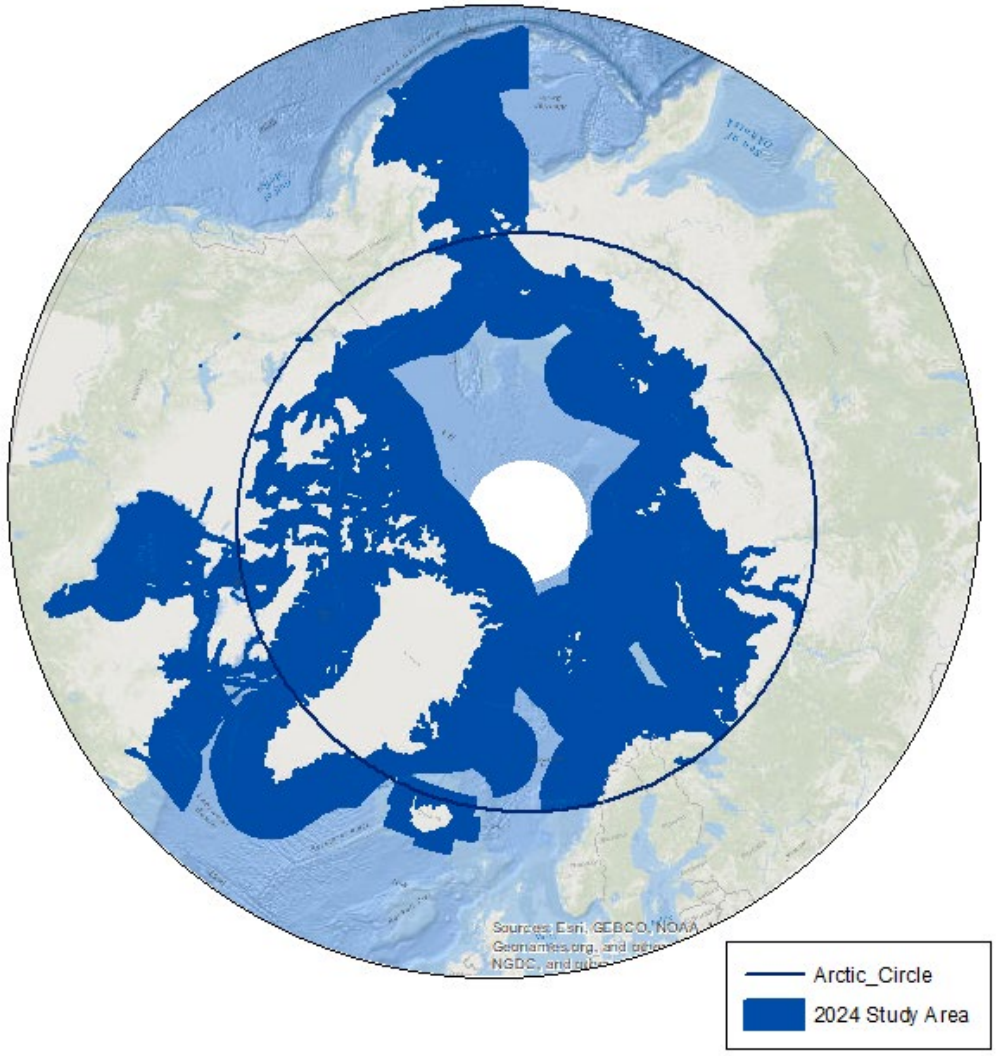


Arctic Hydrographic Risk Assessment

2024 Update

ARHC14 - Tromsø

September 2024

ARCTIC REGIONAL HYDROGRAPHIC COMMISSION

