



# SPACE

St. Petersburg Astronomy Club **Examiner**

March 2023

Editor – Guy Earle

The St. Petersburg Astronomy Club has been the center of family astronomy in the Tampa Bay Area since 1927. Our 425 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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## Astronomy Image of the Month

### Saturday group photo from the 2023 OBS



## April Preview

First, in next month's *Examiner*, there will be a full review of the new portable digital telescope, the **Dwarf II**, which was first introduced by SPAC astroimager Christian Rubach at the OBS and subsequently purchased by at least a half-dozen members. The review will be done by one of the new Dwarf II recipients, perhaps even myself.

Also, Christian Rubach will provide a review of the **ASIAIR Pro** from ZWO. At the OBS, astroimager Bob Stelmock did a presentation on Thursday about this total wifi control device for imaging. It also has been purchased by multiple SPAC members since the star party.



Lastly, starting in April, a team of our SPAC imagers will have an article each month dedicated to targets of interest, along with tips for both veterans and beginners!

## March General Meeting

This month's general meeting is on Thursday, March 23rd at **7:30 PM**. The meeting will be **in person** at St. Petersburg College, Gibbs Campus, 6405 5<sup>th</sup> Avenue North, Natural Science Building, Classroom 236, 2nd floor, and **also virtual**. This month's presentation is **Astrophotography with the ASI Studios** by SPAC Director-at-Large Kyle Brinkman



To attend virtually with **Zoom**, join from your computer, tablet or smartphone by clicking [here](#). You can also dial in using your phone. United States: +1 (301) 715-8592 Meeting ID: 993-399-331 Passcode: 999123

The club's **New Moon observing weekend** will be March 17<sup>th</sup>-19<sup>th</sup> at [Withlacoochee River Park](#) east of Dade City.



## New SPAC Members

We would like to welcome Shawn Wilson, John Boyd, Nancy Schafer, Bill Larsen, Amanda Brown & Ryan Imondi, and Michael Musto to our family of members.

## Examiner Staff

<b>Editor</b>	<a href="#">Guy Earle</a>	813 785-1972
<b>Space News</b>	<a href="#">Steve Robbins</a>	386 736-9123
<b>Field Reporter</b>	<a href="#">Kelly Anderson</a>	813 672-2751
<b>Mirror Lab</b>	<a href="#">Ralph Craig</a>	727 384-2086

## Editor's Thoughts

I hope those who attended the 2023 Orange Blossom Special star party had a great time, and maybe our other SPAC members will be inspired to attend next year. The star party will be from Wednesday to Sunday, February 7<sup>th</sup> to 11<sup>th</sup> 2024. Astronomy is a wonderful hobby, but spending time with friends makes it all the more rewarding.



GUY EARLE



There are months of planning that goes into the OBS, and the best outcome for those putting it together is that when you have a great time, it's that simple. Our OBS chair, Mike Partain, was hit with Covid and unable to attend the event that he had worked so hard to put together all year. SPAC members helped to step up and keep the OBS train running smooth, including the volunteers who helped man the registration booth, set up events, kept the electrical running smoothly, and numerous other things done in the background. But without a doubt the greatest thanks goes to **Doug Sliman**. He worked tirelessly to implement improvements to this OBS and stepped up to fill Mike's place, while not even being a club officer, to make sure everyone had a great time. Doug is a natural master of ceremonies, as I think all

attendees at the closing ceremonies can agree. Thank you, Doug.

Also, I myself wish to thank our club members for being patient as I was zooming my drone around. I was putting videos together of the daily activities, and will eventually work on combining the highlights of each day in one OBS star party compilation.

Lastly, those members who have attended for years will have noticed a few changes, such as the text message alerts and having WIFI for everyone on the field. As we decompress from the 2023 OBS, our members are thinking of what improvements to make for 2024. If you have an idea of something we could do better or a new suggestion, please attend our Zoom business meeting, which is open to all members.



## Field Report

### SPAC Sponsors Van Life Gathering At Withlacoochee River Park February 3 thru 5, 2023

Van Life Outfitters is a small business based in Sarasota that supports do-it-yourself and professional camper van builders. They provide expert advice, equipment and techniques to the growing field of enthusiasts who dream of converting their vans into campers long on luxury and efficiency.

Van Life has inaugurated an annual gathering of van-life enthusiasts to present a fun weekend with live entertainment, how-to-do-it seminars and a venue for vendors to display their wares. Their first annual gathering was scheduled for the Withlacoochee River Park, and they needed a sponsor.



SPAC to the rescue!

Ever mindful of opportunities to make a few bucks for our Club, Jack Fritz and your Intrepid Field Reporter arrived at the park on Thursday the 2<sup>nd</sup> to set up our RVs and oversee the set up of our venue ... wait for it ... to sell

beer to the captive audience.

Scheduled to attend were 265 van owners whose rigs were in various states of conversion, as well as a bunch of daily walk-on enthusiasts, all of whom were surely to have parched throats desperately in need of appropriate libation. Our role was to meet this need, peeling off a percentage of each libation sold for the Club.

