

Opportunity Title: Novel methods for mapping global wetland area and dynamics using passive and active radar, optical remote sensing, and inventory databases

Opportunity Reference Code: 0188-NPP-JUL23-GSFC-EarthSci



Organization National Aeronautics and Space Administration (NASA)

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Application Deadline 7/1/2023 6:00:00 PM Eastern Time Zone

Description Wetlands play a unique role in the Earth system as flooded conditions influence biogeochemical processes, create habitat for biodiversity, and provide a wealth of ecosystem services. Globally, the distribution and seasonal dynamics of wetlands remains uncertain, as efforts to map wetlands using inventory, high-resolution optical remote sensing, and coarse-resolution radar data produce a wide range of areal estimates and trends. This research opportunity will work toward producing the most comprehensive global surface water (e.g. open waterbodies, wetlands, irrigated rice) area and dynamics dataset to date by integrating multiple data sources (inventory, Landsat, ERS, QSCAT, ASCAT) and evaluating its uncertainty using new radar observations provided at high-resolution, using C-band radar from Sentinel-1, and using active L-band radar, from the first three months of the SMAP mission. Existing surface-inundation datasets produced by active and passive microwave data remain to be fully integrated with high-resolution Landsat-based observations of inland waters, due to issues associated with spatial resolution and terminology. In addition, these datasets have yet to be fully evaluated in terms of their uncertainty because of limited resources to carry out such evaluations comprehensively. The research carried out here will develop new algorithms for data integration based on spatial downscaling and machine learning, and will create new datasets for quantifying error and uncertainty for regional focal areas. The researcher will be expected to work with collaborators at NASA GSFC, NASA JPL, and internationally at LSCE, France. The successful candidate will be expected to have skills in systems analysis, Earth science (or sub-discipline), remote sensing and computer programming, with a strong interest in terrestrial ecosystem processes.

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/oir/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 • **Degree:** Doctoral Degree.

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Requirements