

STRATFORD ASTRONOMY GROUP

JANUARY 10TH, 2023



AGENDA

- Meet and Greet
- Club NEWS and Activities (**Museum and New Year Dinner**)
- Club Q & A
- Equipment Lessons (**connect battery and camera**)
- Software and Imaging Information (**running MallincamSky**)
- Latest Astronomy NEWS
- WEBB NEWS
- What's UP this Month
- Show and Tell
- Astronomy Lessons
- Cosmology Lessons
- Conclusion

MEET AND GREET

Welcome
New Visitors

Regrets



PREVIOUS MEETING REVIEW

Meeting
attended by
10:



Michael Burns
Patrick Hayes
Peter Tinitis
Paul Bartlett
Wolfgang Keller
Ken Roberts
Doug Fyfe
Bob Greer
Jim Kelly
Tim Pauli

CLUB NEWS AND ACTIVITIES

Group Funds

Total = \$911.67

- If you would like to contribute to the group, then please e-transfer Tim at:

timannemariepauli@gmail.com

or by cheques:

Tim Pauli
96 Front Street
Stratford, ON
N5A4H2

CLUB NEWS AND ACTIVITIES

EQUIPMENT:

STRATFORD ASTRONOMY CLUB EQUIPMENT

CLUB EQUIPMENT LOCATION:

Paul Bartlett is now storing all the group's equipment. If you wish to borrow an item, then please contact him at:

1948paul.bartlett@gmail.com

519-271-2010

UPCOMING MEETINGS

NEXT MEETING DATES

Bookings

Status: **Approved**

Total hours: 20

Status	Date	Start	End	Facility and spaces
Approved	Tue, Sep 06, 2022	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, Oct 04, 2022	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, Nov 01, 2022	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, Dec 06, 2022	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, Jan 10, 2023	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, Feb 07, 2023	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104

Approved	Tue, Mar 07, 2023	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, Apr 04, 2023	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, May 02, 2023	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104
Approved	Tue, Jun 06, 2023	7:00pm	9:00pm	St. Michael CSS in Classroom 2 - Room 104

CLUB NEWS AND ACTIVITIES

EQUIPMENT:

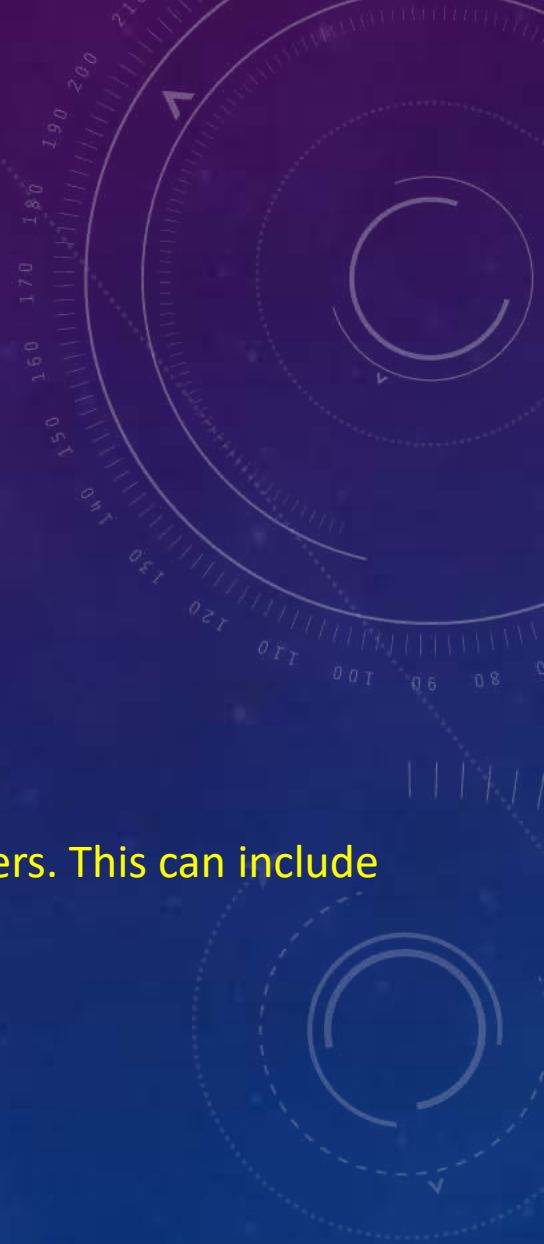
STRATFORD ASTRONOMY CLUB EQUIPMENT

- **New Web site: (<https://awptest.espubs.com/>)**
 - Tim Pauli - Owner/Administrator
 - Ken Roberts - technical contact
 - Tom Kimber - Administrator/Editor
 - Doug Fyfe - Administrator
 - Michael Burns- Administrator
 - Tom will build it on WordPress.
- **Stratford Museum Presentation on Friday January 20th**
 - Introduction Tim
 - Talk by Michael
 - Ken presentation
 - Equipment Show and Tell
- **New Years social Dinner**



CLUB Q & A

- Let's open this up for any Questions and Answers. This can include events that you are aware of .



