The Eyepiece

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

M20 & M8 - The Trifid & Lagoon Nebulas
by Mike Jensen



Mike Jensen - Newsletter Editor

Hi Everyone! Well, it's October! With October comes hope for clear skies here in Florida. I've had a few clear nights at my home here in Port Chartlotte. Like several others of you, I've been giving my new Seestar S50 Pro a workout. It doesn't replace my ES127 on my EQ6R mount, but it sure is easy to set up and VERY portable. I'm very pleased with the results so far. The image above was taken with it and I think it turned out pretty nice!

Last Saturday when we were at the Solar Observation event in Punta Gorda we were talking about observing the moon. It turns out we all have an interest in observing the moon! We always seem to avoid it when looking for planets and stars but we've never tried an Observe The Moon night. So, Tom Segur got with Florida Southwestern College which is where our observatory is and we're on for February 12th, 2027. It will be a Waxing Crescent with about 31% illumination. We did that to get some definition in the terminator and the craters. The full moon is nice and fun, but a crescent is much more beautiful to view and photograph. I can't wait! I hope more of you will come out to join us on one of our observatory nights or Solar Saturdays!



Solar image taken with the Seestar S50 Pro on one of our Solar Saturdays!





https://zoom.us/j/97133837720?pwd=tbU4UzraBmSgiVxWpX5iPbtzBhG5Wq.1

Meeting ID: 971 3383 7720 - Passcode 080023

Or you could click on the image directly above.

President's Message

Brian Risley

Seahawk Park may not be a washout. The field lights do not appear to put out massive glare. Also, the trees in Seahawk Park provide descent shielding for those setting up on the concrete apron. Lights may not go off until 10pm according to the park ranger I talked with. It also looks like they replaced the sensor for the parking lot light so hopefully I can override it with a flashlight.

We will be coming up on elections/budget approval voting, so please respond to those emails over the next few months. We are actively looking for a new Secretary and Vice President as Dan has indicated he cannot continue and Mike is looking for a break and allowing new blood to come in as John and I are retiring after next year. Let me or another officer know if you are interested in the positions.

Upcoming public events:
- FSW Moore Observatory Friday Oct 2nd Dusk
- Solar Observing Gilchrist Park Punta Gorda 9am-noon
- Lee County Parks and Rec Fall Festival is 10/23/26 6:00 to 8:30 pm at the North Fort Myers Regional Park located off old 41 just north of Bayshore behind the NFM Library. I need support to man the scopes and hand out candy to the kids. Full Moon and Saturn rise at sunset.
- Big Cypress Swamp Heritage Festival December 5th 2026 10:00 am to 3:30 pm
- STEMtastic Day of Discovery 2/13/27 Calusa Sound Convention Center 10:00 am to 2:00 pm
- Burrowing Owl Festival at Rotary Park 2/27/27 10:00 am to 4:00 pm
- Rotary Park Public Star Party 3/5/27 6pm to 10pm

GENERAL MEETING ZOOM LINK
This is the **General Meeting** Zoom link for 2026
Here's the Zoom link: https://zoom.us/j/98284448774?pwd=qDhf7GCqgzVyNk8easeJfcXOB217sy.1
Meeting ID: 982 8444 8774

Speakers Series Schedule For General Meetings

October - Gabe Bowman Lunar & Planetary Lab, University of Arizona 68 Years of Lunar Missions.
November - Greg Shanos NASA/JPL Solar system Ambassador Eclipse in Egypt & Culture Syurrounding Ancient Gods for the Stars
December - Jon U. Bell - Indian River State College Planetarium Director - Constellation Connections – Guide Stars to Deep Sky Objects

Club Officers & Positions

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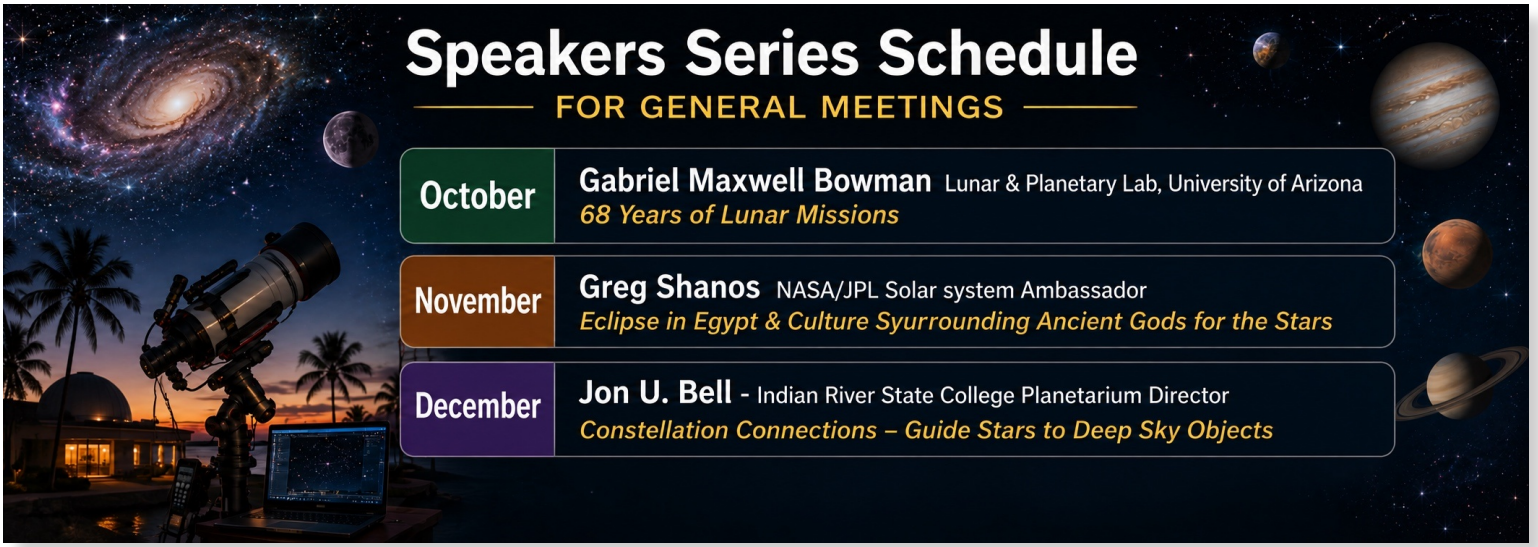
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October's Speaker

Gabriel Maxwell Bowman Lunar & Planetary Lab,
University of Arizona Moon Missions over the Last 20 Years

Gabe Bowman is graduate student at the University of Arizona's Lunar and Planetary Laboratory, pursuing a PhD in Planetary Sciences with a focus on the surface and subsurface of the Moon. He originally come from western New York and loves learning about the amazing landscapes of our planet and others. The title of his talk will be 68 Years of Lunar Missions. It will summarize the history of lunar missions, then focus on a few specific missions that have been key for our understanding of the Moon.



2026/2027 FSW Observatory & Solar Observing Schedule

FSW Observatory	Solar Observing	Location (9am-12noon)
Oct 2, 2026	Oct 17, 2026	Gilchrist Park
Nov 6, 2026	Nov 21, 2026	Punta Gorda Library
Dec 4, 2026	Dec 19, 2026	Ponce deLeon Park
Jan 8, 2027	Jan 16, 2027	Gilchrist Park
Feb 5, 2027	Feb 20, 2027	Punta Gorda Library
Mar 5, 2027	Mar 20, 2027	Ponce deLeon Park
Apr 2, 2027	Apr 17, 2027	Gilchrist Park
May 7, 2027	May 15, 2027	Punta Gorda Library



Club Elections In November

The club will be holding officer elections in November. As per our bylaws, two positions are elected every year to ensure continuity of leadership. The open positions we will be electing this year are for Vice President and for Secretary. Please let Brian, Mike, John or Dan know if you are interested or if you have questions.

Quick Headlines

A new flagship telescope just launched. NASA's Nancy Grace Roman Space Telescope lifted off August 30 on a Falcon Heavy from Kennedy Space Center — worth noting for a Florida club, since some members may have watched it go up. It's now in commissioning en route to the Sun-Earth L2 point. Once operational, Roman has a field of view about 100x larger than Hubble's and will spend its 5-year mission mapping billions of galaxies, hunting exoplanets via microlensing, and probing dark energy and dark matter. First science images are still months off, but it's the mission astronomers have been waiting on for over a decade.

Vera Rubin Observatory is now running for real. After first light in 2025, its 10-year Legacy Survey of Space and Time formally began this year, and in February it successfully distributed 800,000 real-time astronomical alerts in about two minutes — a demonstration of what full operation will look like (eventually up to 7 million alerts a night). This matters directly for club members: the alert stream is public, and it's designed so amateurs and citizen scientists can catch and follow up on new supernovae, hazardous asteroids, and anything unusual, in near real time. In its first year alone Rubin is expected to image more of the sky than every other optical observatory combined.

Artemis II already flew and came home. The first crewed lunar flyby since Apollo launched and splashed down safely back in April, and NASA says the assessments are "on track" for what's next. That said, Artemis III — the actual crewed landing — has slipped from 2027 to late 2027 at the earliest, with real doubt about even that.

3I/ATLAS, the third confirmed interstellar object, is on its way out. It survived perihelion intact in October 2025 (a ~2.6 km nucleus), made its safe closest approach to Earth in December, and was studied by everything from JWST (which detected methane in its coma) to the Parker Solar Probe. It's departing the solar system now, but it's already reshaping planning

The sun is past maximum but not done. Solar Cycle 25 peaked in October 2024, but history (Cycle 23's Halloween 2003 storm, for instance) shows the biggest individual flares often come during the decline. 2025 still produced 19 X-class flares, so strong geomagnetic storms and low-latitude aurora are still very much in play through 2026 — worth keeping half an eye on space weather alerts even though we're off the peak.

The satellite-megaconstellation problem keeps growing, and it's directly relevant to an imaging-focused club: Starlink and its competitors are increasingly showing up as trails in long exposures and raising real concern in the research community about both optical and radio astronomy. It's become enough of an issue that it's now discussed alongside traditional light pollution as a threat to the field, with new studies this year quantifying just how bad it'll get as more constellations launch.

NASA's science budget had a scare and a reprieve. The White House's FY2026 proposal would have cut NASA science by ~25% and cancelled over 40 missions; Congress instead passed a bill holding funding roughly flat, saving Chandra, LIGO, New Horizons, and several planetary missions, and actually doubling Roman's funding to get it out the door this year. Mars Sample Return, notably, did not survive. The reprieve is only for one year — the FY2027 fight is already underway, so this is a live issue for anyone who cares about the field's health, not just a one-time scare.

