



# BUILDING THE **GREAT MAP**

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## LAKEBED 2030

## Where in the World is Data

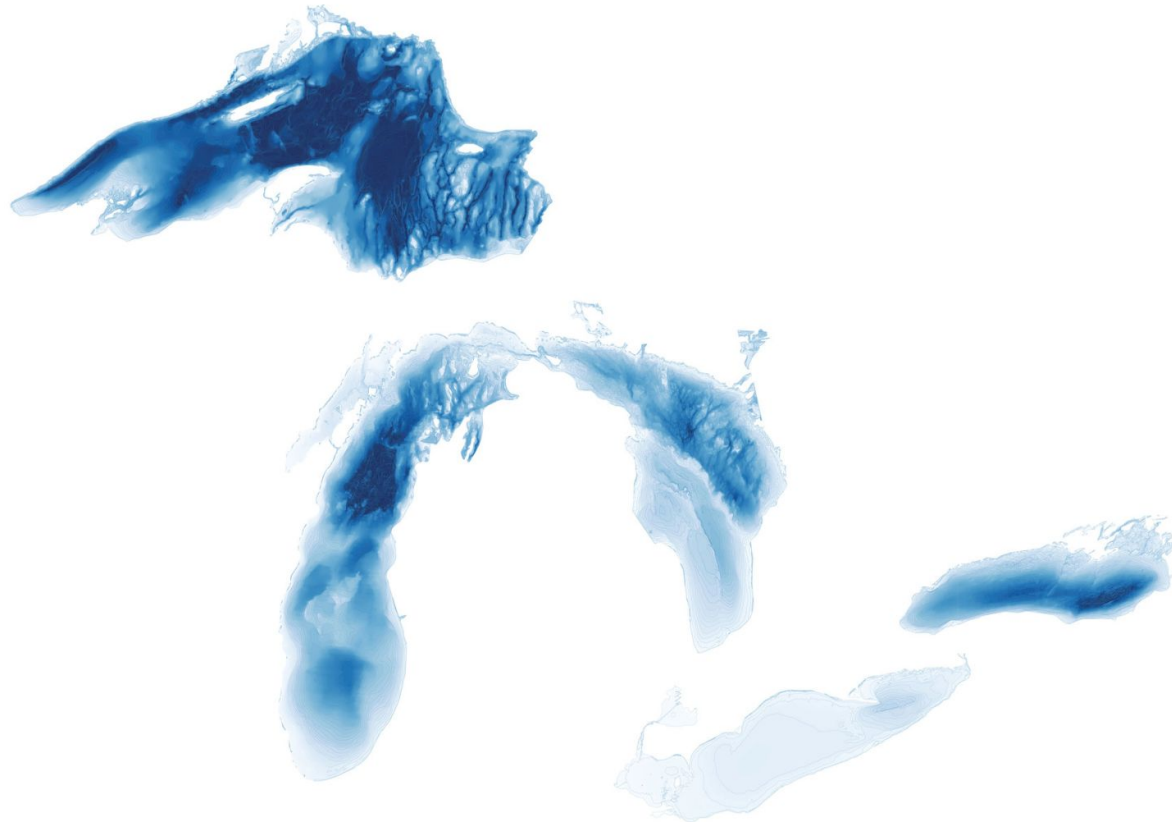
Spring 2025 IOOS DMAC Meeting | April 30, 2025

Tim Kearns (GLOS), Mike Sutherland (GLOS)









