



THE OBSERVER



[Horsehead Nebula \(IC-434\) - George Fischer](#)

UPCOMING EVENTS:

No Riparian Star Party or EVAC Club Meeting in December due to Riparian After Dark event.

For more details, and to see all of the upcoming club events, check out the [events page](#) on our website or the [Calendar](#) on Page 10 of this newsletter.

INSIDE THIS ISSUE:

From the Desk of the President

by Steve Bradshaw

Happy holidays to everyone! By the time you read this newsletter you will have already enjoyed Halloween and Thanksgiving. I hope that those holidays were good for you. I also hope that you have a wonderful Christmas holiday followed by a fun and safe New Years.

Have you noticed how time seems to fly by during this time of the year? I suppose that is a natural result of having four major U.S. holidays all occurring in just over two months. It was only just a couple of days ago that I realized that December was nearly upon us. That realization made me curious about what might be available in the December night sky. While checking a sky atlas app I noticed that Jupiter will be at opposition on December 7th. Ah, Jupiter. I have a special affinity for Ju-

pter, and I am so glad that it is back in our night sky for several months.

For most of my life, Jupiter and Venus were the only planets that I could identify. That is not to say that I could always tell which one was which. But I knew that Venus was never that high in the sky so I could eventually figure out which one was Jupiter. I have fond memories of looking up at Jupiter each year over the many years of my life. I have seen it from the northern and southern hemispheres, from the desert and the ocean, and from the mountains and the open plains. So why do I have an affinity for Jupiter?

We all know that in life everything changes with time: our jobs, our homes, our health, our children, our relationships, everything. We might not

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From the Desk of the President

by Steve Bradshaw

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always like change, but it happens anyway. Like the western novel author Louis L'Amour wrote, "The only thing that never changes is change." But in the middle of all this there is the night sky. Whether it be Jupiter, the Moon, the constellations, or a DSO, these celestial objects are always there every year. They are dependable in a world where not everything is always dependable. And yes, we all know that the sky is also changing, but for the length of our lifetimes most night-sky objects seem to be immutable.

This month I hope that you get to enjoy my lifetime companion known as Jupiter as it moves toward opposition. It is at its best and brightest this month. And be sure to check it out on December 7th when it reaches opposition. Know also that next year it will be shining down on you once again.

Until next month enjoy looking up and learning,
Steve

First Quarter Moon on December 8th at 8:26 AM

Full Moon on December 15th at 2:01 AM

Third Quarter Moon on December 22nd at 3:18 PM

New Moon on December 30th at 3:26 PM

EVAC Outreach Events

by Jake LeAlcala

December Outreach Events:

- December 3rd – 7:00 PM – Kyrene del Norte Star Party
- December 5th – 5:30 PM – Kyrene de los Ninos Star Party
- December 6th – 6:00 PM – J.O. Combs Middle School Star Party
- December 12th – 6:00 PM – Step Up Schools Star Party
- December 15th – 6:00 PM – Smith Jr High School Star Party

Details can be found on the EVAC website - www.evaconline.org/events-meetings. Click on the calendar entry for location and times. Contact [Jake LeAlcala](#), (EVAC's Events Coordinator), if you can volunteer at an event. It is helpful to know who is coming so we can tell you where the observing field is located and how to gain access.

EVAC Meeting Minutes for November 15, 2024 at 7:00 PM AZ Time

by James Yoder

YouTube: Many past EVAC monthly meetings can be viewed on our [EVAC Meetings YouTube Channel](#) or select this [link](#) to go directly to last month's meeting recording.

Welcome

EVAC President Steve Bradshaw welcomed club members to the meeting and reviewed the agenda. Two new visitors were recognized and welcomed.

