



The Eyepiece

SW FL Astronomical Society, Inc.
3236 Forum Blvd #1160
Fort Myers, FL 33905



Editor - Mike Jensen

Hi Everyone!

I think most of us in Florida are ready for September. I mean, what's not to like? The height of hurricane season, continuing Summer heat & storms, football season, back to school traffic, Snowbirds begin packing, oh, and one month closer to October and better viewing and imaging!

This month we've got a great presentation from our very own Dr. Michael DiMario. More info on page 6, Michael will talk about the history and recent restoration of the iconic Yerkes astronomical research facility located in Williams

Bay, Wisconsin. The presentation will be given on Zoom.

In October, another fan favorite and local astronomy expert, Dr. Derek Buzasi will be presenting in person! We don't have the title and subject of his talk as of press time, but we are sure it will be compelling and interesting.

A fun Astro SIG challenge, and plans to do some collaborative imaging this fall as well. Plus, a handful of interesting articles, the Astronomical League report from John MacLean, sky charts, and last months minutes. So much to read!

The The Wizard Nebula by Scott Cruzen

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Monthly Meetings

Our monthly meetings are held on the **first Thursday of each month**. The meetings begin at 7:00pm.

Here is the Zoom link:

<https://zoom.us/j/97435302223?pwd=Y3A2dlk2Q3M2eG1ENTJuOXp-4TEZEQT09>

Passcode: 874185

Each meeting is usually a combined live and Zoom meeting.

The in person meeting is held at:
Calusa Nature Center/Planetarium
3450 Ortiz Ave,
Fort Myers, FL 33905



Below are the dates for the meetings of 2024:

Sept. 5, 2024

Oct. 3, 2024

Nov. 7, 2024

Dec. 5, 2024

Astro Sig Schedule 2024

All Meetings at 7:00pm

Sept. 17th

Oct. 15th

Nov. 19th

Dec. 17th

**ASTRO SIG MEETING ZOOM LINK
NEW LINK**

<https://us02web.zoom.us/j/86016923908?pwd=mVl2usd-QzoUmJPCjWVD2glp7RTWbC.1>

Meeting ID: 860 1692 3908

Passcode: 481554

ASTRO SIG Projects!

Our Astro SIG group has a couple of fun projects planned for the upcoming months.

- Hubble Bubble (Nebula) Challenge
- Collaborated team imaging of designated projects

The Hubble Bubble challenge is easy, download the data, process the image to LOOK like the image of the Bubble Nebula that the Hubble took. More info on page...

The collaborated imaging project will involve several announced targets for the Fall/Winter months. As many of us as possible will image the projects and it will be processed in to one image.



President's Message

Brian Risley

Wow! It's hard to imagine that summer is almost over! The Planetarium is getting ready to open September 1st with some major changes. I can't wait to see what all has been done. We are back to our normal meeting September 5th at 7pm in the planetarium and having it on Zoom.

This month's speaker will be coming to us via Zoom.

Our Program is: The Yerkes Observatory History, Revitalization and Pluto Preccovery Presented by Dr. Michael DiMario, SWFAS Member

Observing events are starting this month (Weather and Mosquito permitting!) Solar Observing starts on the 14th at Ponce de Leon Park 9-noon. FSW Moore Observatory will be open on Friday the 27th. Seahawk Park Star Party is Saturday the 28th with the following weekend on Oct 5th at Seahawk again for Lunar observing.

This is now the start of our season for public outreach events. We really need membership participation in order to hold these events. When there are only a core handful of members that are participating it's hard to do a lot of the requests we get and as we all get older, it's harder to be out there the entire time, We need some new blood in the outreach arena. We always need hands even if just to help handout brochures and greet people. If you are willing to help out, let me know and I can email those interested as events come up so we can make sure that we have people to cover them.

See you all at the meeting!
Brian

24/25 Observatory & Solar Dates

Below are the new schedules for the FSW Observatory and the Solar Observing events for the coming school year. Note that the observatory events will be the fourth Friday of each month, and the Solar observing events will be the second Saturday of each month at the indicated parks in Charlotte County.



FSW Observatory

Sep 27, 2024
Oct 25, 2024
Nov 22, 2024
Dec 27, 2024
Jan 24, 2025
Feb 28, 2025
Mar 28, 2025
Apr 25, 2025
May 23, 2025

Solar Observing

Sep 14, 2024
Oct 12, 2024
Nov 9, 2024
Dec 14, 2024
Jan 11, 2025
Feb 8, 2025
Mar 8, 2025
Apr 12, 2025
May 10, 2025

Park

Ponce deLeon
Bayshore Live Oak
Gilchrist
Ponce deLeon
Bayshore Live Oak
Gilchrist
Ponce deLeon
Bayshore Live Oak
Gilchrist

Club Officers & Positions

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Calusa Nature Center Planetarium Director
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The Astronomical League

As a member of the Southwest Florida Astronomical Society you are automatically also a member of the Astronomical League, a nationwide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you including receipt of The Reflector, the AL's quarterly newsletter, use of the Book Service, through which you can buy astronomy related books at a 10% discount. You can also participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others. To learn more about the Astronomical League and its benefits for you, [visit http://www.astroleague.org](http://www.astroleague.org)



Reflector Magazine

The latest June 2024 copy of the Reflector magazine has been emailed.. It is also available via the web at <https://www.astroleague.org/reflector>

What's up with the Astronomical League – May 2024

The link to the latest happenings is at : [Whats-Up-with-Astro-League-May-2024.pdf \(astroleague.org\)](http://www.astroleague.org/Whats-Up-with-Astro-League-May-2024.pdf)
Covered in the May 2024 edition are ALCON 2024 (July 17-20, 2024) which will be held in Kansas City, Hofstra University's Astronomy Festival on the National Mall (June 22), and the Astronomical League's Spring 2024 Astronomy Day on May 18.

Monthly highlight of the Astronomical League Observing Programs (Article prepared by SWFAS Astronomical League Coordinator John MacLean)

Foundations of Imaging Observing Program

This month our focus is on one of the newest of the League's Observing Programs with an overview of the Imaging Observing Program: [Foundations of Imaging Observing Program | The Astronomical League \(astroleague.org\)](http://www.astroleague.org/Foundations-of-Imaging-Observing-Program)

Amateur astronomers take images for three main purposes or objectives:

- To create **Artistic** images (non-linear data),
- To aid in **Observing** things that are beyond the range of the human eye (linear or nonlinear data),
- To collect **Scientific Data** that extends the bounds of astronomical knowledge (linear data).

The Fundamentals of Imaging Program is designed to give the participant a chance to experience all three of these different purposes with a wide range of targets.

Imaging Targets

Participants have an opportunity for exploring a wide range of targets covering the following:

- Constellations & Asterisms
- Nightscapes (e.g. Milky Way)
- Meteors
- Lunar & Solar

- Stars (binary, variable, nova)
- Planets
- Deep Sky
- Comets & asteroids
- Eclipses & Occultations

Equipment

Ranges from DSLR with wide field optics to dedicated CCD/CMOS astrophotography cameras mounted utilizing tracked and guided mounts.

Imaging Activities

Solar System (Minimum of 27 images required)

Imaging examples include:

- Entire solar disk including sunspots (white light or hydrogen-alpha filters)
- Any seven of the lunar features covered in the Lunar or Lunar II program
- Two of Saturn, Mars, Venus
- Jupiter including the GRS
- Jupiter including an occultation
- Dwarf planets Pluto and Ceres twice over a 1-2 month period
- A comet over 1 – 2 nights
- Additional optional targets include solar and lunar eclipses, nightscapes, lunar occultations

Deep Sky Objects (Minimum 25 images)

- Must include at least two of the following types:
 - o Open Clusters
 - o Globular Clusters
 - o Dark Nebulae
 - o Galaxies
- Bright Nebulae to include at least one of the following:
 - o Star forming regions
 - o Reflection nebulae
 - o Planetary nebulae
 - o Supernova remnants
- Must include both M42 and M31. M42 must include the Trapezium not overexposed along with associated wispy nebulosity. M31 must clearly show the dust lanes, proper color, and a not-overblown core.
- Optional targets include 5 double-stars from the Double Star Program where the separation angles must be measured, 2 Variable stars from the AAVSO index using photometry to measure brightness over time.

