



SPACE

St. Petersburg Astronomy Club **Examiner**

August 2025

Editor – Guy Earle

The St. Petersburg Astronomy Club has been the center of family astronomy in the Tampa Bay Area since 1927. Our 326 adult members are dedicated to promoting and sharing the wonders and science of astronomy. We host a dark-sky star party each New Moon at Withlacoochee River Park, along with local star parties, telescope-making workshops, science lectures, astronomy lectures, educational outreach sessions and much more.

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Copernicus Crater, captured from Riverview, FL, by Guy Earle



September Preview

Next month, SPAC is fortunate to have National Weather Service Meteorologist for the Tampa Bay Area, **Christianne Pearce**, presenting in-person at SPC. There is an open invitation to SPAC members to meet up for a weather balloon launch on Sunday, September 21st at 7 PM (details TBA in email blast later in early September).

SPAC is now winding down its SPC meetings, with October and December being our traditional pot luck dinners in the event space, and both September and November being our last in-person meetings in the classroom (SC 236), so make sure to come out!



Meteorologist Christianne Pearce with SPAC members in 2024 at the launch site in Ruskin.



August General Meeting

This month's general meeting is a social event and will take place on **Thursday, August 28th at 7:00 PM** at **Beef O Brady's** in South Tampa (called Palma Ceia) near MacDill and Bay to Bay Blvd. There will be no Zoom meeting.

This is meant to be an event for members to come together and enjoy each other's company.



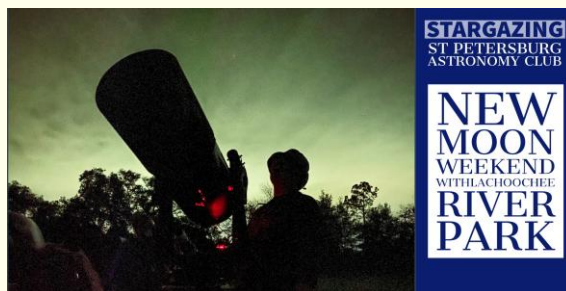
Palma Ceia Beef O Brady's

2819 S MacDill Ave, Tampa, FL 33629

[\(813\) 835-9464](tel:8138359464)

Space has been reserved for SPAC at **7 o'clock**, slightly earlier than our normal meeting time. All are welcome to attend, socialize, and have a bite to eat. This location was picked as sort of a geographical middle to St. Pete and the Brandon area, so I hope you'll join us for this get-together!

The club's **New Moon observing weekend** is on August 22nd and 23rd at [Withlacoochee River Park](#) east of Dade City.



New SPAC Members

We would like to welcome Tom Kaltenbaugh, Anne Ware & Madison Caffey, Shad Wade, Bob Shivers, Moose Henderson, Timothy Milligan & Jolanta Andraka, Elena Ruiz-Olden, Grace & Grace Herron, and Darrell & Kelly Smith to our family of members.

Examiner Staff

Editor	Guy Earle
Space News	Steve Robbins
Field Reporter	Kelly Anderson
Mirror Lab	Ralph Craig
Image Gallery	Peter McLean
Mirror Lab	Mike Davis
	Allen Maroney

President's Message

It is weird how things work in life. Two weeks ago, our new kitten, Nebula, came home with me and joined our home. As some of you know, I lost my best bud, Koda back in March. I have always had German Shepherds in my life and the heartbreak was just too much and their lives so short. As with many of us, I am getting older and just don't have the time and energy to dedicate to raising another German Shepherd puppy...My girls all have cats and to be honest, they have grown on me and voila, Nebula entered into the picture. As my daughter Danielle said to me, "I didn't have my dad being a cat dad on my 2025 bingo card".

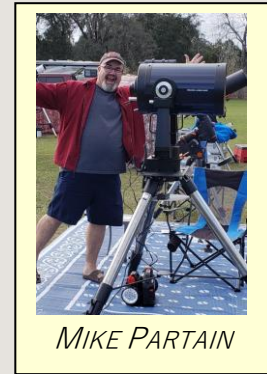
Well tonight, things took a turn for the surreal when after I accidentally left my garage door cracked for a few days. With all the bad weather, a mama cat brought her 5, 3-4 week old kittens in and had them in the garage. Now to figure out what to do with them. Tonight, we fed them kitten milk from a bottle and are hoping mama shows back up...we shall see.

We are approaching our annual elections for office. Serving as an officer in the club is an important role as it is what keeps the club viable. To be honest, we need more people to step up and into leadership roles. Guy and myself have been working on a lot of changes in the club and how we operate and how we meet. Earlier this year we had the unwelcome news that the college increased their monthly meeting rates, effectively pricing us out of our meeting location. This month, we are trying out something new and will hold our general meeting at Beef O Brady's in South Tampa. This meeting will be more of a social and a chance for us to meet and greet. It would be nice to get a head count ahead of time, so while it is not required, if you are planning to attend, please let Guy know by emailing spacexaminer@gmail.com. Back to the thought of leadership, if you wanting to help or unsure, let us know as we could certainly begin by having those interested shadow or assist with the board members to help out or see what exactly they do.

Hope to see you next Thursday at our social. Take care and clear skies! if you want a kitten, for the moment, I have five of them but Nebula is mine.

