

**14th Meeting of the
East Asia Hydrographic Commission (EAHC)
Tokyo, Japan 27- 28 September 2022**

IHO Secretariat's Report

**Dr Mathias Jonas
Secretary-General**



IHO

International
Hydrographic
Organization

East Asia Hydrographic Commission

Main topics of IHO Secretariat's report presentation

- **Outcome of Council 5 affecting EAHC**
- **Ocean mapping initiatives**
- **IMO NCSR9 Decisions relevant for EAHC**
- **Consequences on IMO Decisions specific for ECDIS**
- **IHO Secretariat's activities in support of Goal 3**
- **Preparations of the Forthcoming 6th Council and 3rd Assembly**



IHO

International
Hydrographic
Organization

13/09/2022

Outcome of Council 5 affecting EAHC

C5/41 The Council agreed to the SPI metrics as proposed by HSSC and tasked HSSC to provide tentative values and comments to the Council Chair for the preparation of the Annual Report (section Implementation of the Strategic Plan).



<https://iho.int/uploads/user/Services%20and%20Standards/HSSC/HSSC14/Annex B IHO Annual Report 2021 StrategicPlanReportPerformanceIndicators.pdf>



IHO

International
Hydrographic
Organization

13/09/2022

Dashboard SPI under HSSC

Goal 1 : Evolving the hydrographic support for safety and efficiency of maritime navigation

1.1 DELIVER STANDARDS FOR HYDROGRAPHIC DATA AND SPECIFICATIONS OF HYDROGRAPHIC PRODUCTS

1.1.1 Member States produce & deliver products based on S-100

Target

2026 : 60% of MS distribute at least 1 product*

Value
31/12/2021

0% of MS distribute official products
Several MS distribute S-102 & S-111 compliant with current editions of PS

1.1.2 Number of hydrographic data products and services based on S-100

2026 : 10** Product Specifications are operational (Edition 2.0.0)

0/10
S-100 Edition 2.0.0 approved at HSSC 14

1.2 DEVELOP STANDARDS & SPECIFICATIONS

1.2.1 Percentage of Hydrographic data product and services based on S-100

2026 : 100% of PS** includes cyber security and data quality assessment

0%
No PS in Edition 2.0.0

* Based on that 62 of 94 IHO MS produce S-57 ENC's (March 2021)

** S-101, S-102, S-104, S-111, S-122, S-124, S-127, S-128, S-129, S-131

Goal 2 : Increasing the use of hydrographic data for the benefit of society

2.2 PROMOTE NEW TOOLS AND METHODS

2.2.2 Number of new applications of the new version of Standards for Hydrographic Surveyx (S-44)

Number of downloads of S-44 Edition 6.0.0 and following ones

59



IHO

International
Hydrographic
Organization

Outcome of Council 5 affecting IRCC for SPI (1)

SPI 1.2.2

Percentage of navigationally significant areas (...) for which the adequacy of the hydrographic knowledge is assessed through the use of appropriate quality indicators.

- Navigationally significant areas: areas covered by Usage Bands 3 to 5
- Appropriate quality indicator: Percentage of the area, where CATZOC is other than U (Unassessed).
- The calculation is being done by IHO Secretariat regularly.
- Target for 2026: 100%

