BUILDING THE GREAT MAP
LAKEBED 2030

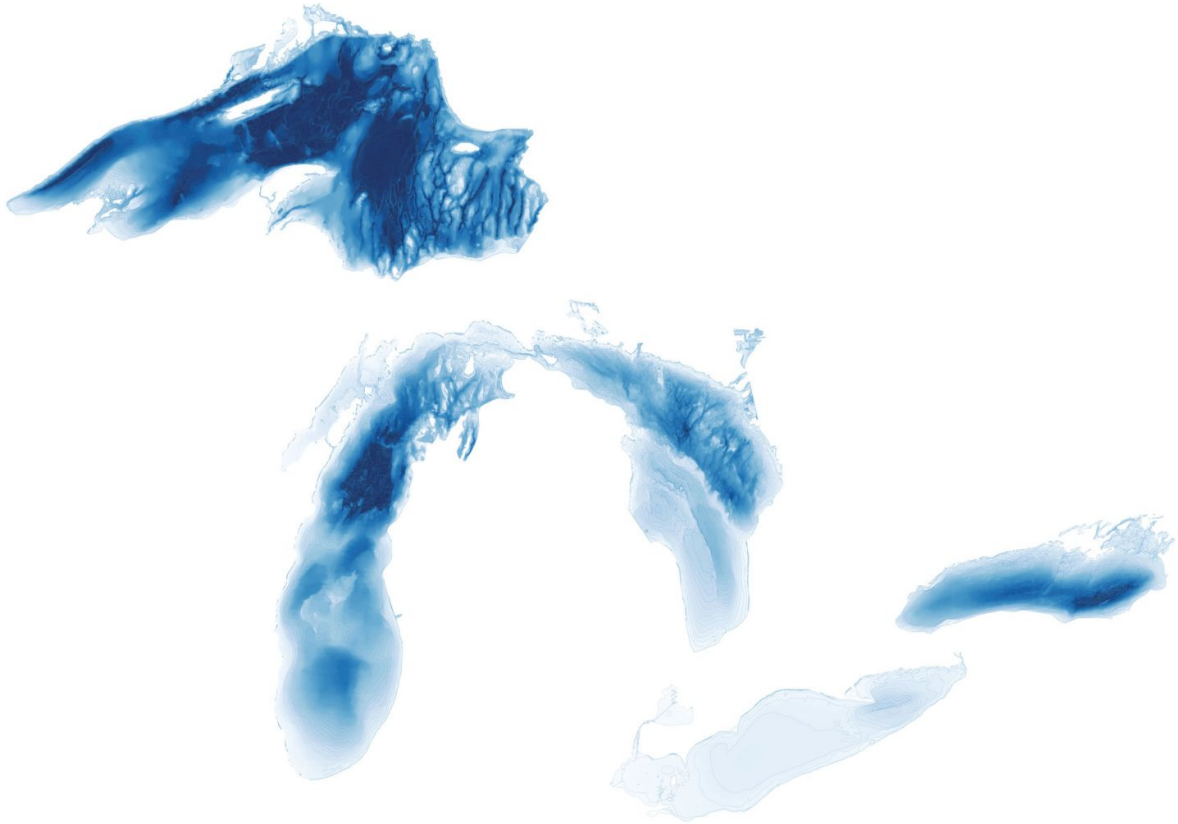
great lakes observing system

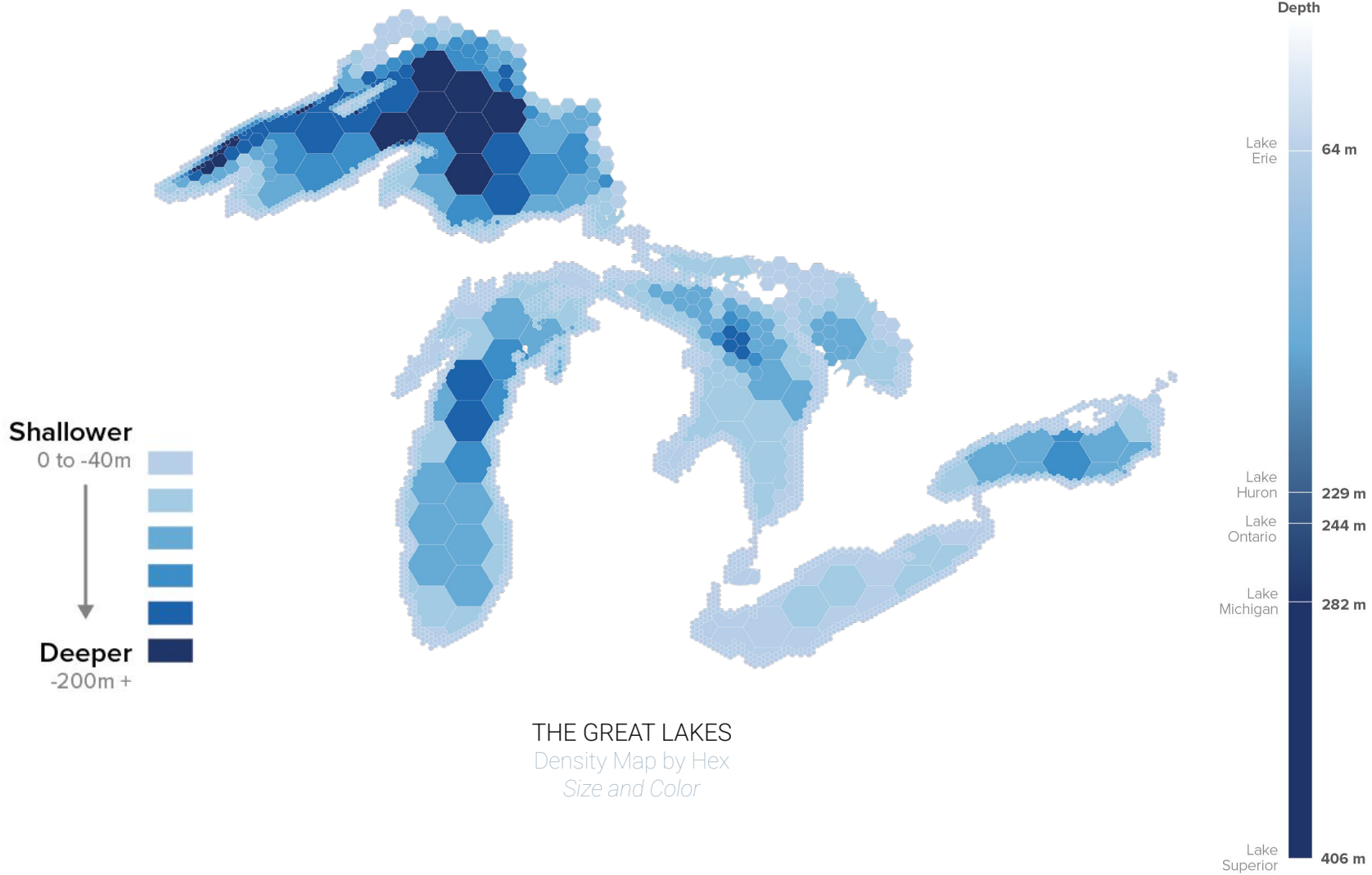
Where in the World is Data

Spring 2025 IOOS DMAC Meeting | April 30, 2025

Tim Kearns (GLOS), Mike Sutherland (GLOS)


