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11TH MEETING OF THE IHO EUROPEAN NETWORK WORKING GROUP (IENWG)

International
Hydrographic
Organization

IHO ACTIVITIES TO CONTRIBUTE TO THE OCEAN OBSERVATION

By Luigi SINAPI
IHO Director



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AGENDA

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1. European Commission and IHO cooperation
2. The EU “Ocean observation – sharing responsibility” initiative
3. The IHO and the Ocean observation
4. New IHO Strategic Plan (2021-2026)
5. The new Standards: S-44 and S-100 (Roadmap and Framework)
6. The IHO contribution to the Ocean observation:
 - ✓ Crowd Sourced Bathymetry
 - ✓ GEBCO-Seabed2030
 - ✓ UN Decade for Ocean Science
7. Conclusions



- ✓ Memorandum of Understanding dated April 2012: a Cooperative framework on an integrated approach to maritime affairs
- ✓ MoU enabler for HOs to:
 - Develop EU and national maritime policies
 - Facilitate the implementation of EU policies
 - Progress on development of standards of marine data
- ✓ In 2014, establishment of IENWG to:
 - Identify EU activities and processes on matters of interest to HOs
 - Interface with EU through RHCs initiatives, IRCC or IHO in general
 - Facilitate common actions of HOs related to EU programs



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THE EU “OCEAN OBSERVATION – SHARING RESPONSIBILITY” INITIATIVE

AIM

TO FILL THE GAP IN NATIONAL, SEABASIN OR GLOBAL OVERVIEW OF WHAT IS BEING MEASURED, WHAT IS GOING TO BE MEASURED OR WHAT SHOULD BE MEASURED MEANS THAT EACH COMMUNITY – FISHERIES, RESEARCH, HYDROGRAPHY – SETS ITS OWN PRIORITIES AND USES ITS OWN ASSETS – VESSELS, BUOYS, ETC. WITHOUT KNOWLEDGE OF WHAT THE OTHERS ARE DOING

OBJECTIVES AND POLICY

- Achieve a coherent approach to European ocean observation
- Allow Member States to build and operate a marine observation infrastructure
- Maximise the potential for “Measuring once and using the data for many purposes”
- Facilitate the sharing of responsibility and assets between different communities and different Countries

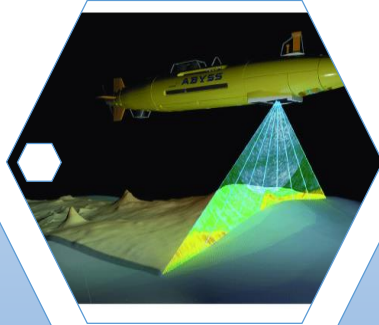
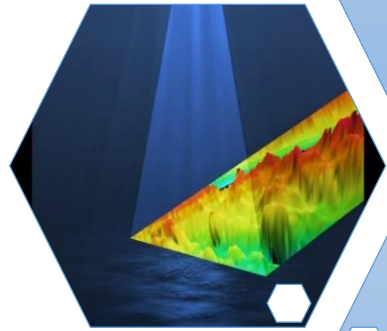


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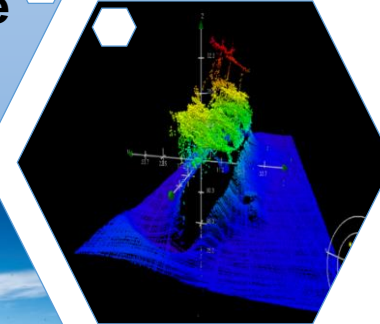
THE IHO AND THE OCEAN OBSERVATION

“Hydrography is much more than nautical charts”

