K-12) or College Student	\$23
Youth	\$18

**Special Interests Groups** 



# Starry Messengers Special Interest Group

# **Opening** Minds to the Universe

The Starry Messengers SIG will hold its first fall meeting on Monday, September 12th at 7:30pm. If you want to become involved in the TAAA outreach program, this meeting is a good time to join our group. The September 12th meeting will be by Zoom.

This year, we'll be meeting every second Monday of the month. It will be a mixture of Zoom and in-person meetings, depending on what we need to get accomplished.

At our September 12th meeting, we'll catch up on what we've been doing over the summer. We need to identify the activities we want to use for our spring outreach events. We may want to tie into the OSIRIS-REx sample return in September 2023, the annular solar eclipse (partial from Tucson) on October 14, 2023, or the Artemis missions that will return humans to the moon. Also at our September 12th meeting, we'll discuss other upcoming outreach activities. We have three telescope additions to the Library Telescope program thanks to the generous donations from two TAAA members. Of course, we always need to recruit and train additional members to do outreach activities.

The September 12th meeting will start at 7:30pm and will end no later than 9pm. We always welcome new faces at our meetings and will value your input to the discussion. A Zoom link will be emailed to all TAAA members should you want to join our SIG.

If you have questions about the Starry Messengers SIG, email <u>Terri Lappin</u> or call 520-977-1290.

# TAAA Ladies' Night Out

### by Susan O'Conner

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

Thursday, September 15, 6:30pm

Fatman Kítchen 2610 N 1st Ave ( NE corner of N 1st and E Copper)

Preview the menu at <u>https://fatmankitchenonline.com/</u> RSVP <u>Susan</u>

# Astronomy Fundamentals SIG

Come join us for a presentation from 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 meeting is on **Thursday, September 8th at 6:30 pm - 8:00 pm**. Topics to be determined.

Contact Conner Justice for Zoom link and more information.

### AFSIG on the Web

Access videos of previous meetings in the TAAA's YouTube Channel.

**Astro-Imaging SIG** 

by Gregg Ruppel

The next AISIG meeting is Monday, September 19 @ 7:00 pm via ZOOM.

Email <u>Gregg Ruppel</u> for the ZOOM link or find it in the <u>TAAA Forum</u>.

Topics: Exotic image processing tools: What do they do and how do they do it - Alex Woronow

Image Sharing, Q/A

Check out <u>AISIG On the Web</u> or contact <u>Gregg Ruppel</u> for the latest information and Zoom links. Look for previous meetings on the <u>TAAA YouTube Channel</u>. Gregg and the AISIG folks are very active on the <u>TAAA groups.io</u> forum. Check out all the helpful advice and amazing images there. For more information or instructions on how to join the forum, check out the <u>TAAA Forum</u>.

Imagers, to help ensure that the TAAA Desert Skies Bulletin has explicit permission to publish your fine work, we need you to submit your images directly to <u>Gregg Ruppel</u>, our Imaging Editor or come up with alternative arrangements. We would like you to restrict the size of your images to around 10MB (a little over is okay if needed). Members would appreciate a brief description of the object if it is not a common target along with your imaging details. If you desire, please include a link to the full-size version. I want to limit space to one page of the bulletin per contributor. If you submit five photos, they will be small or we may ask you to pick your favorites. If you do submit images, I will include you in a pre-publication version of the bulletin for your approval of the quality and layout. Feel free to ask me (<u>David Rossetter</u> – Bulletin Editor) or <u>Gregg</u> if you have any questions.

### Highlights from the Astro-Imaging SIG

### Monsoon Challenge

The AstroImaging Special Interest Group (AISIG) challenged members to image either M13 (globular cluster in Hercules) or M16 (Eagle nebula in Serpens) at the start of the monsoon season. Ladd Lindsay, who recently joined the group, came up with this idea and suggested the targets. Imagers presented their renditions at the July 15 AISIG meeting, and discussed how they acquired their data as well as how the image was processed. You can view the July meeting at the <u>Tucson Astronomy YouTube channel</u>.



Randy Smith - M16



Alex Woronow - <u>M16</u>





Gregg Ruppel - <u>M13</u> RGB with luminance synthesized from the color channels

Gregg Ruppel - <u>M16</u> 28 hours of luminance and Ha.





Tom Eby - M13





Sure hope these images inspire you to join the AISIG and try your hand at astro-imaging.

Ladd Lindsay M16



### by Ralph Means

TIMPA (Tucson International Modelplex Park Association), Dark Sky site west of the Tucson Mountains. <u>TIMPA on the Web</u>

**Observing Sites** 

TIMPA Star Party Dates this month: September 23 and 24.

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

The TIMPA site is only partially improved. There are no inside buildings provided other than restrooms. TAAA does not provide 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.