We also brought our scopes to display to the Gathering attendees. Interrupting the frivolity in the early Saturday evening was a strange astronomic event, a long string of bright dots travelling west to east in unison. Some folks were shouting out about a comet, others thinking they were seeing a meteor (doubtless the slowest meteor in history). But no, it was a string of newly launched Starlink satellites bringing the Internet to the world!





We attracted about 20 van life revelers to our astronomy outreach. While my 4" refractor did indeed find the "Green Comet," it was so faint against the glare of the full moon that only an experienced eye could make it out from the stellar background. Jack's EV scope, on the other hand, was able to take a number of live-stacked images which made the comet very visible. As you can see from the image, Jack's scope was tracking on the stars, so the comet's coma was a bright streak against the starry field. But if you looked closely you could make out the two tails. My refractor delighted the crowd with views of the Moon, Jupiter and Saturn. At least one of the Van Life observers joined the Club and attended OBS!

We made a couple of hundred dollars for the SPAC Coffers, but we also learned several lessons that will enhance our ability to improve our donations for next year. The next Van Life conglomeration is scheduled for February 16 thru 19, 2024, and has been artfully renamed "Vantopia Florida!" Can't hardly wait!

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## Weather Safety



The National Weather Service launched its **Spring Safety Campaign** on March 1st. Please visit their website to learn about unexpected dangerous situations you might encounter and strategies to avoid or remove yourself from them. Scan the QR Code to get more information:



SHIRLEY VUILLE



## Field Report

### Tri-Decadal Anniversary of the Orange Blossom Special

Withlacoochee River Park  
February 22-26, 2023

By Intrepid Field Reporter



KELLY ANDERSON

This year we celebrated the 30<sup>th</sup> Anniversary of the perennial Orange Blossom Special ... wow! Thirty years of frivolity, fellowship, and the occasional foray into things astronomical! But it wasn't technically the 30<sup>th</sup> OBS. Recall in 2021, because of that nasty pandemic we had what we called the "Not really OBS not really a star party." We gathered at the scheduled

time, but we had to forgo the usual activities to avoid crowding in enclosed spaces. Keeping our distance from each other (physically, not socially), wearing masks, frequent hand washing (you know the drill) we managed to have a (kinda) winter star party and kept contagion at bay.

This year, not so much. OBS began for the Set-Up Crew on Sunday. As we were setting up our various mobile abodes we got the news ... our Fearless Leader and Event Organizer, Mad Mike Partain had just tested positive for the nasty bug. Kinda threw sand in our collective gears. Rising to the challenge, Doug Sliman assumed the reins of command, replacing the irreplaceable Mike. We kept calm and carried on, although rumor has it that Doug locked himself in a closet so Teri couldn't hear him scream.



On Monday contractors arrived to set up the Lecture and Mirror Lab tents, Golf Carts were delivered and Port-A-Potties were strategically distributed throughout the area. The Indomitable Jack Fritz and his happy band of helpers temporarily expand

electrical service for underserved areas. Jack's team also checked out the permanent electrical facilities to make sure everything worked. One hundred folding chairs, several tables and the string of red lights were installed in the Lecture Tent. Tuesday afternoon's staff meeting confirmed we were ready for the astronomical hordes about to descend upon us.



### Day One – Wednesday

Today looked to be relatively uneventful for our first day arrivers, but resembled the proverbial bee



hive of activities for staff, getting people registered, passing out T-shirts, selling 50/50 drawing tickets, guiding people to their assigned spaces, passing along advice as to how to best take advantage of the space and services available, chatting about whatever. One assistant was assigned to follow Doug around with a water bottle to put the fire out in Doug's hair. Late

afternoon everyone gaggled at the Lecture Tent to meet and greet each other, catch up with those we hadn't seen since last year, and (most importantly) Johnny White had set up his preeminent popcorn popper and provided kettle corn to the masses for the rest of the week. Thanks, Johnny!

### Day Two – Thursday

The first event of the day was Alan Maroney, Ralph Craig, and Mike Davis demonstrating how to turn a flat disk of glass into a world-class mirror.



Immediately thereafter the worthy Mirror Lab Crew, with the assistance of Richard Garner, enlightened the audience on the intricacies of obtaining near-perfect collimation of Newtonian reflector telescopes.



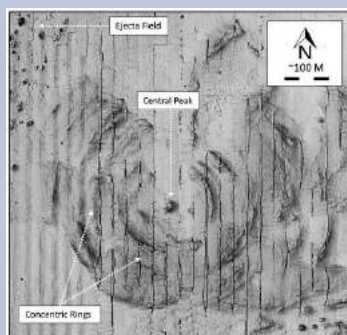
### Day Three – Friday

The pace of activities picked up on Friday, starting with hardy souls heading out for the Bicycle Ride, led by Doug Sliman, and the Nature Walk with Mike Davis in the lead. The ladies headed out for downtown Dade City and the traditional Ladies Luncheon.

After lunch a crowd of thrill seekers gaggled for the Telescope Walkabout, where we wandered through our little Star City looking at the variety of astronomical instruments while their owners chatted about their prized possessions.

