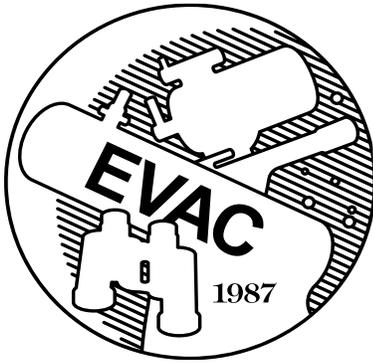


# THE OBSERVER

VOLUME 36 ISSUE 1



Comet Leonard behind JWST Launch Plume

Image Credit & Copyright: [Matipon Tangmatith \(NARIT\)](#)

## From the Desk of the President *by Claude Haynes*

Happy 2022 – all things old are new again. It has been a few years since I have served as President of EVAC, but I am glad to step in again. Great thanks to Gordon for his service during these past trying years, and it isn't over yet. While we have begun Saturday viewing at the observatory, we are still not at full operation or staffing. We have suspended other activities and are still meeting via Zoom. The past officers and board members have worked hard to maintain a level of engagement, but I realize there are many who long for a return to in-person meetings and outreach activities. The board continues to meet monthly

to review the situation, but we have all faced disappointment as the Covid numbers continue to spike. Just when it looks like we have turned a corner we are faced with another wall. Despite that, I have growing confidence that we will return to whatever becomes our new normal soon. We have a strong club, and you have shown great resilience in the face of the pandemonium. I appreciate the sustained attendance at our virtual meetings.

The response to our private sessions at the observatory has been steady, and the attendance on our Saturday public evenings is similar

### UPCOMING EVENTS:

- All meetings will be held online.*
- EVAC Meeting via Zoom - January 21st.*
- Dr. Steven Desch - Oumuamua Its Origin and Impact.*

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# From the Desk of the President

by Claude Haynes

*Continued from page 1*

to the numbers we had prior to our long closure. Alexandra Nachman is our new treasurer, and she has also volunteered to head up our outreach efforts. We are still in search of a Vice-President. The major duties involve arranging for speakers at our meetings, but it is an important position and I hope one of you will step forward and volunteer. There are many opportunities ahead, and while we have struggled these past two years I have great hope that you will continue to support EVAC and our mission to promote public astronomy.

Our next meeting is Friday, January 17 via Zoom at 7:30pm. The speaker will be Dr. Steven Desch who is a professor of astrophysics at ASU and has been a frequent speaker at EVAC for many years. His topic is our recent solar system visitor – Oumuamua and its origin and impact. Don't for-

get to register for the Zoom meeting. Finally, in trying times, I have often relied upon a quotation from Tennyson:

Tho' much is taken, much abides; and tho'  
We are not now that strength which in old days  
Moved earth and heaven, that which we are, we are;  
One equal temper of heroic hearts  
Made weak by time and fate, but strong in will  
To strive, to seek, to find, and not to yield.

Here's to better days ahead.

Your President  
Claude Haynes.

## EVAC Zoom Meeting Notes for 2021 December 17th, at 07:30 P.M. AZ Time

by Wayne Thomas

Here are the Meeting minutes including details of the presentations. (The recorded video of the meeting can be viewed at: [EVAC Zoom Meeting Minutes 2021-12-17.](#))

President Gordon Rosner welcomed those in the "audience" to the virtual meeting shortly after 7:30 p.m. His first slide displayed the meeting agenda:

- Welcome
- Introductions
- Officer Election Results
- Club News
- Member Presentations:
  - o David Dunham - Three Recent Occultation Results (briefly). Plus general information about how to participate in future expeditions.
  - o James Yoder - How to effectively use the monthly list of objects for astrophotography.
  - o Alex Nachman - How to Process Data from the Hubble Space Telescope to Produce Color Images.
  - o Sid Frede - Automating Astrophotography. A quick look at using software and hardware tools to automate image capture.
  - o Jon Koester - How to Build Your Own Home Observatory.

Gordon began the meeting with his welcoming "Live Long and Prosper" slide. He again listed the club officers, both elected and appointed and announced the results of the previous meeting's election of officers. There were

no changes in the seven appointed administrators. The elected officers include President, Claude Haynes; Vice President, an open position; Treasurer, Alex Nachman; Secretary, Gordon Rosner; Board Members at Large - David Coshow, Jon Koester, Bill Peters, Brooks Scofield, and Derek Youngson.

