Opportunity Title: Refinement of Landsat/Sentinel-2 Water Quality Products/Integration of Landscape Change-EPA
Opportunity Reference Code: EPA-ORD-NERL-EMMD-2016-02

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-ORD-NERL-EMMD-2016-02

How to Apply A complete application consists of:

- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional references

All documents must be in English or include an official English translation.

If you have questions, send an email to *EPArpp@orau.org*. Please include the reference code for this opportunity in your email.

Description A research participation training opportunity is currently available at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD)/National Exposure Research Laboratory (NERL). This appointment will be served with the Exposure Methods and Measurements Division (EMMD) in Research Triangle Park, North Carolina.

EMMD develops, evaluates, and applies methods, and performs laboratory and field studies to collect and analyze exposure related data. In addition, it develops new measurement methods, and evaluates sensors including remote sensing technologies and applications. Research involves applying advanced monitoring technology to assess land cover change, terrestrial and aquatic vegetative structure, and water color algorithm development at a variety of scales.

This research project is part of a larger collaborative effort between the U.S. EPA, NASA, NOAA, and USGS to provide an approach for mainstreaming satellite ocean color capabilities into U.S. fresh and brackish water quality management decisions (see http://bit.ly/1MV7WHT and www.epa.gov/cyanoproject). The project goal is to support the environmental management and public use of U.S. lakes, reservoirs, and estuaries by providing the capability to detect and quantify cyanobacteria blooms using satellite data records.

The multi-agency collaborative effort has six main components: (1) develop a uniform and systematic approach for identifying cyanobacteria blooms across the contiguous U.S.; (2) evaluation and refinement of algorithms across satellite platforms; (3) link

impacts of landscape changes and bloom events; (4) demonstrate satellites can link exposure and human health effects in drinking and recreational waters; (5) evaluate the economic value of the satellite early warning system; and (6) data dissemination and training for stakeholders.

This research will focus on the second and third components: algorithm development and linking impacts of landscape change to bloom events. The research participant will be involved in the following activities:

- Developing/refining and validating algorithms which estimate chlorophyll "A" and TSS concentrations of lake and estuarine environments from spectral data retrieved from USGS Landsat 8 and ESA Sentinel 2 satellites
- Assessing landscape metrics contributing to freshwater system health/degradation, including riparian buffer metrics which include crown closure, slope, percent impervious surface, human use index – all of which will provide an overall Buffer Quality Index
- Conducting innovative, relevant, and impactful research that will integrate the application of satellite remote sensing of landscape change (cover type and vegetative) with cyano-bloom events

This project is on the cutting edge of water quality monitoring and applied satellite operations. The research participant will enhance skills in applied satellite remote sensing for cyanobacteria detection and riparian buffer analysis and will be encouraged to communicate research results through peer-reviewed publication and presentation at meetings of professional societies.

This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an interagency agreement between DOE and EPA.

Qualifications

Applicants must have received a master’s degree in a relevant discipline such as aquatic ecology, algal ecology, marine ecology, ocean optics, landscape or spatial ecology, forestry, natural resources, soil science (wetland/agriculture emphasis) or similar field within five years of the desired starting date. Experience in computer coding language (e.g. MATLAB, Python, R, or IDL, etc.) is desirable.

The appointment is full time for one year and may be renewed upon recommendation of EPA and contingent on the availability of funds. The participant will receive a monthly stipend. The annual stipend is *based on level of education.* Funding may be

Opportunity Title: Refinement of Landsat/Sentinel-2 Water Quality Products/Integration of Landscape Change-EPA
Opportunity Reference Code: EPA-ORD-NERL-EMMD-2016-02

made available to reimburse the participant's travel expenses to present the results of his/her research at scientific conferences. No funding will be made available to cover travel costs for pre-appointment visits, relocation costs, tuition and fees, or participant's health insurance. The participant must show proof of health and medical insurance. **The participant does not become an EPA employee**.

The mentor for this project is Blake Schaeffer schaeffer.blake@epa.gov.

Eligibility Requirements

- **Degree:** Master's Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (3 👁)
  - **Environmental and Marine Sciences** (3 👁)
  - **Life Health and Medical Sciences** (3 👁)