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**Report by the  
International Hydrographic Organization  
(IHO)  
and a  
Proposal for a Seminar on the Importance  
of Hydrography in the Antarctic Region**



## Report by the Secretariat of the International Hydrographic Organization as Chair of the IHO Hydrographic Commission on Antarctica

### **Introduction**

The International Hydrographic Organization (IHO) is an intergovernmental consultative and technical organization. It comprises 87 Member States. Each State is normally represented by its national Hydrographer.

The IHO coordinates on a worldwide basis the setting of standards for hydrographic data and the provision of hydrographic services in support of safety of navigation and the protection and sustainable use of the marine environment. The principal aim of the IHO is to ensure that all the world's seas, oceans and navigable waters are surveyed and charted.

### **What is Hydrography?**

Hydrography deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers. Hydrographic surveying identifies the shape and nature of the seafloor and the hazards that lie upon it, together with an understanding of the impact of tides on the depth and on water movement. This knowledge supports all marine activities, including scientific studies, environmental protection and transport.

### **Importance of Hydrography in Antarctica**

Hydrographic information is a fundamental pre-requisite for the development of successful and environmentally sustainable human activities in the seas and oceans. Unfortunately, there is little or no hydrographic information for a number of parts of the world, especially in Antarctica.

In this particular region, where vessels may face the most severe weather conditions, any grounding due to a lack of adequate surveying or nautical charting may have serious consequences. Unfortunately, the grounding of vessels operating outside previously navigated routes in Antarctica is not uncommon.

The Polar Code, adopted by the International Maritime Organization (IMO) in 2014, includes significant cautions concerning hydrography and nautical charting in the polar regions.

As stated, the Polar Code

*... “considers hazards which may lead to elevated levels of risk due to increased probability of occurrence, more severe consequences, or both (...)*

and notes in particular:

*...remoteness and possible lack of accurate and complete **hydrographic data and information**, reduced availability of navigational aids and seamarks with increased potential for groundings compounded by remoteness, limited readily deployable Search and Rescue (SAR) facilities, delays in emergency response and limited communications capability, with the potential to affect incident response ...”*

Most scientific studies and an understanding of the marine environment benefit significantly from a knowledge of the nature and shape of the seafloor and the movement of the water caused by tides. Therefore the lack of such hydrographic knowledge in most Antarctic waters, particularly in the coastal and shallower regions, must compromise many scientific endeavours being undertaken under the auspices of ATCM and individual Member States.

### ***IHO Hydrographic Commission on Antarctica***

The HCA comprises 24 IHO Member States (Argentina, Australia, Brazil, Chile, China, Colombia, Ecuador, France, Germany, Greece, India, Italy, Japan, Republic of Korea, New Zealand, Norway, Peru, Russian Federation, South Africa, Spain, United Kingdom, Uruguay, USA, Venezuela), all of which have acceded to the Antarctic Treaty and are therefore also directly represented in the ATCM.

The IHO Hydrographic Commission on Antarctica (HCA) was formed in 1998 aimed at coordinating activities between its Member States to improve the quality, coverage and availability of nautical charting and other marine geospatial and hydrographic information and services covering the region.

### ***Ways and Means to Improve Hydrography and Nautical Charting in Antarctica***

The IHO has reported regularly on the unsatisfactory level of hydrographic knowledge in Antarctica since ATCM XXXI (Kiev, 2008) and the inherent risks involved for all seaborne activities taking place around the continent. Barely 5% of the depth in Antarctic waters has been measured. The IHO has consistently indicated the requirement to obtain support at the highest political levels if things are to improve significantly.

It is pleasing that ATCM XXXVII adopted Resolution 5 (2014) on strengthening cooperation in hydrographic surveying and charting of Antarctic waters. However, there has been little noticeable impact or improvement on the previously reported situation.

The IHO HCA attempts to work closely with stakeholder organizations such as COMNAP, IAATO, SCAR, IMO and IOC, However, with the exception of successful work with IAATO, no co-operative programmes or packages using ships of opportunity or other resources have been achieved in order to improve hydrographic data in critical shipping areas.

