International Ice Charting Working Group

http://nsidc.org/noaa/iicwg/

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THE ARCTIC MARINE SHIPPING BEST PRACTICES INFORMATION FORUM

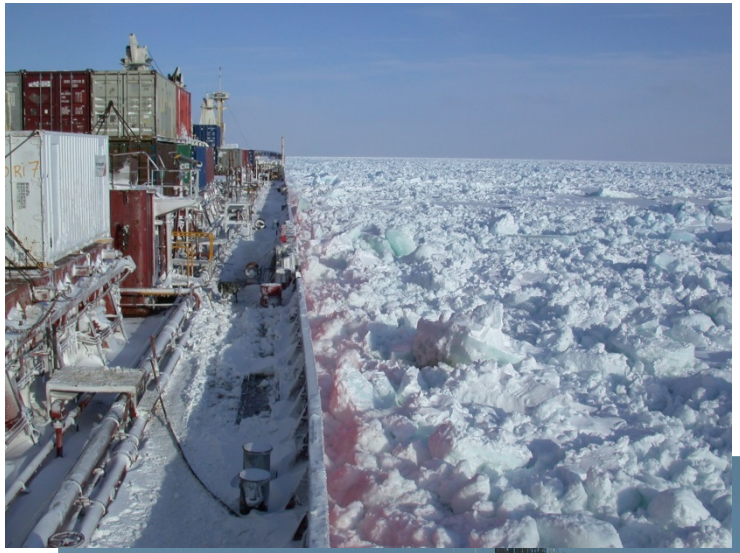
2nd Forum Meeting 14-15 May 2018

International Ice Charting Working Group (IICWG)

- Ad-hoc self-funded group, founded 1999
- Charter signed by 14 national ice services:
  - Argentina, Canada, Chile, Denmark (Greenland), Finland, Germany, Iceland, Norway, Poland, Russia, Sweden, United States, British Antarctic Survey, and the International Ice Patrol

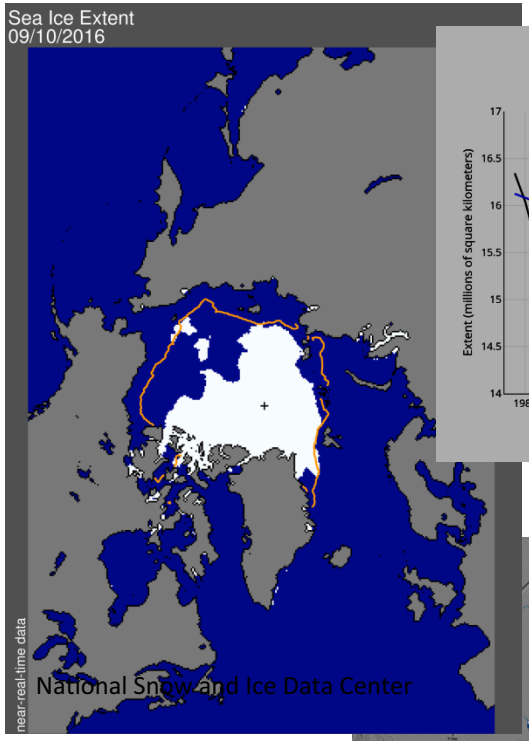
- Coordinates provision of sea ice and iceberg information by the national ice services
- Promotes standardization of ice information globally
- Forum to exchange information, scientific / technical advances, best practices
- Works closely with the JCOMM Expert Team on Sea Ice as an advisory body

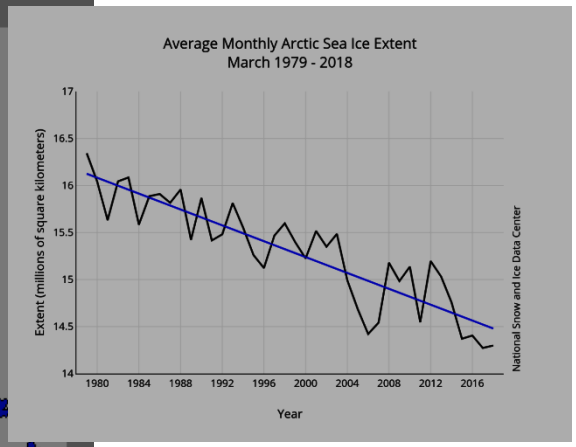
Ice in the ocean is what makes Polar navigation uniquely challenging