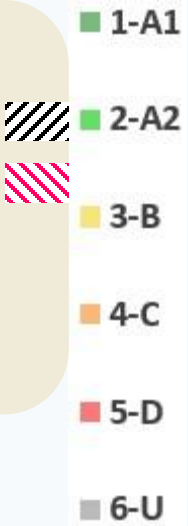


IHO

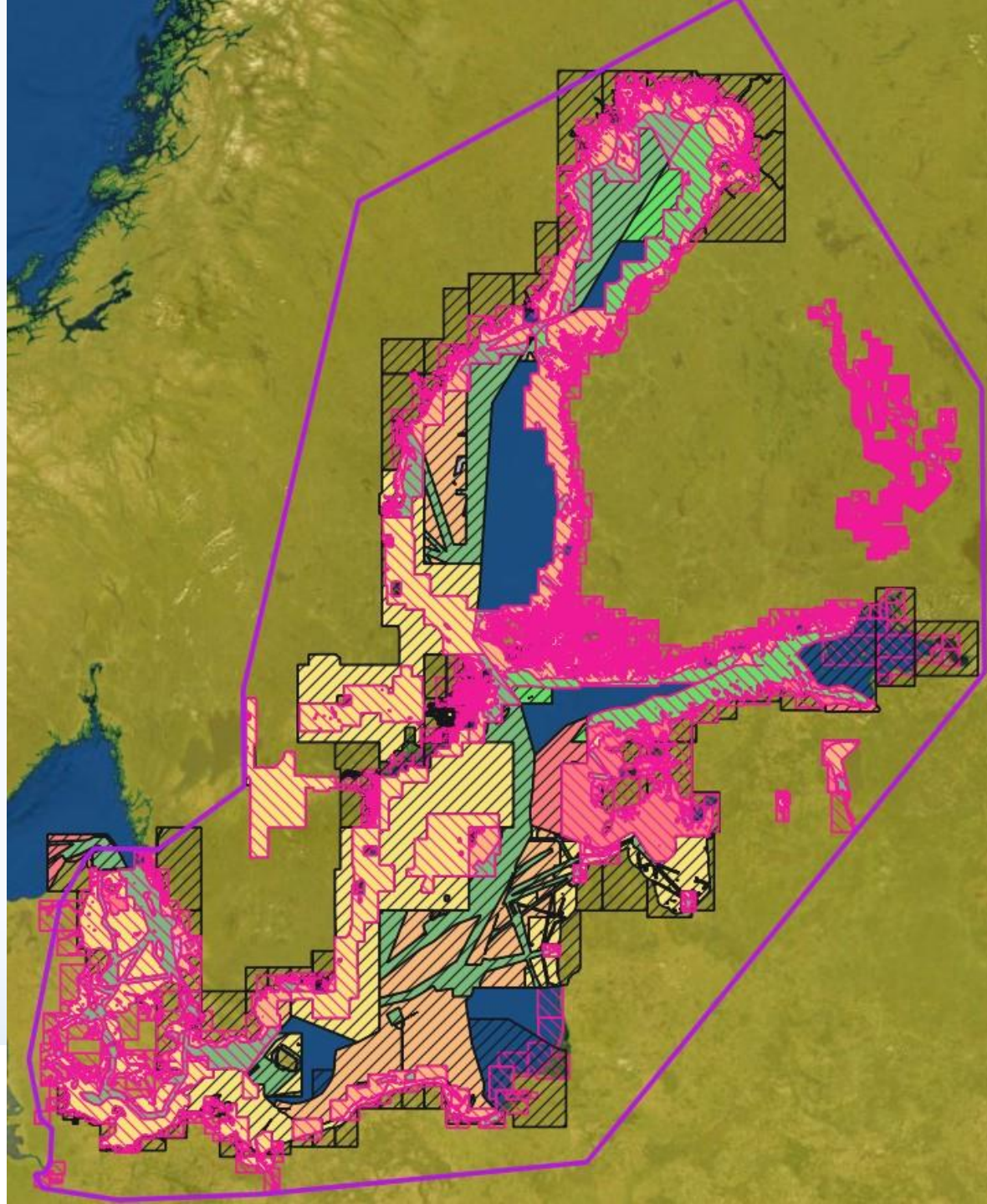
International
Hydrographic
Organization

13/09/2022

**UB3
+UB4
Coverage**



Region: Baltic Sea



SPI 1.2.2 Region E

Sources :
IC-ENC & PRIMAR files
August 2022



IHO

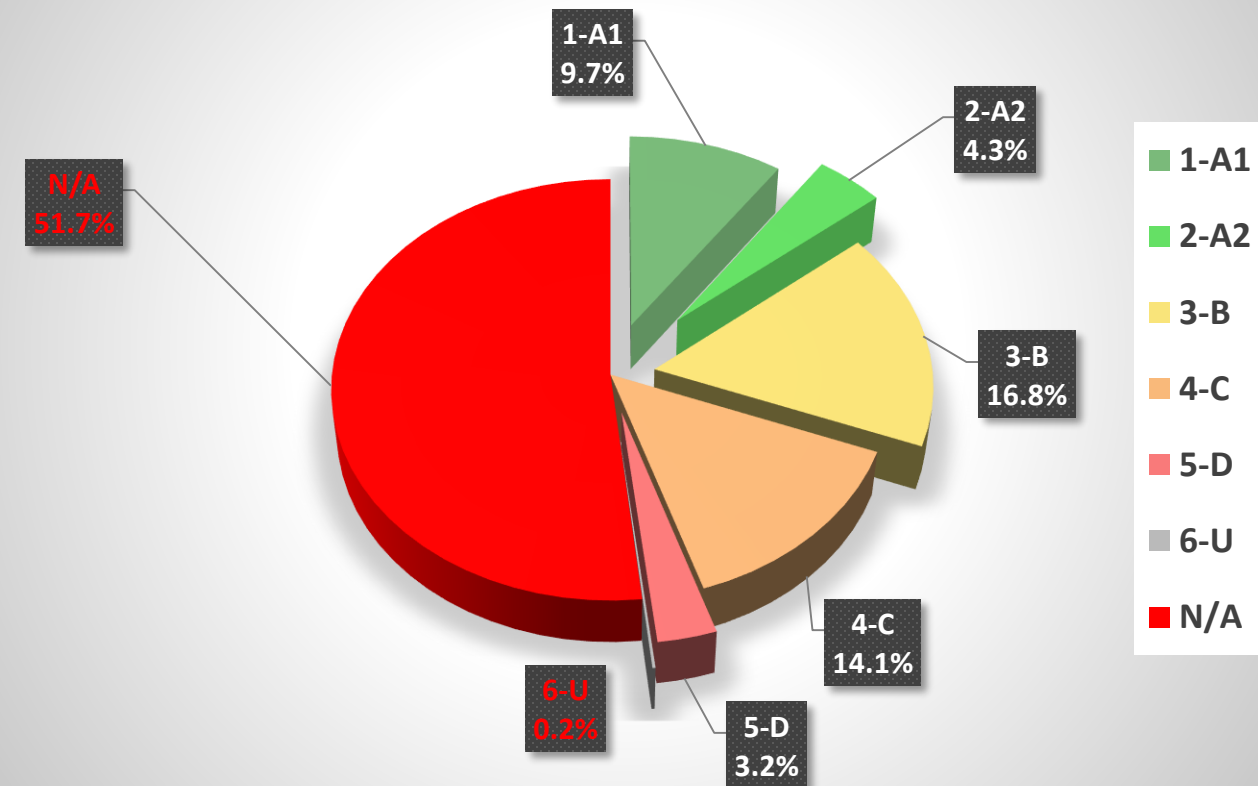
International
Hydrographic
Organization

BSHC - E											
% Surface	UB	CATZOC								UB	
		1-A1	2-A2	3-B	4-C	5-D	6-U	Total	N/A		
CATZOC / ENC	3	9,9%	1,1%	14,1%	8,7%	1,7%	0,1%	35,6%	64,4%	3	
	4	9,4%	8,8%	20,7%	20,8%	5,5%	0,3%	65,4%	34,6%	4	
August 2022	5	11,4%	5,0%	16,6%	25,8%	0,0%	0,2%	59,0%	41,0%	5	
	Total	9,7%	4,3%	16,8%	14,1%	3,2%	0,2%	48,3%	51,7%		
SPI 1.2.2		48,1%									

SPI 1.2.2 : Percentage of navigationally significant areas (e.g. charted traffic separation schemes, anchorages and channels) for which the adequacy of the hydrographic knowledge is assessed through the use of appropriate quality indicators.

(CL23/2022)

Total CATZOC



SPI 1.2.2 Region E

**Sources :
IC-ENC & PRIMAR files
August 2022**

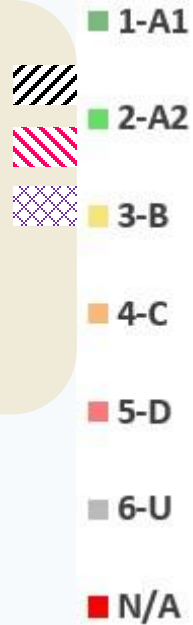


IHO

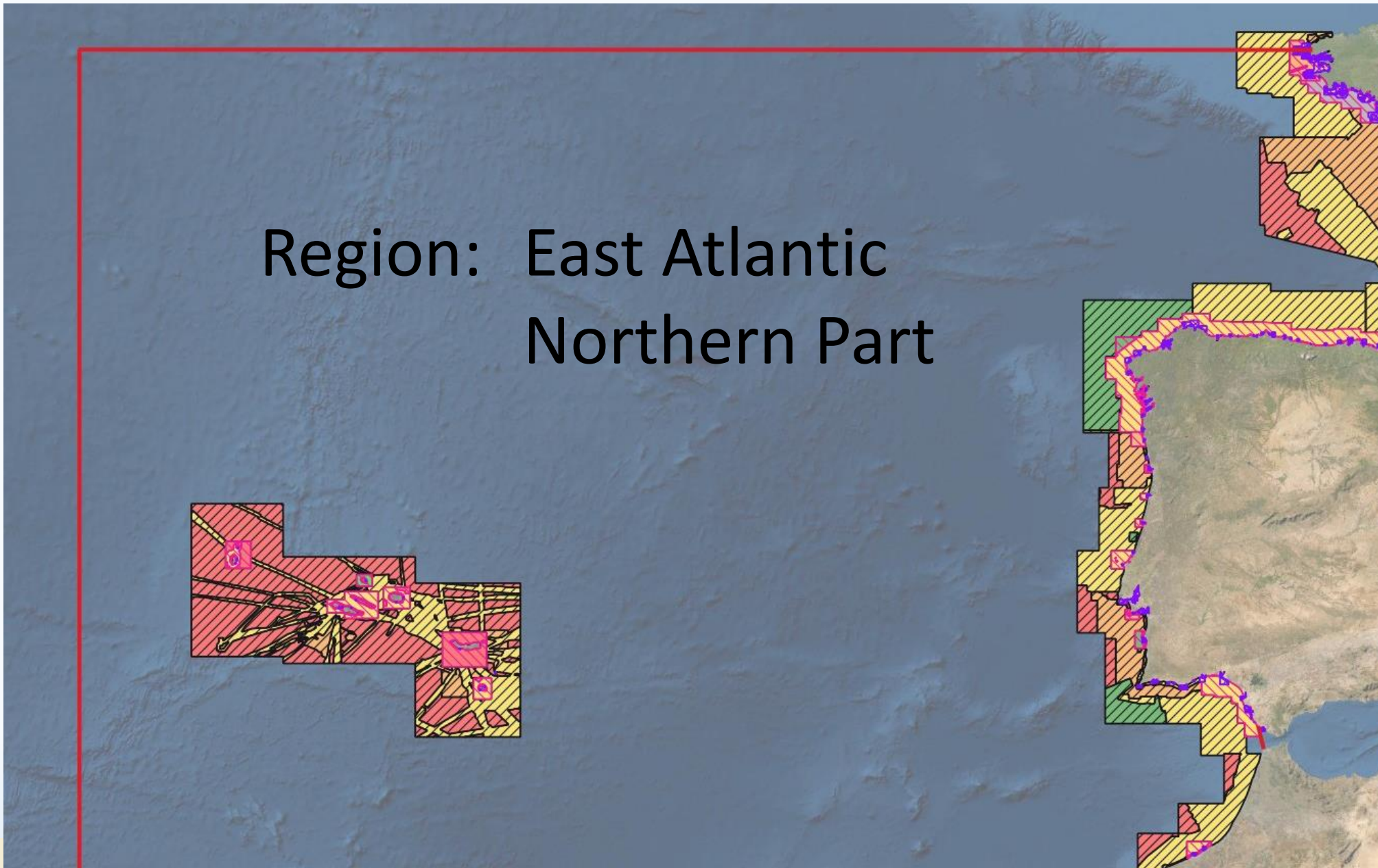
International
Hydrographic
Organization

**UB3
+UB4
+UB5**

Coverage



Region: East Atlantic Northern Part



SPI 1.2.2 Region G

Sources :
IC-ENC & PRIMAR files
August 2022



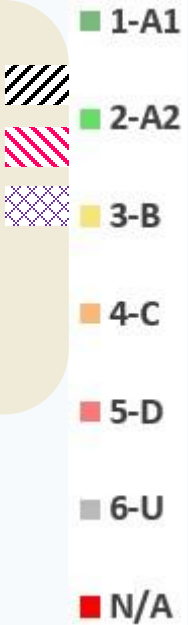
IHO

International
Hydrographic
Organization

13/09/2022

UB3
+UB4
+UB5

Coverage



SPI 1.2.2 Region G

Sources :
IC-ENC & PRIMAR files
August 2022



IHO

International
Hydrographic
Organization

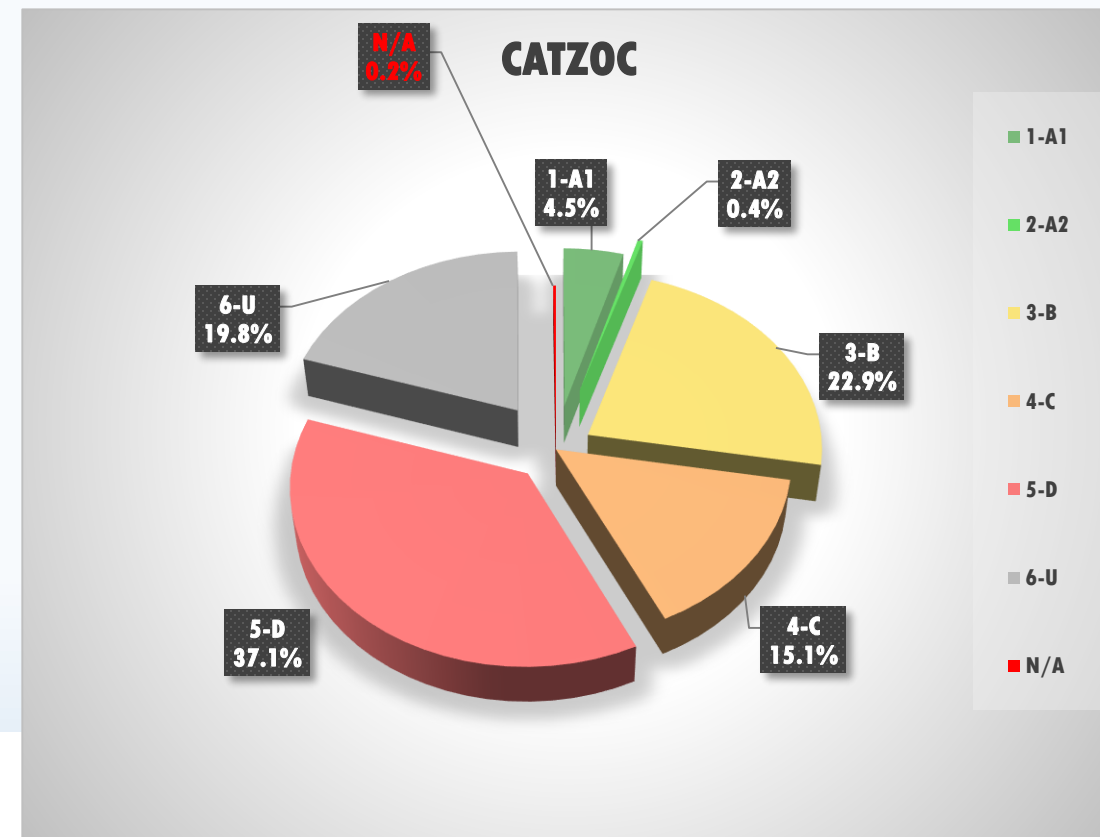
Region: East Atlantic
Southern Part



EA1HC – G										
	UB	CATZOC								UB
		1-A1	2-A2	3-B	4-C	5-D	6-U	Total	N/A	
% Surface	3	3,7%	0,3%	20,4%	15,0%	39,6%	20,7%	99,8%	0,2%	3
CATZOC / ENC	4	11,5%	0,6%	44,9%	13,3%	16,9%	12,5%	99,7%	0,3%	4
August 2022	5	8,3%	2,1%	33,8%	36,2%	8,0%	9,5%	97,9%	2,1%	5
	Total (UB3+4+5)	4,5%	0,4%	22,9%	15,1%	37,1%	19,8%	99,8%	0,2%	Total (UB3+4+5)