International Hydrographic Organization



Maritime Knowledge



Surveillance and Defence



Charts Production

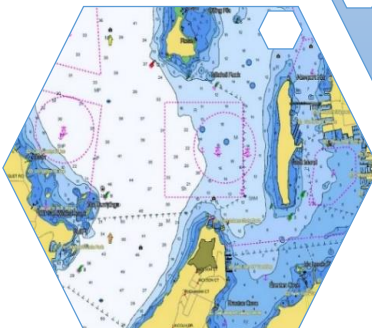


Data Quality

Standards



Services

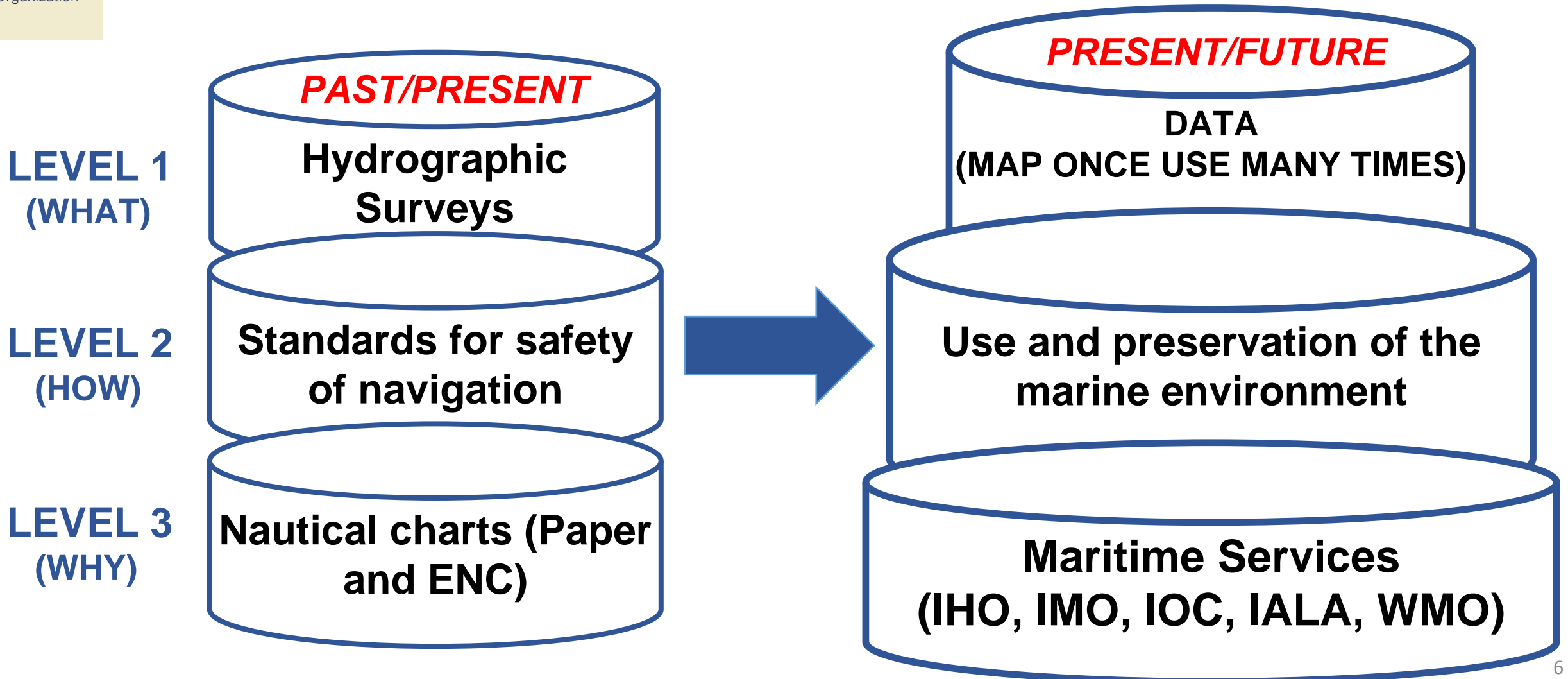




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THE IHO AND THE OCEAN OBSERVATION

