18th Conference of the EAtHC /

18ème Conférence de la CHAtO

Marine Spatial Data Infrastructure

Infrastructure de Données Spatiales Maritimes

&

CSB and Seabed2030

Portuguese Hydrographic Office

Agenda Item 03.4A

IHO

International Hydrographic Organization

Agenda

1. **MSDI WG**
2. EAtHC MSDI WG
3. CSB
4. SEABED 2030

3. Actions List

1. Marine Spatial Data Infrastructure Working Group

1.1. MSDI WG

➥ **Background:**

- Subsidiary body of the IRCC;
- Established in May 2007.

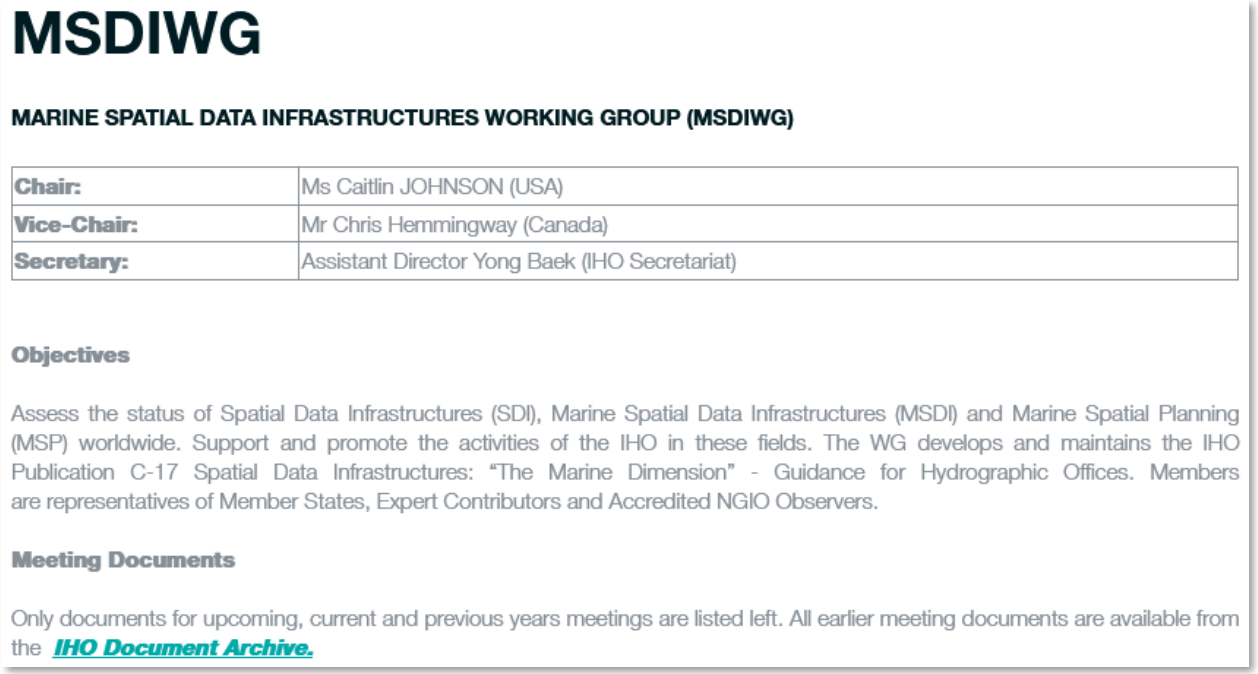
➥ **Composition:**

- Representatives of member states: 33;

  (**EAtHC**: France, Morocco, Nigeria, Portugal,

  Spain, UK, USA)

- Expert contributors: 16.



MSDIWG

MARINE SPATIAL DATA INFRASTRUCTURES WORKING GROUP (MSDIWG)

Chair:	Ms Caitlin JOHNSON (USA)
Vice-Chair:	Mr Chris Hemmingway (Canada)
Secretary:	Assistant Director Yong Baek (IHO Secretariat)

Objectives

Assess the status of Spatial Data Infrastructures (SDI), Marine Spatial Data Infrastructures (MSDI) and Marine Spatial Planning (MSP) worldwide. Support and promote the activities of the IHO in these fields. The WG develops and maintains the IHO Publication C-17 Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices. Members are representatives of Member States, Expert Contributors and Accredited NGIO Observers.

Meeting Documents

Only documents for upcoming, current and previous years meetings are listed left. All earlier meeting documents are available from the ***IHO Document Archive.***

https://iho.int/en/msdiwg

➥ **Objective:**

- Support the activities of the IHO related to SDI, MSDI and MSP, as far as marine data is involved.

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1. Marine Spatial Data Infrastructure Working Group

1.2. UN-GGIM – Working Group on Marine Geospatial Information

Overview | Documents | Meeting materials | International Seminar

Poster - International Seminar on United Nations Global Geospatial Information Management

Presentation materials

Official opening session

- Keynote address - Rena Lee, Chief Executive/Registrar, Intellectual Property Office of Singapore and Singapore's Ambassador for Oceans and Law of the Sea

Session #1 - Availability and accessibility of marine geospatial information for effective governance of seas and oceans

- Mohammad Arief Syafi'i, Geospatial Information Agency, Indonesia
- Ilaria Tani, University of Milano-Bicocca
- Graham Evans, International Cable Protection Committee

Session #2 - Implementing the UN-IGIF-Hydro and advancing the conservation and sustainable use of marine resources

- John Nyberg, International Hydrographic Organization
- Andrick Lal, Ocean Management and Literacy, Pacific Community (SPC)
- CheeHai Teo, UNDESA/SD/GGIMS

Session #3 - Partnerships and innovations for integrated marine geospatial information management

- Agus Sutrianto, Indonesia Navy's Hydro-Oceanographic Center, Indonesia
- Parry Oei, Maritime and Port Authority of Singapore, Singapore
- Kean Huat Soon, Singapore Land Authority, Singapore

