Opportunity Title: Remote Sensing and Machine Learning to Better Define Wetland Loss and Gain in the Mississippi Delta
Opportunity Reference Code: 0106-NPP-JUL24-ARC-EarthSci

Organization	National Aeronautics and Space Administration (NASA)
Reference Code	0106-NPP-JUL24-ARC-EarthSci
How to Apply	All applications must be submitted in **Zintellect**
Application Deadline	7/1/2024 6:00:59 PM Eastern Time Zone
Description	**Description**:

As part of the State of Louisiana's 50-year Master Plan for Coastal Restoration and Protection, the state is now on course to spend several billion dollars constructing sediment diversions in the Mississippi River down-river of New Orleans as a primary tool for building and sustaining coastal wetlands in the Barataria and Breton Sound basins. Hyperspectral remote sensing efforts to date have been unable to adequately map vegetation community structure on basin-scales, such as will be needed to assess how these coastal wetlands are responding to climate change stressors, sea-level rise, and to planned coastal restoration activities. Key science issues linked to extent and health of the Mississippi Delta wetlands and to the usefulness of these new sediment diversions include determining (a) the amount and character of new wetlands that will be gained during diversion operations (b) the newly evolving vegetation community structure and ecosystem functioning benefits. This Post-doctoral Opportunity will offer the selected candidate a research project focused on three main themes in Mississippi Delta wetlands of Louisiana: (1) define and map changes in wetland-water separation classes and water level (tidal) corrections in the Barataria and Breton Sound basins using hundreds of spectral bands from drone flights; (2) analysis of marsh vegetation community structure using field surveys and hyperspectral image data collected from drones, (3) detection of submerged aquatic vegetation (SAV) in imagery from subaerial marsh information to identify the extent of SAV. This will aid in defining its role in the ecosystem in trapping sediment, leading to land gain in areas that are connected to a riverine sediment supply. Skills required include mastery of image processing applications, vegetation field survey techniques for mapping plant community composition, and machine learning for image classification products.

Field of Science: Earth Science

Advisors:

Christopher Potter
chris.potter@nasa.gov
(650) 604-6164

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

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valid EAD card and 2) I-485 or I-589 forms in pending status

Eligibility Requirements

- **Degree:** Doctoral Degree.