Starship is aiming at this year's Mars window. SpaceX has said it wants to send an uncrewed Starship to Mars during the current Earth-Mars transfer window (roughly the back half of 2026) to test propellant production on the surface — though independent confirmation of readiness is thin, and it wouldn't be surprising if this slips to the next window in ~2028.

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 benefit s for you, visit http://www.astroleague.org

Reflector Magazine

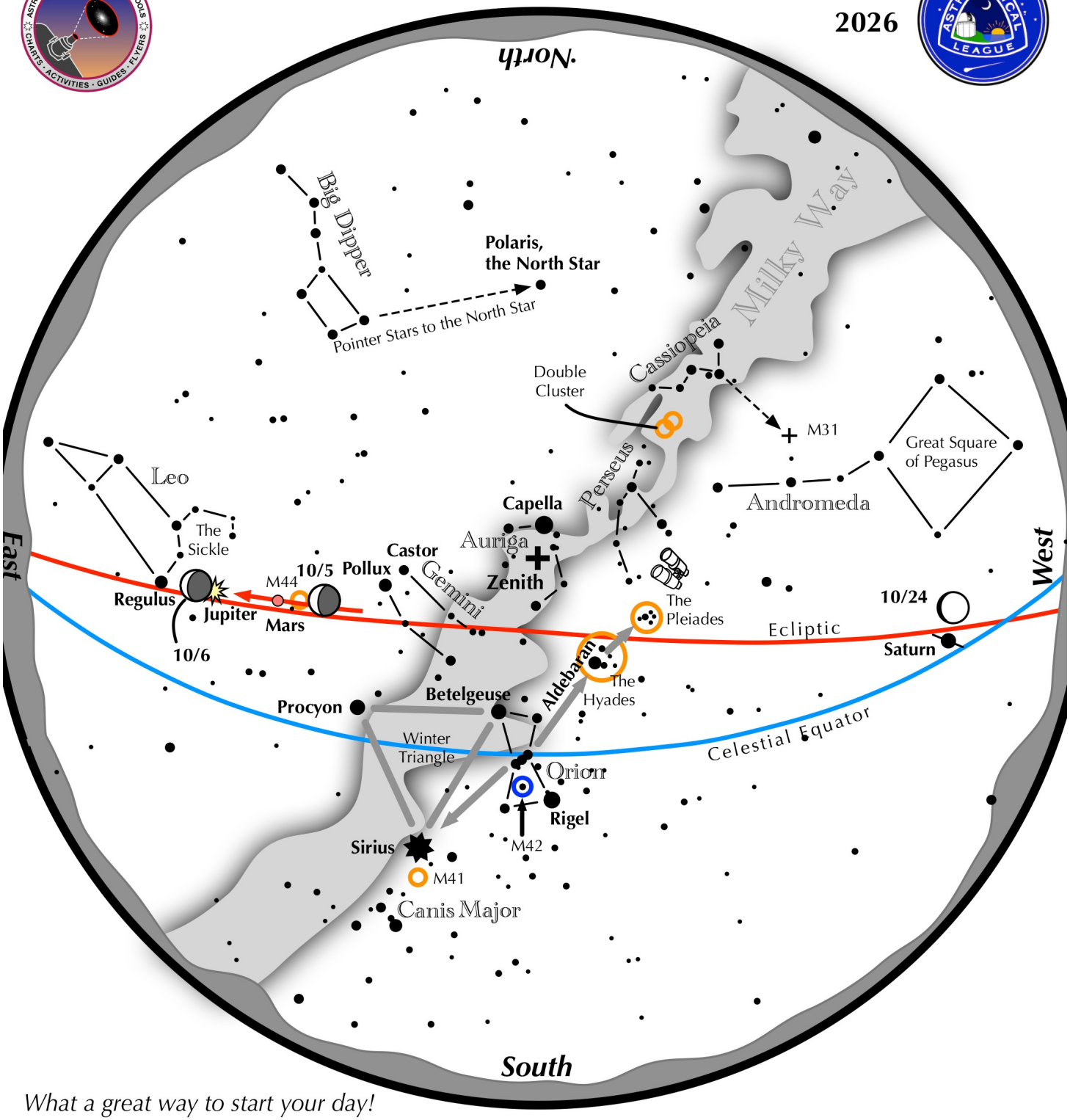
The latest – June 2026 edition of the Reflector magazine was emailed on May 26. It is also available via the web at https://www.astroleague.org/reflector

August 2026
What's up Doc material from Aaron Clevenson was emailed on August 27
The link to the latest happenings is at:
What's Up With the Astronomical League August 2026 - Astronomical League

This issue covers:
2026 Annual Conference
DarkSky International Space Mirror Action
Okie-Tex Star Party October 9-17

Navigating the mid October Morning Sky

2026



What a great way to start your day!

For observers in the middle northern latitudes, this chart is suitable for mid October at 5:00 a.m.

Late sunrises in October provide opportunities for early morning skywatching.

- Bright Jupiter shines high in the east.
- Crescent moon lies just west of Mars on October 5.
- The crescent moon glows next to and occults bright Jupiter on October 6.
- The near full moon glows in the west next to Saturn on October 24.
- During the first half of October, gaze high in the south and overhead to see these many celestial features: the Pleiades, the Hyades with Aldebaran, Orion, Capella and Auriga, the Winter Triangle with Sirius and Procyon, Gemini, and, in the east, Jupiter.

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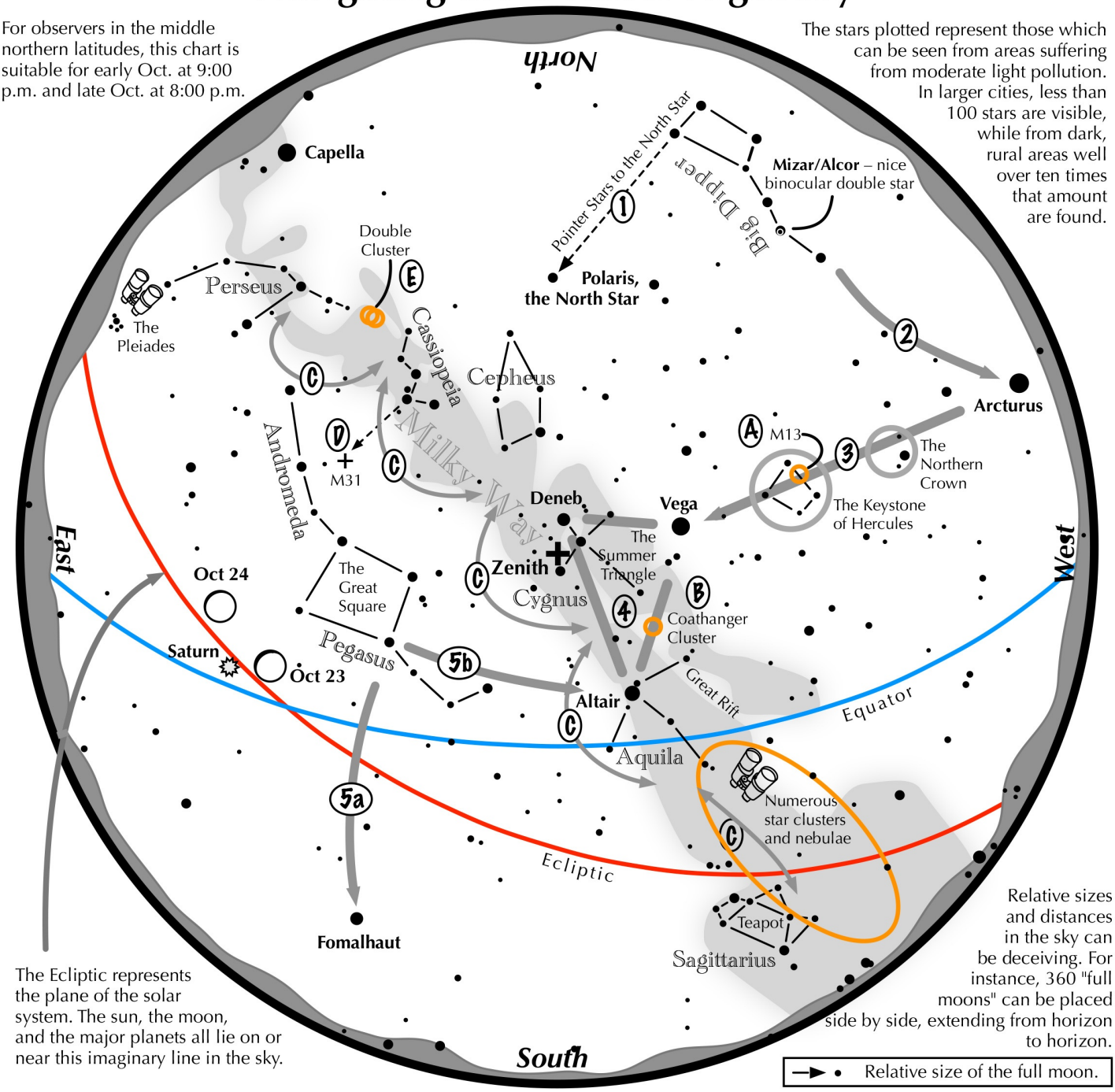
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Navigating the October Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for early Oct. at 9:00 p.m. and late Oct. at 8:00 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 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.

Relative size of the full moon.

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

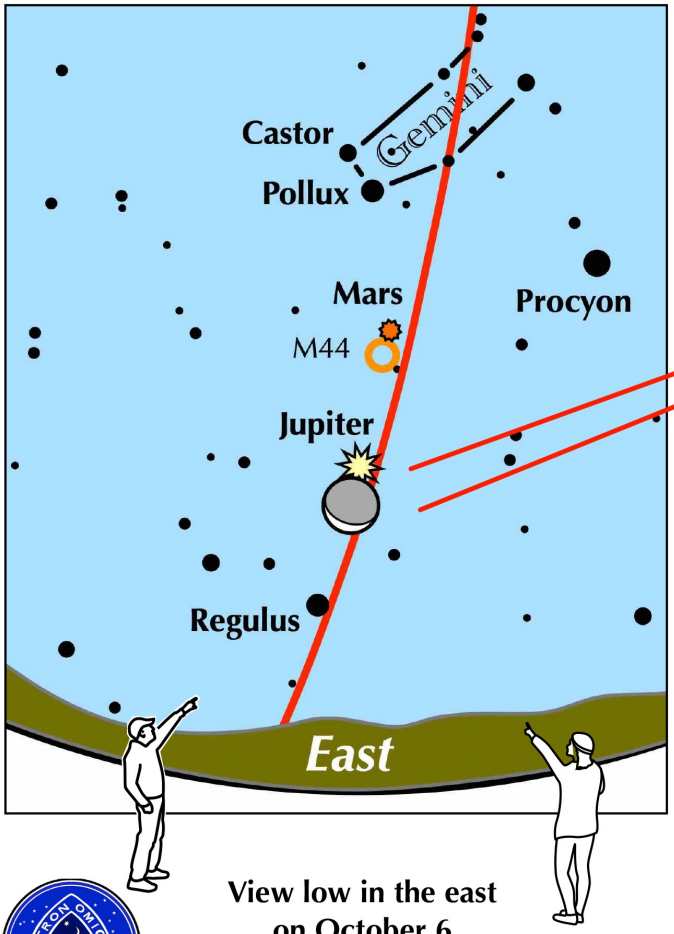
1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper's handle. It intersects Arcturus, the brightest star in the early October evening sky.
3. To the northeast of Arcturus shines another star of the same brightness, 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. Nearly overhead lie the summer triangle stars of Vega, Altair, and Deneb.
5. High in the east are the four moderately bright stars of the Great Square. Its two southern stars point west to Altair. Its two western stars point south to Fomalhaut.