1. Marine Spatial Data Infrastructure Working Group

1.3. OGC – Open Geospatial Consortium

2024/25 Pilot – Potential Scenarios/Use cases

- **Connecting Land and Sea**. Use cases designed to make progress on solving the **hard problem of connecting data and overcoming gaps between land and sea**,- eg datums, challenges related to local datums. Examples may include scenarios involving ports, slow-onset disasters crossing national boundaries (Cyclones), continued work in Arctic Coastal areas, storm surge and potential additional small island states.
- **Connecting to the Oceans Community**. Use cases designed to connect better to global Ocean science data. Examples may include biodiversity, ecosystems, and sea surface temperature predictive models and may be connected to the current OGC Open Science Persistent Demonstrator.
- **Digital Twins for Land and Sea.** Use cases designed to further experiment with OGC and other standards related to connecting Digital Twins of the Land and sea.(Built Environment)
- **Water Column** Use cases designed to explore underwater data gathering/water column for scenarios such as near coastal environmental monitoring and seabed and sub-seabed resource management
- **Coastal Data Integration** Use Cases integrating Marine, Met, environmental, and built infrastructure for a “coast” – huge challenge!
- **Advance the implementation of MPAs (S-122)** – lots till to be done!

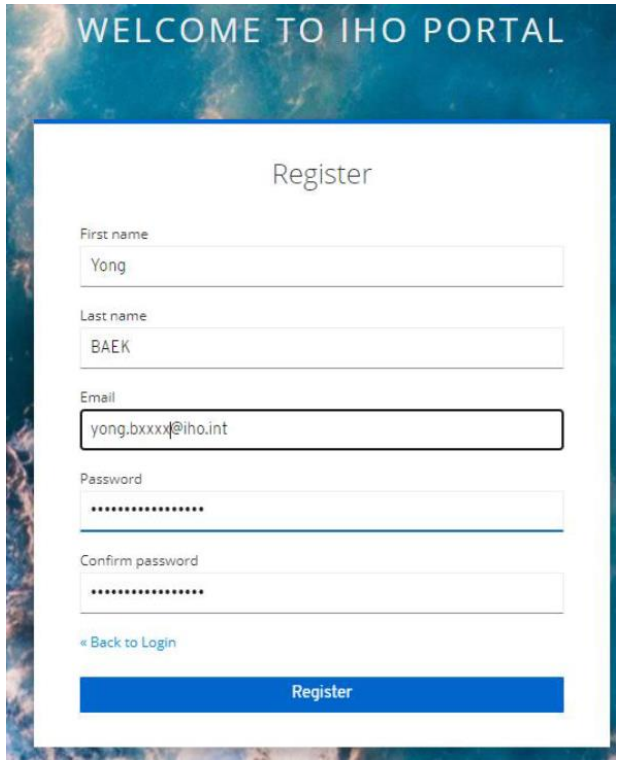
1. Marine Spatial Data Infrastructure Working Group

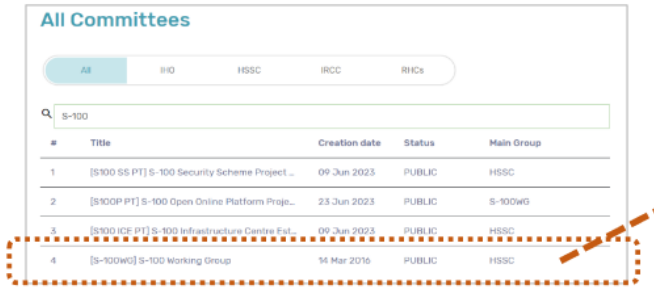
1.4. IHO

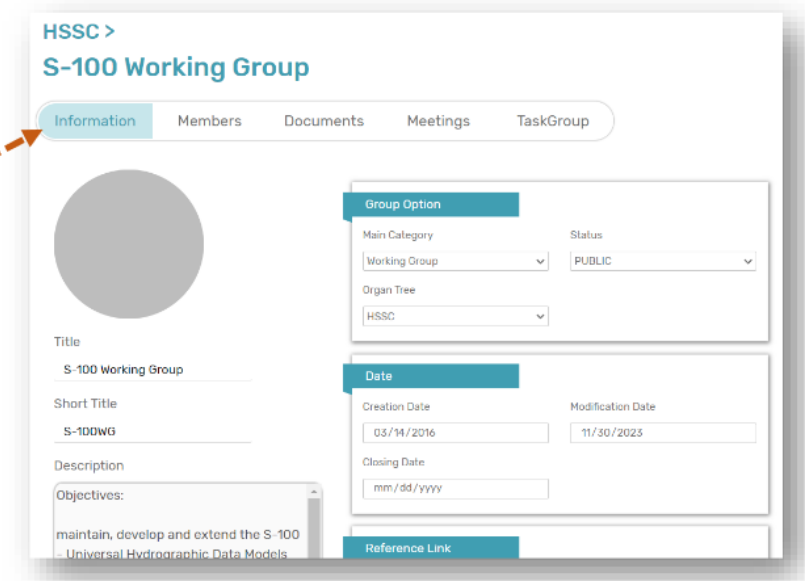
International Hydrographic Organization

➥ **New IHO portal:**

- User register;
- Committee / WG affiliation.







