



# ANNUAL IMPACT REPORT 2015

The Great Lakes Observing System is a network of people and technology coordinated to provide data about the Great Lakes at no cost to users and in a variety of formats and applications. This information informs policy, public health and safety, resource management and research activities.

# FROM OUR DIRECTOR

## BUILDING A DATA SHARING COMMUNITY IN THE GREAT LAKES

Members, Partners, and Friends:

First off, I'd like to thank you, the GLOS network, for your continued support and collaboration, without which we would not be where we are. This year has been truly monumental for GLOS. We welcomed new board and staff, developed and submitted our next five-year funding proposal to IOOS, and completed our application for IOOS Certification. Of course, this year has been monumental for me as well, becoming the GLOS Executive Director. I am honored to be able to lead the organization to its next level of maturity and look forward to working with you all toward advancing the Great Lakes observing enterprise.

Another milestone is on the horizon as 2016 marks the 10 year anniversary since the first GLOS independent board meeting. The organization has come a long way since its inception at the Great Lakes Commission. Over the last ten years the Great Lakes Observing System has supported critical gap-filling data collection and built a space for researchers, state and federal agencies, business and non-profits to come together to share data.



### GREAT LAKES INFORMATION FOR PLANNING, SAFETY AND STEWARDSHIP

The Great Lakes Observing System (GLOS) provides near real-time information and forecasts of conditions bi-nationally and across the Great Lakes. Fishermen, ship captains, meteorologists, emergency response managers, and many other people rely on GLOS every day.

In addition to providing near real-time data, GLOS enables predictions of harmful algal blooms, water quality monitoring, and measurements of ocean acidification. GLOS is a regional partnership of academic institutions, industry, state and federal agencies, and non-government organizations — all collaborating to deliver actionable water and weather information.



GLOS is the Great Lakes entity of the Integrated Ocean Observing System (U.S. IOOS), which works with regional partners to ensure compatible and consistent

ocean and coastal data collection, management, and information products across the nation.

We want to continue to build on our role as coordinator, integrator, and point of leverage and discovery that serves the data needs of the Great Lakes community.



It's that inclusive environment that we have considered while looking at best ways to achieve goals in the future. Building a data sharing community with a culture of involvement and common goals will amplify each piece of data, making it an integral piece of an information puzzle. To that end, you'll see more opportunities from GLOS to engage as a true "network" in the future. I want to encourage you to reach out to us if you have ideas or suggestions for how to foster and grow this community because after all, you are the GLOS network.

Looking forward to another GLOSome year with you all!

Sincerely,

A handwritten signature in black ink that reads "Kelli Paige".

