

Opportunity Title: Computational Researcher - Vicksburg, MS

Opportunity Reference Code: ERDC-EL-2020-0011

Organization U.S. Department of Defense (DOD)

Reference Code ERDC-EL-2020-0011

How to Apply Components of the online application are as follows:

- Profile Information
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - 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. [Click here for detailed information about acceptable transcripts.](#)
- 1 Recommendation(s)

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blanked out, blackened out, made illegible, etc.) prior to uploading into the application system.

If you have questions, send an email to USACE@orise.orau.gov. Please list the reference code of this opportunity in the subject line of the email.

Letter of Recommendation: While a letter of recommendation is not required to be considered, applicants are required to provide contact information for one recommendation in order to submit the application. Applicants are encouraged to request a letter of recommendation before submission as this may help reviewers have a better understanding of the applicant's qualifications and interests. If selected, a letter recommendation must be submitted on your behalf upon acceptance of the appointment.

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


Description The Environmental Laboratory (EL) is one of the seven laboratories of the U.S. Army Engineer Research and Development Center (USACE-ERDC), which is the Army Corps of Engineers' integrated research and development (R&D) organization. EL provides solutions to environmental challenges for the U.S. Army, the Department of Defense and the Nation through environmental science and engineering research and development. Researchers in EL conduct research in ecosystem science and technology, environmental resiliency, environmental sensing, ecological modeling and forecasting, risk and decision science, environmentally sustainable material, systems biology, climate change, computational chemistry, environmental chemistry and environmental security. For more information about the US Army Engineering Research and Development Center (ERDC) Environmental Laboratory (EL), please visit <https://www.erdcl.usace.army.mil/>.


One of our driving projects has been Understanding the Environment as a Threat. This project is tasked with developing the computational tools necessary to predict threats from toxic industrial chemicals and materials (TICMs) in urban environments, including potential sources, modeling plumes from releases, identifying breakdown products, identifying acute health hazards, suggesting gear necessary to counter the threat, and overlay the risk of acute exposure on a map of the theater.




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Under the guidance of a mentor, the participant will develop and optimize algorithms that overlay dynamic exposure risks on the transportation networks and perform network analyses to determine the impact of TICM hazards on travel in the operational environment. The participant will also collaborate with biochemists to understand how biological networks adapt information transfer in response to perturbations and participate in developing novel bio-inspired algorithms to respond to updated hazard data for just-in-time adjustments in travel networks.

Appointment Length

This appointment is a twelve month research appointment, with the possibility to be renewed for additional research periods. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

Participant Benefits











Participants will receive a stipend to be determined by **USACE**. Stipends are typically based on the participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement. *Participants are eligible to purchase health insurance through ORISE.*
- Relocation Allowance
- Training and Travel Allowance

Nature of Appointment

The participant will not enter into an employee/employer relationship with ORISE, ORAU, DOD, or any other office or agency. Instead, the participant will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment.

Qualifications Candidates will need a Master's degree or Ph.D. in a field that indicates computational and network analysis experience (e.g. physics, computational biology/bioinformatics, mathematics, computer science), as well as a publication record supporting such experience. Candidates should have programming experience in multiple languages, with a minimum of Python, C, and C++. Knowledge of parallelization and GPU processing is preferred.

- Eligibility Requirements**
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#) )
 - **Communications and Graphics Design** ([2](#) )
 - **Computer, Information, and Data Sciences** ([16](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([27](#) )
 - **Environmental and Marine Sciences** ([14](#) )
 - **Life Health and Medical Sciences** ([45](#) )
 - **Mathematics and Statistics** ([10](#) )
 - **Other Non-Science & Engineering** ([2](#) )
 - **Physics** ([16](#) )

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- **Science & Engineering-related** ([1](#) )
- **Social and Behavioral Sciences** ([27](#) )