Nisar Mission

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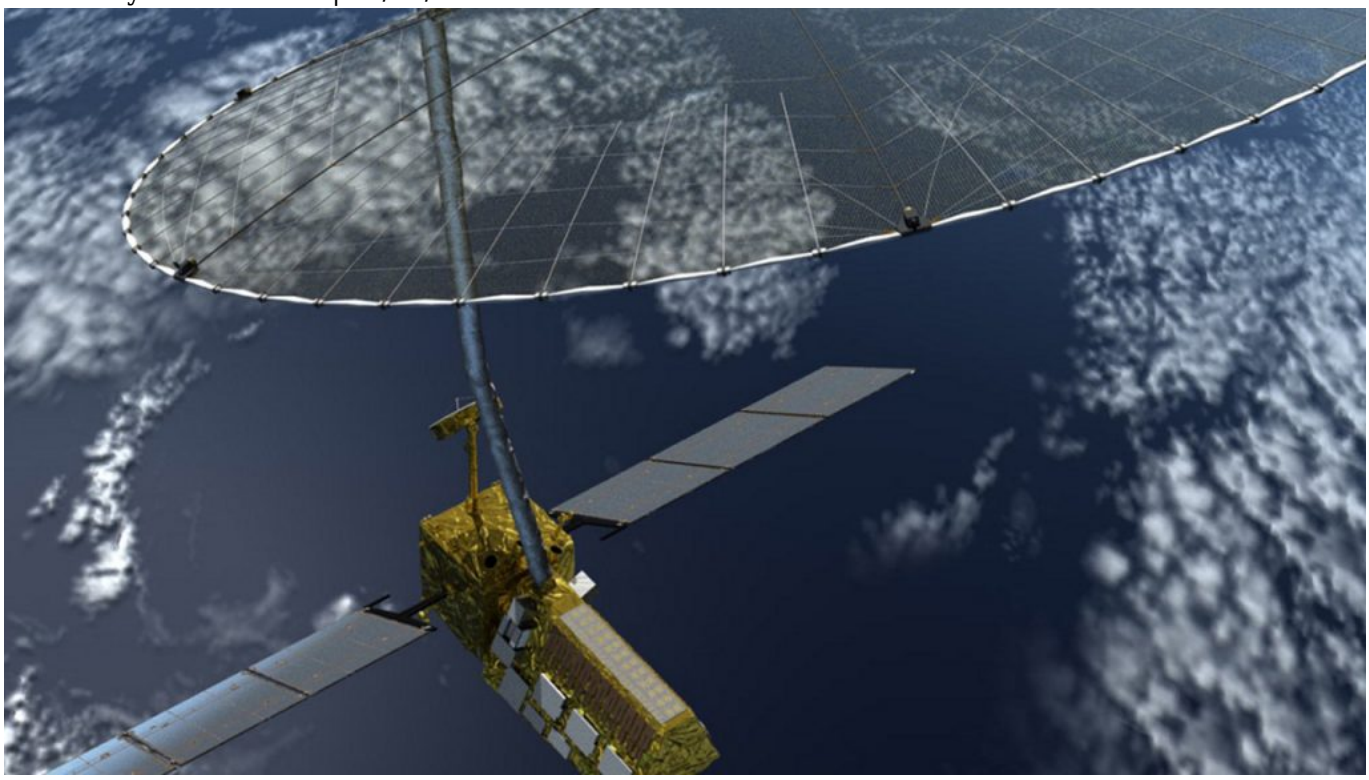

Context- The NISAR satellite is all set to arrive in India as the satellite got a send-off ceremony at NASA recently.

Key Highlights

- The SUV-size satellite will be shipped to India in a special cargo container flight in February 2023 for a possible launch in 2024 from Satish Dhawan Space Centre in Andhra Pradesh.

NISAR

- NISAR is an Earth-observation satellite which stands for (NASA-ISRO Synthetic Aperture Radar).
- It is Jointly developed by the **National Aeronautics and Space Administration (NASA)** and the Indian Space Research Organisation under a partnership agreement signed in 2014.
- It will scan the globe every 12 days over the course of its three-year mission of imaging the Earth's land, ice sheets and sea ice in order to give an unprecedented view of the planet.
- **Features**:
    - The 2,800 kilogram satellite is a dual-frequency imaging radar satellite.
    - While NASA has provided the L-band radar, GPS, a high-capacity solid-state recorder to store data, and a payload data subsystem, ISRO has provided the S-band radar, the GSLV launch system as well as spacecraft.

    - Another component of the satellite is its large 39-foot stationary antenna reflector.
- The reflector will be mainly used to focus “the radar signals emitted and received by the upward-facing feed on the instrument structure.

Objectives of the Mission

- NISAR will observe subtle changes in Earth’s surfaces, helping researchers better understand the reasons and consequences of such phenomena.
- It will spot warning signs of natural disasters, including volcanic eruptions, earthquakes and landslides.
- The satellite will measure groundwater levels, track flow rates of glaciers and ice sheets, and monitor the planet’s forest and agricultural regions, which can improve our understanding of carbon exchange.
- ISRO will use NISAR for several purposes including agricultural mapping, and monitoring of glaciers in the Himalayas, landslide-prone areas and changes in the coastline.
- By using synthetic aperture radar (SAR), NISAR will produce high-resolution images.
- **SAR** is capable of penetrating clouds and can collect data day and night regardless of the weather conditions.