
2018 Great Lakes Summer Fellows Program

The Cooperative Institute for Great Lakes Research (CIGLR) announces the 2018 Great Lakes Summer Fellows Program, in partnership with the National Oceanic and Atmospheric Administration (NOAA) Great Lakes Environmental Research Lab (GLERL). The Great Lakes Summer Fellows Program exposes students to a broad range of disciplines and provides an exciting opportunity for students to conduct research in the Great Lakes region under the mentorship of a CIGLR or GLERL scientist.

Description:

- We are offering eight (8) full-time, twelve-week positions. All positions are located at the NOAA Great Lakes Environmental Research Laboratory (GLERL), 4840 South State Road, Ann Arbor, MI 48108.
- Positions will last for twelve weeks from the start date. The start date will be in early May, but this can be flexible (i.e., early June start) based on the selected candidate's schedule or project needs.
- We seek to use these fellowships to increase diversity in STEM disciplines (science, technology, engineering and math) and strongly encourage applications from students who identify with groups that have been traditionally underrepresented in government and academic workforces.
- There is a stipend of \$6,500 for the twelve-week period, paid in two installments of \$3,250.
- Fellowship position summaries are on the reverse side.

Eligibility:

- The program is limited to currently enrolled undergraduate (juniors and seniors preferred) and graduate students. We will also consider post-baccalaureate or post-masters students who have graduated within the past 12 months (of your fellow position start date) if the position fits directly within a student's career goals.
- You must be either a U.S. citizen or a foreign national who is residing in the U.S. on a current Student Visa.
- Immediate relatives of any CIGLR or NOAA GLERL employees are not eligible to participate in this program, consistent with NOAA guidelines.

To Apply:

- Visit cigl.seas.umich.edu/opportunities/student-fellowships/ to complete an online application, including cover letter, résumé, and transcript upload.
- **Deadline: 18 February 2018 at 11:59 PM EST**
- Applicants will be notified of their status by 22 March 2018.

For application & more information, visit:
cigl.seas.umich.edu/opportunities/student-fellowships/

Contact Information:

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SEE REVERSE FOR FELLOWSHIP POSITION SUMMARIES

The University of Michigan is a non-discriminatory/affirmative action employer.

2018 Great Lakes Summer Fellow Positions More details at cigl.seas.umich.edu/opportunities/student-fellowships/

Ecological modeling of a freshwater estuary (Mentors: Qianqian Liu, UM CIGLR; Eric J. Anderson, NOAA GLERL) This project aims to shed light on how hydrodynamics affect the ecology of Muskegon Lake and the recurring hypoxia in bottom waters. The fellow will work closely with the research team to study how hydrodynamic drivers and anthropogenic stressors affect nutrient and plankton dynamics in Muskegon Lake by applying and calibrating a coupled bio-physical model with observations, analyzing results and engaging in discussion, and carrying out process-oriented numerical experiments.

Impacts of HABs on Lake Erie coastal communities (Mentors: Tian Guo, UM CIGLR; Devin Gill, UM CIGLR; Mark Rowe, UM CIGLR; Victoria Campbell, UM SEAS) Although there are studies starting to describe the economic and public health impacts associated with harmful algal blooms in western Lake Erie, a great deal remains unknown about how HABs impact the behaviors and quality of life of Lake Erie shoreline residents and tourists. This project will focus on the impacts of HABs on tourism, water-based recreation, and public perception. The fellow will be trained in social science methods, and participate in data collection and management. The fellow will also be supported to conduct analysis matching his or her research and professional interests.

Understanding the role of extra-cellular enzyme activity in promoting toxic HABs (Tom Johengen, UM CIGLR; Steve Ruberg, NOAA GLERL) The fellow will support field and laboratory research designed to monitor the timing, extent, distribution, and toxicity of cyanobacterial harmful algal blooms in western Lake Erie and Saginaw Bay, Lake Huron. The fellow will participate in weekly experimental measurements of extra-cellular enzyme activity in conjunction with samples collected during our HABs monitoring program. Results from experiments will be analyzed against observed changes in community composition, algal biomass, nutrient availability and cellular nutrient stoichiometry.

Great Lakes ice climate study (Mentors: James Kessler, UM CIGLR; Jia Wang, NOAA GLERL; Haoguo Hu, UM CIGLR) This project seeks to identify what we can learn about long-term trends in Great Lakes ice cover from the extreme highs and lows of recent years. In particular, the fellow will process the most recent 2018 observational data and append it to the current ice record, perform data analysis of long-term and short term trends in Great Lakes ice cover, and compare short-term observational data to physical model data and validate remote observations with *in situ* observations.

Water quality statistical modeling (Mentors: Mark Rowe, UM CIGLR; Craig Stow, NOAA GLERL) The summer fellow will develop statistical models to predict the response of Lake Erie (hypoxia, algal biomass, nutrient concentrations) to nutrient loads and physical variables using a large database of in-lake observations from federal and state agencies and universities. The fellow will conduct data analysis in a scripting environment, working with several empirical data sets, to develop visualizations, summary statistics, and predictive or explanatory statistical models relating the response of Lake Erie to nutrient loads.

Improving the management of real-time data in the Great Lakes (Mentors: Joseph Smith, UM CIGLR; Steve Ruberg, NOAA GLERL; Philip Chu, NOAA GLERL) For nearly a decade, NOAA-GLERL has produced and archived real-time data from a series of buoys and stations in and around the Great Lakes. There is a great need to identify how real-time data from Great Lakes stations and buoys can be better managed, and what is the best vehicle for disseminating data on the NOAA GLERL website.

The fellow will analyze archived real-time data, their formats, and documentation, developing (and possibly begin executing) plans to re-format and store the data in a more accessible format or data management system.

Estimating gear bias and relative efficiency for zooplankton predators in Lake Michigan (Mentors: Ed Rutherford, NOAA GLERL; Henry Vanderploeg, NOAA GLERL) This project will test the hypothesis that relative efficiency of traditional plankton nets is low for estimating density of native and invasive zooplankton predators. Results will be used to answer whether the use of a strobe flash unit on MOCNESS sampling gear that temporarily stuns zooplankton predators improves efficiency for sampling zooplankton predators compared to using MOCNESS with no flash, or to traditional zooplankton nets. The fellow will quantify how mesh size, net volume, net type, and light affect density estimates of *Mysis*, *Bythotrephes*, and larval fish.

Biotic and abiotic drivers of diel vertical migration in post-dreissenid Lakes Michigan and Huron (Mentors: Hank Vanderploeg, NOAA GLERL; Craig Stow, NOAA GLERL; Ed Rutherford, NOAA GLERL; Doran Mason, NOAA GLERL) We are using multiple technologies to map the fine-scale vertical and nearshore-offshore distributions of physical variables (temperature, light, UV radiation) and biotic variables (chlorophyll, zooplankton, fish) to document the impacts of these changes on diel vertical migration of zooplankton. The fellow will use a variety of statistical approaches in the R programming environment to visualize data and to determine abiotic and biotic factors driving diel vertical migration of zooplankton and larval fishes, as well as participate in at least one 5-day spatial cruise to collect data.