Opportunity Title: Summer Fellowship: Reduced Order Modeling and
Computational Hydrodynamics
Opportunity Reference Code: ERDC-CHL-2025-0003

Organization	U.S. Department of Defense (DOD)
Reference Code	ERDC-CHL-2025-0003
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. CHL research and development addresses water resource and navigation challenges in a variety of hydrodynamic systems including aquifers, watersheds, rivers, reservoirs, lakes, estuaries, harbors, coastal inlets, and wetlands. Physical facilities of approximately 1.7 million square feet and high-performance computing facilities at the DOD Supercomputing Research Center.

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What will I be doing?

Under the guidance of a mentor, you will receive hands-on experience in design, development, and evaluation of model reduction techniques and numerical methods for subsurface and surface flow processes. You will gain experience with forward hydrodynamic models developed in the Coastal Hydraulics Laboratory and contribute to open-source projects on model reduction, finite element methods, data assimilation and inverse modeling. You will collaborate with researchers by exchanging ideas and technical knowledge in computational methods. The overall goal of the project is to improve develop reliable, reduced order computational models for rapid characterization of physical systems in order to improve Army operations and reduce risk to water infrastructure.

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

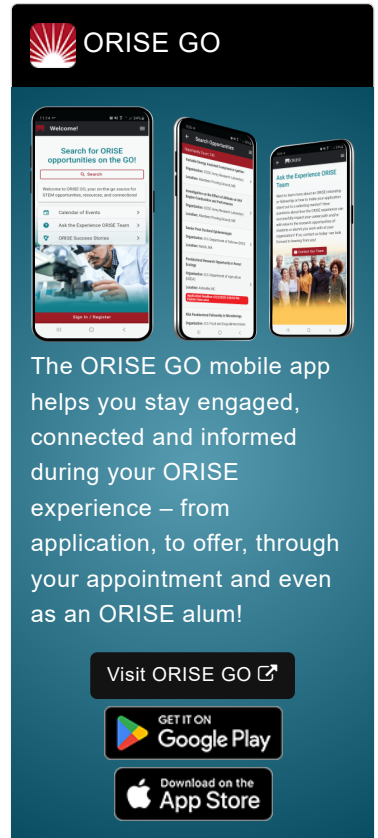**What is the anticipated start date?** May 2025

Exact start dates will be determined at the time of selection and in coordination with the selected candidate.

What is the appointment length?

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

What are the appointment provisions?

You will receive a stipend to be determined by ERDC-CHL. Stipends are typically based

on a participant's academic standing, discipline, experience, and research facility location. Other provisions 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 should have a strong background in the mathematical and computational aspects of modeling subsurface and surface flows. Knowledge in machine learning, data assimilation, and inverse problems is also desirable.

Application Requirements

A complete application consists of:

- Zintellect Profile
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - Please upload a copy of a transcript for your current or most recent degree program that meets the disciplinary qualifications of the opportunity. Click here for detailed information about acceptable transcripts.
- One 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.

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

Point of Contact	[Debbie](#)

Eligibility Requirements	• **Citizenship:** LPR or U.S. Citizen
	• **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or currently pursuing.
	• **Discipline(s):**
	  ○ **Computer, Information, and Data Sciences** (5 👁)
	  ○ **Earth and Geosciences** (2 👁)
	  ○ **Engineering** (5 👁)
	  ○ **Environmental and Marine Sciences** (2 👁)
	  ○ **Mathematics and Statistics** (3 👁)
	  ○ **Physics** (1 👁)
	• **Age:** Must be 18 years of age