29

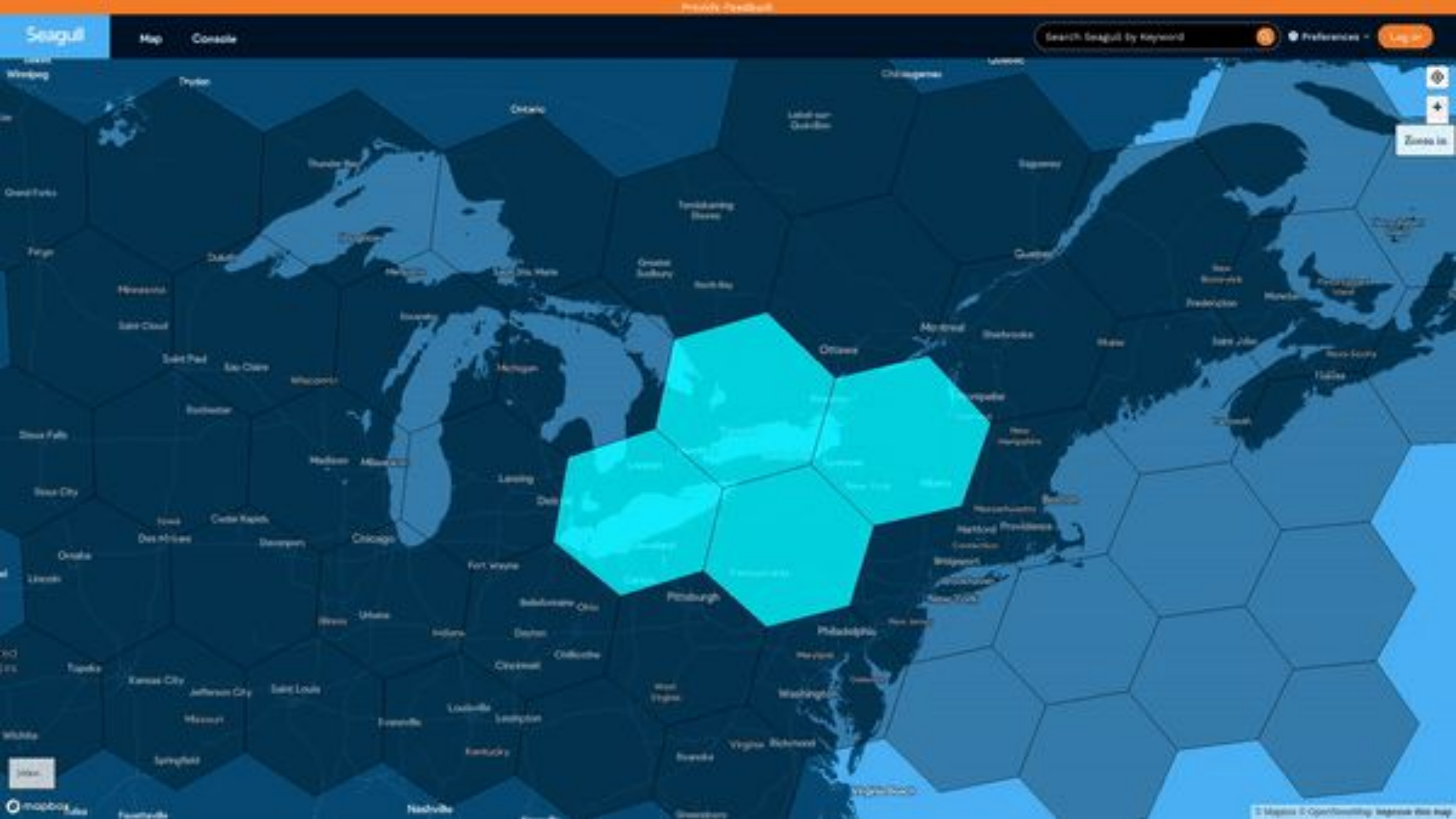




THE GREAT LAKES

Density Map by Hex

Size and Color


Provide Feedback
Seagull
Map
Console
Search Seagull by Keyword
Preferences
Log in
Zoom in
Winnipeg
Ontario
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Duluth
Thunder Bay
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mapbox
