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Annual Report 2024

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IHO

International Hydrographic Organization

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FOREWORD

This year marked the hydrographic community's full recovery from the effects of the pandemic, with the various bodies of the Organization returning to “pre-COVID” levels of participation and productivity. However, some changes in the way we work have remained. Hybrid meetings have now become a popular method to engage with colleagues and third-party representatives. Digital infrastructure is central to all the Organization’s work, with everyone having to become familiar with terms like Github (a cloud-based platform where developers can store, share, and work together with others to write code) and SECOM (a standard for secured wireless data exchange).

One of the key outcomes of the past year has been Member States’ approval of matured editions of the S-100-based data products utilizing route monitoring as priority. Several Member States have announced the undertaking of comprehensive tests for the planned production and dissemination of data sets based on these editions. The objective is to be ready to provide regular data services for the uptake of S-100 ECDIS in 2026! However, the establishment of new production lines for S-100 data sets is a global endeavour. The role the Regional ENC Coordination Centers IC-ENC and PRIMAR will play in assisting small and medium-sized national hydrographic offices to set up this capacity while also working on arrangements for the future distribution as part of the value chain cannot be overstated. This principle will also apply to the latest country to join the IHO, Kiribati, bringing us to 100 IHO Member States. Located in the Pacific, the archipelago is dispersed over approximately 3,5 million square kilometres of ocean and could benefit from hydrographic support, with latest technology being central to this.

The diverse activities of the IHO require strong coordination carried out by the competent organs and dedicated experts. In addition to several important decisions being taken, the eighth IHO Council which took place at the IHO Secretariat in October saw such efforts celebrated during the ceremony for the new “Ex Abyssis ad Alta” - IHO Award for Hydrographic Excellence. The Latin phrase was chosen in honour of Prince Albert 1st of Monaco who used it as his personal motto, but also to reflect the breadth of hydrography. In thinking of modern survey methods such as multibeam hydroacoustic waves penetrating deep waters, uncrewed drones diving to great depths carrying sensors, all complemented by satellite imagery successfully processed and providing shallow water bathymetry, this phrase appears resolutely modern.

Finally, 2025 saw a decisive re-launch of international, inter-governmental and inter-agency cooperation, aimed at intensifying efforts to achieve common goals in the areas of Capacity Development focused on the future full digitisation of information about the marine environment by means of the S-100 standard series.

Striving for modernity is the driver of the Organization. The basis for this is guided by the current Strategic Plan which is now up for revision to help meet the challenges ahead of us for the period 2027 – 2032. With the establishment of the Strategic Plan Revision Working Group at the end of 2024, we are confident that the experts nominated by sixteen Member States from five continents will wisely guide the priorities for the future of the Organization. Stay engaged for the results and please continue supporting the IHO!

Monaco, 1st March 2025

Luigi Sinapi
Director

Dr Mathias Jonas
Secretary-General

Dr John Nyberg
Director

INTRODUCTION

The Secretariat is pleased to present the Annual Report of the activities of the Organization for 2024. This report provides an account of the principal activities and achievements of the IHO, the subordinate bodies of the Organization and the Secretariat during the year. The report also describes the cooperation and participation of other international organizations and stakeholders in the execution of the IHO Work Programme.

Work Programme & Strategic Plan

The conduct of the IHO Work Programme was permanently overseen by the Council. As a result of 2nd Assembly's approval of the revised Strategic Plan each item of the Work Programme was associated with the respective goals and targets. The detailed review of the IHO Work Programme items addressed at Council 6 (2022) resulted in concrete proposals for decisions and actions, which were brought forward to the 3rd Assembly for consideration and subsequent approval. On this sound basis to act, Council 8 (2024) was enabled to approve the Work Programme for the forthcoming year 2025. Based on the IHO Resolution T5.1, Council 8 continued the process of preparation of the IHO Strategic Plan 2027-2032. The managing body of the process – the Strategic Plan Review Working Group (SPRWG) - was established on 1 November on Council decision.

Budgetary and financial situation

The Council has permanently overseen the budget and the financial situation by consideration of the respective annual reports of the Secretary-General and the endorsement of annual budget estimates during the inter-Assembly period.

This Report consists of two Parts to address the two principal items as explained above:

Part 1 – General
Part 1 provides short summary reports and observations on the execution of the IHO Work Programme. Part 1 is structured based on the three parts of the Work Programme: Corporate Affairs, Hydrographic Services and Standards and Inter-Regional Coordination and Support. In this way, the Report is also directly related to the technical structure of the Organization which is based on the Secretariat (Corporate Affairs) function and the two principal Committees - the Hydrographic Services and Standards Committee (HSSC) and the Inter-Regional Coordination Committee (IRCC). As far as suitable, Part 1 of the Report follows the same structure and uses the same headings as in the approved Work Programme.

Part 2 – Finance
Part 2 provides the financial statement and accounts for 2024.

A significant part of the operational budget is allocated to travel. This supports the travel expenses of the Secretariat Staff engaged on IHO activities. A list of Secretariat travel in 2024 is shown in Annex D.

Performance Monitoring

The third Assembly renewed its task for Council to monitor closely the appropriateness and applicability of the agreed Strategic Performance Indicators. The Assembly had decided not to invest further in the MSDI data portal (Goal 2, Target 2.1). The associated SPI 2.1.1 would be interpreted to mean the number of downloads of the data and information represented in the global thematic layers (Decision A3/8). Under the aegis of the responsible Committee chairs, both HSSC and IRCC reported the 2024 indicator values for endorsement at Council 8 (2024). The annual Status Report on Performance Monitoring available forms Annex B to the IHO Annual Report (Publication P-7). This Annex also includes a set of SPI´s for Work Programme 1 Corporate Affairs which was endorsed by Council 6 (2022).

CONTENT

Annexes

ANNUAL REPORT SUMMARY

Work Programme 1

On the 21st May the IHO welcomed the Republic of Kiribati as its one hundredth Member State. Kiribati is composed of 33 islands spread over 3,441,810 km2 of the Pacific Ocean, straddling the Equator and the 180th Meridian. It is the only country in the world located in all four hemispheres (northern, southern, western, and eastern), and is the first country on the international date line. Its EEZ is over 4000 times as big as its land area. This historic landmark opens up numerous benefits of being an IHO Member State to the archipelagic nation, from helping carry out obligations under the SOLAS Convention, to enhancing safety of navigation, maritime security, fisheries management, economic growth, environmental protection, and climate resilience.

Two side events to promote the concept of IHO's S-100 Standards to support IMO's maritime services under the e-navigation framework were organized in the margins of this year's meetings of IMO MSC in May and IMO MEPC in October. Delegates were informed on the general status of development of S-100 Phase 1 product specifications supporting route planning and route monitoring and the resulting benefits in safety and efficiency for international shipping.

This past year also saw a reinforcement of the relationship with IMO in view of the implementation of S-100. In order to raise awareness among the global maritime community, the IHO organised three lunchtime sessions for MSC108 and NCSR11 on the status of S-100 implementation (in partnership with CIRM) and on GEBCO and SB2030 (presented together with SB2030 team). IMO also endorsed a dedicated new output relating to "Development of guidance to establish a framework for data distribution and global IP-based connectivity between shore-based facilities and ships for ECDIS S-100 products" which paves the way for IMO Member States to discuss the regulatory elements of near-real time data exchange in the context of e-navigation.

In order to foster the role of the IHO in the wider ocean domain, representatives of the IHO participated in the UN Ocean Decade Conference in Barcelona in April. The goal was to highlight the use of interoperable data and data standards to support initiatives and informed decision-making. In parallel, the IHO co-hosted two satellite-events: A session on "the seabed data we need for the ocean we want" together with OECD and a session on "Empowering Women for the Ocean Decade: Achieving Gender Equality in Ocean Sciences and Policy Making" together with World Maritime University & International Seabed Authority.

Council Chair Ms Pia Dahl Højgaard awards Assistant Director Yves Guillam with the Ex Abyssis ad Alta – IHO Award for Hydrographic Excellence.

36 Member States supported the introduction of annual award for hydrographic excellence. The proposed award aims to complement the Prince Albert Ist Medal for Hydrography presented by the Government of the Principality of Monaco by offering an opportunity for the IHO to recognize every year achievements by mid-career professionals with expanded eligibility. The Latin phrase Ex Abyssis ad Alta was chosen as the name of the award in honour of Prince Albert Ist of Monaco who used it as his personal motto. With this reference, the Award pays tribute to the instrumental role of the Grimaldi family and the Principality of Monaco in the establishment and continuation of international collaboration in hydrography. The Award Board was unanimous on the selection of Mr Yves Guillam, IHO Assistant Director as the first recipient of the Ex Abyssis ad Alta – IHO Award for Hydrographic Excellence.

Work Programme 2

2024 was a pivotal year in the implementation of S-100. Several operational editions of the Product Specifications were adopted, notably of S-101 Electronic Navigational Charts (ENCs), S-102 Bathymetric Surface, S-104 Water Level Information, S-111 Surface Currents, and S-129 Under Keel Clearance Management. This represents a historic breakthrough for digital navigation and paves the way for Coastal States to offer official products and services based on these standards. Following the S-100 roadmap, the IHO also issued S-100 Edition 5.2.0 and updated several other standards throughout the year.

In parallel, the IHO Nautical Information Provision Work Group (IHO NIPWG) endorsed the publication of new edition of the Guide for Nautical Data Edition (Ed.2.1). Following input from IHO Member State experts and International Harbour Masters Association (IHMA) members, the guide aims to support hydrographic offices and port authorities in the discharge of their collective responsibilities as per the IMO SOLAS Convention on the provision of Hydrographic Services.

A major milestone in 2024 was the approval by Council of the interim establishment of an IHO Infrastructure Center in Korea, hosted by KHOA. Approval for a more permanent entity will be voted on during Assembly 4 in 2026. This center would strengthen the IHO's operational capabilities and support Member States around the world in their implementation of S-100.

Work programme 3

An IRCC Workshop on Crowdsourced Bathymetry was organized and hosted by members of the CSBWG and the IHO Secretariat in April 2024. The workshop drew 107 participants from over 50 coastal States. Several member states have since reached out reiterating the value of this type of engagement. In parallel, the number of Coastal states giving a positive response on allowing the collection of crowdsourced bathymetry in their waters increased from 34 to 36 with the inclusion of Kiribati and the United Kingdom.

The GEBCO Guiding Committee meeting, GGC41 was held in conjunction with the Seabed 2030 and their 6th Pacific Ocean Mapping meeting in Fiji. This marked the first time GEBCO has been to the Pacific islands and saw a great level of engagement from regional participants. It also provided an opportunity for high level visits to the Fiji Navi Hydrographic Office, IUCN and the South Pacific Community. The new GEBCO Strategy and Governance Review were endorsed by both IRCC16 and IOC Executive Committee.

As part of its mission to continue building capacity around the world, the IHO Council agreed to continue with the Empowering Women in Hydrography project supported by remaining funds and future financial and / or in-kind support as currently announced by Norway, Denmark, Belgium, France, US. As part of the project, four interns from Argentina, Peru, USA and New Zealand participated in the IBSC 2024 Intersessional meeting, supporting the revision of the S-5 and S-8 Standards.

PART 1

GENERAL

Summary reports and observations on the execution of the IHO Work Programme

MEMBER STATES OF THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)

31 December 2024

Albania (Republic of)	Mauritius
Algeria	Mexico
Argentina	Monaco
Angola (Republic of)	Montenegro
Australia	Morocco
Bahrain	Mozambique
Bangladesh	Myanmar
Belgium	Netherlands
Brazil	New Zealand
Brunei Darussalam	Nigeria
Bulgaria	Norway
Cameroon	Oman
Canada	Pakistan
Chile	Papua New Guinea
China	Peru
Colombia	Philippines
Croatia	Poland
Cuba	Portugal
Cyprus	Qatar
Democratic People's Republic of Korea	Republic of Kenya
Democratic Republic of the Congo	Republic of Korea
Denmark	Republic of Cabo Verde
Dominican Republic	Romania
Ecuador	Russian Federation
Egypt	Samoa
Estonia	Saudi Arabia
Fiji	Serbia*
Finland	Seychelles
France	Singapore
Georgia	Slovenia
Germany	Solomon Islands
Ghana	South Africa
Greece	Spain
Guatemala	Sri Lanka
Guyana	Suriname
Iceland	Sweden
India	Syrian Arab Republic*
Indonesia	Thailand
Iraq (Republic of)	Tonga
Iran (Islamic Republic of)	Trinidad and Tobago
Ireland	Tunisia
Italy	Turkey
Jamaica	Ukraine
Japan	United Arab Emirates
Kiribati	United Kingdom of Great Britain and Northern Ireland
Kuwait	United States of America
Latvia	Uruguay
Lebanon (Republic of)	Vanuatu (Republic of)
Malaysia	Venezuela (Bolivarian Republic of)
Malta	Viet Nam

* *Rights of membership suspended*

IHO SECRETARIAT 2024

MATHIAS JONAS
Secretary-General

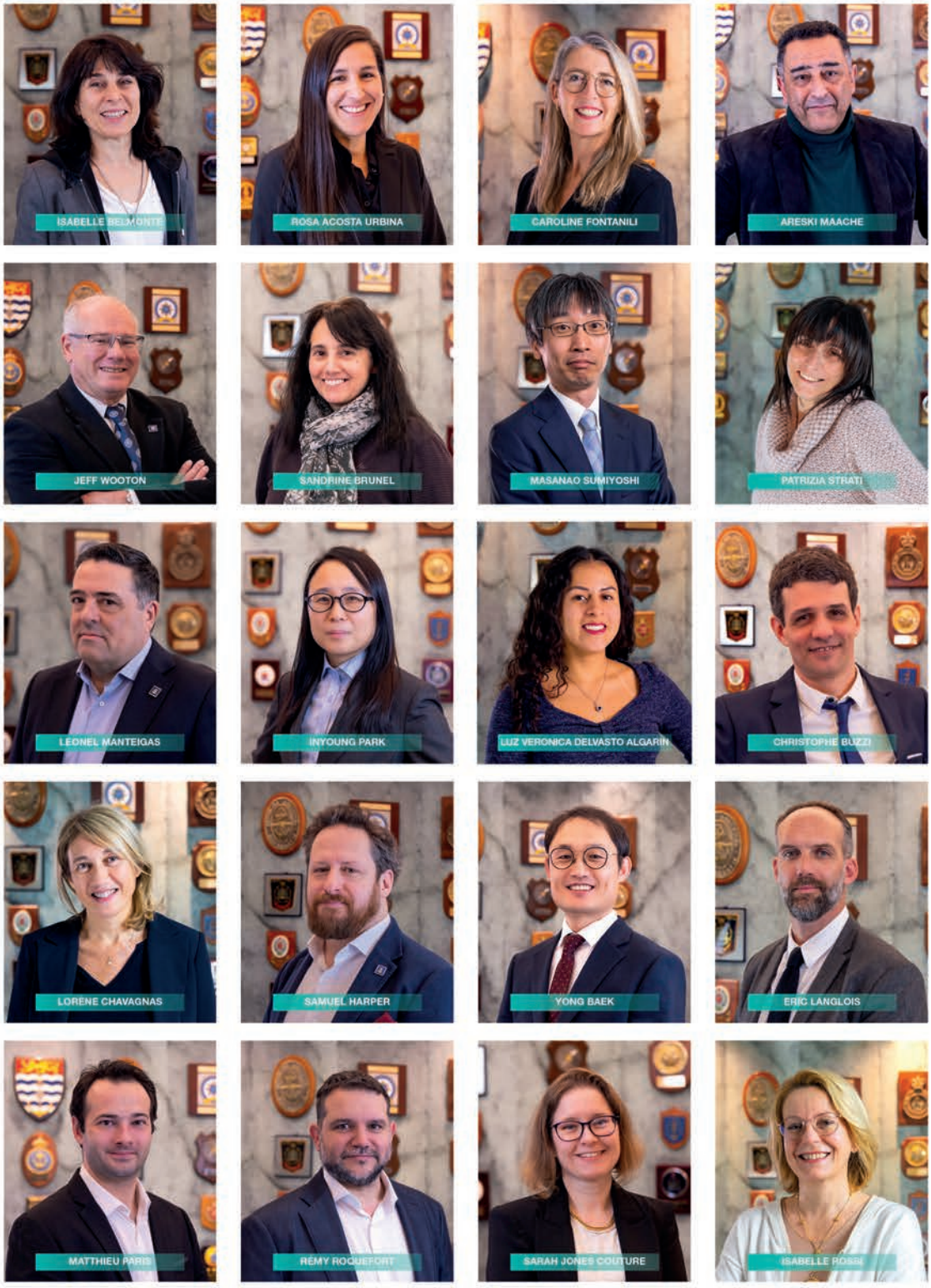
Dr. Mathias Jonas is the elected Secretary-General of the International Hydrographic Organization (IHO) since 2017. Prior to this appointment he held the posts of Vice President of the Federal Maritime and Hydrographic Agency and National Hydrographer of Germany. Being originally a mariner, Dr Jonas has been involved in integrated navigation matters since the beginning of the nineties. He has continuously contributed to IMO and IHO standardisation activities for navigation equipment, survey and cartography since. As one of the responsibilities of his current post he holds the Chair of the Hydrographic Commission on Antarctica.

LUIGI SINAPI
Director

Luigi Sinapi is the Director Inter Regional Coordination and Support Programme – of the IHO since September 2020. He is Rear Admiral of the Italian Navy and before joining the IHO he was Director of the Italian Hydrographic Institute, Commander of a Frigate and a Destroyer, and participated in NATO security missions in the former Yugoslavia and Kosovo for which he was decorated. He is currently in charge of Capacity Building, Education and Training and GEBCO programmes.

JOHN NYBERG
Director

Dr. John Nyberg was elected as IHO Director Technical Programme in 2023. Prior to his appointment, Dr. Nyberg held several positions with the U.S. National Oceanic & Atmospheric Administration (NOAA) including Deputy Hydrographer and Chief of the Marine Chart Division. John has managed international, interagency, and legislative engagements and teams of 100+ employees to produce and distribute thousands of nautical charting products. He has been working on advancing IHO initiatives for over 20 years.


ISABELLE BELMONTE
ROSA ACOSTA URBINA
CAROLINE FONTANILI
ARESKI MAACHE
JEFF WOOTON
SANDRINE BRUNEL
MASANAO SUMIYOSHI
PATRIZIA STRATI
LEONEL MANTEIGAS
INYOUNG PARK
LUZ VERONICA DELVASTO ALGARIN
CHRISTOPHE BUZZI
LORENE CHAVAGNAS
SAMUEL HARPER
YONG BAEK
ERIC LANGLOIS
MATTHIEU PARIS
RÉMY ROQUEFORT
SARAH JONES COUTURE
ISABELLE ROSSI

WORK PROGRAMME 1
Corporate Affairs

Introduction

IHO Work Programme 1 "Corporate Affairs" covers the provision of the principal organs as well as the other services of the Secretariat of the IHO including the management and fostering of relations with other international organizations. Work Programme 1 is executed primarily by the Secretariat, under the leadership of the Secretary-General assisted by the two Directors.

IHO Council

The Secretary-General of IHO, Dr Mathias Jonas, opened the meeting and welcomed participants to the eighth IHO Council (the second meeting of the third Council of the IHO cycle). The Secretary-General recalled the Council's responsibilities and method of work as set out in the Convention, General Regulations and Rules of Procedure and in particular the requirement under Article VI of the Convention that the Council should: "exercise such responsibilities as may be delegated to it by the Assembly"; and "coordinate, during the inter-Assembly period, the activities of the Organization within the framework of the strategy, work programme and financial arrangements, as decided by the Assembly".

The Council stood ready to undertake its duties, having reached a quorum of 28 Council Member States in attendance. The meeting was being broadcast, for the first time, to six registered IHO Member States as a passive live stream. A special welcome was extended to Mr. Javier Yasnikouski, Head of Operational Safety, Maritime Safety Division at IMO, who provided information regarding collaboration between IHO and IMO on the S-100 uptake. Actions with which the Council had been tasked by A-3 included ensuring implementation of S-100 through prioritizing Goal 1 of the IHO Strategic Plan for 2021-2026 in implementing the 2024-2026 Work Programme. A focus must be maintained on: finalization of standards; building of competencies and capacity to produce S-100 data; testing of services; and securing interoperable navigational services. HSSC had put forward proposals to the Council related to implementation of S-100.

At A-3, IHO Members had recognized the need to establish an IHO S 100 Infrastructure Centre. A Project Team under HSSC had worked on the proposal with the Secretariat. Council was asked to agree on the establishment of a Centre in 2025 on an interim basis, followed by a permanent establishment to be decided by A-4.

The task of developing a revised Strategic Plan for 2027 2032 had been advanced through a Correspondence Group, which had recommended the establishment of a Strategic Plan Review Working Group to provide a draft Strategic Plan in time for submission to A-4. Both HSSC and IRCC had provided input for the Strategic Plan. Council was invited to contribute input for the SPRWG to consider and finally endorsed the installation of the body, the terms of reference and a schedule to deliver a draft Strategic Plan for final endorsement by C-9.

Consideration was given to the request from the South West Pacific Hydrographic Commission (SWPHC) for the provision of mechanisms to ensure greater inclusion and participation of all Member States at IHO meetings. An Ad-Hoc Drafting Group, established at C-7, presented the results of a survey on participation; subsequently, a draft Resolution on Maximising Active Participation in IHO Events was approved by the Council.

The number of IHO Member States participating remotely, the Member States participating as observers and the presence of development partners was a reminder of the importance of the decisions to be taken by Council and of the opportunity to engage, discuss issues of common interest and share experiences. Knowing each other made it easier to work together with trust and an open mind and to come together to manage the challenges at hand.

The Council finished with the conclusion about a list of 77 decisions or actions which will drive the work of various IHO bodies such as committees, working groups and project teams assisted by the Secretariat in the interim period until ninth Council Meeting in October 2025.

Cooperation with International Organizations

This element covers liaison and cooperation between the IHO and other international organizations. Notable activities during the year are described. The IHO was represented in most cases by the Secretary-General, a Director or an Assistant Director.

Hydrographic Commission on Antarctica (HCA)

The 19th Conference of the IHO Hydrographic Commission on Antarctica was held at the Army Club in Venice, Italy, in hybrid format from 16 to 18 April 2024, hosted by the Italian Hydrographic Office (IIM). It was preceded by a technical workshop (HPWG, Region M ICCWG and S-100) on the 15th April.

The Conference was chaired by Dr Mathias Jonas, Secretary-General of the IHO, supported by Assistant Director Yves Guillam, HCA Secretary, and Ms Caroline Fontanili (IHO Secretariat), as rapporteur. There were 58 delegates registered (28 present and 30 online) reflecting 21 out of 27 HCA Member States: Argentina, Australia, Brazil, Chile, China, Colombia, France (including the Deputy

ARTICLE III

1. In order to promote international cooperation in scientific investigation in Antarctica, as provided for in Article II of the present Treaty, the Contracting Parties agree that, to the greatest extent feasible and practicable:

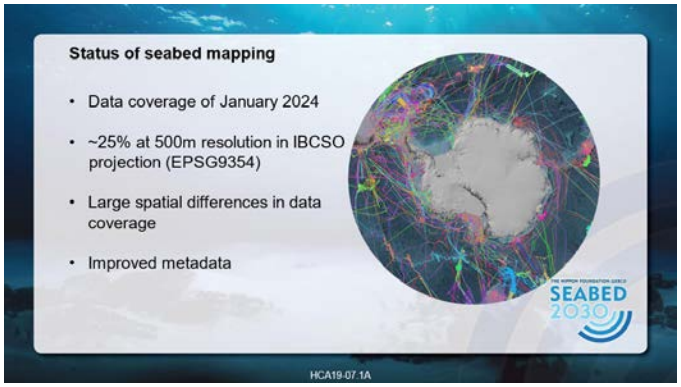
(a) information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;

(c) scientific observations and results from Antarctica shall be exchanged and made freely available.

2. In implementing this Article, every encouragement shall be given to the establishment of cooperative working relations with those Specialized Agencies of the United Nations and other international organizations having a scientific or technical interest in Antarctica.

Director from the French Polar Institute Paul-Emile Victor -IPEV), Germany (including the Lead of the Seabed 2030 Southern Ocean Regional Centre (SORC), Greece, Italy, Netherlands, Norway, Peru, Poland, Republic of Korea, Russian Federation, Spain, Türkiye, United Kingdom, USA, Venezuela and three Observers (Institute of biochemistry and biophysics – Polish Academy of Sciences, and SCAR). The Chair made a special welcome to the Netherlands, Poland and Türkiye as new HCA members.

The HCA Chair thanked RAdm Massimiliano Nannini, Director of the IIM, for his warm welcome address in presence of the representative of the City of Venice, and Italy for hosting HCA-19 in such a historical and inspiring venue.



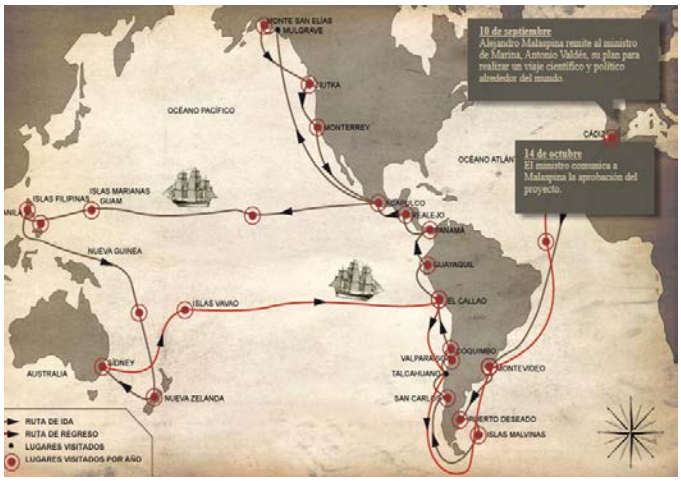
The HCA Chair reminded HCA Members those fundamental principles of the Antarctic Treaty (1959), Article III, and also highlighted those principles which are fully reflected in the HCA statutes to promote international cooperation and exchange in order to make information freely available for the purpose of the conduct of hydrography in the Southern Ocean.

In introduction, the importance for HCA to become involved in the programmes and actions in relation to the impact of climate change in this specific region, was also highlighted. This subject was addressed in a set of proposals led by the HCA Vice Chair supported by the US and the IHO Secretariat.

The HCA Chair reported on various outcomes since the last HCA Conference in 2022 and highlighted those decisions and actions from the 3rd Assembly and the 7th Council meeting having a potential impact on HCA activities, such as:

- the approval of the amendments to S-100 Implementation Roadmap,
- the Assembly decision to establish a S-100 Infrastructure Centre.

Dr Boris Dorschel, Alfred-Wegener Institute (AWI), gave an update on the development of the Seabed 2030 and the IBSCO and invited Member States to engage with their national marine research institutes to improve



Cdr José María Bustamante Calabuig (IM), when delivering the National Report from Spain at HCA-19, makes a moving reference to his ancestor, Captain José Bustamante y Guerra, commanding officer of the corvette Atrevida, sailing in the Southern Ocean during the Malaspina and Bustamante expedition (1789-1794)

their contribution to GEBCO / Seabed 2030. The GEBCO Guiding Committee (GGC) Chair, highlighted the new GEBCO strategy and Governance report, as well as the IHO DCDB data holdings in Antarctica. It was agreed that the IHO in general should better depict the data flow for making contributions and promote it at high level (ATCM, and others contributing parties) to stimulate the provision of data to the IHO DCDB and metadata survey coverage (planned and existing) and, in return, facilitate the pull-push mode to get a one stop-shop discovery access on an annual basis.

The HCA then reviewed progress with national reports from Member States present and online. It was noted the excellent quality of the reports, and collaboration between states sharing data in general for harmonized production of nautical charts, avoiding duplication of efforts which must be encouraged. Noting the new assets available or planned, the reports demonstrated that numerous HCA members are strengthening their engagement for the Antarctic.

A very substantive report was delivered remotely by Dr Chandrika Nath, SCAR representative. The HCA noted the information for a better understanding of future sea level change in Antarctica as well as the announcement of the 5th International Polar Year 2032-2033, to be considered as a possible input to the Revised IHO Strategic Plan. IAATO was thanked for sharing all IAATO reports to ATCM XLV (2023) for consultation on the HCA webpage as unfortunately Dr Lisa Kelley, IAATO representative, could not attend. The HCA Secretary reminded the importance for HCA to prepare carefully ATCM XLVII (2025), due to Priority Task#9 of the ATCM Multi-Year Strategic Work Plan: the IHO is expected to report on the progress made in the improvement of hydrographic surveys and products in Antarctica.

Following up on the decision made at HCA-18 in 2022 and based on the outcome of the WENDWG-14 meeting in February 2024, the HCA Secretary reported on the way the HCA should handle the coordination of S-100 in Region M and consider a new distribution model (including cybersecurity), making easy access for end-users to obtain all S-100 Phase I products and ENDS. It was also recommended that the HCA was to support the S-100 communication strategy towards end-users, manufacturers, IMO, addressing the planning of geographic coverage of S100 based products and data services from 2026.

Mr Lee Truscott (UKHO), Chair of the HCA Hydrography Priorities Working Group (HPWG) and Chart Coordinator for Region M, provided an outstanding review of the compilation of updates received from Members on INT charts and ENC production, and proposed options on the evolution of charting schemes (INT charts and ENCs) in the region and the Antarctic Peninsula in particular. The HCA welcomed the offer made by the Region M ICCWG Chair for VTC meetings, as and when required. Following the workshop and many bilateral discussions in session, consolidated decisions on these matters are to be attached to the main list of decisions and actions. It must be noted that this Conference allowed a real harmonisation of efforts and a great cooperative spirit between the parties.

Regarding the discussions on the strategy for the HCA in the future, the Vice-Chair delivered a report mainly focused on the impact of climate change including a set of proposals (simulation of new ice-free areas which will require surveys, mean-sea level rise, etc.). After a fruitful discussion the HCA agreed to recommend IRCC that the HCA establishes and manages a specific HCA action plan on the subject, led by the Vice-Chair of HCA. As part of this action plan, the HCA Chair invited HCA Members to consider in particular the development of digital twin of navigable waters of the Southern Ocean, free of charge as far as possible, in the true spirit of the Antarctic Treaty. The HCA thanked Mr Patrick Dorr (NGA, USA) for his six years in service as active HCA Vice-Chair and elected Chile (RAdm Arturo Oxley, Director of SHOA) as new Vice-Chair.

Finally, the HCA Chair gave a moving farewell to Mr Yves Guillam – the outgoing HCA Secretary. His exceptional work was hugely acknowledged, and the participants naturally rose for a standing ovation.

International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)

- **2ND Joint IHO/IALA Workshop on S-100/S-200**

The workshop addressed several key topics, including identifying training gaps in S-100 courses for mariners and internal authorities, as well as technical gaps within

2nd Joint IHO/IALA Workshop on S-100/S-200

the S-100 infrastructure. Participants also reviewed and provided recommendations for updating IHO and IALA documentation on technical requirements for managers. The need for improved documentation of Aids to Navigation product specifications was highlighted, along with discussions on technical issues, such as schema validation impacting GML-based products.

Key outcomes included consensus to align S-125 portrayal with IMO Circular 243. The significance of SECOM (Secure Common Data Exchange Network) and the MCP (Maritime Connectivity Platform) in data distribution and security was highlighted. It was recommended that IHO and IALA develop reference materials to support implementors. SECOM's potential for S-100 services was demonstrated, a framework for improving shore-to-ship communication was discussed and addressing data delivery latency was suggested.

The workshop was essential for advancing S-100 and S-200 implementation, addressing both technical and training gaps, and ensuring continued collaboration between IHO and IALA to enhance future maritime safety and navigational systems.

International Maritime Organization (IMO)

- **IMO Technical Cooperation Committee**

The 74th session of the Technical Cooperation Committee (TC), the IMO body that considers matters within the scope of the implementation of technical cooperation projects, was held in London at the IMO headquarters from 24 to 28 June 2024. The meeting was chaired by H.E. Mr. Dwight Gardiner (Antigua and Barbuda) and the Vice-Chair was Ms. Anays Berrocal (Panama). Assistant Director Leonel Manteigas represented the IHO.

In his opening remarks, the Secretary-General of IMO, Mr Arsenio Dominguez welcomed the participants and expressed his condolences for the seafarers that lost their lives, were injured and are being held hostage due to attacks to the ships. The Secretariat was restructured, creating the Technical Cooperation and Implementation Division (TCID) joining three Divisions and Departments to have a structure that provides more coherence between the technical cooperation planning and programming, the implementation of the ITCP and long-term projects. From the agenda, the draft comprehensive strategy expected to further contribute to the vision to improve and enhance the delivery and results of the technical cooperation activities and projects, was highlighted. He concluded expressing the best wishes to all for every success on the deliberations.

The delegation of the International Hydrographic Organization (IHO) updated the Committee on the recent 13th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMPA Capacity-Building Coordination Meeting, which resumed after five years of interruption caused by the COVID-19 pandemic. The meeting coordinated the efforts of Organizations for building and developing capacity in the maritime sector, in line with the United Nations concept of "Delivering as One".

With reference to the partnership arrangements, the Committee was informed on the Global On Board Training (GOBT) programme for fostering competent young seafarers conducted in Busan, Republic of Korea, in December 2023. The Committee thanked the Republic of Korea for its continued support of the GOBT Programme and encouraged Member States to support the expansion of the programme.

On the agenda item related to the 2030 Agenda for Sustainable Development, TC72 agreed the SMART indicators, milestones and targets for data collection to serve as performance indicators for the contribution of IMO's technical cooperation work to the 2030 Agenda for Sustainable Development. It was suggested that IMO may join the United Nations Sustainable Development Group (UNSDG).

TC73 agreed on the proposal to review the Capacity-Building Decade 2021-2030 Strategy and invited the Secretariat to prepare and share a draft comprehensive strategy for consideration by the Committee. Document TC74/6 contains a draft comprehensive strategy, prepared as a merge of the Capacity-Building Decade 2021-2030 Strategy, the Long-term Resource Mobilization Strategy and the Revised financing and partnership arrangements for an effective and sustainable integrated technical

IMO Secretary-General Mr. Arsenio Dominguez during the opening remark.

cooperation programme as well as related content from the TC brochure "All Hands on Deck". The Committee decided to establish a Working Group on Development of a Comprehensive Strategy, instructed it to review and decide on the structure for the revised comprehensive strategy, taking note of other good practice examples from other UN agencies, and approved the respective title to be "IMO Capacity-Development Strategy".

Related to a proposal for strengthening the global training and development network in pursuit of IMO's GHG emission reduction strategy by utilizing the resources of maritime education and training (MET) institutions and by enhancing their overall capacity to produce competent professionals with the knowledge and skills required to achieve GHG emission reduction through the development of new courses and the refinement of the current teaching model, the Committee noted the information and requested the Secretariat to engage with the Maritime Technology Cooperation Centres and the Maritime Just Transition Task Force to gather more information on the work being undertaken.

Recommendations were received to enhance the Junior and Senior Professional Officer (JPO and SPO) programmes by supporting developing countries, in particular Small Island Developing States (SIDS) and Least Developed Countries (LDCs). The Committee noted the information provided by the Secretariat encouraging Member States to submit applications from eligible developing countries to the three JPO positions being funded by the Republic of Korea through the SMART-C Programme and encouraged Member States to provide funding to support third-party JPOs and SPOs.

IHO Assistant Director Leonel Manteigas during one intervention.

The Committee agreed to establish a Correspondence Group on the e-Learning Implementation Plan, under the coordination of Morocco and instructed it to develop a structure for an "implementation plan" and provide advice on the vehicles of adoption/approval.

Related to the technical cooperation aspect of the IMO Member State Audit Scheme, since the establishment in 2006, and up to June 2024, a total of 1,667 individuals from 165 Member States and Associate Members had been trained through 80 activities under the ITCP including the nomination of auditors under the Scheme. There was a shift in focus to targeting technical assistance activities on those recurrent areas where findings/observations were reported in audits. The e-learning training course for auditors under the IMO Member State Audit Scheme developed through the global programme on IMSAS, was launched in October 2023 and a three-day in-person training programme for auditors had been developed to complement the e-learning course.

On the agenda item Capacity-Building: Strengthening the Impact of Women in the Maritime Sector, it was recalled that TC73 had approved the Global strategy for the IMO Women in Maritime Associations. It was noted the resolutions of the Pacific Regional Energy and Transport Ministers Meeting concerning the achievements and work plans of the Pacific Women in Maritime Association (PacWIMA) and was endorsed the initiative to develop a new Regional Strategy for Pacific Women in Maritime 2025-2030. The Committee expressed appreciation for the activities implemented and supported under the ITCP Women in Maritime Programme in 2023 and within the Organization's long-term thematic projects in relation to gender equality and the empowerment of women. A number of interventions outlined Member State initiatives to promote diversity, gender equality and the empowerment of women. Belgium highlighted that although women played a pivotal role in the maritime

sector, they remained underrepresented, especially on-board ships, and therefore this output remained extremely relevant and expressed the intention to submit a proposal for the expansion of the output.

The World Maritime University (WMU) and the IMO International Maritime Law Institute (IMLI) presented documents summarizing the main activities undertaken during 2023 related to governance and management, financial matters, programme enrolments and graduates, academic developments and partnerships, cooperation, research and consultancies, including publications, outreach activities and United Nations-related matters.

- **IMO Maritime Safety Committee (MSC) and the Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR)**

The International Maritime Organization (IMO) Maritime Safety Committee (MSC) and the Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR) are two critical bodies responsible for advancing global maritime safety, security, and efficiency. This season saw deliberations on a number of relevant items including Ships Routing Measures, updates to the ECDIS Performance Standards, updates to the Global Maritime Distress and safety System (GMDSS), and the implementation of new Recognised Mobil Satellite Services was discussed. A key development was the approval by MSC 109 of a new output on the "Development of guidance to establish a framework for data distribution and global IP-based connectivity between shore-based facilities and ships for ECDIS S-100 products".

- **MSC 108**

MSC 108 convened from May 15 to 24, 2024. The IHO was represented by Director John Nyberg and Assistant Director Sam Harper.

A significant outcome was the approval of MSC.1/Circ.1610/Rev.1, which updated the descriptions of Maritime Services in the context of e-navigation. This document includes Maritime Service 5, addressing Maritime Safety Information (MSI), and aims to harmonize the format and structure of services to improve operational consistency. The committee underscored the importance of periodic updates to these descriptions, particularly as harmonization efforts evolve.

There was much discussion surrounding the recognition of new terrestrial GMDSS services, particularly the NAVDAT system. While MSC 108 decided that a formal recognition framework for such services was unnecessary, the committee clarified that NAVDAT would complement, rather than replace, existing NAVTEX receivers. The Sub-Committee on NCSR was tasked with evaluating NAVDAT implementation issues, considering coordination with NAVTEX, and determining its impact on shore and shipborne infrastructure.

S-100 implementation was another key recurring topic. Following the adoption of resolution MSC.530(106)/Rev.1 on Performance Standards for Electronic Chart Display and Information Systems (ECDIS), the committee tasked NCSR with developing operational guidance for route exchange under the S-100 framework. It also invited stakeholders to propose new outputs for future sessions to address implementation challenges and ensure comprehensive training for seafarers.

A notable milestone was the approval of MSC.1/Circ.1310/Rev.2, which updates the Joint IMO/IHO/WMO Manual on Maritime Safety Information. This revised manual will take effect on January 1, 2025, and reflects the latest standards and practices in MSI dissemination. Furthermore, the committee addressed the dissemination of MSI and search and rescue (SAR) information over multiple recognized mobile satellite services (RMSSs). Member States were urged to implement the Iridium SafetyCast service promptly and ensure MSI dissemination through all operational RMSSs by December 31, 2026. Rescue Coordination Centres (RCCs) were also encouraged to establish arrangements with authorized Enhanced Group Call (EGC) providers to disseminate SAR-related information effectively.

MSC 108 deliberated on revisions to resolutions A.707(17) and A.1001(25), which govern distress and safety communications and mobile satellite communication systems in the GMDSS. The committee emphasized aligning these revisions with existing ITU-T recommendations and ensuring compatibility across RMSSs. While cost implications for information providers were noted, no immediate action was deemed necessary.

IHO Director John Nyberg and CIRM Secretary-General Richard Doherty led a lunchtime information brief on the latest developments within S-100, an overview of some of the new functionality and the benefits that could be expected. The session was very well received and attended by approximately 120 delegates.

Alongside the information session, an S-100 demonstrator had been made available in the IMO Delegates Lounge. MSC members were encouraged to visit the demonstrator where they would be able to get a feel for the benefits S-102 and S-111 would bring to the bridge of a ship. Assistant Director Harper was available to assist delegates with using the demonstrator which received significant interest. The Demonstrator will be in situ until September 2024.

IHO Assistant Director Sam Harper and SB2030 Project Director Jamie McMichael-Phillips led another lunch time information session of GEBCO, SB2030 and CSB. Issues relating to the availability of data, the restrictions of the UNCLOS MSR Provisions and how people can participate in CSB were discussed. The session was attended by over 150 people and very positive feedback was received. A number of national delegations requested copies of the presentation material and indicated that they would investigate their national status as regards CSB.

- **NCSR 11**

NCSR 11, convened from June 4 to 13, 2024, with the IHO being represented by Assistant Director Sam Harper.

A major achievement was the completion of modifications to the GMDSS Master Plan module in GISIS which consolidates enhanced group call (EGC) services under a single section. Member States were urged to keep this information updated, particularly concerning the implementation and broadcasting schedules of services like Iridium SafetyCast and other RMSSs.

The sub-committee considered the annual reports from RMSSs. Considering these reports, Member States were encouraged currently using the Inmarsat SafetyNET system, to migrate MSI and SAR broadcasts to SafetyNET II, which offers superior cost efficiency and functionality.

The importance of integrating S-124 products for navigational warnings into existing systems was also emphasized, with Canada sharing its experience in implementing these specifications. The sub-committee acknowledged the complexities involved in S-124 adoption and urged further development to support its global implementation.

In alignment with MSC 108's directives, NCSR 11 finalized a draft Assembly resolution on charges for distress, urgency, and safety communications in the GMDSS. It also prepared amendments to the SOLAS Convention to mandate the dissemination of MSI and SAR-related information through all operational RMSSs. These drafts will be submitted to MSC 109 for approval and are expected to be adopted by the Assembly in late 2025.
Another critical area of discussion was the development of performance standards for the NAVDAT system, which facilitates digital transmission of maritime safety and SAR information via medium- and high-frequency bands. The sub-committee approved draft resolutions on NAVDAT performance standards and radio service provision under the GMDSS. It also instructed the IMO NAVTEX Coordinating Panel to establish a NAVDAT service coordination scheme, considering timeslots, promulgation characteristics, and service area establishment.

The sub-committee advanced work on the VHF Data Exchange System (VDES), agreeing to re-establish a Correspondence Group to finalize amendments to SOLAS Chapter V and develop performance standards and operational guidelines for VDES. These efforts aim to integrate VDES as a navigational tool while considering its potential to replace the mandatory carriage requirement for AIS.

Guidelines for the use of electronic nautical publications (ENPs) were another priority. A Correspondence Group, led by the Republic of Korea, was tasked with finalizing draft guidelines based on feedback from NCSR 11. These guidelines will address practical aspects of using ENPs, ensuring that seafarers and maritime authorities can transition seamlessly from traditional to electronic formats.

IHO Assistant Director Sam Harper and CIRM Secretary General Richard Doherty delivered the same lunchtime information brief on the latest developments within S-100. Again, the session was very well received and attended by approximately 130 delegates.

IHO attends MSC108, NCSR 11 and MSC 109.

John Nyberg and CIRM Secretary General Doherty present on the latest S-100 developments.

S-100 Demonstrator at the IMO HQ.

- **MSC 109**

MSC 109 convened from December 2 to 6, 2024. The IHO was represented by Director John Nyberg and Assistant Director Sam Harper.

MSC 109 reviewed the report from NCSR 11 and adopted the resolutions on Performance standards for the reception of maritime safety information and search and rescue related information by Medium and High-Frequency digital navigational data (NAVDAT) system and MSC.509(105)/Rev.1 on Provision of radio services for the GMDSS. In doing so, MSC 109 confirmed that carriage of NAVDAT equipment was not mandated under the 1974 SOLAS Convention and that the provision of radio services for the GMDSS was determined by SOLAS Contracting Governments. MSC 109 also noted that NAVDAT implementation would continue to be considered by the NCSR Sub-Committee.

Paper MSC 109/19/3 proposed a new Output on the "Development of guidance to establish a framework for data distribution and global IP-based connectivity between shore-based facilities and ships for ECDIS S-100 products". Recognizing the urgent need to address this matter due to the upcoming implementation of S-100 capable ECDIS from 1 January 2026, MSC 109 discussed the scope of the output. In particular, the following views were expressed:

1. There was general support for the development of the guidance proposed in document MSC 109/19/3 as a first step;
2. Proposals related to SOLAS amendments would require further consideration following a proposal for a new output, along with the necessary assessment;
3. It would be premature to amend the ECDIS Performance Standards at this stage; and
4. A road map could be developed to implement the proposed guidance and identify further elements for future consideration by the Committee.

MSC 109 agreed to take a stepwise approach by developing first the proposed guidance for data distribution and global IP-based connectivity, and identifying further elements associated with the implementation of S-100 capable ECDIS. MSC 109 did not agree to develop a road map at this stage. As a consequence, MSC 109 agreed to include in the new output in the biennial agenda for 2024-2025 and the provisional agenda for NCSR 12, with a target completion year of 2026. MSC 109 noted that any additional relevant work, including possible amendments to SOLAS, the ECDIS Performance standards or any other instruments related to this matter, should be considered only once the above-mentioned output was completed, based on proposals for new outputs submitted by interested Member States;

In considering the urgency of this matter for the implementation of ECDIS S-100, MSC 109 authorized NCSR 12 to report to MSC 110 on any matters related to this output that might require urgent consideration, including approval of the new guidance, if finalized in one session. Finally, MSC 109 Invited interested Member States and international organizations to submit relevant proposals to the HTW Sub-Committee to address STCW competency requirements for ECDIS S-100 as part of the existing output on the comprehensive review of the 1978 STCW Convention and Code.

- **An IMO entity: World Maritime University (WMU)**

The WMU-GOI BUGWRIGHT2 Forum 2024 is framed within the Letter of Intent signed in 2023 by IHO and WMU, aiming at providing a framework for active liaison and cooperation between the two parties, with the common objective to contribute to the United Nations Decade of Ocean Science for Sustainable Development.
The Forum 2024 was held at the Danaos Research Center in Athens, Greece on 16 February 2024 and was organized by the WMU-Sasakawa Global Ocean Institute (WMU-GOI) at the World Maritime University (WMU), on behalf of the WMU-GOI BUGWRIGHT2 team. The IHO Secretariat was represented by Director Luigi Sinapi.
The event holds significant importance as it serves as a culminating gathering of national and international high-level experts for the European Union's Horizon 2020 (H2020) funded project, BUGWRIGHT2: Autonomous Robotic Inspection and Maintenance on Ship Hulls (https://www.bugwright2.eu/).

Since the inception of the project, the primary objective has been to bridge the existing gaps between the present and aspired functionalities concerning service robotics utilized in vessel survey, inspection, and maintenance. The WMU-GOI's defined role within this initiative, is titled "Overcoming Regulatory Barriers for Service Robotics in an Ocean Industry Context" and encompasses the crafting of a cutting-edge regulatory framework concerning Robotics and Autonomous Systems (RAS) in the domain of vessel survey and inspection (further information is available on the website: https://bugwright2.wmu.se/). Further the aim was to deliberate upon the strengths, weaknesses, obstacles and prospects stemming from implementing technology and or techniques within the maritime and oceanic realm.

WMU-GOI BUGWRIGHT2 Forum 2024.

The Forum was opened by Prof. Mejia, President WMU, Mr Dimitriadis-Evgenidis, IMO Godwill Maritime Ambassador,

Prof. Long, Director WMU-Sasakawa Global Ocean Institute and Prof. Johansson from WMU-Sasakawa Global Ocean Institute, who addressed the relevance of the robotic revolution in the maritime domain, the importance of human factor in complex scenarios, the importance of technology in the future of maritime activities and the role of the WMU-GOI in the BUGWRIGHT2. The Forum was an interactive session with moderator-led Panel discussions with experts around the topic area.

IHO Director Sinapi at the session
"Confronting Global Environmental Challenges with Innovation".

IHO Director Luigi Sinapi participated as speaker in Session 2 of the Forum, dedicated to "Confronting Global Environmental Challenges with Innovation" and moderated by Mr. Triantafillou, Head of Strategy, Hellenic Marine Environmental Protection Association. To the questions on "The state of play with regards to innovation in hydrographic data collection and the enhancement of safety, efficiency and sustainability in marine and maritime activities", and "The concept of Digital Twins of the Oceans (DITTO) as example of holistic approach to knowledge of the oceans, combining technology with respect for the environment", Director Sinapi highlighted on the innovative standardized approach to represent the marine environment through the new Universal Hydrographic Data Model S-100, and how DITTO aims to develop a consistent, high-resolution, multidimensional and near real-time virtual representation of the ocean that could make ocean knowledge open-access, available to citizens, scientists and policymakers around the world, providing a platform for global cooperation.

United Nations (UN)

- **14th United Nations Committee of Experts on Global Geospatial Information Management**

There were a number of representatives in attendance with hydrographic backgrounds, including Italy, Finland, Singapore, Republic of Korea, Nigeria, USA, and Jamaica. Dr. John Nyberg represented the IHO at the event and participated on three side event panels, Authoritative Data and Evolving Geospatial Landscape, the Forum on the Integration of Terrestrial, Maritime and Cadastral Domains, and the Forum on the First Joint Development Plan for Global Geodesy. All three events were very well attended.

The panel on Authoritative Data and Evolving Geospatial Landscape recognized the work that the IHO does with respect to displaying data quality information through its standards and the hydrographic domain's flexibility with using data collected in a variety of methods, ranging from crowd sourced bathymetry to hydrographic survey's commissioned for non-navigation purposes.

The Forum on the Integration of Terrestrial, Maritime and Cadastral Domains facilitated a very productive discussion on the integration of land and sea data, a challenge that has been prominent for the duration of the existence of the UN Working Group on Marine Geospatial Information Management (WGMGI). Addressing the land / sea challenge was already a priority for the WGMGI, but the Forum added urgency toward solving the problem and was likely the first UN event to include representatives from the marine, land, policy, legal, geodetic, and other domains to discuss the issue.
The Forum on the First Joint Development Plan for Global Geodesy introduced the First Joint Development Plan on Global Geodesy, discussed options on how representatives will take responsibility for activities outlined in the First Joint Development Plan, and encouraged others to take action. The underlying vulnerabilities of the global geodetic system were discussed along with potential

Participants at the WMU-GOI BUGWRIGHT2 Forum 2024.

solutions for identifying resources, including funding models, to support the system in a sustainable manner. All geospatial domains, including hydrography, would benefit from familiarization with the Joint Development Plan for Global Geodesy.

The IHO, OGC, and ISO TC211 presented the annual report on the implementation and adoption of standards for the global geospatial information community, available on https://ggim.un.org/. The report was managed and introduced to the Committee by Peter Parslow, Chair ISO TC211. Dr. Nyberg presented a short intervention in support of the report.

Dr. Parry Oei, Chair of the UN-GGIM-Marine Geospatial Information Working Group introduced the Group's report. Dr. Nyberg provided an intervention in support of the Working Group's report on behalf of the IHO. The IHO intervention asked Member States to consider increased participation and taking on leadership roles. Additionally, the IHO suggested that, in the interests of reducing duplication of effort, that the Working Group work with the IHO MSDIWG to consider a joint structure moving forward that would leverage the strengths of both groups. The IHO's proposal was specifically supported by Member States with hydrographers in attendance.

The GGIM14 decisions included a paragraph that: "Welcomed and supported the proposal for the working group and the International Hydrographic Organization Marine Spatial Data Infrastructure Working Group (IHO-MSDIWG) to deepen their collaboration, cooperation and optimize resourcing through the formation of a single unified global work group and requested the working group to initiate this process by updating their current working modality and procedures in coordination with the IHO-MSDIWG."

In the GGIM Secretariat report, there was a strong recommendation to start preparing for the post 2030 agenda which should begin negotiations in 2027. The aim is to have GGIM represented at the negotiating table.

Organize, prepare and report annual meetings of the Marine Spatial Data Infrastructures Working Group (MSDIWG)

- **MSDIWG**

Attendees: Australia, Canada, Denmark, Germany, Indonesia, Islamic Republic of Iran, Italy, Malaysia, Portugal, Republic of Korea, Singapore, Thailand, UK, USA, and Venezuela

Chaired by Dr. Parry Oei (Chair, UN-GGIM-MGIWG) the opening session started with remarks from the Mr . Muh Aris Marfai (Geospatial Information Agency of Indonesia), Dr. John Nyberg (IHO), Ms. Caitlin Johnson (Chair, MSDIWG), and Mr. Antonius Widjanarko (Chair, GGIM Asia Commission). Vice Admiral Budi Purwanto (Chief Hydrographer, Indonesia), addressed the group, introducing himself and welcoming the Working Group to Bali.

Dr. Oei noted that the UN-IGIF-Hydro is a living document that needs to be kept up-to-date with modern technology and changing global values. A UN-GGIM update was provided by Mr. Chee Hai Teo (UN Secretariat) where he presented recent changes and progress at the UN-GGIM and noted the progress of the combined groups with the drafting and endorsement of the UN-IGIF-Hydro with the need for further work on implementation. Progress on the UN-Geodetic Center of Excellence was noted and IHO participation/partnership with the Center was requested. Climate resilience and environmental sustainability were noted as focal points for the UN and IHO to work together moving forward.

Ms. Johnson led the second session of the day by introducing the ambitions of the MSDIWG. A review of action items and the WG's work plan were undertaken as part of the meeting introduction. Mr. Yong Baek reviewed the activities of the Assembly, Council, and other IHO bodies relevant to the MSDIWG.

The remainder of day 1 was spent on MSDI national reports. The session included presentations from the

Caitlin Johnson leading the WP drafting group.

Regional Hydrographic Commission MSDI chairs and industry MSDI reports. There was significant interest and discussion around reports which presented established MSDI initiatives. This demonstrated the potential for future workshops on the subject. Also, of note, one regional commission indicated that they were ending their working group on MSDI. MSDI best practices, the land sea interface, IGIF-Hydro and partnerships were key themes from the day.

A session that presented the latest updates and progress from the Open Geospatial Consortium was included in day 3. Virgil Zetterlind (Protected Seas) led a discussion on Marine Protected Areas and the work Protected Seas is doing to present their MPA data in S-122. The discussion continued around MPA (S-122) and how the WG will contribute to the implementation of the standard. They noted the evolving IHO direction to the MSDIWG regarding S-122, and have made the decision to track progress, provide guidance, and possibly present data that Protected Seas will offer in the S-122 standard.

The afternoon session, presenting IGIF implementation initiatives in the Pacific, Canadian MSDI initiatives, and Singapore's experience with spatial data metadata, was conducted with the objective of gathering thoughts from the group on how to enter the next phase of the group's work to serve as experts for the implantation and management of the IGIF-Hydro and C-17.

Ms. Johnson chaired a session on re-thinking the MSDIWG Workplan to be more aligned with the IGIF. She presented a crosswalk between the current plan and the IGIF pathways. Ideas were collected via a group exercise and the foundations for an updated plan were completed.

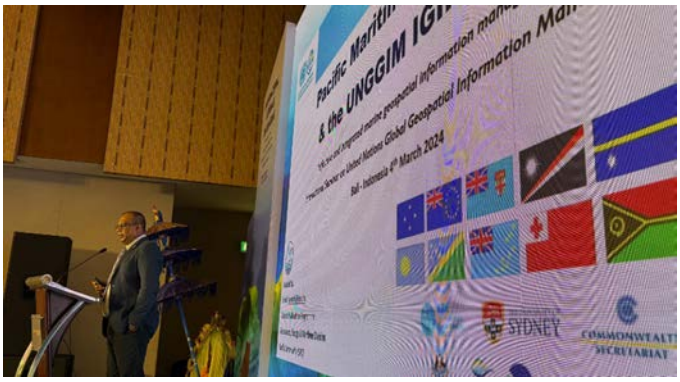
Outcomes:

- UN-GGIM-WMGI agreed that maintaining the UN-IGIF- Hydro is a key component of their future work.
- Progress on the implementation of S-122, with agreed upon path forward for the MSDIWG.
- MSDIWG will propose a refined MSDI action to IHO Council in agreement with the new S-122 path forward.
- Continued collaboration with the UN-GGIM-WGMGI and OGC with agreement that the future work on both the UNIGIF-Hydro and C-17 will be harmonized without duplication of effort.
- The WG agreed to rewrite the IGIF Workplan to be in alignment with the IGIF.
- The IHO Portal was introduced, and agreement was confirmed on its use to manage C-17.
- An updated list of actions was approved for the WG.
- Mr. Julien Barbeau (Teledyne Geospatial) accepted the role of MSDI Secretary.

- **United Nations Seminar on Effective and Integrated Marine Geospatial Information**

A one-day United Nations seminar on integrated marine geospatial information took place prior to the IHO MSDI/ UN-WG-MGI/ OGC meeting. Introductory remarks were delivered by Mr. Muh Aris Marfai (Geospatial Information Agency of Indonesia), Vice Admiral Budi Purwanto (Head of Navy's Hydro-Oceanographic Centre, Indonesia), and Mr. Antonius Wijanarto (President, Regional Committee UNGGIM Asia and the Pacific, Indonesia). The keynote address was delivered by Ms. Rena Lee (Chief Executive/ Registrar, Intellectual Property Office of Singapore and Singapore's Ambassador for Oceans and Law of the Sea). The Seminar included a signing of a Cooperation Agreement between the Indonesian Geospatial Information Agency and Navy's Hydro-Oceanographic Centre.

The Seminar was divided into 3 sessions. The first session was chaired by Ms. Caitlin Johnson (NGA and MSDIWG Chair). Mr. Syafii discussed the impressive geospatial initiatives going on in Indonesia, including the Indonesian Base Map including national bathymetric data and DEM, noting the collection of many datasets in the infrastructure which requires impressive governance across domains. Ms. Tani highlighted existing regulations for marine activities and especially where work is still ongoing to 'fill the gaps,' noting the importance of these legal frameworks. She enforced that geospatial information is key to decision-making and forming appropriate regulations, particularly with a mindset of "ocean spatial planning." Mr. Evans provided an in-depth overview of the International Cable Protections Committee (ICPC) and the indispensable value of submarine cables. He noted the risks associated with submarine cables and the regulatory requirements for installation and maintenance, noting ICPC best practices and the availability and accessibility of submarine cable information.



Mr. Andrick Lal (SPC-PGSC).

Agreement Signing.

The second session was chaired by Mr. Antonius Widjanarko. Dr. John Nyberg (IHO) presented progress on Marine Protected Areas (S-122) and how the standard demonstrates compliance with the UN-IGIF-Hydro and expands beyond traditional navigation based IHO standards. Mr. Andrick Lal presented processes and progress with maritime boundaries in the Pacific, and Mr. Chee Hai Teo presented an update on the implementation of the UN-IGIF.

The third session was chaired by Ms. Helen Philips (UKHO and SWPHC MSDIWG Chair). Captain Agus Sutrianto presented on the Integration of Marine Geospatial Data between Pushidrosal and Other Institutions. He highlighted the uses for hydrographic data environmental protection, disaster response. Dr Parry Oei, Joint IHO Singapore Innovation and Technology Laboratory described how the Lab helps to facilitate innovative projects, enable knowledge creation and foster collaboration multidisciplinary, technical experts to cooperate with international organisations. Kean Huat Soon presented the Framework for Effective Land Administration (FELA): Workplan and Implementation. The three presentations highlighted the common issues and challenges we all have, the importance of partnerships, the collective power of groups thinking outside the box to deliver more quickly. Working collaboratively with partners facilitates innovation and innovative thinking, never assuming it is just us trying to resolve the challenges. We need to act, and we need to deliver quickly. Let's work together to succeed.

Outcomes:

- Prior to the meeting, Geospatial Information Agency and Navy's Hydro-Oceanographic Centre signed a data sharing agreement, a core recommendation of the UN-IGIF and IGIF-Hydro.
- Continued engagement with the UNGGIM and other organizations beyond traditional IHO network.
- Progress on Marine Protected Area (S-122) was presented to an audience beyond navigation.
- Set the scene for the following MSDI/UNGGIM/OGC working group meetings.