Clear skies,

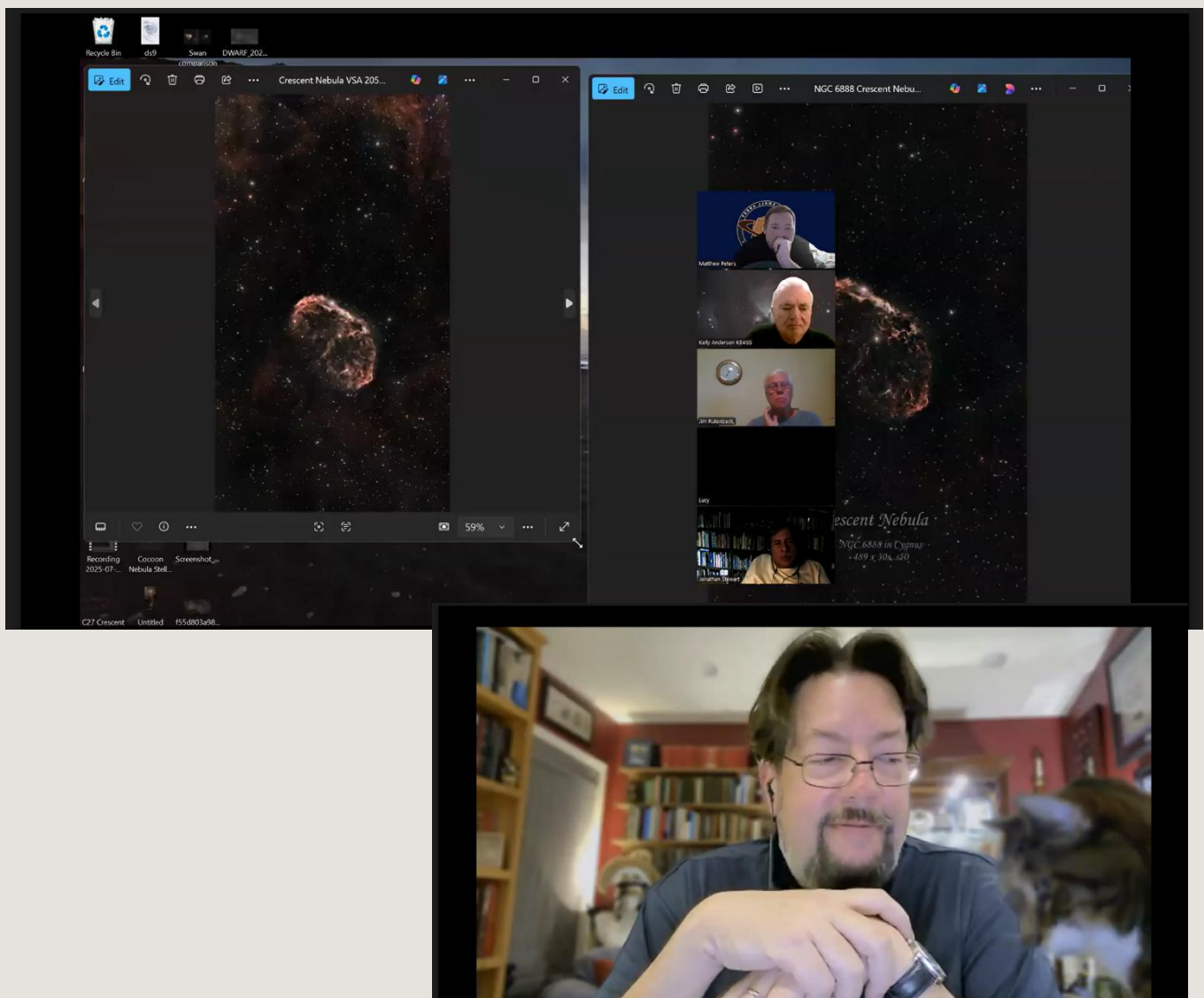
Mike



July General Meeting Recap

I'm thankful to everyone who came to our Zoom-only event at the July meeting, which I think went really well. I did learn, as I'm looking back at the video now, that I need to move my camera back...*way back*. Either that or change the settings because that is way too close!

This past meeting, after Mike mentioned some of the club updates, I talked about the new SPAC merchandise website, the Very Small Array, having finished the Messier List via smart telescope, and showed a 7-minute video on the planets, all before getting into the main portion of the evening, which was showing the operation of the Dwarf 3 telescope and its processing software. If you want to watch the video of that meeting or see the PDF, [follow this LINK](#).



SPAC New Moon Weekend

Field Report

July 25th-26th, 2025

By Intrepid Field Reporter

Having regrettably relinquished my attendance at the lunar-lacking libations of May and June—those sacred New Moon Sabbaticals—due to an ambitious and admittedly circuitous caravan through Wisconsin, Minnesota, California, and sundry eastern coordinates en route to hearth and home, I found myself similarly indisposed for the July convocation. The culprit? My cherished chariot of terrestrial travel—the venerable trailer—was undergoing mechanical ministrations at the local temple of torque and transmission. As I pen this ponderous proclamation, said vessel remains incarcerated in the sanctum of service. Nevertheless, I remain cautiously optimistic that it shall be liberated in time for the August assemblage, despite meteorological murmurs portending precipitation and other atmospheric adversities. Send forth your felicitations and fortuitous vibrations, for I shall require every ounce of luck the cosmos can conjure.

Speaking of luck, the opportunities for observation and imaging during the July DOTM were sparse early on, but improved for Saturday and Sunday nights enough to enable some astronomical activities. Arriving at Withlacoochee River Park on Thursday were the ever-reliable Joe Canzoneri, Bob & Rita Mizell, and Johnny White. Johnny bought a travel trailer so he was able to spend the weekend in reasonable comfort. Tim Harris joined the party on Friday in his Class A motorhome.



