



19th Conference of the IHO Hydrographic Commission on Antarctica

Discussion on addressing climate change for Preparation of the Revision of the IHO Strategic Plan

Agenda item 08.1

HCA-19, Venice, Italy (hybrid), 15 – 18 April 2024



The Hydrographic Commission on Antarctica (HCA) to consider

1) How the future provision of hydrographic information for the region can assist to detect and to mitigate the regional impact of climate change, and

2) How this assistance could be considered within the 2027-2032

IHO Strategic Plan.



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Background

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- IHO Council 7, action item C7/36 and C7/37 identified the need to revise the Strategic Plan for 2027-2032, and **tasked commissions** to provide inputs regarding directions and evolutionary **pathways for consideration**
- At HCA 18, SCAR Executive Director, presented the Southern Ocean Action Plan (SOAP), and the Antarctic Climate Change and the Environment (ACCE) documents for consideration
 - Statement - The **consequences of sea level rise** and melting ice (sea, land and shelves) around Antarctica's coastline will **present significant risks to society**
- At ATCM 45 in June 2023, the IHO Report to ATCM and highlighted the following statement: *"In both Polar Regions, due to climate change effects, new **unsurveyed and unchartered large areas are becoming ice-free** and therefore potentially open to navigation"*
- The HCA is requested to consider how the provision of hydrographic information for the Antarctic region, within the context of the ATS (free and open), can address **regional effects of climate change** and how this could be **considered within the IHO 2027-2032 Strategic Plan**



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Analysis

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Southern Ocean Action Plan (SOAP) Challenge

- **SOAP #2 Crossing Boundaries:** *“Expanding the international collaborative community... To achieve efficient transnational cooperation, and implementing standardised data management is required.”*
 - **Current HCA Governance:**
 - The HCA Objectives state the promotion of the technical cooperation as the focus of the commission.
 - Data repositories are in place.
 - Data Standards such as the S-100 Universal Hydrographic Data Model are in development.
 - Data sharing is by request/exception rather than defaulting to open for sharing and collaboration.

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Proposed actions on HCA:

- 1) Concerted implementation and maintenance of S-101 ENC's for the region according to the burden sharing for INT charts among HCA members.
- 2) Establishment of amending S1xx services for the region – in particular for tides, waters level and currents (S-104, S-111), ice and ocean weather.
- 3) Establish closer collaboration with organizations who operationalize global observation like Mercator Ocean in order to create a digital twin of navigable waters of the Southern Ocean.
- 4) Invite GEBCO / IBCSO to provide HCA with the relevant survey coverage and S102 data, over all coastal waters of Antarctica up to 40m.



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Analysis

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Southern Ocean Action Plan (SOAP) Challenge

- **SOAP #3 Identifying and connecting stakeholders:** *“In polar research, there already exists a constructive and iterative engagement between science and policy-makers.”*
 - **Current HCA Governance:**
 - HCA Statutes Article 3, section 3.4: stimulate Members and Observers forming the HCA to widen hydrographic activity in the region in accordance with ATCM Resolutions.
 - Seek technical advice and assistance from the IHO Secretariat in establishing and strengthening their hydrographic capabilities and policies



Proposed actions on HCA:

- 1) Encourage Member States with the capacity for to establish S-1xx based amending data services for tides, water level and current, sea ice and ocean weather for the Antarctic region.
- 2) Encourage Member States with the capacity for making available tide gauges measurements and statistical data of Mean Sea Level for the Antarctic region.



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Analysis

Southern Ocean Action Plan (SOAP) Challenge

- **SOAP #3 Identifying and connecting stakeholders:** *"Linking the industry with research, infrastructure and logistics - Strengthening engagement with and from industry partners and business operators working in the region for broadening and maintaining of long-term time series of data for ecosystem monitoring."*

Proposed actions on HCA:

- 3) Pursue the concerted transition of all S-57 ENC's available for the region into S101 format and liaise with RENCs in charge of their distribution.
- 4) Proactive approach of shipping companies and research vessels to invite them for the installation of S-100 ECDIS once such devices are readily available.
- 5) Identify, by simulation, new ice-free areas, where adequate surveys should be required.



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Analysis

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Southern Ocean Action Plan (SOAP) Challenge

- **SOAP #3 Identifying and connecting stakeholders:** *“Ensuring societal needs are reflected and addressed through research”*

Proposed action on HCA:

6) Teach IAATO on the observed and expected changes in sea level, the effects for draughts and accessibility of sea areas which has been covered by ice in the past.



