Opportunity Title: Antarctic-wide fluctuations in ice shelf and ice sheet flow
Opportunity Reference Code: 0174-NPP-NOV23-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0174-NPP-NOV23-JPL-EarthSci

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

Description Antarctic glaciers, ice streams, and ice shelves have thinned and sped up in recent decades in response to enhanced ocean melting, particularly in areas surrounding the Amundsen sea sector of the ice sheet. Despite the intense research in these areas, relatively little is known about changes in Antarctic-wide ice flow at sub-annual timescales. This lack of knowledge stems from a historic paucity of satellite data and limited instrument accuracy with which to resolve higher frequency fluctuations in ice flow. With launch of Landsat-8, Sentinel-1a/b, and Sentinel 2-a/b, and the coming launch of NISAR in 2020, we have entered a new area of near-continuous observations of ice flow from which we can explore high-frequency fluctuations and assess their implication for the sensitivity and future evolution of the ice sheet. Under the supervision of Alex Gardner (Sea Level and Ice Group) and Piyush Agram (Radar Algorithms and Processing Group), the successful candidate will work to develop intelligent and efficient algorithms to extract subtle high-frequency variations (tidal and seasonal) in ice flow from large volumes (10s of TB) of velocity data with varying noise characteristics. The candidate will also contribute toward the further refinement of the velocity measurements themselves, when required. Upon characterizing Antarctic-wide fluctuations in ice flow the candidate will provide geophysical understanding by linking observed fluctuations to ocean tides and ocean melt rates as understood through principles of ice mechanics.

References:

Gardner, A. S., G. Moholdt, T. Scambos, M. Fahnstock, S. Ligtenberg, M. van den Broeke and J. Nilsson (2018). ""Increased West Antarctic and unchanged East Antarctic ice discharge over the last 7 years."" The Cryosphere 12(2): 521-547.

Location:
Jet Propulsion Laboratory
Pasadena, California

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:

- 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.