EQUIPMENT LESSONS

LATEST ASTRONOMY NEWS

JANUARY



Hubble detects ghostly glow surrounding our solar system

Date: December 9, 2022

Source: NASA/Goddard Space Flight Center

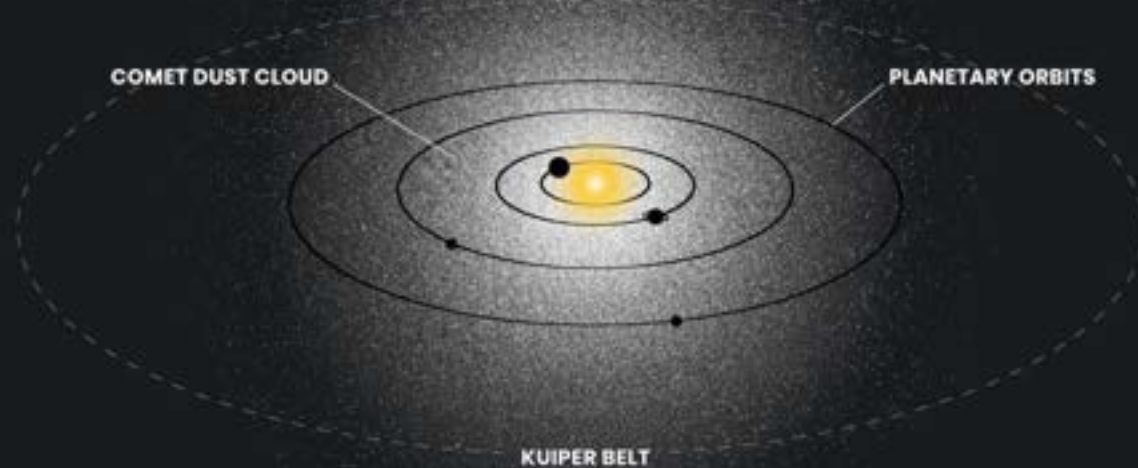
Summary: Imagine walking into a room at night, turning out all the lights and closing the shades. Yet an eerie glow comes from the walls, ceiling, and floor. The faint light is barely enough to see your hands before your face, but it persists. Sounds like a scene out of a scary movie?" No, for astronomers this is the real deal. But looking for something that's close to nothing is not easy.

Aside from a tapestry of glittering stars, and the glow of the waxing and waning Moon, the nighttime sky looks inky black to the casual observer. But how dark is dark? To find out, astronomers decided to sort through **200,000** images from NASA's [Hubble Space Telescope](#) and made tens of thousands of measurements on these images to look for any residual background glow in the sky, in an ambitious project called **SKYSURF**. This would be any leftover light after subtracting the glow from planets, stars, galaxies, and from dust in the plane of our solar system (called [zodiacal light](#)).

When researchers completed this inventory, they found an exceedingly tiny excess of light. That's like turning out all the lights in a shuttered room and still finding an eerie glow coming from the walls, ceiling, and floor.

The researchers say that one possible explanation for this residual glow is that our inner solar system contains a tenuous sphere of dust from comets that are falling into the solar system from all directions, and that the glow is sunlight reflecting off this dust. If real, this dust shell could be a new addition to the known architecture of the solar system.

Comet Dust Cloud Around Our Solar System



Astronomers find that two exoplanets may be mostly water

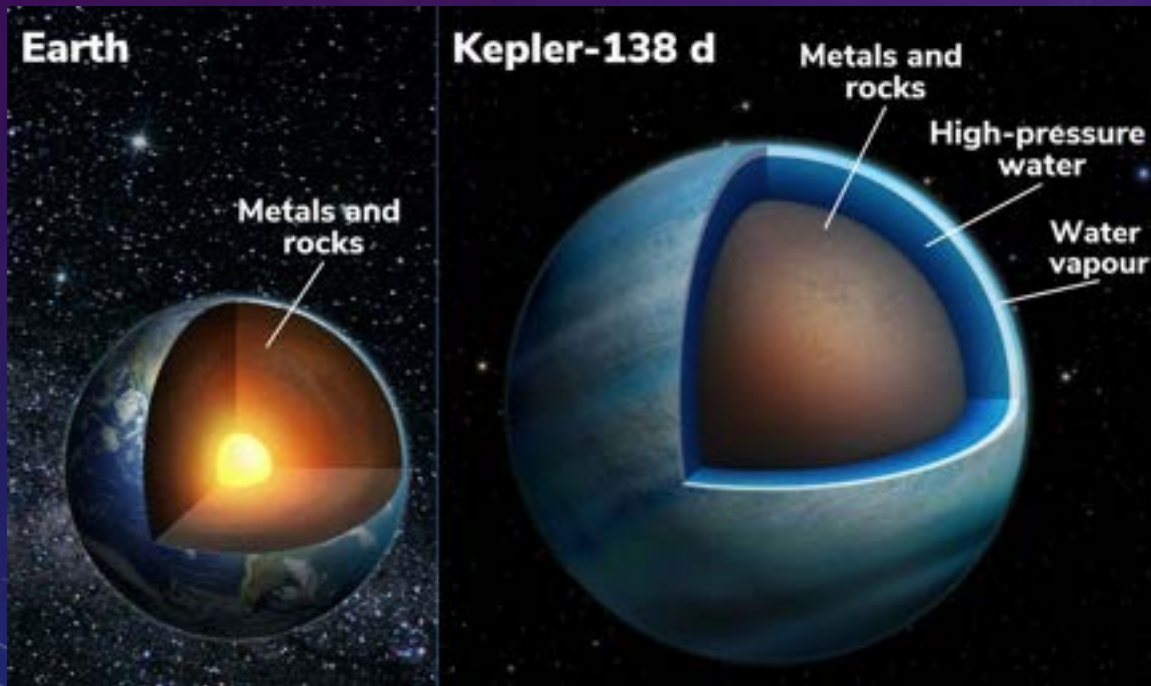
Date: December 15, 2022

Source: University of Montreal

Summary: Astronomers have found evidence that two exoplanets orbiting a red dwarf star are 'water worlds,' planets where water makes up a large fraction of the volume.

- A team led by UdeM astronomers has found evidence that two exoplanets orbiting a red dwarf star are "water worlds," planets where water makes up a large fraction of the volume. These worlds, located in a planetary system 218 light-years away in the constellation Lyra, are unlike any planets found in our solar system.

- Piaulet, who is part of Björn Benneke's research team, observed exoplanets Kepler-138c and Kepler-138d with NASA's Hubble and the retired Spitzer space telescopes and discovered that the planets -- which are about one and a half times the size of the Earth -- could be composed largely of water. These planets and a planetary companion closer to the star, Kepler-138b, had been discovered previously by NASA's Kepler Space Telescope.



