

Proposal to Unify the IHO/OHI Publication C-55 Methodology for the United States and Canada's Hydrographic Surveying Adequacy Metrics

CANADA Areas of Navigational Concern

USCHC 47, St. John's NL, May 30-31

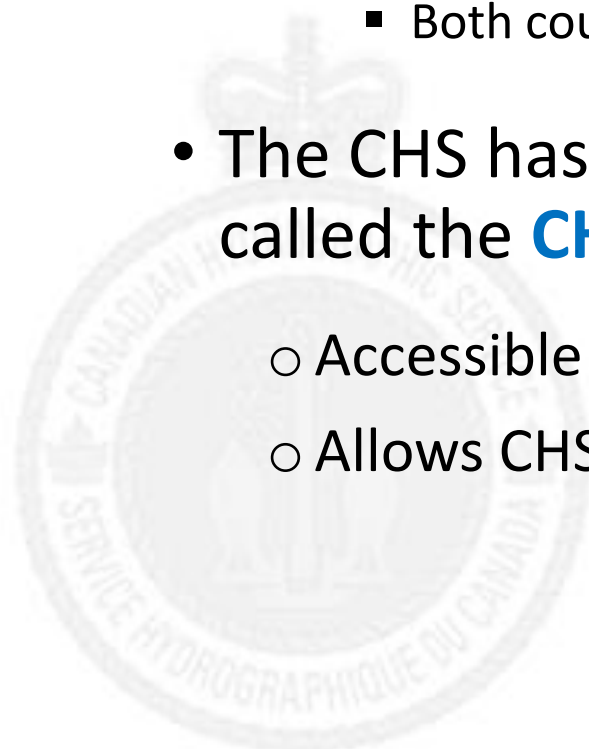


By Rene Chenier



Background

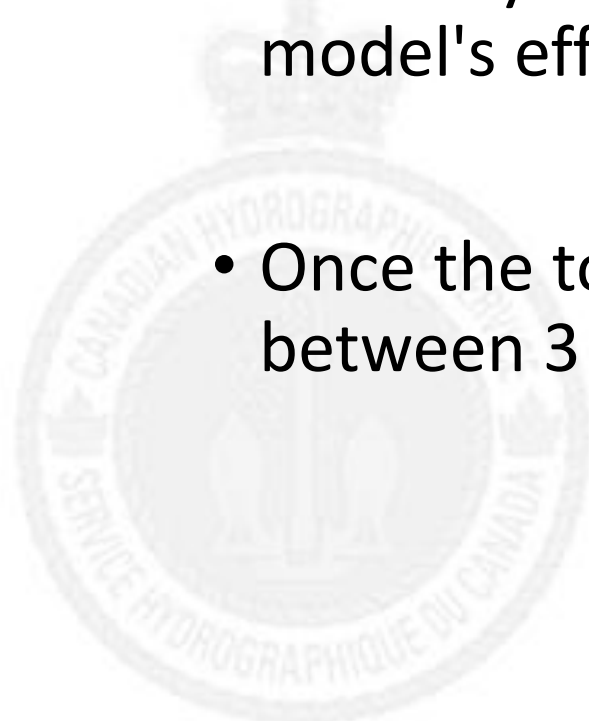
- Under the IHO C-55 publication, hydrographic offices can focus their survey efforts on areas of navigational concern.
 - Beneficial for countries with extensive waterways, like the USA and Canada.
 - Both countries have strategies to address their navigational concerns.
- The CHS has developed a national GIS model to focus on these areas, called the **CHS Priority Planning Tool (CPPT)**
 - Accessible to all CHS staff via a web GIS interface.
 - Allows CHS to direct its resources effectively towards crucial areas.





