



Hydrographic Commission on Antarctica

Seminar on the status and the impact of hydrography in Antarctic waters

Item 2.2 User requirements, Safety of Navigation, Crowd Sourced Bathymetry



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USER REQUIREMENTS - GENERAL

Geographic priorities

Antarctic Peninsula, Weddell Sea, Bellingshausen Sea, Ross Sea, Others?...

Most of marine sciences rely on hydrography in support of

Ocean Monitoring and Operational Forecast Systems

Safety of Navigation

- Safe approach to sites and landings
- Scientific cruises
- Impact of the IMO Polar Code
- Touristic and exploration activities
- Note the limited Search and Rescue capabilities in Antarctica

- Seabed mapping, sedimentology
- Physical conditions of the water column
- High resolution operational oceanographic models need accurate bathymetry
 - Icebergs drifting
 - Biology and chemistry models
 - Boundary conditions
 - Coastal monitoring, tsunami
- Climate change (Antarctic circum currents)



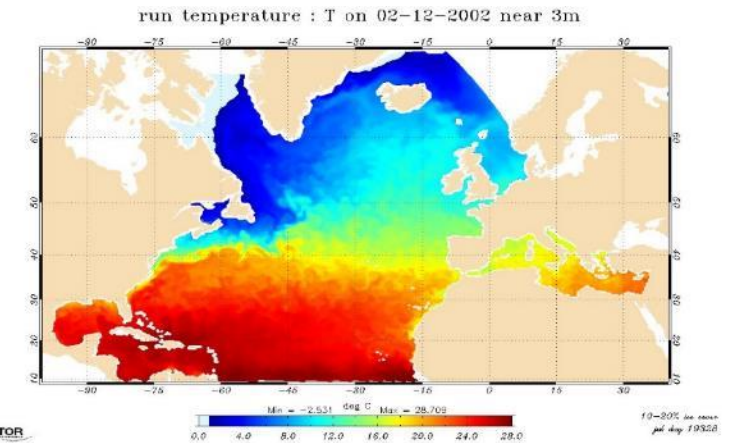
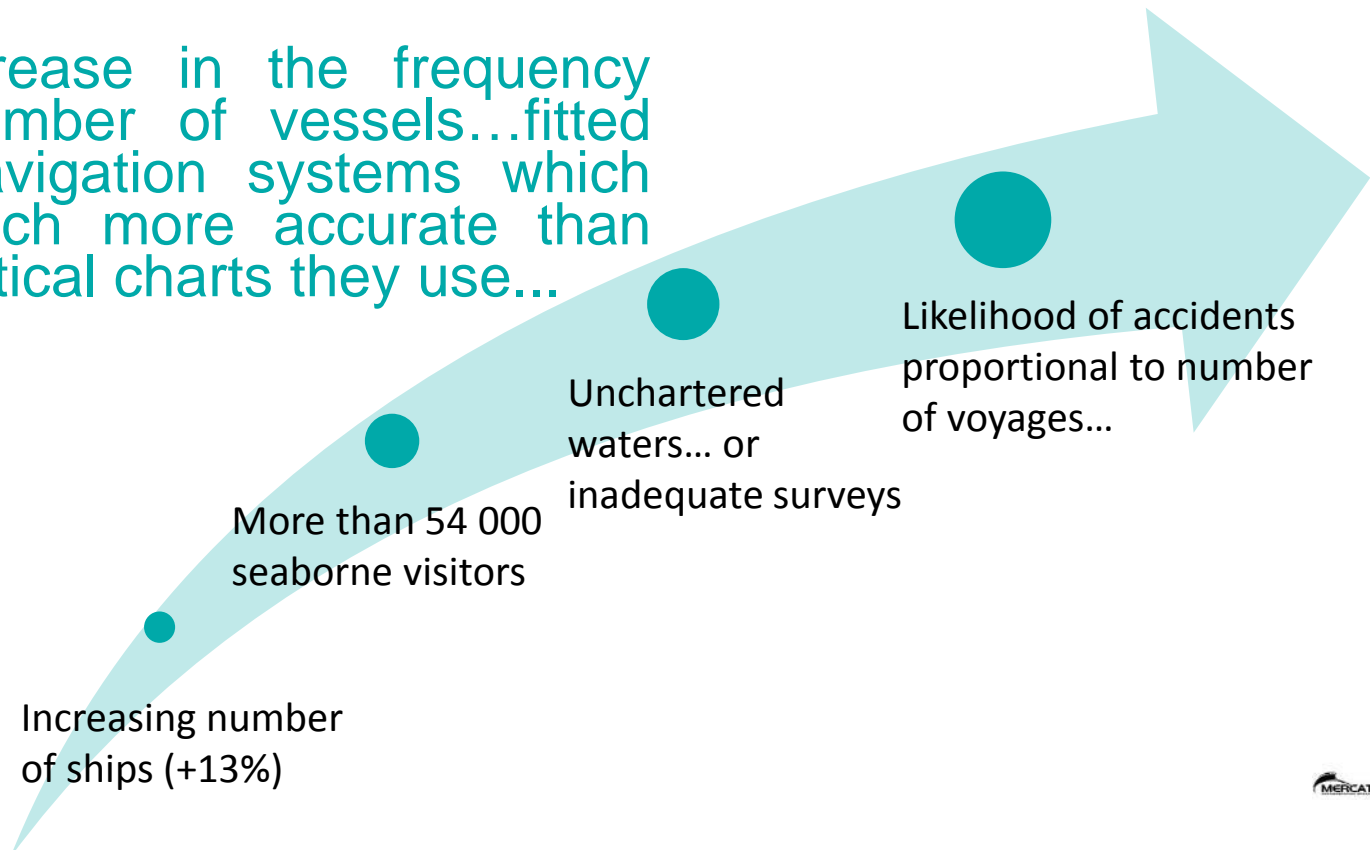
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USER REQUIREMENTS – GENERAL