<u>Reservation Form</u> Any questions, please contact the TIMPA Director: <u>Ralph Means</u>

### Chiricahua Astronomy Complex

by Jim Knoll

CAC Weekend Dates coming up (Friday/Saturday): September 23 – 24 (New Moon September 25) October 21-22 (New Moon October 25)

Please join us to improve CAC with a maintenance Saturday October 8, 2022 from 9 - 4 pm. We will do some routine maintenance actions to improve the site. Please let us know if you can help out: <u>cac-director@</u> <u>tucsonastronomy.org</u>. Thank You!!

Chiricahua Astronomy Complex (CAC) is the club's dark 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 <u>CAC Reservations</u>.

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.

CAC Director: Jim Knoll

CAC on the Web

### **Observing Sites Star Party Dates 2022**

### TIMPA

September 23 and 24 October 21 and 22 November 18 and 19 December 16 and 17

### CAC

September 23 – 24 (New Moon September 25) October 21 – 22 (New Moon October 25) November 25 – 26 (New Moon November 23) December 22 – 23 (New Moon December 23)

### **Chiricahua Astronomy Complex Learning Center Construction Update** August/September 2022

Progress on the interior of the Learning Center Buildings continued this month. The interior framing was completed and confirmed by a scheduled Cochise County Inspection. The County inspector also awarded a 'Green Tag' to the electric panels paving the way for electric meters as soon as the power company lays the cables in the trenches to the buildings.

TAAA members John Kalas and Ross Carnes installed the Cat5 cabling necessary to hook up the camera security system for the buildings. Fabrication of the camera mounts and mounting of the cameras will happen in the next couple of weeks. The final installation of the camera system will need to wait for the local utility to bring power to the structures.

John Kalas, Mike McDowell and Ed Foley pulled the Cat6 cabling for the extension of the site's existing fiber optic internet connection from the RMO through conduit to and through the new buildings. A work party of volunteers will complete the internet and camera cabling by installing the connectors in the next couple of weeks.

The interior electric is being strung by the contractor. Plumbing located in the exterior walls is now also being completed. These activities are in anticipation of the spray foam insulation being done during the first week of September. This insulation will be applied to building's perimeter walls, roof and gables providing temperature insulation, sound attenuation and providing a moisture barrier. The interior room walls will be insulated with rock wool at a later date.

### By Ed Foley

Internet cable being strung.



### by Jim Knoll

Star Party Programs are starting to pick up again as we come to the end of another monsoon season and schools come back into session. I hope everyone enjoyed a little break but am sure



many are anxious to get in some observing and outreach again. As a refresher and for new members, the TAAA Star Party program supports the public, schools, and non-profit organizations with astronomy outreach. Organizations will request our support using the TAAA Website. After coordination, we determine the best start/stop time and optimum number of telescopes. I will then send out an email to TAAA members (usually around mid-month) listing the events for the following month and

number of telescopes required. Members can then reply to the email volunteering for any

outreach events they want to support. You can also sign up at the Friday General Meeting at the Steward Observatory. About 4 days before each event, I will send out an email with additional information. On the day of the event, I will advise the volunteers of any changes due to weather or other issues. Members then show up at the location with their telescopes to share astronomy with the participants. At the height of the season, we can have about 25 events/month, so any support from



TAAA members is appreciated. Outreach can be very rewarding. You just never know when you



might inspire a young person to take up astronomy or science as a career or hobby. It is also a great way to keep the hobby interesting by searching out new objects to share. Public events are also listed on the TAAA Website Calendar and Facebook Page.

Bernie Stinger will be assuming the Public/School/Non-Profit Star Party Manager role this fall. For any questions for this program, you can coordinate with me or Bernie through the

<u>astronomy-events@tucsonastronomy.org</u> email

address. I will continue coordinating the TAAA Paid events (Tucson Stargazing Adventures) supporting local resorts and private stargazing. You can also participate in other outreach events through the TAAA Starry Messenger Special Interest Group (SMSIG). Contact Terri Lappin (<u>smsig@tucsonastronomy.org</u>) for additional information.

by Jim Knoll

Thank you for volunteering your time and talents for our extremely important outreach mission. Below is the list for September, 2022. Events are starting to pick up as schools come back into session. 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 (<u>tucsonastronomy.org</u>) and Night Sky Network (NSN) (<u>nightsky.jpl.nasa.gov</u>) 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 those events and get a notification when I update the event. Again, this is only for PUBLIC star parties listed on Facebook. <u>Email</u> for questions or more information.

### Friday September 3 -- FAR SOUTH (GREEN VALLEY): (NRPR) - Canoa Ranch

5375 S I-19 Frontage Road

All Ages; 50 Participants; 4 Scopes Needed Setup Time: 6:15 pm. Start: 7:00 pm. End: 9:00 pm. Nearest Moon Phase: First Quarter Directions: I-19 South to Exit 56. Cross under the interstate and take the frontage road north to the park entrance.

Viewing Location: Open area center of complex.

### Friday September 23 — ORACLE

Public events at FOUR areas around Oracle All Ages; 200 Participants; Several Scopes Required Setup Time: 5:15 pm. Start: 6:00 pm. End: 9:00 pm. Nearest Moon Phase: New.