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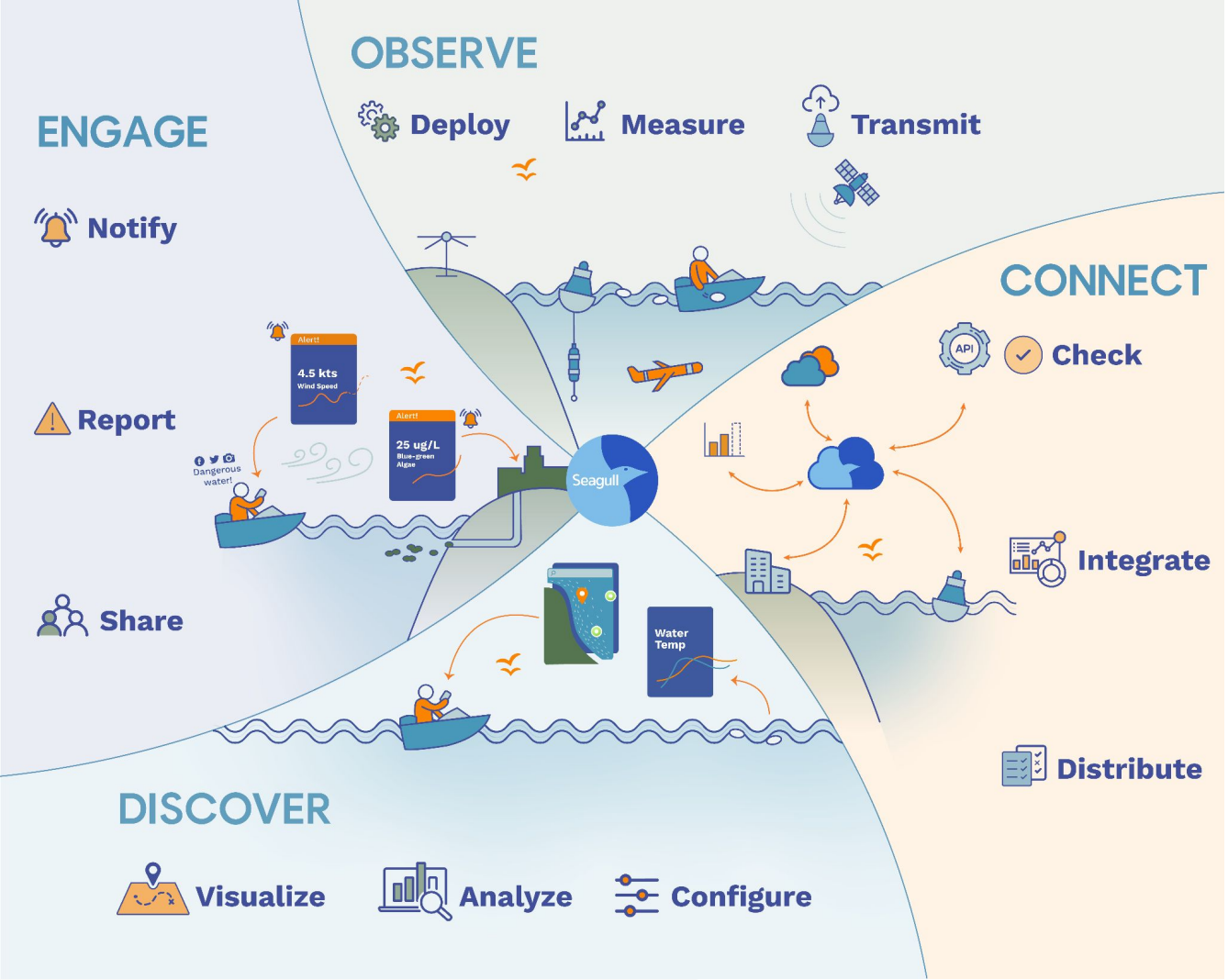

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Seagull

seagull.app

Great Lakes Data and Information Discovery Platform

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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*.