International Hydrographic Organization

Despite notable efforts by some nations (new polar vessels), an increasing gap between availability of good hydrographic data to support user requirements in marine sciences and navigation

An increase in the frequency and number of vessels...fitted with navigation systems which are much more accurate than the nautical charts they use...



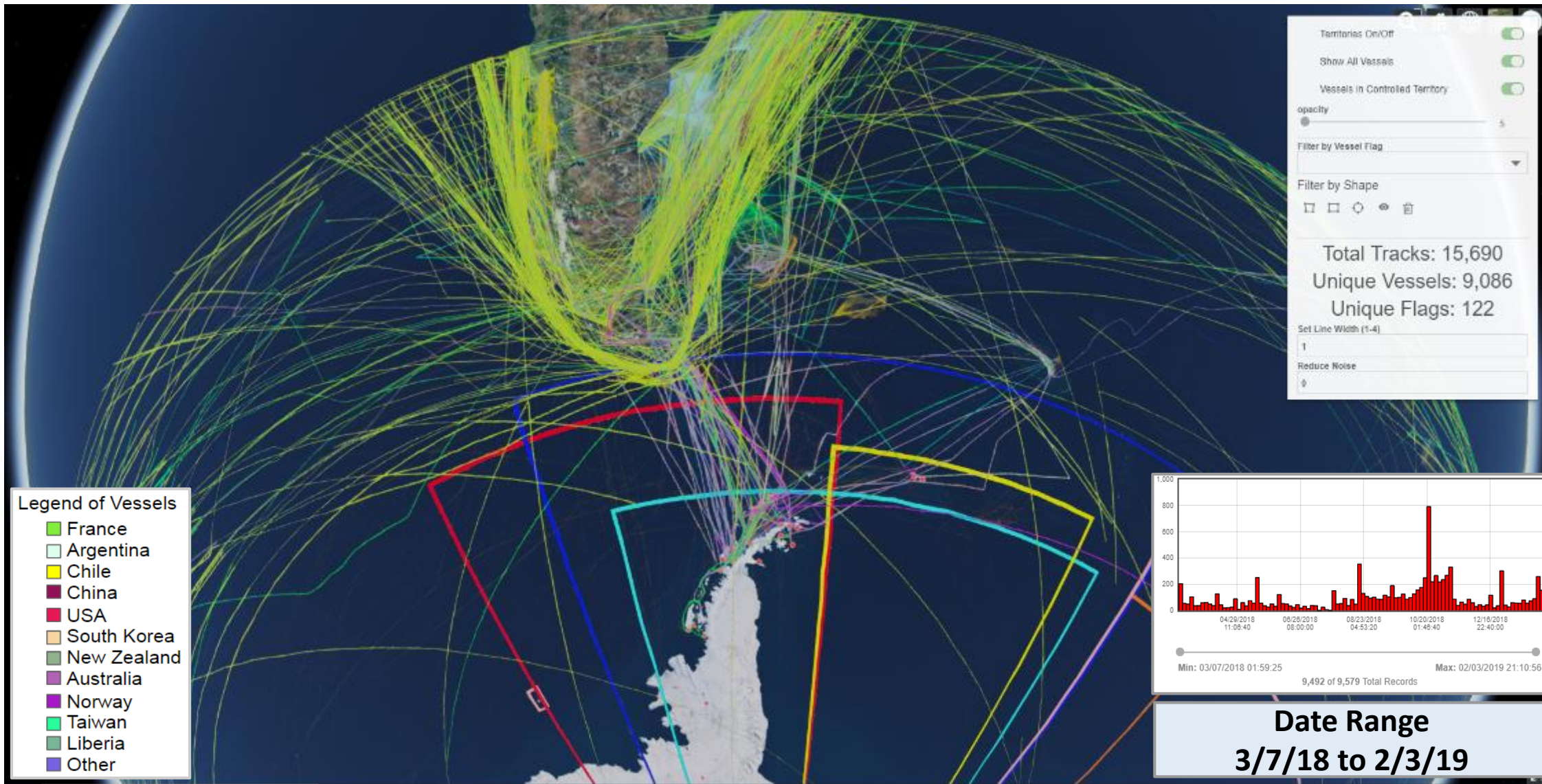
...and scientific models which lack standardized, homogeneous, seamless and accurate bathymetric data



