Global Space Missions: 2023 & 2024

Why in news?

Space missions reach new heights in 2023 as India sticks lunar landing, NASA studies asteroids, and SpaceX iterates at warp speed and 2024 is shaping up to be another exciting year for space exploration.

What are significant global spaceflights in 2023?

Mission	Features
OSIRIS-REx (NASA)	• It studied the asteroid Bennu. • It returned a sample from Bennu which is is thought to be a "time capsule" from the birth of our solar system.
Psyche (NASA)	• Aim is to explore the origin of planetary cores. • Psyche is believed to have a high metal content.
Shenzhou 16 (China)	• Send 3 humans to Tiangong space station. • It created a world record with 17 humans in orbit, 6 aboard Tiangong and 11 on the ISS.
Chandrayaan-3 (ISRO)	• It made a soft landing on the Moon. • India became the 4th country in the world to soft-land a spacecraft on the Moon. • 1st spacecraft to land near the South Pole of the Moon.
Aditya L1 (ISRO)	• It is India's 1st mission to study the Sun and space weather. • It will travel around 1.5 million kilometres away from the planet to the 1st Lagrange point, or L1, between the Sun and the Earth.

What are important global space missions in 2024?

Mission	Objectives	Key points
NASA		
Europa Clipper	To *explore Europa*, Jupiter's moon.	It will study the icy shell, its surface's geology and its subsurface ocean and will also look for active geysers.
Artemis II	To send *4 humans to the Moon* for 10 days.	It includes ***the 1st woman and the 1st person of colour*** to the moon.
VIPER	To survey *water at the south pole of the Moon.*	Volatiles Investigating Polar Exploration Rover, *a robot* the size of a golf cart to search for volatiles.

Lunar Trailblazer and PRIME-1	To look for *water on the Moon* with PRIME-1 to drill into the Moon.	It will *orbit the Moon*, measuring the temperature of the surface and mapping out the locations of water molecules across the globe.
JAXA (Japan Space Agency)		
MMX	To study the *Mars moon, Phobos and Deimos.*	MMX stands for *Martian Moon eXploration.*
ESA (European Space Agency)		
Hera	To study to the *Didymos-Dimorphos asteroid system*.	It will study physical properties of the asteroids.

Quick Facts

DART mission

NASA's mission to the Didymos-Dimorphos asteroid system in 2022, it collided with Dimorphos with such force that it actually changed its orbit to test a planetary defense technique called kinetic impact.

Europa

It is a moon of Jupiter that is slightly smaller than Earth's Moon, with a surface made of ice and it likely harbours a saltwater ocean.

Volatiles

They are molecules that easily vaporize, like water and carbon dioxide, at lunar temperatures and they could provide resources for future human exploration on the Moon.

SIMPLEx

It is NASA's small, low-cost planetary missions which stands for Small, Innovative Missions for PLanetary Exploration.

Luna-25

Russia's 1st independent lunar mission crashed onto the lunar surface as it attempted to become the 1st mission to land near the moon's South Pole.

The Hakuto mission

The 1st privately-led lunar mission (Tokyo based) in history, also crashed onto the moon after spending nearly 5 months in space.

References

1. The Indian Express| Spaceflights in 2023
2. Down To Earth| Global Space Missions of 2024