This is part of the David H Levy Dark Sky Star Party. Would like at least TWO TELESCOPES for each area. Each area will observe a specific type of object to encourage the public to visit all four locations. Please volunteer for the area you would like to support. Specific directions will be provided to those volunteering for the event.

1. Ore House Hilltop Tavern and Restaurant - STAR CLUSTERS

2. NonnA Maria's Restaurant - NEBULAE

3. Oracle Patio Cafe & Market - PLANETS

4. Oracle Community Center - GALAXIES

### Saturday September 24 — ORACLE

Oracle State Park & areas around the town of Oracle 3820 E Wildlife Dr, Oracle, 85623 All Ages; 200 Participants; 4-5 Scopes Required Setup Time: 6 pm. Start: 7 pm. End: 9:00 pm. Nearest Moon Phase: New.

Directions: Highway 77 (Oracle Road) north from Tucson. Follow signs to Oracle State Park Viewing Location: Sidewalk along the Kannally Ranch House parking lot and on the Ranch House upper patio. Some manual movement of equipment may be required due to exact observing location. This is part of the David H Levy Dark Sky Star Party. The Public star parties will be at the Park and several other sites around the town of Oracle.

# Saturday September 24 — SUNSITES (Cochise County)

#### Sunsites Library @ Sunsites Community Center 1216 Treasure Rd, Pearce, AZ All Ages; 50 Participants; 3 Scopes Needed

Setup Time: 6:15 pm. Start: 7:00 pm. End: 9:00 pm. Nearest Moon Phase: New

Directions: US 191 south from Dragoon Road or I-10 to Pearce, AZ. Treasure Road is at the south end of the town. Turn west and the Community Center will be on the south (left) side.

Viewing Location: Parking area? Exact location TBD.

# Saturday September 24 — SOLAR — NORTHEAST TUCSON

Radio Society of Tucson 8711 E Speedway All Ages; 150 Participants; 1 SOLAR Scope Needed Setup Time: 7:30 am. Start:8 am. End: 11 am. Directions: NE corner of Camino Seco and Speedway Blvd in the Calvary chapel Church parking lot. Viewing Location: Parking Lot.

### 2022 Astronomical League Convention (ALCON) Albuquerque, NM By Jim Knoll

Several TAAA members made the journey to the 2022 Astronomical League convention in Albuquerque, NM July 28 – 30. This was three years in the making with 2020 being cancelled and 2021 going virtual. The Albuquerque Astronomical Society (TAAS) did a great job hosting the event, held at the Embassy Suites.



The various sessions consisted of talks on visual observing of variable stars, asteroid missions, observing with binoculars, Pro-Am collaboration, the observable universe scale, stories from historic atlases, the Sloan Digital Sky Survey, diversity in astronomy, solar eclipses, Mars rovers, and lots more. All the talks and workshops were exceptional and filled with lots of information.

Interactive Sundial, Rainbow Park Observatory

We tried our best to get in some star partiees,

but as you can imagine, New Mexico is also in the heart of monsoon so that was somewhat difficult. We did however



still get to visit some great sites to include a tour of "Rainbow Park Observatory", an urban city park with



Rainbow Park Observatory

several large telescopes and an "outdoor planetarium". We also attempted a star party at TAAS's observatory called GNTO (General Nathan Twining Observatory). They have 24 observing pads, a 16-inch Cave Newtonian reflector, and a 14-inch Schmidt-Cassegrain telescope. Another evening event included a trip with limited

observing due to the weather to the Valle de Oro National Wildlife Refuge,

the first site designated as an Urban Night Sky Place by the International Dark-Sky Association. This facility is just a short distance south of Albuquergue. We also did a day trip after the convention to the Karl Jansky Very Large Array and also saw one of the radio telesocpes for the Very Long Baseline Array.



Karl Jansky Very Large Array



This event concluded with a visit to one of the TAAS member's observatory where our sister 40" telescope is housed.

In addition to all the other events, we were also treated with a fantastic talk by Harrison Schmidt on his adventures on Apollo 17 and an awards banquet with keynote speaker Dr. Seth Shostak of the SETI Institute.

All-in-all, a great event. Next year's ALCON will be in Baton Rouge, LA (2023) followed by Toronto, Ontario Canada in 2024. Then, get ready for another great one close to Tucson in 2025 at Bryce Canyon, Utah. If you have not been to an ALCON, I highly recommend attending one. They provide great information and a chance to collaborate with fellow amateurs.

### Other TAAA News

# Fundamentals of Astronomy Class Open for Enrollment

Place: Armory Park Center, 220 S. 5th Ave, Tucson

Date: 3 consecutive Saturdays: October 8, 2022; October 15, 2022; October 22, 2022

Time: 9 AM until 4 PM each day

*Synopsis*: This class covers all the basic topics in Amateur Astronomy. The course is designed for any TAAA member interested in learning the basic concepts in Amateur Astronomy. Topics covered (but not limited to) include the solar system, deep sky objects, stars, telescopes, eyepieces, mounts, star hopping, observation techniques, plus much more. This course is highly recommended for novice amateur astronomers and for anyone who may have just purchased a telescope for the first time. Taking this class will also aid the student in understanding the more advanced lectures often given during general membership meetings.