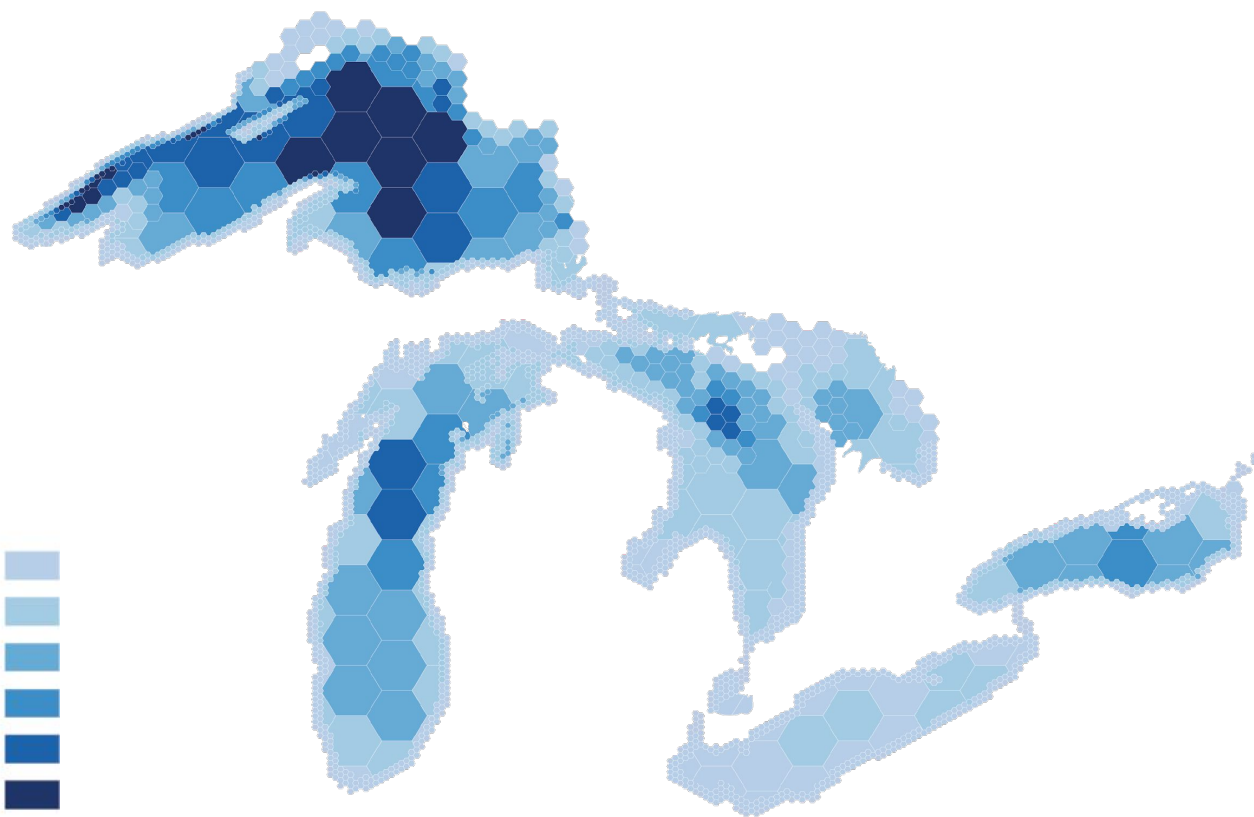
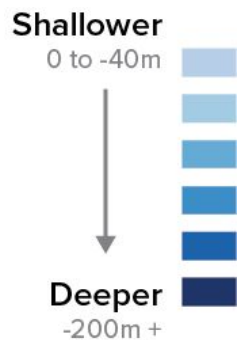
## THE GREAT LAKES



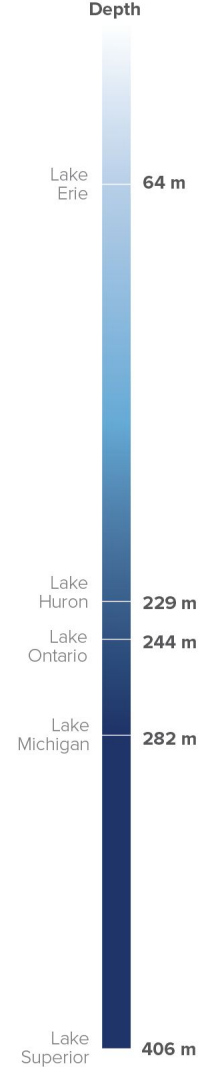
Projection: UTM NAD83 ZONE 17N  
Sources: National Oceanic and Atmospheric Administration, Natural Earth



BETTERMAPS INC.  
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THE GREAT LAKES  
Density Map by Hex  
*Size and Color*







ENGAGE

Notify

Report

Share

DISCOVER

Visualize

Analyze

Configure

OBSERVE

Deploy

Measure

Transmit

CONNECT

Check

Integrate

Distribute

great lakes  
observing system

Seagull

seagull.app

Great Lakes Data and  
Information Discovery  
Platform



Where in the Great Lakes is the *data*?  
*Availability does not equal Accessibility.*



**Most of these tools are centered around where people can  
*get the data.***

**We wanted a tool to make it easy for people to ultimately  
*get the data.***







IHO

International  
Hydrographic  
Organization

# Data Centre for Digital Bathymetry Viewer

## Layers

- ☐ Multibeam Surveys ?
- ☐ Multibeam Survey Footprints ?
- ☐ Multibeam Bathymetry Mosaic ?

- ☐ Single-Beam Surveys ?
- ☐ Single-Beam Sounding Density ?

- ☐ NOAA Hydrographic Surveys: ?
  - ☒ All Surveys with Digital Data
  - ☐ Surveys with BAGs

- ☐ BAG Shaded Relief Imagery ?

?

- ☒ Crowdsourced Bathymetry Files ?

?

- ☐ U.S. Bathymetry Coverage and Gap Analysis ?

