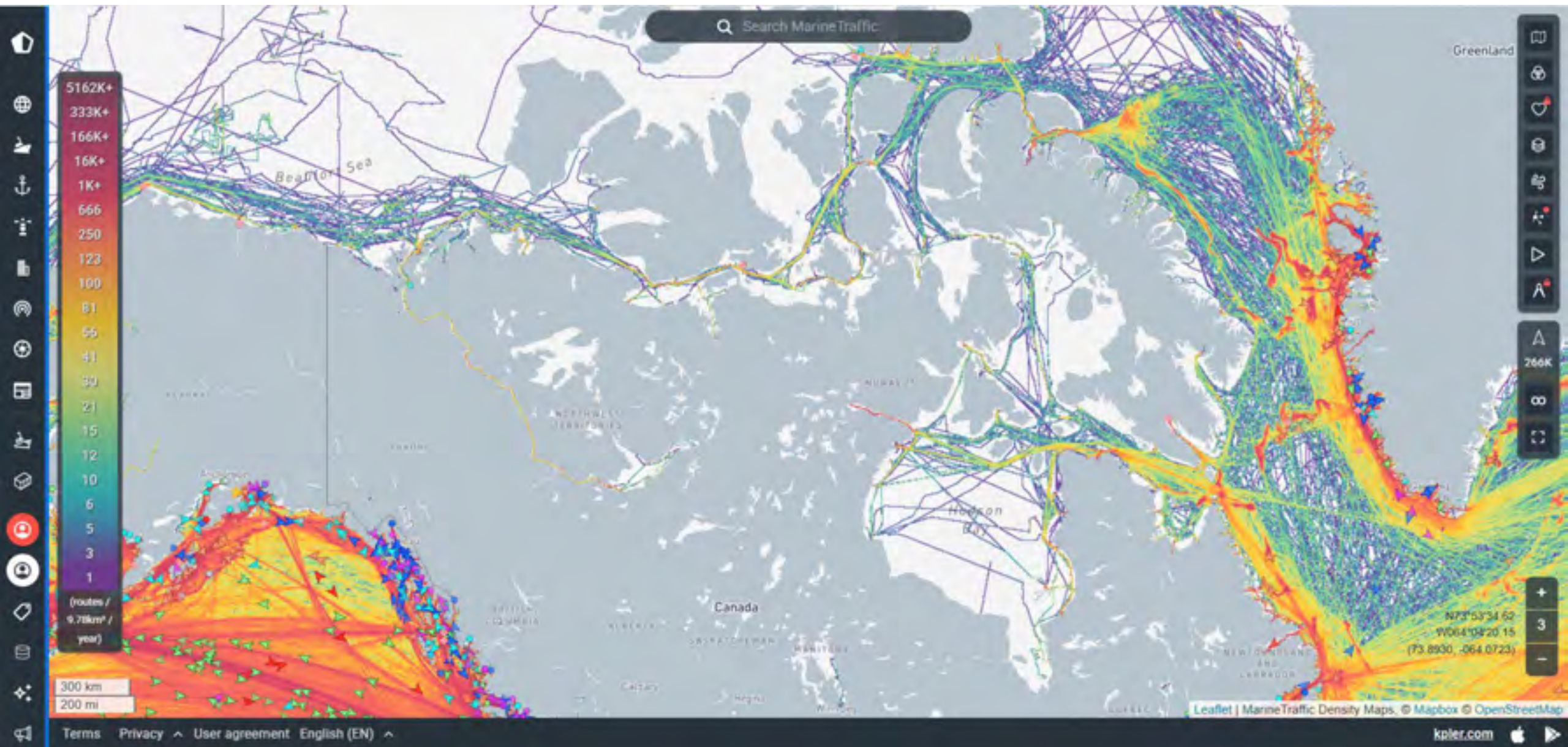




# « Automation & Standardization: Towards Integration of CSB Data at CHS »

*Mathieu Rondeau, Gabriel Montpetit-Allard, Jérémie Lemarchand, Yan Bilodeau, Michel Breton  
Canadian Hydrographic Service (CHS) ; Community Hydrography*