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USER REQUIREMENTS – SAFETY OF NAVIGATION (AIS Patterns)

International Hydrographic Organization



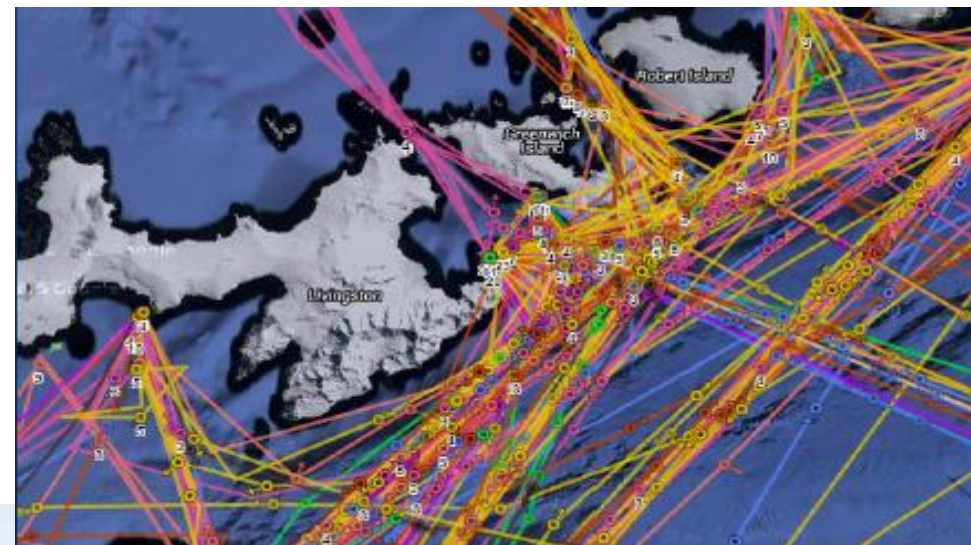
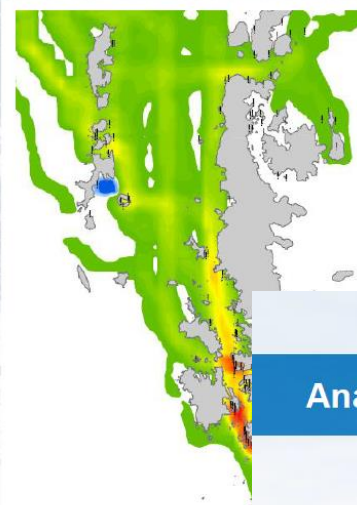
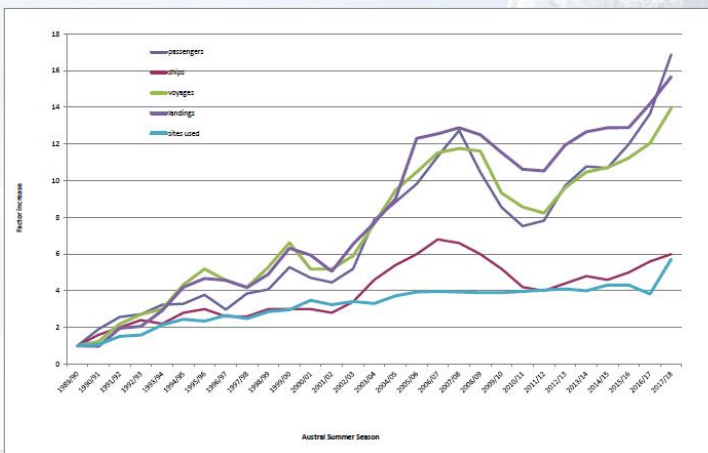