► EMODnet

► Australia

► Canada

► Cape Verde

► France

► Germany

► Japan

► Netherlands

► New Zealand

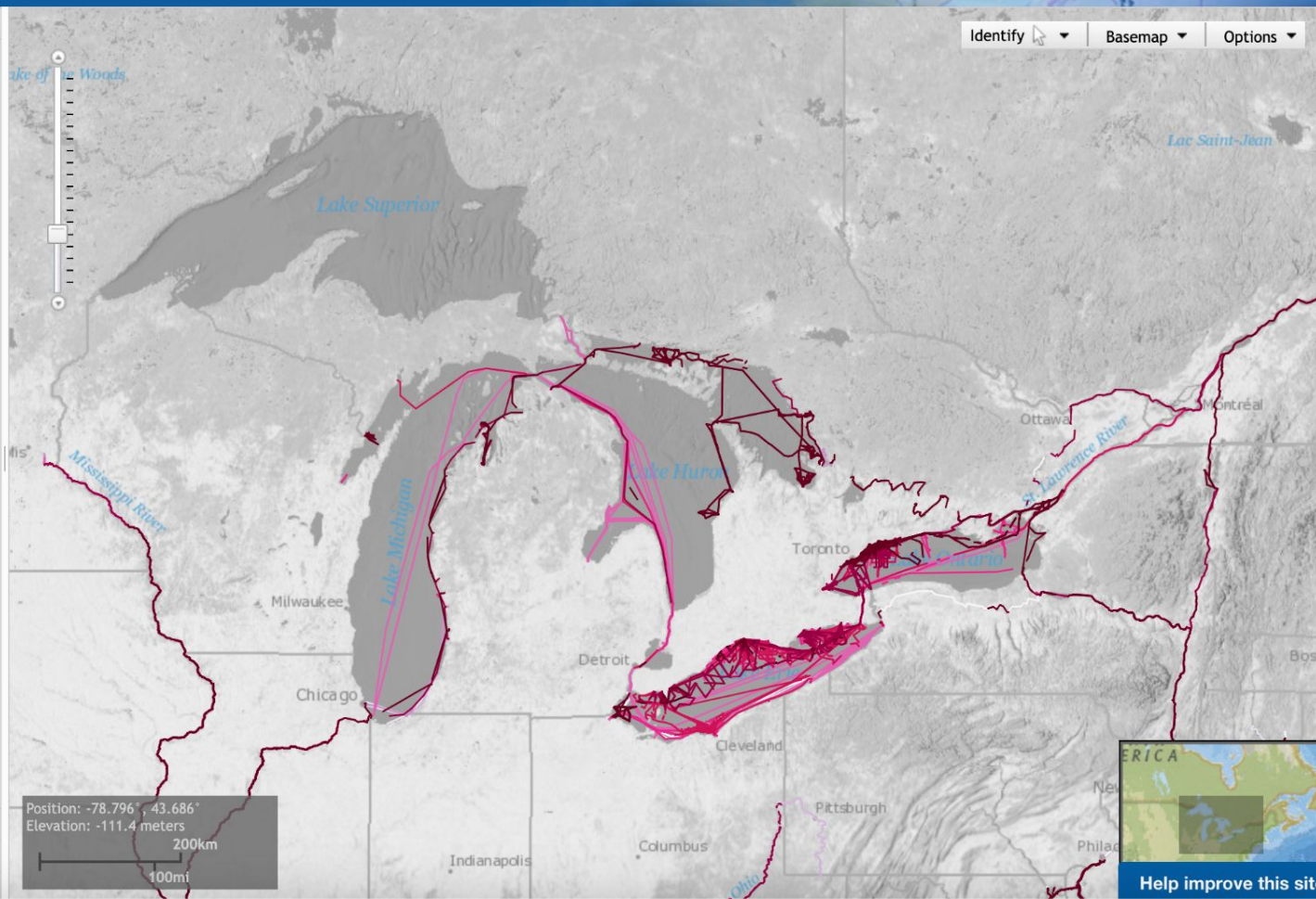
► Norway

► Portugal

Grid Extract