1. Marine Spatial Data Infrastructure Working Group

1.4. IHO

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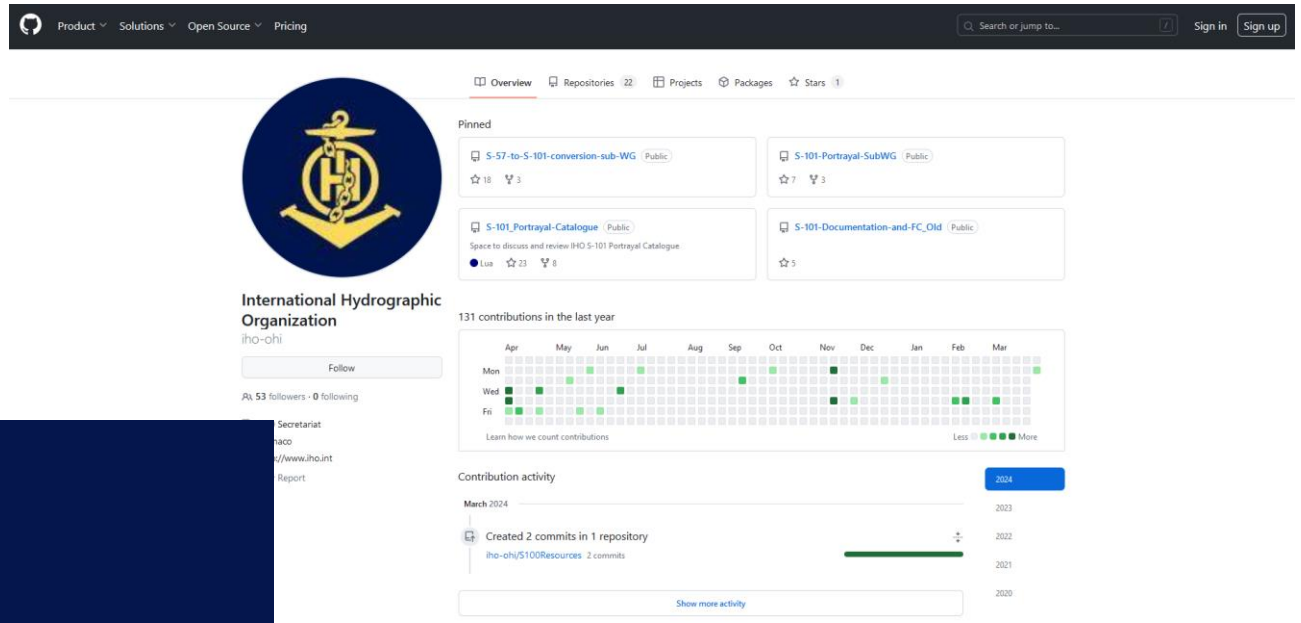
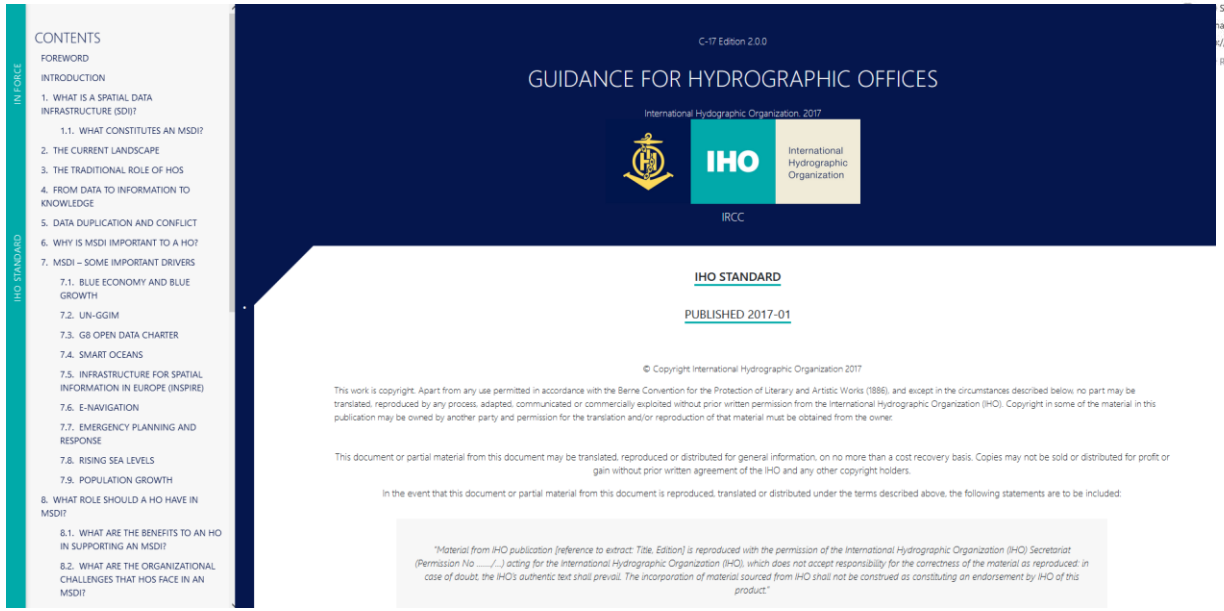
➥ **GitHub**





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Agenda

1. MSDI WG
2. **EAtHC MSDI WG**
3. CSB
4. SEABED 2030

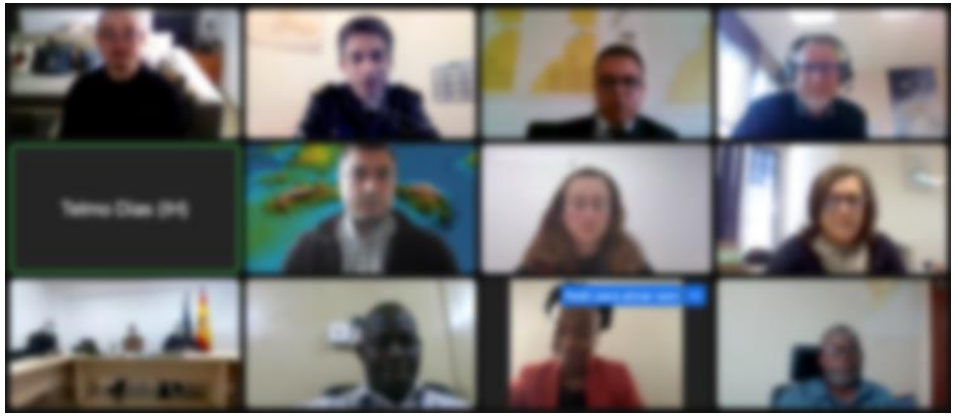
3. Actions List

2. Eastern Atlantic Hydrographic Commission MSDI WG

2.1. EAtHC MSDI WG

➥ **Background:**

- Established in EAtHC16.



https://iho.int/en/eathc-msdiwg

➥ **Composition:**

- 8 members;
- MS: France, Ghana, Morocco, Nigeria, Portugal, Spain;
- AM: UK;
- OBS: Gambia.

