

NASA – ISRO Synthetic Aperture Radar (NISAR)

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In News: Indian Space Research Organisation (ISRO) has completed development of a Synthetic Aperture Radar (SAR) capable of producing extremely high-resolution images for a joint earth observation satellite mission with the U.S. space agency National Aeronautics and Space Administration (NASA).

About NISAR

- NASA-ISRO SAR (NISAR) is a joint collaboration for a dual-frequency L and S-band SAR for earth observation.
- NISAR will be the first satellite mission to use two different radar frequencies (L-band and S-band) to measure changes in our planet's surface less than a centimetre across
- NASA and Bengaluru-headquartered ISRO signed a partnership on September 30, 2014, to collaborate on and launch NISAR.
- The mission is targeted to launch in early 2022 from ISRO's Sriharikota spaceport in Andhra Pradesh's Nellore district, about 100km north of Chennai.
- NASA is providing the mission's L-band SAR, a high-rate communication subsystem for science data, GPS receivers, a solid-state recorder and payload data subsystem.
- ISRO is providing the spacecraft bus, the S-band radar, the launch vehicle and associated launch services for the mission, whose goal is to make global measurements of the causes and consequences of land surface changes using advanced radar imaging.
- NASA requires a minimum of three years of global science operations with the L-band radar, and ISRO requires five years of operations with the S-band radar over specified target areas in India and the Southern Ocean

How will NISAR help ?

- NISAR would provide a means of disentangling highly spatial and temporally complex processes ranging from ecosystem disturbances to ice sheet collapses and natural hazards including earthquakes, tsunamis, volcanoes and landslides
- NASA added that the mission will measure Earth's changing ecosystems, dynamic surfaces and ice masses, providing information about biomass, natural hazards, sea level rise and groundwater, and will support a host of other applications.
- NISAR will observe Earth's land and ice-covered surfaces globally with 12-day regularity on ascending and descending passes, sampling Earth on average every six days for a baseline three-year mission.
- This allows the mission to observe a wide range of Earth processes, from the flow rates of glaciers and ice sheets to the dynamics of earthquakes and volcanoes.