R 1 3 5
2 4 6

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

Search NCEI/DCDB Surveys | Reset

- [x] Crowdsourced Bathymetry Files

Search CSB Files | Reset

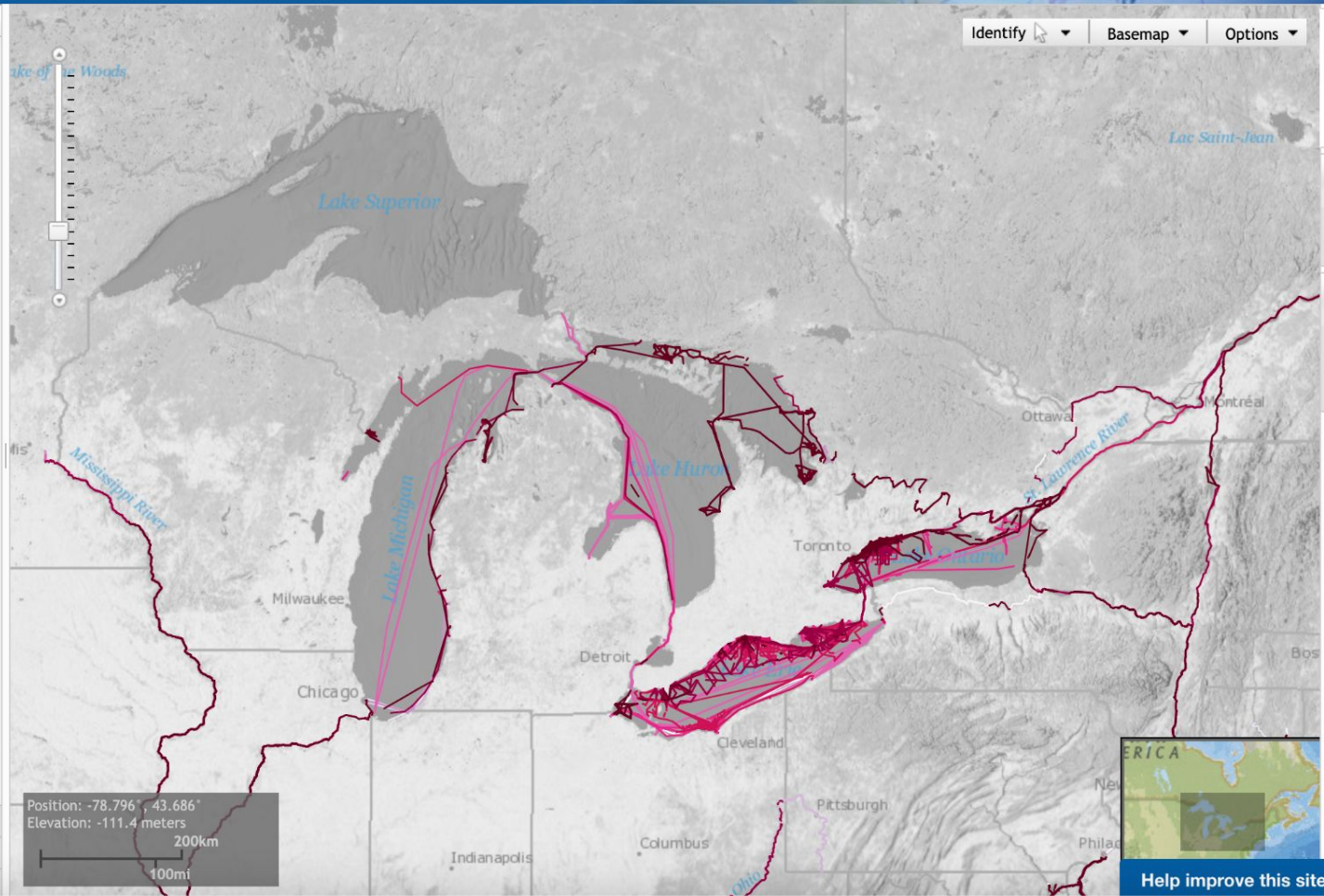
- [ ] U.S. Bathymetry Coverage and Gap Analysis

- EMODnet
- Australia
- Canada
- Cape Verde
- France
- Germany
- Japan
- Netherlands
- New Zealand
- Norway
- Portugal

Grid Extract

More Information

Help



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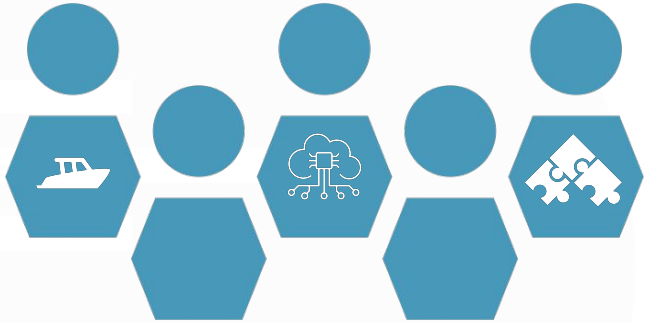

Crowdsourced Bathymetry
brings us **one step** closer to
our **goal**

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Great Lakes Observing System partnered with Orange Force Marine to

