



Red Spider Nebula

Credit: [ESA](#) & Garrelt Mellema (Leiden University, the Netherlands)



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Hello and welcome to the September edition of COSMIC DIMENSIONS, the newsletter that explores the mysteries of the universe and Space Exploration. In this issue, we will dive into topics such as:

- WHAT'S UP IN THE NIGHT SKY FOR SEPTEMBER
- NASA PREPARES FOR HISTORIC ASTEROID SAMPLE DELIVERY
- OCTOBER 2023 ANNULAR ECLIPSE
- CHINA'S YUTU 2 ROVER
- **PURCHASE YOUR ECLIPSE GLASSES**
- and more

Whether you are a curious beginner or a seasoned enthusiast, COSMIC DIMENSIONS will take you on a journey of intrigue and fascination. So begin to explore and enjoy the ride!

- WHAT'S UP IN THE NIGHT SKY FOR SEPTEMBER
- NASA PREPARES FOR HISTORIC ASTEROID SAMPLE DELIVERY
- NASA'S PSYCHE ASTEROID MISSION
- INDIA LANDED A SPACECRAFT ON THE MOON
- OCTOBER 2023 ANNULAR ECLIPSE
- FAMOUS ASTONAUT
- CHINA'S YUTU 2 ROVER
- ISS Fires Thrusters
- **PURCHASE YOUR ECLIPSE GLASSES**
- INTERESTING QUOTES

WHAT'S UP IN THE NIGHT SKY FOR SEPTEMBER

Presented by

Adventure Science Center Nightwatch - Bill McClain

<https://www.youtube.com/watch?v=CU2hfZK2imM>

Tonight's Sky: September

<https://www.youtube.com/watch?v=bCRHVslIFvw>

NASA PREPARES FOR HISTORIC ASTEROID SAMPLE DELIVERY ON SEPT. 24

Mar 24, 2023



Credit: NASA

NASA's **OSIRIS-REx** spacecraft is cruising back to Earth with a sample it collected from the rocky surface of asteroid Bennu. When its sample capsule parachutes down into the Utah desert on Sept. 24, OSIRIS-REx will become the United States' first-ever mission to return an asteroid sample to Earth.

After seven years in space, including a [nail-biting touchdown on Bennu to gather dust and rocks](#), this intrepid mission is about to face one of its biggest challenges yet: deliver the asteroid sample to Earth while protecting it from heat, vibrations, and earthly contaminants. To read more click on the link:

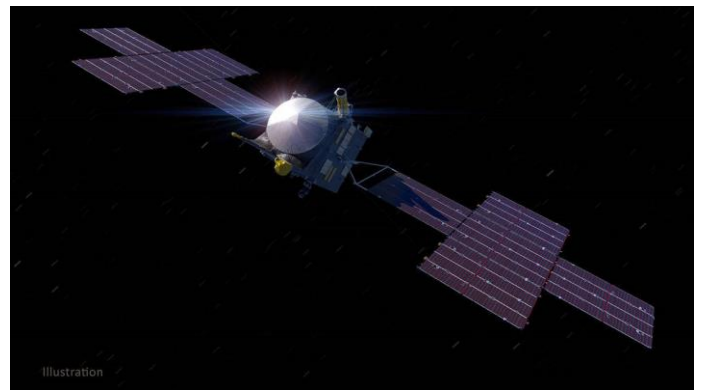
<https://www.nasa.gov/feature/goddard/2023/nasa-prepares-for-osiris-rex-historic-asteroid-sample-delivery-sept-24-2023>

NASA'S PSYCHE ASTEROID MISSION

The Psyche mission is a journey to a unique metal-rich asteroid orbiting the Sun between Mars and Jupiter. What makes the asteroid Psyche unique is that it appears to be the exposed nickel-iron core of an early planet, one of the building blocks of our solar system.

Deep within rocky, terrestrial planets - including Earth - scientists infer the presence of metallic cores, but these lie unreachably far below the planets' rocky mantles and crusts. Because we cannot see or measure Earth's core directly, Psyche offers a unique window into the violent history of collisions and accretion that created terrestrial planets. For more information click the link:

<https://www.jpl.nasa.gov/missions/psyche>



Credits: NASA/JPL-Caltech/ASU

INDIA LANDED A SPACECRAFT ON THE MOON

By Jackie Wattles, Manveena Suri and Vedika Sud, CNN August 24, 2023



Chandrayaan-3's rover Pragyan – Image credit: ISRO

India has landed its Chandrayaan-3 spacecraft on the moon, becoming only the fourth nation ever to accomplish such a feat.