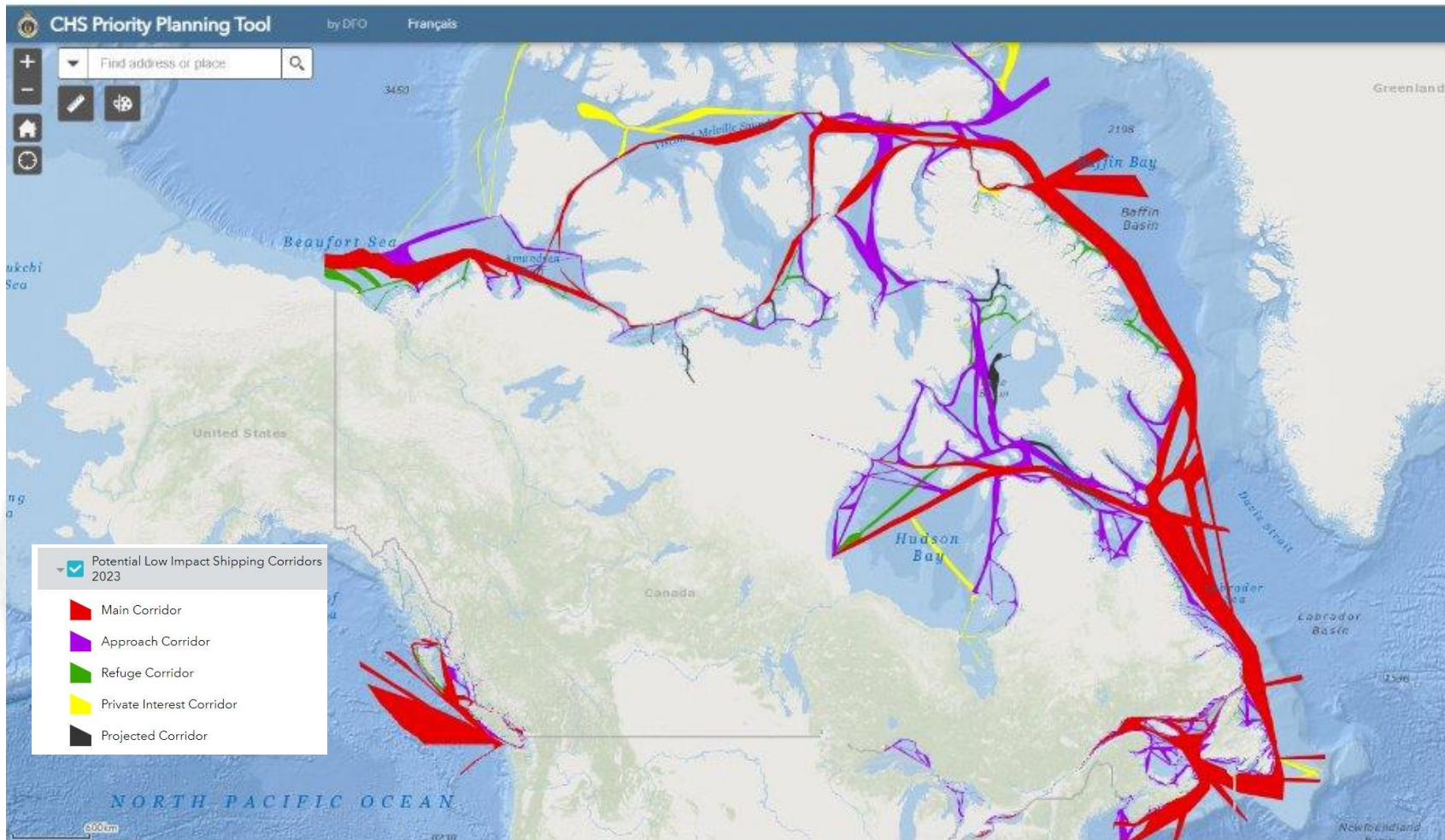
Timeline

- The CPPT has been fully operational since 2016. To ensure its relevance and accuracy, it requires periodic maintenance (several times a year). The recent survey data acquired is crucial to the model's effectiveness.
- Once the tool is updated with this new data, it typically takes between 3 to 5 days to generate the various statistics.



Navigational Corridors

The primary layer that CHS utilizes to delineate areas of navigational concern in Canada is the navigational corridors.



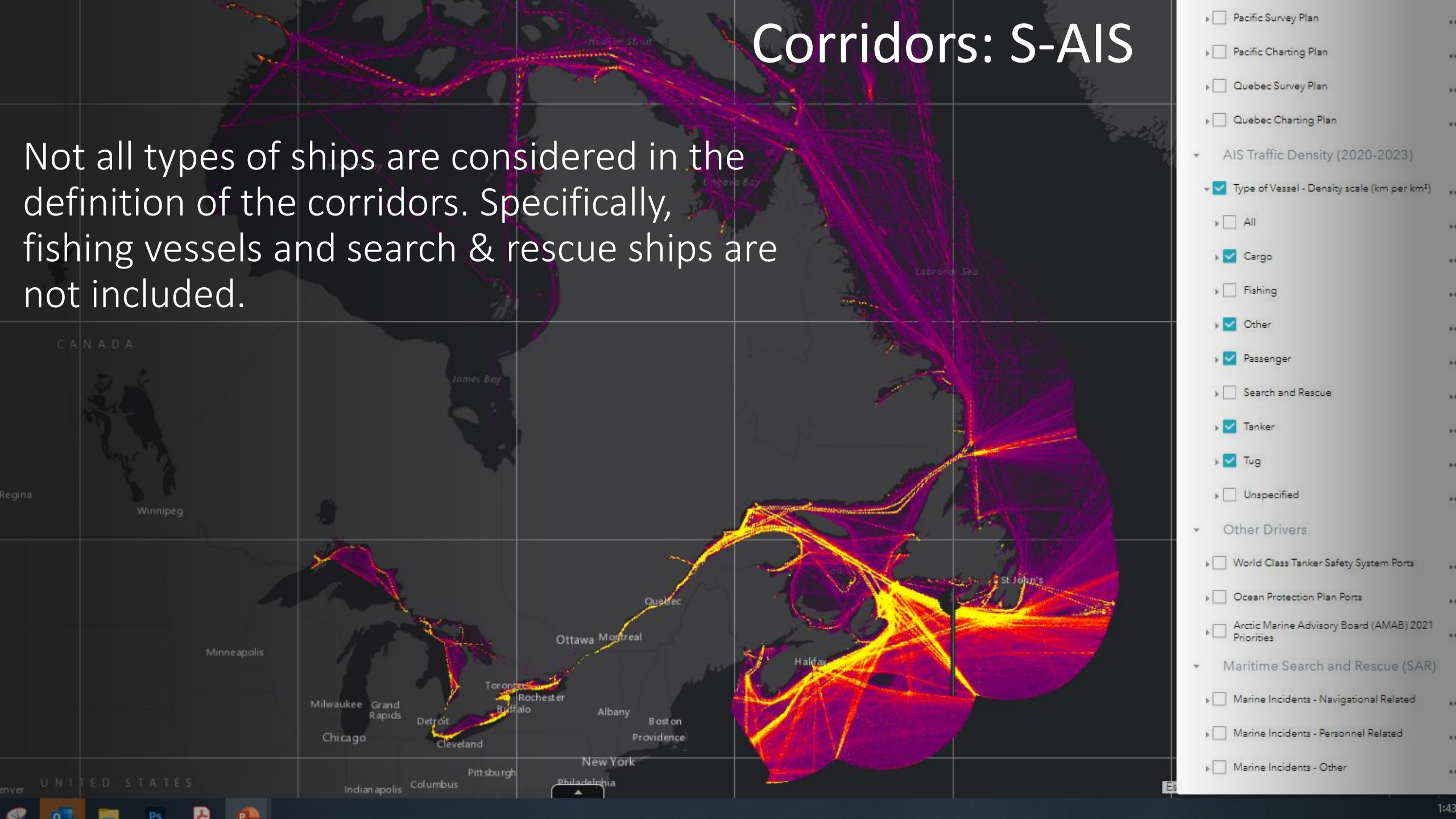
Three primary data sources were employed to establish the corridors:

- Satellite Automated Identification System (S-AIS)
- CHS charts & publications
- Remote sensing data

Higher priority is assigned to the main and approach corridors. These are the ones that will be utilized to report on the areas of navigational concern.