Imaging Criteria

Include:

- In-focus, round stars with no excessive bloat
- No distracting artifacts including noise, bloat, highlight clipping, collimation errors, etc.
- Accurate colors as allowed by the equipment and be free of gradients
- Use of tools like eXcalibrator, G2V, and the Pixinsight Photometric Calibration Tool is encouraged even for beginning observers.

GUEST SPEAKER PRESENTATIONS SERIES

Here's our lineup for the "SWFAS Guest Speaker Presentations" series of talks. These will cover astronomical science and space exploration along with practical astronomy and astrophotography talks by various subject matter experts. We are lining up prominent scientists and researchers to explain the science and technology behind the exciting discoveries being made in recent years in astronomy.

The following presentations are already scheduled and we will be firming up talks in 2024 on a month-to-month basis.:

September -

Dr. Michael Dimario, SWFAS Member, Yerkes Observatory

October -

Dr. Derek Buzasi, Florida Gulf Coast University

November -

Dr. Christopher C Stark - NASA's Search for Life on Exoplanets



The Yerkes Observatory History, Revitalization and Pluto Precovery

Presented by Dr. Michael DiMario, SWFL Member

Sept. 5, 2024

Dedicated in 1897, the Yerkes Observatory 40-inch refracting telescope was the largest in the world, and still is today. Dr. Michael DiMario will talk about the history and recent restoration of the iconic astronomical research facility located in Williams Bay, Wisconsin. He will also talk on the Precovery of Pluto found on E.E. Barnard photographic plates of 1909. Yerkes holds a significant place in the history of astronomy for its many scientific contributions, architectural beauty, and role engaging the public in astronomy.

BIO:

Dr. Michael DiMario, SWFL Member

Michael has seven patents and has authored a published book on systems engineering, contributed numerous chapters of systems engineering texts, as well as more than fifty peer reviewed papers regarding quantum magnetometry, systems engineering, and quality management. He has been interviewed and quoted in Wired Magazine, GPS World, Sifted, and the Financial Times. He holds the oldest precovery record of Pluto located

Dr. Derek Buzasi (PhD, Whitaker Eminent Scholar) Returns to Speak to SWFAS In Oct.



Derek received his undergraduate degree in physics from the University of Chicago, and his PhD in astronomy from Penn State University. He has worked at a variety of institutions, including the National Center for Atmospheric Research, Johns Hopkins University, the California Institute of Technology, and the University of California at Berkeley. Most recently, he served for ten years as Professor of Physics at the US Air Force Academy. Derek has published more than 120 papers, and has also worked on a variety of major instrument teams, including Detector Scientist for the Cosmic Origins Spectrograph, part of the Hubble Space Telescope's most recent upgrade, and Principal Investigator for the Wide-Field Infrared Explorer satellite. He currently serves on the Science Team for NASA's planet-finding Kepler mission.

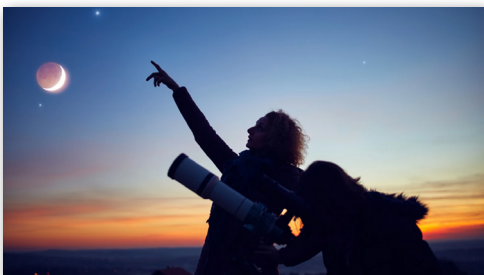
What's Going On in the SIG Group?



By Mike Jensen,
SIG Founder/Leader

Every month we get together on a Zoom call with a pretty loose agenda and manage to have an absolute blast talking about Astrophotography. I hope you'll join us if you're interested in Astrophotography.

There are many who are on the SIG email list but many fewer who actually join the meeting. We'd love to have you join us, and at some point I will begin removing non-participating members from the email list to protect our participating members who send out their images for critique and feedback.



The Hubble Bubble Challenge

Editors Note: Our sincere thanks to SIG member John Udart for the concept of the Hubble Bubble challenge.

Announcing the First Annual Astro Summer Challenge: The Hubble Bubble Games!

As we patiently wait for the clouds to part and the clear November skies to arrive, it's time to keep those processing skills sharp and your creative juices flowing! To celebrate the spirit of the Summer Olympics right here in SWFL, we're excited to invite you to our inaugural Astro Summer Challenge – and we're calling it the Hubble Bubble Games.

This summer's event features a twist on your usual imaging marathon: we're all starting from the same point. Every participant will receive an identical SHO dataset. [CLICK HERE](#), and your challenge is to process it to match (as closely as possible) the iconic 2016 Hubble image of the Bubble Nebula, also known as NGC 7635. Think of it as an Olympiad for the stars – with you as the athlete, and your processing software as the training equipment.

What's at stake? Besides eternal glory among your peers, the top three entries will be honored with a coveted Gold, Silver, or Bronze badge next to their masterpiece, which will be proudly featured in next month's newsletter. But that's not all! For those of you who like to think outside the star box, we're also awarding creativity in the following categories:

- **Best Alternate Color Palette**
- **Best Crop**
- **Best Black & White**
- **Best Animated**

The Rules:

1. Use **only the data provided**. No borrowing from your last trip to Mauna Kea!
2. You can use **any processing software** that suits your style – PixInsight, Siril, APP, Photoshop – or even a magical combination thereof.
3. Honesty is key. This is about your processing skills, not your Astrob-in account.

Let's be real, it's been months since most of us have had a decent sub to work with. The humidity might be threatening to rust our neural connections, but this challenge is the perfect antidote. Whether you're gunning for gold or just here to shake off the cobwebs, the Hubble Bubble Games are your chance to shine!

Here are the other image parameters.
Focal length: 2800mm

Pixel size: 3.76

He didn't use SPCC and did not mention of filter size so that's anyone's guess.

Hubble Bubble Continued

The main "rule" is to make the nebula colors, star colors, rotation and crop match as close as possible to the reference image for the medal awards. The other category awards are more liberal and up to you or the panels discretion. Other participants can judge, just not in the category of their submission. This should (maybe?) take some of the workload off of you.

Ready to dive in? Download the SHO image data [\[here\]](#). Check out the Hubble Bubble Nebula reference image [\[here\]](#).

Please see Hubble Bubble reference image next page, and/or [click here](#).

If you have any questions, please refer to the Q & A section of this event notice. Let the games begin!

Q & A.

Q. Will there be a mount counterweight discus throw or ASI Air shot-put events in the future?

A. Due to SWFAS insurance policy, no events of this nature are allowed. Please refer to bylaw 14 subsection 8.a.C.24.d.

Q. Will OTA jousting be an event featured in the next summer challenge?

A. There are no plans for equestrian sports at this juncture.

Q. What if I am hurt at this event?

A. Please seek immediate psychological counseling from a family member or loved one.

FINAL IMAGES ARE DUE SEPTEMBER 20TH TO MIKE JENSEN

USE THE [ASTRO SIG UPLOAD LINK](#)

PLEASE INCLUDE DETAILS.



**The Bubble Nebula - NGC 7635 as imaged by the Hubble Telescope,
and processed NASA in the SHO palette.**

ASTRO SIG Group Announces Collaborated Team Imaging For Fall/Winter Months

As evidenced by last month's article and image by John Udart, Scott Cruzen and Dick Cogswell, the collaborative photon collecting approach produces a MUCH better image. Why? Well three astrophotographers collecting data on the same image over the course of a couple of weeks, or even a month yields significantly more data than just one astrophotographer.