Figure 1 Witch's Broom – Joe Canzoneri



Figure 2 Eagle Nebula – Joe Canzoneri

As forecast the weather was hot (no surprises there) and cloudy but fairly light on the precipitation. Sucker holes opened enough on Saturday and Sunday for our stalwart band of astronomers to capture some fine images. To join them in spirit your Intrepid (but absent) Field Reporter set up in his back yard and was able to obtain some success with star clusters and the odd galaxy. Capturing nebulae through the Tampa Bay light dome was challenging, but at least I was able to blow the dust off my equipment.

The August New Moon is scheduled for the 22nd and 23rd, plus/minus hurricanes or plagues of frogs, boils and other sundry difficulties. Our September New Moon weekend is the traditional start of the observing

season. Weather will (we hope) improve with cooler temperatures, clearer skies and fewer mosquitoes, so mark your calendars for the 19th and 20th.



Figure 3 Rosette Nebula – Kelly Anderson

SPAC, Dwarf Lab, and Star Trek Voyager

Thanks to Matthew Peters for first introducing me to a member of the Dwarf Lab team back in November 2024, as I have occasionally provided some beta feedback over the past 9 months on the Dwarf 3 and its ever-improving software. All the conversations with the Dwarf Lab team eventually led to their February presentation at our general meeting, as well as kindly donating a Dwarf 3 telescope as our 2025 Orange Blossom Special star party raffle prize, which due to the OBS cancellation from Hurricane Milton will now be raffled at the January 2026 star party. I'm very happy with the growing cooperation between SPAC and Dwarf Lab, as well as their support for the Very Small Array (see the July issue).



My wife and I just returned from Star Trek Las Vegas, the largest dedicated Trek convention that's held anywhere, I believe. I hadn't been to a Trek convention since around 1993, so I wasn't sure what to expect. In retrospect, I doubted needlessly since the convention was a fantastic experience for both of us, even if it was just a brief and rapid two-day experience. We could only attend the Thursday and Friday of the overall 5-day convention, but I did get to see Robert Picardo from Star Trek Voyager, where he had played the emergency medical holographic doctor. Picardo has been a very strong advocate and board member for The Planetary Society for decades, while Tim Russ, who played the Vulcan Tuvok, is himself an avid amateur astronomer.

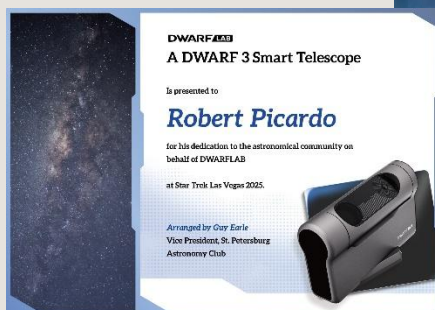
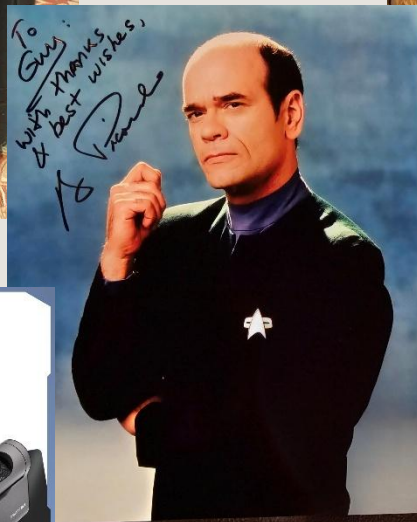
I reached out to Dwarf Labs and asked if they'd be willing to donate two units to these supporters of both professional and amateur astronomy, and they graciously agreed, even making a short video greeting for them both. As a rule, actors generally will accept gifts at conventions, but you have to be mindful that they have to transport these things home. Showing up with a large, framed piece of artwork may be from the heart, but you'd leave the actor with the trouble of figuring out how to get it home. Thus, presenting them with actual telescopes was not an option. A pair of certificates were made, along with a cover letter and brochure in an individual folder for both Picardo and Russ.

My wife and I were up at 2AM on Thursday to get to our 6AM flight, getting into Vegas and the hotel Rio, where STLV was happening, around Noon, Pacific time. We got changed and quickly entered the convention, and were promptly overwhelmed by the scale of the event. It was sensory overload! With over 175 actors, producers, and writers, it was a scale dedicated to Trek that I had

never seen before. Normally, at cons like Tampa Bay ComiCon, you may have one or two Trek actors amongst everybody else. This was different, everything was Trek and everyone was kind and patient. It was like a huge bubble existed once you entered the convention, where all the chaos of the outside world did not penetrate. It was a vibe of positive energy that was positively joyful.

A few hours in, we passed by Picardo's table and found that he had arrived with his handler, so I took the opportunity to present him with the telescope certificate. As it dawned on him what was happening, Bob became stunned. I think he was cautiously suspicious at first, but as I introduced myself from SPAC and a Planetary Society member, he came to realize he was being given a smart telescope. I had some photos on my phone at the ready, as I knew he'd want to see what could be done with the Dwarf 3.

Bob also graciously accepted Tim Russ' folder to give him on Saturday. Tim was not going to arrive until that Saturday morning, and by that time my wife and I were scheduled to already be flying back home. Both Tim and Bob were part of a Planetary Society panel, an audio recording of which will be available on their podcast website. It's a great thing to give back to those who have been the inspiration for our love of astronomy and space. Thank you to Dwarf Lab for your outstanding support!



