Opportunity Title: Ecological Modeling Research - Postdoctoral
Opportunity Reference Code: ERDC-EL-2020-0017

Organization	U.S. Department of Defense (DOD)
Reference Code	ERDC-EL-2020-0017
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 -Click here for detailed information about acceptable transcripts
- References

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 list the reference code of this opportunity in the subject line of the email.
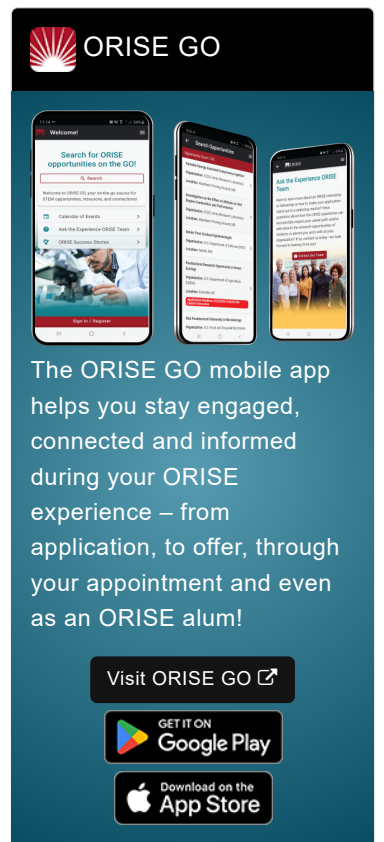
All documents must be in English or include an official English translation.

Description

The Environmental Laboratory (EL) is one of the seven laboratories of 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.erdc.usace.army.mil/.

The Aquatic Nuisance Species Research Program has a major research focus area on "developing next generation integrated ecological models to better predict ecological futures for sustainable USACE operations." One portion of this initiative addresses the evaluation of novel, mechanistic plant growth models with high-resolution field data of aquatic macrophytes.

Mechanistic ecological models provide a means for robust prediction beyond observed conditions, transferability between sites and applications, and ultimately cost savings associated with development. However, these tools often provide predictive resolution at very fine spatial and temporal scales, which can be challenging to validate with field observations typically collected at more coarse resolution. Complex modeling tools are also often inaccessible for rapid application by practitioners constrained by time and resources. This research seeks to refine existing mechanistic vegetation growth models, expand models to include ecosystem process outcomes, evaluate models with high-resolution field observations, and generalize tools for national application by Corps of Engineers practitioners.

This project seeks to evaluate an existing multi-species aquatic plant growth model against an extremely detailed field data set of aquatic primary producers in the Middle Oconee River near Athens, Georgia. Existing models and site-scale data provide a unique opportunity to test process-based, species-agnostic models as well as expand models to include ecosystem processes such

as ecosystem metabolism and nutrient uptake. The selected post-doctoral fellow will collaborate with investigators at the ERDC and the University of Georgia on development, validation, and application of numerical models for this study. Team members will jointly research plant growth modeling and develop generic modeling approaches applicable beyond the focal site.

Location: New York, New York

Appointment Length

This ORISE appointment period is up to twelve months in length. 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 ERDC-EL. 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.

While participants will not enter into an employment relationship with DOD or any other agency, this opportunity may require a suitability investigation/background investigation. Any offer made is considered tentative pending favorable outcome of the investigation.

Qualifications Candidate must have a Ph.D. in ecology, water resources engineering, plant sciences, or related areas. The candidate must have strong quantitative modeling skills and experience developing or applying ecological models. Additionally, excellent written and oral communication skills are needed for close collaboration with a large team of scientists and engineers, presentation of findings, and preparation of manuscripts. Desirable qualifications include familiarity with open source programming languages (R or Python), spatial analysis, hydrodynamic simulation, and application of reproducible research methods (e.g., Rmarkdown, Jupiter Notebooks, GitHub). The candidate may be asked to travel quarterly for project meetings, field data collection, and other duties.

Eligibility Requirements
- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 9/1/2020 11:59:00 PM.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **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 👁)
- **Physics** (16 👁)
- **Science & Engineering-related** (1 👁)
- **Age:** Must be 18 years of age