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US and India Launch Advanced Earth-Mapping Satellite to Monitor Natural Disasters

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The United States and India have launched a joint Earth-observing satellite to track subtle changes in the planet's surface, aiming to enhance monitoring of natural disasters such as floods, landslides, and volcanic eruptions.

The mission, involving the United States' National Aeronautics and Space Administration (NASA) and the Indian Space Research Organisation (ISRO), features the NASA-ISRO Synthetic Aperture Radar (NISAR) satellite. NISAR is designed to detect movements as small as 1 centimetre on the Earth's surface, orbiting at a height of 747 kilometres. The £1 billion (USD \$1.3 billion) mission is described as the first of its kind.

Launched from the Satish Dhawan Space Centre on India's southeastern coast, NISAR will monitor key geological activities, including glacial melting, seismic shifts, and land deformation. It will circle the Earth's poles and scan every 12 days, capturing radar images in high resolution regardless of weather or lighting conditions.

According to Mark Simons, NISAR's geoscience lead, while the satellite cannot predict earthquakes, it will improve understanding of seismic risk zones. NASA's Earth Science Director Karen St. Germain called it "the most sophisticated radar we've ever built."

NISAR is the first radar satellite to operate using two frequencies: NASA provided the L-band radar, while ISRO developed the S-band system. Both work in tandem to provide detailed global imagery, supporting disaster response, agricultural planning, and environmental monitoring.

"This achievement is not limited to two nations," said ISRO Chairman V. Narayanan. "The entire world stands to benefit from the scientific data NISAR will generate."

NASA Deputy Associate Administrator Casey Swails described the launch as a powerful example of international collaboration, while India's Minister of Science and Technology, Jitendra Singh, posted "Congratulations India!" on X following the successful launch.

India's space programme continues to advance on the global stage, with milestones including a Mars orbiter in 2014 and a successful lunar rover landing in 2023. More recently, Shubhanshu Shukla became the first Indian to reach the International Space Station.