Under Club News, Gordon reported that GRCO has recently been open to the public on the weekends but will now be closed until after the New Year's weekend. Otherwise, all other in-person EVAC events remain cancelled. Articles for the Observer are welcome and anyone desiring to write one should contact the club president at [president@evaonline.org](mailto:president@evaonline.org). Anyone wishing to make an astronomy related presentation at a club meeting should also contact the president at the above email address. Include the subject you wish to discuss.

Our next meeting will be on Friday January 21 with Dr. Steve Desch of ASU School of Earth and Space Exploration presenting on "Oumuamua."

Gordon then turned the meeting over to Vice President Tom Mozdzen who introduced the following speakers.

Dr. David Dunham, founder of and former president of the International Occultation and Timing Association (IOTA), presented Recent Asteroid Occultation Results and How

# EVAC Zoom Meeting Notes for 2021 December 17th, at 07:30 P.M. AZ Time

by Wayne Thomas

*Continued from page 2*

to Participate in Future Expeditions. The results of amateur observations of asteroid occultations are used by many professionals including the Southwest Research Institute's Lucy Mission, the Lucky Star Project, and RECON. Recent successes include the observations of (957) Camelia on September 15 of a 7.2 magnitude star, (3548) Eurybates of a 13.5 magnitude star, and (84522) 2002 TC302, a 550 Km diameter Trans Neptunian asteroid occulting a 11.7 magnitude star. The results show where the asteroid was at the time of the occultation and the shape of the asteroid on the sky-plane.

Future occultations which invite your participation include: (4332) Arecibo both on May 19 and on June 9. It is a 24 km main asteroid with a 13.5 km moon.

David then listed several sources including links for more information.

Tom next introduced James Yoder who shared information about his predictions of what would be available to image listed on his website: [ArtCentrics.com](http://ArtCentrics.com).

James explained how to effectively use the monthly list of objects for astrophotography. James explained how his website is organized and how he has arranged his objects to image. He also described his hardware and the software he uses when imaging his targets. Under questions he stated it usually takes from 6 to 8 hours to plan each month's imaging targets. He stacks everything rather than taking a single image. He normally takes 5-minute images that typically total 2 to 3 hours for each color. The coordinates listed are J2000.

Tom next introduced Sid Frede who presented: Automating Astrophotography. A quick look at using software/hardware tools to automate image capture.

Sid began by describing his manual steps in capturing an image which he then uses when automating the process. He also described his criteria for imaging including location in the sky, when the target would be best imaged and how to set alarms to facilitate good imaging. He then described the software he uses. Under questions: Text messaging requires an addon. The computer he referenced is VLINK-W10. Sid uses offsets rather than refocusing for each narrow band filter.

Tom next introduced Alex Nachman who spoke on How to Process Data from the Hubble Space Telescope to Produce Color Images.

Alex began by announcing that the James Webb Space Telescope launch has been scheduled for December 22 [rescheduled for December 25]. She described how she became interested in processing Hubble Telescope images and which specific images she uses to create color images. She then described the steps in her process and presented several images she created. Her two sources are the Hubble Legacy Archive (older) and MAST which is up to date ([MAST.stsci.edu](http://MAST.stsci.edu)). Under questions Alex stated the HST images are in FITS format, but a converter is available to reformat them to TIF which can then be processed by Photoshop.

Tom next introduced Jon Koester who described How to Build Your Own Home Observatory.

Jon began his project by selecting an 8-foot Explora-Dome for his telescope. He then designed the building and pier and started construction in September 2011. He described some challenges he overcame prior to completing the project in June 2012. Under questions he moves his dome manually. The pier is tall to locate the telescope above the treetops. His observatory is located near Show Low at around 7000 feet elevation.

Tom then turned the meeting back to Gordon who reminded all that membership dues are due. Either use PayPal or send a check via USPS to the EVAC Treasurer. (The address and membership form are on the last page of the Observer.)

Gordon adjourned the meeting at 9:25 p.m. (The secretary was unable to determine the maximum attendance.)

Secretary's note: for more details contained in the presentations, see the recording of the online meeting at: [EVAC Zoom Meeting Minutes 2021-12-17](http://EVAC Zoom Meeting Minutes 2021-12-17)

Wayne Thomas,  
Secretary EVAC

# The Backyard Astronomer

by Bill Dellinges

## Winter's Top Ten Celestial Delights January 2016

The winter night sky might arguably be the finest display of stars and constellations all year. A plethora of splendid deep sky objects within them can keep a stargazer busy from dusk to dawn if he or she wears everything they own to keep warm and have a 55 gallon drum of hot coffee nearby. Here's an interesting challenge: Suppose you had to pick the best ten objects of winter from the blizzard of gems overhead. Which ones would make your top ten? Given anyone's choices will be subjective, I shall be so bold as to submit to you my list of the ten best winter objects (in no particular order as they're all winners).