Binocular Highlights

A: On the western side of the Keystone glows the Great Hercules Cluster, a ball of 500,000 stars. **B:** 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger. **C:** Sweep along the Milky Way for an astounding number of fuzzy star clusters and nebulae amid many faint glows and dark bays, including the Great Rift. **D:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **E:** Between the "W" of Cassiopeia and Perseus lies the Double Cluster.

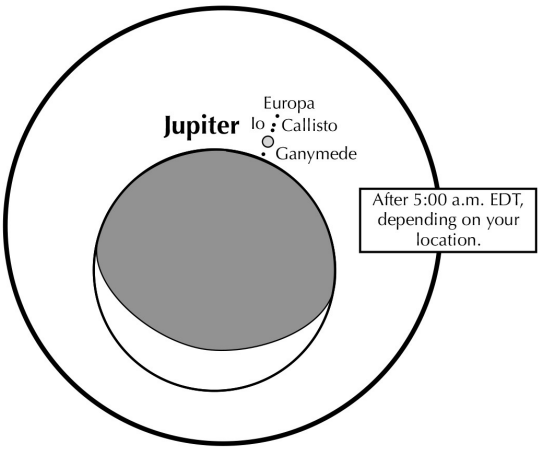
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In the early morning of October 6, try this challenge:



View low in the east
on October 6
2 hours before sunrise

View through a very low power telescope



Moon occults Jupiter for the eastern US. For the rest of us, it lies very close to Jupiter

On the morning of October 6, the moon appears very close to Jupiter.

For those in the eastern half of the US, the planet and its Galilean satellites fully emerge from occulation after 5:00 a.m. The exact time depends on observing location.

Those in the western US see Jupiter immediately next to the dark edge of the crescent moon.

About 5:35 a.m. EDT, Ganymede's shadow begins transiting the planet. It lasts until 9:15 a.m. EDT. Its exit can be seen by west coast telescope users.

And Mars can be found approaching the Beehive star cluster.



The Satellite Boom Overhead

What's Changing in Our Night Sky — and What It Means for Southwest Florida
A Field Guide for the General Public — All Ages

By Mike Jensen



On a clear evening in Port Charlotte, Cape Coral, Ft. Myers or Naples, look up and wait a few minutes. You'll probably see something move — not a plane, no blinking lights, no engine noise, just a small, steady point of light gliding silently across the stars. Fifteen years ago, that would have been a rare treat, something you'd point out to everyone nearby. Tonight, you might see a dozen. If you're out at the right time, you might even catch a whole line of them crossing the sky one after another, like beads sliding along a string. Skywatchers call it a "satellite train," and it's become one of the most talked-about sights in astronomy — for reasons that go well beyond a pretty light show.

A Short History of What's Up There

The satellite age began on October 4, 1957, when the Soviet Union launched Sputnik 1, a beach-ball-sized metal sphere that did nothing but beep. The whole world stopped to listen. For the next sixty years, satellites stayed a specialty business. Governments launched them for weather forecasting, military communication, and eventually GPS; TV and phone companies launched a smaller number for broadcasting and long-distance calls. Even by the start of 2019, after six full decades of spaceflight, there were still fewer than 2,000 working satellites circling the Earth.

Then everything changed. In 2019, SpaceX began launching Starlink, a constellation of satellites designed to beam internet access down to any spot on the planet, including places too remote or rural for cables. Instead of a handful of expensive, one-of-a-kind spacecraft, Starlink needed thousands of identical, mass-produced ones working together, and newly reusable rockets finally made that affordable. Other companies and countries noticed. Amazon began launching its own internet constellation, called Kuiper. China started building two of its own, known as Guowang and Qianfan. By June of this year, the number of active satellites in orbit had climbed to more than 15,700, nearly eight times what it was in 2019, and roughly two out of every three belonged to Starlink alone. More satellites are added every single week, and plans already on file with regulators could push the total past 25,000 within a few years, with proposals reaching even higher after that.

Why This Counts as a Problem

Satellites aren't inherently bad. The GPS in your phone, weather warnings before a hurricane, and rural internet access all depend on them. But astronomers, both professional and amateur, are watching a resource they've always taken for granted, a dark and mostly empty night sky, fill up fast.

Here's the part that surprises most people: many of these satellites are too dim to notice with your bare eyes, but a camera is a different story. A camera sensor built for astrophotography can be tens of thousands of times more sensitive to light than a human eye, especially during the long exposures needed to capture a faint galaxy

or nebula. A satellite that looks like nothing to you leaves a bright, ruler-straight streak across a ten-minute photograph. A 2025 survey of astrophotographers around the world found that 90 percent were dealing with moderate or serious interference from satellite trails, spending close to half an hour per image cleaning up streaks, and throwing out entire frames that couldn't be salvaged. Many of the people surveyed believe there's a tipping point, around 25,000 satellites, beyond which photographing the night sky becomes genuinely difficult everywhere on Earth. We're already more than halfway there.

It isn't only about photographs, either. Radio telescopes, which listen for extremely faint signals from distant galaxies and black holes, can be drowned out by the radio transmissions satellites use to send internet signals down to Earth. And every satellite added to orbit is also one more object that could someday collide with another, creating a cloud of debris that threatens everything else up there, a slow-motion risk scientists call the Kessler syndrome.

What It Means Here in Southwest Florida

This isn't a distant issue for us. We're closer to it than almost anywhere else in the country. Cape Canaveral and Kennedy Space Center, the launch site for most of these satellites, sit just across the state. On a clear night, a launch there is often visible from Fort Myers, Cape Coral, and Naples: a bright point climbing into the sky, sometimes trailing a glowing, jellyfish-shaped plume as sunlight catches the rocket's exhaust at high altitude. For many of us, that's a source of real local pride. We live within sight of where the modern space age is being built. We can see it almost any week of the month. I have seen Starlink trails from here in Port Charlotte.

But it's also where the local astronomy community feels the flip side most directly. Southwest Florida imagers who drive out to our region's dark-sky spots, places like Big Cypress National Preserve or Kissimmee Prairie Preserve, specifically to escape city light pollution are now finding that satellite trails follow them there too. A galaxy image that once needed one clean pass now sometimes needs several, just to get a frame without a streak through it. The very satellites launching from our backyard are showing up in the backyard telescopes pointed back at the stars.

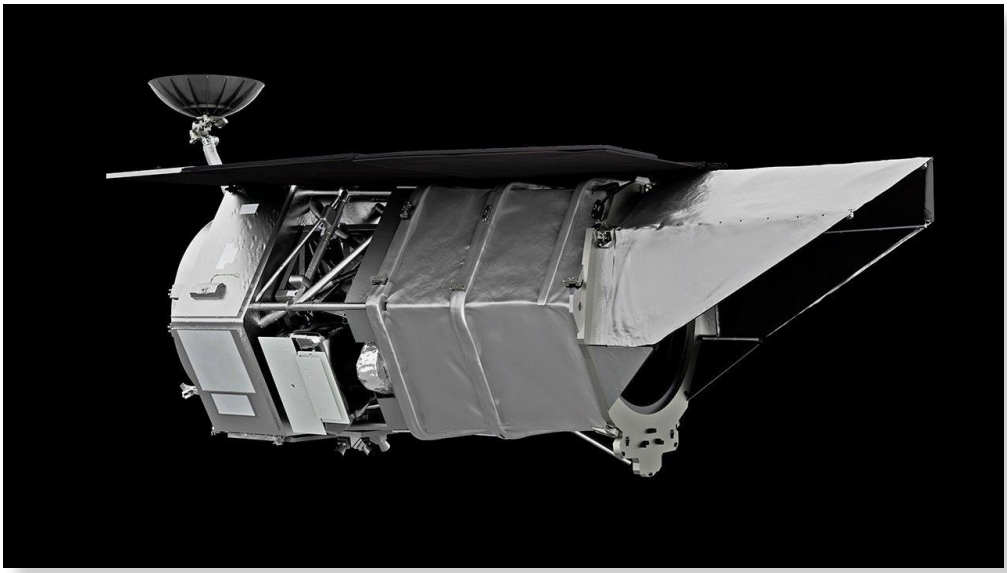
Looking Up, Knowingly

Satellites by and large are not a mistake. But their deployment willy nilly has been and is polluting our skies. It's not my job to say what's right and what's wrong, I'm just sharing a thought. My opinion. Any of you is welcome to submit yours and I'll print it.

But, this un-managed satellite deployment means the night sky, like a coastline or a forest, is a shared resource that more people are starting to pay attention to before it changes for good. Scientists, satellite companies, and regulators are already discussing ways to dim future satellites and better manage how many go up.

In the meantime, the next time you're outside after dark, take a minute to actually look. Count how many of the "stars" are moving. It's a small experiment, but it's also front-row viewing of a genuine turning point in our relationship with the sky above us. Above all, I don't want my grandchildren to look up from a "dark site" and see nothing but the glow of light pollution and the streaks of internet providing satellites where we don't need it. Just my take on things.

Update on Nancy Grace Roman Space Telescope's Journey



NASA's Nancy Grace Roman Space Telescope is travelling toward a vantage point that could transform our understanding of the universe. As of September 20, 2026, the observatory is three weeks into its journey to the second Sun–Earth Lagrange point, L2, while engineers deploy hardware, activate instruments and prepare for years of discoveries.

Roman launched aboard a SpaceX Falcon Heavy from Kennedy Space Center, Florida, at 7:26 a.m. EDT on August 30. Its destination lies roughly 1.5 million kilometres from Earth, beyond our planet in the direction opposite the Sun. There, Roman will follow a halo orbit around L2, maintaining a favourable viewing geometry as Earth travels around the Sun.

The journey takes approximately 100 days. NASA expects orbital insertion in early December 2026; counting 100 days from launch gives December 8, an approximate guide rather than a confirmed appointment. A trajectory correction on August 31 used less propellant than budgeted. NASA's September 14 update scheduled a second correction for later that month, before the final insertion manoeuvre.

