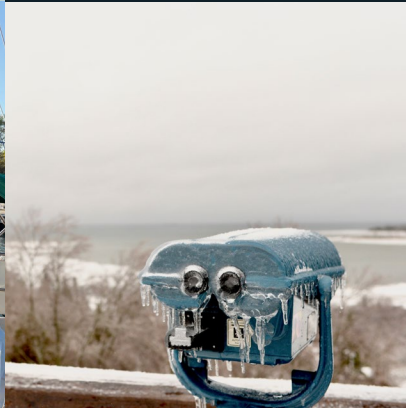


2025 Annual Impact Report



great lakes
observing system

20
years

Letter from the CEO & Reflections on 20 Years of GLOS

For 20 years, the Great Lakes Observing System (GLOS) has worked to make Great Lakes data accessible to everyone who needs it. Our mission remains simple: provide real-time information that keeps people safe and protects freshwater resources for future generations. This anniversary offers a moment to reflect on our progress and purpose.

Founded in 2005 with five partner organizations, GLOS has grown into a network of more than 70 partners, integrating over 230 real-time data streams and generating an estimated \$18 million in annual value. Our work supports natural resource decision-making, public health protection, and navigation safety. This growth demonstrates what happens when organizations choose to work together. Each new sensor added provides data to the entire network, and each improved observation benefits all users. The network effect of these infrastructure investments is an information ecosystem with proven impact.

We've made important strides this year. Our Seagull platform now delivers critical weather, water, and wave data to families planning beach trips, commercial vessels navigating shipping lanes, and rescue operators checking GLOS data before a new mission. We deployed the first real-time evaporation monitoring station on the Great Lakes. And we expanded year-round observations to fill critical winter data gaps. These advances build on decades of steady progress, from achieving Integrated Ocean Observing System (IOOS) certification to launching Seagull, which reimagines how people access lake information.

Sustaining Great Lakes observing requires continued effort and investment. Infrastructure must be maintained, extreme weather events are increasing, and demand for reliable information continues to grow. GLOS is adapting while preserving the consistency users depend on. In 2026, we will launch a mobile coastal safety app focused on preventing water safety incidents and drownings.

The GLOS team extends thanks to the partners and researchers that maintain sensors and share data for free, the users that offer feedback to drive improvement, and supporters that advocate for continued investment. None of this happens without you.

Looking ahead, we are advancing our next strategic plan to strengthen observing networks, expand community partnerships, and build sustainable capacity. GLOS will continue its leadership with Lakebed 2030 to support unprecedented lakebed exploration.

Twenty years ago, we began building the Great Lakes information ecosystem. Today, we are that ecosystem, a trusted infrastructure with real impact. We invite you to join us as we write the next chapter.



Sincerely,

Jennifer A. Boehme

Jennifer Boehme
Chief Executive Officer

20 years of GLOS

"From real-time wave, wind, and temperature data that protect commercial shipping routes, to early warnings that help communities prepare for flooding, dangerous currents, or ice hazards, GLOS reduces risk and saves lives. It's a backbone for regional resilience—supporting fisheries, tourism, infrastructure planning, economic prosperity, and emergency response across the Great Lakes."



Heather Stirratt

Chair | GLOS Board of Directors
2025-Present

"GLOS began as a revolutionary idea to collect and share open-sourced high quality data for the public at large, including swimmers, fishers, the maritime community, researchers, and utility operators. This allows unprecedented access to information for people to make educated and timely decisions."

"For the 40 million residents and commercial users of Great Lakes water - to drink, recreate, or traverse its vast expanse - it means safety. Sharing this data without strings attached has helped advance new technologies and early detections of detrimental chemical and biological stressors. It's exciting to think about what GLOS will bring to the Great Lakes region in the next 5, 10, and 20 years."



Thomas Rayburn

Chair | GLOS Board of Directors
2023-2025

"Organizations like GLOS are really important for the future of the Great Lakes. GLOS has the ability to continue to listen carefully and fill the gaps in ways that are really going to be important for the whole basin. There is no one else doing that for data at that level: connecting the data across the border."



