Opportunity Title: EPA Fellowship for Remote Sensing and Data Science
Opportunity Reference Code: EPA-ORD-CEMM-ACESD-2021-04

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-ORD-CEMM-ACESD-2021-04

How to Apply ***Connect with ORISE...on the GO!*** Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. All transcripts must be in English or include an official English translation. 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 recommendations. Click here for detailed information about recommendations.

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

Application Deadline 3/28/2022 3:00:00 PM Eastern Time Zone

Description ***Applications may be reviewed on a rolling-basis and this posting could close before the deadline.** Click **here** for information about the selection process.

EPA Office/Lab and Location: A research training opportunity is available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Environmental Measurement and Modeling (CEMM), Atlantic Coastal Environmental Sciences Division (ACESD) located in Narragansett, Rhode Island.

ACESD conducts research to enhance the understanding of the effects of human activity on land and waters of the Atlantic seaboard. Researchers collect and analyze data to provide tools for diagnosing and predicting the effects of this activity on aquatic resources and wildlife. ACESD provides research support to EPA Program & Regional Offices and state & local governments. For additional information regarding the Atlantic Coastal Environmental Sciences Division, visit the home page at https://www.epa.gov/aboutepa/about-atlantic-coastal-environmental-sciences-division.

Research Project: The focus of this research training opportunity is remote sensing, specifically:

1. development and application of mixture density networks (MDN), neural network approaches to predict/map chlorophyll concentrations; and
2. development of predictive models for cyanobacterial blooms, both within estuaries and freshwater tidal rivers of the United States, using remote sensing images (e.g., Sentinel 2) as inputs.

The tools to be used include an extensive EPA database of paired chlorophyll/remote sensing reflectances with ancillary explanatory

variables, USGS Earth Explorer, Google Earth Engine, toolboxes for atmospheric correction (e.g., ACCOLITE, POLYMER, SIAC), R and Python programming languages, an existing MDN Python toolbox for neural network analysis, and supercomputer access if needed.

The project integrates remote sensing, programming, and applied statistics.

The research participant may be involved in the following research activities:

1. developing and applying approaches for bulk download of remote sensing images
2. application of toolboxes for atmospheric corrections
3. application of MDN methods for chlorophyll prediction, and
4. development of logistic models to predict cyanobacteria metrics.

Learning Objectives: The research participant may learn about atmospheric corrections for Sentinel 2 data, managing and analyzing large imagery datasets within Google Earth Engine, machine learning approaches for predicting chlorophyll a, and development of predictive logistic models for cyanobacteria. The research participant may author or co-author on peer-reviewed publications, and may present at local and national meetings (possibly virtually). The participant will be a member of a multi-disciplinary research team.

Mentor(s): The mentor for this opportunity is Steven Rego (rego.steven@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: Winter 2022. All start dates are flexible and vary depending on numerous factors. Click **here** for detailed information about start dates.

Appointment Length: The appointment will initially be for one year and may be renewed up to four additional years upon EPA recommendation and subject to availability of funding.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience. Click **here** for detailed information about full-time stipends.

EPA Security Clearance: Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at EPA.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and EPA. Participants do not become employees of EPA, DOE or the program administrator, and

there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please see the FAQ section of our website. After reading, if you have additional questions about the application process please email ORISE.EPA.ORD@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a master's or doctoral degree in one of the relevant fields, or be currently pursuing one of the degrees and will reach completion by the appointment start date. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Strong written, oral and electronic communication skills
- Background and experience in remote sensing
- Proficiency in developing data science applications with R and/or Python
- Experience with Google Earth Engine
- Statistics, ideally including regression and machine learning approaches
- Experience with Arcgis or geospatial analysis with R

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or anticipated to be received by 3/31/2022 11:59:00 PM.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (7 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Physics** (16 👁)
  - **Social and Behavioral Sciences** (1 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).