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Hazard assessment with SAR – What to expect from the NISAR mission

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NASA's NISAR mission, expected to launch in early 2023, will provide SAR observations of nearly all Earth's land surfaces and selected ocean and sea ice areas on both ascending and descending orbits at a 12-day orbit repeat interval. In this talk, mission plans to support both sustained and event-driven observations for hazard assessment are presented. The NISAR satellite will carry both L- and S-band instruments, with the L-band instrument providing the near-global coverage and the S-band acquisitions concentrated in southern Asia and the polar regions. In addition, the mission system will be capable of accepting and implementing requests for rapid processing to support disaster response. Most land observations are part of the standard observation plan, so requested scenes will be marked for rapid processing and delivery, with the goal of providing information within hours of acquisition. In the event that new acquisitions are needed, e.g., over the ocean as major tropical storms develop, the instrument can be retasked to acquire new scenes.

In addition, we present information about efforts on the part of the mission to enable realistic simulation of NISAR's capabilities across a broad range of science and applications topics. To that end, L-band quad-polarimetric and repeat pass SAR data acquired with the airborne UAVSAR instrument, which has ~3-m single look resolution, has been processed to be 'NISAR-like,' with the noise level and spatial resolution of NISAR's planned acquisition modes. To date, more than 400 NISAR-like products from 70 different UAVSAR scenes acquired in North America and Greenland have been produced, and the UAVSAR project is continuing to generate more products specifically to support hazard assessment for fires and landslides. Examples of anticipated NISAR performance will be shown with comparison to results using the full resolution UAVSAR products.

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