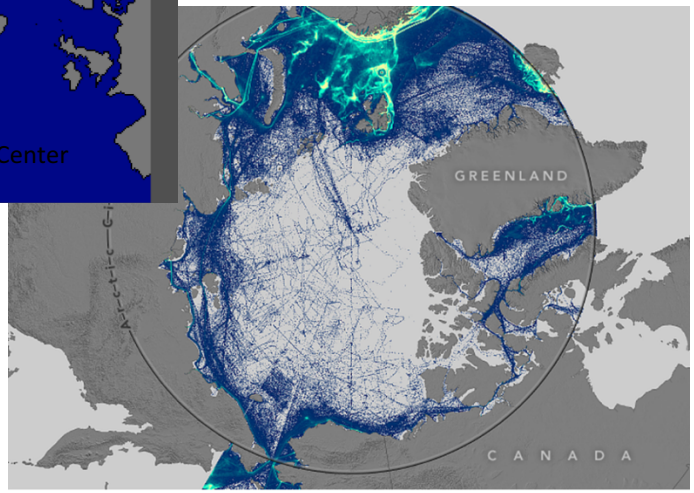


- Sea ice can slow or stop progress and increase fuel consumption dramatically
- It can clog intakes and damage propellers and steering gear
- Multi-year ice and icebergs are as hard as ships' steel

Decreasing Arctic ice actually increases the risk to navigation







- Ice is more mobile – less predictable
- Freeze-up and break-up seasons will be extremely variable
- Ice caps will be spawning icebergs for centuries to come
- Ship operators are moving ever more into ice frequented waters

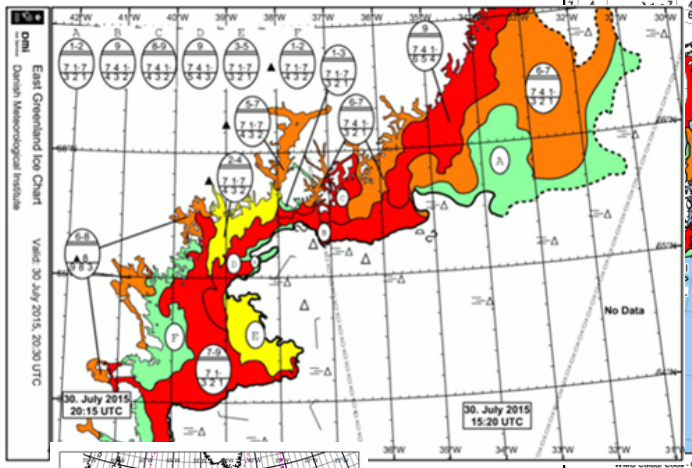
Paul Berkman, Tufts University / Greg Fiske, Woods Hole Research Center.

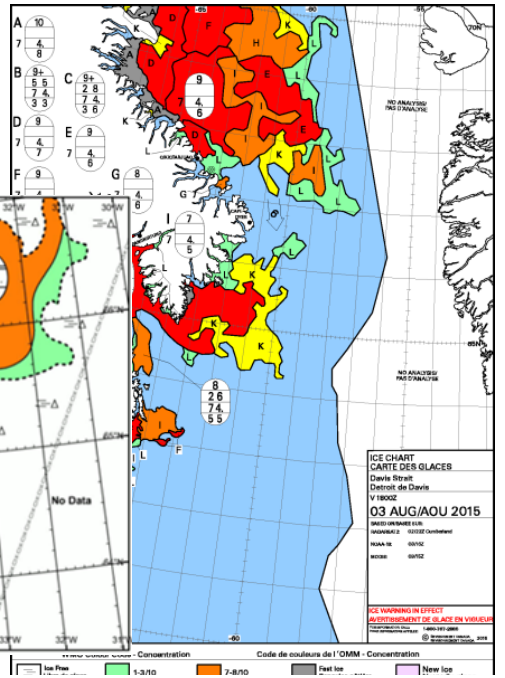
Ice information is essential for the safety of Polar navigation