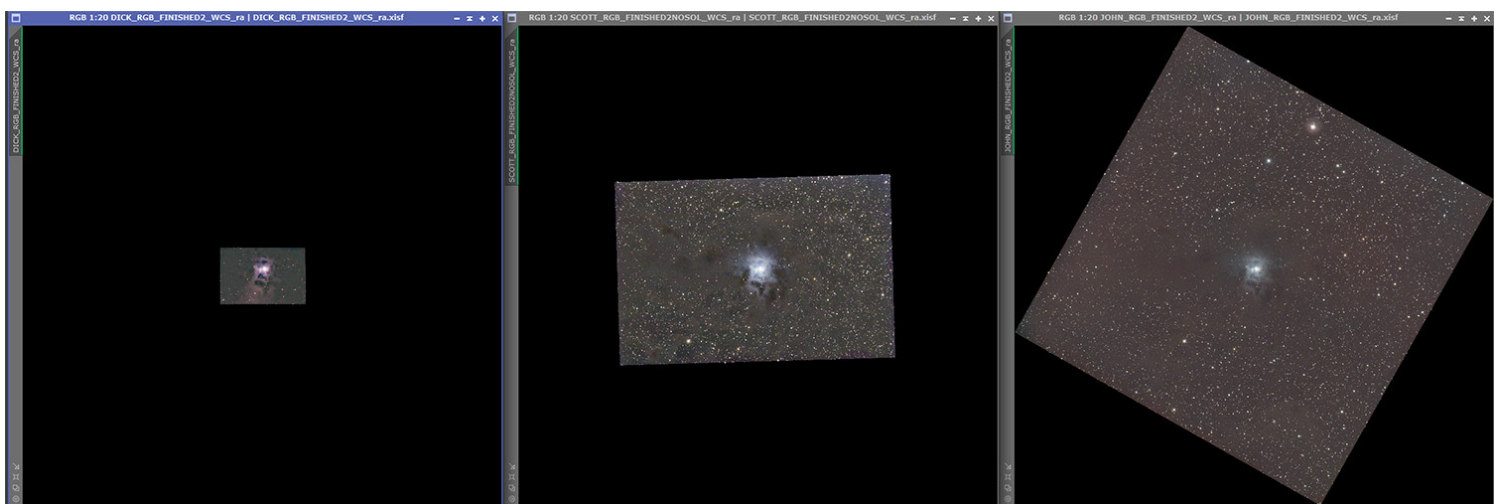
Because it worked so well, we're going to try it for the Fall/Winter months. As a general rule, many of our astrophotographers are pointing at many of the same targets in the night sky at the same time. Why not take all those images and try to image one super image? Each photographer would be listed as a credited photographer of the image, and the collective collaborated image will certainly provide more detail than just one. In our test for this project last month, our three photographers used way different OTA's with varying ranges of focal range.



John's Rig

Scott's Rig

Dick's Rig



So, now the next part of the project is to identify the targets. Over the next month, please [send me](#) your suggestions for the Oct - Dec. timeframe. I'll touch base with several of the SIG team and we'll announce our group of targets in the October newsletter.

Boeing Starliner a Flop? Space X will return stranded crew NEXT YEAR



Two Nasa astronauts who have been stuck in space for over two months will return to Earth in February 2025 with SpaceX.

Nasa said the Boeing Starliner spacecraft the astronauts Sunita Williams and Barry Wilmore had travelled to International Space Station (ISS) on would return to Earth “un-crewed”. The pair took off on what was planned to be an eight-day mission on 5 June but will now spend around eight months in orbit.

The Starliner experienced problems on its way to the ISS, including leaks of helium, which pushes fuel into the propulsion system. Several thrusters also did not work properly.

Boeing and SpaceX were both awarded billion-dollar contracts by Nasa to provide commercial space flights for its astronauts. Boeing’s was worth \$4.2bn (£3.18bn) while SpaceX, which was founded by billionaire Elon Musk, got \$2.6bn.

SpaceX has so far sent nine crewed flights to space for Nasa, as well as some commercial missions, but this was Boeing’s first attempt at a crewed mission.

Engineers at Boeing and Nasa have spent months trying to understand the technical issues with the Starliner craft. They have been carrying out tests and gathering data, both in space and back on the Earth. Their hope was to pin down the root of the problems and find a way to return the astronauts home safely on Starliner.

Speaking at a press conference on Saturday Aug. 24th, Nasa Administrator Bill Nelson said Boeing has been working closely with Nasa to understand what improvements need to be made to the spacecraft.

“Space flight is a risk, even at its safest and even at its most routine, and a test flight, by nature, is neither safe nor routine,” he said.

“Our core value is safety and it is our north star.”

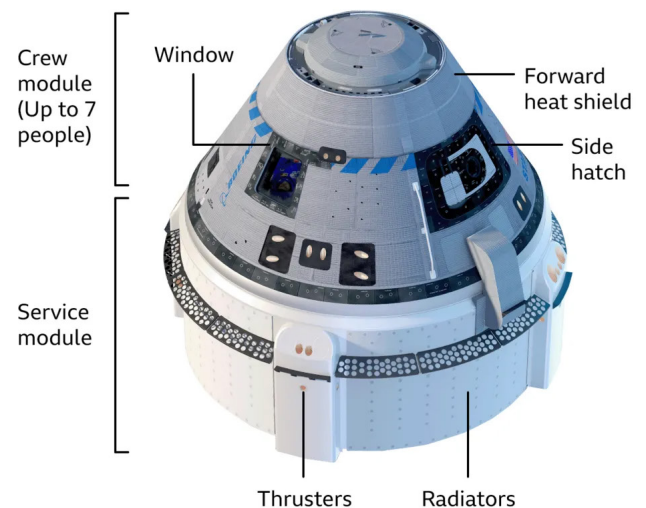
The decision has been made to extend the pair’s stay on the ISS until February 2025 so they can return on a SpaceX Crew Dragon spacecraft.

The extra time allows SpaceX to launch its next vehicle, with lift-off scheduled for the end of September. It was supposed to have four astronauts on board, but will instead travel to the space station with two. This leaves room for Mr Wilmore and Ms Williams to join them in the vehicle to return to Earth at the end of its planned mission next February.

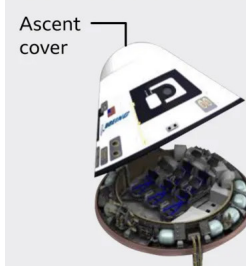
Boeing Starliner

Height: 5m (16.5ft)

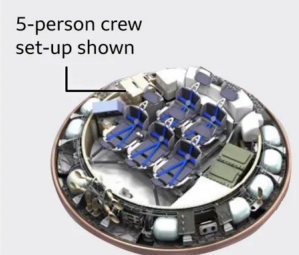
Diameter: 4.56m (15ft)



Clam-shell design for hardware installation



Flexible cabin design for crew and cargo



Source: Boeing

Starliner Astronauts from previous page

Nasa has said both astronauts had previously completed two long-duration stays in space and understood the risks of the test flight, including being aboard the station longer than planned.

The organisation said Mr Wilmore, 61, and Ms Williams, 58, both “fully” supported the plans for their return and would spend the next few months carrying out scientific work, space maintenance and possibly doing some “spacewalks”.

Boeing’s Starliner had already been delayed for several years because of setbacks in the spacecraft’s development. Previous un-crewed flights also suffered technical problems.

In a statement, Boeing said it continued to focus “on the safety of the crew and spacecraft”.

“We are executing the mission as determined by Nasa, and we are preparing for a safe and successful un-crewed return,” it added.