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Analysis

Southern Ocean Action Plan (SOAP) Challenge

- **SOAP #4a Data, observations and modelling - Improving Spatial and temporal knowledge:** *“Informed decision making to achieve the oceans that we want relies upon appropriate scientific input, which itself relies upon scientific data... observations and modelling are closely intertwined and integral parts of all societal outcomes for the Ocean Decade.”*
- **Current HCA Governance:**
 - HCA Statutes Article 3, section 3.5: To facilitate the exchange of information between Hydrographic Authorities... regarding marine information... to aid in the planning and organization of hydrographic activities in the widest sense of the term.
 - HCA Statutes Article 3, section 3.10: facilitate the provision and wide dissemination of information for scientific purposes and to consider the potential of Marine Spatial Data Infrastructure (MSDI) concepts for regional implementation.

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Proposed action on HCA:

1) Provision of those S-1xx based data for tides, water level and currents via SCAR/Mercator Ocean to enable the simulation of effects for sea level.



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Southern Ocean Action Plan (SOAP) Challenge

- **SOAP #4b Data, observations and modelling - Ensuring data and information are fully utilized:** *"Open access can be defined as the practice of providing online access to scientific information that is free of charge to the end-user and reusable."*

Proposed action on HCA: Strive for Member States agreement to provide any S-1xx based data service provisions free of charge via the RENCs.



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Analysis

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Scientific Committee on Antarctic Research (SCAR)

- **SCAR Antarctic Climate Change and the Environment (ACCE) Context and Approach #1.6 Policy Recommendation:** *“ensure that Antarctic and Southern Ocean environments are maintained in a state close to that known for the past 200 years, and in so doing help ensure achievement of the Sustainable Development Goals.”*
 - **Current HCA Governance:**
 - HCA Statutes Article 3, section 3.12: establish committees or working groups as appropriate, to advance regional priorities.
 - ATCM Resolution 6 was approved in 2019 and recommends “Parties to endeavor to find additional resources put towards improving hydrographic surveying and charting in the Antarctic region.”



Proposed actions on HCA:

- 1) Present HCA activities and ambitions in the course of international conferences such as the UN Ocean Conference series.
- 2) HCA to create materials (such as ESRI story maps, Quantarctica, HCA GIS) to communicate and illustrate how accurate navigation charts allow tourism and expose the public to the diverse and fragile Antarctic landscape. Acquire funding or in-kind support for the production of the materials from the commercial actors within the region.



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Analysis

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Scientific Committee on Antarctic Research (SCAR)

- **SCAR Antarctic Climate Change and the Environment (ACCE) 4.4.2 Antarctic Ice Shelf (AIS) Projected Changes and Risks:** *"Under all Socio-Economic Pathways, it is likely that the AIS is committed to lose mass throughout the 21st century due to ocean warming and ice shelf disintegration (medium confidence) [IPCC AR6 WGI 9.4.2.5]."*
 - **Current HCA Governance:**
 - HCA Statutes Article 3, section 3.10: To facilitate the provision and wide dissemination of information for scientific purposes and to consider the potential of Marine Spatial Data Infrastructure (MSDI) concepts for regional implementation
 - HCA Statutes Article 3, section 3.12: establish committees or working groups as appropriate, to advance regional priorities.



Proposed action on HCA:

1) HCA's Hydrography Priorities Working Group adopts a work item to proactively identify options for new routes if released from ice sheet. HCA contacts its members who are committed to ENC production of the affected area to highlight that new navigable areas call for expansion in survey and charting.



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Analysis

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- **ATCM XLV Multi-year Strategic Work Plan #9.** *Promote enhancement of hydrographic surveying in Antarctica. Parties to inform their geographical priorities to map uncharted areas. Parties, IAATO and IHO to report on progress in hydrographical products.*
 - **Current HCA Governance:**
 - ATCM Resolution 6 was approved in (2019) and recommends “Parties to endeavor to find additional resources put towards improving hydrographic surveying and charting in the Antarctic region.”

Proposed action on HCA:

1) HCA will propose to ATCM to give their members a firm commitment for data sharing for transiting and operating research vessels via GEBCO/IBCSO.



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Recommendations

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- Member States to consider the proposed actions and other statements as potential changes to the Work Plan and IHO Strategic Plan 2027-2032.
- Member States are invited to take note of this Proposal and to take action as considered appropriate