Alien planet found spiraling to its doom around an aging star

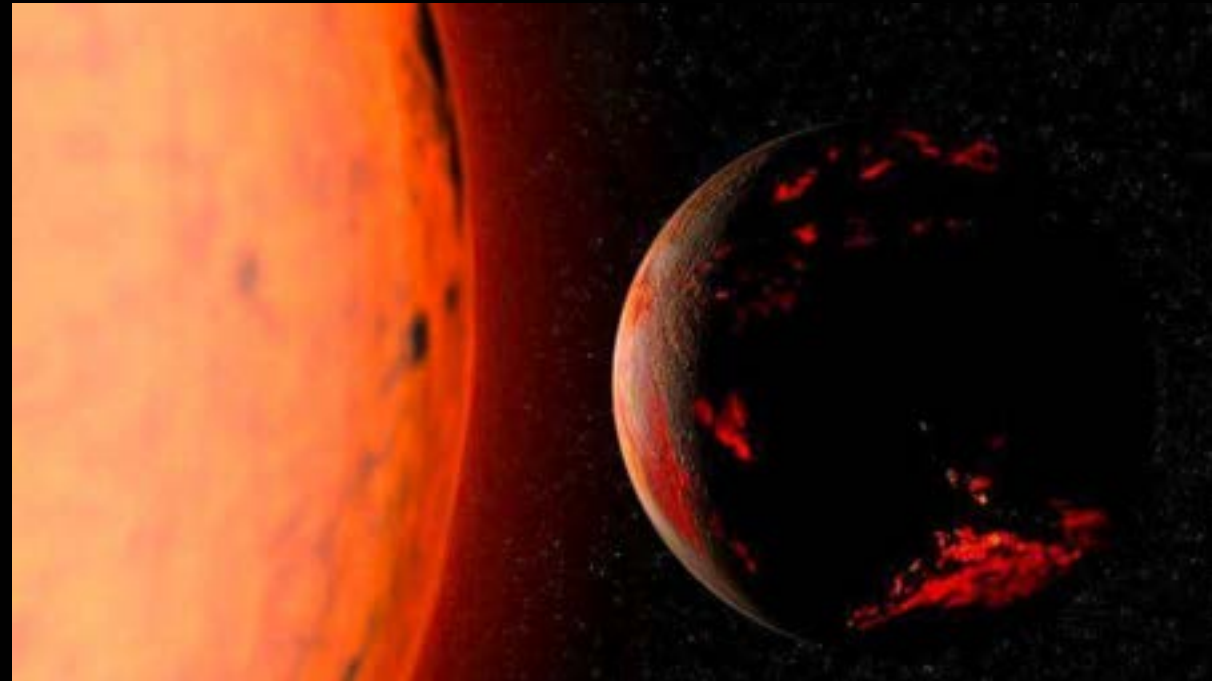
Date: December 19, 2022

Source: Harvard-Smithsonian Center for Astrophysics

Summary: The condemned planet could help answer questions about the fate of other worlds as their solar systems evolve.

For the first time, astronomers have spotted an exoplanet whose orbit is decaying around an evolved, or older, host star. The stricken world appears destined to spiral closer and closer to its maturing star until collision and ultimate obliteration.

The ill-fated exoplanet is designated [Kepler-1658b](#). As its name indicates, astronomers discovered the exoplanet with the Kepler space telescope, a pioneering planet-hunting mission that launched in 2009.





Astronomers find the most distant stars in our galaxy half-way to Andromeda

A search for variable stars called RR Lyrae has found some of the most distant stars in the Milky Way's halo a million light years away

Date: January 9, 2023

Source: University of California - Santa Cruz

Summary: Astronomers have discovered more than 200 distant variable stars known as RR Lyrae stars in the Milky Way's stellar halo. The most distant of these stars is more than a million light years from Earth, almost half the distance to our neighboring galaxy, Andromeda, which is about 2.5 million light years away.

- The characteristic pulsations and brightness of RR Lyrae stars make them excellent "standard candles" for measuring galactic distances. These new observations allowed the researchers to trace the outer limits of the Milky Way's halo.

- "This study is redefining what constitutes the outer limits of our galaxy," said Raja GuhaThakurta, professor and chair of astronomy and astrophysics at UC Santa Cruz. "Our galaxy and Andromeda are both so big, there's hardly any space between the two galaxies."

