



# National Report for Canada

ARHC13 meeting September 2023

Nuuk, Greenland, Denmark



ARCTIC REGIONAL  
HYDROGRAPHIC  
COMMISSION

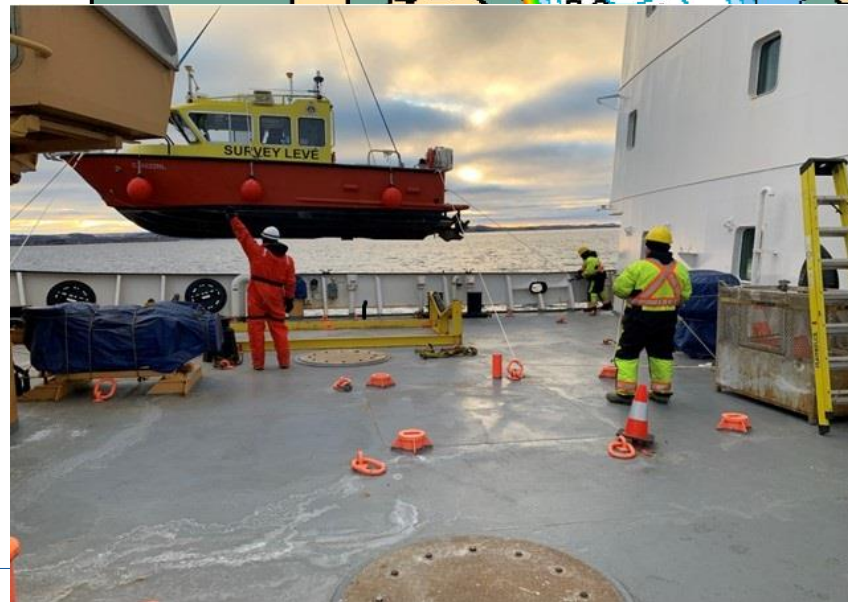
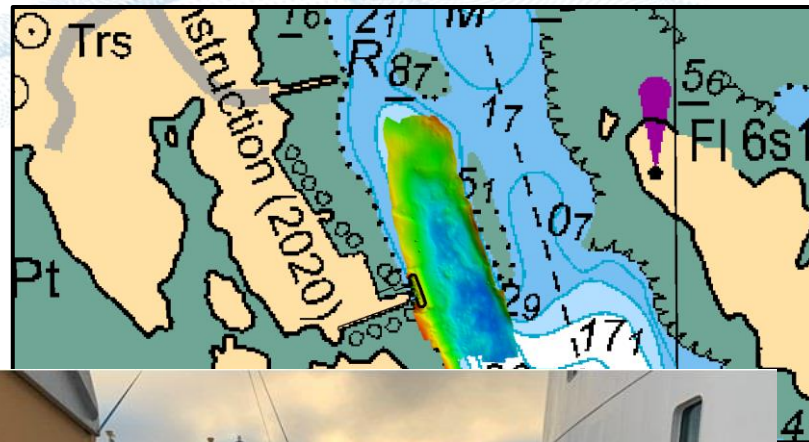
Chris Marshall – Regional Director

