

# John J. McCarthy Observatory

April 2025 Newsburst



Solar Eclipse from Moon

Credit: Firefly Aerospace



Lunar Eclipse from Earth

Credit: NASA/Sara Lowthian-Hanna

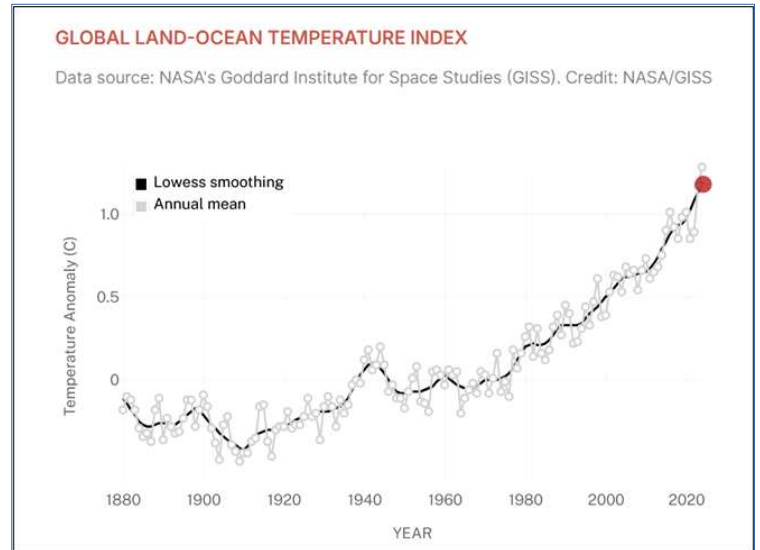
In the early morning of March 14<sup>th</sup> (EDT), the Moon traveled deep into the Earth's shadow, treating Earthlings on the night side of the planet to the first Total Lunar Eclipse in many years. However, from the Moon's perspective, it was the Earth blocking the light from the Sun, creating a Solar Eclipse.

Firefly's Blue Ghost lunar lander captured an image of the March 14<sup>th</sup> eclipse from the surface of the Moon. As the Sun reappeared from behind the Earth, it created the classic "diamond ring effect", a phenomenon which is normally seen from Earth when the Moon moves away from the Sun during a Total Solar Eclipse.

# Our Earth Continues to Warm

The Earth's average surface temperature in 2024 was the warmest on record since global records began in 1850. The rapid warming is attributed to human activities, including the emission of greenhouse gases, such as carbon dioxide and methane.

Earth's oceans have absorbed much of the excess heat and carbon dioxide. The annual global ocean heat content for 2024, for the upper 2000 meters, was a record high, as was the global sea surface temperature.



# Blue Ghost on the Moon

Firefly Aerospace's "Blue Ghost" lunar lander set down on the Moon's Mare Crisium on March 2<sup>nd</sup> near a volcanic feature called Mons Latreille. The second delivery under NASA's Commercial Lunar Payload Services initiative, Blue Ghost was also only the second privately-built spacecraft to safely land on the Moon.

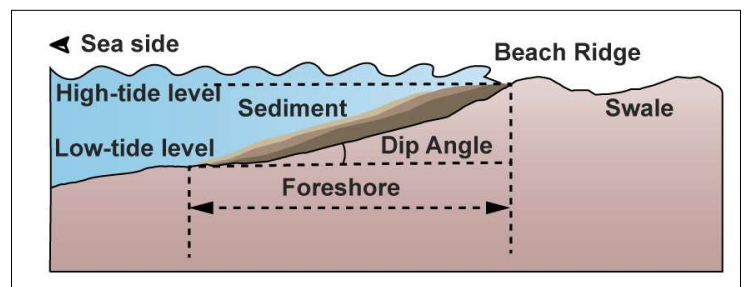
The lander's 10 science instruments, which included a pneumatic, gas-powered drill, powered down at the end of the lunar day (equivalent to about 14 Earth days).



# China Finds a Beach on Mars

The ground penetrating radar on China's Zhurong rover has revealed sloping, sand-like underground deposits that are similar to beach deposits on Earth. The discovery supports the presence of an ancient, ice-free ocean on the Red Planet with tides and wind-driven waves that deposited sediment to form the beach.

Zhurong landed in 2021 in southern Utopia Planitia, one of the largest impact basins on Mars.



Credit: Hai Liu, Guangzhou University, China

## Starliner Astronauts Return

When NASA astronauts Butch Wilmore and Suni Williams arrived at the ISS last June, they were anticipating a short, week-long stay. However, unresolved anomalies with their Boeing Starliner's propulsion system postponed their return as NASA decided to err on the side of caution.

Wilmore and Williams joined Crew 9 with their ISS arrival last September, living and working on the station until their return on March 18<sup>th</sup>, as part of a normal, scheduled rotation of personnel.

