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News: ISRO likely to push Venus mission ‘Shukrayaan I’ to 2031

- Shukrayaan I, was expected to be launched in December 2024.
- The idea was born in 2012. Five years later, ISRO commenced preliminary studies after the Department of Space received a 23% increase in the 2017-18 Budget.
- The organisation sought payload proposals from research institutes in April 2017.

Venus Mission by India (Shukrayaan)

- Shukrayaan is the **planned Venus mission by Indian Space Research Organisation (ISRO) to be launched by December 2024.**
- The aim of the mission is to **study Venus’ atmosphere, which is toxic and corrosive in nature as clouds of sulfuric acid cover the planet.**

Key Objectives of the Mission

- **Investigation of surface process and shallow subsurface stratigraphy.**
- Until now, no prior observation of the sub-surface of Venus has been done.

- Stratigraphy is a **branch of geology in which rock layers and layering are studied.**
- **Study of the structure, composition and dynamics of the atmosphere.**
- **Investigation of Solar wind interaction with Venusian ionosphere.**

Significance of the Mission

- It will help **to learn how Earth-like planets evolve** and what conditions exist on Earth-sized exoplanets (Planets that orbit a star other than our sun).
- It will help in **modelling Earth's climate and serves as a cautionary tale on how dramatically a planet's climate can change.**

Challenges for the Mission

- Venus offers different challenges compared to Mars, given the **thick atmosphere and surface activity, which make it a complex planet.**
- In order to have a deeper understanding, the **instruments need to go deep through the atmosphere.**
- One of the instruments the space agency is planning to use on the spacecraft is a high resolution Synthetic Aperture Radar (SAR) that would examine Venus' surface, despite the clouds around the planet, which lowers visibility.

- It refers to a technique for producing high-resolution images. Because of the precision, the radar can penetrate clouds and darkness, which means that it can collect data day and night in any weather.