

INTERNATIONAL HYDROGRAPHIC ORGANIZATION



ANNUAL REPORT 2018

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FOREWORD

1 July 2018 turned out to be a historic date for navigation at sea. On exactly this day, ECDIS carriage requirement was mandated for new and existing vessels of relevant size on international voyages. This date likewise symbolically marks the conclusion of the IHO's standardization and coordination activities for the global production and dissemination of official high quality digital chart data branded ENC. The fact that this date did not gain any particular reaction from those who are affected, proves the applicability and implicitness of ECDIS technology. It seems appropriate to state that 2018 marks the year when international cooperation in hydrography has finally arrived in the digital age.

So, is that all said and done with ECDIS? We do not think so. Actually, some rather remote areas are not fully covered with ENCs on appropriate scales; there are still problems with geographic overlapping and the quality of the underlying survey data needs improvement in many areas. At the same time many regional projects for resurvey by means of modern equipment are underway, and ENC producing coastal states are constantly striving for improvements of the production workflow, quality assurance and an update regime. Like in many years before, these problems and activities have been the subject of various coordination efforts within the framework of the IHO Work programme in 2018.

High quality ENC provision is based on detailed knowledge of seabed topography. This year's World Hydrography Day theme "Bathymetry - the Foundation for Sustainable Seas, Oceans and Waterways" was setting the tone for the now 89 Member States to progress collaboratively on the subjects under the coordination of the Secretariat and the operational supervision of the IHO Council. One of the obvious insights addressed by the theme is the fact that our knowledge of the oceanic seabed topography is far from being complete. The number "18" seems to be a magic number since new calculations indicate that only 18% of a global 1 km² grid of all seas and oceans enjoyed any measurable survey activity so far. To address this obvious deficiency, this year saw progress in the further refinement of IHO's guidance for Crowdsourced Bathymetry campaigners and the uptake of the Seabed2030 project under the shared responsibility of IHO and IOC. Both approaches fit very well to the lasting concept of GEBCO - *The General Bathymetric Chart of the Oceans* as a long term ocean mapping project which relies largely on the voluntary contributions of an enthusiastic international team of geoscientists and hydrographers.

Relevant progress was also achieved in the development of the S-100 framework with the most notable achievement the publication of the long awaited first edition of the IHO Standard S-101 for the next generation ENC designed to drive the next generation ECDIS. The basis is formed by the operational web based infrastructure called the IHO Geoinformation Registry, which is thought to be the most relevant application of modern ISO geoinformation standards on a global scale.

The relevant chapters of this report reflect these developments and the related prospects in more detail. It informs the reader that, thanks to the enduring commitment and support by means of human, technical and financial resources of its Member States, the IHO was again able to principally meet the goals articulated under all three work programs of Corporate Affairs, Hydrographic Services and Standards and Inter-Regional Coordination and Support.

2018 was in fact the first year of financial supervision conducted under the authority of the Council.

Thanks to the usual conservative budgetary approach by the Directing Committee, endorsed by the Council and approved by the Member States, the fiscal treatments resulted in a well-balanced outcome at the end of the year.


Preparations have started for the planned triennium of celebration activities ranging from 2019 to 2021 to remind the public of the first Hydrographic Conference in London in 1919 and the foundation of the International Hydrographic Bureau in 1921 in the Principality of Monaco as the starting initiatives for a century of fruitful international cooperation in hydrography – despite all the discontinuities and disruptions the world saw during this time. Over these nearly hundred years, the Organization enjoyed the enduring support and interest in the Organization by the Principality of Monaco and the Secretariat has received every indication that this generosity will prevail into the future.

This foreword started with the notion that international cooperation in hydrography has arrived now in the digital age. In order to reflect this, the Secretariat started to transfer numerous services, i.e. has planned and started to conduct a digital overhaul of all IHO communication means. The sensitivity in this undertaking is to address the tradition and cumulated experience of the Organization in the same way as modern technology, enabling extended services, improving public visibility and creating an enduring digital presence. The achievement of full web based traceability of all articles ever published between 1923 and 2018 in the International Hydrographic Review and the creation and ongoing provision of IHO accounts on social media illustrate this overarching consideration very well.

Monaco, 1st April 2019



Abri Kampfer
Director



Dr Mathias Jonas
Secretary-General



Mustafa Iptes
Director

INTRODUCTION

The Secretariat is pleased to present the Annual Report of the activities of the Organization for 2018. 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. This Report consists of two Parts:

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 possible, 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 2018 together with the report of the external auditor.

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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 2018

Algeria	Monaco
Argentina	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 Korea
Democratic Republic of the Congo*	Romania
Denmark	Russian Federation
Dominican Republic	Saudi Arabia
Ecuador	Serbia*
Egypt	Seychelles
Estonia	Singapore
Fiji	Slovenia
Finland	South Africa
France	Spain
Georgia	Sri Lanka
Germany	Suriname
Greece	Sweden
Guatemala	Syrian Arab Republic*
Iceland	Thailand
India	Tonga
Indonesia	Trinidad and Tobago
Iran (Islamic Republic of)	Tunisia
Ireland	Turkey
Italy	Ukraine
Jamaica	United Arab Emirates
Japan	United Kingdom of Great Britain and Northern Ireland
Kuwait	United States of America
Latvia	Uruguay
Malaysia	Vanuatu
Malta	Venezuela (Bolivarian Republic of)
Mauritius	Viet Nam
Mexico	

** Rights of membership suspended*

IHO SECRETARIAT

Secretary-General

Dr Mathias JONAS, Germany



Directors

Abri KAMPFER, South Africa



Mustafa IPTES, Turkey



Managerial Staff

Alberto PEDRASSANI COSTA NEVES

(Brazil)

Cooperation and Capacity Building



Yves GUILLAM

(France)

Charting and Services



Anthony PHARAOH

(South Africa)

Digital Technology



David WYATT

(United Kingdom)

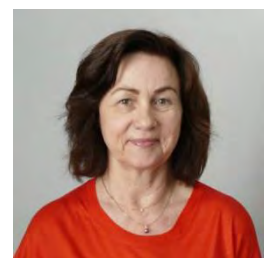
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Ghislaine FAUCHOIS

(France)

Manager, Finance and Administration



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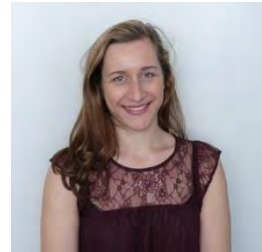
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Technical, Administrative and Service Staff

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Sandrine BRUNEL

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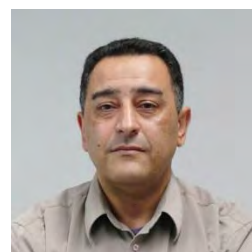
Caroline FONTANILI

Personal Assistant



Arezki MAACHE

Bureau Support Assistant



Daniel MENINI

Cartography and Graphics Assistant



Mireille MOLLET

Registrar, Librarian



Jeff WOOTTON

Technical Standards Support Officer



Associate Professional Officers

Junghyun KIM
(until February 2018)

(Republic of
Korea)

Capacity Building, Assistant
to Council-1 meeting



Dr Hee Yoon PARK
(from September 2018)

(Republic of
Korea)

Standards Support



Dr Kentaro KANEDA
(until March 2018)

(Japan)

GIS and IT Projects



Naohiko NAGASAKA
(from April 2018)

(Japan)

GIS and IT Projects



Atilio ASTE
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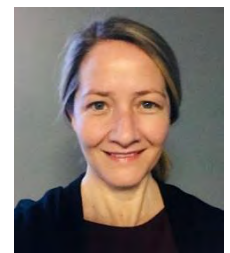
Council Managing Assistant



Kristen Crossett
(since May 2018)

(USA)

Social Media Content and
Provision Management



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 2nd Session of the Council (09 to 11 October 2018)**

RAdm Tim Lowe, National Hydrographer of the United Kingdom, head of the host organization, welcomed all Council members to London. The Secretary-General of the IHO, Dr Mathias Jonas, thanked the UK Hydrographic Office for hosting the meeting. He noted the absence of India and the Russian Federation and stated that the quorum was met with the presence of altogether 28 out of 30 Council Member States present. He acknowledged the registration of the following Observer States: Bangladesh, Chile, Croatia, Fiji, Malta, Myanmar, Nigeria, Poland, Portugal and Qatar. He reminded the Council that the first International Hydrographic Conference occurred in London in 1919. It was at this event where France proposed the establishment of an International Hydrographic Bureau, which eventually led to the foundation of the IHB in 1921 and for the later conversion into the IHO in 1970.

- **Report and proposals from HSSC**

The Chair of HSSC reported that the work of HSSC was guided by ‘IHO Work Programme 2’ tasks and by the key priorities of the Council. As with IRCC, HSSC had a high level of autonomy and it had been able to preserve and increase its flexibility using the resources provided by the IHO Secretariat and Member States. The Chair of the HSSC reported that HSSC ToRs and RoPs had been amended to reflect the presence and role of the Council; and the possibility for the HSSC to decide on the need to go through the Council for recommendations on Standards and Publications before submitting them to Member States for approval.

The Council endorsed the proposed amendments to the HSSC TORs and ROPs. The Chair of the HSSC presented the key priorities of the IHO Work Plan for 2019, beginning with the notional S-100 timeline for Product Specifications. A new simplified S-100 Master Plan was to be reviewed annually. HSSC had endorsed the S-100 Product Specification Guidebook and agreed to include it with the S-100 work plan. HSSC had agreed to the publication timeline of S-100 based Product Specifications, S-101 Edition 1.0.0; S-111 Edition 1.0.0; and S-121 Edition 1.0.0, under the conditions proposed by the HSSC Chair for the new review cycle for the WG/PT development phase of product specifications that were endorsed with immediate effect.

The HSSC Work Plan for 2019-2020 had been amended in light of the progress made to date, namely: development of “S-98 - Specification for Data Product Interoperability in S-100 Navigation Systems”; consolidation of the Product Specification Timeline in accordance with the new simplified S-100 Master Plan, with particular attention to S-101; submission of Ed. 6.0.0 of S-44; the development of a Minimum Standard for Data Validation with respect to the data quality aspects of all S-100 based

product specifications; and contribution to the development of an initial guidance on definition and harmonization of Maritime Services.



- **Report and proposals from IRCC**

The Chair of IRCC presented the Committee's report and proposals, with particular emphasis on the continued need for Capacity-Building; the persistence to resolve overlapping ENC's, noting the associated risk of unpredictable ECDIS behavior giving rise to safety concerns; crowdsourced bathymetry, particularly in its legal aspects; Project Seabed 2030; and Marine Spatial Data Infrastructure (MSDI).

In respect of the proposal to amend Resolution 2/1997 on the establishment of regional hydrographic commissions, members suggested minor editorial changes intended to bring the wording into line with the General Regulations, and noted that a further, more comprehensive revision of the resolution has now been submitted to the regional hydrographic commissions for their comments; any further revisions should include a reappraisal of the phrase "...the RHCs shall complement the work of the IHO Secretariat" in paragraph 1.

- **Development and future provision of S-100 products**

The Secretary-General noted that a number of S-100-based hydrographic products have reached a level of maturity that warrants discussion of the practical aspects of production and dissemination of the datasets and requires specific action by HSSC and IRCC. It will also be necessary to collaborate with industry and also approach the IMO to explore the legal status of the new products as equivalent to existing digital nautical charts and publications for compliance with the applicable carriage requirements of SOLAS. S-100 is the most important application of the ISO 19100 series of geographic standards on a global scale, which will ensure that new components are part of a family of standards and not frozen in time, but updated and reviewed as technology changes.

A number of activities were proposed and Member States made various comments for consideration. The Council finally agreed to task HSSC to consider the possibility to organize a demonstration showcase of S-100 based products and test beds; to task IRCC to instruct and provide guidance to the WENDWG in order to investigate the applicability of WEND-like Principles to the production and dissemination of S-101 ENC's and the first generation of S-100 based products. In conclusion of the lively discussion, the Council, HSSC, IRCC Chairs and Secretary-General proposed to draft an

implementation strategy aiming at the regular and harmonized production and dissemination of S-100 based products for further discussion at A-2 and for the preparation of the 2021-2023 IHO Work Programme. The Secretary-General proposed engaging with the IMO Marine Safety Division, on an informal basis as appropriate, to update on the current status of the S-100 framework and potential future impact on IMO instruments.

- **Review of IHO Corporate Affairs**

The Secretary-General presented an overview of the IHO Work Programme for 2019, which was based on year two of the three-year work programme approved by the first session of the IHO Assembly. This covered: corporate affairs; hydrographic services and standards and interregional coordination and support. Programme 1 included contribution to the IMO-IHO Harmonization Group on Data Modelling (HDGM); assessing participation in events peripheral to the core scope of hydrography; overhauling the website; assisting the Council in its operational consolidation phase; and considering engagement with the UN-GGIM Working Group on Marine Geospatial Information.

Programme-related actions resulting from C-1 included gaining Member States' approval to pursue the procedure for approving recommendations made by HSSC and IRCC, gaining approval for revision of nine IHO Resolutions; and providing enhanced management support for Capacity Building. The proposed theme for World Hydrographic Day 2019 was: "Hydrographic information to drive marine knowledge".

Responding to comments concerning interregional coordination and support, the Secretary-General indicated that he wished to intensify engagement with the UN and academia, including IMO's World Maritime University in Malmö and the International Maritime Law Institute at Malta.



- **IHO Strategic plan review - Report and Proposals from SPRWG**

The Chair of the Strategic Plan Review Working Group (SPRWG), Bruno Frachon, Hydrographer of France, introduced the WG report. The WG agreed on its terms of reference and rules of procedure. It has 23 members, of which 17 are members of the Council. It has worked mainly by correspondence, although 15 members attended an ad hoc meeting convened during the 10th meeting of the IRCC in Goa, India in June 2018.

SPRWG identified a number of issues in the current IHO strategic plan. The strategic assumptions are a mixture of hypothesis and context analysis, with various degrees of impact on IHO business. The document is complex, particularly in respect of the links between the strategic directions and the corresponding work programmes, making it difficult to identify priorities. There is no practical involvement in monitoring the strategic performance indicators and there is no item for this review and assessment of progress in the Assembly's or Council's agenda. Suggestions from SPRWG members – still tentative and subject to comment and review by the Council – included a greater focus on the overall strategic context; a more straightforward and target-oriented plan with a fixed number of strategic targets to be achieved by 2026. Examples of overall goals might include good coverage of relevant services and products, or greater harmonization and accessibility of hydrographic data,

products and services. In the ensuing discussion, members called for a simpler strategic plan with a small number of overarching strategic goals. It was deemed important to increase the visibility of IHO and align the revised strategic plan with global policy frameworks such as the United Nations Sustainable Development Goals related to the blue economy and climate change mitigation measures.

The Council widely welcomed the revised structure of the strategic plan. The Chair of the Council confirmed with the Council that the proposed changes constitute a “complete rewrite” of the Strategic Plan rather than a “revision”. The Council authorized the SPRWG to proceed on that basis.

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.

European Union Initiatives

- **IHO-EU Network WG**

IENWG8

The IHO-EU Network Working Group (IENWG), established by the Inter-Regional Coordination Committee (IRCC) to monitor and deal with the activities and processes developed under the aegis of the European Union (EU), held its 8th meeting (IENWG-8) in a plenary session in Brussels, Belgium, on 27 February, at the Permanent Representation of France. It was followed by IHO-EC-9 which took place on 28 February. Delegates representing DG-Mare¹, EuroGOOS², CPMR, DG-Grow³-Copernicus⁴ and EMODnet⁵ were present.

The IENWG-8 meeting was chaired by Laurent Louvart (France) supported by Corine Lochet (France) as Executive Secretary of the IENWG. Twenty delegates including National Hydrographers, from 13 Member States (Belgium, Croatia, Denmark, France, Germany, Ireland, Italy, Latvia, Netherlands, Norway, Portugal, Spain and Sweden) attended the meetings. Assistant Director Yves Guillam represented the IHO Secretariat.

The main objectives of the IENWG-8 meeting were:

- to assess the achievements made by the IHO through the IENWG since the signature, in 2012, of the Memorandum of Understanding (MoU) between the IHO and the European Commission;
- to consider the current national hydrographic priorities in support of strategic European policies, directives and projects (Maritime Spatial Planning, Integrated Maritime Policy, Research & Innovation, Data Collection and Observation Network, Coastal Mapping, etc.);
- to review the business rules of procedure of the IENWG for better efficiency and outreach.

In support of these objectives, participants shared several experiences through comprehensive presentations, either thematic (Maritime Spatial Planning) or more strategic (examples of EU-funded cross-border projects by Croatia and Sweden).

¹ Directorate-General – Maritime Affairs and Fisheries.

² European Global Ocean Observing System.

³ Directorate-General – Internal Market, Industry, Entrepreneurship and Small and Medium Size Enterprises.

⁴ European Earth Observation Programme (<http://marine.copernicus.eu>).

⁵ European Marine Observation and Data Network (<http://www.emodnet.eu>).

While welcoming the progress achieved since 2012 and before, there was a general consensus for continuing the activities as a network, with possibilities to invite other IHO Member States to contribute actively in some projects on a case-by-case basis.



Participants at the 8th IENWG meeting, Brussels, Belgium

The IHO-EC-9 meeting was organized in the framework of the Memorandum of Understanding with the European Commission following the theme “*Protecting our coasts: how to anticipate and monitor coastal risks? The contribution of coastal data*”.

The economic value of “coastal bathymetry” authoritative data was raised several times, in line with the theme for the World Hydrography Day for 2018, in particular by the representative of EMODnet who introduced the video “*Wake up your [marine] data*”⁶.

Although it was highly recommended that EMODnet moves towards INSPIRE compliancy, it looks that the S-100 framework still needs to be promoted by Hydrographic Offices for further developments supported by the European Commission programmes. The participation of the IENWG at the EOOS Conference⁷ in November 2018 seems to be a good opportunity to promote the S-100 framework. The IHO will also need to consider the United Nations Decade of Ocean Science for Sustainable Development (2021-2030), as a key driver for the future.

IENWG9

The IHO-EU Network Working Group (IENWG), established by the Inter-Regional Coordination Committee (IRCC) to monitor and deal with the activities and processes developed under the aegis of the European Union (EU), held its 9th meeting (IENWG-9) in a plenary session in Brussels, Belgium, from 20 to 21 November, at the DG-Agri⁸ of the European Commission, hosted by DG-Mare².

⁶ <https://www.youtube.com/watch?v=p3vwngxyXuo>

⁷ European Ocean Observing System: <https://webgate.ec.europa.eu/maritimeforum/en/node/4123>

⁸ Directorate-General – Agriculture.

Delegates representing DG-Mare⁹, EuroGOOS¹⁰ and EMODnet¹¹ were present. The IENWG-9 meeting was followed by the 2018 EOOS Conference¹², from 21 to 23 November – *Connecting Communities for End-to-End Solutions*, hosted at the Egg, in Brussels.

The IENWG-9 meeting was chaired by Laurent Louvart (France) and supported by Corine Lochet (France) as Executive Secretary of the IENWG. Twenty-two delegates including National Hydrographers, from 13 Member States (Belgium, Croatia, Denmark, France, Germany, Ireland, Italy, Malta, Netherlands, Norway, Portugal, Romania and Sweden) attended the meeting. Assistant Director Yves Guillam represented the IHO Secretariat.

The main objectives of the IENWG-9 meeting were:

- to review the EOOS strategy and its draft implementation plan in order to examine how the Hydrographic Services of the IHO Member States can contribute and get benefits and visibility in return;
- to compare the different methodologies and web services used by the coastal States to make available and portray their official baseline and coastline data;
- to take the opportunity of the overhaul of the IHO communication plans and means (including social medias) in order to develop the visibility of the objectives and achievements of the IENWG, at least at the European level;
- to consider the possible impact on the economic models of Hydrographic Services if the revision of the European Directive on the re-use of public sector information leads to the inclusion of nautical charts (including ENCs) in the list of the so-called “*high-value public data for re-use*”...the consequence of which being that these data should be made available for free.

Firstly, the members noted the “*call to action*” from EOOS, most of the themes being of interest to the IHO community and aligned with the MoU¹³ between the IHO and the European Commission. They are, in substance:

“1. Countries should coordinate all national marine and coastal data collection efforts to improve efficiency, and identify priorities and gaps Observations should be standardised and operationalized within and across regional seas, building on the work done via existing regional coordination frameworks;

2. ...This requires a concerted effort to ensure that different EU investments in marine and coastal data collection infrastructures are better connected and are linked to existing data management and sharing initiatives; and...

3. ... support integration and drive innovation in infrastructure and technology development to reduce the cost and expand the coverage of ocean data collection, ...”

In support of these objectives, participants agreed to promote the current IHO infrastructure, the activities managed and carried out through the Regional Hydrographic Commissions and the Seabed 2030 Project. They also mentioned the current developments in crowdsourcing bathymetry. It was agreed that the IENWG should prepare a statement of interest towards EOOS, under the umbrella of the existing IHO-EC MoU.

The participants shared their concerns with regard to the possible evolution of the EU Directive on the re-use of public sector information, trying to identify and harmonizing the arguments that could be put forward, at national levels, to avoid a major destabilization effect in the economy of ENC (and S-57 data) production, maintenance and distribution for Hydrographic Services whose budget relies substantially on the licensing revenues and sales.

⁹ Directorate-General – Maritime Affairs and Fisheries.

¹⁰ European Global Ocean Observing System.

¹¹ European Marine Observation and Data Network (<http://www.emodnet.eu>).

¹² www.eoosconference2018.eu

¹³ Memorandum of Understanding.

The EOOS event was co-organised by the secretariats of the European Marine Observation and Data Network (EMODnet), European Marine Board (EMB) and European Global Ocean Observing System (EuroGOOS). The IHO was mentioned several times, in particular highlighting the added-value provided for several applications, by the bathymetry portal of EMODnet to which several European IHO Member States have contributed. The Conference launched the EOOS Strategy 2018-2022 and its Implementation Plan. The IENWG will now consider the possibility of submitting concrete proposals in line with the IHO programme of work.



Four Member States (France, Italy, Netherlands, and Portugal) presented technical posters (7) at the EOOS Exhibition. One of which was a summary of a presentation¹⁴ already given by Ellen Vos (Netherlands Hydrographic Service) at the European Inspire¹⁵ Conference in August 2018, where she was awarded with the Golden Pineapple Inspire Price for her contribution.



Participants at the 9th IENWG meeting, Brussels, Belgium

The closing session of the EOOS, chaired by Vladimir Ryabinin, Executive Secretary of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, highlighted the European contribution to Ocean Observation in the context of International Strategies and developments (the UN Sustainable Development Goals and the Decade of Ocean Science for sustainable development), while the closing remarks were given by Karmenu Vella, European Commissioner for Environment, Maritime Affairs and Fisheries.

¹⁴ “What geospatial information is needed for managing wind farm projects at sea and how are we going to organise that?” - <https://www.youtube.com/watch?v=hJzMNzEdr2Y&t=589s>

¹⁵ Infrastructure for Spatial Information in Europe.

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

- **IALA – IHO Coordination Meeting**

Under the framework of the Cooperation Agreement between the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and the IHO, a coordination meeting was held at the IALA Headquarters in Saint-Germain-en-Laye, France on 24 September 2018. The meeting was attended by six IALA representatives, Director Abri Kampfer and Assistant Director Tony Pharaoh represented the IHO.

One of the main objectives of the meeting was to discuss the draft Templates/Description documents for Maritime Services which are part of a joint IHO-IALA submission to the 2nd meeting of the IMO-IHO Harmonization Group on Data Modelling (HGDM) which took place from 29 October to 2 November 2018 at the IMO Headquarters in London, United Kingdom.

The meeting discussed the current status of the IALA S-201 Product Specification for Aids to Navigation Information and its testing and implementation plan. There was also a discussion on the provision of aids to navigation information in different formats (including via web services) for use by a wide community of users. Its relationship to the IHO S-125 Navigational Services Product Specification was also discussed.

The meeting had a discussion on the implementation of the IALA Marine Resource Name (MRN), concept. This topic had also been discussed at the S-100 Test Strategy Meeting which had taken place during the previous week. It was also agreed that the development of joint guidance on how to implement MRNs would improve interoperability between S-100 based products and services.



Participants of the 2nd IHO - IALA Coordination Meeting

- **19th IALA Conference**

More than 500 delegates attended the 19th IALA Conference which was held in the port city of Incheon, Republic of Korea, from 26 May to 2 June 2018. A total of 94 technical presentations were made in 13 technical sessions and two special sessions over four days and Conference participants were able to see and discuss the latest developments in AtoN and VTS technology in the large industrial exhibition, where a record number of IALA Industrial Members exhibited. The IHO Secretariat was represented by Director Abri Kampfer.



Participants of the 19th IALA Conference

The Conference had a strong focus on the development and exchange of maritime digital information to improve the safety and efficiency of maritime transport. It heard that the use of Maritime Resource Names (.mrrn) will be needed for the development of globally-harmonized data models to enable implementation of digital maritime services under the IMO e-Navigation Strategic Implementation Plan. The evolution of the existing AIS system into VDES was highlighted by a number of presenters as important for secure and reliable digital communications, together with other commercial satellite and terrestrial communications services. There were presentations also, on the practical use of existing public terrestrial systems for providing safety information to fishing vessels and leisure craft. The Conference was informed that cyber security risks in data transfer will continue to grow, and cyber security precautions will remain vital.

Shore authorities in Europe explained how they share AIS data to support maritime domain awareness, and how they are developing traffic management concepts to improve transport chain efficiency.

Effective and unambiguous VTS communications will require common phraseology, procedures and technology for voice communications, and harmonized data models and communication channels for digital information exchange. Revision of IMO Resolution A.857(20) (Guidelines on Vessel Traffic Services) will be necessary for this harmonization and for a common global understanding and implementation of modern VTS services.

In the sessions on Positioning, Navigation and Timing (PNT) the importance of resilience was underscored. Resilient PNT is vital for electronic navigation and underpins a variety of safety-related services. A mix of dissimilar systems is required to achieve resilient PNT and candidate technologies were explored. Autonomous vessels entering service now and in future will need assured positioning and automatic compensation for GNSS outages or disruption. SBAS, R-Mode, Radar positioning and eLoran are electronic systems likely to be used to help achieve the necessary resilience, but there is still no global consensus on a coordinated approach for the maritime world.

The growing use of risk assessment by shore authorities to aid safe navigation was noted. While there is no single “one size fits all” tool, IALA’s risk management tool box has a set of proven, widely-used assessment programs. If used correctly, they can greatly assist aids to navigation authorities to evaluate risk, and help coastal states to meet their international obligations.

Traditional visual AtoN signalling remains essential in waterways. Increasingly they are being supplemented by virtual electronic AtoN for navigation and for emergencies or disasters. The conference heard of recent changes to IALA Recommendations for visual AtoN, of technical developments for practical installation, operation, and maintenance. These conclusions were supported by results of user consultation.

Assisted by many IALA members contributing display material and artefacts, an extensive exhibition of lighthouse heritage supplemented the technical sessions and industrial exhibition, tracing the development of lighthouses and lighthouse life. A national painting competition produced a wonderful array of award-winning paintings from schools across Korea. This exhibition was supported by a special Conference session on the preservation and complementary use of historic lighthouses and their real estate. Presentations explored the cultural, technological, architectural and financial benefits gained from an active heritage programme.

International Maritime Organization (IMO)

The Secretariat of the IHO represented the Organization at all IMO sessions where the agenda contained items of relevance to the Member States, submitting papers for consideration as appropriate. The following paragraphs provide summaries of IHO involvement in various bodies of the IMO that met during the year.

- **Maritime Safety Committee**

MSC 99



IMO MSC 99 in plenary session

The Maritime Safety Committee (MSC) is the highest technical body of the International Maritime Organization (IMO). The functions of the MSC are to consider matters related to aids to navigation, construction and equipment of vessels, rules for the prevention of collisions, handling of dangerous cargoes, maritime safety procedures, hydrographic information, salvage and rescue and any other issues directly affecting maritime safety. The 99th session of the MSC (MSC 99) was held at the IMO Headquarters in London, UK, from 15 to 25 May. Assistant Director David Wyatt represented the IHO. In addressing the agenda of the session in his opening statement, the Secretary-General of IMO, Mr Kitack Lim, noted the participation of Nauru, the 174th and newest Member State of the IMO. He highlighted the first steps being taken to address the issue of Maritime Autonomous Surface Ships (MASS) and the need to accommodate new technologies to improve the efficiency of shipping whilst keeping in mind safety of navigation. He noted the proposed work to be undertaken to progress the second phase of the Polar Code. He also noted the on-going work on the recognition of the Iridium system and that a further application for recognition as a mobile satellite service provider in the GMDSS had been received for the BeiDou Message Service System (BDMSS); he stressed the need to treat all applications in the same manner.

Unsafe Mixed Migration by Sea

During the inter-agency discussions on mixed migration a number of statements were made, which highlighted the actions and efforts being undertaken by numerous organizations and agencies in the central Mediterranean Sea. The Committee encouraged Member States to use the facilitation module in the Global Integrated Shipping Information System (GISIS) and the information included in the appendix to MSC.1/Circ.896/Rev.2 - *Interim measures for combating unsafe practices associated with the trafficking, smuggling or transport of migrants by sea* - to report any incidents.

Hydrography and Charting

The MSC addressed various urgent matters related to hydrography and nautical charting resulting from the NCSR 5 held in February this year. The main items included the establishment of new traffic separation schemes and associated measures “In Dangan Channel” and “In the vicinity of Kattegat” for dissemination by means of COLREG.2/Circ.71; the adoption of new and amendments to existing routeing measures other than traffic separation schemes “Off the coast of Ghana in the Atlantic Ocean”, a precautionary area “Dangan Channel No 2”, deep-water routes, recommended routes and precautionary area “in the vicinity of Kattegat” and two-way, precautionary areas and areas to be avoided “In the Bering Sea and Bering Strait” to be published as SN.1/Circ.336. The Committee decided that those measures covering “In Dangan Channel”, “Off the coast of Ghana in the Atlantic Ocean” and “In the Bering Sea and Bering Strait” should come into force six months after adoption, on 1 December 2018, and those measures covering “In the vicinity of Kattegat” would come into force on 1 July 2020.