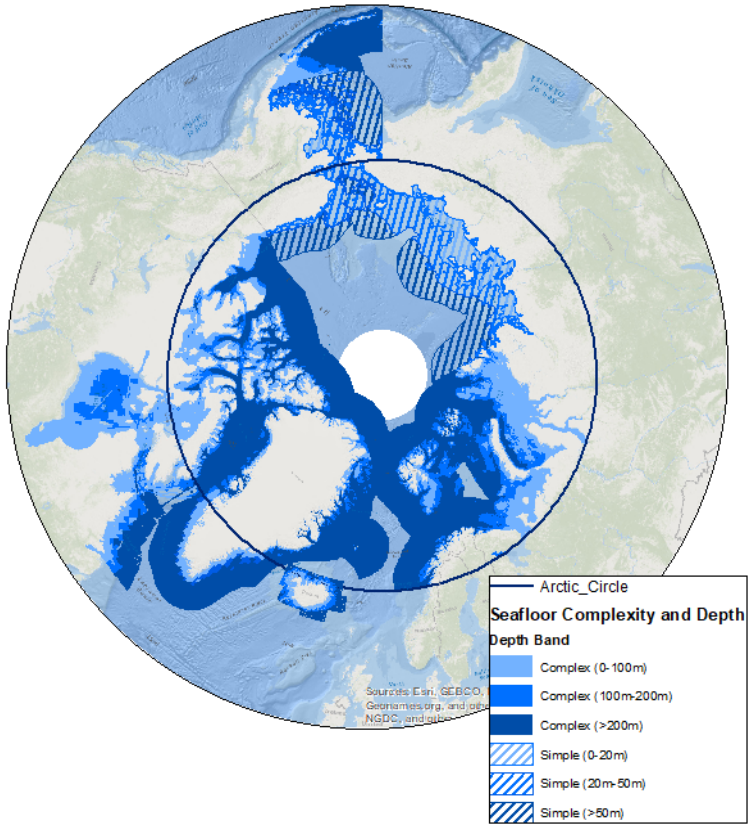
Outline

- Background
- 2024 Updates
- What did we see?
- What did we learn?
- Where do we go from here?