SPI 1.2.2 : Percentage of navigationally significant areas (e.g. charted traffic separation schemes, anchorages and channels) for which the adequacy of the hydrographic knowledge is assessed through the use of appropriate quality indicators.

(CL23/2022)



SPI 1.2.2 Region G

Sources :
IC-ENC & PRIMAR files
August 2022



IHO

International
Hydrographic
Organization

13/09/2022

country_code	country_name
OM	Oman
TO	The Kingdom of Tonga
NU	Niue
PG	Papua New Guinea
V1	Vietnam
TK	Tokelau
WS	Samoa
NG	Nigeria
EG	Egypt
CA	Canada
UK	United Kingdom(International)
CK	Cook Islands
SE	Sweden
ME	Montenegro
BR	Brazil
PL	Poland
NO	Norway
PA	Panama
SI	SLOVENIA
UY	Uruguay
PT	Portugal
PK	Pakistan
NL	Netherlands
MX	Mexico
IS	Iceland
ES	Spain
DK	Denmark
DE	Germany
BH	Bahrain
BE	Belgium
LV	Latvia
PE	Peru
AU	Australia
RO	Romania

AR	Argentina
CU	Cuba
EC	Ecuador
B1	Belgia
GR	Greece 2
SR	Suriname
CL	Chile
ZA	South Africa
TR	Turkey
FR	France
FI	Finland
EE	Estonia
C2	Hong Kong(PRD)
C3	China(PRD)
CN	China (SCC)
1U	Taiwan
CN	China (PRD)
VE	Venezuela
GR	Greece
CO	Colombia
US	USA
NZ	New Zealand
RU	Russia (East coast)
IT	Italy
PH	Philippines
AL	Albania
HR	Croatia
SB	Solomon Islands
VN	Vietnam
GB	United Kingdom(Domestic)

The IHO Secretariat does not have access to all national ENC catalogues for the region and is therefore unable to produce the assessment according to the proposed SPI measurement and similar to other regions



IHO

International
Hydrographic
Organization

13/09/2022

Outcome of Council 5 affecting IRCC for SPI (2)

SPI 2.2.1

Percentage of adequately surveyed area per coastal state

- Use C-55 and additional GEBCO/Seabed2030 information,
- IHO Secretariat to derive figures from C-55 for “adequately surveyed”, per coastal state regularly. For the coastal state with more than one region in C-55, the value will be defined by the weighted average of the regions based on the areas.
- The results are in % per coastal state.
- To report the figures, a strategic overview based on percentage intervals will be applied.
- GEBCO GC to provide an additional figure for each RHC on the Seabed2030 information.



IHO

International
Hydrographic
Organization

13/09/2022

GEBCO: IHO/IOC eternal Ocean mapping programme

UN Oceans Conference Lisbon June 2022:

**GEBCO / Seabed2030 announced that now
23,4% of the world ocean are adequately
mapped!**

**... more is required to complete our image
of the marine territories.**



IHO

International
Hydrographic
Organization

13/09/2022

Ocean mapping through citizen science: Crowd sourced bathymetry

IHO CL 01/2020 & IRCC CL 21/2020

- All coastal States are requested to indicate their position on the **provision of CSB data** from ships within waters subject to their jurisdiction into the public domain
- To date, 32 coastal States (**green**) have replied*



IHO

International
Hydrographic
Organization

13/09/2022



IHO

CL Questionnaire asks:

International Hydrographic Organization

- Do you support or object to the CSB data provision for depth measurements from the internal waters, territorial sea, or EEZ of your country?
- Do you wish to be informed when such information is received by the IHO DCDB?
- Do you wish to review such information before its ingestion into the IHO DCDB?
- Do you wish for the opportunity to put caveats on the further dissemination of such data?

iho.int/uploads/user/Inter-Regional%20Coordination/CSBWG/MISC/B-12_2020_EN_Acceptance_of_CSB_Data_in_NWJ_v3.0.pdf

Enclosure to IHO CL 21/2020
IHO File S3/2649

CROWDSOURCED BATHYMETRY DATA PROVISION – COASTAL STATE POSITION FOR WATERS SUBJECT TO THEIR NATIONAL JURISDICTION

TEMPLATE FORM

(to be returned to the IHO Secretariat **no later than 4 September 2020**)

E-mail: cl-lc@iho.int - Fax: +377 93 10 81 40)

IHO clarification on Crowdsourced Bathymetry Activity

For the purpose of this Circular Letter, the following terms have the specified meanings:

Bathymetry is the determination of ocean, coastal, and inland water depths. The general configuration of sea floor as determined by profile analysis of depth data.

Crowdsourcing is a process by which people and/or groups voluntarily submit observations, data, or information to accomplish a task or goal.

Crowdsourced bathymetry is defined by the IHO as the collection of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.

Crowdsourced bathymetry data provision is the transmission to the IHO Data Centre for Digital Bathymetry for ingestion, aggregation, categorization, and public dissemination of depth measurements made by vessels, using standard navigation instruments, while engaged in routine maritime operations.

IHO Data Centre for Digital Bathymetry (DCDB) was established in 1990 to steward the worldwide repository of bathymetric data. The Centre archives and shares, freely and without restrictions, depth data contributed by mariners. The IHO DCDB is an IHO resource that is hosted by the U.S. National Oceanic and Atmospheric Administration (NOAA) on behalf of IHO Member States.

Internal Waters, Territorial Sea, and Exclusive Economic Zone have the same meanings as are given those terms under the 1982 UN Convention on the Law of the Sea.

Questions:

- 1) Do you support or object to the crowdsourced bathymetry data provision for depth measurements from the internal waters of your country?

SUPPORT

OBJECT

CAVEAT:

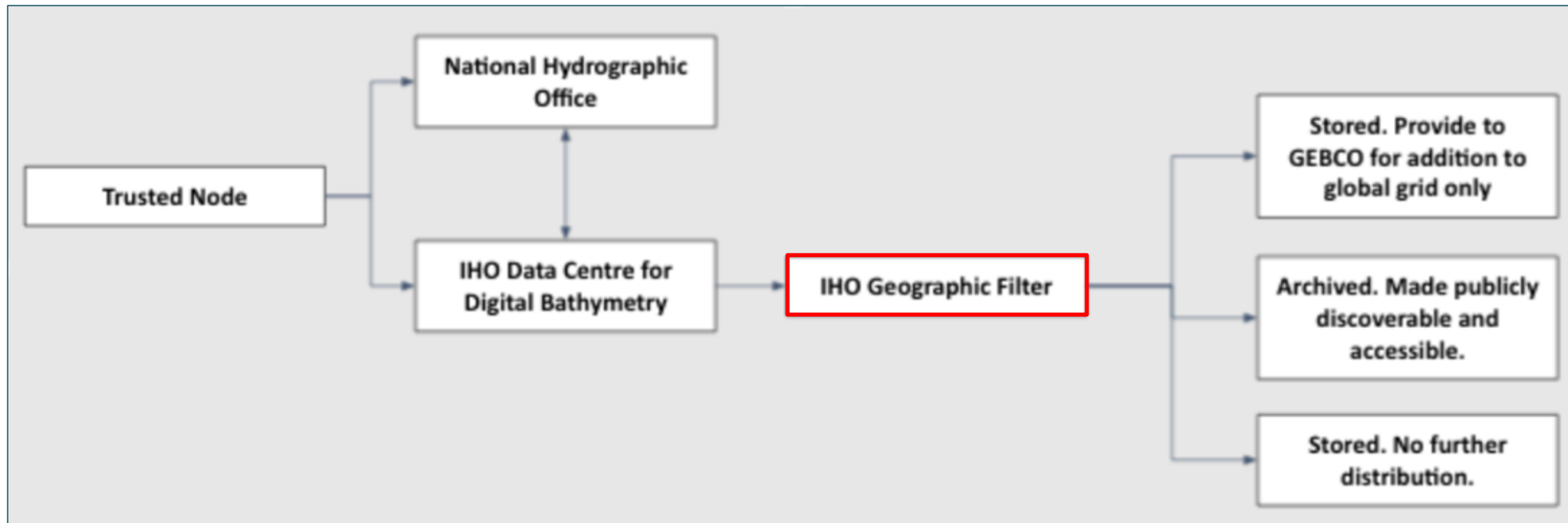


IHO

Geographic Filter

International
Hydrographic
Organization

In response to feedback provided to the IHO, the DCDB implemented (and continues to update) a geographic filter for incoming data to take into account coastal countries' positions on the distribution of CSB collected in their areas of jurisdiction.