**1) The Winter Hexagon:** I see this as an object because I've always thought the cluster of bright constellations comprising the winter sky is simply outstanding compared to any other season of stellar groupings. Even summer's celestial panoply of constellations, along with the summer Milky Way, can't match the bright stars and constellations of winter. Many are grouped together in a fairly limited area such that we can create the Winter Hexagon. Let's begin with Capella in Auriga to form our hexagon. Carry on to Castor and Pollux in Gemini (we'll consider them one stop). Now proceed to Procyon in Canis Major. Sail southwest to Sirius in Canis Major. Rove along to Rigel in Orion. Ascend northwest to Aldebaran in Taurus. Finally, cruise north to Capella to complete the journey. Was that fun or what!?

**2) M-37:** While in Auriga, check out M-37. I think it's the best of the M-36, 37, 38 litter of star clusters in this constellation. What do you think?

**3) M-35:** This beauty in Gemini is one of my favorite open star clusters. Perhaps only M-7 in Scorpius can compete with it for top honors. Take some time to track down NGC 2158, another open cluster less than half a degree southwest of M35. It's five times more distant and thus appears as just a ghost with a hint of resolution. Some mistake it for a comet. Don't let this happen to you!

**4) The Pleiades:** "Glitter like a swarm of fireflies in a tangled braid" (Tennyson). I'm going out on a limb here, but I think M-45, the Seven Sisters, is the single most stunning thing in the night sky that a telescope or binocular can deliver to your eyeballs. It never fails to take my breath

away whether the view is in my 7x50, 16x70, or 20x100 binoculars. Over the decades, I've enjoyed sharing that view with the public and hearing their gasps of amazement. I inform them they're looking at the third closest star cluster to us after the Hyades (120 light years, also in Taurus) and the Coma Berenices Cluster (Mel 111) 282 light years away. The Pleiades are 444 light years away, close enough that seven of the cluster's 200 stars can be resolved with the naked eye.

**5) The Orion Nebula:** Without a doubt, M-42 is the finest emission nebula in the northern skies. Though 1,300 light years away, it's such a huge assemblage of hot glowing hydrogen gas, it appears nebulous even to the unaided eye. Binoculars enhance the view of the nebula along with additional stars and gas making up the Hunter's Sword, a spectacular scene to behold in itself. Astronomers tell us there is enough hydrogen gas in M-42 to create 10,000 Suns. Note the famous Trapezium at the center of the nebula, four of the brightest 6,000 stars responsible for stimulating the gas to shine four of the brightest 6,000 stars responsible for stimulating the gas to shine.

**6) NGC 2392:** The Eskimo Nebula in Gemini is 3,000 light years away and one of the more interesting to observe in that class of dying stars. Like most planetaries, it has a small angular diameter and thus requires high power to appreciate. Try 150x to start. You'll probably be more pleased with powers of 200x or more. A nebula filter may improve the view though it might dim the 10th magnitude central star which is on its way to becoming a white dwarf.

**7) M-41:** This gorgeous star cluster can be found four degrees due south of Sirius in Canis Major and is a naked eye object in a dark sky notwithstanding being attenuated by the blinding light from the night sky's brightest star. This relatively large cluster is perhaps best appreciated through giant binoculars (15x70's or larger).

**8) M-46 and M-47:** I combine these two interesting clusters into one because they're only about one degree apart; I can't resist looking at one without sliding my scope over to the other. These two clusters in Puppis sit adjacent to one another in right ascension and are very different in appearance primarily due to distance. M-47, the western cluster, is larger and sparser as it's the closer of the two at 1,600 light years. It shows about twenty bright stars. To its

# The Backyard Astronomer

by Bill Dellinges

*Continued from page 4*

east is M46, 4,480 light years away. Being further away it appears slightly smaller than M-47 with dimmer stars giving the cluster a granular texture. Interestingly, on its north edge a planetary nebula can be discerned even at low power. Higher power shows a miniature version of the Ring Nebula.