The final feature for the day was a presentation by Antonio Paris on the recent discovery of a possible meteor crater off the coast of Miami. Dr Paris is the Chief Scientist at the Center for Planetary Science, an Assistant Professor of Astronomy and Astrophysics at St. Petersburg College. He spoke on the recent underwater investigation organized by Planetary Sciences, Inc. The possible meteor crater was dated at being between 80,000 and 130,000 years old. They found that certain morphological evidence of a hypervelocity impact was not found, and therefore the cause of this structure is more likely to be a "...solutional doline formed by the uneven dissolution of the Miami Limestone." In other words, it was most likely to be a type of sinkhole caused by dissolving of the underlying limestone.





There are a number of other hypotheses concerning what may have caused the crater, such as a drag zone for a large mooring chain, dredging, paleolithic dwelling back when the ocean level was 20 feet lower, and others. It was highly probable that it is not the result of a meteor strike.

## Day Four – Saturday

The area of interest this morning was the annual Swap Meet, where treasures exchanged hands to the delight of many.



After lunch the Park's Chief Range, Duane Mericle brought up the Park's tractor to take an excited group on the famous Withlacoochee Hay Wagon Ride (sans hay).

At 2:00 o'clock Kathy Blackett gave our keynote presentation. She earned a Bachelor of Science degree in Physics from the AUniversity of Michigan–Dearborn, and later earned her PH.D. from the University of Tennessee in Experimental Particle Physics.



Her presentation was on the earliest galaxies we've been able to discover thanks to the James Webb Space Telescope.



The final event of OBS 2023 was hosted by our President, Brad Perryman and our stand-in OBS Director, Dauntless Doug Sliman. Awards were awarded, and the drawings for the 50/50 and Raffle Scope were given., followed by kids door prized, and the ever popular door prize drawings (sadly Bob's Knobs was not among them). Everyone gathered outside the Lecture Tent for the Group Picture, then we queued up for the Barbeque Dinner.



We did have a few Door Prize Winners:



## SPAC Outreach

**A core activity for SPAC and its members is to provide outreach educational events to the public, to learn about what's up in the night sky and how to use a telescope.**

Steve Gaber, Dave Pearson and I were at Discover Charter School in Dunedin. It was their first event and had over 100 signed up. I did my Solar System program, quickly, before dark. It is way over the heads of 3-9 year olds but some parents enjoyed it. I was rushing because driving over a quick stop slammed the top of my scope into the seat back and slide the set screws out of the mirror cell. It took a bit of time to reset and collimate, but Steve and Dave just had lines.

We could see Jupiter, Trapezium and an almost full moon - very bright. Good seeing, no clouds. A lot of rookies so rewarding. I am sure we will be back in the Fall.

Last event in the northern counties is Brooker Creek, Saturday march 18. It is always a great event and several guests bring their scopes plus at least five from SPAC. Greg, Andy and Shirley are

doing great stuff in the south Pinellas areas.

My wife Liz and I, Shirley Vuille, and Andy Watts were at Northwest Elementary School in St. Petersburg on Tuesday, February 28 with our telescopes for the school's annual "Science Night." We had three telescopes set up on the grass behind the school, two Celestron 8-inch SCTs and Andy's 12-inch Orion Dobsonian. (Also, before it got dark, we were treated to a spectacular view of a beautiful red-tailed hawk, sitting atop a nearby cellphone tower! Shirley trained her C8 on the bird, to the delight of us all.) Probably close to a hundred students and their parents got to look through the scopes at a waxing gibbous Moon, and gracing the western skies, Jupiter and Venus. We handed out many "Moon maps" and a few club brochures to many of the parents. It was a very successful, cool and clear, pleasant evening, and the teachers told us they can hardly wait to have us back again next year!

-Greg Simpson



**An eager Northwest Elementary student looking through Shirley Vuille's 8-in. Celestron SCT.**



## SPAC Raffle Scope Winners

Congratulations to Darla Flynn for winning the fantastic 2023  
SPAC Mirror Lab Raffle Telescope!





## OBS Chair Reflections

We just finished our 30th annual OBS last month and it was a great success. This year we implemented so new ideas to enhance our Star party like a texting service to alert attendees to events and presentations. We also hosted our imaging contest voting via texting as well and hope to have some more enhancements next year so that all attendees can register to receive texts. DnD



MIKE PARTAIN



BBQ was over the top with their catered Saturday dinner. Please be sure to check out the drone video Guy Earle shot of OBS and the Saturday swap meet. It can be found on our Facebook page and is a thing to see. Lastly, a big shout out to our volunteer OBS staff, especially Doug and Joe. They, along with the other staff,

too the bill by the horns after I became ill the day before the event and was unable to attend. Yeah, the Rona got me finally. Without our volunteers, our Star party just wouldn't happen. lastly, congrats to Darla for winning the highly sought after 2023 OBS raffle scope and to the guys at the mirror lab for putting our raffle together. I hope to see everyone back at OBS 2024.