More Information

Help

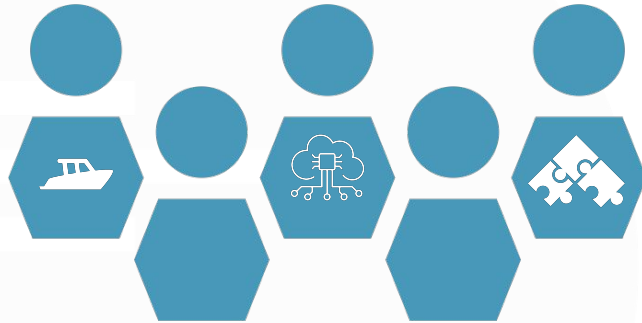






great lakes  
observing system

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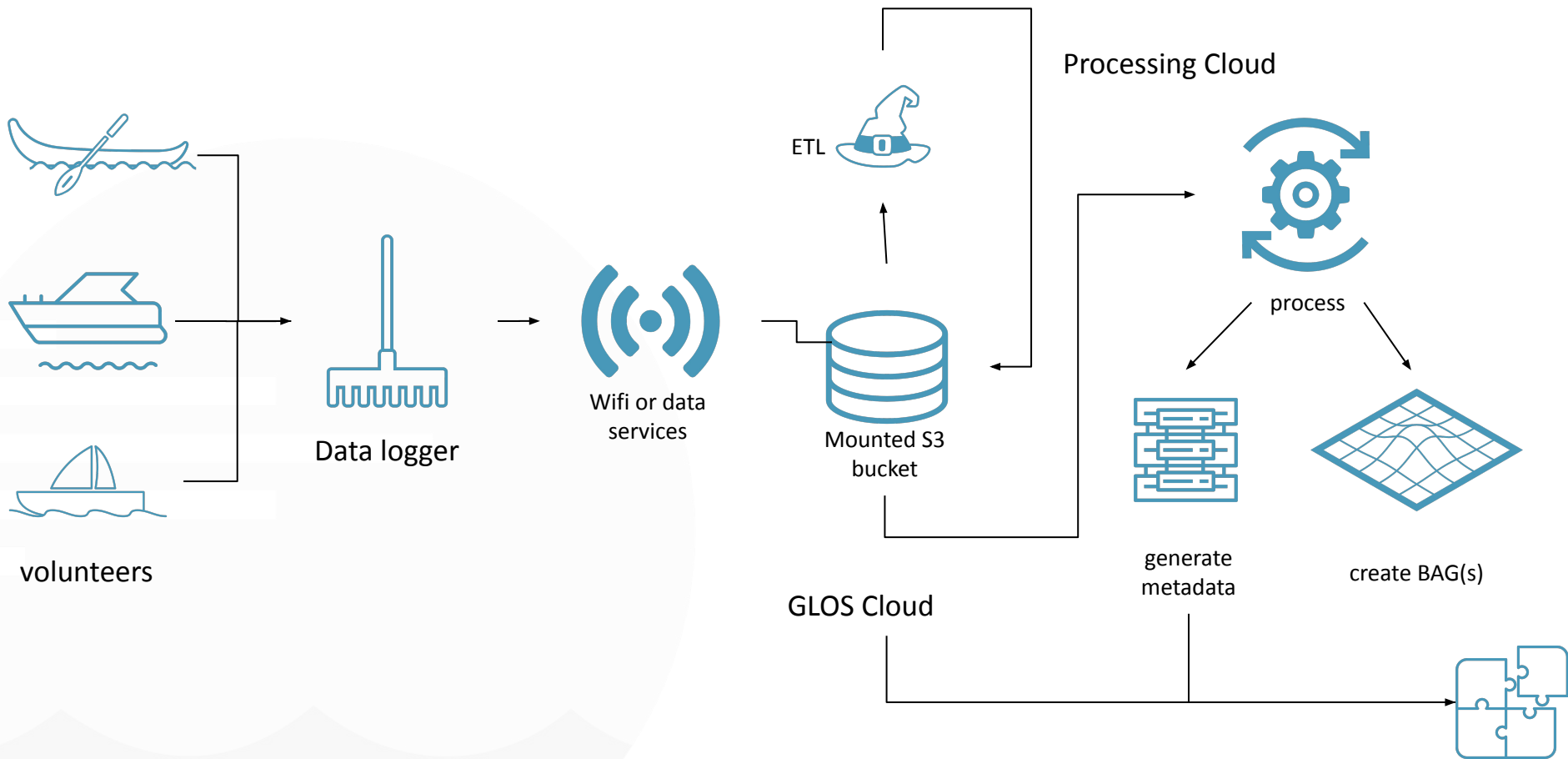