*CIDCO Symposium 2025 – Trois-Rivières*



MarineTraffic. May 27, 2025

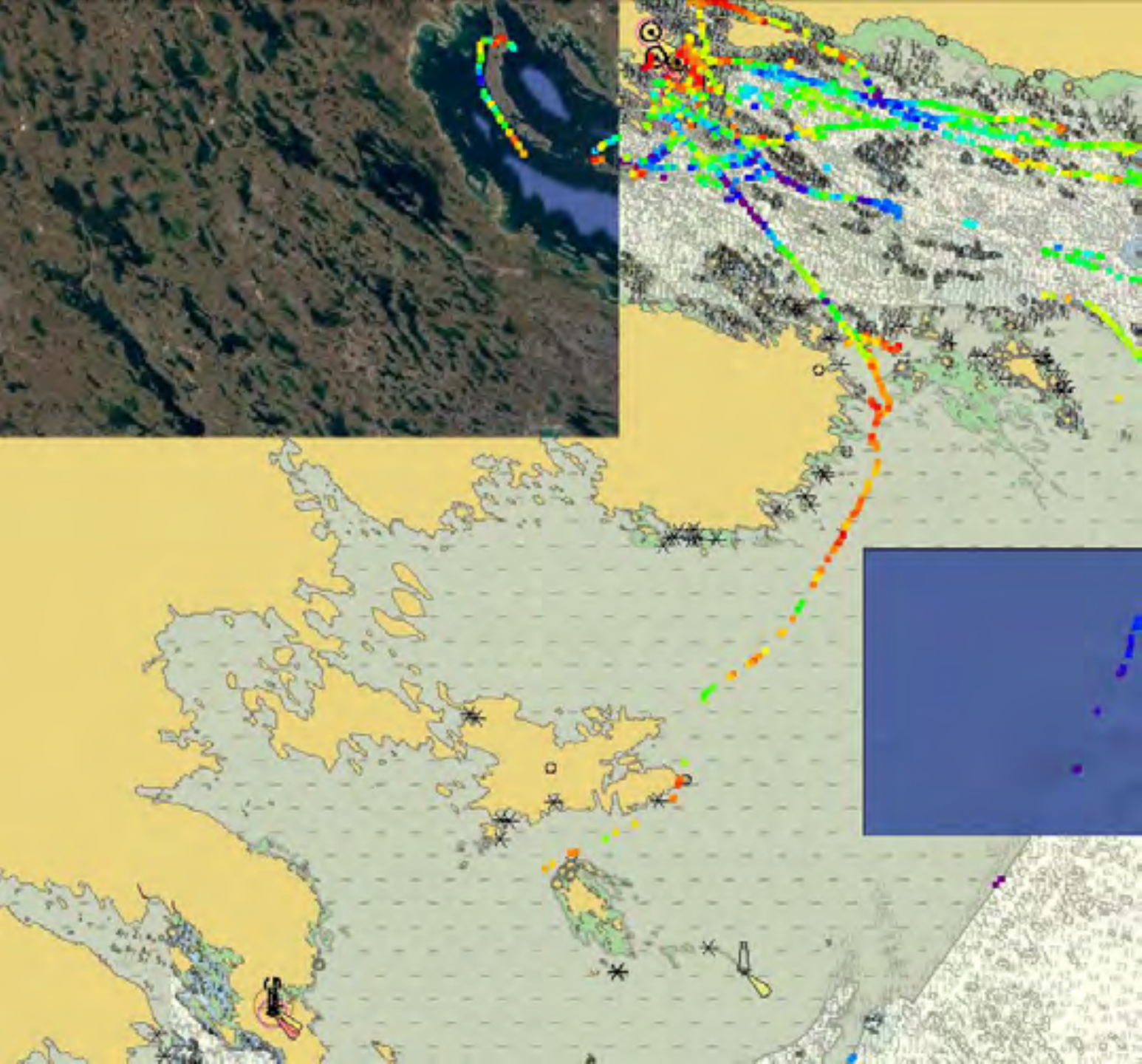


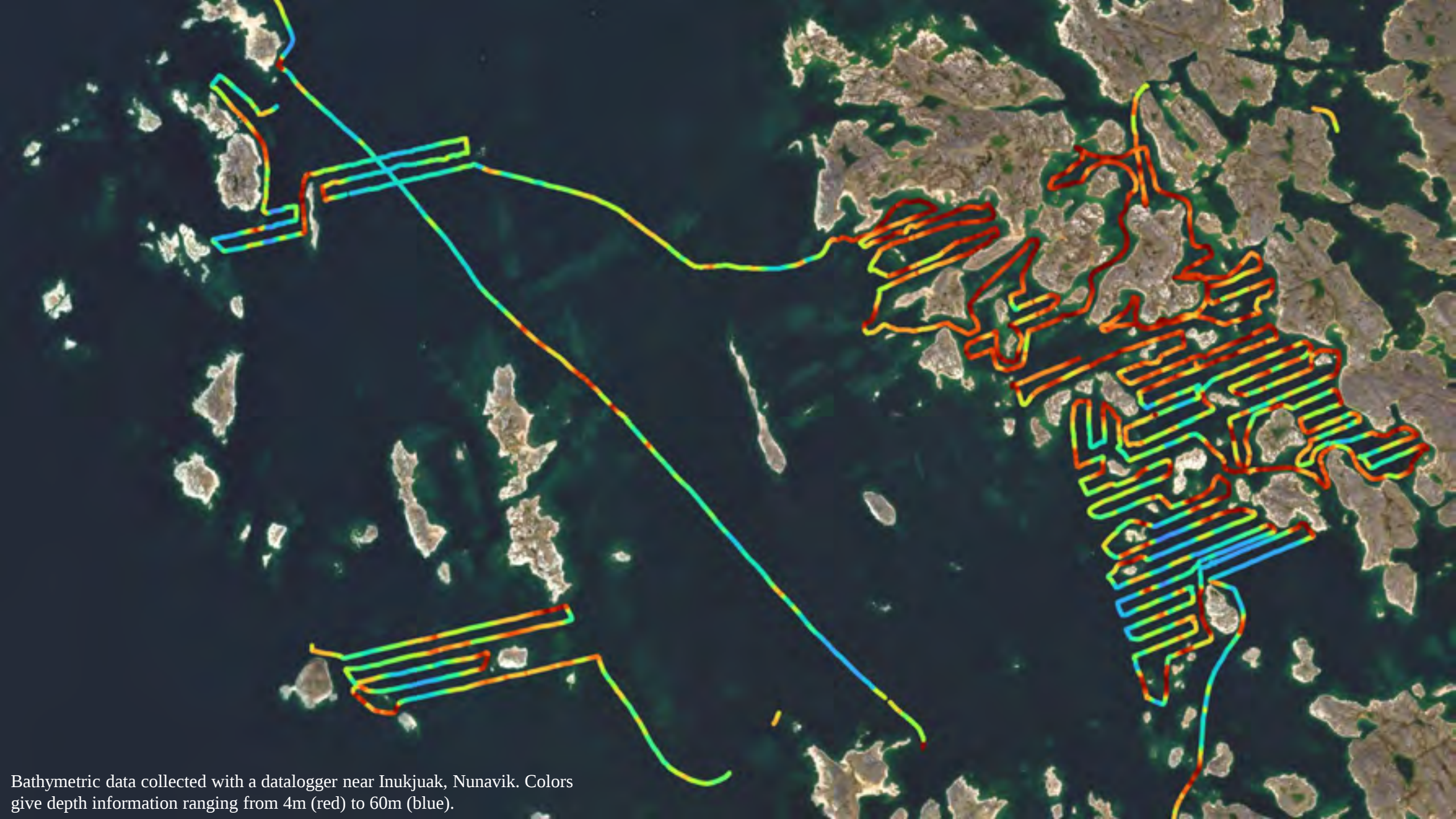
IHO

## **C-1: Capture issues regarding national policy/regulations /culture affecting the endorsement of CSB**

Internat  
Hydrog  
Organiz

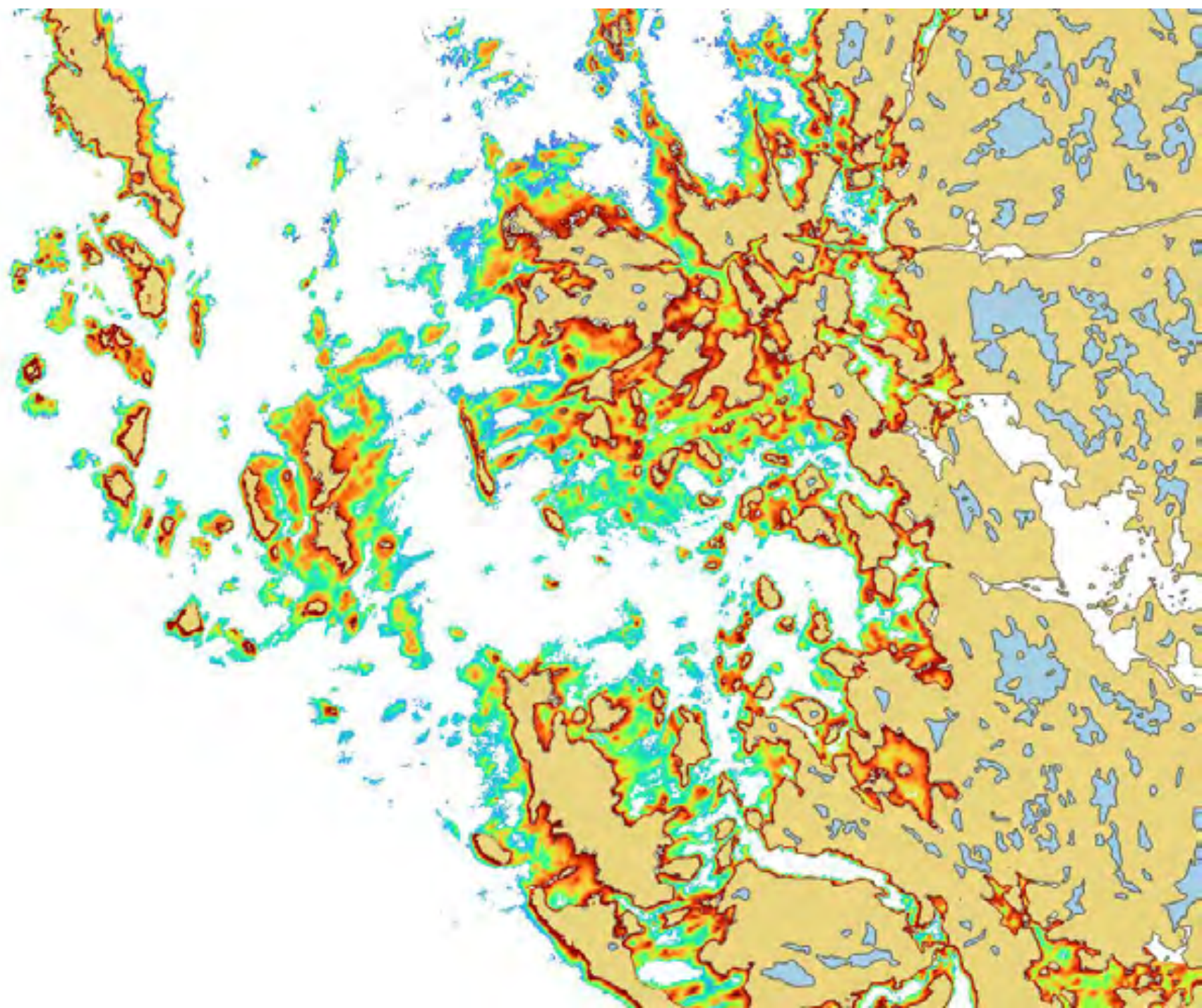
1. National Policies and Regulations
2. CSB Data is Unnecessary
3. CSB Data Collection Confused with Systematic Survey
4. Data Quality and Accuracy Concerns
5. Legal and Liability Issues
6. Standardization and Compatibility
7. Integration with Existing Data Sources
8. Public Awareness and Engagement
9. Resource Constraints

