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Opportunity Title: Development of enhanced microwave soil moisture retrieval algorithms
Opportunity Reference Code: 0180-NPP-NOV24-GSFC-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0180-NPP-NOV24-GSFC-EarthSci

How to Apply All applications must be submitted in Zintellect

Please visit the NASA Postdoctoral Program website for application instructions and requirements: How to Apply | NASA Postdoctoral Program (orau.org)

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 11/1/2024 6:00:59 PM Eastern Time Zone

Description **About the NASA Postdoctoral Program**

The NASA Postdoctoral Program (NPP) offers unique research opportunities to highly-talented U.S. and non-U.S. scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

Soil moisture is a key hydrologic variable that controls the Earth's water and energy balance. L-band microwave observations provide the optimum measurement to estimate surface soil moisture remotely. Passive microwave instruments provide all-weather day-night observations. Passive microwave observations from NASA's Soil Moisture Active Passive (SMAP) and ESA's Soil Moisture and Ocean Salinity (SMOS) missions can be used to estimate soil moisture at coarse resolution. Brightness temperature observations along with a variety of ancillary data are used in a radiative transfer algorithm to estimate soil moisture. This research opportunity involves conducting different analyses to understand the performance of SMAP microwave soil moisture retrieval algorithms and to assess the accuracy of the retrieved soil moistures with the ultimate goal of improving microwave retrieval algorithms. The current L-band radiometers (SMAP and SMOS) provide a spatial resolution of about 40 km, yet future Earth science needs are anticipated to be in the 1-10 km range for many hydrologic and agricultural applications. This research opportunity also includes developing methodologies to improve the spatial resolution of the soil moisture retrievals from L-band missions in space. Examples of disaggregation methodologies include use of (a) active/passive microwave observations, or (b) visible/infrared/passive microwave satellites. There is also a need for more frequent soil moisture observations for hydrologic applications. The focus of the research will be on improving our scientific understanding of the factors affecting satellite soil moisture retrievals. The ultimate goal is to

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improve the current L-band microwave soil moisture products and to provide high spatial and temporal resolution soil moisture estimates for the benefit of the science and applications communities.

Location:
Goddard Space Flight Center
Greenbelt, Maryland

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

Questions about this opportunity? Please email npp@orau.org

Eligibility Requirements

- **Degree:** Doctoral Degree.