SPACE

St. Petersburg Astronomy Club Examiner

October 2025

Editor – Guy Earle

The St. Petersburg Astronomy Club has been the center of family astronomy in the Tampa Bay Area since 1927. Our 328 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.

Inside this Issue:

Moon, Venus, & Regulus - Alfa Leonis aligned and imaged with the Dwarf III smart telescope from Riverview, FL, by Guy Earle

November Preview

Next month, SPAC will be meeting for its final time on Thursday the 13th in our normal classroom, this time for a great presentation by SPAC member Christian Rubach

Our 2026 SPAC Officer Election is a time for members to meet, bring a dish, and share some time socializing with each other. The October event is a Pot Luck event, the last to be held at SPC, so take advantage of this time to share some food and laughts.

Here are the nominations for the 2026 SPAC officers. The election will be in person at the October monthly meeting.

President -- Mike Partain

Vice President -- Guy Earle

Secretary – Peter McLean

Treasurer – Christian Rubach

2023 Director--Steven Gaber

2024 Director – Brad Perryman (nominated)

2025 Director -- Allen Maroney

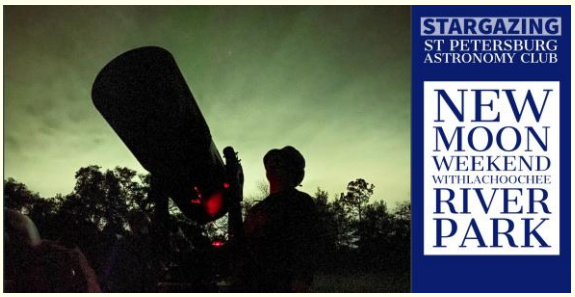
October General Meeting

This month's general meeting will take place on Thursday, October 23rd at **7:00 PM** (set up @ 6PM). The meeting will be ***in person*** at St. Petersburg College, Gibbs Campus, 6605 5th Avenue North, Philip Benjamin Social Arts Building, **Room 116**, (map on last page).

This month will be our **SPAC annual officer election and dinner**. Bring a dessert or some side dish, if you wish. Food and drinks will be provided, so come join the fun!

There is no Zoom meeting this month as the Pot Luck Officer Election general meeting is an in-person only event.

The club's **New Moon observing weekend** is on October 17th and 18th at Withlacoochee River Park east of Dade City.



New and Renewed SPAC Members

We would like to welcome Nicole Drew, Phil Locke, Paul Smith, Chad Thompson & Amber Shepherd-Thompson, Christianne Pearce, John Spencer, Bronislaw Gorecki, Edward Sanborn, Doug Rohloff, Connor King, Bob Morrow, Nicole Stott, Mark & Sharron Bruns, and Conrad Cardano 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

MIKE PARTAIN

Greetings!

Well, OBS 2026 has gotten off to a great start earlier this month. We are fillinjg up quickly with lost of new registrations. A big shout out to our VP, Guy for some really neat ideas to help organize our annual event. Guy was able to confirm NASA astronaut Nicole Stott as our keynote speaker for OBS. Guy has also worked with our Chiefland friends, notably Matt, to revamp our door prize process and we are already seeing some promising results! Please check out the posts on our Facebook page under Phillip Adama, AKA Guy. We will have to rearrange our Friday/Saturday agenda in order to accomodate Nicole's schedule. We have also confirmed with D n D BBQ, that they will host our dinner which will be moved to Friday to align with Nicole's presentation. We will have a schedule of events out by December. If you haven't already registered for OBS 2026, please do so ASAP.

Our general meeting will be next week on October 23rd and is our annual potluck dinner/club elections. Here is the list of candidates who have offered to serve our club. Note that all of the posts are running unopposed so this will mean that our election will be a straight confirmation vote. In the future, I'd like to see more of you step up to help out in leadership. We need this to keep our club healthy. If you are interested in serving, please reach out to any of the names listed below.

President	Mike Partain
Vice President	Guy Earle
Treasurer	Christian Rubach
Secretary	Peter McClean
Director 1	Paul McNabb
Director 2	Allen Maroney
Director 3	Brad Perryman

September General Meeting Recap and Weather Ballon Launch

Guy Earle

On the Sunday before our general meeting, some SPAC members met up on Sunday for a 7PM weather balloon launch at the National Weather Service Ruskin station. Meteorologist Rick Davis was very kind and patient, answering our questions and giving us a tour inside the facility. The weather was absolutely beautiful, with the balloon going up in an amazing sunset. It is impressive how frequent the National Weather Service, all others all around the world, launch the balloons with stunning regularity.