**Crowdsourced Bathymetry**  
brings us **one step** closer to  
our **goal**

Great Lakes Observing System  
partnered with Orange Force  
Marine to

**Gather volunteers,** to  
**Collect data,** and have  
**serve** to the IHO DCDB, for for  
**consumption**







## The CSB program has been *reasonably* successful...

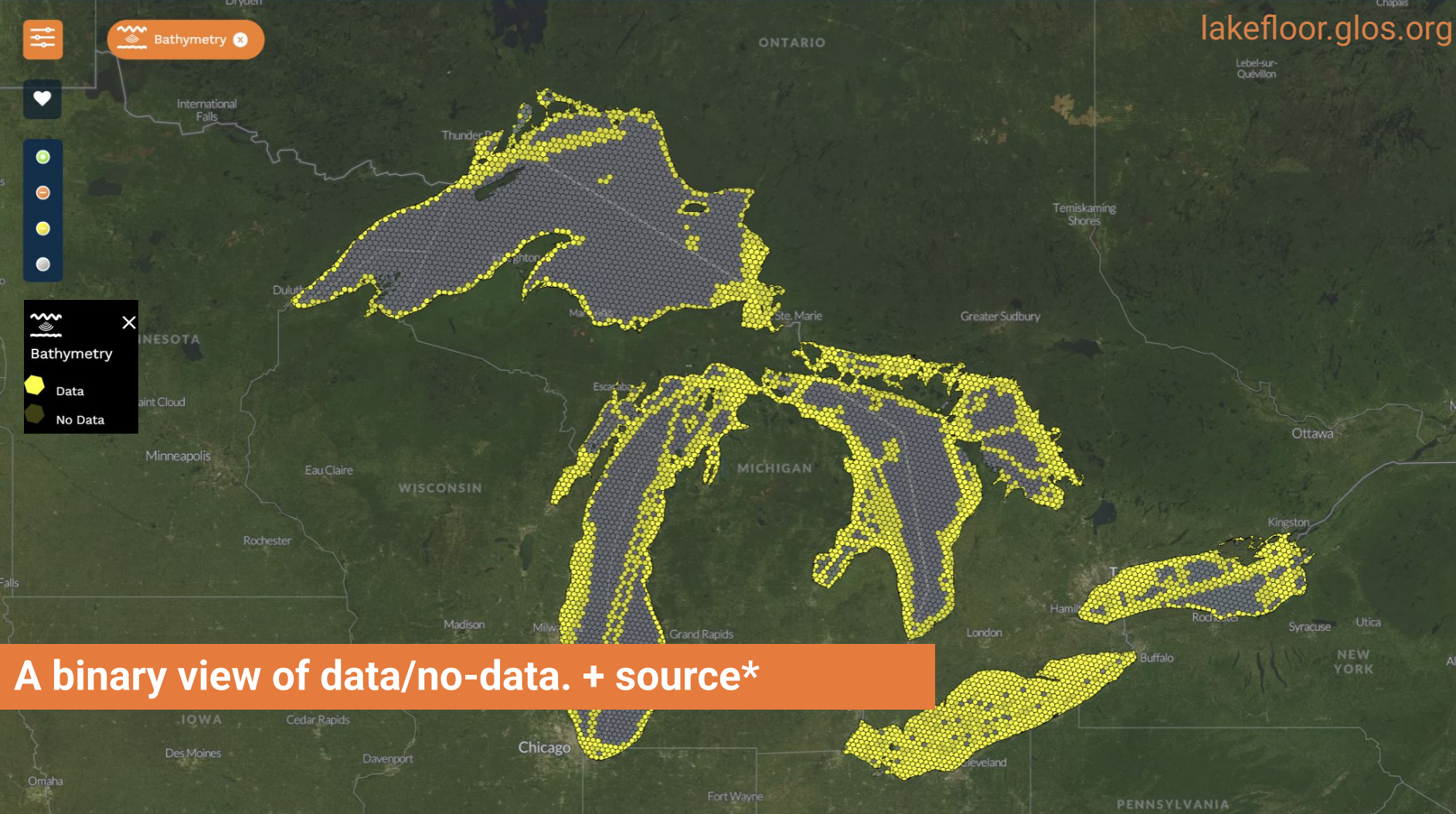
- GLOS is a IHO CSB Trusted Node
- 23.2M soundings submitted to DCDB
- 22 Vessels operating
  - (96% Canada)
- 31,000 NM steamed (linear distance)
- ~\$2,500/vessel/year





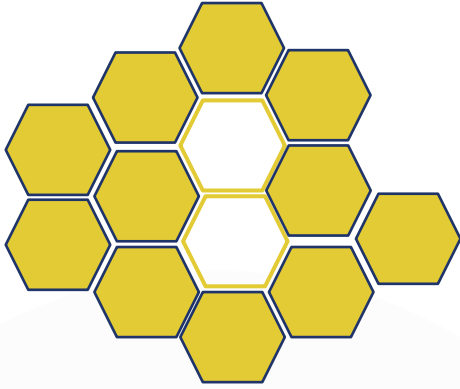
**Where are we going with all this?**





A binary view of data/no-data. + source\*

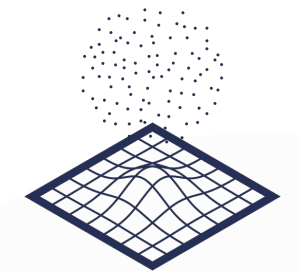




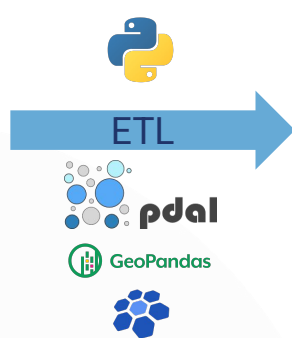
## Hexagon Tessellation & Zoom Levels

Hex Level	Average Area (m <sup>2</sup> )	Approximate Width (m) (Hexolution™)
4	1,770,347,654	45,158
5	252,903,858	17,068
6	36,129,062	6,451
7	5,161,293	2,436
8	737,328	920
9	105,333	348
10	15,048	131

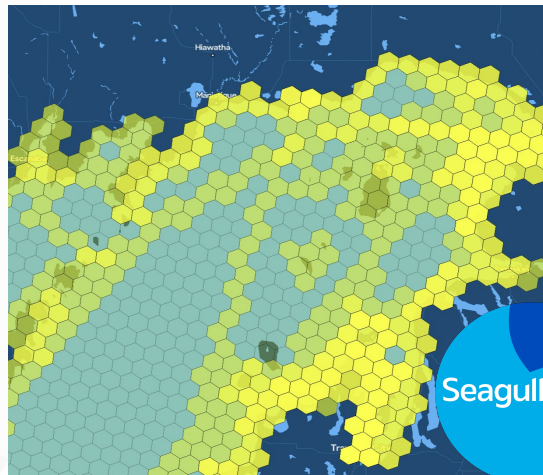
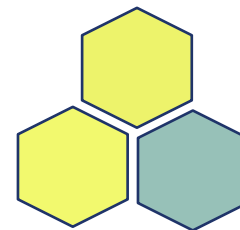
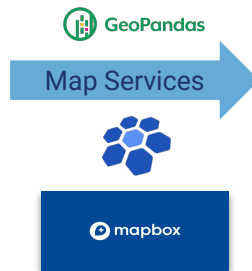
# Behind the Scenes