Corridors: S-AIS

Not all types of ships are considered in the definition of the corridors. Specifically, fishing vessels and search & rescue ships are not included.



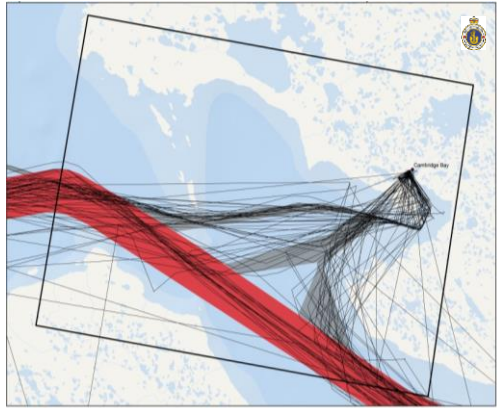
- Pacific Survey Plan
- Pacific Charting Plan
- Quebec Survey Plan
- Quebec Charting Plan
- ▼ AIS Traffic Density (2020-2023)
 - ▼ Type of Vessel - Density scale (km per km²)
 - All
 - Cargo
 - Fishing
 - Other
 - Passenger
 - Search and Rescue
 - Tanker
 - Tug
 - Unspecified
- ▼ Other Drivers
 - World Class Tanker Safety System Ports
 - Ocean Protection Plan Ports
 - Arctic Marine Advisory Board (AMAB) 2021 Priorities
- ▼ Maritime Search and Rescue (SAR)
 - Marine Incidents - Navigational Related
 - Marine Incidents - Personnel Related
 - Marine Incidents - Other

Corridors: CHS Charts & Publications, Remote Sensing Data

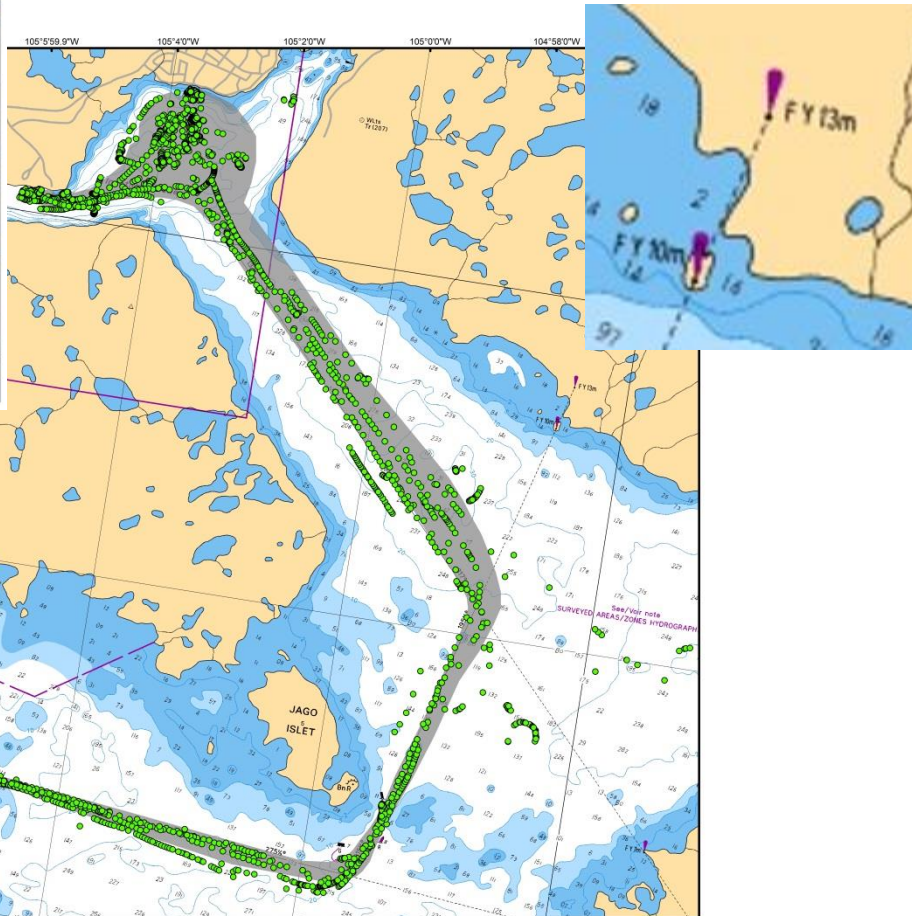
Charts and aids to navigation are used to ensure that corridors pass through a safe area.

Remote sensing data is used to avoid hazards such as shoals.

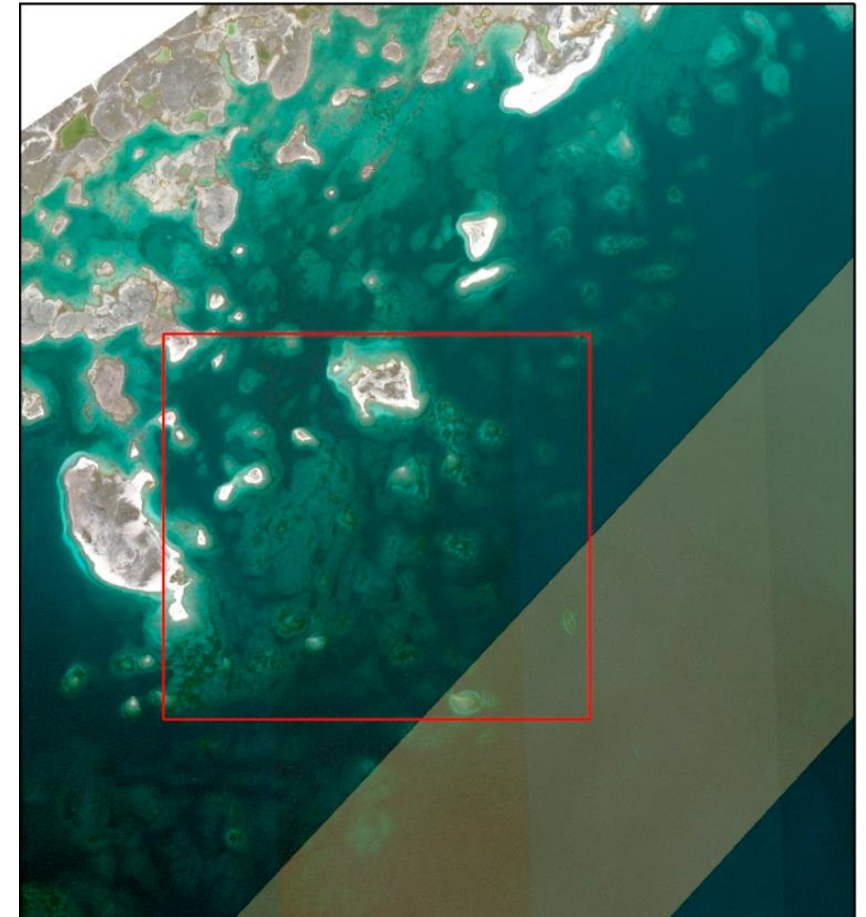
Traffic patterns from AIS data:

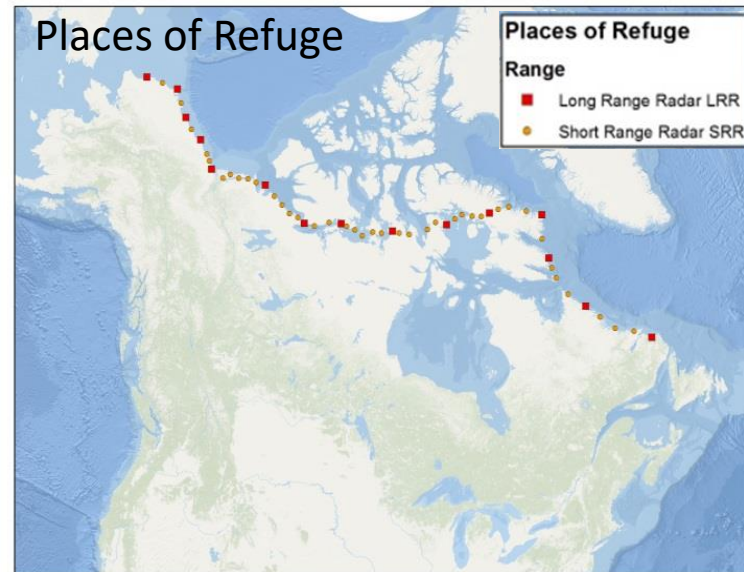
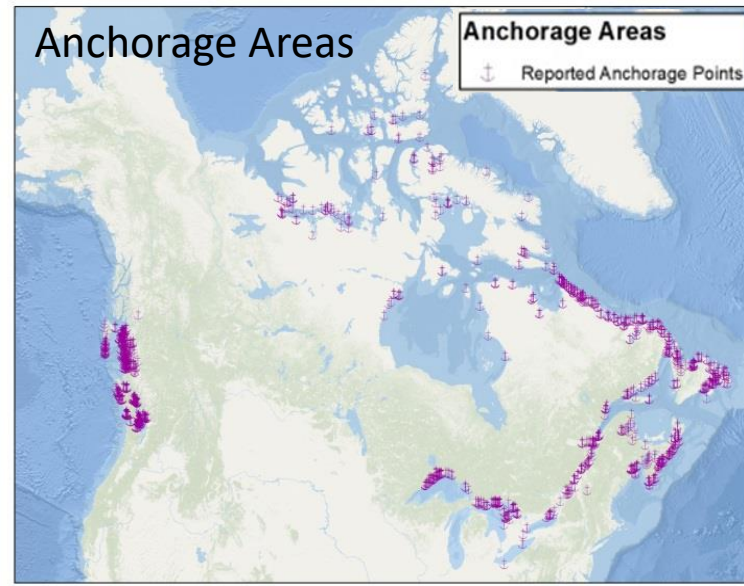


CHS Charts and Aids to Navigation:



Shoal identification using remote sensing data:



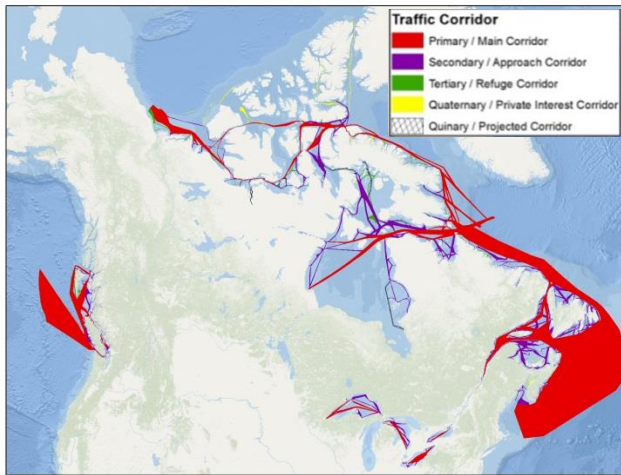


Corridors: Secondary Layers

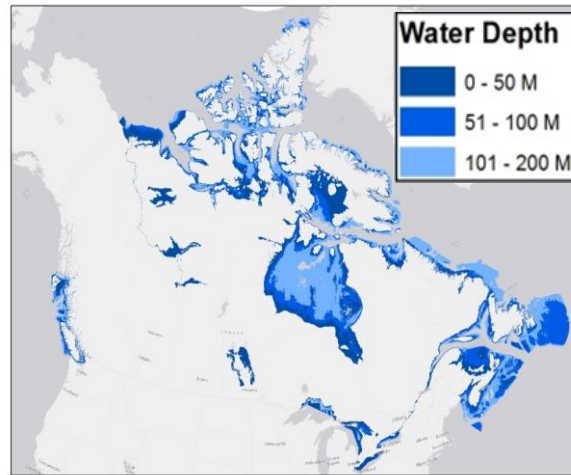
Examples of other secondary layers used for the creation of the corridors