If interested you can contact the instructor at the information listed below or sign up using the sign up sheet that will be available at the August, September and October General Members meeting. Enrollment is strictly limited to 20 students and is on a first come basis. If there is sufficient interest the class may be offered again in the spring time frame.

Instructor – Douglas Smith Phone: 520-396-3233 e-mail: <u>alcor@tucsonastronomy.org</u> or <u>fundamentals@tucsonastronomy.org</u>

### Grand Canyon Star Party National Park Service Report and Letters of Appreciation

The following pages include letters from Edward Keable, the Supervisor of the Grand Canyon National Park, and Rader Lane, GCNP Park Ranger and Dark Skies Coordinator.



10.D (GRCA 8211) July 25, 2022 United States Department of the Interior NATIONAL PARK SERVICE GRAND CANYON NATIONAL PARK P.O. Box 129 Grand Canyon, AZ 86023



Astronomy Volunteers 2022 Grand Canyon Star Party c/o Mr. Jim O'Connor of the Tucson Amateur Astronomy Association

Dear Grand Canyon Star Party Volunteer Astronomers,

On behalf of the National Park Service and Grand Canyon National Park, thank you all for making the 32nd annual Grand Canyon Star Party a huge success! After a two-year hiatus, we returned onsite to both the South and North Rims, celebrating eight nights of the most pristine night skies in the United States. Well over one hundred volunteer astronomers from across the country participated this year, sharing their passion, expertise, and equipment, with thousands of visitors from around the world. The number of positive comments rangers received at our visitor centers about your outreach efforts was staggering. I personally attended several nights of the event and couldn't have been more impressed with your knowledge and commitment to outreach. I understand why this event is often called the best star party in the National Park Service-you are some of the most dedicated educators with which I've had the privilege of working.

This year's event not only enjoyed our pre-pandemic visitation numbers, but skyrocketed above many outreach records of previous years. For example, in 2019, the highest attendance for one of the twilight talks was 700 visitors. This year, •every night hosted between 700 and 850 visitors. Based on our statistics, well over 1,000 visitors from across the globe enjoyed the telescope lots each night, giving us an estimated attendance of over 9,200 visitors. Over 1,300 visitors attended our nightly constellation programs. Clearly, visitors were enthralled to experience Grand Canyon's night skies through your educational offerings-I hope you found providing these life-changing experiences for our visitors equally fulfilling.

I would like to thank the Tucson Amateur Astronomy Association for coordinating the South Rim portion of the event, and the Saguaro Astronomy Club for coordinating the North Rim. I especially thank the Grand Canyon Star Party Committee, Mae Smith, Jim Knoll, and Jim O'Connor, for registering volunteer astronomers from across the country, for organizing and monitoring the campgrounds, and for working throughout the year with our Dark Skies Coordinator Rader Lane on the logistics of the event. The several months of planning by the Committee to execute this event was evident across all aspects, it was matched only by the professionalism and passion from each of you in the telescope field.

Grand Canyon National Park was certified an International Dark-Sky Park in 2019. That same year, thanks to events like the Grand Canyon Star Party, the International Dark-Sky Association awarded us International Dark-Sky Place of the Year. This year's event reaffirmed our place as one of the largest, most complex, and most revered International Dark-Sky Parks in the world. I had a tremendous experience at this year's event, from the twilight talks to the telescopes. I thank you as someone endlessly curious about the wonders of our natural universe. As superintendent, my commitments to you are to protect this cherished resource from the threats of light pollution, to support the continuation and growth of the Grand Canyon Star Party, and to work with you to make Grand Canyon National Park the best place on the planet to experience night skies. For as the sun sets, the profundities of deep time pass from the stones to the stars, and we realize that half the park is after dark.

Mark your calendars for Grand Canyon Star Party 2023, June 10-17. I know I have!

I hope to see you next year.

Edward T. Keable Superintendent Grand Canyon National Park P. 0. Box 129 Grand Canyon, AZ 86023



United States Department of the Interior NATIONAL PARK SERVICE GRAND CANYON NATIONAL PARK P.O. Box 129 Grand Canyon, AZ 86023



August 1, 2022

Dear Grand Canyon Star Party (South Rim) 2022 Participants:

THANK YOU ALL for making the 32nd annual Grand Canyon Star Party a HUGE success!

