

Opportunity Title: Remote Sensing of Atmospheric Snow

Opportunity Reference Code: 0095-NPP-NOV23-GSFC-EarthSci

Organization National Aeronautics and Space Administration (NASA)

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

Description Remote sensing of liquid precipitation (rain) has had decades to mature into a robust retrieval product. With the launch of the Global Precipitation Measurement (GPM) Core Observatory satellite, along with other satellite sensors, remotely sensed retrievals of falling snow now have the opportunity to develop into useful products for scientific research and societal benefit. The research project will involve retrieval algorithm enhancement and validation for estimates of atmospheric snow above the melting layer and, especially, snow that falls at the Earth's surface. The research will also include activities such as identifying various ice growth processes (e.g., columnar or planar growth, aggregation, riming) from remote sensing observations. The approaches will be multi-faceted (radar-only, radiometer-only, combined) and will address some of the challenging aspects surrounding retrievals (e.g., melting layer processes, microphysical and radiative properties of frozen particles, vertical velocities, oriented particles and their relationship to polarized radiometer observations). Retrievals will be for satellite radiometers (frequencies from 10 to 183+ GHz), satellite radars (frequencies from Ku, Ka, and W band), and aircraft remote sensors (both active and passive). Validations and improvements to the algorithms will rely on observations and measurements from existing and future satellite, aircraft and ground instrumentation. Radiative transfer and cloud model simulations will also be used in the analysis. Comparisons with other satellite frozen precipitation estimates will be performed. The application and analysis of this research will help define capabilities and sensor requirements for future instruments.

Location:

Goddard Space Flight Center
Greenbelt, Maryland

Field of Science:Earth Science

Advisors:

Ian S. Adams
Ian.S.Adams@nasa.gov
301.614.6285

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.