Noting the comments made by the IHO and Comité International Radio-Maritime (CIRM) during the discussions on ECDIS issues, the Committee invited the delegation of China and other interested parties to consider submitting a proposal for a new output to address the issues. The MSC agreed to revoke III.2/Circ.2 on 1 July 2018 as proposed by NCSR 5.

Global Maritime Distress and Safety System (GMDSS)

The MSC approved MSC.1/Circ.1593 – *Interim guidelines for the harmonization display of navigation information received via communication equipment*. The Committee adopted resolution MSC.452(99) – *amendments to the revised performance standards for integrated navigation systems (INS) (resolution MSC.252(83))*.

The Committee adopted resolution MSC.450(99) – *Statement of recognition maritime mobile satellite services provided by Inmarsat Global Ltd* – for the FleetBroadband Maritime Safety Data Service for use in the GMDSS. The MSC also adopted resolution MSC.451(99) – *Statement of recognition maritime mobile satellite services provided by Iridium Satellite LLC* – for the Iridium safety voice, short-burst data and enhanced group calling services for use in the GMDSS and tasked the International Mobile Satellite Organization (IMSO) to oversee the completion of the outstanding technical aspects and the subsequent operational implementation phase of the Iridium system. The Committee agreed to refer to the NCSR Sub-Committee the application by BeiDou Message Service System for recognition and use in the GMDSS and tasked the IMSO to undertake the necessary technical and operational assessment.

The MSC approved the 14th session of the IMO-ITU Expert Group for 3 to 7 September 2018 and proposed the 15th session of the IMO-ITU EG to be held in 2019.

e-Navigation

The MSC endorsed the holding of the 2nd meeting of the IMO/IHO HGDM, at IMO Headquarters in London, from 29 October to 2 November 2018. The Committee approved the updated e-Navigation strategy implementation plan to be issued as MSC.1/Circ.1595.

Maritime Autonomous Surface Ships (MASS)

The Committee endorsed the framework for the regulatory scoping exercise, the list of mandatory instruments to be considered, the type and size of ships and the methodology for the exercise, as

well as the plan of work. Member States and international organizations were invited to submit proposals to MSC 100 related to the development of interim guidelines for MASS trials. The MSC also established a Correspondence Group on MASS, under the coordination of Captain Marko Rahikainen (Finland), which was tasked to provide a report to MSC 100, and which should include results of the test of the framework.

Safety Measures for non-SOLAS Ships Operating in Polar Water

The MSC endorsed the decision that any safety measures should apply to Arctic and Antarctic areas for vessels engaged on international voyages. When considering specific safety measures for each type of vessel it was decided that the area of application should be considered on a case-by-case basis and agreed that the types of vessels to be considered are fishing vessels over 24 meters in length (to align with the 2012 Cape Town Agreement), pleasure yachts above 300 gross tonnage not engaged in trade, and cargo ships below 500 gross tonnage down to 300 gross tonnage. The Committee proposed to consider at MSC 100 the wider mandatory application of chapters 9 to 11 of part 1-A of the existing Polar Code, which include safety of navigation, communications and voyage planning. Interested parties were encouraged to submit proposals for further discussion at MSC 100.

MSC 100

The 100th session of the MSC (MSC 100) was held at the IMO Headquarters in London, UK, from 3 to 7 December 2018. Assistant Director David Wyatt represented the IHO. In addressing the agenda of the session in his opening statement, the Secretary-General of IMO, Mr Kitack Lim, highlighted initial progress in the regulatory scoping exercise on maritime autonomous surface ships; the need for approval of revised guidelines on fatigue and further updates on work on goal-based standards; he also drew attention to the work required on addressing safety measures for non-SOLAS polar shipping and a number of safety issues relating to low-sulphur fuel.



Secretary-General of IMO, Mr Kitack Lim, opening the special session to celebrate MSC 100

A special session introduced invited speakers who discussed future technologies and the continued role of the seafarer. A new IMO safety video was launched, highlighting the wide spectrum of work the Committee has done over six decades to enhance safety and security at sea, including navigation, cargoes, ship construction, seafarer training, search and rescue and communications and more.

Maritime Autonomous Surface Ships (MASS)

The Committee approved the framework for the regulatory scoping exercise. The MSC agreed on the definitions on four identified degrees of autonomy. The Committee agreed to identify the regulations in IMO instruments that apply to MASS and then to determine the most appropriate way to address MASS operations. The MSC approved an intersessional Working Group meeting to progress the review of relevant IMO instruments and the development of Guidelines on MASS trials and their scope. The IMO Secretariat agreed to activate a dedicated email account for MASS-related communications and create a web platform to support the work. The Committee agreed to progress the work at the next session of the MSC.

Polar Code for non-SOLAS Ships

The MSC considered safety measures for non-SOLAS ships operating in Polar waters. The Committee considered the proposal to widen the scope of application of the Polar Code to certain non-SOLAS ships. In general there was no support for mandatory application of chapters 9, 10 and 11 of the Polar Code; however it was agreed that further discussion for the revision of SOLAS chapter XIV could be progressed at the next



IMO MSC 100 in plenary session

meeting of the Committee. Noting the lengthy process for revisions to SOLAS, the MSC agreed on a resolution urging administrations to take action to apply relevant provisions, which could be developed at the next session of the Committee. The MSC invited submissions to MSC101 to assist the determination and feasibility of applying chapter 9, 10 and 11 of the Polar Code.

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ECDIS

The Committee considered the proposed new output to revise the MSC.1/Circ.1503/Rev.1 – *ECDIS - Guidance for good practice* – to take into account the experiences gained from the change from the IHO ECDIS Presentation Library Edition 3.4 to Edition 4.0. The IHO made an intervention to support the comments made by the Comité International Radio Maritime (CIRM) and to inform the MSC of the IHO Secretariat's intention to review the technical information and guidance provided on the IHO website, to which the MSC.1/Circ.1503/Rev.1 refers. The Committee agreed to include the work in the post biennial agenda of sub-committee for Navigation, Communications, and Search and Rescue (NCSR) and allowed two sessions for the work, seeking input from the sub-committee on Implementation of IMO Instruments (III) as necessary.

Maritime Security

In considering measures to enhance maritime security, the Committee noted that the information of 25% of all port facilities registered in the maritime security module of Global Integrated Shipping Information System (GISIS) submitted by IMO member States required updating. It was highlighted that the new functionalities in the web services to enable the secure electronic transfer of information between member States and the maritime security module of GISIS had been developed. The MSC urged SOLAS Contracting Governments to review and update the information contained in the maritime security module of GISIS, in particular that relating to port facility security plans.

Piracy and Armed Robbery

The Committee reminded member States to update the information related to their National Point(s) of Contact for communication of information on piracy and armed robbery. The MSC also requested member States to continue to provide information on piracy and armed robbery incidents to the IMO Secretariat, using the reporting form in appendix 5 of MSC.1/Circ.1333/Rev.1. Whilst approving new Global Counter Piracy Guidance, updated Gulf of Guinea Guidance, and version 5 of the Best Management Practices (BMP 5), and issuing the suite of guidance as a new MSC circular on Revised Industry Counter Piracy Guidance, the Committee requested member States as well as owners, operators and managers of ships and shipboard personnel to continue the diligent application of the Best Management Practice and IMO guidance; and invited member States to continue to provide naval assets, and flag States to continue to monitor the threat to ships flying their flags and set appropriate security levels in accordance with the International Ship and Port Facility Security (ISPS) Code.

Unsafe Mixed Migration

During the discussions, the MSC was visited by Her Royal Highness, the Princess Royal, who addressed the Committee as well as listening to the plenary considerations. The MSC received reports on progress made with the Global Compact for Safe, Orderly and Regular Migration and the Global Compact on Responsibility-sharing for Refugees. The MSC received a number of reports from member States directly involved in operations, particularly those involved in the central Mediterranean Sea, and the efforts being undertaken to better facilitate multilateral cooperation and seek solutions to common problems by sharing expertise and best practices. The Committee invited the IMO Secretariat and the United Nations Agencies concerned to inform MSC 101 of the progress made with the global compacts.



Her Royal Highness, the Princess Royal, addressing a session of MSC 100

Sub-Committee on Navigation, Communications and Search and Rescue (NCSR)

The Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) is a subordinate body of the Maritime Safety Committee (MSC) of the International Maritime Organization (IMO). The 5th session of the Sub-Committee (NCSR 5) was held at the IMO Headquarters in London, United Kingdom from 19 to 23 February 2018. The IHO was represented by Assistant Directors David Wyatt and Anthony Pharaoh, Mr Peter Doherty, the Chair of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC), and Mr Christopher Janus, Branch Chief, NGA Maritime Watch - NAVAREA IV/XII. Several representatives of Hydrographic Offices also attended the meeting as a member of their national delegation.

The IHO Secretariat reported on ECDIS issues, including comments on the outcomes of the withdrawal of Edition 3.4 of the ECDIS Presentation Library and the associated IHO ECDIS Check Dataset.

NCSR 5 approved four routing measures, two areas to be avoided and one ship reporting system, which will be forwarded to the MSC for adoption at its 99th session (MSC 99) in May 2018. The Sub-Committee received reports from the Chair of the IMO NAVTEX Panel and the Chair of the IHO WWNWS-SC reported on the activities of the sub-committee.

With respect to navigation matters, the NCSR 5 approved the next meeting of the IMO/IHO HGDM under revised terms of reference and the

establishment of a Correspondence Group to progress the development of *Guidelines on standardized modes of operation, S-Mode*. The Sub-Committee also endorsed the draft *Interim Guidelines for the harmonized display of navigation information received via communications equipment* and the draft *Guidance on the definition and harmonization of the format and structure of maritime services within the Maritime Service Portfolio (MSP)*. In addition the NCSR 5 invited domain coordinating bodies to submit the description of maritime services under their remit to HGDM 2.



IMO NCSR 5 Plenary in session

In regard to Communications and Global Maritime Distress and Safety System (GMDSS) matters, the Sub-Committee approved the establishment of a Correspondence Group on the modernization of the GMDSS, taking into account the progress on the revision of SOLAS chapters III and IV and on the related and consequential amendments to existing instruments other than SOLAS. The NCSR 5 approved the terms of reference for the 14th meeting of the IMO/ITU Experts Group and the draft IMO position on relevant WRC-19 agenda items. The Sub-Committee approved the draft MSC resolution on the *Statement of Recognition of Maritime Satellite Services by the Inmarsat Global Ltd.*, and for it to be forwarded to the MSC for adoption.

The Sub-Committee invited the WWNWS-SC and the WWMIWS Committee to prepare draft revisions to the relevant MSI documentation to reflect the announced migration of the recognized GMDSS services from the Inmarsat-3 to Inmarsat-4 satellites during 2018 and submit them to the next meeting of the Sub-Committee for approval. NCSR 5 also requested Member States and relevant Organizations to bring the information to the attention of certified SafetyNET users, MSI providers and MRCC operators in their respective countries through the promulgation of Notice to Mariners and any other appropriate media.

- **IMO – TC 68**

The 68th session of Technical Cooperation Committee of the International Maritime Organization (IMO-TC 68) was held at the IMO Headquarters in London, UK, from 18 to 20 June. Mr. Zulkurnain Ayub (Malaysia) chaired the meeting. The IHO was represented by Assistant Director Alberto Costa Neves.

The IMO Secretary-General, Mr Kitack Lim, in his opening address, highlighted the arrival of new Member States (Armenia, Nauru) to the IMO that now counts with 174 Members (note: 85 of them are not IHO Member States). He also expressed satisfaction with the visit of HM Queen Elizabeth II to the IMO Headquarters to mark 70 years to the day since the treaty establishing the IMO was adopted. Other facts worth noting was the increase of TC meetings to three working days with translation, reflecting the increase in the scope of work of the Committee and the outcomes of the IMO Member State Audit Scheme (IMSAS) and of the impact assessment exercises.

The meeting received reports on the work of other bodies and organizations and the achievements in delivering the 2018 component of the Integrated Technical Cooperation Programme (ITCP), when USD 13.8 million was executed (85% of the planned budget), being USD 6 million from the TC Fund and the remainder from 21 other sources. It amounts to 215 national and regional activities, training 3 522 people worldwide, complemented by 64 graduating fellows who qualified through the IMO global maritime training institutions. The Committee considered the draft strategy for sustainable resource mobilization for the IMO technical cooperation activities.

Of significance was the appointment of a permanent representative in the Pacific Islands, based in the Pacific Community (SPC), Suva, Fiji. This development responded to the coordinated efforts of the IMO Member States in the region and will provide new opportunities to support Pacific Islands Countries and Territories (PICTs), jointly with the IHO. The meeting also confirmed the 2019 meeting of the Caribbean Regional Senior Maritime Administrators' Workshop and that invitations will be sent to the IHO and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).

The Committee was updated on the developments involving the Country Maritime Profile (CMP) to ensure it is fit for purpose. The IHO representative provided intervention on the importance of sharing the relevant content of the CMP with other international organizations such as the IHO and IALA in order to optimize the effectiveness of the respective capacity building programmes for the benefit of coastal States, in particular when providing joint support under the UN banner "Delivering as One". The IMO Member State Audit Scheme (IMSAS) was also reviewed by the Committee. The CMP and the IMSAS are key elements for the effective implementation of the ITCP.

Other topics of relevance were the development of National Maritime Transport Policies training packages, the strengthening of the impact of women in the maritime sector, the status of implementation of the recommendations of the impact assessment exercise and the development of a new strategic framework for the IMO for 2018-2023.

During the meeting the IHO representative had numerous fruitful informal discussions with the IMO Secretariat Staff and with delegates. The cooperation between the IMO and the IHO for developing and eventually sharing their respective country maritime profiles was discussed and will be further considered. Delegates from Timor Leste were briefed on the importance of hydrography for maritime infrastructures and the possibilities of further cooperation and capacity building. Coordination was progressed with the delegate from the *Comisión Centroamericana de Transporte Marítimo* (COCATRAM) on the implementation of joint capacity building activities in the Meso America and Caribbean Sea region.



The IMO Secretary-General addresses IMO-TC 68

Intergovernmental Oceanographic Commission (IOC)

The 51st Session of the Executive Council of the Intergovernmental Oceanographic Commission (IOC) of UNESCO met in Paris, France from 3 to 6 July under the Chairmanship of Professor Peter M. Haugan (Norway). The Member States of the IOC Council reviewed issues and items from on-going work plans and made preparations for the next session of the IOC Assembly to be held in June 2019. The IHO was represented by Director Mustafa Iptes.

The Executive Council, which meets every year, was opened by UNESCO Director-General Audrey Azoulay. She highlighted the “great opportunity” offered by the United Nations Decade of Ocean Science for Sustainable Development, noting that “it is for the Commission the recognition of its outstanding work, carried out for many years, and its efforts to bring together ocean science and the political sphere – from science to action. One of the priorities of this Decade should be to encourage Member States to provide more sustainable funding for ocean science research, and to strengthen international solidarity by reinforcing the capacities of the Small Island Developing States, which are often on the front line of ocean changes.”

Dr Vladimir Ryabinin, the Executive Secretary of the IOC, reported on the work accomplished by the Commission and the implementation of the IOC programme since the previous session as well as on the budget situation.

UN Decade of Ocean Science for Sustainable Development (2021-2030)

United Nations General Assembly (UNGA), at its 72nd session in September 2017, had decided to proclaim **“the United Nations Decade of Ocean Science for Sustainable Development for the 10-year period beginning on 1 January 2021, within existing structures and available resources”** and called **“upon the Intergovernmental Oceanographic Commission to prepare an implementation plan for the Decade in consultation with Member States, specialized agencies, funds, programmes and bodies of the United Nations, as well as other intergovernmental organizations, non-governmental organizations and relevant stakeholders.”**

IOC Council mainly focused on the preparation of an implementation plan for the UN Decade of Ocean Science for Sustainable Development (2021–2030) with a view of its adoption by the IOC Executive Council in 2020. Representatives of United Nations Agencies and key international partners provided statements and declared their support and commitments to UN Decade of Ocean Science for Sustainable Development. Director Iptes made a stage announcement with regards to IHO’s support to the UN Decade activities.



Director Iptes declares the IHO’s support to the UN Decade activities.

The IOC Council adopted a resolution setting up the process for the preparatory phase (2018-2020) as outlined in the revised Decade Roadmap, which will focus on the preparation of the Implementation Plan for the Decade, encompassing both a Science Plan as well as an Engagement Plan. On this occasion, an Executive Planning Group consisting of high level experts, in charge of preparing the Implementation Plan was formally established, as well as a Stakeholder Forum, open to a broad range of communities (science, technology, ocean management, private sector, civil society) that are interested in contributing to the Decade. The IOC Chair, Peter Haugan, invited all nations to contribute to the planning process and to establish national committees to coordinate activities.

The Sub-Groups and Working Groups of the IOC reported their annual activities to the Executive Council and gave a brief overview of the work undertaken since the previous year’s Assembly,

The IOC Executive Council at its 49th session (Paris, 7. To 10 June 2016) had decided to establish a “IOC Regular Working Group on User Requirements and Contributions to GEBCO Products” to collect, integrate and assess user requirements to inform the development of present and future GEBCO products and to address ways for strengthening the contributions of IOC programmes and Member States activities to GEBCO data and products. The Chair of the Working Group, Alexander Postnov (RF), presented the First Report of the working group to the IOC Council. The Executive

Council decided to conduct the Review of User Requirements and Potential Contribution to GEBCO on a biannual basis, and encouraged the IOC Member States to cooperate to advance basin-scale, campaign mapping and accelerate the delivery of GEBCO objectives and general knowledge of the ocean; in particular by supporting and contributing to the Seabed 2030 Project.

In the margins of the IOC Executive Council meeting, a side event was held on “A Blueprint for International Cooperation in Ocean Mapping”. The IHO, IOC and GEBCO representatives presented their strategies and activities on ocean mapping and also introduced the new GEBCO Seabed 2030 Project to the IOC Council members.



The IHO, IOC and GEBCO representatives at the side event on “Ocean Mapping”.

International Organization for Standardization (ISO)

- **46th WG and plenary meeting of the ISO/TC 211**

The 46th meeting of the International Organization for Standardization (ISO) - Technical Committee 211 (ISO/TC211) meeting was hosted by Danish Standards and took place in Copenhagen, Denmark from 28 May to 1 June. The ISO/TC211 deals with the development of standards and specifications for the geospatial domain. The IHO is a “Class A” liaison member of ISO/TC211 and participates in its standards development and maintenance Working Groups. The 19100 series of standards and specifications produced by ISO/TC211 have been used for the development of the IHO S-100 Universal Hydrographic Data Model. Assistant Director Anthony Pharaoh represented the IHO Secretariat at the 46th ISO/TC211 Working Group and Plenary meetings.



Participants of the 46th ISO/TC211 Plenary Meeting

The meeting approved Slovakia as a new “Participating” (P) member. There are currently 36 P members and 32 Observing (O) members. The TC211 has published 76 standards and has 28 standards currently under development. It also maintains a repository of the UML models, XML Schemas and ontology representations of most of the standards.

ISO requires that all standards undergo regular revisions to ensure that they remain fit for purpose. The plenary meeting agreed that the following standards should undergo systematic review; 19106:2004 (Profiles), 19125-1:2004 (Simple feature access - Part 1: Common architecture and Part 2: SQL) and 19145:2013 (Registry of representations of geographic point location). A revision of ISO 19162:2015 (Well-known text representation of coordinate reference systems) will be undertaken in collaboration with the Open Geospatial Consortium. Document 19157:2013 (Data quality), will be considered for review at the next plenary meeting.

ISO/TC211 will establish an advisory group to support UN-GGIM activities and an Advisory Group Control Body for its Geodetic Register (in accordance with the 19127 standard). The UN-GGIM advisory group will be chaired by the ISO/TC211 Chair, Christina Wasström.

- **47th meeting of the ISO/TC 211**

The 47th meeting of the International Organization for Standardization (ISO) - Technical Committee 211 (ISO/TC211) meeting was hosted by Standardization Administration of China (SAC) and Ministry of Natural Resources of the People’s Republic of China (MNR). The National Geomatics Centre of China and the Wuhan University provided organizational and logistics support for the meeting, which took place in Wuhan, China from 12 to 16 November 2018.



Participants of the 47th ISO/TC211 Plenary Meeting

The meeting approved Eswatini (Swaziland) as a new “Participating” (P) member. There are currently 37 Participating members and 32 Observing members. The TC211 has published 80 standards and has 27 standards currently under development. Representatives from the IHO, Open Geospatial Consortium (OGC) and Defence Geospatial Information Working Group (DGIWG) provided reports on the standards developing activities within their respective organizations. The meeting approved a proposal to establish an internal liaison with ISO/IEC JTC 1/SC 42 on “Artificial Intelligence”. The TC currently has 35 external and 25 internal participating liaison organizations. Assistant Director Anthony Pharaoh represented the IHO Secretariat.

ISO requires in principle that all standards undergo regular revisions to ensure they remain fit for purpose. The plenary meeting agreed that the following standards should now undergo systematic review; 19157:2013 – Data quality, 19135-2:2012 - Procedures for item registration (Part 2: XML schema implementation), 19129:2009 - Imagery, gridded and coverage data framework, 19163-1:2016 - Content components and encoding rules for imagery and gridded data (Part 1: Content model), 19153:2014, Geospatial Digital Rights Management Reference Model (GeoDRM RM) and 19115-1:2014 - Metadata (Part 1: Fundamentals). ISO/TC211 maintains a repository of UML models, XML Schemas and ontology representations of most of its standards. These are available from the TC211 Git¹⁶ repository (at <https://github.com/ISO-TC211>). The repository also includes best practice guidance on the use of UML¹⁷ for the suite of 19100 standards. A new standard (19170) on discrete global grid systems with relevance for IHO standardization activities was confirmed as a “Draft International Standard” and will be circulated for review. Another future important online resource provided by the TC includes the Registry of geodetic codes, which will be made available via the TC211 website, when completed.

The meeting was chaired by Mr Olaf Ostensen (Norway) as the current Chairman, Ms Christina Wasström, was regrettably unable to attend the meeting.

United Nations

- **United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)**



The 8th Session of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) took place at the UN Headquarters in New York, USA from 30 July to 3 August.

The principal purpose of the UN-GGIM is to play a leading role in setting the agenda for the development of global geospatial information management and to promote the use of geospatial information in addressing key global challenges, particularly taking into account the role of geospatial data in monitoring and achieving the Sustainable Development goals agreed under the UN 2030 Agenda for Sustainable Development. The UN-GGIM reports to the UN Assembly via the UN Economic and Social Council (ECOSOC).

Overall 445 participants attended the UN-GGIM, 308 of them representing 88 UN Member States and 2 Non Member States and 197 representing 85 observing organizations – amongst them IHO, represented by the Secretary-General of the IHO, Dr Mathias Jonas.



¹⁶ A digital directory or storage space that can be used to store and access multiple versions of project files.

¹⁷ Universal Modelling Language



John Nyberg, NOAA, Chair of the Working Group on Marine Geospatial information and Dr Mathias Jonas, IHO Secretary-General

Of special relevance for the IHO work programme was the report given under Agenda 14 Marine geospatial information by the Working Group on Marine Geospatial Information.

The Working Group on Marine Geospatial Information under the leadership of John Nyberg (USA) was established by UN-GGIM 7 in 2017 in recognition that geospatial information on inland water bodies and waterways, coastal zones and seas and oceans, is needed to support its administration and management and to meet the demand for critical analysis when questions arise pertaining to the governance of these waters and their resources. The information gathered will play a vital role in measuring, monitoring and mitigating climate change in coastal zones, deltas and tributaries, in supporting national development priorities and the implementation of the 2030 Agenda for Sustainable Development. In recognition of these global needs, the Working Group presented its first work plan and conducted a side event with a focus on S-121 Maritime Limits and Boundaries Project Team and United Nations Division for Ocean Affairs and the Law of the Sea. The side event presented the progress in developing this specification for marine limits and boundaries that allows the presentation of legal aspects of marine areas and their associated rights, restrictions, and responsibilities in alignment with the United Nations Convention of the Law of the Sea (UNCLOS). The standard is also based on ISO standard 19152 Land Administration Domain Model.

IHO as a co-sponsor of the report on the *Implementation and adoption of standards for the global geospatial information community* (Agenda Item 9), brought to the attention of the Committee the subject of the new IHO Standard S-121 for Maritime Limits and boundaries. IHO assured the Committee that it will proactively advertise for the application of S-121 amongst its Member States to meet their deposit obligations according to UN Convention on the Law of the Seas. However, since this national process to deposit according to this Convention is usually not bound to the respective national hydrographic offices, the IHO SG proposed that UN-GGIM regional committees and thematic groups should support the outreach of this standardization activity on all administrative levels. This suggestion was later confirmed as a decision of the Conference. IHO SG pointed out further that the ultimate goal should be to create a global, complete repository of maritime limits and boundaries under the UN framework for the Convention on the Law of the Seas.

The Committee welcomed the report on the implementation and adoption of standards for the global geospatial information community and expressed its appreciation to ISO, IHO and OGC for their continuing support and valuable work to support the international standard on land administration; its focus on developing the S-100 suite of standards including the S-121 standard; and the standard for classifications systems for land cover. Appreciation was expressed for the reported revision to the “Guide to the Role of Standards in GIM” and its “Companion document on Standards Recommendations by Tier” and the Committee commended the 3 SDO for their efforts and resources in updating these documents, following wide international consultation with MS and the professional GIM community. The Committee encouraged the Regional Commissions and thematic groups of UN-GGIM to continue raising awareness, engagement and the promotion of internationally agreed standards, including IHO’s S-121 standard.

- **1st World Geospatial Information Congress (UNWGIC)**

The 1st World Geospatial Information Congress was convened by the United Nations through the Department of Economic and Social Affairs, with the support of the Government of China through the Ministry of Natural Resources and the Zhejiang Provincial Government from 19 to 21 November 2018 in Deqing, Zhejiang Province, China.



More than 1000 participants, including many Ministers and senior officials from across the world, attended the UNWGIC. Participation at the highest level of 200 governments, international and non-governmental organizations, academia and the private sector within the global geospatial information and technology community, made the Congress a truly global event. With the overarching theme "The Geospatial Way to a Better World", the UNWGIC aimed to provide a participatory and inclusive environment to enhance leadership, knowledge and understanding of the significance and the usefulness of geospatial information management to address national, regional and global challenges, in service of social,

environmental and economic development.

The programme of the UNWGIC was expansive, forward looking and thought-provoking. It contained a high-level Opening Ceremony, a Ministerial Dialogue entitled "Towards a more sustainable World for All", four Plenary Sessions, a comprehensive programme of Parallel Sessions and Special Sessions and a Closing Session to wrap up and issue the Moganshan Declaration.

This Declaration addresses inter alia the challenge to Ministers and other high-level decision-makers to ensure that geospatial information and location enablement are able to recognize and underpin the Sustainable Development Goals (SDGs) of the United Nations at national levels through the Integrated Geospatial Information Framework as a fundamental and enabling methodological framework and infrastructure for creating greater social, economic and environmental understanding, evidenced based decision making, design and delivery of projects and services, and implementing and achieving the 2030 Agenda for Sustainable Development. Request was put on Member States, institutions, academia, industry and individuals including the United Nations system to explicitly connect geospatial information to national development agendas; and to confirm that all international stakeholders engaged in geospatial data, technologies and innovation will continue to collaborate and engage across professional domains to effectively democratize and transfer these technologies and share data through the enabling global mechanism of the SDGs utilizing the various integrative systems and solutions now available.

Plenary Sessions were dedicated to:

Sharing the Digital Economy;
Attaining Sustainable Development
Building Smart Societies: and
Growing International Cooperation.

There were thirty-five Parallel Sessions developed in five series to examine the seven themes on:

- 1) Measuring and Monitoring the SDGs;
- 2) Digital Economy. Location Analytics and Big Data:
- 3) Smart, Resilient and Sustainable Societies;
- 4) Growing Global Geospatial Capability and Capacity,
- 5) Geospatial Innovation, Science and Technology:
- 6) Digital Silk Road and International Partners and
- 7) Sustainable Development in Action.

The IHO was represented by Secretary-General, Dr Mathias Jonas, who introduced IHO’s Crowdsourced Bathymetry Initiative in Parallel Session Number 5. A particular highlight of his presentation was the IHO’s Data Centre for Digital Bathymetry (DCDB) Data Viewer where bathymetric observations and measurements from participants in citizen science and crowdsourced programs are archived and made available to the public. The principles of the DCDB are very responsive to the ongoing arguments for a global open data policy to bring geospatial information into the greatest effect “to arrive at a better world” – less pollution, more sustainability and faster recovery of polluted and exhausted areas. In this context Australia presented the “Datacube”-concept which adds the timely component to thematic geoinformation layers. The concept is currently applied in numerous African States to trace the timely development of water resources more efficient, transparent and effective. The IHO Secretary-General proposed to adopt this principle to bathymetric information to present the timely change of seabed topography through sediment transportation and other dynamic processes of the water column, such as temperature and salinity, in a manner that validation and forecast could be undertaken in a more effective and globally standardized manner. This proposal was positively received by the audience.



Other Organizations with relevant agendas to the programme of the IHO

- **Our Ocean Conference**

Starting in 2014, high-level participants from many countries have attended the Our Ocean Conferences (hosted by the Governments of the United States in 2014 and 2016, Chile in 2015 and Malta in 2017), including Heads of State, Government ministers, companies from global industry, non-governmental organizations (NGOs) and philanthropic organizations. The “Our Ocean Conference” series focus on all maritime aspects and regularly invites world leaders to look forward and to respond by delivering high-level commitments to transform the challenges ahead into opportunities for cooperation, innovation and entrepreneurship.



High-level participants of the Our Ocean Conference-2018 at the Opening Ceremony

The 2018 edition of the Our Ocean Conference (OOC2018), the theme being; “Our Ocean, Our Legacy”, was hosted by the Government of Indonesia and took place at Nusa Dua Convention Centre in Bali, Indonesia on 29 and 30 October 2018. The conference was combined with an exhibition illustrating contributions to ocean related activities from coastal States, International Organizations,

non-governmental organizations and industry. High level representatives including Presidents, Vice-Presidents, Prime Ministers and Ministers from over 100 countries and approximately 3000 participants attended the conference.