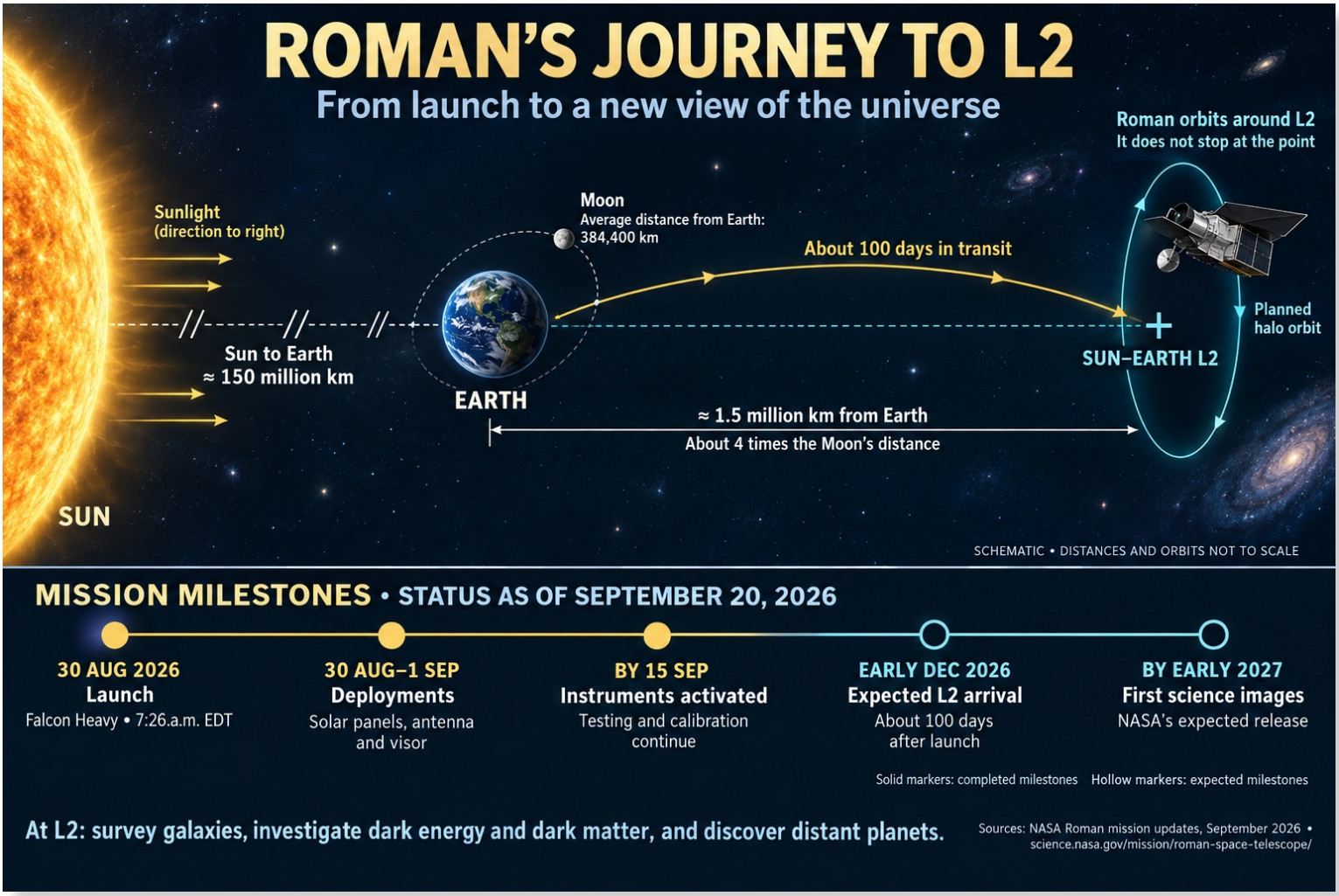
Deployment began during the voyage, not upon arrival. Roman started unfolding its solar panels and sunshade about 83 minutes after launch, securing electrical power and thermal protection. Its high-gain antenna deployed on August 31. The aperture cover, a visor that shields the telescope from unwanted light, extended on September 1. These structures support the observatory's sensitive measurements and communication with Earth.

The Coronagraph Instrument powered on September 1, and NASA confirmed activation of the Wide Field Instrument on September 15. Early checks showed expected performance, but commissioning continues: engineers must cool detectors, refine focus, verify pointing and calibrate both instruments. Initial blurred star images are engineering tests, not science pictures. NASA expects to release Roman's first science images by early 2027.

Arrival at L2 will provide a stable thermal environment and access to the sky. Roman will still need small station-keeping burns, roughly every 28 days. Once commissioning is complete, its planned five-year primary mission will investigate dark energy, dark matter and planets beyond our solar system.
Its 300-megapixel Wide Field Instrument combines sharp infrared imaging with a field of view at least 100 times larger than Hubble's. Galaxy maps, measurements of gravitational lensing and observations of exploding stars will help astronomers investigate cosmic expansion and the distribution of matter. Repeated observations toward the Milky Way's centre will also reveal planets through microlensing, when gravity briefly magnifies a background star's light.

The coronagraph has a different role: demonstrating technology that suppresses starlight to reveal faint giant planets and dusty disks nearby. Its results will help inform future observatories seeking habitable worlds.

Meanwhile, the efficient launch and trajectory correction have improved Roman's prospects: NASA estimates enough fuel for at least 22 years of potential science operations, based partly on projected savings from remaining manoeuvres. That is an opportunity, not a guaranteed mission duration; hardware health and continued support will also matter. For now, Roman's next destination is December's orbital insertion, followed by the transition from a spacecraft in transit to a working cosmic surveyor.



How NASA May Have Doubled Roman's Lifespan Before Its Science Mission Began

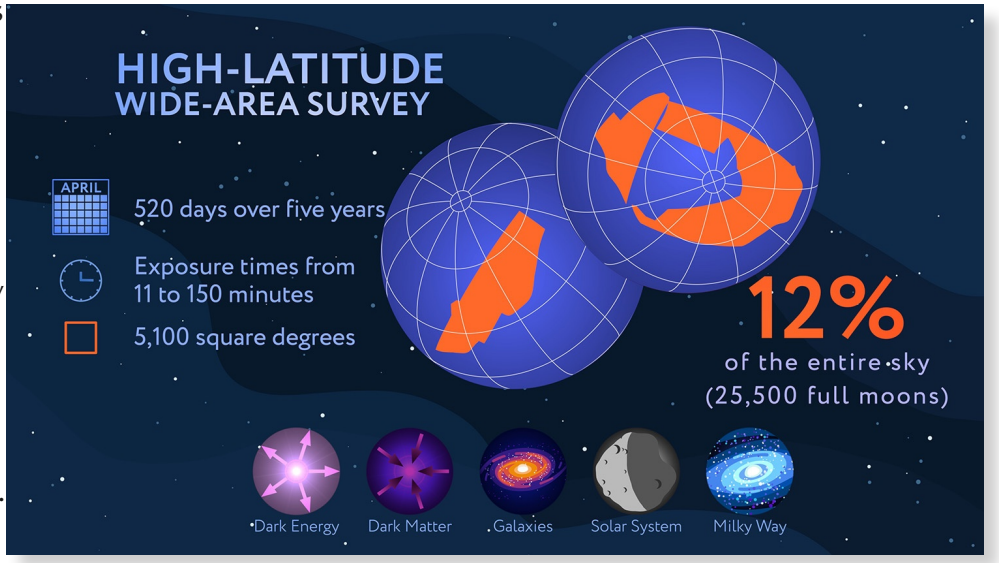
NASA's Nancy Grace Roman Space Telescope may have ***gained more than a decade*** of observing time before its science program begins. On September 14, NASA reported enough fuel for at least 22 years of potential operations, compared with its original ***ten-year fuel budget***. That covered a five-year primary mission and a possible five-year extension. [1]

The biggest immediate saving followed an exceptionally precise launch by SpaceX. Roman's August 31 course correction used only about 18 kilograms of propellant, against an allocation of 200 kilograms. NASA estimates that saving could support four extra years. Another four came from additional fuel loaded before launch: the completed spacecraft weighed less than the conservative planning allowance, leaving room to fill its tanks. [1] A further four years could come from lower fuel consumption during the second correction and final orbital insertion. Those savings remained projections in NASA's announcement. The 22-year figure therefore describes potential fuel endurance, rather than a guaranteed operating lifespan. Once Roman reaches its destination, NASA expects small station-keeping burns approximately every 28 days to maintain its orbit. [1]

The timing needs a distinction. Roman has already left Earth; what lies ahead is routine scientific observing. During its roughly three-month journey to the Sun–Earth system's second Lagrange point, L2, engineers are commissioning the observatory. They switch on equipment, check performance, adjust systems and calibrate instruments before declaring them ready for research. NASA says that schedule can change as testing proceeds. [2]

Roman will circle L2 in a halo orbit. There, the combined effects of gravity and orbital motion allow the telescope to remain aligned with Earth while using relatively little fuel. The location also provides a broad, largely unobstructed view of space and reduces the thermal influence of Earth, the Sun and Moon. Those conditions matter for an observatory designed to detect infrared light. Its solar panels supply electrical power, while propellant serves the separate job of maneuvering the spacecraft. [2]

The scientific prize is substantial. Roman's Wide Field Instrument is a camera with approximately 300 million pixels, designed to capture an area of sky larger than the apparent full Moon in each exposure. Its detectors will measure light from enormous numbers of galaxies, helping researchers investigate dark energy, dark matter and planets beyond our solar system. Its combination of a wide view and detailed measurements makes large surveys practical. [3]



One planned survey alone will cover about 12 percent of the sky in less than a year and a half. Researchers will study subtle distortions in galaxy shapes caused by gravitational lensing, tracing matter that cannot be seen directly. Measurements of galaxy spectra will also help reconstruct cosmic expansion. Together, these observations should test ideas about the forces shaping the universe. [4]

A longer observing career could let astronomers build on those surveys, revisit discoveries and pursue questions that emerge from the first results. That is the real promise behind the fuel arithmetic: more opportunities to use an observatory already built and launched. For now, commissioning must establish that Roman is ready to turn that opportunity into science. [2,4]

Sources and Image Credits

[1] NASA, Ashley Balzer. "Fuel Savings Double Potential Lifetime for NASA's Roman Mission." September 14, 2026.
[2] NASA Science. "Roman Commissioning." Updated September 19, 2026.
[3] NASA, Ashley Balzer. "Primary Instrument for Roman Space Telescope Arrives at NASA Goddard." August 13, 2024.
[4] NASA, Ashley Balzer. "Core Survey by NASA's Roman Mission Will Unveil Universe's Dark Side." February 10, 2026.