Intergovernmental Oceanographic Commission (IOC)

- **2024 Ocean Decade Conference**

Hosted by Spain and co-organized with UNESCO's Intergovernmental Oceanographic Commission (IOC/UNESCO) in its role as the coordinating agency of the UN Decade of Ocean Science for Sustainable Development (2021-2030), the Conference hosted over 1,500 in-person attendees from approximately 124 countries and thousands of virtual participants as the highlight of the Ocean Decade Week (8-12 April). A large-scale platform for representatives from the scientific community, governments, NGOs and civil society, philanthropy, industry, and United Nations entities, this event was inclusive of all voices in the conversation surrounding ocean protection and conservation. Conference discussions strongly supported the significant achievements of the Ocean Decade as the largest global ocean science initiative ever undertaken and identified the following future priorities for ocean knowledge and science generation.

Secretary General Dr. Mathias Jonas, Assistant Director Sam Harper, and Public Relations and Communication Officer Sarah Jones Couture attended the Conference, co-hosted two satellite-events: one in partnership with the OECD on ocean mapping and the second co-hosted with IMO's World Maritime University on achieving gender equality in ocean sciences.

1. The seabed data we need for the ocean we want: This session aimed to look at the importance of advancing our understanding of the ocean and fostering increased investment in related activities.
2. Empowering Women for the Ocean Decade: Achieving Gender Equality in Ocean Sciences and Policy Making

This event was co-hosted by WMU-Sasakawa Global Ocean Institute, International Seabed Authority and International Hydrographic Organization. It looked at how to establish an environment that allows for the equal and fair participation of women.

The Conference itself consisted of two days of workshops, side events and related cultural exhibitions, followed by three days of plenary sessions. The six plenary sessions were organised to explore the work that is being

undertaken to deliver each of the ten Decade Challenges. Each of these plenary sessions were augmented by a number of Parallel sessions which explored specific components of the Vision 2030 White Papers that have been drafted to set out a road map for the delivery of the Decade Challenges, and a blueprint for measuring progress.

Several themes and activities that are relevant to the IHO and the seabed mapping Community were presented including coastal resilience, ocean observations, data collection, data management, standardisation. Updates on the Ocean Decade Data Strategy, the Data 2030 project and the Digital Twin of The Ocean (DITTO) project were discussed. Within these activities, a key principle explore was that of a federated system of data repositories, and the requisite standards, policies and community buy-in that would be required to make such a vision a reality. It was obvious that such an approach presents both potential opportunities for practical use cases of S-10x product specifications, and directly relates to IHO Strategic Goal 2 and 3.

The Conference ended with a landmark series of major announcements and commitments which represent a substantive first step towards achieving the above priorities including the:

- Launch of a roadmap for cooperation between IOC/UNESCO and the European Commission's Directorate-General for Research and Innovation in the framework of the Ocean Decade.
- Launch of new Ocean Decade programmes on sustainable ocean planning, and on sustainable ocean management in Africa.
- Commitment by the Barcelona City Council and the Port of Barcelona to develop a Decade Collaborative Centre focusing on sustainable ocean economy.
- Launch of the Ocean Matcher Tool to enhance opportunities for philanthropic funding to Decade Actions.
- Launch of new funding opportunities for Africa through the Belmont Forum, and SIDS through the Marine Institute, Ireland.
- Launch of the Cities with the Ocean Platform to enhance the use of science for policy and decision making by coastal cities, including the offer of Qingdao Municipality to host the first Ocean Decade Coastal Cities Conference in 2025.

During the Closing Session, the speakers celebrated the successful conclusion of the three-day international gathering, which brought insights, feedback, and solutions through productive discussions and collaborations. These negotiations underscored the pivotal role of the Ocean Decade in catalysing transformative ocean science solutions for sustainable development and providing a visionary path towards 2030. The Conference concluded by setting the tone for further collective and concrete actions, outlined in the newly launched 2024 Ocean Decade Barcelona Statement. Based on insights shared by the global ocean community, the Statement identifies the priority areas of action for the Ocean Decade in the coming years. Vidar Helgesen, IOC/UNESCO Executive Secretary and Assistant Director-General of UNESCO, called to consider it as an actionable framework to be included in implemented scenarios to orient, guide, and refine existing initiatives, as well as new ones, on local, national, and global scales.

- **IOC Executive Council**

The 57th Session of the Executive Council of the Intergovernmental Oceanographic Commission (IOC) was held at UNESCO Headquarters in Paris from June 25 to June 28, 2024. The IHO was represented by Assistant Director Sam Harper. A number of items relevant to the work of the IHO were considered, including the

endorsement of the GEBCO Governance review and Strategy.

The governance and operational effectiveness of the Global Ocean Observing System (GOOS) were key topics of discussion. GOOS aims to sustain a robust global observing infrastructure to serve scientific understanding, ocean risk management, and sustainable development. The IOC Secretariat outlined recent reforms to GOOS governance, guided by the GOOS Strategy 2030, which seeks to align global observing systems with national and regional priorities.

The Council reviewed the appointment of new members to the GOOS Steering Committee and endorsed the inclusion of five regional experts and ten scientific and technical experts. This governance structure aims to strengthen collaboration between Member States and the IOC's regional bodies. Participants emphasized the need for Regional Alliances, particularly GOOS-Africa, to establish clear terms of reference and governance frameworks to ensure inclusivity and effectiveness. Member states expressed support for the proposed reforms, emphasizing that enhanced regional coordination and stakeholder engagement are vital for achieving GOOS objectives under the Vision 2030 framework.

The above is relevant to the ongoing work to investigate whether depth should become a GOOS Essential Ocean Variable (EOV) under the custodianship of GEBCO.
The draft IOC-wide Strategy for Sustainable Ocean Planning and Management (SOPM) was presented to the Council. This strategy aligns with the IOC's Medium-Term Strategy (2022–2029) and aims to guide Member States in addressing ocean governance challenges through science-based tools and frameworks. The IOC Secretariat explained that this initiative responds to calls for enhanced science-based decision-making in sustainable ocean management.

Member States expressed broad support for the strategy, recognizing its importance for achieving Sustainable Development Goal 14 (Life Below Water). The Council decided to establish a Working Group on Sustainable Ocean Planning and Management to refine the strategy and address these concerns before its adoption at the 33rd IOC Assembly in 2025. In terms of the broader utility of seabed mapping, the concept of SOPM as set out in the strategy is an area where the work of the IHO and GEBCO could add value.

The General Bathymetric Chart of the Oceans (GEBCO) Governance review was presented to the Council by IHO Assistant Director Sam Harper. The review recommended improvements to governance structures, stakeholder engagement, and risk management practices amongst other things. The review highlighted the importance of GEBCO's alignment with the UN Decade of Ocean Science for Sustainable Development and the need for increased international cooperation in seabed mapping. The Council endorsed the Governance Review and instructed the GEBCO Guiding Committee to provide an implementation plan by the next IOC Assembly.

The Council also considered the Triennial Review of User Requirements, which gathers feedback on GEBCO products and identifies gaps in bathymetric data. Member States emphasized the need for accessible and high-quality bathymetric data, essential for applications like tsunami warnings, marine spatial planning, and ecosystem conservation. They supported recommendations to enhance data-sharing mechanisms, improve capacity development, and increase participation in future assessments.

The IOC's Capacity Development Strategy (2023–2030) was also presented to the Council. The IOC Group of Experts on Capacity Development (GE-CD) outlined progress in implementing the strategy and proposed a revised Terms of Reference to reflect its evolving mandate.

The strategy prioritizes support for Small Island Developing States (SIDS), Least Developed Countries (LDCs), and youth through targeted training and collaboration. The Council commended the development of the Ocean CD-Hub, an online platform designed to enhance collaboration and visibility for capacity development initiatives. Member States were encouraged to contribute to this platform and provide in-kind and financial support to sustain capacity development efforts.

Key challenges identified included the need for greater participation in capacity assessments and increased outreach to underrepresented regions. The Council endorsed the continuation of the GE-CD's work and encouraged Member States to align their national efforts with the IOC's strategy.

The Council reviewed progress on the UN Decade of Ocean Science for Sustainable Development (2021–2030), which aims to mobilize global efforts toward sustainable ocean management. The IOC Secretariat highlighted key achievements, including the successful execution of the 2024 Ocean Decade Conference in Barcelona, which assessed mid-term progress and set priorities for the coming years.

Member States expressed appreciation for the initiative's contributions to capacity development, data sharing, and collaborative research. They stressed the importance of maintaining momentum and ensuring that outcomes from the Ocean Decade inform broader UN frameworks like the Sustainable Development Goals.

International and Other Observers Organizations

- **International Maritime Pilots' Association (IMPA)**

The 26th Congress of the International Maritime Pilots' Association - IMPA was held in the Postillion Convention Centre WTC Rotterdam from 21 to 26 April and was organized by the Dutch Pilots' Corporation in cooperation with the International Maritime Pilots' Association. All the information related to the Congress can be found at the link https://www.impa2024.com/. The IHO Secretariat was represented by Director Luigi Sinapi.

The Congress benefited from a rich programme of speakers from within the IMPA community, as well as from industry, inter-governmental and non-governmental organizations with whom IMPA works and the International Maritime Organization (IMO). The speakers addressed the safety of pilots on duty, environmental regulations and the impact on piloting, a sustainable profession and human capital, environmental sustainability of pilotage as a public service, recent technology, and stakeholders' engagement.

IHO Director Sinapi gave a presentation "The S-100 standard: the new digital approach to representing the marine environment" whilst on the panel "Ship handling and Operations: Opportunities and Challenges", which was dedicated to international, inter-governmental and non-governmental organizations' speakers. The presentation reflected the huge revolution that the S-100 is introducing in the way to represent the marine environment and provided an overview on the state-of-the-art of S-100 products and services, highlighting the efforts of the IHO and the international community in the implementation phase of the new S-100 standard. The results of the first testbeds conducted in various parts of the world by different agencies on the use of S-100 products and services, and the respective economic and ecological benefits were also presented.

The opportunity was also useful to provide an update on the upcoming S-101 demonstration that will be conducted onboard the ITS Amerigo Vespucci, engaged in a world tour, following the cooperation between Italy and the IHO-Singapore Lab, and on the Letter of Intent (LoI) signed by the IHO and IMPA. The main purpose of the LoI is to focus on the implementation of the S-100 Universal Hydrographic Data Model and the experimentation and testbed of its derived products at the regional and national level, through the involvement of the national Hydrographic Offices and Regional Hydrographic Commissions from the IHO, and the pilots' organizations within the membership of IMPA.

26th IMPA Congress, WTC Rotterdam.

IHO Director presenting on S-100 standard.

IHO Director and IMPA Secretary General with the recent signed IMPA-IHO Letter of Intent.

On the panel "Ship handling and Operations: Opportunities and Challenges", were also presentations by the IMO and IALA representatives – who highlighted respectively on the "2023 IMO Strategy on reduction of GHG Emissions from Ships" and "Advances in Aids to Navigation and VTS to support Efficient Shipping Operations". This last also including some highlights on the progress of the development of series S-200 products – deserve mention.

- **The Mediterranean Science Commission - CIESM**

The 43rd CIESM Congress is an event that not only celebrates scientific breakthroughs but also bridges diverse cultures across the Mediterranean and Black Sea regions, by exploring a wide range of marine disciplines such as dynamics of phytoplankton, environmental toxicology, ocean biogeochemistry, marine biodiversity, sea level variability and coastal hydrodynamics, sustainable blue bioeconomy, microbial biotechnology, geodynamics and marine geological hazards, marine litter and nano/microplastics, climate change impacts, deep sea & extreme environments, aquaculture, ocean literacy, assessment of fishery resources, and Mediterranean Straits.

Particular attention during the Congress was paid to research into the effects of climate change and anthropization in the Mediterranean and Black Sea areas, such as the impact of maritime traffic on marine species, in particular vessel collisions with whales, as well as changes in habitat use by marine species and threats to marine flora.

CIESM and IHO signed a Memorandum of Understanding in 2017, renewed in 2021, to cooperate together for the seas under the auspices of the United Nations Decade of Ocean Sciences for Sustainable Development (2021-2030) principles, to strengthen scientific and technical cooperation for marine policy development and to exchange relevant experience on how modern web-based tools can be used to visualize multiple datasets of various types, enabling a better understanding of interactions within the complex ocean system.

Panel on “Mediterranean Straits: From Ancient Myths to Renewable Energy”.

The 43rd CIESM Congress took place in Palermo, in the prestigious venues of Palazzo Sclafani and Palazzo dei Normanni from 14 to 18 October 2024. The Congress, aiming at strengthening the scientific cooperation amongst coastal States in the Mediterranean and Black Seas, was opened by H.S.H. Prince Albert II, under the scientific direction of the Director General of CIESM, Dr Laura Giuliano. 400 delegates from Institutions, Research Centres, Academia and Organizations belonging to the 23 Member States of CIESM attended the congress. Director Luigi Sinapi represented the IHO as speaker in the “Mediterranean Straits: From Ancient Myths to Renewable Energy” panel, held on 18 October 2024 at Palazzo dei Normanni.

Due to its geological and hydrological setting, the Mediterranean has a lot to say on most relevant Earth’s and climate transformation events. Its Straits, connecting this semi-enclosed sea with Earth Ocean, play a pivotal

Panel on “Mediterranean Straits: From Ancient Myths to Renewable Energy”.

role. Inspiring ancient myths evolving through the culture of fishing villages or enlightening modern hydrodynamic theories with application in renewable energy sectors, Mediterranean Straits are well known since their ancient history, for their economic, strategic, and political importance. The Panel tackled all Mediterranean Straits' aspects, encompassing their physical, ecological, economic, strategic, legal, and political importance.

In his intervention entitled "Safety & security in Mediterranean Straits", Director Sinapi provided an overview on the Mediterranean Straits as key routes for maritime trade, significantly impacting global commerce. They also serve as gateways for cultural and diplomatic exchanges and are essential natural corridors for marine fauna. The Strait of Gibraltar is crossed by approximately 109,000 ships each year. The Suez Canal handles nearly 30% of global container traffic and the Strait of Sicily provides a vital corridor for ships traveling between the eastern and western Mediterranean.

Hydrography and the IHO play a crucial role in ensuring the safety and security of navigation in Mediterranean straits. With products based on the S-100 Universal Hydrographic Data Model, ships will have access to up-to-date information on underwater obstacles, currents, and tides. This will help prevent accidents that could potentially cost lives and have negative economic impacts. Additionally, with IHO products like the S-122 Marine Protected Areas, mariners can be informed of biological activity along their shipping routes, helping them make decisions to prevent ecological harm, such as avoiding collisions with marine mammals.

- **Seapower Symposium**

The XIV Seapower Symposium is a worldwide-awaited, open and inclusive forum where dialogue, discussion and sharing of perspectives link different worlds. Navies, industries, public institutions, academia and international organizations were engaged in across-the-board debates involving the diverse community of players of the national and international maritime cluster.

The theme of the fourteen edition was the underwater environment, as exemplified by the title "A Spotlight on the Depths: the Underwater as the new frontier for humankind". Today, the underwater environment is a very complex and not clearly defined space, the subject of various disputes between states and attention even from other entities that are not necessarily governmental.

As nations grapple with the complexities of competition for resources, military strategies and challenges, the relevance of the underwater world will continue to grow, requiring greater attention and cooperation among global actors to ensure maritime stability and security. Exploring, safeguarding and regulating the underwater environment, while keeping pace with technological advances, is key to addressing global challenges related to safety, resource management, biodiversity conservation and climate change.

The XIV Trans-Regional Seapower Symposium – 8-10 October 2024 – Venice, Italy.

The XIV edition of the Trans-Regional Seapower Symposium (XIV T-RSS), organized by the Italian Navy, was held in Venice, Italy from 8 to 10 October 2024, in "Ex-Squadratori" hall within the historical Arsenal of Venice. The Italian Navy Ships Thaon de Revel, Palinuro and Spica moored alongside Canale della Giudecca in front of the historical Arsenal of Venice, hosted bilateral and thematic meetings. 600 delegates from 67 Navies and 170 Organizations attended the symposium in person. A streaming session of the entire Symposium was also provided by the Italian Navy. Director Luigi Sinapi represented the perspective of the IHO, highlighting how the information on the ocean is the basis for all activities centered on the sea and is fundamental to developing the Blue Economy. It can help guide investments, the use of resources and the protection of underwater infrastructure such as cables. The IHO commitment to increasing knowledge and the availability of data related to the ocean floor, as well as the importance of the full digitization of the marine environment, were also highlighted. This includes the increase of cooperation at an international, regional, and national level with institutions, academia, research centers and industry, and the development of new data standards (S-100) that enable the holistic representation in a four-dimensional manner of the ocean above, on and below the surface.

IHO Director Luigi Sinapi – "Mapping the Seafloor as the Key to Preserve the Marine Environment".

Public relations and outreach

Relationships with the Government of Monaco and the diplomatic corps accredited in Monaco

Communications with the Government of Monaco, in particular the Department of External Relations and Cooperation, was regular and productive throughout the reporting period. Thanks to the established collaboration procedures the accession of the Republic of Kiribati as 100th Member State was successfully managed. Consultations with the Foundation Prince Albert II took place to create a common understanding which contributions to the forthcoming UN Ocean Conference in 2025 can be attributed jointly by the two bodies.

It is common diplomatic practice that many member states' ambassadors who are accredited for the French Republic hold concurrent accreditation for the Principality of Monaco. The new Ambassador of Japan to France and Monaco H.E. Makita Shimokawa, Ambassador of France to Monaco M. Jean d'Haussonville and Ambassador of Sri Lanka to France and Monaco H.E Manisha Gunasekera were welcomed for consultations at the IHO Secretariat as a side event of their official local accreditation in the presence of His Serene Highness Prince Albert II of Monaco.

Promote the IHO through publicity and public relations initiatives

The IHO Secretariat continued its efforts to raise awareness of hydrography's global impact beyond navigation, highlighting its role in various ocean domains. Our communication initiatives also support and reinforce the technical work carried out by IHO staff. This includes through public relations efforts, media engagement (both internationally and locally in Monaco), and events beyond our usual organs and subordinate bodies. A strong emphasis on online communication remained a priority this year, helping to expand outreach and showcase IHO's work.

	Page title and screen class +	↓ Views
	Total	1,237,546 100% of total
1	Search results | IHO	341,535
2	Home | IHO	125,595
3	Navigation Warnings on the Web | IHO	61,326
4	Standards and Specifications | IHO	47,808
5	Standardization of Maritime Activities	23,422
6	(not set)	23,229
7	Circular Letters 2024 | IHO	19,828
8	HSSC | IHO	19,582
9	RHC, Regional, Commissions	15,084
10	Standards in Force | IHO	14,436

To reach a broader audience and increase visibility, the Secretariat diversified its online communications, refining both content and style. A key development was the launch of the IHO Instagram account, designed to present information in a more visual, concise, and accessible manner. Within a few months, the account successfully engaged a new audience beyond the regular participants of IHO organs and subordinate bodies.

On LinkedIn, our following continued to grow, reaching 10,737 by December. The most-viewed post announced

opportunities for at-sea training with Shom as part of the EWH project, garnering 17,889 impressions. The second most-viewed post, about the release of the new S-101 ENC for testing, received 9,885 impressions. Overall, LinkedIn content reached a total of 288,097 views in 2024.

While Facebook followers saw a modest increase to 1,522 (with total views reaching 31,500), engagement on X (formerly Twitter) declined, with 1,250 followers and only 18,731 views. Based on these trends for X, the Secretariat has decided to prioritize other social media platforms for outreach.

In December, the Secretariat launched a Hydrography Advent Calendar, presenting a new aspect of hydrography each day across all social media platforms.

The IHO website's visibility continued to grow, registering 1,237,546 views in 2024, further solidifying its role as a key information hub.

World Hydrography Day

The theme of World Hydrography Day (WHD) 2024 was "Hydrographic Information - Enhancing Safety, Efficiency and Sustainability in Marine Activities". This theme was selected to highlight that - as per Decision 8 of the third IHO Assembly in May 2023 - Goal Number 1 of the Strategic Plan and it targets shall have the highest priority in the implementation of the 2024–2026 Work Programme, which means priority in

- Application of material and human resources.
- Liaison with public sector and industry partners.
- Promotion of concerted regional approaches including increased collaboration with the RENCs; and
- Support of test beds delivering best practice examples for the production, maintenance, and distribution of all prioritized S-100 derivatives.

International Hydrographic Review

The International Hydrographic Review (IHR) concluded 2024 on a successful note. The strategic objectives formulated in 2022 have been consistently and continuously pursued with unwavering dedication, namely: To enhance the journal's international reputation and appeal to authors and readers; to ensure the continuous enhancement of the publication's content quality; to foster collaboration and facilitate the exchange of knowledge between different disciplines; and to maintain the journal's status as a reliable source of information for the entire hydrographic community, encompassing academia, industry, organizations, and agencies.

IHR Volume 30 comprises two issues published in May and November 2024. These issues contain a total of 15 scientific peer-reviewed articles, 12 notes/technical reports, 3 conference papers, 2 book reviews, 3 general information, and 1 obituary. It is gratifying to note that the papers in both issues were met with great interest, having been read thousand-fold and cited numerous times.

Particularly noteworthy is the keynote article on deep-sea biodiversity research by Alex David Rogers, at the time Professor at the University of Oxford and Director of Science at Ocean Census (United Kingdom) resp. REV Ocean (Norway), whose publication documents the interdisciplinary nature of IHR. Another article that merits highlighting is the one by Manuela Ammann (University of Applied Sciences Northwestern Switzerland), winner of the IFHS Student Award, which emphasizes the IHR's commitment to promoting young talents. The IHR also addresses community and social relevance topics, as e.g. showcased by the contributions of Masanao Sumiyoshi and colleagues (IHO Capacity Building Programme) and Simon Ironside and colleagues (Mapping the Plastic in the Sea).

The IHR is an international scientific journal that publishes high-quality original articles on all aspects of hydrography and associated subjects. As an open access journal, all articles are freely available at https://ihr.iho.int/. The editorial board is chaired by Editor-in-Chief Dr Patrick Westfeld, and its members represent the Regional Hydrographic Commissions and include further expert contributors.

Title covers of the two issues 30(1) and 30(2) of The International Hydrographic Review published in 2024.

Encourage new membership of the IHO

The Secretariat was in dialogue with another handful of IMO Member States which indicated interest in joining the IHO. The Secretariats undertook every effort to explain the rights and benefits of their potential IHO membership and looks optimistically forward to welcoming more new IHO members in the forthcoming years.

Management of the IHO Secretariat

Human Recourses

Based on the decision of the third Assembly (Decision A3/10) the entire Secretariat´s staff is working under the revised M-7 Staff Regulations Edition 9.0.0 which was set in force by 1 July 2023.

- **Changes in IHO Secretariat Staff**

The Secretariat comprised 19 Members of Staff, supplemented by three officers seconded by Member States and one assistant to work on specific projects otherwise beyond the resources of the Secretariat. The total number of staff increased by two compared to the previous year. Ms Patricia Strati from Italy received a permanent contract as Administration Accounting Assistant and Mr Matthieu Paris from France was confirmed in his role as Information and Technology Officer. Ms Luz Delvasto from Columbia has served as Outreach Communication Assistant on a limited contract since September.

Mr Yves Guillam, Assistant Director Charting & Services from France left for retirement after almost 12 years' service end of October. He was replaced by Mr Eric Langlois from France.

- **Secondment of Personnel to the IHO Secretariat**

Ms Inyoung Park of Korea Hydrographic and Oceanographic Agency and Mr Masanao Sumiyoshi who arrived in March from the Japan Coast Guard and succeeded to Kazufumi Matsumoto, have been posted to the Secretariat.

A seconded officer from the Directorate of Hydrography and Navigation of Peru, Ms Rosa Acosta Urbina arrived at the Secretariat in January 2024 and assisted with cartographic and organisational tasks.

- **Translation Service**

Under the supervision of the Head Translator, Ms Isabelle Rossi, translation support is received from external contractors - Mr David Giraudeau, Shom, France and Mr Máximo Rubio, from the Spanish Hydrographic Office. The use of modern translation software assists in maintaining high quality and expedient translations into both languages.

Material resources

Building maintenance

Thanks to our staff member Mr Areski Maache and his painting skills, the Secretariat's offices were given a new lease on life. Mr Maache also recycled numerous conference tables with new table tops.

Technical Library of the IHO Secretariat

The Secretariat's technical library comprises of bound manuscript copies of all significant IHO records, such as Conference Proceedings and Circular Letters, together with an extensive ad hoc collection of reference books and periodicals on various topics related to hydrography and nautical charting. The rare copies of the early publications of the organization before the digital age are well protected behind lockable glass doors added to the bookshelves.

- **Information and Operations Management**

IT-Infrastructure of the Secretariat

As an ongoing requirement for any modern IT infrastructure, hardware and software equipment were under permanent maintenance and modernization. The further digitalization of administrative and production processes at the Secretariat was progressing.

The internal IT management continues to rely on a combination of one dedicated member of staff and an Assistant Director, together with assistance and services provided by several service providers under contract. An ongoing challenge was the provision of matured hard- and software infrastructure for remote and hybrid meeting formats. Investments were made in improved audio and video transmission. Other notable investments were made to start the transition to Windows 11 and Microsoft's OneDrive cloud technology. Both elements require substantive investment in desktop soft- und hardware. Office hardware was almost completely replaced with notebooks featuring specific hardware adapter for a two-monitor-workspace.

The IHO website offers open access to a repository of official working documents issued by the Secretariat since 2000 or the date of establishment of active IHO bodies after this year. The preparatory work on the new IHO Portal integrating modern meeting registration tools and archive functionality was finalized under contract with the Korean Company BLUEMAP by end of 2024. The portal is designed to replace the existing Digital Documents Archive ("Reisswolf") and the meeting registration system previously in place. The content transition progressed only well thanks to the technical and operational support of project officers from Japan, the Republic of Korea and Peru.

In-kind contributions of Member States hosting applications such as the DCDB (USA), S-100 Registry and the IHO e-learning centre (both hosted by Republic of Korea) are indispensable for the proper functioning of the Secretariat's digital services.

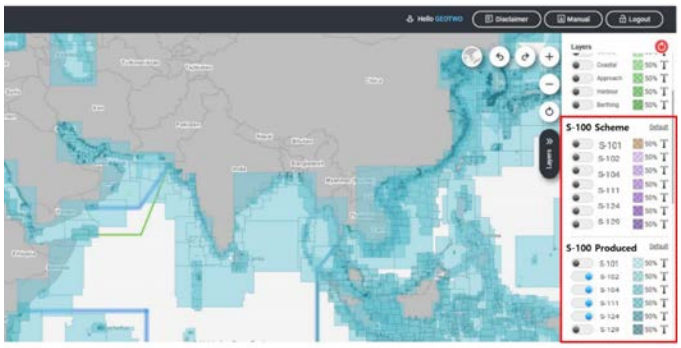
During the year it became even more evident that the continued operations of those services require substantial human resources. The Secretariat´s operational maintenance of the S-100 Registry forming the core digital

component of the S-100 framework alone absorbs two thirds of the time of the appointed staff expert.

GIS Infrastructure

As part of the global GIS infrastructure used in the Secretariat (Country Information System, the Catalogue of National Web portals, etc.), INToGIS is the one-stop-shop platform designed to provide global catalogues of navigational data products compliant to IHO Standards. The system is widely used by Member States, the Regional Hydrographic Commissions, the Charting Regions Coordinators and the IHO Secretariat, to display and manage, the Web Catalogue of INTernational Charts and ENCs (S-11 Part B). Several additional layers are available (World Port Index, European Waters Traffic Density (EMODnet), CATZOC data, etc.). The 2nd version in force is named INToGIS II. Charts and ENCs queries, gap analysis and ENC overlapping functions are available. The WENDWG continued the discussion on the subsequent development of INToGIS III, using S-128 standard as far as possible, in order to allow HOs and other users to manage and visualize S-1xx products coverage in the future. The planning and maintenance of S-10X products are important aspects of INToGIS III. It will offer functionality to guarantee that the coverage of products planned and published by Member States is adequate.

The structured development plan includes the changes of the interface, adding S-100 products for ENDS (Phase I) and additional data layers. For the future planning of INToGIS III, from 2025 – 2029, this tool is expected to facilitate planning / scheming ENCs, S-100 Products



INToGIS III user interface to feature S-1xx product coverage.

for ENDS by Member States, via a coordinated process within the RHCs. Then from 2026, the development of INToGIS IV will include Phase II S-100 Products for ENDS.

Maintenance of publications that are not allocated to a specific IHO body

The Secretariat maintained and issued various publications during the year including P-5 - IHO Yearbook, P-6 Assembly Proceedings, P-7 - IHO Annual Report, S-11 Part B – INTernational Chart Web Catalogue, associated web services and user manuals, and M-3 - IHO Resolutions.

Communication between the IHO Secretariat and Member States through Circular Letters

During the year, the Secretariat published 47 Circular Letters (CLs) in English, French and Spanish and two Finance Circular Letters were published in English and French. In addition, four Council Circular Letters in preparation for the eighth Session of the IHO Council were dispatched.

WORK PROGRAMME 2
Hydrographic Services and Standards

Introduction

The IHO Work Programme 2 "Hydrographic Services and Standards" seeks to develop, maintain and extend technical standards, specifications and guidelines to enable the provision of standardised products and services that meet the requirements of mariners and other users of hydrographic information. This Work Programme is under the principal responsibility of the Hydrographic Services and Standards Committee (HSSC).

Technical Programme Coordination

This element monitors technical developments and oversees the development of the IHO technical standards, specifications and publications through the coordination and interaction of the relevant IHO working groups reporting to the HSSC.

Conduct Annual meeting of the HSSC

The 16th Hydrographic Services and Standards Committee was hosted by the Hydrographic and Oceanographic Department, Japan Coast Guard and was attended by 31 Member States including Australia, Belgium, Brazil, Canada, Chile, China, Denmark, Estonia, Finland, France Georgia, Germany, India, Indonesia, Iran, Italy, Japan, Malaysia, Netherlands, Norway, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Singapore, Spain, Sweden, Thailand, United Kingdom, and United States. Additionally, 6 NGIOs[1] were represented, PRIMAR and a few other invited expert contributors.

The meeting was chaired by Mr. Magnus Wallhagen, National Hydrographer of Sweden, who opened the meeting by recognizing that the HSSC16 agenda well represented the critical period that the IHO HSSC was in the midst of. Mr. Wallhagen was supported by Ms. Nathalie Leidinger – HSSC Vice Chair (France), Dr. John Nyberg – Director (IHO), and Mr. Yong Baek – Assistant Director (IHO).

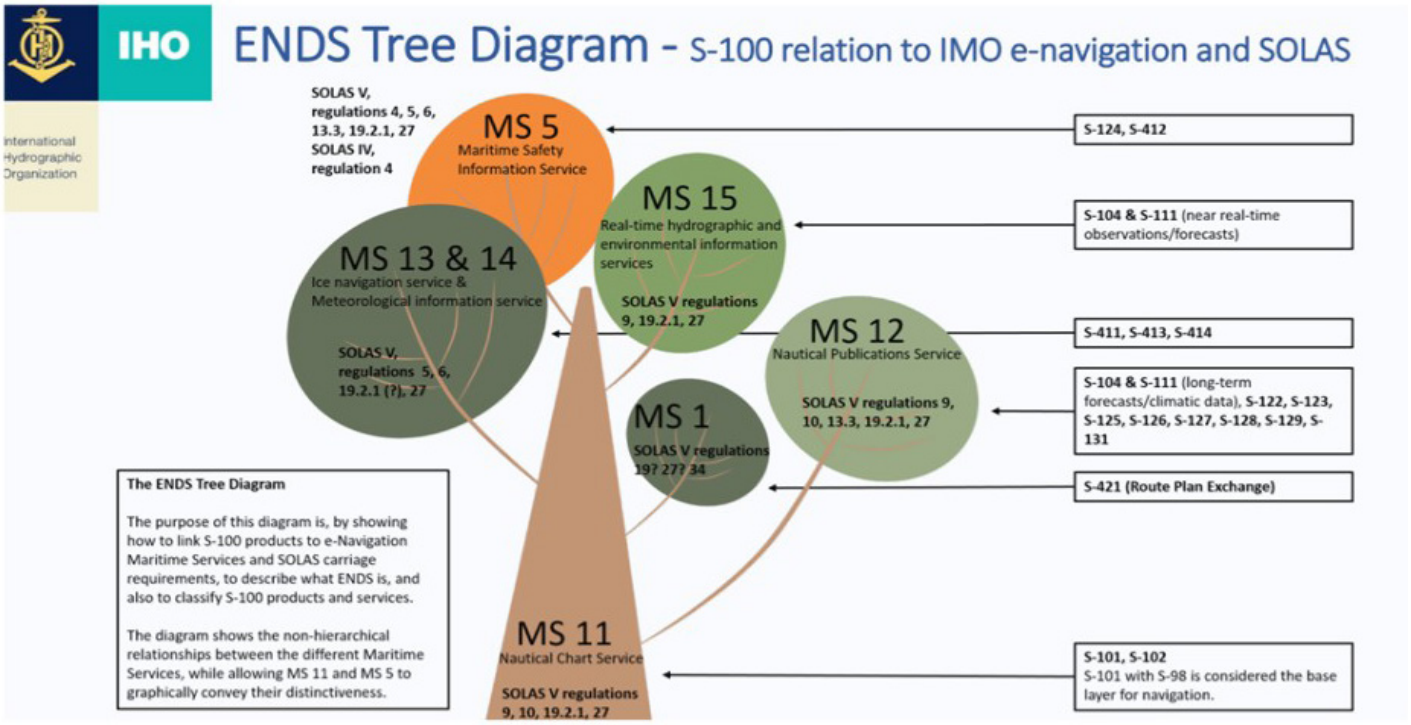
Opening remarks were delivered by Dr. Masayuki Fujita-san, National Hydrographer of Japan, who warmly welcomed the IHO and its Member States to Tokyo. He presented his strong support for the work that the HSSC does and his sincere desire for a successful meeting to advance the agenda of the Committee and its Working Groups.

In preparation for the new IHO Strategic Plan, Mr. Wallhagen and Dr. Nyberg presented a refined summary of areas that the WG Chairs agreed needed refining. This was followed by a decision to post a list for each MS to submit three priority votes on items of importance for the strategic direction of the IHO. The results were shared at the end of

Taking advantage of the February VTC Chair Group meeting on the HSSC inputs to the revised IHO Strategic Plan Votes results.

HSSC 16 Participants.

[1] CIRM, IALA, ICPC, IEC, OGC, WMO



ENDS Tree Diagram.

the meeting. The IHO relationship with IMO was considered as highly important.

In close relation to the IMO, the NIPWG Chair presented an Electronic Navigation Data Services (ENDS) Tree Diagram. The meeting considered this to be an important tool for communicating the relationship between S-100 products and services to the IMO e-navigation series of Maritime Services (MS). It was also noted that the diagram can be a useful tool to help hydrographic offices communicate the importance of their work, particularly in instances like IMO audits.

Proposed IHO Infrastructure Center Implementation Timeline.

The Committee agreed to work with the IMO to hold an industry stakeholder session in conjunction with a 2025 IMO meeting in London.

Furthering HSSC's shift to incorporate a strong strategic agenda, the Committee considered the Infrastructure Centre Establishment Project Team's (ICE PT) report, presented by the Chair of the PT, Dr. Benjamin Hell. The name of the centre was agreed as "IHO Infrastructure Centre" and along with the general roles and responsibilities of the Centre, a timeline was agreed on for implementation, to be presented to Council. Importantly, the ICE PT was tasked to start analysing the IHO Basic Documents to see how they might need to be adjusted, and it was also recognized that the IHO Security Scheme will need to be an integral part of the Centre's responsibility. The Committee agreed that the location of the Centre will be in the Republic of Korea, likely in Busan or Incheon.

The Joint IHO-Singapore Innovation and Technology Laboratory presented progress on all of its current projects with notable successes on S-57–101 conversion guidance, and testing S-102 and 104 and sea trials with S-124 and S-125. The Lab also presented future projects including the testing and operation of the dual fuel ENCs (S-57/S-101) datasets along major international shipping routes and the integration of sea and land datums to monitor sea level rise.

A session on the IHO Security Scheme was held with a focus on updating IHO processes and procedures regarding the S-63/S-100 security scheme. The Security Scheme Project Team presented progress on updating the contracting process for OEM and Data Server agreements. The agreements were in need of a legal review and have already been edited to reduce legal exposure for the IHO but will be further reviewed to improve the terms for both the IHO and signatories of the agreements. A security scheme review process will be put in place for future scheme adjustments.

Working Group and Project Team reports were delivered with many highlighted successes. The most important overall WG/PT success is the widescale coordination to complete operational versions of Phase 1 product specifications by the agreed date at the end of 2024. This

coordinated IHO effort will allow for hydrographic offices around the world to begin full Phase 1 S-100 based production. The Committee noted that both S-98 and S-164 are on the critical path with medium risk for not meeting their 2025 Edition 2.0 deadline. This would impact the type approval process for S-100 ECDIS.

Considerable discussion around data distribution took place during the meeting with particular interest in Secure Exchange and Communication (SECOM) of S-100 based products and services. While S-100 data distribution still needs further testing and consideration, SECOM has presented itself as the most likely means for the secure transfer of S-100 based services. Additionally, the Committee engaged in a discussion around the allowance of SENC delivery for S-100. The majority of IHO MS agreed that SENC delivery is not needed for S-100 and that it may impact the ability to deliver digital signatures from the hydrographic office through the supply chain to the ECDIS. The Committee agreed that further testing should focus on determining if S-100 Part 15 is feasible for S-100 data distribution and that it should ensure that the digital signatures are retained from producer to end user system.

There were some items of particular interest beyond IHO S-100 Phase 1 implementation, including a discussion regarding the inclusion of S-401 Inland ENC in a future version of S-98. The HSSC agreed that a further discussion was needed to assist the Inland ENC Harmonization Group (IEHG) with a future solution for reconciling S-401 with S-98 or an inland version of S-98. HSSC also welcomed the participation and status update from WMO (World Meteorology Organization) on the development of the weather-related S-100 products, with first priority on S-412, Weather and Waves Warning which is a crucial part of the Maritime Safety Information (MSI).

Following a request from DOALOS, the Commission agreed that the S-121 PT should restart their activities in order to support the United Nations process for depositing maritime boundaries in the UN system.

The HSSC recognized the strategic importance of the MASS PT by agreeing to submit a proposal to elevate it to Working Group status at Council 8.

The Committee agreed to request that the IHO Council recognise the St. Lawrence River as an "IHO Canada Sea Trial Area" along with the possibility to identify additional official areas around the world. Canada agreed to share data for the St. Lawrence Sea area free of charge for 6 months for testing purposes. With the operational versions of the Phase 1 S-100 product specifications moving towards implementation, a more structured testing and experimentation approach for their validation, involving all the stakeholders, has been agreed upon, building on the work of the ISO 9001 cell.

Noting the considerable attention paid to strategic decisions, the HSSC Chair Group decided that it would be appropriate to extend the 2025 HSSC meeting for

Needs for building an agile validation strategy.

an extra half day with a strategic focus, including the management of the IHO/IMO/WMO/IALA/CIRM relationships, interaction with the WENDWG, resources and priorities for using them, and working to ensure that the Committee is taking decisions based on validated information including the HSSC ISO Cell.

Hydrographic Data Transfer Standards

This element addresses the developments related to transfer standards for digital hydrographic data, the maintenance of the relevant IHO standards, specifications and publications and the provision of technical advice as appropriate.

Conduct meetings of HSSC Working Groups

- **9th S-100 WG**

The S-100WG 9 was held in Genoa, Italy from November 4 to 8. It was chaired by Ms. Julia Powell (United States), with Mr. Benjamin Hell (Sweden) and Elizabeth Hahessy (Denmark) serving as co-vice chairs. A total of 61 delegates participated, representing 22 Member States, including Australia, Brazil, Canada, Chile, China, Denmark, Finland, France, Germany, Greece, India, Indonesia, Italy, Japan, Morocco, Netherlands, New Zealand, Norway, Republic of Korea, Slovenia, Spain, Sweden, the United Kingdom, and the USA, along with 30 Expert Contributors. The IHO Secretariat was represented by Assistant Director Yong Baek, with Technical Standards Support Officer Jeff Wootton.

Main Discussions and Decisions:

- S-100 Edition 6.0.0 Publication Plan and review proposals:
  The group agreed on a plan to publish S-100 Edition 6.0.0 by 2027. Approved proposals for integration into Edition 6.0.0 include Part 1 URI, Part 7 all geometric primitives, Part 10b dataset identification, Part 10c scan direction references, optional timepoint and ID, Part 15 data status, signature reference, and edition number, and S-100 schema validation. A proposal for Part 17 exchange catalogue metadata was rejected, and the proposal for Part 15 schema was withdrawn.

- S-98 progress, and S-100 overlay on S-57 ENC: The meeting agreed to circulate S-98 Edition 2.0.0 for review and comment prior to the S-100 Test Strategy Meeting scheduled for March 2025, with final comments to be addressed before submission to the next HSSC. Regarding the display of S-100 overlays on top of S-57 ENC, the group confirmed S-100 based non-ENC data overlay on S-57 chart data must not interact with or modify the underlying chart data in ECDIS, in particular the user selectable safety contour and water level adjustment features must only be implemented over S-101 charts.

- Progress on S-164 IHO Test Data Sets in ECDIS:
  The meeting agreed that the S-164 Test Instruction Manual (TIM) will be submitted to the next HSSC, while the development of the Test Data Sets (TDS) will require additional time. The complete S-164 Edition 2.0.0 package is scheduled to enter the IHO approval process in August 2025.

- S-100 based Product Specification validation check: The meeting focused on enhancing validation processes, aligning standards, and ensuring sustainable management of IHO resources. Key decisions included approving the S-158:101 validation checks for submission to HSSC and transferring responsibility for updating S-158:1xx checks from the S-100 Validation Checks subgroup to S-100 Product Specification (PS) owners, who will now use a standardized proposal form for changes.

  The group also agreed to integrate S-100 Part 6 validation checks into S-98 to reduce redundancy, adopt a consistent Check Classification approach across standards, and simplify naming by removing the "S-" prefix from validation check names in the template. Document formatting was addressed, with the S-158:1xx cover document to be provided in Word and validation checks in Excel for easy access by the PS owners. Looking ahead, the meeting agreed to submit Edition 1.0 of S-158:100/98 to HSSC 17.

  The working group will also continue discussions on adopting GitHub for document standardization, and the Validation subgroup will propose a long-term storage solution for validation checks at the next S-100WG meeting.

- Revision of IHO Resolution 2/2007: During the last round of product specification submissions, inconsistencies in the versioning system used for the IHO endorsement process were noted. To address this, the meeting endorsed a proposal to revise IHO Resolution 2/2007, establishing a more structured version control process for standards approvals. This proposal will be submitted to the HSSC for further consideration, with the goal of improving consistency and oversight in the approval process.

- IHO Webpage Restructuring for ENC and ECDIS
  IHO Assistant Director Yong BAEK proposed a restructuring of the IHO website for ENC and ECDIS sections and the meeting supported the proposed layout to improve accessibility and clarity. The restructuring will include essential resources, and progress will be reported in the next meeting.

- Test Bed and Sea Trials Demonstrations:
  The meeting highlighted several collaborative sea trials and test bed projects presented by participants. These included a study by KHOA/KRISO on the ecological benefits of S-100 implementation, and a demonstration of the IHO-SGP dual-fuel ECDIS onboard the Italian ship VESPUCCI, showcasing its ability to display both S-57 and S-101 data and identify portrayal gaps in ENC datasets. Additionally, Canada shared its S-100 International Sea Trial Area plan, which aims to test and provide various

  S-100 datasets, contributing valuable insights to the broader S-100 development efforts.

- **13th S-101 Project Team**

The 13th meeting of the S-101 Project Team (S-101PT13) was held in Stockholm, Sweden, from 17 to 19 June 2024, principally as an in-person meeting, but also providing live streaming for remote attendees. The meeting was chaired by Mr Thomas Richardson (United Kingdom) with co-vice chairs Mr Klas Östergren (Sweden) and Mr Alvaro Sanchez (Australia)[2].

A total of 42 in-person participants attended the meeting, including 26 delegates representing 17 Member States (Australia, Brazil, Canada, Denmark, Estonia, Finland, France, Germany, Italy, Latvia, Morocco, Netherlands, Norway, Republic. of Korea, Sweden, United Kingdom and United States of America). External liaison representatives from the International Electrotechnical Commission (IEC) and International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) also attended, as well as 12 Expert Contributors. The IHO Secretariat was represented by Assistant Director Yong Baek and Technical Standards Support Officer Jeff Wootton, who serves as Secretary for the S-101PT.

[2] Remote attendance.

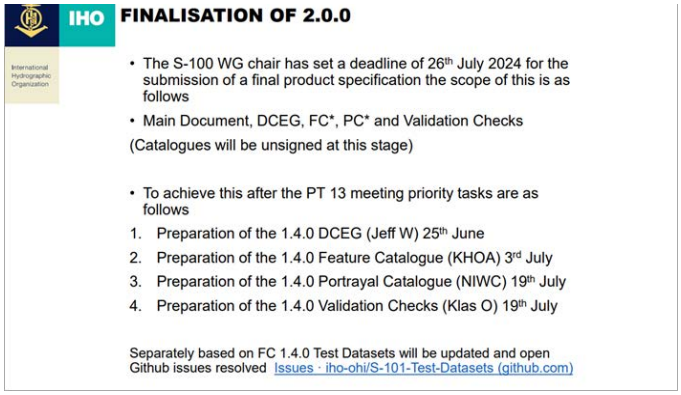
Opening Remarks by HSSC Chair and S-101PT Chair.

Mr. Magnus Wallhagen, HSSC Chair and the National Hydrographer of Sweden, provided opening remarks, welcoming attendees to Sweden and stressing the importance of the meeting in achieving this milestone for S-101 ENC development so as to meet the S-100 timeline outlined in the S-100 Roadmap and the IMO revised Resolution on ECDIS Performance Standards. The S-101PT Chair then opened the meeting, emphasizing the key agenda items, which primarily focused on unresolved issues to ensure that the operational version of the S-101 Product Specification is submitted by the required deadline. This submission must be completed by July 26, 2024, to meet the submission timeline for S-100WG and HSSC endorsement, and Member State adoption, by the end of 2024.

The S-101PT13 meeting concluded several important technical decisions and actions:

- **S-101 Validation Checks**: The validation checks for S-101, as directed by HSSC-16, has been assigned the Product Specification number S-158 which is scheduled for publication in 2025.
- **S-100 ECDIS ENC Update Indication**: For S-101 Edition 2.0.0 and initial implementation of S-100 ECDIS, the functionality to display indications of changes to ENC as included by ENC updates will be implemented as for S-57/S-52 ECDIS. The Update Information feature will initially be optional, with a phased approach to be raised to the S-100WG and the HSSC to potentially mandate this feature to replace the existing ECDIS functionality.
- **Interoperability Identifier (ID)**: It was agreed that the inclusion of the Interoperability ID attribute (in Maritime Resource Name (MRN) format) on all Meta and Geo features for S-101 Edition 2.0.0 will facilitate efficient interconnection between corresponding features included in different S-1xx products. Guidance regarding the Interoperability ID will be included in S-97 for a harmonized approach across all S-100 Product Specifications. The S-101PT Chair will raise this issue with the S-100WG for the development of more detailed guidance in the S-97.
- **Vertical Datum Information**: The meeting agreed on a clarification to S-101 that vertical and sounding datum information presented to the mariner in S-100 ECDIS will be derived only from Meta features. The vertical Coordinate Reference System for soundings populated in the ENC dataset header (DSID) will not be used for this purpose.
- **ENC Support Files**: The terms "ENC support files" and "system support files" were agreed upon to distinguish files referenced by attribution within an ENC dataset from files such as Catalogue files required for end-user system implementation. It was also decided that HTM and XML formats will be removed from S-101 as allowable file formats for S-101 ENC support files.
- **S-101 Edition 2.0.0 Product Specification Finalisation**: The S-100WG chair has set a deadline of 26th July 2024 for the submission of the final Product Specification, which will require completion of the S-101 documentation (Main and DCEG), Feature Catalogue and Portal Catalogue as shown below:

A series of S-101PT remote meetings were held in the second half of 2024, taking into consideration further issues raised and the approval process for S-101 Edition 2.0.0.



Timeline for S-101 Edition 2.0.0 finalisation.

S-101PT13 meeting in-person participants.

- **9th ENCWG**

The ENCWG9 was held in Aalborg, Denmark and was chaired by Mr. Thomas Mellor (United Kingdom), with Mr. Richard Fowle (Denmark) serving as vice-chair. A total of 52 delegates participated, representing 22 Member States, including Australia, Brazil, Canada, Chile, China, Denmark, Estonia, Finland, France, Germany, India, Indonesia, Italy, Malaysia, Morocco, Netherlands, Norway, Portugal, Republic of Korea, Sweden, the

United Kingdom, and the USA, along with 11 Expert Contributors. The IHO Secretariat was represented by Assistant Director Yong Baek, with Technical Standards Support Officer Jeff Wootton joining remotely.

Main Discussions and Decisions:

- ENC Overlap Issues:The group discussed concerns from the WENDWG13-10.1 NGA paper about ENC overlap issues. Two key problems were highlighted:

    1. ECDIS does not display the largest scale data.

    2. CDIS does not provide alarms for navigational hazards from the largest scale data.

For the first issue, it was recommended that the Regional Hydrographic Commissions (RHCs) address overlapping cells. For the second, the ENCWG Chair will contact OEMs to ensure the current instructions in S-64 are sufficient.

- Vertical Inconsistencies in ENCs (RESARE):The group reviewed reports on missing restricted area objects (RESARE) in larger scale charts, which are required to meet IMO ECDIS standards. RENCs conducted checks and reported concerns to data producers. ENCWG recommended that RENCs share the results with producers.

- New Symbols for Power and Telecommunication Cables: A proposal was made to add new symbols for power, telecommunication, and overhead cables. These new line styles will be included in S-52 Edition 5.0.0 and S-64 Edition 4.0 to support dual-fuel mode in S-100 ECDIS. Engineering images were provided by Furuno and SevenCs, and the ENCWG Chair will submit the proposal to S-101PT for further review.

- IHO Webpage Restructuring: IHO Assistant Director Yong BAEK proposed restructuring the IHO webpage for ENC and ECDIS, which the group supported. They recommended including IMO MSC 232(82) and MSC 530(106) on the webpage. Members will contribute resources, and the IHO Sec will report progress at the next meeting.

- IHO-SGP Lab Project Report: The meeting reviewed the initial findings of the IHO-SGP Lab project, focusing on the display of S-101 over S-57 ENC. They also shared the results of the MSS conversion process, which reported no issues with the S-65 conversion guidance.

- Drafting S-52 Edition 5.0.0: The WG drafted S-52 Edition 5.0.0, based on Edition 4.0.4 of S-52 PS. The draft was approved in principle, and comments will be collected from members. After an impact study following IHO Resolution 2/2007, the draft will be submitted to HSSC for approval.

- S-64 Edition 4.0.0 Updates: The group discussed updates to S-64 Edition 4.0.0, including new test scenarios for ENC accuracy, hazard detection, and ECDIS viewing group layers. The focus was on ensuring alignment with changes from the draft S-52 Edition 5.0.0. Key actions include assessing the impact on ECDIS Chart 1 and screen plots, especially for newly approved cable symbols, and making any necessary updates.

- Progress on S-65 Annex B & C Conversion Documents: Jeff Wootton reported on the progress of the S-65 Annex B and C conversion documents. The meeting approved the timeline for both Annexes, and the Conversion Sub-Group planned to submit draft versions of Annex B (Edition 2.0.0) and Annex C (Edition 1.0.0) to ENCWG for endorsement, followed by submission to HSSC for approval. Annex C will be submitted for IHO MS approval by the end of 2025.

Nautical Cartography

This element addresses the developments related to nautical cartography for charts specifications of ENCs and paper nautical charts, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate.

Conduct meetings of Nautical Cartography Working Group (NCWG)

- **10th NCWG**

The 10th meeting of the Nautical Cartography Working Group was held in Monaco, MC from 12 to 15 November 2024 in a fully hybrid format. The meeting was chaired by Mikko Hovi (Finland). The IHO Secretariat was represented by Director John Nyberg and Assistant Director Eric Langlois.

The Working Group started day one with a complete review of actions and items of interest arising from HSSC, Council, Assembly and report from other relevant HSSC Working Groups. Additionally, the group covered general administrative items including updates to their Terms of Reference, Work Plan, and running list of action items.

Main Discussions and Decisions:

- As is usual practice for the Working Group, it

considered a number of proposals and clarifications for chart symbols crossing the full suite of charting products, including paper, S-57, and S-101. In particular, proposals from Canada, France, Indonesia, Netherlands, Sweden, United Kingdom, and The United States were presented and discussed.

- The Group agreed to submit new drafts of the following publication to the next HSSC-17 meeting:

  * S-4 and INT1 and INT2, to incorporate the agreed symbols changes and clarifications;

  * S-11 Part. A to reflect the S-100 product environment with clear references to S-101.

Besides symbology, discussions also addressed the harmonization of colors use in paper chart products:

  * A colored ZOC diagrams proposal by Netherlands was approved.

  * A proposed harmonized color palette for nautical charts was presented by the Baseline Symbology Project Team (BSPT), eventually endorsed by the Working Group. BSPT will now liaise with the S-100 Registry Manager to discuss how to incorporate the table into the S-100 Geospatial Registry.

- The Group decided to initiate a review of the S-11 Part. A publication for the purpose of submitting a new draft to the HSSC by March 2025.

- BSPT also introduced its crosswalk work achieved on symbols across all charting products including printed and digital representations for the purpose of coordinating symbols, colors, lines, styles, etc. for implementation in charts of any kind.

- Patricia Sheatley (ESRI) was officially confirmed as Working Group Secretary.

Digital Data Protection and Authentication

The IHO Secretariat continued to administer the S-63 scheme for S-57 ENCs. In addition, the S-100 scheme application described in S-100 Part 15 is now available on the IHO website to allow for agreements with the Original Equipment Manufacturers (OEM) and Data Servers for S-100 based data sets in order to implement S-100 data dissemination. Both data protection schemes are administered in panel during the transition period.

The administrator function involves processing applications and providing technical support and the individual and unique digital certificates and codes that are required to allow ENC/S-100 data servers, OEMs and software developers to encrypt and de-encrypt ENCs as part of the services or equipment that they provide. The S-63 Security Scheme currently includes 70 Data Servers and 415 OEM's.

In 2024 the IHO embarked on an effort to modernize the data protection scheme. This initiative started with a review and update of the agreements for scheme participation, resulting in version 2 of the agreements. This effort will continue in 2025.

Data Quality

The 19th meeting of the Data Quality Working Group (DQWG) was held as a remote video-teleconference (VTC) event from the IHO Secretariat, Monaco, from 25 to 26 March.

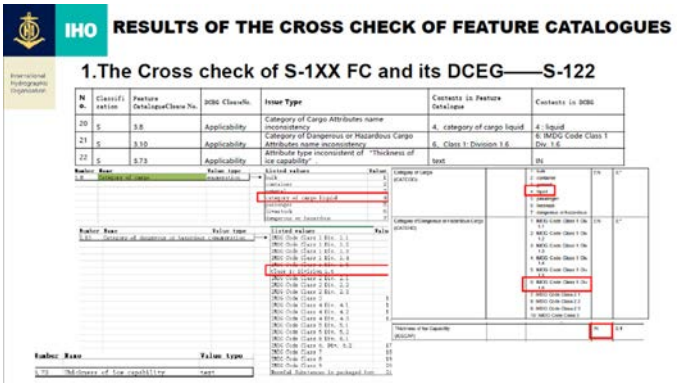
The meeting was chaired by Mr Lingzhi Wu (China). Thirty-two registered delegates representing 16 Member States (Brazil, Canada, China, Denmark, Egypt, Finland, France, India, Indonesia, Netherlands, New Zealand, Norway, Russian Federation, South Africa, United Kingdom[3] and United States), one representative of the RENCs (PRIMAR), five expert contributors (IEHG[4] , Portolan Sciences, SevenCs, CSMART Carnival, and University of New Hampshire) attended the meeting. The IHO Secretariat was represented by Assistant Director Yves Guillam.

The DQWG noted the reports from NIPWG and TWCWG on data quality matters: NIPWG confirmed its intention to use S-97 Part C on their S-1xx Product Specifications when moving to Ed. 2.0.0; the consequences of the focus of S-104 Product Specification, now limited to water levels adjustments to be applied in conjunction to S-102, were also noted. The Chair presented a report on the outcome of the implementation of the cross check of data quality chapters of S-100 based product specification and spotted those Product Specifications that are not harmonized, or do not comply with S-97. Feedback will be reported to the developers as appropriate.

[3] Including Chairs of the Tides, Water Levels and Surface Currents Working Group (TWCWG), of the ENC Standards Maintenance Working Group (ENCWG), and of the S-101 Project Team (S-101PT).

[4] Inland ENC Harmonization Group.

Throughout a very comprehensive presentation, the Chair reported on the work of the Feature Catalogue SubGroup (France, US, SevenCs) of the DQWG. The SubWG conducted the cross-check of feature catalogues of S-121 Ed. 1.0.0, S-122 Ed. 1.0.0, S-123 Ed. 1.0.0, S-124 Ed. 1.0.0, S-127 Ed. 1.0.0, S-128 Ed. 1.0.0, S-130 Ed. 1.0.0 and S-131 Ed. 1.0.0.



Slide 46 out of 111!

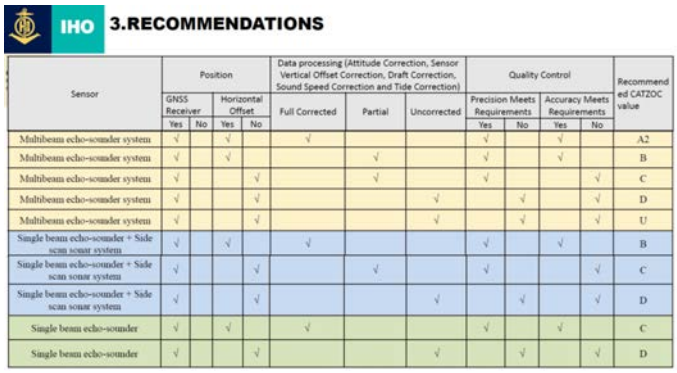
In addition, the results of the review of S-1xx feature catalogues reported in the previous meeting (DQWG18) were updated against S-101 Ed 1.2.0.

In response to HSSC[5] who had encouraged Member States to start populating appropriate POSACC / SOUACC values in existing S-57 ENCs for relevant spatial objects in preparation of the conversion to S-101 ENCs, PRIMAR provided some interesting statistics. The DQWG thanked PRIMAR for this action but suggested some further analysis, prior to HSSC16 if possible, to quantify the order of magnitude of encoding increase (total number of soundings for example).

Following up on a decision made by HSSC, the DQWG and ENCWG prepared a new proposed Ed. 2.0.0 of S-66 - Facts about Electronic Charts and Carriage Requirements, which amalgamates into one single publication: S-66, S-67 Edition 1.0.0 - Mariners' Guide to Accuracy of Depth Information in Electronic Navigational Charts (ENC), Basic information for ECDIS users on ECDIS mandate and electronic charts ENC & RNC, ENCWG Information Papers, ENC and ECDIS Cyber Security Guidelines. ENCWG and DQWG are currently reviewing the proposed Ed. 2.0.0 of S-66, aiming to submit it to the endorsement of HSSC at their meeting in May 2024.

There were fruitful discussions initiated by the Chair about Ed. 1.0.0 of S-68 - Guidelines and Recommendations for Hydrographic Offices for the Allocation of CATZOC/QoBD[6] from Survey Data aiming to design a work plan towards a future Ed. 2.0.0. The meeting agreed that there was a need to engage in the development of a new Edition 1.1.0 as a first step, since the testing and experiment phase cannot be considered as completed[7]. The Chair of the ENCWG suggested also that this publication should be considered as an appendix to S-65 in the future.

Still in the context of a future edition of S-68, an initial proposal was made for improving the allocation of CATZOC values from crowdsourced bathymetric data (and not only from systematic hydrographic surveys). Noting the comments received from several parties including the Crowdsourced Bathymetry Working Group (CSBWG) well reported by the representative of Denmark, the meeting agreed that more work was needed before inclusion into S-68. The involvement of the CSBWG (B-12 custodian) and HSWG (S-44 custodian) was highly recommended.