The President of Indonesia, His Excellency Joko Widodo, officially opened the OOC2018. He emphasized that ocean protection cannot be conducted by a single state or government, it must involve many policymakers and role players. He encouraged the Our Ocean Conference to take concrete actions to enhance cooperation. The Minister of Marine Affairs and Fisheries, Ms Susi Pudjiastuti, and the Minister of Foreign Affairs, Ms Retno Marsudi, as co-hosts of the Conference, made a joint welcome speech at the Opening Ceremony of the OOC2018. His Serene Highness Prince Albert II of Monaco delivered a key-note speech at the conference. Director Mustafa Iptes represented the IHO Secretariat.

Our Ocean Conference-2018 covered numerous ocean related topics, which were considered at different panel sessions during the two day event:

- Marine protected area
- Climate related impacts on the ocean
- Maritime security
- Marine pollution
- Sustainable fisheries
- Sustainable blue economy
- Global Ocean Leadership

Each panel session was followed by the announcement of commitments from different sectors. 287 new commitments, worth about 10.8 Billion US dollars, were pledged during the OOC 2018. Additional Marine Protected Areas were also committed by many coastal and island states around the world.

In addition to the panel discussions in the Conference, a very extensive programme of side meetings and briefings took place under the Exhibition Stage Programme, covering the full range of interests in protection of the world's seas and oceans, moving towards new projects for healthy oceans.

Director Iptes, on behalf of the IHO and IOC of UNESCO, made a Floor Announcement at the Maritime Security session of the OOC2018 regarding the commitment of the "Seabed 2030 Project". In his statement, Director Iptes expressed that the Seabed 2030 Project, initiated in February 2018 as a collaborative project between the Nippon Foundation and GEBCO, aims to map the entire World Ocean by the year 2030. He also emphasized that the Nippon Foundation has already pledged 2 Million US dollars to the project and will contribute 18.5 million US dollars for the first ten years.

During the margins of the conference, Director Iptes had short meetings with the President of Palau, H.E. Thomas E. Remengesau, and the Vice-President of Panama, H.E. Ms Isabel de Saint Malo de Alvarado, regarding IHO membership. It was agreed that the IHO Secretariat will contact the relevant authorities in Palau and Panama in order to continue communication on the membership process of those States.

Information Management

- **IT-Infrastructure of the Secretariat**

The IT-infrastructure continues to rely on a combination of one dedicated member of staff and approximately a third of the time of an Assistant Director, together with assistance and services provided by several service providers under contract terms. In the face of evolving new requirements, particularly in relation to adopting an increasingly complex digital data and information environment, resources remain stretched to meet all the requirements. The complex IHO IT-infrastructure serves a significant archive of reference documents, an extensive and dynamic website that includes the following online applications: a meeting registration system, the ENC catalogue, the INT chart catalogue, an online hydrographic dictionary, a stakeholders database, an S-62 producer code database and an index of downloadable GEBCO charts. Several on-line web services support the mobile computing environment for the senior members of staff who are required to travel frequently.

These include mail services and secure access to the Secretariat internal network services. A new fully searchable and remote accessible digital archive for all IHO documents was tested exhaustively to be put into regular operation in combination with the expected launch of the new IHO web site in 2019.

The work of two officers seconded by Japan and the Republic of Korea enabled several important capabilities to be implemented that might otherwise not have been possible within existing resources; the reporting period saw important progress in enhancements of the GIS environment, combining country and regional information systems, chart information systems and capacity building and bathymetry information. Parts of the system, including web mapping services, are available only within the Secretariat at this stage, however the goal is to provide secure access for Member States and Regional Commissions.

- **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-7 - IHO Annual Report, S-11 Part B – Catalogue of INT Charts, and M-3 - IHO Resolutions.

- **Communication between the IHO Secretariat and Member States through Circular Letters**

During the year, the Secretariat published 61 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 were published in preparation of the 2nd Session of the IHO Council.

- **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.

Public Relations and outreach

- **High level Capacity Building Visit to Angola**

IHO Director Abri Kampfer paid a high level Capacity Building visit to Luanda, Angola from 25 to 28 September to brief senior governmental officials on the role of the IHO and the significance of national hydrographic programmes, particularly for countries with a significant dependence on maritime activities. The visit was preceded by a joint IHO/IALA technical visit, conducted by Captain Sebastião Simões de Oliveira, Brazil, and Mr Jacques Manchard, IALA.

In the first part of his programme, Director Kampfer visited the Institute of Hydrography and Signaling Maritime Angola (IHSMA) and called on Director Manuel Narciso, Director General of IHMSA.

In the second part of the programme, Director Kampfer visited the Port Authority in Luanda and met Captain Henrique da Conceição Pedro, Port Captain of Luanda. The importance of maritime safety information and updated navigational products was highlighted and a demonstration was given to staff to indicate the very few navigational warnings currently promulgated for Angola. Director Kampfer then paid a visit to the Ministry of Mineral Resources and Petroleum where discussions were held with Mr Manuel Xavier Junior, Director of Security, Quality and Environment. The need for maritime spatial planning and the establishment of a national bathymetric database to aid economic development was communicated as well as the importance of hydrography in the context of the “Blue Economy”.



Director Kampfer, Captain Sebastião Simões de Oliveira, Brazil, and Mr Jacques Manchard, IALA with Director Manuel Narciso, Director General of IHSMA.

In the third part of his programme, Director Kampfer participated in the IHSMA Workshop on Safety of Navigation and he delivered a presentation dealing with the importance of hydrography and hydrographic services to any coastal State, State obligations resulting from SOLAS, IHO activities and the benefits of becoming a Member State of the IHO. This was followed by a presentation on the “Blue Economy”, with particular emphasis on the role of hydrography. The Workshop was well attended with 54 delegates representing 4 Ministries, Angola Maritime Safety Authority (IMPA), IHSMA and various stakeholders. During the lively discussion period there was general consensus that Angola need to strengthen its hydrographic capabilities and support was pledged to IHSMA to pursue this activity, including taking steps to initiate the process for Angola to become an IHO Member State.

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

The relationship with the Government of Monaco remained excellent throughout the year. The Department of External Relations and Cooperation continued to assist the IHO Secretariat. The Secretary-General and Directors were also able to further promote good relations when they met various diplomatic and government officers at functions and events hosted in Monaco by the Government or diplomatic missions in the Principality.

For the purpose of the IHO communications overhaul, the Secretary-General, Dr Mathias Jonas sought confirmation from his Serene Highness for the careful modernization of the IHO emblem and received a positive reply by official letter dated 28 September 2018.

- **Monacology 2018**

Monacology is an annual event traditionally held in June for school children from Monaco. Its aim is to raise children’s awareness about the environment and sustainable development through attractive presentations of these topics. The youngsters are enticed to become active through dynamic explorations on the numerous stands. As in previous years, *Monacology 2018* took place on Quai Antoine Ier, from 11 to 15 June, in front of the IHO headquarters.

IHO theme *Hydrography* was presented in *Monacology 2018* with an interactive display and stand. More than 450 pupils from local schools in Monaco visited the IHO stand and took part in activities guided by the IHO staff.

Secretary-General Dr Mathias Jonas represented the IHO at the inauguration of *Monacology* by HSH Prince Albert II of Monaco.



Secretary-General at the inauguration of Monacology 2018 honoured by HSH Prince Albert II of Monaco

The underlying theme of *Monacology 2018* was “17 Sustainable Development Goals” of the United Nations. The IHO presentation focused on the goal 14 “Life below water” showing the pollution caused by plastic. The theme was illustrated on the IHO stand using dynamic presentations illustrating the main ocean gyres in which significant amounts of the world’s ocean plastic pollution is now accumulating. The presentations were kindly provided to the IHO by Mercator Ocean (<http://www.mercator-ocean.fr/en/>), a French non-profit organization operating the Copernicus operational oceanographic services on behalf of the European Commission. All the children enjoyed reproducing the limits of coastlines and oceanic gyres on their own tracings that they could take home or display at school. All aspiring hydrographers received an IHO badge indicating they were a “Junior Hydrographer” and a sticker of the Organization in recognition of their efforts.



“Junior Hydrographers” in action

- **World Hydrography Day 2018**

The Secretariat provided briefing material for World Hydrography Day 2018 and published reports on the IHO website that described the celebrations that were conducted by Member States around the world. For the first time, Secretary-General, Dr Mathias Jonas addressed the global hydrographic community with a youtube video which gained around 1,000 call ups. World Hydrography Day 2018 marks the 97th anniversary of the establishment of the organization known today as the IHO. Under the motto *“Bathymetry –the foundation for sustainable seas, oceans and waterways”*, the IHO and its now 89 Member States reaffirmed their commitment to raising awareness of the importance of hydrography; and continue to coordinate their activities, in particular through maintaining and publishing relevant international standards, providing capacity building and assistance to those countries who aim to increase their activities in sea survey and cartography.

- **International Hydrographic Review**

The annual edition of the International Hydrographic Review was compiled and published in collaboration with the appointed editor, Mr Ian Halls. The IHR is a pdf publication, with peer-reviewed articles, with two editions a year and an annual printed copy consisting of a compilation of the articles. Access to this publication is free via the IHO website and without restriction. Member States are strongly urged to contribute to the Review as an important means of sharing information on their activities and developments within the hydrographic community. Other organizations or individuals working in related hydrographic fields, are also invited to contribute to this publication. The IHO Secretariat has been working with the University of New Brunswick (UNB), Canada, in a project to develop a digital repository of the complete library of the IHR. As a result, the project now provides access to all volumes from 1923 to 2018. They can be found at: <https://journals.lib.unb.ca/index.php/ihr>

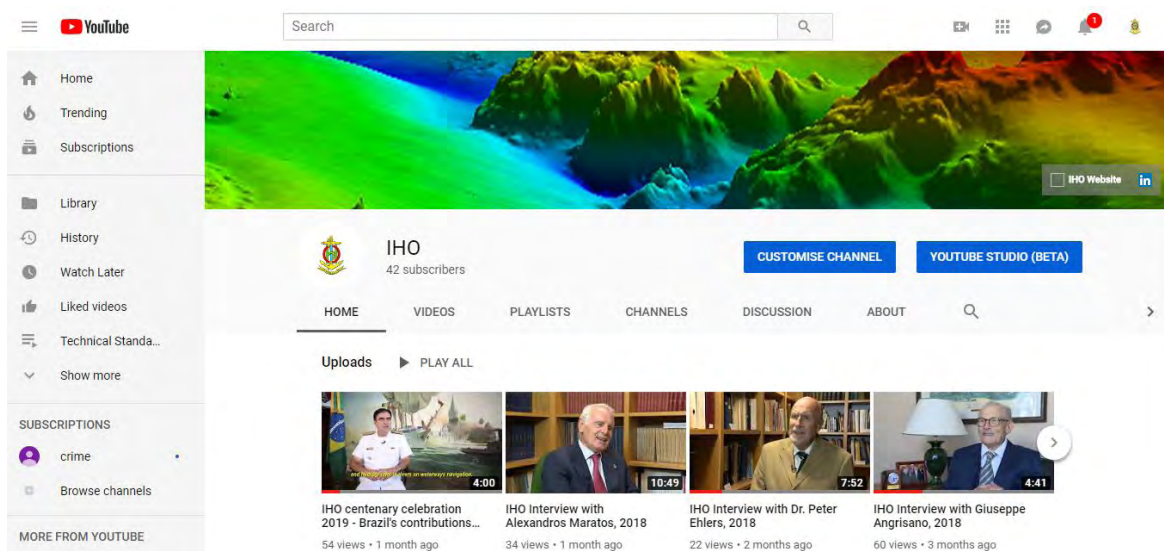
- **Digital presence and media outreach**

The Secretariat maintained a record of the principle IHO activities in the monthly publication of the IHO Bulletin, as well as providing a biannual article in the journal Hydro International.

One of the priorities defined under the Work Programme 2018 had been an overhaul of the IHO website, including GIS-services and IHO’s presence on social media. Advice on social media had been received through the services of an officer on remote secondment from the United States of America and a new website and logo have been developed with a Netherlands publisher, Geomares

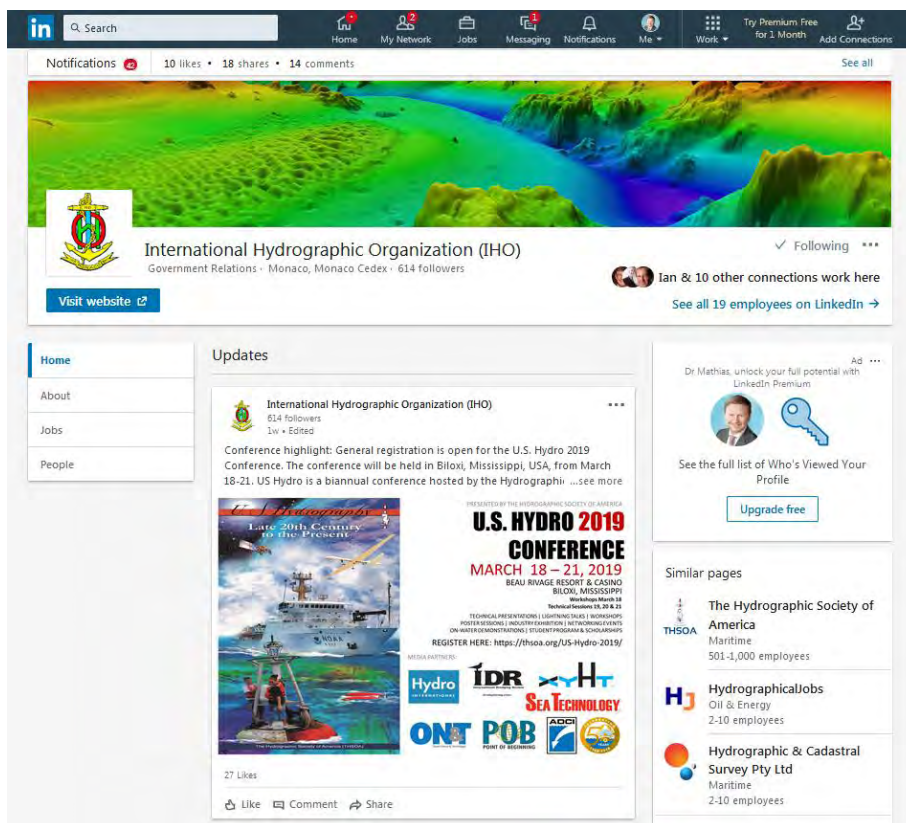
B.V.. The new website, which will have versions in both English and French, will have a functional but creative design that pay respect to tradition and will be fit for modern technology.

Dedicated IHO social media accounts are now available under LinkedIn and youtube. Both channels are regularly fed with content through Ms. Kristen Crossett of NOAA, US who works on remote secondment for the introductory phase of these two new communication streams.



Entry page for IHO's native youtube channel

For content upload, a set of video interviews have already been recorded with notable figures from IHO's recent history, who also form the editorial board for the planned prestige book publication, provisionally entitled "100 Years of International Cooperation in Hydrography".



Impression of IHO's LinkedIn account

- **Preparations for the IHO Centenary**

The plans for the celebration of the centenary of the foundation of the IHO are taking shape. Activities will extend over three years, from the 100th anniversary of the 1st International Hydrographic Conference in London, in 2019, to the 2nd session of the IHO Assembly, in 2020, to the anniversary of the foundation of the International Hydrographic Bureau in Monaco, in 2021. The “peak-of-the-peak” will be World Hydrography Day (WHD) on 21 June 2021. There will also be an opportunity to present IHO’s achievements at the United Nations General Assembly in September 2021 and at the IMO Assembly in November 2021.

The editorial board for the planned prestige book publication, provisionally entitled “100 Years of International Cooperation in Hydrography” was called for a constitutional meeting at the Secretariat by end of September. The prestige book will be an entertaining and educational publication aimed at a non-specialist audience to illustrate the importance and variety of the activities, outputs and developments of the IHO and its effective role in supporting maritime activities in history, at present and in the future!



Group of Co-Authors led by Editor in Chief: Gilles Bessero (right), Hugo Gorziglia, Robert Ward, Mustafa Iptes, Parry Oei, Guisepe Angrisano, Mathias Jonas, Alexandros Maratos, Chris Andreasen, Peter Ehlers, and Mike Barritt

Work Programme & Budget, Strategic Plan and Performance Monitoring

This element of the work programme concerns the execution of the IHO work programme, the new structure and organization of the IHO and its capacity to meet future requirements.

- **Financial situation**

The finances of the Organization remain healthy. The Secretariat pursued a conservative budget and closely monitored expenditure. All details have been reported to the Assembly for endorsement. Part 2 of this annual report provides the full scope.

- **Programme management, performance monitoring and risk assessment**

The processes for programme management, performance monitoring and risk assessment described in the edition of the Strategic Plan in place ranges from 2018 to 2020. In order to improve preparedness for the years to come after, the first Assembly tasked the Council to conduct a comprehensive review of the Strategic Plan and to provide a draft revised Plan, as appropriate, in time for the consideration of the 2nd ordinary session of the Assembly in 2020 and empowered the Council to establish a working group for this discrete purpose.

Annex B reports on the status of performance indicators allocated for the purpose of performance monitoring within 2018.

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 2018 is shown in **Annex C**.

Management of the IHO Secretariat

- **Investment in infrastructure**

Tables, Chair, Loudspeaker, Power supply.

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



Four officers were seconded to the Secretariat during 2018 under the terms of IHO Resolution 3/1987 as amended. Dr Hee Yoon PARK from the Korea Hydrographic and Oceanographic Agency replaced Mr Junghyun Kim in September. Captain Atilio Aste from the Hydrographic Office of Peru finished his secondment in December and Dr Kentaro Kaneda from the Hydrographic and Oceanographic Department of the Japan Coast Guard was replaced by Naohiko Nagasaka in April. Ms Kristen Crossett from the National Oceanic and Atmospheric Agency of the United States of America worked on remote secondment since May.

Mr Park was employed as the Associated Professional Officer (APO) to support the capacity building activities of the IHO, and worked on the development of the capacity building management system and online registration system.

Mr Nagasaka continued to work on the geo-information databases and web-based functions that assist both the IHO Secretariat and the RHCs in fulfilling their roles and the IHO Country Information System that supports the production and maintenance of IHO Publication P-5 - IHO Yearbook and C-55.

Captain Aste continued the work of maintaining and reviewing the IHO Hydrographic Dictionary in English, French and Spanish versions. He also collaborated in improving the data of the IHO Country Information System and was designated as Editor of the GEBCO Undersea Features Names Gazetteer. He also gave most helpful assistance for the preparation and conduct of the Assembly and other meetings.

Ms Kristen Crossett visited the IHO Secretariat in May for one week to familiarize with the Secretariat's Staff and the operational procedures to prepare herself best for her later support of IHO's new social media activities remotely from her home base near Washington D.C. Since then she continuously planned, created and provided content for IHO's new youtube channel and LinkedIn account.

- **Translation Service**

The Secretariat continued to translate key documents from English into French and Spanish through the use of its translation staff, who were employed primarily on the translation of Circular Letters and Secretariat's correspondence. Translations from French into English, when required, were provided by the Personal Assistant. All incoming Spanish correspondence was translated into English, for internal use, by the Spanish Translator.

The volume of this work was similar to previous years and the continued rise in the technical complexity of some of the translations meant there was little opportunity to make any significant progress in the backlog of active IHO publications that await translation into the Spanish languages other than the maintenance of those publications that have already been translated.

- **Secretariat Operations & Performance Improvement Campaign**

The Directing Committee continued with the process of systematic review of the current internal arrangements of the Secretariat in order to identify needs and options to adapt to changed conditions, to optimize the internal work flow, aiming to improve efficiency and make the best use of the skills and talents of all the Members of Staff by acting more collectively. Based on the assessment of the implementation of the previous year's outcome, another workshop was conducted with all the Secretariat Staff. Using a structured approach, a free flow of ideas designated in three main categories, was triggered and moderated by the Secretary-General and the seconded officer Captain Aste. The categories included:

- Infrastructure
- Communication
- Workflow

The results were categorized and will be used for change management in the years to follow.

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 HSSC

The 10th meeting of the HSSC took place in Rostock-Warnemünde, Germany from 14 to 17 May 2018. The meeting was hosted by the German Hydrographic Service (BSH). The HSSC Chairman, Rear Admiral Luigi Sinapi (Italy) opened the meeting and invited Dr. Mathias Jonas, IHO Secretary-General and Mr. Thomas Dehling, National Hydrographer of Germany to provide opening addresses. Seventy two participants representing twenty six IHO Member States and eleven stakeholder organizations participated in the meeting. The IHO Secretariat was represented by Secretary-General Dr. Mathias Jonas, Director Abri Kampfer and Assistant Directors Yves Guillam and Anthony Pharaoh.

Presentations were provided on the status of work activities of the subordinate Working Groups and Project Teams. The S-100WG Chair (Julia Powell) highlighted the extensions to be included in the next edition (4.0.0) of the S-100 Framework Standard. It was proposed that endorsement for this Edition should be obtained by HSSC letter after which Member States approval should be requested by circular letter. New editions of the S-102 (Bathymetric Surface), S-122 (Marine Protected Areas) and S-123 (Radio Services) Product Specifications were endorsed for circulation to Member States requesting approval. The meeting also endorsed a draft new document that provides guidance on developing S-100 Product Specifications. This document will be published as S-97. A new Edition 6.1.0 of the S-58 standard (ENC Validation Checks) containing several corrections was endorsed for circulation to Member States for approval. HSSC endorsed the new title for the draft S-67 publication; “Mariners Guide to the Accuracy of Depth Information in Electronic Navigational Charts”



The participants of the 10th Hydrographic Services and Standards Meeting.

After a protracted discussion related to the applicability and the evolution of the IHO Resolution 2/2007 (Principles and Procedures for Making Changes to IHO Technical Standards and Specifications), including the conduction of impact studies, the committee approved a new review cycle for HSSC Working Groups and Project Teams. The new procedure is intended to expedite the development and review process for Product Specifications. It was agreed that S-101 (ENC), S-111 (Surface Currents) and S-121 (Maritime Limits and Boundaries) Edition 1.0.0 product specifications will be distributed for evaluation and testing under the terms of the new process.

The meeting approved a proposal from NIPWG to hold an XML workshop in Genoa in September 2018. The NIPWG also launched a strategic discussion on the issues related to the development and provision of S-100-based products in the future. This item was reported at the 2nd meeting of Council as part of the HSSC report. All the Working Groups were tasked by the HSSC to provide their inputs to NIPWG, in accordance with the template developed by the Harmonization Group on Data Modelling (HGDM) for maritime services.

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 S-100 and ENC Standards Maintenance Working Groups

The Maritime and Port Authority of Singapore (MPA) hosted the 3rd S-100 Working Group meeting from 10 to 13 April 2018 in Singapore. Fifty eight participants from 22 Member States and 13 Stakeholder organizations attended the meeting. Assistant Director Anthony Pharaoh and Technical Standards Support Officer Jeff Wootton represented the IHO Secretariat.



Participants to the 3rd S-100 Working Group Meeting.

The primary focus of the meeting was to finalise proposals for the new Edition 4.0.0 of the S-100 standard. The new edition makes provision for new bSplines geometry types, a new (Lua) scripting language for conditional symbology procedures, a specification for data streaming and a generic data protection and authentication mechanisms which are now available for the definition of all S-100 based Product Specifications. Updates to the Part 10c (HDF5 data encoding format) of the S-100 document were also approved by the meeting.

During the meeting, breakout groups were convened to complete a new Edition 2.0.0 of the S-102 (Bathymetric Surface) Product Specification and to work on the new generic data protection and authentication section that will be included in S-100 Edition 4.0.0.

Progress reports were provided on the S-121 *Maritime Limits and Boundaries*, S-129 *Under-keel Clearance Management* and the S-101 *Electronic Nautical Chart - ENC* Product Specifications.

Reports were also provided by the Data Quality Working Group on a proposed methodology for the display of quality information and the World-Wide Navigational Warning Service Sub-Committee on the S-124 (Navigational Warnings) Product Specification.

Following an action resulting from the 2nd S-100WG meeting, the IHO Secretariat reported that the Maritime Resource Names (MRN) domain urn:mrn:iho: had been assigned to the IHO and is now registered within the Marine Resource Name Registry of IALA. This enables registration of any relevant entity of the IHO domain as an element of this Registry.

- ***1st S-100 Security (Authentication and Data Encryption) Meeting***

The IHO Secretariat hosted an ad-hoc S-100 Security (Authentication and Data Encryption) Meeting on 18 June 2018. The meeting was chaired by Robert Sandvik (Norway). Twelve participants, representing three Member States and six Stakeholder Organizations attended the meeting. The IHO Secretariat was represented by Director Abri Kampfer and Assistant Director Tony Pharaoh.



The participants of the 1st S-100 Security (Authentication and Data Encryption) Meeting

The primary goal of the meeting was to complete the draft document describing how data protection and authentication will be implemented in S-100 Product Specifications. The document also provides information on the operation and technical details surrounding the Data Protection Scheme, run by the IHO Scheme Administrator. It defines how compression, encryption and authentication are to be implemented both by data servers (those applying the standard to authenticate and encrypt data) and data clients (those using data). Some of the changes to the current S-63 standard include; the use of a different encryption algorithm (based on the Advanced Encryption Standard); the use of the XML format for permits; and the use of digital signatures to replace CRC32 checks.

The document was included as Part 15 to the new S-100 Edition 4.0.0 Standard.

- ***S-100 Test Strategy Meeting (TSM) and S-129 Under-Keel clearance***

The S-129 Under-Keel Clearance Project Team and S-100 TSM meetings were hosted by the Korea Hydrographic and Oceanographic Association (KHOA) in Busan, Korea. Participants from the following Member States attended the meeting; Australia, Canada, Germany, Norway, Republic of Korea and the United States of America. Stakeholder and academic members from the following organisations also participated; University of New Hampshire, IIC, ESRI, KRISO, Furuno, Primar, SevenC's and SPAWAR. Assistant Director Anthony Pharaoh represented the IHO Secretariat.

The S-129 Under-Keel Clearance Project Team (PT) meeting took place on 17 to 18 September and the S-100 TSM took place from 18 to 20 September. The S-129 PT meeting carried out a review of the current draft Product Specification document and made some minor changes to the S-129 model. Feedback was provided on trials that had been conducted on a Furuno prototype ECDIS using S-129 test datasets provided by OMC International.

The S-100 TSM carried out a review of comments received in response to the S-100 Edition 4.0.0 document. There was a discussion on the new data authentication and encryption scheme (documented as S-100 part 15) to consider what resources will be required to manage the new scheme and what implications it will have for data distributors.

The meeting discussed how Marine Resource Names (MRN) should be implemented for S-100 products and services within the S-100 domain, and whether a governing body was required to manage the IHO MRN domain.

The US Space and Naval Warfare Systems Command (SPAWAR) submitted a proposed model for the implementation of “Alerts and Indicators” in S-101 based ECDIS. The new model, which is based on the current portrayal model will trigger alerts and indication instructions (rather than portrayal instructions), and should have minimal impact for S-101 implementation.

Both SPAWAR and the KHOA provided reports on the S-100 test bed projects that had been conducted since the last meeting. KHOA also reported on the current status of the IHO Registry application and the Feature Catalogue / Portrayal Catalogue assembly applications. ESRI provided an update on the latest edition of the S-57 to S-101 ENC conversion tool. Several issues relating to mapping S-57 objects to S-101 Feature classes, were resolved during the meeting.



Participants of the 6th S-100 Test Strategy Meeting.

- **S-101PT**

The 3rd meeting of the S-101 Project Team was held at the IHO Secretariat (Monaco) from 19 to 21 June 2018. The meeting was chaired by Albert Armstrong (USA) and attended by 30 members from 11 Member States and 7 Stakeholder Organizations. Director Abri Kampfer, Assistant Director Tony Pharaoh and Technical Standards Support Officer Jeff Wootton represented the IHO Secretariat.



The participants of the 3rd S-101 Project Team Meeting

Although the main focus of the meeting was to review comments received on the draft edition of the S-101 Product Specification and Data Classification and Encoding Guide documents, reports were also provided on: the status of the IHO Registry; the S-100 Feature, Portrayal and Exchange Catalogue Builder applications; the S-57 to S-101 data convertor application; and the status of the

S-101 validation checks currently under development by the Danish Geodata Agency. Reports were also provided on the S-100 and S-101 data viewer applications developed by the Korea Hydrographic and Oceanographic Agency (KHOA) and the US Space and Naval Warfare Systems Command (SPAWAR).

There were also discussion on the S-101 data loading and unloading policies; the S-101 exchange catalogue format; and the management of S-101 support files. The ENC Display Sub-WG provided feedback on their study to identify ECDIS display anomalies and KHOA reported on new symbols that have been developed for the “SMART e-navigation” project, intended for the non-SOLAS market.

- **ENCWG**

The Australian Hydrographic Office hosted the 3rd ENC Standards Maintenance Working Group (ENCWG) meeting in Wollongong, Australia from 16 to 18 April 2018.

Twenty three participants from 17 Member States and 17 participants from stakeholder organizations attended the meetings. Assistant Director Anthony Pharaoh represented the IHO Secretariat.



Participants of the 3rd ENC Working Group Meeting (Wollongong, Australia)

The main topics of discussion included; a report by a sub group on ENC display issues in ECDIS; the inclusion of High Density Bathymetry in ENCs; issues identified with the S-52 ECDIS Chart 1 dataset; the use of CATZOC in ENCs; the display of quality information in ENCs; the promulgation of T&P information and the possible extension to S-63 (IHO Data Protection Scheme) to make provision for authentication of ENC exchange set files. Presentations were also provided on the display of active submarine volcanos, the use of large format monitors for ECDIS and ECDIS S-Mode specification, currently being developed by an IMO Correspondence Group.

The meeting reviewed the status of documents for which the ENCWG is responsible. A proposal for a machine readable (e.g. xml) version of S-58 (Recommended ENC Validation Checks) was discussed. The Data Quality Working Group submitted a proposal for an encoding bulletin on the encoding of quality of bathymetric data. Proposals were also considered for the inclusion of new anchoring symbol instructions in S-52 and a few issues were identified with the new Edition 3.0.2 of S-64 (IHO Test Data Sets for ECDIS).