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USER REQUIREMENTS – SAFETY OF NAVIGATION

International Hydrographic Organization

Analysis of vessel data

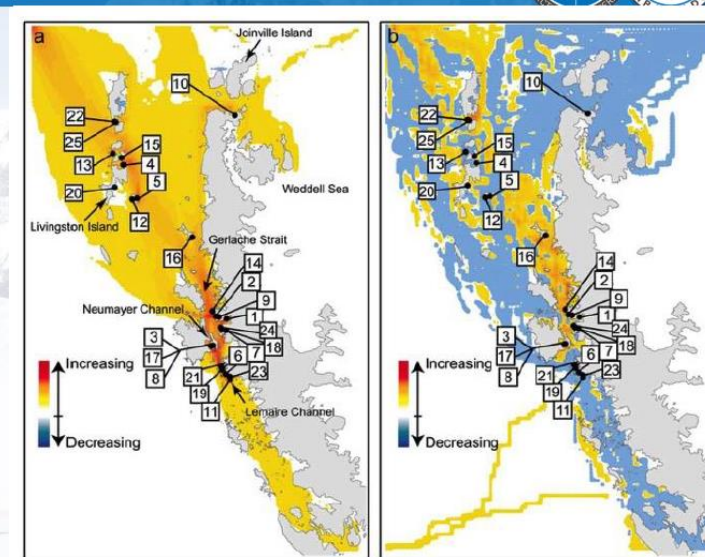


Analysis of vessel data



- passengers
- ships
- voyages
- landings
- sites used

➤ 20 Year Analysis of Vessel traffic patterns.





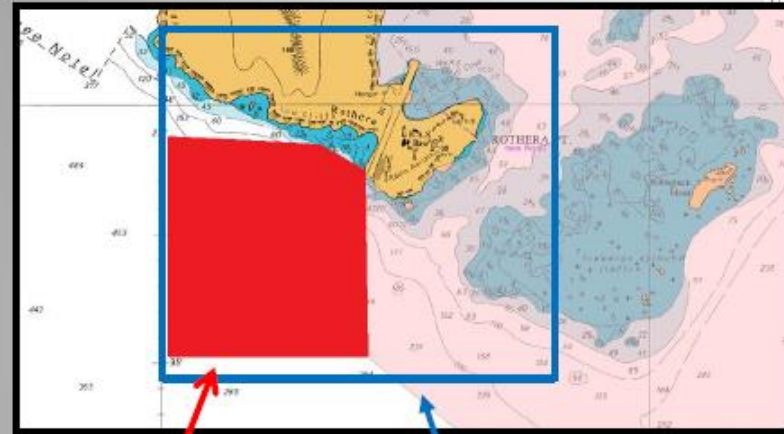
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USER REQUIREMENTS – SAFETY OF NAVIGATION – HOW DOES THE HCA PROCEED ?

