

Hayabusa-2 probe

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In news- Japan's Hayabusa 2 has found that asteroids may have brought water to Earth.

Key findings-

- Scientists from Japan suggest that **water and organic materials might have been brought to our planet from the outer edges of the solar system.**
- **The scientists made the hypothesis after analysing samples from the asteroid Ryugu,** collected by the Japan Aerospace Exploration Agency's (JAXA) Hayabusa-2 probe, which had brought 5.4 grams of rocks and dust from the asteroid to Earth in December 2020.
- The current study stated that **"Volatile and organic-rich C-type asteroids may have been one of the main sources of Earth's water,"** which is essential for the emergence of life.
- While the delivery of volatiles (water and organics) to Earth has been a subject of debate amongst scientists, the materials found in the "Ryugu particles, identified in this study, probably represent one important source of volatiles."
- **The study claimed that the organic material collected probably originated from the fringes of the Solar System,** but was "unlikely to be the only source of volatiles delivered to the early Earth".
- While the composition of particles collected from Ryugu closely matches water on Earth, the study notes there were slight differences, leading scientists to hypothesise that our planet's water might have also originated from places other than asteroids.

Hayabusa 2 probe-

- The Hayabusa-2 mission was **launched in December 2014**

when the spacecraft was sent on a six-year voyage to study the asteroid Ryugu.

- The spacecraft, which was approximately the size of a refrigerator, travelled more than 5 billion kilometres during its journey.
- The spacecraft **arrived at the asteroid in mid-2018** after which it deployed two rovers and a small lander onto the surface.
- In 2019 it fired an impactor into the asteroid's surface to create an artificial crater with a diameter of a little more than 10 metres, which allowed it to collect the samples.
- **In December 2020, Hayabusa-2 delivered a small capsule that contained the rock and dust samples** when it was 220,000 km from the Earth's atmosphere, which safely landed in the South Australian outback.
- Hayabasu2's predecessor, the Hayabusa mission, brought back samples from the asteroid Itokawa in 2010.