Gather volunteers,

Collect data, and

serve to the IHO DCDB, for

consumption

JUNE 24, 2020

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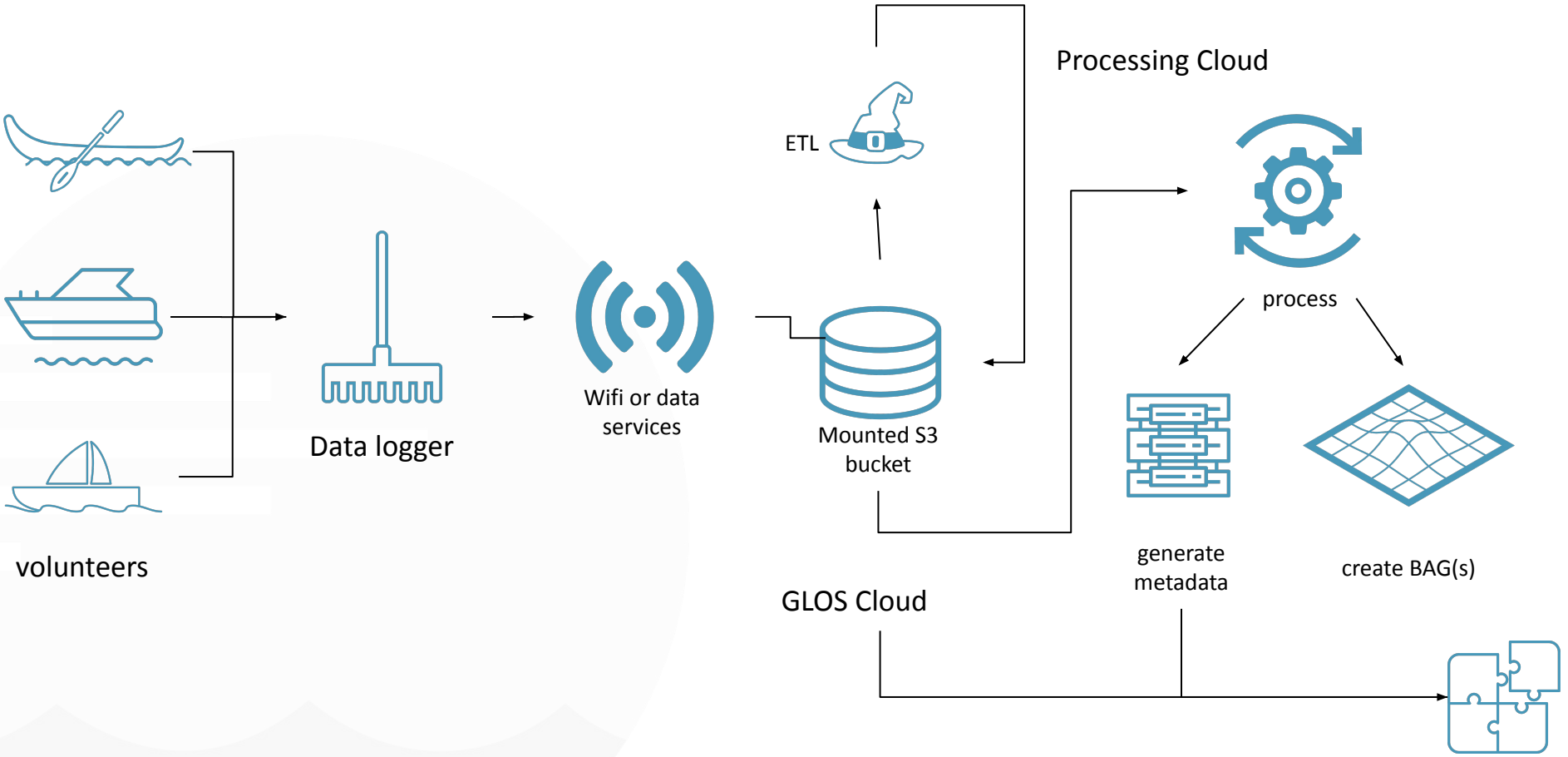

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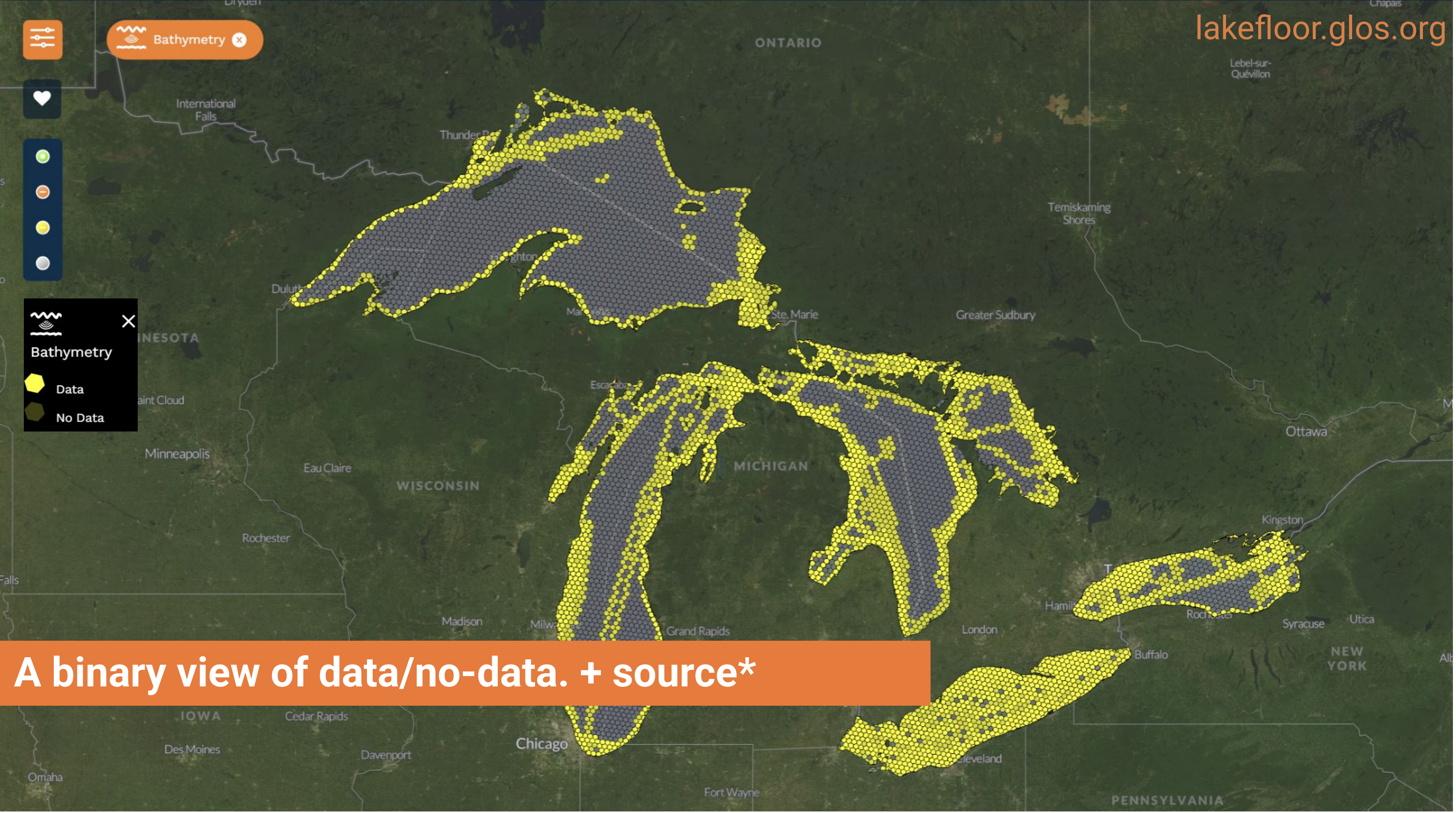
The CSB program has been *reasonably* successful…

