Opportunity Title: Analysis of Coastal Wave Impacts on Shoreline Protection Structures
Opportunity Reference Code: ERDC-CHL-2022-0003

Organization

U.S. Department of Defense (DOD)

Reference Code

ERDC-CHL-2022-0003

How to Apply

Click on *Apply* now to start your application.

Description

The U.S. Army Engineer Research and Development Center's Coastal & Hydraulics Laboratory (CHL) performs research on ocean, estuarine, riverine, and watershed systems in support of the U.S. Army Corps of Engineers (USACE) and the Department of Defense (DOD) Task Force in support of the Ocean Commission. A multi-disciplinary team of scientists, engineers, and support personnel work in CHL's internationally known, unique facilities. This team has developed state-of-the-art experimental and computational models for solving water resource problems worldwide. Physical facilities of approximately 1.7 million square feet and high-performance computing facilities at the DOD Supercomputing Research Center (http://www.erdc.hpc.mil) are the basic infrastructure for producing cutting-edge products for successful coastal, inland water resources, and navigation management. CHL work, although primarily in support of the DOD and the Corp's districts, also interfaces with other federal, state and local agencies, academia, conservation groups, and the general public, as appropriate. The Research Participation Program for USACE-ERDC-CHL provides opportunities to participate in new and on-going applied research and development projects. Research projects range from design guidance to three-dimensional computational models. Focus is placed on inland and coastal navigation, military logistics over the shore, dredging, flood control, storm and erosion protection, waterway restoration, fish passage, hydro-environmental modeling, water/land management, and other water and sediment-related issues facing the nation. For more information about USACE-ERDC-CHL, please visit https://www.erdc.usace.army.mil/Locations/CHL/.

What will I be doing?

This study addresses the needs of several operational objectives across multiple research and development programs in an effort to communicate effective engineering and design strategies of coastal protective structures, like breakwaters, to U.S. Army Corps of Engineers (USACE), using high-fidelity numerical modeling techniques. Numerous coastal structures monitored by the USACE, such as jetties, breakwaters, and groins, are vital for commercial/civil and military navigation along the U.S. coastline. Wave-structure interaction and general wave-driven processes are very complex and can occur across multiple temporal scales. Accurate and robust quantification of reflection, absorption, and transmission wave properties in mixed coastal domains is a ubiquitous problem. This project seeks to improve the existing FUNWAVE-TVD framework with guidance that can be used to configure a combination of sponge, friction, and porosity layers (e.g., absorption/reflection strength) for coastal structures (i.e., partially submerged breakwater).

Under the guidance of a mentor, you will be part of team that will investigate the FUNWAVE-TVD response to different wave inputs across a wide spectrum of coastal structures and their various permutations. You will be given access to DoD's High-Performance-Computing (HPC) machines to carry out your research in a supercomputing environment during your research experience.

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?

The main campus is located in Vicksburg, Mississippi; however, you will be interacting with ERDC-CHL and ERDC-CRREL scientists physically located at our sister laboratory (Cold Regions Research and Engineering Laboratory - CRREL) in Hanover, New Hampshire. This internship will be done remotely at your location with a week-long visit to the CRREL laboratory location during their tenure.

What is the anticipated stat 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 candidates.

What is the length of the appointment?

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

Opportunity Title: Analysis of Coastal Wave Impacts on Shoreline Protection Structures
Opportunity Reference Code: ERDC-CHL-2022-0003

What are the benefits?

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

Nature of the Appointment

You will 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.

Qualifications

Bachelor, Master's, or Doctoral degree received or currently pursuing in Coastal Engineering or similar discipline.

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 - Your application will be considered incomplete and will not be reviewed until one recommendation is submitted. 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. 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!

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or currently pursuing.
- **Overall GPA:** 3.30
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (1 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Mathematics and Statistics** (11 👁)
- **Age:** Must be 18 years of age

Opportunity Title: Analysis of Coastal Wave Impacts on Shoreline Protection Structures
Opportunity Reference Code: ERDC-CHL-2022-0003

Oak Ridge Institute for Science and Education