## OBS Daily Videos

As each day of the OBS came and went, I attempted to capture footage from my new drone, a DJI Mini 3 Pro and turn it and photos into videos of each day's activities. I only had the drone a few days, and in full transparency I purchased it for a future vacation to Iceland so I could do landscape 4K videos of our trip. OBS seemed like the perfect time to learn how to fly the drone and practice movements best suited for recording. Below are each of the videos that have been uploaded to Youtube for you to watch, just scan each QR code to take you directly there. Enjoy!



Day 1, Wednesday, 2/22



Day 2, Thursday, 2/23

































Day 3, Friday, 2/24



Day 4, Saturday, 2/25



## April Lunar Calendar

April 2023						
««	Sun	Mon	Tue	Wed	Thu	Fri
»»	Sat					
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### Full Moon April 5, the Full Pink Moon

April 6, Spica will be  $3.3^\circ$  south of the Moon

April 7, the Moon will cross the celestial equator going south at the Descending Node

April 10, Antares will be  $1.5^\circ$  south of the Moon

April 10, Venus will be  $2.5^\circ$  south of the Pleiades

### Third Quarter April 13

April 15, the Moon will be at Perigee: 367,967 km from Earth

April 15, Saturn will be  $3.5^\circ$  north of the Moon

### New Moon April 19

April 19 will feature a hybrid solar eclipse visible in the South Indian Ocean and South Pacific

April 20, the Moon will cross the celestial equator going northward at the Ascending Node

April 22, the Pleiades will be  $1.9^\circ$  north of the Moon

April 22 is the Lyrid Meteor Shower, ZHR of ~12 on a moonless night with predicted peak  
21:06 EDT

The Lyrid Meteor Shower is known for persistent trains!

April 23, Venus will be 1.3° south of the Moon

April 25, Mars will be 3.2° south of the Moon.

April 26, Pollux will be 1.5° north of the Moon

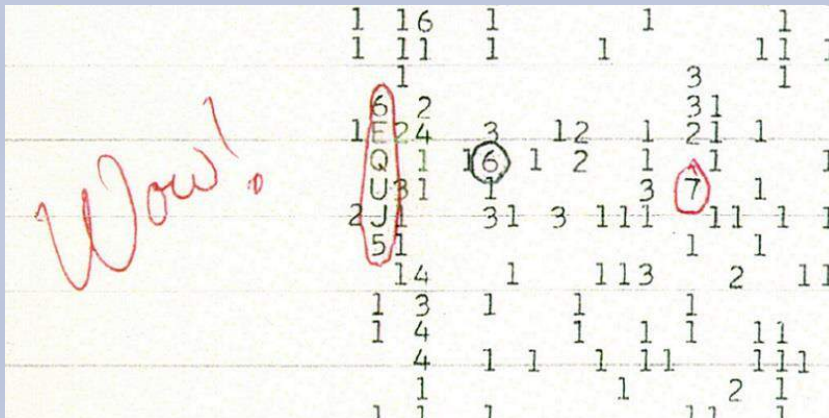
### First Quarter April 27

April 28, the Moon will be at Apogee, 404,300 km from Earth

## Space Exploration News



Our astronaut visitor to this year's OBS, Antonio Paris, seems to be hiding dark secrets from his past. And we're going to expose the sordid details right now. You'll remember that in 1977, astronomer Jerry R. Ehman at the Big Ear Radio Observatory found the infamous WOW! Signal, made viral in a day before the Internet even existed by his expressive marking of the radio