An Arctic Tern. Credit: Audubon Society

Background

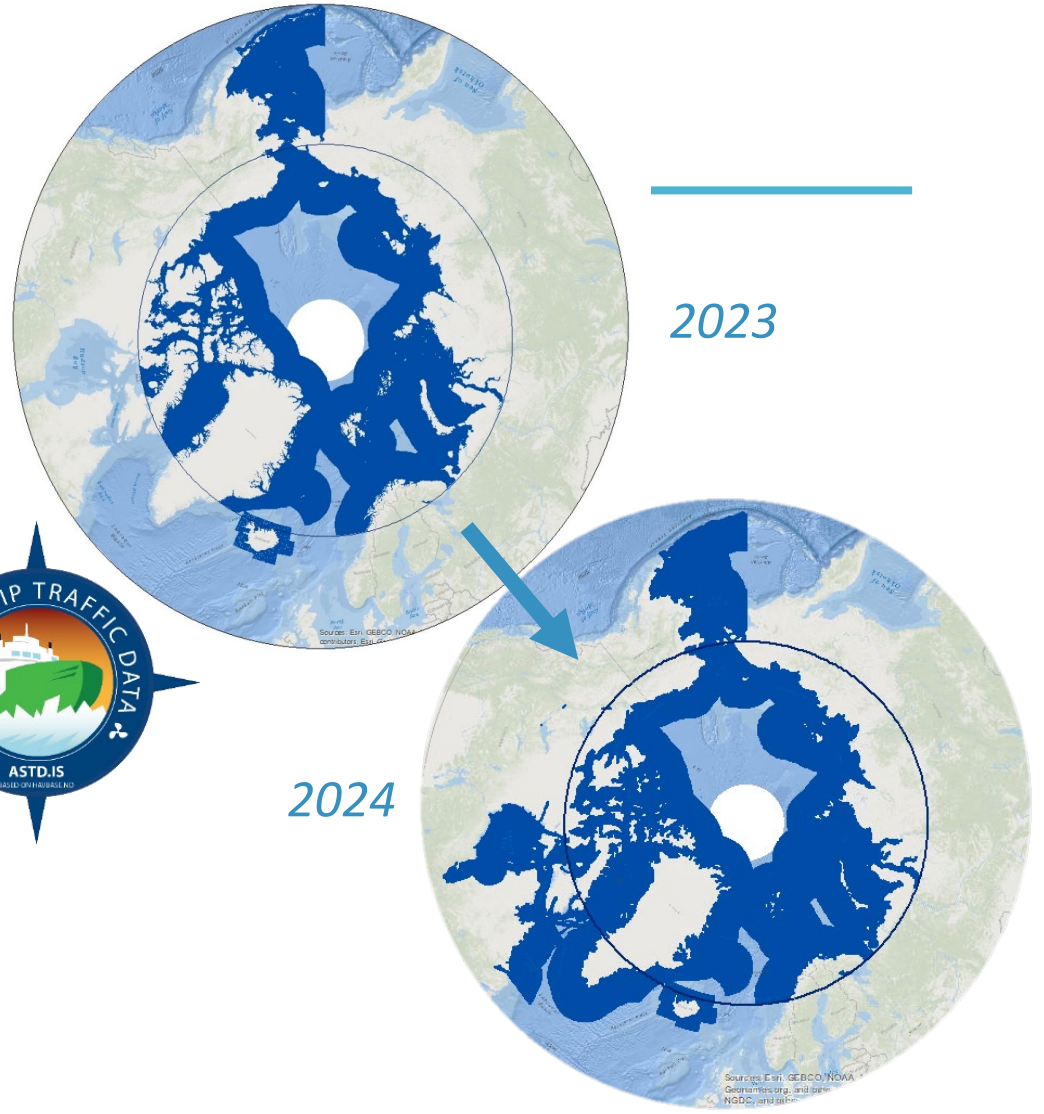
- Continuation of study that started in 2015
  - Last updated in 2023 at ARHC13
- Study analyzes the hydrographic risk across the Arctic
- Essential Question: *How well does our hydrographic data support vessel traffic?*
  - Study identifies areas of concern based on quality of hydrographic data versus seafloor complexity
  - Combined with vessel traffic to get more holistic sense of risk



Potential Concern for Navigation				
	Confidence Level			
	A	B	C	U
Depth Band				
Shallow	Low	Medium	High	High
Mid-depth	Low	Medium	High	High
Deep	Low	Low	Low	Medium

2024 Updates

- Extents were expanded based on discussion from ARHC13
  - Now includes all of Greenland, plus Canada's Hudson Bay and Labrador Coast
- New source for AIS data (again)
  - Utilized PAME's AIS data service, ASTD
  - Raw data; provides more flexibility but requires processing
  - Trackline based (like 2018 study)
- 2024 analysis was focused on process more than data
  - Objective was to establish solid baseline for future updates
  - Used same 2023 CATZOC data as previous study



Change in coverage area between 2023 and 2024

What did we see?