**9) NGC 2362:** This is a small but interesting star cluster in Canis Major. The Dog's back leg points right to it. A line through Epsilon to Delta Canis Majoris and extended 2.5 degrees (and slightly south) will deliver you to this charming little guy. A bright 4.4 magnitude star smack in the middle of the cluster might initially make you think you've not arrived at NGC 2362. Up the power and take a closer look. It will become evident there is a cute little package of gems here. By the way, that bright central star is Tau Canis Majoris, a triple star. It has magnitude 10.5 and 11.2 companions 8.2" and 14.5" from the primary. How can you find them amongst the cluster's stars? I found that surpris-

## EVAC Outreach Events

by Alexandra Nachman

Hey there! I am Alexandra Nachman, the new Outreach Events Coordinator for EVAC! I am very excited to work with the public and get to do awesome events when we begin doing them again! I have been a NASA Solar System Ambassador for NASA JPL since January 2020 and have been doing outreach events ever since! I now have 50 events under my belt and I enjoy doing them so much!

I cannot wait to see what this year brings! I hope to bring my own experience to it and offer a range of fun things to do for events in addition to telescope viewings. I love developing new activities for astronomy to make it fun. I also quite enjoy image processing using professional data, like

ingly easy given their position angles of 90 and 79 degrees respectively.

**10) The Double Cluster in Perseus (NGC 884/869):** Let us turn our attention north to one of the grandest spectacles in the night sky. Between the tip of Perseus and Cassiopeia the eye can perceive a hazy smudge of light. Put any binocular or telescope on it and likely your heart will skip a beat and you'll go weak in the knees. To see this object at its best, use an instrument rendering at least a one degree real field so you'll get both clusters in the field with room left over for esthetic framing purposes. Then it will seem like you're gazing upon hundreds if not thousands of diamonds on black velvet. Both clusters contain young stars over 7000 lights years away.

The winter sky is awash with celestial delights and it was a challenge to limit the list here to only ten. Certainly, these are gems but dozens more await the winter observer. The only question is, can you handle the cold?

that from the Hubble Space Telescope and other observatories. It definitely helps to have amazing images with the presentations! This year is going to be amazing and I hope that when we begin doing outreach activities again that you will join me in sharing the amazing Universe with those who seek to learn! Anyone can volunteer to attend events and bring their telescopes to share the night sky-whether it is at a school or a STEM event or an astronomy event! Can't wait to work with you guys in 2022!

Alexandra Nachman  
Events Coordinator

**NEW MOON ON JANUARY 2 AT 11:33**

**FIRST QUARTER MOON ON JANUARY 9 AT 11:11**

**FULL MOON ON JANUARY 17 AT 16:48**

**LAST QUARTER MOON ON JANUARY 25 AT 06:40**

# Deep Sky Imaging Target Highlights for December

by James Yoder

The average low [temperatures](#) for January in the Phoenix metro area is 46° F. January 02 is a new moon with Astronomical dusk at 7:00pm and Astronomical dawn at 6:03, giving us 11 hours of imaging time.

In this months list there are 112 object/configuration combinations provided of just about every class of deep sky object including 2 Globulars, 18 Open Clusters, 10 Planetary Nebulas, 36 Nebula and 46 Galaxies/Galaxy Clusters.

The [Prospective Imaging Objects guide](#) (PDF download) 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 a few objects that transit roughly between 10pm and 2am. This ensures maximum imaging time over the month.

Happy Hunting!

## Some Highlighted Targets for January

Configuration	Page	Object	Type	ImageLink
Hyperstar	22	<a href="#">NGC-2024</a> , B33	Diffuse Nebula	<a href="#">70min</a>
Hyperstar	13	<a href="#">IC 2118</a>	Bright Nebula	<a href="#">81 min</a>
Reducer(0.7)	16	<a href="#">IC-410</a>	Bright Nebula	<a href="#">305 min</a>
Reducer(0.7)	28	<a href="#">M-35</a>	Open Cluster	No Image
Primary Focus	18	<a href="#">M-1</a>	Planetary Nebula	<a href="#">145min</a>
Primary Focus	22	<a href="#">NGC-1961 et al.</a>	Galaxy Cluster	<a href="#">150 min</a>

Resources:

- [ArtCentrics.com](#) – [January 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, orientation of the image you have taken.

## 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 on the page. EVAC also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To join: [EVAC Facebook Group](#).

The Gilbert Rotary Centennial Observatory (GRCO) also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To visit, please click on [Gilbert Rotary Centennial Observatory - GRCO](#).

Gilbert Rotary Centennial Observatory is open on 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 [grco@evaonline.org](mailto:grco@evaonline.org) for information.