JAMES WEBB TELESCOPE

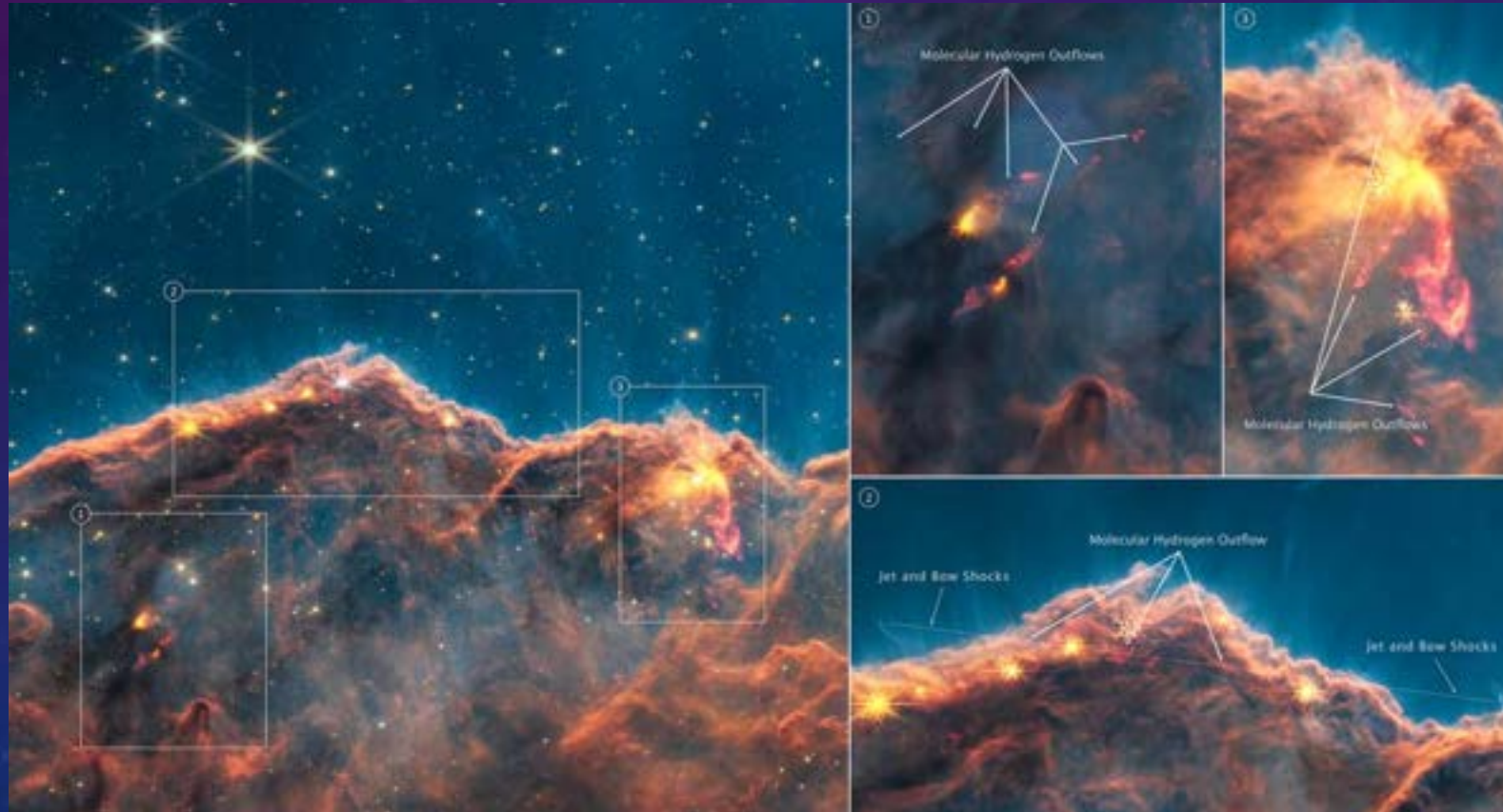
LATEST NEWS



DECEMBER 15

YOUNG STARS IN EARLY STAGES OF FORMATION

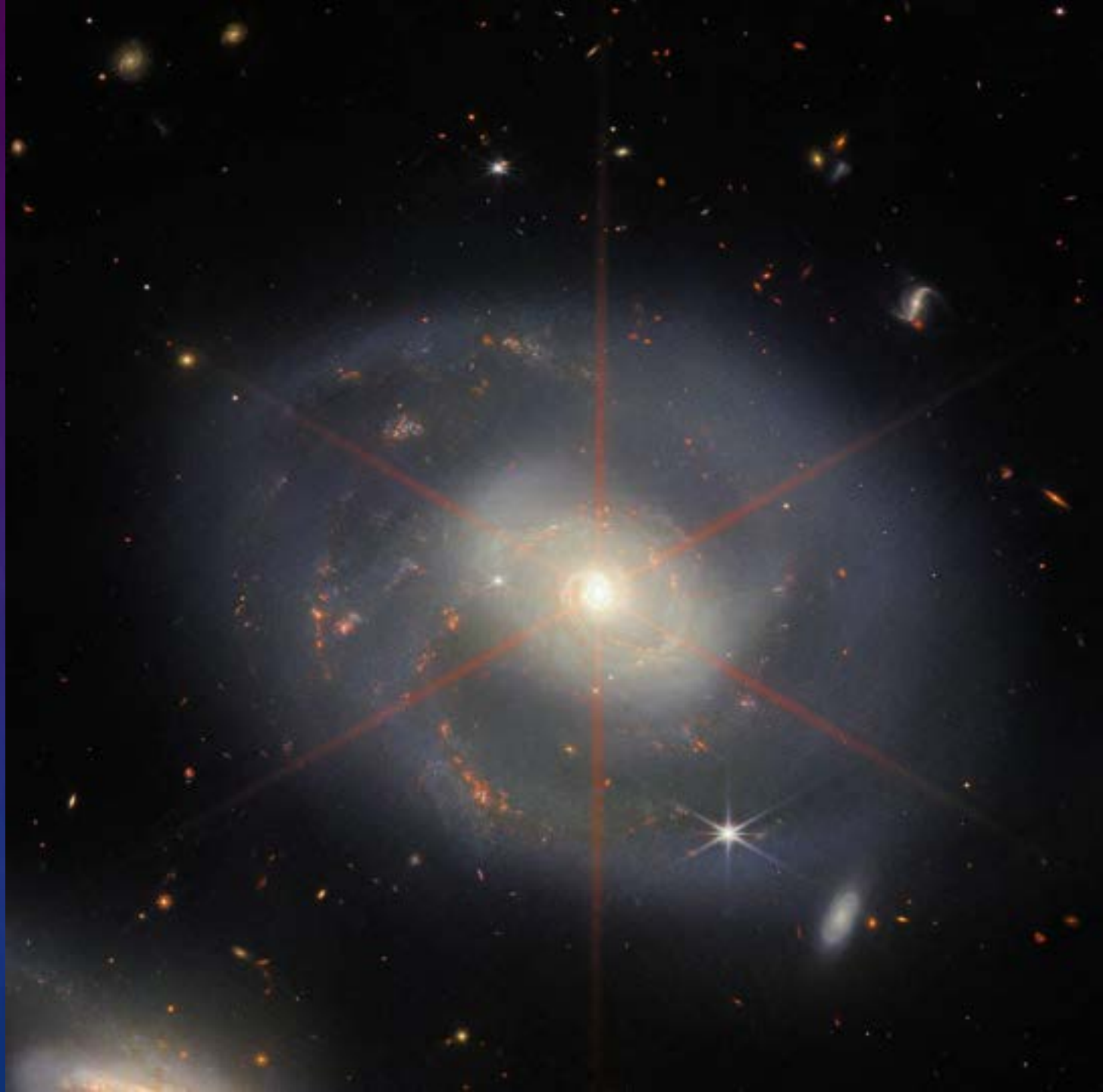
The Cosmic Cliffs, a region at the edge of a gigantic, gaseous cavity within the star cluster [NGC 3324](#), has long intrigued astronomers as a hotbed for star formation. While well-studied by the Hubble Space Telescope, many details of star formation in [NGC 3324](#) remain hidden at visible-light wavelengths. Webb is perfectly primed to tease out these long-sought-after details since it is built to detect jets and outflows seen only in the infrared at high resolution. Webb's capabilities also allow researchers to track the movement of other features previously captured by Hubble.