On the table 2 proposed by the DQWG on crowdsourced bathymetry (left),

"the Danish Geodata Agency[8] *:*

- *Supports the creation of guidelines on how to assess quality of CSB data for nautical charting.*
- *Suggests the involvement of both the CSBWG and HSWG, also to keep the guidelines aligned with B-12 and S-44 publications.*
- *Suggests to focus the guidelines on CSB data collected using SBES, exploring the impact on quality for various processing steps."*

The Chair presented a review of proposed amendments to S-97 Part C, as well as a report on "Recommendations on the data quality evaluation of S-100 products". The IHO Secretariat and the Chair of the S-101PT questioned whether these recommendations, when finalized, would end up in S-158 or instead rolled into S-97. This will be shared with the S-100WG Chair at HSSC-16.

[5] @HSSC15/55 refers.

[6] Quality of Bathymetric Data.

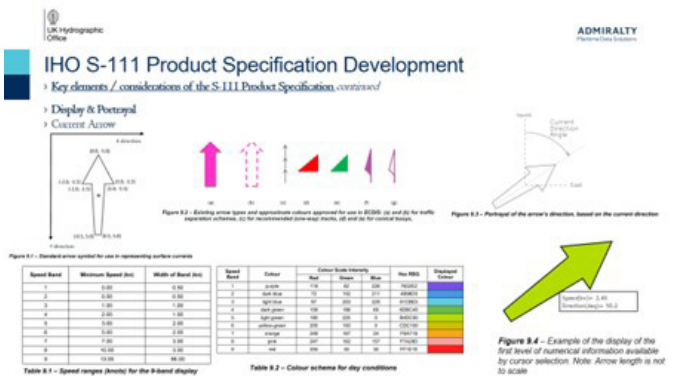
[7] Very few feedback from IHO Member States, except from those Members of the DQWG.

[8] Also as Member of DQWG, CSBWG and HSWG.

The critical importance of data quality in MASS navigation machine readable systems is well recognized. The Chair presented his views on the possible contribution of the DQWG to the activities of the MASS Project Team. He offered to establish a SubGroup to discuss these issues with MASS PT in order to draft a guideline document to explain how to implement data quality evaluation from a MASS user's perspective. The SubGroup has received no adhesion to date.

Thanks to the official nomination received from China (MSA), Mr Lingzhi WU (China) was re-elected at the meeting as Chair of the DQWG in application of the Rules of Procedure (1st meeting after the Assembly), while the position of Vice-Chair remains vacant (no nomination received so far).

Participants in the DQWG-19 VTC Meeting.



Report by the TWCWG on S-104 and S-111 product specification development: Why? What? How?,
Sources, Key elements, Display & Portrayal, Testbeds, Data Quality aspects.

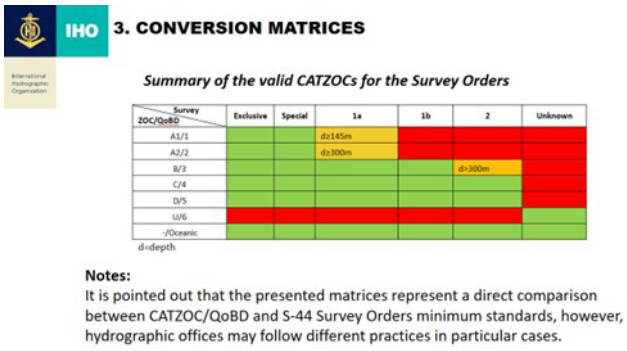
The participants welcomed the provisional offer from the Chair of the DQWG to host the next meeting from 11 to 13 March 2025 in China (dates, location and venue to be confirmed no later than September 2024).

The DQWG Chair was invited to liaise with the S-100WG Chair on the proposed action plan related to the possible revision of data quality elements in overarching S-100 documents (S-97 Part C, S-100 Part 4c, Appendix D of S-100 Part 11). It was recommended to limit the actions, if any, to those considered critical for the future adoption of Edition 2.0.0 of the S-100 based product specifications for Route Monitoring as endorsed by the Council.

Following up on a decision made by HSSC, the DQWG established a sub-group to consider the proposal from the ENCWG to submit Edition 2.0.0 of S-67 at HSSC-15 for endorsement. This new Edition of S-67 - Mariners Guide to use of ENC Data in ECDIS[9] aims to amalgamate into one single publication: S-66 - Facts about Electronic Charts and Carriage Requirements, S-67 Edition 1.0.0 - Mariners' Guide to Accuracy of Depth Information in Electronic Navigational Charts (ENC), Basic information for ECDIS users on ECDIS mandate and electronic charts ENC & RNC, ENCWG Information Papers, ENC and ECDIS Cyber Security Guidelines.

With a focus on data quality elements, the Chair of the S-101 PT reported on the progress made in the development of the S-101 Product Specification, also monitored by the IHO HSSC ISO 9001 Cell. As part of the discussion and following a strong recommendation from HSSC, the RENCs were invited to provide statistics on the progress made by ENC producers on the encoding of two major S-57 data quality attributes[10], currently optional in S-57 and mandatory in S-101, to facilitate the smooth conversion from S-57 to S-101 data.

Thanks to the support provided by the HSWG since the last meeting and the national best practices shared by some Member States[11], the DQWG endorsed at the meeting the proposed Edition 1.0.0 of a new IHO publication: Guidelines and Recommendations for Hydrographic Offices for the Allocation of CATZOC/QoBD[12] from Survey Data.



Coming soon, a long-awaited new IHO Publication:
Guidelines and Recommendations for Hydrographic Offices for the Allocation of CATZOC/QoBD from Survey Data.

This is a significant achievement from the DQWG which will be submitted to HSSC-15 seeking the agreement of the committee on the publication of Edition 1.0.0 "as is", while acknowledging existing limitations in the document, as well as justified national reservations and

[9] Proposed new title at the date of publication of this Bulletin Report.

[10] POSACC and SOUACC.

[11] Australia, Brazil, China, Finland, France, Italy, Japan, Netherlands, Norway, United Kingdom and USA.

[12] Quality of Bathymetric Data.

	ISO 19109:2015	Geographic information — Rules for application schema
	Terms, definitions, and abbreviated terms	
4.1	application	manipulation and processing of data in support of user requirements
4.2	application schema	conceptual schema (4.5) for data required by one or more applications (4.1)
4.3	complex feature	feature (4.9) composed of other features
4.4	conceptual model	model (4.15) that defines concepts of a universe of discourse (4.19)
4.5	conceptual schema	formal description of a conceptual model (4.4)
4.6	coverage	feature (4.9) that acts as a function to return values (4.20) from its range for any direct position within its spatial, temporal or spatiotemporal domain (4.8)
4.7	dataset	identifiable collection of data
4.8	domain	well-defined set
4.9	feature	abstraction of real-world phenomena
4.10	feature association	relationship that links instances of one feature (4.9) type with instances of the same or a different feature type
4.11	feature attribute	characteristic of a feature (4.9)
4.12	feature operation	operation that every instance of a feature (4.9) type may perform
4.13	geographic data	data with implicit or explicit reference to a location relative to the Earth
4.14	metadata	information about a resource
4.15	model	abstraction of some aspects of reality
4.16	observation	act of measuring or otherwise determining the value (4.20) of a property (4.17)
4.17	property	facet or attribute of an object referenced by a name
4.18	quality	degree to which a set of inherent characteristics fulfils requirements
4.19	universe of discourse	view of the real or hypothetical world that includes everything of interest
4.20	value	element of a type domain (4.8)

The ISO 19xxx Dictionary – Example with definition in ISO 19109.

some cartographic aspects that need to be addressed in further editions.

The DQWG thanked the Netherlands, and Mr Rogier Broekman in particular, former DQWG Chair, still active in geospatial information, for their very useful "gift" to the DQWG: a comprehensive and very practical dictionary (spreadsheet) of the definitions used in ISO 19xxx geospatial standards.

The participants welcomed the provisional offer from the Chair of the DQWG to host the next meeting from 6 to 8 February 2024 in China (dates, location and venue still to be confirmed).

Nautical Publications

This element addresses the developments related to the preparation of nautical publications, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate.

Conduct meetings of Nautical Information Provision Working Group (NIPWG)

- **11th NIPWG**

The 11th meeting of the Nautical Information Provision Working Group (NIPWG) was held at the Klub Marynarki Wojennej Riwiera hosted by the Hydrographic Office of the Polish Navy (HOPN), in Gdynia, Poland from 24 to 27 September 2024.

The meeting was opened by Captain Dariusz Kolator, Chief of the HOPN, who stressed the importance of the activities of NIPWG paving the way for nautical publications, still produced by some hydrographic offices in paper format, towards the S-100 era with the electronic navigational data services (ENDS).

The meeting was chaired by Mr Eivind Mong (Canada), supported by Mr James Weston, Secretary (United Kingdom). Thirty-three delegates from 15 Member States (Australia, Canada, Denmark, Finland, France, Germany, India, Italy, Netherlands, Norway, Poland, Republic of Korea, Sweden, United Kingdom and United States of America) and twelve expert contributors representing various stakeholders (IMO EGDH, IHMA, ICS, Furuno, Protected Seas, IIC Technologies, and PRIMAR)[13] attended the meeting. The IHO Secretariat was represented by Assistant Director Yves Guillam.

As last year, the NIPWG Chair opened the meeting, providing a clear statement on the objectives and priorities given by the HSSC, such as S-128 development since it is the only the S-100 based product under NIPWG listed in Phase 1 / Route Monitoring of the S-100 Roadmap. The progress made on the List of those Decisions and Actions from HSSC-16 affecting NIPWG was presented by the IHO Secretariat representative who also referred to the

[13] IMO/IALA/IHO Expert Group on Data Harmonization (EGDH), International Harbour Masters Association (IHMA), International Chamber of Shipping (ICS).

[14] Dolphin with fender.

[15] Dolphin with mooring.

last documents available as part of the HSSC report to the 8th meeting of the Council.

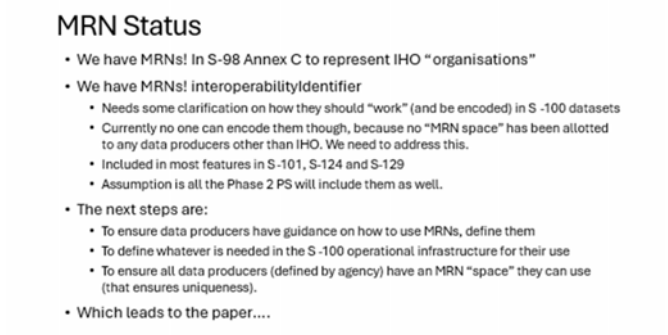
IHMA supported by the Netherlands made a proposal for improving the portrayal of breasting[14] versus mooring[15] dolphins, to improve the safety of berth-to-berth navigation. This proposal aims to be included in the S-131 standard only - Marine Harbour Infrastructure, since it is not possible in S-101 as already discussed in the relevant ENCWG. Together with a proposal for improving the definition of "maintained depths", the NIPWG recommended to consult the NCWG in November, before a decision is made on the way forward. An update on the Guidelines for Harmonized Communication and Electronic Exchange of Nautical Data for Port Calls and the associated interface for Exchange of Port Infrastructure Data was also provided by IHMA. The IHO Secretariat suggested that the Guidelines are simply but formally endorsed by NIPWG on behalf of the IHO (as it should be by the other supporting partners listed in the document, such as IMO), prior to the final formal approval by IHMA. Then, this document can be published on the IHO / NIPWG webpage or any other relevant IHO webpage.

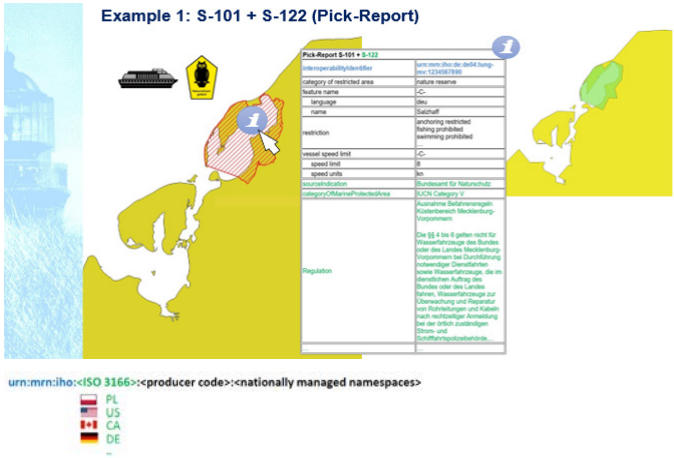
Regarding S-131, in addition to the comments provided by China on the Product Specification that were reviewed, PRIMAR presented the outcome of an experimentation (supported by the Intelligent Ship Transport System project funded by the Norwegian Research Council) aiming to demonstrate how S-131 and S-421 – Route Plan Exchange - can be used for ship-shore communications between a harbour and a vessel. The test bed scenario was also an opportunity to demonstrate the use of common and unique MRN identifiers across products, showcasing the benefit of unique identification of features found or referenced in different products. NTOU presented an online tool developed for the S-131 database project of the IHO-Singapore Lab, as well as experiences and feedback for S-131 tests in various aspects using the UN/LOCODE in accordance with IMO MSC Guidance.

Following the complex technical and policy issues identified in 2023 regarding the MRN concept itself, thanks to Germany, some use cases and clarifying examples were presented during the meeting. The Chair introduced the topic with different steps to be considered.

… in support of the development of the Guidelines for the Implementation of Interoperability Identifier using Maritime Resource Name value. Before assigning a MRN structure to the IHO Member States, some more work and testing was deemed necessary on this matter. Final recommendations are expected at the last VTC meeting of NIPWG in December.

The US on behalf of NIPWG submitted a new version of proposed amendments to the IHO Resolution 5/2002 on the Content and General Arrangement for Digital Nautical





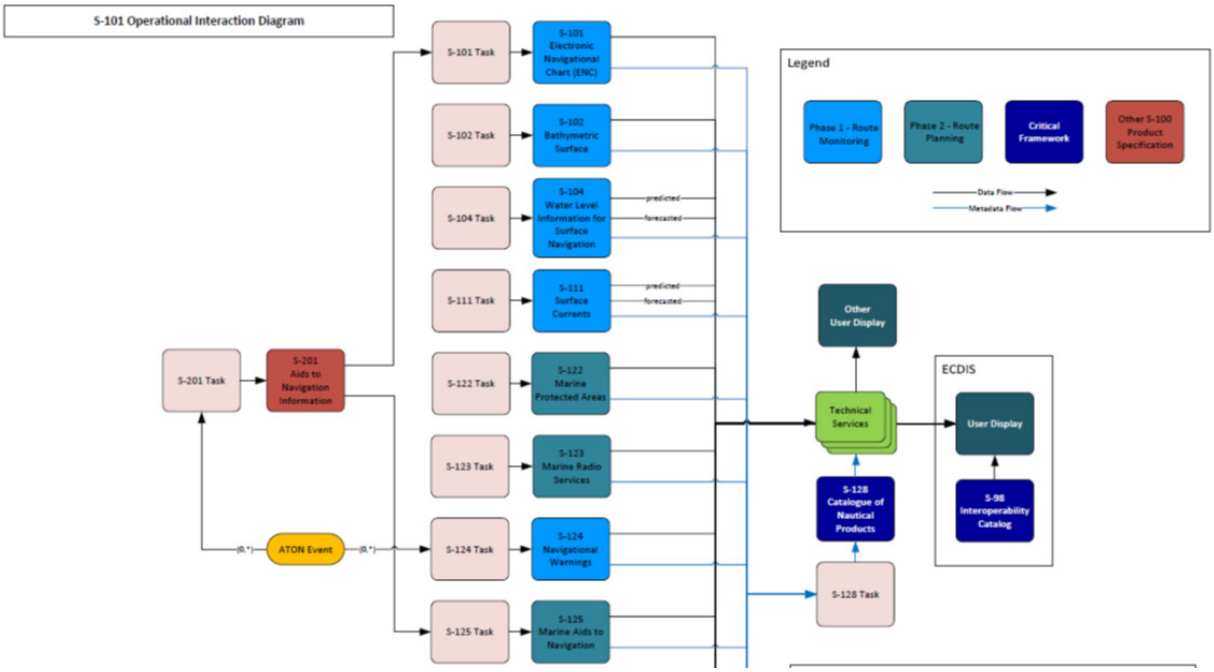
Publications. Several comments were made in session to improve the proposal, notably the need from the IHO Secretariat point of view, to include the ENDS and the associated diagram illustrating the relationship between S-100 products, the IMO Maritime Services and the SOLAS Regulations. Rather than focusing on the existing IHO Resolution, some participants suggested that time had come to supersede it by a brand new one. Decision will be made at the last VTC meeting of NIPWG in December.

An update was provided by the representative of the IMO EGDH who introduced the IMO Guidelines for setting up a Maritime Single Window (Doc. FAL.5/Circ.42/Rev.3 refers) and the newest version of the IMO Compendium on Facilitation and Electronic Business, inviting NIPWG to identify areas of common interest where harmonization might be needed.

[16] National Taiwan Ocean University.

[17] United Nations Code for Trade and Transport Locations.

[18] Maritime Resource Name (Useful Reference: IALA Recommendation R1023).



The Chair allocated a full session on S-128, since the Ed. 2.0.0 of its Product Specification (PS), at the date of NIPWG-11, remains to be submitted to HSSC Members for their endorsement. Those last comments made by the S-128 Task Group Members on the proposed version of Ed. 2.0.0 of the PS which needed further discussion were reviewed in depth. PRIMAR completed the topic with a promising update on the S-128 implementation phase (Services & Interfaces, Dataflow Structure, … and remaining Challenges). The Chair confirmed that the impact study of S-128 had been already completed by Denmark.

Good progress was reported by the US on the development supported by IALA of S-100 Operation Interaction Diagrams (global S-100, S-101 and S-201), a difficult HSSC task that had been on the agenda of NIPWG for more than three years. These diagrams are planned to be further developed, maintained and submitted to HSSC for endorsement. An example for S-101…

On the informative paper[19] submitted by Germany to HSSC-16 regarding data dissemination issues related to e-navigation, NIPWG noted the recommendations but agreed that it was much wiser, for the time being, to wait for the outcome of the discussions on Doc. MSC 109/19/3[20] in the agenda of MSC 109. These recommendations were not supported in general.

NIPWG invited its S-12x Task Groups to consider meeting once a month from now and using the GitHub platform in the future. Once GitHub is considered that it is the best way to proceed for managing their projects, soon after the completion of the transfer of NIPWG key documents, NIPWG will propose the decommissioning of the IHO NIPWG wiki worksite.

Several participants (DK, FI, NO, US, UK) shared their promising progress made on the testing and pre-implementation of S-100 in their countries, with a focus on NIPWG S-12x products.

In his conclusion, the Chair thanked NIPWG Members for all the efforts made and commended the industry subject matter experts for their indispensable and continuous high level technical support. He informed the group that he had to step down from his position as NIPWG Chair at the end of 2024, due to other national priorities. An election of NIPWG office bearers is to be arranged by correspondence prior to the deadline to ensure continuity, at a critical time for S-100.

Tides and Water Levels

This element addresses developments related to tidal and water level observation, analysis and prediction and other related information including vertical and

[19] Doc. HSS16-07.1C and @HSSC16/96.

[20] Proposal for a new output to realize the full potential of the S-100 ECDIS submitted by Antigua and Barbuda, Australia, Bangladesh, Canada, Cook Islands, Ecuador, Georgia, Indonesia, Liberia, New Zealand, Türkiye, Ukraine, United Arab Emirates and BIMCO.

horizontal datums, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate.

Conduct meetings of the Tides, Water Level and Currents Working Group (TWCWG)

- 8th TWCWG

The 8th TWCWG was held VTC between February 20 to 24. The meeting was Chaired by Mr Christopher Jones (UK), supported by Vice-Chair Ms Ruth Farre (RSA). The IHO was represented by Assistant Director Mr Sam Harper. The meeting was attended by representatives from Argentina, Australia, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Indonesia, Italy, Japan, Netherlands, New Zealand, Norway, Peru, Republic of Korea, Romania, South Africa, Spain, Sweden, UK and USA. Expert contributors from PRIMAR, Portolan Services, SevenCs, WR Systems, NOC and All4Land were in attendance.

S-104 and S-111 Ed. 2.0.0 status

The Chair explained the guidance and rationale received from HSSC to scale back the scope of S-104 following engagement at the S-100 working group. An update on the current status of S-104 E 2.0.0 was provided with specific questions and areas for TWCWG's consideration identified. Key items included the mechanism for cancelling old files and the need for digital signatures. PRIMAR gave an update on their S-104 testing and raised the issue of cancelled products from the perspective of a service provider and how this links to S-128. They highlighted the potential security implications for the cancellation of datasets given there is currently no provision for digital signatures. He noted that this issue would also be considered at WENDWG14. The next steps agreed were for comments on the latest version of S-104 to be provided from the group by the 15th March ahead of submission of Ed 2.0.0 to HSSC16.

An update on the development of S-111 Ed 2.0.0 was provided. Within the brief, several changes were proposed. A key decision was to use 'direction uncertainty' in favour of the current 'orientation uncertainty'. It was noted that the latest version would need reviewing by the DQWG ahead of submission to HSSC16. Another key requirement identified was for the development of sample datasets to support testing. The next steps agreed were for comments on the latest version of S-111 to be provided from the group by the 15th March ahead of submission of Ed 2.0.0 to HSSC16.

No specific updates from Member States' on S-104 & S-111 product development, the Chair noted that the NSHC tides working group had a number of active participants and that Germany, Denmark, the Netherlands and Sweden have all made presentations on their current product development status available.

KHOA presented the results of their survey into the production status of S-104 and S-111. Of the 9 countries that responded, 3 replied that they produce S-104 Products. For S-111, 4 of the 9 countries responded that they are developing products. It was agreed that the survey was a good tool for monitoring the implementation of these product specifications amongst Member States and as such it would be repeated annually.

IAPSO Best Practice Guide on Tidal Analysis

An update was provided by the project lead who reported that the first draft of the best practice guide had been produced. It was reported that the next step is to circulate the various sections for peer review and develop the content further. Further, it was suggested that a dedicated section on available software will be added. The team advised that the project would have a poster advertising their work at the 2024 14-19 April Vienna Austria European Geosciences Union general assembly, 14-19 April in Vienna, Austria. The group identified that the key interlinkage between TWCWG and this work is the list of standard tidal constituents.

Relevant IHO Resolutions and Charting Specifications

The group reviewed the relevant charting specifications. It was noted that within B-406, there is some inconsistency with regard to the guidance on levels of accuracy/precision for geographical positions as defined in B-130 and B-131. It was agreed that the solution would be to change the wording to reflect that 'to the nearest minute' was the minimum expected level of accuracy.

Capacity Building

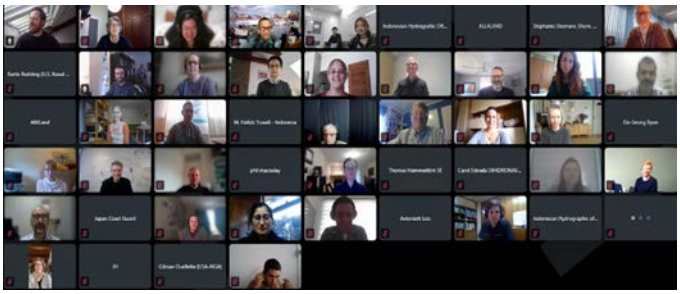
A report was provided on the recent tidal theory course held in Costa Rica. The course, led by NOAA, was delivered in Spanish. The course was very successful with 31 students from 16 countries and 25 organisations participating. The initiative was led and delivered by NOAA and the University of Costa Rica with the planning supported by IHO, COCATRAM, IMO and IOC. Support with the delivery was provided by the Brazilian Hydrographic Service and Spanish Hydrographic Office.

IOC Updates

The Chair of GLOSS gave an update on relevant activity, starting with a history of the origins of GLOSS. It was reported that GLOSS now has a steering group; comprised of a rep from each of the 5 data centres, with an additional 6-8 specialist reps. This group intends to meet more regularly going forward. One of the aims is to realise the concept of a unified data portal. A key element would be greater transparency of the source of that data (currently there is often more than one version of the same data). Another key piece of work is the Updating GLOSS implementation plan. It was noted that TWCWG meetings should be careful not to clash with GLOSS meetings as many members are part of both.

TWCWG Support to Development of S-44

The issue of the lack of detail on the elements of measurement uncertainty relating to tide and current observations in S-44 was discussed. A small task group was established to meet with the HSWG to discuss potential contribution to S-44 Ed. 6.2.0.



- 9th TWCWG

The 9th meeting of the International Hydrographic Organization's (IHO) Tides, Water Levels, and Currents Working Group (TWCWG) was held from September 19 to 22, 2024, at the IHO headquarters in Monaco. The Meeting was Chaired by Mr Christopher Jones (GBR), supported by Vice-Chair Ms Ruth Farre (RSA). The IHO was represented by Secretary General Mathias Jonas, Director John Nyberg and Assistant Director Sam Harper. This hybrid event marked the first in-person meeting in several years, combining physical attendance with virtual participation to accommodate members across various time zones. The Chair welcomed 57 member states, along with representatives from industry and other organizations, emphasizing the significance of the group's collective work and the challenges of implementing new product specifications within the framework of the S-100 Implementation Decade (2020–2030). He acknowledged the dedication of participants, particularly those joining virtually from different time zones, and reiterated the importance of continuing with in-person meetings to foster collaboration and progress.

The meeting was attended by representatives from Argentina, Australia, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Indonesia, Italy, Japan, Netherlands, New Zealand, Norway, Peru, Republic of Korea, Romania, South Africa, Spain, Sweden, UK and USA. Expert contributors from PRIMAR, Portolan Services, SevenCs, WR Systems, NOC and All4Land were in attendance.

The Chair underscored the priority of addressing S-104 (Water Level Information for Surface Navigation) and S-111 (Surface Currents) product specifications, as these are key components of the broader S-100 framework. Both specifications, which are in their 2.0.0 editions, are critical for Phase 1 route monitoring mode and are aligned with the timelines set by the International Maritime Organization (IMO) and the IHO for modernizing electronic navigation charts (ENCs). During the opening remarks, IHO Secretary General Mathias Jonas and Director John Nyberg highlighted the importance of the TWCWG's work in advancing maritime safety, climate resilience, and the integration of tide and current data into ENCs. They praised the group's efforts in addressing challenges such as sea-level rise and its implications for navigation and coastal management.

A key focus of the meeting was the intersession activities that had taken place since TWCWG8. These activities centred on advancing S-104 and S-111, with both now nearing completion and awaiting member state endorsement. The Chair reported on the collaborative work undertaken by project teams and sub-working groups, as well as the harmonization of these efforts within the broader S-100 framework. He also noted the importance of ongoing dialogue with the International Association for the Physical Sciences of the Oceans (IAPSO) and its Best Practice Study Group on harmonic analysis. Additionally, updates were provided on amendments to the TWCWG's terms of reference (TORs) to reflect evolving requirements, including a focus on gender neutrality.

Member State Updates

A number of member states provided updates on their activities relevant to TWCWG. Japan discussed the impact of the 2024 Noto Peninsula earthquake on their chart datum models, emphasizing the need for Ellipsoidally Referenced Surveys (ERS) to address land uplift issues. Chile highlighted progress in producing tidal and current data and their collaboration with Argentina to develop ENCs for the Beagle Channel. Sweden shared advancements in the Baltic Sea Chart Datum 2000 project, which integrates a stable geoid model to address challenges posed by sea-level rise and land uplift. Brazil outlined its extensive tide gauge network, challenges posed by seasonal variations in riverine environments, and advancements in hydrodynamic modelling to support navigation. Norway provided insights into its efforts to expand tide gauge networks and address user demands for data related to storm surges, climate change, and port operations.

S-104 and S-111 Updates

An overview of the latest updates to S-104 was provided by the Project Team lead which included adding attributes for uncertainty, adopting a fileless cancellation method for datasets and enhancing interoperability with S-98 standards. These changes were aimed at addressing user feedback and ensuring compatibility with related products such as S-102 (Bathymetric Surface). However, member state surveys revealed that only 50% of respondents were confident in their ability to produce and implement S-104 products, highlighting a need for further guidance and training.

Similarly, an overview of the latest S-111 updates was provided which included new attributes for uncertainty in speed and direction and improvements in metadata and grid spacing. While these updates were welcomed, member states survey responses indicated that only

one-third of participants felt ready to produce S-111 products. The importance of conducting these light impact studies to assess the readiness of member states and stakeholders to adopt these specifications was noted by the group and stimulated much discussion on potential strategies to improve comprehension and support for implementation.

Harmonization with Technical Standards

The meeting also included discussions on harmonization with technical standards. Collaboration with the S-100 Working Group was emphasized to ensure consistency in validation checks, metadata practices, and product specifications. The need to accommodate multiple vertical datums within S-102 and S-111 products was identified as a critical challenge, requiring advanced validation processes and technical solutions. The group explored potential solutions, including the use of polygon-based vertical datum regions and the development of cross-product validation tests to address overlaps.

Capacity Building

Capacity building was another key theme of the meeting. Member states were encouraged to share their methodologies and experiences in generating S-104 products, with a focus on compiling best practices and creating resources for wider dissemination. The establishment of a GitHub repository for TWCWG documents and tools was highlighted as an important step toward fostering collaboration and knowledge sharing. However, it was noted that only a small percentage of participants were proficient in using GitHub, prompting a recommendation to provide training at future meetings.

Updates from Other relevant Bodies

Collaboration with external organizations, such as the IOC's Global Sea Level Observing System (GLOSS), was discussed in detail. GLOSS provided updates on its efforts to streamline tide gauge networks and address challenges related to data attribution and coordination. The group explored opportunities for joint projects, including the development of unified data portals and the integration of tide and current data into climate resilience initiatives. Similarly, feedback from the IOC's Tsunami and Other Hazards Warning and Mitigation Systems (TOWS) program highlighted the need for enhanced resolution in sea-level monitoring to improve tsunami detection and warnings.

The meeting concluded with a review of challenges and recommendations. Issues such as vertical datum complexities, cross-border data integration, and user feedback on ENCs were highlighted as areas requiring further attention. The group also explored the potential for developing an additional specification, tentatively referred to as S-105, to address gaps left by the streamlined S-104 and S-111 specifications. While this idea received support, it was agreed that further discussions and a detailed proposal would be needed before proceeding.

Hydrographic Dictionary

This element addresses the development, maintenance and extension of IHO Publication S 32 - Hydrographic Dictionary in English, French and Spanish, and the provision of technical advice as appropriate.

Maintain and extend the IHO Hydrographic Dictionary in English, French and Spanish

The Hydrographic Correspondence Group amended its terms of reference to reflect the transition from a formal working group. I now does it's work by meeting on an ad hoc basis to discuss new terms and definitions. The Chair of the HDCG is also a member of the GI registry Domain Control Body and continues to work with the GI Registry Manager on the harmonisation of the reference dictionary database with the IHO GI Registry. All terms have been included into the GI Registry and work continues on the classification of terms into designated categories to reduce the maintenance tasks to those that are relevant to hydrography and cartography with other terms being taken from other specialisations.

ABLOS

This element addresses the developments related to the hydrographic aspects of the United Nations Convention on the Law of the Sea (UNCLOS), the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate.

Organize and prepare the Advisory Board on the Technical Aspects of the Law of the Sea (ABLOS) annual business meeting

- **31st ABLOS Meeting**

The Advisory Board on the Law of the Sea (ABLOS) is a joint board of the International Hydrographic Organization (IHO) and the International Association of Geodesy (IAG) with the objective of providing information and advice on technical aspects of the Law of the Sea.

The 31st ABLOS meeting was held in Rio de Janeiro, Brazil between October 7 and 11. The meeting was attended by seven ABLOS members, two of them remotely and IHO and IAG appointed observers from Chile, Democratic Republic of Congo, Ghana, India, Oman, Qatar and the USA. The 31st ABLOS Board Meeting was chaired by Dr Juan Carlos Báez Soto (IAG-Chile), having as Vice-Chair Ms. Fiona BLOOR (IHO – UK). The IHO Secretariat was represented by Assistant Director Leonel Manteigas.

Dr Juan Carlos Báez Soto, ABLOS Chair, opened the meeting welcoming all participants and thanking the Directory of Hydrography of Navigation (DHN) and the Brazilian Navy for hosting this meeting. He regretted that some ABLOS Members could not attend the meeting in person.

Admiral Linhares, Hydrographer of Brazil, welcomed all participants to DHN mentioning that is an honour to have this group of experts gathered at DHN. He stressed the importance of ABLOS and wished everyone a good and fruitful meeting.

Raising the profile of ABLOS was one of the topics discussed and consideration was given to conducting interviews with ABLOS members/stakeholders for publication in relevant industry literature and on the ABLOS website as well as engaging with the IHO Public Relations and Communications Officer to help promote ABLOS conferences.

The meeting discussed the possibility of developing some training materials that may correspond to the needs of the hydrographic regions, and how to engage with the Regional Capacity Building (CB) Coordinators to know what ABLOS can provide in terms of Capacity Building training and regional based seminars, normally associated with an ABLOS Board Meeting. It was decided that some Members will participate in the next intersessional meeting of the Capacity Building Sub-Committee to liaise and receive inputs from the regional CB Coordinators. The possibility to consider developing material for the IHO e-Learning Center was also discussed. To avoid the repetition of developing training material that already exists, the Board will liaise with DOALOS (UN Division for Ocean Affairs and the Law of the Sea) which already has several courses on different topics.

ABLOS decided in 2020 to create an ABLOS website dedicated to the ABLOS Conferences. The website was created and is maintained by the Technical University of Denmark (DTU) to help raise the profile of ABLOS. It was discussed the need to well define which contents should be available on the IHO website/portal and on the ABLOS website. DTU will liaise with the Secretary on the topic.

One important activity of the ABLOS Members is the respective participation in Conferences and other events related with the Law of the Sea. One permanent action is related to the provision of links to relevant events and organizations for inclusion on the ABLOS website. As part of this action, ABLOS members informed the meeting of their participation at Law of the Sea related Conferences.

Mr. John Ells, Chair of the Editorial Board established for the update of the C-51 Manual on Technical Aspects of the UN Convention on the Law of the Sea (TALOS), briefed the meeting on the progress related to the review of Edition 7.0.0. Options for a platform for group editing, revision and participation were discussed. There is a significant quantity of work involved in developing TALOS into a modern digital format whilst supporting printable pdf delivery. A discussion was held around the editing of the diagrams and animations and some graphics that may need updating. The meeting was informed that an Arabic translation of the Edition 6.0.0, carried out by Qatar, is practically completed.

The observers from Qatar offered to host the next ABLOS Board Meeting and the 12th ABLOS Conference in Doha, Qatar. Members recalled that it was not the first time that this offer had been received and that several participants of the last conference recommended to move the Conference to outside Monaco.

Members discussed the need to consider the finance aspects and the attractiveness for the participants, as well as the need to liaise with the Member States in the region. Qatar informed that will be attentive and supportive of all preparations and that expect to be able to draw speakers and delegates from Africa, Europe, Americas and Asia with particular interest in Law of the Sea from Gulf and Arab countries. 200 to 300 delegates are forecast. The Members thanked Qatar for the generous offer and decided to hold the next ABLOS Board Meeting and the 12th ABLOS Conference in Doha, Qatar. The meeting discussed the creation of the Organizing Committee for the 2025 Conference with several members offering volunteers. The Conference theme that should be around addressing “Is UNCLOS fit for purpose in modern times?” was also discussed, as well as other administrative arrangements.

With reference to the membership, the meeting welcomed a new Member from IHO, Dr Virginie Tassin Campanella, and was informed that Mr. Richard S. Gross, IAG President, is a new member from IAG although he was not able to attend this meeting.

The current Chair, Dr Juan Carlos Báez Soto, informed that he will not extend his term and will leave the Board. He will ask IAG to nominate a member to replace him.

Back-to-back to the Meeting, on Wednesday, DHN organized a Seminar with interventions that were considered very relevant by all attendees. The presentations addressed topics related to the Maritime boundaries, the United Nations agreement on Biodiversity Beyond National Jurisdiction (BBNJ Agreement) and the common heritage of mankind principle in the context of recent negotiations on marine resources.

Hydrographic Surveys Working Group (HSWG)

- **6th and 7th HSWG**

HSWG 6

The 6th Meeting of the IHO Hydrographic Surveys Working Group (HSWG6) was held in hybrid format from February 26 to March 1, 2024, at the Geological Survey of Ireland in Dublin. The IHO was represented virtually by Assistant Director Sam Harper. HSWG6 addressed updates to significant publications such as S-44, B-13, and C-13. The meeting also provided a platform to review progress on a number of other relevant IHO standards and set the course for intersessional activities.

S-44 Standards for Hydrographic Surveys. The current version, S-44 Edition 6.1, is undergoing updates, with a projected release of Edition 6.2 scheduled for October 2024. The Vice Chair outlined the two-year update cycle adopted by HSWG to ensure the standard evolves alongside technological advancements. During the meeting, Megan Greenaway reviewed a timeline for the update process and highlighted amendments under consideration. The updates aim to clarify ambiguities in existing standards, including concerns about bathymetric coverage and the usability of the matrix within survey orders.

Feedback tracking and operational experience formed a vital part of the discussion. Attendees emphasized the need to broaden the scope of S-44 to include methodologies like crowdsourced bathymetry (CSB). Additionally, challenges with defining percentages for bathymetric coverage were forwarded to the Bathymetric Coverage Sub Group (BCSG) for resolution. It was also agreed that the S-44 matrix, a tool for defining survey orders, required greater promotion, and examples of its application would be shared at future regional and international forums.

Another focus was on integrating backscatter data and improving uncertainty definitions. The Uncertainty Sub Group (UNSG) reported progress in aligning uncertainty concepts within S-44 with international standards, such as JCGM. This alignment aims to enhance consistency and interoperability across hydrographic products.

Efforts to promote S-44 globally were also discussed. With over 1,300 downloads of S-44 in 2023, participants emphasized the need for additional metrics to evaluate its impact. A promotional subgroup was formed to create educational materials and surveys, encouraging wider adoption of the standard. Translation updates for S-44 into Chinese, Spanish, and French were reviewed, with further work required to publish Portuguese translations.

B-13 Satellite Derived Bathymetry Guidance. The Satellite-Derived Bathymetry Project Team (SDBPT) presented significant progress on B-13, a document offering guidance for the use of satellite-derived bathymetry (SDB). The group announced that the foreword for B-13 was finalized and would undergo final verification before submission for publication. This document is designed to standardize the application of SDB methodologies, which are increasingly recognized as cost-effective and efficient tools for hydrographic surveying, particularly in remote or shallow areas.

A draft press release was also proposed to publicize B-13's release. To ensure the sustainability of the document, the project team discussed revising its Terms of Reference (TOR) to accommodate a dedicated secretary role and enhance coordination with other project teams within HSWG. Furthermore, the work plan for maintaining B-13 will be reviewed to ensure its alignment with emerging technological trends and operational needs.

Personnel changes within SDBPT were also noted, with Emre Gülher taking over as secretary following the departure of Nigel Townsend. The meeting underscored the importance of SDB's role in the hydrographic community and the need for ongoing collaboration to refine and expand B-13's scope.

C-13 Manual on Hydrography. The Manual of Hydrography Project Team (MHPT) reported progress in revising the structure and content of the manual to better serve as a reference for students and certified hydrographers. The team highlighted their efforts to reorganize chapters and sections, ensuring the manual remains relevant and accessible.

Work on C-13 will continue in the intersession with an emphasis on aligning the manual's content with other IHO standards, such as S-44 and S-100. The team aims to present a comprehensive draft for review at the next HSWG meeting, ensuring that C-13 remains a cornerstone of hydrographic education and practice.

Other items of interest. HSWG6 also explored opportunities for collaboration with other IHO working groups and external stakeholders. The group emphasized the importance of liaising with the Tides, Water Levels, and Currents Working Group (TWCWG) to incorporate standards for water level and current measurements into S-44. Efforts to engage with the GEBCO Technical Sub-Committee on Ocean Mapping (TSCOM) and the

Crowdsourced Bathymetry Working Group (CSBWG) were also discussed, highlighting the need for greater interoperability and data sharing.

HSWG 7

The 7th meeting of the International Hydrographic Organization (IHO) Hydrographic Surveys Working Group was held from 30 September to 4 October 2024at the European Space Agency - ESA at Frascati near Rome, Italy. The IHO was represented by Assistant Director Sam Harper. 42 leading survey experts attended from IHO member states and industry, with delegates from five continents. The five-day agenda was able to cover detailed discussion on some of the longer-term improvements intended for the S-44 standard as well as parallel break out meetings for the Manual on Hydrography and Satellite Derived Bathymetry Project Teams.

S-44 Standards for Hydrographic Surveys. S-44 is now regularly updated on a two-year cycle. HSWG 7 considered how bathymetric coverage is consistently achieved as well as how uncertainty is managed, and enabling better harmonization with other IHO standards across a number of concepts and terms.

B-13 Satellite Derived Bathymetry Guidance. Published for the first time in 2024, this is the first document of its kind, which aims to help hydrographic offices and other users better understand the use cases, opportunities, and limitations of SDB. The update process and schedule were agreed. Due to opportunities and ideas presented during the week at ESA, it was decided to rename the SDB Project Team to become the Earth Observation Project Team to accommodate the broadening scope. External guest speakers from Oregon State university and Maxar contributed to the breakout session of this team.

C-13 Manual on Hydrography. C-13 was last updated in 2011 and is very out of date. A key observation of the team working on C-13 is that the modern audience for this publication is not the same as it was originally. Similarly, it was contended by the group that the format of the publication does not present information in a way that a modern audience would consume such a reference document. following a review of content and surveys to Industry/Academia work has started to update this text. This is proving challenging due to the significant amendments required and as a result the work plan has been updated to reflect the longer period of editing that will be required. A review of progress and the challenges involved along with alternate methods of updating this text were considered during this meeting. The view of the Project Team and Working Group was that MHPT would continue to work on the updates and continue work on multiple Chapters with regular intersessional reviews between Working Group Meetings.

HSWG Members gather for group photo
next to the 1:4 scale model of Ariane Rocket.

WORK PROGRAMME 3
Inter-Regional Coordination and Support

Introduction

The IHO Work Programme 3 "Inter-Regional Coordination and Support" seeks to establish, coordinate and enhance cooperation in hydrographic activities on a regional basis, and between regions, especially on matters associated with the coordination of global surveying, nautical charting and ocean mapping, dissemination of maritime safety information (MSI) and capacity building (CB), including education and training. IHO Work Programme 3 is implemented under the principal responsibility of the Inter-Regional Coordination Committee (IRCC).

Inter-Regional Coordination Committee (IRCC)

The IRCC promotes and coordinates those activities that might benefit from a regional approach. The principal objective of the IRCC is to establish, coordinate and enhance cooperation in hydrographic activities among States on a regional basis, and between regions; establish cooperation to enhance the delivery of capacity building programmes; monitor the work of relevant IHO Inter-Organizational Bodies engaged in activities that require inter-regional cooperation and coordination; promote cooperation between pertinent regional organizations; and review and implement the IHO Capacity Building Strategy, promoting capacity building initiatives.

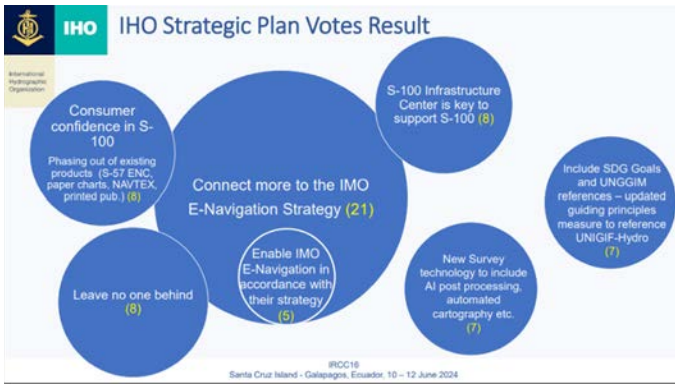
Conduct annual meetings of IRCC

The 16th meeting of the Inter-Regional Coordination Committee (IRCC-16) was held in Santa Cruz Island, Galápagos, ECUADOR, from 10 to 12 June 2024, hosted by the National Defence Ministry through the Naval Oceanographic and Antarctic Institute (INOCAR), in the Charles Darwin Research Station of Puerto Ayora, Santa Cruz Island. The meeting was chaired by Mr Thomas Dehling (Germany) and attended by 40 in person from 16 Member States. The IHO Secretariat was represented by Director Luigi Sinapi and Assistant Director Leonel Manteigas.

Participants at IRCC16

IRCC Chair Mr Thomas Dehling opened the meeting thanking Ecuador for hosting two meetings in a row and emphasized the unity and the internationality of the IRCC by nature. Captain Andrés Pazmiño Manrique, Director of INOCAR, welcomed the participants expressing the gratitude and honor for hosting the meeting and mentioned the ecological and historical significance of the Galapagos as a potential source of inspiration for the IRCC members. IHO Director Luigi Sinapi remarked the valuable support of the Regional Hydrographic Commissions (RHCs) and IRCC in achieving initiatives of common interest in the fields of Hydrography, Nautical Cartography, Capacity Building, Ocean Mapping and many others. IRCC Chair Mr Thomas Dehling provided the IRCC report, highlighting the activities since IRCC 15, the C-7 actions and decisions and those A-3 decisions addressed to IRCC, with particular focus on the review of the IHO Strategic Plan. IHO Director Luigi Sinapi provided the IHO Secretariat Report, highlighting the IHO initiatives of cooperation with international and intergovernmental organizations, the future C-8 meeting topics, the new SPRWG timeline to review the IHO Strategic Plan and the IHO outreach's achievements.

HSSC Chair presented on the progress of S-100 Implementation Roadmap and S-1xx products. He mentioned the approval of the S-100 Ed. 5.2.0 as the foundation of the Phase 1 S-100 products and services. The presence of WMO at HSSC was welcomed as an important sign of their commitment into the development of S-4xx products and services, and for the industry committed in providing weather products and information useful to navigation. The offer from Canada to designate the St-Lawrence River as an IHO Canada S-100 Sea Trial Area (2024-2025) was agreed. Updates on the IHO Infrastructure Centre (ICE) as an integral part of the IHO Secretariat and the offer from ROK to be the host country of the Centre were presented. HSSC Chair highlighted on the recommendation from WENDWG to create S-11 Part C - Guidelines for the Coordination and Management of the Development of S-100 Electronic Navigational Data Services (except S101 ENCs), and the liaison between NIPWG (lead) / S-100WG and WWNWS to address on S-100 dissemination related to e-navigation affecting potential S-100 "real-time" products, including SECOM and a way forward. He also highlighted on the CIRM's request for the IHO to consider a future retirement date for provision of S-57 ENC services and work with the IMO on the outcome. HSSC endorsed Ed. 4.4.0 of S-57, Appendix B.1, Annex A - Use of the Object Catalogue (UOC) for ENC, Ed. 8.0.0 of S-58 - ENC Validation Checks and S-44 edition 6.2.0, for the further approval via IHO CLs. Focus was given to the results of the vote on the Strategic Plan review (see below).



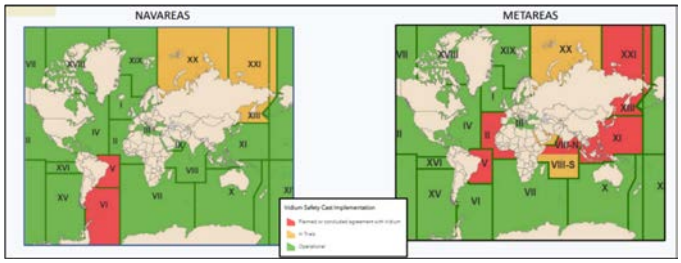
IHO Strategic Plan Results in HSSC

Australia updated on the "Ad-hoc Drafting Group for making IHO events more inclusive", to prepare an IHO Resolution with the objective to maximise participation at IHO meetings, based on 4 options, "Full remote VTC", "Hybrid / in person & VTC", "In person only plus passive live stream" and "In person only". The IHO Secretariat will issue a CL containing a questionnaire to survey on how to make events more inclusive based on the above four categories and then, after the outcomes of the questionnaire, another CL to propose a Resolution on inclusivity of IHO events.

RHCs and HCA Chairs (and those speaking on behalf of those chairs not present at the meeting) focused their reports on the most important regional key achievements, key findings and lessons learned. The following were the main topics discussed:

Revision of the IHO Strategic Plan;

- Harmonized development and implementation of S-100 products and services including all socio-economic benefits (e.g. Decarbonization, Voyage Optimization, Green Corridors and other Green/ sustainable initiatives);
- Acceleration of the progress in the readiness of S-100 data migration through several ways such as exchange technology, experience, workshop and seminar between member states;
- Additional resource allocations to be found in order to start S-101 and S-102 production and how to better serve Sub-ECDIS customers with reliable, affordable and easy to access digital navigational products;
- Challenges with S-101 scheming and possible high workload during the dual fuel period, due to parallel production of both S-57 and S-101 ENCs;
- Implementation of the development of hydrographic survey technology and synchronization of the nautical charts in the future;
- Limited sharing of data with DCDB and GEBCO;
- Limited fund availability in the Capacity Building programme proved that strengthening collaboration across RHCs is very beneficial for cooperation amongst coastal states;
- Technical Visits and High-Level Technical Visits are extremely relevant to leverage hydrographic and cartographic activities in coastal states;
- Substantial achievement for enhancing gender balance in hydrography in some RHCs;
- Arctic's remoteness, vastness and ice-infested waters make it challenging to map the seabed, whilst in Antarctica, the activities of the Hydrographic Commission of Antarctica (HCA) need to be focused on the impact of climate change too.



Iridium SafetyCast Implementation 2024.

The WWNWS-SC Chair informed on the last WWNWS15 meeting, and the specific topics discussed (SPI, C-55, Iridium SafetyCast Implementation, Capacity building and S-124 development). Overall, for 2024, the WWNWS assessed MSI Coastal States capacity to be 89,2% (IHO SPI 3.1.1 target is 90% by 2026) assigned to WWNWS. S-124 version 2.0.0 was endorsed by WWNWS and submitted to HSSC for approval. S-124 Document Encoding Guide draft version was completed and continues to be improved. MSC 108 approved the updated Joint IMO/ IHO/WMO Manual on Maritime Safety Information. WWNWS is working in cooperation with CBSC on a C-55 GIS project, considering the States having the MSI capacity and meeting MSI SPI, and those not having such capacity and not meeting MSI SPI. Next step will be to move the web map to the IHO's ArcGis online server and add a link to the WWNWS web page. MSI courses provided by WWNWS were presented, in line with the IHO CB Strategy Phase 1. WWNWS agreed that the use of all IMO RMSSs should be mandatory, showing those NAVAREAs and METAREAs already fully implementing the Iridium SafetyCast system (see Figure 3), as well as those still in trial and those not having implemented the system yet. A Letter from WWNWS and IRCC Chairs will be issued for relevant member states to implement all IMO recognized mobile satellite services.

The CBSC Chair presented the CB Work Program (CBWP), e-Learning Center, EWH project, and the outcomes of the 13th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/ IMPA Capacity Building (CB) Coordination Meeting held in Monaco in May 2024. The Chair highlighted the generous financial contribution to Capacity Building coming from the Republic of Korea, Japan through the Nippon Foundation and Canada, and the related initiatives / projects funded with those contributions. The contribution from IHO Member States (Belgium, Canada, Denmark, France, Norway, UK and USA) was highlighted, allowing the EWH project to continue as decided at the 7th meeting of the Council. In accordance with action C7/24, a Scoping Team consisting of HOs plus representative/s from the IHO Directing Committee was established, to prepare the regulatory framework for a continued

activity on this human resource theme embedded in the capacity building programme through a proposal for an IHO Resolution and draft the Terms of Reference (ToR) for a future Project Team by C-8.

Both RENCs presented plans for contributions to the CB Work Programme: IC-ENC with "Opt in fund" initiative (the first CB activity funded from this new fund was an ENC Quality Assessment & Conversion Course successfully organized by MBSHC), whilst PRIMAR is providing access to the full e-learning package for five non-RENC member states. Continuous low levels of IHO CB budget for non-earmarked CB activities in upcoming years were partly compensated by the contributions from ROK and from the surplus of the IHO budget. It was agreed that funded activities not completed would no longer be carried over into the following years work programme.

An overview on the IHO e-Learning Center was provided, highlighting that a General Manager Group was established. The System Manager is also provided by the ROK to maintain the system, the eLearning site improved, and the Steering Committee continues to seek e-Learning material from member states and partner organisations to be added to the e-Learning Center platform.

The WENDWG Chair reported on the latest achievements of the WENDWG. WEND-100 Principles are considered sufficient to meet the objectives. An ad-hoc drafting group was established for preparing amendments to the Guidelines on the Implementation of the WEND-100 Principles and inputs for the revision of the IHO Strategic Plan. The IGIF Matrix was considered important for HOs having no S-100 services scheduled yet, but any future annual completion of the WEND-100-IGIF matrix by RHCs was considered optional only. A new readiness level questionnaire was released in fall 2023 indicating an S-100 readiness level estimate of 53% (SPI 1.3.1) using a basic statistical approach. The lack of S-100 Coordinators in several RHCs was noted, and the IHO Secretariat took the initiative of collecting the information available with regard to S-100 coordination in the RHCs. No common ground for pursuing a global common grid scheme was found, notwithstanding risks coverage issues do exist where grids are not aligned or excessively overlapped. WENDWG established an ad-hoc S-11 - Part C drafting team to develop a proposed Edition 1.0.0 of S-11 Part C "Guidelines for the Coordination and Management of the Development of S-100 Electronic Navigational Data Services (other than S-101 ENCs)" to submit for approval in 2025. Some critical overlaps at Usage Band 5 (Harbour) and Usage Band 2 in some RHCs were presented, and the RHCs were encouraged to ask their members to engage bilaterally to resolve overlaps. WENDWG identified a need to consider the development of a communication strategy towards end-users, manufacturers, IMO, addressing readiness and expected geographic coverage of S-100 based products and data services in the following years, from 2026 onward, to be brought to the attention of the next Council for discussion and actions.

France presented a paper on "WENDWG recommendation related to a new distribution model of the S-100 Phase I products and ENDS and decisions proposals" to support the approach aimed at providing S-100 product coverage beyond the S-101 ENCs as soon as the first S-100 ECDIS is available. Because of their demonstrated robust role in the worldwide distribution of products on behalf of HOs, RENCs are key assets for the distribution

OGC federated MSDI pilot prjoect

of S-100. France highlighted the need to clarify what ENDS is and invited IRCC to request WENDWG to develop a new distribution model for S-100 products, in line with the HOs responsibility for the dissemination of nautical products to mariners under SOLAS convention. That dissemination of the S-100 products should build on RENCs, and the IHO Data Protection Scheme (S-100 Part 15) should be used to secure data integrity and retain the data producer signature all the way to the end user.

The MSDIWG Chair reported on the last meeting held in conjunction with UNGGIM and OGC that included a seminar on "Effective and integrated marine geospatial information management". Exchange knowledge through national, RHCs, and expert contributor presentations, IHO Strategy and goals from an MSDI perspective, specifically IHO Strategic Plan Target 2.1 "Build a portal…", and collaboration with UN-GGIM WG-MGI and OGC Marine DWG, were discussed. Following action C7/44, IRCC will report to C-8 that the task of MSDIWG should be modified as "MSDIWG to monitor and provide assistance to the S-122 Protected Seas pilot project with specific focus on the High Seas and MPAs adopted by IMO, to demonstrate the benefits of S-122 for non-navigation purposes". With reference to UN-GGIM WG-MGI – 6th Expert meeting and OGC meeting held aside the last MSDIWG15 meeting, implementation of the UN-IGIF-Hydro, terrestrial / marine / cadastral domain integration and an OGC federated MSDI pilot were discussed (see Figure 4). MSDIWG and IRCC Chairs will send a Letter to RHCs that haven't appointed their MSDI Ambassadors, recommending nominating MSDI Ambassadors and inform MSDIWG on contact details.

The IENWG reported on the 10th anniversary meeting of the European Commission (EC) and IHO held in 2022 and the last IENWG14 meeting held on the occasion of the European Maritime Days (EMD) 2024 organized by the EC and the host country Denmark, where the IHO Secretariat and Seabed2030 participated in the stand of the European Marine Observation Data network (EMODnet). EU maritime policies and projects involving HOs, development of the S-100 products and capacity building, EU initiative on marine data collection reporting and coordination (including hydrography) and need of data for the European Green Deal (GreenData4All) to increase interoperability with data and IHO standards, were presented. A new group was formed by the EC on the vision 2035 of EMODnet, and a representative from the IENWG was invited as a member. IENWG studied synergies on Capacity Building with the EC and produced a document on "IHO and EC Cooperation in Third Countries – A proposal for Hydrographic Capacity Development", for increasing interactions between the IENWG and EC and promote programs for the development of competencies, expertise, training and means to increase the hydrographic capacity in the EU and outside EU.

The IBSC Chair reported on the last IBSC47 meeting, where 17 submissions were received, 2 were not recognized and for the remaining 15 the Board offered inter-sessional revisions, as the submissions had a significant number of shortcomings. A second annual meeting is required to finalize submission reviews and the revision of the four Standards. The board will organize a workshop in the second semester of 2024, to provide clarifications for the institutions on the preparation of submissions to the Board. The Board defined the fees for the recognition of Subjects. Thanks to the positive returns from the EWH project's interns, IBSC will request new interns to work with IBSC on the outreach and on the revision of the Standards. IBSC will liaise with CBSC for the future maintenance of the C47 publication and will present the outcomes to IRCC in 2025.

The CSBWG Chair reported on the three working group meetings held since IRCC15. Following the publication of B-12 Ed. 3.0.0, CSBWG focused on a critical review of the group's operating mandate, identifying ten high level priority work areas and developing a multifaceted work plan. It was noted that in order to draft a submission to the UN Decade, an "IHO CSB Initiative" would first need to be more formally defined. The IHO Secretariat presented a proposal for how to incorporate the development and governance of an IHO CSB Initiative into the CSBWG Work Plan. The IHO CSB Initiative would serve as the central point of standardisation, policy and technical guidance - coordinated and administered by the CSBWG, into which those various CSB projects (such as The Great Barrier Reef Project, the joint IHO & Yacht Club of Monaco, etc.) managed outside the CSBWG would feed into and / or draw from. An IRCC Workshop on Crowdsourced Bathymetry was organised and hosted by members of the CSBWG and the IHO Secretariat on 26 April 2024, drawing 107 participants from over 50 coastal states. The workshop reiterated the value of this type of engagement and highlighted those previous modes of communication around the various aspects of CSB had not always been clear.

The DCDB Director reported on DCDB achievements over the last year. Today, the DCDB archives over 70 terabytes (TB) of uncompressed oceanic soundings acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. Since June 2023, 93 new multibeam bathymetry surveys have been archived. The largest data providers to the DCDB continue to be the U.S. Academic Research Fleet (ARF) with 55 surveys archived in the last year.

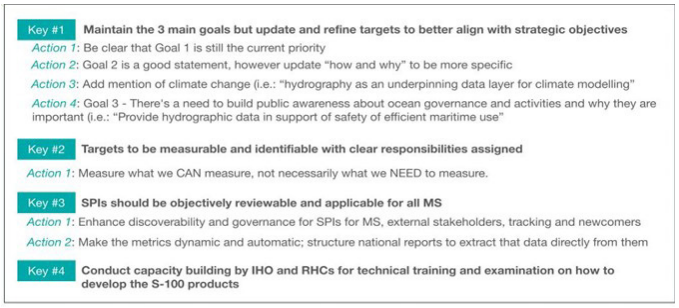
GEBCO Gazetteer.

New CSB data ingest pipelines were finalized with the Interdisciplinary Center for Development in Ocean Mapping (CIDCO), Seabed 2030, International Seakeepers Society, and the Center for Ocean Mapping and Innovative Technologies (COMIT). Bathymetric data contributed to the DCDB are made discoverable and accessible through the DCDB web map viewer (https://www.ncei.noaa.gov/maps/iho_dcdb/). The new Ingest-to-archive data pipelines will allow for improved reliability, increased automation, greater ease in ingesting new data, greater flexibility in allowed data formats for evolving bathymetric technology, provide error handling & notification, better handling of complex datasets and large volumes of data and allow us to be cloud ready. The CSB Coastal State Review Application (CSRA) was tested in late 2023 and will be fully operational soon, to reach out to all coastal States who requested pre-approval of CSB data and provide them training and access to the CSB CSRA. DCDB developed and hosts, on behalf of the IHO, the GEBCO Gazetteer, a web tool that allows the public to search for, view, and download information on more than 3800 undersea features. Gazetteer v4.3.7 is live at https://www.ngdc.noaa.gov/gazetteer/. The GEBCO Subcommittee on Undersea Feature Names (SCUFN) is the primary stakeholder for the Gazetteer.