Ontario and Prairie, and Arctic Regions



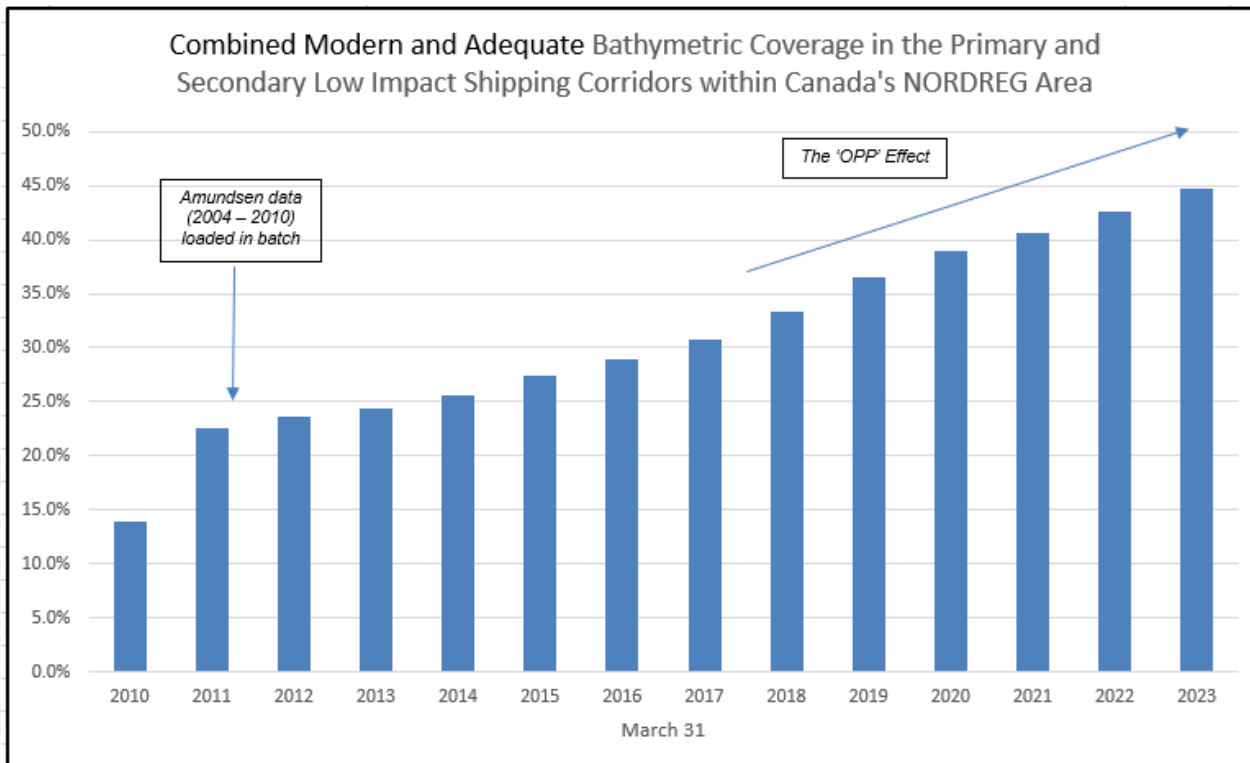
# Overview

- Overview of 2023 Arctic survey and chart production
- Renewal of Canada's Ocean Protection Plan – Year 2
- Strategy for the years ahead
- Innovation





# Status of Hydrography in the Canadian Arctic



Modern = CATZOC A1 & A2  
Adequate = CATZOC B

Modern and Adequate data in combined Primary and Secondary corridors has increased from 30.7% in 2017 to **44.7% as of March 2023.**

Data collected this year will be included by March of 2024.



# 2023 Arctic Survey Fleet

*CCGS Pierre Radisson*



*M/V Polar Prince*



*CCGS Amundsen*

*CCGS Sir Wilfrid Laurier*



*CCGS Des Groseilliers*



*CCGS Henry Larsen*



A versatile inventory of shallow, mid and deep water multibeam systems  
aboard GoC and Chartered ice-breaking platforms.