Areas of Potential Concern with Vessel Traffic

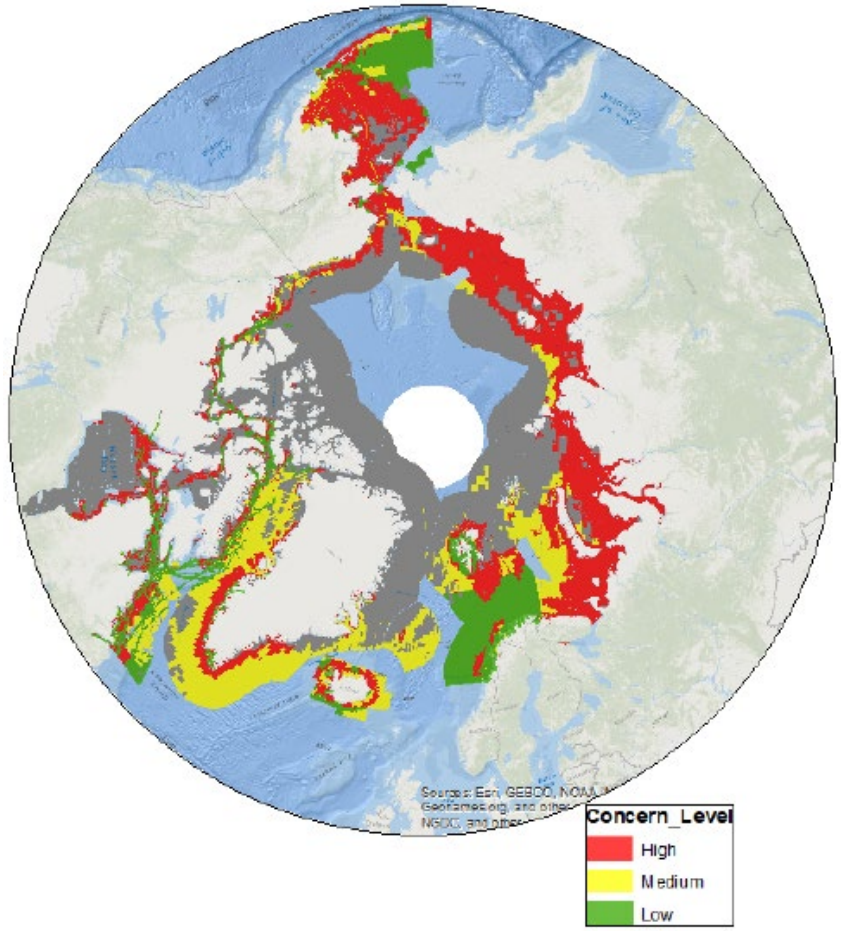
	High			Medium			Low			Total		
Depth Bands	M km2	% of Study Area	% of Traffic Area	M km2	% of Study Area	% of Traffic Area	M km2	% of Study Area	% of Traffic Area	M km2	% of Study Area	% of Traffic Area
Shallow	4.48	27.88%	34.73%	0.35	2.21%	2.75%	0.23	1.41%	1.75%	5.06	31.49%	39.23%
Mid-Depth	2.37	14.77%	18.39%	0.04	0.26%	0.32%	0.10	0.59%	0.74%	2.51	15.61%	19.45%
Deep	-	0.00%	0.00%	4.17	25.99%	32.38%	1.15	7.16%	8.93%	5.32	33.16%	41.30%
Total	**6.85**	**42.65%**	**53.12%**	**4.57**	**28.45%**	**35.44%**	**1.47**	**9.16%**	**11.42%**	**12.89**	**80.26%**	**100.00%**

Difference Between 2023 and 2024 Reports for Areas of Potential Concern with Vessel Traffic

	High			Medium			Low			Total		
Depth Bands	Δ M km2	Δ % of Study Area	Δ % of Traffic Area	Δ M km2	Δ % of Study Area	Δ % of Traffic Area	Δ M km2	Δ % of Study Area	Δ % of Traffic Area	Δ M km2	Δ % of Study Area	Δ % of Traffic Area
Shallow	3.29	19.01%	9.14%	0.21	1.16%	-0.26%	0.16	0.89%	0.25%	3.66	21.06%	9.13%
Mid-Depth	1.54	8.58%	0.54%	(0.05)	-0.41%	-1.62%	0.04	0.14%	-0.55%	1.53	8.31%	-1.63%
Deep	-	0.00%	0.00%	3.10	18.02%	9.37%	(0.05)	-1.78%	-16.88%	3.05	16.24%	-7.52%
Total	**4.83**	**27.59%**	**9.68%**	**3.27**	**18.77%**	**7.48%**	**0.14**	**-0.75%**	**-17.18%**	**8.24**	**45.61%**	**-0.02%**

Positive values indicate an increase from 2023 to 2024, negative values indicate a decrease