CPPT – Creation of the Priority Model

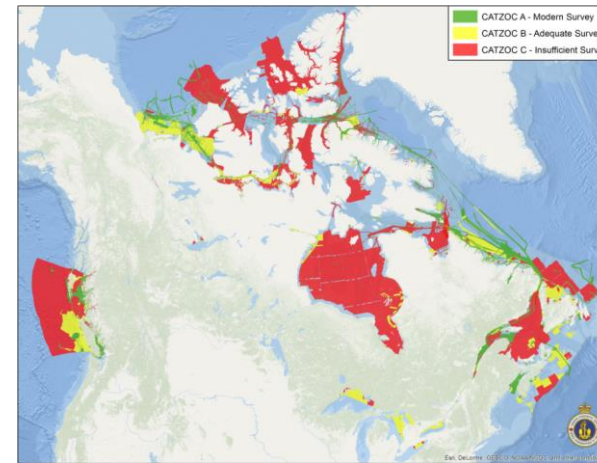
Primary Layers - Planning



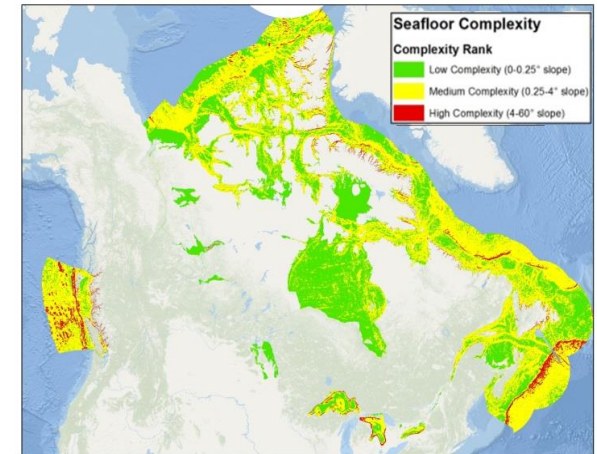
Corridors



Water Depth