Announcements

Steve Bradshaw reviewed the following club business items:

- Star Parties
 - » All-AZ Star Party – is November 1st & 2nd
 - Hovatter observing site off I-10 towards Quartzsite
- EVAC Website Highlights (<http://eastvalleyastronomy.org/>)
 - » Joining a distribution list for EVAC announcements can be done [here](#).
 - » Joining or renewing membership can be accomplished online [here](#).
 - » [EVAC Calendar](#) shows what events and meetings are slated for EVAC members.
 - » Past newsletters can be accessed [here](#).
 - » Used equipment for sale can be viewed [here](#).
 - » Equipment that can be rented by members can be viewed [here](#).
 - » Gilbert Rotary Centennial Observatory (GRCO)
 - Friday and Saturday (weather permitting) dusk to 9:30 PM
 - 2nd Friday of every month is the public star party with members telescopes.
- ASU Planetarium Pizza Party Update
 - » Event is scheduled for Saturday, January 25th starting at 11:45 AM.
- International Dark Sky Discovery Center is under construction to find out more visit their website at www.darkskycenter.org/contact

- 2025 Club Elections – The following positions were voted on and all candidates were approved
 - » Vice President: Amanda Dolly Duvall
 - » Secretary: Jeff Foreman
 - » Board Members: Andrew Thorpe, Gordon Rosner
- There will be no meeting next month due to the holidays.
- The 2nd Friday star party has also been canceled for December.
- Raffle: Two \$25 gift certificates were raffled to members, and four tickets to the upcoming Neil DeGrasse Tyson lecture on June 3rd.

Member Presentation: National Science Foundation Grant Proposal (Tom Mozden)

Tom discussed his experience in applying for a grant from the NSF for his group project involving measuring the diameter of stars based on light received from the stars.

Member Presentation: A Comet, An Aurora and Other Things (Tom Polakis)

A number of topics were discussed including proof we do not live on a flat Earth, some asteroids discovered, the green flash, coronal rain, observing the Moon, a partial lunar eclipse, Saturn's rings inclination, the Northern Lights, Comet C/2023 A3 and the Helioviewer.org website for animations of the Sun.

Feature Presenter: A tale of star-planet interaction (Dr. Laura Neves Ribeiro do Amaral)

Doctor Amaral discussed how solar activity (space weather) can impact the chances of life on planets in a given solar system. The solar cycle was discussed and how solar activity can strip a planet's atmosphere over time. There was also a discussion on how the class of star is related to the activity of the star and as a result the impact on the probability of having a planet that can support life in the star's solar system.

What's Up - Some Astronomical Events of Note for December 2024

by James Yoder

What's Up? – Here we make note of some interesting astronomical occurrences for the month that are visible from the Phoenix Metro area.

Events we are on the lookout for include:

- [Transits](#) – When a celestial body passes directly between a larger body and the observer. For example when one of the inner planets such as Venus passes in front of the Sun ([image](#)).

What's Up - Some Astronomical Events of Note for December 2024

by James Yoder

Continued from page 3

- [Eclipses](#) – Specifically we are focused on [Lunar Eclipses](#) (where the Earth passes between the Sun and the Moon) and [Solar Eclipses](#) (where the Moon passes between the Sun and the Earth).
- [Comets](#) – For the comets we are focused on bright comets ([image1](#), [image2](#)) or ones that may have a near miss with other astronomical objects such as globular clusters, planets, nebula, etc. ([image](#)).
- Planet Activity – [Oppositions](#), [Conjunctions](#) ([image1](#)) and [Occultations](#) ([image2](#)) of note that may be an opportunity for observation or photography. For Jupiter, we also note when multiple moon shadow transits are visible.
- Visually Interesting astronomical alignments such as Moon & planets arrangement in the morning or evening sky ([image1](#)).

WARNING!! – Any event associated with viewing the Sun directly will require the use of a solar filter.

Equipment Requirements are denoted as follows:

- NE – **N**aked **E**ye event, no equipment needed to appreciate this.
- BI – A decent pair of **B**inoculars are recommended.
- CT – **C**amera on a **T**ripod can be used to capture this event.
- TS – **T**elescope is required to view this event.

