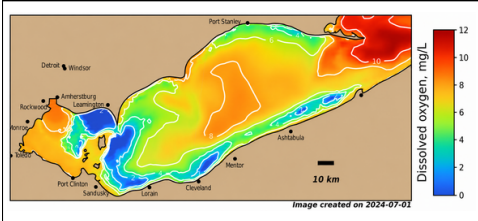


Research Impact & Progress

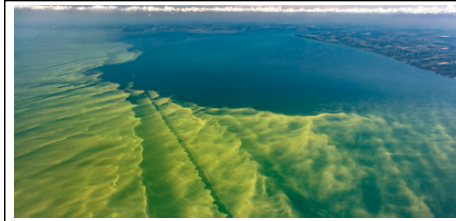
The Cooperative Institute for Great Lakes Research (CIGLR) is hosted by the University of Michigan and consists of a Research Institute that is co-located with the NOAA Great Lakes Environmental Research Laboratory (GLERL) and a Regional Consortium of ten universities, three businesses, and two NGOs that work together to achieve environmental, economic, and social sustainability in the Great Lakes. CIGLR's research themes complement those of GLERL and include hydrometeorological and ecosystem forecasting, observing systems and advanced technology, invasive species and food web ecology, and protection and restoration of resources.

TRANSITIONED TO OPERATIONS (LAST 3 YEARS)



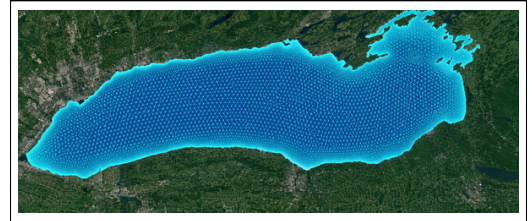
Lake Erie Hypoxia Forecast

Developed by GLERL and CIGLR, this forecast became publicly available in 2024 following operational transition to NOAA National Centers for Coastal Ocean Science (NCCOS). It provides advance notice of low oxygen events affecting Lake Erie municipal water intakes, including major cities like Cleveland, OH. Hypoxia events can impact drinking water quality and require treatment to avoid service disruption. Early warning helps managers adjust staffing, increase monitoring, and prepare for mitigation.



Lake Erie HAB Toxin Forecast

Currently transitioning to operations at NOAA NCCOS, this forecast builds on the operational Lake Erie Harmful Algal Bloom (HAB) forecast developed by CIGLR and GLERL. The Lake Erie HAB Toxin forecast predicts high- and low-risk areas for toxin exposure, supporting informed decision making for public safety (e.g., beach managers) and tourism (e.g., low-risk recreation). A public version of the forecast is anticipated for the 2026 bloom season.



Next-Generation Lake Ontario Operational Forecast System

Next-Gen LOOFS advances real-time and 5-day lake condition forecast capabilities by delivering major advancements in high-resolution modeling of coastal harbors, floodplains, and compound flooding across 600+ streams connected to Lake Ontario, including the St. Lawrence River. Currently transitioning to operations at NOAA Center for Oceanographic Products and Services (CO-OPS), the improved model supports better decision making for navigation and flood control, along with more accurate regional weather simulations (e.g., lake effect snow).

EXPECTED TO TRANSITION TO OPERATIONS (NEXT 1-2 YEARS)

Great Lakes Integrated Operational Forecast System

GLINT-OFS provides critical upgrades to current Great Lakes operational forecasts, covering all five lakes plus Lake St. Clair. By providing accurate information on water levels, currents, ice cover, and more, GLINT supports decision-making for water management, shipping and navigation, coastal communities, and hazard preparedness. Under development by CIGLR and GLERL, GLINT is expected to be ready for CO-OPS validation by January 2027 and operational within two years.

Great Lakes Modular Ocean Model

In development by CIGLR, GLERL, and NOAA Geophysical Fluid Dynamics Laboratory (GFDL), GL-MOM6 is a new version of GFDL's MOM v.6 that improves representation of the Great Lakes in global models. Better representation of lake-atmosphere interactions in global models will support improved future weather and environmental projections and more accurate hazard forecasts, including lake-effect snow and lake ice.

Next Generation Great Lakes Water Level Forecasts

Co-designed by CIGLR, GLERL, the University of Michigan, and primary stakeholders at the U.S. Army Corps of Engineers (USACE), this new Great Lakes water level forecast extends predictions beyond six months, marking a major advancement in subseasonal-to-annual (S2A) forecasting. The improved outlook will support proactive, risk-informed decision-making for water level management, shipping and navigation, coastal resilience, and hazard preparedness. The interagency team is actively coordinating a transition to operations at USACE within two years.