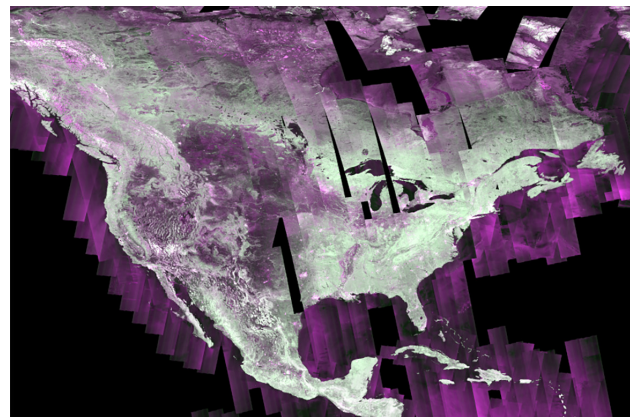


High-Resolution North America NISAR Data

Satellite Needs Working Group - Solution Fact Sheet

The NASA/Indian Space Research Organization (ISRO) Synthetic Aperture Radar (NISAR) is the first satellite mission to collect dual-frequency SAR (L-band at 24 cm wavelength and S-band at 9 cm) to capture highly detailed measurements of changes in Earth's surface including movements as small as a centimeter. It will monitor the Earth's changing ecosystems, dynamic surfaces, and ice masses using advanced radar imaging, providing critical information about biomass, natural hazards, sea level rise, and groundwater, which are paramount for monitoring the changing climate. The Satellite Needs Working Group (SNWG) enabled the NISAR mission to increase the data collection volume by 9 Tbits/day with the installation of a new downlink station at NASA's Wallops Flight Facility in Virginia. The new downlink station will increase NISAR's image resolution from 6.25 m x 5 m to 3.12 m x 5 m over North America (Alaska and Canada to Panama), Hawaii and U.S. Territories, and expand the NISAR coverage area to include ocean data offshore the U.S. and Hawaii, and soil moisture data over the Sahara. The NISAR launch is currently planned for early 2025, and data will be available three months after launch.



This image of North America is a piece of a global mosaic of over 270,000 individual images from the Copernicus Sentinel-1 radar satellite. The colors are from different polarized radar signals sent from and bounced back to the satellite. Green colors indicate vegetation, purple colors show areas with bare Earth or that have thin vegetation such as deserts and urban environments, and white areas are either densely vegetated or ice-covered.

Credit: OPERA Jet Propulsion Laboratory

Societal Benefit

- Measures movements in the Earth's surface associated with natural hazards to inform response decisions
- Tracks changes in the Earth's surface associated with groundwater withdrawal and hydrocarbon production to inform on subsidence and sea level rise
- Enables high-resolution, cloud-penetrating imaging to better support monitoring of a range of environmental observables including biomass, surface water extent, and various ecosystem disturbances
- Collects data over coastal areas for monitoring ocean winds and waves associated with hurricanes and atmospheric rivers to aid in weather forecasting and understanding marine hazards
- Enables the production of high-resolution soil moisture products to inform on crop yields and hazards, food demands, forest fire prediction, water supply management, and other natural resource activities



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Platform	NASA-ISRO Synthetic Aperture Radar (NISAR)	
Instrument	24 cm wavelength L-band Synthetic Aperture Radar (L-SAR)	9 cm wavelength S-band Synthetic Aperture Radar (S-SAR)
Sensor Type	Synthetic Aperture Radar (SAR)	
Processing Level	0 - 2 (from unprocessed instrument data to derived geophysical variables)	
Temporal Coverage	Based on NISAR availability (estimated NISAR launch: early 2025)	
Temporal Frequency	6 - 12 days	
Latency	72 hours	
Spatial Coverage	North America (Alaska/Canada to Panama, Hawaii and U.S. Territories)	Western U.S.
Spatial Resolution	3.12 m x 5 m	
Data Format	HDF5	

How do I access this data?

High-resolution North America NISAR data is not yet available. Once NISAR is launched, data will be distributed through NASA's ASF. Sample NISAR data products are available and can be downloaded through NASA's JPL.



NASA ASF



Sample NISAR products

Where can I find more information?

More information on the high-resolution North America NISAR data is available on this solution's webpage and the official NISAR website.



High-Resolution NISAR Webpage



NISAR Project Website

Background Image Credit: USFS

