Opportunity Title: Ecological Modeling Research
Opportunity Reference Code: ERDC-EL-2021-0001

Organization U.S. Department of Defense (DOD)

Reference Code ERDC-EL-2021-0001

How to Apply **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
- Recommendation

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.

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

Description The Environmental Laboratory (EL) provides relevant, value-added technology supporting the environmental mission of the US Army Corps of Engineers, the Army, the Department of Defense (DoD), and the Nation. Headquartered in Vicksburg, Mississippi, the EL's interdisciplinary staff of over 220 engineers, scientists, technicians, and support personnel plans and executes all phases of the technology development process, from basic research to field implementation to commercialization. The EL staff consists of problem solvers who use research, development, experimentation, special studies, and technical support to address the needs of national and international business development partners. Partnering with Federal and State agencies, academia, and the private sector, the EL uses its distinctive technical capabilities to resolve complex, multi-disciplinary environmental sustainability problems.

Under the guidance of a mentor, the selected candidate will participate in developing, evaluating and applying integrated hydrodynamic-ecological models. This internship is part of a continuing project that focuses specifically on evaluation and application of biological behavior integration into computational particle tracking models to determine population-level recruitment for species with pelagic life stages (e.g., oysters and corals). As part of the research team, the participant's research experience will include the following:

(1) Quantifying and evaluating the major physical, ecological and biological drivers for particles of pelagic larvae.
(2) Identifying major knowledge gaps and design simulation experiments to address missing data and areas of uncertainty.
(3) Conducting model simulations to quantify recruitment of reef-based organisms to source/sink dynamics.
(4) Developing of a quantitative framework for integrating physical and ecological models across scales.
(5) Analyzing results and on writing peer-reviewed journal articles.

Appointment Length

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This appointment is a full-time 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 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.

Qualifications

The ideal candidate must display proficiency in computer programming (languages can include C++, R, Python, MATLAB), hydrodynamic modeling (may include grid/mesh development, simulation, data management and analysis) and ecological principles. Areas of interest include, but are not limited to integrated modeling, ecological modeling, hydrodynamic modeling, model evaluation, particle tracking, among others.

The ideal candidate must have received or currently pursuing a Master's or Doctoral degree.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **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** (6 👁)
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (45 👁)

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  - **Mathematics and Statistics** (10 👁)
  - **Physics** (16 👁)
- **Age:** Must be 18 years of age