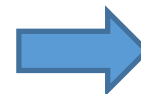
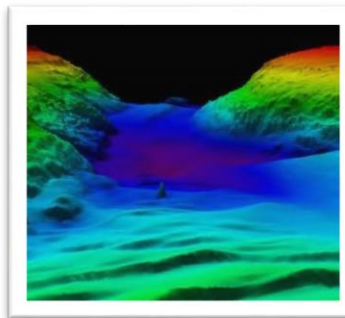
“Hydrography is much more than nautical charts”





GOAL 1

Evolving the hydrographic support for safety and efficiency of maritime navigation, undergoing profound transformation



On-going transformation in navigation, such as e-navigation, autonomous shipping, reduction of emissions, lead to a profound evolution of hydrographic services, in a context of high demands for digital data.

GOAL 2

Increasing the use of hydrographic data for the benefit of society



The ever-growing applications of marine data entails that IHO takes a more prominent role in cultivating the use of hydrographic data through cooperative and collaborative efforts and identifying the need for collecting more data.

GOAL 3

Participating actively in international initiatives related to the knowledge and the sustainable use of the Ocean



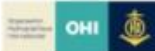

IHO's ambition is to be an effective and recognized contributor to the major Ocean related challenges identified by the international community.



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THE NEW STANDARDS: S-44 AND S-100 (ROADMAP AND FRAMEWORK)

→ Publication S-44 6th Edition mid-September 2020

Dossiers de l'OHI n° S3/8151 & S3/7198 & S3/3061

LETTRE CIRCULAIRE N° 33
14 septembre 2020



ADOPTION DE L'ÉDITION 6.0.0 de la S-44 – NORMES DE L'OHI POUR LES LEVÉS HYDROGRAPHIQUES, ÉDITION 1.0.0 de la S-67 - GUIDE DU NAVIGATEUR SUR LA PRÉCISION DES INFORMATIONS DE PROFONDEUR CONTENUES DANS LES CARTES ÉLECTRONIQUES DE NAVIGATION (ENC) ET DE L'ÉDITION 2.1.0 DE LA S-49 – GUIDES D'ORGANISATION DU TRAFIC POUR LES NAVIGATEURS

Références :

- A. LC de l'OHI 27/2020 du 15 juillet 2020 – *Demande d'approbation de l'édition 6.0.0 de la S-44 – Normes de l'OHI pour les levés hydrographiques, de l'édition 1.0.0 de la S-67 – Guide du navigateur sur la précision des informations de profondeur contenues dans les cartes électroniques de navigation (ENC) et de l'édition 2.1.0 de S-49 – Guide d'organisation du trafic pour les navigateurs*
- B. Résolution de l'OHI 2/2007 telle qu'amendée – *Principes et procédures pour la modification des normes et des spécifications techniques de l'OHI.*

Madame la Directrice, Monsieur le Directeur,

- La lettre circulaire de l'OHI citée en référence A demandait aux Etats membres d'approuver l'édition 6.0.0 de la norme S-44 - Normes de l'OHI pour les levés hydrographiques, l'édition 1.0.0 de la norme S-67 - Guide du navigateur sur la précision des informations de profondeur contenues dans les cartes électroniques de navigation (ENC) et l'édition 2.1.0 de la norme S-49 - Guides d'organisation du trafic pour les navigateurs. Conformément à la procédure d'élaboration et de mise à jour des normes techniques (cf. référence B).
- Le Secrétariat tient à remercier les 45 membres suivants qui ont répondu à la référence A : Afrique du Sud, Algérie, Allemagne, Arabie Saoudite, Argentine, Australie, Belgique, Brésil, Canada, Chili, Chypre, Croatie, Danemark, Equateur, Espagne, Estonie, Etats-Unis d'Amérique, Irlande, France, Grèce, Inde, Iran (République islamique d'), Islande, Italie, Japon, République de Corée, Malte, Malaisie, Maroc, Maurice, Norvège, Nouvelle-Zélande, Pays-Bas, Pérou, Philippines, Pologne, Portugal, Royaume-Uni de Grande-Bretagne et d'Irlande du Nord, Singapour, Slovénie, Suède, Thaïlande, Tunisie, Ukraine et Uruguay.
- Cinq Etats membres (France, Iran (République islamique d'), Pérou, Philippines et Uruguay) ont formulé des commentaires en complément de leur approbation. Ces commentaires et le résultat de leur examen par les présidents des groupes de travail et des équipes de projet, par le président du HSSC et par le Secrétariat sont présentés à l'annexe A de la présente lettre circulaire.