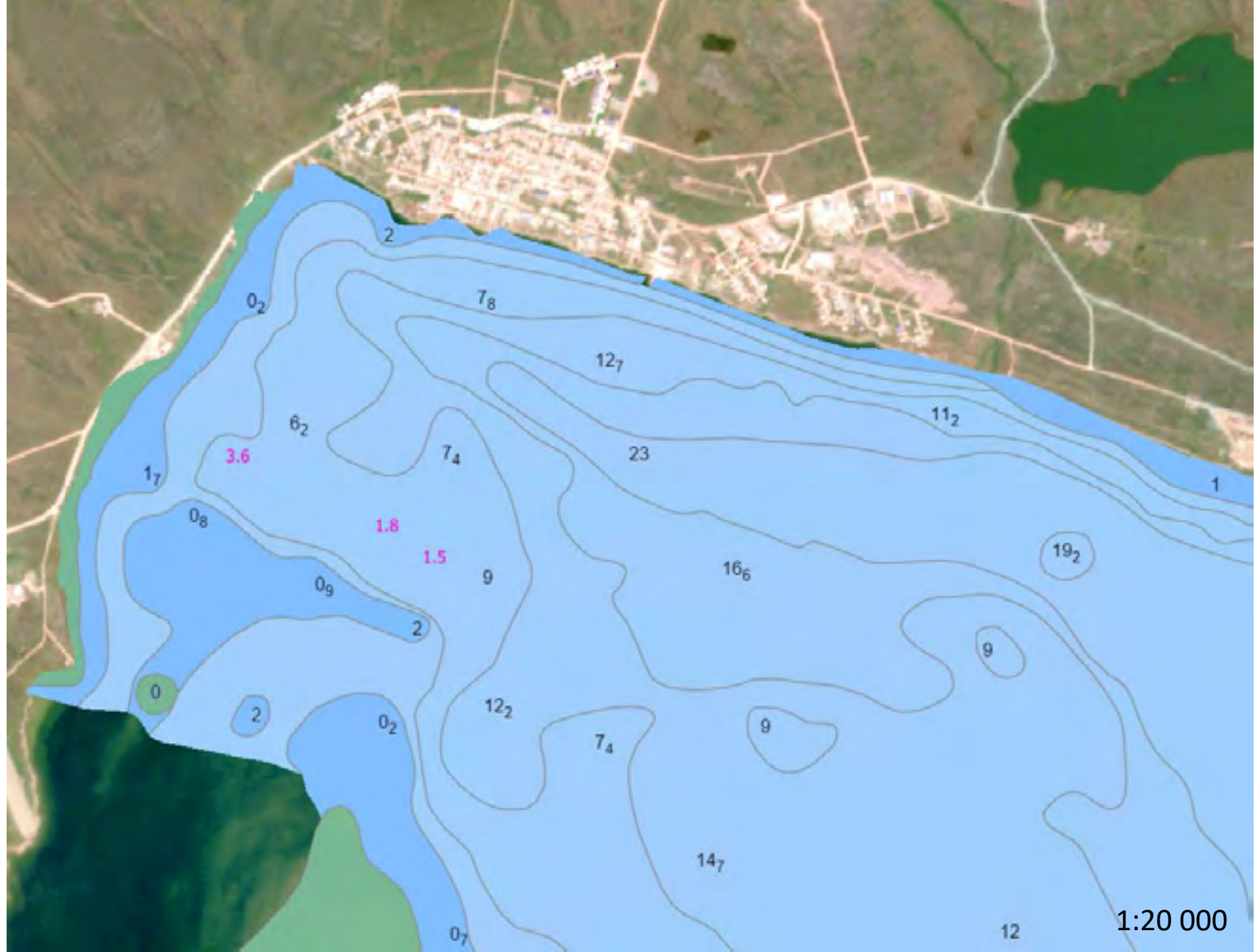




Bathymetric data collected with a datalogger near Inukjuak, Nunavik. Colors give depth information ranging from 4m (red) to 60m (blue).