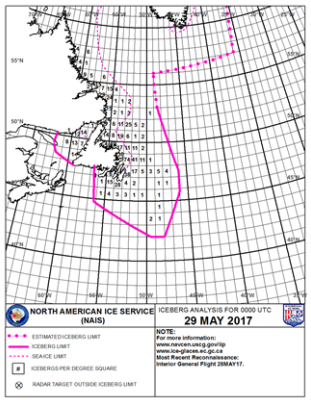
- Where is the ice now and where is it drifting?
- Where will the ice be in relation to my planned route?
- What kind of ice is it? How thick? How strong? Will it be compacting and exerting pressure?
- Are there icebergs? Will I be able to see them in the fog and waves?
- Can I plan a route to avoid the ice completely?
- If I must travel through ice-infested waters, what kind of ship do I need?

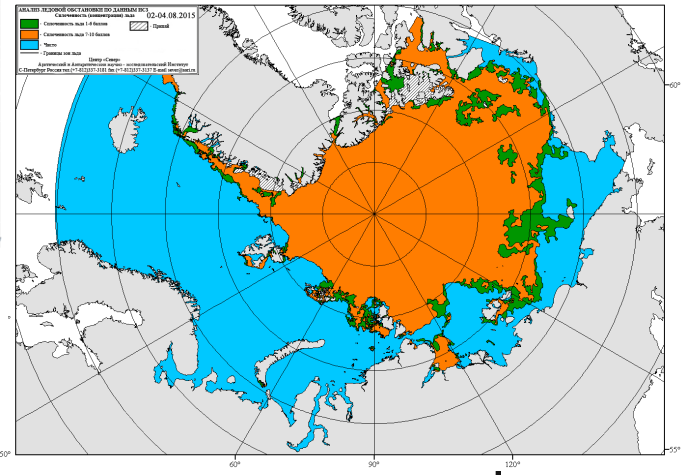
Ice Charting and Forecasting
The role of National Ice Services

- Sea Ice / Iceberg
  - Charts
  - Bulletins
  - Forecasts
- Client interaction
- NAVTEX/SAFETYNET/GMDSS









FICN14 CWIS 041346 Ice forecasts for the Western and Cent
Tuesday 4 August 2015 for today tonight and Wednesday.
The next scheduled forecasts will be issued at 10:00 a.m. We

Ice edge is outside the forecast region.

Prince Alfred. 1 tenth of first-year ice including a trace of old ice except 8 tenths of ol sections.

Prince of Wales. Open water except 6 tenths of old ice in the northern section.

Yukon Coast. Open water except 1 tenth of first-year ice in the extreme western section.

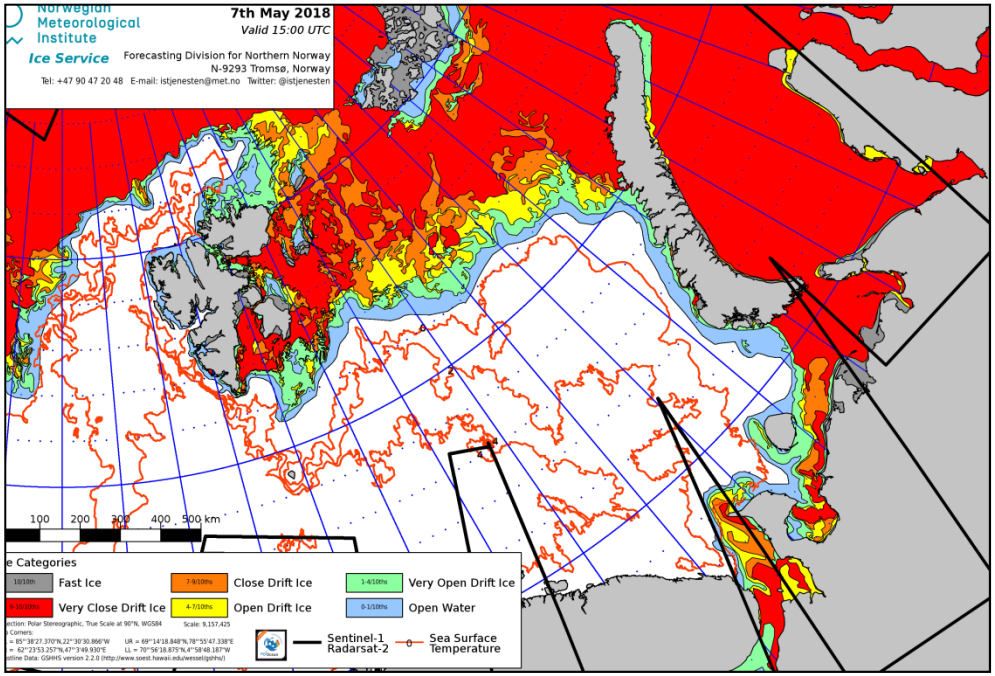
Mackenzie. Open water except 4 tenths of old ice in the northern section.