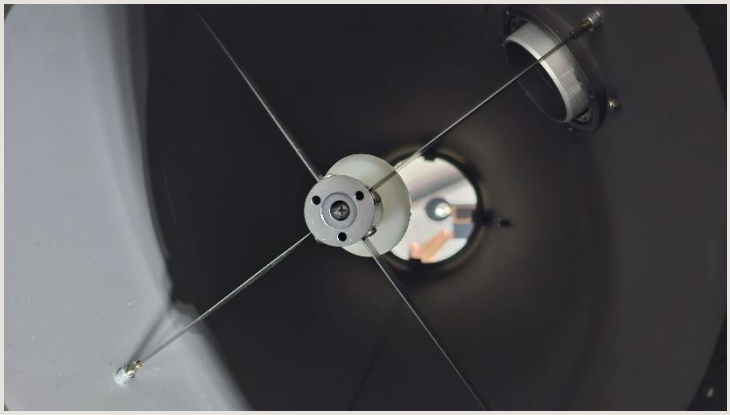
Back to front (L to Rt): Meteorologist Rick Davis, Evalynn & Stephen Mills, Kelly Earle, Denise & Greg Shanos, Craig MacDougal, and myself

Stephen lets loose on the weather instrument after Craig lets loose the balloon

Four days after we had the balloon launch, Meteorologist Christianne Pearce joined our general meeting via Zoom to give a presentation on what the National Weather Service does each and every day for

Cats in Space V: Raffle Telescope

SPAC has donated a telescope to **First Ladies Farm and Sanctuary's** 5th annual **Cats in Space** event on October 25th. Tickets are sold out for the event, but you don't need to attend in order to win the raffle telescope, You can click HERE to go to the raffle link. The telescope is a beautiful 10" f/5 Orion Dobsonian, with an all-metal tube and mirrors that are absolutely clean and look new. The telescope comes with a 50mm finder and an eyepiece set; a 25mm and 10mm metal Orion Plossl eyepieces, along with a set of four, 1.25" color filters, a 2X Orion shorty Barlow (also all metal), and a lunar filter.



OBS star party update!

We have two important Orange Blossom Special star party updates for SPAC members. First, we recently confirmed that Astronaut, artist and science advocate, **Nicole Stott, is coming back**! She was kind enough to do a presentation at SPC back in January 2024, with the intention of returning for the 2025 OBS, but as we as know, Hurricane Milton had other plans. SPAC is going to flip our Friday and Saturday events, with her main presentation on Friday afternoon (schedule TBA), followed by the raffle prizes and then our catered dinner. Our popular swap meet will return to Saturday morning for everyone, including our FOO friends who join us.

Secondly, SPAC is working diligently to provide a wide array of raffle prizes to get you excited and load up those ticket tubs. Remember, we changed it up in 2024 with a new method of raffle drawing, where you can put as many (additional tickets available for purchase) tickets in the item(s) of your choice, guaranteeing that you love what you win! We have items from Move Shoot Move, Sky Watcher, a phenomenal glass print from Fracture of our renowned astrophotographer, Jamie Kenas, of his Elephant Trunk Nebula, as well as products from Bob's Knobs, Agena Astro, tickets to the 2027 Astrofest, and of course, our main raffle prize, a Dwarf 3 telescope, donated by our friends at Dwarf Labs.

SPAC New Moon Weekend

Field Report

September 19-21st, 2025

KELLY ANDERSON

By Intrepid Field Reporter

We had a mixed weekend … warm to muggy days with comfortable temperatures during the night, with fair weather cumulus clouds morphing into scattered cumulus at night. Sometimes blocking any reasonable chance of imaging, just annoying at other times. Put another way, typical Florida late summer weather.

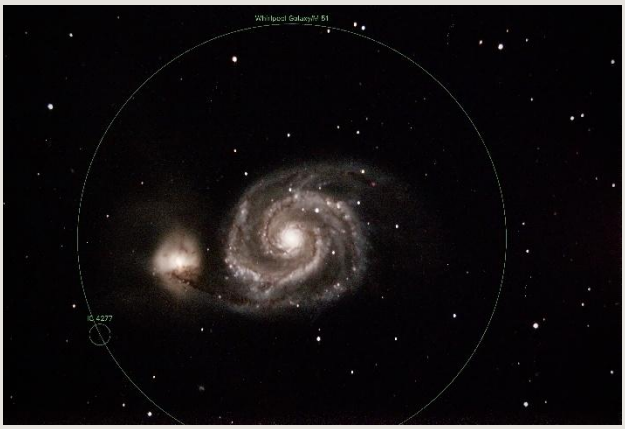
The usual suspects (Joe Canzoneri and Bob & Rita Mizell) arrived early on Thursday. Friday welcomed Bob Stelmock, Tim Harris, and your Intrepid Field Reporter. Even Guy Earle showed up that evening!

One note of not-worthy mention … Saturday night someone decided to run his air boat all around the open field to the west of the park.

Yes, he was boating on field grass! And airboats are LOUD! He finally got tired of annoying the doo-doo out of everyone about 1:30 Sunday morning.

As I scratch out this report (Oct 14th) the forecast is for cool days and clear skies for all weekend. Hopefully we'll be pushing Summer out of the way for our usual good observing weather that'll last until late next Spring. As usual, clear skies are guaranteed.

I had a major computer failure last week and lost all the celestial images I was planning on adding to this report. Thanks for those who contributed, sorry I can't include them. All images in this report were captured by your Intrepid Field Reporter from Withlacoochee River Park, just not from the September 2025 session. No prizes, but who can identify all 6 images? I now have a shiny new custom-built desktop monster that will hopefully be more reliable than its predecessor.



Ain't technology wonderful?