A lot of estimation and extrapolation go into both reporting and compiling Star Party stats. This year, we took three nights of manual-visitor-counts (standing at the entrance with a clicker and counting visitors entering the lots) and averaged those numbers over the event. Thanks to all of you who took diligent stats this year we can all reliably assess where we stand. About 86% of us turned in stats this year. This is 1% higher than 2019! The rest of the stats were assumed based on average contacts. Here is the final tally:

- Astronomer to visitor contacts (that is, eyeballs to eyepieces): 51,816 (2019: 81,095)
- Nighttime contacts: 46,705 (2019:76,258)
- Daytime contacts: 5,111 (2019: 4,837)
- Total nighttime attendance: 9,264 (2019: 12,544)
- Average nightly attendance: 1,158 (2019:1,568)
- Estimated total daytime attendance: 3,870 (2019: 3,870)
- 122 astronomy volunteers contributed 2,652 hours
- Theater Presentation Attendance: 5,390 (2019: 4,370)
- 1,360 visitors attended one of the three nightly Constellation Tours. 65/tour average.
- Average of 50 telescopes were set up each of the 8 nights, including at least 7 videoscopes (2019: 15) each night

for full accessibility to those in wheelchairs or otherwise eyepiece-challenged.

Special thanks to those who set up by day AND night: 257 hours were logged by day at various locations. Keep it up!

The lower numbers this year as compared to 2019 can be attributed to three things: 1) COVID concerns. 2) Huge media push in 2019 for Dark Sky certification. 3) Lower overall park visitation in 2022. However, proportionate to the lowered visitation, we actually maintained higher ratios with our visitor contacts than in previous years!

### Successes from this year:

- The big success this year logistically was hosting the Evening Programs in the Grand Canyon Visitor Center Plaza. The last many years we had trouble accommodating the hundreds of people who were denied access to the theater presentation because of the 233-person limit (fire code). In 2019, we were able to simultaneously project the 2 PowerPoint presentation and the speaker voice to the outside using a stretch screen and HDMI splitter. So our theater attendance skyrocketed from 1,840 (2018) to 4,370 that year. This year, we hosted the presentations completely outside and boosted our outreach even more. In 2019, we averaged 550 people per night. This year, our lowest number was 710 (highest 850). We increased our outreach by over 1,000 visitors, and that is only over 7 nights (1 night was canceled for rain). If we take the average and apply that to the canceled night, we would have increased outreach by around 1,750 visitors.
- Grand Canyon Conservancy (GCC) overlapped Star Party with its donor event Grand Gathering. I gave a talk for them the night before Star Party in the Shrine Auditorium. Many of the donors were able to attend the first few nights of the event. They were all ecstatic about Star Party!
- Lowell Observatory contributed daytime outreach activities in front of the visitor center on June 18th. They provided solar scopes and handed out stickers/magnets/kids activities. We hope to increase our partnership with Lowell in future years.

- The Outreach Team for the James Webb Space Telescope from NASA Goddard Space Flight Center contributed daytime outreach activities in front of the visitor center on June 18th, 19th, and 20th. Among many activities, they chalked out a to-scale drawing of the JWST mirror on the cement and then compared that to a to-scale chalk drawing of the Hubble mirror. It was incredibly popular with visitors and a striking display!
- The event received coverage from USA Today, which was reprinted by dozens of regional papers across North America. We also did a mixture of live and recorded interviews with several local outlets.
- The Tucson Amateur Astronomy Association designated four to five "Star Guides" every night--a new position that helped park rangers with visitor orientation and logistics. This proved to be highly successful! Thank you, Susan Knoll and team!
- We did not do Night Sky Photography Workshops this year (2019 saw 360 attendees over 5 nights of workshops) due to the complexity of getting the event running again after a two-year hiatus.
- GCC purchased a catered lunch as a show of appreciation on the last day of Star Party. We celebrated at Mather Campground. We hope to make this a regular contribution in following years.
- We had a Dark Sky String Quartet play night-sky themed classical music at our event. How cool is that?
- Superintendent Ed Keable personally attended 3 nights!

A HUGE THANK YOU to the TAAA Grand Canyon Star Party Committee for all the work you did to make this event so successful. The Committee works diligently throughout the year to plan the logistics of this event, and it showed! Thank you, Jim Knoll, Mae Smith, and Jim O'Connor.

A big thanks to our very own Mae Smith who supported the event by running campground operations (among countless other tasks). Thanks to everyone who organized social events (Marylin Unruh, Mae Smith, Susan & Jim O'Connor, Susan and Jim Knoll, George Barber, and for treating us to pizza (TAAA).

It was MY honor this year to present Jim O'Connor with the Dark Ranger Award. Jim, I hope it represents everyone's appreciation for your skills as an educator. A good part of our awe for the night skies is informed by and dependent upon cultural understandings. You deeply understand this. Your ability to infuse the science with cultural understandings really does reach people--you bring the universe down to people and place it in their hearts, and you have been doing that tirelessly for decades. You connect people intellectually AND emotionally to the night skies. You make people feel welcomed, included, and, wherever they are from, inspired by their cultural connections to the skies. There is nobody else I can think of outside of the National Park Service who deserves the title of Dark Ranger than you, and I hope you continue to inspire people for many years to come!