NASA Sends Juice To Space

[From NASA](#)

JUICE (JUperiter ICy moons Explorer) will explore Jupiter and three of its icy moons in depth

Mission Overview

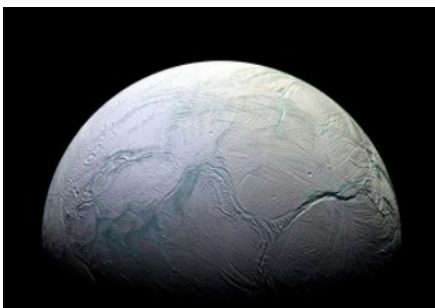
The JUperiter ICy moons Explorer (JUICE) is a European Space Agency (ESA) mission, and the first large-class mission in the ESA Cosmic Visions 2015-2025 programme. The mission is designed to spend at least three years collecting data at Jupiter, and will observe three of the planet’s icy moons: Ganymede, Callisto, and Europa. NASA is partnering with ESA for the JUICE mission, and will provide instruments and components for the spacecraft. The mission launched successfully on April 14, 2023, aboard an Ariane 5 rocket from Europe’s Spaceport in French Guiana

Relevance to Astrobiology

By studying Jupiter and its moons, JUICE will help astrobiologists understand how habitable worlds might emerge around gas giant planets. The icy moons of Jupiter are also primary targets for astrobiology research in the Solar System. Moons like Europa are believed to harbor oceans of liquid water beneath their icy surfaces, and it is possible that these oceans could be habitable for life as we know it.

NASA Involvement

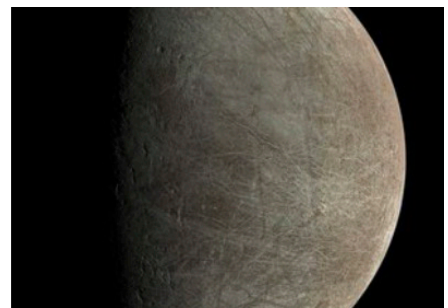
NASA provided the Ultraviolet Spectrograph (UVS) for the JUICE mission, as well as subsystems and components for two additional instruments: the Particle Environment Package (PEP) and the Radar for Icy Moon Exploration (RIME) experiment.



Phosphorus in the Oceans of Icy Moons



Destination: Europa



Hyperhydrated Salt on Icy Moons

Sunspot Activity Begins To Peak

Compiled by Mike Jensen

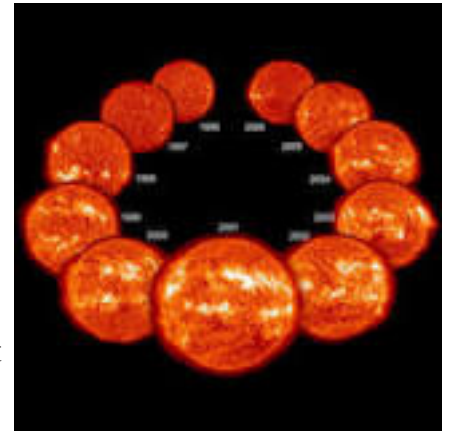
Where are we in the Sunspot cycle right now NASA?

Solar Cycle 25

We are now in Solar Cycle 25 with peak sunspot activity expected in 2025. Solar Cycle 24 was average in length, at 11 years, and had the 4th-smallest intensity since regular record keeping began with Solar Cycle 1 in 1755.

What is the Sun's 11 year cycle?

Every 11 years or so, the Sun's magnetic field completely flips. This means that the Sun's north and south poles switch places. Then it takes about another 11 years for the Sun's north and south poles to flip back again.



What are Sunspots?

Sunspots are dark areas on the sun's surface that appear due to strong magnetic fields that prevent heat from reaching the surface. The magnetic fields are caused by the sun's rotation, which creates a "differential rotation" where the equator rotates faster than the poles. This causes the magnetic field to stretch and form tubes or tunnels that rise and break the surface, preventing convection of superheated gases from below. The gas becomes "frozen" to the magnetic fields, similar to iron filings sticking to a magnet.

This slows or stops convection, which prevents heat from reaching the surface and cools the area, creating a sunspot. Sunspots can be thousands of degrees cooler than the surrounding areas, often around 6,000°F compared to the rest of the photosphere's 10,000°F.

Sunspots can appear in many shapes and forms, and can change size and shape over time. They can last for a few hours to days or even months, and tend to occur in pairs with magnetic fields pointing in opposite directions. Sunspots have a lighter outer section called the penumbra and a darker central region called the umbra.

The number of sunspots on the sun varies throughout the solar cycle, with more sunspots occurring during solar maximum and fewer during solar minimum. Sunspots are also more likely to form during periods when the sun's magnetic poles are stable, which happens every 11 years or so after the poles flip.

See next page for SWFAS member solar images.

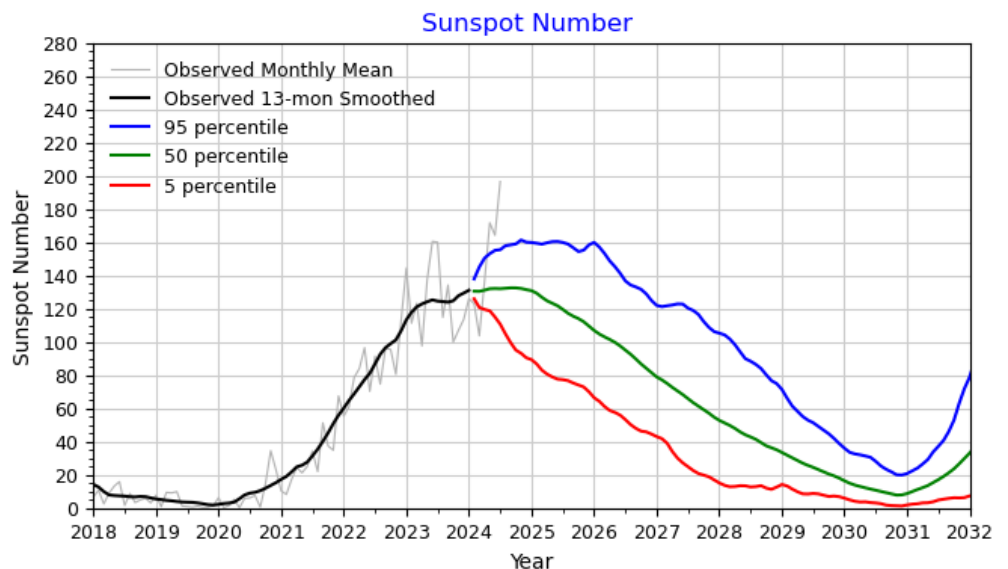
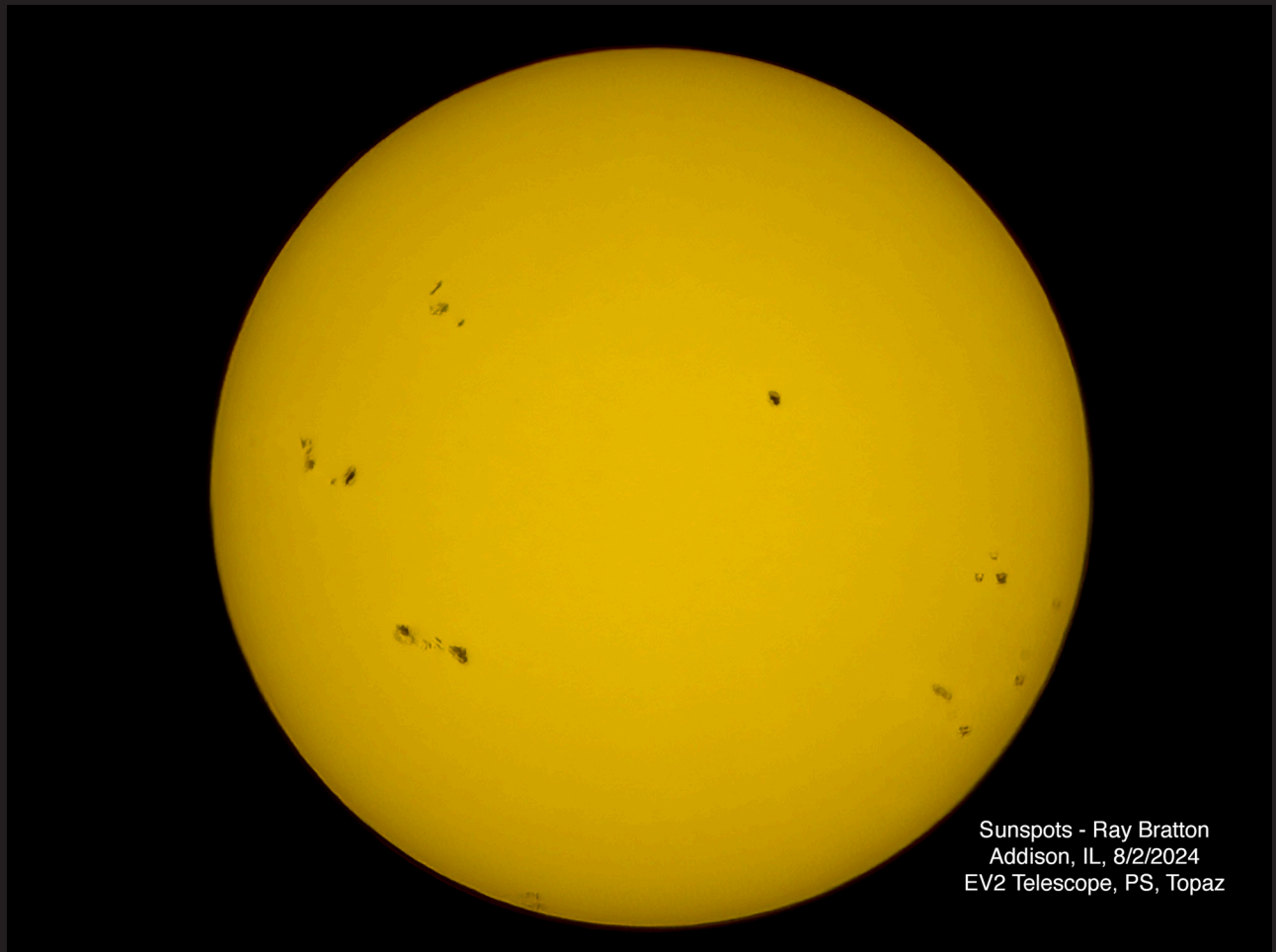




