

Opportunity Title: Next Generation Earth Planetary Boundary Layer Sounding Strategy

Opportunity Reference Code: 0284-NPP-MAR24-GSFC-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0284-NPP-MAR24-GSFC-EarthSci

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

Application Deadline 3/1/2024 6:00:59 PM Eastern Time Zone

Description Description:

The planetary boundary layer (PBL) is the well-mixed shallow atmospheric layer near the surface characterized by vigorous turbulence, which controls the exchanges of heat, moisture, and momentum between the lowest layer of troposphere and Earth's surface. The complexity of the PBL rests in the intertwined nature of the physical processes regulating its evolution. Global Circulation Models (GCMs) struggle in reproducing the observed trends in PBL, with the cloud radiative effect playing the major uncertainty role. This calls for attention in improving the processes influencing the PBL and modulating its long-term trends.

Satellite remote sensing from the current Program of Record has been instrumental in elucidating the role of PBL within the context of the broader, global Earth system. Yet, PBL satellite remote sensing has been impeded by unique challenges, including low information content, poor geophysical constraints, modeling and validation limitations. Due to these issues, remote sensing techniques developed for global applications, often result in inaccurate, poorly constrained estimates of PBL structural and functional dynamics. To this end, the 2017 Decadal Survey has highlighted Earth PBL as a target incubation variable for future exploration, highlighting the need for overcoming the limitation of the current remote sensing techniques, so as to better constrain projections of PBL climate.

Our team's current efforts focus on passive-active inverse method developments (e.g., microwave surface emissivity, passive-active cloud retrievals, etc.) for PBL probing and science investigations (e.g., surface-atmosphere interactions, PBL thermodynamics, PBL cloud feedbacks, etc.) using various data sources, including WHyMSIE, the West₁ cost Hyperspectral Microwave Sensor Intensive Experiment.

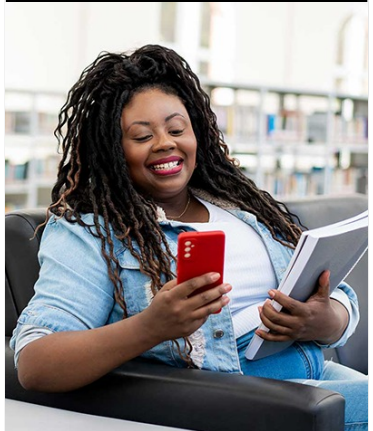
Field of Science: Earth Science

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/oirr/export-control>.



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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

- Qualifications**
1. PhD in Earth Science related disciplines
 2. High programming skills and experience with large volumes of data
 3. Expertise in inverse methods and radiative transfer is a plus.
 4. Expertise in AI/ML and data fusion techniques is a plus.
 5. Familiarity with technology hardware development is a plus

- Eligibility Requirements**
- **Degree:** Doctoral Degree.