Jen Read

Executive Director | GLOS
2008-2014

GLOS Impact

Every year, GLOS grows and evolves to take on new projects based on changing needs and conditions in the Great Lakes. And 2025 was no exception. Despite the changes, we continue to focus on who we are and what we do through our mission to make Great Lakes information accessible to and usable by those that need and want it.



Water Quality Management

Over 40 million people depend on the Great Lakes for drinking water and recreation. When equipped with real-time insights on lake health, observers can **protect source waters, enjoy the lakes safely, and improve the health of their communities.**



Maritime Economy & Services

Maritime transportation and recreation are significant parts of the \$6T regional economy. GLOS observing assets **support safer boating, more efficient shipping, and smarter decision making.**



Public Safety

GLOS works with partners to install observing technology and deliver critical data to measure and assess coastal hazards. The information collected is critical for **providing safety guidance to decision makers, from nearshore navigators to recreational beachgoers.**

“This weather information is critical not just for comfort but for safety. The available models and the accuracy of prediction can be key to planning a trip effectively. Knowing the current conditions is key to not getting caught out in a dangerous situation, like big wave height and/or intense storms.”

Benjamin Lombard
Ludington, MI

“I have used Seagull extensively for pier, surf, and river fishing [for] salmon the past few years. It is a great tool for water temperature, which is a major factor influencing the location of salmon. Without Seagull, it would be more difficult to know when and where to go fishing for salmon.”

Logan Ferguson
Sault Ste. Marie, MI



“I am a beach manager and I use Seagull to assist in public beachfront safety by helping me determine whether water conditions are safe for swimming. Seagull helps me make better informed decisions regarding swimmer safety.”

Christopher Anderson
Evanston, IL



Indigenous Workshops & Partnerships

Indigenous Great Lakes Network Initiative Annual Meeting

GLOS staff attended the [Indigenous Great Lakes Network Initiative's Annual Meeting](#) in Rama, Ontario, where we presented the [Seagull platform](#), and discussed creating custom Seagull platforms with interested communities. We listened as attendees spoke to needs and requirements to address data sovereignty and accountability.

Lac du Flambeau Monitoring & Workshop

Lac du Flambeau (LDF) Band of Lake Superior Chippewa Indians has recently expanded its monitoring capacity through partnership with GLOS. LDF added two Sofar Smart Moorings for inland lake monitoring and these moorings included two of the very first integrated dissolved oxygen sensors in a global network of over 1,000 buoys. These buoys are helping expand LDF's understanding of human pressures on the lake.

Additionally, LDF hosted an Environmental Sensing workshop in the fall to create community awareness for the environmental sensing capacity that exists at LDF. The meeting was co-planned by GLOS, LDF, and members of the [STRONG Manoomin Collective](#).

Members of the LDF community, [Great Lakes Indian Fish & Wildlife Commission \(GLIFWC\)](#), and The [Bad River Band of Lake Superior Chippewa](#) gathered to discuss the recently added monitoring capabilities, additional monitoring needs and purposes within the community, and data sharing concerns/ideas.

Indigenous-led Monitoring & Data Management Initiatives

The [Bay Mills Indian Community](#) and GLOS planned and hosted a workshop in late October. The workshop showcased community monitoring projects including identifying movement patterns of Lake Whitefish, movements of common carp for the protection of wild rice, utilizing various sensors to observe tribal waters as well as other projects focused on bats, cranberries, and water quality.

Sail Her Dreams

Sail Her Dreams is a sailing academy based in Chicago that is focused on STEM and sailing education for girls. GLOS helped support their summer 2025 season by loaning a water quality sonde* to the group and providing training on how to use it. They used the sonde, lovingly nicknamed "Sondra," to collect temperature, conductivity, dissolved oxygen, and water clarity data around Montrose Harbor. We look forward to continuing to support educational initiatives with Great Lakes Sailing in 2026. *Special thanks to University of Wisconsin-Milwaukee for loaning the sonde that is an older version not being utilized for long-term field deployments.