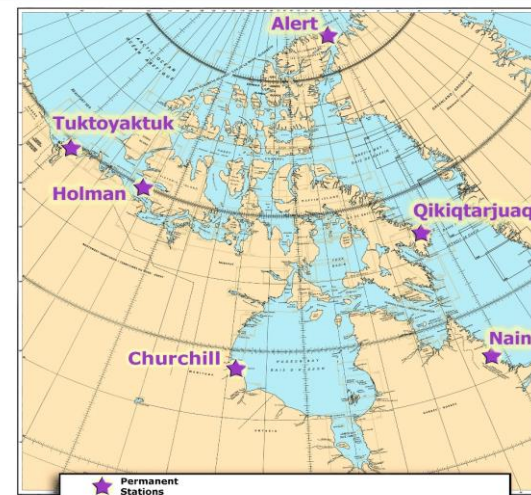
# Summary of 2023 Survey Program

- CHS Survey Operations onboard 4 of 6 sonar equipped CCG icebreakers plus one chartered ship **M/V *Polar Prince***.
- Trusted source data from CCGS Amundsen (Amundsen Science).
- Partnerships with Students on Ice (M/V *Polar Prince*) and DFO Arctic Science (R/V *Frosti*)
- All 6 permanent tide gauge stations plus 3 temporary gauge sites visited and operational.
- CHS was unable to secure a contract for ASV platform (autonomous survey technology) for 2023 season.



Planned 2023 surveys from fleet and chartered vessels | Enquêtes prévues en 2023 auprès de la flotte et des navires affrétés

NGCC <i>Pierre Radisson</i>	
CCGS <i>Sir Wilfrid Laurier</i>	
NGCC <i>Des Groseillers</i>	
CCGS <i>Henry Larsen</i>	
F/V <i>Frosti</i>	
M/V <i>Polar Prince</i>	
Contracted Surveys	





# Arctic OPP Contract Surveys 2023

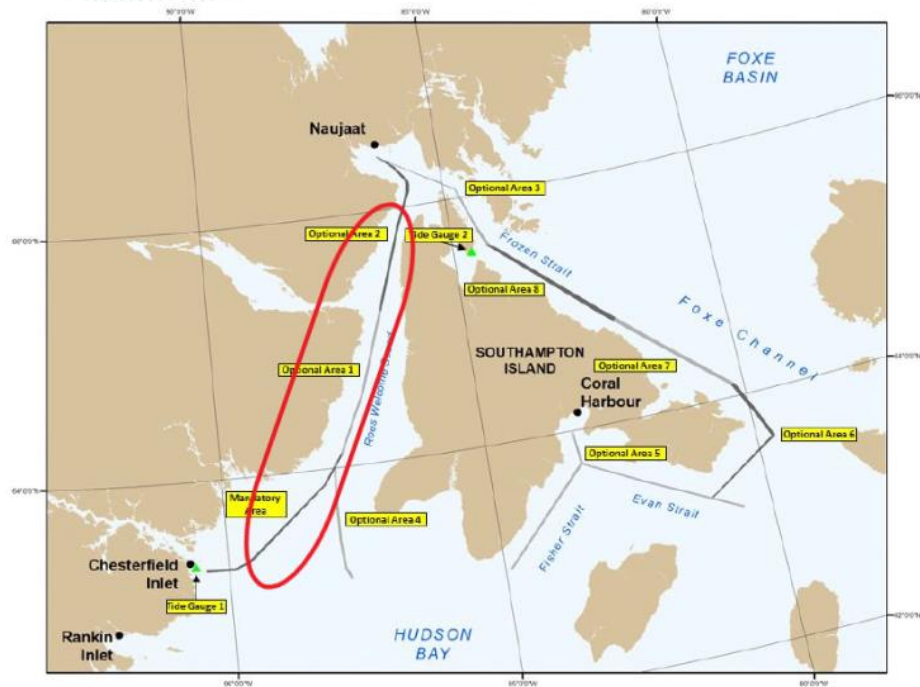
Survey area:

***Corridors Around Southampton Island***

Multi-year contract awarded via Hydrographic  
Services Supply Arrangement

IIC Technologies was selected as contractor  
following competitive procurement process

Year 1 of contract focus is on approaches to  
Chesterfield Inlet and Roes Welcome Sound





