



KAMARAJ IAS ACADEMY
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NISAR

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Why is in news? NASA hands over NISAR satellite to ISRO

NASA-ISRO Synthetic Aperture Radar (NISAR) is a **Low Earth Orbit (LEO) observatory** being **jointly developed by NASA and ISRO**.

NISAR has been built by space agencies of the US and India under a partnership agreement signed in **2014**.

The NISAR is **2,800 kilograms satellite**, will be the **first radar of its kind in space** to **systematically map Earth**, using two different radar frequencies (L-band and S-band) to measure changes in our planet's surface less than a centimeter across.

NISAR will map the entire globe in 12 days.

It provide spatially and temporally consistent data for **understanding changes in Earth's ecosystems, ice mass, vegetation biomass, sea level rise, ground water and natural hazards including earthquakes, tsunamis, volcanoes and landslides.**

NISAR carries **L and S dual band Synthetic Aperture Radar (SAR)**, which operates with **Sweep SAR technique** to achieve large swath with high resolution data.

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.

This **flagship partnership** would have major contributions from both agencies.

NASA is responsible for providing the **L-Band SAR payload system and the GPS System** in which the **ISRO supplied S-Band SAR payload** and both these SAR systems will make use of a large size (about 12m diameter) common unfurl able reflector antenna.

The NISAR Observatory will be **launched from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota** on the southeast coast of the Indian peninsula, on the **GSLV expendable launch vehicle** contributed by **ISRO** by **2024**.

The satellite will **operate for a minimum of three years.**

NASA requires the L-band radar for its global science operations for at least three years. Meanwhile, ISRO will utilise the S-band radar for a minimum of five years.

According to NASA, another important component of the satellite is its large **39-foot stationary antenna reflector**. Made of a **gold-plated wire mesh**, the reflector will be used to focus "the radar signals emitted and received by the upward-facing feed on the instrument structure".

ISRO will use NISAR for a variety of purposes including agricultural mapping, and monitoring of glaciers in the Himalayas, landslide-prone areas and changes in the coastline.

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