Nautical Cartography

This element addresses the developments related to nautical cartography for paper nautical charts and the colours, symbols and display rules used to show System ENC (SENC) information on ECDIS, 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)

Hosted by the Hydrographic Service of the Royal Netherlands Navy, the 4th meeting of the Nautical Cartography Working Group (NCWG) took place in Scheveningen, The Hague, Netherlands, from 6 to 9 November. The meeting was chaired by Mr Mikko Hovi (Finland), supported by Mr James Timmins, Secretary (United Kingdom). Thirty-two delegates from 19 Member States (Brazil, Colombia, Denmark, Estonia, Finland, France, Germany, India, Indonesia, Italy, Japan, Netherlands, Norway, Republic of Korea, Spain, Sweden, Turkey, United Kingdom, USA), two Expert Contributors (Esri, Fugro/ICPC¹⁸), and the IHO Secretariat, represented by Director Abri Kampfer and Assistant Director Yves Guillam, attended the meeting. The Chair of the Data Quality Working Group (Netherlands) was also present during the entire meeting and provided enlightening inputs in relation to doubtful features, accuracy, CATZOC, data quality portrayal, etc.



NCWG-4 participants gathered outside the Badhotel meeting room

Following a motivating welcome address by Captain (RNLN) Marc van der Donck, Hydrographer of the Royal Netherlands Navy, the Nautical Cartography Working Group (NCWG) considered all the actions from the last meeting and those arising from the 9th and 10th meetings of the Hydrographic Services and Standards Committee (HSSC) that related to charting.

The Chair (US) of the Sub-Working Group on the Future of the Paper Chart provided a progress report on the status of this high priority work item of the NCWG work plan and suggested the draft topics that should be considered for an impact study by various stakeholders through a survey to be conducted in 2019. The various tasks to continue the work were allocated to some NCWG Members and the management plan was approved. A preliminary report is planned to be presented at

¹⁸ International Cable Protection Committee

HSSC-11. Several IHO strategic related issues were discussed, such as the future of the INT chart concept itself.

The representative of the ICPC submitted proposals for amendments to the sections of S-4 - *Regulations for International (INT) Charts and Chart Specifications of the IHO* - dealing with submarine cables, aiming to align with the IHO Resolution 4/1967 as amended and eventually to chart cables in possible deep sea mining areas.

Around 15 cartographic issues and proposals were considered by the NCWG, including the possible need to harmonize or standardize the portrayal of satellite derived bathymetry and the associated quality indicators. It is worth noting that since the last NCWG meeting, the submission template used for change proposals on symbology or chart regulations requires a short mandatory analysis of the possible impact of the proposed change on ENC's.

Germany introduced the latest Edition 9 of INT-1 - *Symbols, Abbreviations and Terms used on Charts* – which is now available on the IHO website for download by IHO Member States. An action was initiated to consider future alternative options in the maintenance and production of INT-1. UK introduced the new section V on Data Quality Indicators that is now included in the August 2018 edition of its national publication NP5011 - *Symbols and Abbreviations used on Admiralty Charts*.

The IHO Secretariat provided an update on the developments in progress with regard to the Phase II of the INTtoGIS project, aiming to facilitate the implementation of INT paper chart and ENC schemes in the charting regions, in accordance with guidance given in Publication S-11 Edition 3.1.0, February 2018 - *Guidance for the Preparation and Maintenance of International (INT) Chart and ENC Schemes and Catalogue of International (INT) Charts*. In support of this topic, the meeting welcomed a presentation provided by a representative of Colombia, engaged in a doctoral level study entitled "*Methodological Proposal to Standardize Regional ENC Schemes – Case Study: Caribbean Sea*". This study is planned to be introduced at the 19th meeting of the MACHC and its progress could further be monitored by the WENDWG.

The working group also considered four marine nautical incidents (groundings) by examining the official investigation reports to identify whether lessons learned had to be captured for cartographic improvements. Although it was agreed that these incidents were not due to shortcomings in cartographic concepts, participants acknowledged that these cases were noteworthy to be considered by the NCWG as they help to understand how the nautical publications, charts (ENCs and Paper) and quality indicators are used for setting alarm thresholds, either for route planning or during navigation.

Compared to the previous meetings, this meeting was particularly notable for a major reason: while addressing the cartographic issues, it revealed that a number of Hydrographic Offices are now facing new cartographic challenges resulting from the dual and simultaneous production of ENC's and paper charts from a single chart content database. Therefore, sharing the best practices within the NCWG to avoid inconsistencies in chart production and maintenance is becoming even more important for the future.

Digital Data Protection and Authentication

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

The IHO Secretariat continued to carry out the role of administrator of the S-63 scheme. This function involves processing applications and providing technical support and the individual and unique digital certificates and codes that are required to allow ENC data servers, OEMs and software developers to encrypt and de-encrypt ENC's as part of the services or equipment that they provide.

The IHO Secretariat hosted an ad-hoc S-100 data security meeting on 18 June 2018. The primary goal of the meeting was to complete a draft document describing how data protection and authentication will be implemented in S-100 product specifications. The document includes new

features such as the use of more secure encryption algorithm, the use of the XML format for permits and the use of digital signatures rather than the CRC32 checks used for S-63.

Data Quality

This element addresses the developments related to methods of classifying and depicting the quality of hydrographic information, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate.

Conduct meetings of Data Quality Working Group (DQWG)

The 13th meeting of the IHO Data Quality Working Group (DQWG) took place at the IHO Secretariat, Monaco, from 15 to 19 January.

The meeting was chaired by Mr Rogier Broekman (Netherlands) supported by Mr Sean Legeer (US), as Vice-Chair, and Mr Jyrki Mononen (Finland), as rapporteur. Ten delegates from nine Member States (Denmark, Finland, France, Italy, Japan, Netherlands, Norway, United Kingdom and United States of America) attended the meeting as well as a representative from RENC PRIMAR. Director Abri Kampfner, Assistant Director Yves Guillam and Technical Standards Support Officer Jeff Wootton represented the IHO Secretariat.



Participants in the DQWG-13 meeting, IHO Secretariat, Monaco

According to its new terms of reference adopted at the 9th meeting of the Hydrographic Services and Standards Committee (HSSC-9), one of the main objectives of the DQWG is to ensure that the data quality aspects are addressed in an appropriate and harmonized way for all S-100 based product specifications.

The first two days of the meeting were dedicated to a workshop addressing data quality aspects of the S-101 – *ENC Product Specification - Data Classification and Encoding Guide (DCEG)*, and the best practices on the way CATZOC values are populated for S-57 ENCs by Hydrographic Offices. This workshop highlighted useful rules implemented by some countries (generalization, impact of the passage of time, assessment of so-called unsurveyed areas, conversion tables from S-44 survey metadata to CATZOC values, etc.).

The workshop and the meeting also aimed at capturing the generic data quality components to be considered in the development of a data quality checklist for S-100 based products. After an introduction of ISO quality aspects and the INSPIRE¹⁹ technical guidelines for quality elements

¹⁹ Infrastructure for Spatial Information in Europe.

depicted in the Data Specification on Elevation, a systematic review and comparison was made between existing S-100 based draft product specifications. Special focus was aimed at S-102 – *Bathymetric Surface*, thanks to the participation of the representative from PRIMAR.

The meeting also considered the comments made by the members of the Nautical Information Provision and Nautical Cartography Working Groups on the draft publication S-67 – *Mariners' Guide to Accuracy of ENC's*. It was concluded that a fair amount of work is still needed before this publication is re-submitted to HSSC for endorsement. As it remains a top priority to address mariners' requirements with regard to the quality of bathymetric data, the working group considered different methodologies to help in the decision making process (combination of safety depths and contours with data quality) while the portrayal aspects will need to be addressed by the Nautical Cartography Working Group.

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)

The NIPWG is an IHO working group reporting to the Hydrographic Services and Standards Committee (HSSC) that is responsible for the development of S-100 conformant product specifications in support of future e-navigation services that are intended to provide mariners with harmonized up-to-date information on integrated displays. The 5th meeting of the NIPWG took place in Genoa, Italy, from 12 to 16 March, hosted by the Istituto Idrografico della Marina (IIM).

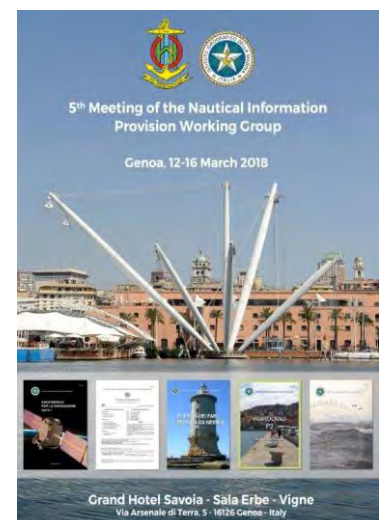
Rear-Admiral Luigi Sinapi, Director of the Italian Hydrographic Institute and Chair of the HSSC, welcomed the participants and attended some sessions. The meeting was chaired by Mr Jens Schröder-Fürstenberg (Germany). Twenty-five delegates from 15 Member States (Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Republic of Korea, Russian Federation, Spain, Sweden, United Kingdom, and United States) and six expert contributors (Anthropocene Institute, IIC Technologies, Portolan Sciences, University of New Hampshire) attended the meeting. The IHO Secretariat was represented by Director Abri Kampfer, Assistant Director Yves Guillam and Technical Standards Support Officer Jeff Wootton.

The meeting reviewed the IHO Resolutions that are in their remit, such as IHO Resolution 7/2009 – *Time Reference*, the amendments of which to be submitted to HSSC for endorsement were agreed.

The meeting noted the progress made, by contract, on the development of the product specification S-127 (*Traffic Management*) – which was endorsed - , and by the Republic of Korea, for S-128 (*Catalogue of Nautical Publications*). While addressing the various complex issues relating to the development of these product specifications and the associated data models, questions were raised on data sources, data flows, portrayal and consistency with other subset of S-100-based products including S-101 ENC's, S-2xx and S-4xx products.

The meeting commended the S-124 Correspondence Group and its outgoing Chair (Yves Le Franc, France), for the work done. NIPWG was encouraged to adopt a similar consistent and holistic approach for the development of other S-1xx products in its remit.

Noting that the developments of S-100 based product specifications are incremental and noting further that close interactions between those product specifications may cause issues, the meeting acknowledged that there was a need to map the global system architecture for every S-100-based



products in the remit of NIPWG and to further address, under HSSC guidance, the basic principles of the supply chain and its various components.

An informative presentation on the IHO Geospatial Information Registry was delivered, highlighting the need for a dedicated workshop on this topic. The comments received from the Chair of the Data Quality Working Group on the data quality component were noted and will be considered in the subsequent editions of S-122, S-123 and S-127, as appropriate.

Noting the existence of several national initiatives on the use of the XML structure for Notices to Mariners (NtM), the meeting decided to take up the harmonization of data exchange mechanism for the provision of NtM paper chart corrections that could enhance data exchanges between HOs.

The Chair reported on the outcome of the 1st meeting of the IMO-IHO Harmonization Group on Data Modelling (HGDM) and will keep HSSC informed on the invitation to submit Maritime Services descriptions, which are under IHO responsibility according to the HGDM Maritime Services template.

The meeting reviewed its work programme and agreed on the top priority work items to be proposed for HSSC's endorsement.



NIPWG-5 participants in Genoa, Italy

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 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)

The Tides, Water Level and Currents Working Group (TWCWG) has been tasked by the IHO Hydrographic Services and Standards Committee (HSSC) to monitor and develop the use of tidal, water level and current information as well as to advise on tidal, water level and current observation, analysis and prediction.

Hosted by the Servicio Hidrografico y Oceanografico Armada de Chile (SHOA), the TWCWG held its 3rd Meeting at the Marina Del Rey Hotel, Viña del Mar, Chile, from 16 to 20 April under the chairmanship of Dr Gwenaële Jan (France). The meeting was attended by 36 delegates from 16 IHO Member States (Australia, Chile, Finland, France, Germany, Italy, Japan, Netherlands, New Zealand, Norway, Perú, Republic of Korea, South Africa, Spain, UK and USA) and the Center for Coastal and Ocean Mapping/University of New Hampshire (CCOM/UNH), USA. Assistant Director David Wyatt, represented the IHO Secretariat.



Rear Admiral Patricio CARRASCO Hellwig addressing participants at the opening ceremony of the TWCWG3

Significant time was set aside to progress the S-100 based Product Specifications, for which the TWCWG is responsible. Significant progress was made on further developing the draft specifications. The results of using the test datasets for S-111 – *Surface Currents* were demonstrated. All participants were encouraged to create datasets compatible with S-104 - *Water Level Information for Surface Navigation* and S-111 for testing and evaluation. It was agreed to submit the draft of the S-111 Edition 1.0.0 to HSSC 10 for formal consideration by IHO Member States and the wider stakeholder community.

Further progress was made on a standard for digital tide tables with a proposed draft IHO resolution being generated by the USA for submission to HSSC 11 in 2019. Although some inputs to the inventory of tide gauges and current meters, and the list of Actual Tides On-line Links had been received, it was agreed to highlight these tools through Regional Hydrographic Commissions with the purpose of raising awareness and encouraging additional inputs.

The Tides, Water Level and Currents Capacity Building (CB) course was discussed and the contents reviewed. It was noted that the material had been translated into French with work progressing on the Spanish and Portuguese versions; it is intended to use the Spanish version for a course being delivered to the Spanish speaking countries of the Meso-American and Caribbean Sea Hydrographic Commission (MACHC) region coordinated by the USA in November. Methods for further development of these courses were agreed as well as identifying the need for closer liaison with the Regional CB Coordinators to assist in selecting appropriate candidates for future courses. It was agreed that the course needed to be highlighted through Regional Hydrographic Commissions with the purpose of raising awareness of the course and encouraging additional requests for its delivery.



Participants at the 3rd meeting of the TWCWG

Mr Peter Stone (NOAA-OCS, USA) was elected as vice-Chair to fill the vacancy created by the departure of Mr Louis Maltais (CHS-Canada).

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 Dictionary Working Group (HDWG), which is tasked by the IHO Hydrographic Services and Standards Committee (HSSC) to review and propose updates to the hydrographic definitions contained in IHO publication S-32 - *Hydrographic Dictionary*, held its 2nd meeting (HDWG2) at the IHO Secretariat, Monaco, from 27 to 28 November under the chairmanship of Mr Jean Laporte (France). Five representatives from five Member States (China, France, Indonesia, Oman and United States), and the IHO Secretariat attended the meeting. Director Abri Kampfer, Assistant Directors David Wyatt and Anthony Pharaoh, the Technical Standards Support Officer, Jeff Wootton, and the Peruvian Project Officer, Atilio Aste, represented the IHO Secretariat.

The participants devoted significant time to discussing a proposed new structure and database application developed by the IHO Secretariat; these discussions were led by Assistant Director Anthony Pharaoh and Technical Standards Support Officer Jeff Wootton, who also described the inter-relationship between the IHO GI Registry and the Hydrographic Dictionary database. It was agreed that the database development should be designed to allow the inclusion of multiple language versions by Member States. The respective term and definition entries will individually refer to the IHO maintained reference version to



Participants of the 2nd meeting of the HDWG in Monaco

achieve a fully multilingual searchable dictionary. The multitude of these language terms referring to the IHO reference version will be maintained by means of a language neutral individual numeric identifier. It was agreed that the proposed database application should replace the current Wiki version, which will be withdrawn as soon the new arrangement becomes publicly accessible. The participants received presentations on challenges of creating multiple language versions, particularly those languages which use non-Roman script characters, such as Chinese and Arabic.

It was also agreed that the comprehensive review of the complete set of terms currently contained in S-32 is planned to be undertaken in early 2019 with those terms identified for removal being subsequently considered by the full HDWG as part of the ongoing maintenance of the reference database. The revised approach will be presented at HSSC11 in Cape Town, South Africa, (6 to 9 May 2019) and subsequently at IRCC11 in Genoa, Italy, (3 to 5 June 2019) to explain the functionality and maintenance, the opportunity for the development of additional language versions by Member States and its important relationship to the IHO GI Registry. It was agreed to use the forthcoming meetings of the Regional Hydrographic Commissions to engage with Member States and encourage their involvement in the creation and maintenance of their own language versions.

It was agreed that a further meeting of the Working Group would be beneficial in due course. A need for the participation of additional experts nominated by Member States was identified, once the new database structure had been developed, when the experience base of the WG would need broader hydrographic and cartographic knowledge in order to undertake the task of reviewing and maintaining

the terms and definitions in the database. It was noted that a review of the Terms of Reference and Business Rules should be undertaken to reflect this development.

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

The Advisory Board on the Technical Aspects of the Law of the Sea (ABLOS) is a joint board of the International Hydrographic Organization (IHO) and the International Association of Geodesy (IAG). The ABLOS comprises four representatives from IHO Member States and four representatives from the IAG. The United Nations Division for Ocean Affairs and Law of the Sea (UN-DOALOS) and the Secretariat of the IHO provide one ex-officio member each. The ABLOS is charged with providing advice, guidance and, where applicable, offering expert interpretation of the hydrographic, geodetic and marine geo-scientific aspects of the Law of the Sea to the parent Organizations, their Member States or to other organizations on request. It also reviews State practice and jurisprudence on Law of the Sea matters which are relevant to the work of the Board to enable it to provide expert advice when needed. The ABLOS also studies, promotes and encourages the development of appropriate techniques in the application of the technical provisions contained within the UN Convention on the Law of the Sea (UNCLOS). IHO publication *C-51-Manual on the Technical Aspects of the United Nations Convention on the Law of the Sea* is maintained by the ABLOS.



ABLOS Members gathered for ABLOS BM25 in Doha

The 25th Business Meeting of ABLOS was held at the Ritz-Carlton Hotel in Doha on 22 and 23 October. It was followed by a seminar titled '*Challenges in the Implementation of UNCLOS – a Regional perspective*' on 24 and 25 October.

ABLOS members and IHO appointed observers from Australia, Brazil, Chile, Denmark, Japan, the Republic of Korea and the United Kingdom were present, as well as five invited observers from Qatar. The Chair, Professor Niels Anderson (IAG – Denmark), welcomed all Board members and observers to the meeting.

The meeting continued its preparations for the 10th ABLOS Conference, which is planned to be held in Monaco on 8 and 9 October 2019.

The meeting finalized the revisions to Chapter 3 and the list of definitions of Edition 5.0.0 of IHO publication C-51 and agreed the completed draft Edition 6.0.0 should be submitted to the 11th meeting of the IHO Hydrographic Services and Standards Committee (HSSC) in May 2019 for its endorsement and subsequent IHO and IAG approval.

ABLOS members and observers discussed notable topics from the various conferences, seminars and workshops that they had attended and undertaken since the previous Business Meeting. The meeting also discussed the material for the ABLOS capacity building training course and reviewed ways to develop it further.

The meeting reviewed the Terms of Reference and Rules of Procedure of the Board and made a number of amendments and revisions. The proposed draft Terms of Reference and Rules of Procedure of the Board will be submitted to the HSSC for endorsement and the IAG Executive Council for approval. The status of current Board members was reviewed and it was noted that the current terms of two IHO appointed members would end in October 2018. The IHO Secretariat was requested to take the necessary administrative action to fill the two vacancies. It was also noted that three IAG appointed members would end their terms in July 2019 and it was agreed that a search for new members should be started early to avoid having unfilled vacancies.

The ABLOS meeting was followed by a Law of the Sea Seminar, which was hosted by the Qatari Standing Committee of the Convention on the Law of the Sea. The Seminar was opened by Dr Ahmad Al-Hammadi, Secretary General of Ministry of Foreign Affairs and Chairman of the Standing Committee of the Convention on the Law of the Sea and was attended by approximately 120 delegates from across the region, including Oman, IR of Iran, Kuwait and a wide selection of Qatari government ministries, technical authorities and universities.



ABLOS 25 “Challenges in the Implementation of UNCLOS – a Regional perspective” Seminar

The Seminar covered presentations on:

- *Settlement of disputes;*
- *The efforts of the Standing Committee of the Convention on the Law of the Sea to implement the provisions of the UNCLOS in the State of Qatar;*
- *The intersection between investment treaty rules and UNCLOS and their effect on regulation of underwater cable networks;*
- *Dynamic coasts in an era of sea level rise – fixed baselines versus fixed limits;*
- *The unresolved issues under UNCLOS: from State Practice perspective;*
- *The ability of the UNCLOS to accommodate new uses and challenges;*
- *Legal protection of coastal states;*
- *Legal framework governing maritime security threats: general overview;*
- *Innocent passage;*
- *What does ABLOS do? TALOS Manual and Capacity Building;*

- *Geodesy and Basic National Infrastructures; The difficulties of obtaining data under UNCLOS – is crowdsourced bathymetry the answer?;*
- *Protecting the Marine Environment during crises: The South China Sea case and its implications for regional protection of the Marine Environment – Environmental matters in the Gulf region;*
- *Technical issues related to time the Commission on the Limits of the Continental Shelf analysis.*

The presentations were followed by question and answer sessions for the participants.

PROJECT TEAM ON STANDARDS FOR HYDROGRAPHIC SURVEYS (HSPT)

- **HSPT2**

The Project Team on Standards for Hydrographic Surveys (HSPT), which is tasked by the HSSC to prepare a draft 6th Edition of IHO publication S-44 - *Standards for Hydrographic Surveys*, held its 2nd meeting (HSPT2), organized by the Diretoria de Hidrografia e Navegação (DHN) of the Brazilian Navy, in Niterói, Rio de Janeiro, Brazil, from 3 to 6 July 2018 under the chairmanship of Christophe Vrignaud (France). 18 representatives from 10 Member States (Australia, Brazil, Canada, France, Italy, Netherlands, Portugal, Sweden, United Kingdom and United States), and expert contributors from Fugro, iXblue and AML Oceanographic attended the meeting. Assistant Director David Wyatt represented the IHO Secretariat.



The HSPT received a presentation from Australia on the work undertaken intersessionally on the ten identified limitations of the current 5th Edition of S-44 and the results of the analysis of the responses to the Customer Requirements Survey Questionnaire. The participants considered and discussed the limitations to identify potential solutions which could be used in the revision process. The HSPT spent significant time developing the proposed matrix version of the current Table 1, generating a suitable format and an expanded number of measurable categories, which were considered to be necessary for the use of the S-44 standards for a-priori Total Propagated Uncertainty (TPU) and a-posteriori Qualification of survey data.



Participants of the 2nd meeting of the HSSC HSPT at CHM, Niterói, Brazil

Using the current 5th Edition of S-44 and C-13 – *IHO Manual on Hydrography* – as a basis, the participants identified an expanded number of new chapter titles and confirmed which HSPT members would take the role of individual chapter leads. During the latter part of the meeting considerable progress was made on the drafting of the contents of the new chapters.

The necessary intersessional tasks were agreed together with identified milestones, in order to allow collation of an initial version of the revised S-44 to be circulated for comment at the beginning of 2019. The participants recognised that a number of iterations would be required prior to submission to HSSC.

The participants also considered what potential tasks a possible Hydrographic Surveys Working Group (HSWG) could undertake if permanently established by HSSC. Common opinion was expressed that the pace of technological and methodological change would make more regular review and maintenance of S-44 desirable in the future. The HSPT also noted that to ensure harmonization with the 6th Edition of S-44, C-13 would require a considerable amount of updating



2nd meeting of the HSSC HSPT in plenary session

and insertion of some material from the current 5th Edition of S-44. The participants also felt that such a Working Group could deliver a forum for discussing new technologies and methods in hydrographic surveying, although it was recognized that measureable outputs would need to be identified and articulated as potential Terms of Reference.

It was agreed that further meetings would be required to progress the initial draft of the 6th Edition of S-44, in preparation for presentation to the HSSC and to take account of member States' and stakeholders' comments.

IMO-IHO Harmonization Group on Data Modelling (HGDM)

- **HGDM2**

The 2nd joint IMO/IHO Harmonization Group on Data Modelling (HGDM-2) meeting took place from 29 October to 1 November 2018 at the IMO Headquarters in London, United Kingdom, under the chairmanship of Mr Sunbae Hong (Republic of Korea).

HGDM-2 was attended by representatives from the following Member States: Australia, Brazil, Bangladesh, Canada, China, Egypt, Germany, Japan, Norway, Nigeria, Republic of Korea, Sweden, Turkey, United Kingdom and the United States. The group was also attended by members from the International Chamber Of Shipping (ICS), International Electrotechnical Commission (IEC), International Harbour Masters Association (IHMA), International Maritime Pilots Association, International Association of Marine Aids to Navigation And, Lighthouse Authorities (IALA) and Comite International Radio-Maritime (CIRM) and Baltic and International Maritime Council (BIMCO). Director Abri Kampfner and Assistant Director Anthony Pharaoh represented the IHO Secretariat.



HGDM Chairman and Secretariat

Director Kampfer provided a report on the status on the S-100 framework Standard and highlighted the changes and extensions included in the new S-100 Edition 4.0.0 to be released in December 2018. The report also included an update on the status of the suite of S-100 based product specifications currently under development by various bodies and the IHO GI Registry operated by the IHO Secretariat.

The group carried out a detailed review of the draft guidance document on the definition and harmonization of the S-100 compliant format and structure of Maritime Services. There was discussion on a Norwegian paper on those marine services for which there is currently no coordinating body. Norway also proposed amendments to the draft guidelines and the IHMA initiated a discussion on the terminology currently used in the Marine Services guidance document.

Following a discussion on future procedures to be followed by Member States or International Organizations when proposing new generic descriptions of Maritime Services, it was decided that such future descriptions should be submitted to the NCSR Sub-Committee for consideration under either a revised output referring to the “Consideration of descriptions of Maritime Services” or under “Any other business”.

A review of the existing service descriptions provided by Norway, Sweden, IHO, WMO, IMPA and IALA was conducted and it was agreed that these descriptions of Maritime Services should be consolidated and published under a MSC circular to allow for easy future revisions. Furthermore, it was agreed that clear indication should be provided noting that drafts descriptions would be periodically updated, to ensure their harmonization.

HGDM2 prepared a report to the IMO NCSR Sub-Committee proposing a two-step approach for the definition and harmonization of the format and structure of Maritime Services. Whereby consideration should be given to issue a MSC Resolution containing the draft Guidance on the definition and harmonization of the format and structure of all Maritime Services, including the template for the submission of maritime service descriptions and guidance for the harmonized specification of technical services. Furthermore, to consider the distribution of a MSC Circular consolidating the descriptions of maritime services, which could be re-issued, as revised versions, when maritime services were added or updated. It was further recommended to rename the guiding document to “Guidance on the definition and harmonization of the format and structure of Maritime Services”, and to exclude the references previously made to the term “Maritime Service Portfolio”. It was considered that HGDM2 completed the assigned tasking and the need for any future meetings will be determined by the IMO NCSR Sub-Committee.

e-Navigation Underway International Conference

The 8th e-Navigation Underway International conference was held from 24 to 26 January 2018 on board the DFDS ferry M/S PEARL SEAWAYS, during which time she sailed from Copenhagen to Oslo and then returned to Copenhagen. The theme for the conference was the realization of the Maritime Service Portfolios.



Participants to the 8th e-Navigation Underway Conference



Director Abri Kampfer addressing the Conference

The conference was attended by 144 delegates, representing 29 countries and 7 international organisations. The associated exhibition attracted 3 exhibitors, displaying the latest developments in e-navigation.

Following welcoming remarks from Bjørn Borbye Pedersen of the Danish Maritime Authority, Conference Chair, and opening addresses from Francis Zachariae, Secretary-General of IALA, Andreas Nordseth, Director General of the Danish Maritime Authority, the key note speech was given by Mr Niels Smedegaard, President and CEO of DFDS (Det Forenede Dampskibs-Selskab).

A series of 28 presentations were given under the broad headings of general perspectives, e-navigation projects and testbeds, autonomous solutions in the maritime domain, specific e-navigation solutions, and building blocks for e-navigation. Director Abri Kampfer, representing the IHO, presented the progress in developing S-100 that has been recognised as the baseline standard for e-navigation.

As a result of the 28 presentations and related discussions that took place over the three days of the Conference, six highlights were identified:

- Ship-owners have clearly realised the potential and business cases in e-navigation both in the areas of safety, efficiency and cost reduction.
- Increasing attention is being paid to harmonised standards for services and products which are necessary for e-navigation.
- Disruption of the maritime industry driven by exponential technological change demands faster stakeholder and regulatory response to achieve the benefits of new technology for human needs.
- There is increasing collaboration between test bed operators, leading to an acceleration in the realisation of new digital maritime services and connectivity infrastructure.
- Several major projects and global test beds have tested VDES (WHF Digital Data Exchange System) with good results using both terrestrial and satellite platforms. VDES prototypes are now on the way for use on ships and ashore.
- Autonomous systems, driven by the business case, are becoming operational and authorities and organisations must prepare.

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 meeting of IRCC

The 10th meeting of the Inter-Regional Coordination Committee (IRCC10) was held in Goa, India, from 4 to 6 June, hosted by the Indian National Hydrographic Office. The meeting was attended by the Chairs, or their representatives, of the 15 Regional Hydrographic Commissions (RHCs) and the IRCC subordinate bodies and 27 observers. A total of 52 participants were present. The meeting was chaired by Dr Parry Oei (Singapore). The opening ceremony was attended by Vice Admiral A.R. Karve, Flag Officer Commander in Chief of the Southern Naval Command, Indian Navy. The IHO Secretariat was represented by Director Mustafa Iptes (IRCC Secretary) and Assistant Director Alberto Costa Neves.

The IRCC reviewed the reports and activities of its subordinate bodies and the RHCs and considered the need for enhancing regional coordination and cooperation. IRCC also considered the outcomes of the 1st meeting of the IHO Council (C-1), acknowledged the accomplishments and challenges of the Capacity Building programme and the International Board on Standards of Competence (IBSC) activities, examined the developments on Crowdsourced Bathymetry (CSB) and ocean mapping activities and considered issues related to the Worldwide ENC Database (WEND).