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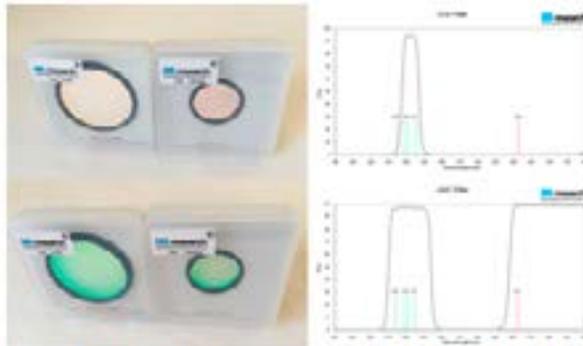
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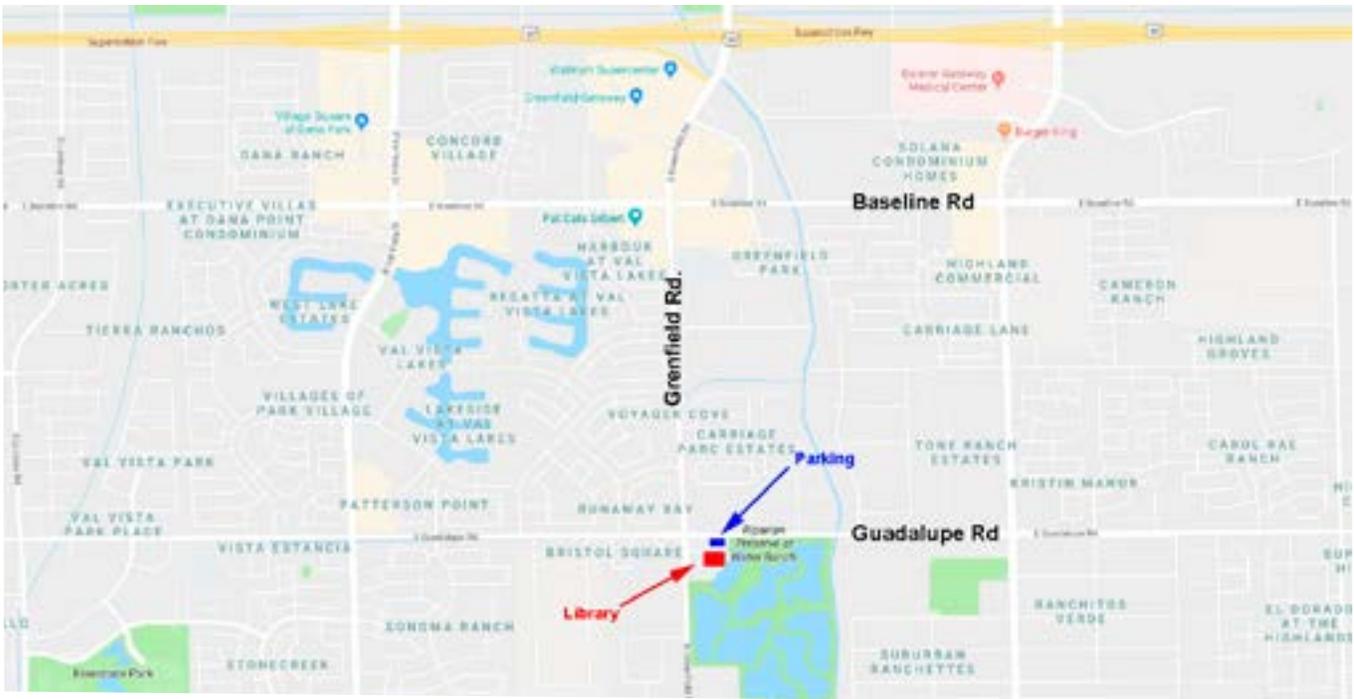
Monthly Meetings will be presented live online using Zoom. See the EVAC Website for updates. All other events are on hold until health concerns are resolved.

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 normal in-person monthly meetings have temporarily been cancelled, and are replaced with an online Zoom meeting.**

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 7:30 pm.

***Visitors are always welcome!***



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



## JANUARY 2022

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	<b>21</b>	22
23	24	25	26	27	28	29

**January 21** - EVAC Monthly Meeting Live Online via Zoom.

**The EVAC Monthly Meeting will be held live online via Zoom. All other meetings and events have been cancelled until further notice.**

## FEBRUARY 2022

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

**February 18** - EVAC Monthly Meeting Live Online via Zoom.

**The EVAC Monthly Meeting will be held live online via Zoom. All other meetings and events have been cancelled until further notice.**



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