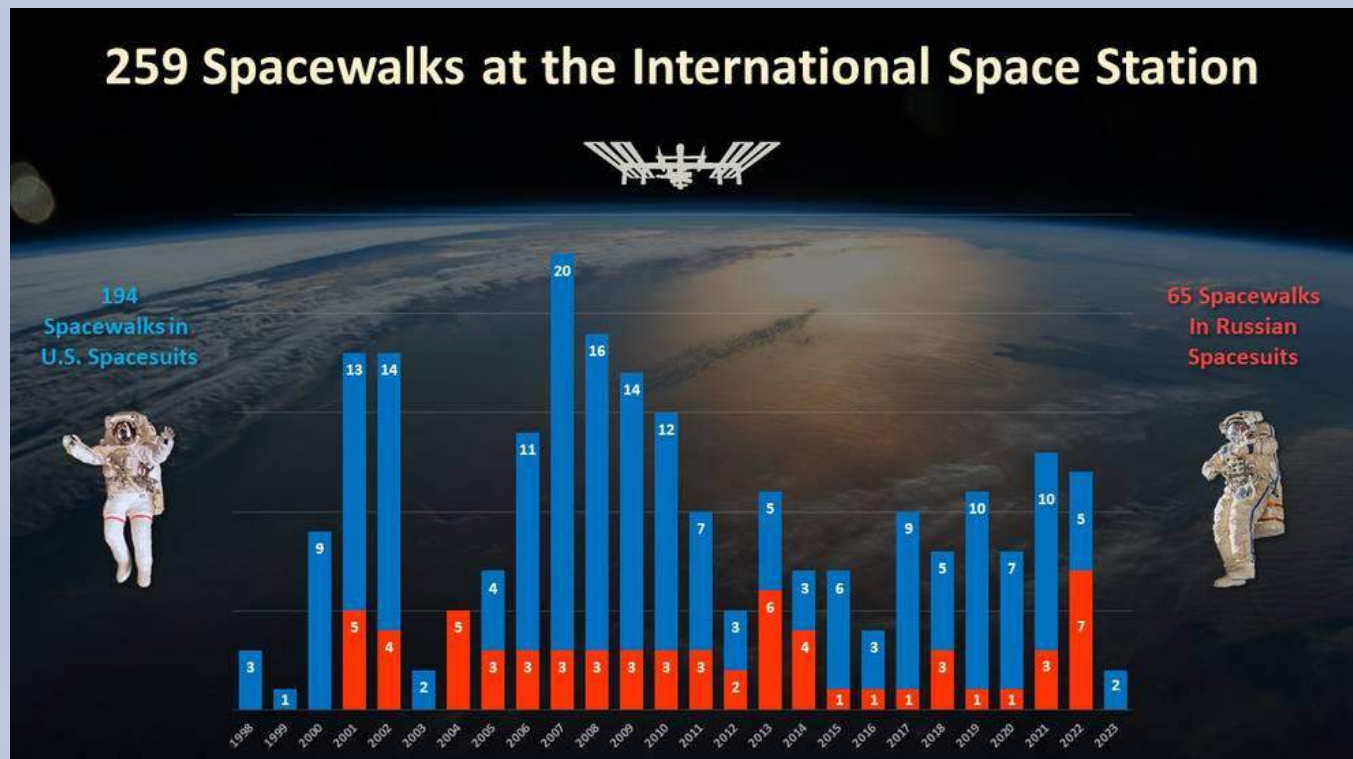


telescope's output tape. Antonio Paris has something to say about that in 2017. He found that two comets were passing through the part of the sky the Big Ear Radio Observatory was surveying on August 15, 1977. Paris and team observed one of the two comets, 266P/Christensen using a 10

meter radio telescope and found the signal matched the 40 year-old WOW! Signal. Paris is careful to note that this doesn't absolutely prove the WOW! Signal was caused by Comet 266P/Christensen, but they did positively conclude that the WOW! signal was a signal from natural, not alien, causes. Wow! And now you know....



Continuing to keep things current on an astronomical time scale, I discovered a fact that truly astonished me while researching a recent space walk by Nicole Mann and Koichi Wakata from the International Space Station. I had always believed that the world masters in space walking were the Russians. However, the fact is that since the first ISS spacewalk in 1998, The US has dominated the number of EVAs from the station. In total so far, 194 spacewalks have been American, or at least in



American EVA suits, as other nations' astronauts have also participated, and 65 spacewalks have been in Russian spacesuits. Show of hands. How many are nearly as surprised by this fact as I am?

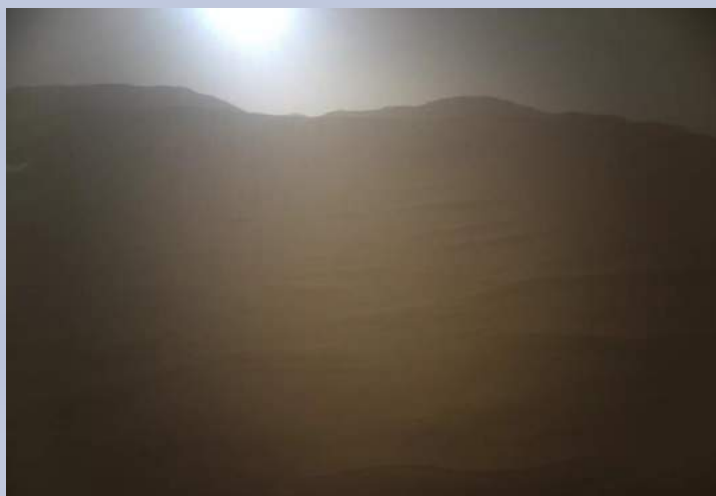
On March 13, The Solar and Heliospheric Observatory (SOHO) spacecraft detected an extremely

rare solar farside halo coronal mass ejection (CME) leaving the Sun faster than 3,000 kilometers per second. This type of event is so rare that it happens about once every 10 years. Although the blast was directed opposite Earth's direction, you can clearly see backscatter from the shock wave in SOHO's (scan the QR code on the left). Even GOES-East detected particles reaching Earth from the back side of this monumental CME. Details on [Spaceweather.com's title page](#), which changes frequently. Look fast. This is not a persistent link.



NASA's intrepid Mars helicopter, Ingenuity, continues to thumb its nose at the near stowaway status it was forced to accept in order to score its passage to the red planet. Not allowed to take one byte of computer data or one electron of power from Perseverance's supplies and required to be entirely self-sufficient, Ingenuity completed its 46<sup>th</sup> flight since its first on April 2021. This time, on February 25, it traveled about a third of a mile (.5 kilometers for those in

metric infested nations) to extend its total accumulated distance so far of 6.3 miles. Ingenuity's camera is oriented 22 degrees below horizontal, so occasionally it gets a glimpse of Martian sky. It did so on this flight, capturing a spellbinding view of the Martian sunset.



