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Opportunity Title: EPA Estuarine Chesapeake Bay Water Quality & Hydrodynamic Model
Opportunity Reference Code: EPA-REG3-2026-0001

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-REG3-2026-0001

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

A complete application consists of:

- An application
- Transcripts – 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. Your application will be considered incomplete, and will not be reviewed until one recommendation is submitted.

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

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Application Deadline 9/25/2026 3:00:00 PM Eastern Time Zone

Description ***Applications may be reviewed on a rolling-basis and this posting could close before the deadline.**

EPA Office/Lab and Location: A research opportunity is currently available at the Environmental Protection Agency (EPA) at The Chesapeake Bay Program Office in Annapolis, Maryland, and may involve collaboration with investigators at other locations.

The mission of EPA is to protect human health and the environment. EPA works to ensure that: Americans have clean air, land and water; National efforts to reduce environmental risks are based on the best available scientific information; Federal laws protecting human health and the environment are administered and enforced fairly, effectively and as Congress intended; Environmental stewardship is integral to U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy; All parts of society have access to accurate information sufficient to effectively participate in managing human health and environmental risks; Contaminated lands and toxic sites are cleaned up; and chemicals in the marketplace are reviewed for safety.

The Chesapeake Bay Program Office (CBPO) in Region 3 provides core scientific and management support to the Chesapeake Bay Program, a unique, regional partnership derived from Section 117 of the Clean Water Act to direct the protection and restoration of the Bay watershed.

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Research Project: The Chesapeake Bay Program Office (CBPO) is seeking a candidate to conduct research on the Chesapeake Bay Water Quality Model. The candidate will conduct research with, and have access to, a world class team of model practitioners in the Chesapeake Bay Program who are on ongoing projects involving the development and application of numeric estuarine water quality models to support the historic Chesapeake Bay Total Maximum Daily Load (TMDL). The research aims to restore and maintain Chesapeake living resources despite the challenges of future environmental conditions, growth, and other impacts.

The research is to conduct state-of-the-art simulations of water quality processes in the water column, sediment, shallow water, shoreline processes, and ecological processes. The research activities will provide the information needed for the Chesapeake Bay Program Partnership's Watershed Model (CBP Watershed Model) in the development and application of next-generation Chesapeake Bay models to assess the Chesapeake Bay water and ecosystem quality using the unstructured grid model SCHISM and the ICM water quality model. The research will include extensive collaboration with managers, scientists, and engineers throughout the Chesapeake Bay Program Partnership, including different academic institutions and scientific organizations.

The Chesapeake Bay model is further linked to state-of-the-science watershed and airshed models providing a comprehensive tracking and understanding of input nutrient loads and the estuarine response under existing conditions, future environmental conditions, and future management conditions. The ORISE participant’s research will help in the development, calibration, and application of the Chesapeake unstructured grid model and will provide the participant with knowledge, experience, and a network of world class scientists in a rapidly advancing field. The participant’s research will result in a model system of the Chesapeake that is widely followed by other national and international estuarine programs.

Specific Research Topics and Tasks:

1. Research to support the information needed to develop inputs for a SCHISM or equivalent unstructured grid model of the Chesapeake Bay from the watershed, atmospheric deposition of nitrogen to surface cells, and the ocean boundary.
2. Research to support the information needed to provide a detailed linkage of flows, nutrients, and sediment between the Chesapeake Watershed Model and the estuarine unstructured grid model.
3. Research to support the calibration SCHISM-ICM Main Bay Model (MBM) and Multiple Tributary Models (MTMs) to water quality and hydrodynamic observations.
4. Research activities to apply the Chesapeake Bay unstructured grid model to scoping, research, and management scenarios as directed by CBP technical workgroups.
5. Research activities to apply the Chesapeake Bay unstructured grid

model in examining the influence future environmental conditions have on Chesapeake water quality and living resources.
6. Collaboratively research with multiple model teams in different Chesapeake tributaries and collectively use the information to improve the Chesapeake Bay Model in the mainstem Bay (MBM) and its tributaries (MTMs).
7. Research documentation of specific analyses and of the overall estuarine model development, calibration, and application.

Learning Objectives:

- Learn the structure, application, and policy relevance of the Chesapeake Bay Water Quality Model in support of the Chesapeake Bay Total Maximum Daily Load (TMDL).
- Learn to conduct state-of-the-art numerical simulations of estuarine processes, including water column dynamics, sediment interactions, shallow water and shoreline processes, and ecosystem responses.
- Learn to apply and advance next-generation modeling tools, including the unstructured grid model SCHISM and the ICM water quality model.
- Learn to integrate estuarine, watershed, and airshed models to assess nutrient loading, transport, and ecosystem response under current and future environmental and management scenarios.
- Learn to develop, calibrate, validate, and apply complex unstructured grid models to support science-based decision-making.
- Learn to collaborate effectively with managers, scientists, engineers, and academic partners across the Chesapeake Bay Program Partnership.
- Learn to translate advanced modeling results into actionable insights for restoring and sustaining Chesapeake Bay living resources.
- Learn to contribute to a nationally and internationally recognized estuarine modeling system while building expertise and professional networks in a rapidly evolving field.

Mentor(s): The mentor for this opportunity is Lewis Linker (linker.lewis@epa.gov). If you have questions about the nature of the research please contact the mentor.

Anticipated Appointment Start Date: October/November 2026. All start dates are flexible and vary depending on numerous factors.

Appointment Length: The appointment will initially be for one year and may be renewed three to four additional years upon EPA recommendation and subject to availability of funding.

Level of Participation: The appointment is full time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience.

Citizenship Requirements: This opportunity is available to U.S. citizens

only.

EPA Security Clearance: Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at EPA.

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 EPA. Participants do not become employees of EPA, 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.

ORISE offers all ORISE EPA graduate students and Postdocs a free 5 year membership to the National Postdoctoral Association (NPA).

The successful applicant(s) will be required to comply with Environmental, Safety and Health (ES&H) requirements of the hosting facility, including but not limited to, COVID-19 requirements (e.g. facial covering, physical distancing, testing, vaccination).

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

Qualifications The qualified candidate should have received or be currently pursuing a doctoral degree in one of the relevant fields (in computational science, applied mathematics, physical oceanography, marine biogeochemistry, or environmental science related field [e.g. marine science], or in a computational related field [e.g. physics, engineering, computer science, applied mathematics]). Degree must have been received within the past one year, or be currently pursuing.

Preferred skills:

- Experience in environmental applications.
- Strong quantitative skills and experience in numeric model development and scientific programming, and broad knowledge of coastal and estuarine systems.
- Experience and demonstrated skills in numeric modeling using unstructured grids, particularly in ocean/estuarine modeling is preferred.
- Experience with the SCHISM model or other unstructured grid models and their applications to estuarine and coastal systems.
- Experience in water quality modeling.
- Strong background in physical/biogeochemical processes in estuarine and coastal waters.
- Evidence of strong quantitative skills.
- Evidence of experience in using numerical models for oceans, coastal waters, estuaries, and using unstructured grid models, particularly SCHISM.

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Point of Contact Ashley

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 12 months or currently pursuing.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (2)
  - **Communications and Graphics Design** (2)
  - **Computer, Information, and Data Sciences** (6)
  - **Earth and Geosciences** (6)
  - **Engineering** (7)
  - **Environmental and Marine Sciences** (7)
  - **Life Health and Medical Sciences** (8)
  - **Mathematics and Statistics** (7)
  - **Social and Behavioral Sciences** (1)