Thanks to ALL of you for traveling so far to share your time, telescopes and knowledge so patiently and enthusiastically with so many park visitors from around the globe. Your efforts were well spent in touching lives and making new converts to amateur astronomy, science, and the preservation of dark night skies.

Some closing thoughts: In no place on nocturnal Earth as at the Grand Canyon can you stand between so much deep time revealed beneath you in stone and above you in star. If there is any place on the planet where people become so emotionally, intellectually, and spiritually inspired by the awesome power of the universe so as to redirect their lives for the betterment of our natural and cultural worlds it is at Grand Canyon during Grand Canyon Star Party. Think about that. We are changing lives with this event. As testament to this, I'll leave you with one of many visitor comments we received:

"Hi Rader! My name is Leesa and my family enjoyed the dark sky telescope experience at the Grand Canyon last night. It was beyond words for us...I have 3 boys, 14, 13, and 11 and we were traveling with another family with two more boys, age 14 and 11. We stayed until midnight and spoke to so many of the pros and amateurs (but so knowledgeable!) who were so happy to share their passion. What a gift, what a treasure of a program! An inspiration for the young. We are so grateful! At Trailer Village this morning I spoke to one of the astronomers staying near us. I wanted to know how to say thank you -- we will never forget and we will take up the dark skies cause. Thank you, and please thank the many astronomers who came out to be a part of such a cool event! BRAVO!"

Mark your calendars for June 10-17, 2023 - the 33rd Annual Grand Canyon Star Party!

See you down trail, Rader Lane



# Astronomer in Residence at Grand Canyon

Grand Canyon Conservancy (GCC) seeks solo astronomers, artists, educators, scientists, and other practitioners from around the world who wish to share their expertise, research, and reflections on one of the most pristine night skies in the United States, the South Rim of Grand Canyon National Park.

The Astronomer in Residence program is designed to support scholars and practitioners from a wide range of disciplines that focus on the night sky in their work – especially in reference to the threats of light pollution, society's complex relationship with natural darkness, or our cosmic significance.

Selected residents live and work at the historic Verkamp's artist residence at Grand Canyon National Park for a 6-week period and receive a stipend of \$2,000 to cover the costs of food, travel, and supplies. Available residency periods are March 8 – April 19, April 26 – June 7, October 18 – November 29, 2023.

Applications are due September 30, 2022. More information here.



# Astronomical Society of the Pacific

# Apply to become an Eclipse Ambassador!

NASA and the Astronomical Society of the Pacific (ASP) are inviting amateur astronomers to become official **Eclipse Ambassadors** to prepare communities off the central paths for the upcoming solar eclipses crossing North America in October 2023 (annular) and April 2024 (total). **As an Eclipse Ambassador, you will partner with a local undergraduate student to receive training, resources, and support to deliver effective community eclipse engagement prior to the eclipses, focusing on local audiences outside the central paths who will experience a partial eclipse.** 

We particularly want to focus on audiences who are under-represented in science and who have not already connected with a NASA program.

The project's goal is to reach 500 communities across the country. We ask astronomy enthusiasts to join us to make connections, learn new skills, and share your enthusiasm about eclipses and science with the public! With any luck, your club will see an infusion of members from a new generation. You will receive a generous box of activities, handouts, and solar viewing glasses as well as an official badge designating you a NASA Partner Eclipse Ambassador.

The goals and expectations of the Eclipse Ambassador Program are:

- 1. Amateur Astronomers partner with a local undergraduate student
- 2. Partners train together via a virtual workshop (3 weeks, roughly 4 hours of work/week)
- 3. Eclipse Ambassadors host one or more community event:

### APPLICATION INFORMATION

This is a rolling application process: partners are assigned as candidates apply, so don't delay! The team will match qualified candidates with local undergraduate students to become NASA Partner Eclipse Ambassadors.

Find more information and apply today at: eclipseambassadors.org

### *by Doug Smith* What's Up list for September 2022 – October 2022

Fellow amateur astronomers, many of the Astronomical League observing programs can be done from our backyards. The following is a list of objects visible this month for the more common observing programs.

#### **Constellation Hunter Program** – Northern Skies

The following constellations are well placed for observing for September and October: Aquarius, Aquila, Cepheus, Cygnus, Delphinus, Equuleus, Lacerta, Lyra, Pegasus, Sagitta, Vulpecula

#### **Messier Observing Program**

The following Messier objects are well placed for observation during September and October (listed in ascending RA): M56, M55, M71, M27, M75, M29, M72, M73, M15, M2, M39, M30

### Lunar and Binocular Observing Program

The following is a list of dates for the lunar phase during September and October:

New Moon: September 25, October 25 40 Hours waxing: September 27, October 27 72 hours waxing: September 28, October 28 4 days old: September 29, October 29 7 days old: September 3, October 3 10 days old: September 6, October 5 Full (14 days old): September 10, October 9 Gibbous: September 17, October 17 72 hours waning: September 22, October 22 40 hours waning: September 23, October 23

### Solar System Observing Program

The following list describes the various solar system objects and their visibility during September and October: **Mercury** becomes an early morning object during the last two weeks of September and all of October. Greatest elongation occurs on October 8.