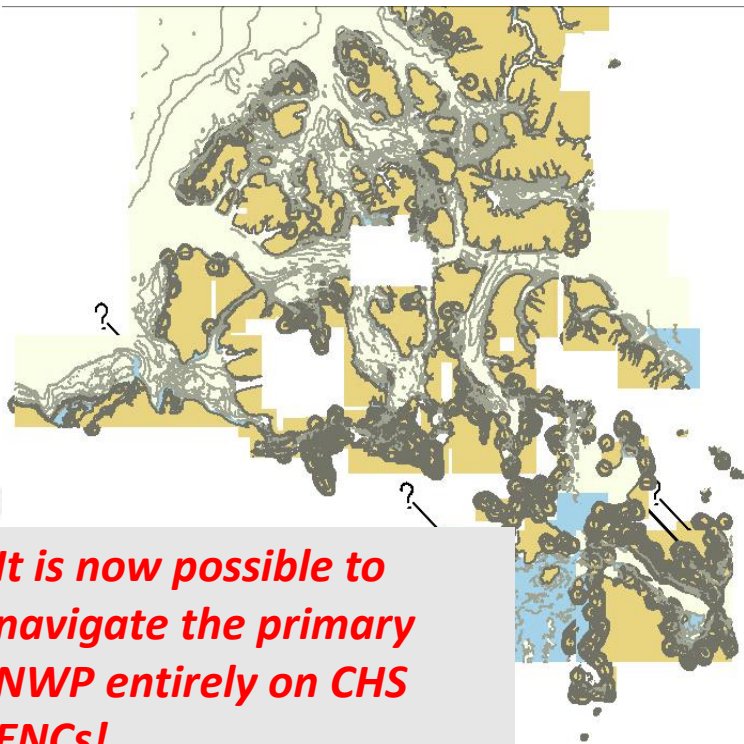
# Filling Arctic ENC Gaps

Over the past year, **31** new ENCs produced (**25 on S100 grid**) and **17** new editions released, **8** new edition Paper Charts published.

CHS Strategy - Prioritize and focus on the *Proposed Low Impact Shipping Corridors*

- Continue to build up digital/vector ***foundational data***

- **Phase 1:** Create first edition ENC to match Paper Chart limits – currently ~ 95% complete.
- **Phase 2:** prepare legacy bathymetry (load into Bathy db) and update ENC with new bathymetry on priority basis.
- **Phase 3:** Produce new charts on S100 grid (one of 3 scale bands) – 500+ ENCs just for Corridors!
- **Phase 4:** Move to “*Continuous Maintenance*” model, ENCs updated with new data on ongoing basis.



***It is now possible to navigate the primary NWP entirely on CHS ENCs!***



# OPP2 ENC Production

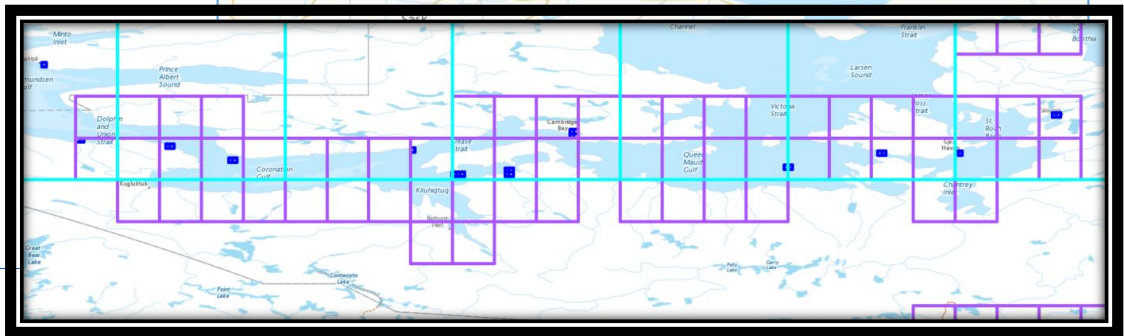
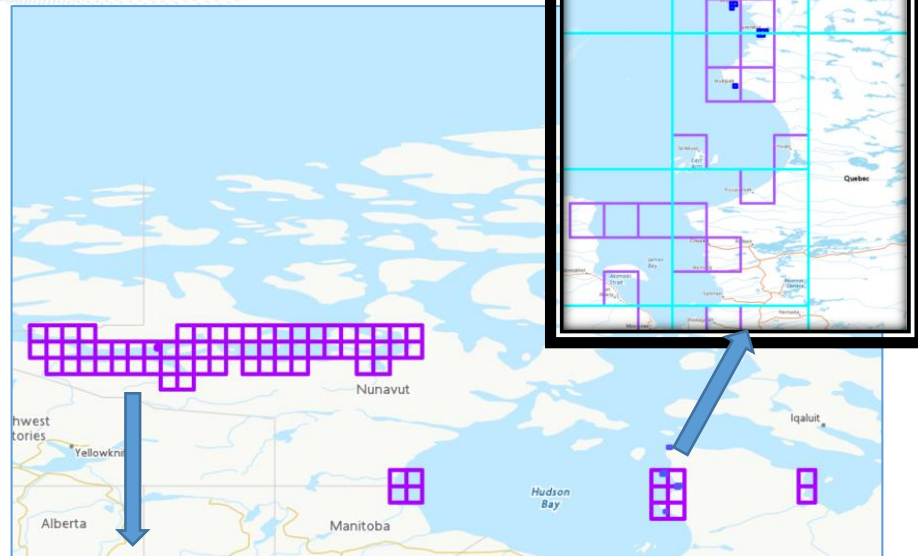
For 2023-24 – Significant work Arctic  
on **Data Integration and Chart  
Production**

