Opportunity Title: Water Research GIS Support
Opportunity Reference Code: EPA-NSSC-0009-50

Organization

U.S. Environmental Protection Agency (EPA)

Reference Code

EPA-NSSC-0009-50

How to Apply

Click HERE to apply.

Description

The EPA National Student Services Contract has an immediate opening for a full time Water Research GIS Support position with the Office of Research and Development at the EPA facility in Research Triangle Park, NC.

The Office of Research and Development at the EPA supports high-quality research to improve the scientific basis for decisions on national environmental issues and help EPA achieve its environmental goals. Research is conducted in a broad range of environmental areas by scientists in EPA laboratories and at universities across the country.

What the EPA project is about

The Center for Computational Toxicology and Exposure (CCTE) supports ORD by providing solutions-driven research to rapidly evaluate the potential human health and environmental/ecological risks due to exposures to environmental stressors, ensure the integrity of the freshwater environment and its capacity to support human health and well-being, and facilitate proper ecological functioning. CCTE researchers develop and apply cutting edge innovations in analytical methods development, software applications, decision support tools, scientific computing, system administration and database administration infrastructure, and databases/datamarts/datasources to rapidly evaluate chemical, biological, and toxicological exposures and the associated impacts, analyze their transport through the environment, and assess the health effects of these exposures to people and the environment. Within CCTE, the Scientific Computing and Data Curation Division (SCDCD) develops the knowledge and information architecture necessary for integrating, transforming, and managing large scale data streams related to assessing the risk of chemical, biological, and toxicological substances. SCDCD creates and manages online tools and ensures compatibility with existing chemistry, biology, toxicology, and other experimental data sources.

What experience and skills will you gain?

As a team member, you will support research under the Safe and Sustainable Water Research (SSWR) Research Program providing structured and computationally accessible data to support assessment of water toxicity from both natural and anthropogenic causes and sources. The team member will assist in or lead the development of software to estimate the relative location and concentration of bacterial and viral threats to drinking water sources. The team member will assist with support of data needs, including acquisition and development of datasets to parametrize hazard models, assistance in the testing or evaluation of databases, and basic summaries and analyses of data. The work of the team member may include gathering additional datasets from online sources, formatting datasets into standard templates and uploading into databases, testing, and evaluating ease-of-use of software, and application of data science and machine learning techniques.

The duties of the team member will include, but are not limited to:

- Collecting data on opportunistic and zoonotic pathogens such as Legionella, Mycobacteria, and Pseudomonas as well as other organisms including viruses, protozoans, cyanobacteria (i.e., microcystins, anatoxin, cylindrospermopsin), and dinoflagellates (i.e., prymnesium and euglenophyceae), etc., from available data sources;
- Categorizing the locations/sources/severity of the collected bacterial, viral, and other collected data and the proximity and directionality to sensitive facilities (i.e., schools, hospitals, nursing homes, hotels, libraries, community centers, drinking water systems, storage tanks, wastewater treatment facilities, sewer systems, storm overflow systems, etc.);
- Using and/or developing databases, spreadsheets, etc., to store and maintain information on bacterial, viral, and other collected data;
- Developing scripts/programs in R, Python, Javascript, SQL, etc., to transfer collected data from their original data sources to a

central database, spreadsheet, etc.;

- Developing a GIS Shapefile for New Orleans Louisiana, based on the GIS Shapefile previously developed for Houston Texas, using ESRI Software;
- Developing additional GIS Shapefiles for other cities along the Gulf of Mexico (GOM) using ESRI Software;
- Developing R, Python, Javascript, SQL, etc., software to estimate the relative location and concentration of bacterial and viral threats to drinking water sources using a pre-existing tool as the basis of development, that is compatible with smartphones, tablets, laptops, and desktop computers and different web browsers (i.e., Google Chrome, FireFox, Opera, Microsoft Edge, etc.);
- Utilize and monitor a collaborative code repository and configuration/project management system (e.g., Jira, GitHub, Confluence, BitBucket, etc.);
- Comparing machine extracted data with information in source documents and systematically tracking changes using an established app;
- Reviewing and flagging data quality according to specified criteria; and
- Contribute to implementation of reusable and scalable techniques for data management.

Communications-related responsibilities will include:

- Contributing to an interdisciplinary team of developers and scientists;
- Thoroughly documenting all work as directed by EPA mentor to comply with EPA Quality Assurance procedures for transparency and reproducibility of work;
- Drafting technical reports describing complex datasets, data manipulation procedures, and software development and operation;
- Presenting work in internal reports/memos for use by EPA scientists;
- Participating as an author of a peer-reviewed scientific journal article manuscript documenting this research; and
- Potentially presenting work at scientific conferences.