The Walter H. Haas Observers Award

by Gregory T. Shanos

The **Association of Lunar and Planetary Observers (ALPO)** is a scientific and educational organization founded in March 1947 by Walter H. Haas. SPAC member Gregory Shanos joined the ALPO in 2021 and has since submitted over 575 observations of the planets. **The 2025 Walter H. Haas Observers Award has been bestowed to Greg Shanos.** Most amateur astronomers gravitate (pun intended) towards deep sky observing and astrophotography. The planets being a mere after thought. Nothing could be further from the truth. The light from deep sky objects took millions to billions of years to reach our telescopes whereas reflected light from the planets took only light minutes. In addition, the planets exhibit changes on a daily basis. For example, not only are the phases of Venus of interest but unbeknown to many, the upper and middle clouds of Venus are visible in ultraviolet and infrared wavelengths respectively. Today's CMOS chips are also sensitive in the UV and IR and by using the proper filters, these wavelengths are enhanced and the clouds become visible on Venus. The clouds appear dark due to an unknown ultraviolet absorber. At 1010nm (1 micron) the surface features on Venus become visible and are able to be imaged!



Mars exhibits dark albedo features at specific central meridians which rotate with the planet. Syrtis major, Hellas basin and Olympus mons are examples of such features. Mars exhibits seasons like the Earth. During Martian winter the seasonal ice caps composed of carbon dioxide form and grow then shrink again the spring and summer. Dust storms typically develop and may engulf the planet. During the 2018 apparition of Mars a global dust storm engulfed the entire planet, and no albedo features were visible from earth for several months until the dust began to clear. Clouds typically form near the limb and over the volcanoes.

These clouds are easily visible from earth especially with the use of a blue/violet filter. During the 2022 apparition Greg was involved in a blue clearing study with ALPO Mars Section Coordinator Roger Venable MD. Blue clearing is a phenomenon whereas albedo features not typically visible with a blue/violet filter become visible. Greg submitted 61 images of Mars taken under strict protocols that were analyzed by Dr. Venable and published in the Winter 2025 issue of the Strolling Astronomer– the Journal of the Association of Lunar and Planetary Observers.

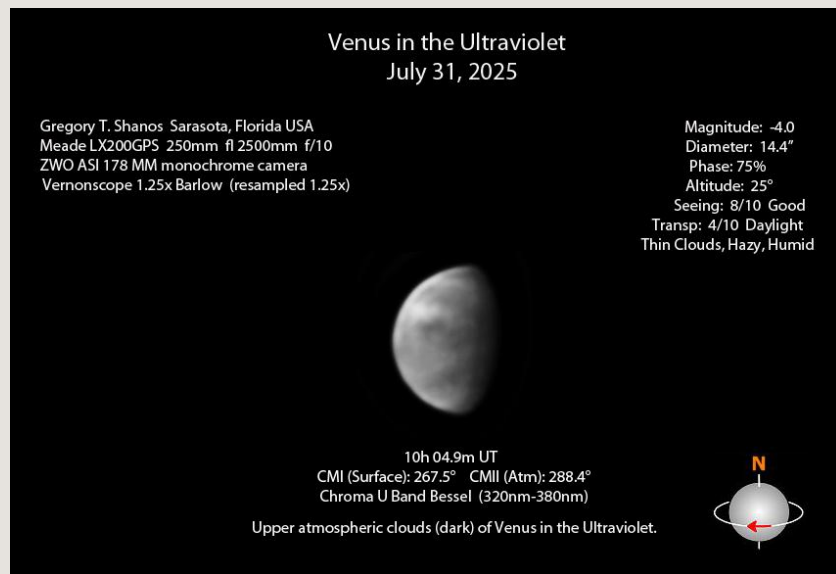
Jupiter, being a gas giant, exhibits atmospheric clouds with storms such as cyclones, anticyclones, festoons and the of course, the Great Red Spot. The colors of the atmospheric bands, including the Great Red Spot, also vary at unpredictable intervals. The four Galilean moons, Io, Europa, Ganymede and Callisto regularly transit the planet and cast their shadow. These shadow transits are predictable and the free program WinJupos will alert you to which moon and at what time and date the shadow transit will occur.

Saturn is by far the “Lord of the Rings”. The most obvious feature is the tilt of the rings. Typically, the A, B, C & D rings are visible as well as the Enke and Cassini divisions. The rings also cast a shadow on the planet. In reciprocation, Saturn itself also casts a shadow on the rings. Around opposition, the rings appear brighter due to the Seeliger effect, whereas shadows of the individual ring particles temporarily disappear from our view. Every 13.7 to 15.7 years, as Earth’s orbit passes through Saturn’s ring plane, the rings appear thin and edge-on. During this time, shadow transits of the moons Titan, Dione, Mimas, Enceladus are able to be observed. Saturn’s disk appears to be yellow–brown in color due to cloud bands with subtle color variations. These cloud bands do not change appearance as rapidly as those on Jupiter. Transient features such as storms, eddies and bright spots are of particular interest. Saturn’s rings and disk are always a delight.

The more difficult planets to image are Mercury, Uranus and Neptune. Mercury being low on the horizon is always a challenge, however, I have been able to image the larger impact craters on its surface. Mercury is best observed during morning apparitions since it rises higher in the sky instead of setting during the evening. Uranus and Neptune show a disc which is blue green in color with the poles appearing white.

As you can see, planetary astrophotography has much to offer. Since the planets are bright objects, the method utilized is different from that of deep sky astrophotography. The basic technique is to take a short 60 to 90 second uncompressed AVI/SER video of the planet using a dedicated uncooled planetary camera, align and stack the individual frames, sharpen and you are essentially finished. The software utilized is Firecapture, or Sharpcap to acquire the video,

Autostakkert or Astrosurface to align and stack the individual frames and Registax or WaveSharp to sharpen the final image and GIMP for further post-processing. Best of all these programs are FREE! Derotation of images in WinJupos further reduces noise and increases resolution. For planetary, larger is better since a long focal length is required. Most planetary imagers use at least an 8-to-14-inch Schmidt-Cassegrain telescope with a Barlow lens. You can even be altazimuth mounted since Autostakkert/Astrosurface will eliminate any field rotation during the aligning and stacking process.