STARRY WREATH IN PEGASUS

DECEMBER 21

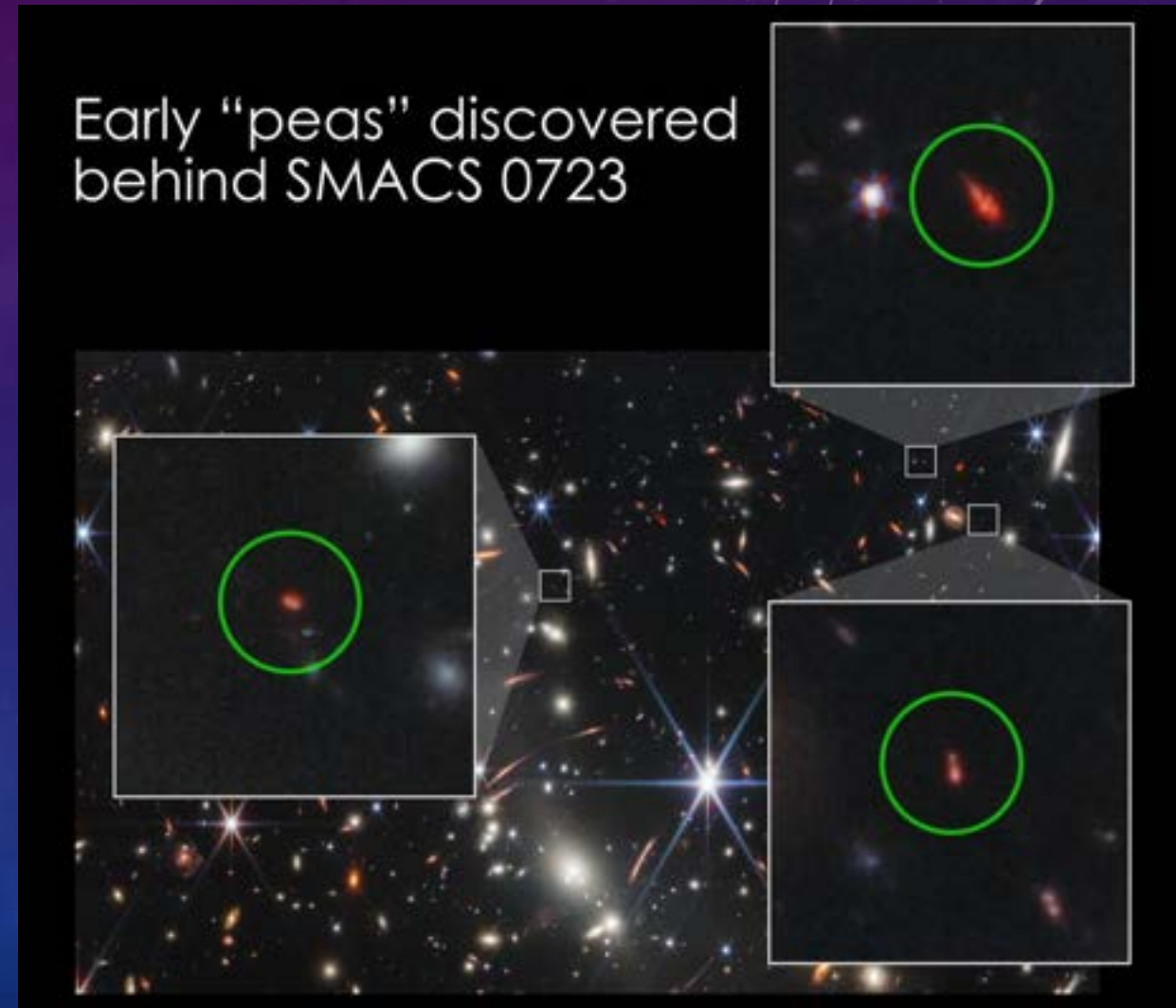
The James Webb Space Telescope spies the spiral galaxy [NGC 7469](#), located 220 million light-years from Earth in the constellation Pegasus, in this image released on Dec. 21, 2022. This galaxy is very dusty, but Webb's infrared vision can peer through to observe features like the intense ring of star formation close around its bright center.



NASA'S WEBB TELESCOPE REVEALS LINKS BETWEEN GALAXIES NEAR AND FAR

JANUARY 09

A trio of faint objects (circled) captured in the James Webb Space Telescope's deep image of the galaxy cluster [SMACS 0723](#) exhibit properties remarkably similar to rare, small galaxies called "green peas" found much closer to home. The cluster's mass makes it a gravitational lens, which both magnifies and distorts the appearance of background galaxies. We view these early peas as they existed when the universe was about 5% its current age of [13.8 billion years](#). The farthest pea, at left, contains just 2% the oxygen abundance of a galaxy like our own and might be the most chemically primitive galaxy yet identified.