IHO

Geographic Filter

International Hydrographic Organization

The DCDB is currently working to automate the notification and approval process of data for coastal states who have provided positive responses but request pre-approval of data before the public distribution from DCDB.

The screenshot shows the DCDB Geographic Filter interface. At the top, there are navigation links for 'Home' and 'Manage', and a user profile for 'Chris Slater' with a 'Log Out' button. The main area is divided into a search panel on the left and a map on the right. The search panel has a search bar and a 'Search' button. The map shows a globe with a green box highlighting a region in the Atlantic. A modal window is open over the map, displaying details for the 'French Exclusive Economic Zone'.

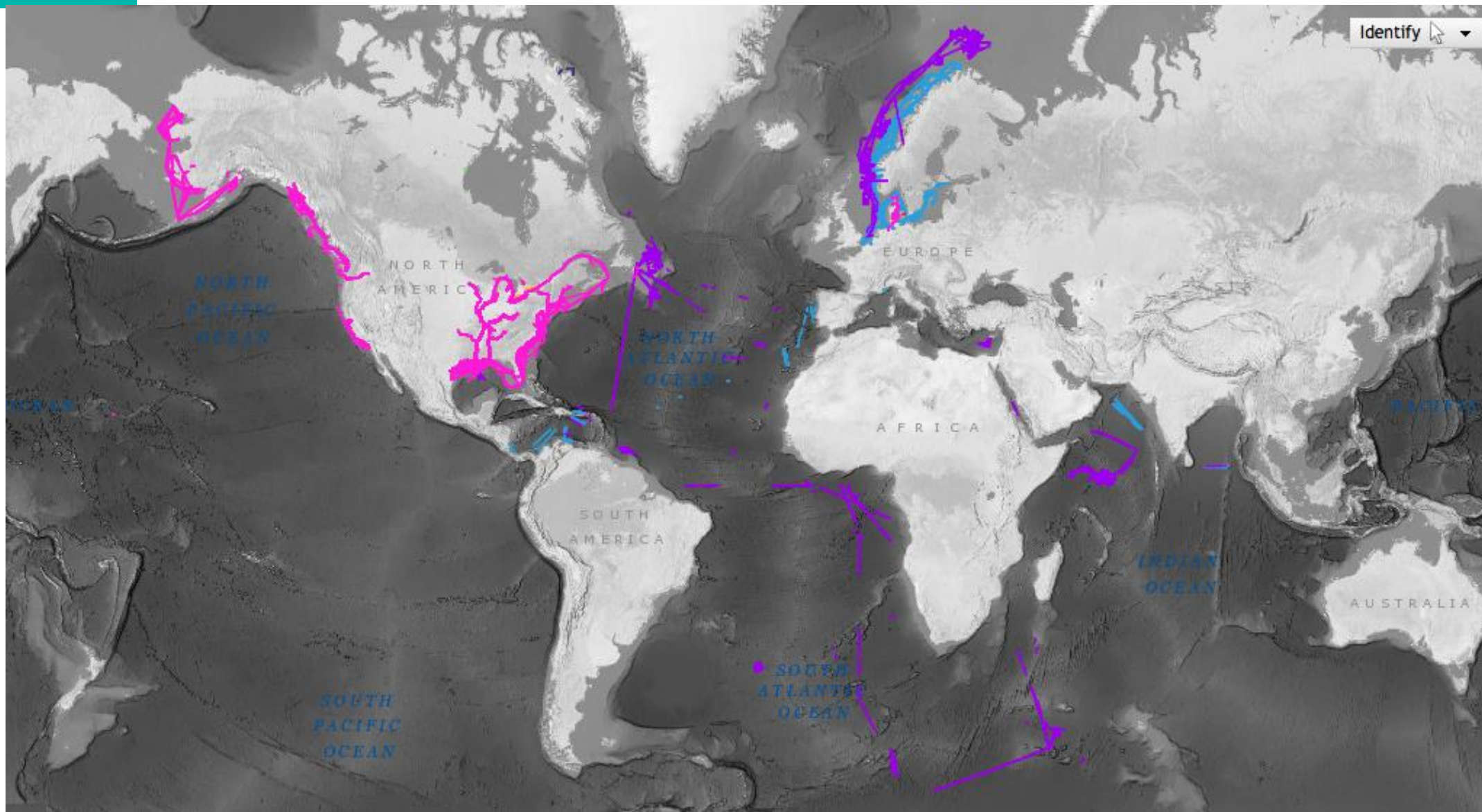
Trace Id	Publish	External Id	Provider	Platform	Instrument	Start Time	End Time	File Name	File Size	Last Updated
000033e4-759c-4591-af98-04c29f6b967b	true Change	MACGR-9221566-AIDAAURA-oyHjp011	MacGregor	Anonymous		2020-03-28T03:08:33Z	2020-03-28T03:10:16Z	20220322085844674039_9221566-AIDAAURA-oyHjp011.tar.gz	965	2022-03-28T21:17:48.738516Z
000042ca-d435-4d84-aaa4-ec04163d4dc2	true Change	MACGR-9221566-AIDAAURA-oyHjp011	MacGregor	Anonymous		2020-04-29T03:00:32Z	2020-04-29T03:02:36Z	20220322083434750180_9221566-AIDAAURA-oyHjp011.tar.gz	798	2022-03-28T15:16:03.354039Z