Data Sources

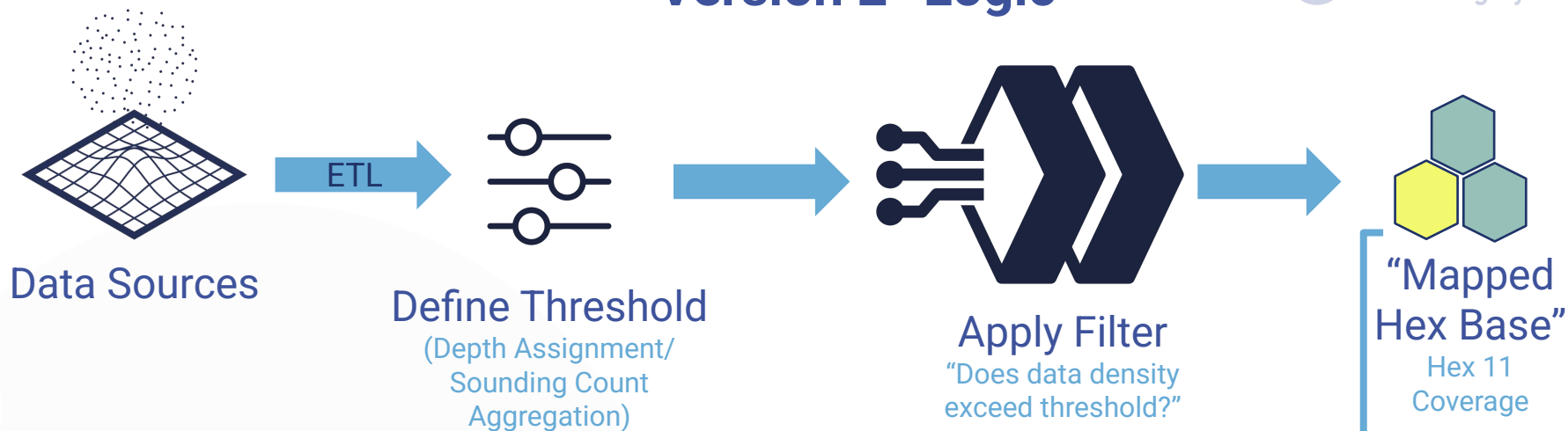


Simple Filter  
"Do soundings exist"

