

Opportunity Title: EPA Fellowship on Development of Ecological Effects Models to Improve Ecological Risk Assessments

Opportunity Reference Code: EPA-ORD-CEMM-GEMMD-2023-01

Organization U.S. Environmental Protection Agency (EPA)

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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.

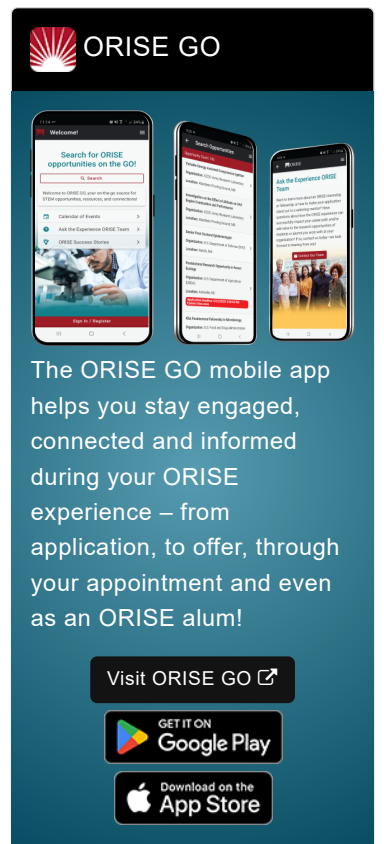
All documents must be in English or include an official English translation.

Application Deadline 5/26/2023 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 opportunity is available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Environmental Measurement and Modeling (CEMM), Gulf Ecosystem Measurement and Modeling Division (GEMMD), Biological Effects and Population Response (BEPR) Branch located in Gulf Breeze, Florida.


Research Project: Toxicity translators are mechanistic effects models that interpret chemical impacts measured on individuals in laboratory tests into metrics applicable to populations and ecological landscapes. These models use life history and demographic profiles for a diversity of species to inform a range of potential chemical impacts within a broad taxonomic group (e.g., invertebrates, fish). The research participant will collaborate with a Translator development team to develop and refine models for invertebrates, fish, and amphibians to provide improved and more realistic evaluation of risks posed to diverse species by chemical contaminants. Many taxa of concern (e.g., freshwater mussels, coral) have obligatory relationships with other species that range from mutualistic to parasitic that must be considered when evaluating chemical risks. Currently, the US EPA lacks methods to adequately evaluate risks to species complexes and broader communities. Additionally, toxicity test data are often limited to endpoints measured on surrogate species, which may have limited relevance to larger species that cannot be closely studied. The research participant will collaborate with the team to develop and apply numerical, mechanistic effects models in conjunction with observed or modeled data of




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chemical concentrations in the environment. The research participant will explore novel approaches to data analysis and extrapolation to investigate the different types of approaches that can be used to improve Ecological Risk Assessments performed under various regulatory statutes.

The research participant may be involved in the following activities:

- Developing conceptual and life history models that represent invertebrates group of conservation concern
- Exploring how diverse life histories influence the susceptibility of species and aquatic communities
- Exploring approaches to extrapolate effects measured on surrogate species in the laboratory to untested taxa in the environment.

Learning Objectives: The research participant will have the opportunity to learn how to use endpoints collected from standardized toxicity tests with species life history data to extrapolate chemical effects across species and from the laboratory to field contexts. Depending on the research participants interest, there may be an opportunity to learn different exposure models that estimate the fate and transport of chemicals in the environment. As a part of this project, the research participant will learn modeling techniques, including development, calibration, application, and evaluation.

Mentor(s): The mentor for this opportunity is Dr. Sandy Raimondo (raimondo.sandy@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: 2023. 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 three 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

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through ORISE.

ORISE offers all ORISE EPA graduate students and Postdocs a free 5 year membership to the National Postdoctoral Association (NPA).

The successful applicant(s) will be required to comply with Environmental, Safety and Health (ES&H) requirements of the hosting facility, including but not limited to, COVID-19 requirements (e.g. facial covering, physical distancing, testing, vaccination).

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 be currently pursuing or have received a master's or doctoral degree in one of the relevant fields (e.g. Environmental Science, Ocean Science, Ecology, Biology, Statistics, Applied Mathematics). Degree must have been received within five years of the appointment start date.

Preferred skills:







- Willingness to learn to perform simulation modeling.
- Knowledge and/or desire to learn how to do numerical modeling, statistical analysis, and data extrapolation is a plus.
- Knowledge or interest in learning R, Python, Matlab, programming or statistical packages would be most beneficial.
- Experience and/or interest in developing populations models would be helpful, but not required.
- Experience and/or interest in using/applying chemical fate and transport models would be helpful, but not required.
- Experience and/or interest in toxicology and chemistry would be helpful, but not required.
- Experience in numerical modeling, including ecological and statistical modeling would be useful.
- Having familiarity with computer programming would be useful, since data analysis will most likely done using some form of programming package, such as R.
- Having a solid foundation in math and statistics, to understand the modeling itself.
- Ideally someone interested and able to do ecological modeling (or with experience).
- This project has many possible facets (i.e., ecology, biology, toxicology, data extrapolation), therefore the most important skill is the interest and ability to join a team and be willing to learn.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**

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- **Chemistry and Materials Sciences** ([4](#) )
- **Computer, Information, and Data Sciences** ([3](#) )
- **Earth and Geosciences** ([21](#) )
- **Environmental and Marine Sciences** ([14](#) )
- **Life Health and Medical Sciences** ([48](#) )
- **Mathematics and Statistics** ([11](#) )