

Jupiter Icy Moons Explorer (JUICE) mission

April 13, 2023

In news— The European Space Agency (ESA) is all set to launch the Jupiter Icy Moons Explorer, or Juice, mission from its spaceport in French Guiana on an Ariane 5 launcher.

What is Juice mission?

- The mission will **launch to the biggest planet in the solar system in search of signs of life on its three biggest moons.**
- During its voyage, the spacecraft will **complete fly-bys of Venus, Earth, and the Earth-Moon system** to arrive at its destination in 2031.
- It will **observe Jupiter and its three largest moons: Callisto, Europa, and, in particular, Ganymede.**
- The moon's buried oceans could tell us whether life can arise in different environments across the cosmos.
- The **objective is to explore the moons for habitability and to explore if it is possible to live around giants.**
- The spacecraft will characterise the oceans, icy shells, compositions, surfaces, environments, and activity of Ganymede, Europa, and Callisto and the wider Jupiter system, characterising Jupiter's atmosphere, magnetic environment, ring system, and other satellites.
- After its first arrival in the Jovian system, the **spacecraft will go on to spend many months orbiting Jupiter, completing fly-bys of Europa, Ganymede, and Callisto,** and finally conducting an orbital tour of Ganymede.
- The spacecraft will be **powered by 10 solar panels** that will be deployed as two distinctive cross-shaped arrays. These total an area of about 85 square meters.
- Juice has been **equipped with 0 state-of-the-art**

instruments, comprising the most powerful remote sensing, geophysical, and in situ payload complement ever flown to the outer Solar System.

- The **mission has a remote sensing package** that includes imaging and spectral imaging capabilities, **a geophysical package that comprises a laser altimeter (GALA)**, and a **radar sounder (RIME)** for exploring the moon's surface and subsurface.
- The in situ package contains a powerful suite of **instruments to study the particle environment (PEP)**, a **magnetometer (J-MAG)**, and a **radio and plasma wave instrument (RPWI)**.
- Juice has a **2.5-meter-long High Gain Antenna to talk to Earth**.

Further

reading:

<https://journalsofindia.com/jupiter-is-the-planet-with-most-moons-as-twelve-new-moons-discovered/>