The Sun Is Missing Something — And That's Why We're Here

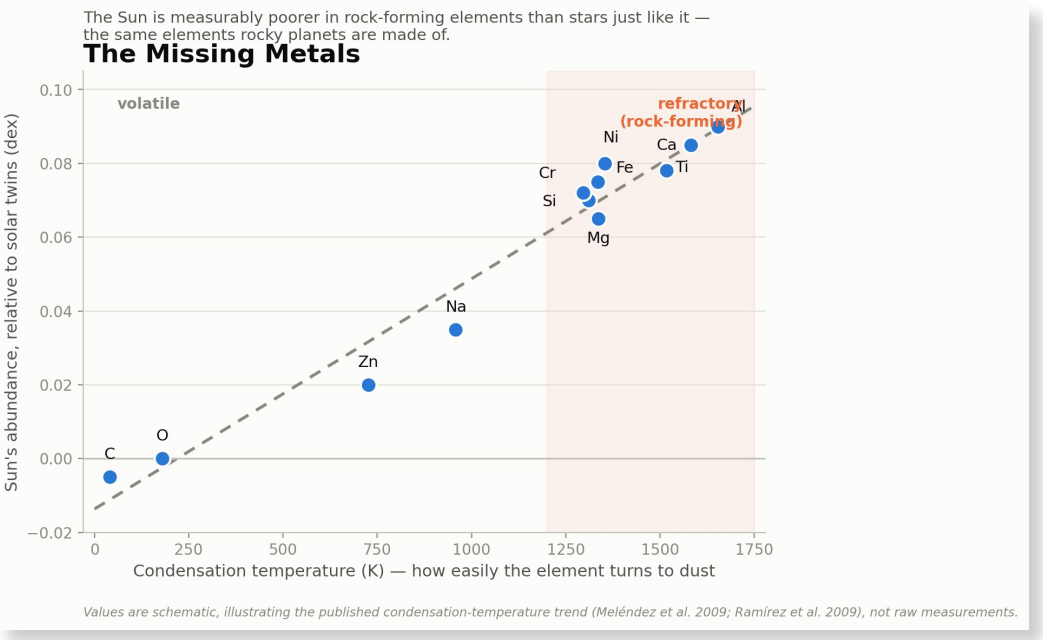
Astronomers comparing the Sun to its long-lost stellar twins keep finding the same pattern: our star is defined as much by what it lacks as by what it has.

For most of human history, the Sun was simply the Sun: singular, unmatched, the one fixed point against which every other star was measured. It took modern spectroscopy — and, more recently, a small population of "solar twins," stars so similar to the Sun in mass, age, and temperature that they're effectively its siblings scattered across the galaxy — to reveal something strange. When astronomers finally put the Sun side by side with stars that are supposed to be its chemical and physical doubles, it didn't quite match up. It was missing things: certain elements, a companion star, even a normal amount of bad temper. And a growing body of research suggests that every one of those absences may be a precondition for the fact that anyone is here to notice them.

The Missing Metals

Stars are, chemically speaking, extremely boring. A star's outer layers largely preserve the composition of the cloud of gas and dust it condensed from, so two stars born with the same mass at the same time should have nearly identical chemical fingerprints. That makes solar twins — the rare stars that match the Sun's mass, age, and temperature closely enough to serve as genuine doubles — an unusually sensitive instrument: any difference between the Sun and its twins isn't noise, it's a clue.

In 2009, astronomers Jorge Meléndez and Iván Ramírez, working with high-precision spectroscopy, found exactly such a difference. Comparing the Sun to a set of solar twins, they reported that the Sun is depleted in "refractory" elements — iron, nickel, silicon, aluminum, and other metals that condense out of a cooling cloud of gas at high temperatures — relative to "volatile" elements like carbon and oxygen, which stay gaseous longer.



As the researchers put it, "the Sun appears to be deficient in elements that are abundant in the Earth and other rocky material in the Solar System." The pattern tracked cleanly with condensation temperature: the more refractory an element, the more the Sun seemed to be missing it.

The explanation the team proposed was elegant. Rocky planets — Earth, Mercury, Venus, Mars, the asteroids — are themselves made overwhelmingly of refractory material. If a young star's protoplanetary disk sequesters a large fraction of its rocky, metal-rich dust into planets instead of letting it fall into the star, the star that's left behind should show a small but measurable refractory deficit, exactly the signature the Sun displays.

Planetary scientist John Chambers later showed just how small a deficit this really is in absolute terms: the

missing material amounts to only “a few Earth masses of rocky material with the abundance pattern of the Earth and meteorites” — a few planets' worth of iron and rock, skimmed off the top of a star and locked into worlds instead.

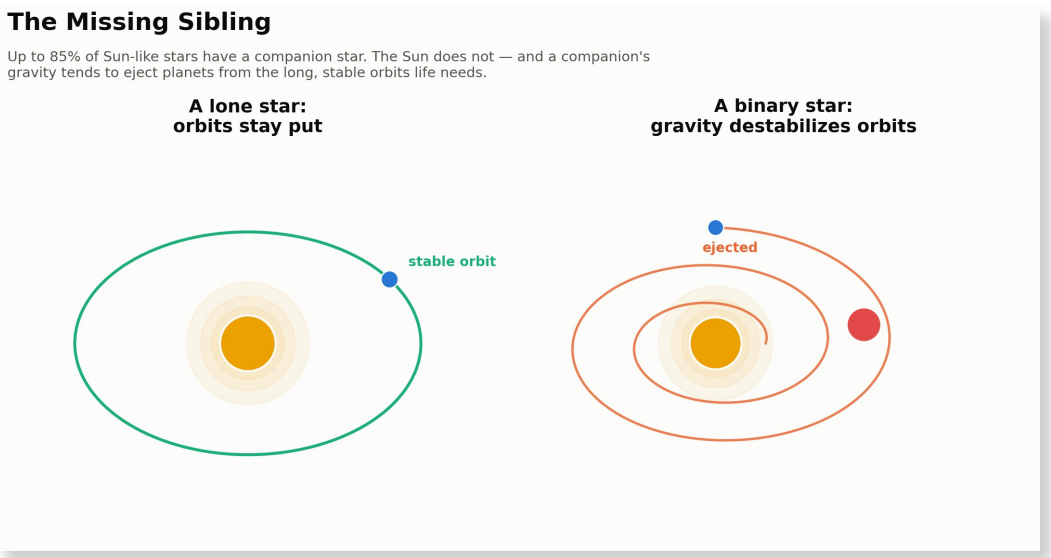
In other words, the Sun may look chemically unusual precisely because it built rocky planets. The same elements that are conspicuously absent from the Sun's outer layers — iron, nickel, silicon — are conspicuously present under our feet. If Meléndez and Ramírez's interpretation is right, the ground we're standing on is, quite literally, the “missing” piece of the Sun's spectrum.

It's worth being honest that this story isn't fully settled. Later surveys of solar twins found that the relationship between refractory depletion and planets is messier than the original picture suggested — some studies tie the effect to giant planets rather than terrestrial ones, others to the Sun's birth environment or its slow migration through the galaxy, and a 2025 reanalysis published in Astronomy & Astrophysics argued that the Sun's peculiar composition doesn't correlate with giant planets at all. What hasn't been overturned is the basic observation: the Sun really is chemically unusual among its twins, and rocky planet formation remains the leading, if contested, explanation for why.

The Missing Sibling

The Sun is also missing something in its family tree: a companion.

Most stars are not loners. Surveys of Sun-like stars find that up to 85% have at least one gravitationally bound companion — a second star orbiting alongside the first, sometimes for billions of years. Stars are born in clusters, condensing together out of the same collapsing cloud, and a great many of them keep a partner from birth. The Sun, by contrast, is single. No dim companion star orbits it at any distance; nothing else in the Solar System is a star at all.

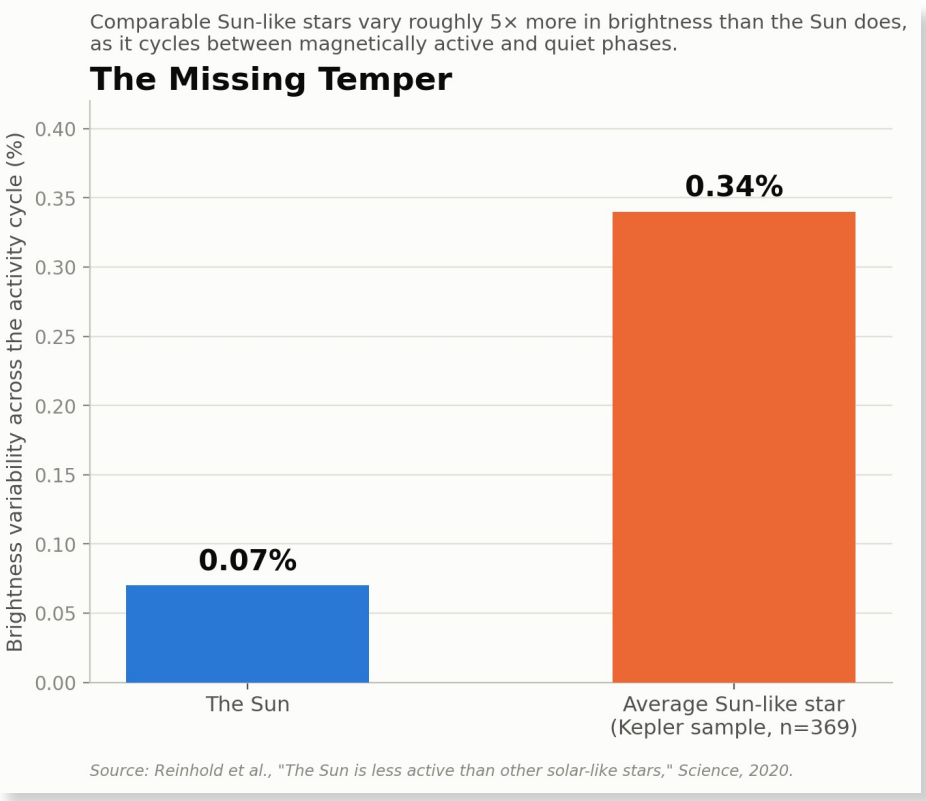


That doesn't mean the Sun was always alone. The leading model holds that the Sun formed in a crowded stellar nursery alongside thousands of siblings, some of which it may originally have been paired with, before a chance gravitational encounter — a close pass with another star in that crowded nursery — stripped its companion away or flung the Sun out on its own. Researchers estimate that roughly 40% of single, Sun-like stars may have been “exiled” from a binary or multiple system this way, rather than having formed solo to begin with.

That single fact — that the Sun ended up alone — may be part of why the Solar System looks the way it does. A close binary companion doesn't just sit passively in the sky; its gravity tugs on everything orbiting the primary star, and over time that tugging destabilizes planetary orbits, especially in the outer reaches of a system. Simulations of planets in binary star systems show that as a companion star's orbit tightens over time, it tends to eject other bodies from stable orbits altogether — scattering them into interstellar space or sending them

plunging inward.