The GEBCO Guiding Committee (GGC) Chair reported on the work of past GGC meetings and the organization of next GEBCO meeting in 2024 (Fiji). The new GEBCO strategy and GEBCO Governance review report were endorsed by IRCC. GGC will soon start to organize the implementation (if, how, priorities) of the GEBCO Strategy and the recommendations included in the GEBCO Governance review. The outcomes of the Maps the Gaps Symposium held in November 2023 in Monaco at Musee Océanographique were presented, highlighting on seabed knowledge, improved climate modelling, marine biodiversity discovery and monitoring, and offshore wind planning process. Request for higher resolution products, interest in expanding scope of GEBCO products and request for greater choice of file formats, including better visualization tools, were brought to the attention of IRCC. From the Nippon Foundation GEBCO Seabed2030 project, increased to 24.9% of the world's oceans directly measured and mapped, works alongside UN Decade team and other global initiatives, 14 new MoU's among which with NHC as first RHC, and the NF GEBCO UNH training alumni conference July 2023 in Tokyo, were also presented. The improved cooperation / harmonization between GEBCO Sub Committees work from new strategy as well as the funding challenges faced by the GEBCO programme were finally highlighted.

IRCC opened a discussion on the Axis of evolution of the IHO Strategic Plan. Three groups were created to brainstorm on the "Strategic Plan structure", "Governance and Role of IRCC", "Measurement system (SPI ?)" and "Aspects concerning RHCs and IRCC bodies". Example outcomes of the brainstorming session will be brought to the attention of C-8.

Denmark presented on the results of the "Fund Generation Project Team under IRCC" established as a result of A-3 and C-7. Two meetings were held, Chair and Vice Chair were nominated. The initial focus for the PT will be to develop a prioritised list of activities and seek review from IRCC and HSSC to validate this list, focus will then shift to the identification of opportunities for recurring funding based on two scopes, Scope 1 – existing and short-term options and Scope 2 – long term strategic options. The Terms of Reference of the PT were adjusted and approved by IRCC.



Example of the outcomes of brainstorming on the IHO Strategic Plan Review.

The next IRCC meeting is planned to be held on 3-5 June 2025 in Monaco at the IHO Secretariat. Following meetings will be held in Peru (May/June 2026), Nigeria (May/June 2027), Australia or New Zealand (May/June 2028 – Venue TBD), and Denmark (May/June 2029).

GEBCO Guiding Committee (GGC). On 31st October in Suva, Fiji, following the invitation of the Fiji Hydrographic Office, a delegation composed of the IHO Director & Head of Delegation Luigi Sinapi, IHO Assistant Director Samuel Harper, Chair GEBCO Guiding Committee Evert Flier, Director Seabed2030 Jamie McMichael Phillips and Head of Seabed2030 Pacific Ocean Centre Kevin Mackay, paid a visit to the Fiji Hydrographic Office (HO), the Chief of Fiji Navy and the Permanent Secretary Home Affairs, the Oceania Regional Office of International Union of Conservation Nature (IUCN) and the Secretariat of Pacific Community (SPC).

During the meetings with the Fijian authorities, the following topics were discussed:

- The hydrographic and nautical cartographic capacities of the Fiji HO;
- The re-establishment of the National Hydrographic Committee, as a representation of different governmental and civil society stakeholders;
- The importance for Fiji and the South West Pacific Region to host the Seabed2030 Regional Pacific Centre and GEBCO meetings, to raise the awareness of seabed mapping at national and regional level;
- The commitment of the Fijian authorities in investing in Hydrography and supporting the initiatives of the IHO for the sustainable development of the national and regional blue growth;
- The international recognition of the importance to complete the first phase of the S-100 products implementation and the associated benefits and opportunities for the IHO Member States;

- The engagement of the IHO in the UN Decade and the next UN Ocean Conference planned in 2025 (UNOC25);
- The interest of IUCN in the full breadth of the IHO work, from standards to GEBCO, from data access to collaboration at events such as UNOC25, in order to strengthen the liaison between the two organizations;
- The commitment of Fiji Government towards the protection of 30% of the Fijian ocean areas by 2030, in line with the objectives of the 30x30 Alliance;
- The importance of investing in building capacities in favour of the SPC member states;
- The intention to update the IHO-SPC Memorandum of Understanding signed in 2011.

Organized by the Nippon Foundation GEBCO-Seabed2030 project in the Tanoa International Hotel, Nadi, Fiji, the 6th Pacific Regional Centre Meeting took place from 4 to 6 November and was attended by 90 participants from 27 countries (mainly Pacific Island Countries – PICs). The Meeting was structured in one-day workshop and two-day conference. The IHO Secretariat was represented by Director Luigi Sinapi and Assistant Director Samuel Harper, respectively keynote speaker and moderator of Session 3 dedicated to ocean mapping, ocean discovery and crowdsourced bathymetry.

The six keynote speakers (the Minister of Land and Resources of Fiji, the IHO Director, the Head of Ocean Affair Division of Nippon Foundation, the Director Seabed 2030, the Chair of GGC, the Head of Marine Policy and Regional Coordination Section of IOC-UNESCO) highlighted the need for Pacific region to translate aims into concrete actions, investing on public-private partnerships and innovative models, generating virtuous clusters that cooperate with each other and share the mission of fighting against fragmentation, attracting investments for a more agile and operational approach to seabed mapping. Accessible ocean data, education and training and capacity building, supported by global initiatives like GEBCO, Seabed2030 and Crowdsourced Bathymetry, represent some of the desires and solutions available to PICs.

Participants at the 6th Pacific Regional Centre Meeting, 4-6 November, Nadi, Fiji.

A broad range of topics were discussed, including Pacific maritime boundaries, the extended continental shelf, integrating ocean mapping for sustainable marine tourism and the specific needs of the Pacific Island Countries.

Participants at the 6th Pacific Regional Centre Meeting, 4-6 November, Nadi, Fiji.

Particular reference was made to the Republic of Kiribati becoming the 100th IHO Member State, and its internal hydrographic capacities development. The use of new technologies, such as satellite derived bathymetry and autonomous and uncrewed vehicles, together with successful exploration campaigns in the Pacific area to fill bathymetric data gaps were discussed. In terms of solutions, open data sharing and accessible marine digital products were identified as enablers to raise the awareness of seabed mapping and reduce the barriers between the states of the South West Pacific region.

The 41st Meeting of the GEBCO Guiding Committee took place in the Tanoa International Hotel, Nadi, Fiji, in the days 4, 7 and 8 November. 60 attendees from 14 IHO member states (Australia, Canada, Colombia, Fiji, Indonesia, Ireland, Italy, Japan, Malaysia, Norway, Republic of Korea, Solomon Islands, Sri Lanka, United States of America) and representatives from the IOC-UNESCO and Industry participated in the meeting. The IHO Secretariat was represented by Director Luigi Sinapi and Assistant Director Samuel Harper, who is also the GEBCO Secretary.

The following main topics were discussed:

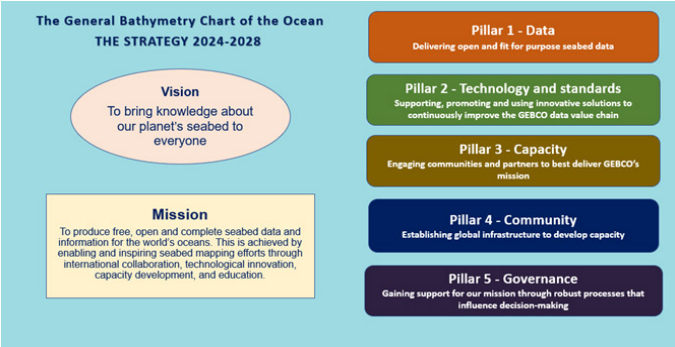
- The IHO and IOC-UNESCO updates;
- The GEBCO Strategy (2024-2030) and the implementation of the descendent Strategic plan;
- The GEBCO Governance Review report and related prioritized recommendations;
- The necessity to update the GEBCO ToRs and RoP;
- The turn-over in the GGC and Subcommittees membership, as well as the related positions of Chairs and Vice Chairs;
- The GEBCO work plans and funding for 2025 and beyond;
- The submission of "Depth" as EOV (Essential Ocean Variable) to GOOS (Global Observation Ocean System) by the IHO Secretariat;
- The IHO and GEBCO participation at the 2025 global events in favour of the oceans (Ocean Conference, 4-6 June 2025, Nice – France, Blue Economy Forum, 7-8 June 2025, Monaco and UNOC25, 9-13 June, Nice-France);
- The Seabed2030 activities performed in 2024 and planned for 2025, with particular focus on the latest signed MoUs by Seabed2030;
- The latest updates on CSB and DCDB activities;
- The reports from the 6 GEBCO Subcommittees;
- The future of conducting symposia back-to-back to the GGC meetings, and
- The outcomes of the 6th Pacific Regional Centre Meeting.

The GGC attendees were divided in 5 groups to conduct a SWOT analysis of the 5 Strategic Pillars (Data, Technology and standards, Capacity, Community and Governance) of the GEBCO Strategy (2024-2030), with the aim to identify the top-3 Strengths, Weaknesses, Opportunities and Threats for each of the 5 Strategic Pillars. The results of the SWOT analysis, in addition to the recommendations descending from the GEBCO Governance, will be used to draft the GEBCO Strategy Implementation Plan.

In order to progress a number of focused areas of work, a series of Task Groups composed of GGC members were created. These small groups will tackle subjects such as:

41st GGC and Seabed2030 – 6th Pacific Ocean Mapping meetings – Nadi, Fiji.

- Liaison with the IHO Fund Generation PT,
- Liaison with the IOC Sustainable Ocean Planning and Management WG,
- Liaison with the Map the Gaps Symposium organizing committee,
- Develop proposals for future approach to the GEBCO seminars beyond 2025,
- Investigate submitting Depth as an EOV,
- Develop the Strategy Implementation plan and to coordinate UNOC25,
- Discuss and prepare a Townhall at the One Ocean Science Congress in 2025.



The GEBCO Strategy (2024-2030).

The GEBCO Secretary reported that one IHO Project Officers has been assigned to support GEBCO, and this was greatly appreciated. IOC reported that the funds bi-annually assigned to GEBCO has been increased which was also well received.

The GEBCO Sub-Committees reported on their annual work plans and received specific guidance from the GGC on a range of activities for 2025. SCUFN was requested to develop a formal proposal for naming using alpha-numeric codes, together with implications of the change properly articulated whilst SCRUM was requested to identify priority areas for regional seabed mapping as well as supporting the organization of regional seabed mapping projects. TSCOM will explore how/whether GEBCO Grid should/could be incorporated as an S-XXX Product Specification, whilst SCOPE was declared dormant due to the lack of Chair and Vice Chair.

Finally, the GEBCO Budget for 2025 was discussed and approved. Mr Evert Flier, Norway was confirmed as the GGC Chair for the remainder of his 3 year term (2 years remaining due to a mismatch between the 3 year term as Chair and 5 year term as a member of the GGC), whilst the position of GGC Vice Chair will remain vacant until the next GGC intersessional meeting, due to the need to fill some vacancies in the IOC-UNESCO GGC membership. The Chair Teams of TSCOM and SCRUM were endorsed by the GGC for another 3-year term each.

The Nippon Foundation – GEBCO Training Programme. It was noted that GEBCO had a relationship with the Nippon Foundation since 2014 which represented more that 35 million dollars' worth of investment. During this time they have supported 120 students from 50 different countries.

In 2023, it was reported that 150+ valid applications for 7 spaces had been received which went to show how popular and in demand the course is. It was noted that that this would be something that SCET should consider in terms of what the appetite may be for a range of learning offerings.

In reflecting on the value and importance of the contribution the Nippon Foundation has made the seabed mapping community, the range of activities and dispersion of the NF-GEBCO Alumni, was duly noted.

Sub-Committee on Undersea Feature Names

SCUFN. The 37th meeting of the IHO-IOC GEBCO Sub-Committee on Undersea Feature Names (SCUFN) was hosted jointly by the Korea Institute of Geoscience and Mineral Resources (KIGAM) and the Korea Hydrographic and Oceanographic Agency (KHOA) in Jeju, Republic of Korea, from 24 to 28 June 2024.

The meeting, chaired by Dr Yasuhiko Ohara (IHO representative) from the Japan Hydrographic and Oceanographic Department (JHOD, Japan), was attended by about 60 participants, which consisted of ten SCUFN members (out of 12), plus representatives of 12 Member States (Canada[1], China, Greece, India, Indonesia, Japan, Malaysia, Oman, Philippines, the Republic of Korea, United Kingdom and Viet Nam) and subject matter experts (Marine Regions, NOAA (USA), ACUF[2] (USA), KHOA and KOSBI[3] (ROK)). Assistant Director Yves Guillam (SCUFN Secretary) represented the IHO Secretariat.

Ms Kyung-wha Back, Director for Territory and Oceans Division, Ministry of Foreign Affairs, Republic of Korea.

[1] Ms Anna Hendi, Chair of the SCUFN UFN Project Team, participated on VTC for the agenda item on the Automated Detection of Features.

[2] Advisory Committee on Undersea Features.

[3] Korea Seabed Information.

Mr Se-Joon Kim, Vice-President of KIGAM, Korea Institute of Geoscience and Mineral Resources, summarized the geology of Jeju Island and introduced the historical names of Jeju Island, as clear confirmation of the relationship between mankind, human culture and nature, and evidence of the specific role of SCUFN in bridging human society and marine environment. He also announced the commissioning of their new state-of-the-art seismic research vessel Tamhae 3, her name meaning "Exploring the Ocean".

SCUFN was extremely honoured with the welcome address by Ms Kyung-wha Back, Director for Territory and Oceans Division, Ministry of Foreign Affairs, expressing the strong support of the Republic of Korea on the objectives of SCUFN.

At the official dinner in presence of KHOA's Director Kwan-chang Lim, the SCUFN Secretary had the opportunity to reply to and thank the Republic of Korea and KHOA in particular for their outstanding and continuous support to SCUFN activities. The SCUFN Operational Web Services (SCUFN OWS) operated by KHOA, encompasses several interdependent components:

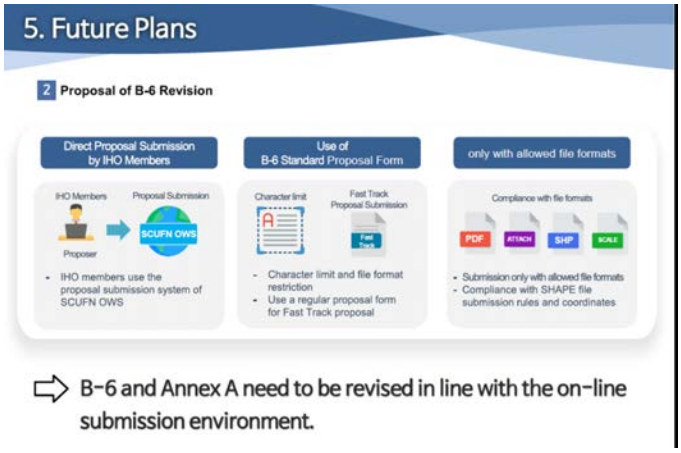
- the submission interface[4],
- the review interface, a very efficient interface at the disposal of SCUFN Members for reviewing naming proposals prior to meeting sessions,
- the repository and the SCUFN archive, and
- the improvement of the interoperability with the GEBCO Gazetteer operated by NOAA.

SCUFN Members considered 140 new naming proposals during the meeting, among which:

- 108 were ACCEPTED[5], sometimes with minor changes of the generic term,
- 4 were kept PENDING, inviting the proposers to provide complementary information,
- 28 were NOT ACCEPTED.

At the start of the sessions dedicated to the review of naming proposals, an update on the progress made by the interested parties (China, Malaysia, Philippines and Viet Nam) on the discussions related to the naming of features located in the South China Sea (SCS) was shared by Malaysia. This was followed by official statements by the same interested parties confirming the need to consider the SCS still "frozen" for naming features. With the exception of Philippines who "…urged SCUFN to urgently lift the freeze of the SCS, and resume with considering and approving naming proposals for undersea features…". In the absence of a joint proposal for a way forward in the SCS submitted to SCUFN, SCUFN agreed to keep on with the decision made at SCUFN-36 (Decision SCUFN36/04.6/01) in 2023.

Very useful updates were provided by the supporting organizations (NOAA, KHOA) and the subject matter experts from ACUF, and Marine Regions. An excellent demonstration of the new on-line submission interface on SCUFN OWS was provided by KHOA and the developers of KOSBI. Aiming to facilitate the direct upload of naming proposals by the proposers themselves, this new component should improve the efficiency within SCUFN drastically (Secretariat's resources, KHOA staff), as well as the compliance and the quality control of the proposals.



On the need to amend Publication B-6 once the new submission interface becomes fully operational.

The continuous maintenance by NOAA/NCEI of the GEBCO Gazetteer of Undersea Feature Names under the leadership of the Director of the DCDB was also commended. A status report on those (naming) proposers who had provided associated bathymetric data to the IHO DCDB was provided, but it was agreed that there was room for improvement. The SCUFN Secretary took the opportunity to welcome observers from the Sultanate of Oman for the 1st time in such a SCUFN meeting and drew the attention of participants on the excellent article by Oman in the Bulletin N°67 of the UN GEGN[6], June 2024, explaining how the "UNGEGN strategic plan aligns with SCUFN & IHO".

On the future of SCUFN, a fundamental topic that was identified at the meeting in 2023, the following significant progress was made, as reported by the SCUFN Secretary:

- Liaison with the founder of the Working Group on Star Names of the International Astronomical Union for benchmarking best practices, rules of procedures and nomenclatures,
- Approval of the Terms of Reference and establishment of the new SCUFN Sub-Group Naming 2023 at SCUFN-37,
- New members announcing their intention to join and contribute to this sub-group, including subject

[4] In the final stage of development before commissioning.

[5] Or ADOPTED which is the word used by SCUFN when proposals are located in national waters (archipelagic, territorial sea).

[6] United Nations Group of Experts on Geographical Names (SCUFN Member Trent Palmer).

matter experts in data modelling (Marine Regions, NOAA and Canada).

- SCUFN noted the signature by the SCUFN Chair of the Ocean Decade Canada-GEBCO Project Implementation Plan: Detection of Undersea Features, already presented at SCUFN-36 by Canada.

The Chair and Secretary thanked the Republic of Korea for their outstanding hospitality and excellent support for the preparation and the efficient arrangements provided during the week.

Participants in SCUFN-37.

Maritime Safety Information

The Capacity Building Sub-Committee (CBSC)

The 22nd meeting of the Capacity Building Sub-Committee (CBSC) was held in Santa Cruz Island, Galápagos, ECUADOR, from 5 to 7 June 2024, hosted by the National Defence Ministry, through the Naval Oceanographic and Antarctic Institute (INOCAR) in the Charles Darwin Research Station. The meeting was chaired by Mr Evert Flier (Norway) and attended by 18 attendees from 10 Member States, representing 10 out of 15 RHCs, with Australia and Japan as observers. The IHO Secretariat was represented by Director Luigi Sinapi and Assistant Director Leonel Manteigas.

Participants at CBSC22 in Charles Darwin Research Station.

Captain Andrés Pazmiño Manrique, Director of INOCAR, welcomed the participants and highlighted the importance of Capacity Building (CB) in the International Hydrographic Community to contribute to the safety of navigation and safeguarding the marine domains. He also informed that Ecuador has a long history in environmental protection and understanding the complex geological and biological processes that continue to shape Galápagos islands, as a sanctuary for studying evolutionary biology but also a critical area for marine research and sustainable tourism. CBSC Chair Mr Evert Flier thanked INOCAR for hosting the CBSC-22 meeting in a place which is an example of sustainable management for the entire world. He mentioned the initiatives taken to provide additional funds to the CB Work Programme, as the creation of the Project Team on Fund Generation of IHO' Project Initiatives under the IRCC, the support provided by the RENCs and the generous support from Nippon Foundation and Republic of Korea. Director Luigi Sinapi highlighted that the meeting represents a useful occasion to contribute to the IHO challenges for implementing the new Capacity Building Strategy, supporting the S-100 implementation roadmap and contributing to the creation of new hydrographic capacities in those coastal States not yet having a Hydrographic Service and not yet members of the IHO.

Some noteworthy aspects emerged from the presentations of the CB coordinators, which demonstrate that RHCs are exploring all available opportunities to broaden the CB offer to their members, including activities of Phase 3 of the CB Strategy, closely related to the implementation of the S-100 roadmap. In this regard, the CB coordinators prepared specific Phase 3 activities to be submitted to the IC-ENC for subsequent funding, similar to what was done in the MBSHC for the "Workshop on ENC Quality Assessment", funded under the "IC-ENC Opt In Fund" with the name "ENC Quality Assessment & Conversion Course".

Course funded by IC-ENC "Opt In Fund" for MBSHC members.

PRIMAR signed a Letter of Intent with the IHO to provide IHO Member States access to the PRIMAR Training Portal, based on application through the CBSC. Then, particular interest aroused on the Center of Excellence for Operational Ocean and Great Lakes Mapping at the University of New Hampshire, established at NOAA, to unify approach to provide a focal point for activities transitioning developments in mapping platforms, sensors, and concepts of operations into operations and to

provide a mechanism to leverage public-private partnerships in advancing the nation's ocean and Great Lakes mapping goals.

Highlights on the Project Team on Fund Generation of IHO' Project Initiatives under the IRCC were delivered by Australia as member of the PT, to update the CBSC on the tasks and list of activities that require funding. As contribution to the PT, the work prepared by the IENWG on "IHO and EC Cooperation in Third Countries for Hydrographic Capacity Development" to promote programs for the development of competencies, expertise, training and means to increase the hydrographic capacity in the EU and outside EU, was introduced by the IRCC Chair.

A presentation on IHO e-Learning center was provided by Tom Richardson, the Chair of the IHO e-Learning center Steering Committee, highlighting the achievements done so far and the challenges that the center is facing. The center will also function as hub for e-courses provided by other institutions and international /intergovernmental organizations.

On EWH project, to accomplish the Council's action on Gender Balance in Hydrography (C7/24), it was decided to establish a Project Team with the participation of the main stakeholders involved so far into the EWH project, to define the regulatory framework (M-3) for a continued activity on this social theme through a proposal for an IHO Resolution, to be proposed to IRCC by the end of 2024. Attention was given to the initiatives in place and on the generous contributions (financial and in-kind) recently received by some IHO Member States (Belgium, Canada, Denmark, France, Norway, UK and USA).

A significant increment of the funds for non-earmarked activities was received from the Republic of Korea in 2024 for 2025. In the Finance Report for 2023 (see CCL 02/2024), 40k€ of the IHO budget surplus for 2023 would be allocated to the Capacity Building Fund for 2024. The Three-Year Work Plans were presented and the non-earmarked activities for 2025 were prioritized, based on CB Procedure 4. To meet the requirements of all submissions (29 in total) would require funds of 577,000 €. The funds allocated to the 2025 CB Work Programme currently stand at 189,061 €. In case additional funds are attributed to the CB Fund in 2024, they will be allocated to 2025 CBWP.

In the compilation of the CB Management Plan for 2025, priority was assigned to those activities related to Phase 1, with attention to those coastal states not yet IHO members (Technical Visits and seminars on raising awareness on Hydrography before the RHCs meetings), in accordance with the revised Capacity Building Strategy Ed. 2022. Consideration was given to the potential support that could come from the IC-ENC through the "IC-ENC Opt In Fund" to finance those activities co-related to Phase 3. The USCHC CB coordinator in coordination with Australia will explore GIS options to visualize CB activities included into the CB Management plan.

INOCAR kindly offered the opportunity to visit its insular detachment based in Santa Cruz Island, providing a presentation on the activities normally carried out in the Galapagos Islands, with particular focus on hydrographic surveys in the Galapagos Exclusive Economic Zone (EEZ), environmental monitoring projects conducted in collaboration with International Organizations, and activities in the tide gauging and oceanographic sectors. Finally, on the morning of 7th June, CBSC participants were offered a guided tour inside the Charles Darwin Research Station.

The WWNWS Sub-Committee (WWNWS-SC)

The 16th meeting of the International Hydrographic Organization (IHO) World-Wide Navigational Warning Service Sub-Committee (WWNWS) was held on 2 - 6 September 2024 in a hybrid format, hosted by the Servicio Hydrográfico y Oceanográfico de la Armada (SHOA), Valparaiso, Chile. 85+ participants with 35 in person representatives from the International Maritime Organization (IMO), International Mobile Satellite Organization (IMSO) and Satellite Communication companies attended as well. The meeting was led by Mr. Christopher JANUS (Chair WWNWS, United States) and Mr Trond SKI (Vice-Chair WWNWS, Norway). The IHO Secretariat was represented by Assistant Director Sam Harper.

Servicio Hidrografico y Oceanografico insular de la Armada.

Rear Admiral Arturo Oxley, Director of SHOA welcomed participants to Chile. Referencing the unique geographic location of Chile on a major fault line, and its inherent exposure to Tsunami inundation, he emphasized the importance of the WWNWS-SC to his nation and the region.

He noted that the 16th meeting of the WWNWS-SC was being held in the 150th anniversary year of SHOA and welcomed participants to be part of this celebration. The Chair WWNWS-SC welcomed all participants and introduced himself. He provided brief background details to the meeting and expressed his appreciation to all present for making the effort to participate in person. He extended his thanks to Chile for hosting the meeting and remarked on the fantastic facilities and the effort that they had gone to. Updates to the group's Terms of Reference (ToRs) and work plans were also noted, ensuring alignment with the IHO's broader objectives.

The chair gave an update on IHO SPI 3.1.1 Percentage of Coastal States that are capable to provide maritime safety information (MSI) and reported that this was at 89.6% against a 2026 target of 90%. There was a question over whether the current measure was an accurate reflection of the actual status of MSI provision within Coastal States. He also reported on the work to update C-55 and showcased the GIS database that shows the status of MSI provision that will be made available on the IHO website in due course. Reports from the Capacity Building and MSI training course held in Oman and Türkiye were discussed as well as a developments in E-learning material provided by France.

The IMO provided a summary of the key outcomes from MSC108 and NCSR11. It was reported that MSC 108 approved updates to Maritime Services, including MSC.1/Circ.1610/Rev.1, to enhance the harmonization of e-navigation. It decided that a formal recognition framework for new terrestrial GMDSS services was unnecessary and that NAVDAT should not replace NAVTEX. The committee mandated the dissemination of MSI and SAR information through all operational RMSSs by December 31, 2026, urging Member States to implement Iridium SafetyCast as soon as possible. It also initiated revisions to resolutions A.707(17) and A.1001(25) to align with evolving satellite communication requirements. NCSR 11 focused on updates to the GMDSS Master Plan, encouraging migration to SafetyNET II and ensuring MSI is broadcast via Iridium SafetyCast. It proposed SOLAS amendments to require MSI and SAR dissemination through all RMSSs and finalized draft resolutions on GMDSS communication charges. The sub-committee advanced NAVDAT implementation, tasking the NAVTEX Coordinating Panel with developing a coordination scheme. Work also progressed on integrating the VHF Data Exchange System (VDES) into SOLAS, with Japan leading a Correspondence Group. Additionally, South Korea was assigned to develop guidelines for Electronic Nautical Publications (ENP).

The outcomes from the 22nd meeting of the Document Review Working Group were discussed along with the agreed review schedule. A key focus was the BDMSS SafetyLink Manual and the Joint IMO/IHO/WMO MSI Manual. Key actions included adding the BDMSS SafetyLink Manual to the document review schedule, revising various IMO resolutions (A.705, A.706, and A.1051) for better clarity, and making structural updates to improve navigation warning dissemination, particularly for Maritime Autonomous Surface Ships (MASS) and Search and Rescue (SAR) information.

Briefings on the activities of the IMO NAVTEX and the IMO Enhanced Group Call (EGC) Coordinating panels were provided by their respective chairs as well as developments in the provision of mobile satellite GMDSS services from Inmarsat and Iridium.

The Chair of the EGC Panel provided a report, emphasizing the importance of NAVAREA coordinators' participation in meetings and explaining the group's mandate, operations, and the process of securing an EGC certificate. He highlighted the necessity of contingency arrangements, citing cases where they had been essential, and encouraged attendance at the next meeting. The IMO representative clarified that the GMDSS Master Plan allows for flexible scheduling and requested notification if alignment issues arise. A discussion followed on the challenges of contingency arrangements during total communication failures, but it was agreed that all NAVAREAs should implement them, as they are free and beneficial despite potential limitations. Inmarsat and Iridium gave updates on their respective systems and future planned developments. Both reiterated their offer of assistance and highlighted various training solutions that are available.

An update on the work of the Space Activity Advisory Group (SAAG) was provided, emphasizing the use of the optional recording template and recommending its continued promotion among coastal states. NAVAREA IV/XII reported on space operators' engagement with MSI and findings from the South Pacific Uninhabited Area (SPOA) study, highlighting that vessel operators adjust courses for small hazard areas but face challenges with large exclusion zones. The group recommended reminding MSI providers about the template and inviting the Space Activity Advisory Group (SAAG) to meet with space operators. In terms of reporting relevant space weather events, it was recommended that collaboration between WWNWS-SC and AG-WWMIWS should be improved, space weather warnings should be standardized, and MSI documentation to be revised as needed.

Reports from the Capacity Building and MSI training course held in Oman and Türkiye were discussed as well as a development in E-learning material provided by France.

S-124 was a key element of WWNWS16 with day three being dedicated to updates on the outputs of the relevant technical task teams established at WWNWS15. The next steps needed to meet the deadline for publishing S-124 Ed. 2.0.0 were discussed and the associated workplan was adjusted. Beyond the technical development of S-124, discussions were had about whether S-124 constituted MSI, and as a consequence whether it should be incorporated into the GMDSS. It was noted that it was likely that eventually S-124 would become recognised as MSI (as defined in the GMDSS and associated

IMO instruments), however the existing dissemination methods would exist alongside it for the foreseeable future. Finally, the proposed new NCSR output for the development of guidance to establish a framework for data distribution and global IP-based connectivity was presented and discussed.

- Presented the results of the annual NAVAREA self-assessments
- SPI 3.1.1 Percentage of Coastal States that are capable to provide maritime safety information (MSI) reported to IRCC16 was 89.6% against a 2026 target of 90% – Question over whether the current measure was an accurate reflection of the actual status of MSI provision within Coastal States.
- Report on the work to update C-55 and showcased the GIS database that shows status of MSI provision that will be made available on the IHO website in due course
- Report on MSI CB courses that have been delivered in Oman and Türkiye
- The group reflected on the discussions at MSC108 and NCSR11 – noting the approval at the former of the ECDIS Performance standards
- Group considered the development and implementation of S-124 and debated issues relating to its inclusion in the GMDSS. Group agreed to work on a roadmap for S-124 implementation to try and get clarity on this
- Group discussed the paper that had been submitted to MSC109 on developing guidelines for the use of IP based transfer methods for S-100 products such as S-124.

<u>The Worldwide ENC Database Working Group (WENDWG)</u>

The 14th meeting of the Worldwide ENC Database Working Group (WENDWG), was held from 20 to 22 February 2024 in Norfolk, Virginia, USA, hosted by the Office of Coast Survey (NOAA). This meeting included a short Stakeholders' Session on the "Expectations from Mariners and End-User Service Providers on ENDS Provision".

Opening address by the WENDWG Chair.

The meeting was chaired by Mr Jens Schröder-Fürstenberg (Germany), seconded by Mr Jason Scholey, Vice Chair (UK). Forty-one delegates from 21 Member States (Australia, Brazil, Canada, China, Denmark, Ecuador, Finland, France, Germany, Greece, Indonesia, Italy, Latvia, Norway, Republic of Korea, Spain, Suriname, Sweden, Türkiye, United Kingdom and the United States) representing 12+1 Regional Hydrographic Commissions (ARHC, BSHC, EAHC, EAtHC, MACHC, MBSHC, NHC, NSHC, SAIHC , SWAtHC, SWPHC, USCHC and the HCA), the RENCs (IC-ENC, PRIMAR, and the EAHC-RECC) attended the meeting. Two Stakeholders (Furuno, ChartWorld) out of six had responded positively to the invitation from the WENDWG Chair. Director Luigi Sinapi and Assistant Director Yves Guillam (Secretary) represented the IHO Secretariat.

In their opening speeches, Ms Julia Powell, Chief of Marine Chart Division (NOAA) , and the Chair welcomed the participants and reminded the important IMO milestone of January 2026 for the S-100 ECDIS. IHO Director Luigi Sinapi echoed their statements highlighting the importance of defining a S-100 capabilities-based approach at regional level and for the WENWG to provide subsequent guidelines through the IRCC to the S-100 Regional Coordinators for a timely and harmonized

WENDWG14 participants.

S-11 Part C - Drafting Group Session.

Guidelines on the Implementation of the WEND100 Principles IHO Strategic – Drafting Group Session.

implementation of the S-100 Roadmap.

The Chair provided a short report on the accomplishments of the WENDWG since the last meeting. Addressing an action from the Council aiming to make IHO events more inclusive, the WENDWG confirmed the relevance of its Terms of Reference in force (in-person plenary meetings once year, with virtual meetings between for addressing specific issues). The RENCs, which maintain the S-57 ENCs Data Flow Diagram from Producers to End-Users on an annual basis, confirmed that they had started to design the much more complex description of the diagram applicable to ENDS in the S-100 eco-system.

The RHCs reported on the general situation in their associated Charting Region, and shared the challenges they face, and the various options retained in the implementation of the S-100 Roadmap. Together with the outcome of a survey on the readiness level of the RHCs and Member States presented by the Chair, the discussion revealed a large span of readiness level and the difficulty, despite the WEND100-IGIF matrix tool designed in 2022, to make a robust and harmonized assessment at national level on the one hand, and regional level on the other hand, both levels being necessary. From this survey, the metrics on the SPI[11] 1.3.1[12] was refined and will remain in force until the term of the current IHO Strategic Plan 2021-2026.

Beyond the capability readiness level, the WENDWG agreed that there was a need to prepare for the 2025 IHO Reports to the IMO, the expected coverage of the full Phase I spectrum of S-100 based products in January 2026 and onwards, including S-101. In order to do so, INToGIS III remains the one-stop-shop platform to support the RHCs and give a worldwide vision of the S-100 plans and production. KHOA (Republic of Korea) confirms its intention to pursue this development but announced a delay for the development and testing phases of the interface by the IHO Secretariat, Member States and RHCs, this interface being necessary as long as the S-128[13] files are not available. The establishment of a management plan, including the testing phases by RHCs, was recommended on this project.

The WENDWG noted the potential scope for the application of ISO 9001-like principles proposed by the IRCC ("RHC S-101 production/coordination/distribution"), but no progress was made on this topic due to lack of resources.

In addition, following a couple of submission papers[14] proposed by the Chair, the WENDWG agreed to set up two ad hoc drafting groups:

- One, led by the Chair, in charge of the development[15] of a new S-11 Part C – Guidelines[16] for the Coordination and Management of the Production and Distribution of S-100 ENDS.

- One, led by the Vice-Chair, for preparing amendments to the Guidelines on the Implementation of the WEND100 Principles and for contributing to the revision of the IHO Strategic Plan.

The RENCs informed the participants on the development of their S-100 Services in general which look very promising since they cover the full scope of challenges faced by their members. Representatives of the industry shared their vision on the ENDS provision in the future. The main ideas arising from the Stakeholders' session, for the S-100 concept to remain attractive to the end-users, are:

- The first objective for the IHO should not only be to complete the S-101 ENC coverage equivalent to the S-57 ENC's one, but to engage the IHO into the development of a new cyber secure distribution model such as a "one-stop-shop for all S-100 data services

[11] Strategic Performance Indicator.

[12] Ability and capability of Member States to meet the requirements and delivery phases of the S100 implementation plan.

[13] Catalogue of Nautical Products.

[14] « Think beyond the borders, what comes next » in particular.

[15] Work Item N8 of the WENDWG Work Plan 2023-24, approved at IRCC15.

[16] Provisional title.

along a given route"[17].

- Considerations to be given on push versus pull cyber secure shore-ship distribution models, to the benefits expected by functional mariners' requirements and considered by manufacturers for the launch of S-100 ECDIS which are: S-102, S-104, S-111, S-129, and then S-128[18].

The Marine Spatial Data Infrastructures Working Group (MSDIWG)

Attendees: Australia, Canada, Denmark, Germany, Indonesia, Iran, Italy, Malaysia, Portugal, Republic of Korea, Singapore, Thailand, UK, USA, and Venezuela

Chaired by Dr. Parry Oei (Chair, UN-GGIM-MGIWG) the opening session started with remarks from the Mrh. Aris Marfari (Geospatial Information Agency of Indonesia), Dr. John Nyberg (IHO), Ms. Caitlin Johnson (Chair, MSDIWG), and Mr. Antonius Widjanarko (Chair, GGIM Asia Commission). Vice Admiral Budi Purwanto (Chief Hydrographer, Indonesia), addressed the group, introducing himself and welcoming the Working Group to Bali.

Dr. Oei noted that the UN-IGIF-Hydro is a living document that needs to be kept up-to-date with modern technology and changing global values. A UN-GGIM update was provided by Mr. Chee Hai Teo (UN Secretariat) where he presented recent changes and progress at the UN-GGIM and noted the progress of the combined groups with the drafting and endorsement of the UN-IGIF-Hydro with the need for further work on implementation. Progress on the UN-Geodetic Center of Excellence was noted and IHO participation/partnership with the Center was requested. Climate resilience and environmental sustainability were noted as focal points for the UN and IHO to work together moving forward.

Ms. Johnson led the second session of the day by introducing the ambitions of the MSDIWG. A review of action items and the WG's work plan was undertaken as part of the meeting introduction. Mr. Yong Baek reviewed the activities of the Assembly, Council, and other IHO bodies relevant to the MSDIWG.

The remainder of day 1 was spent on MSDI national reports. The session included presentations from the Regional Hydrographic Commission MSDI chairs and industry MSDI reports. There was significant interest and discussion around reports which presented established MSDI initiatives. This demonstrated the potential for future workshops on the subject. Also, of note, one regional commission indicated that they were ending their working group on MSDI. MSDI best practices, the land sea interface, IGIF-Hydro and partnerships were key themes from the day.

A session that presented the latest updates and progress from the Open Geospatial Consortium was included in day 3. Virgil Zetterlind (Protected Seas) led a discussion on Marine Protected Areas and the work Protected Seas is doing to present their MPA data in S-122. The discussion continued around MPA (S-122) and how the WG will contribute to the implementation of the standard. They noted the evolving IHO direction to the MSDIWG regarding S-122, and have made the decision to track progress, provide guidance, and possibly present data that Protected Seas will offer in the S-122 standard.

The afternoon session, presenting IGIF implementation initiatives in the Pacific, Canadian MSDI initiatives, and Singapore's experience with spatial data metadata, was conducted with the objective of gathering thoughts from the group on how to enter the next phase of the group's work to serve as experts for the implantation and management of the IGIF-Hydro and C-17.

Ms. Johnson chaired a session on re-thinking the MSDIWG Workplan to be more aligned with the IGIF. She presented a crosswalk between the current plan and the IGIF pathways. Ideas were collected via a group exercise and the foundations for an updated plan were completed.

Caitlin Johnson leading the WP drafting groups.

Mr. Julien Barbeau (Teledyne Geospatial) accepted the role of MSDI Secretary.

Outcomes:

- UN-GGIM-WMGI agreed that maintaining the UN-IGIF- Hydro is a key component of their future work.
- Progress on the implementation of S-122, with agreed upon path forward for the MSDIWG.
- MSDIWG will propose a refined MSDI action to IHO Council in agreement with the new S-122 path forward.
- Continued collaboration with the UN-GGIM-WGMGI and OGC with agreement that the future work on both the UNIGIF-Hydro and C-17 will be harmonized without duplication of effort.
- The WG agreed to rewrite the IGIF Workplan to be in alignment with the IGIF.

[17] ChartWorld presentation refers..

[18] And not S-101 only.

MSDIWG Group Photo

- The IHO Portal was introduced, and agreement was confirmed on its use to manage C-17.
- An updated list of actions was approved for the WG.
- Mr. Julien Barbeau (Teledyne Geospatial) accepted the role of MSDI Secretary.

The IHO-EU Network Working Group (IENWG)

The 14th meeting of the IHO-EU Network Working Group (IENWG) was held in Svendborg, Denmark on 29 May 2024, hosted at Svendborg Hotel by the DANISH GEODATA AGENCY - GEODATASTYRELSEN (GST). The meeting was chaired by Mr Pierre-Yves Dupuy (France) and attended by 17 participants from 9 IHO European Member States (present and remote) and the European Commission – DG Mare remotely. IHO Director Luigi Sinapi represented the IHO Secretariat. The chosen venue of the meeting allowed the attendees to participate in the European Maritime Days (EMD) organized by the European Commission / City of Svendborg / Danish Maritime Authority on 30 and 31 May 2024 in Svendborg, Denmark, to which the IHO joint company with Seabed2030, contributed communication materials to the booth hosted by EMODnet with the support of DG MARE (CE).

Mr Allan Idd Jensen, Head of Department at GST and Mr Luigi Sinapi, opened the meeting highlighting the importance of the topics of the agenda for strengthening the relationship between the IHO and EC and developing a strategy in the recognized common areas of interest, such as S-100 development, Capacity Building and Data Collection. The IENWG Chair presented the meeting's agenda, highlighting the EU policies and projects of interest to the IHO.

The following topics were discussed:

- EU maritime policies: to continue the activity of monitoring and influencing developments in EU maritime policies for the benefit of IHO and EU countries Hydrographic Offices. The impact of the "All Ocean Observation Project", "GreenData4all and Green Deal Data Space" and "High Value Datasets – HVD survey results" descending from the approval of the EU Regulation 2023/138 on High Value (maritime) Datasets were discussed.
- Data collection: to develop with the support of Hydrographic Offices Inter-regional and Horizon Europe programs, aiming for common acquisition campaigns of bathymetric data in the EU maritime basins. An update on the EMODnet Vision 2035 Drafting group establishment and EMODnet bathymetry and the links with GEBCO and Nippon Foundation Seabed2030 project were presented.

EMODnet as in-situ marine data in Europe and beyond.

Participants at IENWG-14

- <u>Development of the S-100 hydrographic products and services in Europe</u>: to promote to EU DG MARE and DG MOVE the potential use of S-100 products and services on Maritime Safety & Surveillance projects and the evolution of Copernicus Coastal Emergency Management Services. The latest developments of the "MaDaMe (Maritime Data Methods) for safe shipping" and "Baltic Sea e-nav Interreg project" were presented. On this latter, Sweden highlighted on the project outputs:

  A. Output 1 - Available Baltic Sea E-Nav Base package via:

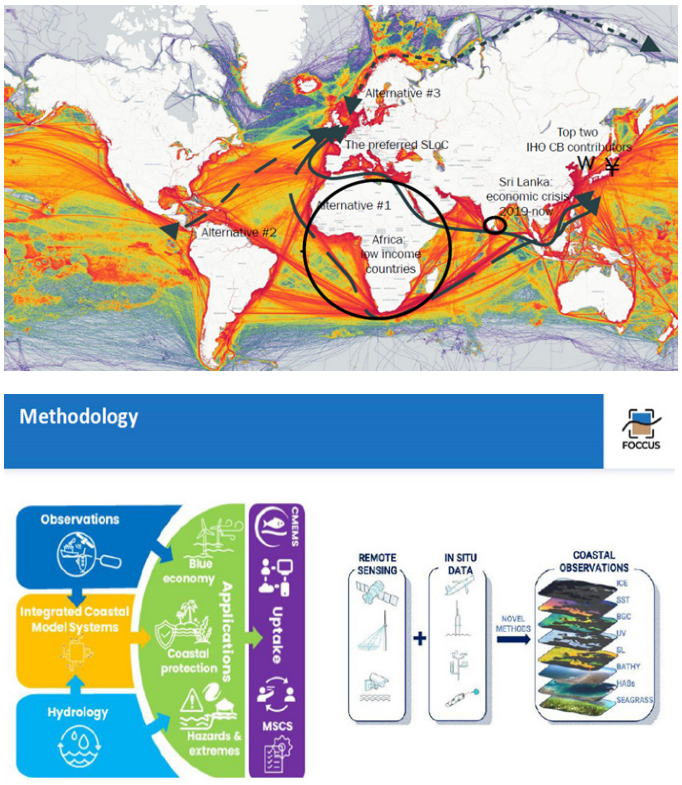
- S-101 next-generation electronic navigational charts with full coverage of the major shipping routes in the Baltic Sea;

- S-102 dense bathymetry seafloor information products will cover most relevant shipping routes, fairways and harbour approaches, where hydrographic survey data of sufficient quality is available;

- S-104 water level and S-111 sea surface currents as amending data sets.

  B. Output 2 - Guidelines adopted regionally under the Baltic Sea Hydrographic Commission (BSHC) to regulate how these products and services shall be harmonised across borders between different nation's respective responsibility.

- <u>Capacity Building</u>: to promote programs for the development of competencies, expertise, training and means to increase the hydrographic capacity in the EU and outside EU. The strong link between the Worldwide Hydrographic Capacity development



Recent developments in EU and IHO initiatives.

and the security of the Sea Line of Communications (SLoCs) between Europe and East Asia and Africa was presented, affirming the need of a resilient network of SLoCs as fundamental for the world economy, reliable nautical charts (INT, S-57, S-1XX) to enable safe navigation and investments in hydrographic capacity development elsewhere to assure global maritime accessibility. The proposal elaborated by the IENWG under the leadership of Belgium

on “IHO and EC Cooperation in Third Countries for Hydrographic Capacity Development” was discussed and commended by the WG, as a strong example to demonstrate that IHO priorities and EC international development priorities are synergetic, thereby offering potential for mutual benefits by intensifying cooperation. The proposal will be presented to the next IRCC-16 as part of the IENWG report to IRCC and to the IHO Fund Generation Project Team, recently established to identify opportunities for recurring funding based on existing and short-term options and long-term strategic options.

- EU on-going projects of interest for the IENWG: the “Technical Group NOISE” to establish the underwater noise thresholds at EU level, “Standards and Best Practices in Ocean Observation”, “FOCCUS” project on forecasting and observing the open-to-coastal ocean for Copernicus users and “ReMAP” project to review and evaluate the monitoring and assessment of Maritime Spatial Planning (MSP) and the study conducted by SHOM on the application of IHO standards to MSP, were discussed.

EDODnet / IHO / Seabed2030 booth at the EMD 2024, 30-31 May 2024, Svendborg (Denmark).

The involvement of the IHO Secretariat was reaffirmed as an important asset for the promotion of activities at high level in the EU Commission.

Following the presentation of DG MARE representative on “Ocean Observation: enabling coordination and synergies”, the WG based on the four challenges for the next phase of collaboration: Maritime policies, Data Collection, e-navigation standards (IHO S-100 products and services) and Capacity Building, developed key messages to be sent to EU DGs and bodies via DG MARE.

Once the new European Commission is settled and not before the last quarter of 2024 / first quarter 2025, the IENWG will arrange a high-level meeting to discuss the four challenges with the European Commission.

On 30 and 31 May 2024, the IENWG-14 participants attended the EMD and related workshops on global issues concerning the blue economy, the marine environment, the maritime security and ways of moving forward in European areas of interest.

The FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)

The FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) is a joint Board of the International Federation of Surveyors (FIG), the International Hydrographic Organization (IHO) and the International Cartographic Association (ICA). They are responsible for reviewing the syllabi of programmes and individual recognized schemes from education and training institutions, maintaining IBSC publications, providing guidance to education and training institutions and supporting the IHO for the establishment of new hydrographic programmes where regional training capacity does not exist.

The 47th IBSC meeting was held in the German Hydrographic Office, the Bundesamt für Seeschifffahrt und Hydrographie (BSH) in Hamburg, Germany, from 15 to 26 April 2024. The meeting was chaired by Capt (R) Nickolas Roscher (Brazil) and attended by all the 12 Members of the Board. The new members Cdre J. Gurumani (India), Dr. Manuela Milli (Italy) and Cdr Felipe Barrios (Chile) attended an IBSC meeting as members for the first time. IHO Assistant Director Leonel Manteigas (IBSC Secretary) represented the IHO Secretariat.

In the opening session, BSH President Mr Helge Heegewaldt, welcomed the participants enhancing the responsibilities of BSH and how it is dependent to well-trained staff, highlighting the importance of IBSC.

On 23rd April, the National Hydrographer of Germany and IRCC Chair Mr Thomas Dehling joined the meeting welcoming the participants and offering the support of IRCC, being IBSC one the IRCC subordinate bodies. He highlighted the difficulty of the work of the Board and emphasized the important contributions of the quality of education and training.

In the afternoon of Wednesday 24th April, the IBSC had a meeting with stakeholders from industry, academia, hydrographic offices and other governmental agencies to discuss the desired modifications of the current Standards. Several inputs were received from the different representatives.

The Board reviewed 17 submissions from 10 Countries, to recognize nine programmes on hydrographic surveying and two programmes on nautical cartography. From the

IBSC Members with the BSH President and the National Hydrographer of Germany.

17 submissions, three were new programmes. In conclusion, 2 submissions were classified as "Not recognized" and 15 were classified as "Could be recognized", some additional adjustments were necessary to the submitted documentation, to be reviewed intersessionally.

The IBSC discussed and approved other important working items such as the IBSC Work Programme, IBSC Fund, the programmes that have lost their recognition and those needing a recognition's extension.

On-site visits (OSV) are activities of the Board contributing to confirm the internal revision of documents presented by the institutions and assessing the alignment of their programmes with the Standards, while reviewing their educational processes. During the meeting the most recent OSV to IIC Technologies and UKHO were discussed, whilst new OSV were planned and prioritized.

After the decision to recognize individual subjects of the existing S-5 Standards, the Board worked on the respective implementations, defining the necessary updates to the new edition of the Guidelines.

One of the current objectives of IBSC is to update the Standards by the 4th Session of the IHO Assembly in 2026. The Board planned several consultations with stakeholders to receive their input for the updates. One of the main concerns was related to the impact on the duration of the programmes. IBSC has plans to proceed with these consultations in future meetings and workshops. To streamline the revision process, the members were divided into two different groups with the objective of identifying the topics to be added, changed and / or removed from the Standards until September 2024, by the next intersessional meeting.

To improve the quality of IBSC submissions, a workshop was planned for September / October 2024. Participants who are expected to present submissions to the annual IBSC meetings in 2025 and 2026 will be invited.

Since the internship program in 2022 had a positive outcome, IBSC expressed the intention to recruit again interns at the next intersessional meeting assisting the revision of the Standards and helping to enhance the outreach and promotion of the Board.

Conduct Regional Hydrographic Commission meetings (RHC)

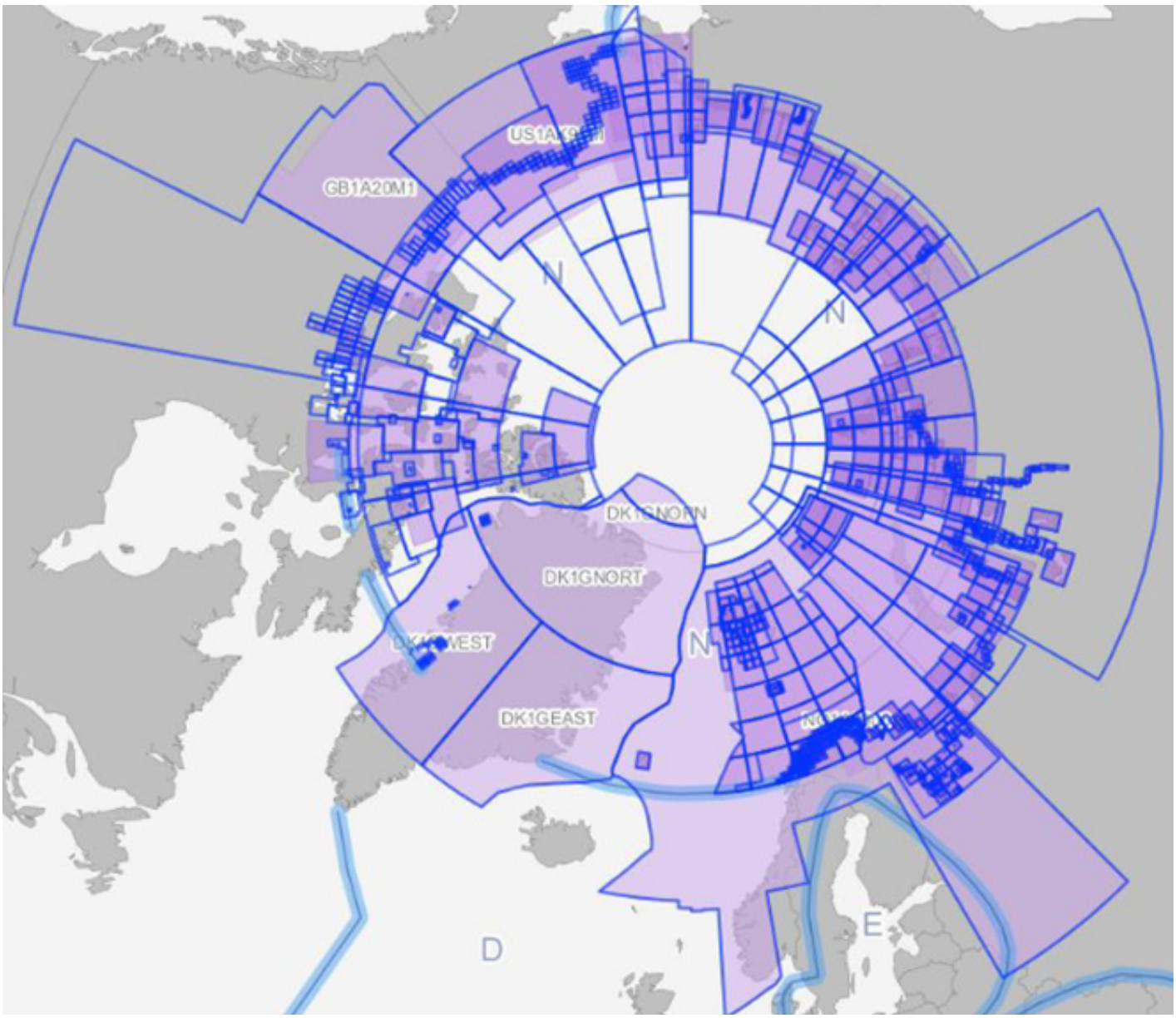
Arctic Regional Hydrographic Commission (ARHC)

Twenty-four participants representing four ARHC Members (Canada, Denmark, Norway, and the USA and four Associate Members (Finland, Iceland, Italy and United Kingdom) participated in the Conference.

The ARHC Conference was chaired by Evert Flier, Norway. The IHO Secretariat was represented by Secretary-General Dr Mathias Jonas.

The conference was preceded by an Open Forum which saw presentations from Norwegian academia and several industry partners in the field of cutting-edge survey technology such as airborne lidar and satellite derived bathymetry.

The Meeting commenced with the IHO Secretariat's Report. ARHC Members were informed by the IHO Secretary-General of the strategic issues discussed at this year's meetings of HSSC and IRCC, these strategic issues will be on the agenda of the upcoming 8th meeting of the Council. In his presentation, the Secretary-General put special emphasis on the parallel activities of the Hydrographic Commission on Antarctica in view of a coordinated approach for the implementation of future regional S-100 based data services.



Overview on the ENC coverage Region N - Source: IHO INToGIS Web catalogue

All participants reported on their national activities in the Arctic region since the last Conference. The Conference took note of items such as uncrewed survey technology, national survey programs, definition of cross boundary ENC griding schemes ENC provision and other themes of relevance for all Hydrographic Offices of the region. All four Commission members present confirmed their principal readiness to start the regular provision of S-101 and S-102 products according to IHO's agreed S-100 roadmap implementation timelines. Canada shared an interesting comment made by Navigators operating in the region: in their view, detailed and up to date ENCs make Aids to Navigation redundant. The following facts provided by the US report are of common interest beyond the Arctic Waters:

- USA and Canada agreed on rescheming their transboundary ENCs to an agreed grid.

- USA/NOAA S-100 coverage will be permanently presented under a new GIS service named "nowCoast" https://nowcoast.noaa.gov/

- Marine Spatial data infrastructure: in August 2024, the U.S. notified national and allied partners of the potential action for termination of the Global Maritime Traffic Density Service. This will impact on the continued provision of this layer by means of the IHO Secretariat`s INToGIS Service, as since up today there is now other accessible global source of traffic density based on AIS data recordings.

- Geospatial studies: USA/NGA has publicly released the Dynamic World Coastline – a world-wide coastline collected at 1:50k (50-meter accuracy)

- All existing US traditional paper nautical charts, including small craft charts and associated raster chart products will be cancelled by January 2025 as part of the U.S. program to "transition" all "traditional" paper nautical charts and related raster products. A paper chart alternative is being made available

in the form of the online NOAA Custom Chart application. This enables users to create their own customized nautical charts directly from the latest official NOAA electronic navigational chart (NOAA ENC®) data. NGA produces the Certified Printed ENC for customers where NOAA has cancelled paper nautical charts to meet SOLAS or other regulatory requirement for specific customers.

US and Canada also reported about the unification of their respective national assessment of adequacy of hydrographic survey for all their international charting waters to feature IHO publication C-55. The engineering solution is based on water depth, CATZOC, and recent survey footprints and gains more adequacy compared to assessment of simply CATZOC. ARHC will draft a proposal to be bring this forward as the recommended method to IRCC which will include the coded algorithm as public domain.

Another discussion arose on IMO's ongoing review of the Polar code: the Commission proposed to add a cautionary note on the limited availability of detailed navigational charts and digital services in this specific area while at the same time strong commitment was expressed to apply the S-1xx based amending data services carrying regionally specific information such as ice information and MPA for the Arctic region.

Regarding collaboration with the Arctic Council's Working Group on the Protection of the Arctic Marine Environment (PAME), the Commission agreed a renewal and update of the 2019 Memorandum of Understanding (MOU). The purpose of this MOU is to foster greater communication between the ARHC and PAME and enhance coordination on strategies to improve hydrographic data and services in the Arctic and environmental sustainability, safety and efficiency of Arctic shipping. The ARHC and PAME intend to maintain and increase opportunities for scientific, technical and professional exchange between their members, sharing knowledge and expertise to the advantage of both. ARHC and PAME decide to cooperate as follows:

1. Each body intends to exchange information with and consult the other on matters of common interest with a view to ensuring maximum coordination of their work and activities;

2. Each body intends to invite a representative of the other to attend any meeting at which topics within the other's area of expertise are on the agenda;

3. Each body intends to provide notice of proposed seminars, workshops, etc., that may be of interest to the other to enable joint participation should it be of mutual benefit. The bodies also intend to identify opportunities to organize seminars or workshops under joint sponsorship;

4. At the request of PAME, the ARHC will provide input to PAME with respect to matters within the scope of activities and expertise of the ARHC; at the request of the ARHC, PAME will provide input to the ARHC for matters falling within the scope of activities and expertise of PAME.

Outcomes:

- Commission members informed each other about their recent hydrographic activities in the Arctic Region.

- Four out of five Commission members are ready to deliver S-101 ENCs and S-102 high resolution bathymetry datasets according to the timelines of IHO's S-100 roadmap from 2026 onwards.

- The Commission proposed a refined method to access the adequacy of hydrographic survey for future

use by all Regional Hydrographic Commissions.

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Baltic Sea Hydrographic Commission (BSHC)

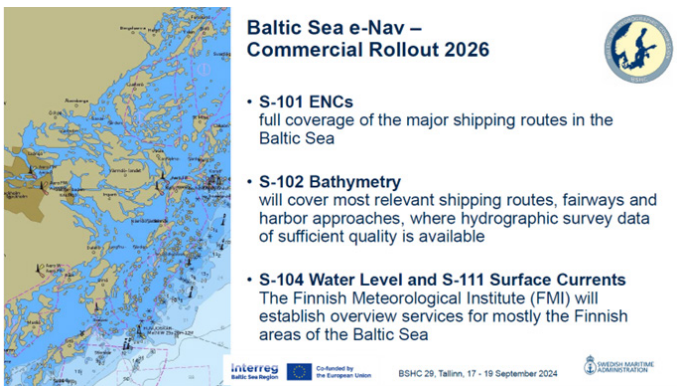
Twenty-six participants representing seven BSHC Members (Denmark, Estonia, Finland, Germany, Latvia, Poland, Sweden), one Associate Member (Lithuania) and two observers (United Kingdom and USA) participated in the Conference.