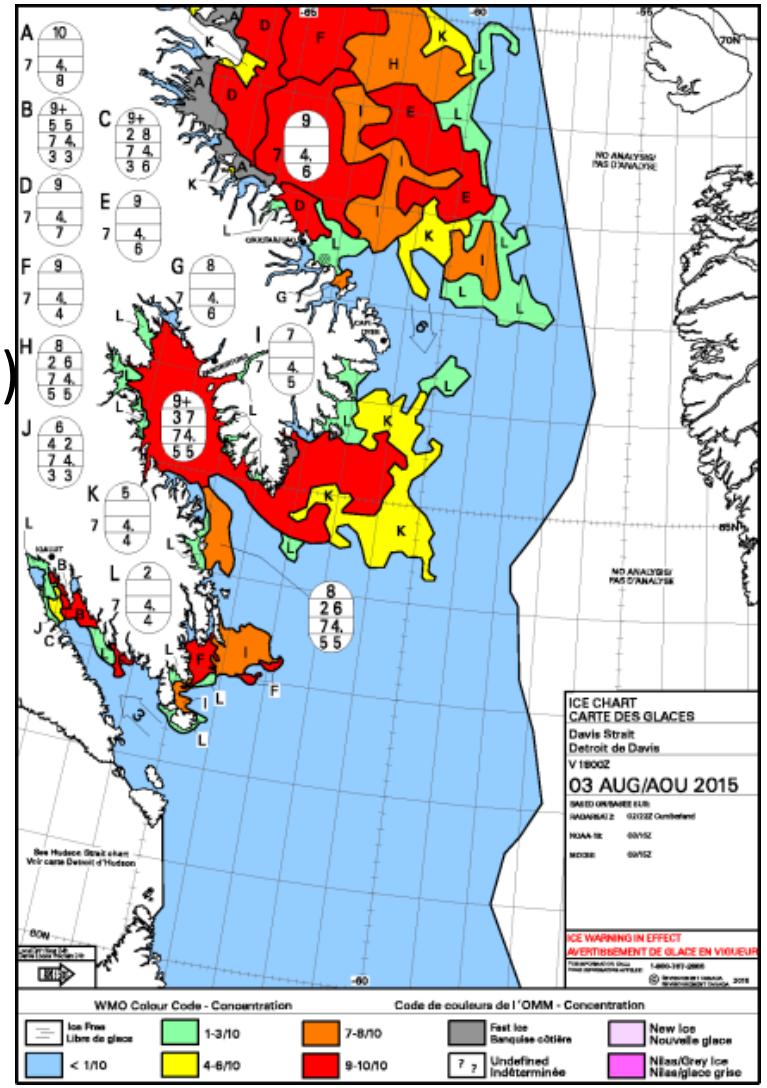
Ice Information for the Polar Code

9.3.1 ….. ships shall have means of receiving and displaying current information on ice conditions in the area of operation ...