IOOS Fall Meeting

We were honored to have the 2025 [IOOS](#) Fall Meeting in the Great Lakes! From September 16-18th, GLOS hosted the IOOS Program Office, IOOS Association, and Regional Association representatives in Traverse City, MI.

GLOS CEO Jennifer Boehme led a 'GLOS Highlight' session featuring partner presentations by Hayden Henderson of [Great Lakes Research Center at Michigan Tech](#), Ella Skrocki of [Sleeping Bear Surf](#), Brian Tol of [Mutually Human](#), and (then) GLOS Board of Directors Vice Chair Pete Giencke. All presenters helped showcase the immense value of our regional observing network and the potential for new and innovative ways to deliver data to the region's stakeholders.





Smart Great Lakes

In 2025, the [Smart Great Lakes Initiative](#) (SGLi) leadership team worked to evaluate current goals, consider the ever evolving and advancing technology, and address changing needs of the Great Lakes region. In February 2026, SGLi will host a workshop to re-establish a shared purpose, reorienting towards a SGLi 2.0, to better incorporate the major forces reshaping Great Lakes observing and information systems.

The workshop will also explore how the landscape of data providers and users is evolving—and what new gaps, needs, and opportunities this creates for future Great Lakes information services.

Lakebed 2030

Since 2019, the [Lakebed 2030](#) initiative has grown from a grassroots effort into a binational network of U.S. and Canadian organizations, multi-jurisdictional agencies, and individuals who recognize the importance to the economy and environment by having the remaining 85% of the Great Lakes lakefloor fully explored and mapped to modern standards and in high-density.

In 2025, GLOS continued as a leader of the Lakebed 2030 initiative. With government and academic partners, [NOAA](#) and [Northwestern Michigan College](#), GLOS helps lead the efforts behind the initiative’s strategic plan and data collection.

The Lakebed 2030 initiative remains committed to comprehensive and high resolution lakefloor mapping for the entirety of the Great Lakes.

Expanding Volunteer Contributions of Lakefloor Depth Data

GLOS initiated the Crowdsourced Bathymetry program as a public/private partnership in 2021. Led by GLOS and contracted vendor [Orange Force Marine](#), there are now nine vessels of opportunity that have been outfitted with bathymetric data acquisition and transmission capabilities. Since the program’s inception, over 32 million depth soundings have been collected and have been publicly disseminated via the [International Hydrographic Organization’s Data Centre for Digital Bathymetry](#).

GLOS continues to explore opportunities for program expansion through increased vessel participation as well as research and development to improve data acquisition efficiency.



The Great Lakes Mapping Act

Representatives Lisa McClain (MI, 9) and Debbie Dingell (MI, 6) reintroduced the Great Lakes Mapping Act in April 2025. This bipartisan legislation would direct the [National Oceanic and Atmospheric Administration \(NOAA\)](#) to conduct high-resolution mapping of the Great Lakes to further understand the underwater environment of the Great Lakes’ lakebeds.

2025 Seagull Update

In 2025, GLOS focused on strengthening and expanding our digital products to better serve the varied needs of the Great Lakes community. Much of our effort centered on the development of a new mobile application **Seagull Coast** that will bring coastal safety information directly to users planning recreational activities on the Great Lakes. At the same time, we continued to enhance and operate [Seagull](#), our flagship data platform - adding new data sources, improving performance, and introducing powerful tools for both users and platform managers. These efforts reflect our ongoing commitment to delivering reliable, actionable, and user-centered information that supports safer and more informed decision-making on and around the Great Lakes.

Growth, New Data & Better Tools

We continued to invest in Seagull by expanding its capabilities, improving performance, and supporting daily operations and maintenance. Seagull continues to serve a wide range of users including anglers (private and commercial), small craft operators, tour operators, scuba divers, boating enthusiasts, beach goers, water treatment managers, researchers, and cruise ship companies.