**Venus** is a morning object during September and most of October. Disappears in the solar glare around October 20, reappears as an evening object around October 23. It will be an evening object for the rest of the year.

**Mars** rises around 10 PM on September 1. It will rise earlier each day. By the end of October it is rising around 7:30 PM.

**Jupiter** is well placed for viewing during September and October. Rising shortly after sunset in early September. By October Jupiter is already risen at sunset. By end of October Jupiter transits around 9:30 PM. **Saturn** is well up at sunset during September and October. Transits around 11 PM in early September and around 7 PM by end of October.

**Uranus** is a late evening object during September and October. It rises around 9:30 PM on September 1, and rises around sunset on October 31.

Neptune is well placed for observation during September and October, being relatively close to Jupiter.

### **Urban Observing Program**

The following deep sky objects are well placed for observing during September and October: Cr 399, NGC 6818, NGC 6826, M27, NGC 6910, NGC 6934, NGC 6940, NGC 7009, M15, M2, M39, NGC 7160

The following Double Stars are well placed for observation during August and September: Beta Cygnus, Gamma Delphinus

### "THE (not so) LITTLE BOOK OF ASTRONOMICAL CURIOSITIES and Explanations of Celestial Phenomena"

I believe that amateur astronomers and more generally anyone with an interest in astronomy will find this book is unlike other astronomy books available. The book consists of 59 eclectic topics falling into two general types, with some overlap. Many of the topics selected are ones that might contain a surprise and should intrigue you—"Wow" topics for short. Other topics provide explanations for various often-asked questions about celestial phenomena. Some of these latter topics involve mathematical arguments. A few of these arguments are included within the topics themselves, but most are in appendices at the end of the book and are intended for those of a more mathematical bent. Those who prefer to avoid mathematical intricacies can concentrate on the main text which they should find quite interesting. There are 249 diagrams and images plus five tables accompanying the text. The book is sold on Amazon. <a href="https://www.amazon.com/dp/057837708X?ref=pe\_3052080\_397514860">https://www.amazon.com/dp/057837708X?ref =pe\_3052080\_397514860</a>





We would like to invite TAAA Members to the 2022 NASA Innovative Advanced Concepts (NIAC) Symposium which will be held in Tucson, AZ on September 20-22, 2022 at the Tucson Marriott University Park! This event is free, open to the public, and all are invited to attend in person (<u>registration website link</u>), via <u>Livestream</u> or through our new <u>interactive event space</u>.

The NASA NIAC program executes annual solicitations seeking exciting, innovative, and technically credible advanced concepts that could one day change the possible in aeronautics and space. The portfolio of NIAC studies addresses diverse research areas including: Revolutionary Exploration Systems, Novel Propulsion, Human Systems & Architectures for Extreme Environments, Sensors, and Imaging. This year's Symposium will feature exciting keynote addresses to inspire attendees. Past NIAC speakers have included visionary thinkers, distinguished scientists, senior government officials, authors, astronauts, and entrepreneurs.

Details of the Symposium are provided below, including how to register. All information relating to the Symposium can be found on the <u>NIAC Symposium page</u>.

NIAC SYMPOSIUM Date: September 20 – 22, 2022 Location: Tucson Marriott University Park, 880 East 2nd Street, Tucson, Arizona 85719 This event is free and open to the public. Feel free to share broadly! This three day, in-person event will feature presentations from currently funded NIAC researchers, and exciting keynote speakers.



# Fred Lawrence Whipple Observatory (FLWO)

The largest satellite facility of the Smithsonian Astrophysical Observatory (SAO), part of the Center for Astrophysics | Harvard & Smithsonian. Located on Mt. Hopkins in southern Arizona, this remote site is home to a number of telescopes, including the 6.5 meter MMT Observatory.

They host many on-line presentations by eminent astronomers. Check out their <u>web site</u> and <u>Calendar</u>.

# THE UNIVERSITYSteward Observatory PublicI. OF ARIZONAEvening Lecture Series

We are thrilled to be able to celebrate 100 years of presenting lectures on astronomy and telescope viewing to the public by offering a special Public Evening Lecture on the 100th Anniversary of the very first Steward Public Evening. Please save the dates for the following Public Evening Lectures, which will begin at 7:30 p.m. in Steward Observatory Room N210 and on ZOOM at the URL: <u>https://arizona.zoom.us/j/4470189357</u>

All of the lectures and the use of the telescope are free of charge and open to the general public. For more information, go to the <u>Evening Lecture Series page</u>. Sign up for our monthly Astronomy Newsletter at: <u>https://signup.e2ma.net/sign up/1797802/1759894/</u>. Click <u>here</u> to stream podcasts of previous Public Evening Lectures.

