

Opportunity Title: Doctoral or Graduate Student: Hurricane Rainfall Hazard Analysis for Coastal Compound Flood Risk Assessment
Opportunity Reference Code: ERDC-CHL-2023-0011

Organization U.S. Department of Defense (DOD)

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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 222-member group includes 152 scientists and engineers and 18 contractors, including 59 doctorate and 62 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.

What will I be doing?

This ORISE fellowship will provide you a rewarding educational experience to foster a strong collaboration between a faculty member, students, and the U.S. Army Corps of Engineer's Coastal Hazard Group (CHG). The Coastal Hazards System (CHS), a national-scale multi-agency initiative, utilizes a probabilistic analysis framework of historical coastal hazards, enhanced by high-fidelity modeling and machine learning, to provide statistically robust atmospheric and storm surge datasets in a consistent framework that supports the accomplishment and progression of research objectives for both the CHG and a faculty member/student collaboration. In particular, the CHS also strengthens the statistical foundations of the emerging methods and data that are key to both collaborator's efforts to improve understanding the risk of compound coastal flooding. The objectives and findings along this engaging learning path will be documented in a report at the conclusion of the fellowship.

You will have an opportunity to gain skills and knowledge in:

- Interpreting results of hurricane rainfall models. This will include testing methods to use CHS simulated synthetic hurricane results as inputs into hurricane rainfall models. To interpret the outcomes, research high-resolution rainfall reanalysis validation datasets to identify model error.
- Enhancing hurricane rainfall models with stochastic elements. This will entail testing statistical methods to relate hurricane rainfall model error to natural variability and to represent it in representative stochastic ensembles.
- Study the impact of a hurricane rainfall model with stochastic elements for compound hazard analysis. This will involve learning how to generate stochastic rainfall ensembles across hurricanes that behave differently (from the Gulf of Mexico to up the East Coast) and describing the impact of the ensemble approach on compound hazard analyses.

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?

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



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What is the length of the appointment?

This ORISE appointment is a part-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?

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 As a highly qualified candidate, you will have a PhD or currently a graduate student in Marine Science, Oceanography, Engineering, or related field with emphasis on coastal compound flooding, modeling of hurricane rainfall, statistical analysis, and error/uncertainty quantification. Knowledge of hurricane climatology, coastal hazards, and programming languages are also required.

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 - For this opportunity, 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. [Click here for detailed information about acceptable transcripts](#).
- One 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.

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Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blacked 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.

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**Eligibility
Requirements**

- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
- **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** ([30](#))
 - **Mathematics and Statistics** ([11](#))
 - **Physics** ([16](#))
- **Age:** Must be 18 years of age