➥ **Objective:**

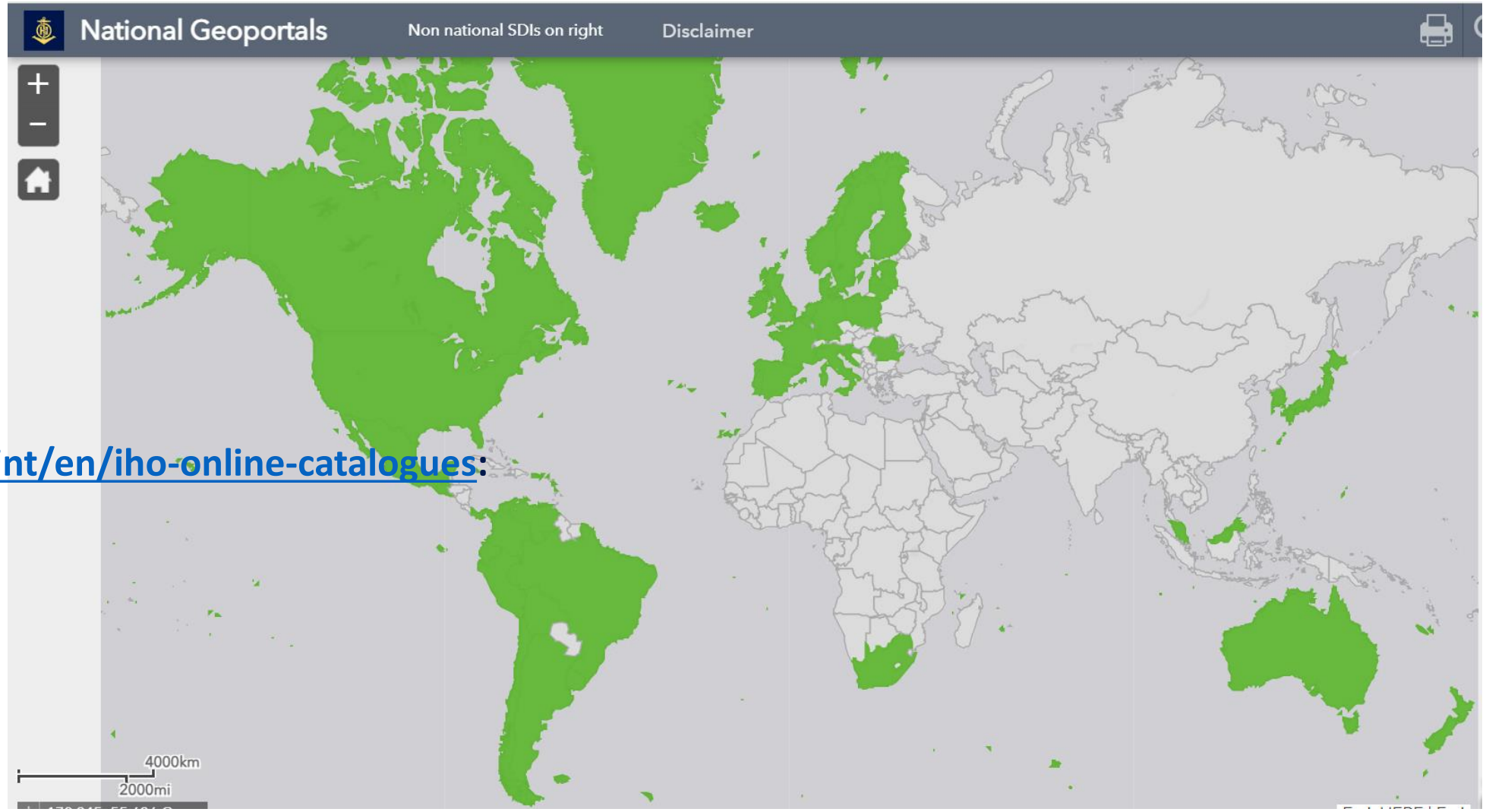
- Support the activities of the EAtHC related to MSDI, focusing on managing and sharing marine spatial data and extending its use.

➥ **Last meeting:**

- 03 May 2023 (VTC) – Only attended by Spain and UK.

2. Eastern Atlantic Hydrographic Commission MSDI WG

2.2. EAtHC SDI/MSDI Implementation – IHO Web App



➥ https://iho.int/en/iho-online-catalogues:

- France
- Portugal
- Spain
- UK
- USA

2. Eastern Atlantic Hydrographic Commission MSDI WG

2.3. Online WorkShop

➥ **Schedule:**

- 7th May, 2024.

➥ **Topics:**

- Relevance of MSDI for hydrographic offices;
- Infrastructure development: spatial databases, metadata catalogues, web services and APIs.

➥ **Interested:**

- Ghana;
- Morocco;
- Nigeria;
- Portugal;
- UK.

➥ **Confirmations:**

- Morocco;
- Portugal;
- Spain.

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Agenda

1. MSDI WG
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3. **CSB**
4. SEABED 2030
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What is Crowdsourced Bathymetry (CSB)?

CSB is the **collection and sharing of depth measurements** from vessels, using **standard navigation instruments**, while engaged in routine maritime operations.
(CSB data will not replace systematic survey data)

In 2014, the IHO initiated a collaborative project to encourage mariners **to collect bathymetric data** (CSB).

It is a major **contribution** for ocean mapping.

Is CSB important? Why?

- Contributes to safe navigation in areas of high change and/or sparse coverage
- Supports global efforts such as Nippon Fundation-GEBCO Seabed 2030; UN Decade of Ocean Science
- Data with scientific, commercial & research value at no cost to the public sector
- Useful along shallow, complex coastlines
- Identify uncharted features, verify charted information and help fill the gaps where no data exists
- Confirm whether charts are appropriate for the latest traffic patterns.