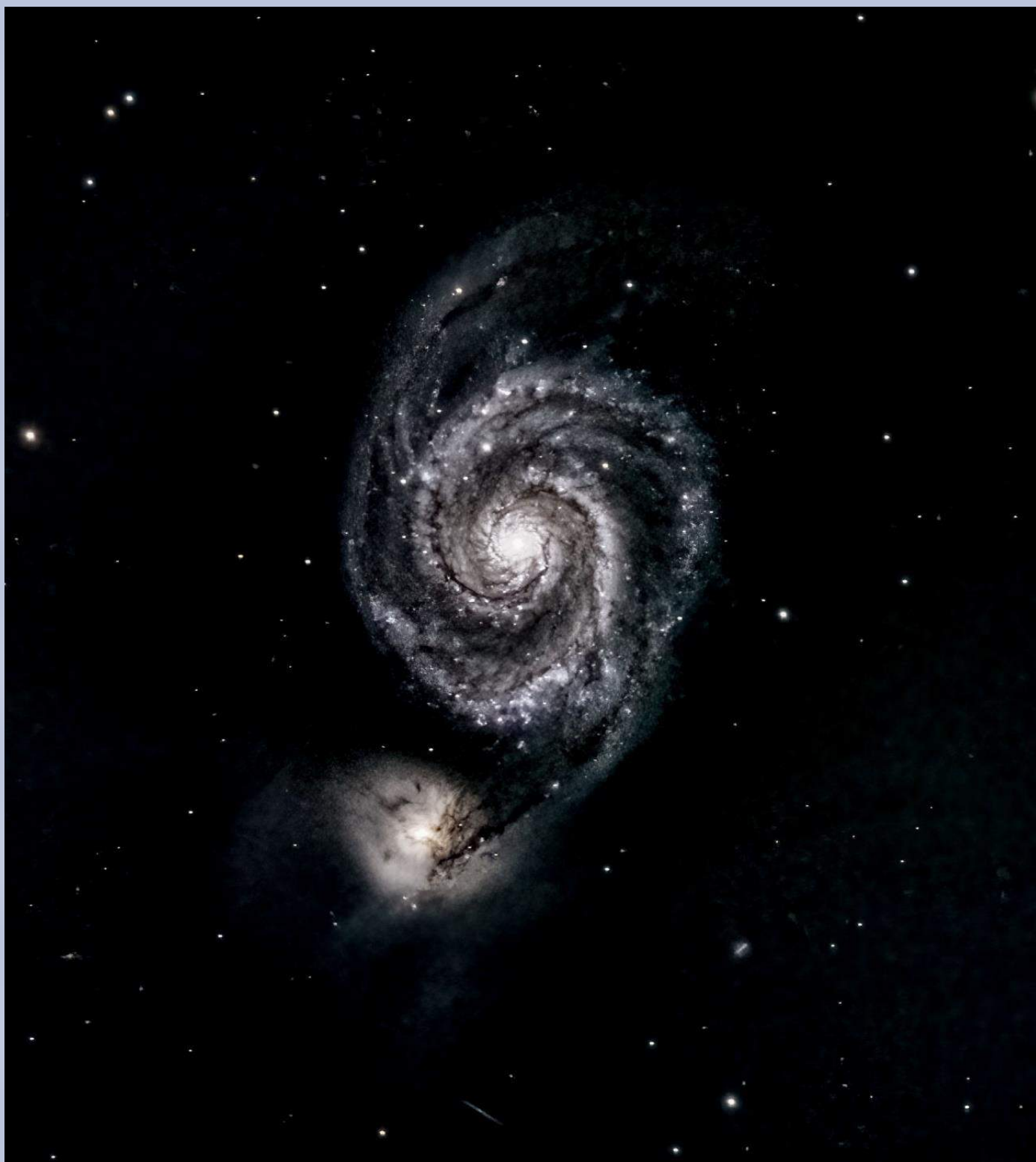
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## SPAC Image Gallery

