

**Opportunity Title:** Sea ice studies using satellite SAR and multi-sensor data

**Opportunity Reference Code:** 0260-NPP-NOV23-JPL-EarthSci

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0260-NPP-NOV23-JPL-EarthSci

**How to Apply** All applications must be submitted in [Zintellect](#)

**Application Deadline** 11/1/2023 6:00:59 PM Eastern Time Zone

**Description Description:**

Research opportunities exist within a science program in the upcoming NISAR mission (<https://nisar.jpl.nasa.gov/>) to derive and analyze sea ice motion products based on satellite SAR time-series observations in the Arctic and Southern Oceans. A primary Cryosphere science requirement in the NISAR mission is to improve the understanding of the circulation and dynamical change taking place in the sea ice covers of the Arctic and Southern Ocean through the derivation of ice motion kinematics obtained from extended time series of repeat SAR imaging. The large-scale circulation of sea ice determines the advective portion of the ice balance which provides a velocity boundary condition on the ocean surface. The small-scale motion describes the interaction of individual floes, aggregation of floes, and the deformation component that results in openings and ridge building, the dynamic portion of the sea ice thickness distribution that will be provided by both NISAR and Sentinel-1 measurements. These observations will contribute to the continuation of the record of SAR-derived sea ice motion observations of the Arctic Ocean and the initial stages of such records for the Southern Ocean sea ice cover. These records are crucial for understanding the changes in sea ice including mass loss forced by climate change, calibration/validation of model simulations, and assimilation in models. Research opportunities exist to develop analysis methods to utilize and combine sea ice motion products from multiple SAR sensors and passive microwave that will go towards deriving daily interpolated motion products; and to utilize these products within a broad spectrum of research topics. These topics may include the impact of deformation and volume change to satellite-derived sea ice thickness observations, the impact of circulation changes on floe interactions and landfast ice dynamics including the use of INSAR, and changes in circulation related to changing atmospheric forcing and ocean warming. [https://nisar.jpl.nasa.gov/system/documents/files/26\\_NISAR\\_FINAL\\_96-19.pdf](https://nisar.jpl.nasa.gov/system/documents/files/26_NISAR_FINAL_96-19.pdf)

**Field of Science:** Earth Science

**Advisors:**

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**Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States.** A complete list of Designated Countries can be found at:

<https://www.nasa.gov/oiir/export-control>.

Eligibility is currently open to:



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- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

**Eligibility  
Requirements**

- **Degree:** Doctoral Degree.