Opportunity Title: USGS Oceanography Fellowship - Ocean Hydrodynamic Modeler
Opportunity Reference Code: DOI-USGS-2024-28

Organization U.S. Department of the Interior (DOI)

Reference Code DOI-USGS-2024-28

How to Apply ***To submit your application, scroll to the bottom of this opportunity and click APPLY.***

A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial 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.
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations. At least one recommendation must be submitted in order for the mentor to view your application.

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

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Application Deadline 12/6/2024 3:00:00 PM Eastern Time Zone

Description **USGS Office/Lab and Location:** A research opportunity is available with the U.S. Geological Survey (USGS), located in St. Petersburg, Florida.

The USGS mission is to monitor, analyze, and predict current and evolving dynamics of complex human and natural Earth-system interactions and to deliver actionable intelligence at scales and timeframes relevant to decision makers. As the Nation's largest water, earth, and biological science and civilian mapping agency, USGS collects, monitors, analyzes, and provides science about natural resource conditions, issues, and problems.

Research Project: This opportunity is with the St. Petersburg Coastal and Marine Science Center (SPCMSC) in St. Petersburg, Florida. The SPCMSC provides coastal and marine research to ensure that our Nation has the information it needs to understand as well as to restore and protect healthy coastal and ocean resources and the communities that depend on them. SPCMSC is seeking a highly motivated Ocean Hydrodynamic Modeler to join our team as a fellow. The primary purpose of this fellowship is to support the USGS/NOAA Total Water Level and Coastal Change Forecast (https://coastal.er.usgs.gov/hurricanes/research/twlviewer/) project. The selected candidate will collaborate on advancing research and operational models related to coastal wave and ocean dynamics and sediment transport. The selected candidate will collaborate closely with USGS scientists and external partners to improve the understanding and

forecasting of oceanic processes in coastal environments.

Learning Objectives:

- **Numerical Modeling:** Develop and implement high-resolution hydrodynamic models to simulate water flow and its effects on coral reef dynamics, including sediment transport.
- **Data Analysis:** Analyze and interpret data from field studies and remote sensing to validate model outputs and refine simulations. Analyze and interpret model outputs to understand physical processes such as storm surge, tides, waves, and currents, as well as their impacts on coastal areas.
- **Collaboration:** Collaborate closely with other scientists to integrate hydrodynamic model data and answer complex science questions.
- **Research and Development:** Stay current with advances in hydrodynamic modeling techniques and coral reef research to enhance project methodologies and outcomes.
- **Reporting and Presentation:** Help prepare technical reports, research papers, and presentations to communicate findings to stakeholders, including scientific communities and conservation organizations.
- **Field Work:** Help design and participate in field surveys as needed to collect hydrodynamic data, ensuring proper methodologies are followed.

Mentor: The mentor for this opportunity is Legna Torres Garcia (ltorresgarcia@usgs.gov). If you have questions about the nature of the research please contact the mentor.

Anticipated Appointment Start Date: January 6, 2025. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be renewed upon recommendation of DOI and is contingent on the availability of funds.

Level of Participation: The appointment is full time.

Participant Stipend: Stipend rates may vary based on numerous factors, including opportunity, location, education, and experience. If you are interviewed, you can inquire about the exact stipend rate at that time and if selected, your appointment offer will include the monthly stipend rate.

Citizenship Requirements: This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the Guidelines for Non-U.S. Citizens Details page of the program website for information about the valid immigration statuses that are acceptable for program participation.

ORISE Information: This program, administered by 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 USGS. Participants do not become employees of USGS, DOE or the program administrator,

and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: If you have questions about the application process please email USGS@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a master's or doctoral degree in one of the relevant fields (Marine Science, Oceanography, Environmental Engineering, or a related field). Degree must have been received within the past five years.

Preferred skills:

- **Experience:** Extensive experience with numerical modeling tools such as ROMS (Regional Ocean Modeling System), XBeach, SWASH, NWAVE, FUNWAVE, Delft3D, ADCIRC, or similar platforms.
- **Technical Skills:** Proficiency in programming languages such as Python, MATLAB, or Fortran, as well as experience with high-performance computing environments. Strong analytical skills and the ability to work with large datasets from both observational sources and model outputs.
- **Knowledge:** Strong understanding of hydrodynamic principles, waves, and the impacts of environmental changes on reef systems.
- **Communication:** Excellent written and verbal communication skills, with the ability to convey complex concepts to diverse audiences.
- **Team Player:** Ability to participate collaboratively in multidisciplinary teams and manage multiple projects effectively.
- Knowledge of sediment transport processes and experience with coupling hydrodynamic models with sediment transport modules.
- Experience with total water level forecasting and coastal system change predictions in the context of storm surge and sea-level rise.

Point of Contact Keri

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (3 👁)
  - **Mathematics and Statistics** (11 👁)
  - **Physics** (16 👁)
  - **Social and Behavioral Sciences** (1 👁)