Image from Dr. Michael DiMario, Taken with a Seestar on Aug. 2



Sunspots - Ray Bratton
Addison, IL, 8/2/2024
EV2 Telescope, PS, Topaz

Saturn Is Almost On Edge

Saturn's rings will seemingly disappear from view in 2025, a phenomenon caused by the planet's rotation on an axis. Saturn won't actually lose its rings in 2025, but they will go edge-on, meaning they will be essentially invisible to earthlings, NASA confirmed to CBS News.

The rings will only be slightly visible in the months before and after they go edge-on, Amy Simon, senior scientist at NASA's Goddard Space Flight Center, said in a statement to CBS News. Those who want to see what Saturn looks like on various dates can use the PDS rings node, she said.

Because the planet rotates on an axis tilted by 26.7 degrees, the view of its rings from Earth changes with time, Vahe Perroomian, professor of physics and astronomy at the University of Southern California, told CBS News via email.

Every 13 to 15 years, Earth sees Saturn's rings edge-on, meaning "they reflect very little light, and are very difficult to see, making them essentially invisible," Perroomian said.



Image By SWFAS Member
Ray Bratton



Saturn in Bortle 8 sky by Ray Bratton

Brand/Type of Telescope/Lens:
Explore Scientific 127FCD100
Triplet, 952mm with Televue 2X
(focal length is more than 2X - about
2200mm).

Mount: EQ6R Pro with ASIAIR Plus,
iPad Pro

Exposures: ASIAIR+ video capture &
stacking with Optolong UHC filter,
ASI294MC Pro camera

Processing Software: ASIAIR+ video
capture & stacking, Photoshop RAW,
Topaz

Here's the story:

Saturn has the rings almost "edge-on" and will be closest to Earth - opposition on September 8, 2024. Even with poor conditions, Bortle 8 & smoke I wanted to catch Saturn with the rings almost straight on. Will try with a ASI662MC planetary camera next and maybe a darker location.

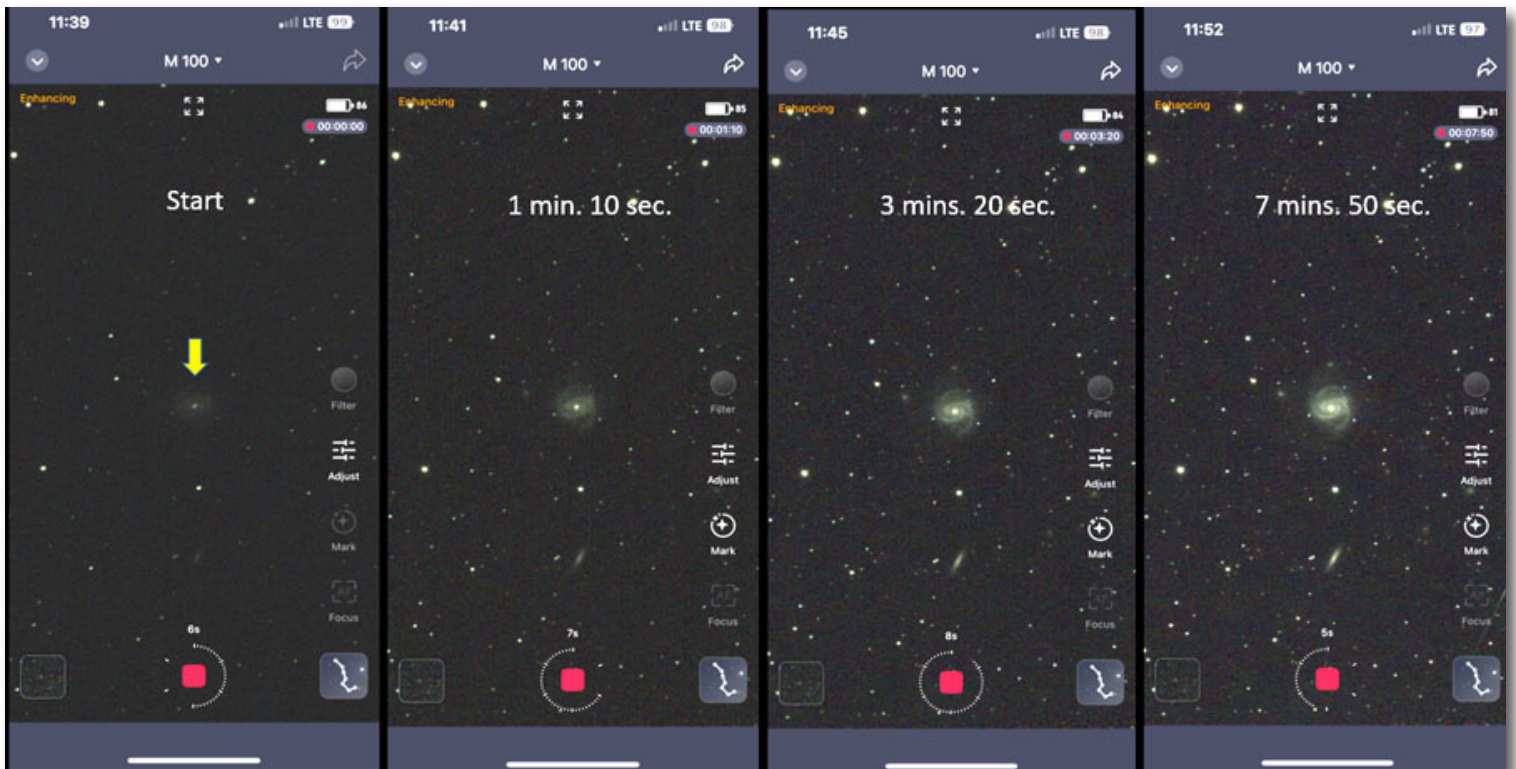
Visual/Astrophotography versus Smart Telescopes

Compiled by Mike Jensen (Don't shoot me, I'm only the messenger)

I got in to serious astrophotography in 2020. Of course during the Covid pandemic. But, I think I'm a little different than the casual astronomy buff who, forced to stay home during Covid, decided to get a telescope. I joined SWFAS in the Fall of 2020 out of a desire to meet and learn from astrophotographers, not to create a pandemic hobby.