IHO

CSB Data Holdings

International
Hydrographic
Organization

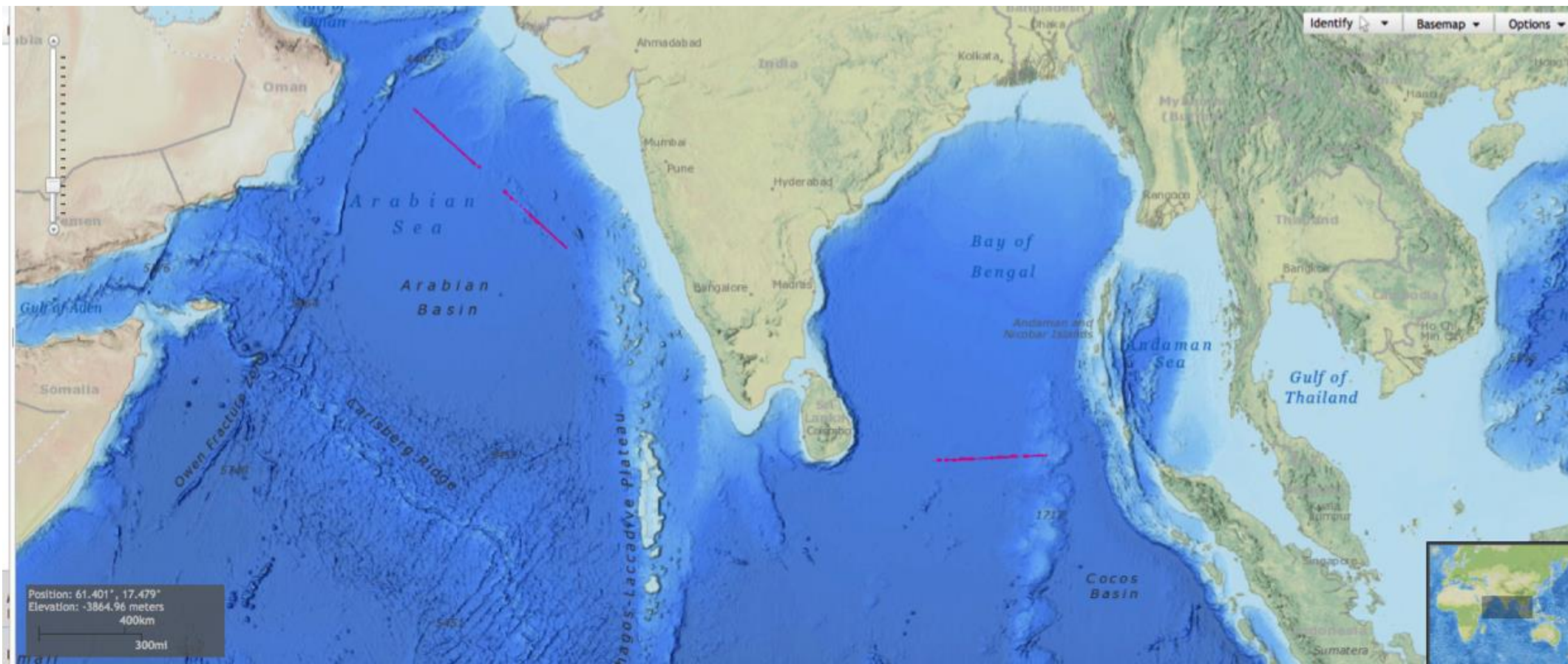




IHO

CSB Data Holdings

International
Hydrographic
Organization

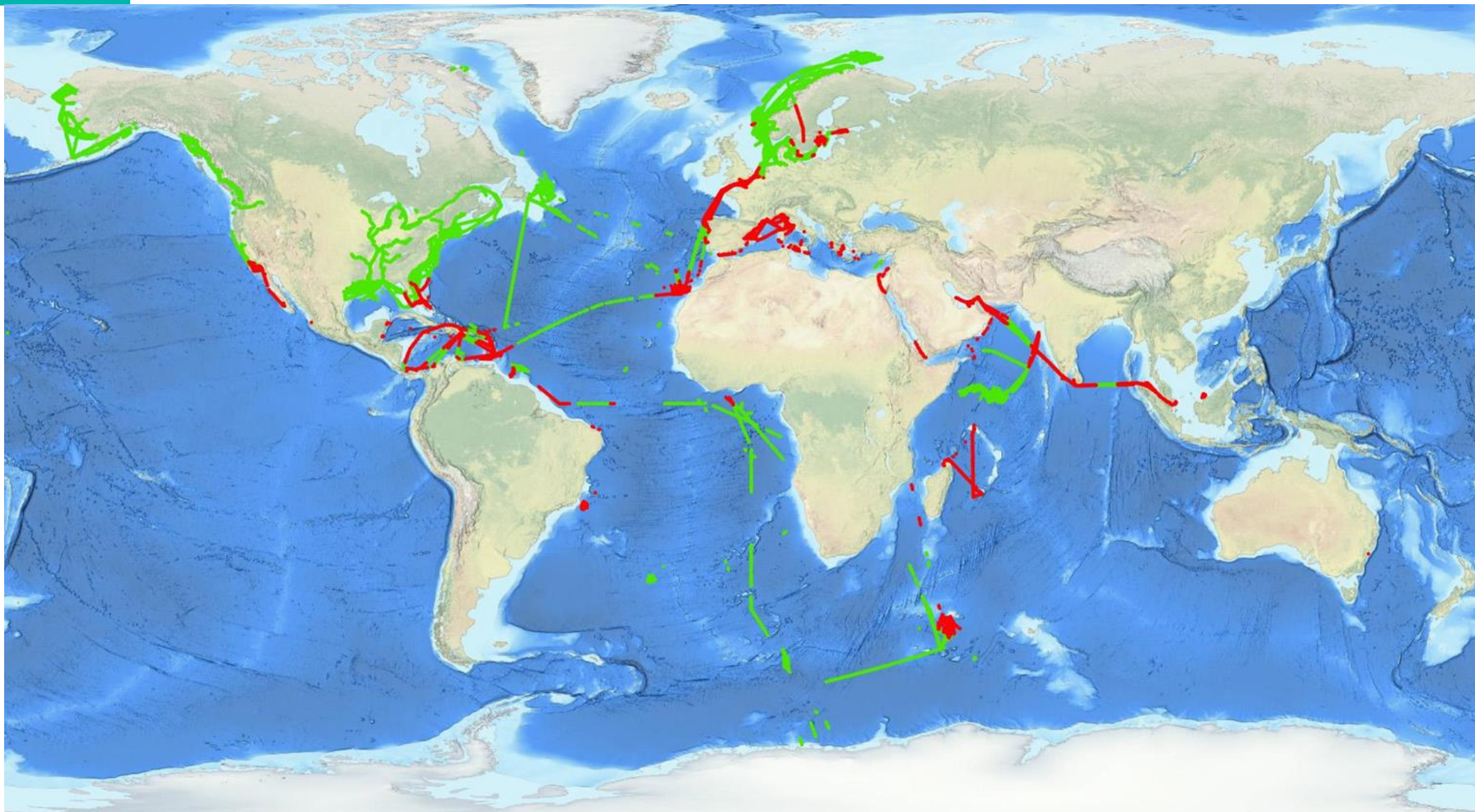




IHO

CSB Data Holdings

International
Hydrographic
Organization



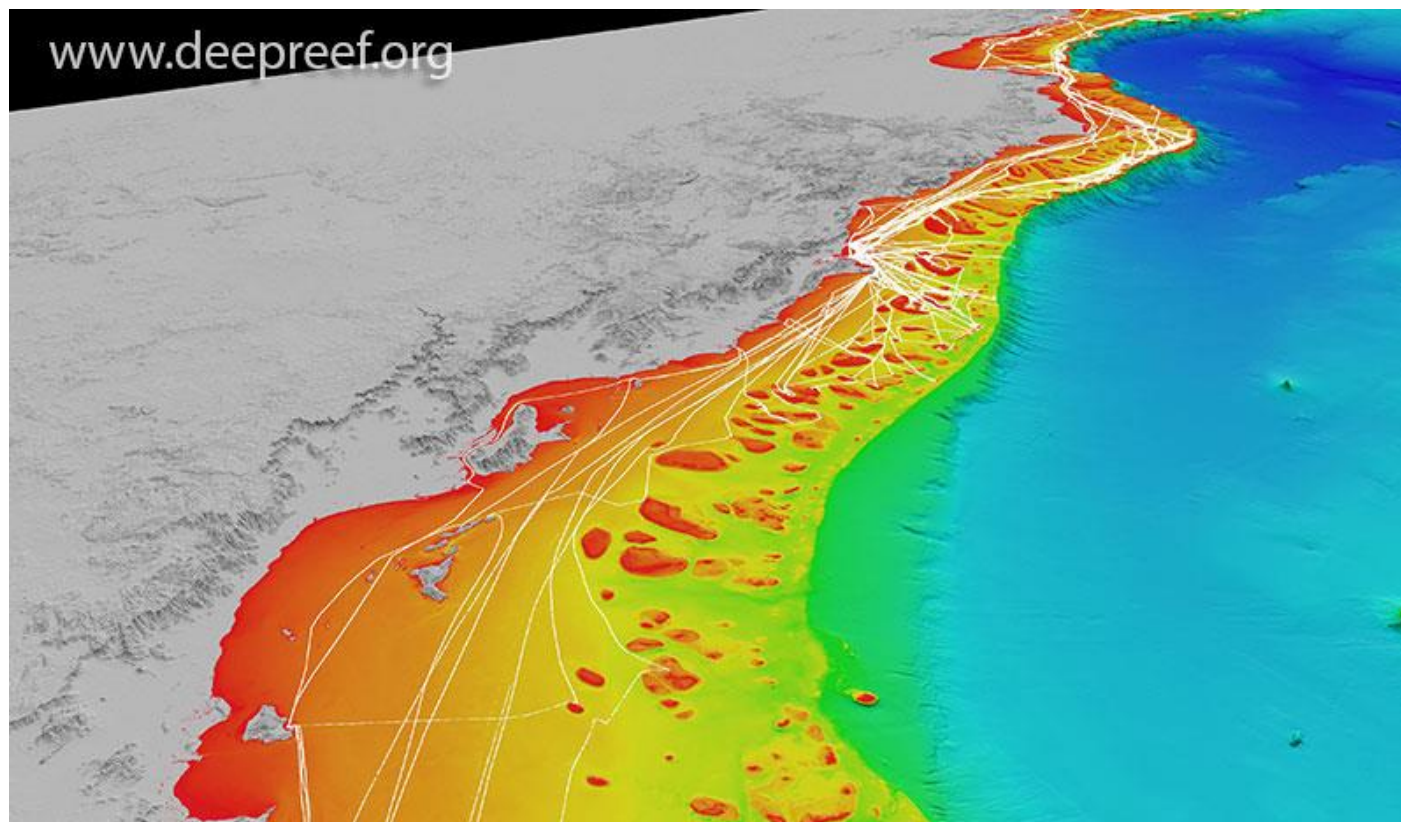


IHO

The Value of CSB Data

International
Hydrographic
Organization

- Data with scientific, commercial & research value at no cost to the public sector
- Fill gaps where data is scarce (eg: Arctic, SIDS)
- Useful along shallow, complex coastlines
- Identify uncharted features
- Assist in verifying charted information
- Confirm whether charts are appropriate for the latest traffic patterns.



3D view of northern Great Barrier Reef showing all vessel tracks as of December 2019