Date	Event	Time	Equipment	Images	Ref	Comments
12/07	Jupiter at Opposition		BI, TS			Jupiter lies opposite to the Sun in the sky and will be visible for most of the night.
12/15	Full Moon	2:01 AM	NE			Cold Moon: This is the month when the winter cold fastens its grip, and the nights become long and dark.
12/18	Moon/Mars Appulse	2:00 AM	BI, TS	1		The Moon and Mars within 47' of each other about 70° above the eastern horizon at 2:00 AM.
12/21	Mercury AM Sighting	Pre-Dawn	NE, BI, CT, TS			Since Mercury is so close to the Sun it is generally difficult to spot in the sky. However, on this morning, it will appear 16° above the eastern horizon just before sunrise.
12/23	Jupiter Double Transit	12:47 to 1:50 AM	TS	1, 2		Io and Ganymede double shadow transit from 00:47 to 01:50. Jupiter is well placed for this event.
12/30	New Moon	3:26 PM	NE			Dark Skies

These events and others throughout the year can be viewed on my webpage [here](#), Happy hunting!

Deep Sky Imaging Target Highlights for December 2024

by James Yoder

The [average low temperature](#) for December in the Phoenix metro area is 45° F. December 30th is a New Moon with the Moon setting at 5:14 PM that night and not rising again until 8:30 AM the following morning.

In this month's list there are over 137 object/configuration combinations provided of just about every class of deep sky object including 4 globular clusters, 22 planetary nebulas, 37 nebula, 7 dark nebula, 20 open clusters and 47 galaxies/galaxy clusters.

Bright Moon Targets (Moon) – These are small targets that have a high surface brightness, these would be globular clusters and planetary nebula, that with appropriate narrowband filters can be imaged even in a near full moon situation.

The Prospective Imaging Objects Guide ([Download PDF](#)) covers objects that reach their highest point in the sky and crosses the meridian (aka transit) sometime between astronomical dusk to dawn. We will be highlighting objects that transit roughly between 10 PM and 2 AM when possible. This ensures maximum imaging time over the month.

Happy Hunting!

Some Highlighted Targets (Most of these objects were imaged in Chandler)

Configuration	Page	Object(s)	Type	ImageLink
Hyperstar	18	Pleiades (M-45)	Open Cluster	159 min
Hyperstar	21	Witch Head Nebula (IC-2118)	Dark Nebula	81 min
Focal Reducer	23	Flaming Star Nebula (IC-405)	Bright Nebula	250 min
Focal Reducer	25	The Spider and the Fly	Diffuse Nebula	335 min
Primary Focus (Moon)	19	Crystal Ball Nebula	Planetary Nebula	88 min
Primary Focus	32	Horsehead Nebula (B-33)	Dark Nebula	145 min
Primary Focus	32	NGC-1961	Galaxies	150 min

Resources:

- [ArtCentrics.com](#) – [Potential Targets Guide](#) (PDF download)
- [Telescopius](#) – Lookup objects, plan imaging session.
- [Field of View Calculator](#) – Test different telescope, camera & eyepiece combinations.
- [Astrometry.net](#) – Solve images captured by your system. Get image RA/DEC, pixel scale, image size, and orientation of the image you have taken.

Used Equipment For Sale at Great Prices

The East Valley Astronomy Club (EVAC) has used astronomy equipment for sale. Please note that equipment sales are **“as is”** and are **“pick-up only”**.

For more details and to answer any questions, contact the EVAC Property Director, James Yoder (properties@evaonline.org) or visit the EVAC Sales webpage [HERE](#). This page includes a brief description of the items, photos and reference materials (e.g. users manuals, etc.).