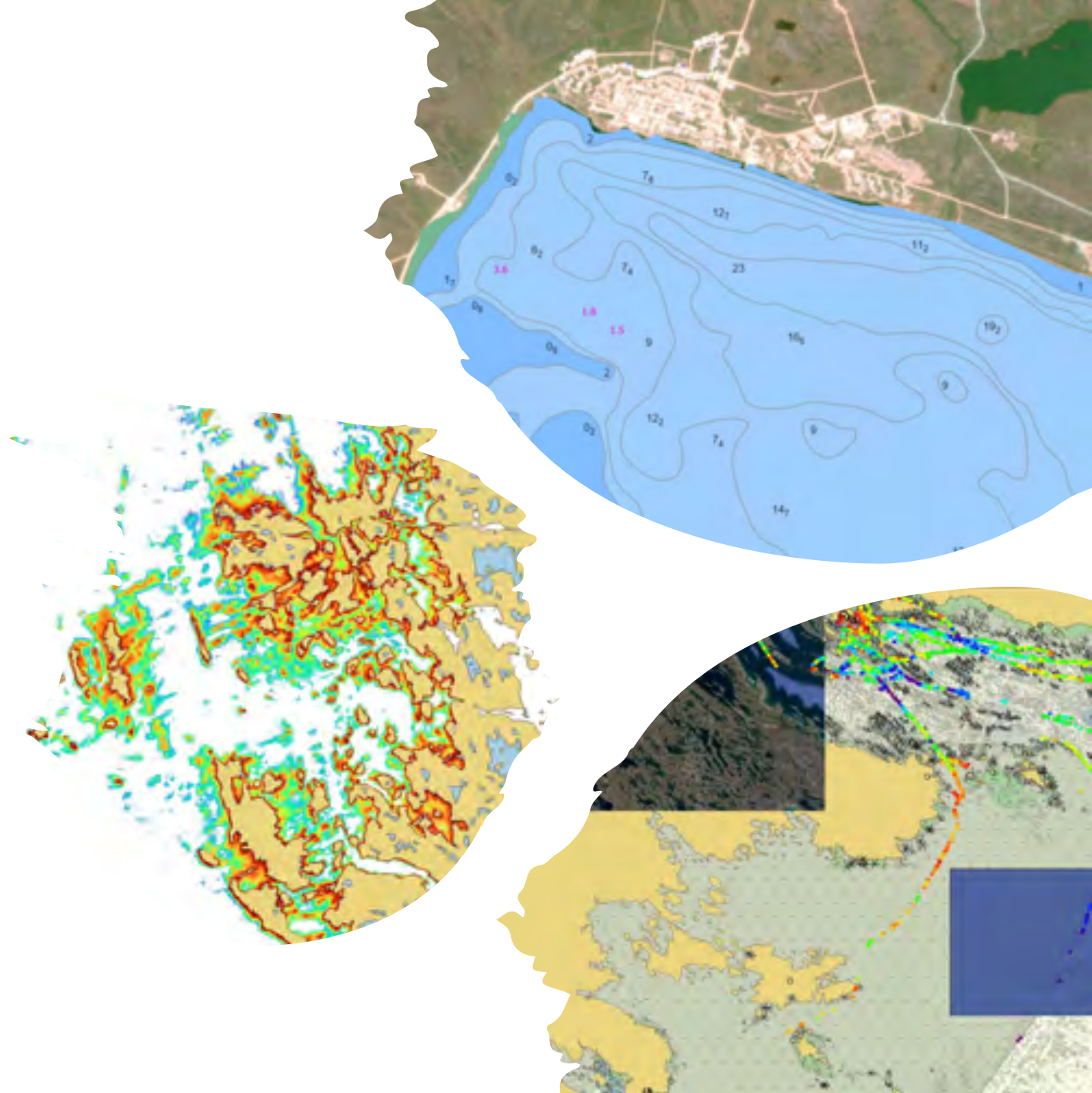
« The accuracy and coverage of the **SDB surface improved drastically** with the addition of newly provided **community bathymetric data** in the area. »





CSB can be use for:

- Reconnaissance Survey
- SDB Calibration
- NTM  
Recommendations

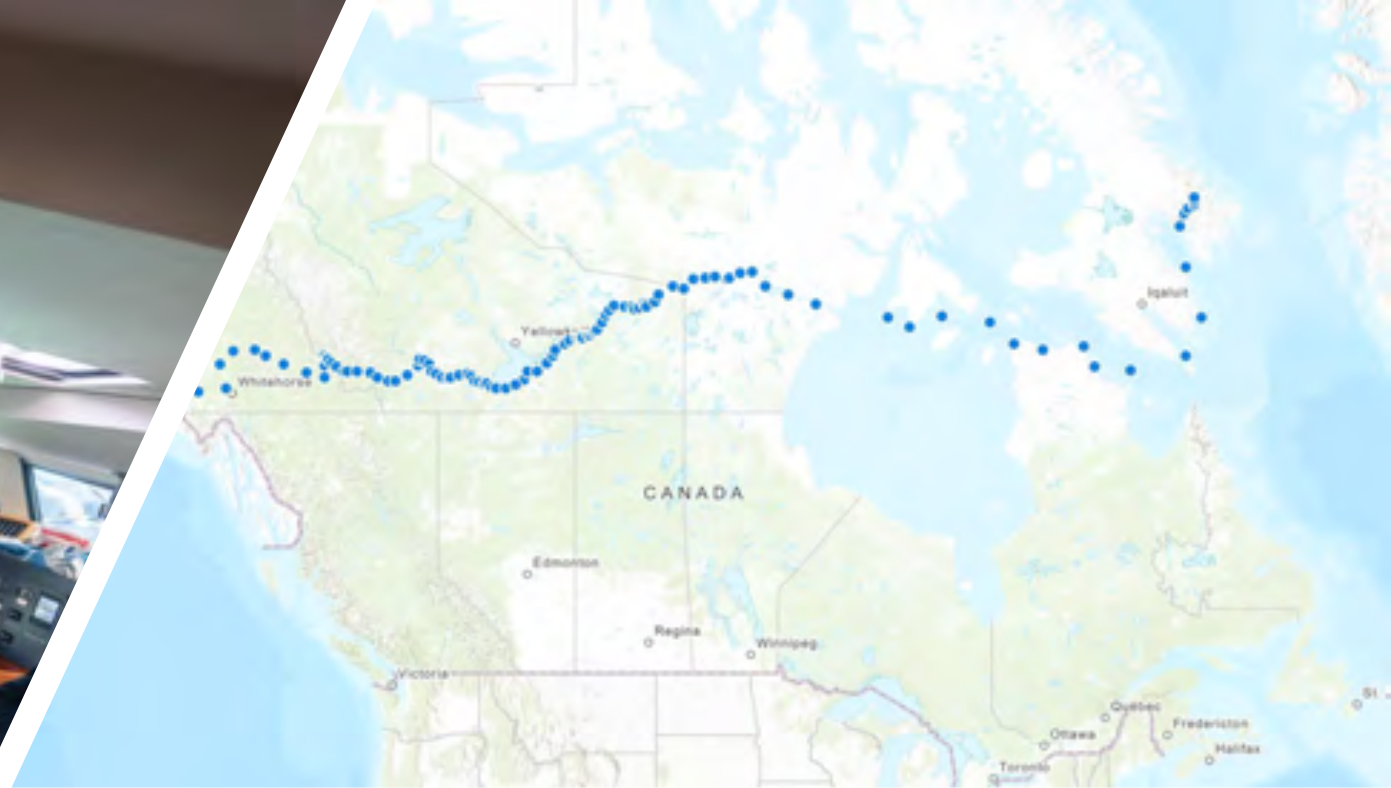




IHO

## **C-1: Capture issues regarding national policy/regulations /culture affecting the endorsement of CSB**

1. National Policies and Regulations
- ~~2. CSB Data is Unnecessary~~
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Anorak sailboat  
voyage from  
Quebec City to  
Baker Lake, then  
to Pangnirtung,  
and back to  
Quebec City.