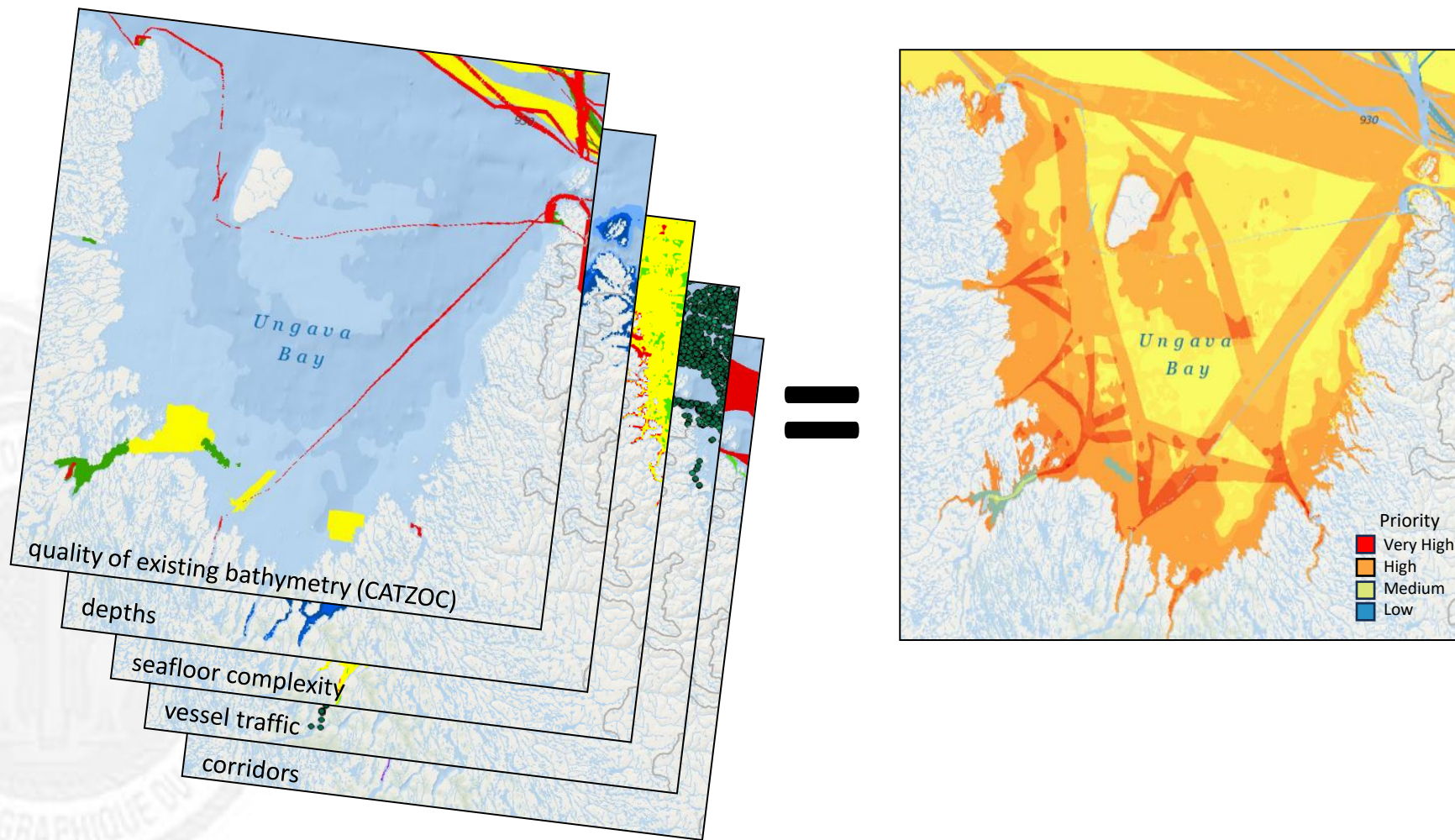
Surveys



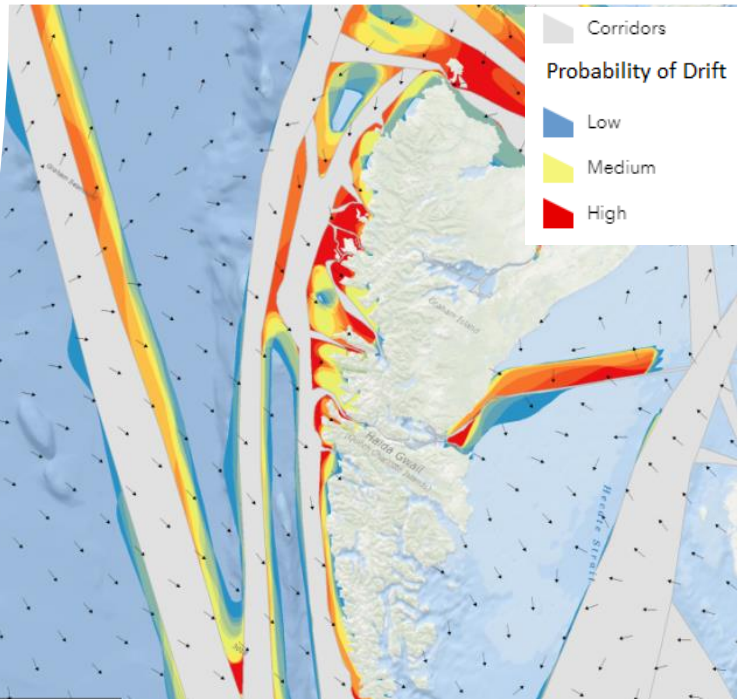
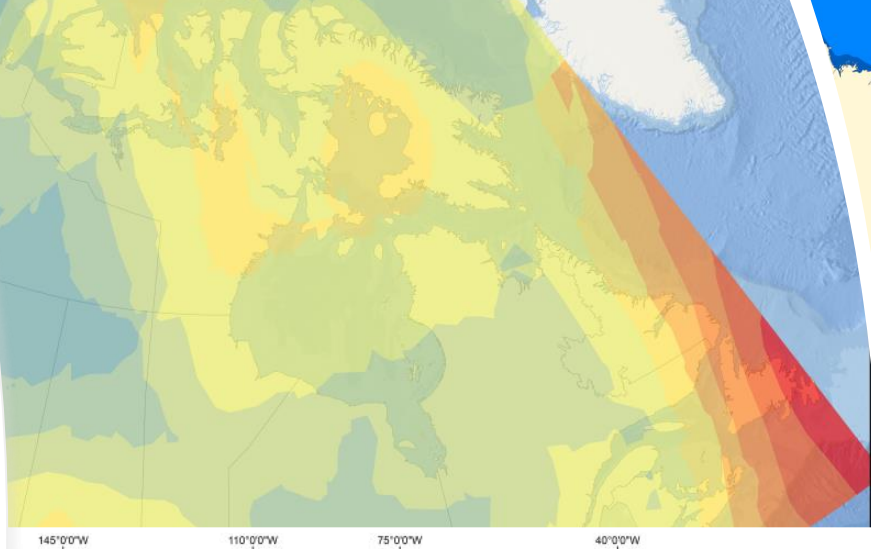
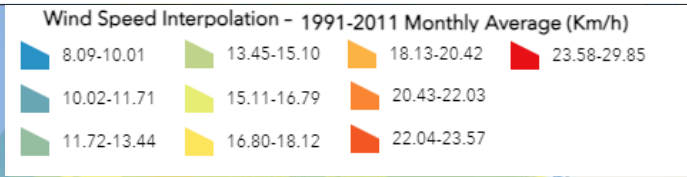
Seafloor Complexity