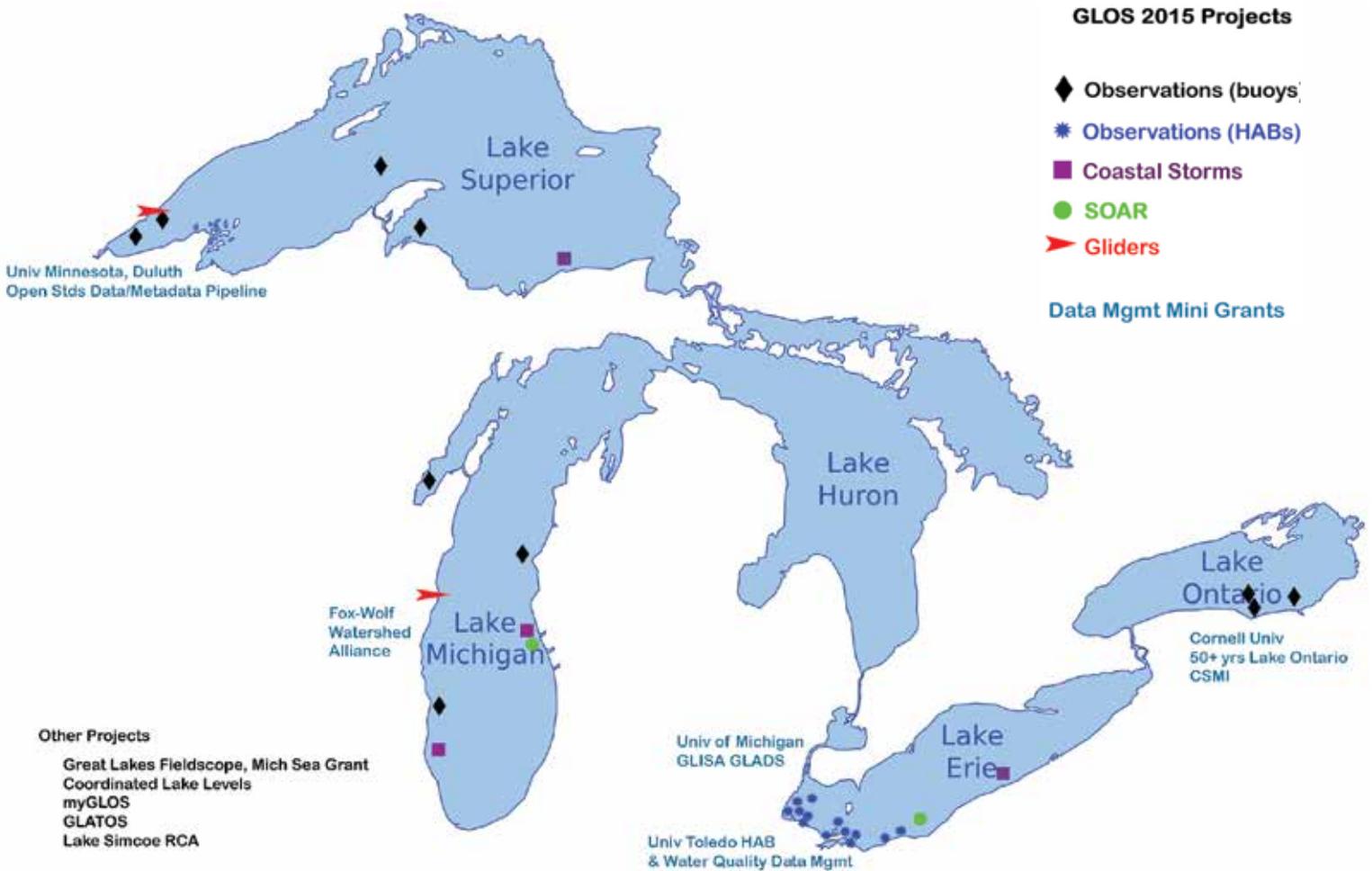
Kelli Paige  
Executive Director, GLOS



The IOOS Association is a non-profit organization formed by the Regional Associations (RAs) for Coastal and Ocean Observing in support of the U.S. IOOS. It works with the 11 RAs, the U.S. IOOS

Program Office in NOAA, and other partners to address the nation's need for coastal observing and information.

# PROJECTS AND MEMBERSHIP

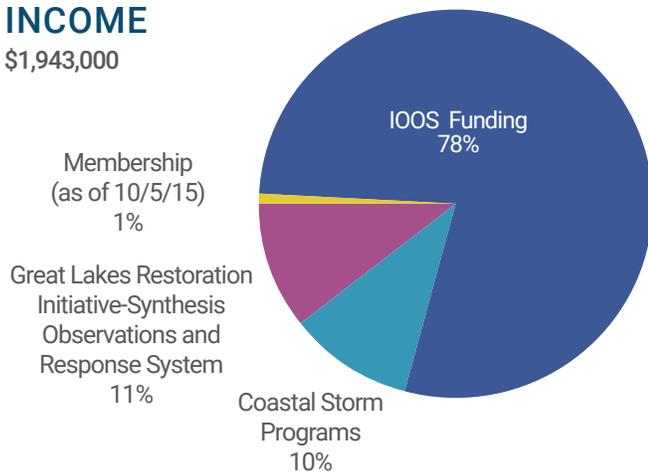


## 2015 FINANCIALS

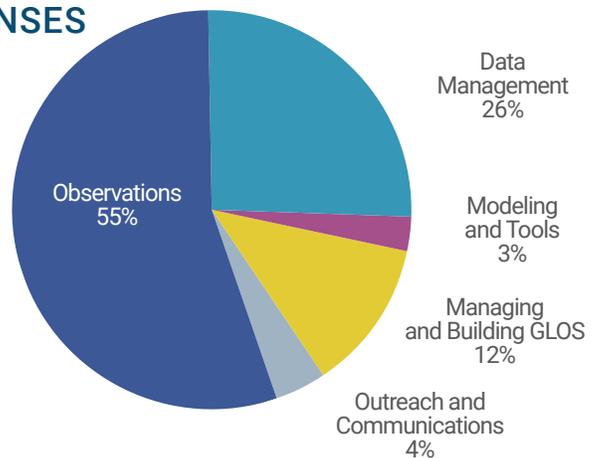
GLOS is funded primarily by U.S. IOOS.

### INCOME

\$1,943,000



### EXPENSES



The financial information above represents funding allocated in 2015 and how these funds were budgeted to be spent. Our financial year ends June 30th and audited financials are available at [www.guidestar.org](http://www.guidestar.org).