# Fall 2022 Centennial Year Lectures

Sep. 19	Dr. Thomas Fleming Dr. Buell Jannuzi, Director Steward Observatory	100 Years of Steward Observatory
Sep. 28	Dr. Marcia Rieke, Regents Professor Dr. Elizabeth Roemer, Endowed Chair Steward Observatory	The Webb Telescope: Starting Steward Observatory's Next 100 Years
Oct. 3	Dr. Daniel Marone Steward Observatory	Imaging Black Holes with the Event Horizon Telescope
Oct. 17	Dr. Christopher Walker Steward Observatory	Floating Above Antarctica: The GUSTO Mission
Nov. 14	Dr. Laird Close Steward Observatory	Adaptive Optics at Steward Observatory
Nov. 28	Dr. Becca Levy Steward Observatory	A JWST View of Starburst Galaxies: Sweet Data Coming Soon!

### COLLEGE OF SCIENCE LUNAR & PLANETARY LPL Evening Lecture Series LABORATORY

Each fall semester, the <u>LPL Evening Lecture Series</u> presents LPL scientists discussing their latest scientific research and space mission projects. Lectures (including time for Q&A) are held on Wednesday evenings, 7:00 to 8:00 p.m., in The University of Arizona Kuiper Space Sciences Lecture Hall, Room 308 and livestream via Zoom. Doors open at 6:30 p.m.

<u>Sep. 21</u>	Dr. Ilaria Pascucci Professor Associate Department Head	<b>Revealing Planetary Systems in the Making with ALMA and NASA's Webb Telescope</b> , LPL
<u>Oct 19</u>	Dr. Tyler Robinson Associate Professor, LPL	TBA
<u>Nov 16</u>	Dr. Sukrit Ranjan Assistant Professor, LPL	TBA

### Skyward

By Dr. David H. Levy September 2022

# **On First Looking Through Baade's Window**

Much have I travell'd in the realms of gold, And many goodly stars and clusters seen; Round celestial islands have I been With telescope after telescope to the night sky hold. Oft of one wide expanse had I been told That Galileo ruled as his demesne; Yet did I never breathe its pure serene Till I heard Baade speak out loud and bold: Then felt I like some watcher of the skies When a new star cluster swims into his ken; Through his majestic window looks upon the Milky Way He star'd at the centre of our galaxy. Like a diamond shining in the sky, with a wild surmise— Silent, through the mists of space and time.

(--Keats, Chapman's Homer sonnet, adapted for this article.)

Lying in the western portion of Sagittarius, the archer, is a small region of sky that has unusual importance for astronomers around the world and which to me is one of the most beautiful things in the whole sky. It was most thoroughly studied by the German astronomer Walter Baade while using the great 100-inch Hooker reflector at Mt. Wilson Observatory in California while searching for the center of the Milky Way galaxy. Before this time, the location of the Milky Way Galaxy's center was not well understood.

Walter Baade had an interesting and unusual life. In the mid-1930s, he lost his application papers for United States citizenship. Consequently, in 1941 he was classified as an enemy alien and was held virtually under house arrest. Somehow a compromise was reached and he was allowed to state his address as Mount Wilson observatory. With a monopoly of observing time on the great 100-inch telescope, he concentrated his efforts on the Milky Way galaxy.

One of Baade's most important projects was a search for a region of the sky that could be close to the center of the galaxy. He took good advantage of the wartime blackout over the city of Los Angeles. Intended to help obscure the city from attacking warplanes from Japan, it also darkened the sky significantly so that Baade could try to find areas near the galactic center. Although he did not find it, he did uncover a small area in Sagittarius relatively free of dust. This "window" was slightly south of the main center of the galaxy. The globular cluster NGC 6522 is at the middle of this area, and NGC 6528 is near its edge.

Astronomers still use this window to study stars in the Milky Way's central bulge. Important information on the internal structure of the Milky Way is still being better understood by measurements made through this "window". The window's shape is irregular in outline and delimits about 1 degree of the sky, an area of about 2 moon diameters. It is centered on NGC 6522, which might be, at 12 billion years, the oldest star cluster in the sky. Baade's window is the largest of the six areas through which stars in the Milky Way's central bulge can be seen. Stars observed through Baade's Window can be called BW (for Baade's Window) stars, similarly giant stars can be called BW giants. OGLE and other observation programs have successfully detected extrasolar planets orbiting around central stars in this area.

On a rare clear evening during the summer of 2022, I gazed at the clusters and stars through this window. I shall never forget the exquisite majesty of this distant region which, thanks to Walter Baade, allows me to peer toward the middle of the enormous Milky Way galaxy which is our home.



Baade's window with NGC6522 at center and NGC6528 at lower left. Photo taken and used with permission by Adam Block.

Adam Block Mount Lemmon SkyCenter University of Arizona

Dr. David Levy is a long-time member and former President of the TAAA. He is a well know astronomy writer and discoverer of comets. He writes this monthly "Skyward" column for the Vail Voice and generously allows us to publish it here.