2.3.3 ….. the Manual shall include risk-based procedures …

- The most basic ice information for navigation is an “Ice Chart”
  - Ice concentration
  - Ice thickness (stage of development)





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- POLARIS is a widely used risk assessment tool based on **ice concentration** and **stage of development**
  - Risk Index = Ice Concentrations x Risk Value

Increasing ice thickness (severity)

Increasing ice class

Increased Risk

		WINTER RISK VALUES (RVs)											
POLAR SHIP CATEGORY	ICE CLASS	ICE FREE –	NEW ICE 0-10 cm	GREY ICE 10-15 cm	GREY WHITE ICE 15-30 cm	THIN FIRST YEAR 1ST STAGE 30-50 cm	THIN FIRST YEAR 2ND STAGE 50-70 cm	MEDIUM FIRST YEAR 1ST STAGE 70-95 cm	MEDIUM FIRST YEAR 2ND STAGE 95-120 cm	THICK FIRST YEAR 120-200 cm	SECOND YEAR 200-250 cm	LIGHT MULTI YEAR 250-300 cm	HEAVY MULTI YEAR 300+ cm
A	PC 1	3	3	3	3	2	2	2	2	2	2	1	1
	PC 2	3	3	3	3	2	2	2	2	2	1	1	0
	PC 3	3	3	3	2	2	2	2	2	1	0	-1	
	PC 4	3	3	3	2	2	2	2	1	0	-1	-2	
	PC 5	3	3	3	3	2	2	2	1	0	-1	-2	-2
B	PC 6	3	2	2	2	2	1	1	0	-1	-2	-3	-3
	PC 7	3	2	2	2	1	1	0	-1	-2	-3	-3	-3
C	IA Super	3	2	2	2	2	1	0	-1	-2	-3	-4	-4
	1A	3	2	2	2	1	0	-1	-2	-3	-4	-4	-4
	1B	3	2	2	1	0	-1	-2	-3	-3	-4	-5	-5
	1C	3	2	1	0	-1	-2	-2	-3	-4	-4	-5	-6
	NO ICE CLASS	3	1	0	-1	-2	-2	-3	-3	-4	-5	-6	-6

The JCOMM Ice Logistics Portal

http://www.bsis-ice.de/IcePortal/

Convenient access to current ice charts produced by all of the national ice services

World regions: Southern | Northern 90W | Northern 90E | MetAreas | Position Home | Contact Us

♦ S-411 ECDIS charts

» Actual S411 charts

♦ Background information

» Sea Ice Service of the World

» Manual of Standard Procedures for Observing and Reporting Ice Conditions

» SIGRID-3: A Vector Archive Format for Sea Ice Charts

» Ice Chart Colour Code Standard

♦ Links

» JCOMM-ETSI

» GMDSS-MetArea

The Ice Logistics Portal was created as a joint initiative of the International Ice Charting Working Group, the JCOMM Expert Team on Sea Ice and Polar View for the International Polar Year. It is now maintained by the German Bundesamt für Seeschifffahrt und Hydrographie. It is intended to create a convenient point of access to operational sea ice information produced by the world's ice services. Access to products is provided via a series of pre-defined regions for both the Arctic and the Antarctic. Since the primary focus of the Ice Logistics Portal is on operational sea ice data (i.e. ice charts), only the most recent information is displayed for any given region.

