



IHO Input to the Report of the UN Secretary General on Oceans and Law of the Sea

This contribution is provided in response to your letter dated 21 March 2023 as the input from the International Hydrographic Organization to

General

1. The International Hydrographic Organization (IHO) is the inter-governmental international organization that ensures that seas and navigable waters are properly surveyed and charted, through the coordinated endeavours of national Hydrographic Offices that also contribute to the promulgation of Maritime Safety Information (MSI). The requirement to provide these services is set out in Regulation 9 of Chapter V of the International Convention for the Safety of Life at Sea (SOLAS) and is therefore an obligation placed on all contracting governments. Regulation 9 requires, among other things that *... ensure that hydrographic surveying is carried out, as far as possible, adequate to the requirements of safe navigation*. Regulation 4 of Chapter V places an obligation on Contracting Governments to ensure that appropriate navigational warnings are issued as part of the MSI services.

Developing standards, guidance, products and services

7. IHO standards and guidelines, intended to assist coastal States in meeting their obligations and requirements, fall under three main themes:

- nautical charts, issued on paper or in digital format (Electronic Navigational Charts), which are produced by national Hydrographic Offices to support safe navigation in accordance with the requirements of SOLAS;
- the maritime component of spatial data infrastructures being developed at the national and regional levels, which includes in particular high resolution bathymetry (depth data) compiled by national Hydrographic Offices;
- the global reference bathymetric data sets developed and made available through the GEBCO programme (General Bathymetric Chart of the Oceans) operated jointly by the IHO and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

8. The current worldwide coverage of Electronic Navigational Charts is now effectively corresponding with paper chart coverage. However, numerous remote areas that are far away from the highly frequented shipping routes are still not sufficiently covered by modern up-to-date nautical chart information. Further progress is hindered by the lack of reliable survey data and the allocation of appropriate resources and priority by the governments of many coastal States. While most of established shipping routes are relatively safe navigationally because of widespread use by many ships over many years, the advent of larger vessels and the need for vessels to travel to new destinations, in particular with regard to the expansion of the cruise industry, are not supported by adequate surveys and charts.

9. The IHO is also developing and maintaining guidelines to assist stakeholders in implementing the requirement of international instruments such as UNCLOS and SOLAS. An example is the Manual on Technical Aspects of the UN Convention on the Law of the Sea (TALOS Manual - IHO Publication C-51). The TALOS Manual is maintained jointly by the IHO and the International Association of Geodesy (IAG). Its purpose is to provide guidance in order to ensure maximum international standardization of the technical aspects of UNCLOS. The Manual can be downloaded free of charge from the IHO website at www.iho.int.

10. The IHO develops and sets standards, and issues guidance which ensure that hydrographic information is available and can be delivered to users through appropriate harmonized and interoperable products and services. The current maintenance of existing standards and the development of new ones are driven by the need to continue to satisfy the SOLAS requirements of

elements require easy access to standardized, high quality digital geospatial information that can support marine spatial management. Accordingly, the IHO continues to work on its S-100 framework to support the creation and maintenance of interoperable maritime data product specifications compliant with the ISO-19100 series of geographic information standards. The series also includes a product specification for maritime limits and boundaries (S-121). The purpose of S-121 is to provide UN DOALOS with a suitable format for the exchange of digital vector data pertaining to the maritime boundaries, limits and zones of States to meet their respective UNCLOS deposit obligations.

11. Numerous IHO Member States currently engage in significant efforts to establish regular and frequent services utilizing such datasets with national and regional coverage. Since the S-100 framework and the associated web based infrastructure is not limited to host data product specifications native to the hydrographic domain, the IHO is proactively supporting the expansion of the S-100 concept to related domains such as maintenance of fixed and floating aids to navigation (IALA), weather and sea ice coverage (WMO), route plan exchange format (IEC), inland electronic charting (IEHG) and oceanography (IOC).

Authoritative Dataset on the Limits of Oceans and Seas

The responsible technical body is currently taking action to develop a new Product Specification named *Polygonal Demarcations of Global Sea Areas* (S-130). The objective is to use the S-130 Product Specification as a dataset model for the subsequent production of the authoritative S-130 Dataset with global coverage of all geographic limits of the oceans and seas as maintained in analogue form by the IHO since 1919 by means of IHO publication S-23.

Recognition of the Southern Ocean

12. In 2021, National Geographic, USA, quoting the IHO, recognized the Southern Ocean as the 5th ocean. Following this publication, the IHO Secretariat received a significant number of requests for explanations on how this name

agencies, academia and industry in general, with priority for the Caribbean, West Africa and South West Pacific regions.

16. Benefit of the full range of IHO Capacity Building activities is accessible only to IHO Member States.

Promoting the marine dimension in global agendas

17. The IHO Secretariat has continued to contribute directly to the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM). At its 12th session in August 2022 the report on the *Implementation and adoption of standards for the global geospatial information community* (Agenda Item 13), was brought to the attention of the Committee by the three Standard Developing Organizations ISO, OGC and IHO Group. This group, being an integral part of the global geospatial information management community,

the GEBCO world map; the GEBCO Cook Book; Web Map Services and its lead bathymetric product: a global gridded bathymetric data set.

22. A significant source of data for these products is the IHO Data Centre for Digital Bathymetry (DCDB). One of the primary objectives of the IHO DCDB is to provide an authoritative source of bathymetry for ocean mapping requirements. In order to achieve this, GEBCO proactively collects, GEBCO has worked towards improving its participation in regional mapping activities and has appointed representatives to participate in selected meetings of Regional Hydrographic Commissions that operate under the umbrella of the IHO. Traditionally, GEBCO has focused on waters deeper than about 200 m; however, it is now actively collecting data in shallow water areas to support activities such as coastal zone management and development, and the mitigation of marine disasters such as storm and tsunami inundation. IHO Member States are encouraged to contribute bathymetric data in shallower coastal areas to support the production of higher resolution gridded data products.

23. A new GEBCO 15 arc-second global grid is regularly published every June. The most current GEBCO grid was produced in cooperation with the Nippon Foundation-GEBCO Seabed 2030 data set (Olson et al, 2014) - a fusion of land topography with measured and estimated seafloor topography. This base grid is augmented with the gridded bathymetric data sets developed by the four Seabed 2030 Regional Centers and compiled into a global bathymetric grid at the Seabed 2030 Global Center. Information on how to access the grid and the data sets included can be found on the GEBCO web site: www.gebco.net/data_and_products/gridded_bathymetry_data/. The new GEBCO grid released in June 2023, contains significantly more data, and the overall coverage has increased to approximately 25%. Work continues on making additional datasets available and encouraging the IHO Crowdsourced Bathymetry (CSB) initiative to help increase publicly available bathymetric data. The Seabed 2030 regional and global centers continue to work closely with the CSBWG.

24. The IHO initiated the Crowdsourced Bathymetry Initiative aiming to