A stable, quiet, multi-billion-year orbit like Earth's — the kind of long, boring stability life seems to require — is a much easier thing for a lone star to provide than for a pair. It's a reasonable bet that the Solar System only produced a habitable, stable Earth because an ancient chance encounter pulled the Sun away from whatever siblings it once had, leaving it single. We shouldn't be surprised that the Sun is alone; that isolation may have been essential.



The Missing Temper

The last thing the Sun seems to be missing is bad behavior.

In 2020, a team led by Timo Reinhold at the Max Planck Institute for Solar System Research compared decades of brightness measurements from the Sun to those of 369 other stars with Sun-like rotation periods, gathered by NASA's Kepler space telescope. Comparable stars showed brightness variations roughly five times stronger than the Sun's, as each cycles between magnetically active and quiet phases. Solar brightness barely wobbles at all by the standards of its own peer group.

Reinhold and his colleagues also noted that the deeper historical record — proxies for solar activity stretching back roughly 9,000 years, reconstructed from tree rings and ice cores — shows that the Sun has been coasting through an unusually quiet stretch for a long time, not just during the few decades we've had satellites watching it. “The Sun has been going through a quiet phase for thousands of years,” Reinhold observed, “and we therefore have a distorted picture of our star” if we assume it represents typical stellar behavior. His co-author Sami Solanki added a reminder of what's driving the whole system: “The magnetic field is the driving force responsible for all fluctuations in activity.”

That magnetic restraint matters enormously for anything living nearby. Many Sun-like stars — especially younger and faster-rotating ones — regularly produce “superflares,” eruptions thousands of times more powerful than anything the Sun has thrown off in recorded history, capable of stripping away a planet's atmosphere or sterilizing its surface with radiation over geological time. A star that ran hot and violent the way roughly four out of five of its rotational twins do would make it far harder for a nearby rocky planet to hang onto an atmosphere — or onto life — across the billions of years evolution needs to work. The Sun's calm is not the default. It's the exception, and life on Earth has had the run of nearly five billion years partly because of it.

What the Absences Add Up To

None of these three findings, on its own, proves that we exist because the Sun is deficient in metals, unpaired, and unusually placid. Stellar astrophysics is a field of correlations and contested mechanisms, not neat causal

chains, and researchers are still arguing over exactly how much weight to put on each piece. But taken together, they sketch a suggestive picture: a star that gave up a portion of its rocky material to build planets instead of keeping it for itself, that lost a sibling early enough to leave its remaining planets on stable, undisturbed orbits, and that has spent billions of years running quieter than almost all its peers.

Every one of those is an absence — a "should be there and isn't." And in each case, astronomers argue, that absence looks less like a deficiency and more like exactly the conditions a rocky, temperate, life-bearing planet would need its star to provide. The Sun isn't unusual because something went wrong. It may be unusual because, in a sense, something went right — right enough that three and a half billion years later, someone is here to compare it to its neighbors.

Sources

- Meléndez, J. et al. (2009). "A New Method to Identify Solar Twins." The Astrophysical Journal Letters. See summary coverage: ScienceDaily, "Exoplanets Clue To Sun's Curious Chemistry" (2009).
- Ramírez, I. et al. (2009). Astronomy & Astrophysics — abundance analysis of solar twins.
- Chambers, J. E., as summarized in "Using Solar Twins to Explore the Planet–Star Connection," The Messenger (ESO), No. 161 (Sept. 2015).
- "The peculiar composition of the Sun is not related to giant planets." Astronomy & Astrophysics (2025).
- Reinhold, T. et al. (2020). "The Sun is less active than other solar-like stars." Science, 368(6490), 518–521.
- ScienceDaily, "Sun is less active than similar stars" (April 2020); coverage of Reinhold et al.
- "Why doesn't our Sun have a twin? If it did, we might not even exist." BBC Sky at Night Magazine.

Are you AI Curious?

By Mike Jensen

Unless you've been hiding under a rock for about a year, you have likely heard of AI. Many of the stories coming out are about how bad it is for us and how it's going to ruin our world and take over. It's almost always doom and gloom from the media. That's what sells papers (well, not anymore), maybe thats what attracts viewers or clicks etc.

I choose to look at AI as something very beneficial that can cause problems if you let it, if you don't let it take over your life like a teenager with their first new phone. I opened up a ChatGPT account a few months ago. I was, you know, curious. I wanted to see what it could do. So, what did I do, I Googled it. That's funny to say knowing now what I know. The old term of "Googling" something will slowly fade away in leui of using an AI tool. If the tool needs to go to the web, it will.

Ok, so let's get to the meat of why I'm writing. A month of so ago, largely because I do this newsletter for you, I set up a weekly Astronomy Briefing. It shows up in my ChatGPT chats on Friday at 8am. Here's the exact words I used to create the briefing: "Every Friday, give me a concise astronomy briefing focused on JWST, Hubble, the Nancy Grace Roman Space Telescope, and the Vera C. Rubin Observatory. Highlight the most important new science, images, milestones, and schedule changes, explain why each matters in clear general-audience language, and include primary or official sources I can use when preparing presentations." Here's what I got:

Astronomy briefing — September 25, 2026

This edition covers the most useful developments announced September 14–25.

Hubble: 200,000 orbits—and a supernova expected to appear again

Confirmed — announced September 23. Hubble completed its 200,000th Earth orbit on September 19 after traveling more than five billion miles and making over 1.7 million observations.

For the milestone observation, Hubble monitored galaxy cluster MACS J0417. The cluster's gravity bends light from a distant supernova nicknamed Athena, creating multiple images that reach Earth at different times. Athena is predicted—not guaranteed—to reappear by early March 2027.

Why it matters: Measuring precisely when the supernova returns could improve estimates of the universe's expansion rate and map otherwise invisible mass in the intervening galaxy cluster.
Presentation resources: NASA announcement and Hubble image

Roman: Both major instruments are functioning in space
Confirmed — announced September 15. NASA activated Roman's 300-megapixel Wide Field Instrument and successfully tested the control, thermal and mechanical systems of its Coronagraph Instrument. Initial out-of-focus starlight reached the main camera as expected; focusing and calibration remain underway.

Why it matters: This confirms that Roman's two defining capabilities survived launch: Hubble-quality infrared imaging across a vastly wider field and advanced technology for suppressing starlight to reveal nearby exoplanets.

Schedule: Roman is still traveling to the Sun–Earth L2 region. NASA expects orbital insertion around early December 2026 and the first science-quality images by early 2027. These dates remain projections.
A highly accurate first course-correction burn used less than 10% of its allocated fuel. NASA now projects enough propellant for at least 22 years of potential operations, versus the original ten-year fuel budget; that is an estimate, not an approved 22-year mission.

Presentation resources: NASA instrument checkout and first-photon image · NASA mission-lifetime analysis

Rubin: Storm recovery continues; return date remains unsettled
Confirmed status — September 18. Rubin remained off-sky while crews combined planned maintenance with recovery from July's severe Chilean storm. Backup-generator failover was successfully tested, camera-refrigeration work was progressing, and LSST Camera servers and clean-room systems were back online. Commercial power restoration is a longer-term job, but Rubin said it should not prevent observing from resuming. At the time of the update, however, no return-to-sky date had been announced.

Why it matters: Rubin's Legacy Survey of Space and Time has begun, but this interruption affects the early observing cadence. The next operational update should show whether regular nightly coverage can resume without a significant schedule impact.
Official source: Rubin summit technical update

Proposed—not final — September 24. Rubin also proposed publicly releasing its Euclid Deep Field South data without normal data-rights restrictions. NSF and DOE have given provisional approval, pending community

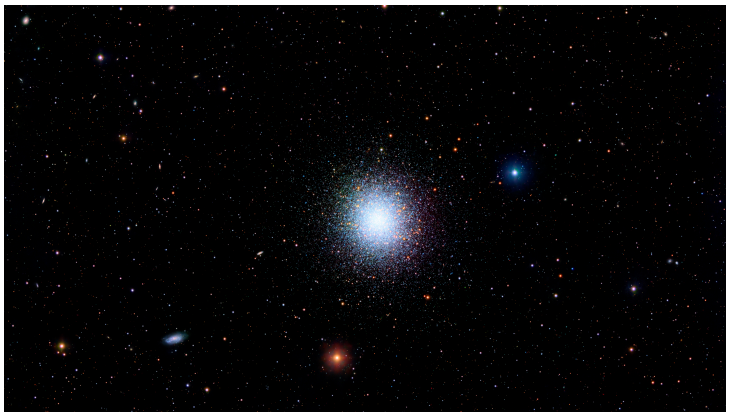
support. If adopted, it would make joint Rubin–Euclid analysis easier and accelerate development of combined data-processing methods. Rubin proposal notice

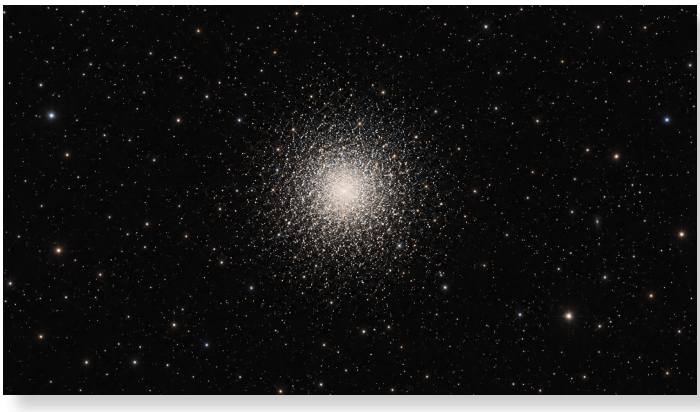
JWST: Giant stellar nursery panorama reaches unusually low masses
Confirmed — released September 15. One of Webb's largest images to date shows IC 348, a nearby stellar nursery about 1,000 light-years away. Webb identified brown dwarfs with masses as low as roughly twice Jupiter's—objects occupying the hazy boundary between stars and giant planets.

Why it matters: Objects this small are difficult to produce with standard star-formation models. The result may force astronomers to rethink how extremely low-mass brown dwarfs form and where the dividing line between star-like and planet-like formation belongs.

Presentation resources: STScI release and high-resolution imagery

Ok, so this is just the start. Next I'm going to add a request to tell me what astrophotography targets are coming in to my view during October given my back yard constraints. I'll let you know how it goes.





Here's a quick side by side comparison. My image of M13 on the upper left, and ChatGPT's image on the right. Yes, you can create images and graphics with AI, but there's nothing like going out into the mosquito infested night to get your own image. Actually, most of my image of M13 was taken around 3-5 in the mornings when I was sleeping. I had programmed my ASIAIR to shoot it. Give it a try!