The high quality of planetary images by today's amateur astronomers has caught the attention and interest of professional planetary scientists. ALPO serves as a database where amateur astronomers to submit their images with pertinent scientific information such as Date, Universal Time, Central Meridian, Telescope, Camera, Optics utilized etc. International databases include hstjupitergroups.io, Planetary Virtual Online Library, British Astronomical Association, and ALPO-Japan. I submit my images to all these organizations. I have received alerts on the hstjupitergroups.io that the Juno spacecraft will be at a certain position taking photographs of Jupiter during a certain time frame. All images of Jupiter from amateur astronomers are needed to compare with those of the spacecraft.

In conclusion, planetary astrophotography is a rewarding endeavor worth pursuing by amateur astronomers who have an interest in astrophotography. While you're imaging a deep sky object with a refractor, turn your Schmidt-Cassegrain to whatever planet is visible during the observing session. You will be pleased with the results.

September Lunar Calendar



Full Moon, September 7

September 7 will be a total lunar eclipse, mag 1.362 but not for us! India and Australia get this one.

September 7, the Moon will cross the celestial equator going northward at the Ascending Node

September 8, Saturn will be 4.0° south of the Moon

September 10, the Moon will be at Perigee: 364,781 km from Earth

September 12, the Pleiades will be 1.0° south of the Moon

September 12, Mars will be 2.0° north of Spica

Third Quarter September 14

September 16, Jupiter will be 4.6° south of the Moon

September 16, Pollux will be 2.4° north of the Moon

September 19, Venus will be 0.4° north of Regulus

September 19, Regulus will be 1.3° south of the Moon

Sept 19, Venus will be 0.8° south of the Moon. Europe gets to see an occultation. We didn't buy tickets.

Sept 20, the Moon will cross the celestial equator going southward at the Descending Node

September 21 Saturn will be at opposition

September 21 will have a partial solar eclipse if you live in New Zealand or parts of Antarctica

New Moon September 21

September 22 is the autumnal equinox

September 23 Neptune is at opposition

September 23, Spica will be 1.1° north of the Moon

September 24, Mars will be 3.9° north of the Moon

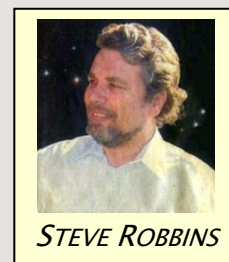
September 26, the Moon will be at Apogee: 405,552 km from Earth

September 27, Antares will be 0.6° north of the Moon

First Quarter September 29

Space Exploration News

ULA is back in the game following a [successful and notable launch](#) of its Vulcan Centaur rocket August 12, 2025, reestablishing the former most prolific and reliable launch company as not one to be disregarded. This was the first military launch for the new rocket, and it had a requirement that SpaceX couldn't deliver with Falcon 9, the necessity to launch this satellite directly to geosynchronous orbit, not just to a geosynchronous transfer orbit.



Thanks to its best second stage rocket on the planet, Centaur, ULA accomplished this with ease. Thanks to the strap-on solid rocket boosters, the launch looked spectacular from DeLand. How was it from St Pete?

Scheduled to journey

aboard the only proven Western Civilization successful lunar lander,



[Blue Ghost](#), the Lunar Surface Electromagnetics Experiment – Night (LuSEE-Night), a collaboration between DOE’s Brookhaven National Laboratory, the DOE Office of Science, [UC Berkeley's Space Sciences Laboratory](#), and [NASA's Science Mission Directorate](#) will head to the Moon in 2026 for a revolutionary mission. First, this mission is the first non-Chinese mission to land on the far side of the Moon. It is doing so because it is carrying LuSEE-Night, a radio telescope, which will use the



body of the Moon as an electromagnetic shield so it can access parts of the electromagnetic spectrum radio telescopes on Earth can't use because of radio interference and the opaque ionosphere. Curiously, although Blue Ghost 1 was launched aboard a Falcon 9 from SpaceX, Neither NASA nor Firefly Space, the company responsible for Blue Ghost, has a shred of information on what the launch vehicle will be. Could Firefly be planning to use their own rocket if possible?

What came first, the chicken or the egg? This has been a perplexing apparent paradox in biology, answered by the fact that eggs came well before chickens, but with other organisms first. In cosmology (somehow you knew I couldn't write a paragraph about chickens) the analogous question is "What came first, black holes or the galaxies that surround them?" Armed with their super-weapon, the James Webb Space Telescope, cosmologists and astrophysicists are now attacking that very question. There are three main theories about the formation of black holes, the small seed, large seed and primordial black hole scenarios.

The prevalent theory of the time is the small seed model, where when a star at least 10 times the mass of the sun supernovas and the remnant collapses into a black hole 10 to 100 times the

mass of the Sun. These small black holes then accrete material and merge over billions of years to form the giant black holes at the center of galaxies.

Then comes the large seed model, where somehow large clouds of gas don't form stars as we see in the Milky Way, but directly collapse all the way to quickly formed large black holes. This is difficult to justify because as concentrations within the cloud individually reach fusion temperatures and pressure, the radiation pressure drives additional mass away from the new star, preventing further accumulation of mass. Even black holes have similar processes where the mass in the accretion disk radiates energy that repels further mass from adding to the mass of the black hole. What could turn these "feedback mechanisms" off to allow the formation of a large black hole directly? Until now, answering that question was unnecessary.