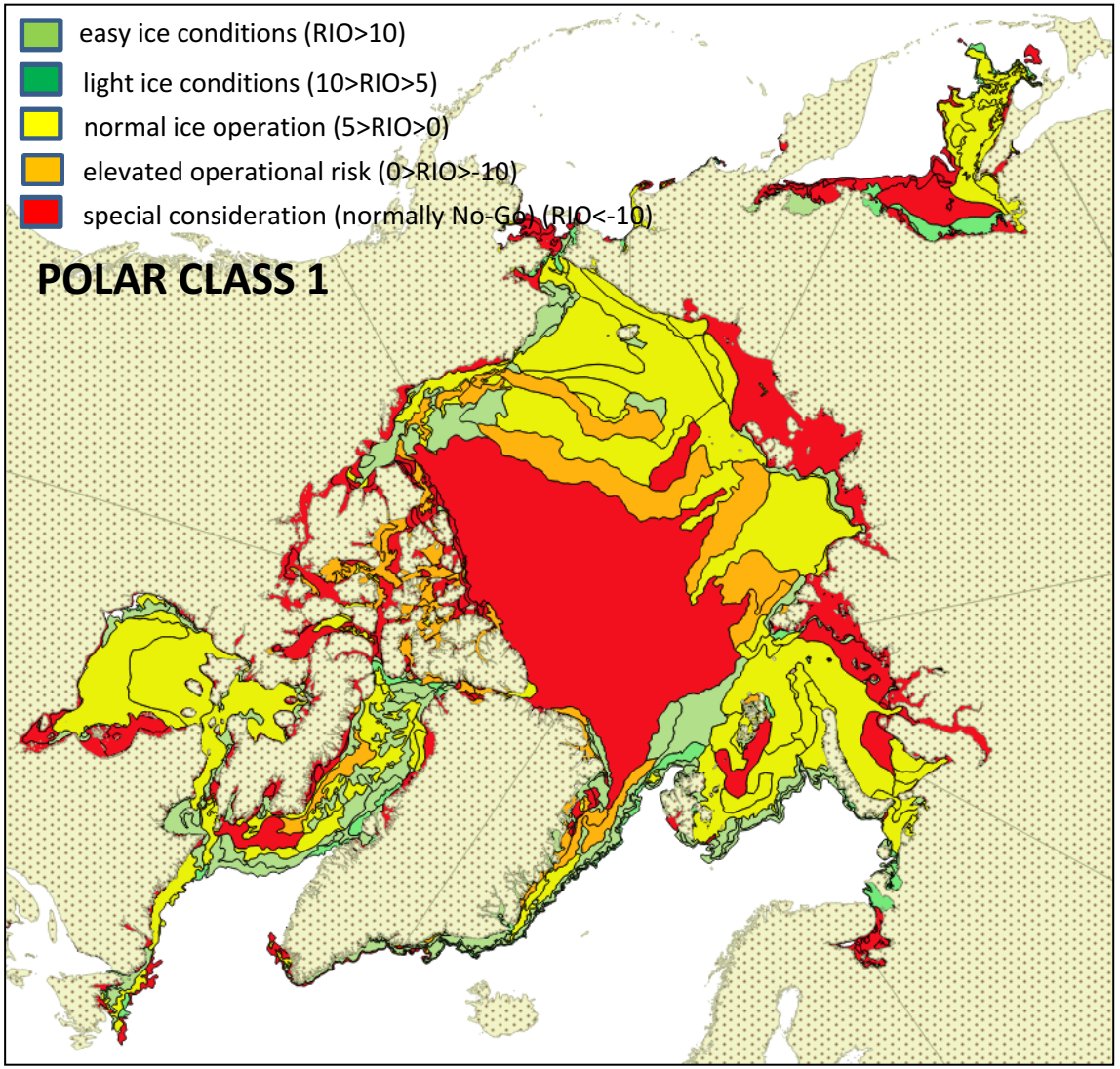
Enter High Connection Speed Site
- For broadband connection

Enter Low Connection Speed Site
- Text only for dial-up connection

As a new feature it is now possible to choose charts according to a given geographic position. Up till now the position can be input only as full degrees .

Ice Logistics Portal – Polar Code Products

- S-411 Ice Chart Data Visualization
  - Data comes from current ice charts produced by national ice services
  - Displayable on Electronic Navigation Systems (with appropriate software)



IICWG Initiatives for Polar Code Implementation

- Assisting ice services to ensure that ice charts contain all of the information needed to support Polar Code risk assessment
  - Technology transfer; ice analyst training
- Working with Classification Societies to improve the POLARIS risk assessment tool, particularly for use in the Antarctic
- Working with the Nautical Institute to develop curricula, training materials, and certification standards for use by the maritime institutes
- Enhancing ice information available on the Ice Logistics Portal
  - Historical information for strategic planning
  - Improved ice forecast information

Thank you

Other Ice Information websites on the Forum Portal

- IICWG – contacts and links for national ice services and information about IICWG activities
  - http://nsidc.org/noaa/iicwg/
- JCOMM – standards and publications on sea ice and other maritime information
  - http://www.jcomm.info/
- Polarview – satellite data for experienced users and customized ice information products
  - https://www.polarview.aq