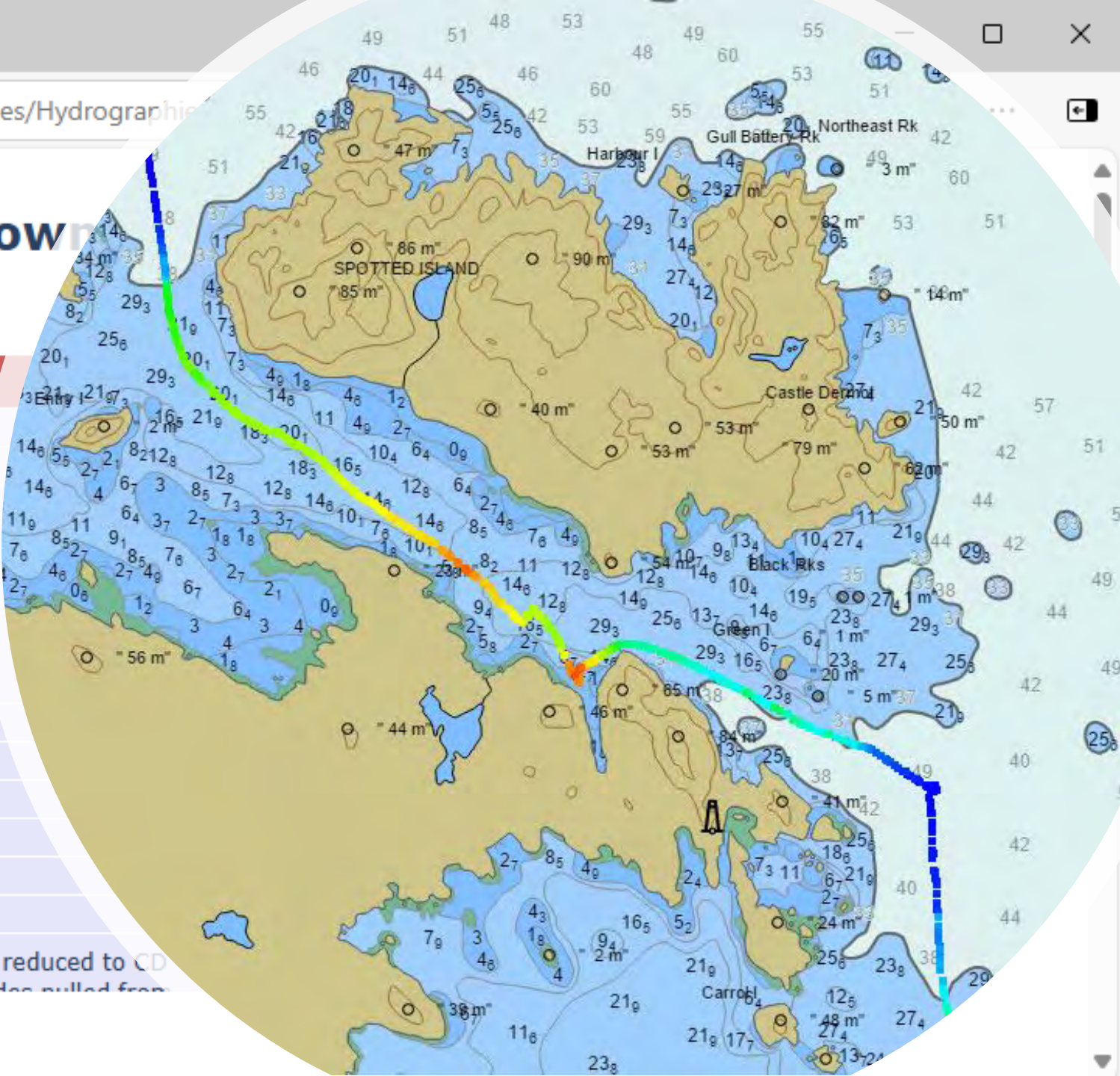
Tide Reduction  
Uncertainty  
(THU & TVU)

122 Tide Stations  
requested via IWLS  
Computing Time = 1h

# CH-OFM-unknown

## Metadata Table

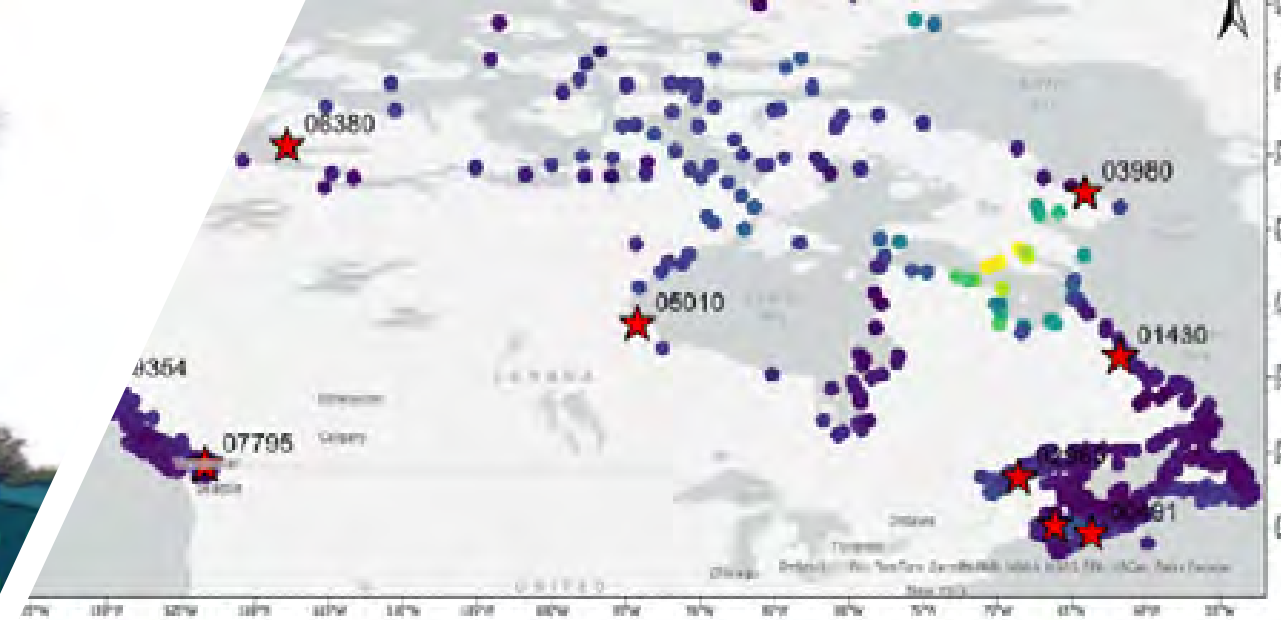
| Metadata                               | Value                                                                    |
|----------------------------------------|--------------------------------------------------------------------------|
| Start Date                             | 2024-06-23                                                               |
| End Date                               | 2024-10-25                                                               |
| Vessel                                 | unknown - unknown                                                        |
| Horizontal Coordinate Reference System | WGS 84 - EPSG:4326                                                       |
| Vertical Coordinate Reference System   | Chart Datum                                                              |
| Sounding Hardware                      | OFM - unknown                                                            |
| Sounding Technique                     | unknown                                                                  |
| Positioning Method                     | WAAS                                                                     |
| Sounder Draft (m)                      | 0.74                                                                     |
| TVU (m)                                | 2.4                                                                      |
| THU (m)                                | 11.8                                                                     |
| Water Level Reduction Method           | The dataset has been reduced to CD thanks to predicted tides pulled from |