### ***Depth Measurement to be Included in Environmental Data Observing Programmes***

The IHO is committed to the collection and management of reference bathymetric data sets required for modelling the different ocean and coastal mechanisms, in particular through the programme of the General Bathymetric Chart of the Oceans (GEBCO), which is co-governed by the IHO and the IOC, and the IHO Data Centre for Digital Bathymetry (DCDB) that acts as the global data repository for publicly available bathymetry of the world's oceans, seas and coastal waters, including the underpinning data for GEBCO.

The IHO is now encouraging innovative supplementary data gathering and data maximizing initiatives, to increase mankind's knowledge of the bathymetry of the seas, oceans and coastal waters including crowd-sourced bathymetry (volunteered geographic data) including in Antarctica.

The advent of particularly inexpensive data loggers means that it is now possible to use existing equipment in a non-intrusive way for all seafarers to collect and render bathymetric data to the IHO DCDB. Most ships are inherently capable of measuring and digitally recording the depth in coastal waters using existing ship's equipment and an increasing number of vessels are capable of taking measurements in deeper water using existing ship's equipment. This is particularly so for scientific and passenger vessels and supply ships.

The IHO considers that the measurement, recording and rendering of depth data as a routine environmental observing activity should be undertaken at all times when vessels are at sea, and where no restrictions apply.

### ***Proposal for a Seminar on the Importance of Hydrography in the Antarctic Region***

At the thirty-ninth Antarctic Treaty Consultative Meeting in Santiago, Chile, the IHO Representative suggested that it would be useful to examine in much more detail the impact of the status of hydrographic surveys and nautical charts covering Antarctic waters. It was proposed that the IHO considers organising a seminar similar to the one offered at ATCM XXXI held in Ukraine in 2008. Chile and Ecuador supported the IHO proposal.

As a result,

... *The Meeting agreed to insert a new priority relating to hydrographic surveying in Antarctica, and agreed to consider the issue in 2018 (see ATCM Final Report paragraph 161).*

The IHO proposes that a seminar be arranged during the first days of ATCM XLI in Ecuador in 2018. It would be led by the Secretary General of the IHO, who is also Chair of the IHO Hydrographic Commission on Antarctica (HCA). The seminar would be supported by the national Hydrographers represented in the IHO HCA. Other relevant supporting organizations that operate under the umbrella of the IHO, including the General Bathymetric Chart of the Oceans (GEBCO) project and the International Bathymetric Chart of the Southern Oceans (IBCSO) projects would contribute. Collaborating and supporting Organizations including SCAR, COMNAP, CCAMLR and IAATO will be invited to provide their perspectives as part of the seminar.

In addition to the statement made by Ecuador at ATCM XXXIX in Chile supporting the principle of holding a seminar in Ecuador as part of ATCM XLI in 2018, the IHO Secretariat has received further correspondence<sup>1</sup> from Ecuador as the host country, supporting this position.

The seminar will examine in detail the impact of the currently unacceptable state of hydrographic knowledge, nautical charting and bathymetric mapping covering Antarctic waters, particularly in relation to safety, operations, environmental protection, climate change, oceanographic modeling and research in the region. The seminar will go on to identify several practical, low-cost solutions that States and other Organizations can implement to improve the current situation. The seminar will also draw attention to the existing arrangements in the IHO that enable would-be data providers from the ATCM community to identify specific areas where their own activities can be used to provide much-needed depth data for the common good.

The outcome of the seminar will be a number of recommendations on a coordinated implementation plan for subsequent consideration by the ATCM.

### ***Proposals for Consideration by ATCM***

**The IHO invites ATCM to include a seminar on the status and the impact of hydrography in the Antarctic to be delivered by the IHO as part of the programme for ATCM XLI in Ecuador in 2018.**

**The IHO invites ATCM to consider including in its relevant policy/doctrine/regulations covering ship operations (passenger vessels, scientific campaigns, supply activities, etc.), an encouragement that the measurement, recording and rendering of depth data should be undertaken at sea at all times as a routine environmental observing activity unless particular restrictions apply.**

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<sup>1</sup> Letter from Under Secretary of Latin America and the Caribbean, Ministry of External Relations, dated 28 November 2016, to the General Commander of the Navy, Ecuador.