## **Production**

- Legacy and modern data are  
integrated in production database.

- Producing ENCs on S100 scale  
bands (port, transit, overview).

- Targeting 50-75 new ENCs over the  
next year (OPP2 5-year target is  
~250 or 50% coverage of priority  
corridors)

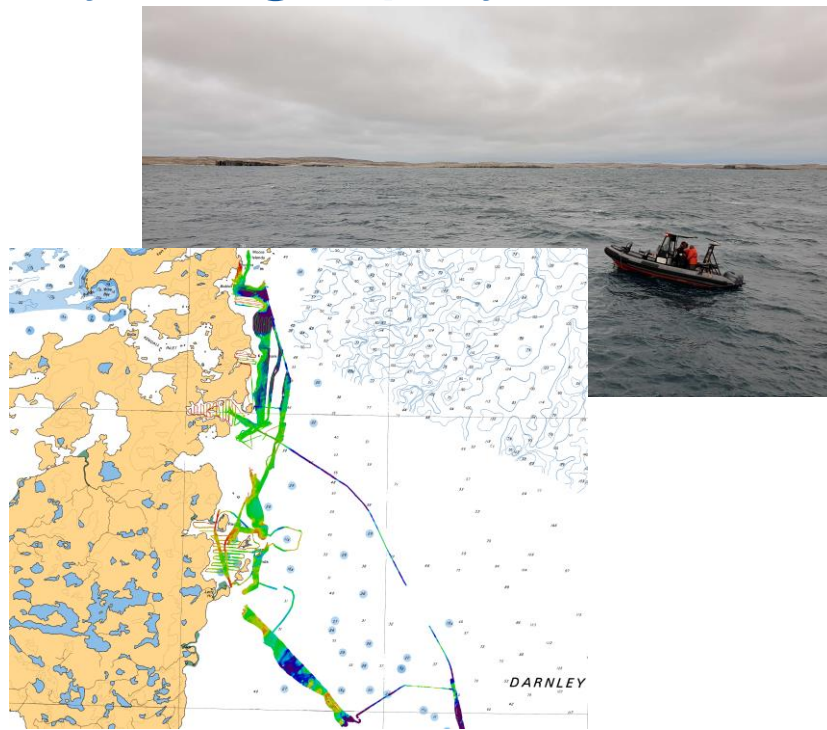






# OPP2 Community Hydrography

- Community-based bathymetric and hydrographic data collection in the Qikiqtani region of Nunavut (Kinngait).
- Bathymetry and hydrographic data collection in support of Ecosystem Knowledge of Areas of Importance to Miawpukek First Nations.
- Community-driven bathymetric mapping in Tuktoyaktuk.
- Anguniaqvia niqiqyuam Marine Protected Area (MPA) Habitat Mapping Survey in Paulatuk
- Collaboration with Canadian Coast Guard Search & Rescue community boats