ISS: 25 Years of Habitation Is Arduous

TIMOTHY MILLIGAN

The following is a special contribution by freelance writer and astrophotographer, Timothy Milligan, about the CRS-23 mission

Spaceflight is hard. Complacency is deadly.
Two simple truths that are easy to forget when I look up at the night sky and see the International Space Station (ISS) silently orbiting overhead. But its presence is no accident. The ISS was designed to pass over 90% of the world's population[1] a constant reminder that "*We are up here.*"

I grew up in the 1960s, fortunate enough to witness the live broadcast of Neil Armstrong's first steps on the Moon, July 20, 1969. NASA has been a part of my vocabulary since I was five years old. So, decades later, standing at NASA's press site to cover a space launch, I felt like I'd come full circle.

The launch in question was NASA's Northrop Grumman Commercial Resupply Services 23, or CRS-23 for short. On paper, it was "just" a resupply mission. In person, it was anything but.

Being at the Kennedy Space Center's press site, a place I'd only ever seen on television or online, was surreal. The nostalgia, the triumphs, the tragedies… it's all part of the history here. I felt honored. Humbled. But I was also there to work, to cover the launch from Space Launch Complex 40 (SLC-40).

Before this experience, I might have thought: "It's only a resupply mission." But not anymore. These missions are the lifeblood of the ISS. Without them, the station would soon become uninhabitable. Every launch is critical. Every payload matters. Every person involved is part of something extraordinary.

After 25 years of continuous human presence aboard the ISS, it's easy to forget just how hard it is to keep people alive in space. It takes constant effort, vigilance, and an unwavering belief in the mission. Complacency is not an option. Not when the stakes are this high.

A bit of back history before I dive in too deep. The first component of the ISS was launched by Russia. The Functional Cargo Block (FGB) was deployed November of 1998[2]. It took 2 more years of construction before the permanent habitation of the ISS started in October of 2000[3]. This year we are celebrating the 25th anniversary of habitation on the ISS.

But how do you keep, on average, six people happy for months at a time while they live and work on the ISS? You give them what they need. First and foremost: air, water, and food.

Keep reading, there's more on that coming up.

On September 14th, 2025, I observed the launch of the NG-23 Cygnus Resupply Mission to the ISS from SLC-40 at Cape Canaveral Space Force Station. The launch vehicle was a SpaceX Falcon 9, carrying the Cygnus XL spacecraft. The mission delivered over 4,911 kilograms (approximately 10,828 pounds) of scientific investigations, research materials, and cargo to the ISS.

Liftoff occurred at 6:11 PM EDT, precisely on schedule. The skies around KSC were mostly clear, with only a few cumulus clouds in the distance. It was a beautiful Florida day, with the temperature at a comfortable 83° F (28° C).

This was my first time attending a Falcon 9 launch from the official NASA Press Site, which is located on KSC, not on Cape Canaveral. Standing approximately 6.2 miles (9.98 km) from the pad, I wasn't quite sure what to expect, particularly in terms of launch trajectory and booster return.

Fortunately, the rocket's direction was easy enough to follow visually, but the booster's reentry burn proved harder to track. In front of me, a tracking camera, belonging to a major online platform, was already aimed at the sky. Following its guidance, I looked up just in time to see what resembled a bright firework at the zenith. A large, fiery bloom marked the Falcon 9's reentry burn, used to slow its descent back through Earth's atmosphere.

Moments later, a collective murmur spread through the press observers: “There it is!” The Falcon 9 booster became visible as it descended gracefully toward Landing Zone 2 (LZ-2).

Then came the telltale sound: three sharp sonic booms echoed across the flat landscape, followed by the bright visual of the booster lowering itself behind the tree line for a precise, controlled landing.

While the visual spectacle was stunning, what stood out most was the intensity of the sonic booms, which felt louder than the initial launch sound. I heard three sonic booms in quick succession, a rapid triple report that echoed sharply across the press site. The sensation was physical as well as auditory, it felt like someone lightly pounding on your chest, each boom delivering a soft, percussive thump that you could feel. Then came the echoes off the Vehicle Assembly Building (VAB). It felt like the sound would never stop, bouncing and rolling across the landscape. These booms were generated by different parts of the booster, typically the engine section, interstage, and grid

fins, as they broke the sound barrier during descent.

This observation aligns with research by Mark C. Anderson and Kent L. Gee, who found that: “For observers farther than 2 km from the launch and landing locations, the sonic boom peak overpressure exceeds the peak pressures experienced during the launch.”[4] This was certainly my experience. Although individual perception varies depending on atmospheric conditions and terrain, their data support the idea that sonic booms can register more forcefully than launch acoustics at certain distances—particularly in open areas like the NASA Press Site.

Words like "wow," "amazing," and "spectacular" only begin to describe how I felt witnessing this launch. The weather was perfect, the countdown proceeded without delay, and ignition occurred precisely on time. Most importantly, the launch was not "scrubbed," a dreaded word around Kennedy Space Center.

As thrilling as it was to see the Falcon 9 lift off in person, it’s essential to remember the purpose behind it. The ISS, is only as valuable as the international crew that lives aboard it, conducting research, maintaining systems, and representing a global effort in space exploration.

For more than 25 continuous years, humanity has maintained a presence on the ISS. Expedition 1, launched in 2000, began with just three crew members. As of this writing, Expedition 73 consists of 10 astronauts, a significant increase in both personnel and capability. When was the last time you had 10 people living in your house?