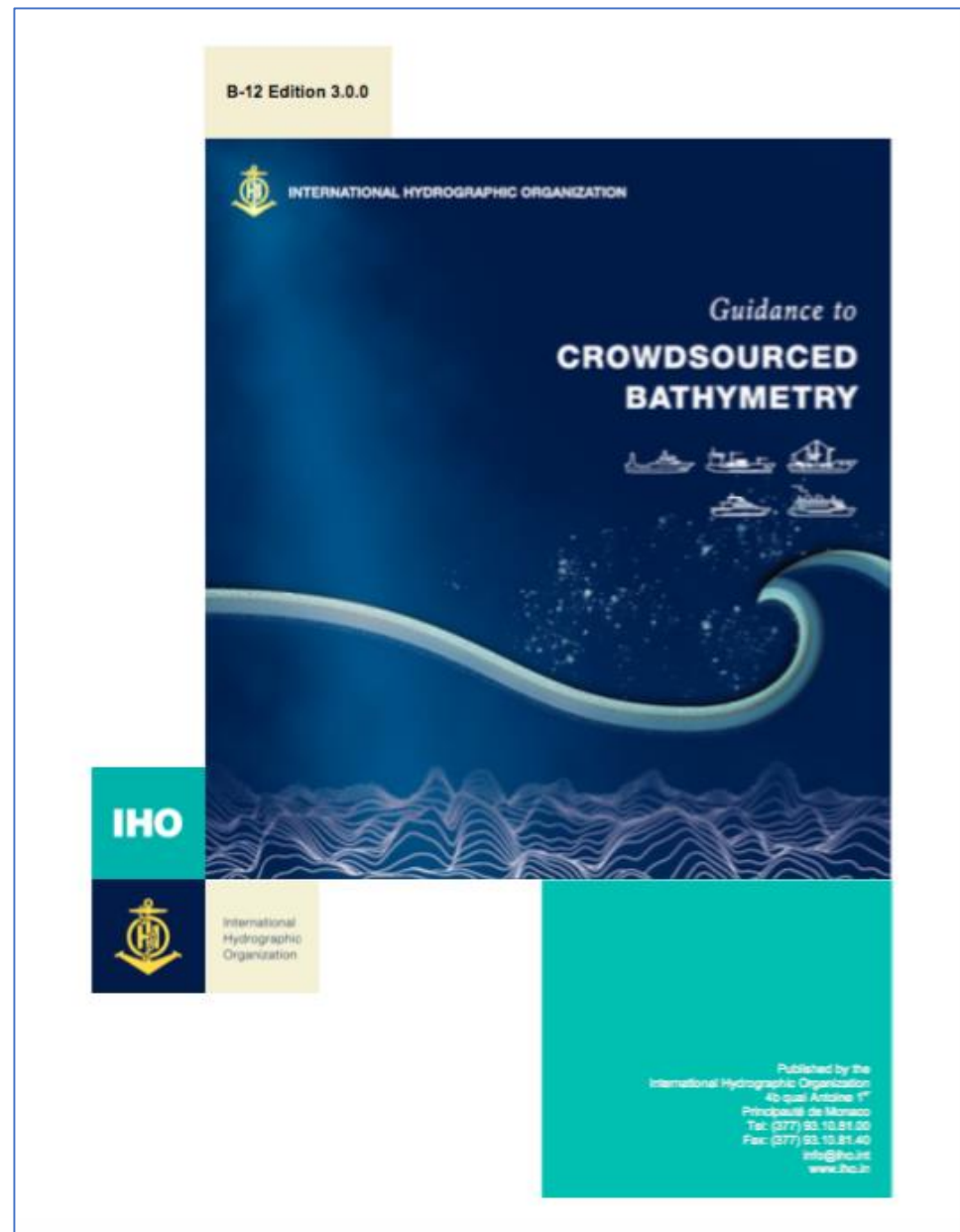


IHO

How to Collect & Contribute CSB Data

International
Hydrographic
Organization

- The DCDB accepts CSB contributions through a network of **"Trusted Nodes"**
 - Eg: 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, and 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).





IHO

Current CSB Trusted Nodes

Rose Point Navigation System

- Mariners can enable their electronic charting system log file to record *position, depth, and time.*



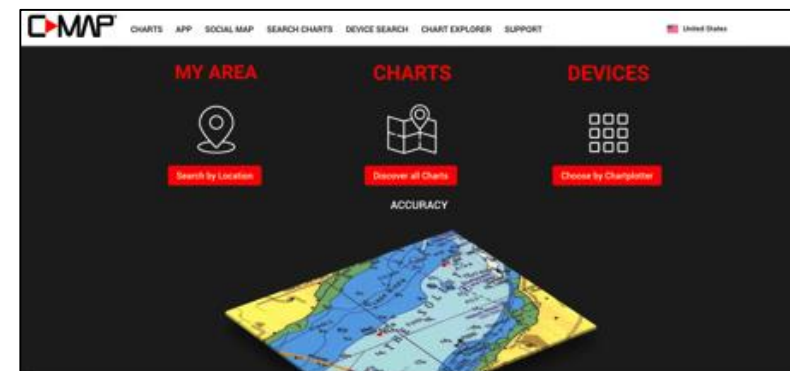
www.rosepointnav.com



Voyage
Data
Recorder

Navico C-MAP

- New CSB feed b/w DCDB & navigation software company.



MacGregor/Carnival Cruise Line

- Data provided by Voyage Data Recorders (VDR)



Petroleum Geo-Services (PGS)

- Data feed from PGS vessels to the DCDB

M2Ocean

- Testing data submissions with data collected by Hydroballs (small autonomous bathymetric buoys)



James Cook University

- Distributed data loggers to volunteer vessels along the Great Barrier Reef



SmartLog USB
data logger



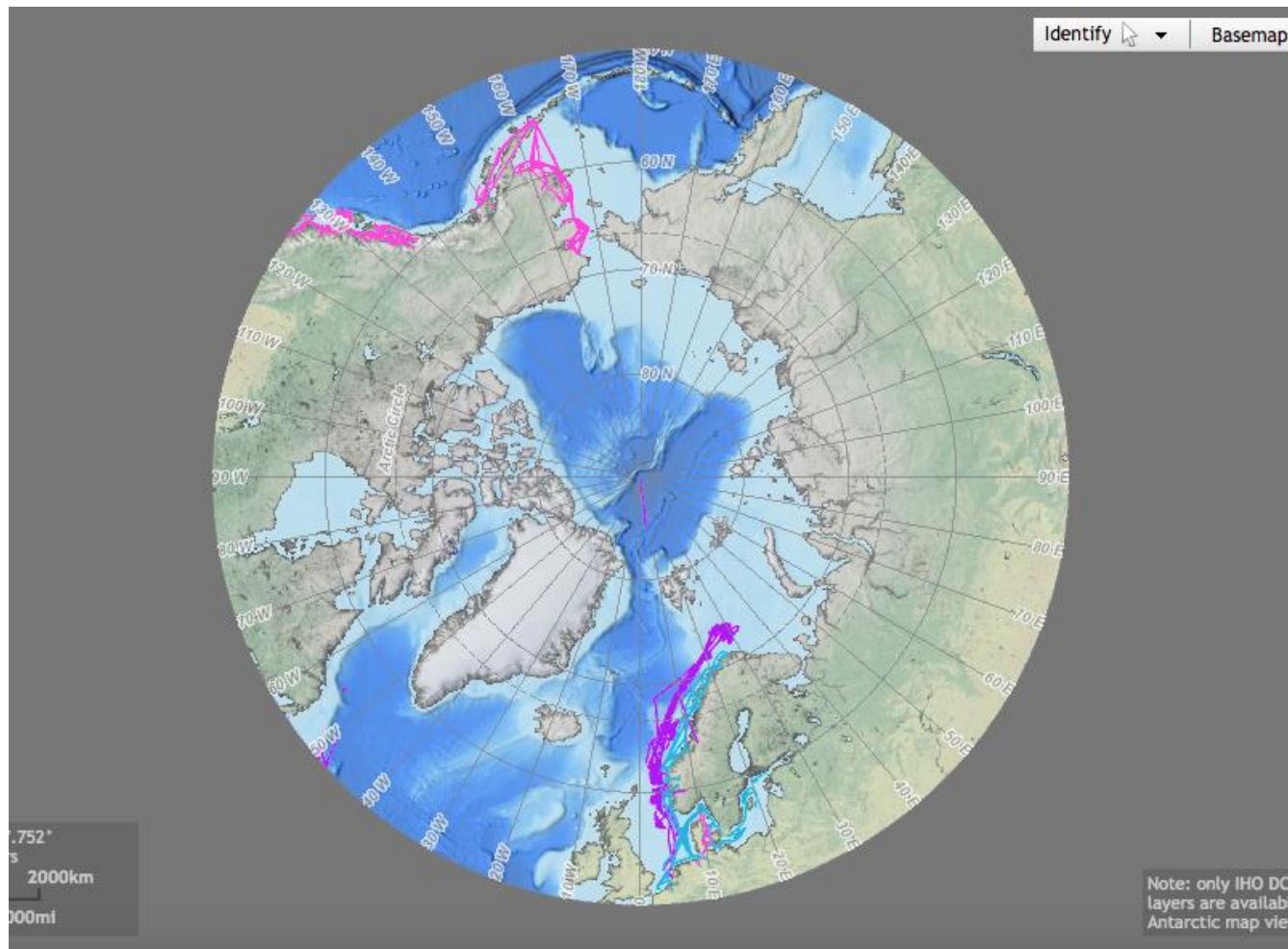


IHO

How can your HO become involved?

International
Hydrographic
Organization

- Offer a positive response to the IHO or IRCC Circular Letters.
- Consider joining and/or attending the CSBWG - it is open to all!
- Talk about it!!



Please contact your CSB/Seabed 2030 Coordinator - evert.flier@kartverket.no



IHO

How can your HO become involved?

International Hydrographic

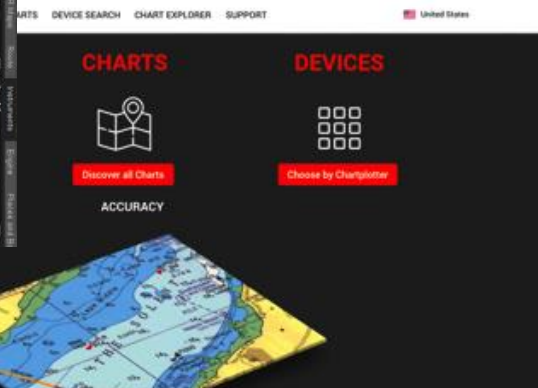
- Determine local interest in participating.
- Determine how your community can become involved. Options include:
 - Utilizing participating navigation software systems (eg: Rosepoint, Navico-CMAP)
 - Utilizing VDRs for larger seagoing vessels
 - Installation of data loggers (NMEA0183 or 2000)



SmartLog USB data logger



www.rosepointnav.com



Please contact your CSB/Seabed 2030 Coordinator - evert.flier@kartverket.no

IMO NCSR9 Decisions relevant for EAHC

- IMO NCSR9 agreed to the draft MSC circular on ECDIS Guidance for good practice (deletion of some of the obsolete references made to the Data Presentation and Performance Check (DPPC) dataset of IHO in relation to anomalies)
- IMO NCSR9 approved the draft MSC resolution on Performance Standards for Electronic Chart Display and Information Systems (ECDIS) and forward it to the Committee (MSC 106, November 2022) for adoption;



Consequences on IMO Decisions specific for ECDIS

- ECDIS Performance Standards now include references to IHO Product Specifications S-98, S-100 and S-101.
- NCSR9 agreed on a transitional period of three years between 1 January 2026 to 1 January 2029, during which new installations of ECDIS compliant with either the existing IMO Resolution MSC.232(82) standards or the newly introduced S-100 based IMO ECDIS Performance Standards is accepted.
- IHO has now commitments towards IMO and other stakeholders to achieve operational status on the prioritized S-100 Product Specifications iaw the Roadmap for the S-100 Implementation Decade to achieve substantial coverage including robust distribution and update services for S-101 ENCs and related products by 1 January 2026.