- 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?

lakefloor.glos.org



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

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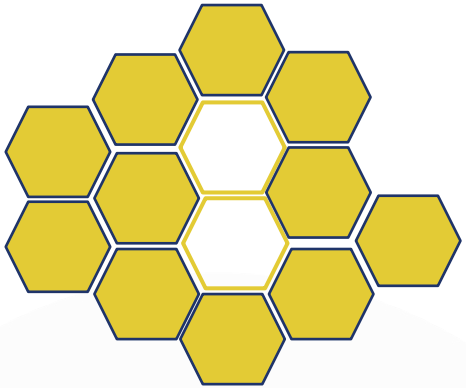

Hexagon Tessellation & Zoom Levels

Hex Level	Average Area (m^2)	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

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Data Sources

ETL

pdal

GeoPandas

Simple Filter

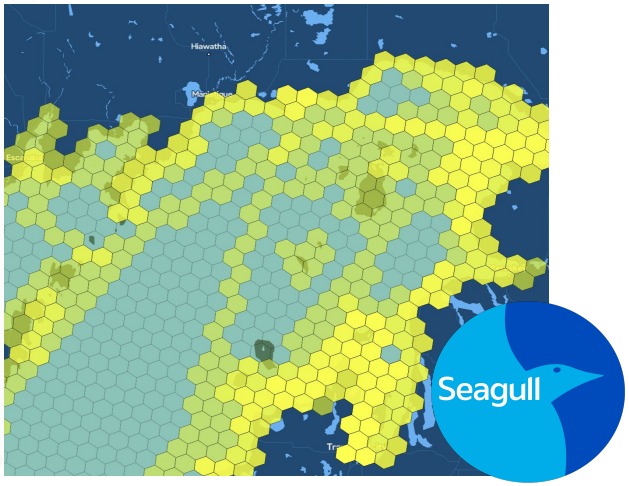
"Do soundings exist"

GeoPandas

Map Services

mapbox

Publish



“Version 2” Logic

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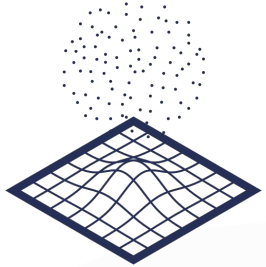
“Hexolution” 11



Data Sources

ETL

Define Threshold

(Depth Assignment/ Sounding Count Aggregation)

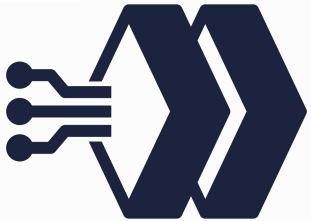
Apply Filter

“Does data density exceed threshold?”

“Mapped Hex Base”

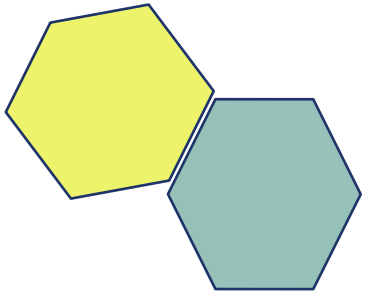
Hex 11 Coverage

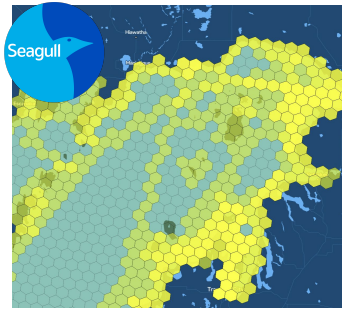
“Hexolution” 6-10 (iterative)



Evaluate parent/child coverage

“Is the parent hex completely mapped?”