New and Enhanced Seagull Features in 2025

- **Platform Management Workspace**
We developed and released a new management workspace for platform managers, enabling them to view and manage data quality flags, make platform-specific announcements visible to users, control deployments and manage platform parameters, and more efficiently oversee platform data and operations.
- **Expanded Water Level Data**
Water level stations were added to Seagull, with plans to continue expanding water level coverage to provide more comprehensive access for users.
- **Wave Forecasting Model Data**
Wave forecasting model data from WaveWatch III was added to Seagull, enhancing users' ability to assess wave conditions across the Great Lakes.
- **Webcam Data Pipeline (Coming Soon)**
We developed a new pipeline to support adding more webcams to Seagull. These additional webcams will be released soon, further improving situational awareness for users.
- **Ongoing Performance and Stability Improvements**
We continued addressing bugs, performance issues, and scalability challenges to ensure Seagull remains reliable, responsive, and capable of meeting growing user demand.



User Reach & Engagement

Over 146,000 active users in 2025
120,000+ users based in the United States, with growing regional diversity
4,481 registered Seagull accounts, enabling personalized views and user alerts



Top Cities by User Count

Chicago led all cities with approximately 23,000 users
Followed by Indianapolis (12.3k), Ashburn (10.3k), Detroit (5.6k), Toronto (3.9k), Minneapolis (3.7k), Milwaukee (3.5k), New York City (3.2k), Grand Rapids (2.8k), and Virginia Beach (2.3k).



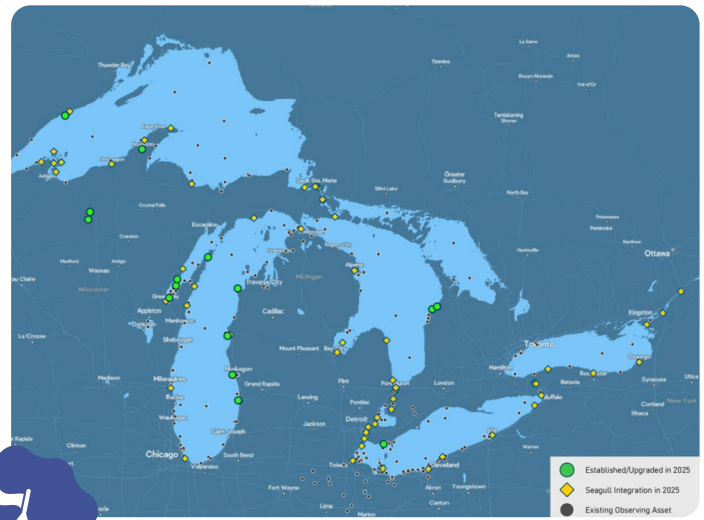
How Users Access Seagull

76% mobile users, reflecting on-the-go, field-based usage and **23% desktop users**

Great Lakes Observations

Community-Targeted Observing Deployments

- Lightweight observing buoys are becoming increasingly popular for areas without real-time information. Notably, even community partners have started to maintain some sites. This year, three “non-traditional” buoy operators deployed seven Spotter buoys.
- GLOS has focused on building relationships with [National Weather Service](#) (NWS) colleagues in the region. With improved safety as a core goal for near real-time observations, we make sure NWS is aware of new deployments, welcoming feedback on where additional observations are most valuable to improve forecast abilities.
- Special funds are dedicated to making repairs and upgrades to aged instrumentation on buoys and meteorological towers, allowing information to be provided more reliably to end users, better leveraging every tax dollar.



Refurbishing Platforms & Adding New Observations

- GLOS continues to support several organizations’ platform refurbishment and additional observing capacity additions. These upgrades and additions help with our ability to monitor coastal conditions and improve the longevity of the observing system.
- A special pool of funds is dedicated to making repairs and upgrades to aged instrumentation on buoys and meteorological towers, allowing information to be provided more reliably to end users and every tax dollar to be better leveraged.
- Notable upgrades include brand new buoy superstructures, updated weather stations, temperature sensors, and water quality monitoring equipment, as well as improved data loggers and modems for better communication of data.