WHAT'S UP

STRATFORD ASTRONOMY GROUP

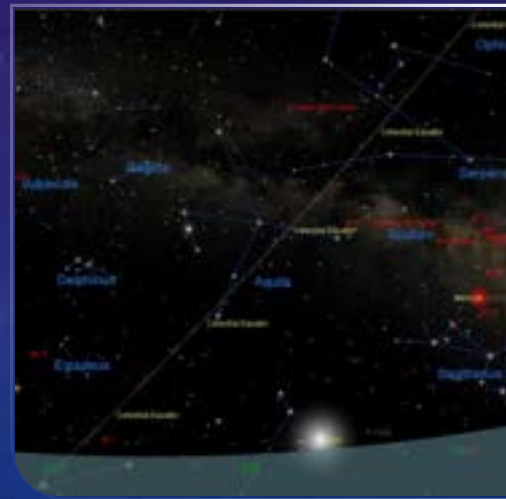
WHAT'S UP FOR JANUARY



This is a month of "Almost for us"

JANUARY 23 – MERCURY AT ITS MORNING PEAK

- Hopefully spotting Mercury with your unaided eye is on your astronomy bucket list. Well, you have another chance January 23rd when the tiny planet reaches its morning peak 13° above the southwestern horizon. It will actually sit this high above the horizon for several mornings on either side of the 23rd (the 18th-30th), so you can take a few opportunities if the skies aren't agreeable on the 23rd specifically. A pair of binoculars will show mercury is in phase.



JANUARY 25 – THE MOON & JUPITER ARE APPROACHING

- While we have an almost lunar occultation of Jupiter in January, the two majestic objects are getting increasingly close together (at least from our perspective). On the night of January 25th, the Moon and Jupiter will appear as close as $1^{\circ}36'$ apart; the Moon will be just five days old and thus not provide too much interference. So, use this as an excuse to pull out those binoculars and telescopes, or just get your Butt outside and view these amazing objects.

The screenshot displays a star chart software interface. At the top, a toolbar includes navigation controls (Go Backward, Step Backward, Stop, Step Forward, Go Forward), a search bar (09:58:08 pm January/25/2023), and various display options (Free Rotation, Terrestrial Sphere, Celestial Sphere, Rotate Tool, Show Stars, Show Variable Stars, Show Double Stars, Show Clusters, Show Galaxies, Show Networks). Below the toolbar, a secondary toolbar contains options like Show Daylight, Show Equatorial Grid, Show Horizon Grid, Field of View Indicators, Toggle Labels, Labels, Show Constellation Figures, Show Constellation Boundaries, Show Ecliptic, Star Options, Show Minor Image, Show Night Vision Mode, Map Like, Photo Like, and Chart Elements.

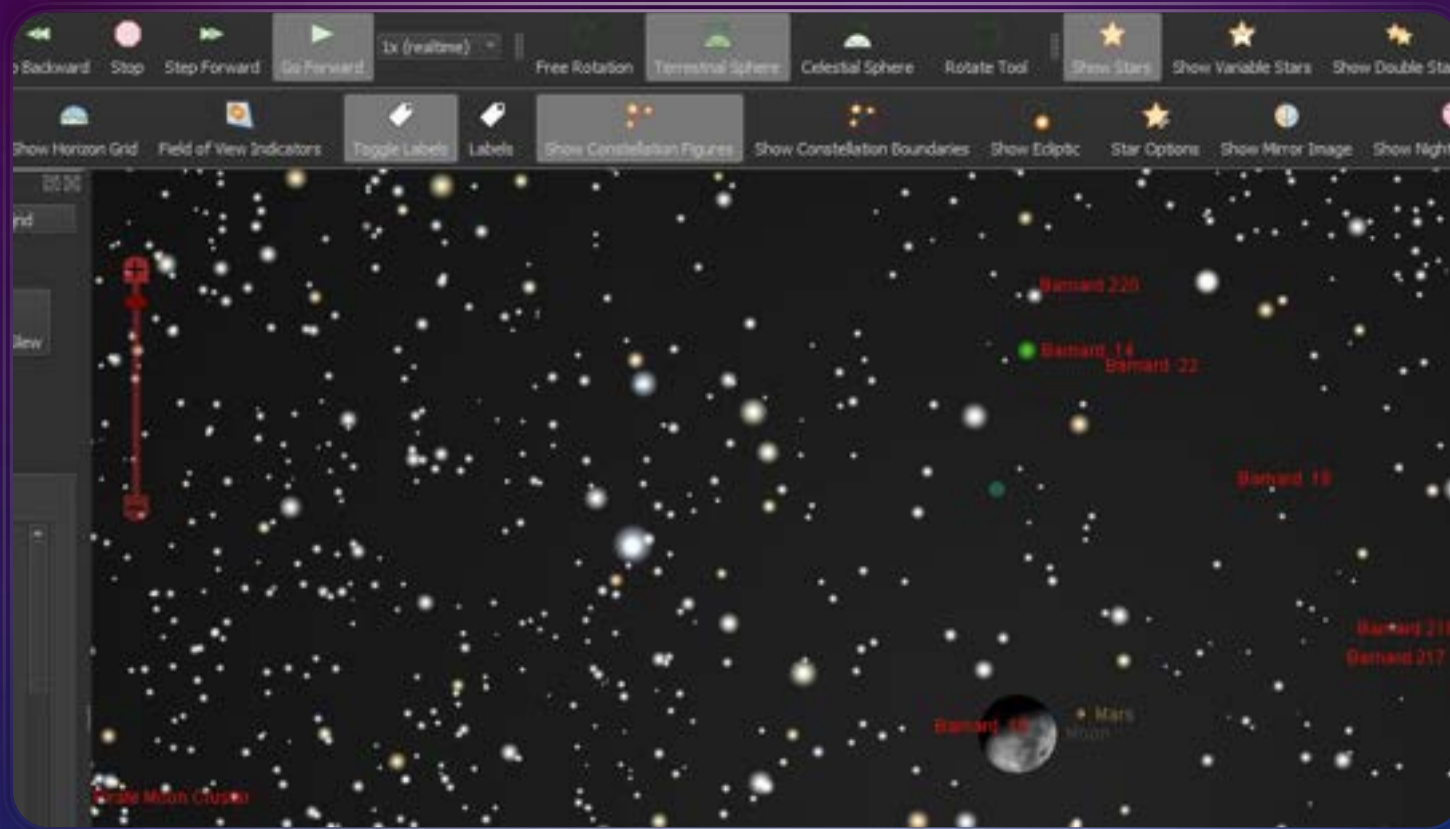
The main view shows a star chart with constellations labeled: Cetus, Piscés, Lacerta, and Pegasus. The Celestial Equator is also visible. A red double-headed arrow indicates the distance between Jupiter and the Moon. The bottom left corner features a detailed object information report for Jupiter:

Object Name: Mouse click position
RA (Topocentric): 02h 02m 15.8s
Dec (Topocentric): -37° 48' 20"
RA (2000.0): 02h 01m 17.2s
Dec (2000.0): -37° 54' 42"
Azimuth: 222° 40' 59"
Altitude: -06° 54' 44"
Rise Time: 15:09
Transit Time: 18:05
Set Time: 21:02

JANUARY 28 – LUNAR OCCULTATION OF URANUS (WELL ALMOST)

- As one might expect given the Moon's 27-day cycle, early-in-the-month lunar occultations have a chance of happening again later in the month. So, it goes for 31-day January, when the lunar occultations of both Uranus and Mars happen twice. Does that make these "Blue Uranus" and "Blue Mars" events, like a "Blue Moon" is the second full moon of the month?
- In any case, January 28th provides a second chance to spot Uranus and the Moon close together (unless you happen to be working in Siberia, you will see an occultation). The rest of us can try and spot the Moon and Uranus in close proximity, just 52.8 arcminutes apart at their closest.

JANUARY 30 – LUNAR OCCULTATION OF MARS (WELL ALMOST)



The next night, those of us who flew in from Siberia to the Southwestern and Southern U.S. will have a chance to spot the second lunar occultation of Mars in January. But for us another Almost occultation will occur.

JANUARY 22 – VENUS AND SATURN TOGETHER(WELL ALMOST)

Saturn almost kisses Venus on this night. You will observe that Venus is about 0.5° south of Saturn on this early evening night.