# INCREASING DATA OFFERINGS

## INCENTIVIZING DATA AVAILABILITY

A federated data management system with central coordination could be visualized as an interstate highway system. For instance, GLOS and its Federal partners could be seen as stewards of a data management “interstate highway,” but there are other critical players, such as academic institutions, state and local government, and other research/policy/advocacy organizations that are responsible for the local “roads” that connect to this system. These partners already collect and/or manage data but need to develop the capacity and infrastructure to help make their data available to a wider audience. Similarly, there may be larger policy or management efforts being planned by a consortium of partners that need to design or develop a framework to manage and widely share the data being used for these initiatives.

GLOS held a mini-grant competition to provide one-time investments in support of data management projects that can help connect the “local roads” to the “interstate highway” system. Five projects were awarded funding through this opportunity.

**A Harmful Algal Bloom and Water Quality Data Management Program for Western Lake Erie** Thomas Bridgeman, University of Toledo

**An Open Standards Data and Metadata Pipeline for the Natural Resources Research Institute Great Lakes Data** Terry Brown, University of Minnesota-Duluth

**Aiding management and advancing Great Lakes ecology: Combining 50+ years of data with the 2013 Lake Ontario Cooperative Science and Monitoring Initiative** Lars Rudstam, Cornell University

**Building a Great Lakes Adaptation Data Suite (GLADS) for Informed Decision Making in the Great Lakes Region** David Schwab and Catherine Riseng, University of Michigan

**Development of a regional data management system to support the restoration of Green Bay and implementation of the Lower Fox River Total Maximum Daily Load** Jessica Schultz, Fox-Wolf Watershed Alliance

# GREAT LAKES INFORMATION FOR PLANNING, SAFETY AND STEWARDSHIP

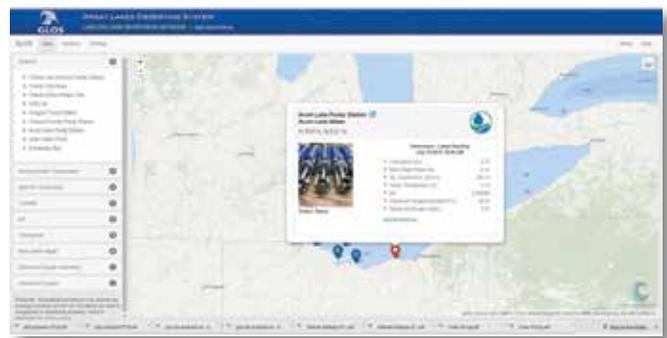
## BETTER INFORMATION ABOUT HARMFUL ALGAL BLOOM CONDITIONS

After more than half a million people lost access to drinking water in and around Toledo, Ohio in August of 2014, the Great Lakes Observing System worked to coordinate data and improve response to HABs. The HABs Data Portal provides convenient access to data used to monitor conditions and to alert those making decisions regarding harmful algal blooms and water treatment.

The Lake Erie HABs Monitoring Network includes a diverse range of water quality stakeholders. Those include municipal water treatment facilities, such as Ottawa County, Avon Lake, Toledo, Oregon, Marblehead, and Put In Bay. The Network also includes academic institutions, with Bowling Green State University, the University of Toledo and Ohio State University adding information as well as federal data from the National Oceanic and Atmospheric Administration's Great Lakes Environmental Research Laboratory sensors and private data from LimnoTech.

“GLOS is a leader in the collection and sharing of environmental data from distributed sources. Having all of the public water system datasonde information available in a user friendly format at one location will make it easier for Ohio EPA staff, public water system operators, researchers and even the general public to access this important streaming information in real-time.”

-Heather Raymond, Ohio EPA



# GREAT LAKES INFORMATION FOR PLANNING, SAFETY AND STEWARDSHIP

## WORKING ACROSS BORDERS

The Great Lakes are a bi-national resource, and GLOS is connecting data from both nations to inform decision making and management. Great Lakes data users can look forward to a richer selection of data thanks to the 2015 introduction of an applied information product generated by an ongoing binational partnership. Global Earth Observations Great Lakes (GEO Great Lakes) and Conservation Ontario have enabled the Lake Simcoe Region Conservation Authority (LSRCA) to link their near-real-time data feeds into the Great Lakes Observing System's data portal, thereby demonstrating that cross-boundary data can be readily shared to increase access and use of reliable data in decision support.