Thankfully, the ISS is equipped with three toilets to accommodate that many residents.[5] But life aboard the station involves more than just work, although, what a place to work. Everything we take for granted on Earth, such as breathable air, clean water, and tasty food, must be transported or produced onboard. Most of these essentials are delivered via uncrewed resupply missions, including Northrop Grumman’s "Cygnus," SpaceX’s "Cargo Dragon," JAXA’s "HTV," and Russia’s "Progress" spacecraft.

These launches are not just about rockets, they are lifelines to the low Earth orbiting ISS.

As Sergeant Joe Friday from the classic TV series *Dragnet* would say, “Just the facts, sir.” So here are some facts that might just baffle your mind.

All of the following figures are documented on NASA and related agency websites[6] though the data is spread across multiple sources.

Total cargo flown to the ISS: 453,512.50 kilograms.

This includes consumable supplies such as air, water, food, and fuel. This figure does not include six launches for which I could not find data, nor does it account for launches that failed to deliver their cargo to the ISS. It also excludes manifest items not intended to be brought inside the ISS, such as satellites and special scientific investigations.

For those more comfortable with imperial units, that's **999,822.73 pounds**—just shy of one million.

To help visualize this: imagine a fully loaded Boeing 747 jet, complete with passengers, luggage, and yes, even the kid kicking the back of your seat. That's the scale we're talking about.

Let's break it down further (first in kilograms, then in pounds):

Total unmanned cargo flights: 169
Failed missions: 5
Fuel delivered: 57,426.5 kg (126,597 lbs)
Air delivered: 3,830.00 kg (8,443.69 lbs)
Water delivered: 26,602.50 kg (58,648.40 lbs)
Food: Not listed separately in most sources, but rest assured—they're not starving up there.

Now, for a fun visual.

Imagine you're floating through the ISS and decide to visit the newly opened (and entirely fictional) *ISS Star Hop Bar.* You secure your feet in the stirrups on the floor and ask for a whiskey and Coke. The bartender smiles. You follow up with, "What's the house wine?" Again, just a smile. Finally, you ask for something simple—just some water.

He brings you a small bag containing about 8 ounces. Then he slides you the bill.

You gasp. **$5,000 for a bag of water?** The bartender sees the look on your face. The bartender shrugs and says, "That's our SpaceX special price. It used to be higher."

You both laugh.

As history reminds us, spaceflight is not easy. It is dangerous. It is expensive. It can be deadly.

So next time the ISS passes overhead, step outside—whether with a telescope, binoculars, or just your own eyes—and take a moment to reflect. If you're lucky, you might even catch it transiting the Sun or Moon.[7]

But remember: the ISS is more than a piece of hardware orbiting Earth. It is **humanity**, **science**, **life**, and above all, **hope**, circling above the only home we have.

References:

NASA, Station Facts
NASA, 2015, "Reference Guide to the International Space Station", 78
NASA, 2015, "Reference Guide to the International Space Station", 89
Acoustical Society of America, February 2025, "Why does the Falcon-9 booster make a triple sonic boom during flyback?"
Guinness World Records,2021, Most Toilets in a Space Station
Wikipedia, Uncrewed Spaceflights to the International Space Station
NASA, Spot the Station

Additional Resources:

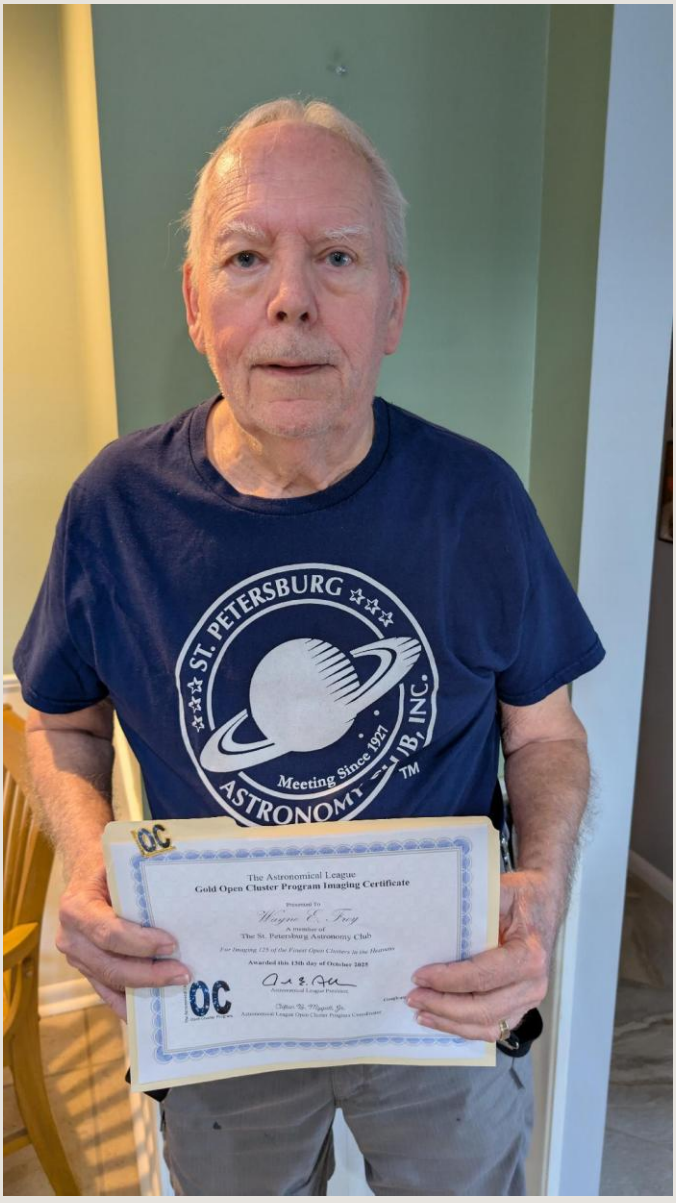
NASA Northrop Grumman CRS-23 SpaceX Falcon 9 Launch
Flyback sonic booms from Falcon-9 rockets: Measured data and some considerations for future models
NASA, Partners Adjust Next Cygnus Resupply Launch
NASA, Northrop Grumman Assessing Cygnus XL Engine Burn Plan