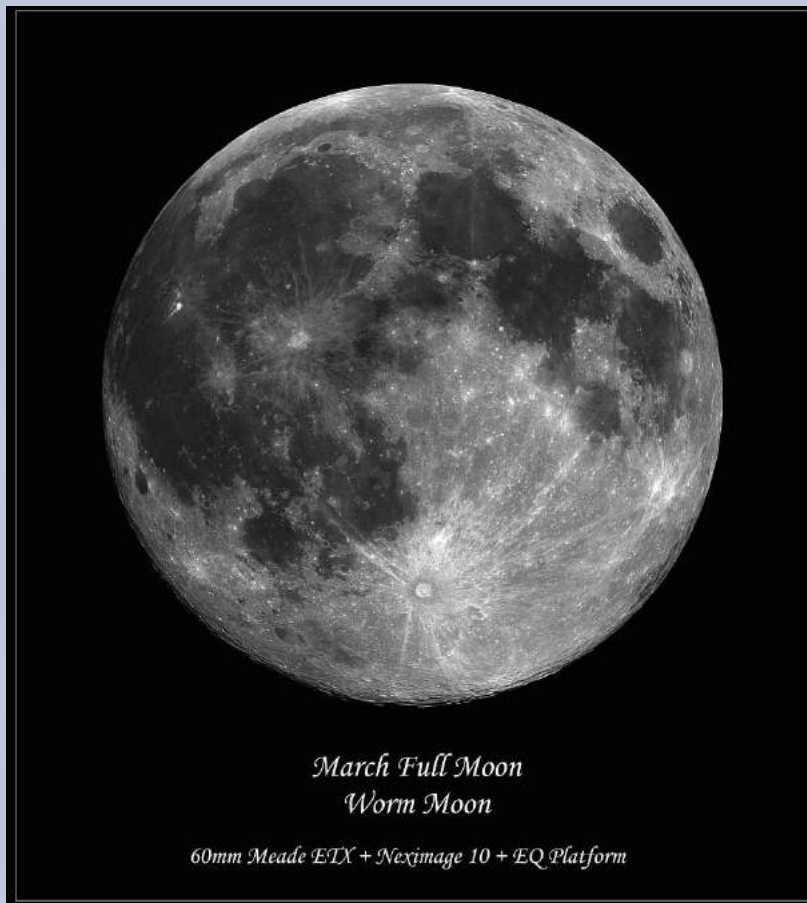


Here are some excellent astrophotography highlights from our fellow SPAC members. Anyone who would like to share his or her work, I encourage you to [email the editor](#) to submit for future newsletters or share them on our [SPAC Facebook page](#).









Page 17: Photo by  
**Phillip Roey**

Previous Page: M51  
by **Howard Ritter**

Left: The Full Moon  
by **Guy Earle**

Below: IC443  
by **Rich Tobin**







Above: **M81 & M82** w/William Optics 71 and QHY533M by **Joe Reichle**

## International Dark Sky Association



LEEANN  
MUSZYNSKI



### **Celebrate the Night! April 15-22, 2023**

Join the International Dark-Sky Association and the dark sky movement!

Light pollution may seem harmless, but it has far-reaching consequences that are harmful to all living things. Effective outdoor lighting reduces light pollution, leading to a better quality of life for all. The dark sky movement is working to bring better lighting to communities around the world so that all life can thrive.

Any artificial light that is not needed is a pollutant that has serious harmful consequences.

Light pollution is increasing at a rate of 2x the global population and 83% of the global population lives under a light-polluted sky.

Light pollution can:

- Disrupt wildlife
- Impact Human Health
- Waste money and energy
- Contribute to climate change
- Block our view of the universe

Visit [www.idsw.darksky.org](http://www.idsw.darksky.org) to learn more about the dark sky movement and to discover the night where you live!

## SPAC Business Meeting

Our next business meeting is **Wed., April 12th, 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.

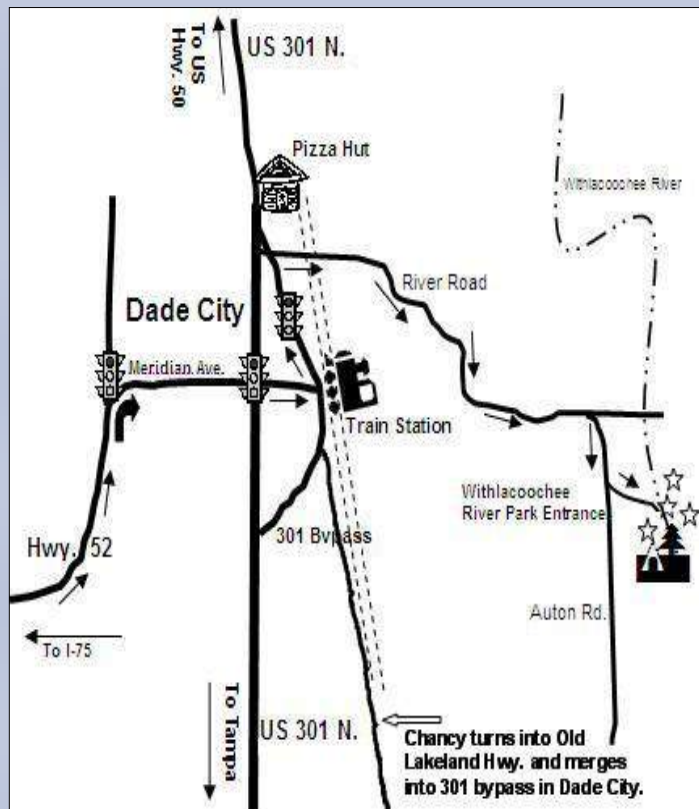
## Officers & Directors

President	<a href="#">Brad Perryman</a>	727 420-1957
Vice Pres.	<a href="#">Paul Krahmer</a>	727 535-5827
Secretary	<a href="#">Shirley Vuille</a>	727 864-2624
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Dir.-at-Large	<a href="#">Kyle Brinkman</a>	727 455-6931
Dir.-at-Large	<a href="#">Steven Gaber</a>	727 215-0464
Dir.-at-Large	<a href="#">Jack Fritz</a>	727 692-9831
SPACE Editor	<a href="#">Guy Earle</a>	813 785-1972
Public Relations	<a href="#">John O'Neill</a>	727 637-5945
Membership Chair	<a href="#">Shirley Vuille</a>	727 864-2624
Mirror Lab Chair	<a href="#">Paul McNabb</a>	727-345-5713
Outreach Chair	<a href="#">Jim Hunter</a>	813 507-8415
Star Party Chair	<a href="#">Mike Partain</a>	850 339-0828
Librarian	<a href="#">Ralph Craig</a>	727 384-2086
Club Webmaster	<a href="#">Jack Fritz</a>	813 508-5680
Dark Sky Chair	<a href="#">Leeann Muszynski</a>	813-601-0986

*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.