The BSHC Conference was chaired by Mr Olavi Heinlo, National Hydrographer of Estonia. The IHO Secretariat was represented by Secretary-General Dr Mathias Jonas.

Mr Kristjan Truu, Director Maritime Division of Estonian Transport Administration extended words of welcome and highlighted the importance of the collaboration between the Baltic states in the field of hydrography. He gave special emphasis to the challenges which lay ahead of the Commission to agree about a concerted implementation of the S-100 concept.

The Meeting itself commenced with the IHO Secretariat's Report. BSHC Members were informed by the IHO Secretary-General of the strategic issues which will be on the agenda of the upcoming 8th meeting of the Council. All Commission members agreed on the compelling need for the installation of the envisioned IHO Infrastructure Centre to facilitate the roll out and future maintenance of the S-100 technical ecosystem. In his presentation, the Secretary-General also put special emphasis on the ongoing Secretariat's activities for further digitalization of its services rendered for online meeting registration and the geodata portal INToGIS.

All participants reported on their national activities in the Baltic region since the last Conference. The Conference took note of items such as uncrewed survey technology, national survey programs, harmonisation



of vertical datum, ENC griding schemes, marine spatial planning in waters under national jurisdiction and other themes of relevance for all Hydrographic Offices of the region. Lithuania reported that the benefit to accede to IHO (and consequently to become a full member of BSHC) was recognized by the Estonian administration in general, however, since the country is facing a change of the government after the forthcoming election the parliamentary process for accession can only start after. The commission as well as the IHO Secretariat confirmed their support by sending another letter presenting arguments in favour of the accession to both bodies.

All Commission members present confirmed their principal readiness to start the regular provision of S-101 and S-102 products according to IHO's agreed S-100 roadmap implementation timelines. The regional coordination to achieve compatibility of the respective national contributions will be undertaken under an EU funded project named Baltic Sea E-Nav Partnership.

Estonia holds the presidency of the Council of the Baltic Sea States from 1 July 2024 to 30 June 2025. Among the priorities of the Estonian presidency is "Sustainable and Prosperous Region priority". The Expert Group on Sustainable Maritime Economy (EGSME) will carry out the work on the creation of green corridors launched by the German Presidency and continued by the Finnish Presidency. The Estonian Presidency will work towards reaching a common understanding of the meaning of a green corridor and creating a network of interested parties. As a new initiative, the Presidency will aim to start the preparations (mapping existing projects and defining interested countries) for creating a digital twin of the Baltic Sea, i.e. collecting real-time data in order to simulate marine processes and in this way have a better understanding of the condition of the sea. The 2nd meeting of the member states expert group on Ocean Observatory and meeting of the experts on sustainable maritime economy organized by the DG MARE of the European Commission to be taken place end of September in Tallinn were identified as an opportunity to present BSHC's role in planning hydrographic surveys in the Baltic Sea and future contributions to the digital twin. It was agreed that the Estonian colleagues will represent the BSHC scope and ambitions in S-100 service provisions on behalf of the Commission on both meetings.

Outcomes:

- Commission members informed each other about their recent hydrographic activities in the Baltic Region.

- Baltic States are in pole with the implementation of S-100 Roadmap. Eight out of nine Baltic States will start the regionally coordinated provision of S-101 ENCs and S-102 high resolution bathymetry datasets with significant coverage on the main shipping routes and important harbours from 2026 onwards.

- Some committee members are successful in national coordination for the uptake of amending services such as S-104 and S-111 for current and water level information, S-124 for Navigational Warnings and the S-41x range to provide sea weather information in the second half of the running decade.

- Germany presented an AI-driven self-learning methodology for the automized detection of boulders in multibeam data sheets and offered knowledge transfer to interested neighbour countries.

East Asia Hydrographic Commission (EAHC)

Attendees: Australia, Brunei Darussalam, China, Indonesia, Japan, Maylasia, Philippines, Republic of Korea Singapore, Thailand, UK, USA, and Viet Nam

The EAHCSC opened with remarks from Vice Admiral Budi Purwanto, followed by an introduction from Dr. John Nyberg and a prepared speech from Admiral Muhamad Ali, Indonesian Chief of Navy.

The meeting was chaired by Vice Admiral Budi Purwanto, Chief Hydrographer, Indonesia.

Matters arising were discussed and the agenda was approved, followed by the IHO report, delivered by Dr. Nyberg. The SC considered a new working structure to include an EAHC Conference, Steering Committee, the IHO Singapore Lab and project working groups. The SC also considered reports from the East Asia RECC and commission working group reports.

The Chair led an excellent discussion on actions and decisions from the Assembly, Council, and other IHO bodies. There was special attention on the upcoming revision of the IHO Strategic Plan with the commission agreeing to provide input ahead of HSSC and IRCC.

China MSA presented their significant progress on producing S-100 datasets and testing it in S-100 compliant ECDIS. There were additional presentations from Caris regarding their progress with updating their software to produce S-100 products. ESRI presented their capabilities to produce a custom chart.

Japan JHOD presented their experience responding to the Noto peninsula earthquake in 2024.

Presented by CDR Lim Siong Hui (Maylasia) the Commission discussed their Terms of Reference, noting outstanding articles to be endorsed.

Outcomes:

- Hong Kong, China accepted the role of S-57/101 Coordinator.
- ROK accepted the role of S-100 Coordinator.
- Technical visit to Cambodia (A-10) agreed and planning started.
- Presented potential for countries interested in becoming IHO Member States.
- Regional update regarding IHO Strategic plan with a schedule to provide input for revision.
- Substantial regional collaboration and continued support between Commission Members. Including national and organizational updates.
- Presented update on the 2024-25 schedule for S-100 implementation and how MS in the region can be involved.
- Presented opportunities for IHO engagements in 2024-25.

Meso American - Caribbean Sea Hydrographic Commission (MACHC)

On 2nd December in Panama City, Panama at the DGPIMA, the IHO Director Luigi Sinapi paid a visit to the Director General DGPIMA Mr Max Florez and his staff regarding the reactivation of Panama's accession process to the IHO. The meeting highlighted Panama's interest in becoming a member of the IHO and its willingness to remove all internal obstacles that have slowed down the process over the past two years.

EAHCSC.

IHO Director and DGPIMA delegation – Panama City, Panama, 2 December 2024.

Discussions between the IHO Director and DGPIMA were focused on the following topics:

- Reasons for the slowdown in the IHO accession process
- Procedural steps to join the IHO
- Allocation of budget (available since 2024) to secure the payment of IHO membership fee
- Institutional benefits to join the IHO (a permanent seat in the IHO Council, 6 votes in the election of the IHO Directing Committee – Full membership to the MACHC)
- Phases and time to create a full hydrographic capacity in Panama
- Capacity Building's opportunities with particular attention to the Cat A and B Courses in Hydrography and Nautical Cartography
- Implementation of S-100 as opportunity to improve the performances in the Panama Canal.

The Dirección General de Puertos e Industrias Maritimas Auxiliaries of the Maritime Authority (DGPIMA) of Panama assured the IHO that the process for the adhesion of Panama to IHO has re-started. The Council of Ministers prepared a law for the adhesion that will be presented to the National Assembly (Parliament) by the MFA and the Autoridad Maritima de Panama in January 2025 for the approval. After three rounds at the Parliament, the law will be signed by the President of Panamanian Republic hopefully late in 2025. A Technical Visit to Panama to assess the status of the hydrographic capacity in Panama was considered as a potential follow up action in 2026.

On 2nd December a Seminar on "Raising Hydrographic Awareness" as part of the regional 2024 IHO Capacity Building programme was held in favour of the MAC region's members. 60 attendees from MAC region States participated in person and remotely to the Seminar. Themes related to Digital Maritime Services Development, IALA Maritime Buoyage System, Hydrographic Science Education, Capacity Building and S-100 were presented, highlighting those fields of major interest of the MAC region's States like MSI, MSDI, S-100, Education and Training.

The 25th Meeting of Meso American and Caribbean Sea Hydrographic Commission – MACHC25 took place in the W Panama Hotel, Panama City, Panama, in the days 3-6 November, hosted by the United Kingdom as Chair of MACHC. Eighty attendees in person and virtually from 16 IHO Member States (Brazil, Colombia, Cuba, Dominican Republic, France, Guatemala, Guyana, Jamaica, Mexico, Netherlands, Spain, Suriname, Trinidad and Tobago, United Kingdom, United States of America and Venezuela), 13 non-IHO Member States (Antigua and Barbuda, Belize, Costa Rica, El Salvador, Grenada, Honduras, Monserrat, Panama, St Kitts and Nevis, St. Vincent, The Bahamas, The Grenadines and Turks and Caicos), IALA, IC-ENC and Industry participated in the meeting. All the 15 MACHC members were represented. The IHO Secretariat was represented by Director Sinapi.

The Chair opened the MACHC25, remarking the importance of the meeting to improve safety of navigation in the area and to progress in a smooth and harmonious implementation of S-100 amongst the States of the Region. He also announced that the MACHC Statutes remained unchanged after a round of revision from the previous MACHC meeting.

During the presentation of the IHO Secretariat Report, IHO Director Sinapi highlighted the importance of enlarging the IHO membership and the outcomes of the High Level Visit to The Bahamas conducted in April 2024, the approach of a new era for e-navigation, with the implementation of the first bunch of S-100 products which will become operational in 2025 for the injection on the market from the 1st January 2026 to be used in ECDIS-100, the need for more investment in the IHO Capacity Building Work Programme, with particular focus on the

S-100 activities requested by the Regional Hydrographic Commissions. Finally, the importance for an active participation of the IHO at the global initiatives in favour of the oceans which will take place in 2025 in Monaco and France, and some insights on the new IHO Portal were also presented.

The USA, as chair of the SPRWG, presented the IHO Strategic Plan Review for 2027-2032, explaining that the drafting phase will commence from 1st January 2025 to present the new SP to Council-9 in October 2025. Retain the focus on safety and efficiency of navigation through the current GOAL 1 and the two options on merging GOAL 2 and 3 or leaving them unchanged, were also presented. MAC region is represented in the SPRWG by 4 States (Brazil, France, UK and USA).

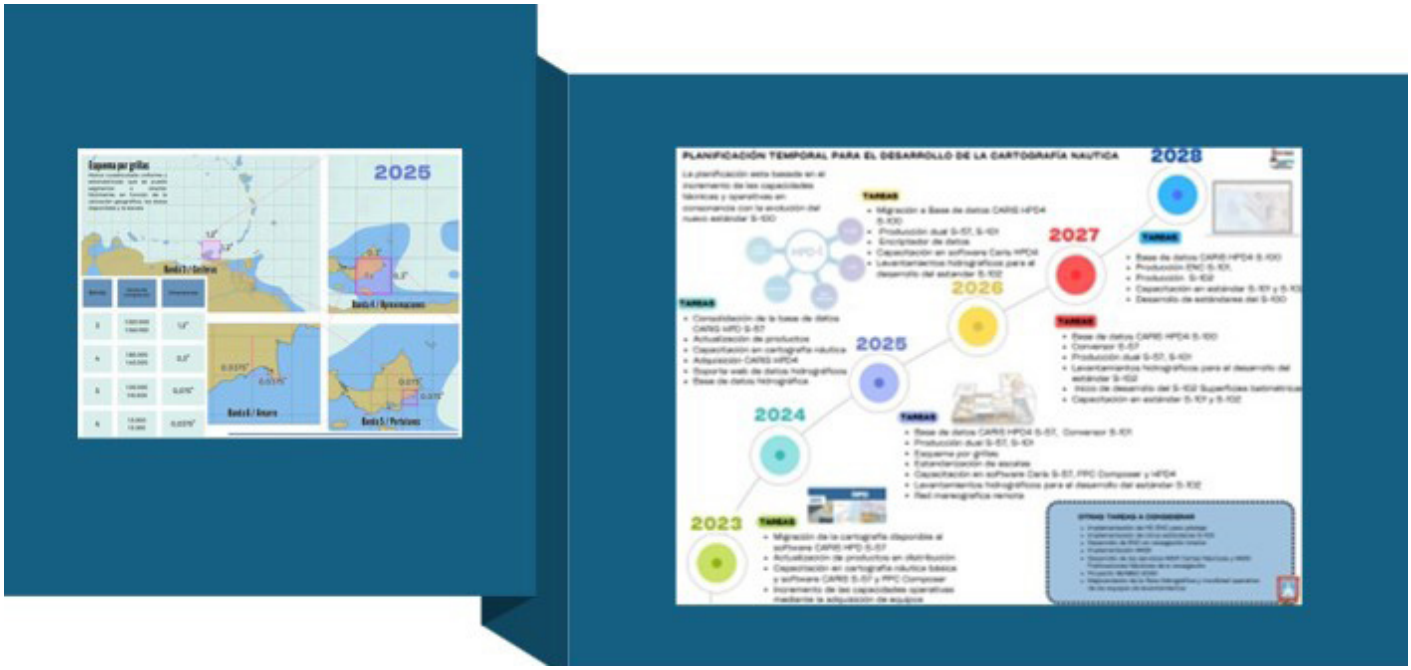
UKHO presented on the development of a new (Virtual) Port Situational Awareness Service (see links: https://

Development of a new Virtual Port Situational Awareness Service tool from the UKHO).

youtu.be/a0mLxRzj0Jc - https://youtu.be/hdhDcgTXM7U - https://youtu.be/a6FouoUjAkE - https://youtu.be/NTNrL-4E71w), actually using S-57 information, with the plan to integrate the Service with the S-100 products' data when ready, to open new opportunities for seafarers in planning route to ports approach in real time.

The following main topics were discussed alongside the presentation of the National reports, divided into Achievements (A), Challenges (C) and Plans (P) affecting MAC region's Countries:

- Automated production of new nautical charts (A)
- Use of new technologies and transformation of the hydro-oceanographic capacities (A)
- New opportunities within the EWH project and the UK "Improving Gender Balance Fund" (A)
- Increasing the surveys' coverage of waters under national jurisdictions (C)
- Need of more Capacity Building investments, more educational (Hydrography and Nautical Cartography Cat A & B courses) and training (on new technology and S-100) opportunities
- Establishing / improving national MSDI portals (C)
- Increasing data sharing (C)
- Implementing National Hydrographic Committees and raising the awareness in Hydrography at national level via High Level Visits and Technical Visits (C)
- Implementation of S-100 based products, achieving a consistent gridded scheme and a full transition from S-57 to S-101 (C)
- Contribution to CSB, Seabed2030 and GEBCO via the delivery of depth data to DCDB (C)
- Increasing the investments into Hydrography (funds and human resources) (C)
- Increasing the PCA support to the PCA Countries in seabed mapping (P)
- Facing climate change effects (P)
- Negotiation of maritime boundaries (P)
- Investment in new equipment, survey vessels, new technology and autonomous and uncrewed vehicles to employ in hydrography (P).



Bolivarian Republic of Venezuela S-100 Implementation plan and Grid Scheme.

The Bolivarian Republic of Venezuela presented on their national S-100 Implementation plan, highlighting the challenges related to the short time remaining to implementation of the Phase 1 product and the need of supporting the production of both S-57 and paper charts. A uniform and standardized grid framework for S-101 was also proposed for potential use at regional level.

Regional Capacity Building initiatives conducted, underway and planned were described, highlighting the importance of the benefits of the inter-regional coordination, the importance of investing in S-100 implementation, MSI courses, on-line courses, High Level Visits and Technical Visits to respectively increase the hydrographic awareness in the MAC region's States and assess the national hydrographic capacity. A Technical Visit to Panama to assess the status of the hydrographic capacity in Panama was included in the regional Capacity Building plan for 2026.

Progress in the development of the S-124 - Navigational Warnings in the region was reported, made via the development of a MACHC S-124 implementation plan and the forthcoming publication on the IHO e-learning Centre portal of MSI capacity building material "on demand" on S-124.

The INT Charts and ENCs coverages in the MAC region were presented by the INT Chart – ENC regional coordinator (Suriname as MICCWG Chair). Thanks to the RENCs assessments, the overlaps in the region were presented, highlighting that the bilateral cooperation and more communication between the ENCs producers contribute to eliminate overlaps. The MACHC S-100 services coordinator will be identified when the process to finalize the ToR and RoP of the MACHC International S-100 Coordination Working Group is completed. The MICCWG Chair will work closely with the WENDWG in accordance with the next "Guidelines for the Coordination and Management of the Development of S-100 Electronic Navigational Data Services (other than S-101 ENCs)" actually under drafting by the WENDWG, and to meet the 2026 IMO target (S-100 ECDIS).

France – as representative of MACHC to the IENWG – presented on the last developments / achievements of the initiatives of the IENWG, with focus on EMODNET and its 2035 vision and the Capacity Building's initiative on "IHO and EC cooperation in third countries", including the MAC region's countries, S-100 products and data collection needs. In addition to that, France presented on behalf of PRIMAR about the latest achievements of such RENC, particularly on the establishment of a "PRIMAR S-100 CB Fund" with the aim to support the implementation of S-100.

IC-ENC General Manager presented on the IC-ENC latest developments, projects and initiatives. IC-ENC Learning Management System (LMS), member-to-member secondments (new in 2024), Cloud training environment,

MACHC25 participants – Panama City, Panama.

IC-ENC/Industry/User Conferences, "Activity Fund" established from those IC-ENC members that decided to "opt-in" part of their ENC revenues to support the test-bed and implementation of S-100 products, were presented, highlighting the opportunities for the MAC region to catch via the MACHC working groups.

Industry presentations on the state-of-the-art Technology, Geo-data and Education, and IALA representative's presentation on the new intergovernmental status of IALA, World-Wide Academy and the obligations related to Marine Aids to Navigation, completed the agenda of the conference.

Ms Bernice Mahabier from Suriname took over the position of MACHC Chair and Rear Admiral Laurent Kerleguer from France was elected MACHC Vice Chair.

Outcomes:

The Visit to the Autoridad Maritima de Panama provided a good opportunity to reactivate the discussion with the Panamanian authorities on Panama's accession to the IHO. The seminar on "Raising Hydrographic Awareness" was a fruitful familiarization exercise on Hydrography and its applications for all States in the MAC region, some of which do not have yet a hydrographic capacity.

- Important progress in seabed mapping and participation in GEBCO and Seabed2030, as well as data sharing with the DCDB, shown a steady increase over the past five years in the MAC region seafloor mapped.
- The MACHC MSDIWG took the initiative to act as MSDI Ambassador to the IHO MSDIWG and support also the IHO EWH project, in the form of a co-Ambassador for MSDI and EWH projects.
- National reports presented by the MACHC's members and observers shown internal difficulties in dealing with the S-100 implementation and the need for a regular conduction of courses on S-57 to S-101 conversion, activities on the production of the other S-100 products belonging to Phase 1 / Route Monitoring, and the need for more investments (funds and human resources) on hydrographic surveys and new technology.

[19] Apologies received from Algeria, Lebanon and IALA.

Mediterranean and Black Seas Hydrographic Commission (MBSHC)

Following the invitation from the Maritime Hydrographic Directorate of Romania (DHM), the 24th Conference of the Mediterranean and Black Seas Hydrographic Commission (MBSHC) took place from 2 to 4 July 2024 in Constanta, Romania. Sixty-five registered participants from 18 Members of the MBSHC out of 24 (Albania, Bulgaria, Croatia, Cyprus, Egypt, France, Georgia, Greece, Italy, Malta, Monaco, Montenegro, Morocco, Romania, Slovenia, Spain, Türkiye, Ukraine)[19], two Associate Members (United Kingdom and the United States of America) attended the event, together with four Observers (Germany[20], IC-ENC and PRIMAR, the two Regional ENC Coordinating Centres (RENC), the Mediterranean Scientific Commission (CIESM)), and stakeholders from industry (Esri, Fugro, Exail, Ocean Aero, Teledyne Caris and SevenCs). The IHO Secretariat was represented by Director Luigi Sinapi and Assistant Director Yves Guillam.

Participants in the 24th Conference of the MBSHC.

The Conference was preceded on 1 July, by successive working sessions led by the Chairs of the MBSHC Working Groups, aiming to finalize the recommendations and proposed actions to be presented at the plenary Conference for decision if appropriate.

The Conference (see above Figure) was chaired and opened by Ms Vinka Kolić Bubić, Director of the Hydrographic Institute of the Republic of Croatia (HHI). VAdm Mihai Panait, Chief of Romanian Naval Forces, honoured the participants with a welcome address stressing the pivotal coordination role played by this Commission in the area. The consequences of the war context were outlined by some critical new requirements such as the need to maintain specific corridors, free of mine threat, to ensure the safety of navigation of commercial shipping as well as up-to-date disaster response plans. Other serious concerns were shared on the possible consequences of the conflict regarding marine pollution. Director Sinapi in his opening speech thanked the host for the wonderful arrangements made for this Conference and highlighted the magnitude and complexity of "important topics [to be discussed], which are technical in nature, as per the technical nature of the IHO, but can have an impact on decision-making level by Member States of the MBSHC".

The meeting started, in accordance with the Statutes, by the election of the Vice-Chair, taking effect at the end of the Conference: France was elected by acclamation. It was followed by a very contentious phase: the approval of the agenda. The MBSHC Chair noted the statements made by Greece and Türkiye and finally decided not to accept the objection made by Greece, who claimed the introduction in the agenda of a vote for the approval of their proposed INT charts in the Aegean Sea, as previously announced in the MBSHC CL 02/2023. The MBSHC Chair justified her decision, in line with the MBSHC CL 12/2024 issued prior to the Conference.

The MBSHC approved the designation of Türkiye as new Region F ICCWG Coordinator. The MBSHC also agreed on the dual representation of the MBSHC in the WENDWG, by the Region F ICCWG Coordinator on one hand, for ENCs issues, and by the MBSHC S-1XX WG (France) for S-100 topics other than S-101 on the other hand. After lengthy discussions on the amendments proposed by the Region F ICCWG Coordinator following a consultation by Circular Letter, the TORs and ROPs of the Region ICCWG were finally approved.

Twenty national reports of very high quality were presented by Members and Associate Members, most of them underlining the important efforts and significant progress made to contribute, at the national level as a 1st step, to the S-100 Implementation Roadmap, providing examples of how the respective Hydrographic

Participants in session at the 24th Conference of the MBSHC.

[19] Apologies received from Algeria, Lebanon and IALA.

Offices have started – internally first and engaging with the most important national stakeholders secondly – with detailed and time lined roadmap to produce and implement the S-1xx products related to Phase 1.

Following up on a proposal from five nations of the Black Sea Working Group (BASWG) of the MBSHC, aiming to assign one permanent seat to BASWG Member States in the Council in the future, the Commission decided after fruitful discussions to reject the proposal and not

NAVTEX station status in NAVAREA III.

to amend the Annex to the Statutes of the MBSHC for the allocation of seats to the Council. As for the evolution of the "hydrographic interest" criteria also used in the composition of the Council, the Commission invited the five Member States to submit a consolidated proposal to the Council by the 15th of July. Beforehand, the IHO Secretariat advised these Members to consider the Chapter 6 of the report of the Strategic Planning Working Group to the International Hydrographic Conference 2007[21].

The IHO Secretariat presented the last developments of INToGIS III aiming to offer a platform to Member States and RHCs for planning the coordination of the coverage and production of S-100 based products and data services. The launch of the testing phase by Coordinators (July-August 2024) was announced. The Commission noted the intention of the United Kingdom to grid their current ENC coverage in the region. This is planned to be discussed at the Region F ICCWG level as a 1st step.

Contentious issues were also raised on NAVTEX coverage in the Aegen Sea leading to additional statements by Greece and Türkiye, and Cyprus.

Türkiye, as Capacity Building (CB) Coordinator, made some suggestions on the possible future themes of the World Hydrography Day, which could be taken into consideration if appropriately shared with the IHO Secretariat before Council-8 for discussion.

The review of the decisions, actions and recommendations at the end of the Conference was delayed for more than 90 minutes due to discussions between Greece and the Chair of MBSHC as well as Türkiye and the Chair of MBSHC on an action captured in session by the Chair table, by which Greece had requested officially advice from the IHO Secretariat on the Aegean Sea charting issues. The action was transferred to the list of recommendations as the best possible compromise. In fact, despite promising efforts on the implementation of S-100 by most of the Member States, the issues on INT paper charts schemes in the Aegean have remained unresolved for more than 15 years like ENCs overlaps which will potentially jeopardise the regional coordination of the implementation of S-100.

At the end of the Conference, Romania - Captain Lucian Grigorescu, Director of DHM - took over the chairpersonship of the Commission. Noting that the next Conference is planned in 2026, the year of the 4th Session of the Assembly, the IHO Secretariat drew the attention on the dates of the Conference and on the need to launch the selection of the Members of the Commission applying for a seat at the Council, no later than in October 2025. Captain Lucian Grigorescu closed the Conference expressing his gratitude to all participants, his staff for the arrangements and Croatia as former Chair.

Nordic Hydrographic Commission (NHC)

Attendees included: Denmark, Finland, Norway Iceland, and Sweden.

Nordic Hydrographic Commission.

The meeting was hosted by Sjöfartsverket (Swedish Maritime Administration) and chaired by Mr. Magnus Wallhagen, National Hydrographer of Sweden, who opened the meeting by recognizing the long history of the Commission and presenting some of the topics discussed throughout the Commission's history.

Regular commission business was managed by Mr. Wallhagen throughout the meeting. Dr. Nyberg presented the Secretariat's report with special attention on the outcomes of the recent WEND WG meeting and the road toward S-100 implementation. This led to further strategic discussions around the importance of progressing S-100, Empowering Women in Hydrography, IHO's relationship to the IMO, the IHO Strategic Plan, and equal access to IHO meetings were some of the themes

[21] Useful References in Doc. C4-02.3A.

discussed during the presentations.

Comprehensive national reports were delivered by the Member States. Topics reflected those common in the IHO, including charting and survey work in the region. Additionally, there were discussions regarding office re-organization, volcanic activity in Iceland, and survey to ENC process improvements.

An engaging Commission roundtable was conducted to share regional approaches toward the implementation of S-100. The region in general appears to be well on track to meet the goals presented in the S-100 Implementation Strategy. The presentations hosted on the Commission website are excellent resources for those looking to implement the Universal Hydrographic Data Model.

The evolving thinking on Electronic Chart Systems and regulation versus education was discussed from national, regional, and international points of view. The Commission agreed that this was an important topic to keep in mind and plans to keep it on the regional agenda for future meetings.

A Commission wide Memorandum of Understanding (MoU) was signed by all members of the Commission. The MoU represents a significant collaborative effort between the NHC and Seabed 2030. The MoU builds on established practices by Commission Member States who all provide their data through EMODNet bathymetry.

The Commission conducted an in-depth discussion on the future of the IHO Strategic Pan which resulted in a proactive set of suggestions for the NHC to present to the IRCC in June.

This Commission meeting was held during a critical juncture for the IHO and its MS activities regarding future production of S-100, including production system experience. Strong collaboration was reconfirmed and the NHC appears to be well positioned to successfully implement S-100 products and services in accordance with IHO timelines. Strategic areas of interest included production, distribution, and security.

NHC Signing the Seabed 2030 MOU.

Outcomes:

- The Commission agreed on several inputs to update the IHO Strategic Plan.
- The Commission signed a joint MOU with GEBCO Seabed 2030.
- The IHO Secretariat presented the importance of the current issues that will impact the future of the IHO, including the future of S-100, IHO infrastructure, the Strategic Plan, leaving no country behind, and gender inclusivity among others.
- The IHO Secretariat presented the importance of the S-100 agenda leading up to 2030 with an emphasis on the results from the latest WEND WG meeting – the commission agreed to move forward with the buildout of S-100 products and services beyond S-101.
- The Commission agreed that Denmark will be the MSDI Ambassador for the NHC
- Significant progress was made in. understanding regional plans for implementing S-100 based products and services
- Finland was elected to serve as both Chair and Vice Chair as is the tradition of the Commission.

North Indian Ocean Hydrographic Commission

Attendees included: Australia, Bangladesh, France, India, Indonesia, Malaysia, Maldives Myanmar (VTC), Oman, Pakistan, Saudi Arabia, Sri Lanka, Thailand, UK and the USA

The meeting was generously hosted by the Hydrographic Department of the Royal Thai Navy and was chaired by VAdm. Komsan Klinsukon (Thailand) with Capt. Rahman Rezaur (Bangladesh) as Vice Chair.

Following VAdm. Kinsukon, Dr. Nyberg who represented the IHO Secretariat provided introductory comments in which he echoed the Admiral's sentiments regarding the importance of hydrography beyond charting. Both introductions also presented the importance and challenges facing the hydrographic community regarding the implementation of the Universal Hydrographic Data Model, the need to work together to ensure a successful implementation, and the need to provide hydrography to support navigation, the environment, and livelihoods of seafarers.

Immediately following the introductions, the Commission held a flag ceremony to recognize the transfer of the chairmanship from Indonesia to Thailand.

Dr. Nyberg presented the Secretariat's Report where he highlighted the current issues that will impact the future of the IHO, including the future of S-100 leading up to

NIOHC.

2030, IHO infrastructure, the Strategic Plan, and leaving no country behind.

North Indian Ocean Hydrographic Commission.

Flag Ceremony, Cdre Dyan Primana Sobaruddin (Indonesia) and VAdm. Komsan Klinsukon (Thailand).

National Reports were delivered by all Full and Associate Member States of the Commission who were in attendance. The reports presented a few common themes including concerns about the capacity to implement S-100 products and services, notable concern about climate change, and available resources and opportunities for capacity building.

The NIOHC hosted a series of industry presentations that focused on data collection, processing, and product compilation.

During the closing session the Chair presented a presentation that highlighted achievements and challenges, presented below. The presentation was an excellent way to synthesize the action items and to prepare for the upcoming IRCC.

Achievements:

- Appointed S-100 coordinator with separate duties from NICCWG.
- Continue Active Working Groups including NICCWG and MSDIWG.
- High number of INT charts produced (181 charts).
- A large number of participants including countries from outside the region participated in NIOHC meeting in Chiang-Mai, Thailand. Various commercial sectors also participated and presented e.g. software development, technological enterprises and training academies.
- Collaboration with neighbouring RHC on capacity building capacity to leverage the limited IHO capacity building fund was discussed intensively.
- The region welcomed the development of the IHO fund generation project team and the support provided by the RENCs as we move forward.
- Substantial achievement for enhancing gender balance in hydrography as demonstrated by India and Indonesia by means of their respective national reports.

Challenges:

- Collective improvement of hydrography and products at regional level would be best enabled by greater participation in IHO/NIOHC thus the Commission should also encourage non-member states to contribute and benefit from NIOHC CB activities and become eventually IHO/NIOHC members. (e.g. Sudan, Djibouti, Somalia, Yemen, Eritrea, Maldives, etc.).
- Lack of CB funding (and opportunities) in the region.

- Absence of a well-defined plan for S-1xx implementation including augmentation of training in support of this important transition in ENC production and other S-100 based services.

- Lack of sufficient survey data contribution.

North Sea Hydrographic Commission (NSHC)

Attendees included representatives from: Belgium, Denmark, France, Germany, Iceland, Ireland, Netherlands, Norway, Sweden, and the United Kingdom.

North Sea Hydrographic Commission.

The meeting was hosted by Sjöfartsverket (Swedish Maritime Administration) and chaired by Magnus Wallhagen, National Hydrographer of Sweden, who opened the meeting by recognizing the exciting challenges facing the IHO in 2024, notably the implementation of the S-100 hydrographic data model and the refresh of the IHO Strategic Plan.

Regular Commission business was managed by Mr. Wallhagen throughout the meeting. Dr. Nyberg presented the Secretariat's report, Thomas Dehling, National Hydrographer of Germany, present the Council/IRCC report and Mr. Wallhagen presented the HSSC report. The importance of progressing S-100, Empowering Women in Hydrography, IHO's relationship to the IMO, the IHO Strategic Plan, and equal access to IHO meetings were some of the themes discussed during the presentations.

During the meeting the Commission considered the future of paper charts, hydrographic surveying in the region, crowd source bathymetry, the IHO Strategic Plan, the future of implementation of S-100 and the needed associated IHO infrastructure, and marine safety information, among many other things.

The Commission visited the World Maritime University and conducted a workshop for the students and faculty. The workshop introduced the IHO, presented the basic future capabilities of the S-100 Universal Hydrographic Data Model, the regulatory framework around S-100 and allowed time for questions from the students. It was apparent that more communication regarding S-100 is needed in the near-term to help future maritime sector employees understand how S-100 will benefit them in the future.

The Commission conducted an in-depth discussion on the future of the IHO Strategic Pan which resulted in a proactive set of suggestions for the NSHC to present to the IRCC in June.

This particular meeting was of strategic importance for the region which aims to lead the global implementation of S-100 in partnership with neighbouring commissions. It not only considered the production of new product specifications but also the policies and data needed to support them.

Outcomes:

- The Commission agreed on several inputs to update the IHO Strategic Plan.

- A workshop was conducted at the World Maritime University to increase the understanding of the future of S-100.

- Increased contribution toward Gender Balance were

NSHC visit to WMU.

NSHC Signing new ToRs.

offered and recognized.

- The IHO Secretariat presented the importance of the current issues that will impact the future of the IHO, including the future of S-100, IHO infrastructure, the Strategic Plan, leaving no country behind, and gender inclusivity among others.

- The commission agreed to move forward with the buildout of S-100 products and services beyond S-101.

- Commission agreed on revised statutes that reflect the applicable IHO Resolution on RHCs, gender neutral language and changes in rules of procedures (physical meetings every second year and VTCs the year in between).

- The Commission decided to close the operation of its sub-MSDI WG and to appoint an MSDI ambassador (Germany) for the IHO MSDIWG.

- It was strongly noted that there is an increased need for IHO communications to include the impacts of S-100 on mariners of the future, the IMO, and others who will be implementors of the Universal Hydrographic Data Model.

- IHO to consider a strategy on IMO interaction – produce a bulletin on the IMO-IHO tree diagram.

- UK and Germany were elected as chair and vice chair respectively.

ROPME Sea Area Hydrographic Commission (RSAHC)

On 25th November in Riyadh, Kingdom of Saudi Arabia, following an invitation from the Director General Hydrogaphy, Mr Saud Hamoud Al-Ruways, IHO Director Luigi Sinapi paid a visit to the President of GEOSA Eng. Mohammed bin Yahya Al Sayel. The results of the meeting were posted on the official website of GEOSA at the following link https://t.co/s54DiyahSV and on social media.

Discussions between the IHO Director and the President of GEOSA were focused on the following topics:

- Implementation of UNGGIM – IGIF 9 pathways

- Importance of data sharing

- Need to invest in Hydrography

- Transition from S-57 to S-100 and need to implement a plan for the transition to the new S-100 products

- Importance of strengthening the ties between IHO and Kingdom of Saudi-Arabia via the General Authority for Survey and Geospatial Information (GEOSA)

- Intention of GEOSA to contribute to raise awareness on Hydrography, support the transition to S-100 through a Capacity Building plan in favour of the International Hydrographic Community.

The 10th Meeting of ROPME Sea Area Hydrographic Commission – RSAHC10 took place at the Ritz Carlton Hotel, Jeddah, Kingdom of Saudi Arabia, from 26 to28 November. 40 attendees from 10 IHO Member States (Iraq, IR of Iran, Oman, Pakistan, Qatar, Saudi Arabia, United Arab Emirates, France, United Kingdom and United States of America) and representatives from IALA, Seabed2030 and Industry participated in the meeting, whilst the General Manager of IC-ENC participated from remote. The IHO Secretariat was represented by Director Luigi Sinapi.

The Chair opened the RSAHC10 meeting on behalf of the President of GEOSA, commenting on the importance of the need to improve safety of navigation in the area. He also affirmed the Kingdom of Saudi Arabia's role in international and regional cooperation with relevant organisations, bodies, centres and authorities in order to make KSA waters a safe environment in accordance with

IHO Director and President of GEOSA, Riyadh, Kingdom of Saudi Arabia, 25 November 2024.

the best international practices.

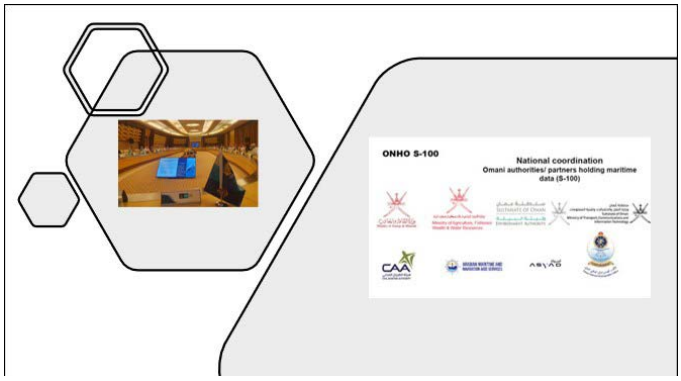
IHO Director Sinapi highlighted the approach of a new era for e-navigation, with the implementation of the first lot of S-100 products which will become operational in 2025 with their arrival on the market from the 1st January 2026 to be used in ECDIS-100, the need for more investment in the IHO Capacity Building Work Programme, with particular focus on the S-100 activities requested by the Regional Hydrographic Commissions. The importance of an active participation of the IHO in global initiatives in favour of the oceans, such as the UNOC which will take place in 2025 in France and Monaco, was also highlighted.

The following main topics were discussed alongside the presentation of the National reports:

- Participation in the Council from the RHCs and assignment of Council seats to the RSAHC
- Opportunity to conduct separate technical IHO and IALA visits to the I.R. of Iran
- Importance to have an MSDI Ambassador in the Region, to boost the creation of MSDIs at national and regional levels, with particular focus on S-100 and its derived products
- Need for more support and investments on Capacity Building to facilitate the transition from S-57 to S-100 and the implementation of S-100 products
- Caspian Sea: international rules and standards for safety of navigation and hydrography need to be customized to the Caspian Sea countries needs and regulations
- Iraq is facing internal challenges to sign the RSAHC Statutes to become a full member of RSAHC
- Importance of coastal areas surveys and update of IHO C-55 Publication
- Increased participation in national, regional and international fora/meetings in Hydrography
- Protection of the marine environment and sustainable development in the RSA region, such as the one described by the Kingdom of Saudi Arabia aiming for the creation of a department in charge for either Hydrography and Hydrology
- France offered to test the IntoGIS III for the RSAHC, similarly to what it is doing for other RHCs
- The United Kingdom, as Primary Charting Authority (PCA) of many RSA States, has revised its risk-based prioritisation of the PCA portfolio countries in the region
- National initiatives to reduce the impact of paper charts production on the HOs, such as the initiative of NGA to plan to cancel all traditional paper charts and their US Notice to Mariners by January 2026, and shift paper chart production to a smaller suit, created via the Certified Printed Electronic Navigational Charts (CPENC).

Pakistan, as NAVAREA IX coordinator, confirmed that in NAVAREA IX all the navigational and coastal warnings are broadcasted through INMARSAT and IRIDIUM SafetyCast systems, as Iridium SafetyCast service became SOLAS carriage compliant from 1 January 2020. Particular emphasis was given to Capacity Building and MSI courses to be conducted in the NAVAREA IX to involve also currently inactive members in the Region.

Regional CB initiatives conducted, underway and planned, were described highlighting the importance of the benefits of the inter-regional coordination, the importance of investing in S-100 implementation, MSI courses and on-line courses. The internal regional challenges were also highlighted, with the request to the RSAHC Member States to be more cooperative and participate more actively in the regional CB programme's definition. The opportunities offered by the two RENCs (1 CB activity on the S-57 to S-101 conversion funded by IC-ENC in favour of RSAHC and NIOHC, via the "Activity fund" established from a portion of national ENC revenues for other projects, including the support to the IHO CB initiatives on S-100 implementation, and the on-line courses provided by PRIMAR) and the inter-regional coordination with NIOHC for the conduct of joint CB activities were underlined. Kingdom of Saudi Arabia offered MSDI opportunities to the RSAHC members.



Oman S-100 Implementation plan.

The Sultanate of Oman presented their national S-100 Implementation Plan, highlighting the implementation challenges including the lack of time, the need to support the production of both S-57 and paper charts, and the production systems, resources and capabilities. The Sultanate of Oman was nominated as S-100 Services Coordinator for the RSA region with the consensus of all the RSAHC members, closing the RSAHC9 Action 17 opened 2 years ago at RSAHC9 meeting. The new S-100 coordinator will work closely with the WENDWG in accordance with the next "Guidelines for the Coordination

10th ROPME Sea Area Hydrographic Commission – RSAHC10 participants – Jeddah, Kingdom of Saudi Arabia.

and Management of the Development of S-100 Electronic Navigational Data Services (other than S-101 ENCs)" currently under drafting by the WENDWG, and for meeting the 2026 IMO target (S-100 ECDIS).

An MSDI presentation was delivered by UKHO, with specific focus on the joint activities conducted by the MSDIWG and the UNGGIM-MGI for the implementation of the UNGGIM-IGIF 9 pathways, the recent results of the 2024 MSDIWG, the regional MSDI initiatives and the future developments related to the connection between MSDI and S-100 with specific focus on S-122 – Marine Protected Areas, the Digital Twins for Marine Spatial Data, the collaboration and engagement with stakeholders and the emerging technological trends, as well as the many similarities between MSDI and the technical committee of the IHO (HSSC). The Kingdom of Saudi Arabia was nominated MSDI Ambassador for the RSAHC, closing the RSAHC9 Action 16 opened 2 years ago at RSAHC9 meeting.

The INT Charts and ENCs coverage in the RSA region were presented by the INT Chart – ENC regional coordinator (I.R. of Iran). Thanks to the RENCs assessments, the overlaps in the region were presented, highlighting that the risks for navigation are assessed low to medium. Bilateral cooperation and more communication between the ENC producers to eliminate overlaps was encouraged in accordance with the WEND principles and IHO Resolution 1/2018 - Elimination of overlapping enc data in areas of demonstrable risk to the safety of navigation.

Industry presentations on the state-of-the-art technology, geo-data and education, on Seabed2030 project and the recently issued "Use Cases on why Mapping the Oceans is important" from the Director of Seabed2030, UKHO on the new Admiralty Visual Ports tool, and IALA representative on the new intergovernmental status of IALA, the World-Wide Academy and the obligations related to Marine Aids to Navigation, completed the agenda of the conference.

The RSAHC Chair will send a Circular Letter requesting nominations for the regional CSB/GEBCO/Seabed2030 for the RSA Region. The I.R. of Iran was elected RSAHC Vice-Chair. In 2025 the I.R. of Iran will take over from Saudi Arabia as RSAHC Chair.

Outcomes:

The Visit to the President of GEOSA provided a unique opportunity to strengthen the ties between the IHO and the Kingdom of Saudi Arabia - KSA and discuss issues in the field of geospatial data management and the implementation of the S-100 Standard. GEOSA intends to cooperate with the IHO and support - through a Capacity Building plan - the transition to the S-100 and a broad sharing of geospatial data in line with the 9 pathways of the UNGGIM-IGIF. At the end of the meeting, it was decided that the IHO will propose - in collaboration with the Directorate of Hydrography of GEOSA - a draft Agreement with an attached Capacity Building plan and its budgetary quantification to the President of GEOSA for evaluation and approval in 2025.

National reports presented by the RSAHC's Members showed internal difficulties in dealing with the S-100 implementation and the need for regular support – from 2025 onwards – in courses on S-57 to S-101 conversion and activities on the production of the other S-100 products belonging to Phase 1 / Route Monitoring. The Sultanate of Oman was nominated S-100 coordinator for the RSA region, with the task to develop the implementation S-100 roadmap for the RSAHC to meet the 2026 IMO target (S-100 ECDIS) and share the regional roadmap with WENDWG at the next WENDWG meeting in February 2025.

Particular attention was paid to the surveys of the waters under national jurisdictions, with the aim to update the C-55 publication and accomplish under the obligations of the SOLAS convention on safety of navigation.

The need to improve the gender balance in the IHO, in the RSA region and within the RSA regional HOs.

The RSA members nominated the Kingdom of Saudi Arabia as MSDI Ambassador for the RSA region, recognizing the KSA leadership in geospatial data management, in the field of hydrographic marine survey to support the safety of marine navigation.

The RSA members decided to meet intersessionally in between two face-to-face meetings scheduled every two years, to reduce the lack of communications amongst the RSA members and better prepare the transition towards the S-100 standard. The RSAHC Chair will issue a Circular Letter to receive feedback from the RSA Member States and decide on the form of the intersessional meeting (face-to-face or remote).

The most important moments of the RSAHC10 meeting and the main achievements were the subject of a long and comprehensive report on the KSA national television network "Alekbariyatv" (see the link: https://x.com/alekhbariyatv/status/1862320742953529748?s=48&t=hs-ZxvnyZ5pxCRpHO15Vdw).

Southern Africa and Islands Hydrographic Commission (SAIHC)

The meeting was attended by Angola, France, Kenya, Mauritius, Norway, South Africa, Seychelles, United Kingdom, Comoros, India, Madagascar, Malawi, Namibia, and Tanzania. Portugal and Mozambique attended via VTC.

Admiral Angus Essenhigh (Chair) opened the meeting with a warm welcome to the SAIHC. He introduced many of the accomplishments and challenges facing the commission, received approval for the agenda, and reviewed the actions arising from SAIHC 19.

Admiral Essenhigh was followed by her Excellency, Ambassador Nancy Karigithu (Kenya) who provided the keynote address. Ambassador Karigithu welcomed all representatives to the conference, celebrating regional collaboration and successes while addressing challenges. She noted that the UKHO has provided longstanding support as Kenya's PCA, and that the IHO brings together member states to enhance safety through hydrographic collaboration. She stated that Kenya's blue economy, including oceans, rivers, and lakes, plays a vital role in national development by contributing to job creation and food security and noted that the SAHC has fostered cooperation and data sharing among member states. Looking ahead, key priorities include continued advocacy, legislative support, financial backing, and leveraging new technologies to advance hydrography in the region.

The International Chart Coordination Working Group presented an overview of the charting situation in the region, including INT and ENC development, chart overlaps and an introduction to the S-100 implementation roadmap.

The Commission's MSDI Working Group presented an updated which included a ToR refresh, a portal project. The regional MSDI WG was suspended, but the SAIHC agreed to maintain an ambassador role which will be represented by the UK.

The Capacity Building Coordinator updated the Commission on CB opportunities and progress. She highlighted the EWH project, upcoming funded training opportunities, and the capacity building workplan.

The African Great Lakes SubWG reported on initiatives in the region, including a comprehensive IALA Lake Victoria technical mission in September 2024, a World Bank Multi phase programme in the Lake Victoria basin to include hydrographic surveys, and the submission of an IHR Technical Report.

A CSB update was delivered that focused on current activities and initiatives in the region and around the world.

National Reports were given by MS. Angola, France, Kenya, Mauritius, Norway, South Africa, UK, Seychelles, Comoros, India, Madagascar, Malawi, Namibia, Portugal, Uganda, and Zambia. Many success stories were shared, including the completion of several hydrographic surveys in the region, new products for navigation being produced, and an increased awareness of the future S-100 landscape, to name a few.

Some of the challenges highlighted by the membership include the need for increased training in hydrography

Sibonelo Dlamini (South Africa), Victoria Obura (Kenya), Ambassador Nancy Karigithu (Kenya), Dr John Nyberg (IHO).

and charting, lack of equipment, the need for increased ministry level hydrographic awareness, and resources for the implementation of S-100.

The SAIHC presented a disaster response plan that started with a form for collecting contact information to respond to disasters. They also received an update regarding WWNWS, including significant events and challenges including the current broadcasting of warnings and countries which are not submitting warnings for a variety of reasons, including trouble with transmissions, lack of training, and lack of transmission stations. SANHO is planning an MSI eLearning package and SAIHC MS were encouraged to participate.

Relevant International Organizations, including IALA, the South African Hydrographic Society, GEBCO, KMFIR, and the Maritime Organization for Eastern, Southern, and Northern Africa (MOESNA) presented updates. A few highlights included, IALA's transformation to an Intergovernmental Organization. Of special note, data was contributed to KMFIR as part of their data mining exercise, and MOESNA was supportive regarding their members becoming IHO members. MOESNA and IHO agreed to investigate an MOU similar to the MOWCA/IHO arrangement.

Industry presentations were provided which highlighted the availability of industry led opportunities and technology.

The Commission discussed their priorities for the IRCC and Council, noting the importance of capacity building and increased hydrographic data collection, including satellite derived and crowdsourced bathymetry. The Commission's visit to the Uhuru II during the meeting was highlighted as an important awareness building activity for the commission. It expanded the group's understanding of the importance and status of hydrography on the African Great Lakes.

A presentation from the SAIHC S-100 Coordinator was given with a recommended pathway for implementation. Specific importance was given to the need for national implementation plans and S-100 capacity building in the region.

Both IC-ENC and Primar presented their current status and capabilities, including training and membership opportunities.

The Commission held an election for Chairman and Vice-Chairman. The UK was re-elected as Chair and Mauritius was re-elected as Vice-Chair.

South-West Atlantic Hydrographic Commission (SWAtHC)

The 18th meeting of the South West Atlantic Hydrographic Commission (SWAtHC18) was held in Buenos Aires, Argentina, in a hybrid format from 9 to 10 April 2024, hosted by the SHN – Servicio de Hidrografía Naval of Argentina. The meeting was chaired by Vice Admiral Carlos André Coronha Macedo (Brazil) and attended by 34 registered participants, 27 in person and 7 by VTC. All members of SWAtHC (Argentina, Brazil and Uruguay) were represented (either in person or remotely), as well as the Associate Member State, Paraguay. In addition, Spain participated at the meeting as an invited State. In a letter addressed to the SWATHC Chair, Bolivia apologized for not being able to attend the meeting, for administrative reasons. The meeting was also attended by representatives of the industry (Teledyne Geospatial, Kongsberg Maritime and Xylem Hypack). The IHO Secretariat was represented by Director Luigi Sinapi. On the evening of 9 April, Brazil hosted a reception on board the Hydro-Oceanographic Ship Faroleiro Almirante Graça Aranha moored in the port of Buenos Aires.

The SWAtHC18 meeting was preceded by a Workshop on Hydrographic Awareness held on 8 April and funded with the IHO CBWP2024 funds. The workshop's agenda

Participants at SWAtHC18 and reception onboard Hydro-Oceanographic Ship Almirante Graca Aranha.

included presentations on the capabilities and activities of the Hydrographic Offices of Argentina, Brazil and Uruguay, professional presentations on waterway surveys, maritime safety and beaconing, as well as presentations of hydrographic survey techniques and data collection equipment by the industry, including hydrographic surveys and nautical cartography in the rivers of South America. Particular mention should be made of the presentation on the implementation of the S-102 product in waterways, as a product that can increase the safety of inland waterways navigation.

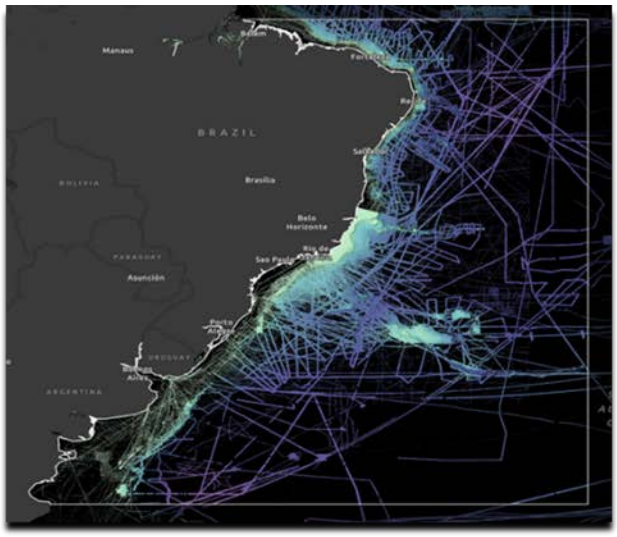
The SWAtHC18 meeting was opened by the Chair, and followed by the Director of SHN and IHO Director, who welcomed the participants, thanked Argentina and SHN for hosting the meeting, highlighting the numerous initiatives involving the Regional Hydrographic Commissions such as the review of the IHO Strategic Plan, the S-100 Route Plan and the future of paper charts. IHO Director Sinapi mentioned the next challenges that the Secretariat and the IHO undertook with particular reference to the UN Ocean Decade and the next world events with reference to the Oceans (United Nations Ocean Conference – UNOC planned in 2025 in Nice, France). SWAtHC Chair highlighted the need for collaboration in the implementation of the S-100 action plan, the need to increase capacity building activities at regional level, the lack of participation in RHC activities and meetings, the good progress has been made in inter-regional cooperation and successful partnerships with industry and stakeholders, and finally the importance of having a geo-coordinating role to help ensure data provision at regional level.

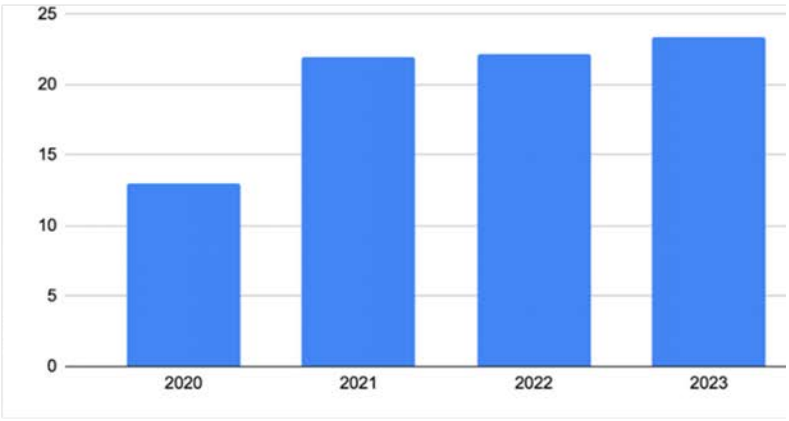
The Regional Capacity Building Coordinator reported on the most recent CB activities, the current status of the IHO e-learning centre and the IHO-CANADA Empowering Women in Hydrography (EWH) project within the Region, highlighting the excellent support that the HOs regularly receive from the industry in building hydrographic capacities at national and regional level. A request has been submitted to IC-ENC for the provision of funds to support CB phase 3 projects, including conversion from S-57 to S-101 and production of ENC and S-100 products. The activities will be submitted to IC-ENC to eventually be approved and financed by the IC-ENC "opt-in funds". Special mention was made of the workshop on the conversion from S-57 to S-101 held at the IHO-Singapore Laboratory in November 2023, which was attended by representatives of the Hydrographic Services of Argentina and Uruguay. Following the report on the last WWNWS meeting, Argentina, as NAVAREA VI coordinator highlighted the problem of the dual system (NAVTEX and IRIDIUM SafetyCast) to be used in the dissemination of MSI. At regional level, it was decided to initiate coordination actions between Brazil and Argentina to evaluate the transmission of safety information through IRIDIUM SafetyCast. Spain, as NAVAREA III coordinator, offered technical solutions for the deployment of the new IRIDIUM SafetyCast system.

Brazil, Argentina, Uruguay and Spain presented the respective national reports, highlighting a very high level of attention to South America's inland waters, in particular the Paraguay-Parana' waterway which connects all the countries of the Region and contribute significantly to the economic development of the area. In Argentina, for example, 80% of maritime trade passes through the South American river network, again underlining the importance for the country's economy and sustainable development of the safe navigation of the river network serving South American countries. Special attention was paid to the implementation of the S-100 Roadmap and the production of S-1xx products. Within the CB at regional level, particular interest was aroused by the Portuguese-language training offered by Brazil (courses in Hydrography Cat A and B, in Meteorology and Oceanography, and on Tides in cooperation with COI/IMO/IHO). The latest updates on the IEHG (Inland ENC Harmonization Group), were presented, with specific reference to S-401 (Inland ENC) Ed. 2.0.0, which will be ready by the end of 2024, and the way to read Inland ENC (IENC) that requires a dedicated computer navigation program, and not the same ECDIS or ECS device software used for ENC/ECS. Finally, the strong interest shown by the State of Paraguay in becoming a member of the IHO and thus of SWAtHC should be highlighted. Paraguay's representatives pointed out that the accession process has been initiated within the country and that the IHO Letter sent in February 2024 has been received and the necessary actions are underway to arrive at the approval of an internal regulatory instrument necessary for the accession to the IHO.

Industry presented the latest updates in the S-100 area, with particular reference to the latest software developments for the migration from S-57 format to S-101 format, in the dual-fuel period preparatory to the complete transition to the S-100 products, and for the production of the various S-1xx products, as well as the

Waterways surveys in SWAtHC.

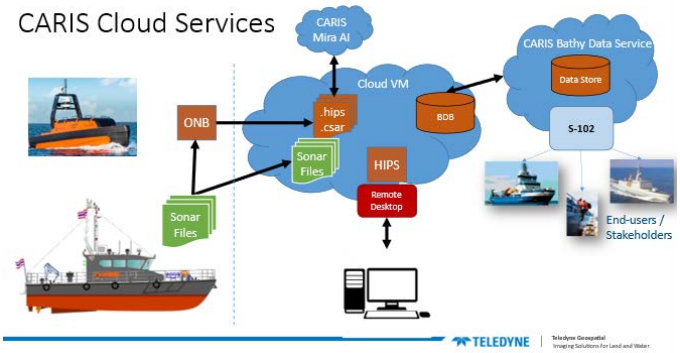




2020-2023 SWAtHC's contribution to GEBCO.

complete automation of the production of paper charts using CARIS Cloud as the generator of paper charts in pdf format. The latest technologies in the fields of hydrographic and oceanographic investigation and discovery developed in waterways, with reference to the Paraguay-Parana' waterway, were also presented.

The CSB/GEBCO/Seabed2030 Regional coordinator provided an update on the activities of GEBCO, Crowd Source Bathymetry (CSB) and Seabed2030, highlighting



CARIS Cloud service and S-102 production.

that the coastal States of the Region actively contribute to the GEBCO programme and Seabed2030 project, through the regular submission of existing bathymetric data in national databases and new data from hydrographic campaigns, which achieved a SWAtHC contribution rate of over 23% of the region's marine area of interest. That was possible thanks to the excellent collaboration with Seabed2030's Atlantic and Indian Ocean Regional Centre.

SWAtHC Planning Committee presented the situation regarding the production of S-1xx products, pointing out that none of the SWAtHC's Hydrographic Offices (HOs) have an agency-wide S-100 product implementation plan, 66% of the HOs plan in the short term to start working with S-102, 100% of the HOs have already performed tests on the transformation of S-57 products to S-101 prototypes, 100% of the HOs estimate the probable year of implementation of S-101 as from the end of 2026 or beginning of 2027, and 100% of the HOs consider that one of the main obstacles is not having specialized personnel. Finally, the detailed deployment plan (2023-2027) of the S-100 products was approved by the Commission, envisaging the start of S-101 production from late 2026 / early 2027.

South West Pacific Hydrographic Commission (SWPHC)

Prior to the South-West Pacific Hydrographic Commission (SWPHC) IHO Director Dr. John Nyberg and SWPHC Chair Ms. Hilary Thompson visited Suva, Fiji in order to meet with several high-level IHO stakeholders, including the Fiji Hydrographic Office.

On 22 February, Dr. Nyberg visited the Geospatial Information Management Division of the Ministry of Lands and Mineral Resources where he met with the Division Director, Meziyanne Hicks. The meeting focused on progressing the UN-IGIF-Hydro and the importance of including standards in Fiji's geospatial management plans. Ensuring that land and sea domains share compatible standards, and that data is available across government agencies was discussed. Dr. Nyberg agreed to work with the Ministry of Lands and Mineral Resources should they wish to seek more information in their implementation of IHO standards.

Dr. Nyberg then met with the International Union for the Conservation of Nature (IUCN) where he, the Regional Director, Leituala Kiniselani Toelupe Tago, and the IUCN Data Management Team discussed current IUCN data management practices and the potential implementation of IHO Standard S-122 Marine Protected Areas.

On 23 February, Dr Nyberg and Ms. Hilary Thompson were welcomed to the Fiji Hydrographic Service by LCDR Apenisa Cavuilati, Director (acting) of the Fiji Hydrographic Service. LCDR Cavuilati presented a

detailed presentation on the capabilities, challenges, and future of the Fiji HO. The presentation was followed by a discussion between Ms. Thompson and LCDR Cavuilati concerning the following week's SWPHC meeting and collaboration between the Australian and Fiji Hydrographic Offices.

International Union for the Conservation of Nature.

Fiji Hydrographic Service.