Equipment being offered for sale this month includes:

- [Towa Catadioptric Telescope with Equatorial Mount](#) (Sale Price = \$250)
- [Celestron 8SE Schmidt-Cassegrain GoTo Telescope](#) in fair condition (Sale Price = \$500)
- [9" Cassegrain Optical Tube Assembly](#) (Sale Price = \$200)
- [Thousand Oaks Type 2 Solar Filter ID=308mm](#) (Sale Price = \$100)

Non-EVAC Equipment for Sale (This is mostly member sales, EVAC is neither responsible for, nor endorses this equipment).

- [10" Meade SCT](#) (Tom Mozdzen) Sale Price = \$450 OBO
- [JMI Telescope Case](#) (Tom Mozdzen) Sale Price = \$250 OBO
- [New Celestron Motor Focuser](#) (Kent Bell) Sale Price=\$175
- [12.5" f/5 Dobsonian](#) (Brooks Scofield) Sale Price = \$800
- [Celestron C90 Spotting Scope](#) (David Hopper) Sale Price=\$160

EVAC Equipment Rental Program

The East Valley Astronomy Club (EVAC) Is introducing a rental program for EVAC Members. Details on terms and equipment can be found on the [EVAC Rental page](#). Each item below rents for \$25/week for up to 4 weeks. Currently the following items are available for rent:

- **Celestron C-8 with Nexstar GoTo Mount** - Everything you need to begin exploring the night sky.
- **ZWO Seestar S50 All-in-One Smart Telescope** - Everything you need to image the Sun, Moon and some bright, deep-sky objects. Extremely user friendly.
- **Celestron 10" Dobsonian Telescope** - Everything you need to begin exploring the sky.
- **Visual Filters for Deep Sky Objects** - 15 different filters to try before you buy.
- **Imaging Kit for Planetary & Moon Photography** - Everything you need to capture and process images except the telescope.

Telescopes come with all equipment necessary for observation (e.g. eyepieces, finder scope, power supply, etc.)

Contact the EVAC Property Director, James Yoder, at properties@evaonline.org for more details and to answer any questions.



SkyPi Remote Observatory

The darkest, most Pristine, sky in the continental U.S. !

At the site: Bathroom facilities, running water, 5 pads w110v, wifi, acres of grassy camp sites.

From the site: Very Large Array 42mi E, The Astronomical Lyceum 55mi E, MRO Observatory 80mi East.

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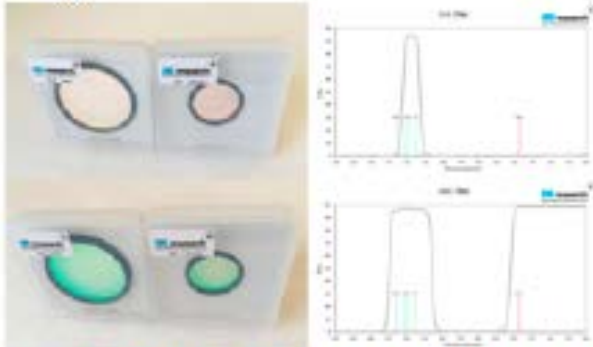
12995 N. Oracle Road Tucson, AZ 85739 520-292-5010
www.starizona.com

**Apache-Sitgreaves
Observatory**
Overgaard, Arizona

Largest Public
Observing
Telescope
in
Arizona



Critical products for visual observing, too!



A-S Research Nebula Filters: See More Nebulosity!

The complex block contains the title and location of the Apache-Sitgreaves Observatory. It features a photograph of a man in a blue shirt sitting on the base of a large, dark, cylindrical telescope. To the left of the telescope, the text "Largest Public Observing Telescope in Arizona" is written. Below the telescope, the text "Critical products for visual observing, too!" is displayed. Underneath this text are two rows of images: the first row shows two nebula filters (one orange, one red), and the second row shows two more nebula filters (one green, one blue). To the right of the filters are two spectral graphs showing light intensity versus wavelength, with specific lines highlighted in green and red.

www.apache-sitgreaves.org

Monthly Meetings will be held in person and also presented live online using Zoom. See the EVAC Website for updates.