Seasonal Usage Patterns

Seagull usage shows a strong seasonal pattern aligned with Great Lakes recreation. During the in-season months (May through October), the platform supported **122,000 users** and recorded nearly **5 million page views**, averaging around **4,500 users per week** and peaking at **11,000–13,000 weekly users** during the busiest months of August and September. Daily usage reached a high of approximately 4,900 users in August 2025. Even during the off-season (January–April and November–December), Seagull continued to see steady engagement, with about 29,000 users and 560,000 page views, underscoring its value as a year-round resource.

Platform Reliability & Data Growth

230

Active Stations

99.9%

Uptime Maintained

25

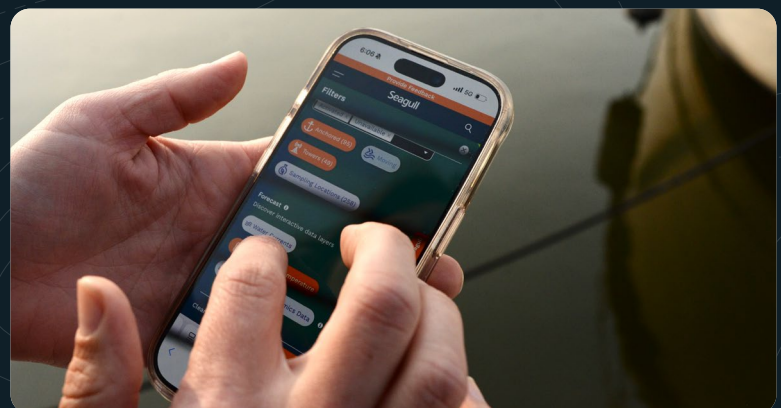
New Datasets

70

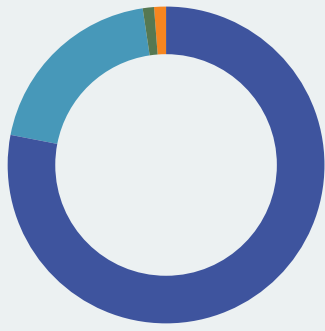
Seagull Data Contributors

320

Near Real-Time Datastreams (archived or streaming)



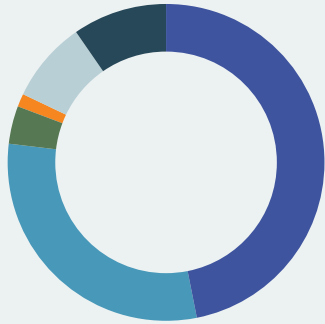
2025 Financials



07.01.24 to 06.30.25

Revenue: \$4,833,175

● NOAA IOOS Core Program Fund	\$3,513,729 (80%)
● NOAA IOOS Inflation Reduction Act	\$1,228,147 (18%)
● Other Income	\$58,586 (1%)
● In-kind Contributions	\$32,712 (1%)



Expenses: \$4,807,817

● Grants & Contracts	\$2,017,608 (42%)
● Personnel	\$1,415,835 (29%)
● Office Operations	\$264,536 (6%)
● Travel & Meetings	\$64,081 (1%)
● Capital Equipment	\$244,794 (5%)
● Public & Private Partnerships	\$800,963 (17%)

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A Special Thanks

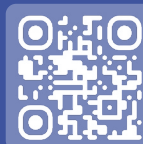
To our donors & supporters

We saw an incredible amount of support in 2025. These Great Lakes are unparalleled and so are those who love and support them.

You all are WHY we do it and HOW we are able to continue doing it.



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GLOS is one of the **11 regional associations** that make up the **Integrated Ocean Observing System**: ioos.noaa.gov