The IRCC reviewed and endorsed the amendments to the IRCC ToRs and RoPs proposed by the IHO Secretariat. The Committee also considered and agreed on the revision of IHO Resolution 2/1997 as amended (*Establishment of Regional Hydrographic Commissions - RHC*).

The meeting was informed of the achievements of the Capacity Building Programme and acknowledged the generous financial support from the Republic of Korea and from the Nippon Foundation of Japan, the in-kind support from Member States and industry stakeholders and the work of the RHC CB Coordinators and Project Leaders in these achievements. IRCC also endorsed the proposed amendments to the CBSC ToRs and RoPs. The IRCC acknowledged the work done by the IBSC in the delivery of the new framework for the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. The meeting considered the impact of the work done by the IHO Secretariat to maintain publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide*.

The IRCC10 was informed of the activities on World-Wide Navigational Warning Service (WWNWS), NAVAREAs and the progress on documentation of WWNWS. The IRCC considered that Maritime Safety Information (MSI) training courses led by the WWNWS-SC and sponsored by the CBSC are a critical issue for the continued success of MSI capacity building and the lack of qualified trainers, in particular in French and Spanish languages, will need to be addressed.

The IRCC10 reviewed progress towards the full implementation of the WEND Principles and noted with concern that overlapping ENCs create confusion onboard ships and that the IHO community should strive to eliminate overlapping data. The Committee endorsed the proposal that the management of overlap cases should be addressed by RHCs. IRCC noted the WENDWG recommendation that all ENC data should be made available to the RENCs, not only for ensuring Quality Control in general, but also for risk assessment of overlapping ENCs. IRCC also noted the recommendation that RENCs should consider offering a S-57 license management service to support safety of navigation for all classes of vessels. The IRCC commended the work undertaken by both RENCs on their high-quality support to hydrographic offices and end-user service providers and for their contribution to Joint-RENC technical meetings. The Committee approved the proposed revisions to the WENDWG ToRs and RoPs and the continuation of the WENDWG activities.

The IRCC10 was informed of the activities of the General Bathymetric Chart of the Oceans (GEBCO) Project, in particular on the progress of Seabed 2030 Project. IRCC endorsed the final draft version of the B-12 Guideline (*IHO Guideline on Crowdsourced Bathymetry, Edition 1.0.0*) prior to final endorsement by the Council and approval by Member States. The Committee approved the proposed revisions to the CSBWG ToRs and RoPs and tasked the WG to continue its work under the proposed revised ToRs in order to safeguard the implementation phase and future work on Edition 2.0.0 of the Guidelines. IRCC also acknowledged the work done by the CSBWG in the production of the draft CSB Guidance Document.

The IRCC10 reviewed the progress on global Marine Spatial Data Infrastructure (MSDI) activities and considered the development in Marine Spatial Planning (MSP) implementation worldwide. The IRCC also considered the impact of the newly established *United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Working Group on Marine Geospatial Information (MGIWG)*. The IRCC established the IHO Project Team on the implementation of the UN-GGIM Shared Guiding Principles for Geospatial Information Management (PPT) and endorsed the ToRs and RoPs of the PPT.

The Committee reviewed and endorsed the proposed amendments to the IHO Resolution 6/2009 (International Hydrographic Review - IHR). The meeting also noted the outcomes of HSSC10 and its relation to the IRCC activities.

The meeting considered the benefits of having solid infrastructure in the IHO Secretariat to support the IHO Member States and the subordinate bodies, and noted the developments in databases and online services, in particular the IHO Geographic Information System (GIS) tools.

IRCC also considered and agreed on its key priorities for 2019, which are Capacity Building Provision, INT chart and ENC schemes, Crowdsourced Bathymetry, Project Seabed 2030 and Marine Spatial Data Infrastructures.



Participants of the IRCC10 Meeting.

Cooperation with Member States and attendance at relevant meetings

The objective of this element of the Work Programme is to facilitate coordination, cooperation and collaboration among IHO Member States in order to improve the provision of hydrographic and charting services and products through the structure of the 15 RHCs and the IHO Hydrographic Commission on Antarctica.

This element is largely accomplished through the meetings of the RHCs. The frequency of meetings of the RHCs varies from annually to triennially, depending on the region. RHC meetings continued to increase in importance as they exercise an increasingly active role in the overall planning, execution and assessment of the IHO Work Programme as it relates to their regions. A Director, sometimes accompanied by an Assistant Director, represented the IHO Secretariat at the RHC meetings, providing guidance and assistance on IHO matters.

Arctic Regional Hydrographic Commission

The 8th Conference of the Arctic Regional Hydrographic Commission (ARHC) was held in Longyearbyen (78°N°), Svalbard, Norway, from 11 to 13 September, and included an Open Forum "*Improving Marine Knowledge in the Arctic*" that took place on 11 September.

Twenty five participants representing four of the five ARHC Members (Canada, Denmark, Norway, and the USA), three Associate Members (Finland, Iceland and Italy) participated in the Conference. Ten stakeholders participated in the Open Forum, including the Norwegian Institute for Marine Research and representatives from the government of Svalbard and from local authorities such as the University Centre of Svalbard (UNIS), who hosted the Open Forum.

At this Open Forum, after an encouraging video message delivered by HSH Prince Albert II of Monaco introduced by the Secretary-General, the stakeholders provided informative user perspectives on the fleets of research vessels, on the design of polar research vessels and their possible contribution to hydrographic programmes, on pilotage requirements for Spitzbergen areas and marine geospatial information in support of various



applications. Most of the presentations provided useful information to fully understand the Arctic issues that are at stake and may impact on marine activities in the near future (climate change, etc.).

Representatives of the Arctic Spatial Data Infrastructure (Arctic SDI), a cooperation which is based on a Memorandum of Understanding between the National Mapping Agencies of the eight Arctic Council countries, were also present and had a fruitful side meeting with the ARHC MSDI Working Group (ARMSDIWG).



The ARHC Conference itself was chaired by Ms Birte Noer Borrevik, Director of the Norwegian Hydrographic Service (Kartverket). Dr Mathias Jonas, Secretary-General of the IHO and Assistant Director Yves Guillam represented the IHO Secretariat and arranged a preparatory meeting of the 2nd meeting of the IHO Council in the margins of the Conference, with the Chair of the Council.

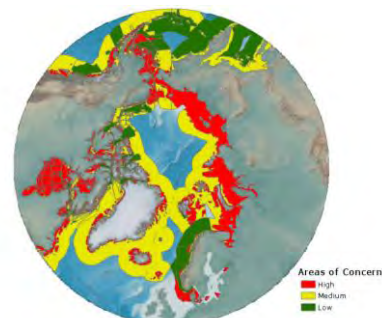


Participants in ARHC-8, Longyearbyen (78°N), Svalbard, Norway

All participants reported on their activities in the Arctic region since the last Conference.

The ARHC Members were informed by the Secretary-General of the strategic issues that will be on the agenda of the 2nd meeting of the Council. As part of the lessons learned from the last Conference of the IHO Hydrographic Commission on Antarctica, he also reported on the outcome of the 19th meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea on the theme "*Anthropogenic underwater noise*" as it might impact on the organization of some hydrographic and geophysics surveys in Polar regions in the future when low frequency acoustic sensors are to be used. Canada agreed to upgrade their flyer on this issue.

Under the guidance of the Operational and Technical Working Group of the ARHC (OTWG), the US provided an update of the results of a desktop study aiming to provide some indicators of the Arctic Hydrographic Adequacy, the results of which could be used to invite vessels of opportunity, including research vessels and cruise ships, to support crowd-sourced bathymetry initiatives and contribute to the Seabed 2030 project.



The Region N Chart Coordinator (Norway) reported on the status of nautical charting in the region, which was complemented by a presentation by the Secretariat of the new functionalities offered by INTogIS II, which is now under the testing phase by some coordinators. Norway also reported on the Arctic 2030 project, which aims to improve the access to marine geospatial information for the Arctic through the Arctic SDI. This project could be used as a key enabler to reinforce the links with PAME (Arctic Council's working group on the Protection of the Arctic Marine Environment). Based on several years of the ARHC's technical cooperation with PAME on polar navigation matters, the ARHC expressed its desire to explore and develop a Memorandum of Understanding (MoU) with the PAME Working Group in the upcoming year. A MoU would define a cooperative framework to facilitate planning, support, and technical exchanges.

The Director of the Office of Coast Survey (US (NOAA)) presented the NOAA data policy for the use of non-traditional data and their best practices for the management of data provided from external sources, a topic of interest for many hydrographic offices.

The ARHC Members present at the Conference noted the comments received from the hydrographic service of the Russian Federation (DNO) about the different agenda items, and in particular about the application of the United Kingdom to become an Associate Member of the ARHC. It was agreed to defer the discussion to the next Conference, where the participation of observers and stakeholders (industry, research and academic institutes, other IHO Member States) in possible ARHC open sessions will be reconsidered as well.

The Russian Federation was elevated from the position of Vice-Chair to take over the Chair at the end of the Conference. The Conference noted the Russian Federation's offer to host the 9th Conference of the ARHC. Noting the IHO calendar in 2019, it was agreed to invite the Russian Federation to consider the possibility for hosting the ARHC from 17 to 19 September 2019.

The Conference was closed by a technical visit to the Svalbard Satellite Station. This station provides the up-and-downlink to low orbit satellite surveillance for the main purpose of ocean observation by SAR, AIS and optical satellites. The conference attendees learnt that seamless and high frequent surveillance of the full global, up to a resolution of 50 cm, is currently the usual practice. All data are commercially available for any client – either for governmental or commercial purposes.

Baltic Sea Hydrographic Commission

The 23rd Conference of the Baltic Sea Hydrographic Commission (BSHC23) was held in Aalborg, Denmark, from 27 to 29 August, under the Chairmanship of Mr Thomas Dehling, (Germany). Seven out of eight full members of the Commission (Denmark, Estonia, Finland, Germany, Latvia, Poland, Sweden) and associate member Lithuania were represented at the Conference. The Russian Federation was not represented. The United Kingdom and the United States of America were represented at the Conference as Observers. The IHO Secretariat was represented by Secretary-General Dr Mathias Jonas.

BSHC23 covered a wide range of regional topics including developments in each of the Member States, the latest status of hydrographic surveying and nautical charting including INT Charts, ENC production and BSHC cooperative projects. The members of the BSHC reported on their national hydrographic, cartographic and Maritime Safety Information activities since the 22nd meeting. They also presented new developments with regard to surveying, chart production and maritime traffic management. Secretary-General Dr Jonas reported on the IHO Work Programme and the Organization's activities during the previous year. He also provided the Commission with general information on the discussions undertaken at the first meeting of the IHO Council (C-1) in October 2017 and topics to be discussed at the upcoming second meeting of the IHO Council (C-2) in October 2018 in London, highlighting the fact that five (Denmark, Finland, Germany, Sweden and Russian Federation) of the nine BSHC members will be present at the Council. He encouraged the other members to forward their views on the Council topics to the Council member states of the region.

The Commission reviewed on-going regional initiatives, in particular the activities of the Monitoring Re-survey Working Group (MWG), Baltic Sea Bathymetric Database Working Group (BSBDWG), joint North Sea and Baltic Sea Marine Spatial Data Information Working Group (NS-BSMSDIWG), Baltic

Sea International Charting Coordination Working Group (BSICCWG) and the Chart Datum Working Group (CDWG). As a result of the work of the latter, the Commission endorsed a specific vertical chart datum for the Baltic region named Baltic Sea Chart Datum 2000 (BSCD2000) and recommended its use throughout all nautical charts published for the area. As the first Regional Hydrographic Commission ever, BSHC agreed on the establishment of a permanent Maritime Safety Information Working Group (MSIWG). The endorsed Terms of References and Rules of Procedures task this group to continue the work previously conducted at the so called BALTICO meetings to harmonize and improve the MSI services for the WNWWS Baltic Sea sub-area. Sweden accepted to take over the Chair of this new Working Group.

The Commission considered the outcome of the 10th meeting of the Hydrographic Services and Standards Committee (HSSC) and the Inter-Regional Coordination Committee (IRCC) including the 8th meeting of World Wide ENC Database Working Group (WEND-WG). The Chair explained the discussions which arose at IRCC10 in the course of the review of IHO Resolution 2/1997 pertaining to the general status of the RHCs within the regulatory framework of the IHO. The Commission tasked the Chair to gather the individual reflections of the BSHC member states and to draft a consolidated view to be put forward to IRCC11 in 2019.

The Conference put special emphasis on regional engagement within the framework of the IHO-European Union Networking Working Group (IENWG). Multilateral projects such as Coastal mapping and Emodnet phase III, which enjoy active participation of BSHC members, have been presented in further detail. The conference took evenly note on national activities in European projects with relation to maritime themes and links to hydrography.

The Commission renewed its commitment to the continued maintenance of the BSHC internet portal hosted by Sweden, including the provision of a gridded bathymetry model for the whole Baltic. The current model still faces good public perception by a significant number of visitors and downloads. Numerous members confirmed their plans to supply up to date data in higher resolution to improve the usability of the model. The member states reaffirmed these activities as their regional contribution to the Seabed 2030 project. Sweden highlighted the fact that one of the Regional data centers of the project is situated in Gothenburg, Sweden, which facilitates direct collaboration between both undertakings very smoothly.

As tasked at the previous BSHC meeting in Rostock, Germany in 2017 (BSHC22), the Chair presented the identified amendments of the Statutes of the BSHC in order to reflect changes of the IHO convention properly. As the final activity under his Chairmanship, he conducted the formal signature ceremony of the amended BSHC Statutes at this event. An authorized copy of the signed document will be deposited at the IHO Secretariat as the conclusive activity on this subject.

At the end of the meeting, Captain Andrzej Kowalski, (Poland) was elected as the new Chair of the BSHC.



The Heads of the national delegations at the signing ceremony of the amended Statutes of the Baltic Sea Hydrographic Commission.

East Asia Hydrographic Commission

- **EAHC TRDC8 & EAHC SC5 Meetings**

The 8th meeting of the EAHC Training, Research and Development Centre Board of Directors Meeting (TRDC-BOD) and 5th meeting of the Steering Committee of the East Asia Hydrographic Commission (EAHC) was held in Xiamen, China from 5 to 8 March 2018, hosted by the China Maritime Safety Administration (CMSA) chaired respectively by Mr Jamie Chen, Singapore and by the Hydrographer of Malaysia Rear Admiral Dato' FADZILAH bin mohd Salleh. Mr Xu Ruqing, Director General of the Maritime Safety Administration, Department of Transport, People's Republic of China (CMSA) opened the 5th EAHC SC. He acknowledged the importance of hydrography for safety of navigation and the very important role of the EAHC in a very dynamic region. He assured delegates that CMSA is fully committed to participate in an international and regional role to improve hydrographic surveying and charting.



Participants in the 8th EAHC TRDC-BOD Meeting



Participants in the 5th EAHC SC Meeting

Representatives from all but one EAHC Member State attended the meetings. The following IHO Member States were present: Brunei Darussalam, China, Indonesia, Japan, Republic of Korea (RoK), Malaysia, Philippines, Singapore and Thailand. The Democratic People's Republic of Korea and Vietnam was not represented. Cambodia was represented at the meeting as an Observer State. Director Abri Kampfer represented the IHO Secretariat.

The EAHC TRDC-BOD Meeting discussed the regional interventions regarding training and technical development and determined capacity building requirements. The developments of Train-The-Trainer and basic Survey and Cartography course curricula was deemed to be very successful as the majority of EAHC have implemented it. The Steering Committee discussed and pledged support for participation in the 2018 capacity building programme and approved the 2019 capacity building funding bids, as proposed by the EAHC TRDC-BOD, to be forwarded to the IHO Capacity Building Sub Committee. Consensus was reached on the update process of the EAHC Statutes that was last amended in 1980 and feedback will be provided at the 6th meeting of the EAHC SC.

The Commission discussed progress and involvement in Marine Spatial Data Infrastructures (MSDI) and the RoK, as the chair of the EAHC-MSDIWG, provided an update on completed and planned events.

Details of regional electronic navigational chart (ENC) coverage were discussed including the current temporarily suspended distribution of the co-produced navigation purpose 2 (small scale) ENC coverage in the South China Sea. It was announced by China - Hong Kong that two of the four ENCs have been updated and will be circulated for comments during March. The planned release date is 01 April 2018. China - Hong Kong provided feedback on the progress of the establishment of the East Asia Regional ENC Coordinating Centre (EA-RECC). It was reported that the EA-RECC has been established, that it is fully resourced and staffed, and that EAHC members were invited to join.

- **13th EAHC Conference**

The 13th Conference of the East Asian Regional Hydrographic Commission (EAHC) was held from 18 to 20 September in Putrajaya, Malaysia and was timely aligned with the HydroSea 2018 Conference & Exhibition that took place at the same place and venue.

Fifty nine participants representing nine out of the ten EAHC Members (Brunei Darussalam, China (including Hong Kong), Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, Republic of Korea, Singapore and Thailand), one Associate Member (Viet Nam) and two observers (United Kingdom and United States of America) participated in the Conference.

The EAHC Conference was chaired by Rear Admiral Hanafiah Hassan, Head of the Malaysian Hydrographic Centre (*Pusat Hidrografi Nasional*). Dr Mathias Jonas, Secretary-General of the IHO represented the IHO Secretariat. He delivered a report on the relevant issues undertaken under the three pillars of the IHO work Programme namely, Corporate Affairs, Hydrographic Services and Standards and Inter-regional Cooperation and Support since the EAHC12 conducted in 2015. In the course of his report he explained the ongoing preparations of the upcoming 2nd IHO Council to be held in October 2018 in London, UK. He finally informed the Member States about the recent improvements of the IHO Secretariat's GIS services and reminded the attending nations to report details of their respective services on an annual frequency, facilitating the IHO Secretariat in keeping the relevant database and the IHO publications P-5 and C-55 up to date. The commission received an in-depth explanation of the revision process of IHO Resolution 2/1997 provided by US and agreed on the collective procedure to put the EAHC compilation of national comments forward to the IRCC chair.

The Commission was informed about the work of the subordinate Working Groups. An item to note as a speciality of this regional commission is the work of a Strategic Team Advance Roadmap Task Group (STAR). STAR, chaired by Japan, is tasked "to identify and propose initiatives that will address the future direction of EAHC". The expected outcome will be an EAHC Strategic Plan and Roadmap which will be closely aligned with the overarching strategy revision process of IHO currently undertaken by the SPRWG.

Recent achievements in Capacity Building and the implementation phase of the East Asian RENC to be operated in Hong Kong, China were considered in greater detail.



Participants of the 13th Conference of the East Asia Hydrographic Commission in Putrajaya, Malaysia

Singapore informed the meeting that the need for a Category "C" qualification was identified by EAHC and thus the in-house Cat "C" programme was established. Two sessions of Training for Trainers Programme for Hydrographic Survey was held to develop the syllabus to provide survey technicians with the necessary knowledge required to conduct a hydrographic survey in a shorter period. Singapore opined that practical training is necessary for integrating the theoretical knowledge with practical experience among EAHC Member States. Singapore therefore recommended to review and upgrade the Cat "C" to Cat "C-Plus", which can prepare a student for field survey works and close the gap between Cat "B" and Cat "C" with a project based assessment and an exchange programme.

Singapore proposed a resolution to identify appropriate activities within the collaborative framework of the EAHC to respond to the challenge of climate change. Further work on this topic was put on the EAHC Steering Committee. In the closure of the Conference the Chair of the EAHC was formally handed over to the Vice-Chair, Dr Yukihiro Kato, National Hydrographer of Japan.

The national delegations also attended the associated HydroSea 2018 Conference where Dr Mathias Jonas delivered a keynote, titled "Challenging the norm in hydrography".



Vice Admiral Dato' Pahlawan, Commander Western Fleet of the Royal Malaysian Navy opens the HydroSea 2018 Conference by means of three gong hits.

Eastern Atlantic Hydrographic Commission

The 15th Conference of the Eastern Atlantic Hydrographic Commission (EAtHC15) was held from 17 to 19 October 2018, in Lagos, Nigeria and hosted by the Nigerian Navy Hydrographic Office (NNHO). The Conference was chaired by Captain José Daniel GONZALEZ-ALLER LACALLE, National Hydrographer of Spain. Simultaneous interpretation in French and English was provided.



Participants of EAtHC15

The Conference was attended by 34 delegates. The six IHO Member States of the Region, six Associate Member States (out of nine) and seven Observer States (out of eleven) were represented. Representatives of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and the Danish Maritime Administration (DMA) participated as observers. MOWCA and PMAWCA, with whom the IHO has a Memoranda of Understanding (MoU), did not attend the meeting. Around 30 stakeholders from Nigeria also attended. Director Abri Kampfer and Assistant Director Alberto Costa Neves represented the IHO Secretariat.

The Chair reported on the main EAtHC activities since the previous Conference held in 2016 and the list of actions arising from EAtHC14 was updated. Director Kampfer provided an update on current IHO Secretariat matters, the outcomes of the 2nd Meeting of the IHO Council and the activities of the IHO bodies that impact the region. The meeting also reviewed the Statutes in order to harmonize it with the entering into force of the amendments to the Convention on the IHO.

All the coastal States participating in the Conference reported on their activities, progress and difficulties. Despite the challenges, significant progress was made in coastal States in the region. Morocco had the Royal Navy Division of Hydrography, Oceanography and Cartography (DHOC) proclaimed by a Royal Dahir (a Moroccan King's decree) as the National Hydrographic Service. The DHOC was also appointed as the Secretariat of the recently created National Hydrographic Coordinating Committee (NHCC), a 5-year work plan was established, a new hydrographic survey vessel was built and is in the process of delivery and nautical charts are being co-produced with France. Nigeria reported on the newly established Maritime Safety Information (MSI) portal and its broadcasting via NAVAREA II, the establishment of the basic hydrographic course, the construction of a new hydrographic vessel to be delivered in 2019 and the possibility of cooperation with other countries in the region.

Cameroon attended the meeting for the first time since 2012 and reported on the increase in awareness in the country and the plans to build capacity to comply with its international obligations. Senegal informed the meeting on the progress made with the program to monitor coastal erosion (in Senegal, Togo and Benin) and its relation with hydrography. Gambia reported that new hydrographic equipment was acquired and the process to identify the stakeholders for the National Hydrographic Coordinating Committee (NHCC) was underway. The meeting was informed that a hydrographic service was operational in Guinea to ensure safety of navigation for ships accessing the Port of Conakry.

Liberia reported on the ongoing training of a MSI National Coordination and the intention for promulgation of MSI via SafetyNET, the national awareness on the international obligations and the need to create national legislation and operational services in the country and the plans to join the

IHO. Côte d'Ivoire acquired a new survey launch equipped with multi-beam sonar, was in progress with its tidal program and improved its Capacity Building (CB) infrastructure at the *Académie régionale des sciences et techniques de la mer* (ARSTM). There was an intention to accede to the IHO Convention to become a Member State. France, Portugal, Spain and UK provided information on their developments and plans for the region, working in close cooperation with the African coastal states.

The conference was informed on the creation of a NHCC in Ghana, the existing National Spatial Data Infrastructure (SDI), the creation of a MSI System and portal with the support of DMA, the progress made at the Regional Maritime University (RMU) and the plans to join the IHO. Togo informed the meeting on the establishment of a NHCC for the maritime affairs and the autonomous port of Lomé and the cooperation with the neighbour Benin. Gabon reported on the reframing of its maritime governance which includes hydrography and the closer cooperation with IHO, IALA and France.

Congo informed the meeting on the new projects to develop hydrographic port operations in Pointe-Noire. The Democratic Republic of Congo reported on the increased awareness on the importance of hydrography, maritime and the Congo River, where new projects funded by the World Bank and the European Union will improve hydrography, cartography and aids to navigation.

France, the CB Coordinator for the region, reported on the execution of the CB activities in the region since the last conference and the 3-year work plan 2018-2020. Of particular note was the execution and plans of high-level and technical visits, the ongoing visits to regional training centres to find synergies in support of the CB plans, the past and future phases of the HydrOMAOC project to identify funding by linking hydrography with other larger maritime and marine related projects in the region. The meeting was also pleased to note the benefits of having an awareness seminar preceding the meeting, where coastal states were to be informed of their international obligations, the need for better cooperation within the region and the value of their hydrographic information.

The status and implementation of the regional INT and ENC charting schemes were reviewed by the regional coordinator for INT Region G (France), including the process for monitoring and managing charts and the chart schemes. The meeting also considered how the IHO CB Programme can support coastal states to prepare for the International Maritime Organization (IMO) Member State Audit Scheme (IMSAS) with respect to the provision of hydrographic services, taking as example the successful support to Cabo Verde in 2017 by means of a technical visit.

In accordance with the Statutes of the Commission, Commodore CE Okafor from Nigeria and Rear Admiral Carlos Ventura Soares assumed duties, respectively, as Chair and Vice-Chair at the end of the Conference.

The EAtHC15 Conference was preceded by a Regional Awareness Seminar on Maritime Geospatial Knowledge on 15 and 16 October, in the same venue. The Seminar was opened by Vice Admiral Ibok-Ete Ekwe Ibas, Chief of the Naval Staff, Nigerian Navy, who highlighted the importance of hydrography for the social and economic development in the region. The seminar was co-located with an industry exhibition. Representatives of 17 coastal States, IHO, IMO, IALA, IOC, and the local Academy, Industry and Government participated in the seminar.



Participants of the Regional Awareness Seminar on Maritime Geospatial Knowledge that preceded the EAtHC15 Conference

Participants and lecturers actively participated in topics ranging from the work of the IHO, IMO and IALA, compliance with international obligations, the IHO CB Strategy and the importance of accurate nautical information, hydrographic awareness and its economic benefits, the need for National Hydrographic Coordination Committees, the need for working with the primary charting authorities, the need to integrate the Marine Spatial Data Infrastructure (MSDI) to the national SDIs and examples of national achievements in the region.

Meso American - Caribbean Sea Hydrographic Commission

The 19th Meeting of the Meso-American - Caribbean Sea Hydrographic Commission (MACHC) was held in Cartagena de Indias, Colombia from 26 to 30 November with 107 participants representing 13 Member States, nine Associate Members, four observer States, eight observer organizations and 10 commercial companies. Director Mustafa Iptes and Assistant Director Alberto Costa Neves represented the IHO Secretariat.



Participants at the 19th Meeting of the Meso American – Caribbean Sea Hydrographic Commission

The MACHC-19 was hosted by the General Maritime Directorate/*Dirección General Marítima* (DIMAR), the Colombian Maritime and Hydrographic Authorities and chaired by Rear Admiral Henrique Flores Morado, National Hydrographer of Mexico. The meeting was opened by Admiral Ernesto Durán González, Commander of the Colombian Navy, and by Vice Admiral Juan Manuel Soltau Ospina, Colombian Maritime Authority and National Hydrographer.

An IHO Capacity Building Seminar on Hydrographic Governance and dealing with Maritime Disasters was held on 26 and 27 November, preceding the Conference. The seminar received contributions from IHO Member States and the Secretariat, the International Association of Aids to Navigation and Lighthouse Authorities (IALA) and from several industry stakeholders. Participants from 18 coastal States in the region received relevant information and actively contributed to the seminar and to the development of a draft framework document to support the preparation and response to disasters in the region.

The seminar was followed by the meetings of the MACHC International Chart Coordination Committee (MICC), Capacity Building Committee (CBC) and Marine Economic Infrastructure Program (MEIP). The MACHC subsequently endorsed the change in name and status of MEIP to Marine Spatial Data Infrastructure Working Group (MSDIWG) and confirmed Mr James Rogers (USA-NGA) as its Chair. The Commission also endorsed Mrs. Bernice Mahabier (Suriname) as the new Chair of the MICC.

MACHC was informed on the work, and its impact, of the IHO Secretariat and bodies, received reports from coastal States and regional organizations, considered ongoing Capacity Building activities and endorsed future plans for the region. Updates from the University of West Indies (UWI) on risk assessment and accident statistics and from the GEBCO Seabed 2030 and International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA) were received. The meeting also received updates from Industry on technological and operational developments that were well appreciated.

Participants were invited to consider a regional contribution to the revision of the IHO Resolution 1/2005 *IHO Response to Disasters*, besides their individual inputs. The draft MACHC Response to Disasters Framework was endorsed by the Commission and will be circulated for further comment before consideration by the next meeting.

The Commission received reports from the UN-GGIM Working Group on Marine Geospatial Information (WGMGI) Chair, from the Tri-national Initiative for Marine Science and Conservation in the Gulf of Mexico and Western Caribbean and from the Caribbean Marine Atlas (CMA). Industry participants provided insightful contribution related to SDI and data management.

The meeting was informed by the MICC of the significant progress in ENC coverage in the region reaching 914 ENCs, from 820 available in 2017. The region was able to cover 14 of the 43 large scale ENC gaps identified by Cruise Ship Ports Gap Analysis in 2015 and work was in progress to address the remainder. Worth noting that the MACHC did not identify any overlaps posing risk to the safety of navigation in the region. There was progress in the INT Chart production with 49 produced and a further 33 schemed. The Plenary endorsed the work and the reports of the MICC, of the CBC and of the MSDIWG.

During the meeting, Dominican Republic signed the Statutes of the MACHC as a full Member following its reinstatement to the IHO in January 2018. The meeting also noted with satisfaction that the last NAVAREA IV-XII Coordinator Report indicated that Dominican Republic started to send MSI messages, contributing to the safety of navigation in the region.

The MACHC elected Ms Kathryn Ries (USA/NOAA) and Vice Admiral Antonio Fernando Garcez Faria (Brazil) as its Chair and Vice-Chair.

During the MACHC-19 meeting, Vice Admiral Soltau, Hydrographer of Colombia and General Maritime Director (DIMAR), presented the Distinguished Service Medal of the Colombian Maritime Authority to IHO Director Mustafa Iptes and to Assistant Director Alberto Costa Neves at a special ceremony. The medals were presented as recognition for the continued support to hydrography in Colombia for the benefit of the national maritime development.