S-44 Edition 6.0.0



International Hydrographic Organization
Standards for Hydrographic Surveys





International Hydrographic Organization

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S-44 6TH Edition – WHAT’S NEW?

- ✓ Introduction of “bathymetric coverage”
- ✓ The special order explicitly requires complete bathymetric coverage
- ✓ 6th Edition wishes to encourage the use of S-44 beyond safety of navigation
- ✓ Introduction of the concept of matrix of specifications
- ✓ The importance of the epoch of realization of geodetic systems
- ✓ A chapter dedicated to metadata
- ✓ Technologically and methodologically independent



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THE NEW STANDARDS: S-44 AND S-100 (ROADMAP AND FRAMEWORK)

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- ✓ Creation of a new set of coordination principles (as WEND was to S-57 ENC's), developed by the WEND WG under IRCC
- ✓ Coordination with IMO to transition from S-57 to S-101 ENC's and to recognize additional services
- ✓ Coordination with industry for production and use of S-100-based services
- ✓ Capacity-building for producers
- ✓ Development of global distribution capability



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THE NEW STANDARDS: S-44 AND S-100 (ROADMAP AND FRAMEWORK)



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S100 MASTER PLAN

HOs to Produce Operational S-101 ENC's



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THE IHO CONTRIBUTION TO THE OCEAN OBSERVATION: CROWDSOURCED BATHYMETRY

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- ✓ In 2014, the International Hydrographic Organization (IHO) initiated a collaborative project to enable mariners to collect “Crowdsourced Bathymetry”
- ✓ Crowd sourced Bathymetry (CSB) is the collection of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations
- ✓ **NOAA/IHO DCDB** built a new data pipeline that allows the public to upload, discover, and download CSB data via a web-based map viewer interface
- ✓ In January 2020 the IHO issued **Publication B-12 - IHO Guidelines for Crowdsourced Bathymetry Edition 2.0.3**



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THE IHO CONTRIBUTION TO THE OCEAN OBSERVATION: CROWDSOURCED BATHYMETRY