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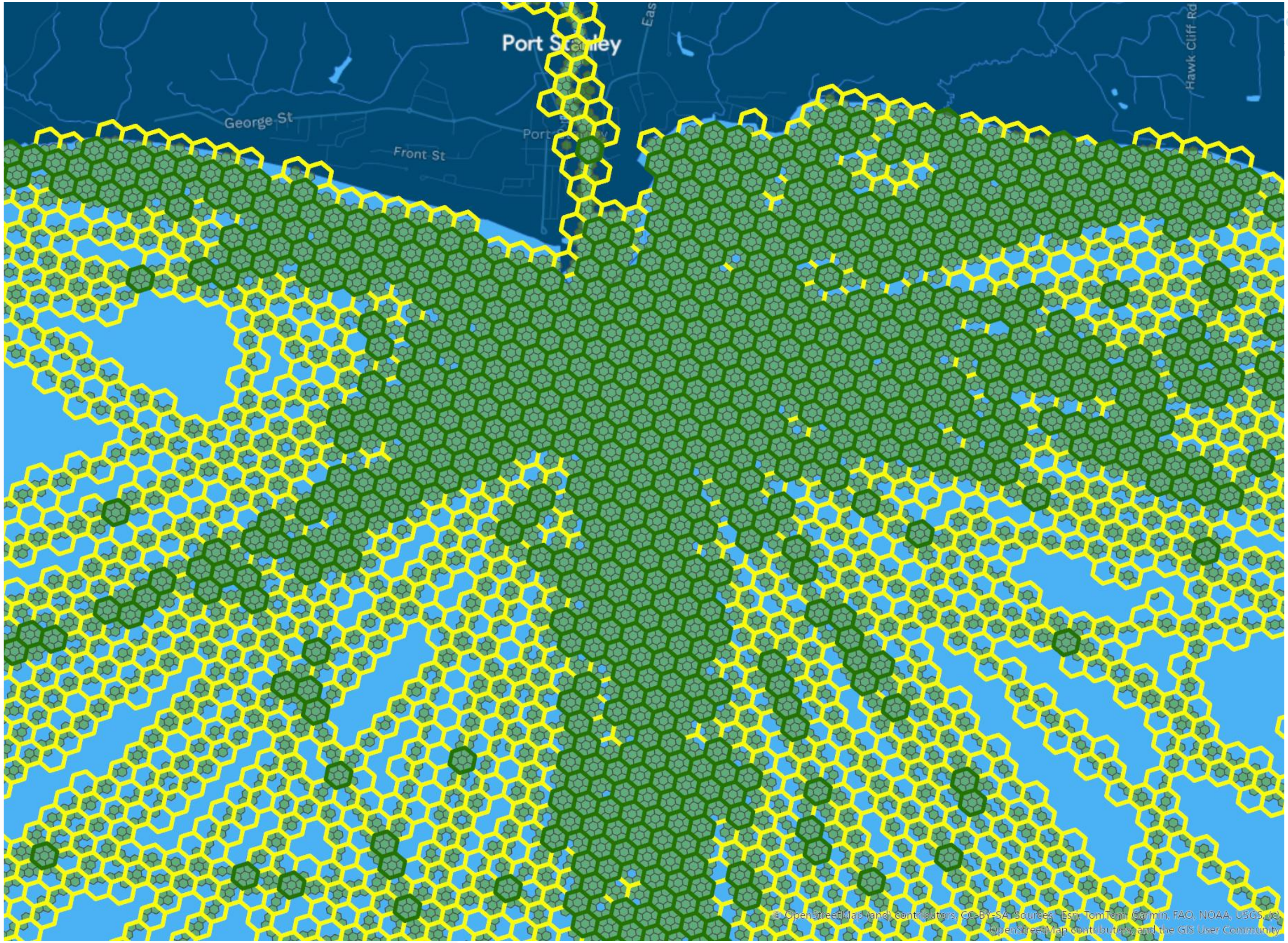

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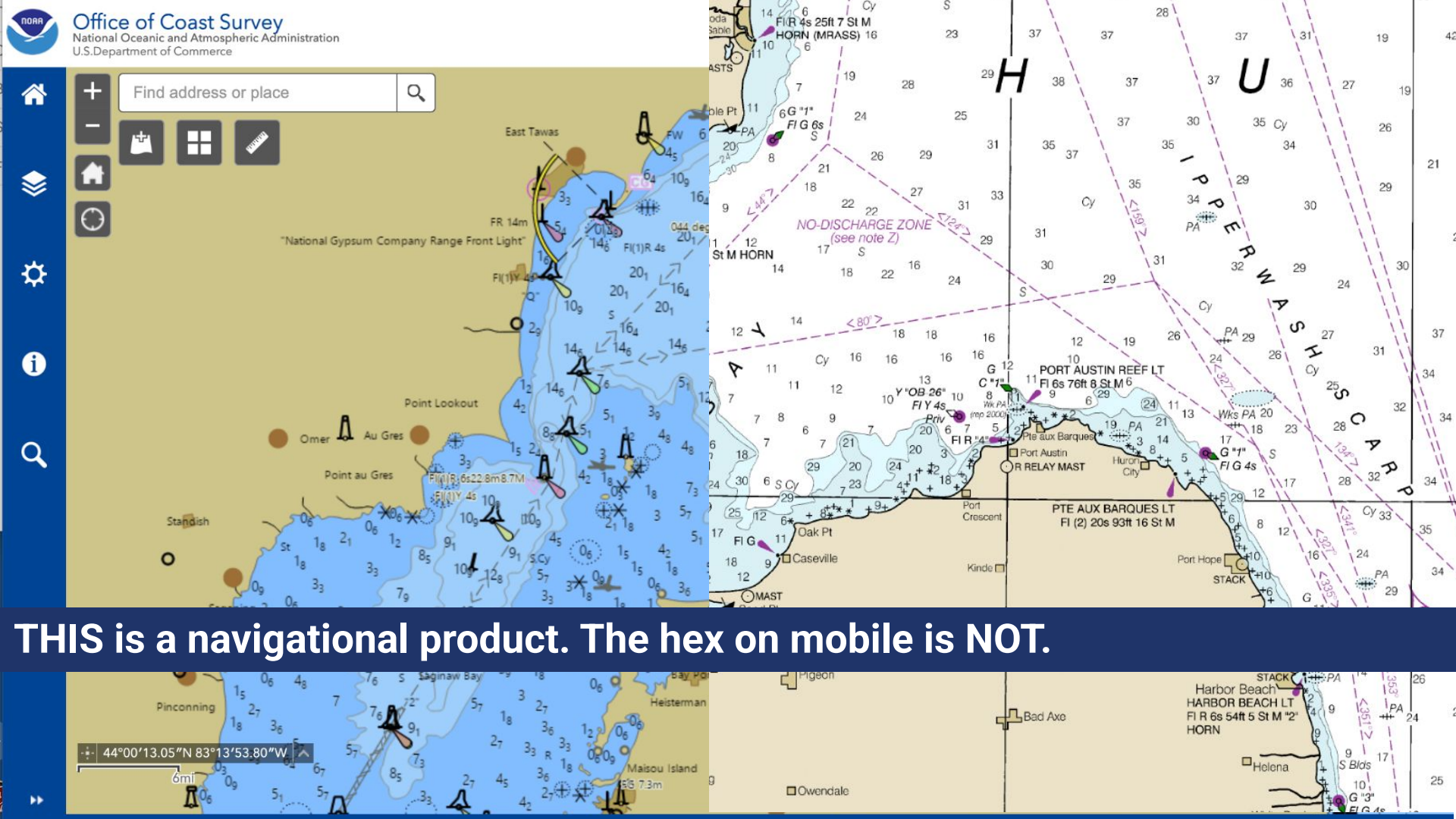
Eventually, this will be available on a mobile app.