Now, almost three years since the explosion of Covid has calmed down, we are seeing the demise of telescope making companies (Orion) and distributors (OTA) and the emergence and upswing of what's being called the Smart Telescope. In my opinion, an excellent example of two long storied companies who could not keep up with technology, marketing to make their business models work.

So, what is a Smart Telescope and who should we keep an eye on? As defined by the AI on my Google browser: *A smart telescope is a telescope with a built-in camera and a motorized mount that's controlled by a computer and a smartphone app. The app displays live images from the telescope's camera, which can then be stored on the phone. Smart telescopes are designed for a variety of users, from beginners to experienced stargazers. A smart telescope has a built-in camera that stacks successive short exposures of a selected target until it builds up a detailed image. The user operates it with a smartphone and photos are stored in the phone's photo library. **No knowledge of the sky is required, and a beginner can be off and running in minutes.***



Above, an example from the Seestar. As the Seestar stacks successive 10-second exposures of the spiral galaxy M100 the scene deepens before your eyes.

Smart telescopes work similarly to optical telescopes by collecting light from the night sky and focusing it onto camera sensors. The camera then takes a series of short exposures of a target, which it combines to create a detailed image. Some smart telescopes can also show objects in our solar system, like the moon and planets.

Here are some examples of smart telescopes:

- eVscope: Good for real-time viewing of deep sky objects in groups, and can reveal colors that aren't visible with a normal optical telescope
- Stellina: An app-driven telescope that doesn't require separate image processing
- DWARF II: A portable telescope that can be controlled with the DWARFLAB app
- Vespera: An ultra portable refractor telescope that Vaonis introduced in 2018
- ZWO Seestar S50: An all-in-one telescope that includes an electric focuser, astronomy camera, and filter carousel

So, some of my more dedicated astronomy and astrophotography friends may chuckle in dismay and cast dispersions on this new approach to observing and astronomy. But think about it, most of us are constantly buried in our phones.... all the time. Most of us either image using a laptop and some other software like NINA, OR we've drunk the ASI AIR Kool Aid and use the proprietary plug and play approach driven by guess what? Our phones or tablets!

For those of us in our 60's, 70's & 80's, we finally found the time to spend on this fantastic hobby, and (as my friend Linwood says) spend the money on this hobby. Let's face it, serious astrophotography isn't cheap. Most good rigs range from \$5,000 to \$10,000. Some run MUCH higher. But those of us who are willing to spend that kind of money are few and far between. I'd say maybe 10 of us have those types of rigs in our Astronomy Club. So, given that, in comes the smart telescope. A "plug & play" approach to not only observing, but astrophotography. No HUGE telescopes that some older people just cant lift. No dealing with plugins and PixInsight and SPCC, or Blur Exterminator, just plug and play. For those who are not producing fine art astrophotography, or who just seek to see some astro phenomenon, smart telescopes may just be the perfect thing. Oh, and what about that next generation. Yeah, the one that has grown up on technology. Smart Telescopes are right down their alley. If they want to go deeper, they always can.

[For more info, see this article in Sky & Telescope.](#)



This is a 4.5-minute exposure of the Eagle Nebula (M16) with the Seestar S50. The smart telescope's aperture is 50 mm and its field of view 1.3° x 0.7°. Seestar uses a Wi-Fi network to communicate with your phone. No internet is needed.

Astro SIG Images



Northern Lights as imaged by Phil Jansen in Northern Michigan.



NGC7635 Bubble Nebula and Messier 52 Open Cluster by Scott Cruzen

Brand/Type of Telescope/Lens: Astronomics Astro-Tech 80mm EDT APO refractor 480mm FL

Mount: Skywatcher EQ6-R Pro, ASIAir Plus

Exposures: 195 x 180sec Ha/OIII Dual Band, 192 x 300sec Ha/OIII Dual Band

Processing Software: Siril/SiriLic, GIMP, DarkTable, Topaz

Here's the story: NGC 7635, AKA Caldwell 11, is the Bubble Nebula, 8,000 light years away in the constellation Cassiopeia. Also in this shot is M52, sometimes called the Cassiopeia Salt and Pepper Cluster. I shot these subs last October with a dual band Ha/OIII filter and was also planning to shoot SII data to make an SHO image and some RGB for the stars, but never was able to find an opportunity. Due to the lack of clear weather this month I decided to go ahead and see what I could make out of just the Ha and OIII data, and this is it.



SH2-142 The Wizard Nebula and Open Cluster NGC7380 by Scott Cruzen

Brand/Type of Telescope/Lens: Astronomics Astro-Tech 80mm EDT APO refractor 480mm FL

Mount: Skywatcher EQ6-R Pro, ASIAir Plus

Exposures: 151 x 300sec Ha/OIII dual narrow band filter, 109 x 300sec SII filter

Processing Software: Siril/SiriLic, GIMP, DarkTable, Topaz

Here's the story: SH2-142 is an emission nebula 8,500 light years away in the constellation Cepheus. It has an embedded open cluster designated NGC7380. When observed at the right angle, it resembles a wizard in a peaked cap, thus the name. I shot this data over 3 nights last September and processed an SHO image that was in the Sept 2023 Newsletter. I was never really happy with the way that image turned out so I decided to take another shot at processing it this month, as the night sky has basically resembled gumbo and useless for imaging. Having learned quite a few new tricks in the past 11 months, I was hoping for a better result, and the new image does appear to me to be substantially clearer, more detailed, with better color than last year's attempt.



IC 5070 The Pelican Nebula by Steve Sandor

Brand/Type of Telescope/Lens: Celestron Omni 150 XLT reflector, prime focus, focal length 750mm

Mount: Bresser Exos 2 go to mount

Exposures: Forty 90 second images taken with a modified Canon D60 camera and no filters in Harbor Springs Michigan

Processing Software: Siril

Here's the story: The Pelican Nebula IC 5070 is an HII region associated with the North American Nebula in the constellation Cygnus. The gas and dust cloud is located 1800 light years away. This is an active area for star formation. The gas cloud resembles a pelican head, hence the name. The formation is located near the constellation Cygnus and the bright star Deneb. This was a good object for my combination of focal length and camera. This time of year, the nebula is located high in the sky with a transition time around The apparent dimensions are 60' X 50'. With the dark bortal 4 skys in northern Michican I did not use any filters.



M13 Great Hercules Globular Cluster by Steve Sandor

Brand/Type of Telescope/Lens: Celestron Omni 150 XLT reflector telescope with a focal length of 750mm

Mount: CG4 with OnStep go to controls added.

Exposures:

This is a stack of fifty five 60 second exposures using a Canon D60 camera at ISO 800. There were no filters used for these pictures.