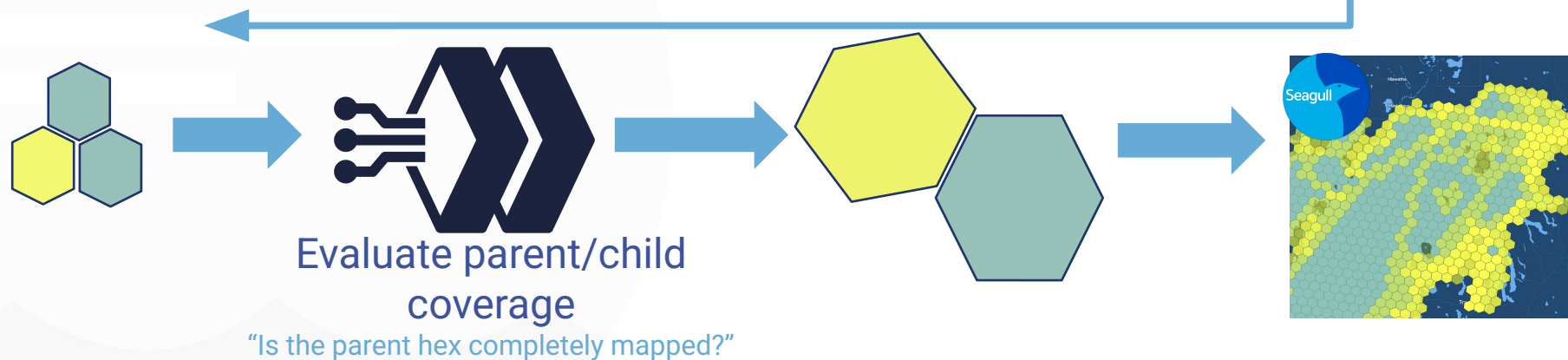


# "Version 2" Logic

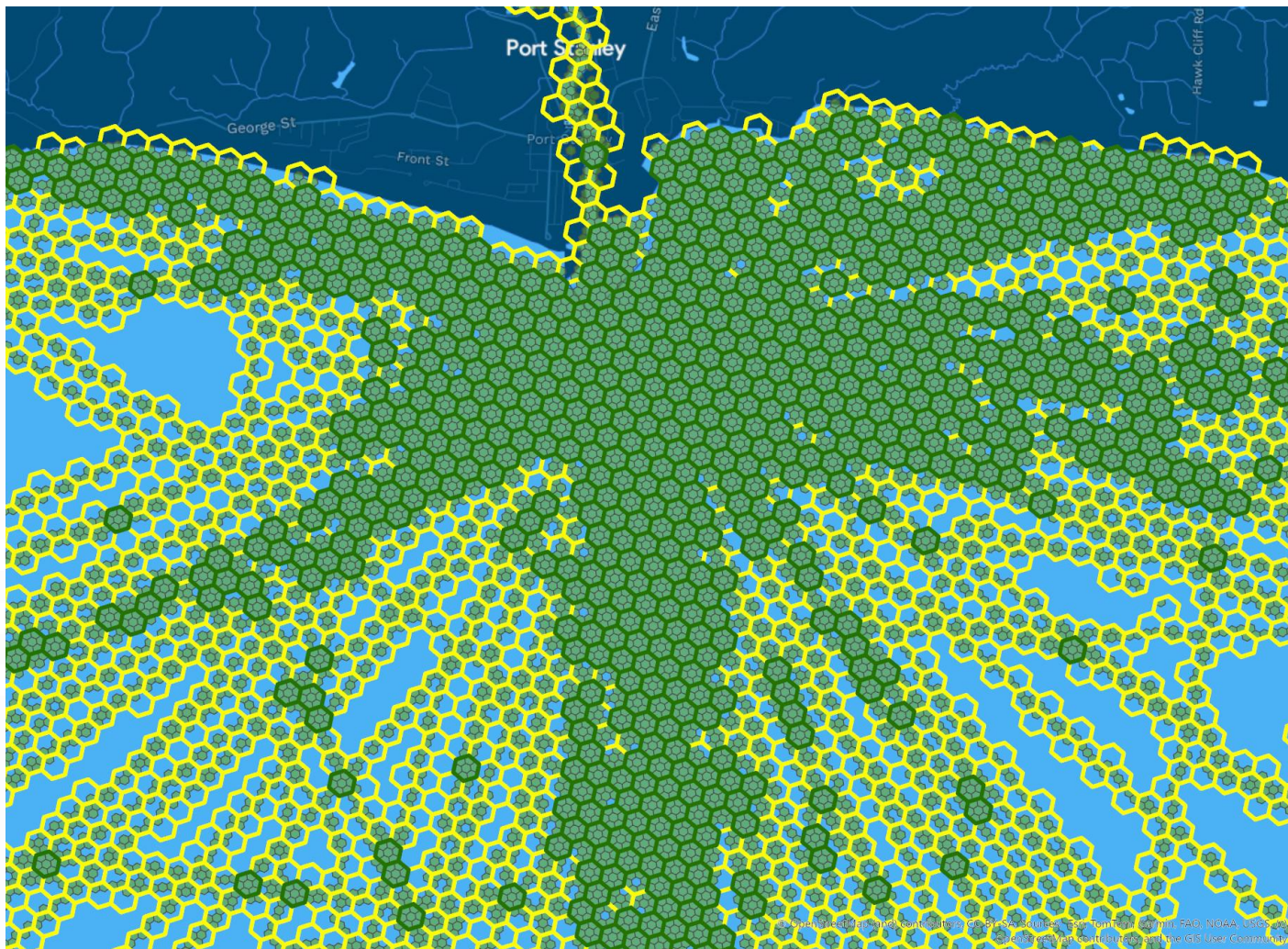
"Hexolution" 11



"Hexolution" 6-10 (iterative)