By Line: Timothy Milligan *Freelance Reporter* is an avid Astrophotographer and a Member of the Astronomical League. Awarded the "Imaging - Messier Observing Program" on 09-12-2025

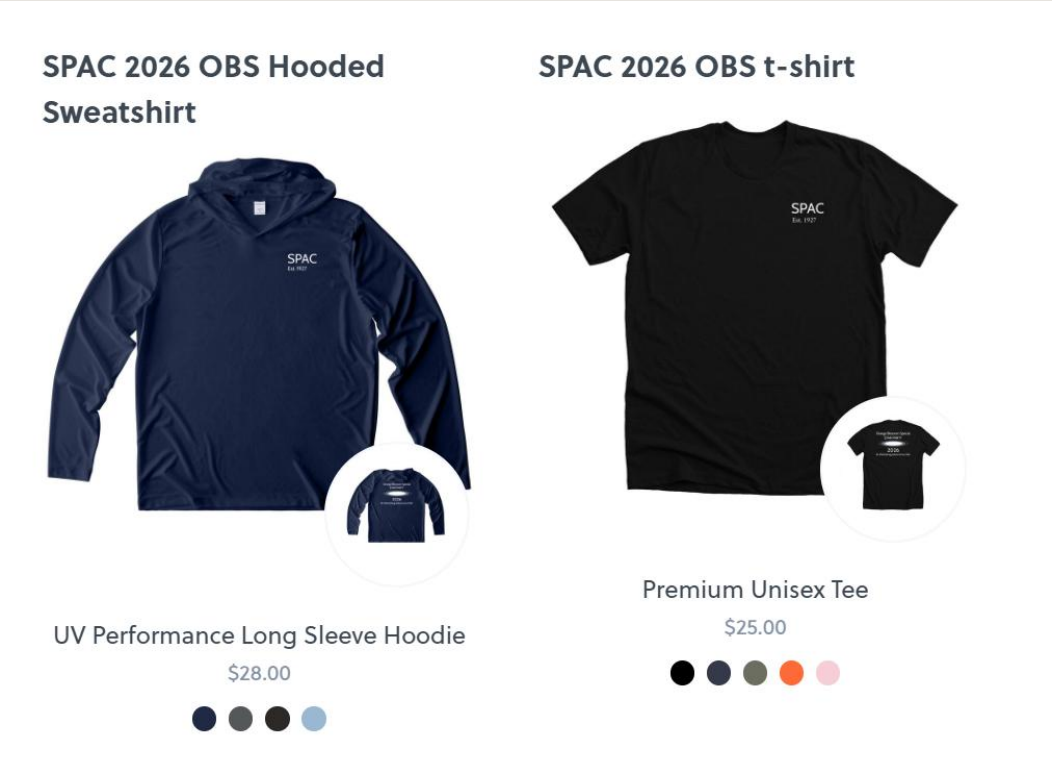
SPAC Member is awarded by the Astronomical League

PETER MCLEAN

Congratulations to SPAC member **Wayne Frey** your achievement and award in the **Open Cluster Program** of the Astronomical League. You have placed the St. Pete Astronomy Club on the rolls of the Astro League chart of awards as our first awardee. Thank You and well-done sir!



Don't forget your OBS shirt/hoodie



The **Orange Blossom Special 2026 star-party** is just three months away, so make sure to grab your special star-party t-shirt. Yes, there's an orange style available! We're changing it up, instead of ordering a giant batch, members need to go to the Bonfire link below and order their shirt. I would make sure you order it by the start of December to have it in time, as it will be printed and sent directly to you. There's also an OBS hooded sweatshirt now available if you're hoping, like I am, for cold skies.

Click ON THIS LINK to take you to the website.

SPAC Image Gallery

PETER MCLEAN

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.

