

# Cooperative Institute for Limnology and Ecosystems Research (CILER) Overview

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## CILER Background

- Founded in 1989
  - MOU between University of Michigan and Undersecretary of Oceans and Atmosphere, DOC
- Center of Excellence at the School of Natural Resources and Environment (SNRE)
  - Moved from College of Engineering to SNRE in 2002.
- Awarded 6 multi-year Cooperative Agreements (CAs) by NOAA OAR
  - Currently operating within our 2012-2017 CA
  - Re-competition for CILER in 2017

## CILER's Mission

- Advance our understanding of, and ability to predict, complex ecosystem processes, responses, and dynamics in the Great Lakes
- Identify and characterize emerging areas of concern for the Great Lakes ecosystem, with applications to all coastal ecosystems
- Provide a forum for better linking ecosystem responses, sustainable ecosystem services, and decision-making in the Great Lakes
- Translate research into productive outcomes for stakeholders in the region through outreach and education
- Improve effectiveness of education and expand research training opportunities for students and postdoctoral fellows

## CILER's Goals

- Facilitate the translation of research into more effective decision-making and public education
- Support NOAA's mission and strategic goals
- Facilitate research in the Great Lakes region
- Mentor and train the next generation of scientists through research and education

## Regional Consortium model: 9 academic partners

- Michigan State University, University of Minnesota-Duluth, University of Illinois, University of Wisconsin-Madison, SUNY-Stony Brook, Ohio State University, University of Toledo, Grand Valley State University, Penn State

## CILER Activities

- Task I: CILER administration, education & outreach, postdoctoral fellows program, Great Lakes student fellows program, visiting scientist program, GLERL-CILER Great Lakes seminar series
- Task II: Research and development that involves collaboration between CILER and NOAA scientists
  - Fostered by co-location of CILER and GLERL scientists
- Task III: Research that supports NOAA's goals, but requires minimal collaboration with NOAA scientists

## Current CILER Personnel

- Administration (located at UM)
  - Director (50%), Assoc. Director (15%), Research Administrator (100%), Grants & Contracts Specialist (60%), Administrative Assistant (20%)
- Research (located at GLERL)
  - 4 Research Scientists
  - 2 Retired NOAA Senior Research Staff
  - 15 Permanent Research Staff (+2 pending)
  - 5 Temporary Research Staff
  - 5 Post-doctoral Research Fellows (+1 pending)
  - 8 Summer Student Fellows
  - 1 Long-term Student Fellow
  - 6 Graduate Students
- Total personnel = 51 (+3 pending)

## CILER Contributions to NOAA's Mission

### Theme I: Great Lakes Observing & Forecasting Systems

- Promote ability to forecast physical and ecological dynamics in the Great Lakes
- Improve access to real-time and historical data to researchers and stakeholders
  - › Food web models and predictions of invasive species impacts
  - › Great Lakes response to climate change
  - › Great Lakes Observing System Regional Association (GLOS-RA) Nearshore Observing System Network
  - › Great Lakes ice-circulation modeling
  - › Great Lakes Dashboard Project



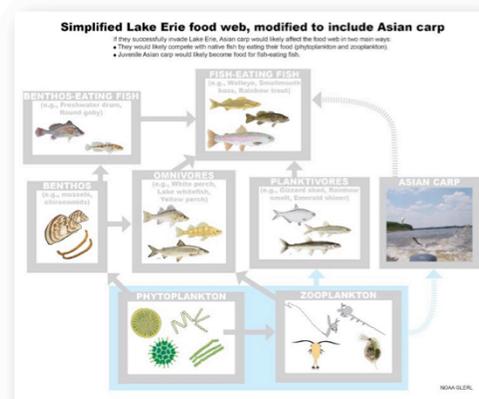
Great Lakes Dashboard Project

## CILER Contributions to NOAA's Mission

### Theme II: Invasive Species

- Prevent, monitor, detect, and control invasive species
- Understand the range of their ecosystem impacts

- › Assessing impacts of Asian carp invasion on Great Lakes food webs
- › Simulating impacts of quagga mussels on the Lake Michigan food web



## CILER Contributions to NOAA's Mission

### Theme III: Ecological Risk Assessment

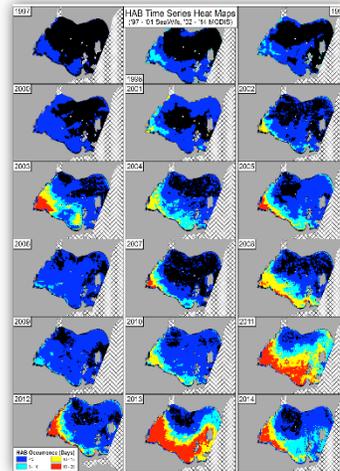
- Document the causes and consequences of emerging physical, chemical, and biological anthropogenic stressors in the Great Lakes
- Evaluate short- and long-term effects of multiple stressors on Great Lakes ecosystems
  - › Harmful Algal Bloom (HAB) and beach quality forecasting
  - › Long-term Ecological Research (LTR) in Lakes Michigan & Huron