“ With an exceptional lake-monitoring program, the near real-time data that LSRCA is able to provide in this shared environment is bound to improve conservation outcomes. By moving into this new shared platform we are achieving goals set on both sides of the border. As the partner pool expands stakeholders will see improved depth of information and expanded access to sources. ”

- Kim Gavine, general manager of Conservation Ontario and Environmental Protection



# BUILDING PARTNERSHIPS



“ The health of our customers is of utmost importance to us. Getting good information from the lake provides an integral piece of the safe water puzzle. ”  
-Scott Moegling, Water Quality Manager  
with the Cleveland Division of Water.

Photography ©Ed Verhamme

Cleveland Division of Water, Cleveland Water Alliance, and the Lake Erie Energy Development Corporation partnered on a new buoy this year in the Cleveland Area with a grant funded by the US Environmental Protection Agency Great Lakes Restoration Initiative and administered by the GLOS and the National Oceanic and Atmospheric Administration.

A diverse group of stakeholders will utilize observations from the buoy. The bottom waters of central Lake Erie regularly go anoxic during the summer and fall months. This presents a problem for water intake managers that rely on a consistent source of freshwater to supply drinking water to plants located along the Ohio shoreline. The hypoxic zone hugs the bottom of the lake and as the summer progresses the thickness of the bottom hypoxic layer increases. The water intake cribs draw water from about 10 to 15 feet off the bottom. In past years the hypoxic layer expands enough vertically that the low dissolved oxygen water was drawn into the intakes. Passing storms and internal seiches can also temporarily drive the hypoxic layer up in the water column and into the intakes. The monitoring system will track the thickness of the hypoxic zone, or “hypolimnion,” and provide valuable tools for resource managers.



# great lakes observing system

## GLOS MEMBERSHIP

GLOS is the trusted source of water and weather information in the Great Lakes. GLOS membership is a diverse mix of those interested in obtaining, using, and sustaining the best water and weather information in the region.

The federal funds we receive provide critical base support, but we need your help to keep the system operating and improving. With your membership we will be able to:

- Maintain and repair infrastructure, ensuring continued observations and forecasts,
- Develop new tools to make it easier for people to access and understand the information, and
- Advocate for the national IOOS program to continue base support.

### GLOS MEMBERS (as of October 1, 2015)

#### Associate level (individual):

Jennifer Boehme  
John Bratton  
Kathryn Buckner  
Mark Burrows  
John Carey  
Matthew Child  
Gregory Cutrell  
Peter Esselman  
Carolyn Foley  
Nancy Frank  
Norma Froelich  
Glen Hudgin  
Tom Johengen  
W. Charles Kerfoot  
Kelly Knee

Frank Kudrna  
Wendy Leger  
John Lenters  
Karl Luttrell  
Martha Maier  
Guy Meadows  
Adam Mednick  
Benjamin Miller  
Eric Obert  
Jennifer Read  
David Schwab  
Robert Shuchman  
Tad Slaweki  
Edward Verhamme  
Lizhu Wang

#### Associate level (non profit):

Buffalo State College Great Lakes Center  
Conservation Ontario  
Council of Great Lakes Industries  
Great Lakes and St. Lawrence Cities Initiative  
Great Lakes Commission  
Great Lakes Fishery Commission  
Great Lakes Research Consortium  
International Joint Commission  
Michigan Tech Research Institute  
NY Sea Grant  
Regional Science Consortium  
UM-Duluth Large Lakes Observatory  
University of Michigan Water Center  
USGS Midwest Region

#### Associate level (for profit):

Fondriest Environmental, Inc.  
LimnoTech  
R. M. Young Company  
RPS ASA

## BECOME A MEMBER

Membership in GLOS is an important way to support your regional coastal observing system and can include the following benefits:

- ✓ Subscription to GLOS Real Time News
- ✓ Complimentary registration for Annual Meeting
- ✓ Consultations with GLOS staff

For more information and an application form, please visit:

[www.glos.us/membership](http://www.glos.us/membership)

### GLOS STAFF

Kelli Paige, Executive Director

Andrea Maguire, Program Coordinator

Kristin Schrader, Communications Manager

**10** municipal water intake facilities contributing data to the HABs Portal

**41** different partner sensors and buoys provided data in 2015

**3** new buoys were funded in FY14-15 (2 coastal storms and 1 Cleveland buoy)

**\$487,171** total amount awarded in data mini grants (5 grants total)

FOR REAL-TIME GREAT LAKES AND WEATHER DATA AND UPDATES  
ON GLOS ACTIVITIES, VISIT OUR WEBSITE: [WWW.GLOS.US](http://WWW.GLOS.US)



### STAY CONNECTED!

GLOS stakeholders are increasingly accessing data on mobile devices, and we will soon be launching a mobile-friendly version of the website. Check out [www.glos.us](http://www.glos.us) soon on your mobile device.