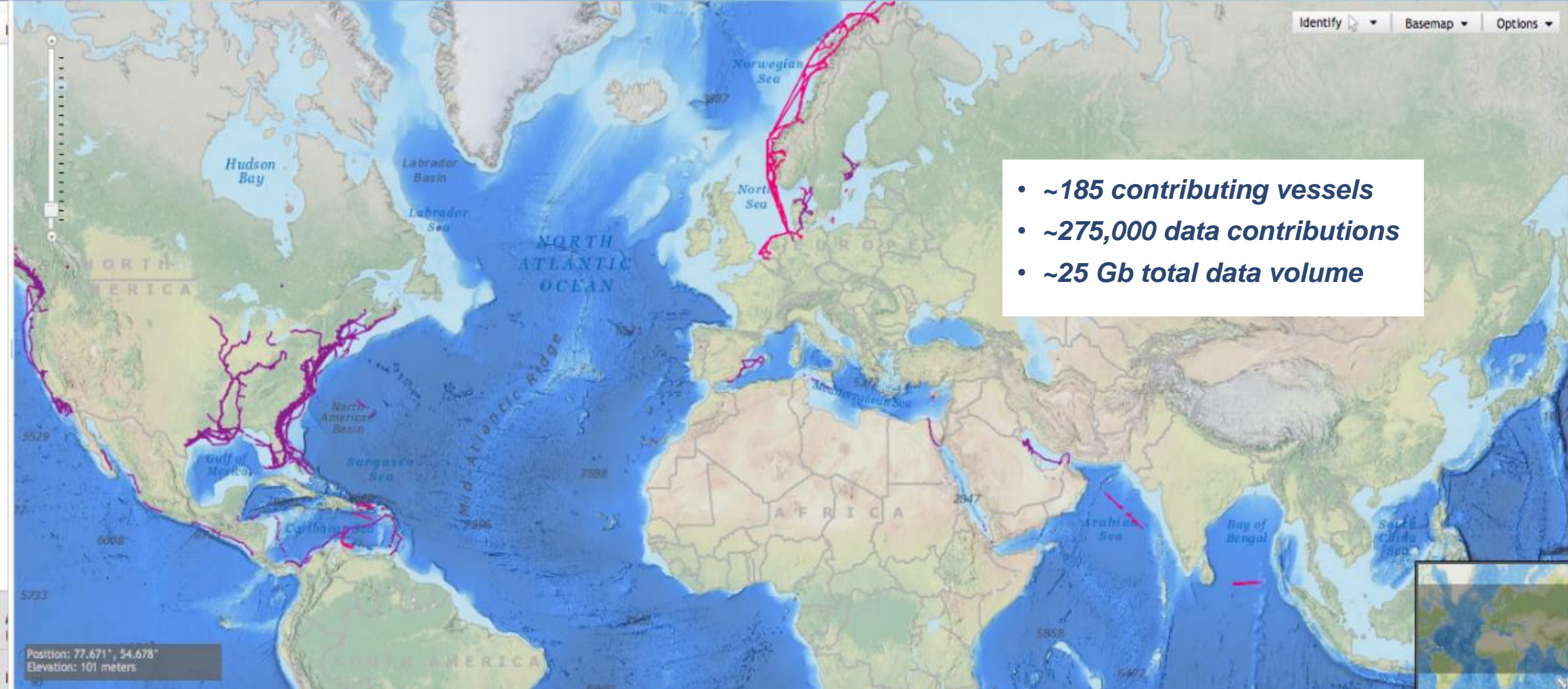
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Data Centre for Digital Bathymetry Viewer



- *~185 contributing vessels*
- *~275,000 data contributions*
- *~25 Gb total data volume*



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THE IHO CONTRIBUTION TO THE OCEAN OBSERVATION: CROWDSOURCED BATHYMETRY

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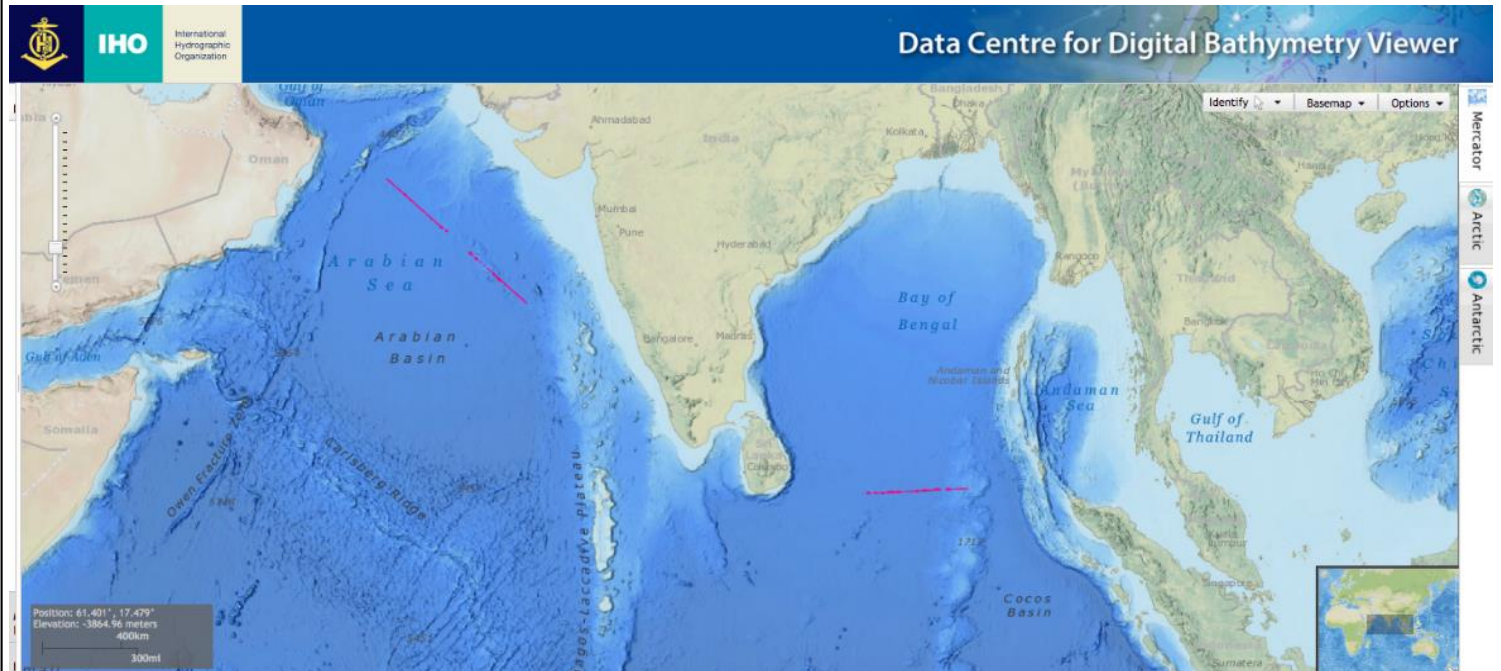
Annex A to IHO CL 47/2019

