

Opportunity Title: Applying Quantitative Analytical Skills to Evaluate Ability of EPA Environmental Models

Opportunity Reference Code: EPA-ORD-NERL-CED-2016-03

- Organization** U.S. Environmental Protection Agency (EPA)
- Reference Code** EPA-ORD-NERL-CED-2016-03
- 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

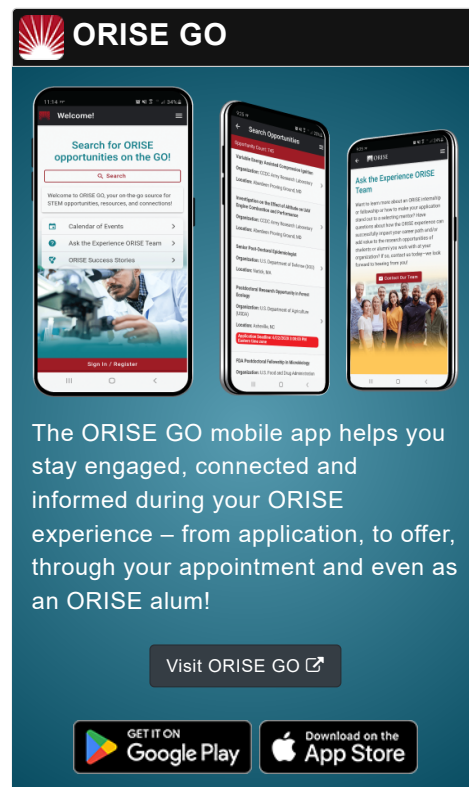
All documents must be in English or include an official English translation.

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

Description A postdoctoral research training opportunities 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 Computational Exposure Division (CED) in Athens, Georgia.

This project applies quantitative analytical skills to evaluate the ability of EPA environmental models to accurately predict aquatic exposure and effects from chemicals at large spatial scales. The EPA uses submitted data and computer models to integrate core science exposure processes in multiple exposure media (e.g., air, surface water, ground water, soil, sediment, biota). Collected data and models are used to estimate exposure and effects at relevant biological (e.g., organism, population, community, ecosystem) and spatial scales (e.g., field, site, watershed, regional, national, global).

The research participant may develop and apply watershed models used by the EPA over a large geographical area at a relatively small contiguous watershed resolution with an emphasis on interoperability with other fate, transport, exposure and effect models. The project could contribute to model development, application, documentation and utilization of models used by EPA for assessing risks from chemicals. Research activities may include computer programming (Python, web scripting languages, and/or R), numerical verification of model output, cloud-based database management, creating modules for simulating population dynamics, model execution, model Application Programming Interface (API) development and documentation, spatio-temporal likelihood estimation and model

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selection based on level of interest and skill set. The research participant will be exposed to team programming skills in the context of modern scientific functional programming approaches and leveraging a web programming technology stack with a cloud computing implementation. Additional professional development activities may include exposure to basic scientific hypothesis testing and inferential processes in a computational context. This includes implementing numerical experiments designed to evaluate the ability of EPA models to effectively estimate chemical exposures and effects. These algorithms are made available in modeling systems that provide predictive capabilities for complex environmental exposures. The participant may also participate in making them publicly available as web applications and evaluating the ability of these models to effectively assess environmental exposures and effects.








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 doctoral degree in a science, technology, engineering or mathematics field within five years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date.

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. Funding may be 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 Tom Purucker (Purucker.tom@epa.gov) and the anticipated start date is August 1, 2016.

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (12 )
 - **Computer, Information, and Data Sciences** (16 )
 - **Earth and Geosciences** (8 )
 - **Engineering** (10 )
 - **Environmental and Marine Sciences** (14 )
 - **Life Health and Medical Sciences** (15 )
 - **Mathematics and Statistics** (10 )

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