IHO Strategic Plan for S-100 implementation

- **Roadmap for the S-100 Implementation Decade (2020-2030) – Annex 2 : S-100 Timelines**

Draft revision submitted to C6 :

https://iho.int/uploads/user/About%20IHO/Council/council6/C6_2022_04.1A_HSSC_Report%20Annex%20B-ver1.0.pdf

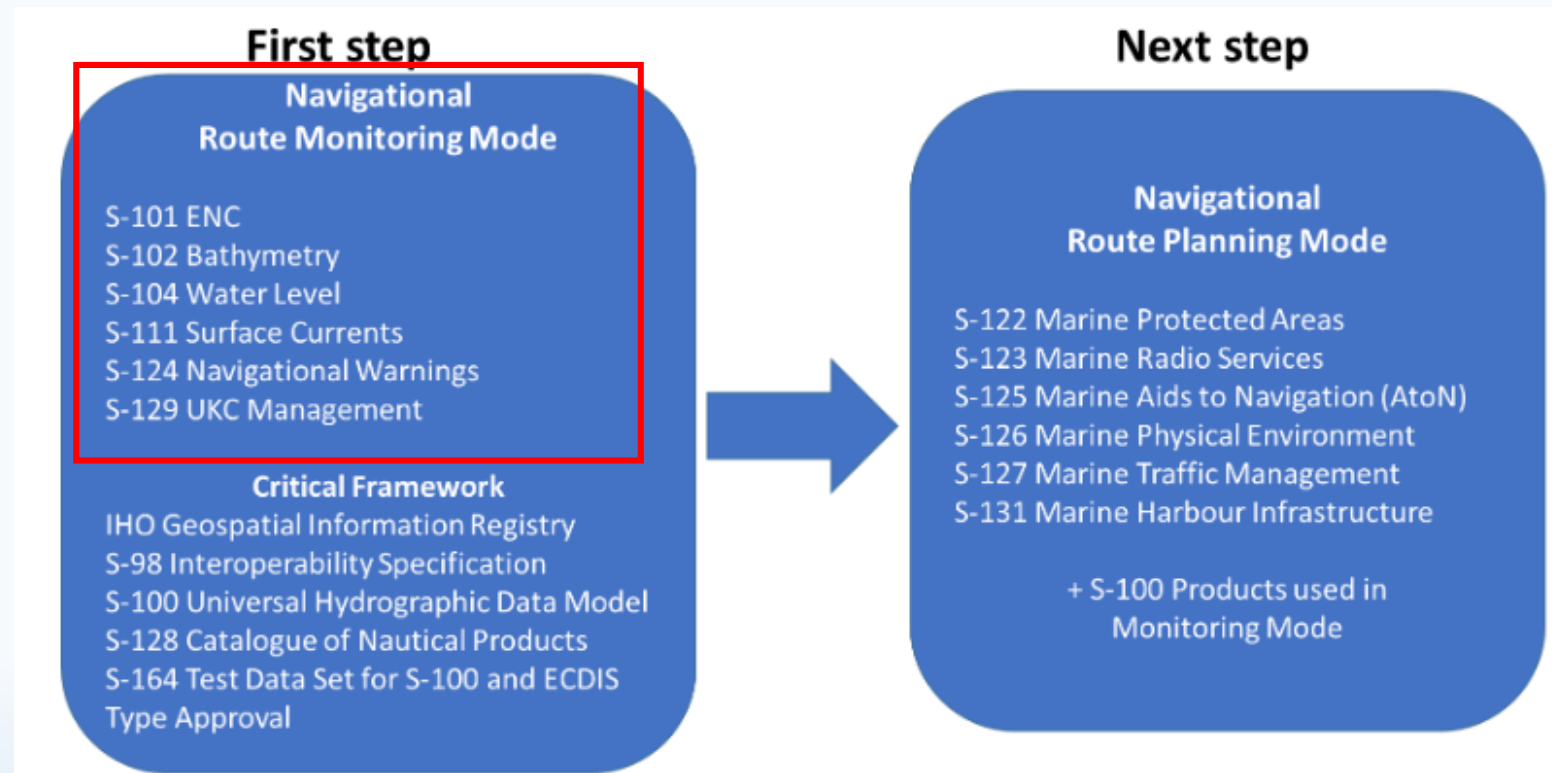


Figure 2 The IHO Navigational Package to be handled by the Interoperability Specification S-98. Additional layers may be added in the future.

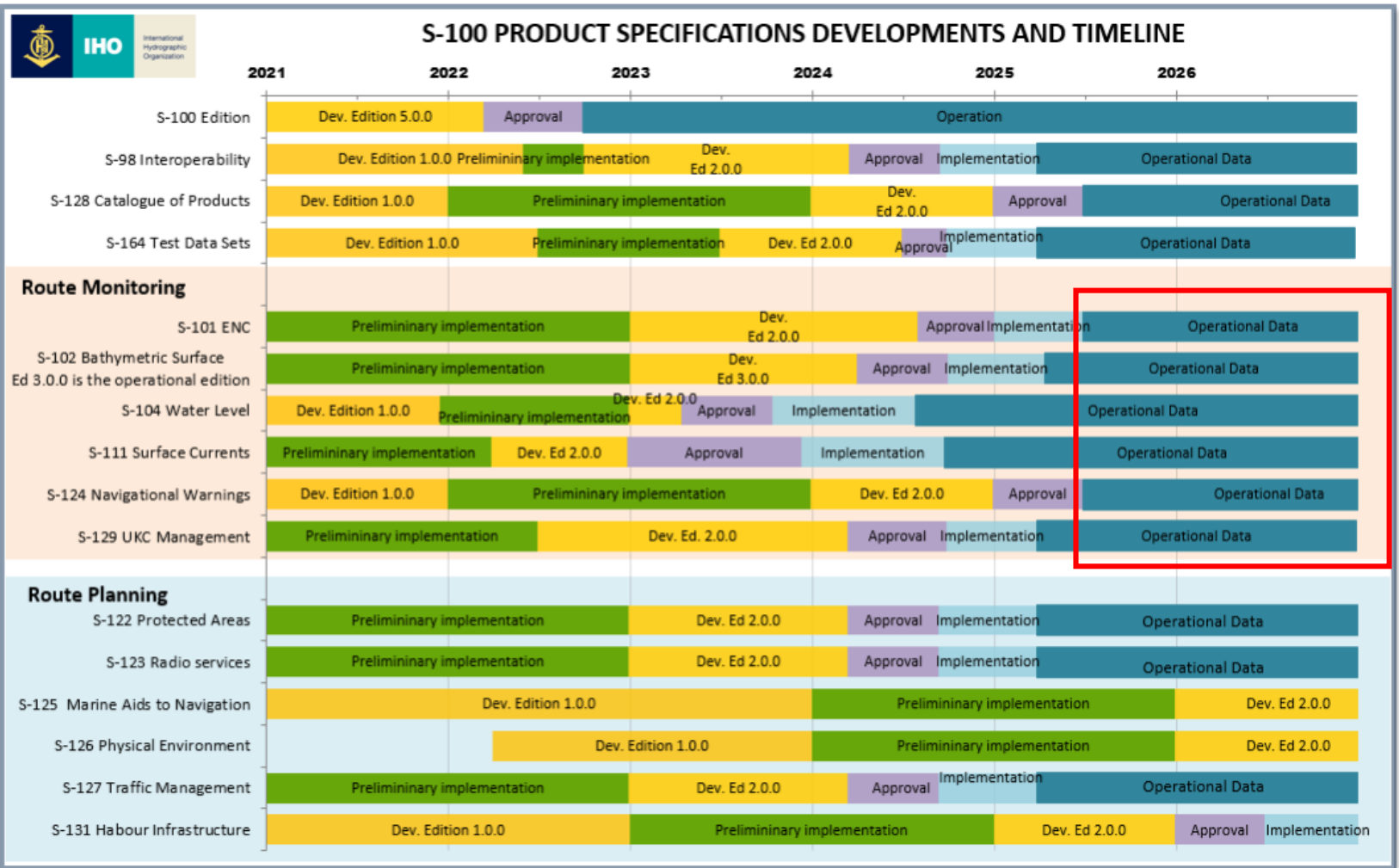


IHO

International
Hydrographic
Organization

Roadmap for S-100 Data products specification

Roadmap for the S-100 Implementation Decade (2020-2030) – Annex 2 : S-100 Timelines



- **Priority to put on S-101**
 - Development of Edition 2.0.0 of S-101 Product Specification by the end of mid-2024
 - Mid-2025 / 2026 > Start of the S-101 operational data production



Next step:

Coordination of S-100 Data production and dissemination services

- Principles of the WEND for S-1xx products (Adopted - IHO CL 37/2021)

<https://iho.int/en/wendwg-repository>

5. Coordination of S-1XX products and dissemination services

5.5. Member States will address coverage of S-1XX products on a regional basis through Regional Hydrographic Commissions (RHCs), and the WENDWG will monitor the overall coverage on a global basis, reporting to IRCC.

5.6. The applicable RHC may facilitate arrangements for production and dissemination of S-1XX products. RHCs should engage with data owners, product and service providers, and other stakeholders as appropriate to ensure that a coordinated and cohesive regional approach is considered . Also, the existing RENC structure may facilitate co-operation between individual Member States and support RHC's to achieve appropriate S-1XX product coverage.