Summary analysis of positive responses

1. Based on the comments received to the questionnaire in Annex B to IHO CL 11/2019, the following table will be published as the Positive List to guide potential data gathering activities undertaken by the wider maritime community in waters of national jurisdiction:

Member State	Area	Specific actions required
Argentina	EEZ only	Provide copy of dataset to Hydrographic Office
Brazil	EEZ only	Provide copy of dataset to Hydrographic Office
Cyprus	All waters	Provide copy of dataset to Hydrographic Office
Denmark	All waters	Inform Hydrographic Office of any variance with published chart
Georgia	All waters	Provide copy of dataset to Hydrographic Office
Germany	All waters	Inform Hydrographic Office of new dataset
Monaco	All waters	Provide copy of dataset to Hydrographic Office
Netherlands	All waters	Inform Hydrographic Office of new dataset
New Zealand	All waters	Inform Hydrographic Office of new dataset
Norway	All waters – no multibeam activity without prior permission	Inform Hydrographic Office of new dataset
Philippines	Shipping routes and transit passages only	None
South Africa	EEZ only	Provide copy of dataset to Hydrographic Office
Sweden	EEZ only	Inform Hydrographic Office of new dataset
USA	All waters	None

Following the feedback provided (and not provided) in response to IHO CCLL 11/2019 and 21/2020, the DCDB implemented a geographic filter for incoming data to take into account coastal countries' positions on the collection of CSB in their areas of jurisdiction.





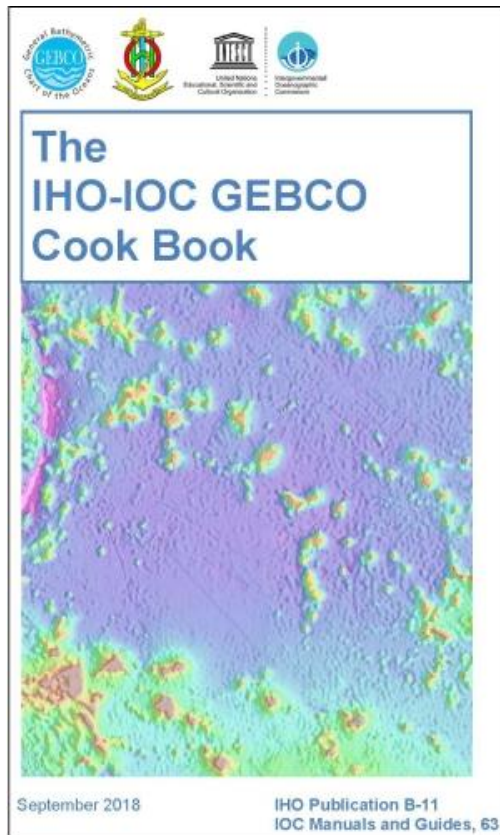
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THE IHO CONTRIBUTION TO THE OCEAN OBSERVATION: GEBCO-SEABED2030