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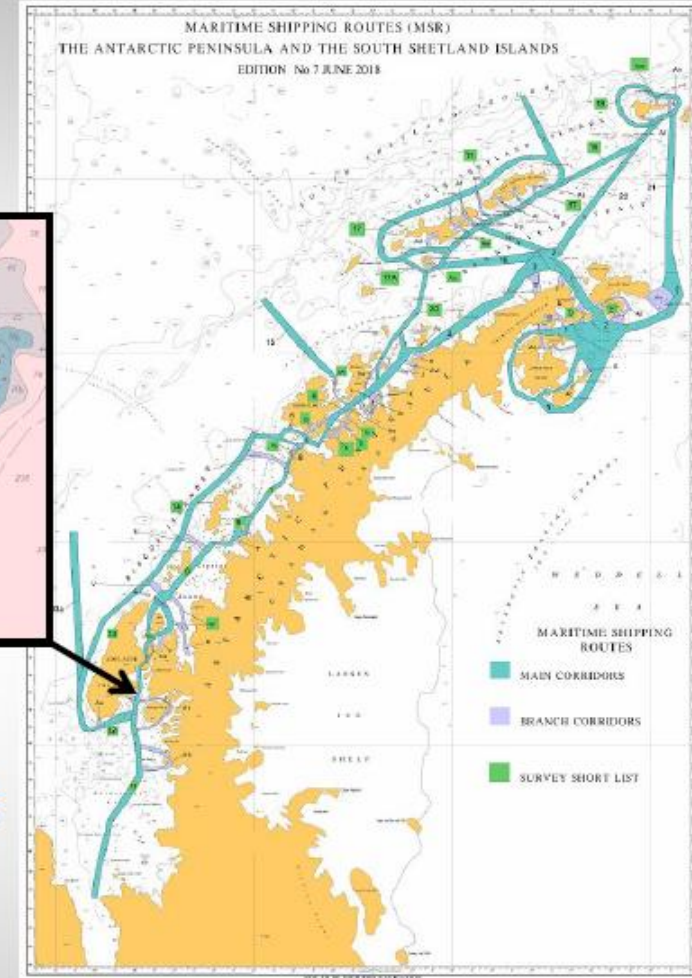
- Analysis on a yearly basis (IAATO and COMNAP support)
- Prioritization taking into account existing surveys and their adequacy for navigation (coastal, approaches, etc.), existing ENC charting coverage

Biscoe Wharf,
Rothera Station



Extended MSR

Proposed new INT chart

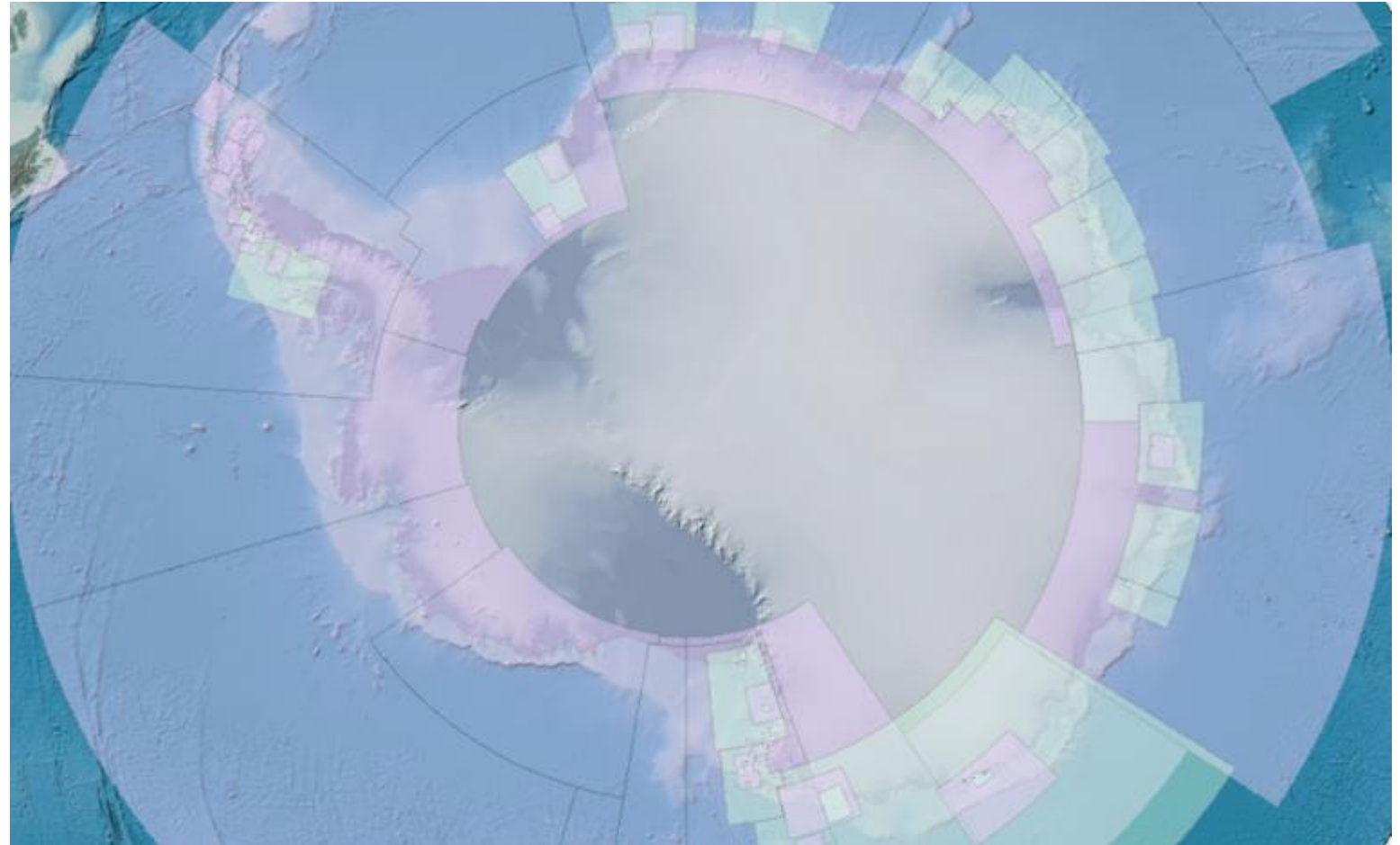
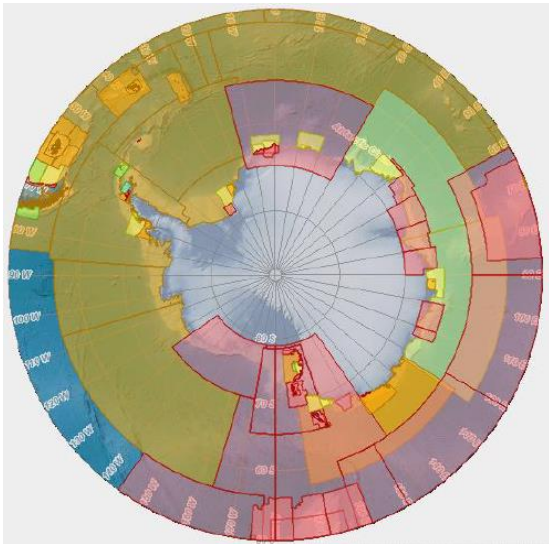




