Opportunity Title: ERDC Coastal Hydraulics Laboratory: Eco-morphodynamic Model Development and Validation
Opportunity Reference Code: ERDC-CHL-2024-0008

Organization U.S. Department of Defense (DOD)

Reference Code ERDC-CHL-2024-0008

How to Apply Click on *Apply* now to start your application.

Description The Coastal and Hydraulics Laboratory (CHL, est. 1996) multi-disciplinary team of scientists, engineers and support personnel is internationally recognized for its world-class research. This laboratory includes more than 150 engineers and scientists and a number of contractors, including more than 60 doctorate and master's degrees. Along with access to unique, cutting-edge facilities, these team members have the experimental and computational expertise needed to solve water resource problems worldwide. CHL addresses an entire spectrum of water resource challenges in groundwater, watersheds, rivers, reservoirs, estuaries, harbors, coastal inlets and wetlands.

Project

The purpose of this project is to expand applicability of existing CHL numerical hydrodynamic and geomorphologic models to vegetated nearshore environments. Recent code advancements will be tested by leveraging published field and laboratory experiments related to 1) drag forces for depth-varying plant morphologies, 2) vegetation-turbulence interactions (i.e., generation and dissipation), and 3) turbulence-induced non-cohesive sediment transport.

What will I be doing?

Under the guidance of mentors, you will conduct research alongside CHL staff and other primary researchers in a real-world laboratory environment and gain exposure to modern research technologies and techniques. Your participation will be split between two research opportunities depending on your preferences and availability. Both involve reviewing and synthesizing published literature, coding, and conducting numerical tests based on previous laboratory and/or field experiments. The first opportunity is focused on non-cohesive sediment transport in vegetated environments. The second opportunity is focused on depth-varying drag forces on non-uniform plant morphologies (e.g., mangroves as compared to grasses). You will have an opportunity to first-author a technical publication if desired.

Why should I apply?

This fellowship provides the opportunity to independently utilize your skills and engage with experts in innovative ideas to move the proposed research forward.

Where will I be located? Location Varies

What is the anticipated start date?

ERDC-CHL is ready to make an appointment immediately. Exact start date will be determined at the time of selection and in coordination with the selected candidate.

What is the length of the appointment?

This ORISE appointment is a full-time twelve-month opportunity. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

What are the benefits?

Opportunity Title: ERDC Coastal Hydraulics Laboratory: Eco-morphodynamic Model Development and Validation
Opportunity Reference Code: ERDC-CHL-2024-0008

You will receive a stipend to be determined by ERDC-CHL. 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

About ORISE

This program, administered by Oak Ridge Associated Universities (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 DoD. Participants do not enter into an employee/employer relationship with ORISE, ORAU, DoD or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the ORISE Research Participation Program at the U.S. Department of Defense.

Qualifications

The ideal candidate will have computer programming experience in data processing and numerical modeling. Preferred skills in model development, coding in Python, and familiarity with FORTRAN is a plus. Candidates must have experience with fluid mechanics, basic computer coding, earth and geosciences, engineering, mathematics, statistics and other physical sciences. Experience in studying wave dynamics and/or sediment transport processes is preferred. Applicants must be currently residing in the United States and for the duration of the internship. Student applicants must be affiliated with a college or university based in the United States (inclusive of Hawaii, Alaska, and Puerto Rico) and have a minimum GPA of 3.0 or higher.

A complete application consists of:

- Zintellect profile
- Essay Questions - The application includes questions specific to the opportunity.
- Academic Records - An official transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted.
- One (1) recommendation - We encourage you to contact your recommender(s) as soon as you start your application to ensure they are able to complete the recommendation form and to let them know to expect a message from Zintellect. Recommenders will be asked to rate your scientific capabilities, personal characteristics, and describe how they know you. You can always log back in to your Zintellect account and check the status of your application. The status will go from Started to Submitted and then to Completed once the required recommendations have been received.

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. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this

Opportunity Title: ERDC Coastal Hydraulics Laboratory: Eco-morphodynamic Model Development and Validation
Opportunity Reference Code: ERDC-CHL-2024-0008

opportunity. All application materials should be submitted via the “Apply” button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

Connect with ORISE...on the GO! Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

Point of Contact Debbie at ORISE

Eligibility Requirements

- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or currently pursuing.
- **Minimum Overall GPA:** 3.00
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (51 👁)
  - **Mathematics and Statistics** (11 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (2 👁)
- **Age:** Must be 18 years of age