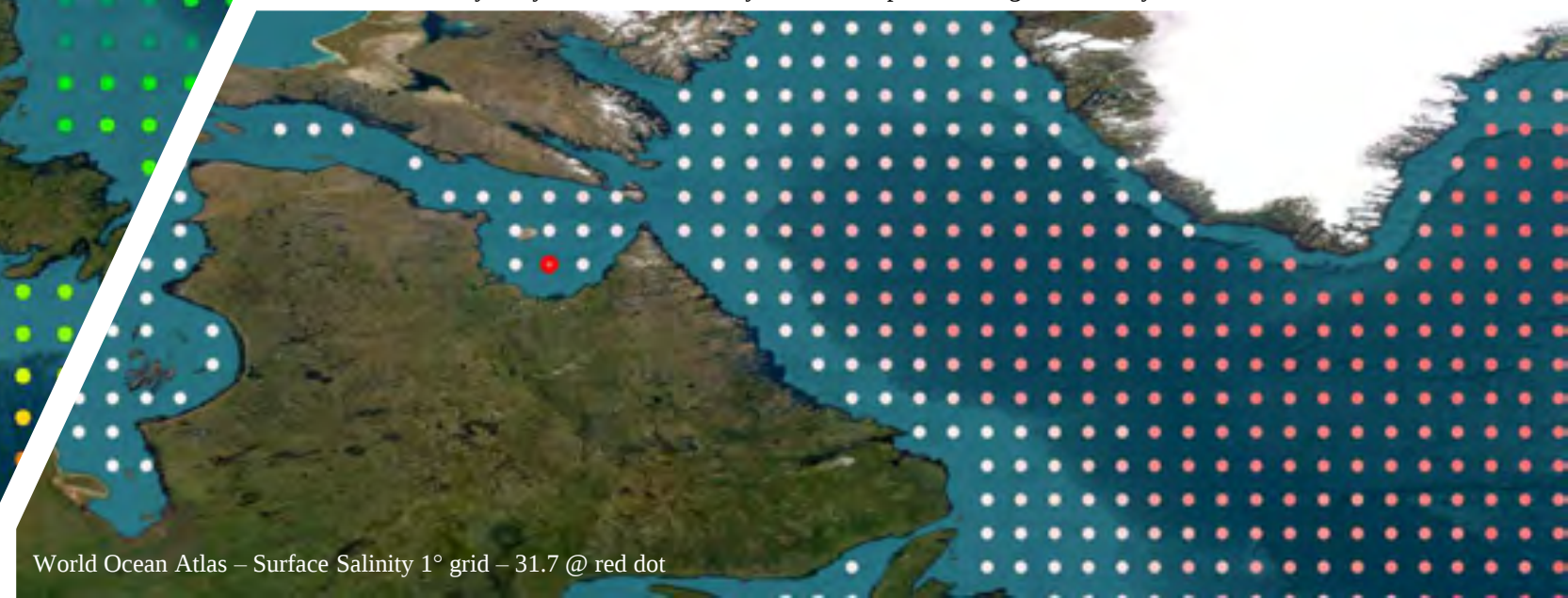
## Per Sounding Uncertainty

- $\text{THU} = 3\text{m} + \text{Sounder FootPrint}$
- $\text{TVU} = 0.35\text{m} + 4\% \text{ Depth}$



★ Primary Stations      Uncertainty (m)  
0.07    0.40    0.60    1.00    1.50    1.70  
Crowd-Sourced Bathymetry Vertical Uncertainty Calculation per Sounding. Muthusamy P & Al.