Captain Sandoval García (Dominican Republic) signs the Statutes of the MACHC as a full Member in the presence of the Chair, Rear Admiral Enrique Flores Morado (Mexico)



IHO Director Mustafa Iptes and Assistant Director Alberto Costa Neves at the Ceremony of Presentation of the Distinguished Service Medal of the Colombian Maritime Authority

Mediterranean and Black Seas Hydrographic Commission

The 14th meeting of the Black and Azov Seas Working Group (BASWG14), which was a Working Group of the Mediterranean and Black Seas Hydrographic Commission (MBSHC), was held in Constanta, Romania, on 3 and 4 May 2018 under the chairmanship of Captain Hakan Kuslaroglu,

Hydrographer of Turkey. Eighteen delegates attended the meeting. Five Black Sea Littoral States were represented: Bulgaria, Georgia, Romania, Turkey and Ukraine. The Chair of the MBSHC, Rear Admiral Luigi Sinapi, the Coordinator of the Regional International Charting Coordination Working Group (ICCWG - Region F) (France) and NAVAREA-III Coordinator (Spain) also attended the meeting. The IHO Secretariat was represented by Director Mustafa Iptes.

The Member States reported on their national activities since the last meeting of the MBSHC which was held in Montenegro in July 2017. The Working Group reviewed the Capacity Building (CB) activities in the region, presented by Turkey, as the CB Coordinator for MBSHC, and the status of the INT chart and ENC schemes of the Black Sea and Azov Sea, presented by the ICCWG Coordinator, France. The status of Maritime Safety Information coverage in the Black Sea was also discussed at the meeting. Director Iptes provided a briefing on current IHO issues, the work of the IHO Secretariat and the outcome of the 1st IHO Council. The MBSHC Chair provided the Working Group with the outcomes of the MBSHC-20 meeting affecting the BASWG activities.

The activities and the new developments of the BASWG will be reported to the next meeting of the MBSHC in Cadiz, Spain in June 2019. Captain Kuslaroglu was re-elected as Chair of the BASWG.

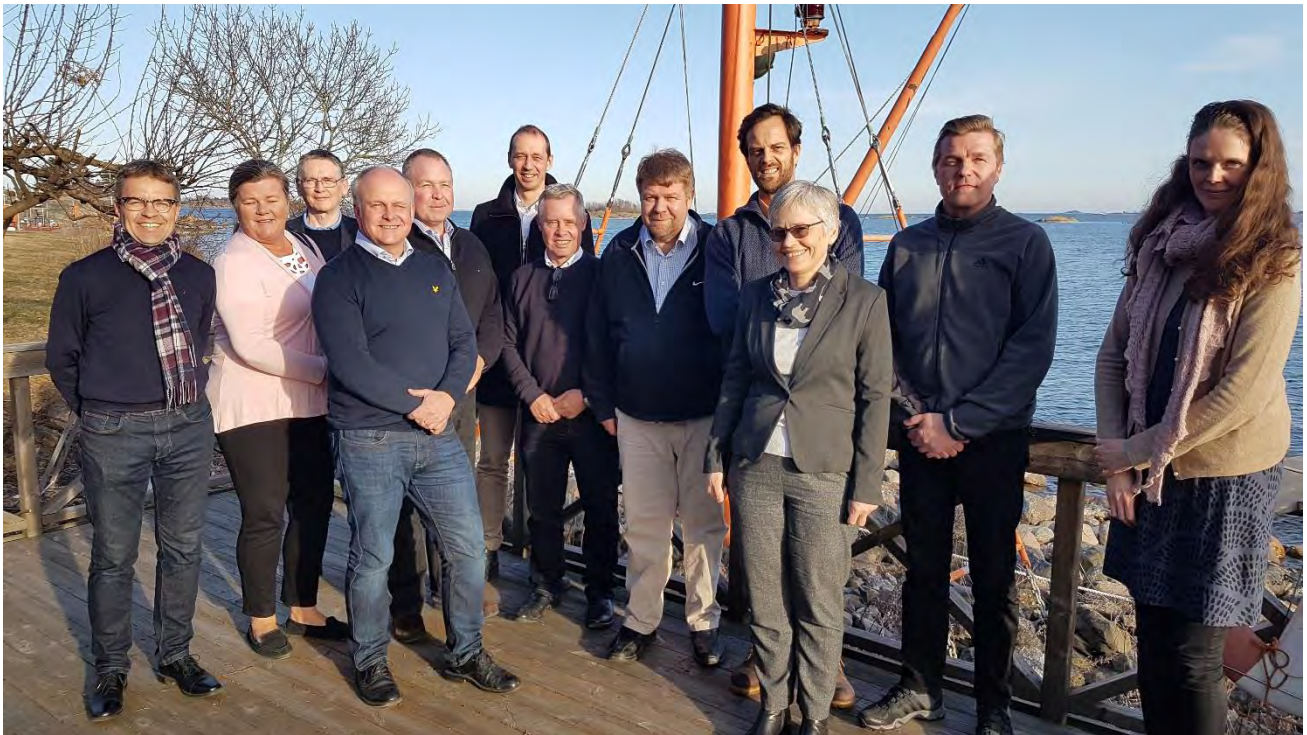


The participants of the 14th meeting of the Black and Azov Seas Working Group.

Nordic Hydrographic Commission

The 62nd Meeting of the Nordic Hydrographic Commission was held at Arkö Island near Norrköping, Sweden. Patrik Wiberg, National Hydrographer of Sweden welcomed representatives of all NHC Member States, namely Sweden as host country, Denmark, Finland, Iceland and Norway. The representative of the IHO Secretariat, Secretary-General Dr Mathias Jonas was not able to attend due to illness.

The Commission received the respective national reports and discussed a number of topics of high regional relevance such as the involvement in EU projects, experiences gained with modern survey technics, crowdsourced bathymetry and regional harmonization of the geodetic datum for navigational charts. The Commission finally adopted a revision of the NHC Statutes to align to the amended IHO Convention.



The participants of the 62nd meeting of the Nordic Hydrographic Commission.

North Indian Ocean Hydrographic Commission

The 18th meeting of the North Indian Ocean Hydrographic Commission (NIOHC) was held in Goa, India, from 9 to 12 April, under the chairmanship of Vice-Admiral Vinay Badhwar, Chief Hydrographer of India. Participants were welcomed at the opening ceremony by Vice Admiral Girish Luthra, Flag Officer Commander-in-Chief Western Naval Command of India. NIOHC Member State representatives from Bangladesh, Egypt, India, Indonesia, Myanmar, Saudi Arabia, Sri Lanka, Thailand and the United Kingdom (UK) attended the meeting together with representatives of Associate Members from France, Mauritius and Oman. The Russian Federation was represented as an Observer State. A representative of the Intergovernmental Oceanographic Commission of UNESCO and several industry stakeholders also attended as invited observers. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHO Secretariat.



Director Iptes addressing the opening ceremony of the NIOHC18

The NIOHC received reports from Member States, Associate Member States and the IHO Secretariat as well as summary reports on the first meeting of the IHO Council and latest meetings of the IHO Hydrographic Services and Standards Committee (HSSC) and the Inter Regional Coordination Committee (IRCC). The meeting also received reports on progress and issues related to the work of the IHO Marine Spatial Data Infrastructures Working Group (MSDIWG), relevant activities that had taken place in the International Maritime Organization (IMO), including relevant outcomes of the 5th meeting of the IMO Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR 5) and an up-date from the NAVAREA VIII coordinator.

A comprehensive CB plan was developed for submission to the 16th meeting of the IHO Capacity Building Sub-Committee (CBSC16).

The meeting included a number of presentations from industry representatives. These highlighted technologies and training opportunities available to the region. Industry representatives were keen to emphasize their willingness to engage with the NIOHC and its members to assist the development of hydrographic and cartographic capability within the region.

The UK, as current Vice-Chair of the NIOHC, became the Chair of the NIOHC in accordance with the procedures as defined by the Statutes of the Commission. The NIOHC elected Sri Lanka to assume the Vice-Chair position for the next period.



NIOHC18 in plenary session

North Sea Hydrographic Commission

Hosted by the Flemish Hydrographic Service, the 33rd meeting of the North Sea Hydrographic Commission (NSHC) took place in Ostend, Belgium from 27 to 28 March 2018.

The meeting was chaired by Mr Declan Black (Ireland). 20 delegates representing all ten Member States (Belgium, Denmark, Germany, France, Iceland, Ireland, Netherlands, Norway, Sweden and United Kingdom) participated and three expert contributors from industry stakeholders participated as observers by invitation of the NSHC Chair. IHO Secretary-General Dr Mathias Jonas represented the IHO Secretariat.

IHO Secretary-General provided the report of the IHO Secretariat and particularly encouraged NSHC-members to propose themes of strategic relevance through the Council. Bruno Frachon, France, in his capacity as chair of the Strategic Plan Review Working Group, gave a brief report on the current state of work of the Strategic Plan Review Working Group, established by the Council as instructed by the first Assembly.

The United Kingdom, as representative of this Commission at the Worldwide ENC Database Working Group (WENDWG), briefed the participants on WENDWG7 (2017) and the recent WENDWG8 Meeting, which took place in Buenos Aires, Argentina, the week prior to NSHC33. Discussion arose on the support to ships, not covered by the SOLAS carriage requirements for ECDIS, with ENC content.

Germany reported on the activities of the IHO EU Network Working Group (IENWG) for the intermediate period since 2016. The Commission confirmed Thomas Dehling, Germany, as NSHC representative at IENWG. The Commission approved the extension of the ToRs and RoPs for the North Sea International Charting Coordination Working Group (NSICCWG) to address harmonization of small and medium scale ENCs in the Commission area, Region D. The NSHC took note of the work progressing towards a common reference surface stretching over the entire area, as well as an updated work plan under the coordination of the North Sea Tidal Working Group (NSTWG).

The Member States discussed at length how the Commission can play a more prominent role in strategic developments of the IHO Council, IHO Strategy Review and influencing the European Union discussions in the maritime domain. The Commission is well represented at the Council to address the various strategic issues, in addition the Commission is able to act as a coordinating regional body and therefore can address and supervise regional activities such as e-navigation and autonomous shipping as potential new items. It was agreed to continue to meet under the current two year cycle but to intensify engagement on regional projects and endeavor to include topics and issues beyond those which are already assigned to NSHC Working Groups.

In the margins of the report of the Resurvey Working Group it was discussed whether the members of the Commission should engage in demonstrator projects for crowdsource bathymetry. No firm decision was made at this stage but Commission members anticipated it would be appropriate to initiate such activity within the forthcoming intersessional period. Mr Kenneth Himschoot, Sea-ID, presented his technical solution for a low-cost data logger designed for crowdsourcing of single beam data. He indicated that the device had the new capability to measure GNSS ellipsoidal altitude with previously unseen accuracy for this sort of equipment. He invited the members of the Commission to set up test scenarios of the device to compare its capabilities in regular survey campaigns.

Numerous issues of regional relevance such as MSDI, bathymetry in support of the Blue Economy, work on Marine Spatial Planning in Norway and the designation of new shipping routes based on cross border marine spatial planning were addressed under the relevant agenda items.

Subjects on new developments in cartography and survey were presented for automated generation of contour algorithms to facilitate ENC's with dense bathymetric contours. Based on a proposal from Germany, the Commission agreed to initiate a workshop on this topic hosted by the Federal & Maritime Hydrographic Agency of Germany (BSH).

Further discussion arose about challenges in survey activities close to or even inside wind farm areas. Germany presented a specific large-scale paper and digital charts covering such an area.



The Participants to the NSHC33

Norway presented a proposal sponsored by Germany, New Zealand, Sweden and USA to provide GEBCO with bathymetric information extracted from ENC's. The concept proposes to appoint the RENCs as the ENC hub with the task of creating a technical solution for extracting this information in a suitable format and then forwarding the data to the IHO DCDB for inclusion in the GEBCO grid database. France suggested that for the North Sea the provision of detailed bathymetric data for the support of GEBCO would be the more viable solution. The Commission took note that the proposal was already being submitted to IRCC via WENDWG for a high-level decision, and subsequent direction and guidance. Norway continued with the presentation of a new approach to updating text oriented Nautical Publications such as pilot books.

At the end of the meeting, the role of chair was passed to Ms Virginie Debuck, Belgium.

Southern Africa and Islands Hydrographic Commission

The 15th Conference of the Southern Africa and Islands Hydrographic Commission (SAIHC) was held from 27 to 30 August 2018 at Eden Island, Seychelles. The following SAIHC Member States attended the meeting; Seychelles, France, Mozambique, Mauritius and the United Kingdom. South Africa participated via video conference. Namibia, Portugal, India, Angola, Tanzania, Comoros, Madagascar, Malawi and Kenya attended as Associate Members. Delegates from the International Maritime Organisation (IMO) and International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and industry stakeholder participants from Kongsberg Maritime, AML Oceanographic and IMarEST also participated in the meeting. Director Abri Kampfer represented the IHO Secretariat.

The meeting was opened by the Hon. Didier Dogley (Seychelles Minister of Tourism, Civil Aviation, Ports and Marine), and chaired by Rear Admiral Tim Lowe (UK). Each of the coastal States present provided an update on their activities since the last meeting that took place in Saint-Gilles, French Department of la Réunion held in September 2017.

The 15th Conference included a meeting of the SAIHC International Charting Coordination Working Group (ICCWG) during which the status of INT chart and ENC production in the region was discussed and decisions were made on resolving current ENC overlaps. A presentation on the current and future functionalities of the IHO INTToGIS was well received.



Participants of the 15th SAIHC Conference

There were presentations and discussions on Marine Spatial Data initiatives and the Conference decided to establish a SAIHC MSDIWG, whose Terms of Reference needs to be finalised by correspondence. The membership of the group, led by the UK, will be all the Member States and Associated Member States. GEBCO activities, presented by a former GEBCO scholar, Mr Seeboruth from Mauritius, included information on the GEBCO–Nippon Foundation Seabed 2030 Project. IHO capacity building programme for the region was discussed and the need to refine the SAIHC Capacity Building Strategy was identified. The Conference also had the opportunity to bid the Capacity Building Coordinator, Mr Jeff Bryant (UK), a fond farewell as he will be proceeding on retirement. His tireless efforts to identify, motivate and execute capacity building events for the region was much appreciated and will be missed. Other topics discussed during the meeting included; feedback from IHO Council, HSSC, IRCC, C- 55 information, procedures for marine disasters and the current revision of IHO Resolution 1/2005 and the improvements required for the submission of maritime safety information for NAVAREA VII and VIII. Presentations were also provided by each of the industry participants.



Captain Joachim Valmont, Seychelles Maritime Safety Administration, signing the SAIHC Statutes, affirming Seychelles as a new Member State of SAIHC

- **IHO/SAIHC Seminar for Raising Hydrographic Awareness**

The 15th meeting of the Commission was preceded by a seminar for Raising Hydrographic Awareness sponsored by the IHO capacity building fund and delivered by representatives from the IHO Secretariat, IMO, IALA and the UK. The seminar was intended to provide the representatives of the SAIHC with information to assist in the development and strengthening of hydrographic capacity to meet their international obligations under SOLAS and to support economic growth and protection of the marine environment.

The Commission re-elected Rear Admiral Tim Lowe (UK) and Captain Theo Stokes (South Africa) to continue as its Chair and Vice-Chair.

South-West Atlantic Hydrographic Commission

The 12th meeting of the South West Atlantic Hydrographic Commission (SWAtHC) was hosted by the *Servicio de Oceanografía, Hidrografía y Meteorología de la Armada* (SOHMA), the Uruguayan Hydrographic Service, on 5 and 6 April in Montevideo. Eighteen delegates attended the meeting, chaired by Captain Pablo Tabarez, Head of SOHMA. All three IHO Member States of the Commission, Argentina, Brazil and Uruguay, were represented together with the Associate Member, Paraguay. One industry stakeholder (Teledyne CARIS) participated in the meeting as Observer. The IHO Secretariat was represented by Director Abri Kampfer and Assistant Director Alberto Costa Neves.

The meeting approved the request received from Bolivia to sign the SWAtHC Statutes as Associate Member and considered measures to raise the awareness of Paraguay and Bolivia on the importance of becoming IHO Member States. Both are already Members of the IMO and parties to the SOLAS Convention and Paraguay was an IHO Member from 1967 to 1969.

Argentina reported on the progress of hydrographic surveys and the new editions in paper and electronic charts for both the coastal and inland waters. The meeting was also informed on the significant progress done in the establishment of the national spatial data infrastructure and its marine component, in parallel with the national system for marine data involving government and academy components. Progress was also reported in the International Bathymetric Chart of the Southern Ocean (IBCSO) and in the participation of Argentina in the Marine Cartography Working Group (MCWG) of the International Cartographic Association (ICA), recently recreated.

Brazil informed the meeting on the recent hydrographic surveys in coastal and inland waters and the important contribution from private surveys in support of updating port charts. The production of INT Charts under the Brazilian responsibility was completed and the ENC production achieved 86% of the planned coverage. Brazil also reported on the achievements of the IC-ENC branch covering South America.

Uruguay reported progress in conducting surveys in coastal areas, in the La Plata River and other inland waters. Progress was reported in the development of the cartographic production system, conducted with the work of two IHO-Nippon Foundation CHART Project alumni. SOHMA produces paper and digital charts and is in the transition from offset to print-on-demand.

The IHO representatives provided a briefing covering IHO activities and the status of coverage of shallow water bathymetry in the region where all the Members responded to the IHO Circular Letter 11/2016 and provided their ENC depth data.

The SWAtHC Planning Committee reported its work on INT Charts, ENC and Capacity Building. Produced INT Charts amounts to 76% of the planned charts and ENCs to 82% of the national plans, from 80% reported in the last meeting. There are no significant overlaps in the region and all ENCs have their CATZOCs assessed, an indication of the good work and cooperation that exists in the region. The region is developing its ENC scheme that will be submitted to the next WENDWG9 meeting. The Committee also reported on the execution of the regional capacity building plan and the needs of the 5 States for further developing their hydrographic and cartographic infrastructures.

Brazil informed the Commission on the outcomes of the Inland ENC Harmonization Group (IEHG) held in Brazil in 2017. The industry representative briefed the Commission on the technical developments in automatic data acquisition and processing, with consequent optimization of processes.

During the meeting participants had the opportunity to visit and have lunch at the Brazilian Hydrographic Vessel *Sirius* that had called in the port of Montevideo. The IHO Secretariat delegation also took the opportunity to pay a visit to the facilities of SOHMA, during which a lunch was offered by the hosts with the presence of the former National Hydrographer of Uruguay, Rear Admiral Gustavo Musso, now the Head of the Navy Directorate of Material, and with Rear Admiral Fernando Pérez Arana, the National Maritime Administrator.



Participants of the SWAtHC12 meeting

South West Pacific Hydrographic Commission

The Royal Fijian Navy hosted the 15th Conference of the South West Pacific Hydrographic Commission (SWPHC) on 21 and 22 February in Nadi, Fiji. Representatives from all nine Member States of the Commission (Australia, Fiji, France, New Zealand, Papua New Guinea (PNG), Tonga, United Kingdom (UK), United States of America (USA) and Vanuatu), and six of the seven Associate Members (Cook Islands, Indonesia, Kiribati, Niue, Samoa and Solomon Islands) attended the meeting. Two Observer States (Nauru and Tuvalu), three international organizations and three representatives from industry also participated, a total of 39 participants. The IHO was represented by Director Abri Kampfner and Assistant Director Alberto Costa Neves.

The meeting was opened by the Hon. Ratu Inoke Kuboabola (Fiji's Minister of Defence), and chaired by Commodore Fiona Freeman (Australia). Each of the coastal States present provided an update on their activities since the last meeting that took place in the Noumea, New Caledonia, 15 months previously. The meeting noted the support provided by Australia in conducting surveys in PNG, in

becoming the primary charting authority for Solomon Islands, the hydrographic training provided to Fiji and the plans for surveying and charting in the region.



Participants to the 15th Conference of the South West Pacific Hydrographic Commission

The Commission acknowledged the significant progress made in Fiji since the last meeting with the support from Republic of Korea and other States in the region. New surveys and charts were produced and plans for expanding the hydrographic service are in place. France reported on the progress in New Caledonia, French Polynesia and Wallis & Futuna with new surveys and charts, including seven new ENCs, deployment of new survey systems, increase in the monitoring of sea level and availability of hydrographic-related data.

New Zealand reported on the production of new ENC cells and New Editions (in country and in other States in the region), progress made in the Pacific Regional Navigation Initiative (PRNI) with increasing data discovery, risk assessment, capacity building, mitigation measures and partnerships. Surveys were conducted in its own waters and in Samoa, and surveys are planned in Cook Islands, Niue, Samoa, Tokelau and Tonga. Risk assessments were conducted in Samoa and Tokelau.

The progress made by PNG was noted by the Commission. With the support of the Asian Development Bank's Maritime & Waterways Safety Project (MWSP), surveys were conducted in ports and coastal areas and will be used to update the relevant charts. Tonga reported on new surveys and chart updating in cooperation with the neighboring countries and the developments in its hydrographic unit.

UK informed the meeting that 104 ENCs were published in the region since the last meeting, alongside updates to several nautical publications. Progress was made under the Commonwealth Marine Economies (CME) Programme for providing surveys, charting and capacity building in the region, with the ultimate goal to promote economic growth and prosperity.

The effort made by USA to allow existing source data to be available for charting was noted by the Commission, this will have substantial impact in US charts in the region. USA reported on progress and plans for survey and charting in the region.

The progress made by Vanuatu was significant and acknowledged by the meeting. Since the last meeting the country became an IHO Member and during the Conference Vanuatu became a full Member of the SWPHC. Progress was seen in the establishment of the national coordinating committee, the development of a survey priority plan and the plans to build a hydrographic unit.



Mr Henry Worek (center) from Department of Ports & Harbours of Vanuatu receives the IHO crest from Director Abri Kampfer after signing the Statutes of the SWPHC as a full Member in the presence of Commodore Fiona Freeman (Australia), SWPHC Chair.

The Cook Islands reported on the surveys and charting done in bilateral agreement with New Zealand, in cooperation with The Pacific Community (SPC) and with industry support. Kiribati informed the meeting that a National Coordinator for MSI was established and plans are underway to establish hydrographic services. Nauru informed the meeting on the difficulties to put in place legislation to support the development of hydrography and nautical cartography in the country. Niue reported on the support received from New Zealand through the PRNI and the plans to establish a National Hydrographic Authority and a National Coordination Committee. Palau reported on the efforts to build capacity in the country.

Samoa reported on the establishment of the National Hydrographic Committee and the risk assessment conducted by New Zealand and informed on the plans to establish the National Coordinator for MSI and to establish a hydrographic office. The meeting was informed on the difficulties in Tuvalu to survey and update existing charts, but the country has plans to establish legislation and to establish a MSI position in the near future.

Cook Islands, Kiribati, Samoa and Tuvalu informed the Conference on their intention to become Member States of the IHO.

During the Conference Indonesia, from the neighboring EANC, signed the SWPHC Statutes as Associate Member, in order to facilitate the harmonization of ENC's, and to coordinate hydrographic surveys, capacity building activities, data sharing and exchange expertise.

SPC briefed the Commission on the development of its Pacific Safety of Navigation Project and the progress in conducting hydrographic and geodetic surveys, implementing Aids to Navigation and supporting data discovery in the region. IALA World-Wide Academy informed the meeting on the work done via its needs assessment visits using risk assessment tools, bringing to the attention of the beneficiary countries the shortcomings of their nautical charts and MSI infrastructure. GEBCO and New Zealand provided insights on the GEBCO Seabed 2030 Project with the support of the Nippon Foundation of Japan, the appointment of a Project Director and the next steps to be taken to advance toward its goals.

The Commission was informed about the significant impact of the severe tropical cyclone Gita just before the SWPHC16 which prevented Tonga to host the meeting as planned.

- **IHO/SWPHC Technical Workshop on Implementing Hydrographic Governance**

The 15th meeting of the Commission was preceded by a technical workshop on *Implementing Hydrographic Governance* sponsored by the IHO capacity building fund and delivered by representatives from the Primary Charting Authorities in the region, IHO Secretariat, International Association of Aids to Navigation and Lighthouse Authorities (IALA) and the Pacific Community (SPC). The workshop was intended to provide the representatives of the Pacific Island Countries and Territories (PICT) with elements to assist in the development and strengthening of hydrographic capacity to meet their international obligations under SOLAS and to support economic growth and protection of the marine environment. Nine presenters briefed the 29 participants to the workshop.

The Commission re-elected Commodore Fiona Freeman (Australia) and Lieutenant-Commander LtCdr Saula Tuilevuka (Fiji) to continue as its Chair and Vice-Chair.

USA-Canada Hydrographic Commission

The 41st meeting of the United States – Canada Hydrographic Commission (USCHC) was held on 26 March in Victoria, British Columbia, Canada. USCHC41 took place in conjunction with the 2018 Joint Canadian Hydrographic and National Surveyors' Conference. The meeting was co-chaired by the Hydrographer General of Canada, Dr Geneviève Bécharde and the Director of the Office of Coast Survey of the USA, Rear Admiral Shepard Smith. Thirty one participants attended the meeting including representatives from the Canadian Hydrographic Service (CHS), the Departments of National Defence (DND) and Fisheries and Oceans (DFO), the National Oceanographic and Atmospheric Administration (NOAA), the National Geospatial-Intelligence Agency (NGA), the US Navy and the United Kingdom Hydrographic Office (UKHO). Director Abri Kampfer represented the IHO Secretariat.



The participants of the USCHC41 meeting

The USCHC41 agenda covered a wide range of topics of mutual interest with the Member States' reports and the additional briefs on the activities of the International Hydrographic Organization (IHO), WEND Working Group, Maritime Spatial Data Infrastructure (MSDI) Working Group, Crowdsourced Bathymetry Working Group and IHO/IOC GEBCO Seabed 2030 Project.

Some of the topics provoking in-depth discussions included:

- The INT Chart Programme review (from the USCHC perspective);
- Marine Spatial Data Infrastructures;

- Hydrographic Remote Sensing Workshop;
- Grid based ENCs; and
- Crowdsourced bathymetry.

Several technical presentations were also made that were complementary to the discussions, including: Future of the Paper Chart (Canada); Visualizing Model Data for Mariners (USA); Conversion of equipment to autonomous vessels (Canada) and Seabed-2030-a-call-to-action (USA).

Hydrographic Commission on Antarctica

The IHO Hydrographic Commission on Antarctica (HCA) operates in a similar way to the other 15 Regional Hydrographic Commissions that encompass the world. Born by the initiative of IHO Member States which are Member States of the Antarctic Treaty, the HCA seeks to coordinate hydrographic activities to improve the quality, coverage and availability of nautical charting and other hydrographic data, information and services covering the Antarctic region. Due to the specifics of the legal conditions of Antarctic territories, their remoteness from civilization and its poorly explored state, HCA statutes put special emphasis on a collaborative approach of all Member States activities and addresses the support of scientific activities on the same level as safety of navigation. The 15th Conference of the HCA was held at the *Diretoria de Hidrografia e Navegação* (DHN), in Niteroi, Brazil, from 26 to 28 June.

The Conference was chaired by Dr Mathias Jonas, Secretary-General of the IHO, supported by Assistant Director Yves Guillam, Secretary (IHO Secretariat). Nineteen delegates from 10 Member States (Australia, Brazil, Chile, Colombia, Italy, Russian Federation, South Africa, United Kingdom, USA and Venezuela), one stakeholder organization (IAATO- The International Association of Antarctic Tour Operators), attended the meeting. Apologies were received from Argentina, France, Germany, India, Japan, the Republic of Korea, and Norway, who were unable to attend but provided their national reports.

The Conference reflected on the effects of the revised Convention on the IHO pertaining to the HCA Statutes and agreed to apply the resulting editorial adaptations when the amendments to the IHO Resolution 02/1997, proposed by the IRCC, are endorsed by the Council.



**Participants of the 15th Conference of the IHO
Hydrographic Commission on Antarctica**

The HCA reviewed progress since its 14th Conference held in 2016 and received reports from the IHO Member States present. Reports received from Member States not present were delivered by the Secretariat. The reports demonstrated impressively that numerous HCA members are strengthening their engagement for the Antarctic in terms of new ship's capacity for survey and research and investment in new carrier technology such as Autonomous Surface vessels. IAATO delivered a comprehensive explanation of its constitutions and operations. The IAATO representative highlighted the compelling need for enhanced hydrographic activities and agreed to check if the new IHO guidance on crowdsourced bathymetry (B-12) can be implemented technically – possibly by export from Voyage Data Recorder recordings. This coincided with the consent of the commission that HCA Members should be encouraged to ensure that bathymetric information contained in their HCA ENC's should be extracted and transmitted to the IHO DCDB.

The Chair delivered the Secretariat's Report. He explained the association of the Commission to the relevant IHO bodies, namely IRCC, the IHO Council and the IHO Assembly and provided information on the preparations of the centenary celebrations of the international cooperation in hydrography with the peak event of the 100th anniversary of the IHO in 2021. He requested the HCA Members to identify materials and contributions from the Antarctic region to demonstrate the achievements since the 1st HCA Conference and provide the list of materials to the IHO Secretariat for consideration.

HCA noted the solid progress in the production of paper charts (so far altogether 90 charts) and related ENC coverage. Taking note of a recent IRCC decision, it was agreed that the Region M Coordinator, in liaison with HCA Secretariat and the RENCs, has the responsibility to check and monitor ENC overlaps within the Antarctic region.

Discussions at the meeting centered not only on the need to obtain bathymetric data from all sources and observers in the region, but also on the need to improve and develop a coordinated approach across the HCA membership on the future provision of S-100 based data products. HCA agreed that, as a matter of principle, the current primary charting authorities in Antarctica should be encouraged to consider future production and distribution of S-100 based products for Antarctica, in their designated areas of charting responsibilities.

The Secretariat reported on recent activities to add functionality to IHO's native GIS Portal INTtoGIS to provide specific functional enhancements for the polar region such as polar centric azimuthal projection for the presentation of chart schemes. The Commission opted for an intensified cooperation with external data portals such as Quantarctica, led by the Norwegian Polar Institute, to promulgate relevant hydrographic content through integration into their respective GIS services. Such collaboration was agreed as the future favorite solution instead of further technical investment from the Secretariat for a native HCA GIS database solution. In this context IAATO was requested to consider the possibility of providing metadata of vessels traffic patterns for inclusion as a layer.