How to to collect and Contribute CSB Data

DCDB accepts CSB contributions through a network of Trusted Nodes (organizations, universities, companies …)

Trusted Nodes may supply data login equipment, provide technical support to vessels, download data from data loggers, and be responsible for data transfer directly to the DCDB

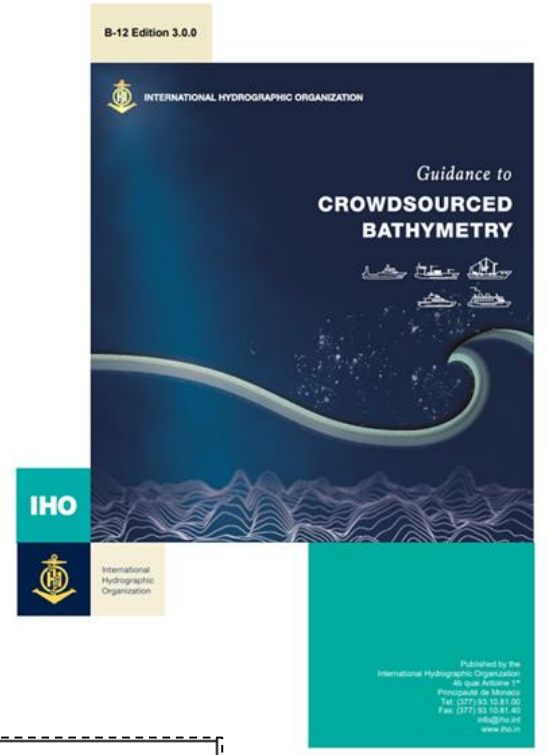
DCDB was established by IHO in 1990 to steward the worldwide collection of open bathymetric data.
DCDB is hosted by the US National Oceanic and Atmospheric Administration´s (NOAA)

CSB Background

https://iho.int/uploads/user/Inter-Regional%20Coordination/CSBWG/MISC/B-12_2023_EN_Acceptance_of_CSB_Data_in_NWJ_v7.0.pdf

Acceptance of CSB activities and provision of resultant datasets in national waters of jurisdiction (IHO CL 21/2020)

34 Coastal States;
CHAtO/EAtHC: Cameroon, France, Portugal, USA



IHO Publication B-12 (Guidance to Crowdsourced Bathymetry)

States the IHO policy and best practices

Edition 3.0.0, 2022

CSB-GEBCO-Seabed 2030 Coordinators

EAtHC (Eastern Atlantic)	Portugal	LCDR Telmo Geraldes Dias	Geraldes.dias@hidrografico.pt

CSB Working Group (CBSWG)

Composition: IHO Member States and Member States representing RHCs, Expert Contributors, IHO (France, Nigeria, Portugal, Spain, UK and USA)

Last Meeting – CSBWG15, 23-25 April 2024

CSBWG Workshop – 26 April 2024.

- Presentation by SHOM

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IHO Crowdsourced Bathymetry Initiative

The IHO defines crowdsourced bathymetry (CSB) as depth measurements collected and contributed by vessels, using standard navigation instruments, while engaged in routine maritime operations.

In 2014, the IHO recognized that traditional survey vessels alone could not be relied upon to solve data deficiency issues and agreed there was a need to encourage and support all mariners in an effort to "map the gaps." An initiative was established to support and enable mariners and professionally manned vessels to collect CSB. This approach leverages underway x, y, z, t data already being collected on vessels with common commercial echo sounders and Global Navigation Satellite System receivers. CSB can be used to supplement the more rigorous and scientific bathymetric coverage done by hydrographic offices, industry, and researchers around the world.

Contribute CSB Data

The DCDB accepts CSB contributions through a network of "Trusted Nodes," which may be organizations, companies or universities serving as data liaisons between mariners (data collectors) and the DCDB. Trusted Nodes may supply data logging equipment, provide technical support to vessels, download data from data loggers, or be responsible for data transfer directly to the DCDB.

CSB data must be provided in either CSV or GeoJSON, and capture the minimum required information (XYZ, timestamp). The IHO DCDB intends to publicly release the Trusted Node's data in its original form under the CC0 public domain dedication via the IHO DCDB Viewer.

The following documents clarify some aspects on CSB related to the submission of data to IHO DCDB:

- IHO CSB Trusted Node Agreement Form Template
- Guidance for Submitting CSB Data to the IHO DCDB
- Sample CSB File Formats
- Example CSB GeoJSON file

Those interested in contributing data or becoming a Trusted Node should contact the DCDB at bathydata@iho.int .

The collection of crowdsourced bathymetry information contributions is authorized under the OMB Control Number included in the Paperwork Reduction Act and Privacy Act statements.

Access CSB Data

Interactive Map/Data Viewers

Download CSV or GeoJSON files, including full metadata as contributed, via the IHO DCDB Viewer or NOAA's Bathymetric Data Viewer. The package is delivered as a gzipped tar file with the contents nested in directories several levels deep.

API

Download soundings using the CSB Data Extract API. This API can be called directly or by using the DCDB map viewer for a more human-friendly experience. The soundings can also be requested as a gridded product with a specified resolution.