Example of CPPT Model Output



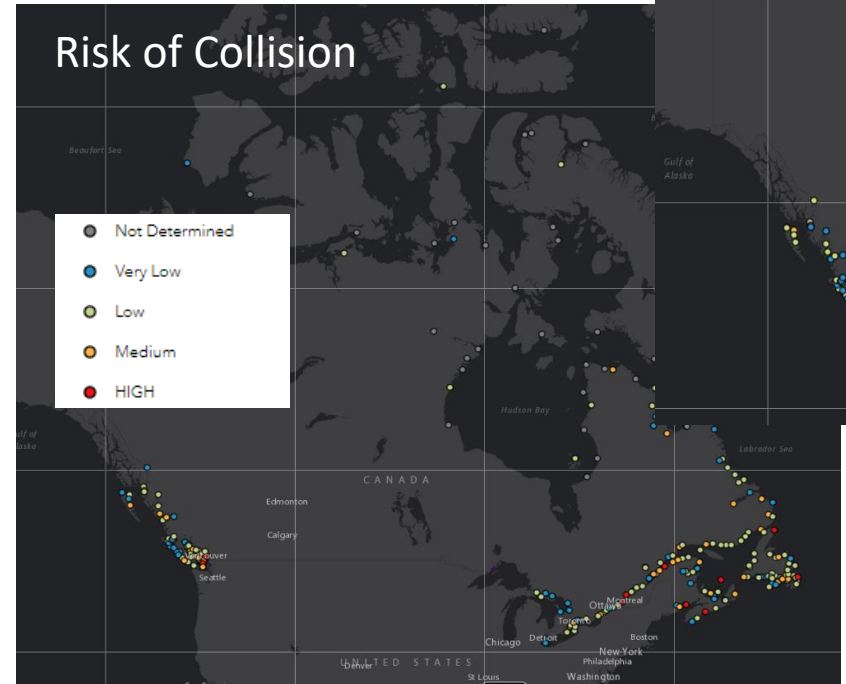
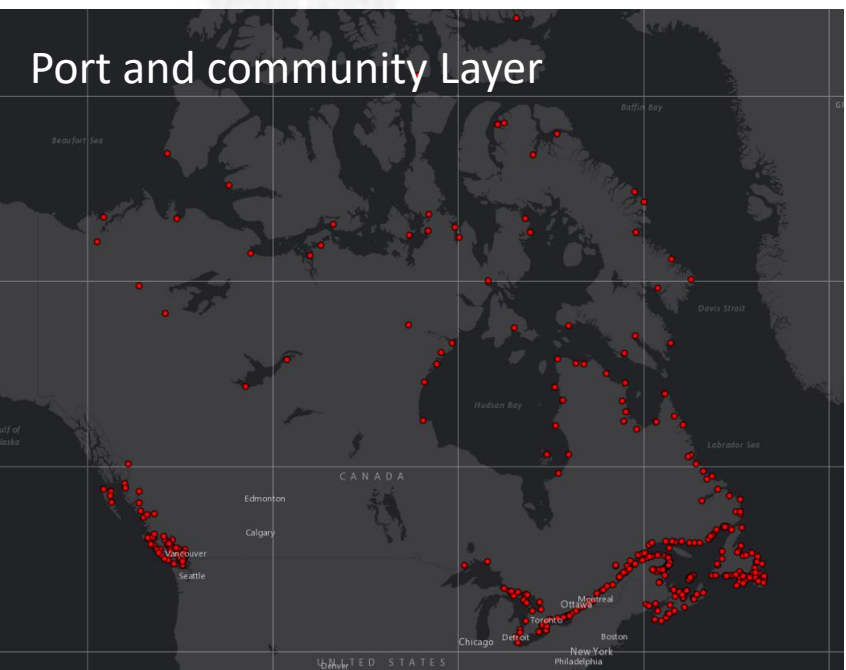
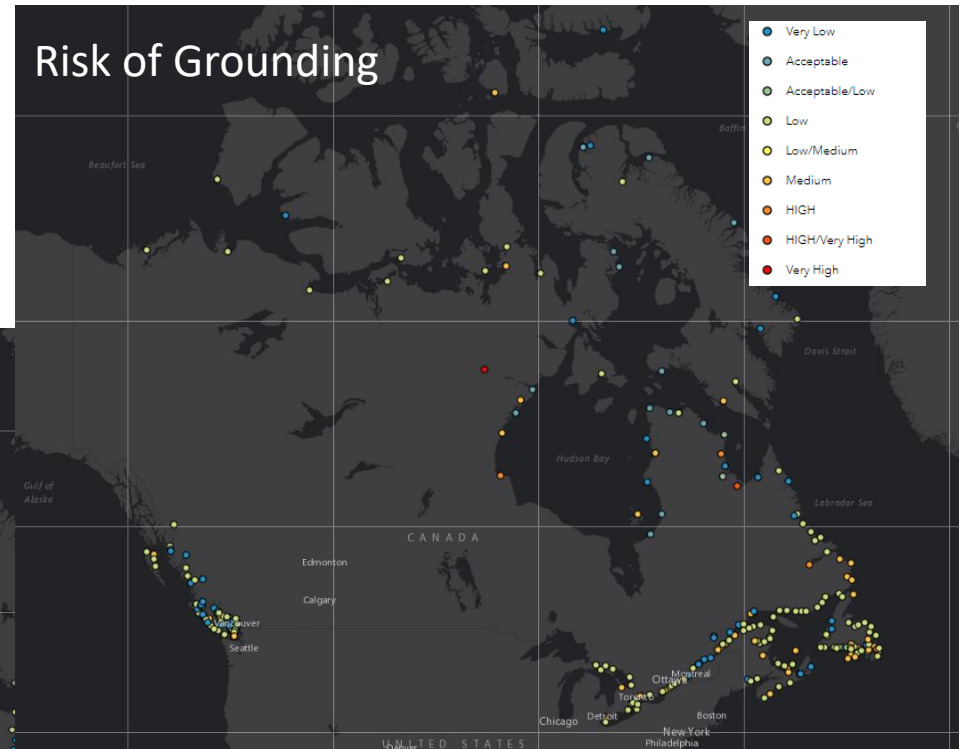
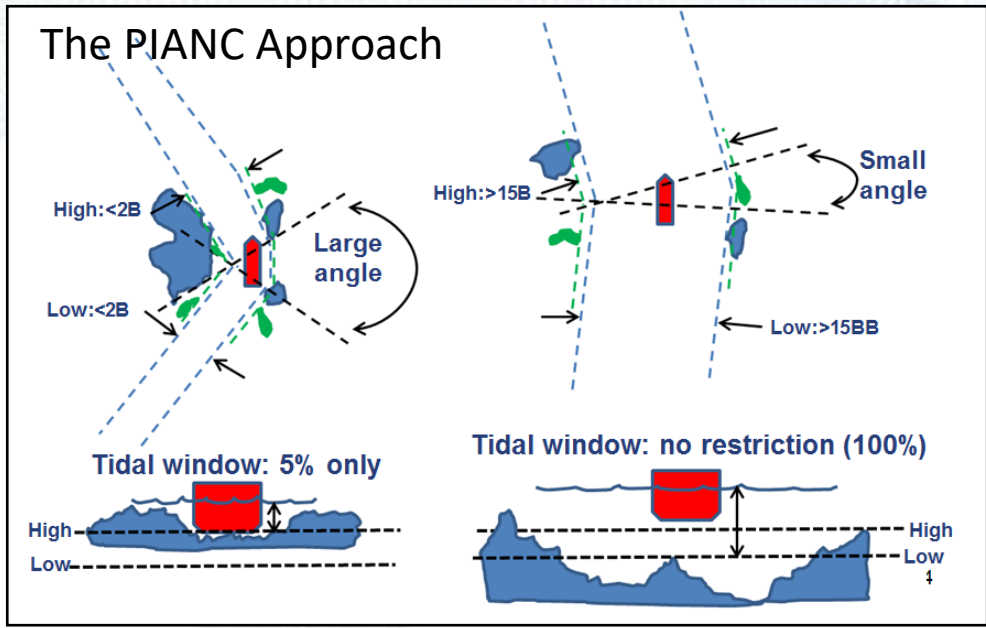
CPPT: Secondary Layers