Following the Fiji Hydrographic Office meeting, Ms. Thompson and Dr. Nyberg met with Jens Kruger, Deputy Director of Ocean and Maritime Programme at the Secretariat of the Pacific Community (SPC) to advance progress on updating the IHO/SPC Memorandum of Understanding. The afternoon meeting started with a tour of the SPC Laboratory, including an explanation of SPC hydrographic capabilities, including their multibeam sonar and its project history. The tour continued with brief introductions around the SPC office to present SPC's wide range of projects and capabilities including marine modelling, marine spatial planning, IMO engagement, work with the Decade of Ocean Science for Sustainable Development and more. To close the meeting, the group agreed to work on refining the MOU with the aim to have the update signed and completed by November 2024 in conjunction with GEBCO Ocean Week in Nadi, Fiji.

Secretariat of the Pacific Community.

Outcomes:

- Agreed on a path forward for an updated IHO/SPC Memorandum of Understanding.
- Gained a better understanding of SPC capabilities and presented current IHO priorities.
- Advanced preparation for the SWPHC meeting.
- Presented the benefits of standards (Marine Protected Areas S-122) to IUCN and established a working relationship to ensure future coordination.
- Presented the benefits of IHO standards to Fiji Lands and Minerals. Agreed to work together regarding future implementation of standards.

USA-and Canada Hydrographic Commission (USCHC)

The 47th Meeting of the US/Canada Hydrographic Commission (USCHC47), was held from 30 to 31 May 2024 in St. John's, Newfoundland, Canada. USCHC47 took place in conjunction with the Canadian Hydrographic Conference 2024.

The meeting was chaired by Ms Manon Larocque, Hydrographer of Canada. Twenty-one participants attended the meeting in person and eight others attended virtually, including representatives from the Canadian Hydrographic Service (CHS), the Royal Canadian Navy, the National Oceanographic and Atmospheric Administration (NOAA), National Geospatial-Intelligence Agency (NGA), US Corps of Engineers, Naval Oceanographic Office, and the United Kingdom Hydrographic Office (UKHO) as observers. IHO Secretary-General, Dr Mathias Jonas represented the IHO Secretariat.

The meeting commenced with welcome words from meeting host Mr Craig Hogan, Acting Director of the Canadian National Fishery Centre, opening remarks of the Chair, the Vice-Chair Rear Admiral Benjamin Evans,

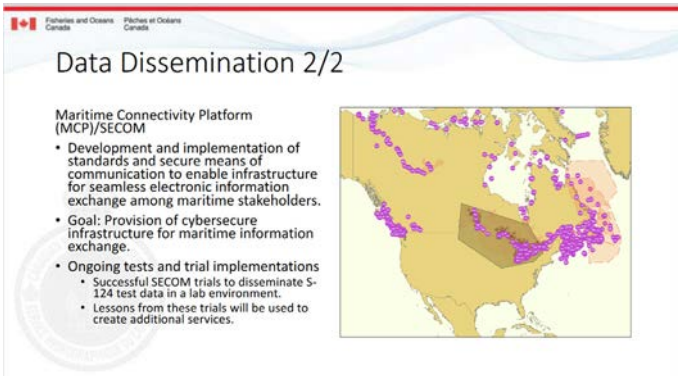
NOAA Director and the IHO Secretary-General. The meeting proceeded with the approval of the agenda and the matters arising from the previous USCHC46 Meeting and the respective list of actions.

National Reports were presented in sequence from Canada and US, followed by reports of the IHO Secretariat and UKHO. According to the two national reports, notable progress was made in preparatory work for the uptake of S-100 based data services. It was confirmed that substantial production capacity will be made available for the target date for S-100 ECDIS on 1st of January 2026. The Commission agreed to create a priority list for S-101 ENC roll out taking due regard of the availability of amending services such as S-102, , S-104, and S-111 services in the area. It is assumed that those data services will be made available for harbour areas and approaches at first.

Canada reported field tests for the secure dissemination of future S-124 Navigational information making use of the SECOM mechanism as agreed by IMO to be used for seamless electronic information exchange among maritime stakeholders.

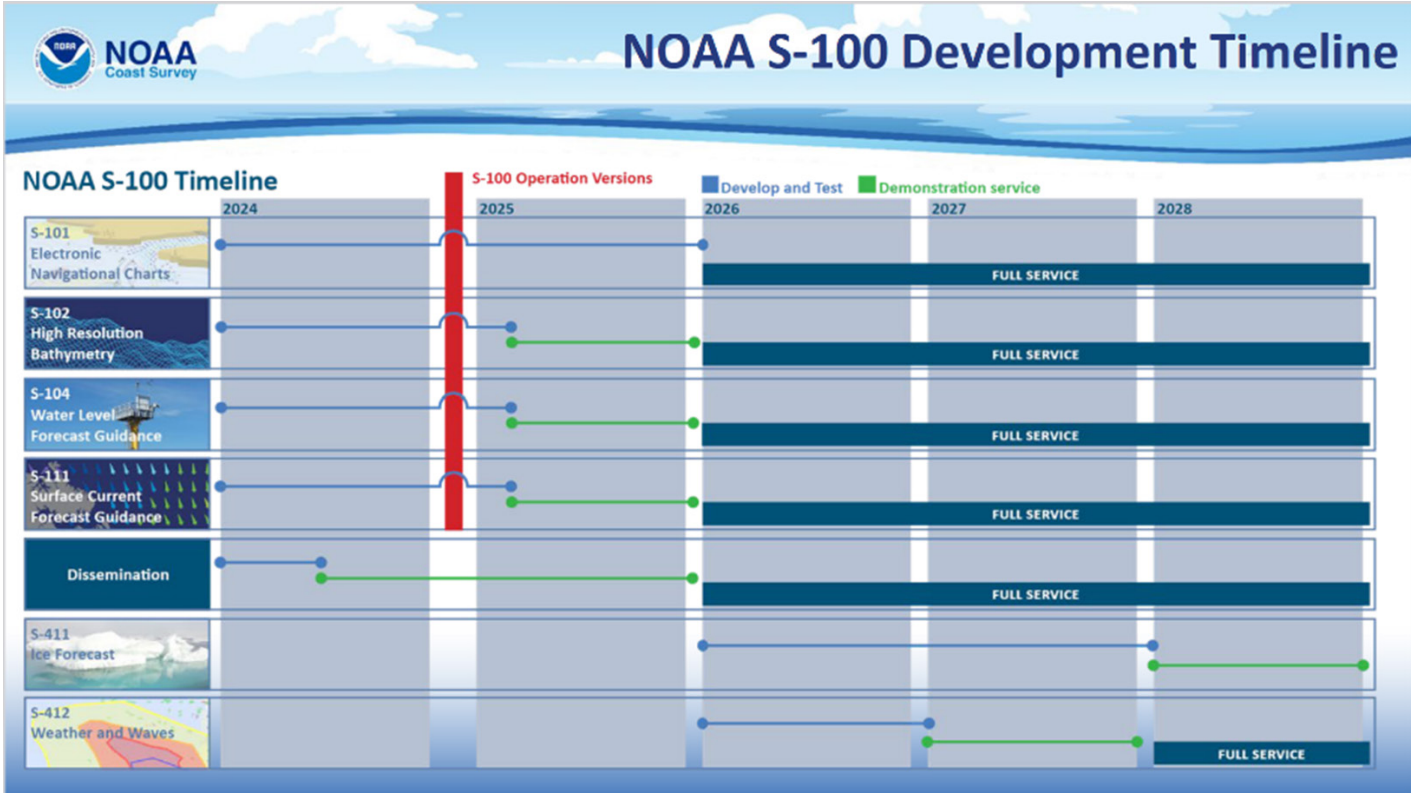
Both reports highlighted the efficient cross boundary coordination to solve cartographic issues resulting from the new schemes. As a result, there is a planned issuance of coproduced ENCs stretching along the national borders.

Canada reported that the S-501 Project Team is making strides towards Readiness Level 1 in creating an S-100 compliant Additional Military Layers product

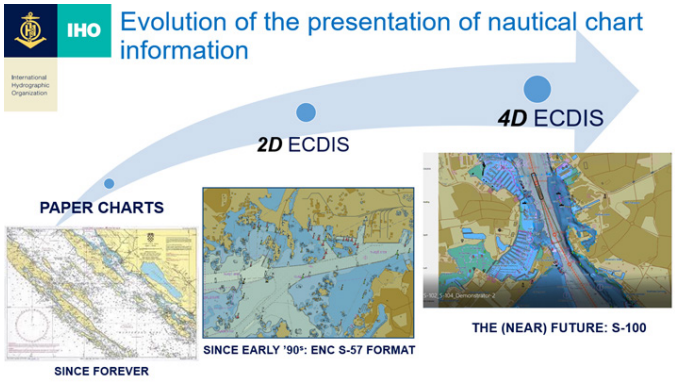


specification. With strong engagement from many NATO nations particularly Canada, Germany, United Kingdom, and United States, preliminary test datasets representing about 40% of the catalogue should be presented to production software companies before the end of this summer. If the current momentum is maintained, the goal of reaching Readiness Level 4 will be met by summer 2025.

As another item of note, US reported on the ongoing cancellation of national paper charts. The last NOAA paper chart will be cancelled on 5 December 2024. To feed the ongoing customers' needs on printed products, NOAA has set up its Custom Chart mechanism to produce bespoke samples for domestic customers. Canada seconded to this item that a similar process was initiated to create paper charts as much as compliant IHO S-4 Standards based on ENC content. The meeting continued with the reports of the respective national representatives in various IHO related activities, namely updates on the WENDWG deliberations with interrelations to



IHO's MSDI activities and GEBCO/Seabed2030. A sub-item of this mapping initiative named Lakebed2030 was agreed as a collaborative effort to map the Great Lakes according to modern standards.



The Commission discussed which position on the revision of the IHO Strategic Plan should be presented to the forthcoming IRCC meeting. The Commission agreed about an intervention proposing to keep three main goals in general but with a shifted focus on precision marine navigation with the S-100 framework as enabler, the hydrographic support of marine activities beyond navigation as a merger of the current Goal 2 and Goal 3, and the strengthening of the workforce of those who work in the hydrographic domain.

The Chair Ms Manon Larocque and the Vice-Chair Rear Admiral Benjamin Evans signing a contract to formalize cross boundary production of ENCs and other subjects of mutual support.

Before closing the meeting, Manon Larocque handed over to Benjamin Evans as host of the forthcoming meeting. The next meeting is scheduled for 20 to 21 March 2025 in Wilmington, North Carolina, USA.

Dr Jonas took the opportunity of the preceding Canadian Hydrographic Conference to address the Conference as Keynote Speaker under the title "***Toward the digital twin of the navigable waters - Progress in the implementation of IHO's S-100 Concept***".

Joint Capacity Building Asia-Pacific workshop on Enhancing Safety of Navigation with Maritime Digitalization

The 2024 Joint Capacity Building Asia-Pacific workshop on Enhancing Safety of Navigation with Maritime Digitalization was held in the Intercity Hotel, Daejeon City, Republic of Korea (ROK) from 9 to 11 July 2024. The Workshop was hosted by the Ministry of Oceans and Fisheries of Republic of Korea and co-organized by IMO, IHO, IALA and Republic of Korea. The IHO Secretariat was represented by the Assistant Director Leonel Manteigas.

The workshop had 44 participants. In addition to the representatives from the Ministry of Oceans and Fisheries and several other organizations from research institutes and the industry of Republic of Korea as well as the representatives of IMO, IHO and IALA, 16 participants from 8 countries participated at the Workshop.

Mr. Seong-yong CHOI, Director General of Maritime Affairs and Safety Policy Bureau, Ministry of Oceans and Fisheries (ROK) addressing the Workshop.

The Workshop was opened by Mr. Seong-yong CHOI, Director General of Maritime Affairs and Safety Policy Bureau, Ministry of Oceans and Fisheries, (MOF), who welcomed the participants and highlighted the importance of the digitalization, expressing the wish that the workshop could promote the maritime mobilization and digitalization and contribute to share the experiences and developments on those areas. IALA Deputy Secretary-General, IHO Assistant Director and IMO Technical Officer completed the opening ceremony thanking the Republic of Korea for the organization of this important event for the international maritime community.

The Workshop was composed of seven sessions. On the second Session dedicated to the "Update from International Organizations", IHO Assistant Director Leonel Manteigas delivered a presentation on the topic "IHO capacity building contribute to the safety of navigation and maritime digitalization", providing an overview of the IHO, with focus on hydrography and its importance to the safety of navigation, the IHO Capacity Building programme and its phases, the transition from S-57 to the S-100 products, the education opportunities offered every year and then the importance of the partnership between international organizations to improve capacity building efficiency. IALA presented its respective work programme for 2023-2027, the cooperation with other organizations and the transition from NGO to an IGO, that will commence in August 2024. IMO

IHO Assistant Director Leonel Manteigas presenting at the session "Update from International Organizations".

presented updates on the modernization of the GMDSS, the Digital Navigational Data System, e-navigation, and digital VHF.

Session three was dedicated to "Sharing Digital Experiences", with three of the four presentations related to the S-100 data model. This session was chaired by IHO Assistant Director Leonel Manteigas who also delivered a presentation on the "S-100 contribution to the safety and efficiency of navigation and maritime digitalization" focused on the S-100 implementation roadmap and the respective benefits of the S-100 data model. In this session there was an update on the S-100 from the Korea Hydrographic Research Agency with a status of the ENCs in Korea, the Korean Sea Navi, a system for small non-SOLAS vessels and an overview and the projects on S-100 as well as the future plans. IALA presented on "IALA S-200 testbed, training and sea trial" with the respective role on the S-200 development, the publications and product specifications, the findings from S-201 preliminary exercise, the sea trial on S-124/S-125, the S-200 Pilot training of last February and the 2nd IALA-IHO Joint workshop on S-100/S-200 development. The session was closed by a presentation on the "Maritime Connectivity Platform" from AIVeNautics with the respective concept and working structure.

Two important sessions were dedicated to the topic "Digitalization in participating countries" with presentations from Bangladesh, Cambodia, Malaysia, Indonesia, Philippines, Sri Lanka, Timor-Leste and Viet Nam, informing the participants on the last developments and concerns about national projects on the maritime sector.

The session dedicated to Maritime Mobility included two presentations from the Korea Research Institute of Ships and Ocean Engineering (KRISO). One was related to "Maritime digitalization" with Eco-friendly and autonomous ships and the digitalization in maritime, introducing some technological trends such as the SMART-Navigation and related R&D activities, as well as the Global Maritime Digital Route Testbed project in ROK. The second was dedicated to the "Maritime Autonomous Surface Ships (MASS)" with the concept and global trends, providing examples of several global projects related to the respective development and the outline of the Korea Autonomous Surface Ship (KASS) project. This session included also a presentation on the "Korea GHG reduction effort" with the Eco-Friendly Ship concept and the respective changes in the maritime industry from HD Hyundai marine solution.

In the end of the Workshop, it was agreed that important topics were discussed including significant transformations progressing in some areas, such as the Maritime Autonomous Surface Ships and the e-Navigation that require the adaptation of structures, data, information and products to support them. The S-100 data model is a huge challenge, involving IHO, IMO, IALA, IOC, WMO and others. The Workshop also provided an important

Participants of the "Workshop on Enhancing Safety of Navigation with Maritime Digitalization".

opportunity to receive updated information about the situation, challenges and projects of some countries, and a significant opportunity for networking. Considering the success and importance of this workshops, ROK expressed the intention to continue with this initiative in the coming years.

Visit to the MASS Operation Test Center.

Increase participation by non-Member States

One of the important strategic goals of the IHO is to increase the participation of non-Member States in IHO activities. The CB Technical Visits and High-level Visits are an important instrument to continue the campaign to raise the awareness to developing Countries, Member and non-Member States of the IHO. From the 11 CB Technical Visits and High-level Visits planned for 2024 only 6 were executed with three Technical Visits to Guinea, Democratic Republic of Congo, Costa Rica, Guinea-Bissau and Cambodiaas well as two High-level Visits to Bahamas and Panama. The accession of the Republic of Kiribati to the IHO Convention as new IHO Member State on May 2024 brought the IHO Membership to 100 Member States, unfortunately two Member States remain suspended.

Capacity Building Management

Meetings with other organizations, funding agencies, private sector and academia

The IHO Capacity Building programme is a strategic objective of the organization that considers the hydrographic maturity of coastal States and provides targeted training, technical assistance and awareness-raising seminars and workshops aimed at improving the status of hydrographic surveying and nautical charting and the delivery of maritime safety information in regions, particularly for developing countries.

The IHO Capacity Building programme is funded from the IHO budget and is supplemented by additional financial support from Member States and RENCs (currently the Nippon Foundation of Japan, Republic of Korea IC-ENC and Canada, Belgium, Norway, Denmark and UK with funds for the Empowering Woman in Hydrography project) with in-kind support from Member States and from industry. Particular attention has been focused on the e-Learning, in order to optimize the limited funds available and also allow increase in the participation to the educational and training programmes from the Member States. In that regard, the 2nd IHO Assembly approved the proposal from the Republic of Korea to establish an IHO e-Learning Center that after a period of tests was established by the Capacity Building Sub-Committee. The e-Learning Center Steering Committee was created and now is working to get more contents to the Center that is operating with the technical and financial support from Republic of Korea.

The level of activity of the IHO Capacity Building (CB) Program in 2024 seems to have returned to the normal after the COVID 19 pandemic. CBSC decided that no more non executed activities will be carried over from the 2024 CBWP to the 2025 CBWP (Decision CBSC21/14). From the 25 funded non-earmarked activities of the 2024 CBWP only 15 were executed which represents an execution of 60% (58% of the allocated budget).. The 311,565 € of non-earmarked budget assigned to 2024 has benefited from the funds attributed by the IHO Secretariat, from the funds not used in CBWP2023 and also from additional funds made available by the Republic of Korea and IC-ENC for capacity building activities for the Regional Commissions (the so-called non-earmarked activities). Considering all the funds, the earmarked and the non-earmarked, the 2024 CBWP had a total budget of 1,101,788 euros.

One Director, one Assistant Director, one CB Assistant and some other members of the staff were directly engaged in supporting the CB programme.

Meetings with other organizations, funding agencies, private sector and academia

The 14th Coordination Meeting of the IHO-ROK Programme Management Board (PMB14)

The 14th Coordination Meeting of the Programme Management Board (PMB14) for the IHO-Republic of Korea (ROK) Programme of Technical Cooperation was held in person, at the Le Pavillon Hotel, New Orleans, USA from 23 to 24 January 2024, in accordance with the Memorandum of Understanding between the ROK and the IHO on support for the IHO Capacity Building Programme. Delegations from KHOA (ROK), USM (USA) and the IHO participated at the meeting. The IHO Secretariat was represented by IHO Director Luigi Sinapi and Assistant Director Leonel Manteigas. The Capacity Building Sub-Committee (CBSC) Chair, Mr Evert Flier also participated in the meeting. The PMB14 meeting was chaired by the IHO Director Luigi Sinapi.

The meeting started with the 2023 Financial Report and a presentation from the USM. The PMB14 examined 9

applications for the Category "A" Master of Science course in Hydrographic Science at the University of Southern Mississippi (USM) recognized by the IBSC (FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers). The Selection Panel, comprising representatives from the ROK, the IHO Secretariat, the USM and the Chair of CBSC as an observer, selected candidates from Nigeria and Greece each to enrol in the 2024-2025 program. In addition to the selected candidates, two alternates from Malaysia and Bangladesh were selected. Since 2013, the number of students who have graduated from the Category "A" Programme totals 23, including those from the 2023-2024 academic year, from 14 IHO Member States (Bahrain, Bangladesh, Estonia, Guatemala, Jamaica, Malaysia, Mauritius, Mexico, Nigeria, Philippines, Romania, Thailand, Tunisia and Türkiye).

PMB14 representatives at the Pavillon Hotel, New Orleans, USA.

PMB14 also approved the budget allocation for the programmes in 2024, already confirmed by KHOA with a Letter dated 17 January 2024. The budget includes the participation of 10 students in the a Course in Hydrography recognized with the Category "B", to be held at the Korea Hydrographic and Oceanographic Agency (KHOA) in Busan, ROK from 17 June to 1 November 2024, a new remarkable contribution (60.000 Euro) to support the IHO Capacity Building Work Programme 2024 (CBWP 2024) non-earmarked activities, and the participation at the 2023-2024 Graduation Ceremony planned for the 1st of August 2024 at the USM. During the meeting, a presentation on the recent decisions taken by the IHO

Visit to the USM facilities.

e-learning center Steering Committee was provided by Mr Evert Flier in his position as IHO e-Learning center Steering Committee Chair, and a discussion on how to enlarge the Category "A" Master of Science course in Hydrographic Science Alumni network was initiated.

On 25 and 26 January 2024, visits to the USM facilities distributed between the Port of Gulfport, the USM Gulf Park Campus and the Stennis Space Center in Mississippi took place. Prof Stephan Howden, Director Hydrographic Science Research Center of the USM and Prof Leonardo Macelloni, Associate Director Hydrographic Science Research Center of the USM demonstrated the functions of the new Marine Research Center (MRC) in the Port of Gulfport, the new programme to release the certificates on Unmanned Maritime Systems (UMS) performed at USM Gulf Park Campus, and then the oceanographic support facility at the Stennis Space Center. In addition, the visit provided the opportunity to the PMB14 representatives to meet with the current students of the Category "A" Master of Science course in Hydrographic Science, and report on the new challenges of the International Hydrographic Organization and the courses sponsored by Republic of Korea.

The PMB14 representatives and the current two sponsored students.

<u>The 13th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMPA Capacity Building Coordination Meeting</u>

The 13th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMPA Capacity Building (CB) Coordination Meeting was held on 13 and 14 May 2024 at the headquarters of the International Hydrographic Organization (IHO) in Monaco. The meeting marked the restart of the joint CB coordination meetings after four years of interruption caused by the COVID Pandemic, bringing together 16 representatives from eight organizations: IHO, IMO, WMO, IALA, IOC, IAEA, IALA, FIG and IMPA. The five representatives from IMO and WMO participated by videoconference. The IHO was represented by Director Luigi Sinapi and Assistant Director Leonel Manteigas, who chaired the meeting and acted as secretary of the meeting. The main objective of the meeting was to coordinate the efforts of international organizations for building and developing capacity in the maritime and

Participants at the 13thJoint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/ IMPA Capacity Building Coordination Meeting.

marine sectors, in line with the United Nations concept of "Delivering as One".

The notes from the previous meeting were discussed and all participants provided an overview of the activities in the areas of Capacity Building (CB)/Capacity Development (CD) within their respective organizations, with particular emphasis on projects developed, in progress and under consideration, achievements, challenges and lessons learned in executing CB/CD, particularly on those activities related to the recent initiatives related to the United Nations Decade of Ocean Science for Sustainable Development (2021-2030).

The intention to initiate a single common project in the CB/CD sectors was discussed and received common interest from all the organizations present. On this regard, IOC and IMO informed to have access to some funding mechanisms, whilst IMO has a specific division related with funding agencies and a Resource Mobilization Mechanism, which starts with the identification of the needs, the development of the project concept/proposal in the donors' format and then the identification of the donors.

The e-learning resources/platforms of the present organizations were also discussed, as well as possible new ways to collectively improve e-learning and share resources. IOC brought the example of its Ocean Teacher Global Academy (OTGA) hosting several courses from other organizations, such as the IHO courses on Tides and Water Level and Hydrographic Governance. It was decided that the organizations present would share links to their respective e-Learning portals/platforms, in order to facilitate access to their content by a wider international target audience.

IMO provided information regarding the dissemination of Maritime Safety Information (MSI), its impact on NAVAREA and METAREA Coordinators, and Search and Rescue services. IHO, IMO and WMO work collaboratively in the continuous revision and update of MSI technical documentation, including procedures and message formats. On GMDSS developments, SOLAS chapter IV was revised recently, including the recognition of new mobile satellite services and relevant obligations of SOLAS Contracting Governments with reference to the provision of radiocommunication GMDSS services. IMO is also working on the implementation of NAVDAT and coordination of services with NAVTEX. It is important to assist the Member States with the implementation of those satellite and terrestrial services and make them aware of recent, ongoing and upcoming developments. The implementation of S-100 is a concern to assure that the above services would be available by the agreed deadlines of ECDIS S-100 implementation.

IHO informed on the MSI courses and workshops delivered during the past 4 years, the activity and objectives of the IHO Sub-Committee on the World-Wide Navigational Warning Service and the importance of MSI as part of the IHO Strategic Plan. The Organizations decided to support IHO in providing those activities related with the MSI to be included in the IHO CB Work Programme for 2025.

Regarding the IMO Member State Audit Scheme (IMSAS), IMO informed on the evolution of the audit scheme and how an audit process is developed from planification to execution, including report and follow-up report phases. Further developments include the measures to enhance the effectiveness of the audit process, including corrective actions to be implemented after the completion of the entire process.

Finally, the IHO informed on the four instruments to assess the hydrographic capacity of a coastal state: A. The four phases of the States' Hydrographic Capacity, provided by the Regional Hydrographic Commissions (RHC) to the Capacity Building Sub-Committee; B. The update of IHO publication C-55 - Status of Surveying and Charting Worldwide; C. The High-Level Visits and Technical Visits reports; and D. The States' reports to the RHC.

It was concluded that the organizations should start to share the plans of their own activities since next meeting, trying to identify those activities that can be delivered jointly (e.g. the tides and water level course executed last November and sponsored by IMO, IOC and IHO and joint IMO/IHO/IALA technical visits). IHO, IOC and IALA expressed the interest in participating in the elaboration of the concept notes to participate in some big projects. It was unanimously decided to discuss on the possible ways to launch and fund joint activities of interest for all organizations present at the next meeting, with an action for IMO to identify projects where other organizations can be involved since the development of concept notes.

Follow-up of CB activities and initiatives

The IHO Secretariat, on behalf of the CBSC, continuously monitored CB activities and initiatives. One Director and one Assistant Director were engaged in this work. Additionally, the Secretary-General, both Directors and

the Assistant Directors continuously monitored CB activities undertaken in the RHC areas for which they provide an overview and advisory function.

Capacity Building Assessment

Technical and Advisory Visits

Execution of the technical and advisory visits executed in 2024 are summarized in the following table:

N°	Activity	RHC/Org	Implementation
A-01	Technical visit to Guinea	EAtHC	Led by Shom 17-22 March 2024
A-02	Technical Visit to Democratic Republic of Congo	EAtHC	Led by SHOM 13-17 January 2024
A-03	Technical Visit to Uganda	SAIHC	Led by UK 20-23 January 2025 (it was planned for 2024)
A-07	Technical Visit to Costa Rica (from 2023 A-05)	MACHC	Led by USA 20-23 August 2024
A-08	Technical visit to Guinea-Bissau (from 2022 A-06, 2023 A-10)	MACHC	Led by Portugal 17-24 February 2024
A-10	Technical Visit to Cambodia (from 2021 A-08, 2022 A-15, 2023 A-14)	EAHC	Led by Indonesia, China and Japan 25-26 September 2024
	High level Visit to Bahamas	MACHC	Led by IHO 15-19 April 2024
	High level Visit to Maritime Authority of Panama	MACHC	Led by IHO 2 December 2024

Capacity Building Provision

Raise awareness on the importance of hydrography

The IHO Secretariat continued to work on a schedule of visits to improve global awareness of hydrography, engage external stakeholders such as the United Nations, UN-GGIM, IMO, IALA, the European Commission, funding agencies, academia and industry in general. Unfortunately, some of the planned courses, workshops and seminars are still not being executed. This included visits to high level authorities in several countries, participation in RHC meetings and participation in various courses, seminars and conferences.

Revise M-2 – The Need for National Hydrographic Services

The IHO Publication M-2 was updated in 2018 as Edition 3.0.7, and is being updated with the accession of the new Member States.

Technical workshops, seminars, short courses

Execution of the seminars, workshops and short courses planned for 2024 are summarized in the following table:

N°	Event	RHC	Implementation
P-05	Seminar "20 Years of Capacity Building Actions in EAtHC Assessment and Prospect"	EAtHC	Led by SHOM, Casablanca, Morocco 29 April-3 May 2024
P-07	Seminar on Raising Awareness of Hydrography	MACHC	Led by UKHO, Panama 2- 3 December 2024
P-08	MSI (training on establishment of MSI structure and basic MSI procedure)	NIOHC/ RSAHC	Led by UKHO, Bahrain 28-30 October 2024
P-09	Seminar on Raising Awareness of Hydrography	SWAtHC	Led by Istanbul, Türkiye 8-10 April 2024
P-16	Workshop on ENC Quality Assessment	MBSHC	Led by SHODB, Istanbul, Türkiye 26 February-1 March 2024
P-27	Workshop on Disaster Response (former 2022-P5, 2023-P33)	SWPHC	Led by US Navy, Nadi, Fiji 26 February-1 March 2024
P-29	Workshop on MSI Development & Implementation (former 2023-P6)	MBSHC	Led by USA NGA & UKHO, Istanbul, Türkiye 07-09 May 2024
P-30	Raising Hydrographic Awareness (for SAIHC Associate and Non-Members) (former 2023-P7)	SAIHC	Led by UKHO, Kisumu, Kenya 16-19 September 2024

Coordination of Global Surveying and Charting

Publication C-55: Status of Hydrographic Surveying and Nautical Charting Worldwide

During the report period the Secretariat received more updates and confirmations to the entries in C-55.

The following table lists the countries for which updates to existing C-55 entries were received in 2024

IHO Member States	Non IHO Member States
Argentina	Benin
Brazil	Comoros
Cameroon	Congo
Colombia	Equatorial Guinea
Croatia	Gabon
Estonia	Gambia (Republic of The)
France	Guinea
Ghana	Liberia
Greece	Lithuania
Guatemala	Madagascar
India	Mauritania
Ireland	Senegal
Lebanon	Sierra Leone

Mauritius	Togo
Monaco	Antarctica
Morocco	
Pakistan	
Philippines	
Poland	
Slovenia	
South Africa	
Spain	
United Kingdom of Great Britain and Northern Ireland	

Ocean Mapping Programme

Conduct meetings of the Crowdsourced Bathymetry Working Group (CSBWG)

CSBWG15

The 15th meeting of the IHO Crowdsourced Bathymetry Working Group (CSBWG) was held in hybrid format from April 4 to6, 2024, at the IHO Secretariat in Monaco. The meeting was attended by 29 in person and 53 on-line. It was Chaired by Jennifer Jencks (USA) and supported by Belen Jimenez (NZ). The IHO was represented by Secretary General Mathias Jonas, Director Luigi Sinapi and Assistant Director Sam Harper.

The meeting began with opening remarks from IHO Secretary General Mathias Jonas, who emphasized the critical role of CSB in supporting sustainability and democratizing ocean mapping. The Chair welcomed participants and highlighted key updates, including the introduction of the new "CSB 101" document, designed as an entry-level guide for stakeholders. Attendees were reminded of the commitment to annual in-person meetings supplemented by interim virtual sessions. Updates to the group's Terms of Reference (ToRs) and work plans were also noted, ensuring alignment with the IHO's broader objectives.

IHO CSB Initiative Website

The IHO Secretariat provided an update on the CSB section of the IHO website. Efforts to improve accessibility, navigation, and cross-referencing with other platforms, such as CIDCO's site, were highlighted. The website is intended to serve as an institutional hub, complementing external resources and offering users a clear overview of CSB initiatives, related projects, and tools. Participants suggested integrating the new "CSB 101" document and promotional materials into the website to enhance outreach and user engagement.

Update on the IHO Data Centre for Digital Bathymetry (DCDB).

A brief was provided on updates and ongoing enhancements to the DCDB. Data can now be accessed via an API, and a review mechanism was introduced for datasets requiring publication approval. Work on integrating CSB data into the Autogrid application, which previously supported only multibeam data, is underway. Additionally, a next-generation map viewer is under development. Attendees discussed the importance of tracking data usage, including metrics such as downloads and user demographics, to guide decision-making. Suggestions were made to develop a dashboard to provide these insights, which would also support the outreach subgroup's efforts.

It was reported that the DCDB team is exploring collaborations with partners like Raymarine and CCOM, focusing on data-sharing mechanisms, submission guidance, and referencing schema. Efforts are also being directed toward building internal dashboards to better serve the CSB community and decision-makers. Participants emphasized the importance of user feedback to shape these initiatives effectively.

Workplan Items Updates

Maintenance of B-12. Guillaume Morisette reported on the maintenance of IHO publication B-12, noting that the current version is outdated. He recommended forming a dedicated project team comprising experts from hydrographic offices (HOs), industry, and academia to ensure rapid updates and innovation. This team would address governance challenges and propose a more agile maintenance approach. A proposal to create this team and define a product review cycle will be submitted to the IRCC for consideration.

Aligning CSB with the UN Decade. Evert Flier presented options for restructuring the CSB initiative to align with the UN Decade of Ocean Science. Two options were proposed: integrating the CSBWG work plan into the initiative or creating a distinct CSB Initiative work item. The group endorsed the latter, as it would ensure participants have access to all CSBWG outputs while maintaining a clear focus. This structure will be proposed to IRCC16, with further exploration of how CSB can formally align with the UN Decade's goals.

Addressing Policy and Regulatory Challenges. The Chair highlighted significant data restrictions due to member states' reluctance to permit the release of CSB data from their waters. Discussions centred on strategies to address these challenges, including engaging with Seabed 2030 and developing online platforms to showcase mapping progress and national acceptance of CSB.

Data Classification and Standards. Updates on data classification, industry engagement, and quality assurance tools were provided. Efforts are ongoing to evaluate CSB data within the DCDB for cartographic purposes and

to develop standards for describing CSB data on ECDIS systems. Participants underscored the importance of transparency and access to tools that enhance data usability and decision-making.

Regional Engagement. Belen Jimenez reported on strategies to support CSB coordinators in engaging regional hydrographic commissions (RHCs). Guidance documents for coordinators were updated, and efforts to raise awareness of CSB through capacity-building initiatives were outlined. The group agreed to organize a coordinators' meeting and share the outcomes to refine processes further.

Advancing Technology and Tools. Participants discussed potential software solutions to support HOs in adopting CSB, emphasizing open-source tools and standardized approaches. CIDCO, in collaboration with CCOM, is developing a Python toolkit for georeferencing soundings and performing advanced raytracing using sound velocity profiles. These efforts aim to lower barriers to entry and streamline the deployment of Trusted Node solutions. Work on the CSB data cycle was also reviewed, with Brian Calder presenting tools for filtering, processing, and correcting data. He advocated for using platforms like GitHub to improve workflows and ensure accessibility. A workshop on these tools will be organized alongside CSBWG16 to build members' technical capabilities.

Communication and Outreach. The Communications and Outreach Strategy was presented by Sarah Grasty, who emphasized the importance of clearly defining the CSB initiative's mission and outcomes. The strategy includes developing targeted outreach materials, leveraging existing networks, and identifying infrastructure for broader dissemination. Participants highlighted the need to prioritize communication efforts to support various work items and ensure consistency in messaging.

Recognition and Incentives. David Millar introduced a plan to recognize and incentivize CSB contributors, which includes distributing questionnaires to gather feedback from participants and Trusted Nodes. Despite a slow initial response, outreach efforts continue, with support from organizations such as the World Ocean Council. The findings will inform strategies to enhance participation and long-term engagement.

Seabed 2030 and Collaborative Efforts. Updates from Seabed 2030 highlighted its role as a Trusted Node for CSB data. Progress in processing datasets and integrating metadata was shared, along with ongoing collaborations with Smart Oceans–Smart Industries (SO-SI) and the World Ocean Council. A two-page flyer targeting the shipping industry was proposed to enhance engagement and participation.

The meeting concluded with reflections on the progress made and the challenges ahead. The Chair emphasized the need to develop metrics to measure progress against work item objectives and announced plans to implement a new reporting process for intersessional work. Participants expressed gratitude for the collaborative spirit of the meeting and the dedication of the working group to advancing CSB efforts globally.

- The main focus of the meeting were the updates to workplan items including outreach, B-12 maintenance and regional engagement.
- CSBWG15 discussed and agreed upon a new structure for the IHO CSB Initiative which will be submitted to IRCC for approval.
- It was noted that a key area where there is a need to upskill the community is the use of the opensource tools in development. As such, a workshop will be help ahead of CSBWG16 dedicated to the use of these tools.

Maintain IHO bathymetric publications

- **B-4** - Information concerning recent bathymetric data

The IHO DCDB is a recognized international repository for all deep ocean bathymetric data (greater than 100 m) collected by hydrographic, oceanographic and other vessels. It has also received significant contributions of crowdsourced bathymetric data. These data can be viewed from: https://maps.ngdc.noaa.gov/viewers/csb/ and http://maps.ngdc.noaa.gov/viewers/bathymetry/.

The DCDB data are publicly available and used for the production of improved and more comprehensive bathymetric maps and grids, particularly in support of the GEBCO Ocean Mapping Programme. Significant work has been undertaken to improve the searching, viewing and accessibility of the DCDB data, including a new data ingest pipeline for Crowdsourced Bathymetry.

- **B-6** - Standardization of undersea feature names

Edition 4.2.0 of Publication B-6 on the Standardization of Undersea Feature Names entered into force in October 2019. This publication provides guidelines for naming features, a naming proposal form and a list of generic

terms with definitions with significant clarifications and improvements compared to the previous Edition that was issued in 2013. The work continues within SCUFN to improve the geometric parameters of some specific features (Seamount versus Ridge for instance) but nothing is mature enough to move to another Edition of B-6 yet.

"The Cookbook for Generic Terms" is a much more comprehensive catalogue of all morphologic definitions of undersea features, compared to B-6, that will benefit soon from the views of other subject matter experts (Geoscience Australia, BGS, et al.) already involved in the development of a Two-Part Seabed Geomorphology Mapping Scheme for Multidisciplinary Applications.

SCUFN agreed that an inter-comparison of these definitions of generic terms was essential to ensure consistency in the future, as B-6 is not self-sufficient as such, while recognizing that it is the only authoritative international guidelines available to proposers at present.

The SCUFN Secretary set up a new Repository dedicated webpage in the IHO SCUFN website to collect all complementary information to Publication B-6. With lessons learned from further experimentations in naming proposals reviews, the final objective is for SCUFN to prepare new amendments for more robust generic terms definitions in B-6, to be published in a new Edition 4.3.0 when appropriate.

- **B-8** - GEBCO Gazetteer of Undersea Feature Names

The database of the on-line GEBCO Gazetteer of Undersea Feature Names, developed by the IHO DCDB (co-located at one of the US National Centers for Environmental Information (NCEI), NOAA), is maintained by the IHO Secretariat through contract support to the former SCUFN Secretary.

SCUFN commended NOAA, KHOA, and their software developing teams for the excellent work madesince the last meeting in 2022. A very comprehensive status report was provided.

SCUFN noted that continued improvements and enhancements of the Gazetteer will remain incremental, and that an annual funding of 50K/year had been secured and will be used to:

- Perform annual maintenance and upgrades (when necessary).
- Implement a limited number of requested enhancements.
- Progress the development of the GEBCO Gazetteer and KHOA Beta-Gazetteer integration.

Mr Chris Slater, Lead Software Engineer (NOAA) recommended that:

- SCUFN Members test Gazetteer v5 and notify the IHO DCDB of any issues;
- SCUFN members provide support and feedback when needed during development of the

GEBCO Gazetteer and KHOA OWS integration;

- KHOA OWS developers continue to test the Gazetteer v5 test environment and let GEBCO Gazetteer developers know of any issues, changes, or questions;
- SCUFN Members let GEBCO Gazetteer developers know when an upgrade to Gazetteer v5 is appropriate.

- **B-9** - GEBCO Digital Atlas

IHO publication B-9 - GEBCO Digital Atlas (GDA) was previously a two-volume DVD and CDROM set which contained: the GEBCO global bathymetric grid at 30 arc-second intervals; the GEBCO One Minute Grid global bathymetric grid, a global set of digital bathymetric contours and coastlines, the GEBCO gazetteer of undersea feature names and a software interface for viewing and accessing the data sets. However, the modern incarnation of the Digital Atlas is a series of digital datasets and products that are available for download from the GEBCO website. As a consequence, it was anticipated that Publication B-9 would be cancelled, however on further investigation it was agreed that the B-9 designation should somehow be attributed to a Digital Object Identifier. This work is ongoing and is due to be reported to GGC42.

- **B-11** - GEBCO Cook Book

The GEBCO Cook Book (IHO publication B-11) is a technical reference manual that has been developed to assist and encourage participation in the development of bathymetric grids. It is an important GEBCO reference document that is used by academic institutions and hydrographic organizations. The Cook Book covers a wide range of topics such as data gathering, data cleaning, examples of gridding, and provides an overview of different software applications used for producing bathymetric grids. In 2024, the Cook Book Editor in Chief moved on from their current role and the Editorial Board is currently looking for a new Chair. Work on updating the cookbook will continue in 2025.

<u>Maintain liaison with RENCs</u>

- *14th Steering Committee of the International Centre for ENC Distribution (IC-ENC), Indonesia,Bali, 16 – 18 July 2024*

The IC-ENC Steering Committee was hosted in Bali, Indonesia from July16-18. IC-ENC Members attended both in person and virtually. The IHO attended as an Observer and was represented by Dr. John Nyberg. There were 44 Member States in attendance, both virtually and in person.

The Chair, Captain Burak Inan (Türkiye) welcomed the participants, presented the meeting protocols, and

adopted the agenda. The Chair's remarks were followed by a welcome address from VADM Budi Purwanto. VADM Purwanto welcomed the meeting participants to Indonesia and noted that they are the newest member of IC-ENC and are eager to work with the other members to improve global cooperation with regard to navigation services collectively. Admiral Angus Essenheigh then addressed the meeting, thanking the hosts and the Chair. He also expressed his appreciation for the Chair team, IC-ENC Staff, and noted the extensive agenda. Admiral Essenheigh also expressed the UKHO's continued commitment to supporting the IC-ENC and its members to address shared challenges.

The Chair presented an extensive introduction to the IC-ENC meeting, acknowledging the importance of the "opt-in" fund toward achieving the objectives for 2026. He hoped for active contribution from all Members during the SC25 meeting, noting this was an important time to shape future strategies and priorities. He stated that he believes, "those who are left behind are more important than those at the front." and commented that the SC25 discussion group format is being used to allow all voices to be heard.

New members Dubai and Thailand were welcomed to the IC-ENC, making the full membership of the IC-ENC 52. Both new members gave brief introductions and stated their enthusiasm for being new members of the IC-ENC.

James Harper (IC-ENC General Manager) reviewed the most recent status of IC-ENC actions from the last IC-ENC Steering Committee meeting. Notably, the IC-ENC Funding Project Team has made substantial progress. He then followed with a high-level overview of IC-ENC in order to set the scene regarding IC-ENC's current status, including finance and resources. The current IC-ENC folio stands at 12,650, and the number in the non-ECDIS is now about two thirds of this. A healthy IC-ENC budget was presented, including a significant midyear forecast for the "Activity Fund" budget to be used for Member benefits, e.g. standards development, and global capacity improvement. Mr. Harper emphasized the importance of the IC-ENC community and the importance of learning together. He introduced the concept of the net promoter score, which is meant to indicate the overall success of the IC-ENC. The score has improved over the past year and was seen as an indicator of an indicator of IC-ENC membership value.

An overview of the ENC, S-100 and WENDWG environment was presented by Su Marks (IC-ENC). Ms. Marks gave an excellent overview of the work of the IHO ENCWG particularly as it relates to IC-ENC interests. The IC-ENC conversion training was highlighted as an important support opportunity for IC-ENC members. The training has taken place both in person and online. With regard to the S-100 environment and IC-ENC Services, the S-100 roadmap was presented, and the 2026 deadline was emphasized. IC-ENC recognized the importance of being able to "feed" the market with S-100 products and services as they become available. S-101, 102, 104 and 111 have been developed and built into the IC-ENC workflow tool. S-122 is in scope but currently remains outside the automated workflow. Challenges include product specifications that are at different levels of maturity, support for dual fuel production, insufficient validation tools, and a lack of test datasets. IC-ENC intends to work on all of these.

Excellent questions were presented to the IHO regarding the level of detail presented to the IC-ENC membership and the focus of their work. The IHO representative indicated that distribution has been a key concern of the future customers of S-100, including security. There was also an interest in seeing the S-100 roadmap updated on a more regular basis. The IHO representative was pleased to note the importance of the IC-ENC contribution to standards development and stated that it was a critical component of achieving S-100 progress to date.

IC-ENC presented their achievements regarding S-101 conversion training around the world through its two workshops in 2024. The IC-ENC learning cloud has also been launched and includes different types of production software training to enhance the learning experience.

The IC-ENC members broke into groups to share challenges regarding S-100 implementation with the idea that results would be included in the next iteration of the IC-ENC Strategic Plan. Challenges included everything resource limitations, need for additional training, software accessibility and readiness, and more.

Presentations from various breakout groups which discussed IC-ENC's ENC and S-100 future services were

presented. Challenges included availability of resources, advocacy information around S-100, training, and understanding of cost-benefit-advocacy strategies to name a few. Gridding and the use of production software was highlighted as an important training need. The future of distribution, particularly with regard to different product types, was discussed.

The IC-ENC agreed to support a proposal from the US to explore the possibility of supporting automated paper chart production. It also agreed to support a proposal from Türkiye to support production training for IC-ENC Members.

IC-ENC distribution and revenue management was then discussed in plenary with an overview of its current status including the current VARs. The discussion also included details about the IC-ENCs expanding ECD service for the sub-ECDIS market, indicating positive developments for distributing ENCs to markets other than ECDIS.

Belgium presented their plans for an ECD service for Belgian leisure crafts. Current Belgian law requires a paper chart or a "digital alternative" but many are using unofficial apps. A survey is underway which intends to raise awareness regarding mandatory requirements and how to access official products. It was recognized that regulatory adjustments need to be made in many places around the world in order to realize the true value of electronic charting services for the sub-ECDIS market.

IC-ENC agreed on key messages around S-100 that were aimed at IC-ENC adaptability with respect to offering new services and how they will be distributed. They then discussed a series of "Guiding Principles" which aim to put a focus on supporting a wide number of potential users, financial transparency and auditing/assurance, acting as a group, prioritizing S-100, and general IC-ENC service improvements.

The final day was reserved for decisions around operations, governance, finance, and community. The IC-ENC spent the morning discussing internal finance matters.

Türkiye gave a presentation on the results of the S-101 conversion workshop held in Istanbul earlier this year. The workshop resulted in very positive feedback and was the first training of its kind, a regional approach funded by a RENC. The need for more Phase 3 training was firmly supported by Türkiye. There was support for replicating the workshop's approach in the future. The IC-ENC also agreed to develop proposals to support future unfunded IHO capacity building events.

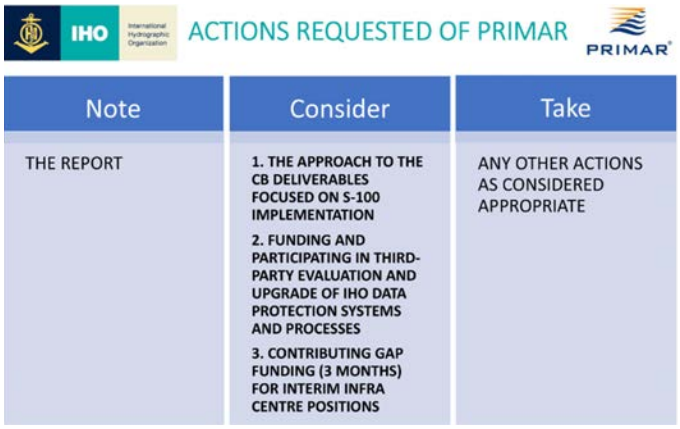
IC-ENC presented their progress on secondment opportunities and future opportunities. Secondment applications for hosting secondees are welcome anytime.

The IC-ENC broke into groups to discuss potential uses of money for technical and capacity building opportunities. Some suggestions include purchasing production software for member states, Cat B cartographic training, support for IHO standards and infrastructure, and potential alternative means for distributing Member funds for the benefit of Members. There was general support for the IC-ENC to take a whole contribution approach for the "Activity Fund" and that the IC-ENC will continue its existing process for Fund proposals.

An IC-ENC Strategic Plan and priorities were discussed, and the new plan will be drafted following the meeting.

- *31st PRIMAR Advisory Committee (PAC31) Helsinki, Finland -12 – 14 November 2024*

The PAC31 meeting took place from 12 to 14 November in the Katajanokan Kasino in Helsinki, Finland, organized by TRAFICOM (Finnish Transport and Communication Agency). The meeting was attended by 29 participants from 9 PRIMAR Member States (Albania, Croatia, Estonia, Finland, France, Latvia, Norway, Poland, Sweden) and PRIMAR. The IHO Secretariat was represented by Director Luigi Sinapi.



IHO Secretariat Report – Actions requested of PRIMAR.

The National Hydrographer of Finland opened the meeting remembering the importance of the implementation of S-100 roadmap and the production and the injection to the market of the S-1xx products related to the Phase 1. The IHO Director presented the actions and decisions of interest to PRIMAR at the last 8th IHO Council meeting . He also highlighted the importance of three initiatives – IHO Capacity Building Work programme's activities focused on the S-100 transition and implementation, upgrade of the IHO data protection processes, gap funding for interim (3 months) S-100 Infrastructure Centre – focused on the implementation of the S-100 standard, requesting the support of PRIMAR to discuss with the "Fund Generation Project Team", established under the Inter Regional Coordination Committee (IRCC) of IHO, where PRIMAR is represented.

Amongst the topics discussed during the meeting, the following ones deserve a particular mention:

Establishment of a PRIMAR Capacity Building Fund, by allocating part of the 2023 and 2024 surplus and a set percentage point of the annually generated surplus

beyond cost recovery. Support from the PRIMAR S-100 CB Fund will be based on decisions made by the PRIMAR S-100 Capacity Building Fund Steering Committee (CBFSC), consisting of PAC Chair, PAC Vice Chair, Director PRIMAR, ECC Managing Director and any other interested Member States. Applications regarding courses, training, activities and needs requested to be sponsored by the PRIMAR S-100 CB Fund shall be forwarded from a PRIMAR Member State to the PRIMAR Strategic WG (PSWG) and CBFSC, based on a standard CB application form.

- Update of the PRIMAR Strategic Plan approved in 2023, with reference to the Risk Analysis and the PRIMAR S-100 Roadmap, aligned with the IHO S-100 Implementation Strategy Ver. 3.0 Ed. October 2023.

- Consideration on the use of IIC Academy (as the training arm of IIC Tech) which provides S-5B and S-8B programs that are recognized by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, to run onsite conversion training for PRIMAR Member States in 2025.

- Provision of online training modules on S-100, S-101, S-102, S-111 (and S-104 with modules under development) via the PRIMAR Training Portal.

PRIMAR Training Portal.

- Support to the production of the coming operational version of S-128, in consideration of the central role of RENCs in S-128 production and distribution.

- Development of an IHO Scheme Administrator application compliant with S-100 Ed. 5.2.

- Exploration and visualization of novel spatial-temporal aspects of the S-100 series dataset in a 3D view.

- Adjustment to the distribution solutions for new user segments (i.e. non navigational, non-SOLAS, onshore licenses, etc.) through a broader products portfolio (ONE-STOP-SHOP), the development of new licencing conditions and the expansion and improvement of more self-service solutions.

- Preparation for the provision of SECOM compliant distribution services within IMO e-navigation, making available a SECOM viewer.

- Improvement of PRIMAR marketing/visibility – internal and external – by creating in-house/on the web films.

- Support to the BALTIC-SEA e-NAV project to be aligned regionally with the IHO Sea Trial Area concept.

- Investment on Artificial Intelligence (AI), to drive efficiency and manage costs in alignment with PRIMAR Strategy, improve overall productivity, handle criteria customer inquiries and increase automation.

Before ending the meeting, it was announced that Morocco will soon sign an agreement with PRIMAR to become a PRIMAR Member State. Then, PAC announced Mr. Magnus Wallhagen from Sweden as the new PAC Chair and Mr. Olavi Heinlo from Estonia as the new PAC Vice-Chair, both for a two-year period.

PAC31 participants – 12-14 November, Helsinki, Finland.

Outcomes:

- Full awareness that the successful implementation of the S-100 is possible only by having the RENCs onboard, as they can assure the “Coordinated Implementation of Services” and the “Development of Global Distribution Capacity” of the S-100 products and services, as stated in the IHO S-100 Implementation Strategy.

- A PRIMAR S-100 Capacity Building Fund with the purpose of supporting IHO S-100 related capacity building activities was established. Priority is given to the S-100 CB projects related to PRIMAR Members States, secondarily to official IHO S-100 CB projects/activities, in accordance with proposals submitted to the PRIMAR Member States to an ad-hoc PRIMAR S-100 Capacity Building Fund Steering Committee (CBFSC).

- In the coming years, PRIMAR will support both the intake and distribution of S-57 and S-101 data through its own various channels for as long as possible, as a S-100 Centre of Excellence, using Artificial Intelligence (AI) and acting as ONE-STOP-SHOP as the most viable solution to get as many S-100 products as possible through the PRIMAR value chain.

Contribute to outreach and education about ocean mapping

Visit to the University of Southern Mississippi (USM) facilities and the Graduation Ceremony of the Category "A" Master of Science in Hydrographic Science at the University of Southern Mississippi, USA, 1 – 2 Aug 2024.

The Graduation (Recognition) Ceremony of the Category "A" Master of Science in Hydrographic Science and Category "B" Bachelor of Science in Marine Science (Hydrography) was held at the University of Southern Mississippi (USM), USA on 2 August 2024. Two students from Mauritius and Türkiye graduated from the Category "A" Master of Science in Hydrographic Science Programme under the IHO-Republic of Korea (ROK) Programme of Technical Cooperation.

Graduates and representatives from USM, IHO, ROK, NOAA and US Navy .

The ceremony was hosted by Dr Chris Winstead, Dean of the College of Arts and Sciences of the USM, and moderated by Prof Stephan Howden, Director Hydrographic Science Research Center of the USM. Ten students graduated from the Master of Science in Hydrographic Science this year, including the two students supported by the IHO-ROK Programme and one student supported by the U.S. Navy. Two more students graduated from the Bachelor of Science in Marine Science. In addition to many officials from the USM, representatives from Mississippi State and Congressional Delegation, NAVAL Oceanographic Office, Saildrone and TSHOA and U.S. Navy, Mr Jongwook Choi, First Secretary of the ROK Embassy in the U.S., Rear Admiral Ben Evans, Director, NOOA Office of Coast Survey and Cdr (ret) Matt Borbash Deputy Hydrographer of the U.S. Navy attended the ceremony. The IHO Secretariat was represented by Director Luigi Sinapi.

Details of the Ceremony.

Since 2000, the USM has been organizing the Category "A" Master of Science course in Hydrographic Science, recognized by the IBSC (FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers). The IHO-ROK Technical Cooperation Programme under the Memorandum of Understanding between the IHO and ROK commenced with supporting students to attend the course from 2013 to contribute to the IHO Capacity Building Programme.

IHO Director and ROK representative with the IHO-ROK graduates Mr Hunish Kumar Mattarooa (Mauritius) and Lt Mustafa Kanat (Türkiye).

The number of successful graduate students from the programme totals 23, including the two from Mauritius and Türkiye (2023-2024 academic year), and from 14 IHO Member States (Bahrain, Bangladesh, Estonia,Guatemala, Jamaica, Malaysia, Mauritius, Mexico, Nigeria, Philippines, Romania, Thailand, Tunisia and Türkiye).

Dr Chris Winstead, Dean of the College of Arts and Sciences of the USM congratulated the graduates and highlighted that the Joint International Hydrographic Applied Science Programme (JIHASP) is a cooperation between the USM and the U.S. Navy, Naval Meteorology and Oceanography Command celebrating this year its 25th class. With the first class graduating in July 2000,

the upcoming 2024 graduating class represents the successful completion of degree requirements by 258 students, including 73 international students from 37 different countries.

Rear Admiral Ben Evans recalled the recent efforts made in increasing the knowledge of oceans' floor, adding – in 2024 – an area of roughly the dimensions of the European Union and bringing the total percentage to 26.1%. A tremendous challenge is still awaiting the hydrographers: to make the world's leaders more aware of the oceans and the consequences that this massive gap has on their fundamental understanding. In fact, as climate change is causing sea level rise and an increase in the frequency and intensity of severe weather conditions, coasts are experiencing a growing threat of inundation for high tides and storm surge and these impacts don't end in the coastal zone, and hydrography can help in accurate forecasting extreme events, requiring high resolution in surveying coastal areas and shallow waters. He finally underlined the importance of hydrographic data that requires to be processed and reported in a way that meets the goal to get once and use many times.

First Secretary Mr Jong Wook Choi from the ROK Embassy to the USA congratulated with the graduated students for the passioned efforts in achieving the important recognition in hydrography, to contribute to the safety of navigation and the conservation and use of the oceans. He finally thanked the teaching body of the USM, highlighting the significance of collaboration of the three organizations (ROK, IHO and USM) behind the Category "A" Master of Science in Hydrographic Science.

IHO Director Luigi Sinapi thanked the USM and the Republic of Korea for this successful program since the 2013-14 academic year, highlighting that nowadays, the marine and maritime domains are in the midst of radical changes which will propel navigation forward and open a realm of new possibilities, where hydrographers have a central role in facilitating the omni-comprehensive digital representation of the Ocean. The uses of hydrographic information have expanded from just nautical charts and services to including a broad range of stakeholders and marine and maritime sectors. In addition to that, the International Hydrographic Community is fully committed in revolutionizing the approach to Hydrography, through a massive recourse to autonomous sea operations requiring machine-to-machine data exchange and automated decision-making, and a new standardized and real-time approach to safety of navigation, through the use of new products and services under the framework of the new Universal Hydrographic Data Model S-100, which will become operational in 2026.

Visit to the USM facilities of Stennis Space Center.

Cdr (ret) Matt Borbash, Deputy Hydrographer of the U.S. Navy presented the "Hydrographer of the Navy Education Award" to Mr Vincent Carl Ceci, as Mr Ceci had shown outstanding performance during the 2023-24 academic year.

Finally, Dr David Wells, professor Emeritus, University of New Brunswick, Canada, in his recorded remarks of the 25th graduating class of the JIHASP, highlighted the role of IBSC and the essential skills that a surveyor must have for a successful carrier: capacity to work in a team, experience and integration.

The ceremony was preceded (1st August) by a meeting with the students of the 2023-24 Category "A" Master of Science in Hydrographic Science, who illustrated the projects executed at the completion of the course, and then by a visit to the USM facilities at the Stennis Space Center in Mississippi. Dr Stephan Howden, Director Hydrographic Science Research Center of the USM and Dr Leonardo Macelloni, Associate Director Hydrographic Science Research Center illustrated the functions of the oceanographic support facility and the respective laboratories at the Stennis Space Center.

High-Level Visit to the Bahamas, Nassau, THE BAHAMAS.

Following an invitation from the Bahamian Ministry of Foreign Affairs dated 7th February 2024 and the policy to enlarge the IHO membership, the IHO Director Luigi Sinapi paid a High-Level Visit to the Commonwealth of The Bahamas from 15 to 19 April. The Visit was aimed at resuming discussions on The Bahamas' potential membership to the International Hydrographic Organization, the progress made in the maritime sector of The Bahamas, the way forward to further strengthening the national capacity in hydrography and the future of The Bahamas' charting authority.

During the Visit, IHO Director Sinapi met with the Honourable Wayne Munroe, M.P., Minister of National Security, the Parliamentary Secretary of the Ministry of Foreign Affairs, Mr. Jamahl Strachan, the Director General of the Ministry of Foreign Affairs, Mrs. Jerusa Ali, The Honourable Senator Ryan Pinder, Attorney General and Minister of Legal Affairs, The Honourable Wayne Munroe K.C., Minister of National Security, the Honourable Vaughn Miller, M.P., Minister of Environment and Natural Resources and many other intra-ministerial stakeholders from Maritime & Oceans Affairs Bureau, Royal Bahamas Defence Force, Bahamas National Geographic Information Services, Department

IHO Director visiting the Bahamian Ministries of Foreign Affairs, Legal Affairs, National Security and Environment and Natural resource.

of Environmental Planning and Protection, Port Department and Bahamas Maritime Authority.

The discussions were focused on the role of Hydrography, IHO and Meso-American and Caribbean Sea Hydrographic Commission (MACHC) in the sustainable development of the Caribbean Ocean economy, the importance of Hydrographic Services at national, regional and international levels, and their role in the sustainable development of national economies, with reference to the economy of The Bahamas and the opportunity to improve the current Maritime National Policy.