Processing Software: Siril

Here's the story: This is a picture of M13 the Great Hercules Globular Cluster. It is located in the constellation Hercules and is at a distance of 22,200 to 25,000 light years away. This cluster is estimated to contain between 300,000 and 500,000 stars. The night I took the photos was the first night trying out the new OnStep go to hardware on this CG4 mount. Prior to this it was strictly a manual equatorial mount. The OnStep hardware includes two stepper motors, brackets, cog belts and cog gears designed to mount on the CG4. It also includes a controller box with USB, bluetooth, and WIFI access. I used the free OnStep application for android on my cell phone to control the mount. I selected M13 to see how well the mount was able to locate objects and accurately track them. I was impressed with the ease of use and the tracking ability. The cost of the conversion was only \$163.



Moon Photos by Dan Dannenhauer

Photos of the Blue Super moon taken on August 20, 2024 at 1:05 AM. Note I filtered the blue on one. Also note these were taken on my Seestar after much difficulties.

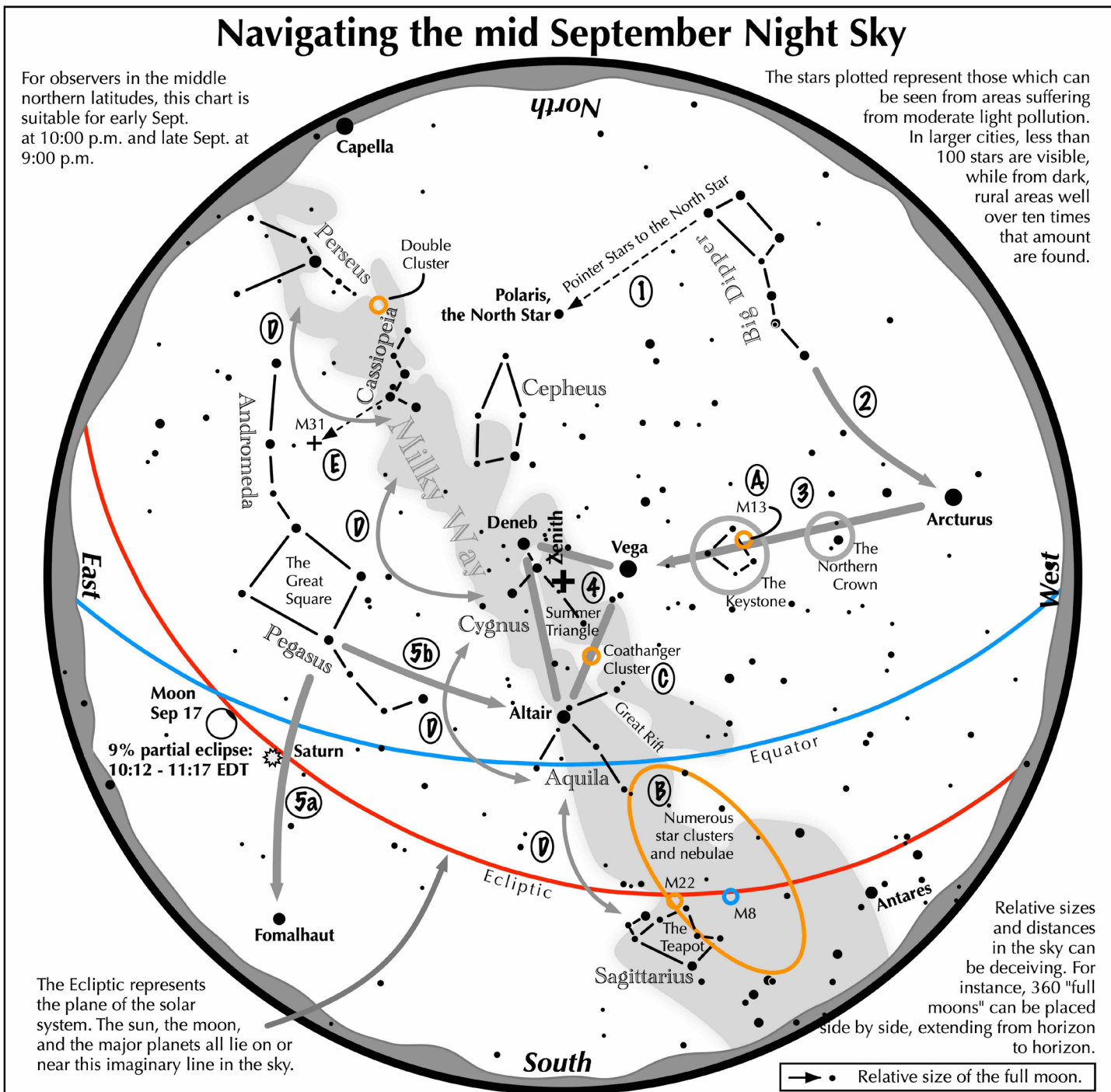


Astronomical League Sky Charts

Navigating the mid September Night Sky

For observers in the middle northern latitudes, this chart is suitable for early Sept. at 10:00 p.m. and late Sept. at 9:00 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

→ • Relative size of the full moon.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Navigating the mid September night sky: Simply start with what you know or with what you can easily find.

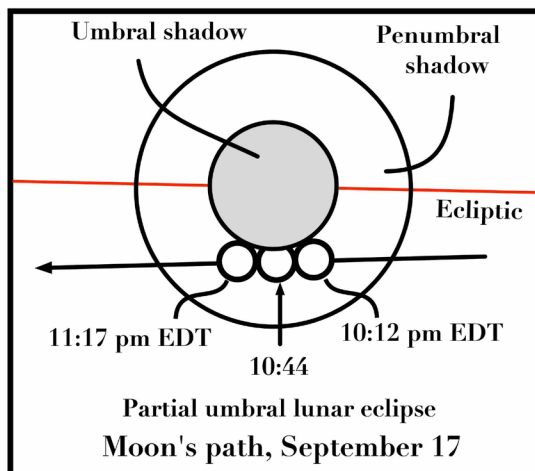
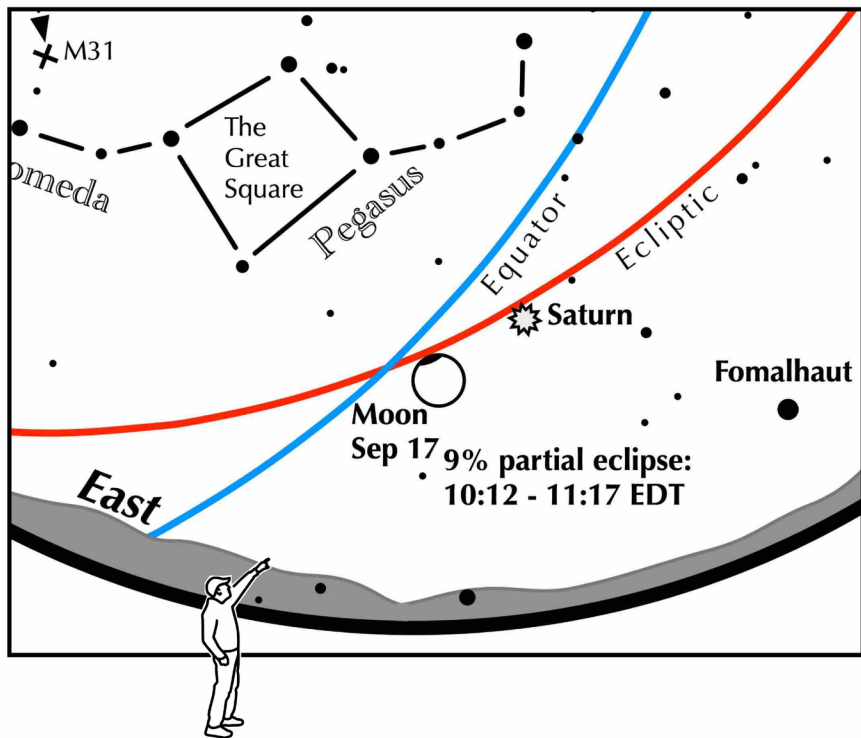
- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Follow the arc of the Dipper's handle. It intersects Arcturus, the brightest star in the September evening sky.
- 3 Nearly overhead shines a star of similar brightness as Arcturus, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 4 The stars of the summer triangle, Vega, Altair, and Deneb, shine overhead.
- 5 The westernmost two stars of the Great Square, which lies high in the east, point south to Fomalhaut. The southernmost two stars point west to Altair.