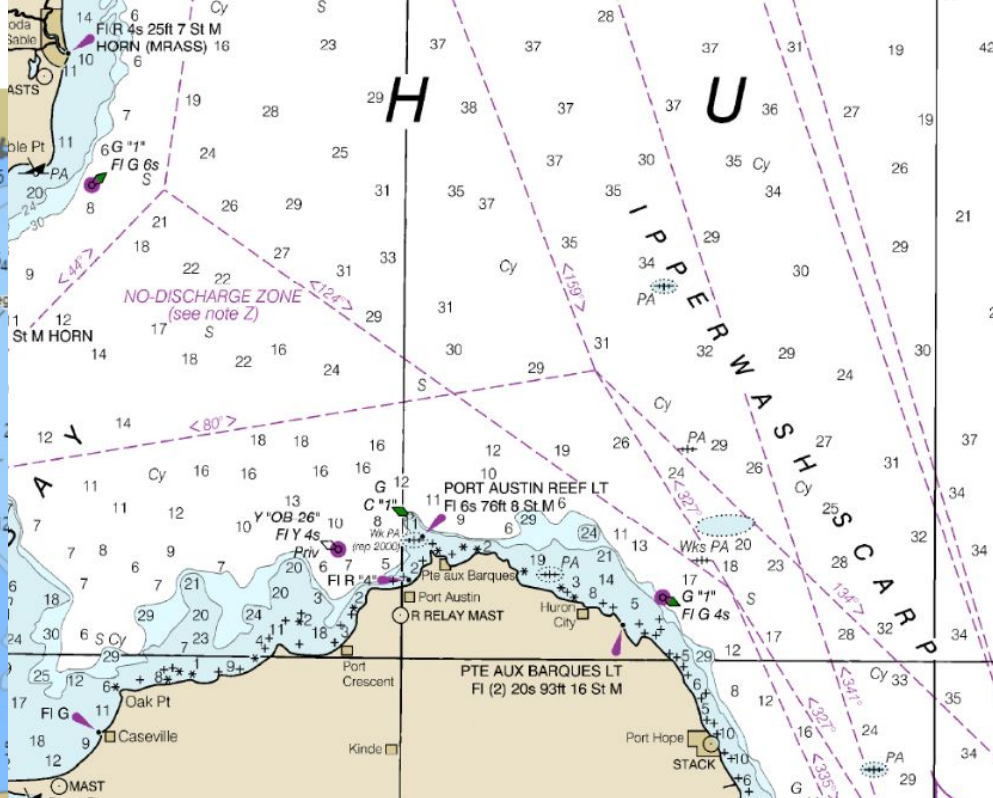
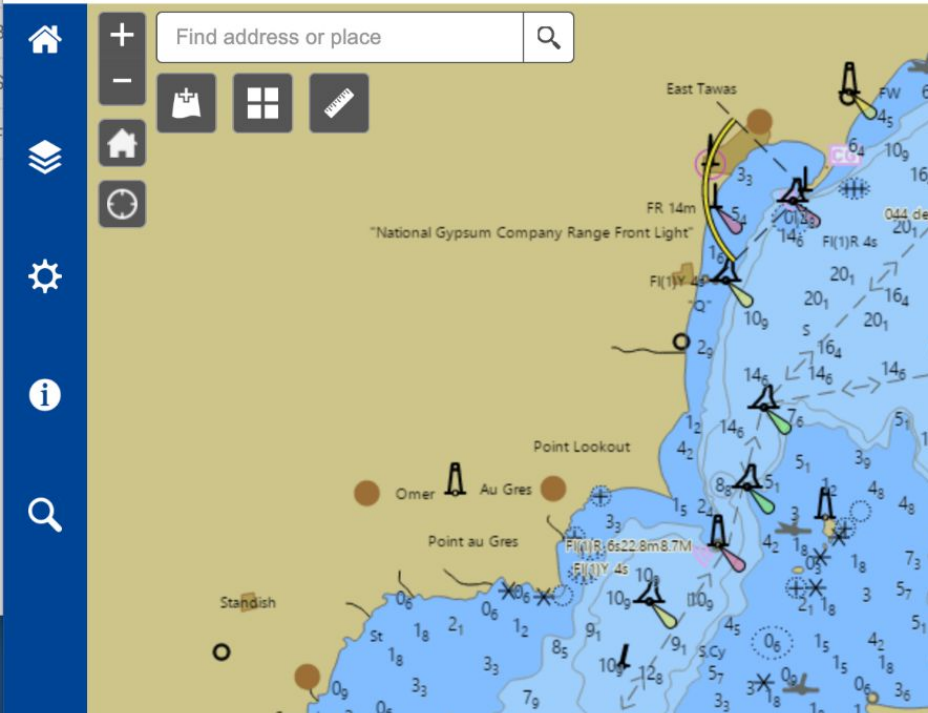
at lakes  
erving system

Eventually, this will be  
available on a **mobile app**.

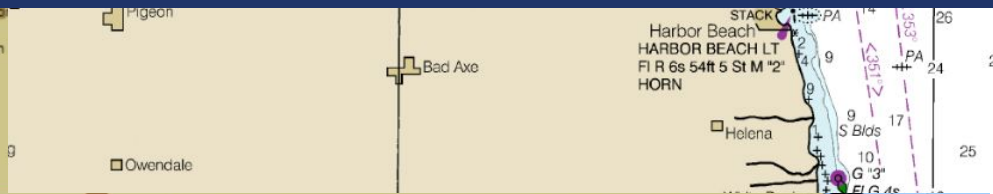
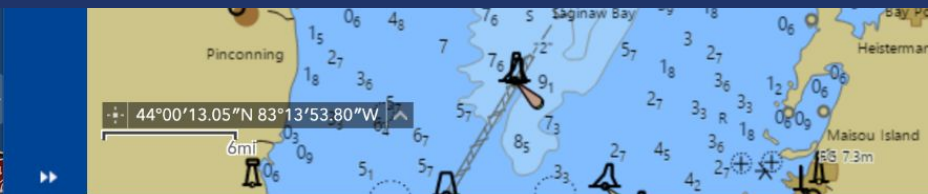
Opportunity  
Awareness  
Gaps  
Volunteer







**THIS is a navigational product. The hex on mobile is NOT.**



# Thank you.



great lakes  
observing system

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## Live Demo.

Michigan Tech. Univ. NCAR Plane Survey (9/9 - 9/13/24), Low latency - *less than a week ago!*

JUNE 24, 2020