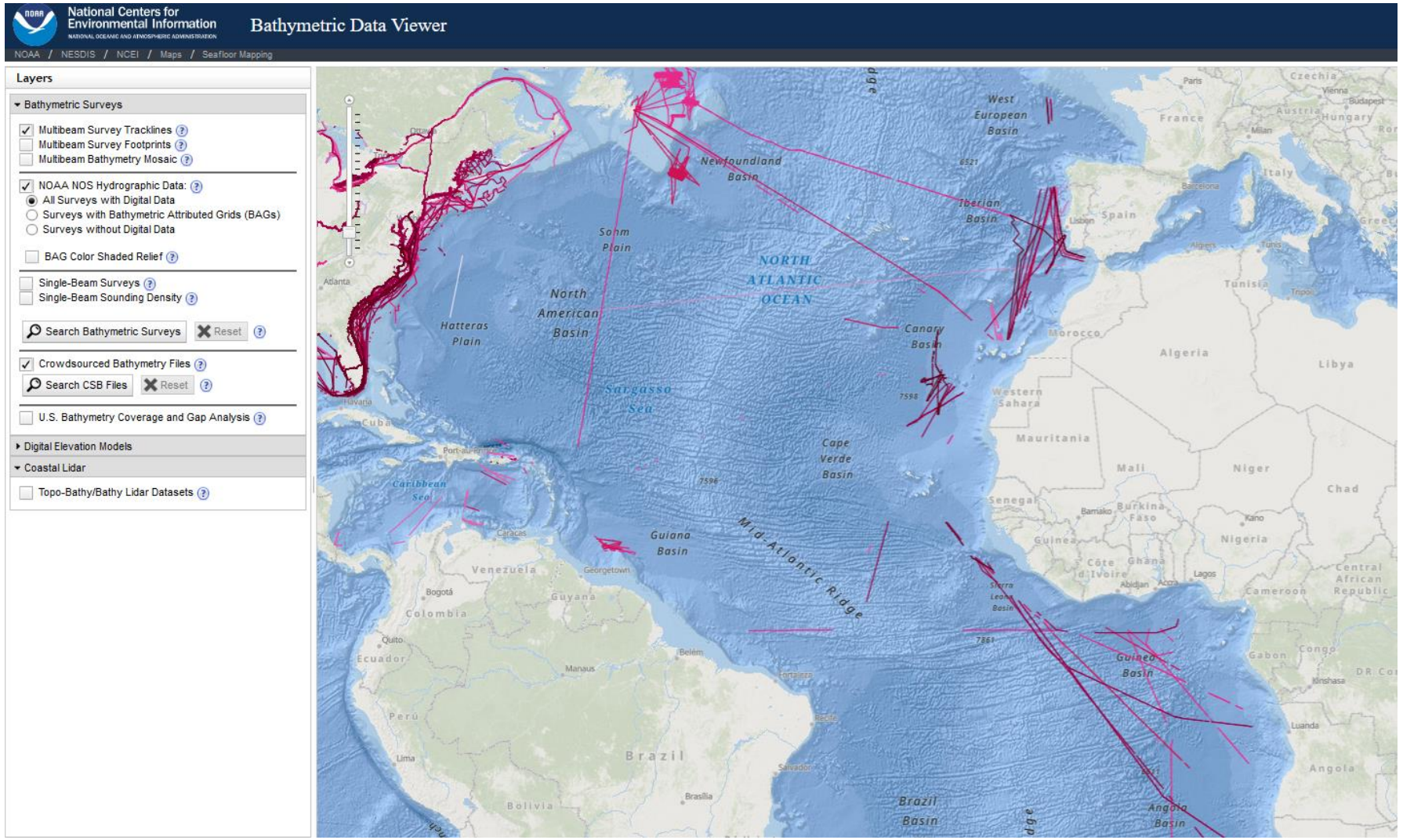
Cloud Access

Download CSV-format files directly from the AWS S3 bucket hosted by the NOAA Open Data Dissemination Program. Users can review the registry of open data, browse data in the bucket and download individual files, or use AWS-provided and third-party tools and SDKs for programmatic access.

Note: *CSV files downloaded from the S3 bucket only contain UniqueID, File_UUID, lon, lat, depth, time, platform name, provider attributes and that full metadata is not provided.*

Additional information can be found in the Crowdsourced Bathymetry Frequently Asked Questions.

CSB
CSB Activities



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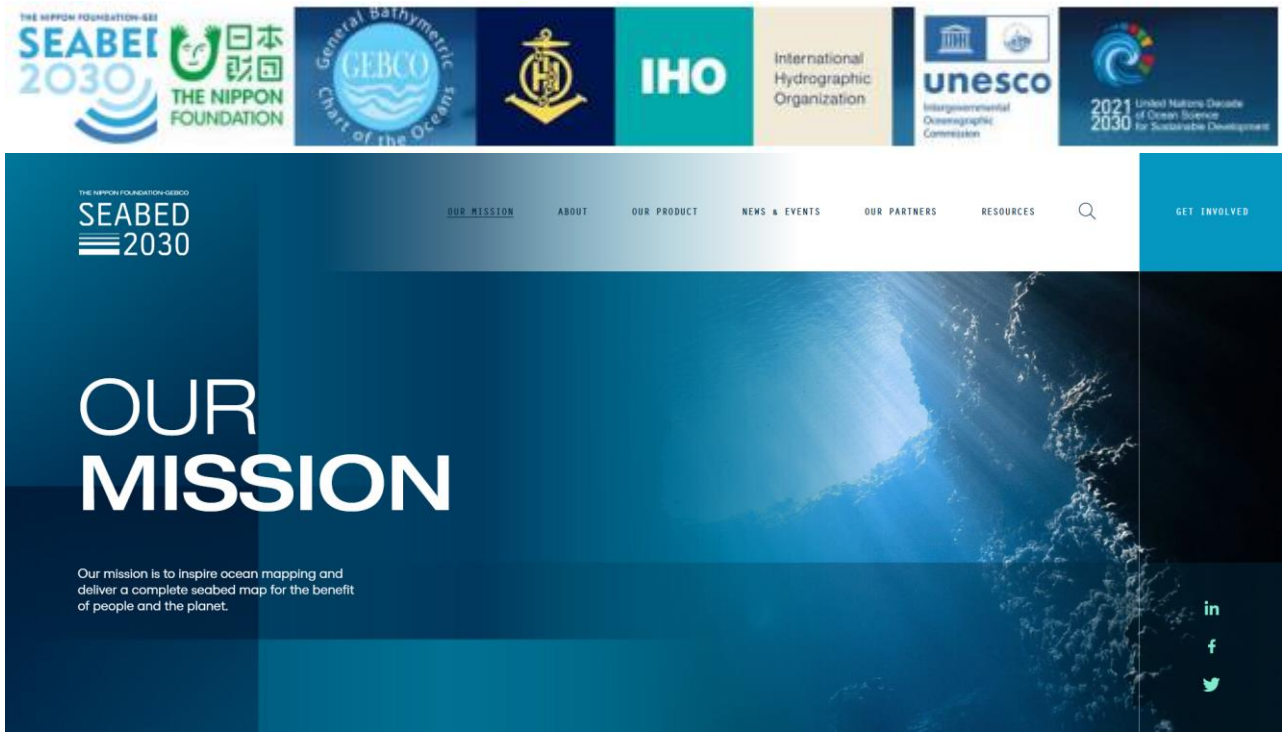
4. **SEABED 2030**

3 Actions List

What is Seabed 2030 Project?