Meeting Minutes
The Southwest Florida Astronomical Society, Sept. 3, 2026

Southwest Florida Astronomical Society Membership Meeting Minutes from Calusa Planetarium 9/3/26
President Risley opened the meeting at 7AM by thanking all 26 members for attending (14 Zoom and 12 in person). He then asked Dan Dannenhauer to introduce this evening's guest speaker. Dan said that he met Carlos at the Winter Star Party several years ago, attended Carlos' presentation and believed that our members would enjoy Carlos' programs of clear sky viewing by using SeeStar scopes in various locations other than Florida.

Program: 'Astronomical Culture Changes by SeeStar scopes and the use of remote clear sky locations'. Carlos Garcia narrated that he was self thought and has now formed

EasyScoopes.space for astronomers to view affordable and easy remote astrophotography. One does not have to set up, ship a scope, but rent in various locations. Specifically Carlos illustrated his Redford, Big Bend, Texas site for month to month rentals with no cancelation penalties. Carlos also discussed the availability of Southern Hemisphere viewing through ZuLuAlpha, listing the price and programs offered. Carlos is a board member of the Southern Cross Astronomical Society and can be reached at starpicturesmiami@gmail.com Many questions were asked and answered. Dan advised that he was a user of Carlos' program and encouraged the members to try it.

November and December Election of Officers and 2027 Budget: President Risley advised the membership that both Secretary Dan Dannenhauer and Vice President Mike Jensen have resigned their positions as of 1/1/27 and others must step up to run. President Risley also advised that both he and Treasurer John MacLean will resign their positions as of 1/1/28. This is of deep concern as younger members must step up to fill these positions on the Board of Officers. Tom Klein and Tim Lilly both declined to run. Mike Jensen said he would still produce the monthly Newsletter and Website. The 2027 budget will be presented as soon as available.

Upcoming Outreach Events:
Lee County: Brian Risley stated that the CNCP Friendly Forest Fall Fest will be held on September 19 through the 20th from 10AM until 4PM. He also advised that the Seahawk Park Star Party may be held (watch for details) on September 12th. Brian said that the Lee County Parks and Recreation Fall Festival will be held at the North Fort Myers regional park off of US 41 just north of Bayshore and behind the NFM Library on October 23rd. Brian also encouraged the members to attend the Big Cypress Swamp Heritage Festival on December 5th.
Charlotte County:
Tom Segur stated that the FSW Moore Observatory view begins at dusk on September 4th. Tom also advised that the Solar Observing at Ponce DeLeon Park in Punta Gorda will be held from 9AM until Noon on September 19th. He further stated that the Peace River wildlife Center may be relocated which would effect their venue.
Mike Jensen stated that he has become more involved in Tom Segur's programs and desires to spend more time assisting and participating in the Charlotte County activities.

Officer and Committee Reports:
President: President Risley advised that the October 1st guest speaker is Gabriel Maxwell Bowman of the Lunar & Planetary Lab located at the University of Arizona with 20 Moon Missions over the last 20 years.
Vice President: Vice President Jensen stated that there was no Vice President report other than to encourage

members to step up and fill the soon to be vacant officer positions. Mike also stated that he will continue working on the Website and monthly Newsletter. He also said that he will attempt to have a Social Dinner before the end of the year.

Secretary: Secretary Dannenhauer apologized for being absent at the August meeting and asked the members to WAIVE the August minutes for now. President Risley accepted a unanimous voice approval for such waiver.
Treasurer: President Risley rendered the treasurer's report as John MacLean was absent. Brian said that the Society was ahead of 2026 budget by $812 and all was in order and approved by the officers.
Equipment Coordinator: Brian Risley advised that the NexStar will not be available but everything else in the storage room is.

Program Coordinator: In John's absence, Dan advised that the October's speaker is Gabriel Bowman, November's speaker is Greg Shanos and December's speaker is Jon Bell with specifics in the Newsletter.
Open Discussion, New Business, Old Business, Adjournment: President Risley asked the members if there was any other issue that they would want to present. Hearing none he asked for a motion to adjourn…….so moved by Mike Jensen and seconded by Tom Segur……passed unanimously at 8:15PM

Astrophotography Special Interest Group (SIG)



By Mike Jensen - Leader/Founder

OCTOBER IMAGING TARGETS FOR SOUTHWEST FLORIDA

October is the payoff month. The rainy season afternoon storms finally start losing steam, the first real cold fronts push humidity out of the air, and the sky overhead swings fully into fall: Cassiopeia and Cepheus ride high most of the night, Andromeda climbs to a genuinely comfortable altitude before 9 p.m., and the Pleiades clear the eastern trees by mid-evening. Cygnus is still up there, still worth a look, but it's setting earlier every week now and sliding out of prime position. This is also the month Saturn hits opposition, so if you've been putting off planetary imaging, October is when it pays off.

Home base for most of us runs Bortle 6 to 7, somewhere between Cape Coral and Fort Myers. Push inland toward Lehigh Acres or out into Charlotte County and you'll find pockets closer to Bortle 4.5. As always, the bright stuff doesn't care much about your Bortle number. The faint stuff does, and October is a good month to make the drive, because the weather finally cooperates.

Last quarter moon falls on October 3, new moon on October 10, first quarter on October 18, and full moon on October 26. That gives a solid moonless-to-lightly-moonlit stretch from about October 3 through October 18, your best window for narrowband work on the fainter targets in this list. Save the week around the 26th for Saturn, lunar shots, or catching up on processing. Sunset runs from about 7:13 p.m. EDT on the 1st down to roughly 6:45 p.m. by the 31st, so you're getting a real jump on darkness compared to summer, and astronomical twilight ends early enough that a work night session is realistic again.

Weather-wise, October is usually the best month of the fall. The tail end of hurricane season means you still want to keep an eye on the tropics, but the daily thunderstorm pattern that dominates July through September breaks down fast once the first fronts arrive, typically in the second and third week of the month. Those fronts drag down drier, more stable air, and the nights right after one passes tend to have the steadiest seeing and the cleanest transparency of the whole year. Watch the dew point, not just the cloud forecast; a front-driven clear night with low humidity will out-perform a hazier "clear" night from the tropical airmass every time. I was gone for the month of October last year so I'm really looking forward to it this year. Dick told me that last year he set up in mid October and pretty much never broke his rig down. Just kept imaging until Feb/March. I was about the same from early November.

The Big Three

These are the targets that'll be in everyone's capture folder by Halloween: bright, well placed, and forgiving of whatever you're shooting with.

The Andromeda Galaxy (M31)

Andromeda is in an even better spot than it was in September. It clears the trees in early evening now and sits comfortably high by 9 or 10 p.m., well clear of the horizon murk that softens detail lower down. At magnitude 3.4 and roughly three degrees across, six full moons wide, it's one of the few deep sky objects that shrugs off Bortle 7 and still shows dust lanes, a bright core, and the companion galaxies M32 and M110.
Focal lengths from 135mm to about 500mm frame the whole galaxy plus both satellites in one shot. Go longer, 1000mm and up, and you're chasing dust lane detail instead, best handled as a two- or three-panel mosaic

rather than a crop. Both the SeeStar S50 and Dwarf 3 do this one well since their native focal lengths (around 250mm and 100mm) capture the full galaxy without any stitching, and it's bright enough to reward even a modest session.

The core saturates fast, so shoot a range of exposure lengths and blend them in post rather than fighting one exposure time for the whole frame. And don't crop M32 and M110 out just to get tighter on the core; they add real weight to the final image.

Saturn

Saturn reaches opposition on October 4, the night it's closest to Earth, brightest, and up all night. This is the reason to prioritize planetary work this month rather than putting it off. The rings are the story right now: they crossed edge-on to Earth back in March 2025, and by opposition this month they've opened back up to only around seven or eight degrees of tilt. That thin-oval look is unusual and won't return until well into the 2030s, so this is a good year to actually document it rather than assume you'll catch a better ring angle next season. Planetary work means the longest focal length you can manage, ideally 2000mm and up toward 4000mm with a Barlow or Powermate, paired with a fast planetary camera shooting video. Stack with AutoStakkert! and align with PIPP, keeping only the sharpest percentage of however many thousand frames you collect. This target is out of reach for the SeeStar and Dwarf; their apertures and native focal lengths just aren't built for planetary resolution.

Seeing matters far more than transparency for this one. Florida's low elevation and generally humid air can still produce surprisingly calm seeing on nights with light surface wind and a quiet jet stream, so don't write off a slightly hazy night if the wind is dead calm. Check the jet stream forecast before you check cloud cover.

The Pleiades (M45)

The Seven Sisters clear the eastern horizon by mid-evening and are well placed for most of the night by month's end, a good sign that fall has properly arrived. At magnitude 1.6 and about two degrees across, four full moons wide, it's naked-eye obvious even from Cape Coral, and a telescope or camera reveals what your eyes can't: pale blue reflection nebulosity wrapped around the brighter stars, most visible around Merope and Maia.

This is a wide-field target. Anything from 200mm to 500mm frames the full cluster with room around the edges; push past 800mm and you're cropping into individual stars rather than showing the cluster as a whole. It's a great match for the SeeStar S50 and Dwarf 3, both of which render the bright stars and a hint of the surrounding nebulosity without much fuss, since the cluster's brightness carries it through short integration times even under Bortle 6 or 7.

The nebulosity is fainter than it looks in other people's finished images, so don't be discouraged if your first stack looks like stars on a black background. Longer integration, two hours and up, starts pulling the blue wisps out, and a mild stretch works better here than an aggressive one; push too hard and you'll drag out sensor gradients along with the nebula.

The Middle Tier

Once the big three are in the folder, the club splits into two camps: fainter targets, more demanding framing, and in most cases a narrowband or duo-band filter isn't optional anymore.

Bubble Nebula (NGC 7635) with M52

Cassiopeia is riding high through most of the night now, and the Bubble is worth revisiting if you shot it in

September, since it's better placed and easier to reach for a full session. The nebula itself is a small shell of gas blown out by a hot young star, about fifteen arcminutes across, so 800mm to 1500mm renders it at a useful scale, ideally with open cluster M52 sharing the frame.

The shell structure needs real integration time, four to six hours minimum from home skies, to separate cleanly from the surrounding gas cloud Sh2-162. More total exposure is the fix here, not aggressive sharpening; a thin, well-defined edge on the bubble comes from signal, not processing tricks.

Heart and Soul Nebulae (IC 1805 and IC 1848)
These sit side by side in Cassiopeia, two enormous emission nebulae that together span close to five degrees, each wrapped around its own young star cluster. The Heart (IC 1805) is the more popular of the pair, with a dense knot of star formation near its center sometimes called the Fishhook. The Soul (IC 1848) is a bit fainter and more diffuse. I may go wide field on these this year.