The Chair of the HCA Hydrographic Priorities Working Group (HPWG) provided a comprehensive analysis of the charting coverage (INT paper charts and ENC's) in the region. Statistics and illustrations of recent vessel traffic patterns, provided by IAATO, and access to AIS data were very useful in verifying the existing maritime shipping routes (MSR) and were used to set survey and charting priorities in the HCA and resulted in the identification of two new MSRs.

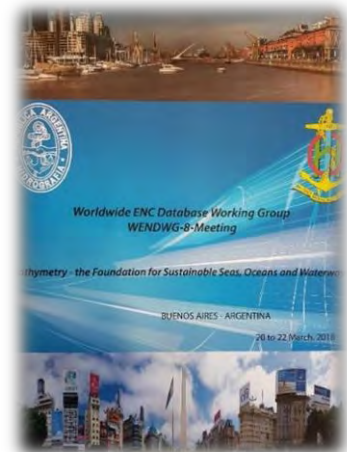
Brazil delivered a presentation of the extended and successful interpretation of backscatter data as a result of a survey campaign. The Commission agreed that the use of backscatter technology should gain more attention since it bridges well to scientific domains such as geology and proves the concept of multiple re-use of survey measurements.

The Chair informed the Commission on the confirmed opportunity to present the status of hydrographic activities in Antarctica at a seminar as part of the 42nd session of the Antarctic Treaty Consultative Meeting (ATCM) taking place in Prague, Czech Republic in July 2019. The Commission agreed on the outline of the HCA presentation to be given at the event and placed the upcoming HCA-16 around this date from 3 to 5 July 2019. Since the Czech Republic is not an IHO Member, the Secretariat accepted the organizing role for the event.

WEND Working Group

The 8th meeting of the Worldwide ENC Database Working Group (WENDWG) took place in Buenos Aires, Argentina, hosted by the Hydrographic Service of the Navy (SHN) of Argentina, from 20 to 22 March, in conjunction with the 3rd joint meeting of the Regional ENC Coordinating Centres (RENC), IC-ENC and PRIMAR. Commodore Valentin Alejandro Sanz Rodríguez, Director of the SHN, welcomed the participants, highlighting the key role played by the WENDWG within the IHO for the safety of mariners. The meeting was chaired by Mr Jamie McMichael-Phillips (United Kingdom). Thirty-two delegates from thirteen Member States (Argentina, Brazil, Canada, China, Finland, France, Iran (Islamic Republic of), Italy, Netherlands, Norway, Turkey, United Kingdom and United States) representing twelve Regional Hydrographic Commissions (ARHC, BSHC, EAHC, EAHC, MACHC, MBSHC, NHC, NSHC, RSAHC, SAIHC, SWAtHC and USCHC), the Chairs of the IC ENC Steering Committee and PRIMAR Advisory Committee and the directors of both RENCs attended the meeting. Additionally, five expert contributors from industry stakeholders and academia participated as observers by invitation of the WENDWG Chair. Director Mustafa Iptes and Assistant Director Yves Guillam (Secretary) represented the IHO Secretariat.

Following the adoption of the IHO Resolution 1/2018 - *Elimination of overlapping ENC data in areas of demonstrable risk to the safety of navigation* -, the meeting discussed the ways and means that are at the disposal of the ENC Producers, the RENCs and the Regional Hydrographic Commissions (RHCs) to implement it. It was noted that the IHO has now all the necessary tools in place to reach the objective of the elimination of overlapping ENC data (overlap checker, IC ENC policy as a decision aid on risk assessment and the new Edition 3.1.0 of S-11 Part A – *Guidance for the preparation and maintenance of ENC schemes*).



The meeting agreed to investigate the possibility of acquiring a world-wide AIS (Automatic Identification System) traffic density database to facilitate the assessment of gaps in the ENC coverage by ENC Producers and the International Charting Coordination Working Groups (ICCWG). The aim is to make the database available through the enhanced version of the INTToGIS system (INTToGIS II), developed by KHOA (Korea Hydrographic and Oceanographic Agency, Republic of Korea) in liaison with the IHO Secretariat. The representatives of the six RHCs present, agreed to experiment with INTToGIS II. The task on the monitoring of gaps will be complemented by the updates to the List of Ports database (NGA Publication 150) to be provided by the RHCs on a regular basis. With regards to the ENC coverage and availability, the WENDWG agreed to commission a more user-friendly version of the IHO ENC Coverage Catalogue that was under development since 2016 as part of the actions identified for a better implementation of the WEND Principles.

The WENDWG commended the high-quality support provided by IC-ENC and PRIMAR and noted the establishment of the East Asia-Regional ENC Coordination Centre (EA-RECC). The representative of the EA-RECC was invited to participate in the future Joint RENCs e-meetings. The WENDWG addressed the need for all types of vessels (SOLAS, leisure boats, etc.), for safety reasons, to get access to the most updated navigational data (S-57) and invited the RENCs to consider the way forward for offering harmonized license management services to their Members. The WENDWG Members also agreed to consider supporting the GEBCO Seabed 2030 Initiative, as soon as this enlargement of the scope of the WENDWG is endorsed by IRCC.

The meeting reviewed its work programme and agreed on the top priority work items to be proposed for IRCC's endorsement.

Mr Jamie McMichael-Phillips (UK) and Mr John Nyberg (US) were re-elected as Chair and Vice-Chair of the WENDWG respectively.



WENDWG-8 participants in Buenos Aires, Argentina

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. Taking the opportunities of attending regional and other international meetings and events, in particular during the RHC, UN headquarters and IMO meetings held during the year, the IHO Secretary-General, Directors and Assistant Directors visited and briefed high level governmental officials directly and through their diplomatic representatives as part of the IHO awareness-raising campaign. Non-Member States of the IHO were also encouraged and invited to participate in the RHC meetings, CB initiatives and relevant IHO meetings. The awareness-raising campaign is also conducted during the CB Technical and High-Level Visits.

- ***High Level visit to Panama***

IHO Director Mustafa Iptes, accompanied by Assistant Director Alberto Costa Neves, paid a high-level visit to Panama City, Panama on 3 and 4 December to invite and encourage the application of Panama to become a Member State of the IHO and to advise on the need to promote and develop the national hydrographic infrastructure.

In the first part of their programme, the IHO Team visited the Panama Canal Authority (PCA) and had a meeting with Mr Jaime Rodríguez, Chief Hydrographer of the PCA, who provided a briefing on the hydrographic capacity of the PCA and on the survey activities at the Panama Canal. The IHO Team also had a tour in Panama Canal onboard a survey vessel of PCA and visited the recently constructed locks of the Panama Canal.

In the second part of the programme, the IHO Team visited the Panama Maritime Authority (PMA) and called on H.E. Mr. Jorge Barakat Pitty, Minister of Maritime Affairs of Panama. Director Iptes presented the role and the activities of the IHO and underlined the importance of the hydrography, a Hydrographic Service and the benefits of becoming a full Member State of the IHO. Director Iptes was informed that Panama, as an important maritime State and the number one Flag State of the IMO, has a positive desire to join the IHO in the near future and is actively working to become a member of the IHO. Minister Barakat Pitty and Director Iptes has agreed on working closely to facilitate the membership process of Panama.

- ***Accession of a New Member State and Reinstatement of a Suspended Member***

The accession of Bulgaria to the IHO Convention as an IHO Member State brought the IHO Membership to 89 Member States. In January the Dominican Republic was reinstated as a Member State, suspended since 1983.

Capacity Building Management

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 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 (currently the Nippon Foundation of Japan, and the Republic of Korea) with in-kind support from Member States and from industry. However, considering the growing demands for IHO Capacity Building activities, more funds and contributions are required. For this reason, the Secretary-General and Directors continued the Secretariat's campaign to find new donor States and funding organizations.

The level of activity of the IHO Capacity Building (CB) Programme increased in 2018. Expenditure in the IHO 2018 CB Work Programme (844 517 Euros) was 35% bigger than the budget for the previous year. The ongoing financial support is provided by the Nippon Foundation of Japan, the Republic of Korea and by a contribution from the IHO budget with in-kind support from Member States and from industry. In 2018, 75% of the budgeted work program was executed and paid for.

One Director, one Assistant Director, one CB Assistant and some other members of the staff were directly engaged in supporting the CB programme. The Secretary-General appointed a dedicated CB Assistant from 1 January, reducing the constraint in the performance of the CB Programme.

Capacity Building Sub-Committee (CBSC)

The 16th meeting of the IHO Capacity Building Sub-Committee (CBSC16) was held in Goa, India, from 30 May to 1 June, hosted by the Indian National Hydrographic Office. The meeting was chaired by Mr Thomas Dehling (Germany) and attended by 29 participants representing the 14 Regional Hydrographic Commissions (RHCs) and 17 Member States. RSAHC was not represented. The opening ceremony was attended by Vice Admiral Vinay Badhwar, Chief Hydrographer of the Government of India and former Vice-Chair of the CBSC. The IHO Secretariat was represented by Assistant Director Alberto Costa Neves (CBSC Secretary).

The CBSC is responsible for the continuous assessment of the status of hydrographic surveying, nautical charting and maritime safety information in nations and regions where hydrography is developing, for assistance for States to achieve sustainable development and improvement in their ability to meet hydrographic, cartographic and maritime safety obligations with particular reference to recommendations in UNCLOS, SOLAS, and other international instruments, and for the establishment and maintenance of close relationships with national agencies and international organizations in terms of Capacity Building.

The Sub-Committee monitored the impact of the IHO Capacity Building (CB) Strategy and considered that it proved to be very efficient in directing the efforts of the CBSC. Participants were informed on the very important role played by the CB matters during the 1st meeting of the Council (C-1) where the work of the CBSC was recognized as one of the major strategic endeavors of the IHO. The Council endorsed the proposal for increasing the CB support at the IHO Secretariat and the Secretary-General decided to establish a full-time position for the Capacity Building Assistant from 1 January 2018.

The progress in the development of a CB Management System by the efficient support from the Republic of Korea was noted by the meeting, together with the financial support from the Republic of

Korea (ROK) and Nippon Foundation of Japan. The extraordinary generous ongoing contribution from Japan and ROK have been a major factor in the success of the CB programme. The meeting was informed on the outcomes of the annual Joint CB Coordination meeting of IHO, IMO, WMO, IOC, IAEA, IALA, FIG and IMPA that took place at the IALA headquarters in November 2017. The International Maritime Pilot Association (IMPA) participated for the first time and the meeting considered, among others, the development of comprehensive projects to be delivered under the UN concept of "Delivering as One".

The reports received from the Regional Hydrographic Commissions indicated progress on several fronts with Bulgaria becoming the 89th Member State of the IHO, the development of new IBSC recognized programmes at both Category "A" and "B", the positive impact of the Maritime Safety Information (MSI) courses coordinated between the CBSC and the WWNWS-SC, the improved coordination with regional organizations and the impact of aid-programmes from foreign affairs, in particular in the South West Pacific and in the Caribbean Sea, with key developments in Small Islands Developing States (SIDS).

The meeting noted with concern that no report was submitted by the RSAHC due to the lack of a permanent CB Coordinator in the region and decided short-term actions to mitigate the negative impact on RSAHC Members. The meeting concluded that despite the successes achieved by the IHO CB Programme, more resources are needed to support the development of hydrographic services worldwide in a sustainable way.

Participants noted the progress made in regional projects related to Capacity Building, in particular: the New Zealand Ministry of Foreign Affairs and Trade (MFAT) with Land Information New Zealand (LINZ) and the Pacific Community (SPC) to support Cook Islands, Kiribati, Niue, Samoa, Tokelau, Tonga, Tuvalu and Vanuatu; the UK Commonwealth Marine Economies (CME) Programme and Overseas Territories Seabed Mapping Programmes to support the development in the Commonwealth and in the Overseas Territories in the South West Pacific and the Caribbean; the EAHC/Training, Research and Development Center (TRDC) Training for Trainers (TFT) in Basic Hydrography and Cartography to improve hydrography and nautical cartography among hydrographic offices in the region; and the EAHC HydrOMAOC (OMAOC stands for *Organisation Maritime de l'Afrique de l'ouest et du Centre*, French for Maritime Organisation for West and Central Africa – MOWCA) to develop hydrographic services in the WCA where 17 of the 19 coastal States are not IHO nor EAHC Members.

National projects were also reported: the Mexican Project for Strengthening of Hydrographic Capabilities in Mesoamerica and Caribbean Sea (FOCAHIMECA, from the Spanish), jointly run by the Ministry of the Navy and the Mexican Agency for International Development and Cooperation (AMEXCID) as a component of the Maritime Short Distance Transport Initiative, in collaboration with the Association of Caribbean States (ACS) and the Italian cooperation with Lebanon for building a National Hydrographic Service with a data-centric approach, with resources provided by the Italian Ministry of Foreign Affairs and executed by the Italian Navy Hydrographic Institute.



Participants of the 16th meeting of CBSC

The meeting was also informed on the good level of cooperation with IALA, in particular in Joint Seminars on Safety of Navigation, on joint technical/needs assessment visits and potentially on risk assessment; on examples of resource mobilization aiming at attracting and managing resources from donor agencies; and on the strategy of international organizations to approach donor agencies, with offer to support geospatial projects that could benefit from hydrographic components.

The CBSC agreed on the importance of the IHO Publication C-55 *Status of Hydrographic Surveying and Nautical Charting Worldwide*, as the database that underpins IHO advice to the UN, IMO and other agencies, and is used in particular in the context of IMSAS. However, it considered that the confidence in the indicators are severely limited by the non-uniform approach each coastal State (or their PCA) use to derive the input to the publication and decided to review C-55 and to introduce CATZOC information as an interim solution as an indicator for survey adequacy, tasks to be accomplished with the establishment of a C-55 Review Project Team (C-55RPT).

The CBSC updated and adjusted the 2018 CB Work Programme, considered the priorities identified by the Sub-Committee, the available and potential additional resources and approved the 2019 CB Management Plan and the 2019 CBWP.

Manage Capacity Building Fund

The Republic of Korea and the Nippon Foundation of Japan made significant financial contributions to the CB Fund during the period of this report. Many other IHO Member States contributed significant in-kind resources to the CBWP, by providing the venue, instructors, local support, or other resources to ensure the effective implementation of CB activities. A statement of accounts for the CB Fund is contained in Part 2 of this Annual Report.

- **Develop and maintain a Capacity Building Management System**

The Secretariat, with the support of the Republic of Korea, continued to develop a more robust Capacity Building Management System using databases and online services, but at a very slow pace due the resource limitations.

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

- **Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMPA Capacity Building (CB) Coordination Meeting**

The 11th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMPA Capacity Building (CB) Coordination Meeting was held on 10 and 11 September, onboard the HQS Wellington, Headquarters of the International Maritime Pilots' Association (IMPA) in London, UK. The annual meeting brought together ten representatives from the IHO, IMO, WMO, IOC, IALA, FIG and IMPA. The IAEA was not represented at the meeting. The IHO was represented by Director Mustafa Iptes and Assistant Director Alberto Costa Neves, Capacity Building Sub-Committee (CBSC) Secretary.

The main goal of the meeting is to coordinate the efforts of international organizations for building and developing capacity in the maritime and marine communities. The meeting coordinates activities and shares resources in line with the United Nation concept of "Delivering as One" for effective, efficient, coherent and better performing presence in developing countries. The coordinated international presence has the benefit of creating conditions for enhanced communication and cooperation within the countries and their national infrastructure.



The Participants of the 11th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMPA Capacity Building Coordination Meeting at the IMPA's Headquarters (HQS Wellington) in London, UK.

Participants reviewed the joint activities conducted in the intersessional period, including the needs assessment visit to Sudan and the seminars for raising awareness of relevant topics preceding the regular conferences of relevant Regional Hydrographic Commissions (RHCs), namely the MACHC and SAIHC. Future joint activities such as the technical visits to Angola, Madagascar, Trinidad and Tobago and Tunisia were also considered, along with the coming seminars preceding the EAHC, the MACHC and the NIOHC. The meeting considered the need to increase the joint activities related to Maritime Safety Information (MSI).

The meeting was informed on the achievements, challenges and lessons learned from each organization, including those related to the implementation of the respective CB or Capacity Development (CD) strategies, the management of calendars, course catalogues and portals. The meeting also considered how to make better use of training for trainers (TFT) and of alumni's and stakeholders' seminars and how to overcome barriers for delivering courses in different languages. Sister Organizations also presented their experiences on how to deal with funding agencies.

The organization of a joint project to support a developing country or region was further considered. The sister organizations decided to adjust one project that is under development in order to better align it to potential donor agencies and to the UN Sustainable Development Goals (SDG). The meeting reaffirmed the importance of the IMO as the mother-ship of the maritime community with its membership of 174 States, numerous observers and very relevant ensemble of international conventions, to drive the joint project. It also recognized the importance of joint support to coastal States in their preparation for the IMO Member State Audit Scheme (IMSAS) and in responding to the deficiencies identified in areas where other organizations have a mandate.

Participants were informed on the status of the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) by the IOC representative and how the organizations can contribute to the 2018-2020 planning phase and to its implementation plan. E-learning and blended learning used by some of the organizations were reviewed, together with the use of Moodle platform, jointly or independently. The meeting also considered principles to address the challenges in Africa, in particular to raise awareness on the importance of the maritime and marine environment and to promote opportunities.

Other topics of interest were the cooperation for research (e.g. risk assessment), the use of mentoring to support young professionals, the benefits for exchanging information to support individual and collective activities and the development of a common web page to support the work of the group.

- **Other meetings**

The 8th meeting of the IHO/ROK Programme Management Board (PMB8)

The 8th meeting of the IHO/Republic of Korea (ROK) Programme Management Board (PMB) was held at the Secretariat of the International Hydrographic Organization, Monaco from 27 to 28 February 2018. The ROK delegation comprised Mr. Dong Jae LEE, Director General, Mr Hee Yoon PARK and Mr. Yong BAEK from the International Cooperation Team at the Korea Hydrographic and Oceanographic Agency. The IHO was represented by Mr. Lamberto Orlando LAMBERTI (Vice Chair of the IHO Capacity Building (CB) Sub-Committee), Director Mustafa Iptes and Assistant Director Alberto Costa Neves (Secretary). Mr. Maxim Van Norden, Programme Manager at the University of Southern Mississippi (USA) and relevant IHO Staff also attended the meeting as invited contributors. The meeting was chaired by Director Iptes.

The PMB was established under the IHO - ROK Memorandum of Understanding (MoU) to identify directions for improving hydrography and nautical cartography worldwide through the capacity building activities funded by the ROK and to manage the IHO-ROK programme of technical cooperation. The meeting agreed on the need to revise the current MoU in order to update and adjust some of its provisions.

The meeting reviewed the progress and achievements of the various training and education activities sponsored by the ROK. The annual financial contribution from the ROK forms a significant part of the Capacity Building (CB) Fund used to support the annual IHO CB Work Programme (CBWP). Since its inception the ROK contribution has supported education programmes in hydrography and cartography, training for trainers' (TFT) courses, seminars and short courses on hydrographic surveys, ENC quality assurance, marine spatial data infrastructures, law of the sea, and tides and water levels, among others.

The PMB considered the management aspects of supporting trainees on the Category "A" Hydrography Programme at the USM and the Category "B" Nautical Cartography Programme at the KHOA in order to effectively deliver high level education and training to participants from developing countries. During the meeting the selection board for the 2018-2019 edition of the Category "A" Programme was established and selected two candidates from Estonia and Malaysia respectively, subject to final acceptance by the USM.

The meeting was pleased to acknowledge the increasing number of qualified candidates that were nominated for the Category "A" Programme this year. The meeting also discussed ways to help ROK training alumni continuing their professional development and engaging in IHO projects. The alumni might also investigate how to take advantage of social media to create an environment of cooperation between them.

The PMB was informed that the financial contribution from the ROK to support CB activities in 2018 was to be less than in previous years due to an unusual requirement to support the Korean Seconded Officer at the IHO Secretariat in 2018. The ROK also expressed its interest in continuing the support to further develop the Capacity Building Management System (CBMS) by working with the IHO Secretariat.

The meeting was also briefed on CB activities being conducted by the East Asia Hydrographic Commission Technical, Research and Development Center (TRDC) and its developments of e-learning to better assist the international hydrographic community. The use of e-learning is a strategic objective for the EAHC/TRDC.



The Participants of the 8th Meeting of the IHO-ROK Programme Management Board in the IHO Secretariat (Monaco).

Liaison Visit to the 10th Course of the IHO- Nippon Foundation CHART Project

Director Mustafa Iptes, Assistant Director Alberto Costa Neves and Mr Naohiko Nagasaka (Project Officer seconded to the IHO Secretariat from Japan) visited the United Kingdom Hydrographic Office (UKHO) on 12 September to meet and brief the trainees attending the 10th course of the IHO - Nippon Foundation CHART (Cartography, Hydrography and Related Training) Project. The project, funded by the Nippon Foundation of Japan, provides training in marine cartography and data assessment, which is recognized at the Category B level by the FIG-IHO-ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. The course was hosted by the UKHO and composed of five modules, each module varying from two to five weeks in length. The 10th course started on 3 September and ended on 14 December. It was attended by students from Brunei Darussalam, Croatia, Indonesia, Pakistan, Philippines, Poland and Sri Lanka.



The trainers and trainees of the 10th CHART Course with the IHO Visiting Team.

The Team from the IHO Secretariat discussed various topics with the students. In response, the students described their experiences and thanked the Nippon Foundation, UKHO and IHO for the opportunity to develop their knowledge and expertise in the field of nautical cartography. Director Iptes delivered a presentation highlighting the areas of influence and the value of hydrography and the responsibilities of Governments in relation to the provision of hydrographic data, information, products and services. The Capacity Building programme was also described in detail by Assistant Director Costa Neves. The students were encouraged to keep in touch with each other and to maintain an alumni relationship after they return to their home countries.

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 planned in 2018 are summarized in the following table:

N°	Activity	RHC/Org.	Implementation
1	Training Center Visits	EAtHC	Led by SHOM with UKHO During 2018
2	Technical visit Georgia	MBSHC	Led by Italy and Ukraine 16-18 October 2018
3	High-Level Visit to Angola	SAIHC	Led by IHO Secretariat with Brazil 25-28 September 2018
4	Needs Assessment Visit to Sudan	IMO, IHO and IALA	Jointly executed by IMO, IHO and IALA 21-26 April 2018

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. This included visits to high level authorities in several countries, participation in RHC meetings, participation in various seminars and conferences, and the active promotion of IHO activities in specialized magazines and journals.

- **Revise M-2 – The Need for National Hydrographic Services**

The IHO Publication M-2 was updated in 2018 as Edition 3.0.7, including the accession of Bulgaria as the 89th Member State.

Technical workshops, seminars, short courses

Execution of the seminars, workshops and short courses planned in 2018 are summarized in the following table:

N°	Events	RHC	Implementation
1	IHO-ROK Category "A" Programme	Secretariat	Led by USM, Hattiesburg, USA 1 August 2018-1 August 2019
2	ROK Category B Survey Programme (phase 1/2)	Secretariat	Led by KHOA, Busan, ROK 12 July-30 November 2018
3	IHO-Nippon Foundation CHART Project	Secretariat	Led by UKHO, Tauton, UK 3 September-14 December 2018
4	Regional awareness seminar on maritime geospatial knowledge	EAtHC	Led by SHOM, Lagos, Nigeria 15-16 October 2018
5	Technical Workshop on Implementing Hydrographic Governance	SWPHC	Led by LINZ, Nadi, Fiji 19-23 February 2018
6	Seminar on Raising Awareness of Hydrography	SAIHC	Led by UKHO, Victoria, Seychelles 27 August 2018
7	Phase 1 Skills Course	NIOHC	Led by UKHO, Goa, India 28 January-1 February 2019
8	Seminar on Raising Awareness of Hydrography	MACHC	Led by UKHO, Cartagena, Colombia 26-27 November 2018
9	MSI Training Course	SWAtHC	Led by DHN, Niteroi, Brazil 16-18 October 2018
10	MSI Training Course	SWPHC	Led by LINZ, Wellington, NZ 6-9 August 2018
11	Workshop on MSI	MBSHC	Led by ONHO, Istanbul, Turkey 11-13 September 2018
12	MBES Processing and Data Basing Training for Mozambique	SAIHC	Led by UKHO, Maputo, Mozambique 11-26 November 2018
13	Port and Shallow Water Survey Course	SWAtHC	Led by SHN, Buenos Aires, Argentina 24-28 September 2018
14	Carto Production DB System Development Workshop	EAHC	Led by MSA, China 22-26 October 2018
15	Survey Technician training for Mauritius	NIOHC	Led by UKHO, Goa, India 22 October 2018-20 February 2019
16	Workshop on LIDAR technology and methodology for shallow waters and coastline hydrographic surveys	SEPRHC	Led by INOCAR, Guayaquil, Ecuador 22-26 October 2018
17	MBES Processing	MACHC	Led by CIOH, Cartagena, Colombia 10-14 December 2018
18	Senior Survey Technician training for Mauritius	NIOHC	Led by UKHO, Goa, India 18 February - 6 July 2019
19	Port and Shallow Water Survey Course	MBSHC	Led by IIM, Genoa, Italy 17-21 September 2018
20	GEBCO Training Project	UNH	Led by UNH, Durham, USA August 2018-August 2019
21	Use of GNSS for tide correction for survey (former 2017 CBWP P-18)	EAHC	Led by Indonesia 9-13 July 2018

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 2018:

IHO Member States	Non-IHO Member States
Australia	Eritrea
Argentina	Kiribati
Bangladesh	Maldives
Canada	Nauru
Estonia	Niue
Fiji	Palau
Finland	Somalia
France	Sudan
Indonesia	Tuvalu
Malaysia	Yemen
Mauritius	
Nigeria	
Norway	
New Zealand	
Seychelles	
Spain	
Suriname	
United Kingdom	
Ukraine	
Vanuatu	

Updates for the Antarctic region were not provided in 2018.

The IHO Secretariat continued to update publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide* based on the submissions received from Member States. The current edition of C-55 was generated from a database that is continuously updated as an online service accessed from the download section of the IHO website. The IHO Secretariat continued to investigate ways to display the current database in a GIS environment and to seek new ways to use geo-information to represent the status of surveys and charting around the world. The CBSC16 established a C-55 Review Project Team to investigate the means to generate the figures to C-55 using CATZOCs.

RHC to coordinate ENC schemes, consistency and quality

In 2018, Ed. 3.1.0 of the IHO Publication S-11 Part A - Guidance for the Preparation and Maintenance of International (INT) Chart and ENC Schemes – was approved by the IHO Member States and issued. In addition to the guidance relating to the preparation and maintenance of ENC schemes that

was approved in 2017, this new Edition incorporates a basic check-list for reviewing INT charts, developed by the Nautical Cartography Working Group (NCWG) and Regional INT Charts Coordinators, as well as a new procedure for reviewing INT charts, as a consequence of the revocation of the IHO Resolution 1/1992 - Monitoring of INT Charts. RHCs are expected to coordinate the development and maintenance of small/medium scale ENC schemes and to ensure that uniform parameters are used to ensure consistency and quality. RHCs are also invited to monitor and report on gaps and overlaps in ENC coverage on a regularly basis. With the support provided by the RENCs (IC ENC and PRIMAR), these topics are considered at every meeting of the WENDWG.

Maintenance of INT chart schemes and improvements of availability of the INT chart series

The purpose of the IHO INT chart series is to define and produce a set of medium and large-scale charts that are specifically designed for planning, landfall and coastal navigation and access to ports used by ships engaged in international trade. The designation of the limits and scale for each INT chart and the designation of which country will be the primary producer of each INT chart are managed by the relevant RHC.

As a result of the operational use of the INTOGIS web services by most of the charting regions, the S-11 Part B (Catalogue of INT Charts) database quality continued to increase significantly in 2018. The following table summarizes the status of the INT chart scheme at the end of 2018, according to the new S-11 Part B INT Chart Web Catalogue:

Region	Coordinator	Commission	Scheduled	New Publications reported in 2018	Published Total	Version
A	USA/NOS	USCHC	18	2	17	3.0.1
B	USA/NOS	MACHC	82	0	49	3.0.1
C1	Brazil	SWAtHC	51	0	36	3.0.2
C2	Chile	SEPRHC	44	0	7	3.0.0
D	UK	NSHC	220	2	219	3.0.6
E	Finland	BSHC	308	3	298	3.0.9
F	France	MBSHC	248	1	173	3.0.4
G	France	EAtHC	172	0	141	3.0.4
H	South Africa	SAIHC	125	0	103	3.0.6
I	Iran (I.R of)	RSAHC	143	0	100	3.0.1
J	India	NIOHC	170	9	154	3.0.5
K	Japan	EAHC	294	0	240	3.0.0
L	Australia	SWPHC	67	0	62	3.0.3
M	UK	HCA	117	3	90	3.0.5
N	Norway	ARHC	12	0	9	3.0.2
1 :10 Million	IHO Sec.		25	0	24	3.0.1

Total of INT charts scheduled: 2096

Total of INT charts produced in 2018: 20 (0.9% of the total scheduled)

Total of INT charts published by end 2018: 1722 (82.2% of the total scheduled)

Maritime Safety Information

Conduct Meetings of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC)

Conduct Meetings of the World-Wide Navigational Warning Service Sub-Committee (WWNWS)

The Document Review Working Group (DRWG) of the IHO Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC), which is continuing its review of the WWNWS documentation, met at the Headquarters of the International Maritime Organization (IMO) in London, UK from 27 February to 1 March under the chairmanship of Mr Peter Doherty (USA). The meeting was held in the week following the 5th session of the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR 5), to take advantage of the presence of WG Members who had previously attended NCSR 5 (Canada, Norway, Spain, UK, USA, IMO, World Meteorological Organization (WMO), International Mobile Satellite Organization (IMSO), Inmarsat, Iridium and IHO). The IHO Secretariat was represented by Assistant Director David Wyatt.

The outcomes of the 5th session of the IMO Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR 5) relevant to the WWNWS-SC were reviewed. These included the work of a number of Correspondence Groups and groups developing equipment guidelines in which WWNWS-SC members should be involved.