Binocular Highlights

- A:** On the western side of the Keystone glows the Great Hercules Cluster.
- B:** Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C:** 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D:** Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.
- E:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.



A partial lunar eclipse that is a nibble, not a bite!



The Moon slides through a partial umbral eclipse

A very partial umbral lunar eclipse occurs on the night of September 17. Bring out the binoculars for a better look at Earth's shadow taking a nibble out of the moon. Only about 9% of the surface will be in umbral shadow. The event will be slight enough that the casual observer might not notice it.

Mid eclipse and the best view occurs at 10:44 pm EDT. West Coast observers will find it low above the southeastern horizon.



View to the southeast on September 17
from 10:12 through 11:17 pm EDT.
Mid eclipse lands at 10:44 pm



ASTRONOMICAL LEAGUE Double Star Activity

Other Suns: Eta Cassiopeiae

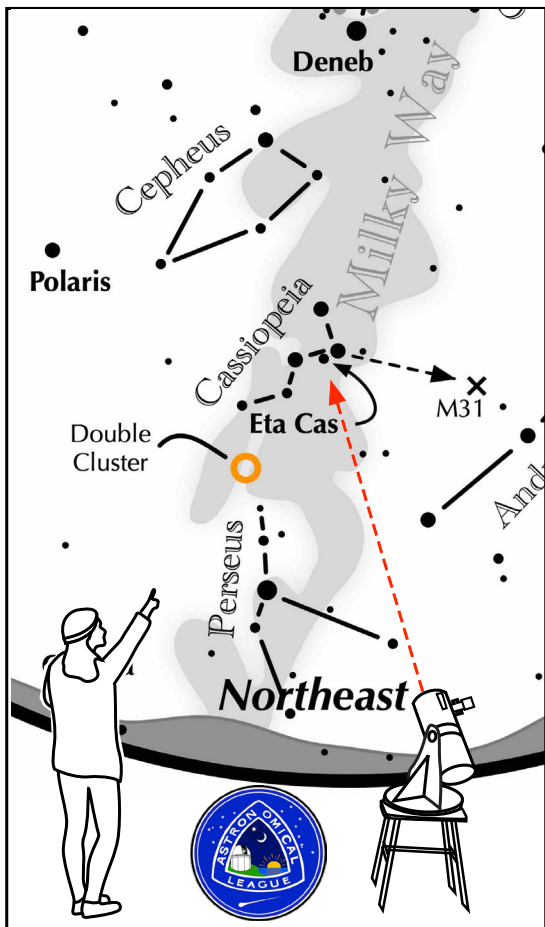
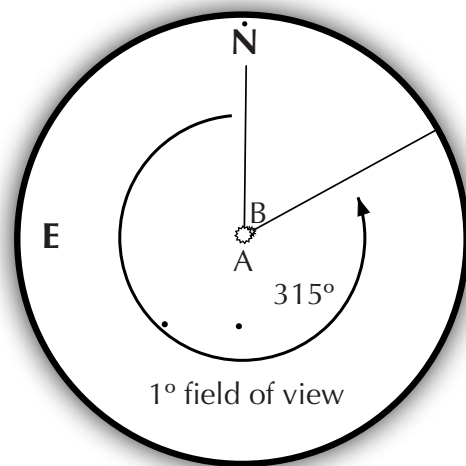
How to find Eta Cassiopeiae on a September evening

High in the northeast are the five moderately bright stars forming the "W" of Cassiopeia. The second star moving east along the W is Alpha Cassiopeiae. Eta is the dimmer star immediately to Alpha's northeast.

Suggested magnification: >30x
Suggested aperture: >2 inches

Beta Cassiopeiae

A-B separation: 13 sec
A magnitude: 3.5
B magnitude: 7.4
Position Angle: 319°
A & B colors:
yellow, purple?



Southwest Florida Astronomical Society Member Minutes

August 1, 2024 all Zoom

President Risley opened the meeting at 7:00 PM promptly, thanked all 22 for attending giving the trying circumstances and asked John MacLean to introduce the quest speaker, Doctor Rana Ezzeddine of the University of Florida to speak on the Oldest Stars in the Universe.

PROGRAM: Doctor Ezzeddine stated that her scientific research covers a range of topics in stellar astrophysics, but that her discussion tonight regards observing the physical and chemical properties and signatures of first and second generation stars.

The origin and evolution of stellar populations and the chemical enrichment events that lead to the present day abundance distribution of elements via chemical evolution of the galaxy. She produced many pictorials of : the chemical cartography of the Milky Way Galaxy, identifying the accretion of our galaxy, nucleosynthesis in stars, how elements heavier than iron form the universe, how binary stars are formed, the process of measuring the age of astronomical objects and many more. In summary Doctor Ezzeddine said that we should take away the knowledge of most iron poor stars in the Milky Way halo and neighboring dwarf galaxies are archeological fossils of the early Universe and that we need to keep digging for more metal-poor targets with high resolution spectrographs and big telescopes.

Many questions were asked and professionally answered. The good Doctor was well praised and thanked for speaking.

PLANETARIUM UPDATE: President Risley reiterated the Mercury bulb incident wherein Doctor Jon Bell and 2 graduate students of Indian River State College's Hallstrom planetarium where working on and taking apart our Spitz projector for their transport and use when the mishap occurred. All 3 are now fine, but the Planetarium, which was undergoing renovation, had to be

subjected to hazmat cleanup. Renovations are now behind in timeframe, new carpeting, chairs and the like are being replaced and or renovated. Our September meeting's formate is thus uncertain at this time. Brian will advise as to the progress and manner of meeting at some point in August.

UPCOMING EVENTS: President Risley advised that there are no August events, but that several will start in September. President Risley advised that FSW Moore Observatory will hold events September 27, October 25, and November 22, 2024. That Charlotte Solar Observing will begin on September 14 at Ponce De Leon Park , October 12 at Bayshore Live Oak Park and November 9, 2024 at Gilchrist Park (9AM till noon for Solar). And that Seahawk Park Star Parties will begin at dusk on September 28, October 5, and November 2, 2024.

OFFICER AND COMMITTEE REPORTS:

Vice President Mike Jensen stated that he had no report as he was vacationing in the Arctic Circle. Lots of neat animals and people. He also stated that he had nothing more regarding the Newsletter nor Website to report. Secretary Dan Dannenhauer asked for approval of his June 6th minutes. Such were moved by Ray Bratton and seconded by John MacLean. Motion passed unanimously

Treasurer John MacLean reported that we now have 112 members in our SWFAS. That he paid the \$646 for the annual Astronomical Society dues and also paid \$100 for the Dark Sky Internet. The rest of the treasury balances can be viewed on line and have been approved by the officers. No motion needed.

Program Chairman John MacLean reported that our speaker for September will be our own Michael Dimario on the Yerkes Observatory. John further stated that October's speaker will be

Derek Buzasi of FGCU and that he is in the process of finalizing his presentation.

There was much discussion regarding Solar Observation given the 25-30 Sun spots active at this time. Mike Jensen asked for photos for the Newsletter.

There being no other old or new business President Risley asked for a motion to adjourn. So moved by Ray Gregory and seconded by Tom Klein.