International Hydrographic Organization



GEBCO aims to provide the most authoritative publicly available bathymetric data sets for the world's oceans



Seabed 2030 is a collaborative project between the [Nippon Foundation](#) and **GEBCO**. It aims to bring together all available bathymetric data to produce the definitive map of the world ocean floor by 2030 and make it available to all.



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THE IHO CONTRIBUTION TO THE OCEAN OBSERVATION: GEBCO-SEABED2030

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THE NIPPON FOUNDATION-GEBCO



The NUMBERS

- ✓ Ocean mapping coverage now **19%**
- ✓ **14.5million km2** of new data in last year:
 - **~54 x size of New Zealand's** landmass
- ✓ At **6%** when Seabed 2030 Project began

The new INITIATIVES

- Ocean Frontier Mapping: Use GEBCO Grid to inform location of future mapping - Advocate for greater mapping activity - Identify funding for mapping expeditions
- Crowd Sourced Bathymetry: Promoting CSB around the world - Gaining support of, and data from, contributors at all levels
- Technology Innovation: Technology organizations to facilitate cloud data storage/transfer/processing solutions



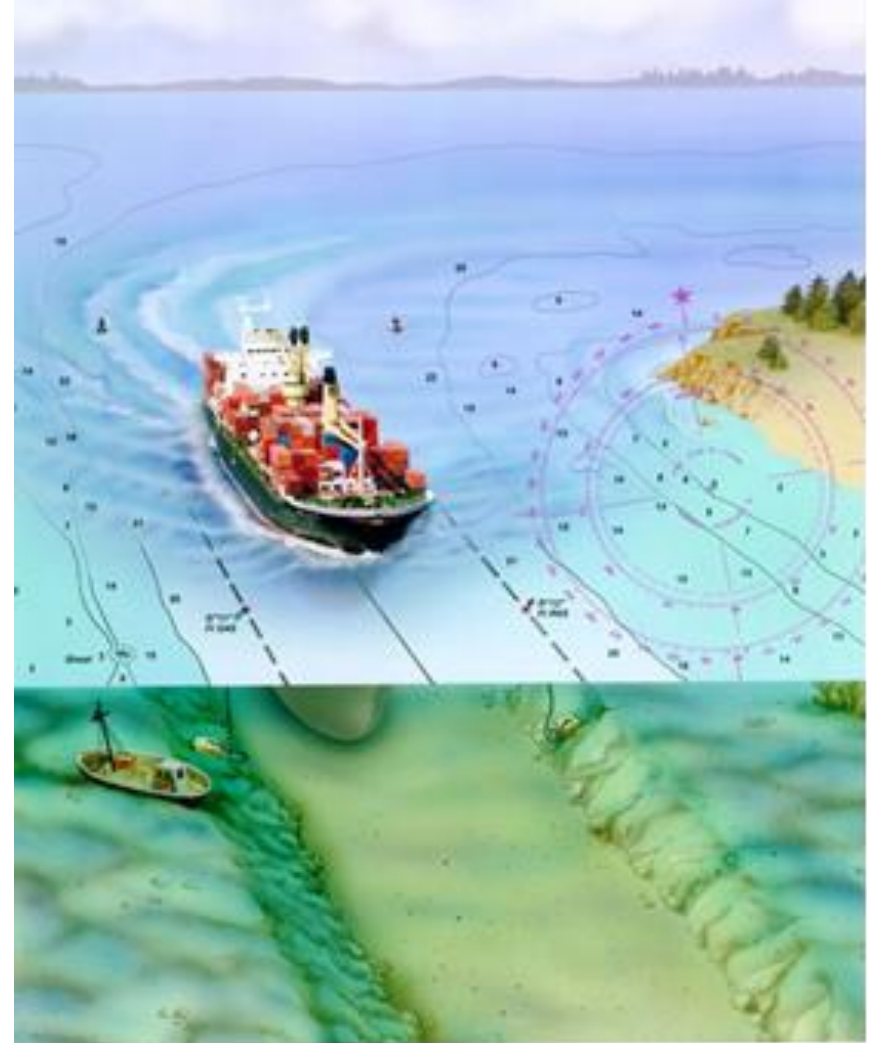
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THE IHO CONTRIBUTION TO THE OCEAN OBSERVATION: UN DECADE FOR OCEAN SCIENCE