The mission could cement India's status as a global superpower in space. Previously, only the United States, China and the former Soviet Union have completed soft landings on the lunar surface.

Chandrayaan-3's landing site is also closer to the moon's south pole than any other spacecraft in history has ventured. The south pole region is considered an area of key scientific and strategic interest for spacefaring nations, as scientists believe the region to be home to [water ice](#) deposits. See the link below for more information.

<https://www.cnn.com/2023/08/23/world/chandrayaan-3-lunar-landing-attempt-scni/index.html>

OCTOBER 2023 ANNULAR ECLIPSE

(I am repeating this article if you missed it the last month issue)



The October 2023 annular eclipse is a rare and spectacular event that will cross North, Central, and South America on **Saturday, October 14, 2023**. An annular eclipse occurs when the Moon is too far from the Earth to completely cover the Sun, leaving a bright ring of light around the dark disk of the Moon. [This is also known as the “ring of fire” phenomenon¹.](#)

The path of annularity, where the ring of fire is visible, will start in Oregon at **9:13 a.m. PDT** and end in Texas at **12:03 p.m. CDT**. [It will also pass over parts of California, Nevada, Utah, New Mexico, Mexico, Guatemala, Belize, Honduras, Nicaragua, Panama, Colombia, and Brazil¹².](#) [The duration of annularity will vary from place to place, but the maximum will be about 4 minutes and 28 seconds in Colombia².](#)

Outside the path of annularity, a partial solar eclipse will be visible in all 48 contiguous U.S. [states plus Alaska¹](#). A partial eclipse occurs when the Moon covers only a part of the Sun. The degree of partiality will depend on how close you are to the path of annularity. [For example, in Seattle, Washington, the Moon will cover about 40% of the Sun's diameter at maximum eclipse².](#) [To watch the annular or partial eclipse safely, you need to use specialized eye protection designed for solar viewing or an indirect viewing method such as a pinhole projector¹.](#) You should never look directly at the Sun without proper protection as it can cause permanent eye damage or blindness.

[Some of the best locations to see the October 2023 annular eclipse are³:](#)

- Crater Lake National Park, Oregon: The park offers stunning views of the deepest lake in the U.S. and the surrounding volcanic landscape. The annular eclipse will occur at **9:18 a.m. PDT** and last for about **2 minutes and 10 seconds**.
- Grand Canyon National Park, Arizona: The park is one of the most iconic natural wonders in the world and a UNESCO World Heritage Site. The annular eclipse will occur at **10:29 a.m. MDT** and last for about **3 minutes and 6 seconds**.
- Albuquerque International Balloon Fiesta, New Mexico: The fiesta is the largest hot air balloon festival in the world and attracts hundreds of thousands of visitors every year. The annular eclipse will occur at **10:35 a.m. MDT** and last for about **3 minutes and 51 seconds**. [The fiesta will also host a special “eclipse glow” event where balloons will light up in sync with the eclipse⁴.](#)
- Big Bend National Park, Texas: The park is home to diverse ecosystems, wildlife, and geological features. It is also one of the darkest places in the U.S., making it ideal for stargazing. The annular eclipse will occur at **11:54 a.m. CDT** and last for about **4 minutes and 13 seconds**.
- Medellin, Colombia: The city is known for its cultural vibrancy, innovation, and social transformation. It is also close to the point of greatest eclipse where the ring of fire will be widest and longest. The annular eclipse will occur at **1:32 p.m. COT** and last for about **4 minutes and 28 seconds**.

I hope this information helps you plan your eclipse viewing experience. If you want to learn more about eclipses or find out where and when to see them in your location, you can visit these websites:

- <https://solarsystem.nasa.gov/eclipses/2023/oct-14-annular/>
- <https://www.greatamericaneclipse.com/october-14-2023>
- <https://www.timeanddate.com/eclipse/solar/2023-october-14>

In April 2024 there will be a total solar eclipse which I was going to discuss in this month's issue but will do it in the October issue.

