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News: NISAR Satellite

- The NASA-ISRO Synthetic Aperture Radar (NISAR) satellite, a collaborative effort between National Aeronautics and Space Administration (NASA) and Indian Space Research Organisation (ISRO), is scheduled to launch in early 2025.

NASA ISRO Synthetic Aperture Radar – NISAR

- **NASA and ISRO are jointly developing** a satellite called NASA ISRO Synthetic Aperture Radar (NISAR) under a partnership agreement signed in 2014, which will **detect movements of the planet's surface as small as 0.4 inches** over areas about half the size of a tennis court.
- The mission is supposed to be **launched by early 2025** and is expected to **operate for 3 years at a Low Earth Orbit (LEO)**.
- 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 to give an unprecedented view of the planet.

- NISAR 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.
- It will be a 2,800 kilogram satellite consisting of both L-band and S-band Synthetic Aperture Radar (SAR) instruments, which makes it a dual-frequency imaging radar satellite.

Aim

- Tracking subtle changes in the Earth's surface.
- Spotting warning signs of imminent volcanic eruptions.
- Helping to monitor groundwater supplies.
- Tracking the rate at which ice sheets are melting.

Expected Benefits

- NISAR's data can help people worldwide better manage natural resources and hazards, as well as providing information for scientists to better understand the effects and pace of climate change.
- The data will allow for a better understanding of the causes and consequences of land surface changes.

Applications of NISAR

- **Comprehensive Monitoring:** NISAR captures Earth's surface movements (horizontal & vertical) with high clarity, functioning day and night through clouds.
- **Disaster Mitigation:** Tracks seismic activities, landslides, volcanic events, and ice sheet shifts for disaster impact reduction.
- **Environmental Tracking:** Monitors forests, wetlands, farmlands, and deforestation to support sustainable resource management.
- **Infrastructure Stability:** Assesses infrastructure, monitors urbanisation, and detects oil spills for better management.
- **Data-Driven Decision-Making:** Supports understanding tectonic movements and promotes informed, sustainable, and economic use of resources.