

Opportunity Title: Postdoctoral Fellowship in Harmful Algal Bloom Habitat
Modeler

Opportunity Reference Code: NOAA-NCCOS-2022-03



Organization National Oceanic and Atmospheric Administration (NOAA)

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A complete application package 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. Selected candidate must provide proof of completion of the degree before the appointment can start. Click [Here](#) for detailed information about acceptable transcripts.
- A current resume/CV
- One educational or professional recommendation

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

**Application
Deadline** 1/26/2022 3:00:00 PM Eastern Time Zone

Description **Applications will be reviewed on a rolling-basis.*

NOAA Office/Lab and Location: A research opportunity is currently available with the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Stressor Detection and Impacts Division (SDI), Harmful Algal Bloom (HAB) Forecasting Branch located in Gloucester, Virginia.

The National Oceanic and Atmospheric Administration (NOAA) formed the National Centers for Coastal Ocean Science (NCCOS) in 1999 as the focal point for NOAA's coastal ocean science efforts. NCCOS uses cutting-edge research and high-tech instrumentation to provide citizens, coastal managers, public health officials, and other decision makers with reliable information needed to determine how best to protect environmental resources and public health, preserve valued habitats, and improve the way communities interact with coastal ecosystems. The NCCOS is headquartered in Silver Spring, MD but also has research labs across the nation. The NCCOS also has many assets including research programs, vessels, satellites, science centers, laboratories, and a vast pool of distinguished scientists and experts.

The HAB-F Branch delivers near real-time forecasting products for predicting the intensity/severity, location, and the potential health risk HABs pose in the Great Lakes and coastal regions of the U.S. While national in scope, forecasting efforts and products address regional needs and specific HAB species. The product sets are intended to support coastal resource managers, public health officials, researchers, and the public.

Research Project: Under the guidance of a technical mentor, the selected candidate will gain experience in various research activities including ecological niche and habitat monitoring and modeling development and validation techniques, satellite data processing, historical data curation and calibration, data analytics, stakeholder engagement, as well as generating outreach materials and technical documentation.

Specific projects include 1) model development for the Chesapeake Bay and 2) algorithm development for HAB species in the Bay.

1. Numerous potentially toxic phytoplankton are known to bloom in the Chesapeake Bay and pose a threat to shellfish, fish, public health and the ecology. In an effort to better protect fisheries and farmed shellfish in the Chesapeake Bay, early identification of potentially harmful algal blooms (HABs) is critical. The diversity of HAB species and their unique impacts on fisheries, aquaculture, recreation, and/or drinking

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water, necessitates the development of novel multi-species HAB forecasts. Since 2014, the NCCOS HAB-F Branch has been using satellite data to monitor phytoplankton in the Bay to support management activities. We are now expanding our efforts to model and forecast the occurrence of multiple HAB species in the Bay. A key part of this effort is understanding the current knowledge and data resources related to these blooms. The selected fellow will synthesize current understanding of algal blooms and data for Chesapeake Bay and assist in the development of an ecological niche model through literature reviews, data synthesis, and engagement with the scientific and management communities.

2. We have also developed a new technology for the rapid identification of HABs in Florida, called HABscope. This microscope/camera technology is used as part of a volunteer network effort to count cells of the toxic red-tide former, *Karenia brevis*, in the Gulf of Mexico. In an effort to train the instrument for new HAB species, which include species that occur in Chesapeake Bay, the selected fellow will be trained on the Artificial Intelligence (AI) technology and assist in developing new algorithms and calibrating the instrument for new phytoplankton species. This will also require documenting the methods used and modifying existing training manuals to include these new capabilities.

Learning Objectives: The fellow will

1. Develop an understanding of phytoplankton ecology in Chesapeake Bay
2. Gain familiarity with ecological and habitat modeling approaches
3. Develop ways to synthesize complex information into useful forms for implementation into ecological models
4. Identify and synthesize large datasets from multiple organizations for use in ecological and habitat models
5. Learn about HAB-F capabilities in monitoring and modeling, including use of satellite data products and models
6. Expand familiarity with statistical and coding software such as R, Python or MATLAB
7. Develop skills in using AI technology for identifying phytoplankton types and the use of the HABscope for phytoplankton enumeration

Mentor: The mentors for this opportunity are Michelle Tomlinson (michelle.tomlinson@noaa.gov) and Jian Shen (shen@vims.edu). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: January 2022. 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 NOAA and is contingent on the availability of funds.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend of \$6,000 and a health insurance supplement of \$300 per month.

Citizenship Requirements: This opportunity is available to U.S. citizens and legal permanent residents (LPRs).

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 NOAA. Participants do not become employees of NOAA, 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 NOAA@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a doctoral degree in Oceanography, Aquatic Sciences, Marine

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Sciences, Limnology, Biological Sciences, or a related field.

Preferred skills:

- Research experience
- Demonstrated ability to work independently and part of a team
- Working knowledge of habitat models for open ocean and coastal systems
- Experience with artificial intelligence

**Eligibility
Requirements**

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** (2 )
 - **Earth and Geosciences** (2 )
 - **Environmental and Marine Sciences** (14 )
 - **Life Health and Medical Sciences** (4 )
 - **Mathematics and Statistics** (4 )