➤ Action WENDWG12/21

The WENDWG to invite IRCC / RHCs Reps to consider how they anticipate the role of S-100 Services Coordinator in their future (expansion of the role of Chart Coordinators, or establishment of a new function) ...



IHO

International
Hydrographic
Organization

13/09/2022

WENDWG Letter 02/2022 (10 August 2022) > S-100

Implementation – WEND100-IGIF Matrix is the key

Best practice: Hydrographic Commission on Antarctica HCA conducts a distributed approach

- HCA agreed to establish an HCA S-100 Implementation Working Group. Some actions are planned to prepare the governance and production strategies for the top priority S-100 based products (S-101, S-102, S-104, S-111, S-122, S-124, S-128, and S-411).

Following up on Action WENDWG12/33 (IGIF pathway matrix per S-1xx product, per RHC), **HCA** agreed on some guiding initial principles and leaders to fill the HCA S-100-IGIF Matrix:

- **S-101: GB** (as Region M Charting Coordinator, continuity by S-57 conversion)
- **S-102: GE** (in liaison with **AWI**, as Seabed 2030 Data Centre/IBCSO)
- **S-104: US** (in its global capacity in ocean modelling)
- **S-111: US/FR** (in its global capacity in ocean modelling)
- **S-122: EC/GE** (making benefits of experience gained in Ecuador and BSHC)
- **S-124: AR, AU, CL, ZA, NZ** (as NAV Coordinators)
- **S-128: NO/GB** (as Operators of PRIMAR/IC-ENC)
- **S-411 – Ice information: AR/CL/GE**



WENDWG Letter 02/2022 (10 August 2022) > S-100 Implementation – WEND100-IGIF Matrix is the key

Best practice: Eastern Atlantic Hydrographic Commission conducts a concerted approach

The EAtHC instructs the Region G ICCWG Members to develop a regional strategy to implement the WEND-100 IGIF matrix.

RCC to organize a dedicated ICCWG Workshop on the implementation of the WEND-100 IGIF Matrix and more generally on the S-100 implementation on the EAtHC Region.

Evaluation of 7 S-1XX (S-101, S-102, S-104, S-111, S-122, S-124 & S-128) and MSDI on 9 criteria on national level to be combined later for a regional layout:

- Governance and Institutions
- Policy and Legal
- Data
- Financial
- Innovation
- Standards
- Partnerships
- Capacity and Education
- Communication and Engagement

Each criteria has 5 levels depending on the state of progress



Consequences on IMO ECDIS Decisions specific for EAHC

To meet new IMO ECDIS its time for action. EAHC is invited

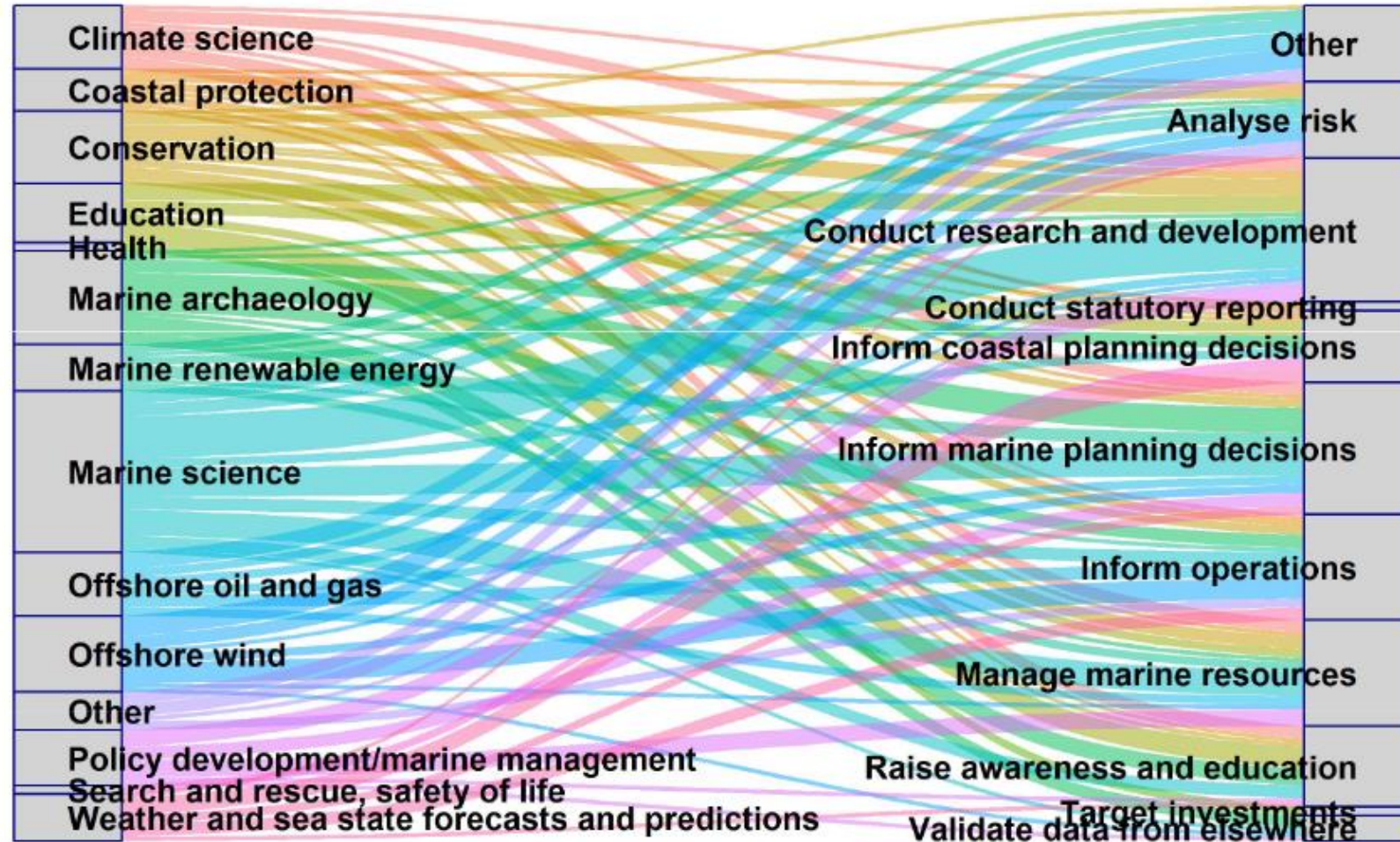
- to set up a S-100 Services Coordination for transition S-57 to S-101, production and dissemination of other S-1xx, for the region and apply instructions from IRCC/WEND (reference: [WENDWG Letter 02/2022](#)).
- Application of the WEND Matrix template based on IGIF-H would be the measure at hand in a distributed or concerted approach.
- to report via EAHC representative in WENDWG at WENDWG13 on the S-100 Roadmap for East Asia.



IHO Secretariat's activities in support of Goal 3

Message: uses of hydrographic data are diverse

- UN Oceans Conference Lisbon June 2022
- UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea Twenty-Second meeting UN Headquarters, New York, USA 6 – 10 June 2022
- UN GGIM - 12th Session of the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) 3 - 5 August 2022



Conclusions on participation of UN Events in view of Strategic Goal No 3

- IHO is only one in a multitude of voices. Visibility and networking is essential but comes with costs and efforts.
- IHO is well organized and effective thanks to the representation of Member States through hydrographic offices which belong to the national administration and enjoy secured funding for systematic work.
- IHO has a chance to become a main player for the digital twin of the ocean if the suitability of the S-100 concept is understood and adopted beyond our traditional stakeholder's community. In liaison with OGC and ISO, IHO should strive to interface with the oceanographer's community put focus of marine geo services like nowcast, forecast and simulation. ARGO is a good example.
- IHO should consider further development of existing and new authoritative regional and global geoinformation services such as GEBCO grid, ENC coverage, CATZOC, undersea feature names and ... marine protected areas.



IHO

International
Hydrographic
Organization

Proposed action for EAHC in view of Strategic Goal No 3

Identify themes of the hydrographic domain to support Strategic Goal No 3 - for example

- regional S-100 based product service provision for data streams of beyond Priority No 1 and 2 such as S-131 Harbor Infrastructure, S-411 and S-412
- start to collect MPA information (coverage, metadata) to become prepared for a test case for S-122 GIS service for the region
- maintain human and material resources to assist the Secretariat in outreach to UN Ocean decade activities addressing themes of the East Asia



IHO

International
Hydrographic
Organization

Forthcoming 6th Council

Ahead of the 3rd Session of the IHO Assembly, the main topics on the C-6 agenda will be the

- Roadmap for the S-100 Implementation Decade,
- Dual Fuel concept for S-100 ECDIS,
- IHO Strategic Plan 2021-2026,
- Revised Capacity Building Strategy
- IHO Budget and Work Programme for 2023 and for the period 2024-2026.

Future of Paper Chart



IHO

International
Hydrographic
Organization

13/09/2022

Forthcoming 3rd Assembly

Assembly had to be moved by one week! New date 2 – 5 May

Suggestion to book flights early and accommodation now!

EAHC members are reminded to declare in which Regional Hydrographic Commission (RHC) they wish to be counted for the purpose of determining the number of seats allocated to each RHC on the IHO Council (CL27/2022 refers) and discuss about the election of its member for a seat of Council number 3 for the Inter-Assembly period 2023 – 2026.



IHO

International
Hydrographic
Organization

13/09/2022

EAHC is invited
to take note of this briefing,
and to take action as considered
appropriate



IHO

International
Hydrographic
Organization

13/09/2022

40