World Ocean Atlas – Surface Temperature 1° grid – 1.8 @ red dot



World Ocean Atlas – Surface Salinity 1° grid – 31.7 @ red dot

### 3rd Party BDB

- 65 datasets reduced to CD
- Metadata attached to each dataset
- 20 NTMREC

Tuktoyaktuk

Paulatuk

Aklavik

Nauyasat

Pangnirtung

Yellowknife

Lutselk'e

Rankin Inlet

Salluit

Inukjuak

Kuujuuaq

Sanikiluaq

Mamalilikulla

Tlowitsis / Wei Wai Kum

Ka:yu:'k't'h' and Che:k'tles7et'h

K'omoks

Innu - Essipit

Mont-Joli

Riviere-du-Loup

Saint-John's



IHO

International  
Hydrographic  
Organization

# Data Centre for Digital Bathymetry Viewer

## Layers

### IHO DCDB/NOAA NCEI

- ☐ 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

- ☒ Crowdsourced Bathymetry Files

Search CSB Files Reset

- ☐ U.S. Bathymetry Coverage and Gap Analysis

### EMODnet

- Australia
- Canada
- Cape Verde

Grid Extract

More Information

Help

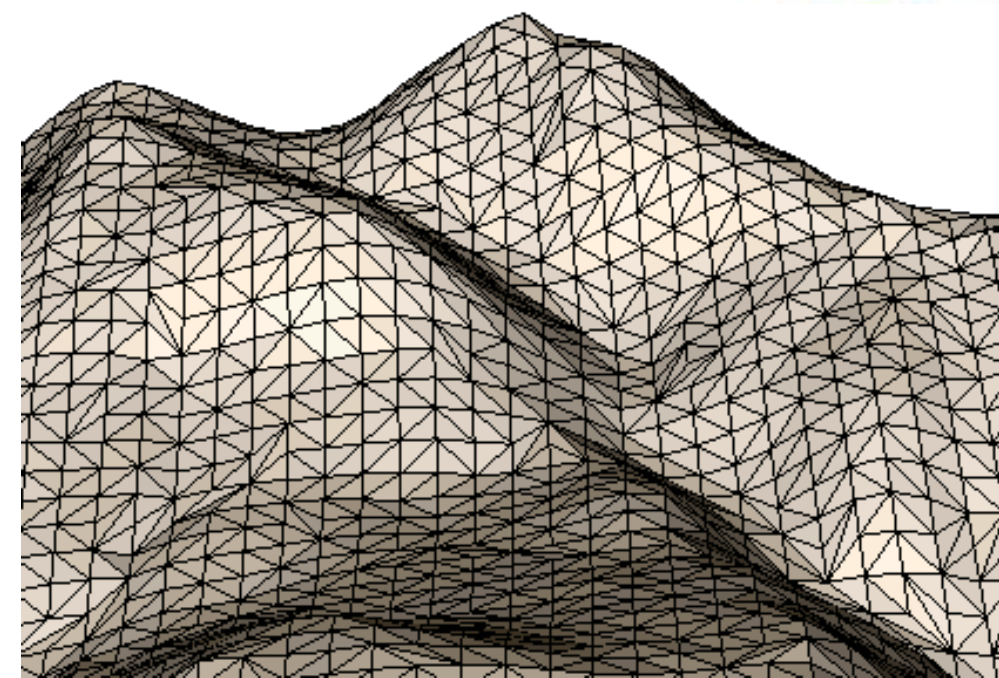
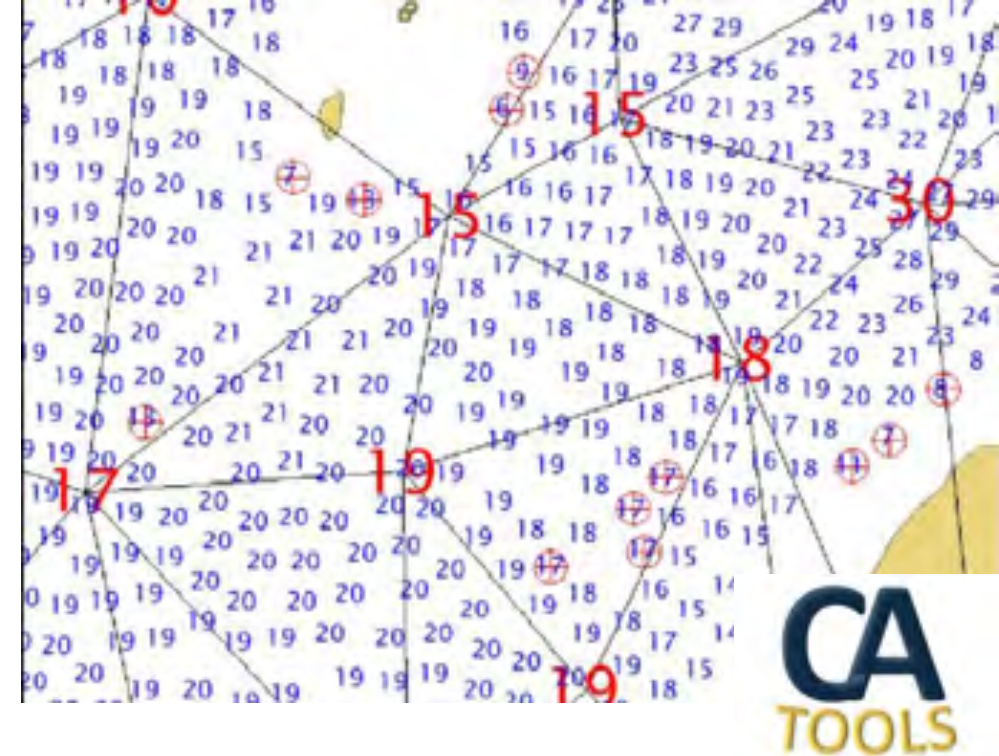
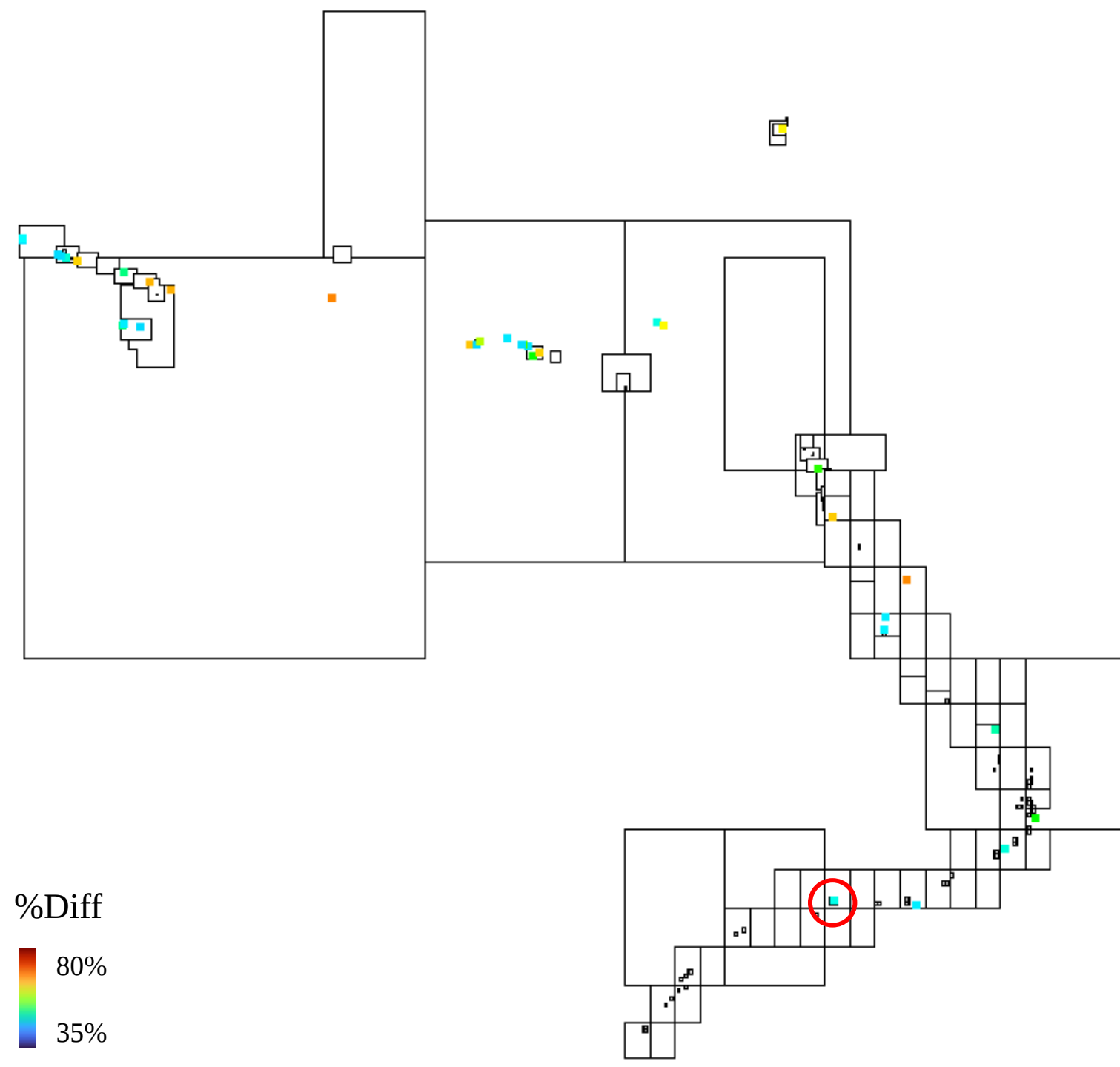