Deep Space (Galaxies, Star Clusters, Comets)

NGC660 Starburst Galaxy
by Philip Roey
from Okie/Tex Star Party
Kenton, OK

NGC6946 Fireworks Galaxy
by Philip Roey
from Okie/Tex Star Party
Kenton, OK

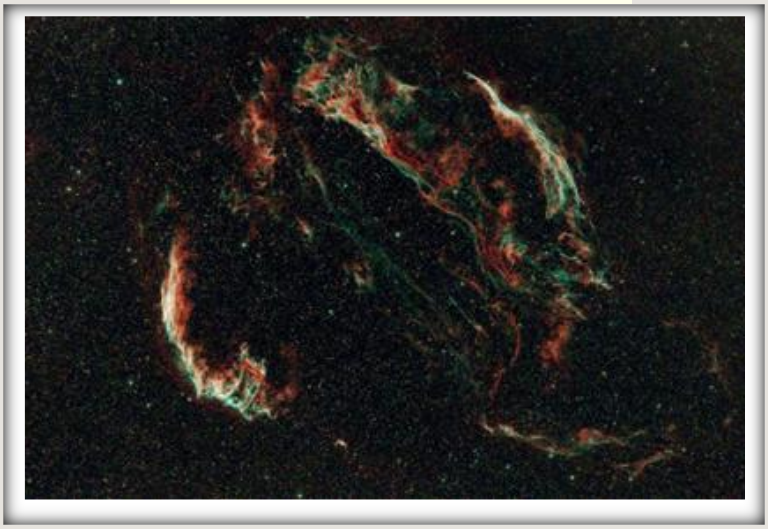
Nebula

IC1396 Elephants Trunk Nebula
by Joey Iglesias
from St. Petersburg, FL

Running Man, Demarian, & Orion Nebulae
by Allen Maroney
from Pinellas Park, FL

Center of the Heart Nebula IC1805
by Jamie Kenas
from Chiefland Astro Ranch, FL

Veil Nebula Complex
by Richard Tobin
from Safety Harbor, FL



Planetary-Lunar-Solar

C2025/A6 Comet Lemmon
by Jamie Kenas
from Chiefland Astro Ranch, FL

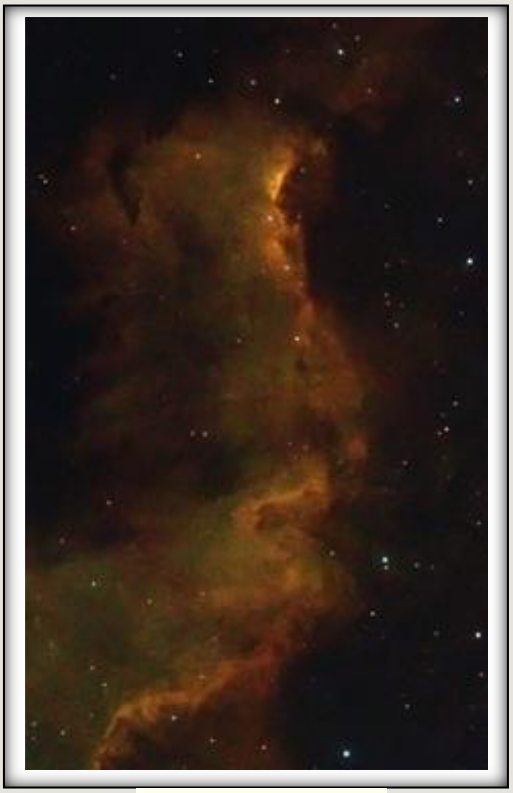
Saturn
by Guy Earle
from Riverview, FL

Moon, Venus, & Regulas
by Joe Reichle
from Apollo Beach, FL

Double Jovian Moon Transit
by Greg Shanos
from Sarasota, FL

Smart Telescope

Seestar S50 VSA Image
NGC7635 Bubble Nebula
by Guy Earle



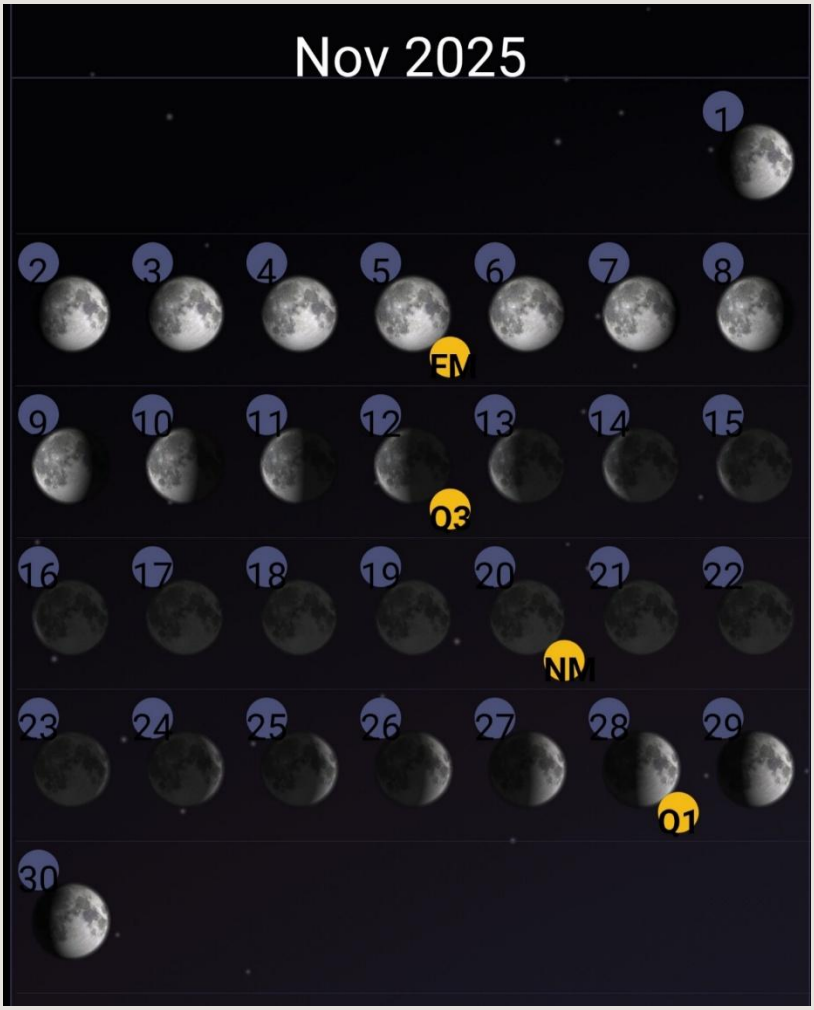
Seestar S50 Image
Cygnus Wall
by Joe Canz
from Orlando, FL

