



# **External Review of the Cooperative Institute for Great Lakes Research (CIGLR)**

A Presentation to the  
NOAA Science Advisory Board

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*Review Panel Chair*

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# Outline



- Members of the Science Review Panel
- Overview of CIGLR
- CIGLR Themes
- Findings and Recommendations
  - Overall Findings
  - Science Review Recommendations
  - Education and Outreach Recommendations
  - Science Management Recommendations
  - Research Theme Recommendations
- Final Comments



# Science Review Panel

**Michael J. Donahue, Ph.D., Chair**

AECOM Technical Services, Inc. and SAB Member Emeritus

**Gary Garnet**

NOAA - National Weather Service

**Todd Nettesheim**

US Environmental Protection Agency

**John Dettmers, Ph.D.**

Great Lakes Fishery Commission

**Michael Twiss, Ph.D.**

Clarkson University

**John Horne, Ph.D. (Advisor)**

University of Washington



# CIGLR Overview



- **Established in 2017**; previously known as the Cooperative Institute for Limnology and Ecosystems Research (CILER) established in 1989.
- **Focus areas include:**
  - 1) Facilitate/lead primary research on key sustainability challenges;
  - 2) Foster engagement with resource managers and other decision-makers to transfer science into application;
  - 3) Provide a diverse workforce with “cutting-edge” career training that yields a diverse and adaptable cadre of researchers and practitioners; and
  - 4) Promote public Great Lakes literacy via outreach and communications.
- **Regional Consortium Members:** University of Michigan, Central Michigan University, Cornell University, Grand Valley State University, Michigan State University, University of Minnesota- Duluth, Ohio State University, University of Windsor, University of Wisconsin-Milwaukee, Fondreist Environmental, Great Lakes Environmental Center, LimnoTech, The Nature Conservancy-Great Lakes, and the National Wildlife Federation- Great Lakes Regional Center.



# CIGLR Overview (cont.)

- **NOAA-sponsored Collaborations:** Michigan Sea Grant, Great Lakes Environmental Research Laboratory, University of Michigan School for Environment and Sustainability, Great Lakes Integrated Sciences Assessments and the National Estuarine Research Reserves program.
- **Vision:** “to be a trusted NOAA Consortium that brings an expanded research capacity with a multidisciplinary, multisector approach and broad geographic coordination, to inform decision makers and help meet grand sustainability challenges of the Great Lakes”.
- **Mission:** “to lead research, develop applications and products, and engage with stakeholders to achieve environmental, economic, and social sustainability in the Great Lakes.”
- **Primary Themes:** 1) Observing Systems and Advanced Technology; 2) Invasive Species and Food Web Ecology; 3) Hydrometeorological and Ecosystem Forecasting; and 4) Protection and Restoration of Resources.



# Science Review Panel Methodology



- Panel member selection
- Review of CIGLR history, strategic plans, report and other documents
- CIGLR researcher presentations and discussion
- Panel member meetings/consultations with NOAA- GLERL and CIGLR Leadership
- Writing assignments/findings and recommendations
- Guided by seven criteria: Grant Success, NOAA-University Partnership, Regional Collaboration, Research Outcomes, Engagement, Career Training, and Outreach and Communications
- Report drafting, refinement, and submittal



# CIGLR

## Overall Findings



- CIGLR research is of high quality, topical, and relevant to NOAA.
- CIGLR has attracted productive early- and mid-career scientists to lead its programs.
- Principal Investigators, cooperators, post-docs, graduate students, and biologists have published 121 peer-reviewed publications in the first three years of a five-year agreement.
- The Science Review Panel rates CIGLR as “Outstanding” and offers several recommendations in the interest of strengthening its critically important focus on Great Lakes research.



# Science Review Recommendations

- **Consider establishing a “venture capital” fund that allows CIGLR to provide staff and students with funding support for new and emerging issues.** This type of fund will allow CIGLR to remain on the “cutting edge” of scientific research and provide “seed money” for investigations that may potentially result in a large-scale focus for CIGLR.
- **Generate additional first-authored publications by CIGLR PIs to further enhance the Cooperative Institute’s stature.**





# Education and Outreach Recommendations



- **Increase the diversity of CIGLR- affiliated staff and students via hiring practices and active outreach.**
- **Focus outreach opportunities to benefit the informed use and health of the ecosystem, rather than focusing solely on the extent to which CIGLR/GLERL products are known and used by the public.**
- **Focus outreach opportunities across the entire Great Lakes region.**
- **Explicitly recognize the need to recognize geographic, racial (including environmental justice) and cultural considerations.**



# Science Management Recommendations



- **Urge NOAA to increase its funding ceiling to \$40M/5 years to maintain current efforts and respond to our report recommendations.**
- **Maintain a focus on ‘Omics’ to advance this potentially transformative work.**
- **Enhance relationships within the University of Michigan/Great Lakes Environmental Research Laboratory realm by establishing and formalizing regularly scheduled coordination/collaboration meetings.**
- **Appoint a full-time, permanent CIGLR director.**
- **Enhance relationships with other Great Lakes entities by establishing and formalizing regularly scheduled coordination/collaboration meetings.**



# Science Management Recommendations (cont.)



- **Undertake a thorough review of consortium members to a) add additional members from the academic, private sector and NGO communities; and b) ensure that existing members are fully engaged/involved in consortium activities and contribute to CIGLR's mission.**
- **Hire a permanent social scientist.**
- **Develop and implement a policy-related program to strengthen outreach to legislators at the state and federal level.**
- **Develop a clearly-stated workplan and timeline for research activities.**



# CI Theme Recommendations

## Observation Systems and Advanced Technology



- **Establish linkages between Observing System and other new and emerging research.** Marriage of remote sensing technologies with emerging technologies that support 'omics research will provide rich observations across the breadth of the Great Lakes region encompassing spatial and temporal priorities.
- **Fully document and publicize the benefits of Observing System products and outcomes.** Incorporating an engineering approach to this research theme will provide valuable insights to demonstrate Observing System utility. More innovative approaches and advanced technologies are desired.



# CI Theme Recommendations

## Invasive Species and Food Web Ecology



- **Broaden the scope of research to include all five Great Lakes, including the connecting channels and tributaries, where appropriate.**
- **Collaborate with operational staff early in the research process where research products are likely to lead to operational outputs.** Specifically, enhanced collaboration with efforts such as the NOAA Lake Erie Harmful Algal Bloom Forecast, is recommended.
- **Enhance focus on, and attention toward policy-relevant findings and recommendations.** This will enhance the impact of CIGLR science by directly benefitting resource managers and policy-makers as part of research outcomes.



# CI Theme Recommendations

## Hydrometeorological and Ecosystem Forecasting



- **Ensure that climate change is an overarching CIGLR theme given its far-reaching implications for weather, hydrologic conditions, and ecosystem health.** This can be accomplished, among others, by linking its work in this area to climate change, as appropriate.
- **Strengthen relationships with the NWS, particularly in regard to forecasting of lake effect snow, ice cover and lake levels.** The Panel recognized the synergy between CIGLR activities and the NWS mission, yet also noted that these relationships were limited, and the full benefits and efficiencies of closer collaboration were not being realized.



# Final Comments

- The Science Review Panel rates CIGLR as **OUTSTANDING**, given its scientific excellence, productivity, focus on critical issues, and collaborative nature.
- In the interest of further strengthening its critically important work, a series of recommendations focus on Overall Findings and Recommendations, Education and Outreach, Science Management and the several Research Themes that characterize CIGLR's current focus.



Questions?