The importance of having a hydrographic capacity for becoming a Maritime Hub in the Caribbean region was discussed, as a fundamental means to obtain accurate knowledge of the dynamics of the sea, its resources, limits, and natural changes, to achieve the following two main purposes:

- To optimize The Bahamas' value chains like Tourism, with the construction of new ports and coastal constructions to receive cruise ships with larger capacities and more places to entertain like restaurants and hotels. It also assures the wealth of natural resources like beaches, corals and coastline that are the main reason tourists want to visit The Bahamas, looking for a safer navigation to reduce accidents at; and,

- To achieve a sustainable marine management that allows for the efficient exploitation of marine resources, protection of the marine environment and permanent control of erosion and sedimentation phenomena that affect the coastline.

Following the interest of the Bahamian Authorities, the IHO Director provided also a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis to become a member of the IHO, highlighting the dependency of a third part for the collection of specific ocean data, due to the lack of technology, trained personnel or a specialized infrastructure, and the threats that could limit this process. It was affirmed that the IHO can accompany and assist The Bahamas throughout the process, thanks to the consolidated IHO Capacity Building program and the international support from other IHO Member States. The Bahamas Information Services released a press release on the Visit.

Finally, the benefits to become an IHO member were summarized as follows:

- Access to Training and Education opportunities.
- Access to a global community of experts.
- Build capacity to address national ocean priorities.
- Have a voice in the development of standards for safety of navigation and ocean data.
- Improve safety of navigation in the geographical region of belonging.
- Access to global best practices.
- Become a Member of IHO Council thanks to the hydrographic interest.

Press Release

Director of International Hydrographic Organization Making an Official Visit to The Bahamas

Authored by: Bahamas Information Services
Source: Bahamas Information Services
Date: April 16, 2024

NASSAU, Bahamas – The Director of the International Hydrographic Organization (IHO), Luigi Sinapi is making an Official Visit to The Bahamas from April 15 – April 19, 2024.

During his visit, the Director paid a courtesy call at the Ministry of Foreign Affairs (MFA) on Tuesday, April 16, 2024. He met with the Ministry's Parliamentary Secretary, Jamahl Strachan, M.P. and Director General, Jerusa Ali.

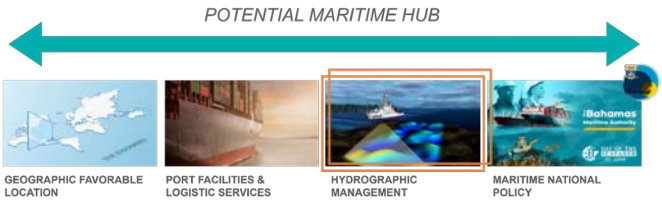
Directly, following the courtesy call, Mr. Sinapi met with Intra-Ministerial Stakeholders to discuss the benefits of The Bahamas joining the IHO.

He has been the director of the IHO for six years and is responsible for coordinating IHO's programme. Before becoming the Director of the IHO, Mr. Sinapi served as Director, Italian Hydrographic Institute from October 2015 to July 2020. He also served in the Italian Naval Academy.

The IHO is an intergovernmental organization that works to ensure all the world's seas, oceans and navigable waters are surveyed and charted. Established in 1921, it coordinates the activities of national hydrographic offices and promotes uniformity in nautical charts and documents. It issues survey best practices, provides guidelines to maximize the use of hydrographic survey data and develops hydrographic capabilities in Member States.

Pictured from left: Foreign Affairs Officer, Maritime and Ocean Affairs Bureau, Keesha Claudia Bethell; Director General, MFA, Jerusa Ali; Director of the International Hydrographic Organization (IHO), Luigi Sinapi; Permanent Secretary, MFA, Melvin Seymour; Parliamentary Secretary, MFA, Jamahl Strachan, M.P. and Kimberley Lam, Head, Maritime and Ocean Affairs Bureau.

Press release from the Bahamas Information Services.



The Bahamas as a potential Maritime Hub in the Caribbean Sea.

- Preparedness for IMO audits.

and the necessary procedural steps to join the IHO were discussed.

At the end of the individual meetings, the intention of the Bahamian authorities to support the internal process for joining the IHO was confirmed at all levels, as well as the intention to start the familiarization with the hydrographic community through the participation at the MACHC works as Associate Member. It was also agreed that the IHO Secretariat will continue to follow and support the Bahamian authorities along the next

IHO Director and MFA Director General signing the "Concept Note".

procedural steps to join the IHO, providing all the necessary assistance.

Finally, to provide a "Way Ahead" for strengthening the Bahamian national capacity in hydrography, outlining the future of The Bahamas' charting authority, and consolidating the progress made in the maritime sector of The Bahamas, a "Concept Note" was signed by the IHO Director and the Director General of the MFA of The Bahamas. The following are the agreed recommended actions to be taken by the Government of The Bahamas in the next future:

1. Consolidate The Bahamas' presence at the regional level by joining the Meso-American and Caribbean Sea Hydrographic Commission (MACHC) as an Associate Member, through the signing of the MACHC Statutes.

2. Participate actively in the activities of the IHO's Capacity Building Programme for the MACHC Region.

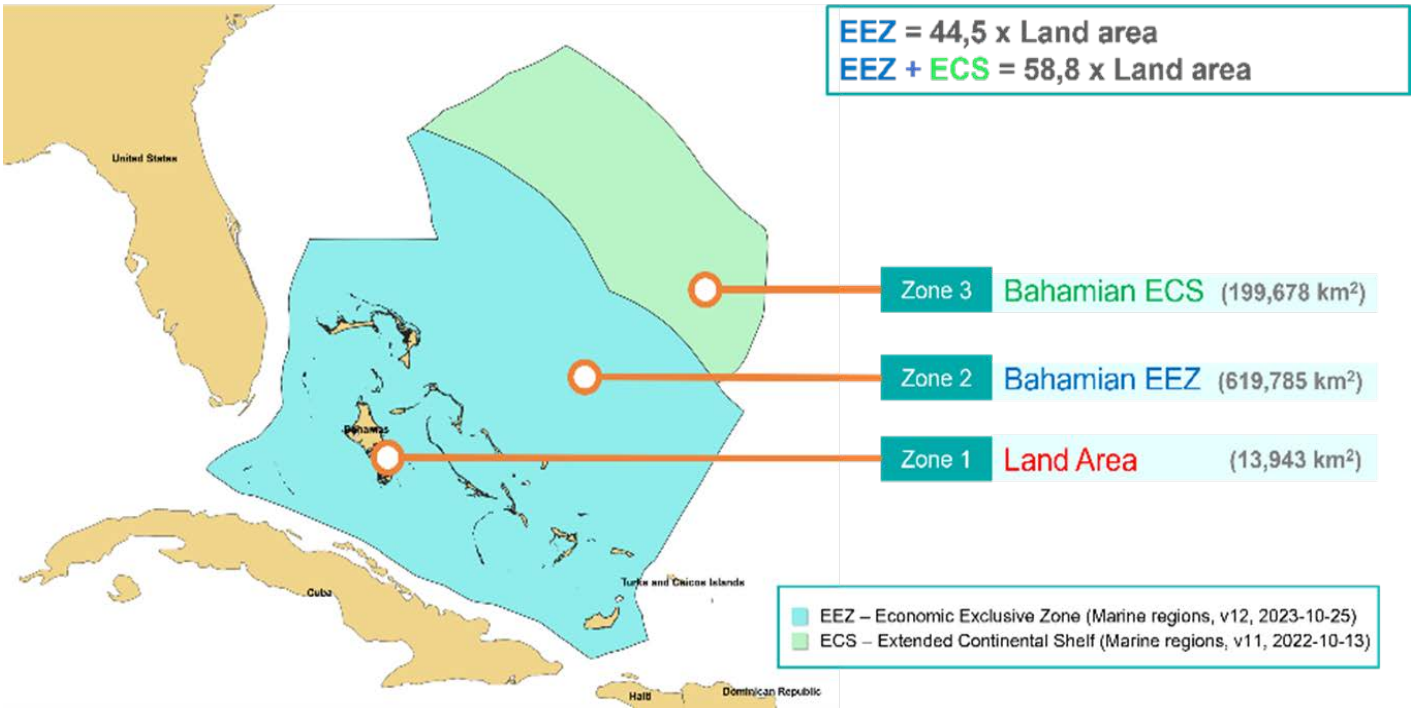
3. Plan - in cooperation with the MACHC Capacity Building coordinator - an IHO Technical Visit to assess the perceived present and future hydrographic requirements of The Bahamas, to prepare the Technical Status Report and identify the various areas of work that a national Hydrographic Service should carry out and the existing gaps.

4. National Hydrographic Coordination Committee (NHCC) to build in collaboration with other stakeholders (Academia, Research centres, Industry etc,) outreach programmes (workshops / announcements / social media) to raise awareness of the importance of Ocean sciences / hydrography.

5. Take steps to identify and allocate appropriate funding to support the creation of a National Authority and a National Hydrographic Service.

6. Implement the phases reported in the IHO Publication M2 Ed. June 2018 – The Need for National Hydrographic Services for the creation of a National Hydrographic Service.

7. Ministries of Foreign Affairs, Legal Affairs, National Security, Environment and Natural Resources, in cooperation with the Office of the Prime Minister, to



IHO Director visiting the Bahamian Ministries of Foreign Affairs, Legal Affairs, National Security and Environment and Natural resource.

present to the Parliament a proposal of an internal regulatory instrument (e.g. a Law) to approve the "Convention on the International Hydrographic Organization" done in Monaco on 3 May 1967, and as amended by the Protocol dated 14 April 2005 that entered into force on 8 November 2016.

8. Ministry of Foreign Affairs to send a Note verbale submitting a Letter of Accession to the IHO Convention to the Principality of Monaco through diplomatic channels.

Maintain relations with Nippon Foundation for the management of GEOMAC (Geospatial Marine Analysis and Cartography) program at the UKHO.

Visit to the 16th course of the IHO-Nippon Foundation GEOMAC project - UK Hydrographic Office, Taunton, UK, 23 October 2024

IHO Director Luigi Sinapi, Assistant Director Leonel Manteigas and Project Officer from Japan Masanao Sumiyoshi visited the UK Hydrographic Office (UKHO) on 23 October 2024 to have a meeting with the UKHO staff and meet and deliver presentations to the seven trainees of the 16th course of the IHO - Nippon Foundation GEOMAC (Geospatial Marine Analysis and Cartography) project to enrich their knowledge of the IHO and on the project.

The GEOMAC project, funded by the Nippon Foundation of Japan, provides training in nautical cartography and data assessment that is recognised by the FIG-IHO-ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) as Category "B" programme on nautical cartography. The programme is delivered by the UKHO and consists of eight modules and a final project, each module lasts between one and three weeks. The 16th course is taking place from 15 July to 13 December 2024 and is attended by ten trainees, seven supported by the project from IHO Member States, namely Bangladesh, Cuba, Fiji, Lebanon, Philippines, Tunisia and Venezuela (Bolivarian Republic of).

The trainees and trainers of the 16th GEOMAC course with the IHO visiting team.

During the meeting with UKHO training staff, the status and issues of the current 16th GEOMAC course were considered along with the plans for the 17th GEOMAC course next year, including the timing of the call for the applications and the duration of the training course., The future challenges of the GEOMAC Programme were discussed with the need to renovate the project with Nippon Foundation in 2026 and also the UKHO to renovate the recognition of the programme in 2027.

The presentations delivered by the IHO team covered various topics related to hydrography. Director Sinapi

highlighted the importance of hydrography, the role of IHO and the recent challenges faced. Assistant Director Manteigas underlined the objectives, activities and partnerships of the IHO Capacity Building and the impact of the GEOMAC programme on the Capacity Building Programme. Project Officer from Japan Sumiyoshi described the JCBP/CHART/GEOMAC project history and the evolution over 15 years, the importance of the alumni network and the expectations related with the remaining training and post-training activities of the trainees.

Presentations by the IHO visiting team.

In response, the trainees sincerely thanked the Nippon Foundation, UKHO and IHO for the opportunity to develop their knowledge and expertise in the field of nautical cartography and other relevant fields and discussed with the IHO visiting team the next generation of nautical chart and information products (such as those based on the S-100 data model) and possible improvements to the training programme.

The trainees were encouraged to contribute significantly to the nautical cartography in their countries, regions and globally, and to strengthen the IHO-Nippon Foundation alumni network, after returning to their home countries. At the end of this training course, the number of graduates will exceed 100, further strengthening the global community of nautical cartographers.

Outcomes:

- A delegation of the IHO Secretariat visited the UKHO to meet and deliver presentations to the trainees of the 16th GEOMAC course, which is recognised as a Category “B” programme in nautical cartography. The importance of hydrography, capacity building and alumni networking were emphasized, and the trainees were encouraged to take the lead in marine cartography in their countries and globally.

- The current situation and future plans of the GEOMAC programme were discussed between the IHO team and the UKHO training staff to be presented to the Nippon Foundation in view of the submission of the next 3-year GEOMAC programme (2026-2028).

- The trainees from various countries expressed their deep appreciation to the Nippon Foundation, UKHO and IHO, and discussed with the IHO visiting team the new developments on the Universal Hydrographic Data Model S-100 and the potential improvements to the GEOMAC programme.

New and Revised IHO Publications

The following new IHO publications or revised editions were issued during 2024 and are available from the IHO website.

Date	Announced via CL	Title
03/04/2024	CL19/2024	M-3 / Adoption of the IHO Resolution - The Ex Abyssis ad Alta - IHO Award for hydrographic excellence
05/06/2024	CL26/2024	P-7 / Publication of the Annual Report of the IHO for 2023
07/06/2024	CL272024	S-100 / Adoption of Edition 5.1.0 of IHO Publication S-100 – Universal Hydrographic Data Model.

NB: The following publications are continuously updated:

- B-8 - Gazetteer of Geographical Names of Undersea Features
- C-55 - Status of Hydrographic Surveying and Nautical Charting Worldwide
- P-5 - IHO Yearbook
- S-32 - Hydrographic Dictionary
- S-62 - List of Data Producer Codes


INTERNATIONAL
HYDROGRAPHIC
ORGANIZATION
Annual Report 2024
Work Programme and Budget, Strategic Plan, and Performance Monitoring
Status Report on Performance Monitoring related to the Strategic Plan of IHO 2021-2026
IHO
International Hydrographic Organization

Background

The IHO Strategic Plan 2021 – 2026 comprises four sections:

I **Preamble** – introduction to the IHO, its vision, mission, and objects. The wording is drawn from the Convention on the IHO.

II **Challenges** – overview of the strategic context within which the IHO and Member States operate now and will operate in the near future and how this may impact activities.

III **Goals** – targets for 2026 and Strategic Performance Indicators.

IV **Implementation Framework** – briefly outlines how the plan is enacted and how progress with respect to the plan is reviewed and monitored.

To face the challenges described under section II, the plan is structured through three overarching goals, focusing the exercise of its mission during this period. Under the three goals, the Organization has identified targets to be reached by 2026.

The Strategic Plan is design to focus on three most relevant goals to be addressed in the two trienniums but is not a comprehensive description of the full scope of IHO activities, which is fully covered in its Work Programme. The Assembly endorsed the alignment of the 2024 and three-year IHO Work Programme 2024-2026 with the Strategic Plan, while keeping the current structure of the Work Programme to facilitate the operational work and implementation by the Secretariat.

2

Progress monitoring

Success in achieving the Strategic Goals and Targets is measured by Strategic Performance Indicators (SPIs). The Council determines the method for calculating the performance indicators. The alignment of those indicators to the relevant elements of IHO´s Work Programme demonstrates the interrelation between ambitions of the Strategic Plan, the Work Programme and the Secretariat´s operational work.

Council oversees the implementation of the strategic goals and targets

The 2nd Assembly instructed the Council to monitor closely the appropriateness and applicability of the proposed SPI and amend them if necessary. In doing so, the application of the SPIs was allocated to the Secretary-General for Work Programme 1, the Hydrographic Standards & Service Committee (HSSC) for Work Programme 2 and the Interregional Coordination Committee (IRCC) for Work Programme 3 respectively.

In view of the overarching importance of the Strategic Plan to achieve the goals and targets of the Organization, the Council measures the effective implementation of the Strategic Plan through annual review of the SPI reported for the three Work Programmes, by keeping in mind to apply the principles of ISO 9001 as an important theme of the Council activities for the intersessional period towards the third Assembly in 2023.

IHO bodies striving to measure success

The fifth meeting of the Council in October 2021 was the first opportunity to reflect over the implementation of the goals and targets of the Strategic Plan 2021-2026 since its inception. The Secretary-General and the Chairs of HSSC and IRCC reported about their experimentations with the assigned SPIs in particular for meeting Goals 2 and 3.

The Council approved the suggestion to measure the notable activities under Work Programme 1 in four categories as SPIs.

- Global outreach
- Regional outreach
- Stakeholder's specific outreach
- Consultations

With the IRCC dedicated workshop on SPIs (April 2022) followed by the approval at IRCC-14 of the SPIs' definitions and metrics, the IHO established in 2022 the conditions to fully monitor the implementation of the Strategic Plan through 15 SPIs. Most of the SPIs are processed by the IHO Secretariat itself with data kindly provided by Member States, WGs, RHCs and RENCs. The metrics of a couple of SPIs are still under consideration.

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 profound evolution of hydrographic services, in a context of high demands for digital data.

Targets supporting Goal 1

- Deliver standards for hydrographic data and specifications of hydrographic products; support their regular production; and coordinate regional and global services for their provision.
- Develop standards, specifications and guidelines in the areas of data assurance, including cyber security and data quality assessment.
- Use capacity building and training to develop and increase the ability of Member States to support safety and efficiency of maritime navigation.

Strategic Performance Indicators validating the targets supporting Goal 1

SP 1.1.1 Percentage of Member States having operationalized production and distribution of hydrographic data products and services based on IHO Universal Hydrographic Data Model (S-100), under an implementation framework of coordination and agreed timelines.

SP 1.1.2 Number of hydrographic data products and services based on Universal Hydrographic Data Model that cater for the new requirements: autonomous shipping, reduction of emissions.

SP 1.2.1 Percentage of hydrographic data products and services based on S-100 model that are covered by IHO standards, specifications and guidelines on cyber security.

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

SP 1.3.1 Ability and capability of Member States to meet the requirements and delivery phases of the S100 implementation plan.

4

Strategic Performance Indicators for Goal 1

Work Programme Tasks related to SPI 1.1.1 and 1.1.2

1.1 Co-operation with International Organizations and participation in relevant meetings
1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring
2.1 Programme Coordination
2.2 Foundational Nautical Cartography Framework
2.3 S-100 Framework
2.4 S-57 Framework
2.5 Support the implementation of e-navigation and Marine Spatial Data Infrastructures (MSDI)
3.4 Coordination of Global Surveying and Charting Coverage
3.5 Maritime Safety Information

SPI 1.1.1	Metrics	Member States distribute at least one product based on S-100.						
	Year	2021	2022	2023	2024	2025	2026	60%[1]
		0%	0%	0%	0%	-	-	60%[1]

SPI 1.1.2	Metrics	Product Specifications should be operational (e.g. Edition 2.0.0 approved by Member States.)						
	Year	2021	2022	2023	2024	2025	2026	10
		0	0	0	5	-	-	10

Work Programme Tasks related to SPI 1.2.1 and 1.2.2

1.1 Co-operation with International Organizations and participation in relevant meetings
1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring
2.1 Programme Coordination
2.2 Foundational Nautical Cartography Framework
2.3 S-100 Framework
2.4 S-57 Framework
2.5 Support the implementation of e-navigation and Marine Spatial Data Infrastructures (MSDI)
2.6 Hydrographic Surveying
2.8 Other technical standards, specifications, guidelines and tools
3.4 Coordination of Global Surveying and Charting Coverage
3.5 Maritime Safety Information

SPI 1.2.1	Metrics	10 Product Specifications (same as in SPI 1.1.2) includes cyber security and data quality assessment.						
	Year	2021	2022	2023	2024	2025	2026	100%
		0	0	0	50%	-	-	100%

SPI 1.2.2	Metrics	Navigationally significant areas: areas covered by ENCs in Usage Bands 5 to 3. Indicator: % data coverage in ENCs, where CATZOC value is other than U (Unassessed) and Unavailable.						
	Year	2021	2022	2023	2024	2025	2026	100%
	A-USCHC		83.3%	87,3%	91,3%	-	-	
	B-MACHC		96.1%	97,7%	91,3%	-	-	
	C1-SWAtHC		99.4%	99,4%	99,4%	-	-	
	C2-SEPRHC		86.9%	87,4%	86,2%	-	-	
	D-NSHC		99.5%	99,9%	99,5%	-	-	
	E-BSHC		92.8%	91,3%	93,30	-	-	
	F-MBSHC		88.6%	89,8%	89,8%	-	-	
	G-EAtHC		80.0%	79,4%	80,5%	-	-	
	H-SAIHC		93.3%	93,3%	94,4%	-	-	

[1]Target : 64 out of 94 IHO Member States producing S-57 ENCs

Work Programme Tasks related to SPI 1.2.1 and 1.2.2

	I-RSAHC	68.2%	67,4%	64,8%	-	-
	J-NIOHC	68.3%	63,1%	63,1%	-	-
	K-EAHC	51.4%	54,6%	78,8%	-	-
	L-SWPHC	98.5%	98,8%	99%	-	-
	M-HCA	79.0%	81,4%	81,5%	-	-
	N-ARCH	18.0%	16,4%	19,2%	-	-

Work Programme Tasks related to SPI 1.3.1

1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring

3.2 Regional Hydrographic Commissions and the HCA

3.3 Capacity Building

SPI 1.3.1	Metrics	Ability and capability of Member States to meet the requirements and delivery phases of the S100 implementation plan. Target 50%.						
	Year	2021	2022	2023[1]	2024[2]	2025	2026	50%
		-	Yes	53%	43%	-	-	-

[1]Response rate: 23%
[2]Response rate: 60%

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.

Targets supporting Goal 2

- Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures (MSDI).
- Promote new tools and methods to accelerate and increase coverage, consistency, quality of surveys in poorly surveyed areas.
- Apply UN shared guiding principles for geospatial information management in order to ensure interoperability and extended use of hydrographic data in combination with other marine-related data.

Strategic Performance Indicators validating the targets supporting Goal 2

SP 2.1.1 Number of hits downloading data/information from the portal.

SP 2.2.1 Percentage of adequately surveyed area per coastal state.

SP 2.2.2 Number of new applications of the new version of Standards for Hydrographic Surveys (S-44).

SP 2.3.1 Number of HOs reporting success applying the principles in their national contexts.

Strategic Performance Indicators for Goal 2

Work Programme Tasks related to SPI 2.1.1

1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring
3.3 Capacity Building
3.7 Marine Spatial Data Infrastructures

SPI 2.1.1	Metrics	Portal in design phase, download counting technology to be implemented.					
	Year	2021	2022	2023	2024	2025	2026
		Number of hits downloading data/information from the portal					
		-	461	456	589	-	-

Work Programme Tasks related to SPI 2.2.1 and 2.2.2

1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring
2.6 Hydrographic Surveying
2.8 Other technical standards, specifications, guidelines and tools
3.2 Regional Hydrographic Commissions and the HCA
3.3 Capacity Building
3.4 Coordination of Global Surveying and Charting Coverage
3.6 Ocean Mapping Programme
3.8 International Standards for Hydrographic Surveyors and Nautical Cartographers

SPI 2.2.1	Metrics	Technology to generate percentage figures from C-55 under discussion.					
	Year	2021	2022	2023	2024	2025	2026
		Percentage of adequately surveyed area per coastal state					
		Number of Coastal States within the percentage band of adequate surveyed areas (C55)					
	0%<= area< 25%, depth <200m		69	70	73	-	-
	0%<= area< 25%, depth >200m		82	81	86	-	-
	25%<= area< 50%, depth <200m		25	25	26	-	-
	25%<= area< 50%, depth >200m		20	20	18	-	-
	50%<= area< 75%, depth <200m		20	23	19	-	-

Work Programme Tasks related to SPI 2.2.1 and 2.2.2

	50%<= area< 75%, depth >200m	17	18	18	-	-
	75%<= area< =100%, depth <200m	34	31	32	-	-
	75%<= area< =100%, depth >200m	21	20	20	-	-
		Number of RHCs within the percentage band of area mapped (GEBCO)				
	0%<= area< 25%, depth <200m	18	-	-	-	-
	0%<= area< 25%, depth >200m	12	-	-	-	-
	25%<= area< 50%, depth <200m	1	-	-	-	-
	25%<= area< 50%, depth >200m	7	-	-	-	-
	50%<= area< 75%, depth <200m	0	-	-	-	-
	50%<= area< 75%, depth >200m	0	-	-	-	-
	75%<= area< =100%, depth <200m	0	-	-	-	-
	75%<= area< =100%, depth >200m	0	-	-	-	-

SPI 2.2.2	Metrics	Number of downloads of S-44. New applications/survey methods/platforms used as a result of S-44 Edition 6.0.0.					
	Year	2021	2022	2023	2024[1]	2025	2026
	Downloads/Applications	59/0	312/0	1312/0	-	-	-

[1]Due to changes in website analytics in 2024, this metric is not available for this year

Work Programme Tasks related to SPI 2.3.1

1.1 Cooperation with International Organizations and participation in relevant meeting

1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring

3.7 Marine Spatial Data Infrastructures

SPI 2.3.1	Metrics	Extension of P-5 required.					
	Year	2021	2022	2023	2024	2025	2026
		Number of HOs reporting success applying the UN shared guiding principles for geospatial information management in order to ensure in their national contexts. % of Yes/Full (from 34 Member States)					
	Representation		72%	72%	72%	-	-
	Governance		81%	81%	81%	-	-
	Compliance		94%	94%	94%	-	-

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.

Targets supporting Goal 3

- Collaborate with other bodies who deliver capacity building and training to improve effectiveness of capacity building activities and programmes.
- Improve knowledge of the world's seafloors.
- Implement a comprehensive IHO digital communication strategy in order to enhance its visibility and accessibility to its work.

Strategic Performance Indicators validating the targets supporting Goal 3

SP 3.1.1 Percentage of Coastal States that are able to provide marine safety information (MSI) according to the joint IMO/IHO/WMO manual on MSI.

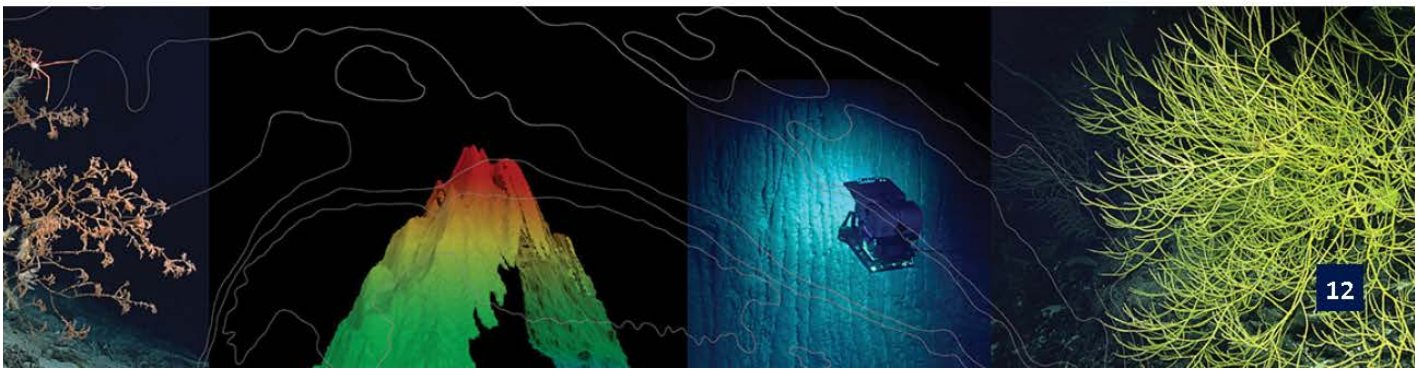
SP 3.2.1 Amount of data received per year by the IHO Data Centre for Digital Bathymetry (DCDB).

SP 3.2.2 Number of contributors to DCDB who are not hydrographic offices.

SP 3.2.3 Percentage of total sea area that is Seabed 2030 compliant for ingestion into the GEBCO dataset and services.

SP 3.3.1 Number of visits, likes, re-postings, etc. associated to the IHO social media sites.

SP 3.3.2 Volume downloaded from the IHO website and Geographical Information System (GIS).



Strategic Performance Indicators for Goal 3

Work Programme Tasks related to Secretariat's activities addressing Goal 3

1.3 Co-operation with International Organizations and participation in relevant meetings
3.6 Public Relations and Outreach
1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring

Metrics	Notable activities undertaken under the IHO Work Programme 1 in four categories.					
Year	2021	2022	2023	2024	2025	2026
Global outreach	13	15	15	11	-	-
Regional outreach	4	4	4	9	-	-
Stakeholder's specific outreach	15	25	21	7	-	-
Consultations	2	2	6	11	-	-

Work Programme Tasks related to SPI 3.1.1

1.1 Co-operation with International Organizations and participation in relevant meetings
1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring
3.1 Programme Coordination
3.2 Regional Hydrographic Commissions and the HCA
3.3 Capacity Building
3.6 Ocean Mapping Programme
3.7 Marine Spatial Data Infrastructures

SPI 3.1.1	Metrics	Percentage of Coastal States that are capable to provide marine safety information (MSI) according to the joint IMO/IHO/WMO manual on MSI [WWNWS and CBSC tasked to develop a collaborative approach how to measure and count.]						
	Year	2021	2022	2023	2024	2025	2026	90%
			62%	87%	89.2%	-	-	

Work Programme Tasks related to SPI 3.2.1, 3.2.2, and 3.2.3

1.1 Co-operation with International Organizations and participation in relevant meetings

1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring

3.1 Programme Coordination

3.2 Regional Hydrographic Commissions and the HCA

3.6 Ocean Mapping Programme

SPI 3.2.1	Metrics	Amount of data received per year by the IHO Data Centre for Digital Bathymetry (DCDB tasked to start measurement.)					
	Year	2021	2022	2023	2024	2025	2026
	Datasets/Surveys		375	180	56	-	-
SPI 3.2.2	Metrics	Number of contributors to DCDB who are not hydrographic offices (DCDB tasked to measure.)					
	Year	2021	2022	2023	2024	2025	2026
			4	3	59	-	-
SPI 3.2.3	Metrics	Percentage of total sea area that is Seabed 2030 compliant for ingestion into the GEBCO dataset and services [DCDB tasked to start measurement in collaboration with BOC (UK).]					
	Year	2021	2022	2023	2024	2025	2026
			23,4%	24,9%	26.1%	-	-

Work Programme Tasks related to SPI 3.3.1 and SPI 3.3.2

1.2 Information Management
1.3 Public Relations and Outreach
1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring
3.3 Capacity Building
3.4 Coordination of Global Surveying and Charting Coverage
3.6 Ocean Mapping Program

SPI 3.3.1	Metrics	Followers/Views on LinkedIn, Facebook and Twitter					
Year		2021	2022	2023	2024	2025	2026
in		4263/177,600	6525/245,573	8821/322,413	10737/288,097	-	-
f		673/ 2049	954/2711	1267/27,680	1522/31500	-	-
X		566/77,200	973/58200	1175/62,100	1250/18731	-	-
IG		-	-	-	141/8893	-	-

SPI 3.3.2	Metrics	Volume downloaded from the IHO website and Geographical Information System (GIS)					
Year		2021	2022	2023	2024	2025	2026
IHO website views		380,946	863,322	921,575	1,237,546	-	-
User groups identified		5	-	-	8	-	-
Volume downloaded from GIS		-	-	-	-	-	-

List of IHO Secretariat Travel (2024)

Date	Name	Meeting	Destination	Country
JANUARY				
23 26	SINAPI	PMB 14	New Orleans	New Orleans
23 26	MANTEIGAS	PMB 14	New Orleans	New Orleans
FEBRUARY				
15 16	SINAPI	WMU-GOI BUGWRIGHT2 Forum	Athens	GREECE
19 23	SINAPI	WENDWG 14	Norfolk	USA
19 23	GUILLAM	WENDWG 14	Norfolk	USA
22 23	NYBERG	Regional visit	Suva	FIJI
26 01	NYBERG	SWPHC21	Nadi	FIJI
MARCH				
04 08	NYBERG	MSDIWG15	Bali	INDONESIA
04 08	BAEK	MSDIWG15	Bali	INDONESIA
12 14	JONAS	IMO International Maritime Law Institute	Valetta	MALTA
19 21	WOOTTON	IC-ENC Tech Conference	Athens	GREECE
26 28	SINAPI	BASWG17	Istanbul	TÜRKIYE
08 12	HARPER	UN Ocean Decade Conference	Barcelona	SPAIN
08 12	JONES COUTURE	UN Ocean Decade Conference	Barcelona	SPAIN
09 10	NYBERG	NSHC37	Malmo	SWEDEN
09 10	SINAPI	SWAtHC18	Buenos Aires	ARGENTINA
09 12	JONAS	UN Ocean Decade Conference	Barcelona	SPAIN
11 12	NYBERG	NHC67	Malmo	SWEDEN
15 18	JONAS	HCA19	Venice	ITALY
15 18	GUILLAM	HCA19	Venice	ITALY
15 18	FONTANILI	HCA19	Venice	ITALY
15 19	SINAPI	HLV Bahamas	Nassau	BAHAMAS
15-26	MANTEIGAS	IBSC47	Hamburg	GERMANY
23 24	SINAPI	IMPA Conference	Rotterdam	HOLLAND
29 03	NYBERG	Regional Awareness seminar and EAtHC18	Casablanca	MOROCCO
MAY				
13 14	JONAS	Geospatial World Forum	Rotterdam	HOLLAND
14 16	NYBERG	Geospatial World Forum	Rotterdam	HOLLAND
15 23	HARPER	IMO MSC 108	London	UNITED KINGDOM
20 21	SINAPI	MBSHC24 Prep meeting	Split	CROATIA
21 23	NYBERG	NIOHC23	Chiang Mai	THAILAND
27 31	JONAS	USCHC47	St John's	CANADA
28 31	NYBERG	HSSC16	Tokyo	JAPAN
28 31	BAEK	HSSC16	Tokyo	JAPAN
29	SINAPI	IHO-EU Network Working Group (IENWG-14)	Svendborg	DENMARK

JUNE				
04 13	HARPER	IMO NCSR 11	London	UNITED KINGDOM
05 07	SINAPI	CBSC22	Galapagos (Santa Cruz)	ECUADOR
05 07	MANTEIGAS	CBSC22	Galapagos (Santa Cruz)	ECUADOR
10 12	SINAPI	IRCC 16	Galapagos (Santa Cruz)	ECUADOR
10 12	MANTEIGAS	IRCC16	Galapagos (Santa Cruz)	ECUADOR
17 19	BAEK	S101 PT13	Stockholm	SWEDEN
17 19	WOOTTON	S101 PT13	Stockholm	SWEDEN
20 21	JONAS	WHD at the IMO (UKHO)	London	UNITED KINGDOM
24 28	GUILLAM	SCUFN37	Jeju	KOREA
24 28	MANTEIGAS	IMO TC74	London	UNITED KINGDOM
26 27	HARPER	IOC ASSEMBLY	Paris	FRANCE
25 26	JONAS	Fraunhofer IPM Curators Board meeting	Fribourg	GERMANY
JULY				
01 04	SINAPI	MBSHC24	Constanta	ROMANIA
01 04	GUILLAM	MBSHC24	Constanta	ROMANIA
03	NYBERG	IHMA	Rotterdam	NETHERLANDS
09 11	MANTEIGAS	Workshop Safety of Nav Maritime Digitalization	Daejeon	KOREA
16 18	NYBERG	14 SC IC ENC	Bali	INDONESIA
AUGUST				
01 03	SINAPI	IHO-ROK-USM Graduation ceremony	New Orleans	USA
05 09	NYBERG	UNGGIM	New York	USA
27 29	JONAS	WMU	Malmo	SWEDEN
SEPTEMBER				
02 06	HARPER	WWNWS16	Valparaiso	CHILE
03 05	JONAS	ARHC 14	Tromso	NORWAY
09 11	NYBERG	IALA S100 Workshop	Annapolis	USA
09 13	BAEK	IALA S100 Workshop	Annapolis	USA
17 19	NYBERG	SAIHC20	Kisumu	KENYA
18 19	JONAS	BSHC 29	Tallinn	ESTONIA
20	HARPER	IHO/OECD UNOC 2025 prep mtg	Paris	FRANCE
24 27	GUILLAM	NIPWG11	Gdynia	POLAND
OCTOBER				
01 04	HARPER	HSWG7	Rome	ITALY
03	JONAS	MEPC IMO	London	UNITED KINGDOM
07 09	MANTEIGAS	ABLOS31	Rio da Janeiro	BRAZIL
07 10	SINAPI	XIV Trans-Regional Seapower Symposium	Venice	ITALY
08 10	BAEK	ENCWG9	Aalborg	DENMARK
18	SINAPI	CIESM43	Palermo	ITALY
23	SINAPI	GEOMAC16	Taunton	UNITED KINGDOM
23	MANTEIGAS	GEOMAC16	Taunton	UNITED KINGDOM
23	SUMIYOSHI	GEOMAC16	Taunton	UNITED KINGDOM

NOVEMBER				
31 08	SINAPI	Visit Fijian authorities & SB2030 & GEBCO GC 41	Nadi / Suva	FIJI
31 08	HARPER	Visit Fijian authorities & SB2030 & GEBCO GC 41	Nadi / Suva	FIJI
04 08	WOOTTON	S100WG9	Genoa	ITALY
04 08	BAEK	S100WG9	Genoa	ITALY
06 08	NYBERG	S100WG9	Genoa	ITALY
11 15	MANTEIGAS	IBSC Intersessional Meeting	Athens	GREECE
11 15	HARPER	High Level Visit	Tarawa	KIRIBATI
11 14	SINAPI	PAC31 Meeting (PRIMAR Advisory Committee)	Helsinki	FINLAND
13 15	JONAS	IBSC Intersessional Meeting	Athens	GREECE
25 29	SINAPI	Visit to GEOSA & RSAHC10	Riyadh / Jeddah	SAUDI ARABIA
DECEMBER				
03 06	SINAPI	HLV to Panama Maritime Authority & MACHC25	Panama City	PANAMA
03 06	NYBERG	IMO MSC 109	London	UNITED KINGDOM
03 06	HARPER	IMO MSC 109	London	UNITED KINGDOM

Responsibilities of the Secretary-General and Directors in 2024

Dr. Mathias JONAS – Secretary-General

Relations with EU, the United Nations including IMO,ISA and WMO, international bodies concerned with hydrographic matters in polar regions, Non-Member States of the IHO, and other relevant organizations and bodies as appropriate;

- Matters concerning IHO Membership, Host Government Affairs;
- Public Relations;
- Finance and Budget;
- Strategic Plan, Work Plan;
- Programme Performance Reporting;
- IHO Council;
- Administration of the IHO Secretariat, Information Technology;
- Personnel Administration of the IHO Secretariat, Staff Regulations;

and the following Regional Hydrographic Commissions:

- Arctic Regional Hydrographic Commission;
- East Asia Hydrographic Commission;
- Nordic Hydrographic Commission;
- North Sea Hydrographic Commission;
- US Canada Hydrographic Commission.

and the following Commission as Chair:

- Hydrographic Commission on Antarctica.

John NYBERG – Director (Technical Programme)

- HSSC and subordinate bodies;
- Relations with ABLOS, IALA, ICA, IEC, ISO, and other relevant organizations, concerning the HSSC programme and MSDI;
- Technical Support services;
- Stakeholder Liaison;

and the following Regional Hydrographic Commissions:

- Baltic Sea Hydrographic Commission;

- Eastern Atlantic Hydrographic Commission;
- North Indian Ocean Hydrographic Commission;
- Southern African and Islands Hydrographic Commission;
- South-West Pacific Hydrographic Commission.

Luigi SINAPI - Director Inter Regional Coordination and Support Programme

- IRCC, and its subordinate bodies, including IBSC, GEBCO and ABLOS
- Relations with FIG, GEO, IOC, the academic sector (education and training), and other relevant organizations, concerning the IRCC programme;
- Capacity Building, Training, Education and Technical Co-operation, including CB Work Programme, CB Fund and budget;
- IHO Publications;
- International Hydrographic Review;
- IHO Assembly ;
- Annual Report;

and the following Regional Hydrographic Commissions:

- Mediterranean and Black Seas Hydrographic Commission;
- Meso American - Caribbean Sea Hydrographic Commission;
- South-East Pacific Regional Hydrographic Commission;
- ROPME Sea Area Hydrographic Commission;
- South West Atlantic Hydrographic Commission.

Responsibilities of the Staff of the IHO Secretariat in 2024

Managerial Staff

Mr L. MANTEIGAS (Portugal)	ADCC	Cooperation and Capacity Building
Mr Y. GUILLAM - until end of October (France)	ADCS	Charting and Services
Mr. E. LANGLOIS - from September 1st (France)		
Mr. Y. BAEK (South Korea)	ADDT	Digital Technology
Mr S. HARPER (United Kingdom)	ADSO	Surveying and Operations
Mrs. S. BRUNEL (France)	FAO	Finance/Administration Officer

Translators

Ms I. ROSSI	HT	Head Translator

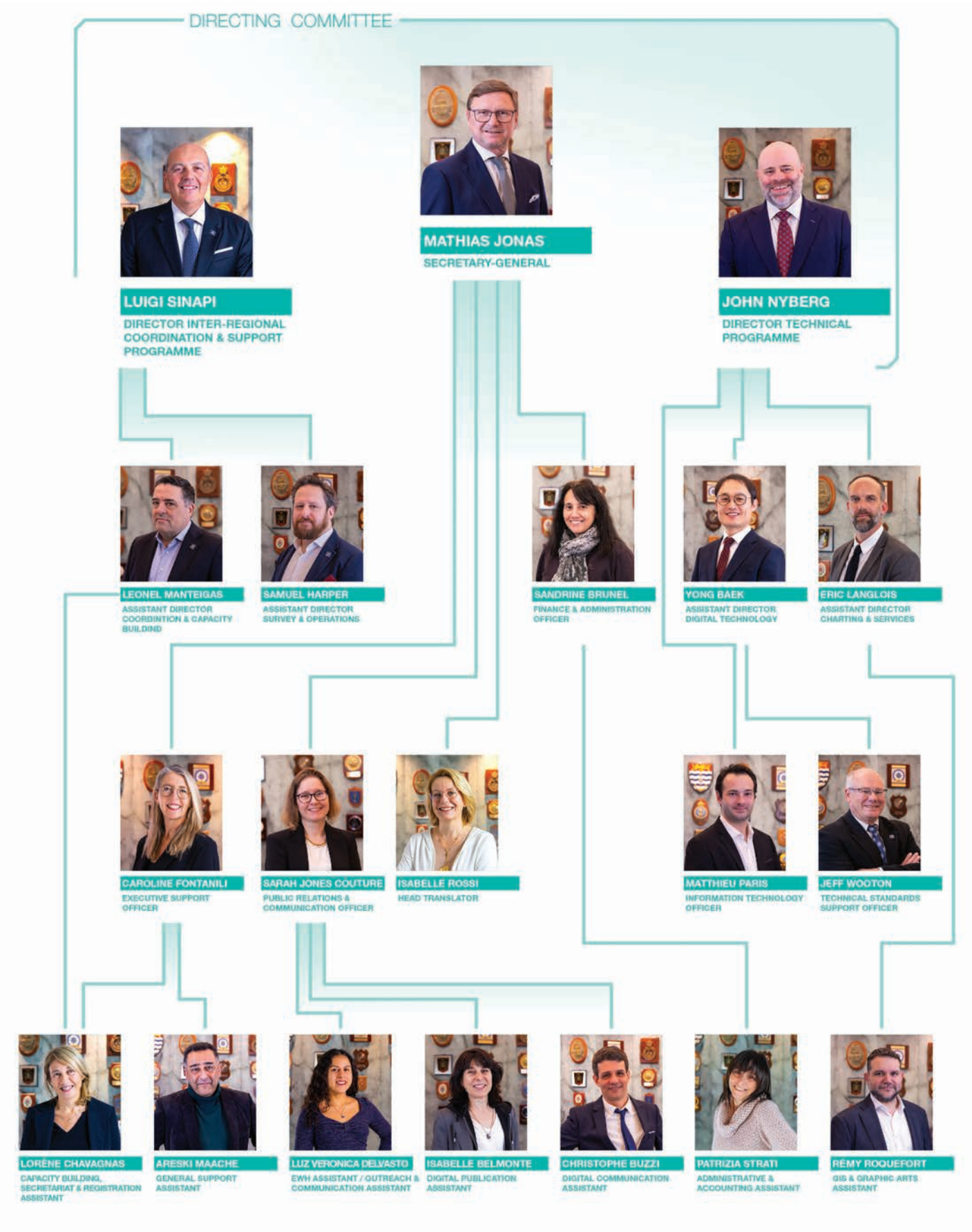
Technical, Administrative and Service Staff

Mr C. BUZZI	DCA	Digital Communication Assistant
Ms I. BELMONTE	DPA	Web and Digital Publications Assistant
Ms L. CHAVAGNAS	SRA	Secretariat & Registration Assistant
Mr. M. PARIS	ITO	Information Technology Officer
Ms L. DELVASTO	EWH/OCA	EWH/Outreach & Communication Assistant
Ms C. FONTANILI	ESO	Executive Support Officer
Ms. S. JONES-COUTURE	PRCO	Public Relations & Communication Officer
Mr A. MAACHE	GSA	General Support Assistant
Mr. R. ROQUEFORT	GGA	GIS Services and Graphic Arts Assistant
Mr J. WOOTTON	TSSO	Technical Standards Support Officer

Associate Professional Officers

Ms I. PARK (Republic of Korea)	POK	Standards Support
Mr. M. SUMIYOSHI (Japan)	POJ	Internal administration
Mrs. R. ACOSTA URBINA (Peru)	POP	Gebco and administration Coordinator

IHO Secretariat in 2024



List of acronyms

A

ABLOS	Advisory Board on the Law of the Sea
AIS	Automatic Identification System
ARHC	Arctic Regional Hydrographic Commission
ATCM	Antarctic Treaty Consultative Meeting

B

BASWG	Black and Azov Seas Working Group
BSHC	Baltic Sea Hydrographic Commission

C

CB	Capacity Building
CBSC	Capacity Building Sub-Committee
CBWP	Capacity Building Work Programme
CHART	Cartography, Hydrography and Related Training (Project)
CIRM	Comité International Radio-Maritime
CL	Circular Letter
COMNAP	Council of Managers of National Antarctic Programs
CSB	Crowdsourced Bathymetry

D

DCDB	Data Centre for Digital Bathymetry
DG Mare	Directorate-General for Maritime Affairs and Fisheries
DHN	Diretoria de Hidrografia e Navegação
DQWG	Data Quality Working Group

E

EAHC	East Asia Hydrographic Commission
EAtHC	Eastern Atlantic Hydrographic Commission
EC	European Commission

ECDIS	Electronic Chart Display and Information System
EIHC	Extraordinary International Hydrographic Conference
EMODnet	European Marine Observation and Data Network
ENC	Electronic Navigational Chart
EU	European Union

F

FIG	International Federation of Surveyors

G

GEBCO	General Bathymetric Chart of the Oceans
GGC	GEBCO Guiding Committee
GIS	Geographic Information System

H

HE	His Excellency
HO	Hydrographic Office
HSH	His Serene Highness
HSSC	Hydrographic Services and Standards Committee

I

IAEA	International Atomic Energy Agency
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAPH	International Association of Ports and Harbours
IBCSO	International Bathymetric Chart of the Southern Ocean
IBSC	International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers
ICA	International Cartographic Association
ICCWG	International Charting Coordination Working Group
IEC	International Electrotechnical Commission
IC-ENC	International Centre for Electronic Navigational Charts
IENWG	IHO-EU Network Working Group

IHB	International Hydrographic Bureau
IHC	International Hydrographic Conference
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IMPA	International Maritime Pilots' Association
IMSO	International Mobile Satellite Organization
INT	International
IOC	Intergovernmental Oceanographic Commission
IRCC	Inter-Regional Coordination Committee
ISA	International Seabed Authority
ISO	International Organization for Standardization
IT	Information Technology

J

JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology
JHOD	Japan Hydrographic and Oceanographic Department

K

KHOA	Korea Hydrographic and Oceanographic Agency

L

M

MACHC	Meso American - Caribbean Sea Hydrographic Commission
MBSHC	Mediterranean and Black Seas Hydrographic Commission
MEIP	Maritime Economic Infrastructure Programme
METAREA	METeorogical Area
MoU	Memorandum of Understanding
MOWCA	Maritime Organization for West and Central Africa
MS	Member State
MSC	Maritime Safety Committee

MSDI	Marine Spatial Data Infrastructure
MSDIWG	Marine Spatial Data Infrastructures Working Group
MSI	Maritime Safety Information
MSP	Maritime Service Portfolio
MSP	Marine Spatial Planning

N

NATO	North Atlantic Treaty Organization
NAVAREA	NAVigational Area
NAVTEX	NAVigational TEXt Messages
NCEI	National Centers for Environmental Information
NCSR	IMO Sub-Committee on Navigation, Communications and Search and Rescue
NCWG	Nautical Cartography Working Group
NGA	National Geospatial-Intelligence Agency
NGIO	Non-Governmental International Organization
NHC	Nordic Hydrographic Commission
NIOHC	North Indian Ocean Hydrographic Commission
NIPWG	Nautical Information Provision Working Group
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NSHC	North Sea Hydrographic Commission

O

OGC	Open Geospatial Consortium

P

PI	Performance Indicator
PMB	Project Management Board

Q

R

RENC	Regional ENC Coordinating Centre
RHC	Regional Hydrographic Commission
ROK	Republic of Korea
RoP	Rules of Procedure
ROPME	Regional Organization for the Protection of the Marine Environment
RSAHC	ROPME Sea Area Hydrographic Commission

S

SAIHC	Southern African and Islands Hydrographic Commission
SCRUM	Sub-Committee on Regional Undersea Mapping
SCUFN	Sub-Committee on Undersea Feature Names
SDI	Spatial Data Infrastructures
SEPRHC	South East Pacific Regional Hydrographic Commission
SHOM	Service hydrographique et océanographique de la marine
SOLAS	International Convention for the Safety of Life at Sea
SPI	Strategic Performance Indicator
SWAtHC	South West Atlantic Hydrographic Commission
SWPHC	South West Pacific Hydrographic Commission

T

TALOS	Technical Aspects of the UN Convention on the Law of the Sea
TC	Technical Committee
ToR	Terms of Reference
TSCOM	Technical Sub-Committee on Ocean Mapping
TWCWG	Tides, Water Level and Currents Working Group

U

UAE	United Arab Emirates
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UN	United Nations Organization

UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-GGIM	United Nations Committee of Experts on Global Geospatial Information Management
UNH	University of New Hampshire
USA	United States of America
USCHC	USA-Canada Hydrographic Commission

V

W

WEND	Worldwide ENC Database
WG	Working Group
WMO	World Meteorological Organization
WP	Work Programme
WPI	Working-level Performance Indicator
WWNWS	World Wide Navigational Warning Service
WWNWS-SC	WWNWS Sub-Committee

X

Y

Z

PART 2

FINANCE

Financial statements and accounts for 2024

FOREWORD TO THE FINANCE REPORT FOR 2024

Amended by Secretary-General´s recommendations on the use of the accrued surplus in the 2024 budget for 2025.

Introduction

1. This part of the Annual Report 2024 presents the statements of the finances and accounts of the IHO for the 2024 fiscal year in accordance with the Financial Regulations of the IHO.

Result for the fiscal year 2024

2. The 2024 audit of the IHO`s accounts has been undertaken by an external auditor, CABINET TARAMAZZO. The Audit Report is annexed to Part II of this Annual Report.

3. The audited financial statements present a positive balance for 2024 of 296,156.91 Euro (see Table 9 (English) and 10 (French)). The budget surplus for 2024 is available for investment in 2025. This result comprises a surplus of 221,000 € from the budget implementation, an additional income of 215,000 €, an underspend of 1,000 € in capital expenditure and the inclusion of the amount paid for depreciable assets of 14,000 €.

Budget implementation

4. It should be noted that the surplus in 2024 results from a conservative budget implementation which considered potential deficit caused by non-payment of contributions from several Member States. As a buffer a bad debt reserve of 185,000 € Euro was withheld. This provision for bad debts was calculated using the difference between the 2024 deficit in Member States contributions and the additional income from arrears paid and/or new Members States' contributions.

5. The recruitment costs of an additional accountant and a communication assistant were partially covered by additional external resources from collaboration with the Nippon Foundation in support of the Seabed2030 project and from Member States' support of the Empowering Women in Hydrography project. The communication assistant received a temporary contract which depends on continued external funding beyond the budget estimates confirmed by the Council.

Supplementary remarks on budget issues

In-kind contributions from the Government of the Principality of Monaco

6. According to the official agreement between the IHO and the Government of the Principality of Monaco concerning the headquarters of the Organization, the Principality, in addition to the normal owner's responsibilities, has taken the responsibility of rent, electricity, and water which totals 58,467 Euro for 2024. Several costs for maintenance and repair of the facilities infrastructure were also generously covered by the Government of the Principality of Monaco.

Outstanding financial contributions from some Member States

7. When assessing the positive balance sheet, it should be noted that several Member States failed to pay their annual financial contributions for the fiscal year 2024. At the end of the year, 29 Member States had not paid their annual contributions in full. This amounted to 687,000 Euro, which is, in effect, income for 2024 yet to be received and represents 21.23 % of the total value of the expected Member States' contributions. The 21.23% unpaid receivables for 2024 are more substantial than the 13.92% debts for 2023 and represent a significant departure from the 5-year average debt of 10.10%. When these debts are cleared, they will be reflected in the relevant yearly accounts as extraordinary income. The Secretariat undertakes every effort to remind Member States of their obligations to pay and is in contact with the local bank and other intergovernmental organizations to facilitate payments. It must be explicitly stated, however, that a missed clearance of these debts will leave the IHO Secretariat operations in a critical situation and will have a severe impact on its future performance.

IHO Funds

Assembly Fund

8. At the end of 2024, 303,172 Euro was available in the Assembly Fund for the planning and execution of the subsequent IHO Assemblies. Thanks to the formal confirmation received from the Government of the Principality of Monaco, the 4th Session of the Assembly in 2026 will be held in the Auditorium Rainier III as the majority of the past IHO Conferences and the 1st Session of the IHO Assembly in 2017.

9. It is expected that due to general inflation, the significant growth in IHO membership of about 20% since 2017, and the demand for digital broadcast for remote participation will cause an increase in cost for the forthcoming Assembly of about 30% (equal to 50,000 Euro) over the year 2017. For this reason, savings are required to top up the Assembly Fund to supplement the annual contribution to the Assembly Fund of 30,000 Euro which cannot cover the expected increase in cost. An additional provision of 50,000 Euro out of the 2023 surplus was made in 2024, but in order to safeguard the expected costs of the 5th session of the Assembly in 2029, another extraordinary provision is addressed under the Secretary-General's recommendation on the use of the 2024 surplus.

10. The costs for the annual Council are allocated separately from this Fund in the operational budget to an annual amount of 15,000 Euro for 2024 to 2026.

Special Projects Fund

11. At the end of the year 2024, the positive balance of the Special Projects Fund was 99,520 Euro. In 2024 expenses for special projects were associated mainly to Work Programme 2 and amounted to 104,501 Euro in total.

12. The proper functioning of the Organization's interactions with the huge variety of its stakeholders is highly dependent on modern digital infrastructure, such as the IHO web page and the new IHO portal to maintain the subordinate bodies (i.e. committees, working groups, project teams and the digital archive of all the working documents as the core). This need is addressed under the Secretary-General's recommendation on the use of the 2024 surplus for 2025 to revamp the back end of those two elements through allocation of funds to the Special Project Fund.

Capacity Building Fund

13. In 2024 the level of activities to build hydrographic capacity as planned in the annual Work Programme 3 started to recover from the aftermath of the COVID-19 pandemic and the subsequent postponement of some of the earmarked CB activities (i.e. Cat A and Cat B courses). The Secretariat received 457,507 Euro from the Republic of Korea, and 436,077 Euro from Japan – mainly earmarked for the conduct of Cat A and Cat B courses for hydrographers and cartographers' education and training.

14. The Secretariat received 82,405 Euro from Canada, 10,000 Euro from Denmark, 10,000 Euro from Belgium and 20,000 from Norway to support Empowering Women in Hydrography (EWH) Project. The total expenditure was 50,298 Euro, and the balance at the end of 2024 is 66,919 Euro. In order to extend the communication assistant's existing temporary contract, the Secretary-General recommends allocating a part of the 2024 surplus to maintain the contract. This would extend the contract to the end of the third quarter of 2026 – marking the completion of all activities around the fourth Assembly end of April 2026.

15. Since the regional coordinators nominated by the various Regional Hydrographic Commissions were not able to conduct all Capacity Building activities approved by the Capacity Building Sub-Committee for 2024, a significant amount of 1,040,273 Euro (not including EWH) remained left for expenditure in the forthcoming year(s).

IBCS Fund

16. The IBSC Fund was established in 2010. At the request of the Fédération Internationale des Géomètres (FIG) Secretariat, which had administered the Fund on behalf of the International Board of Standards of Competences (IBSC) since its establishment, the IHO Secretariat, as secretary of the IBSC, took over the role of treasurer of the Fund in 2015. The Fund holds the income generated by the IBSC through its fees structure and supports the normal operations of the IBSC that is jointly operated and governed by the IHO, the FIG and the International Cartographic Association (ICA). The balance of funds on 1 January 2024 was 47,764 Euro. An amount of 47,675 Euro received in fees from institutions seeking recognition by IBSC, and a part of 2023 surplus for 10,000 Euro. 45,098 Euro was spent on travel expenses for the Board members to attend meetings. Thanks to the increased amount of fees received close to the end of the calendar year 2024, the Fund is now in a healthy financial situation, with a positive balance at the end of 2024 of 60,340 Euro.

GEBCO Fund

17. Based on a proposal of the Nippon Foundation and the GEBCO Guiding Committee, the IHO and the IOC as parent organizations of GEBCO agreed on a joint project named SEABED2030, aiming to increase the detail of global knowledge of the seabed topography of the seas and oceans. Within the framework of the project, the IHO Secretariat accepted the administration of the project fund as donated by the Nippon Foundation. In 2024 the Secretariat received 2,812,993 Euro for the administration of the eighth year of the SEABED2030 project from the Nippon Foundation. At the end of 2024, a balance of 1,375,561 Euro remained in the SEABED2030 account. In 2024, 2,942,140 Euro were spent for reimbursement of salaries, operational costs, and travel expenses of the operational phase. The amount of 14,600 for the SCUFN Gazetteer. The amount of 1,590,828 Euro remains for payment of the forthcoming activities of global and regional data centres forming the infrastructural part of the project.

18. The refreshed GEBCO Strategy 2024-2030 includes elements where their implementation requires extra external capacity. The Secretary-General proposes to make an extra provision out of the 2024 surplus to facilitate the work of GEBCO in favor of an accelerated increase in ocean mapping in support of the UN Ocean Decade.

Renovation and Enhancement Fund

19. The Renovation and Enhancement Fund is intended to cover any major expenses required for the renovation and upkeep of the IHO headquarters' infrastructure and premises. An allocation to this fund is normally made annually from the operating budget, as approved by Member States through the Council, which has not been the case in 2024. At the end of the year 2024, the positive balance of the Renovation and Enhancement Fund was 77,538 Euro. To meet the emerging risks in terms of cyber security, a major overhaul of the client/server architecture of the Secretariat's internal IT infrastructure started in 2024 and will continue in 2025. This undeniable need for investment is covered by the existing balance of 77,538 Euro in the Fund.

Relocation Fund

20. Following the return of the outgoing Assistant Director Charting and Services to the North of France and the incoming successor arriving from Germany in 2024, the Relocation Fund closed with a positive but low balance of 19,620 Euro. To meet all anticipated expenditure of the relocation of internationally recruited members of staff upon their joining or leaving the IHO Secretariat over the next years, an extraordinary deposit to the Relocation Fund will be required. This need is addressed under the Secretary-General's recommendation on the use of the 2024 surplus in 2025.

Internal Retirement Fund and Pension Plan

21. The Internal Retirement Fund (IRF) supports the IHO's long-established independent retirement plan (pension scheme) for several retired members of the Secretariat staff. The pensions of nine retired members of staff are covered by the IRF. The IRF is purposely maintained in low-risk investment accounts. The investment sum required at the end of 2024 to meet the estimated liabilities of the IRF over its lifetime increased by 135,642 Euro to 2,428,304 Euro. The engagement increased with the life expectancy of retirees in compliance with the insurance codes the IHO is aligned with.