### Withlacoochee River Park – Dade City, FL

Detailed directions can be found at:

[www.StPeteAstronomyClub.org](http://www.StPeteAstronomyClub.org)

Reservations are not necessary. Please print and display our [Friends-Of-The-Park Pass](#) on your dashboard.

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.





## St. Petersburg Astronomy Club

### Recognition of Patrons & Benefactors

Clifford B. Benham	Benefactor	Steven Balke	Patron
Lakeisha & Stephen Black	Benefactor	Christopher Bankston	Patron
David Brewer	Benefactor	Lori Bartels-Tobin &	
Walter Brinkman	Benefactor	Espen Holmen	Patron
Dave & Deborah Catalano	Benefactor	Sean Bloch & Emiliy Kulokas	Patron
Kimberly Dean	Benefactor	Kyle Brinkman	Patron
& Caroline Sherman		Michael Callahan	Patron
Jack & Roni Fritz	Benefactor	Rich & Bonny Carlson	Patron
Christopher Halls	Benefactor	Ralph & Christine Craig	Patron
Michael Haworth & Melanie Otte	Benefactor	Garrison Crenshaw	Patron
Valerie Hyman	Benefactor	& Diane Doolittle	
Sai & Maggie Kakumanu	Benefactor	London & Leslie Crosby	Patron
Jamie Kenas	Benefactor	Dan Denney	Patron
David Knowlton	Benefactor	Peter & Jaclynn Dimmit	Patron
Laura & Roy Lanier	Benefactor	Daniel Doyle & Suzanne Ford	Patron
Greg Legas	Benefactor	Guy & Kelly Earle	Patron
Tod Markin	Benefactor	Joseph & Pamela Faubion	Patron
Kelly McGrew	Benefactor	Darla & Peter Flynn	Patron
Kevin & Karen Mulford	Benefactor	Steve & Cindy Fredlund	Patron
Will & Jenni Nelson	Benefactor	Steve Gaber & Karen Sell	Patron
David & Tara Pearson	Benefactor	Richard & Mary Garner	Patron
Rath, Damon & Jean Futch	Benefactor	Les & Janet Gatechair	Patron
Howard Ritter	Benefactor	Steve Gross & Julia Winston	Patron
Doug & Teri Sliman	Benefactor	Ben Groves & Veronica Bynum	Patron
Andrew & Bonnie Watts	Benefactor	Kevin Hanley	Patron
Bob & Michele Winslow	Benefactor	Jason & Steph Hargrove	Patron
*****		Timothy & Mary Ann Harris	Patron
Dan & Alyson Affolter	Patron	Sharon Herman	Patron
Bill & Norma Amthor	Patron	& Melissa Hughes	
Jan Anschuetz	Patron	Charlie & Linda Hoffman	Patron

Matt Hughes & Manuel Ordonez	Patron
Neal Kleinman	Patron
Matt Labadie & Jennifer Willman	Patron
Bill Larsen	Patron
Joe & Shirley Litton	Patron
Barbara Lloyd	Patron
Steve & Jeri Maiaroto	Patron
Allen Maroney & Tracee Elliott	Patron
Gabriel & Reyna Martinez	Patron
Joe Mirabelle	Patron
Herb Monroe & Martha Stewart	Patron
Leeann Muszynski	Patron
Robert Nadeau & Ali Wuchert	Patron
Dominick Oppolo	Patron
Stephen Oros	Patron
Michael & Carli Partain	Patron
Brad & Lisa Perryman	Patron
Alan Polansky	Patron
David & Jenny Powell	Patron
Thomas & Andy Prince	Patron
John & Abbie Redmond	Patron
David & Rusty Richmond	Patron
Christian & Wendy Rubach	Patron
Gregory Satchwell	Patron
Nancy Schafer	Patron
Rebeca & Jack Selbo	Patron
Anthony Staiano	Patron
Jonathan Stewart	Patron
Tom & Michelle Sweet	Patron
Alexie Velez & Yanira Hernandez	Patron
Ed Wilson	Patron
Elizabeth Wood	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 join or 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](https://www.stpeteastronomyclub.org/Sign_In.php) on the SPAC website where you can join, view and update your membership profile, provide payment, and **print your membership card**.

- **US Mail Option: Takes more time to process manually because we are all volunteers.**

Complete the attached membership form and send it along with your payment to:

Jim Hunter  
17316 Oak Ledge Drive  
Lutz, FL 33549.  
(Checks should be made payable to SPAC, Inc.)

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.**