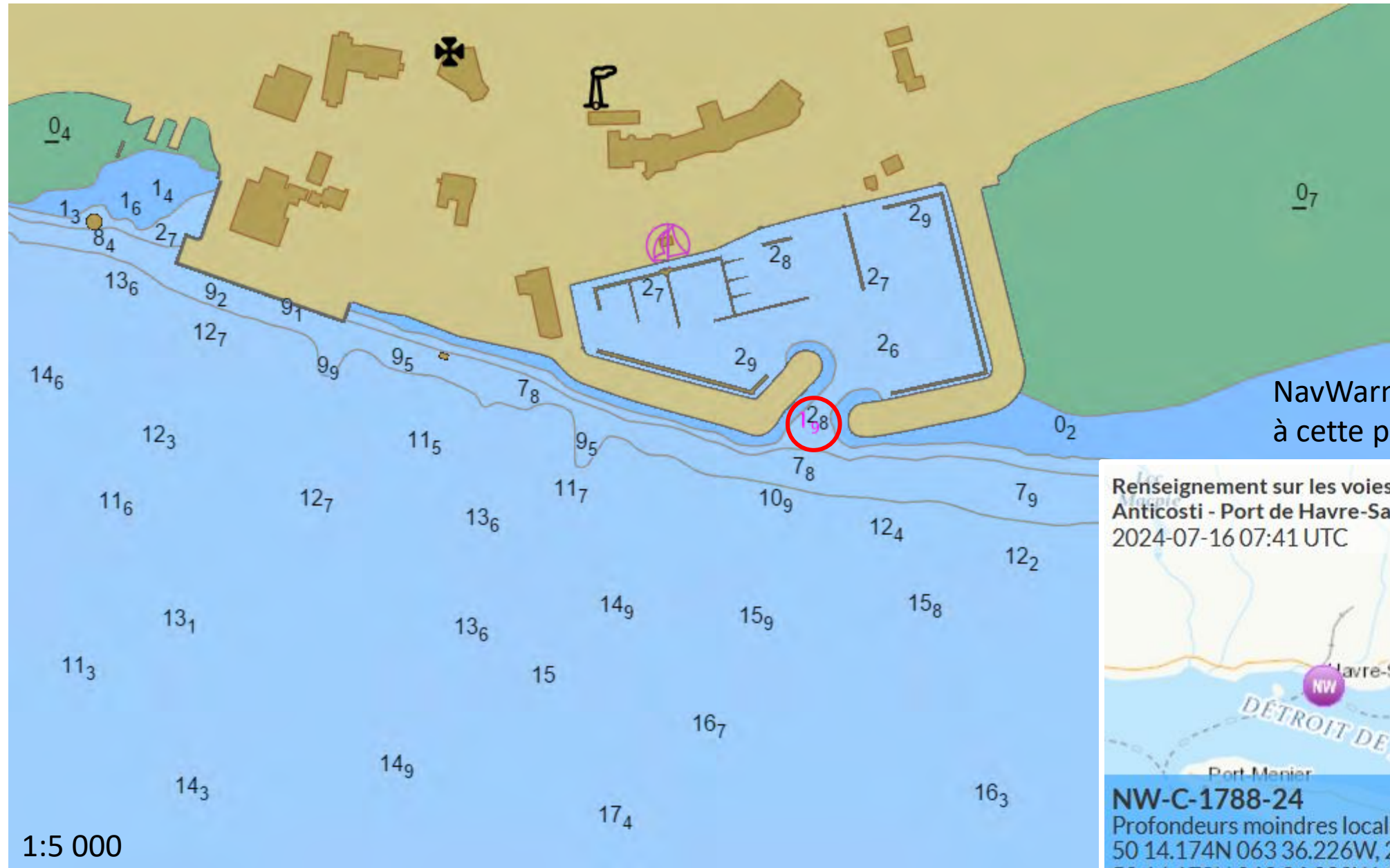
166 ENCs requested  
via CHS Chart Index  
Computing Time = 10h



Assistant  
NavWarn  
Copilot



# Havre St-Pierre



NavWarn déjà actif  
à cette position

Renseignement sur les voies navigables -  
Anticosti - Port de Havre-Saint-Pierre  
2024-07-16 07:41 UTC

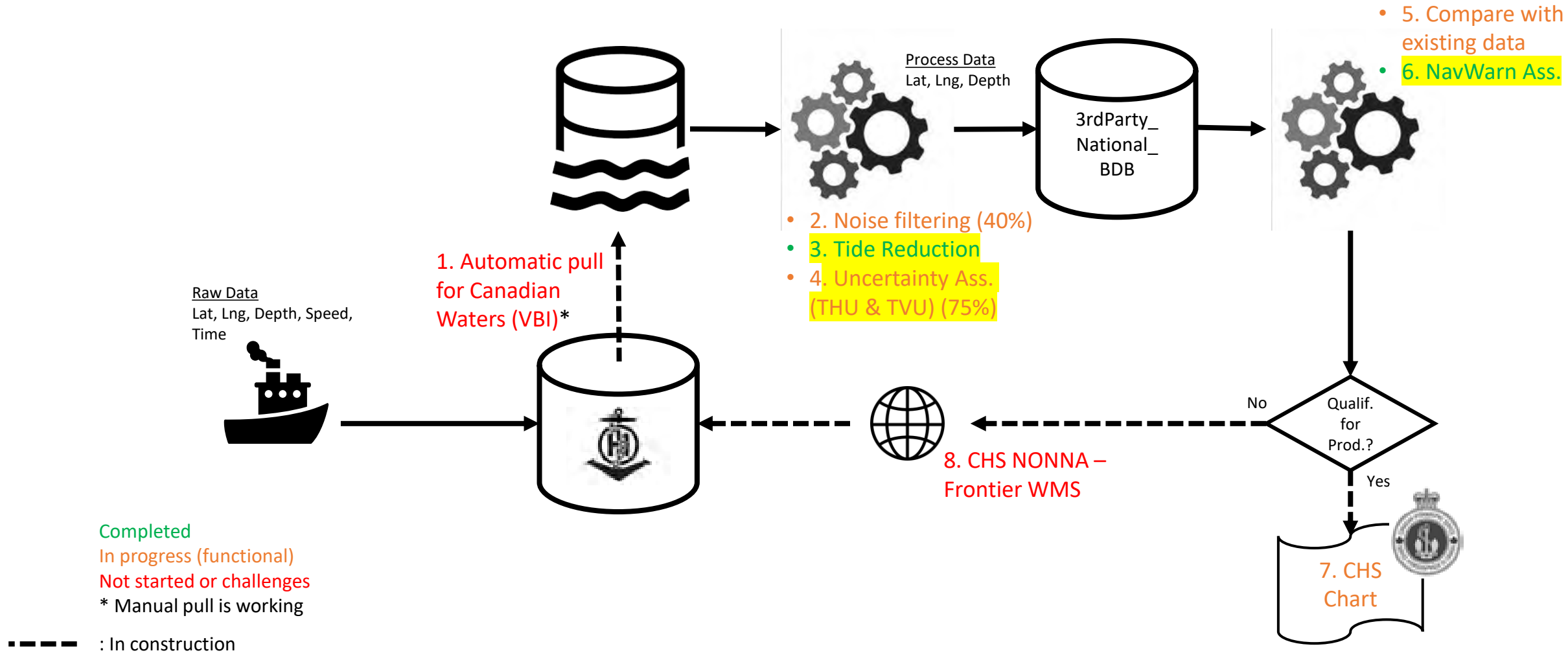


**NW-C-1788-24**

Profondeurs moindres localisées à :  
50 14.174N 063 36.226W, 2 mètres  
50 14.172N 063 36.228W, 1,9 mètre

# CHS' CSB data integration approach

## ISO 1006





# MERCI !

# Questions ?

Mathieu Rondeau

[mathieu.rondeau@dfo-mpo.gc.ca](mailto:mathieu.rondeau@dfo-mpo.gc.ca)



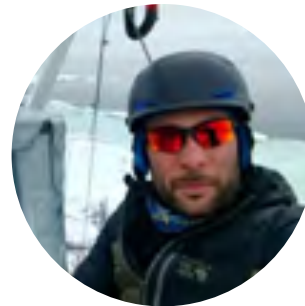
Yan Bilodeau –  
Computer  
developer



Michel Breton -  
Manager



Jérémie Lemarchand  
- Hydrographer



Gabriel  
Montpetit-Allard  
– Outreach  
Supervisor



Mathieu Rondeau  
– Dataflow  
Supervisor