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USER REQUIREMENTS – SAFETY OF NAVIGATION – HOW DOES THE HCA PROCEED ?

- Existing ENC charting coverage
- Quality of data (Zone of confidence categories)





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FUTURE – EFFECTIVE CROWD SOURCED BATHYMETRY

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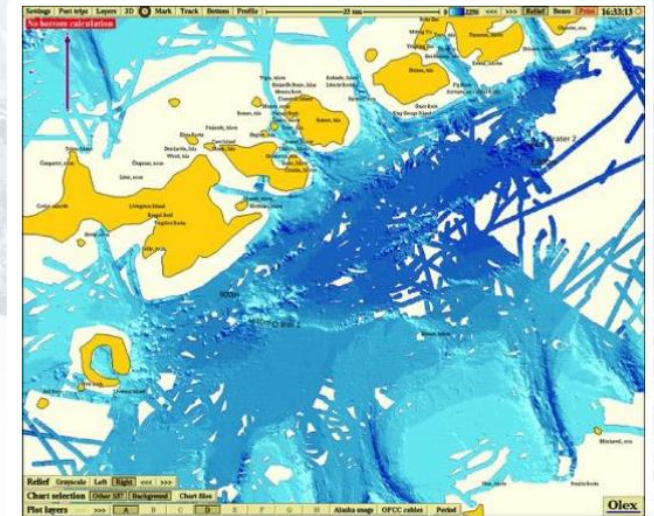
Current practice...

- ...but where are all the data collected by research institutes? In general, not in HOs' databases, sometimes in IBCSO (AWI Bremerhaven)
- Need for a more robust and world-wide organized mechanism (like it is already the case with meteo observations), for data collection, compilation, discovery and provision

OLEX

- 21 Ships
- 3 Yachts
- More participate each year
- Arctic and Antarctic
- Includes sharing of historic data

- How can we make sure all Stakeholders have access to this information?



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FUTURE – EFFECTIVE CROWD SOURCED BATHYMETRY

International Hydrographic Organization



- Professional contributions through Seabed 2030 Project,
- **B-12**, a new operational and technical guidance document for all who contribute to the IHO Crowd Source Bathymetry initiative, through provisions to the IHO Data Center for Digital Bathymetry DCDB)
- High density DCDB global bathymetric data grid accessible under open data licence terms