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IHO Strategic Plan – Proposed
GOAL 3:

*“Participating actively in
international initiatives
related to the knowledge
and the sustainable use of
the Ocean”*





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THE IHO CONTRIBUTION TO THE OCEAN OBSERVATION: UN DECADE FOR OCEAN SCIENCE

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UN DECADE Objectives

Obj. 1: Increase transformative ocean knowledge capacity and capability globally

Obj. 2: Expand, innovate and integrate ocean knowledge systems globally

Obj. 3: Understand and predict the whole ocean system and its component parts

Obj. 4: Develop integrated assessment and decision support systems and other transformational tools and processes

Data portals based on open data approach expanding scientific and technical capability

- Global ocean observing systems
- Partnering with information generators and end-users
- Develop and maintain new technology
- Integrate local knowledge

Ocean Mapping

Develop and disseminate analytical tools to predict human and environmental interactions based on multiple stressors.

IHO Strengths

MSDI, Data product standardization
Capacity building

Tides and Currents
Satellite derived bathymetry
Survey standards (S-44)
Autonomous survey technology
Local collaboration in RHCs

GEBCO, DCDB, CSB, S-100 data products interoperability

Existing charts and bathy data in Polar waters,
S-101 next Generation ENC in combination with AIS and others



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CONCLUSIONS

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- 1. THE IHO IS FULLY ENGAGED TO CONTRIBUTE TO THE KNOWLEDGE AND THE SUSTAINABLE USE OF THE OCEANS, THROUGH THE ACTIVE CONTRIBUTION TO THE GLOBAL INITIATIVES ON OCEAN MAPPING**
- 2. NEW IHO STANDARDS REPRESENT SUITABLE MEANS TO SUPPORT EACH EU COMMUNITY TO ACHIEVE A COHERENT OCEAN OBSERVATION ... BUT THEY ARE NOT SUFFICIENT (PROMOTION, SCOPE EXPANSION, WORKSHOPS, HOs ABILITY TO PLAY THE ROLE OF DATA CENTRES, SURVEYS PRIORITIES COORDINATORS, ETC.)**



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CONCLUSIONS

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- 3. IENWG, IN LIAISON WITH RHCs, IS INVITED TO CONSIDER THE NEW IHO STRATEGIC PLAN AND 3-YEAR PROGRAMME OF WORK, AND MAKE PROPOSALS TO IRCC TO IMPROVE IMPLEMENTATION OF THE STRATEGIC PLAN, BASED ON CURRENT EU POLICIES AND INITIATIVES, PROJECTS AND SERVICES, FUNDING OPPORTUNITIES, IN ORDER TO DEVELOP SYNERGIES**

- 4. THE IHO DIRECTOR/IHO SECRETARIAT STAND READY TO CONTRIBUTE TO THE IENWG'S PROPOSALS TOWARDS EU AND TOWARDS IHO IN GENERAL (BOTH WAYS), INCLUDING AMENDMENTS TO IENWG TORs IF NECESSARY AND THEN DEVELOPMENT OF EFFECTIVE EC-IHO MoU IMPLEMENTATION PROCEDURES IF NEEDED.**