👉 👉 👉 Don't forget to purchase your eclipse glasses to view the October 2023 and April 2024 solar eclipses

To view the upcoming eclipses safely there are many products available. Click on the link below to see them. **This is an affiliate link which means if you click on it and purchase any items, I will receive an affiliate commission at no extra cost to you.** This commission helps support my education programs.

https://www.eclipseglasses.com?sca_ref=4135201.w76xb24WqN

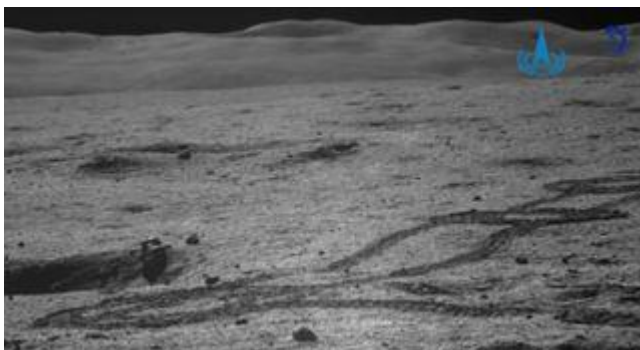
ROBERT LAWRENCE: FIRST AFRICAN-AMERICAN ASTRONAUT

The Manned Orbiting Laboratory (MOL) was a joint project of the US Air Force (USAF) and the National Reconnaissance Office to obtain high-resolution photographic imagery of America's Cold War adversaries. Authorized in August 1965, the MOL Program envisioned a series of mini-space stations in low polar Earth orbit, occupied by 2-man crews for 30 days at a time, launching and returning to Earth aboard modified Gemini capsules.

The USAF selected Maj. Robert H. Lawrence, Jr., on June 30, 1967, as a member of the third group of aerospace research pilots for the MOL Program. Lawrence thus became the first African-American to be selected as an astronaut by any national space program. Of the significance of his selection Lawrence said with his typical modesty, "This is nothing dramatic. It's just a normal progression. I've been very fortunate." To learn more about this famous man click the link: <https://www.nasa.gov/feature/robert-lawrence-first-african-american-astronaut>



USAF Maj. Robert H. Lawrence (second from left) with his fellow MOL Group 3 astronauts Lt. Col. Robert T. Herres, Maj. Donald H. Peterson and Maj. James A. Abrahamson.
Credits: U.S. Air Force



Winding tracks made by China's Yutu 2 moon rover in the regolith of Von Kármán crater, imaged in January 2023. (Image credit: CNSA/CLEP)

CHINA'S YUTU 2 ROVER REVEALS DEEP LAYERS BELOW FAR SIDE OF THE MOON

By Andrew Jones August 25, 2023

A team of scientists have put together an image of the layers beneath the surface of the far side of the moon using data from China's Yutu 2 rover.

The Chang'e 4 lander and rover touched down on the moon's far side on Jan. 2, 2019, making the pair the first spacecraft to ever soft-land on the side of [the moon](#) that never faces Earth.

The solar-powered [Yutu 2 rover](#) has been exploring the floor of the 115-mile-wide (186 kilometers) Von Kármán Crater ever since. Data from its two-channel ground penetrating radar (GPR) is providing a deeper look below the surface, providing a glimpse into the local geological history. The instrument pings the ground with radio waves and detects echoes to help build a picture of the internal structure below. To read more click on the link: https://www.space.com/china-chang-e-4-yutu-2-rover-moon-subsurface-layers?utm_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm

SPACE PIC OF THE MONTH



Flocculent spiral NGC 2841

Credit: NASA, ESA and the Hubble Heritage (STScI/AURA)-ESA/Hubble Collaboration Acknowledgment: M. Crockett and S. Kaviraj (Oxford University, UK), R. O'Connell (University of Virginia), B. Whitmore (STScI)

ISS FIRES THRUSTERS TO AVOID ONCOMING SPACE JUNK

By Elizabeth Howell August 25, 2023

Space debris flying towards the International Space Station forced an evasive maneuver Thursday (Aug. 24).

A Russian module on the International Space Station (ISS) turned on around 11 a.m. EDT (1500 GMT or 6 p.m. in Moscow) to move the orbiting complex away from space junk. NASA confirmed the maneuver via e-mail.



The International Space Station in orbit above Earth. (Image credit: NASA)

"On Thursday, the International Space Station's Zvezda service module engines were fired for 21.5 seconds ... to maneuver the complex away from the predicted track of an orbital debris fragment," NASA officials wrote. For more information click the link: <https://www.space.com/international-space-station-debris-avoidance-maneuver-august-2023?utm>

☞ ☞ ☞ *Don't forget to purchase your eclipse glasses to view the October 2023 and April 2024 solar eclipses*

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https://www.eclipseglasses.com?sca_ref=4135201.w76xb24WgN

INTERESTING QUOTES

"We are limited only by our imagination and our will to act." -- **Ron Garan**

"What everyone in the astronaut corps shares in common is not gender or ethnic background, but motivation, perseverance, and desire — the desire to participate in a voyage of discovery." -- **Ellen Ochoa**

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