The Nippon Foundation – GEBCO **Seabed 2030** Project is a **collaborative project** to inspire the **complete mapping** of the world's **ocean** by **2030**, and to **compile** all bathymetric data into the **freely-available** GEBCO Ocean Map.



Is Seabed 2030 Important? Why

- Bathymetry data is an **essential ocean observation**
- Seabed mapping data has **broad use and value**
- Ocean processes extend **beyond territorial waters**
- Only **~25%** of the ocean has been mapped with **direct observation** (GEBCO 2023)

Mapping the entire ocean is a **massive task** that can only be achieved through cooperation and coordination

Project Background

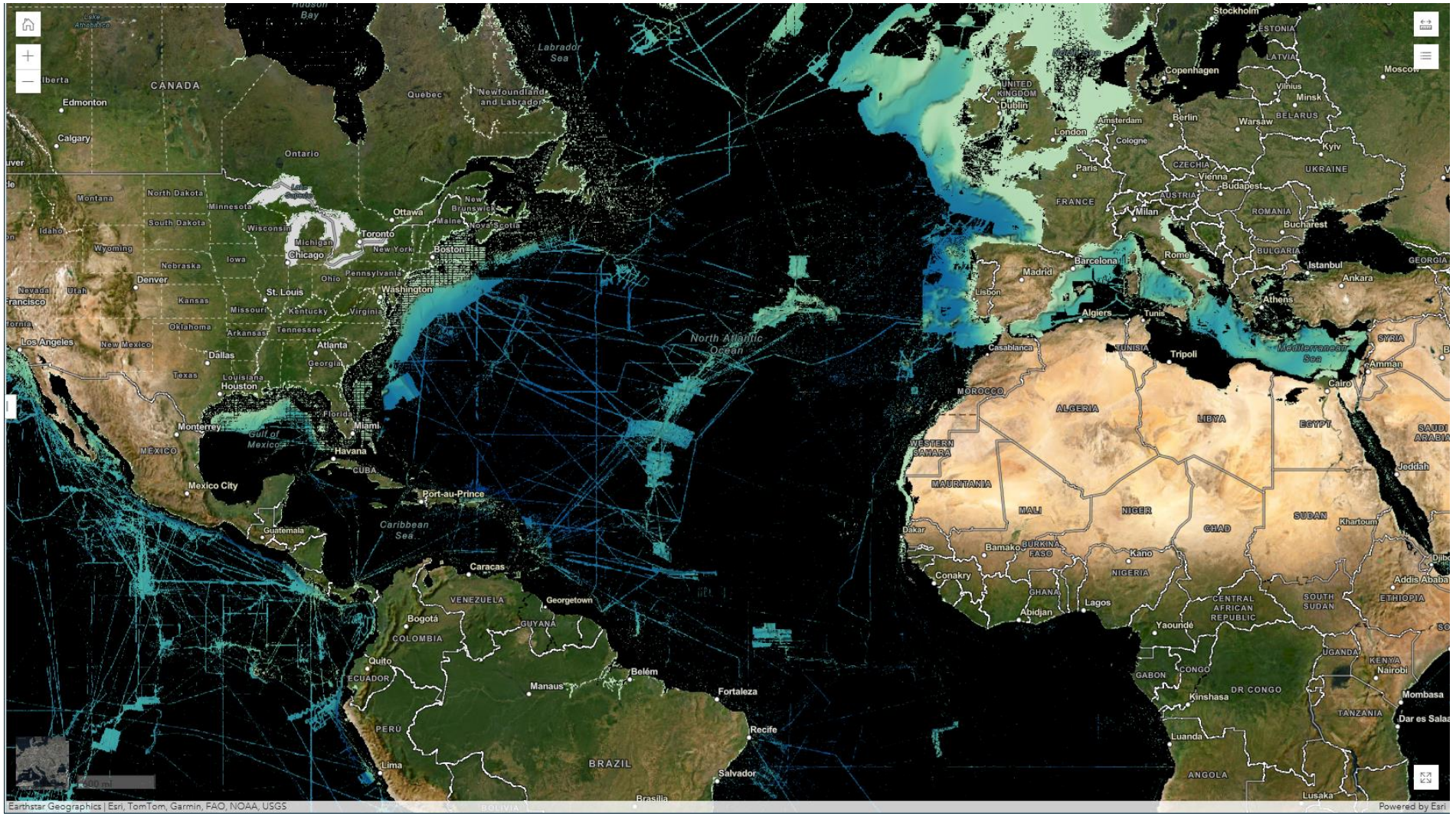
Regional approach

Regional centers (RDACCs)
Global center (GDACC)