# Renewal of Canada's Ocean Protection Plan

- In August of 2022, the Government of Canada announced a renewal of the Ocean Protection Plan.
- Significant investment for the CHS to improve Hydrographic Services in the Arctic - **\$84M over 9 years**.
- OPP2 will include 2 initiatives for CHS:
  - Modern Hydrographic Services in the Arctic
  - A new Community Hydrography Program
- Currently in year **2** of the 5-year program.



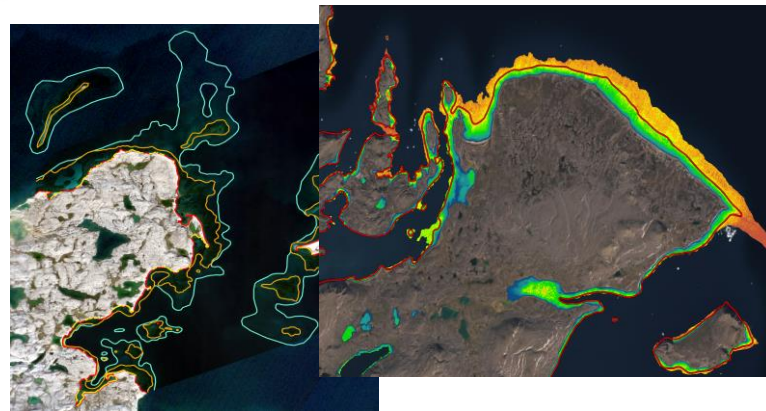
The Honourable Joyce Murray, Minister of Fisheries, Oceans and the Canadian Coast Guard visited Rankin Inlet Nunavut Wednesday August 10 2022 to announce funding to improve charting in Arctic waters. Minister Murray met with the DFO's Regional Director General Gabe Nirlungnayuq, and Regional Director of the Canadian Hydrographic Service Chris Marshall (pictured). New funding under the Oceans Protection Plan will expand charting of Canadian Arctic waters and boost the Canadian Coast Guard's response capabilities in the North.



# OPP2 – Highlights of what CHS will deliver

Significant investment, building upon work CHS achieved over the past 5 years OPP1

- **Accelerate bathymetric data collection.** Maximize existing CCG survey assets, contract to private sector, and funding for dedicated survey vessel. Leverage new technologies (USV, SBD etc.)
- **Dedicated Arctic Data Integration and Chart Production Team** – Incremental funding for new team (FTEs), focused effort
- **Develop and test new services** to communicate risk of Arctic navigation. Better information in dynamic and remote regions – Remote sensing.
- **Implement a Community Hydrography program** for Canada's Coastal Communities