## CILER Contributions to NOAA's Mission

### Theme IV: Protection and Restoration of Ecosystem Resources

- Promote ecological integrity and preservation of biological diversity
- Protect, restore, and enhance coastal areas to promote healthy ecosystems
  - › Implementation of the Great Lakes Synthesis, Observations, and Response System (SOAR) program
  - › Implementation of Habitat Blueprint in Muskegon, MI
  - › Predictive models of the relationship between phosphorus and algal production in Lake Erie
  - › Land use indicators and Tipping Points



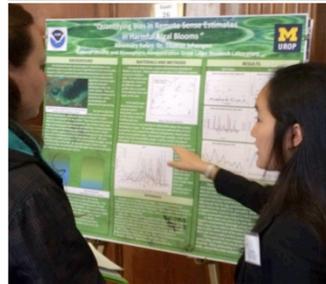
## CILER Contributions to NOAA's Mission

### Theme V: Education and Outreach

- Promote education and training opportunities to students from K-12 through graduate level

#### › Research and Training Opportunities

- Postdoctoral Research Fellows
- Graduate Student Research Assistants
- UM Master's Student Opus
- Great Lakes Summer and Long-term Student Fellowships
- Undergraduate Research Opportunity Program (UROP)
- Partners-for-Excellence HS Intern Program



## CILER Contributions to NOAA's Mission

### Theme V: Education and Outreach

- Education and Outreach Activities
  - National Ocean Sciences Bowl
  - GLERL-CILER Great Lakes Seminar Series
  - Lab open houses and group tours
  - Guest Lectures at Regional Universities and K-12 Classrooms



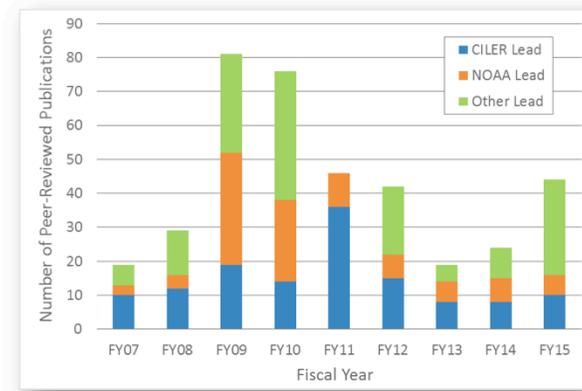
## CILER Contributions to NOAA's Mission

### CILER-sponsored Workshops and Symposia

- CILER 2016 Mini-Summits
  - 3 strategic workshops, one centered on each of GLERL's 3 research themes
  - Invited experts will produce recommendations for future research directions
- International Association for Hydro-Environment Engineering and Research (IAHR)  
2016 Symposium on Ice; May 31-June 3  
- NOAA Ecosystem Modeling and Forecasting Framework for the Great Lakes: Development and Implementation Workshop
- NOAA-OHH Development and Application of Biosensors for Monitoring Human and Ecosystem Health

## CILER Scholarly Output

774 publications since beginning of current CA  
- 380 peer-reviewed -

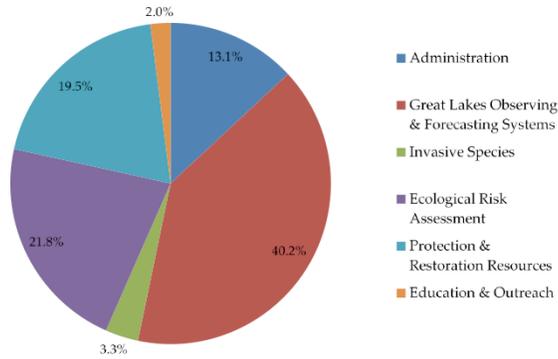


## CILER Funding

**\$12,218,669\***

Total funding from July 1, 2012 – January 31, 2016

### Funding by Theme



\*Includes \$586,772 University of Michigan contribution for Task I Administration

## CILER Challenges

- Alignment of University and NOAA research priorities
- Engagement of Consortium partners
- Lack of dedicated funding for education and outreach activities – need for CILER branding
- Majority of research activities are externally-funded
- Ability to fund graduate students and post-doctoral fellows

## Summary

- CILER provides mutual benefit to NOAA and University of Michigan
- CILER personnel are integral components of most GLERL projects
  - Currently involved in 21 out of 33 GLERL projects (64%)
- NOAA benefits from involvement with students, postdocs, researchers, and faculty with diverse interests in Great Lakes science – A conduit for future NOAA hires
- CILER-facilitated collaboration with NOAA is central to University of Michigan's Great Lakes research

## Questions?