Finally, there is the primordial black hole scenario, where in the early universe black holes were made and when the universe became transparent, black holes were already present. They would have to be small to medium sized, but that would give them additional time to grow that the small seed model doesn't allow.

Now astrophysicists are backed into a corner and have to choose. Why? Astrophysicist Dr Pieter van Dokkum of Yale University, using the JWST found a strange object, two rings, slightly overlapping with a dot in the middle. Using observations from the Keck Observatory, his team established that these rings were the product of two disk galaxies colliding face to face, producing two ring galaxies that overlap. This has also been seen in the local universe.

However, radio telescope analysis from the Keck Observatory showed that although there was radiation from the bulges at the center of the two rings, as expected, there was higher radiation coming from the region between them, at the intersection point of the two rings. This turned out to be a supermassive black hole not related to the centers of either of the two constituent galaxies. So two galaxies, THREE black holes, with the largest by far not being at the center of either of the two surviving galaxies.

Watch [Fraser Cain's interview](#) of Dr Pieter van Dokkum to delve deeper. This discovery is revolutionary and absolutely will change our concepts of where black holes initially came from and what processes contribute to their growth. Dr Becky Smethurst is the first astrophysicist you should think of when a black hole controversy or discovery erupts and [here is her video](#) on the same subject.

SPAC Image Gallery



Here are some excellent astrophotography photos from our fellow SPAC membership, shot from various locations and divided into categories similar to our annual star party imaging competition. If you would like to share your work, I encourage you to [email Peter](#) your image or share them on our SPAC Facebook page.



PETER MCLEAN

Deep Space (Galaxies, Star Clusters, Comets)



*NGC7331 and SN2025r6s
from Arizona
by Mike Davis*

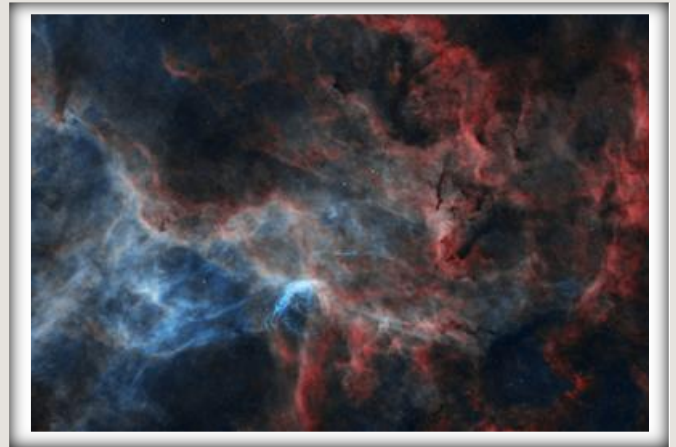
Nebula

*M20 Trifid Nebula
from Arizona
by Mike Davis*



Wolf Rayet 134

by Philip Roey



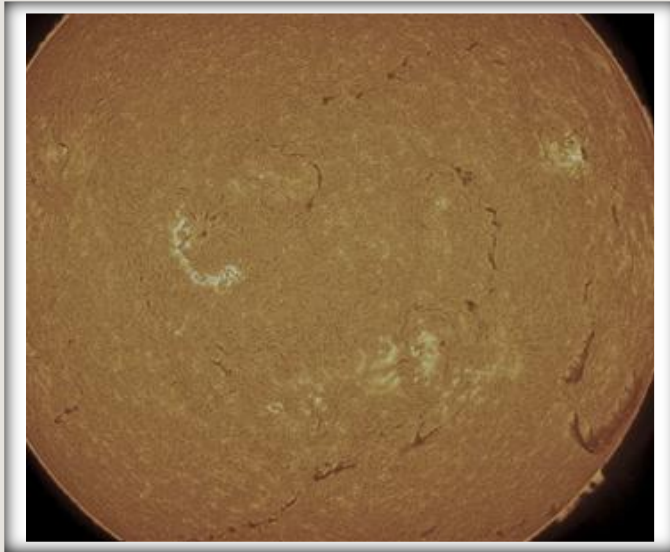
*IC4592 Blue Horsehead Nebula
from Withlacoochee River Park
by Johnnie White*



*Sh2-116
from Chiefland Astro Ranch
by Jamie Kenas*

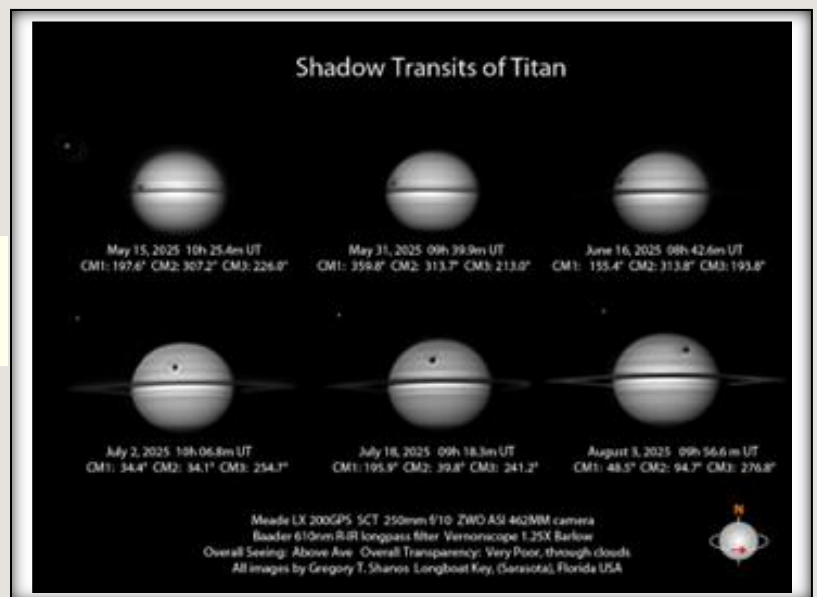


Planetary-Lunar-Solar



*Amazing Solar Portrait
from Dunedin, FL
by Christian Rubach*

*Shadow Titan Transits of Saturn Collage
From Sarasota, FL
By Greg Shanos*



*Saturn
from Riverview FL
by Guy Earle*

Smart Telescope



*M31 Andromeda Galaxy
With the Dwarf III
From Riverview, FL
BY Guy Earle*

*M16 Eagle Nebula
From Withlatchiochee River Park
with the Seestar S50
by Joe Canzoneri*