Scale and operationalize use of remote sensing and SDB

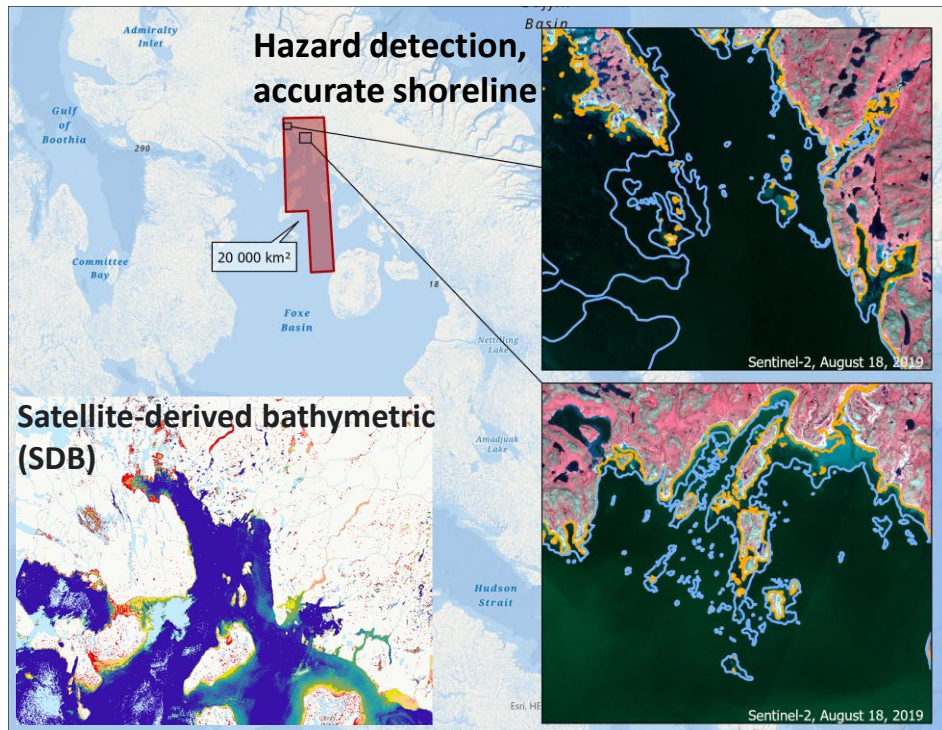


Inshore Rescue Boat – Rankin Inlet, NU – CSB data collection.



# Arctic Remote Sensing (RS) Services to support the creation of nautical products and mission planning

## Example of RS for Mission Planning in Foxe Basin



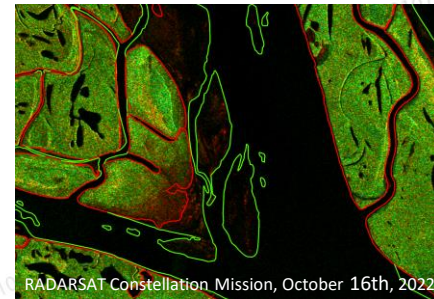
# Innovative Arctic Products – Testing new methods and potential products to support navigation in dynamic areas

**The Mackenzie River:** Given the very dynamic nature of the Mackenzie River this area was selected as the first site to test a new RS approach to create navigational products.

A series of charts ( 6425 to 6430) on a very dynamic section of the river was started.



**Multi-sensor approach:** The approach developed to capture low and high waters leverage different sensors (Radar and optical data)





# Summary of CHS' Arctic Strategy

## Within the Low Impact Shipping Corridors:

- Focus survey assets on LISC (still ~55% to complete)
- Maximize use of trusted source and third-party data collection.
- Fill charting gaps – prioritize the LISC with ENC at the appropriate scale with transition to new ENC grid and continuous maintenance
- ENCs will provide “Digital Foundation” for future S100 suite of services.

## Outside the Low Impact Shipping Corridors:

- Fully leverage remote sensing technologies (target detection and SDB).
- Work with industry, International partners (IHO) on innovative ways to communicate risk and inform planning
- Collaborate with third parties and Arctic communities on data collection (CSB).

# Department of National Defence Update

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- Allied System for Geospatial Intelligence Maritime Sub-Group (AMSG) visit to Victoria, BC 14-17 Nov 2023 & NATO Geospatial Maritime Working Group (GMWG) co-production
  - Additional Military Layers
  - Military ENC / Submarine ENC
  - Derived bathymetric products
- RCN involvement in the Arctic in 2023
  - HMCS Harry Dewolf participated in OP Nanook (Tuugaalik and Nunakput) which is a Canadian led exercise focusing on northern Navigation, interoperability with international allies and strengthening the RCNs relationship with federal, territorial and local partners in the north
- RCN Arctic Offshore Patrol Vessels (AOPV) update
  - Harry DeWolf and Margaret Brooke in active service, Max Bernays and William Hall delivered in sea trials, Frederick Rolette and Robert Hampton Gray laid down and under construction



IHO

International  
Hydrographic  
Organization





# Thank-you Merci

For further information and questions please contact:

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<http://www.charts.gc.ca>