Dwarf III Image
NGC7293 Helix Nebula
by Ron Collins
from Zephyrhills, FL

Dwarf III Image
Horsehead and Flame Nebulae
by Chad Thompson
from Dunedin, FL

November Lunar Calendar

****calendar credit to Luna Solaria****



November Astronomical Events

November 1, the Moon will cross the celestial equator going northward at the Ascending Node

November 1, Venus will be 3.3° north of Spica

November 2, Saturn will be 3.7° south of the Moon

Full Moon, November 5

November 5 is the S Taurid Meteor Shower, ZHR ~4. This isn't the meteor shower you were looking for

November 5, the Moon will be at Perigee: 356,833 km from Earth

November 6, the Pleiades will be 0.8° south of the Moon

November 8, Mercury will be 2.6° north of Antares

November 10, Pollux will be 2.7° north of the Moon

November 10, Jupiter will be 4.0° south of the Moon

Third Quarter November 12

November 12 is the North Taurid Meteor Shower, ZHR ~5. This could be the shower you were looking for

November 12, Regulus will be 1.1° south of the Moon

November 12, Mercury will be 1.2° south of Mars

November 14, the Moon will cross the celestial equator going southward at the Descending Node

November 17, Spica will be 1.2° north of the Moon

November 17 is the Leonid Meteor Shower, ZHR 10-15, no meteor storm this year but worthwhile for sure

November 19, the Moon will be at Apogee: 406,445 km from Earth

New Moon November 20

November 21 Uranus will be at opposition

First Quarter November 28

November 28 the Moon will cross the celestial equator going northward at the Ascending Node

November 29, Saturn will be 3.7° south of the Moon

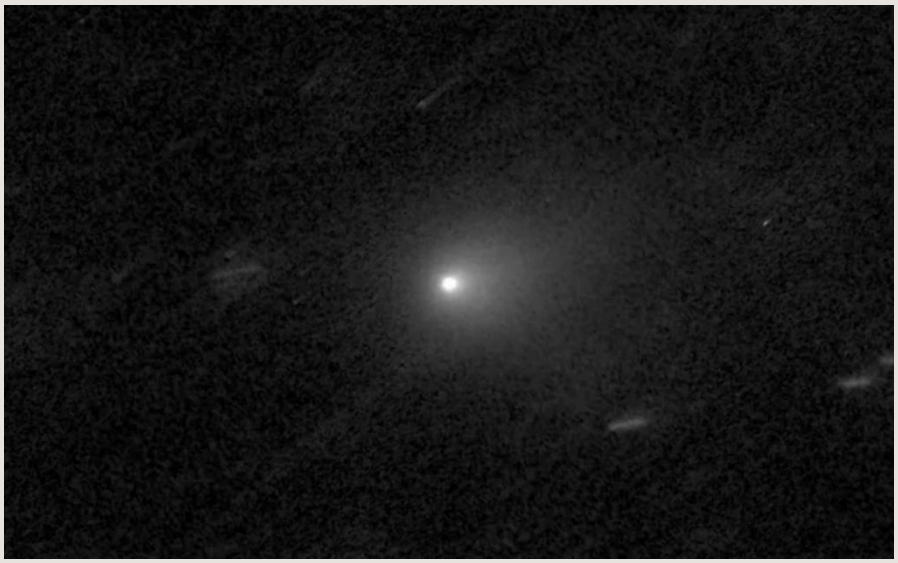
Space Exploration News

STEVE ROBBINS

Following quickly on the success of Starship's OFT 10 flight on August 26, the last launch of block 2 Starship, Orbital Flight Test 11, roared to life October 13 to avenge the inglorious three flights previous to OFT 10. This time there would be no burn-through of hinge areas on the aft flaps. This time they would pre-announce the planned explosions of the booster and Starship after landing in the ocean. This time the entire flight would proceed without anomalies: Liftoff, booster burnback and landing, achievement of orbital velocity, deployment of Starlink v2 mass simulators, refiring of the Raptors while in space, reentry without dramatic near failure of flight components or unplanned

explosive events, hovering dramatically over the Indian Ocean before falling into the sea and dramatically exploding. This was truly a fantastic sendoff for Starship block 2, and great hope for the future of the Starship system.