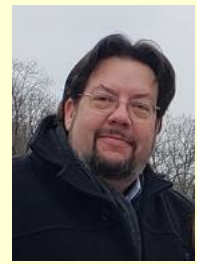


*M104 Sombrero Galaxy
with the Vanois Vespera
by Garrison Smith*

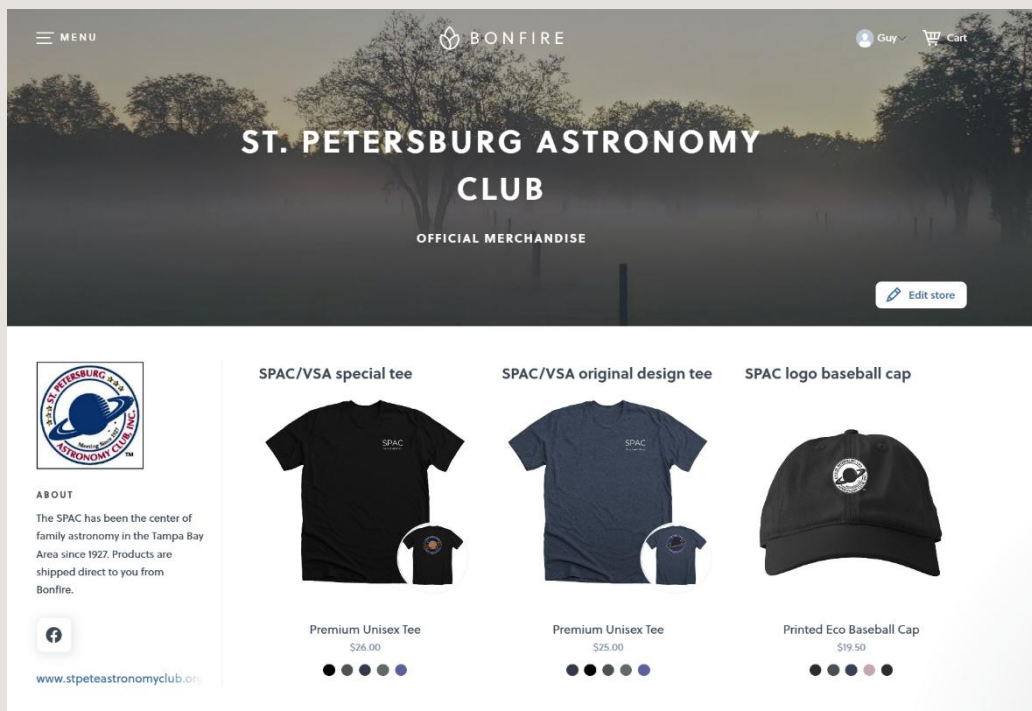
Reminder for SPAC merch

Just a reminder that **SPAC now has a merchandise website** set up so you can deck yourself out in some great astronomy gear. We have various t-shirts, including those of the VSA, OBS 2026, and other items including hoodies, hats, and more.

Click [ON THIS LINK](#) to take you to the website.



GUY EARLE



SPAC Officer Elections for 2026

We currently have a nearly full slate of candidates for 2025: Mike Partain for President, Guy Earle for Vice President, Peter McLean for Secretary, Christopher Rubach for Treasurer, with one opening for 2026 Director-At-Large, since Jack Fritz will not be seeking to continue in that position. If you are interested, SPAC will accept nominations until October 1, 2024. Please email me at spacexaminer1927@gmail.com if you would like to be considered for nomination.

SPAC Business Meeting

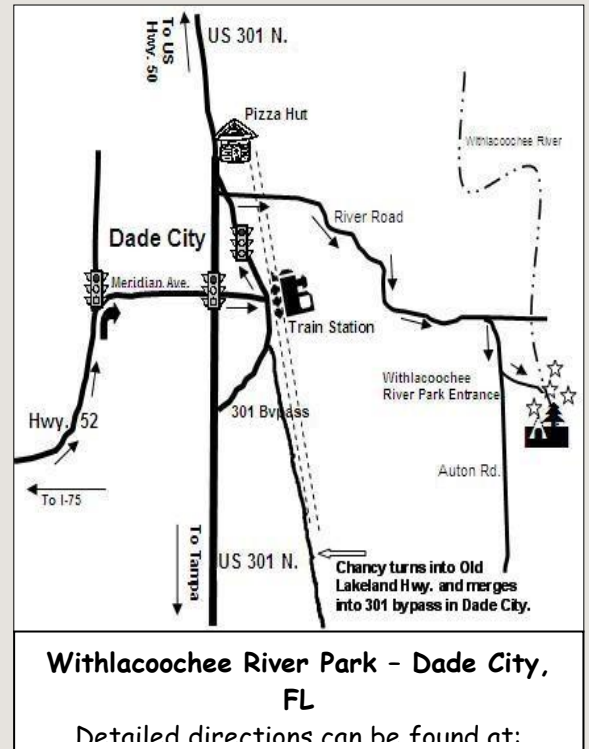
Our next business meeting is **Wed., Sept. 10th, at 8:00 PM** via conference call; details upon request.