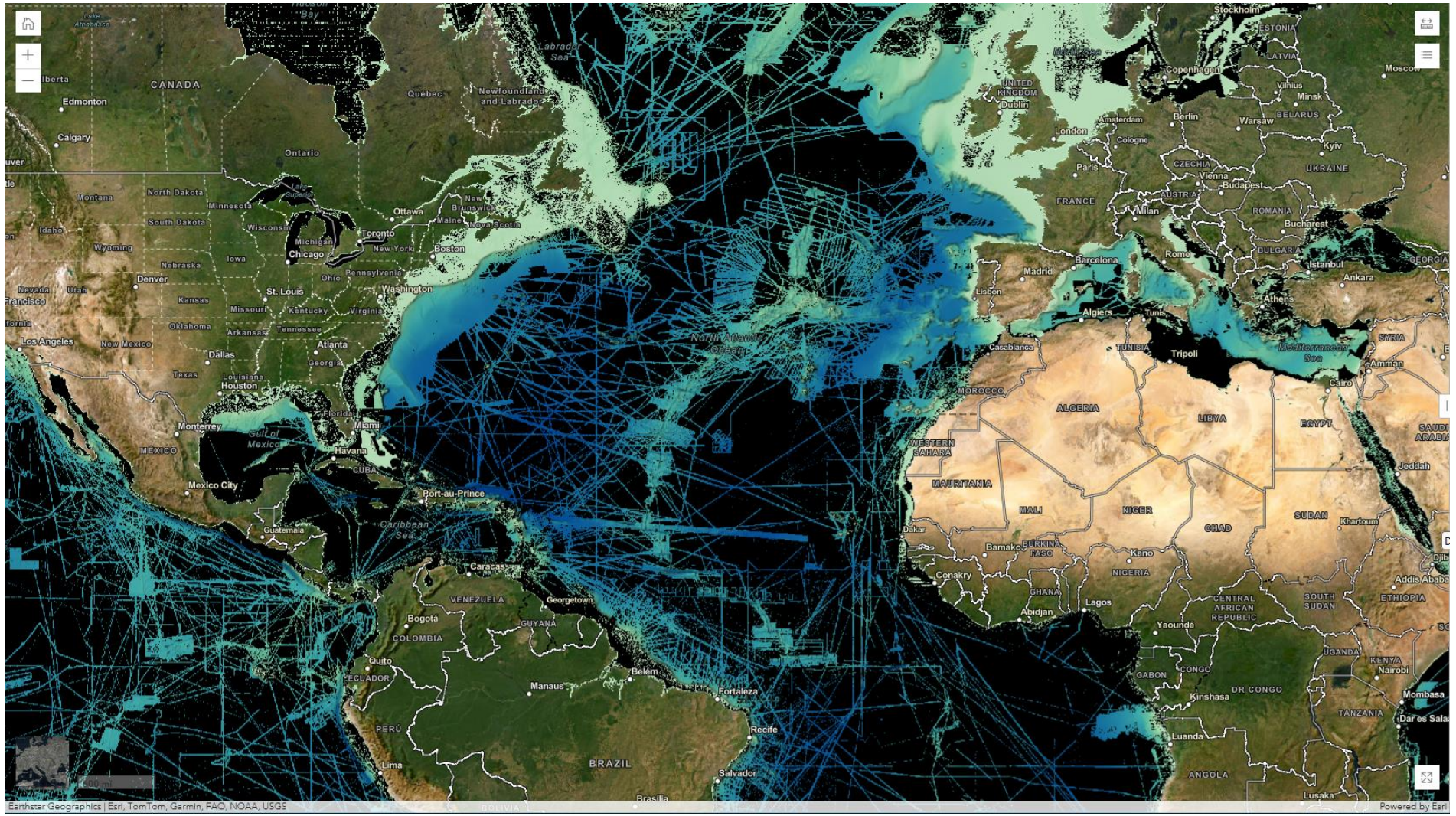
What mapped means – resolutions

Access the GEBCO grid

2014 - How much of the EAtHC is mapped?



2023 - How much of the EAtHC is mapped?



How to contribute

Identify Sources

With Data

With Data

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Agenda

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3 **Actions List**

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Eastern Atlantic Hydrographic Commission MSDI WG

Actions List

Action Item	Description			
(MSDI) 16-01	Review the procedures for the transmission of survey data, in order to make sure that all relevant national organisations can access the survey data covering their national waters.	All coastal States	Permanent	In progress
(MSDI) 16-02	EAtHC members are invited to identify further potential sources of bathymetric measurements and survey data providers to facilitate the further completion of the Data Center for Digital Bathymetry (DCDB) data holdings and General Bathymetric Chart of the Oceans (GEBCO).	EAtHC Members	Permanet	In progress
(MSDI) 16-05	Propose the terms of reference (ToR) and rules of procedure (RoP) of the EAtHC MSDI WG.	MSDIWG Chair	EAtHC18	Completed
(MSDI) 16-07	Build an inventory (with links) of existing MSDI in the EAtHC region.	MSDIWG Chair & Coastal States	EAtHC18	That info is published in IHO website
(MSDI) 16-08	Create a list of common/base layers to the MSDI projects (bathymetry, shoreline, maritime boundaries, etc.)	MSDIWG Chair & Coastal States	EAtHC18	Fusion with 17-02 (web app)

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Eastern Atlantic Hydrographic Commission MSDI WG

Actions List

Action Item	Description			
(MSDI) 17-01	Support the Crowdsourced Bathymetry (CSB) initiative with positive actions, such as requiring all research vessels, when on passage or when it does not interfere with other research activities, to collect bathymetric data for later uploading.	All coastal States	Permanent	In progress
(MSDI) 17-02	Maintain a web map application to use as testbed by EAtHC MSDI WG members and to publish and share hydrographic data.	EAtHC MSDIWG	EAtHC19	In progress
(MSDI) 17-03	Encourage all coastal states to respond to CSB questionnaire (IHO CL 21/2020, IRCC CL 1/2020) and, if possible, offer a positive response, even if qualified, to enable provision of CSB data into the public domain collected from ships within waters subject to their national jurisdiction.	IHO Member States	Permanent	In progress
(MSDI) 17-04	Plan a workshop on how to build a MSDI (geospatial data, spatial databases, web services, etc.)	MSDIWG Chair	EAtHC18	In progress 7th May, 2024
(MSDI) 17-05	Propose a measuring process for SPI 1.2.2 and SPI 2.2.1	EAtHC MSDIWG	EAtHC18	Dormant
(MSDI) 17-06	MSDIWG shall plan a table top exercise and submit it to the Chair.	EAtHC MSDIWG	EAtHC18	In progress

Actions requested from EAtHC

➥ **EAtHC is invited to:**

1. Take note of the presentation.
2. Improve engagement of EAtHC MSDI WG members.
3. Discuss any item with relevance to MSDI and take appropriate actions.
4. Join CSBWG & Answer to CL 11/2019.
5. Support (sharing data) with SEABED 2030 project / DCDB

Thank you for your attention