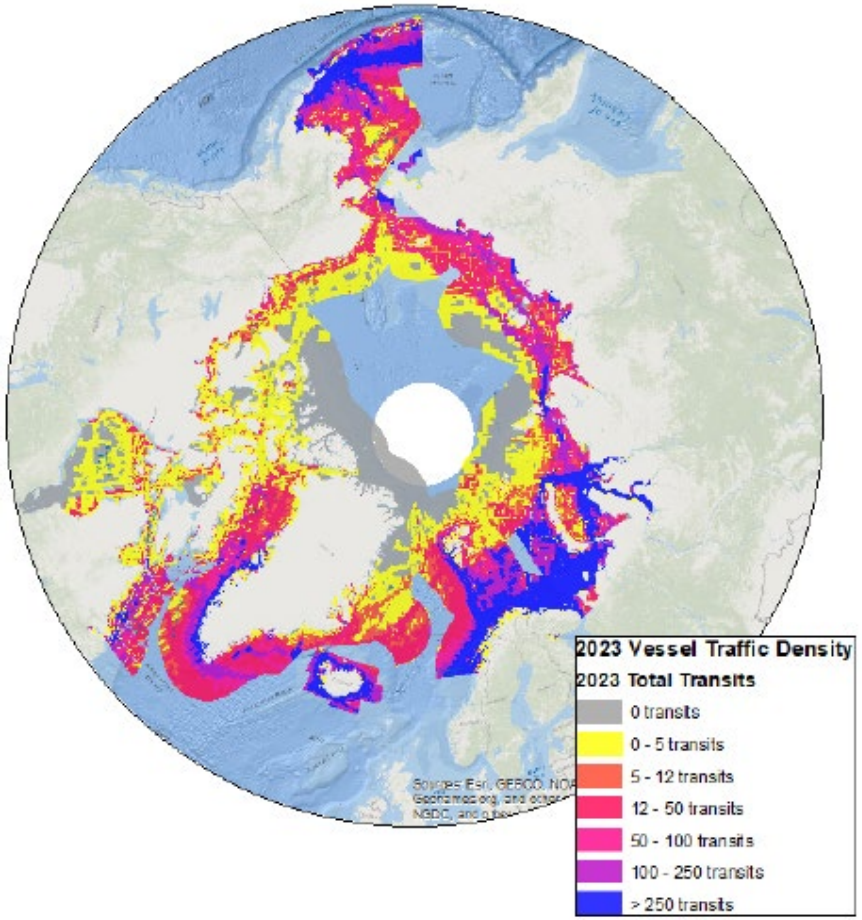
Not a direct comparison due to changes in data sources, methodologies, and extents



Heat map showing areas of highest concern with highest vessel use

What did we learn?

- Getting AIS data that is fit for use is hard
  - May be opportunities for automation through collaboration with PAME
- Consistency is key to extract the most value from this study
  - Future studies using same extents and methodologies will prove much more valuable information
- Room for improvements to make process much faster
  - If we can reduce processing burden, we will make process more approachable and enable further insights



Heat map of vessel traffic for 2023 for high consequence vessels

Where do we go from here (long term)?

- Continuing to perform this analysis annually is helping us refine our process
  - With process more firmly established, next objective is automation to reduce burden
  - Objective is to make procedure readily accessible to all, so that anyone could replicate our findings or use methods to further study their own regions
- As process matures, worth discussing how to expand the analysis and add more value
  - Increased resolution?
  - Focus on established route(s) within the Arctic?
  - Different parameters for vessel types or definitions of “high” traffic?
- Discuss how this analysis interacts with existing IHO initiatives, such as SPI 1.2.2
  - Current role is to support SPIs by providing additional context
  - In the future there may be opportunities to collaborate or integrate aspects of this approach into the SPIs?

Where do we go from here (short term)?

- Welcome the ARHC's feedback to:
  - Discuss the report and this presentation
  - Offer guidance on any recommended revisions
  - Take any other actions deemed warranted

A beautiful ribbon seal rests on an ice floe. Credit: NOAA Photo Library

Thank you!

Questions?

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