All interested members are invited to attend. All club business decisions are made at the business meeting so as not to encumber the general meeting.

Officers & Directors

President	Mike Partain
Vice Pres.	Guy Earle
Secretary	Peter McLean
Treasurer	Christian Rubach
Dir.-at-Large	Allen Maroney
Dir.-at-Large	Steven Gaber
Dir.-at-Large	Jack Fritz
SPACE Editor	Guy Earle
Public Relations	John O'Neill
Membership Chair	Peter McLean
Mirror Lab Chair	Paul McNabb
Outreach Chair	Steven Gaber
Star Party Chair	Mike Partain
Librarian	Ralph Craig
Club Webmaster	Allen Maroney
Dark Sky Chair	OPEN

Click on the name to send email



Withlacoochee New Moon Weekends

There's no need for reservations. However, the park closes at sundown, so you will need to arrive before then. The park rangers will give you the gate-code once you're inside the park. Please do not call for the gate code as they are not allowed to give it out over the phone.



Please join us! All astronomy enthusiasts are welcome. You do not need to be a club member to attend. Please refer to our [Club Calendar](#) for details and scheduled dates. There is a small fee to the park for using electricity, reduced even further for club members, which you can pay on our club website [HERE](#).

SPAC Recognition of Patrons & Benefactors

Walter Brinkman	Benefactor	Joseph & Pamela Faubion	Patron
Dave & Deborah Catalano	Benefactor	Darla & Peter Flynn	Patron
Stephanie Colon &		Steve & Cindy Fredlund	Patron
Jack & Roni Fritz	Benefactor	Steve Gaber & Karen Sell	Patron
Matt Hughes & Manuel Ordonez	Benefactor	Richard & Mary Garner	Patron
Valerie Hyman	Benefactor	Timothy & Mary Ann Harris	Patron
Craig & Roberta Jameson	Benefactor	Michael Haworth & Melanie Otte	Patron
Jamie Kenas	Benefactor	Charlie & Linda Hoffman	Patron
David Knowlton	Benefactor	Eric Houghton	Patron
Laura & Roy Lanier	Benefactor	Mark Kepka	Patron
Tod Markin	Benefactor	Willy & Beth Lebian	Patron
Kelly McGrew	Benefactor	Dave & Mary MacKenzie	Patron
Kevin & Karen Mulford	Benefactor	Steve & Jeri Maiaroto	Patron
David & Kathryn Musser	Benefactor	Allen Maroney & Tracee Elliott	Patron
Rath, Damon & Jean Futch	Benefactor	Ralph & Molly Merritt	Patron
Mike Rozycki	Benefactor	Steven Miller & Lisa Alessi	Patron
Christian & Wendy Rubach	Benefactor	Stephen Oros	Patron
Doug and Teri Sliman	Benefactor	Yervant & Jo-Ann Parnagian	Patron
Garrison & Ruth Smith	Benefactor	Michael & Carli Partain	Patron
Michael Strand	Benefactor	Brad & Lisa Perryman	Patron
Jim & Robin Sumner	Benefactor	Alan Polansky	Patron
Aleksandar Trajkovic	Benefactor	Thomas & Leslie Salinas	Patron
Andrew & Bonnie Watts	Benefactor	Tom Spano	Patron
Johnny White	Benefactor	Jonathan Stewart	Patron

Bill & Norma Amthor	Patron	Tom & Michelle Sweet	Patron
Steven Balke	Patron	Jose & Mary Torres	Patron
Michael Brennan	Patron	Alexie Velez & Yanira	
Michael Callahan	Patron	Hernandez-Velez	Patron
Ralph & Christine Craig	Patron	Skip & Kim Walker	Patron
Glynis Dilaire	Patron	Richard White	Patron
Peter & Jaclynn Dimmit	Patron	Shawn Wilson	Patron
Guy & Kelly Earle	Patron	Elizabeth Wood	Patron
		Pete Zapadka & Amy Johns	Patron



St. Petersburg Astronomy Club Membership Form

Membership in St. Petersburg Astronomy Club, Inc. (SPAC) is open to anyone, regardless of age, who is interested in astronomy. Benefits of membership include a monthly subscription to the SPAC Examiner newsletter, reduced camping rates and use of the club's bunkhouse at our dark sky site at Withlacoochee River Park, the ability to serve on the SPAC board and voting privileges. Dues are considered donations and are non-refundable. Membership options are available as listed below.

You are now able to choose how you wish to renew your membership:

Preferred On-line Website Option: New instructions as our website has been updated.

Go to https://www.stpeteastronomyclub.org/Sign_In.php on the SPAC website where you can view and update your membership profile, provide payment, and print your membership card.

Adult 1: _____ Adult 2: _____

Street: _____

City, State, Zip: _____

Home Phone: _____ Cell Phone: _____

Email Address: _____

Number of Children under 18: _____

Memberships:

Single: ☐ \$ 30.00/YR. Includes one adult, minor children, the "SPACE" newsletter, and all the rights and privileges of membership.

Family: ☐ \$ 35.00/YR. Includes two adults, minor children and the above rights and privileges.

Patron: ☐ \$ 50.00/YR. A Patron member is entitled to the above rights and privileges.

Benefactor: ☐ \$100.00/YR. A Benefactor member is entitled to the above rights and privileges.

Student: ☐ FREE. SPAC offers free membership to full time high school and college students.

Expected date of graduation: _____

Total Submitted: \$ _____

Your SPAC Membership Card is required for reduced fees at the campground.