Shoot them separately at 400mm to 800mm to get real structure in each, or go wide, under 250mm, and frame both in a single shot if your sensor is large enough. This is squarely a narrowband target: a dual-band filter pulls real structure out of Ha and OIII, and a full SHO palette on mono cameras is a rewarding multi-night project if you want to put in the hours. The SeeStar's duo-band mode handles the brighter core of the Heart reasonably well, though it won't touch the fainter outer regions the way a dedicated mono setup will.

Pacman Nebula (NGC 281)
Also in Cassiopeia, the Pacman is a compact emission nebula and open cluster about 35 by 30 arcminutes, named for the dark dust lanes that carve a mouth-like notch into the glowing gas. It's a good next step up from the Bubble: similar difficulty, similar filter requirements, but a different shape and a bit more contrast to work with once you've got a few hours of integration.

Focal lengths of 800mm to 1500mm frame it well. A dual-band filter is close to mandatory from our home skies; without one, the dust lanes and the surrounding nebulosity mostly disappear into background glow. Plan on three to four hours minimum, and don't rush the stretch. Pulling the dark lanes out too aggressively flattens the contrast that makes this target interesting in the first place.

The Hard Three
These three ask more of your gear, your integration time, or your sky, and all three are worth the drive to Big Cypress or Kissimmee Prairie if you're serious about them.

NGC 891
This edge-on spiral sits in Andromeda, not far from M31 itself, and it's a completely different kind of challenge: instead of a bright, forgiving galaxy face, you're chasing a thin, faint disk split by a dark dust lane running its entire length. At magnitude 9.9 and about 13 by 2.5 arcminutes, it's small and it's dim, so 1000mm to 2000mm is the sweet spot, and you'll want every bit of aperture you can bring.

Under Bortle 6 to 7, expect to need five or six hours to pull the dust lane cleanly away from noise, and the difference a darker site makes here is bigger than on almost anything else in this list. This one is a legitimate reason to drive. It's also a poor match for the SeeStar or Dwarf; the surface brightness is too low and the target too small for their optics to do it justice.

California Nebula (NGC 1499)
The California sits in Perseus and is enormous, about two and a half degrees long, roughly five times the width of the full moon, but spread so thin that it's nearly invisible in broadband from anywhere near a city. It only

reveals itself under a hydrogen-alpha or dual-band filter, and even then it wants a genuinely wide field, 135mm to 300mm, to fit the whole shape in frame.

That combination, wide field plus narrowband, is awkward for a lot of setups in this club; you need a fast, short lens paired with a filter, which isn't every rig's strong suit. Expect four to six hours even with a dual-band filter, more if you're shooting Ha alone on a mono camera, and treat a Bortle 7 attempt as a rough draft for a darker-sky redo.

Stephan's Quintet with the Deer Lick Group (NGC 7331 and companions)
This is the most demanding target on the list and the most rewarding if you pull it off. NGC 7331, a bright spiral galaxy in Pegasus, anchors the frame, but the real prize is Stephan's Quintet just to its south: five small, faint galaxies locked in a slow gravitational dance, four of them genuinely interacting and roughly 290 million light-years away.

You need focal length here, 1500mm to 4000mm, since the quintet spans only a few arcminutes, and you need dark skies, since the faintest of the five galaxies sits well below what Bortle 6 or 7 will resolve cleanly. Plan on six-plus hours minimum, and go to Big Cypress or Kissimmee Prairie if you want the faint galaxies to show as more than smudges. This is squarely a long-focal-length, dedicated-mount target; smart scopes don't have the reach for it.

Putting It Together
If you're building your month around the moon calendar, October 3 through 18 is your window for the faint stuff: the Bubble, the Heart and Soul, the Pacman, and all three hard targets want moonless or near-moonless skies. Andromeda and the Pleiades are bright enough to shoot on any clear night regardless of the moon. Saturn doesn't care about lunar phase at all, so slot your planetary sessions in whenever the jet stream forecast looks calm, moon or no moon.

On the dark-site question, it comes down to what's on your list. Stick with the big three and you can stay home and save the drive. If NGC 891, the California Nebula, or Stephan's Quintet are on your list, an evening at Big Cypress will get you meaningfully more than the same hours under Cape Coral's sky glow, and a full night at Kissimmee Prairie will get you more still. Either way, October's the month to use it: the weather won't cooperate like this again until next fall.



M20 & M8 - The Trifid (Left) & The Lagoon Nebulas by Mike Jensen
Brand/Type of Telescope/Lens: SeeStar S50 Pro
Mount: Gitzo Tripod - Alt Az mode

Exposures: 976 x 10 sec exposures

Processing Software: PI, PS

Here's the story: This and two other targets are "First Light" on my new SeeStar S50 Pro. Yes, I bit the bullet! Always intended to, and I'm happy! This image is the result of two nights imaging. Total time 2 hours, 42 minutes, (oh and 40 seconds). The SeeStar gives you a variety of images/outputs to reward you for your imaging efforts. It automatically stacks an image for you. Also, you can set the rig to keep all thd individual fits files so you can stack them yourself. That's what you see here. I used the auto-stacked file as a reference file and let WBPP do it's thing. It rejected 110 images in the registration process, this due to the Alt Az mode. I'll be placing it on a equatorial wedge to help correct this. The wedge will also save on hard drive space by allowing me to expose for 30 secs to two minutes. This image was done in Ha and Oiii mode. The SeeStar does not have a Sii filter. So I did some PixInsight and Pixel Math wizardry to convert the image to the HOO palette.



M31 by Mike Jensen
Brand/Type of Telescope/Lens: SeeStar S50 Pro
Mount: Gitzo Tripod - Alt Az mode

Exposures: 700 x 10 sec exposures done in "Mosaic" mode

Processing Software: PI, PS

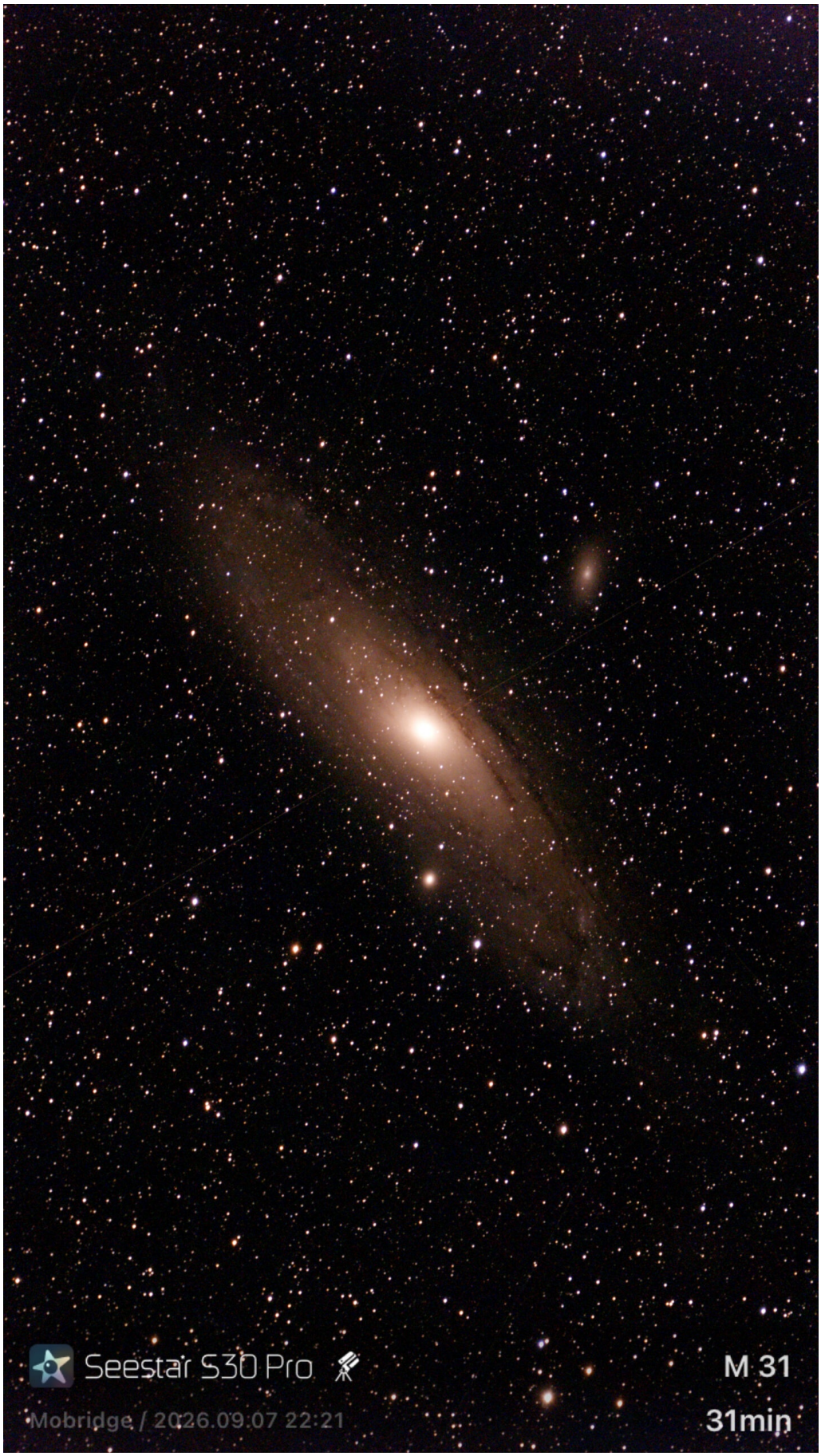
Here's the story: Here's another "Show & Tell" image from my new Seestar S50 Pro. I sure like it. It doesn't replace my ES127 on the EQ6R mount but it's a heck of a lot easier to set up and go! I just set it up for "EQ" mode and I'm checking out progress on that as the clear nights open up.

Andromeda Galaxy by Chris Young

Brand/Type of Telescope/Lens:
Seestar 30 Prow 5f
Mount: Seestar
Exposures:
186 stack
31 min
160mm

Processing Software: Seestar
Here's the story:

Photo taken in S.Dakota





M33 by MARIO MOTTA

Brand/Type of Telescope/Lens: 6 inch F7 refractor, home made, zeiss triplet type
Mount: home made equitorial
Exposures: 34 5 minute subs, of a OSC ASI 071 camera, with a new filter, Antlia triband RGB Ultra II , useful as a LP filter

Processing Software: PixInsight

Here's the story: This image shows how good and useful this new filter from Antlia is, this was taken in bortle 4.5 sky and is my best image ever of M33. I used this same filetr in Naples Florida in the spring, and was amazed as the first filter useul in the Bortle 7 skies of Naples, and to get galaxies for the first time in LP skies