Required Knowledge, Skills, Work Experience, and Education

- Demonstrated education and/or experience in GIS (Geographic Information Systems), geospatial data compilation and analysis;
- Strong written, oral, and electronic communication skills;
- Experience programming in R, Python, Javascript, or other scripting/programming languages; and
- Experience using ESRI and/or equivalent GIS software.

Desired Knowledge, Skills, Work Experience, and Education

- Experience with remote sensing and image processing**.**

Location: This job will be located EPA's facility in Research Triangle Park, NC.

Salary: Selected applicant will become a temporary employee of ORAU and will receive an hourly wage of $23.37 for hours worked.

Hours: Full-time.

Travel: Occasional overnight travel may be required.

Expected start date: The position is full time and expected to begin May 2023. The selected applicant will become a temporary employee of ORAU working as a contractor to EPA. The contract renews each May through 2025.

For more information, contact EPANSSC@orau.org. *Do not contact EPA directly.*

Qualifications
- Be at least 18 years of age **and**
- Have earned at least a Bachelor's degree in the fields of biology, toxicology, chemistry, physics, geospatial science, geography, geosciences, limnology, environmental science, ecology, engineering, computer science, information science, mathematics, bioinformatics, statistics, computational biology, or a related field of study from an accredited university or college within the last 24

months **and**

- Be a citizen of the United States of America or a Legal Permanent Resident.
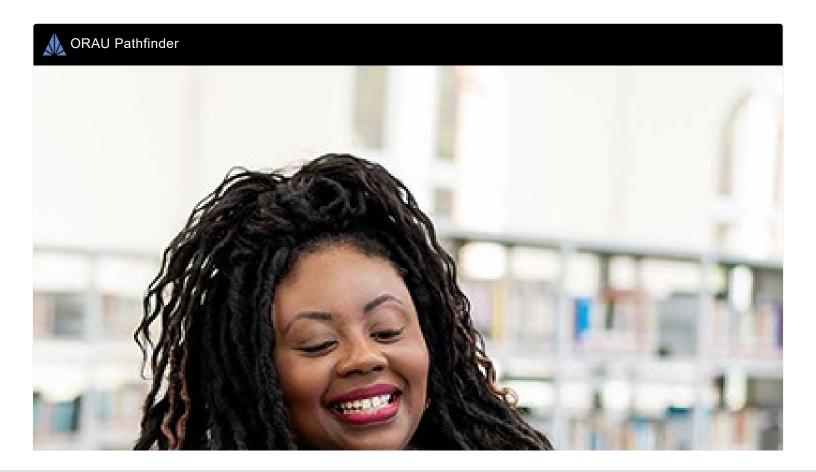
Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Bachelor's Degree received within the last 24 month(s).
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (1 👁)
  - **Computer, Information, and Data Sciences** (1 👁)
  - **Earth and Geosciences** (1 👁)
  - **Environmental and Marine Sciences** (2 👁)
  - **Life Health and Medical Sciences** (3 👁)
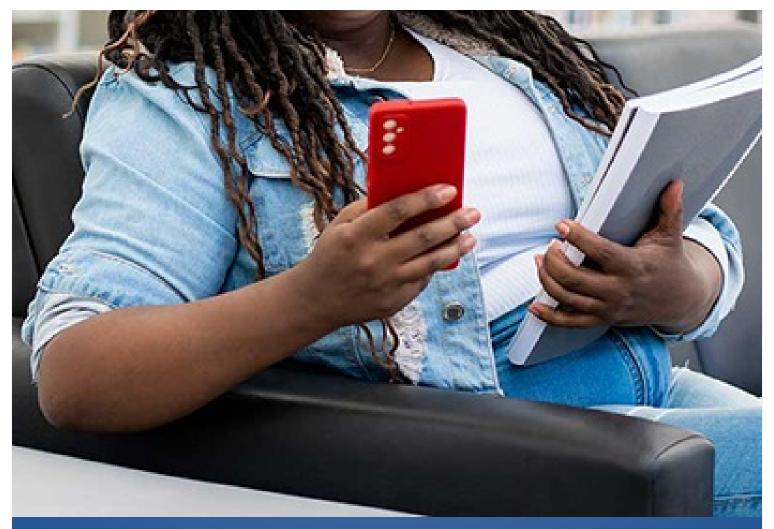 - **Mathematics and Statistics** (1 👁)
  - **Physics** (1 👁)

Affirmation

I certify that I am at least 18 years of age; a recent graduate with at least a Bachelor's degree in the fields of biology, toxicology, chemistry, physics, geospatial science, geography, geosciences, limnology, environmental science, ecology, engineering, computer science, information science, mathematics, bioinformatics, statistics, computational biology, or a related field from an accredited university or college within the last 24 months; a citizen or a Legal Permanent Resident of the United States of America; and not a current employee of EPA ORD or the spouse or child of an EPA ORD employee.

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