Search for: Saturn Find

Saturn

Center Frame Show Photo+ Goto Closed Loop Goto

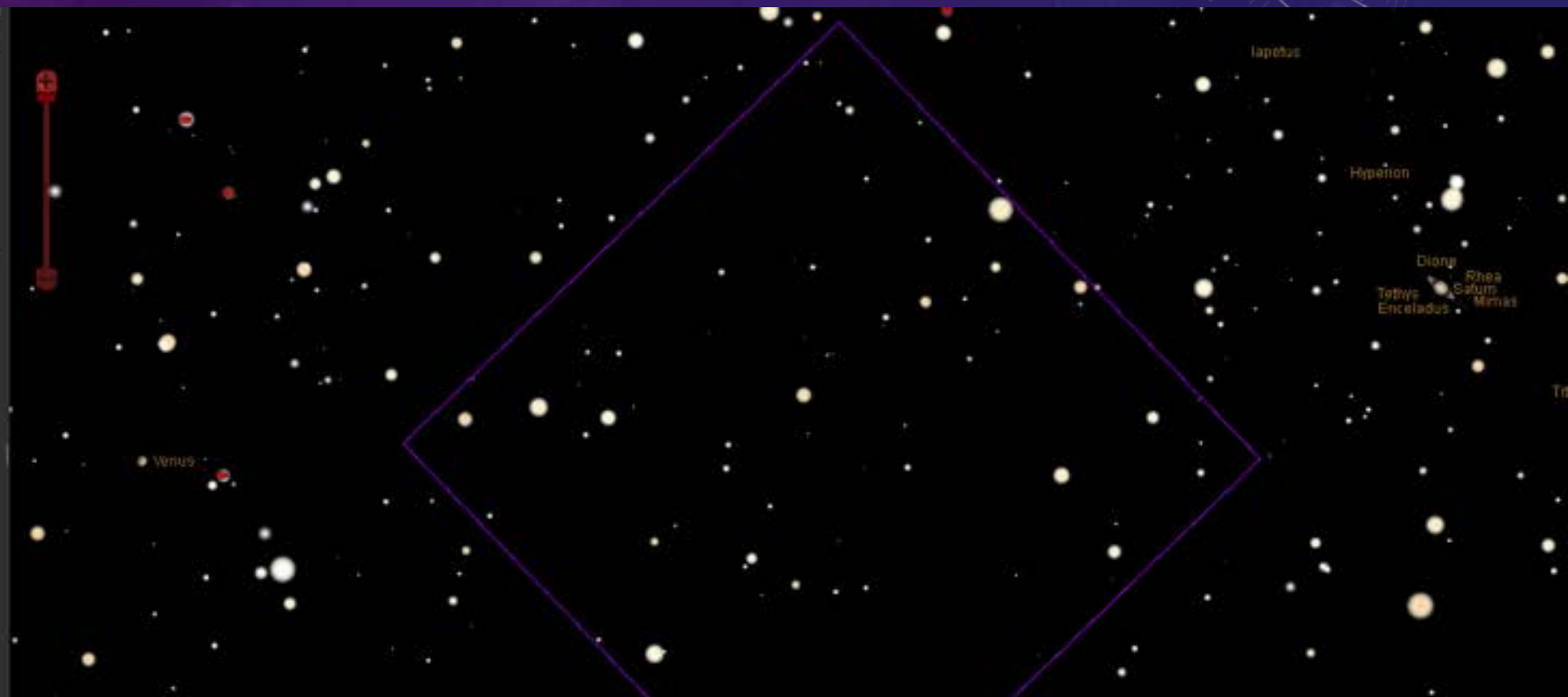
Copy Text Add to List Lock On Abort

Details Advanced Log

Object Information Report

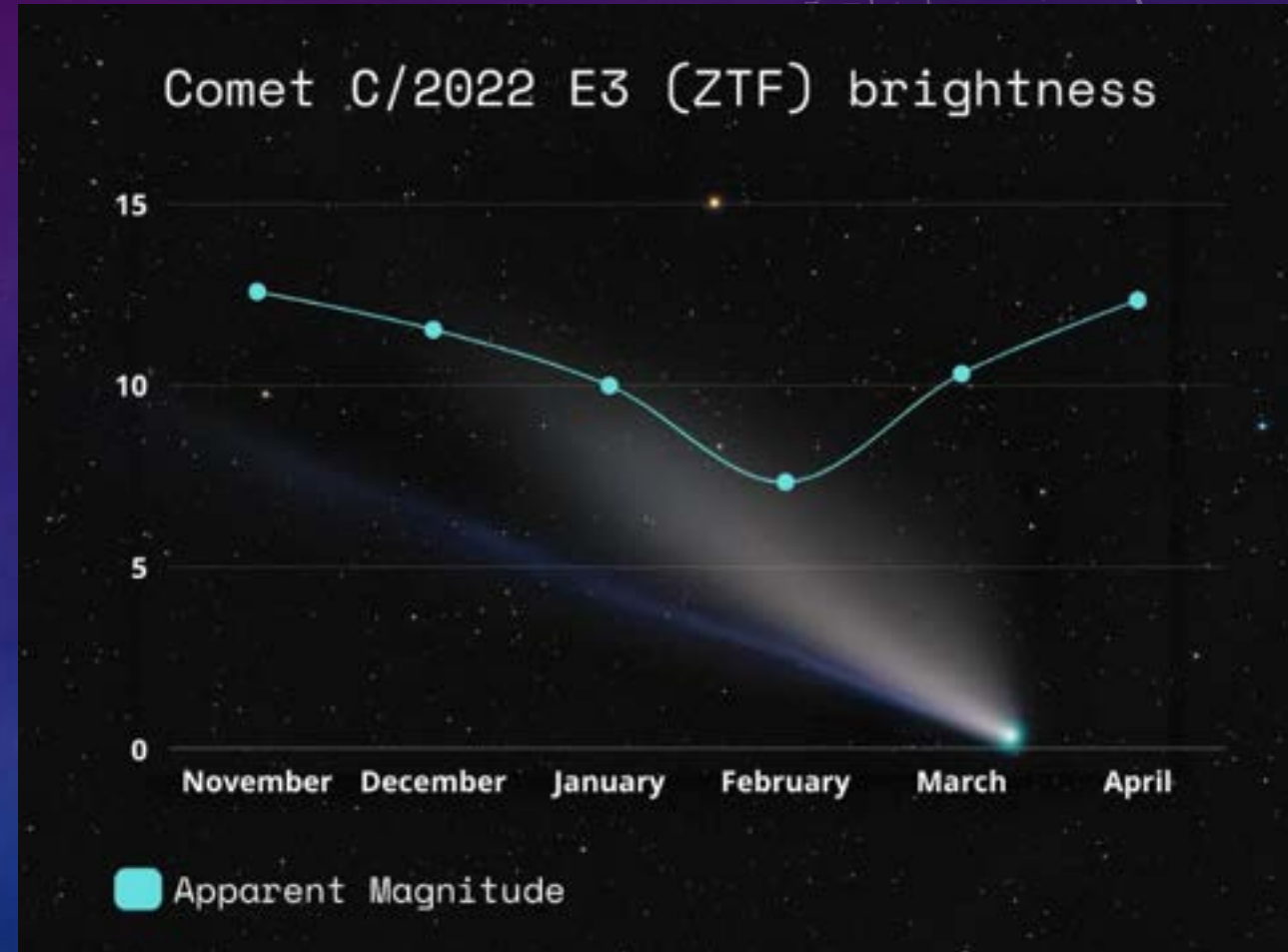
- Object Name: Saturn
- Object Type: Saturn
- RA (Topocentric): 21h 50m 04.4s
- Dec (Topocentric): -14° 25' 35"
- RA (2000.0): 21h 48m 50.9s
- Dec (2000.0): -14° 31' 51"
- Azimuth: 253° 24' 05"
- Altitude: -03° 30' 00"
- Axis Position Angle: 6° 18'
- Magnitude: 0.82
- Phase (%): 99.96%
- Rise Time: 06:59
- Transit Time: 14:05
- Set Time: 19:12
- Hour Angle: 05h 24m 00s
- Earth Distance (au): 10.73
- Sun Distance (au): 9.83

RA Rise Time Set Time OBJECT



JANUARY 12 – COMET C/2022 E3 (ZTF) A NAKED EYE COMET?

- The comet, named [C/2022 E3 \(ZTF\)](#), is currently passing through the inner solar system. It will make its closest approach to the sun, or perihelion, on [Jan. 12](#), and will then whip past Earth making its closest passage of our planet, its perigee, between [Feb. 1](#) and [Feb. 2](#).
- If the comet continues to brighten as it currently is, it could be visible in dark skies with the naked eye. This is difficult to predict for comets, but even if [C/2022 E3 \(ZTF\)](#) does fade it should still be visible with binoculars or a telescope for a number of days around its close approach.
- We should look for [C/2022 E3 \(ZTF\)](#) when the moon is dim in the sky, with the new moon on [Jan. 21](#) offering such an opportunity, weather permitting. According to the [website Starlust](#) (opens in new tab), the comet will be in the [Camelopardalis constellation](#) during its close approach.



SHOW AND TELL

SOFTWARE AND IMAGING LESSONS