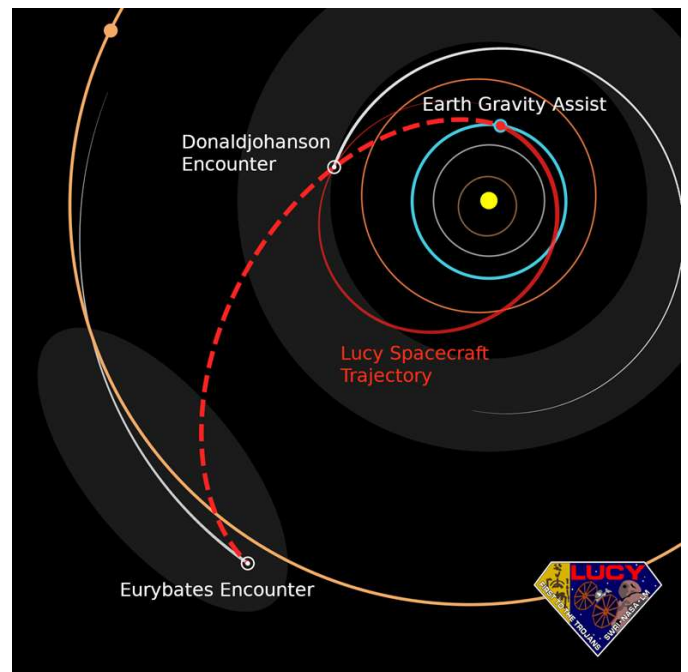


Crew 9 Returns  
Credit: NASA

## Lucy Encounter

A gravity assist from a flyby of Earth on December 13<sup>th</sup> provided NASA's Lucy spacecraft the boost needed to propel it through the main asteroid belt and to the first of eight Trojan asteroid encounters. Scheduled to arrive in 2027, Lucy will visit Eurybates and its moon Queta, located in an asteroid swarm at the Lagrange 4 position (60° ahead of Jupiter in its orbit around the Sun).

Along the way, the spacecraft will fly past the main belt asteroid (52246) Donaldjohansen on April 20<sup>th</sup>.



## SPHEREx and PUNCH

Two NASA missions were launched into polar orbit on March 11<sup>th</sup> from the Vandenberg Space Force Base, California.

The Spectro-Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer (SPHEREx) observatory is designed to map the entire sky in infrared light (102 individual wavelengths or colors), while the Polarimeter to Unify the Corona and Heliosphere (PUNCH), which consists of four suitcase-sized satellites, is designed to study the Sun's outer atmosphere, or corona, where the solar wind originates and evolves.

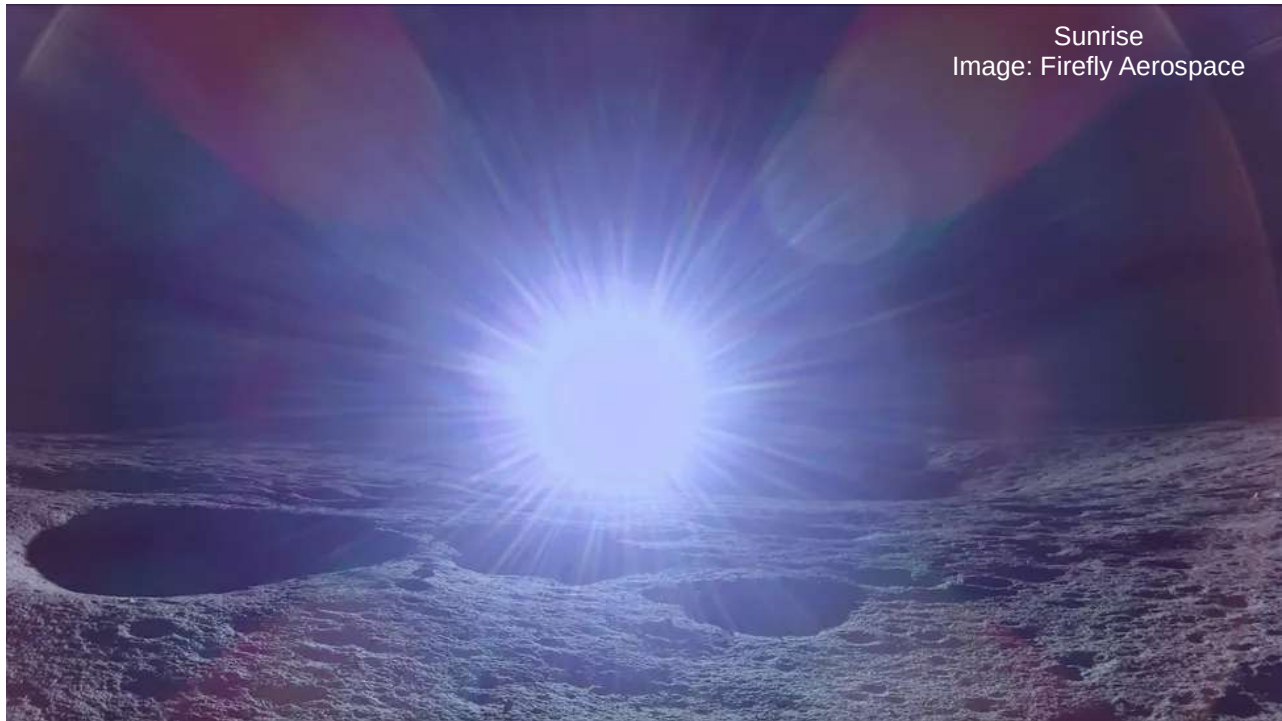


SPHEREx and  
its cone-shaped  
photon shields

Credit: NASA/  
JPL-Caltech

# Lunar Day

A lunation is the period of time between successive new moons (29.531 days). Most of the Moon's battered surface is bathed in sunlight for approximately half that time and in darkness for the remainder. Firefly's Blue Ghost Lander captured sunrise when it landed on March 2<sup>nd</sup>, as well as sunset on March 16<sup>th</sup>, from the Moon's Mare Crisium. The lander is not expected to survive the long lunar night as temperatures drop below -200°F (-130°C), bringing to conclusion a very successful mission.



# Second Saturday Series

## State of the Earth



April 12th

8:00 to 10 pm

## Free Star Party

*John J. McCarthy Observatory*  
Behind the New Milford High School  
860.946.0312  
[www.mccarthyobservatory.org](http://www.mccarthyobservatory.org)



All are welcome to enjoy a brief presentation along with observing\* the sights of the winter night sky through a variety of telescopes!

\*Observing if weather permits



# Contact Information



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