The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:00 pm.

Meetings are also available online via Zoom.

Visitors are always welcome!



Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234



December 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

December 3rd - Kyrene del Norte Star Party

December 5th - Kyrene de los Ninos Star Party

December 6th - J.O. Combs Middle School Star Party

December 12th - Step Up Schools Star Party

December 15th - Smith Jr High Star Party

January 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

January 10th - 2nd Friday Star Party

January 17th - EVAC Monthly Meeting

East Valley Astronomy Club - 2024 Membership Form

Member Dues (Based on the month you are joining the club)

	Individual	Family	Student (18yr+ with ID)
January - June	\$30.00	\$35.00	\$20.00
July - December (<i>Renew in January</i>)	\$15.00	\$20.00	\$10.00
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Renewal Dues (Current Members Only)

Astronomical League: \$10.00 Annually:

Individual	Family	Student (18yr+ with ID)
\$30.00	\$35.00	\$20.00
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Name Badges: Quantity: _____

\$10.00 Each

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC.

Payment will be made using PayPal:

Name:

Phone:

Address:

Email:

City
 State
 Zip

URL
 For website

Would you be interested in our outreach program? Yes No

How did you discover East Valley Astronomy Club?

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC"), the receipt and sufficiency of which is hereby acknowledged, I hereby affirm that I and any related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, children, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, hereby forever release, acquit and discharge to hold EVAC and its related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, from any and all causes of action, claims, losses, damages, liabilities, expenses (including attorneys' fees) and demands of any nature whatsoever, known or unknown, that in any way relate to, arise out of, or concern EVAC and/or my presence on the premises of any EVAC Star Party and related areas, whether or not those causes of action, claims, damages, liabilities, and demands are part of the specific subject matter of EVAC or any EVAC Star Party. This release is intended to and does cover all injuries and damages, and the consequences thereof, whether known or unknown at the time of the execution of this release, which have occurred or may hereafter occur or which may hereafter be discovered, and which may have been caused or may be claimed to have been caused by the said incident, and specifically includes, but is not limited to, bodily injuries, mental and emotional injury, pain and suffering, medical treatments, and loss of earnings or income.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance. EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Signature _____

Date _____

Find Out What's Happening – Join EVAC-Announce List

If you would like to receive email announcements about EVAC meetings and activities, please join the EVAC–Announce mailing list. Click on the link below to subscribe. Enter your full email address in the box titled User Options and press OK. You will receive a confirmation email. Your privacy is respected by EVAC and we will never sell your email address, or use it for non-club relevant solicitations. This mailing list is designed for communication from EVAC, and does not enable users to respond to the message. If you wish to contact club officers, please use the list in the Contact-Us area on the Home page of our EVAC website. To subscribe to the EVAC–Announce mail group click: <http://www.freelists.org/list/evac-announce>. To unsubscribe use the same link, enter your email address and select Unsubscribe from the “Choose An Action” list. Another list to consider is AZ-Observing@groups.io, simply click on this link <https://groups.io/g/AZ-Observing> and follow the instructions. EVAC also has a Facebook Group where members may share ideas, photos, and Astronomy related information. Click on the link to join: [East Valley Astronomy Facebook Group](#).

The Gilbert Rotary Centennial Observatory (GRCO) also has a Facebook Group. To visit, please click on [Gilbert Rotary Centennial Observatory - GRCO](#). The Observatory is open on Friday and Saturday from sunset until 9:30pm. We need volunteers. Training is provided. Help us engage the community in the wonders of the night sky. Email gcco@evaonline.org for information.

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The East Valley Astronomy Club is a 501(c)(3) nonprofit charitable organization.

www.evaonline.org

East Valley Astronomy Club
PO Box 2202
Mesa, Az. 85214-2202

President: Steve Bradshaw

Vice President: Woody Sims

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