Recommendation of the Secretary-General for the allocation of the 2024 budget surplus in 2025

22. As reported in the audited financial statements, the effective budget surplus for 2024 is 296,1567 Euro. This surplus is to be managed in accordance with IHO Resolution 1/2014 as amended through deposits in favor of existing IHO Funds.

23. As a lesson learned from the conduct of the 3rd Session of the IHO Assembly at the Grimaldi Forum and the expected conditions for future Session of the IHO Assembly - as explained in paragraph 8 and 9 - the Secretariat expects substantial additional costs for the conduct of the subsequent Assembly sessions. The extra cost estimate amounts to approximately 40,000 Euro per Assembly. As in previous years, it is therefore recommended to allocate significant portion i.e. 50,000 Euro of the effective 2024 budget surplus to the Assembly Fund to increase reserves. This measure will safeguard the health of the Fund to cover the expected expenses for the fourth and fifth session of the IHO Assembly.

24. As highlighted under paragraph 12, the core digital communication infrastructure of the Secretariat formed by the IHO web page and the IHO portal need an upgrade of its back end which will eventually result in an update of the structure and a refresh on the layout of the front end as well. To address this need it is proposed that the Special Projects Fund shall receive 75,000 Euro.

25. In order to strengthen the support of the 2025 Capacity Building Work Programme beyond the earmarked contributions made by Member States as stated in paragraphs 13 to 15, the Secretary-General recommends the allocation of 50,000 Euro to the Capacity Building Fund to give more flexibility for measures to be covered from native IHO resources including the continuation of the temporary contract of the communication assistant.

26. In support of the implementation of the refreshed GEBCO Strategy 2024 - 2030 as stressed under paragraph 18, an extra provision of 60,000 Euro to the GEBCO Fund is proposed to enable an increase in activities for ocean mapping.

27. To meet all anticipated expenditure of the relocation of internationally recruited members of staff upon their joining or leaving the IHO Secretariat over the next years as explained under paragraph 20, an extraordinary deposit of 60,000 Euro is proposed for the Relocation Fund out of the effective 2024 budget surplus for 2025.

Proposed allocation of the 2024 surplus to IHO Funds

28. The Secretary-General proposes that the budget surplus for 2025 of 295,000 Euro be distributed as follows:

a. 50,000 Euro to the Assembly Fund,

b. 75,000 Euro to the Special Project Fund,

c. 50,000 Euro to Capacity Building Fund,

d. 60,000 Euro to the GEBCO Fund,

e. 60,000 Euro to the Relocation Fund.

Concluding remarks

29. The Secretariat, ever mindful of the difficulty in forecasting the income of the Organization due to none or late payment of financial contributions by Member States and other factors, continues to take a conservative approach to the budget and finances of the Organization. The impossibility of forecasting how inflation will develop over the years to come adds challenges to the budgetary maintenance of the Secretariat's operations. A modest increase of Member States contributions of 3% from 2024 was approved by the 3rd Assembly to maintain good financial health and to enable the return to the nominal headcount to support the Secretariat´s ability to meet all its current obligations. Timely payment of all Member States' contributions remains critically important and may eventually allow the return to the nominal headcount to cover the extra efforts resulting from the planned installation of the IHO Infrastructure Centre.[2]

Yours sincerely,

Dr Mathias JONAS

Secretary-General

INTERNATIONAL PRESENTATION

PRESENTATION INTERNATIONALE

International Hydrographic Organization

Organisation Hydrographique Internationale

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Index des Etats Financiers

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Table 1

International Hydrographic Organization - *Organisation Hydrographique Internationale*

Comparative Balance Sheet - *Bilans comparés*

as of 31 December 2024 - *au 31 décembre 2024*

(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

	See notes		2024		2023
Immobilisations **- Fixed assets**					
Valeur nette des immobilisations - Net Tangible assets	4		74		74
Actif circulant **- Curent assets**					
Débiteurs - Debtors	5	602		854	
Trésorerie disponible					
Cash at bank and in hand :	10	8,951		8,678	
		9,553		9,532	
Créditeurs - montants à moins d'1 an					
Creditors - amounts falling due within 1 year	6	-3,431		-3,183	
Fonds de roulement **- Working capital**			6,122		6,349
Engagements pour les retraites	7	3,609		3,633	
Pension commitments		-3,609		-3,633	
			0		0
Actif net - Net assets			6,196		6,423
Réserves **- Reserves**					
Capitaux permanents de l'OHI - Accumulated surplus			2,877		2,818
Autres réserves - Other reserves	8+9		3,748		3,808
			6,625		6,626

Table 2

International Hydrographic Organization - *Organisation Hydrographique Internationale*

Comparative Global Income and Expenditure - *Charges et revenus comparés*

as of 31 December 2024 - *au 31 décembre 2024*

(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

	2024	2023
Revenus - Income	4,076	3,622
Charges opérationnelles - Operating costs	-3,367	-3,084
***Résultat opérationnel* - Operating result**	**710**	**538**
Intérêts reçus - Interest received	104	94
Equipement de bureau - Office equipment	-30	-26
Charges financières - Financial costs	-335	-283
Dotations aux fonds dédiés - Transfer to dedicated funds	-153	-108
***Résultat annuel* - Result for the year**	**296**	**215**

Etat d'évolution du financement permanent

Statement of changes in permanent funding

	Capitaux permanents de l'OHI Net members funds	*Réserve de réévaluation* Revaluation Reserve	*Autres réserves* Other reserves (note 9)	Total
***Montants au 1er Janvier 2024* - Available on 1 January 2024**	2,718		3,808	6,526
Résultat de l'année - Result for the year	296		-	296
***Evolution des fonds dédiés* - Evolution of dedicated funds:**				
- *Dépensé à partir des fonds dédiés* - Spent from dedicated funds			-60	-60
- *Fonds de retraite interne* - Internal Retirement Fund			-	
- *Fonds pour le déménagement des directeurs* - Relocation Fund			-	
- *Fonds pour les conférences* - Conference Fund			-	
- *Fonds pour le Renforcement des Capacités* - CB Fund			-	
- *Fonds pour les Projets spéciaux* - Special Projects Fund				
***Mouvements dans l'année* - Movements in the year (provisions) :**				
- *Variation provision du FRI* - Changes in IRF requirements	-136		-	-136
- *Dotation du fonds de réserve d'urgence* - Allocation to Emergency Rese Fund	-2		-	-2
- *Réserves à distribuer* - Reserves to be distributed				
***Montants au 31 Décembre 2024* - Available at 31 December 2024**	**2,877**		**3,748**	**6,625**

Table 3

International Hydrographic Organization - *Organisation Hydrographique Internationale*

Profit and Loss Statement - *Compte d'exploitation*

as of 31 December 2024 - *au 31 décembre 2024*

(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

		2024	***2023***
***Revenus* - Income**			
Contributions des Etats Membres - Contributions from Member States		3,648	3485
Imposition interne - Internal tax		214	182
Revenus et dépenses exceptionnelles - Exceptional income and expenditure		215	-45
		4,076	3622
***Revenus financiers* - Interest received**			
Intérêts des placements - bank interest		104	94
***Charges opérationnelles* - Operating costs**			
Charges de personnel - Personnel costs	2,906		2597
Déplacements - Long Distance Travel	244		209
Entretien des locaux et équipements - Maintenance of premises and equipment	99		105
Postes et télécommunications - Postage and telephone	22		25
Consultants - Consultancy	44		74
Support administratif pour le Conseil - Administrative support for the Coun	13		12
Autres publications - Other publications			
Revue H.I - I.H Review	10		10
Autres coûts opérationnels - Other operating costs	7		26
Fournitures de bureau - Office stationery	3		7
Relations publiques - Public relations	18		20
Charges diverses - Miscelleanous			
		-3,367	-3084
***Matériel de bureau* - Office equipment**			
Amortissement des immobilisations - Depreciation	15		11
Autres achats - Other purchases	15		14
		-30	-26
***Charges financières* - Financial costs**			
Créances douteuses - Bad debts	185		133
Provision congés payés - Provision leave days			0
Provision retraites externes - Provision external retirement	150		150
		-335	-283
***Dotations aux fonds dédiés* - Allocation to dedicated funds**		-153	-108
***Résultat net annuel* - Result for the year**		**296**	**215**

Table 4

International Hydrographic Organization - *Organisation Hydrographique Internationale*

Cash Flow Statement - *Etat de flux financiers*

as of 31 December 2024- *au 31 décembre 2024*

(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

		2024		***2023***
Cash Flow opérationnel **- from operating activities**				
Résultat opérationnel de l'année - Result for the year		296		215
Ajustements pour **- Adjustments for :**				
Dépréciation des immobilisations - Depreciation	15		11	
Cession d'immobilisations - Sale of fixed assets				
Provision du FRI - IRF provision				
Variation des réserves - Change in reserves				
Intérêts bancaires - Bank interest	-104		-94	
Charges financières - Financial expenditure				
Résultat avant variation du fonds de roulement		-89		-82
Result before working capital changes		207		133
Variation des débiteurs - Change in accounts receivable	252		-253	
Variation des créditeurs - Change in accounts payable	-248		-511	
		4		-764
Flux financier opérationnel - Operating cash flow		211		-631
Intérêts réglés - Interest paid	0		0	
Ajustement du Fonds de retraite - Retirement fund adjustment	-76		69	
		-76		69
Flux financier opérationnel net - Net cash from operating activities		135		-562
Flux financier des investissements				
Cash flow from investing activities				
Achats d'immobilisations - Purchase of fixed assets	40		-29	
Cessions d'immobilisations - Sale of fixed assets	0		0	
Intérêts reçus - Interest received	104		94	
Flux net des opérations d'investissement				
Net cash movement from investment activities		144		65
Total des flux financiers **- Total cash flows**		280		-497
Disponibilités au 1er janvier de l'année				
Cash at 1st January of the year		9,294		9791
Disponibilités au 31 décembre de l'année				
Cash at 31st December of the year	Euros	9,574	Euros	9294

Table 5

International Hydrographic Organization - *Organisation Hydrographique Internationale*
Budget Implementation Summary - *Compte rendu de l'exécution budgétaire*
as of 31 December 2024 - *au 31 décembre 2024*
(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

	2024		
	Budget	**Actual - *Réel***	**Variance**
***Revenus* - Income**			
Contributions des Etats Membres - Contributions from Members State	3,635	3,648	-12
Imposition interne - Internal tax	250	214	36
Intérêts bancaires - Bank interest	40	104	-64
	3,925	3,966	-40
***Charges opérationnelles* - Operating costs**			
Charges de personnel - Personnel costs	3,208	2,906	302
Déplacements - Long Distance Travel	250	244	6
Entretien - Maintenance	120	99	20
Postes et télécommunications - Postage and telephone	32	22	10
Consultants - Consultancy	40	44	-4
Support administratif pour le Conseil - Administrative support for the Council	15	13	2
Autres publications - Other publications	1		1
Revue HI - I.H Review	10	10	
Autres coûts opérationnels - Other operating costs	8	7	1
Fournitures de bureau - Office stationery	8	3	5
Relations publiques - Public relations	20	18	2
Charges diverses - Miscellaneous	1		1
	3,712	3,367	345
***Dépenses d'investissement* - Capital expenditure**			
Amortissement - Depreciation	15	15	
Autres achats - Other purchases	16	15	1
	31	30	1
***Autres Dépenses d'investissement (>762€)* - Other Capital expenditure (over 762€)**			
Achat d'équipement informatique - Purchase of IT equipement	15	1	14
Achat de mobilier - Purchase of furniture	10	4	6
	25	6	19
***Charges financières* - Financial costs**			
Provision clients douteux - Provision for bad debts		185	-185
Provision congés payés - Provision for leave days			
Provision retraites externes - Provision external retirement	150	150	
	7	229	-221

Table 6

International Hydrographic Organization - *Organisation Hydrographique Internationale*

Overdue Contributions - *Contributions échues*

as of 31 December 2024 - *au 31 décembre 2024*

(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

		2024	2023	2022	2021	*Total*
Angola	Angola	12	8	8		***28***
Argentina	Argentine	29	28			***57***
Bahrein	Bahrein	16				***16***
Cabo Verde	Cap Vet	8				***8***
Cameroon	Cameroun	17				***17***
Cuba	Cuba	12	8	8		***28***
Dem.Rep. Of Congo	Rep.Dem. Du Congo	12	12	8	4	***36***
D.P.R of Korea	Rép. Dém de Corée	21	20			***41***
Ecuador	Equateur	22				***22***
Ghana	Ghana	8				***8***
Guyana	Guyane	12	12	12		***36***
Iraq	Irak	8	8	8	4	***28***
Kenya	Kenya	8	8			***16***
Kiribati	Kiribati	4				***4***
Kuweit	Koweit	41				***41***
Lebanon	Liban	12	12			***24***
Myanmar	Myanmar	21	20			***41***
Nigeria	Nigéria	41				***41***
Oman Sultanate	Sultanat d'Oman	8				***8***
Papua New Guinea	Papua Nvle Guinée	12	12			***24***
Qatar	Quatar	29	28	28		***85***
Russia	Russie	75	3			***78***
Saudi Arabia	Arabie Saoudite	65				***65***
Singapore	Singapour	112				***112***
Solomon Islands	Iles Solomon	8				***8***
Tonga	Tonga	8	8	8		***24***
Trinidad & Tobago	Trinite & Tobago	8				***8***
United Arab Emirates	Emirats Arabes Unis	25				***25***
Venezuela	Venezuela	33				***33***
		687	***187***	***80***	***8***	***962***

Suspended IHO Member States	Outstanding Contributions	Payment	Balance
Etats Membres de l'OHI suspendus	*Contributions arriérées*	*Paiement*	*Solde*
Serbia - *Serbie*	24.0		***24.0***
Syrian Arab Republic- *Rép. arabe syrienne*	60.0		***60.0***
	84.0	***0.0***	***84.0***

Table 7

International Hydrographic Organization - *Organisation Hydrographique Internationale*

Creditors - *Créditeurs*

as of 31 December 2024 - *au 31 décembre 2024*

(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

Contributions reçues d'avance	***Reçues en 2024 pour les prochaines contributions***	***Reçues en 2023 pour les prochaines contributions***
Contributions received in advance	Received in 2024 for future contributions	Received in 2023 for future contributions
Albania - *Albanie*	8	0
Algeria - Algérie	27	0
Australia - *Australie*	35	0
Belgium - *Belgique*	0	58
Brazil - *Brésil*	45	45
Bruneï	0	20
Bulgaria - *Bulgarie*	12	0
Canada	0	0
Chile - *Chili*	3	3
Cyprus - *Chypre*	99	111
Egypt - *Egypte*	29	0
France - *France*	62	62
India - Inde	79	0
Ireland - *Irlande*	16	16
Latvia - *Lettonie*	16	16
Mauritius	12	12
Mexico - *Mexique*	48	48
Netherlands - *Pays-Bas*	66	65
New Zealand - *Nouvelle-Zélande*	16	16
Poland - *Pologne*	12	12
Portugal - *Portugal*	0	93
South Africa - *Afrique du Sud*	21	20
Sweden - *Suède*	41	41
Thailand - *Thaïlande*	0	45
United Kingdom - *Royaume Uni*	112	111
	759	794

Créditeurs et charges à payer - Creditors and accruals		
Plan de pensions - Pensions plan payments	9	49
Charges à payer - Accruals	361	694
Autres créditeurs - Other	28	0
	398	742

International Hydrographic Organization
Organisation Hydrographique Internationale

Notes to the Financial Statements - *Notes relatives aux Etats Financiers*

as of 31 December 2024 - *au 31 décembre 2024*
(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

1- Principes Comptables – *Accounting Policies*

(a) Principes comptables de base – *Basis of accounting*

Les états financiers sont préparés conformément aux principes comptables de l'Organisation Hydrographique Internationale qui ne sont pas substantiellement différents des principes comptables généralement reconnus en Principauté de Monaco sauf pour certains points, par exemple :

- La Provision pour assurer les pensions au personnel IFR et aux retraités : conformément aux principes comptables de l'Organisation Hydrographique Internationale, la provision est intégralement comptabilisée au moyen d'un compte de capitaux propres tandis que, selon les principes comptables généralement reconnus en Principauté de Monaco, cette provision et sa variation annuelle devraient être comptabilisées au moyen de comptes de pertes et profits ;
- Quelques différences mineures de présentation.

The financial statements are prepared in accordance with the International Hydrographic Organization accounting principles which are not substantially different from the generally accepted accounting principles in Principality of Monaco except for some matters, for example :

- *Provision to ensure pensions to IFR staff and retirees : in accordance with the Internal Hydrographic Organization accounting principles, the provision is fully recorded through an equity account whereas under the generally accepted accounting principles in Principality of Monaco, this provision and its annual variation should be recorded through profit and loss accounts.*
- *Some minor presentation differences.*

(b) Revenus – *Income*

Les revenus proviennent essentiellement des contributions des Etats Membres de l'OHI.
Income principally represents contributions receivable from Member States.

(c) Contributions échues – *Overdue contributions*

Conformément à l'article 16 du règlement financier, les droits et prérogatives d'un Etat Membre peuvent se trouver suspendus lorsque ces contributions sont échues depuis au moins 2 années.
La décision 24(e) de la première session de l'Assemblée de l'OHI a supprimé l'article 13 du règlement financier concernant les intérêts de retard.
A compter de 2013, une provision complémentaire pour créances douteuses est instituée, afin de refléter les incertitudes géopolitiques de certains Etats Membres.
In accordance with Article 16 of the Financial Regulations, Member States can be suspended when contributions are in arrears by at least two years.
Decision 24e of the first session of the IHO Assembly deleted article 13 of the financial regulations regarding interest on late payment.
From 2013, an additional provision for bad debts has been made, in order to reflect geopolitical uncertainties of some of the Member States.

(d) **Amortissement des Immobilisations – *Depreciation of tangible assets***

Il est pratiqué un amortissement sur toutes les immobilisations (d'un prix unitaire supérieur à 762 Euros) à hauteur de la valeur totale de l'immobilisation sur sa probable durée d'utilisation selon les taux suivants :

- Mobilier 20 % du coût par année (sur 5 années)
- Equipement informatique 33.33% du coût par année (sur 3 années)

Provision is made for depreciation of all tangible assets (over 762 Euros in value per article) at rates calculated to write off the cost or valuation over its expected useful life as follows:

- *Furniture 20% per annum on cost (5years)*
- *IT Equipment 33.33 % per annum on cost (3 years)*

(e) **Transactions en devises – *Foreign Currencies***

En cours d'année, les transactions libellées en devises sont converties en Euros au taux de change en vigueur à la date de la transaction.

En fin d'année, les dettes et disponibilités libellées en devises sont converties en Euros au taux de change à la date d'établissement du bilan. Les pertes et gains de change sont enregistrés dans le compte de résultat.

During the year, transactions denominated in foreign currencies were converted into Euros at the rate of exchange ruling at the date of the transaction.

At the end of the year, current assets and liabilities denominated in foreign currencies were converted at the rate of exchange ruling at the balance sheet date.

Profit and losses on exchange are dealt with in the profit and loss account.

(f) **Fonds de Retraite interne – *Internal retirement Fund***

L'OHI gère un fonds de pension dénommé Fonds de Retraite Interne (FRI).

Neuf retraités sont concernés par ce fonds.

La totalité des avoirs destinés à couvrir les engagements de ce fonds font l'objet de comptes bancaires spécifiques sous forme de comptes de dépôt à terme.

L'Organisation retient l'intégralité de l'engagement déterminé sur la base de l'estimation d'une étude actuarielle (voir note 7). Depuis 2005, les pensions sont réglées à partir des avoirs du FRI, au lieu d'être réglées depuis le budget de l'OHI, comme ce fut le cas de 2000 à 2004.

The Organization operates a benefit pension scheme know as the Internal Retirement Fund (IRF).

Nine retirees are covered by this fund.

A proportion of the assets held to meet the pension liability are held in designated bank accounts and investments. The Organization makes full provision for the estimated liability based on actuarial valuation (see note 7). From 2005, pensions have been paid form dedicated IRF accounts as opposed to payment from the IHO budget as in previous years (from 2000 to 2004).

(g) **Provision pour retraites externes – *Provision for external retirement***

L'OHI a l'obligation d'assurer à ses membres du personnel recrutés localement un pension de retraite au moins équivalente à la CAR.

Un nouveau contrat a été souscrit depuis Janvier 2022 auprès d'une compagnie d'assurance, GAN VIE, qui assure une pension au moins équivalente à celle versée par la CAR, à la condition que le capital nécessaire au paiement de cette provision soit versé intégralement au GAN au moment du départ à la retraite du salarié.

Cette obligation est calculée et ajustée tous les ans.

La provision budgétée et révisable est de 150 000 € par an.

The IHO has an obligation towards its staff members locally recruited to ensure a retirement pension at least equivalent to the one served by the CAR.
A new contract has been established with another insurance company, GAN VIE, with effect 1st January 2022 which ensures a payment of a pension equivalent CAR on the condition that the capital needed for the payment of this pension is totally paid by the IHO on retirement of the Staff Member. This engagement is calculated and adjusted every year.
The budgeted and revisable provision is €150,000 per year.

(h) **Réserve de Trésorerie opérationnelle et Fonds de réserve d'urgence**
Operating Cash Reserve and Emergency Reserve Fund

L'article 17 du règlement financier indique que le Secrétariat disposera à la fin de chaque année d'une réserve de trésorerie opérationnelle, dont le montant sera d'au moins 3/12ème du budget opérationnel annuel.
L'article 18 du règlement financier indique que le montant du fonds de réserve ne sera pas inférieur à 1/12ème du budget opérationnel annuel (voir note 10).
Article 17 of the Financial Regulations indicates that the Secretariat will have at its disposal by the end of each year an amount of operating cash reserve, which will correspond to at least 3/12th of the annual operating budget.
According to Article 18 of the Financial Regulations the Emergency Reserve Fund shall not be less than 1/12th of the annual operating budget (see note 10).

(i) **Evolution ou changement de procédures internes**
Evolution or changes of internal procedures

A compter de 2007, et en accord avec le commissaire aux comptes, les procédures internes ont évolué dans 2 domaines :

- Pour l'amortissement des immobilisations, le Secrétariat retient maintenant la date d'acquisition de l'immobilisation au lieu de commencer à constater l'amortissement à partir du début de l'année suivante ;
- Les dotations aux fonds dédiés (Conférences, déménagement des directeurs, projets spéciaux, fonds pour le renforcement des capacités, fonds de rénovation et d'amélioration et fonds pour la GEBCO) sont dotées à partir du budget.

From 2007, and in agreement with the independent auditor, internal procedures have been developed in 2 areas :

- *Regarding the depreciation of fixed assets, the Secretariat now depreciates these assets from the date of acquisition of the assets, as opposed to starting the depreciation the year following that date ;*
- *Allocations to dedicated funds (Conference Fund, Relocation Fund, Special Project Fund, Capacity Building Fund, Renovation and Enhancement Fund é GEBCO Fund) are included in the budget.*

Table 8

2- Information relative au personnel – *Employee Information*

	2024	***2023***
Charges de personnel - *Personnel costs :*		
Secrétaire général et directeurs - *Secretary general and directors*	571	554
Salaires du personnel - *Salaries to Staff Members*	1,414	1,261
Cotisations aux régimes de retraite - *Payment to retirement funds*	408	372
Primes d'assurance - *Medical insurance costs*	379	343
Allocations au personnel - *Allowances*	45	23
Autres charges de personnel - *Other staff expenses*		
Personnel temporaire - *Temporary staff*	90	45
Formation - *Training*		
	2,906	2,597
L'effectif moyen annuel se décompose comme suit :		
The average number of employees during the year was made up as follows :		
Secrétaire général et directeurs - *Secretary general and directors*	3	3
Assistant Director and Finance officer	5	5
Personnel Permanent- *Permanent Member of Staff*	12	12
	20	20

3- Imposition du Résultat – *Taxation*

Selon l'accord conclu entre l'OHI et le Gouvernement de la Principauté de Monaco, les résultats de l'activité de l'Organisation sont exempts d'imposition.
According to the agreement between the IHO and the Government of the Principality of Monaco, the Organization is exempt from direct taxation.

4- Immobilisations – *Tangible Fixed Assets*

	Mobilier & Instruments Furniture & Instruments	*Biblio-thèque* Library	Total
Valeurs d'acquisition - *Cost*			
Au 1er janvier de l'année - *At 1 January 2024*	367	37	404
Solde des mouvements de l'année -*Net change during the year* *	-40	0	-40
Au 31 décembre de l'année - *At 31 December 2024*	327	37	364
* Achats moins mises au rebut - *Purchases less scrapping of equipment*			
Amortissements - *Depreciation*			
Au 1er janvier de l'année - *At 1 January 2024*	-330	0	-330
Amortissements de l'année - *Depreciation for the year*	40	0	40
	-290	0	-290
Valeur nette - *Net book value*			
Au 31 décembre de l'année n-1 - *At 31 December of previous year*	37	37	74
Au 31 décembre de l'année n - *At 31 December of current year*	37	37	74

Table 8

5- Débiteurs – *Debtors*

	2024	*2023*
Contributions restant dues (nettes de provision) *Overdue contributions less provision*	362	629
TVA récupérable - *VAT recoverable*	60	94
Avances au personnel et charges constatées d'avance *Prepayments and Staff advances*	180	131
	602	854

6- Créditeurs – *Creditors*

	2024	*2023*
Contributions reçues en avance - *Prepaid contributions*	759	794
Garantie au FRI - *Guaranty to the IRF*	1,650	1,646
Créditeurs et charges à payer - *Creditors and accruals*	1,022	742
	3,431	3,183

7- Engagement pour la Retraite – *Pension Commitments*

	2024	*2023*
- Dépôts à terme du FRI - *IRF Bank deposits*	2,482	1,744
- Disponibilités banque SG - *SG Bank deposits*	294	243
	2,776	1,987
- Garantie du Secrétariat - *Secretariat Guaranty*	833	1,646
- Estimation de l'engagement de retraite du personnel *Estimated net liabilities for existing and former Staff Members*	3,609	3,633

8- Fonds dédiés (pour des operations ultérieures) *Dedicated funds for future operations*

	2024	*2023*
- Fonds pour les conférences - *Conference Fund*	303	203
- Fonds de déménagement - *Relocation Fund*	20	-17
- Fonds de rénovation et d'amélioration – *Renovation and Enhancement Fund*	78	41
- Fonds pour le renforcement des capacités - *Capacity Building Fund*	1,107	1,138
- Fonds pour les projets spéciaux - *Special Projects Fund*	100	169
- Fonds pour la GEBCO - *GEBCO Fund*	1,591	1,740
- Fonds de la bibliothèque de présentation - *Presentation Library Fund*	63	60
- Fonds pour la conférence ABLOS - *ABLOS Conference Fund*	9	11
- Fonds IBSC - *IBSC Fund*	60	48

Table 8

9- Réserves – *Reserves*

	2024	2023
- Fonds de réserve d'urgence - *Emergency Reserve Fund*	316	314
- Réserves à distribuer - *Reserves to be distributed*	100	100
	3,748	3,808

10- Réserve de trésorerie en fin d'année – *End of Year Cash Reserve*

Le montant de trésorerie de fin d'année est un indicateur très utile pour illustrer la solvabilité de l'Organisation, et sa capacité à poursuivre ses opérations durant les 3 mois de l'année suivante (13 semaines).
Un mois supplémentaire se trouve requis pour le fonds de Réserve d'urgence, ce qui signifie un total de 17 semaines.
The end of year cash reserve is a very useful indicator of the liquidity of the Organization, and its ability to continue operations in the new year. It should be sufficient for 3 months operations (13 weeks).
In addition, a further 1 month is required for the Emergency Reserve Fund, this means a total of 17 weeks.

	2024		2023
Trésorerie de l'OHI - *IHO Cash balances*	8,951		8,678
(dont positions financières en devises - voir note 11 - *including foreign exchange holdings - see note 11)*			
Moins - *Less*			
- Contributions de l'année suivante - *Contributions received in advance*	-759		-794
- Valeur des fonds dédiés - *Dedicated funds*	-3,330		-3,492
	4,862		4,481
- Garantie en faveur du FRI - *Guaranty to the IRF*	-833		-1,646
- Trésorerie disponible - ***Net available Cash***	4,029	*	2,846
* 55 semaines de fonctionnement *55 weeks of operations*			

Total du budget de l'année suivante (2025) - *Total Budget for 2025*	3,786 *(hors fonds dédiés)*
- Besoin financiers totaux (Art.17 & 18) = 17 semaines	
Total IHO financial requirements (Art.17 & 18) = 17 weeks	
Art. 17 Réserve de trésorerie opérationnelle (3 mois) :	-947
Art. 17 Operating Cash Reserve (3 months)	
Art. 18 Fonds de réserve d'urgence (1 mois) :	-316
Art. 18 Emergency Reserve Fund (1 month)	
Excédent de trésorerie disponible	2,767
Cash surplus	

Table 8

11- Positions financières en devises – *Foreign Exchange Holdings*

Les disponibilités financières comportent des positions en devises étrangères.
Pour information, la valeur en milliers d'Euros de ces positions en devises en fin d'année sont :
The Cash balance include financial availabilities held in foreign currencies.
For information, the value in thousands of Euros of foreign currencies held at the end of each year was :

	2024	2023
○ Positions en USD - *USD holdings*	1,555	1,560

Ces positions en devises sont sujettes à revalorisation, en fonction de la variation des taux de change, et génère des pertes ou gains de change.
These holdings are liable to re-valuation, according to exchange rates fluctuations.

12- Engagements de caution – *Guarantee commitments*

Personne concernée :
Monsieur Masanao SUMIYOSHI, détaché du service des gardes-côtes japonais auprès de l'OHI, en qualité de locataire de son domicile.
Objet : Caution solidaire du locataire portant sur paiement du loyer mensuel de 1 390 €
Durée du bail : 3 ans (29/03/2024 – 29/03/2027)

Person concerned :
Mr Masanao SUMIYOSHI, seconded by the Japan Coast Guard to the IHO, as Lessee of his apartment.
Subject : Surety on the tenant's monthly rent payment of 1 390 €
Length : Length of lease = 3 years (29/03/2024 – 29/03/2027)

AUDITOR'S REPORT

RAPPORT COMMISSAIRE AUX COMPTES

Table 9

BALANCE SHEET

(expressed in Euros)

ASSETS	12/31/2024	12/31/2023
I. CASH AT BANK AND IN HAND		
IHO - Bank current accounts	2,597,383.57	2,519,686.08
IHO - Bank deposit accounts & investment	4,532,766.17	6,156,954.04
Petty cash	478.90	1,506.95
	7,130,628.64	**8,678,147.07**
II. VARIOUS DEBTORS		
Purchases made in advance	1,868.33	4,834.16
Outstanding bills	0.00	200.00
Advance to staff	51,851.33	208.33
Claim for refunding of VAT	60,182.28	94,115.99
Interest from Deposit to be received	126,576.19	126,051.74
	240,478.13	**225,410.22**
III. OUTSTANDING CONTRIBUTIONS		
Contributions for the year	773,712.41	485,044.51
Contributions for previous years	352,368.28	281,702.40
Contributions for suspended MS	84,271.68	84,271.68
Provision for doubtful contributions	-357,925.44	-222,086.19
Interest remaining due on contributions	0.00	0.00
	852,426.93	**628,932.40**
IV. INTERNAL RETIREMENT FUNDS ASSETS		
Retirement cash invested (IRF)	2,482,355.81	1,744,829.12
Retirement cash invested (External Pension Plans)	294,140.19	242,916.93
	2,776,496.00	**1,987,746.05**
V. FURNITURE AND EQUIPMENT	327,154.77	367,009.23
Depreciation of assets	-289,690.91	-329,644.42
VI. LIBRARY	36,663.99	36,663.99
	74,127.85	**74,028.80**
	11,074,157.54	**11,594,264.54**

LIABILITIES	12/31/2024	12/31/2023
I. PROVISION FOR THE PENSIONS		
Provision to ensure pensions to IRF staff and retirees	2,428,304.30	2,292,662.16
Provision for external retirement		
II. VARIOUS CREDITORS		
Value of External Pension Plans	303,095.57	291,825.17
A.M.R.R Supplementary Retirement Scheme	0.00	0.00
Accruals (outstanding bills, telex, telephone)	361,111.45	693,572.38
Travel claims & wages	27,954.47	0.00
Various creditors	0.00	0.00
Deposits received for Conference (stands)	0.00	0.00
	692,161.49	**985,397.55**
III. CONTRIBUTIONS RECEIVED IN ADVANCE		
Received in advance or in excess	**759,235.89**	**794,220.79**
IV. CAPITAL		
Emergency Reserve fund	315,558.00	314,008.00
Reserves to be distributed	100,000.00	100,000.00
Staff Retirement fund (IRF)	886,861.76	1,098,219.84
Conference Fund	303,171.85	203,171.85
Relocation Fund	19,620.07	-16,530.47
Renovation and Enhancement Fund	77,538.25	41,148.25
Capacity Building Fund	1,107,192.29	1,137,612.84
Special Projects Fund	99,520.16	169,021.16
GEBCO fund	1,590,824.87	1,739,505.27
Presentation Library Fund	63,062.15	59,562.15
ABLOS Conference fund	9,034.70	10,734.70
IBSC Fund	60,340.42	47,763.87
	4,632,724.52	**4,904,217.46**
Net yearly operating profit	296,156.91	215,221.97
Net Members Fund	2,265,574.44	2,402,544.61
	2,561,731.35	**2,617,766.58**
	7,194,455.87	**7,521,984.04**
	11,074,157.54	**11,594,264.54**

BILAN

(exprimé en Euros)

ACTIF		31/12/2024	31/12/2023	PASSIF		31/12/2024	31/12/2023
I. TRESORERIE DISPONIBLE				**I. PROVISION POUR LES PENSIONS DU PERSONNEL**			
OHI - Comptes courants bancaires		2,597,383.57	2,519,686.08	. Provision pour couvir les pensions du personnel		2,428,304.30	2,292,662.16
OHI - Comptes de dépôt & placement monétaire		4,532,766.17	6,156,954.04	(retraités et actifs relevant du FRI)			
Espèces en caisse		478.90	1,506.95	Provision pour retraites externes			
		7,130,628.64	**8,678,147.07**	**II. CREDITEURS DIVERS**			
II. DEBITEURS DIVERS				Plans de pensions externes		303,095.57	291,825.17
Prestations effectuées d'avance		1,868.33	4,834.16	Retraite complémentaire A.M.R.R		0.00	0.00
Factures non encaissées		0.00	200.00	Charges à payer (factures, télécommnucations, etc..)		361,111.45	693,572.38
Avances au personnel		51,851.33	208.33	Salaires et notes de frais		27,954.47	0.00
Demande de remboursement de TVA		60,182.28	94,115.99	Créditeurs divers		0.00	0.00
Intérêts sur placements à recevoir		126,576.19	126,051.74	Montants reçus pour la prochaine Conférence (stands)		0.00	0.00
		240,478.13	**225,410.22**			**692,161.49**	**985,397.55**
III. CONTRIBUTIONS				**III. CONTRIBUTIONS RECUES EN AVANCE**			
Contributions pour l'année en cours		773,712.41	485,044.51	Reçues en avance ou en excédent		**759,235.89**	**794,220.79**
Contributions échues (années précédentes)		352,368.28	281,702.40	**IV. CAPITAUX PERMANENTS**			
Contributions (Etats membres suspendus)		84,271.68	84,271.68	Fonds de réserve d'urgence		315,558.00	314,008.00
Provision pour contributions		-357,925.44	-222,086.19	Réserves à distribuer		100,000.00	100,000.00
Intérêts restant dus sur contributions échues		0.00	0.00	Fond de Retraite Interne (FRI)		886,861.76	1,098,219.84
		852,426.93	**628,932.40**	Fonds pour les conférences		303,171.85	203,171.85
				Fonds pour le déménagement des directeurs		19,620.07	-16,530.47
IV. TRESORERIE DES FONDS DE RETRAITE				Fonds de rénovation et d'amélioration		77,538.25	41,148.25
				Fonds pour le renforcement des capacités		1,107,192.29	1,137,612.84
Trésorerie disponible (FRI)		2,482,355.81	1,744,829.12	Fonds pour les projets spéciaux		99,520.16	169,021.16
				Fonds pour la GEBCO		1,590,824.87	1,739,505.27
Trésorerie placée (Plans externes)		**294,140.19**	242,916.93	Fonds de la bibliothèque de présentation		63,062.15	59,562.15
				Fonds pour la conférence ABLOS		9,034.70	10,734.70
		2,776,496.00	**1,987,746.05**	Fonds IBSC		60,340.42	47,763.87
						4,632,724.52	**4,904,217.46**
V. MOBILIER & EQUIPEMENTS		327,154.77	367,009.23				
Amortissement des immobilisations		-289,690.91	-329,644.42				
				Résultat opérationnel net de l'année en cours		296,156.91	215,221.97
VI. BIBLIOTHEQUE		36,663.99	36,663.99	Capitaux nets permanents		2,265,574.44	2,402,544.61
						2,561,731.35	**2,617,766.58**
		74,127.85	**74,028.80**				
						7,194,455.87	**7,521,984.04**
		11,074,157.54	**11,594,264.53**			**11,074,157.54**	**11,594,264.53**

International Hydrographic Organization - *Organisation Hydrographique Internationale*

Profit and Loss Statement - *Compte d'exploitation*

as of 31 December 2024 - *au 31 décembre 2024*

(expressed in Euros - *exprimé en Euros*)

		2024		*2023*
***Revenus* - Income**				
Contributions des Etats Membres - Contributions from Member States		3,647,644.00		3,485,061.12
Imposition interne - Internal tax		213,588.17		181,793.65
Revenus et dépenses exceptionnelles - Exceptional income and expenditure		215,245.90		-44,522.78
		4,076,478.07		3,622,331.99
***Revenus financiers* - Interest received**				
Intérêts des placements - bank interest		104,371.74		93,845.14
		104,371.74		93,845.14
***Charges opérationnelles* - Operating costs**				
Charges de personnel - Personnel costs	2,906,310.91		2,597,294.37	
Déplacements - Long Distance Travel	244,004.46		209,533.72	
Entretien des locaux et équipements -	99,451.62		104,558.67	
Maintenance of premises and equipment	0.00		0.00	
Postes et télécommunications - Postage and telephone	21,650.92		25,193.40	
Consultants - Consultancy	43,900.00		92,214.44	
Support administratif pour le Conseil - Administrative support for the Cc	12,600.46		11,653.81	
Autres publications - Other publications	360.00		250.00	
Revue hydrographique internationale - I.H Review	10,000.00		10,000.00	
Autres coûts opérationnels - Other operating costs	6,645.76		7,077.06	
Fournitures de bureau - Office stationery	3,292.60		6,651.98	
Relations publiques - Public relations	17,987.77		19,894.56	
Charges diverses - Miscelleanous	400.00		22.99	
		-3,366,604.50		-3,084,345.00
***Matériel de bureau* - Office equipment**				
Amortissement des immobilisations - Depreciation	15,212.95		11,459.57	
Autres achats - Other purchases	14,556.73		14,148.03	
		-29,769.68		-25,607.60
***Charges financières* - Financial costs**				
Créances douteuses - Bad debts	185,118.72		132,802.56	
Provision congés payés - Provision leave days	0.00		0.00	
Provision retraites externes - Provision external retirement	150,000.00		150,000.00	
		-335,118.72		-282,802.56
***Dotations aux fonds dédiés* - Allocation to dedicated funds**		-153,200.00		-108,200.00
***Résultat net annuel* - Result for the year**		**296,156.91**		**215,221.97**

International Hydrographic Organization
Organisation Hydrographique Internationale

Notes to the Financial Statements - *Notes relatives aux Etats Financiers*

as of 31 December 2024 - *au 31 décembre 2024*
(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

1- Principes Comptables – *Accounting Policies*

Les états financiers sont préparés conformément aux principes comptables de l'Organisation Hydrographique Internationale qui ne sont pas substantiellement différents des principes comptables généralement reconnus en Principauté de Monaco sauf pour certains points, comme le plan de retraite personnalisé dont l'OHI a la responsabilité sur les 3 modalités de régime en cours :

a) La Provision pour assurer les pensions au personnel FRI et aux retraités : conformément aux principes comptables de l'Organisation Hydrographique Internationale, la provision est intégralement comptabilisée au moyen d'un compte de capitaux propres tandis que, selon les principes comptables généralement reconnus en Principauté de Monaco, cette provision et sa variation annuelle devraient être comptabilisées au moyen de comptes de pertes et profits *(détaillée dans le point 5 h)* ;
b) La provision de retraite des membres du personnel recrutés sur le plan local dont la couverture est gérée par un prestataire externe d'assurance retraite (GAN) et détaillée dans le point 5 i ;
c) Les membres du personnel recrutés à l'international sont couverts par un plan de retraite personnalisé qui accumule le capital des cotisations de l'OHI et de leurs cotisations personnelles, à retirer à la date de la fin de leur mandat à l'OHI.

The financial statements are prepared in accordance with the International Hydrographic Organization accounting principles which are not substantially different from the generally accepted accounting principles in Principality of Monaco except for some matters, such as the personalized pension plan for which the IHO is responsible for the 3 types of plan currently in force :

a) Provision to ensure pensions to IFR staff and retirees : in accordance with the Internal Hydrographic Organization accounting principles, the provision is fully recorded through an equity account whereas under the generally accepted accounting principles in Principality of Monaco, this provision and its annual variation should be recorded through profit and loss accounts (detailed in point 5 h) ;
b) The pension provision for Locally Recruited Members of staff are covered by an external pension insurance provider (GAN) and detailed in point 5 i.
c) Internationally-Recruited Members of Staff are covered by a personal retirement plan which accumulates the capital of the IHO's contributions and their personal contributions, to be withdrawn at the end of their term of office with the IHO.

2- Présentation de l'OHI – *Presentation of the IHO*

L'organisation Hydrographique Internationale (OHI) est une organisation intergouvernementale consultative et technique, qui a été créée en 1921 en vue de soutenir la sécurité de la navigation et la protection du milieu marin. L'OHI jouit du statut d'observateur auprès de l'Organisation des Nations Unis et elle est reconnue comme étant l'autorité compétente en matière d'hydrographie et de cartographie marine.
Le Secrétariat de l'OHI est basé à Monaco et dirigé par un Secrétaire général et assisté de deux directeurs. Le Secrétariat général et les deux directeurs sont élus par les Etats Membres de l'OHI lors des sessions ordinaires de l'Assemblée.

The International Hydrographic Organization (IHO) is an intergovernmental consultative and technical organization that was established in 1921 to support safety of navigation and the protection of the marine environment. The IHO enjoys observer status at the United Nations (UN) and is recognized as the competent international authority regarding hydrography and nautical charting.
The Secretariat of the IHO is based in Monaco and is headed by a Secretary General assisted by two Directors. They are elected by the IHO Member States at ordinary sessions of the Assembly.

3- Information relative au personnel – *Employee Information*

Les membres du personnel sont régis par le règlement du personnel, qui énonce les devoirs et obligations, les conditions de service et les droits fondamentaux des membres du personnel du Secrétariat de l'OHI.
Members of Staff of the IHO are ruled by the Staff Regulations, which set out the duties and obligations, the conditions of service and the basic rights of the Members of staff of the IHO.

L'effectif moyen annuel se décompose comme suit :
The average number of employees during the year was made up as follows :

Secrétaire général et directeurs - *Secretary general and directors*	3
Assistant Director and Finance officer	5
Personnel Permanent – *Permanent Member of Staff*	12
	20

4- Contributions reçues d'avance – *Contributions received in advance*

A partir du mois de Juillet de l'année en cours, les lettres de demandes de contributions pour l'année suivante sont envoyées aux Etats Membres. Les paiements reçus sont comptabilisés dans le compte 4873 « Contributions reçues d'avance ». Le revenu de contribution est comptabilisé au 1er janvier de l'exercice concerné.
As of July of the current year, letters for the contributions for the following year are sent to Member States. Payments of these contributions are accounted for in the account 4873 "Contributions received in advance". Income from these contributions is accounted for on the 1st January of the following year.

5- Fonds dédiés (pour des operations ultérieures) – *Dedicated funds for future operations*

a. Fonds pour l'Assemblée – *Assembly Fund*

Le fonds pour les Conférences permet la couverture des dépenses de l'Assemblée hydrographique internationale.
The Conference Fund allow the expenses linked to the International Hydrographic Assembly to be met.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	203,171.85 €
Dotation budgétaire pour 2024 – *Budget Allocation 2024*	50,000.00 €
Affectation Résultat – *Decision Resultat*	50,000.00 €
Dépenses – *Expenditure*	
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	303,171.85 €

b. Fonds de rénovation et d'amélioration – *Renovation and Enhancement Fund*

Le fonds de rénovation est maintenu pour couvrir toute dépense importante de modification ou de rénovation des locaux, dont le financement ne serait pas assuré par le Gouvernement de la Principauté de Monaco.
The renovation fund is maintened in order to meet any major expenses incurred for modification or renovation purposes of the building, in relation to those expenses not covered by the Government of the Principality of Monaco.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	41,148.25 €
Dotation budgétaire pour 2024 – *Budget Allocation 2024*	40,000.00 €
Dépenses – *Expenditure*	- 3,610.00 €
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	77,538.25 €

c. Fonds pour le déménagement des directeurs- *Relocation FUND*

Ce fonds est destiné à couvrir les dépenses de déménagement des membres du personnel recrutés sur le plan international.
This fund is intended to cover the removal and relocation expenses for the internationally recruited members of staff.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	- 16,530.47 €
Dotation budgétaire pour 2024 – *Budget Allocation 2024*	60,000.00 €
Dépenses – *Expenditure*	- 23,849.46 €
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	19,620.07 €

d. Fonds pour les conférences ABLOS – *ABLOS CONFERENCE FUND*

Le fonds ABLOS couvre les dépenses d'une conférence qui se tient tous les 2 ans.
The ABLOS Fund supports the operational costs for the ABLOS conference which is held every other year.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	10,734.70 €
Dotation budgétaire pour 2023 – *Budget Allocation 2024*	
Dépenses – *Expenditure*	- 5,000.00 €
Recettes – *Income*	3,300.00 €
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	9,034.70 €

e. Fonds pour la Carte Générale Bathymétrique des Océans – *GEBCO FUND*

Ce fonds a été crée en 2002 pour couvrir les activités liées à la GEBCO (recettes et dépenses), et inclut les subventions reçues chaque année du Gouvernement de la Principauté de Monaco et d'autres bienfaiteurs.

This fund was created in 2002 to support approved GEBCO project activities and includes the subventions received every year from the Government of the Principality of Monaco and any other supporting benefactors.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	1,739,505.27 €
Revenus – *Income :*	
Dotation budgétaire pour 2024 – *Budget Allocation 2024*	18,200.00 €
Subvention reçue du Gvt. de Monaco – *Subvention from the Gvt. Of Monaco*	8,300.00 €
Transfert de la Nippon Foundation – *Transfer from Nippon Foundation*	2,812,993.09 €
Dépenses – *Expenses :*	
SCUFN Gazetter – SCRUM	- 14,600.00 €
SEABED 2030	-2,942,140.15 €
GEBCO	- 31,433.34 €
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	1,590,824.87 €

f. Fonds pour la bibliothèque de présentation – *PRESENTATION LIBRARY FUND*

Ce fonds est dédié à l'évolution d'une publication spécifique (Annexe A à la publication S-52-bibliothèque de présentation de l'OHI pour les ECDIS). Lors de sa 6ème réunion, le comité des normes et services hydrographiques ont approuvé la continuation de ce fonds et a recommandé qu'il soit utilisé pour financer le développement ultérieur de la composante présentation de la nouvelle génération de normes basée sur la S-100.

This fund is dedicated to the maintenance of a specific publication (S-52 Annex A-IHO Presentation Library for ECDIS). During its 6th meeting, the Hydrographic Services and Standards Committee endorsed the continuation of the fund and recommended that the fund be used to support further development of the portrayal component of the new S-100 based generation of standards.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	59,562.15 €
Revenus – *Income :*	
Ventes de la publication "Bibliothèque de présentation »	3,500.00 €
Sales of the Publication « Presentation Library"	
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	63,062.15 €

g. Fonds de réserve d'urgence – *EMERGENCY RESERVE FUND*

Conformément à la lettre LCCF 6/2003 approuvée, le montant du fonds de réserve d'urgence ne devra pas être inférieur à 1/12ème du budget opérationnel annuel.

As announced in FCCL 6/2003, the amount of the Emergency Reserve Fund shall not be less than 1/12th of the annual operating budget.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	314,008.00 €
Allocation complémentaire pour satisfaire les dispositions de l'article 18 du règlement financier	
Additionnal allowance to meet Financial Regulations Art.18 requirements	1,550.00 €
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	315,558.00 €

h. Fonds de retraite interne (FRI) – *INTERNAL RETIREMENT FUND (IRF)*

L'OHI gère un fonds de pension dénommé Fonds de retraite interne (FRI). Actuellement, neuf retraités sont concernés par ce fonds.
La totalité des avoirs destinés à couvrir les engagements de ce fonds font l'objet de comptes bancaires spécifiques sous forme de comptes de dépôt à terme.
L'Organisation retient l'intégralité de l'engagement déterminé sur la base de l'estimation triennale d'une étude actuarielle.
A partir de 2016, une provision complémentaire, réévaluée tous les ans, est incluse dans le budget annuel, afin de couvrir les engagements supplémentaires générés par la possibilité pour les membres du personnel de choisir une pension basée sur la CAR, conformément à l'article 9.6 du Règlement du personnel édition 8.0.0.

The Organization operates a benefit pension scheme known as the Internal Retirement Fund (IRF).
Nire retirees are covered by this fund.
A proportion of the assets held to meet the pension liability are held in designated bank accounts and investments.
The Organization makes full provision for the estimated liability bases on triennial actuarial valuation.
From 2016, a provision has been included in the annual budget, to be adjusted every year, to cover the additional liabilities of the Staff Members electing to draw a pension equivalent to the CAR, in accordance with article 9.6 of the Staff Regulations edition 8.0.0.

Montant de la dette sociale au 01/01/2024 *Amount of social liability on 01/01/2024*	3,911,802.16 €	
Dotation Budgétaire 2024 – *Budget allocation 2024*	150,000.00 €	
Intérêts perçus par le fonds (D/A) – *Interests received from deposit acc.*	27,600.48 €	
Pensions réglées par le fonds (FRI)-*Pensions paid from IRF*	- 238,958.56 €	
		3,850,444.08 €
Variation annuelle de la dette sociale du FRI *Variation of IRF liability during the year*		135,642.14 €
Solde du compte FRI au 31/12/2024 – *Balance of IRF on 31/12/2024*	2,292,662.16 €	
Provision pour les pensions au 31/12/2024 *Provision for the pensions on 31/12/2024*	2,428,304.30 €	
Montant de la dette sociale du FRI au 31/12/2024 *Amount of IRF social liability on 31/12/2024*		3,986,086.22 €

i. Provision pour retraite externe - *PROVISION FOR EXTERNAL RETIREMENT*

L'OHI a l'obligation d'assurer à ses membres du personnel recrutés localement une pension de retraite au moins équivalente à la CAR. A cet effet, un contrat avait été souscrit auprès d'une compagnie d'assurance, Neuflize Vie. En février 2021, Neuflize Vie a décidé d'annuler ce contrat.
Un nouveau contrat a été souscrit à partir de janvier 2022 auprès d'une autre compagnie d'assurance, GAN VIE, qui assure une pension au moins équivalente à celle versée par la CAR, à la condition que le capital nécessaire au paiement de cette pension soit versé intégralement à GAN au moment du départ à la retraite du salarié.
Cet engagement est calculé et ajusté tous les ans par un actuaire Actélior (partenaire du GAN).
D'après le rapport établi par Actélior, l'engagement global actualisé au 31/12/2024 est de 1 636 840 €, dont 844 914 € ont été versé au contrat courant 2024.

Au 31/12/2024, la provision annuelle comptabilisée s'élève à 150 000€ payable sur 2025.
Le delta restant à étaler fera l'objet d'une révision sur 2025 compte tenu du rapport de 2024 avec un changement de méthode de calcul pour un réajustement de l'étalement.

The IHO has an obligation towards its staff members locally recruted to ensure a retirement pension at least equivalent to the one served by the CAR. To this effect, a contract had been established with an insurance company, Neuflize Vie. In February 2021, Neuflize Vie decided to cancel this contract.
A new contract has been established with another insurance company, GAN VIE, with effect 1st January 2022 which ensures a payment of a pension equivalent CAR on the condition that the capital needed for the payment of this pension is totally paid by the IHO on retirement of the Staff Member.
This engagement is calculated and ajusted every year by an actuary called Actelior (a GAN partner).
According to the report prepared by Actelior, the total updated obligation at 31/12/2024 is 1,636,840 €, of which 844,914 € was paid into the contract during 2024.
At 31/12/2024, the annual provision recognized amounted to 150 000 € to be paid over 2025.
The delta remaining to be recognised will be reviewed in 2025 in the light of the 2024 report, with a change in the calculation method to readjust the value.

j. Fonds pour le renforcement des capacités - *CAPACITY BUILDING FUND (CBF)*

La lettre circulaire 87/2004 définit le CBF comme un soutien visant à aider les pays en voie de développement à établir des capacités humaines et institutionnelles en vue du développement efficace des capacités en levés hydrographiques et en cartographie marine nécessaires.
Circular Letter 87/2004 defines the CBF as a support to assist developing countries in building human and institutional capacities for the effective development of hydrographic surveying and nautical charting capabilities needed.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	1,137,612.84 €
Revenus – *Income :*	
Dotation budgétaire de l'OHI – *IHO Budget Allocation*	65,000.00 €
Soutien reçu de la République de Corée– *Support from the Republic of Korea*	457,507.05 €
Soutien reçu du Japon – *Support from Japan*	436,077.00 €
Soutien reçu du Canada – *Support from Canada*	142,405.68 €
Dépenses – *Expenses :*	
Activités financées par la Rep. de Corée- *Activities supported by the Rep.of Korea*	-350,377.83€
Activités financées par le Japon - *Activities supported by Japan*	-574,224.26€
Activités financées par le Canada - *Activities supported by Canada*	- 50,297.73€
Activités financées par le fonds de l'OHI- *Activities supported by IHO*	-156,510.46€
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	1,107,192.29 €

k. Fonds pour les projets spéciaux - *SPECIAL PROJECTS FUND*

Le Fonds pour les projets spéciaux a été établi en 2012 pour couvrir différents projets spéciaux, comme la maintenance ou l'établissement de normes, l'édition ou la mise à jour de publications complexes, diverses traductions, et des besoins particuliers identifiés par les comités et groupes de travail de l'Organisation. Ce fond couvre en particulier le développement de la nouvelle génération de normes basées sur la S-100.
The Special Projects Fund was established in 2012 to cover various special projects, such as the maintenance or drafting of standards, the editing or updating of complex publications, translations, and particular requirements identified by the Committees and other bodies of the Organization. This fund supports in particular the development of the new generation of S-100 based standards.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	169,021.16 €
Dotation budgétaire de l'OHI – *IHO Budget Allocation*	20,000.00 €
Affectation Résultat – *Surplus Decision*	15,000.00 €
Dépenses – *Expenditure*	-104,501.00 €
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	99,520.16 €

l. FONDS IBSC - *IBSC FUND*

Le Fonds sert à couvrir les dépenses opérationnelles authorisées du Comité.
A partir de 2015, l'OHI en tant que secrétaire de l'IBSC, a repris le rôle de trésorier du Fonds.
The purpose of the Fund is to support the approved operational expenses of the IBSC.
From 2015, the IHO as secretary of the IBSC, took over the role of treasurer of the Fund.

Montant du fonds au 1er Janvier 2024 – *Amount of fund on 1st January 2024*	47,763.87 €
Affectation Résultat – *Surplus Decision*	10,000.00 €
Honoraires facturés aux institutions souhaitant obtenir l'homologation IBSC *Fees levied on institutions seeking recognition by IBSC*	47,674.95 €
Frais de voyages – *Travel Expenses*	-45,098.40 €
Montant du fonds au 31/12/2024 – *Amount of fund on 31/12/2024*	60,340.42 €

Les fonds ABLOS, GEBCO et IBSC sont tous gérés par le biais des comptes bancaires consolidés de l'OHI.
The ABLOS, GEBCO and IBSC funds are all operated as part of the consolidated IHO bank accounts

PASCALE TARAMAZZO

EXPERT – COMPTABLE

MEMBRE DE L'ORDRE DES EXPERTS COMPTABLES DE LA PRINCIPAUTE DE MONACO

Independent auditor's report

International Hydrographic Organization
4, Quai Antoine 1er
98000 Monaco
MONACO

As auditor appointed by the IHO Assembly decision of 05/02/2023, for the financial years 2023-2025, we present our annual report for the financial year 2024.

Report on the audit of the financial statements

Our opinion

In our opinion, the financial statements of the International Hydrographic Organization's present fairly, in all material respects, the balance sheet of the Organization as of December 31, 2024, and its profit and loss statement for the year then ended in accordance with the accounting principles selected and disclosed by the Organization as set out in the notes to the financial statements, subject to the following qualification:

- Some specific funds are subject to an annual request for reimbursement of the unspent amount paid in and estimated in dollars. The exchange dollar/euro exchange is not recognized in the result figure, in the absence of an agreement to cover it, and remains in the funds' account. In the absence of determination of these successive exchange differences, whose origin relates to the previous year until 2023, we are not able to assess their impact. During 2024, all the reimbursements have been defined on a euro basis.
- For the purpose of external retirement, a cash payment provision of 150.000 € has been determined for 2024 in relation to the amount paid in 2023. An update of the payment schedule will be made in 2025, following the evaluation by the Actelior actuaries.

What we have audited

The financial statements of the International Hydrographic Organization's financial statements comprise the following:

- The balance sheet as of December 31, 2024;
- The statement of income for the years then ended;
- The notes to the financial statements.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs).

Our responsibilities under those standards are further described in the Auditor's Responsibility for the Audit of the Financial Statements section of our report.
We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion except as noted above.

Independence
We are independent of the Organization in accordance with the International Ethics Standards Board for Accountants' (IESBA) Code of Ethics for Professional Accountants. We have fulfilled our other ethical responsibilities in accordance with the IESBA Code.

Basis of accounting and restrictions on distribution and use
Reference is made to Note 1"Accounting policies" to the financial statements for a description of the basis of accounting. The financial statements have been prepared for the Member States of the Organization. Consequently, the financial statements may not be suitable for any other purpose. Our report is intended solely for the use of the Organization's Member States and is not intended to be and should not be distributed to or used by anyone other than the Organization's Member States. We have not modified our opinion on matter.

Other information

The Secretary General is responsible for Other Information. Annual Report 2024 - Part 2- Finances constitutes the other information for the year ended December 31, 2024. It includes the financial statements referred to here above and our auditor's report thereon, and the Profit and Loss Account as of 31 December 2024.

Our opinion on the financial statements does not extend to the other information and we do not express any form of assurance on it other than on the financial statements covered by our report.

In connection with our audit of the financial statements, our responsibility is to read the other information referred to above and to consider whether the other information is materially inconsistent with the financial statements.

Responsibilities of the Secretary General and those in charge of governance for the financial statements

The Secretary General is responsible for the preparation and fair presentation of the financial statements in accordance with the accounting principles selected and disclosed by the Organization as set out in the notes to the financial statements, and for such internal control as the Secretary General determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Secretary General is responsible for assessing the Organization's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern of accounting unless the Secretary General either intends to liquidate the Organization or to cease operations, or has no realistic alternative but to do so.
Those responsible for governance are responsible for overseeing the Organization's financial reporting process.

Auditor's responsibilities for auditing the financial statements

Our objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists.
Misstatements may arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken based on the financial statements.
In an audit in accordance with ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement due to fraud is greater than the risk of not detecting a material misstatement due to error, because fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Understand internal control relevant to the audit to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Organization's internal control.

- Evaluating the appropriateness of accounting policies used, and the reasonableness of accounting estimates and related disclosures made by the Secretary General.

- Conclude on the appropriateness of the Secretary General's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Organization's ability to continue as a going concern. If we conclude that material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Organization to cease to be a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements present fairly the underlying transactions and events.

We communicate with those charged with governance about, among other things, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Date: 20/03/2025

Pascale TARAMAZZO
Le Commissaire aux comptes