Opportunity
Awareness
Gaps
Volunteer



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

Thank you.

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Live Demo.

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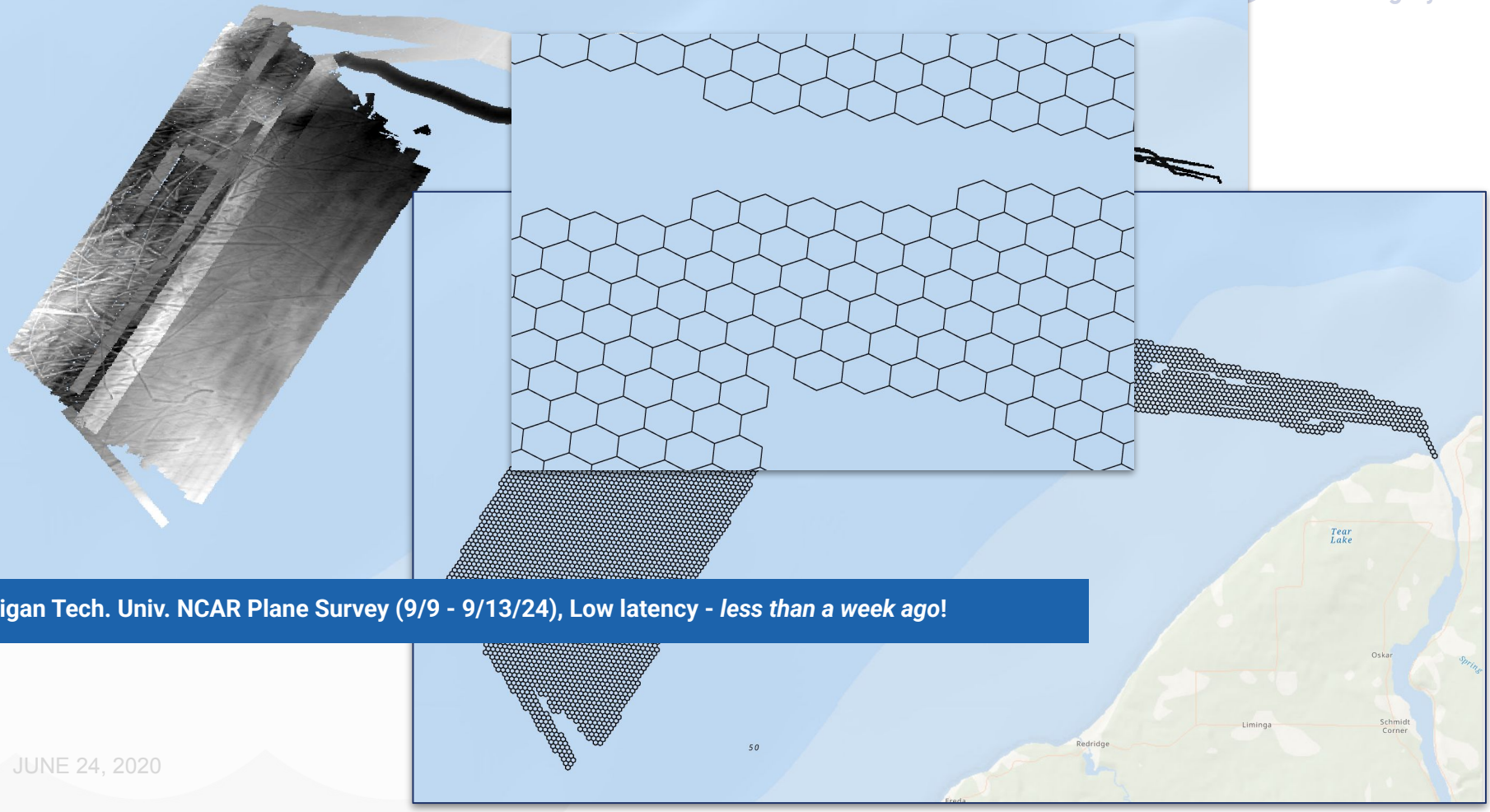

Michigan Tech. Univ. NCAR Plane Survey (9/9 - 9/13/24), Low latency - *less than a week ago*!

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