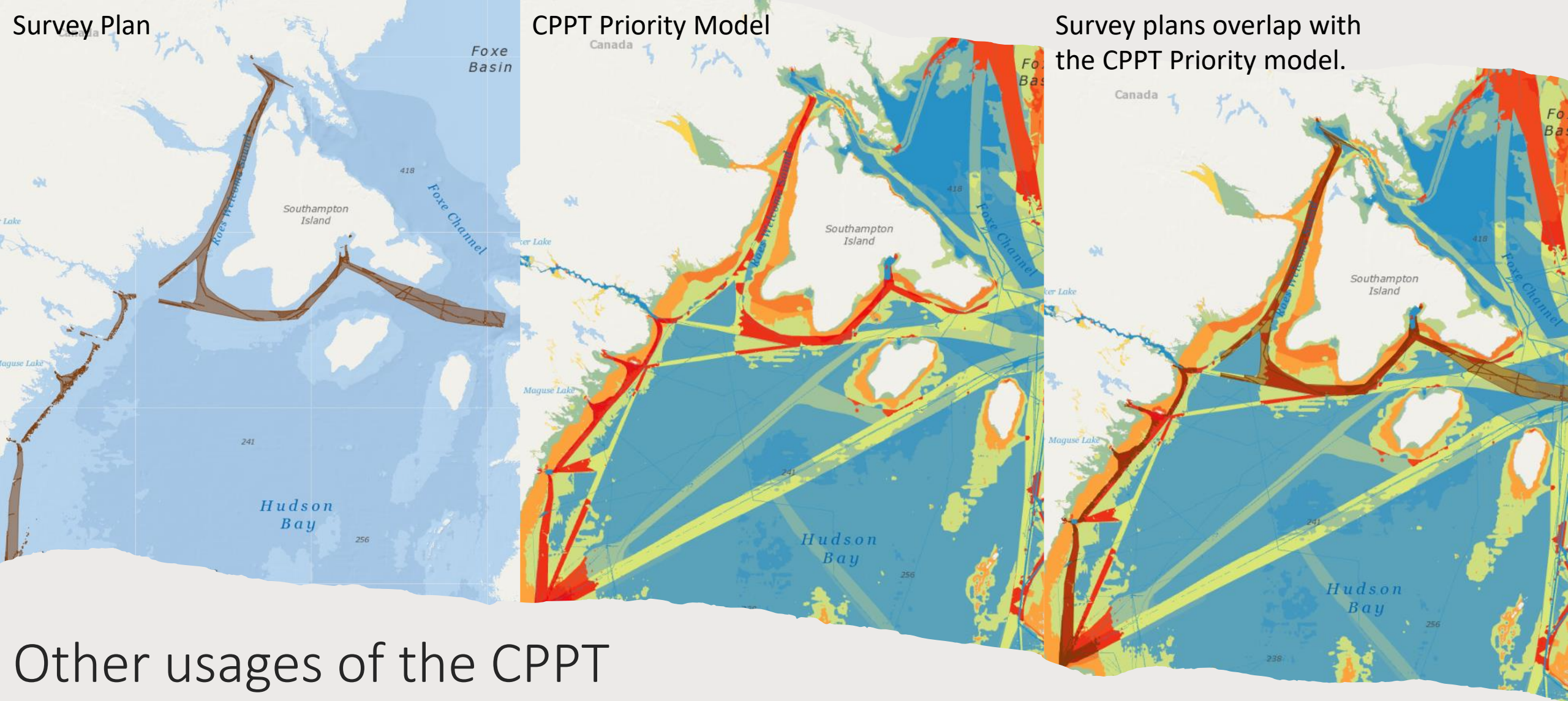




CPPT - Risk of Grounding and Collision

The risks of grounding and collision are also included in the CPPT.





Survey Plan

CPPT Priority Model

Survey plans overlap with the CPPT Priority model.

Other usages of the CPPT

Support Planning : Many layers that aid in planning are also included in the CPPT, such as layers related to indigenous agreements and treaties.

Reporting: All of our charting and survey plans are integrated into the CPPT.

Developing an effective tool at the national level

To achieve this, consistent layers at the national scale needed to be compiled. For instance, the process of creating the corridors alone took over a year.

Model Maintenance

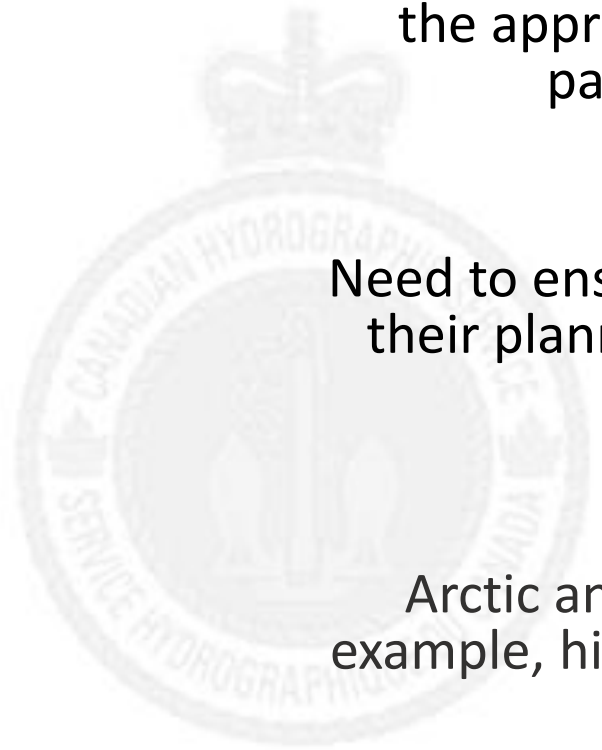
Maintaining all the layers in the model is time consuming. The more complex the approach, the more time is needed for maintenance. The AIS data in particular requires a significant amount of time to maintain.

Tool Incorporation

Need to ensure employees understand the CPPT and incorporate this tool into their planning. Under the OPP, the CPPT is one of the primary tools used to steer our priorities.

Priority scales

Arctic and southern priorities need to be viewed on different scales. For example, high traffic density in the Arctic is not the same as in southern ports.





Questions