Comet 3I/Atlas or comet C/2025 N1 (choose the choice of your choice) flew past Mars as expected on October 3, 194 AU, 18.042 million miles, 72.162 times the distance from Earth to the Moon, from Mars. At that distance, cameras on the Mars rovers picked up a smudge in the sky, disappointing members of the Alien Enthusiast Cult, who were rooting for landers deployed by the comet to conduct landing expeditions to Mars. The opaque cloud of ***AI slop*** polluted the Internet, making it increasingly difficult to find the real info.



On October 4, **Perseverance rover sent back a photo** which could be the comet, but only shows a nucleus trail, so it may only be a moon of Mars. NASA hasn't published analysis due to the government shutdown. Perhaps the best views were from **ESA's ExoMars Trace Gas Orbiter** (TGO). 3I/Atlas was closer to 19 million miles from it, so the photos are not the hoped-for detailed images of the nucleus, but photos of a normal appearing comet coma and tail. CaSSIS Principal Investigator Nick Thomas said in a statement released by ESA on Tuesday (Oct. 7). "The comet is around 10,000 to 100,000 times fainter than our usual target."

Perhaps our best shot at getting more detailed information about the comet will come from another ESA mission, **JUICE, on its way to study Jupiter** to study its icy moons, Ganymede, Callisto and Europa. It will have a much more light-sensitive telescope with higher resolution than TGO, plus other instruments to bring to bear: the camera, a near-infrared imaging instrument, a UV spectrometer, a sub-millimeter instrument, and a sensor to image neutral atoms. However well- equipped JUICE is for observations, it will be MUCH further away than the robots in and near Mars, .5 AU, 40 million miles, 160 lunar distances away. There will be no ultra-detailed photography from that far away.

This is strictly a remote sensing expedition, but a very capable one. The study window will stretch from November 2 and November 25.

In 1971, a little-known scientist named Stephen Hawking was puzzling out the characteristics of objects not even verified by science at that time: black holes. He was fascinated by the size of event horizons, non-physical objects that should be observable, just as the horizon between land and sky is visible on Earth. As of that date, no black hole had been proved to exist in the universe, but Hawking was working out the mathematics of what the area of black hole event horizon surfaces would be. In the process of that investigation, Hawking invented the Area Theorum of Black Holes, the statement that upon the merger of two black holes, the area of the surface of the resulting single black hole could never be greater than the sum of the areas of its progenitors. Lacking evidence to back it up, Hawking's theorum was put on ice.

Until January 14, 2025, when the LIGO Laser Interferometer Gravitational Wave Observatory observed a gravitational wave, GW250114, so strong that for the first time the signal to noise ratio of the data was 80. This allowed very close examination of the data to verify masses and sizes of black holes involved before, during and after the merger. The last time such a merger happened was before LIGO had been optimized to work near its theoretical limits. GW150914, on September 14, 2015 had a signal to noise ratio of only 24, not enough to completely verify Stephen Hawking's Area Theorum.

The increased sensitivity of LIGO this time, resulting in the much higher SNR allowed researchers to determine the masses of both progenitors and compare them to the final merged black hole. What they found was that the resultant Black Hole had a mass of about 80% the sum of the progenitors, the other 20% of mass relativistically turned into the energy dissipated in the gravitational wave.

The best account of this is on **Dr Becky Smethurst's YouTube** Channel, and she links to the **scientific papers** you can use to fully immerse yourself in the procedures. So now, Stephen Hawking's hypothesis, worked out in mathematics, but with no evidence to support it has become a whole theory of how black holes work. Ain't science grand?

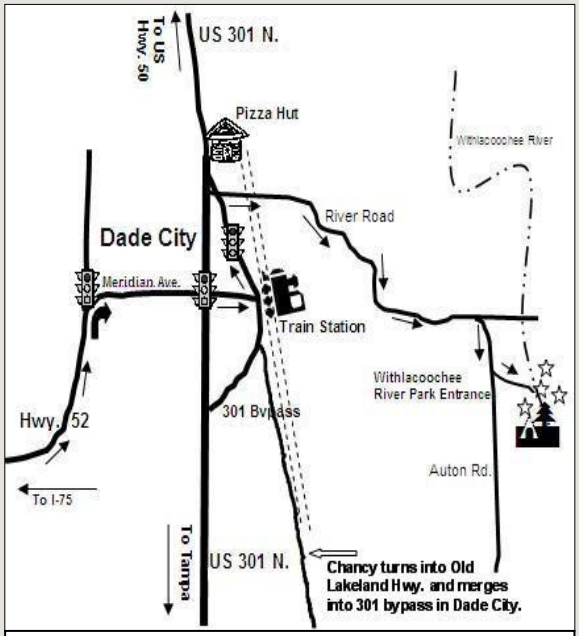
SPAC Business Meeting

Our next business meeting is **Wed., Nov. 5th, 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 River Park – Dade City, FL

Detailed directions can be found at:

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

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

SPAC October Meeting 10/23/25 **Pot Luck Party 7PM**

Location: Philip Benjamin Social Arts Building - Party Room 116.

Barbecue Pork provided by SPAC. Please bring a dish to share.

Park on the south side of the building next to 5th Ave. S. It is ok to park in several Staff Parking spaces during this time. The only unlocked door to the building will be the Room 114 outside access door facing the south parking lot. The rest of the building's outside doors will be locked.