DRWG16 participants at IMO Headquarters

As a consequence of the decisions made at the NCSR 5, in particular the changes to the Inmarsat satellite constellation and services, the DRWG was invited to undertake a priority review of the IMO Resolutions A.705(17), as amended - *Promulgation of Maritime Safety Information*, A.706(17), as amended - *World-Wide Navigational Warning Service*, and A.1051(27) - *World-Wide Met-Ocean Information and Warning Service*. In addition the DRWG was invited to review the IHO publication S-53 – *Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)* – and the *International SafetyNET Manual* to ensure full harmonization with the IMO resolutions and that they correctly reflected the changes to the Inmarsat satellite constellation and services. The outcomes were considered by the 10th meeting of the WWNWS-SC (WWNWS10), which was held from 27 to 31 August 2018 in Monaco and subsequently submitted to the 6th session of the NCSR in January 2019.

Iridium presented the initial version of their GMDSS mobile satellite system guidance document – *Iridium EGC Satellite Services Manual*, which was reviewed and a number of suggested amendments were offered by the Group.

WWNWS Document Review Working Group, Maintain and extend the following IHO standards, specifications and publications: S-53 and relevant IHO Resolutions in M-3

The WWNWS relies on various IMO/IHO documents to provide guidance for the promulgation of internationally coordinated NAVAREA and Coastal warnings, including the SafetyNET and NAVTEX systems, which each have their own guidance document.

The Document Review Working Group (DRWG) met in the week after the 5th session of NCSR and commenced amendments to the IMO Resolutions A.705(17), as amended - *Promulgation of Maritime Safety Information*, A.706(17), as amended - *World-Wide Navigational Warning Service*, and A.1051(27) - *World-Wide Met-Ocean Information and Warning Service* - to ensure their alignment with the changes to the Inmarsat services announced at NCSR 5. The proposed future editorial amendment cycle to the MSI documentation was discussed, noting the need to take into account the proposed amendments to the SOLAS Convention, the outcomes of the Modernization of the GMDSS and the expected recognition of Iridium as a mobile satellite service provider in the GMDSS.

It was decided at WWNWS10 that the 17th meeting of the Document Review WG ((DRWG17) will continue the review of the IHO publication S-53 – *Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)* – and the *International SafetyNET Manual*, and prepare proposed amendments for consideration at WWNWS11 in 2019 and subsequent submission to NCSR 7 in 2020. Iridium agreed to continue to develop appropriate documentation to support its proposed GMDSS service.

Liaise with IMO and WMO on the delivery of MSI within the GMDSS

The WWNWS-SC, with support from the IHO CB Programme, continued to deliver its comprehensive training course that provides practical guidance to relevant authorities in countries that are drafting navigational warnings or broadcasting MSI. The Sub-Committee received updated information on the delivery of MSI training. The meeting was informed that a MSI course had been held in Wellington, New Zealand, for South West Pacific Hydrographic Commission (SWPHC) states.

A critical issue for the continued success of the MSI course was the availability of qualified trainers; the Chair noted that the course can only be delivered in English at present, due to the lack of experienced and qualified French and Spanish trainers.

The WWNWS-SC reviewed the relevant matters considered and decisions taken during the 99th session of the IMO Maritime Safety Committee (MSC 99) and the fifth session of IMO NCSR. The contents of the relevant Annexes of the Master Plan on the modernization of GMDSS were reviewed. Of particular note were the recognition by MSC 99 of Inmarsat FleetBroadband and the Iridium system a recognized mobile satellite service providers of the Global Maritime Distress and Safety System (GMDSS).

Improve the delivery and exploitation of MSI to global shipping by taking full advantage of technological developments

The 10th meeting of the World-Wide Navigational Warning Service (WWNWS) Sub-Committee (WWNWS10) was held at the IHO Secretariat, Monaco, from 27 to 31 August under the chairmanship of Mr Peter Doherty of the United States of America. At the same time the first meeting of the World Meteorological Organization (WMO) World-Wide Met-Ocean Information and Warning Service (WWMIWS) Committee (WWMIWS1), under the chairmanship of Mr Johan Stander of South Africa, was also hosted by the IHO Secretariat and a number of joint sessions took place. Director Mustafa Iptes welcomed the meetings which were attended by a total of 66 delegates.



Participants at the joint meetings of the IHO World-Wide Navigational Warning Service Sub-Committee and the WMO World-Wide Met-Ocean Information and Warning Service Committee at the IHO in Monaco

The WWNWS10 was attended by 46 delegates from 21 IHO Member States, the Secretariat of the International Maritime Organization (IMO), the Secretariat of the WMO, the Secretariat of the International Mobile Satellite Organization (IMSO), the Chairs of IMO NAVTEX and International SafetyNET Coordinating Panels, Inmarsat, Iridium, Security of Navigation, Stabilisation, Advice and Training (inc AWNIS) (SONSAT) and the IHO Secretariat. A representative of the Intergovernmental Oceanographic Commission (IOC) of UNESCO joined by remote link for discussions on tsunami warning messages. The delegates included representatives of 18 NAVAREA Coordinators, one Sub-Area Coordinator and six National Coordinators. The IHO Secretariat was represented by Assistant Director David Wyatt (Secretary).

During the joint sessions the WWNWS-SC and the WWMIWS-C discussed a number of topics of mutual interest and receive briefings and presentations from Inmarsat and Iridium on the developments in the provision of mobile satellite Global Maritime Distress and Safety System (GMDSS) services. The current state of Maritime Safety Information (MSI) documentation was discussed, in particular the amendments to all the MSI documentation affected by the Inmarsat I-3 to I-4 satellite migration and the recognition of Iridium as a mobile satellite service provider of the GMDSS. The IMSO provided a brief on the Iridium operational implementation plan and programme, for which it is responsible.

The delegates received briefings on the outcomes of recent International Maritime Organization (IMO) meetings, including the 99th session of the Maritime Safety Committee and the 5th session of the Sub-Committee on Navigation, Communications and Search and Rescue. The relevant agenda items for the 14th session of the IMO-International Telecommunication Union (ITU) Expert Group were discussed. Updates on the activities of the IMO NAVTEX Coordinating and the International SafetyNET Coordinating panels were provided by their respective chairs.

During the separate WWNWS10 meeting, the Sub-Committee received Maritime Safety Information (MSI) self-assessment reports from all 21 NAVAREAs, the Baltic Sea Sub-Area and a national report from China and reviewed the relevant outcomes of the IRCC10 meeting. The outcomes from the 16th meeting of the Document Review Working Group (27 February to 1 March 2018) were discussed.

The meeting also received a detailed progress report on the development of the S-124 Product Specification on Navigational Warnings from the Chair of the S-124 Correspondence Group. The WWNWS-SC considered progress reports on the delivery of MSI training courses, discussed the processes for reporting the status of MSI provision at Regional Hydrographic Commission meetings and methods for identifying to the Capacity Building Sub-Committee the regions and coastal States most in need of training and assistance.

Ocean Mapping Programme

A series of meetings related to the IHO-IOC GEBCO (General Bathymetric Chart of the Oceans) project were hosted by Geoscience Australia and Land Information New Zealand (LINZ) in Canberra, Australia, from 12 to 16 November 2018:

- 12 and 13 November: Joint meeting of the Technical Sub-Committee on Ocean Mapping (TSCOM), the Sub-Committee on Regional Undersea Mapping (SCRUM) and the Outreach Working Group (OWG);
- 14 November: GEBCO Symposium; and
- 15 and 16 November: 35th Meeting of the GEBCO Guiding Committee (GGC).

The IHO Secretariat was represented at the joint TSCOM, SCRUM and OWG meeting by Assistant Director David Wyatt who was joined by Director Mustafa Iptes for the GEBCO Symposium and the meeting of the GGC.

- **TSCOM, SCRUM and OWG**

The joint meeting of TSCOM-SCRUM was co-chaired by Dr Karen Marks (USA), Chair of TSCOM, and Dr Vicki Ferrini (USA), Chair of SCRUM.

Update reports were provided on the following regional mapping projects: Indian Ocean Bathymetric Compilation (IOBC), North Atlantic Seabed Mapping Project, International Bathymetric Chart of the Arctic Ocean (IBCAO), International Bathymetric Chart of the Southern Ocean (IBCSO), Canadian Hydrographic Service (CHS) activities, European Marine Observation and Data Network (EMODnet) Bathymetry Digital Terrain Model (DTM) 09/2018 developments, Istituto Idrografico Della Marina (IIM) of Italy in the Arctic region and contributions to the GEBCO and Seabed 2030 projects and the Open Geospatial Consortium (OGC) and its relevance to GEBCO and Seabed 2030 project.



TSCOM, SCRUM and OWG in plenary session

Reports were received from the Seabed 2030 Regional Data Assembly and Co-ordination Centres (RDACC) and the Global Data Assembly and Co-ordination Centres (GDACC). A comprehensive brief was provided on the developments in the IHO Data Centre for Digital Bathymetry (DCDB) and future proposed enhancements. Details were also provided on the Crowdsourced Bathymetry (CSB) initiative and the collaboration with Rosepoint Navigation to gather position and depth data via ECS from small vessels. The work to enhance the data collected via the Voluntary Observing Ships (VOS) programme to include bathymetry was highlighted.

Professor Hyo Hyun Sung, Chair of the OWG, presented a detailed update on activities, the proposed GEBCO outreach and capacity building strategies and suggested a way forward in consideration of the decision at GGC34 to create a new Sub-Committee out of the existing Outreach Working Group (OWG) with responsibility for Outreach, Communications and Engagement, to be called the Sub-Committee on Communications, Outreach, Public Engagement (SCOPE).

Thierry Schmitt (France) and Caitlyn Raines (ESRI) were elected as Chair and Vice-Chair of TSCOM respectively for the period 2019 to 2022.

- **GEBCO Symposium**

For the 12th consecutive year, the GEBCO project organized a symposium on the theme of 'Map the Gaps'. The symposium was opened by James Johnson, Chief Executive Officer, Geoscience Australia. The symposium, which included digital poster sessions and contributions from a broad spectrum of institutions involved in all aspects of ocean mapping, featured 25 presentations on a diverse range of topics.



James Johnson, Chief Executive Officer, Geoscience Australia, opening the GEBCO Symposium

- **GEBCO Guiding Committee**



GEBCO Guiding Committee members at GGC35

All of the IHO appointed representatives on the GEBCO Guiding Committee were present. Representatives of Australia, Bangladesh, Canada, Chile, China, Ecuador, Egypt, France, Germany, India, Italy, Japan, Latvia, New Zealand, Poland, Republic of Korea, United Kingdom, USA, Venezuela, IOC, IHO as well as representatives from various Federal and Commonwealth government departments and academic institutions attended the

meeting as observers with a number of industry stakeholders attending as expert contributors.

The Chair, Mr Shin Tani (IHO - Japan), introduced the agenda and programme. The GGC received brief reports from its Sub-Committees and Working Groups and endorsed the work which they had undertaken. The GGC also received reports from key personnel performing functions on behalf of GEBCO as well as reports from its parent bodies, IHO and IOC, on activities since the previous meeting.

The Chair of the Sub-Committee on Undersea Feature Names (SCUFN) reported on the changes of membership and the election of a new Chair (Hyun-Chul Han) and Vice-Chair (Yasuhiko Ohara). He noted that there remained one IOC vacancy to be filled. He highlighted some changes proposed to B-6 (*Standardization of undersea features names*) to make the supporting bathymetric data available to the IHO DCDB as part of a submission. The GGC endorsed an amendment to the ToRs article 2.8 of the SCUFN to increase the submission deadline from 30 days to 60 days for all formats of submissions. He reported on the activities of the Undersea Feature Names Project Team (UFNPT) and the proposed future activities related to the development of a S-100 based Product Specification and the registration of terms in the IHO GI Registry.

The GGC considered outreach and ways to raise the profile of the GEBCO project among the different stakeholder and user communities, including the IHO and the IOC Member States, the maritime and scientific community and the general public. The GGC approved the creation of the new Sub-Committee on Communications, Outreach and Public Engagement (SCOPE) and directed the Chair of the OWG to develop appropriate ToRs. In addition, the GGC requested the Chairs of all Sub-Committees to review their ToRs with a view to achieve better harmonization and consistency. The GGC also requested the Chair OWG to generate a draft communications strategy for consideration at GGC36. The GGC devoted considerable time to discussions on the Seabed 2030 Project. The interim Seabed 2030 Project Director provided a comprehensive presentation on the establishment and activities of the Seabed 2030 Project Team and the regional centres. He highlighted the key personnel involved in the Project Team and the Sponsors. He also presented the initial goals and work packages included in the initial establishment documentation and the overall goal of the project being to complete the GEBCO Grid started in 1903. The GGC reviewed the Year 1 Seabed 2030 Project report and the proposed Year 2 Project Work Plan and both were endorsed after inclusion of a number of amendments and recommendations.

The GGC also reviewed its current financial situation in relation to proposed planned projects. The Committee addressed the budget submissions from its subordinate bodies and approved revised allocations to ensure a contingency balance of 15,000€ was maintained for 2019 to cover emergent items.

The GGC reviewed the state of membership and it was noted that one IHO appointed vacancy needs to be filled. The GGC elected Shin Tani (Japan) and Martin Jakobsson (Sweden) as Chair and vice-Chair respectively for the period 2019-2021.

- **Sub-Committee on Undersea Feature Names (SCUFN)**

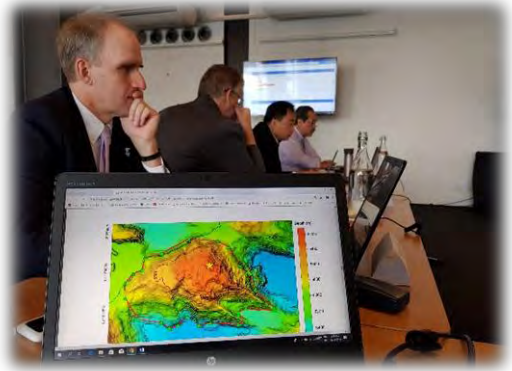
The 31st meeting of the IHO-IOC GEBCO Sub-Committee on Undersea Feature Names (SCUFN) was hosted by the New Zealand Geographic Board, the National Institute of Water and Atmospheric Research (NIWA), GNS Science and Land Information New Zealand (LINZ), in Wellington, New Zealand, from 23 to 27 October 2018.

SCUFN is tasked with the determination of the names of undersea features to appear in the products of the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) project and on international nautical charts. These names, also widely used in scientific publications, are made available in the GEBCO Gazetteer of Undersea Feature Names (www.gebco.net → Data and products → Undersea feature names → view and download). The meeting, chaired by Dr Hans Werner Schenke (IOC representative) from the Alfred Wegener Institute for Polar and Marine Research (AWI – Germany), was attended by 28 participants, which consisted of eight of the 12 SCUFN members (four IOC and four IHO representatives), four of the upcoming SCUFN members (two IOC and two IHO representatives), three members of the SCUFN Project Team on Undersea Feature Names (UFN PT) and 12 observers, including Dr Geoffroy Lamarche, Head of the Seabed 2030 South and West Pacific Centre and Mr Tetsushi Komatsu (IOC Secretariat). Assistant Director Yves Guillam (SCUFN Secretary) represented the IHO Secretariat.

The meeting was opened by Mr Apanui Williams (LINZ), providing a traditional Māori welcome. In addition, welcoming remarks were given by Hon Eugenie Sage, Minister for Land Information, Ms Gill Jolly, Acting-General Manager for Strategy, GNS Science and Mr John Morgan, Chief Executive of NIWA. The representatives from the host organizations welcomed all the participants and stressed that SCUFN's work is very important and strategic in order to support not only the GEBCO maps and other GIS, but also the GEBCO Seabed 2030 project, aiming to develop a new global high-resolution map of the oceans.

The Sub-Committee considered proposals for 281 undersea feature names (a record in SCUFN history!), submitted by various bodies and supporting organizations from Ascension (1), Brazil (5), China (79), Costa Rica (1), Japan (76), Philippines (16), Republic of Korea (3), Republic of Palau (40), New Zealand (15) and USA (45).

While a large number of the names proposed to the Sub Committee were accepted, decisions on some were kept as pending (54 from China in particular) for further consideration for various reasons, including the need for the proposers to take into account the guidelines given in Publication B-6 - *Standardization of Undersea Feature Names (Guidelines, Proposal Form, Terminology)* about the grouping of specific terms in the same categories. Some other proposals were not accepted (44 from NOAA, USA in particular) as they were considered as not meeting the minimum standards.



Working session at the SCUFN-31

In addition to the analysis of naming proposals, the Sub Committee considered several "corporate" issues, including:

- The endorsement of an amendment to the SCUFN Rules of Procedure and the new Edition of B-6 that will be submitted for approval by the GEBCO Guiding Committee at its 35th meeting,
- The development of a repository of typical cases in a "cook book" aiming to help for the consistency of the decision-making process within SCUFN,
- The importance of multilateral consultations between proposers prior to SCUFN meetings when the feature may be located in areas of mutual interests, which are now facilitated by the availability on the SCUFN webpage of a List of Naming Authorities by country,
- The cooperation between Marine Regions, SCUFN and UFN PT to de-conflict naming and positions between different sources and contribute to the UFN data modelling,
- The current and future status of the maintenance and improvement of the GEBCO Gazetteer interface by the National Oceanic and Atmospheric Administration (NOAA) of the United States, in parallel with the development of a prototype on integrated SCUFN web services and database by the Republic of Korea,
- The increasing resources needed to incorporate SCUFN naming decisions into the GEBCO Gazetteer and the fact that this can only be achieved by contracting out some work during the inter-sessional period.



Participants in SCUFN-31, Wellington, New Zealand

SCUFN elected Dr Hyun-Chul Han (Republic of Korea, IOC representative) as Chair and Dr Yasuhiko Ohara (Japan, IHO representative) as Vice-Chair. The Sub Committee also welcomed the offer made by Malaysia to host the next meeting in August 2019.

In his final address Dr Hans Werner Schenke reflected on the accomplishments of SCUFN over the last fifteen years and fondly recalled the former members who provided outstanding support to SCUFN activities. He expressed his hope that the name of Dr Galina Agapova (Geological Institute of the Russian Academy of Sciences), who passed away on 14 August 2018, could be given to a major undersea feature in the future.

- **Encourage the contribution of bathymetric data to the IHO DCDB**

The GEBCO Ocean mapping programme is dependent upon the availability of bathymetric data and undersea feature information. In order to achieve its goals, GEBCO proactively collects, stores and disseminates bathymetric data for the world's oceans. GEBCO has worked towards improving its participation in regional mapping activities and has also appointed representatives to participate in selected RHC meetings.

Traditionally GEBCO has focused on areas deeper than 200 m, however, it is now actively collecting data in shallow water areas to support activities such as coastal zone management and the mitigation of seaborne disasters such as storm surges and tsunami inundation. IHO Member States are encouraged to contribute bathymetric data in shallower coastal areas to support the production of higher resolution gridded data products and to complete the GEBCO grid coverage.

Conduct meetings of the Crowdsourced Bathymetry Working Group (CSBWG)

- **Crowdsourced Bathymetry**

The Crowdsourced Bathymetry Working Group (CSBWG) has been tasked by the Inter-Regional Coordination Committee (IRCC) to develop the IHO publication B-12 that provides guidance on the collection and use of Crowdsourced Bathymetry (CSB) and to investigate ways to increase participation in data gathering activities. The document will provide guidelines and advice on various considerations that should be taken into account when collecting CSB data for inclusion in the global bathymetric data set which is maintained in the IHO Data Centre for Digital Bathymetry (DCDB).

The working group held its 6th meeting at the offices of the National Oceanographic and Atmospheric Administration (NOAA) - National Centers for Environmental Information (NCEI) in Boulder, Colorado, USA from 19 to 21 June 2018. The Chair of the CSBWG, Ms Jennifer Jencks (USA, Director of the DCDB), chaired the meeting which was attended by representatives from four Member States (Canada, Norway, UK and USA), and observers and expert contributors from the World Ocean Council, the NF-GEBCO Seabed 2030 Project, ONE Data Technology Co, Dongseo University and Farsounder INC; Denmark, GMATEK, Sea-ID, ChartWorld/SevenCs and TeamSurv participated remotely for various agenda items and subsequent discussions. Assistant Director David Wyatt (Secretary) represented the IHO Secretariat.

The CSBWG briefly reviewed the final draft version of the B-12 Guidelines which was presented to the IRCC at its 10th meeting in Goa, India, in June 2018; this will be followed by consideration by the IHO Council at its 2nd meeting in October and submitted for adoption by the IHO Member States towards the end of 2018. The participants received presentations updating activities on a number of ongoing projects related to CSB.



The participants of the 6th meeting of the CSBWG

The participants spent time considering the future tasks which had been approved by IRCC10 as a result of the adoption of the revisions to the ToRs of the CSBWG. In particular the discussions focused on Member States' data gathering policies and future outreach strategies, for which five headline topics (need, how, what, incentives and benefits) were identified to increase contributions and participation, these will be further developed at the next meeting.

The current chair, Ms Jennifer Jencks (USA), and vice-chair, M Serge Gosselin (Canada), were unanimously re-elected in the delayed elections for the period 2018-2020.

Seabed 2030 Project

Initiated at the Forum for Future Ocean Floor Mapping by Mr Sasakawa, Chairman of the Nippon Foundation, in Monaco in June 2016, the Nippon Foundation-GEBCO Seabed 2030 project commenced its operational phase at the beginning of February 2018. The project stood up the four regional centres (North Pacific-Arctic Oceans, South and West Pacific Ocean, Atlantic-Indian Oceans, and Southern Ocean) and the Global Center based at the British Oceanographic Data Centre (BODC) of the National Oceanographic Centre (NOC) in the United Kingdom (UK). A number of regional meetings have been held with a focus on data discovery, making data publically available and gap assessment. A reappraisal analysis of the data coverage of the GEBCO 15 arc" grid, based on current technology variable resolution bands, indicates that 6.8% of the current GEBCO grid has been completed. The Seabed 2030 project has a goal of completing the GEBCO grid by 2030, such that each grid square will contain at least one depth sounding. A new GEBCO grid is expected to be released in early 2019, which will contain significantly more data, particularly in the Arctic and Antarctic regions, where the coverage has increased to approximately 18%.

Work continues on making additional datasets available and encouraging the IHO Crowdsourced Bathymetry (CSB) initiative to help increase the publically available bathymetric data. The Seabed 2030 regional and global centers continue to work closely with the CSBWG.

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 publically available and used for the production of improved and more comprehensive bathymetric maps and grids, particularly in support of the GEBCO Ocean Mapping Programme.

The DCDB has been working with the private sector to provide a facility for mariners to log bathymetry (position, depth, and time) data using their Electronic Chart Systems, and forward this data to DCDB.

- **B-6 - Standardization of undersea feature names**

Edition 4.1.0 of Publication B-6 on the Standardization of Undersea Feature Names entered into force in September 2013. It provides guidelines for naming features, a naming proposal form and a list of generic terms with definitions. A draft new Edition of B-6 was developed through contract support to include the outcome of the work done by the SCUFN Generic Term Sub-group and some editorial corrections. In 2018, SCUFN submitted the draft Edition 4.2.0 of Publication B-6 to the endorsement of the GEBCO Guiding Committee.

In order to address the need to harmonize under the S-100 framework the undersea feature names definitions that already exist in B-6, the Feature Concept Dictionary of the IHO GI Registry, the S-57 Feature Catalogue and in the IHO Hydrographic Dictionary S-32, the SCUFN established the Undersea Feature Names Project Team (UFNPT) in 2017. At the SCUFN-31 meeting, the new Chair (Ms Anna Hendi, Canada) reported on some analysis carried out since the last meeting.

- **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)), was maintained by the IHO Secretariat through contract support. Some maintenance issues and the requirements for possible upgrades were further investigated and fixed prior to the SCUFN-31 meeting.

- **B-9 - GEBCO Digital Atlas**

IHO Publication B-9 - GEBCO Digital Atlas (GDA) is a two-volume DVD and CDROM set which contains: the GEBCO global bathymetric grid at 30 arc" 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. The GEBCO grids are generated by combining quality-controlled ship depth soundings with depth interpolations between sounding points guided by satellite derived gravity data. The grid is available for download from the GEBCO website. No update was issued in 2018, although the proposed release of the GEBCO 2018 grid at 15 arc" was delayed and is now planned for release in early 2019 as the GEBCO 2019 grid, which will be an enhanced product based on the unpublished 30 arc" GEBCO 2017 grid.

- **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.

The Cook Book was first released as IHO Publication B-11 in April 2012 and as an IOC guide document in October 2012. A new chapter, Chapter 16 - *Finding Gaps to Map*, was added in September 2018. The chapter has three sections - *Google Earth Pro and SRTM30_PLUS Overlays*, *Assessing Gaps via Bathymetric Sounding Density* and *A GIS Approach to Prioritizing the Gaps to Map*.

Contribute to outreach and education about ocean mapping

GEBCO continues to promote the importance of bathymetric data to the international community.

The GEBCO Outreach Working Group considered how to improve the GEBCO website in order to make ocean mapping more interesting / enticing for scholars and students. The WG discussed what content could be added to make it a valuable resource for student projects and considered how this could be harmonized with Seabed 2030 Project developments. It was highlighted that the communications strategy was the overall priority for GEBCO and it was recommended that a short strategy document be developed to provide guidance of how to take forward the identified tasks, the

immediate priorities of which were listed as: branding clarity, web page design, web page implementation, social media strategy/implementation/engagement and outreach strategy.

In addition, the IHO-IOC GEBCO Cook Book continues to be used as an important educational resource for ocean mapping students.

GEBCO Website kept current and updated regularly

The GEBCO website provides access to information about GEBCO's products, services and activities. The website can be viewed at <http://www.gebco.net>.

GEBCO bathymetric maps and data sets can be downloaded from the website. These continue to be accessed by a wide user community that includes commercial and academic sectors and the general public.

The GEBCO website also provides access to the world grid via a Web Map Service (WMS). The GEBCO's website has been maintained and updated on behalf of GEBCO by the British Oceanographic Data Centre (BODC) since July 2008. The GEBCO website underwent a complete revamp in 2018, the result being a much more modern and refreshed appearance with improved links to the relevant partner websites of the IHO, IOC, DCDB and Seabed 2030.

Marine Spatial Data Infrastructures

This element addresses the developments related to the hydrographic component of Spatial Data Infrastructures (SDI), the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate. Thirty-three representatives from 36 Member States and thirteen Expert Contributors participated in this activity during the period of this report. The IRCC strongly encouraged RHCs to promote MSDI and to explore the potential of the MSDIs.

Conduct meetings of the Marine Spatial Data Infrastructures Working Group (MSDIWG)

The 9th meeting of the MSDIWG took place in Niteroi (Rio de Janeiro), Brazil, hosted by the Brazilian Hydrographic Service (DHN), from 30 January to 1 February, preceded on 29 January by a MSDI Open Forum and followed on 2 February by a meeting of the Open Geospatial Consortium (OGC) Marine Domain Working Group (Marine DWG). The meeting was chaired by Mr Jens Peter Hartmann (Denmark). Sixteen delegates from eleven Member States (Brazil, Denmark, Germany, Indonesia, Italy, Malaysia, Netherlands, New Zealand, Republic of Korea, United Kingdom and United States) and ten observers and expert contributors from the OGC, International Cable Protection Committee (ICPC), Teledyne Caris, ESRI, OceanWise and AllforLand attended the meeting. Assistant Director Alberto Costa Neves represented the IHO Secretariat.



Participants to the MSDIWG 9 meeting.

The meeting reviewed its Work Plan 2017-2020 in view of the outcomes of the Assembly, the Council and the IRCC meetings and of the changes in SDI around the world. Participants considered the development of the Conceptual Study by OGC, the adoption of the OGC Discrete Global Grid System (DGGS), the matters related to the distribution and licensing of data, the roles of the RENCs for licensing data for non-navigational purposes and the roles of a MSDI in sharing data. The meeting then considered the best ways to help Member States and Regional Hydrographic Commissions (RHCs) to further develop their MSDIs and the possibilities of supporting the establishment of the UN-GGIM Working Group on Marine Geospatial Information.

Participants considered how to progress the development of Edition 2.0.0 of IHO Publication C-17 - *Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices* in order to keep it up to date and relevant. The meeting was informed on the status of the OGC Marine DWG concept study for MSDI.

Member States representatives informed the meeting on the developments related to MSDI pilot projects intended to demonstrate the feasibility of a national MSDI, how best to capture consistent metadata, data formats and visualization, the development of applications that support different users, the organization of a consistent policy and governance framework and the development of national geoportals and web services. Most participants highlighted an increase in awareness of the value of geospatial data and the trend towards data-centric services, rather than focusing on products and the need to educate national agencies on how best to organize their databases.

The meeting was informed on the development of regional MSDIs, and in particular the one covering the Arctic region. This reflected the contribution of Member States to the establishment of a regional MSDI using open data and standards for interoperability of dependable geospatial data for the benefit of the wider community. Participants were informed about the Ecological Marine Units (EMU), smart telemetry as part of an MSDI, the use of variable resolution surfaces for improving efficiency when handling big data, and other developments in the Baltic and North Seas, EMODnet, and the marine cadaster.



The participants to the MSDI Open Forum.

- **MSDI Open Forum**

The MSDI Open Forum gathered experts from the region to explore developments in the interconnectivity of tide and weather data, in defense SDI, cyber-physical relationship, the support to the blue economy, the strategic aspects of a SDI in economic projects and the perspectives of big data.



The participants to the OGC Marine DWG meeting.

- **OGC Marine DWG Meeting**

OGC members considered the concept study to establish the framework for future development of MSDI. This concept study could be followed by a pilot study if funds are made available. The meeting was also briefed on the S-121 progress and Pilot Study, the perspectives with changing landscape for stakeholders, among other aspects of the broad marine community.

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

- **IBSC Annual Meeting**

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). The IBSC is responsible to promote, develop and maintain international standards of competence for hydrographic surveyors and nautical cartographers, to maintain publications and documents resulting from the tasks carried out by the Board, to review training and education programmes seeking recognition and to conduct onsite visits to institutions holding recognized programmes.

The 41st meeting of the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) was held at Institut Teknologi Bandung (ITB) campus in Bandung, Indonesia, from 16 to 27 April, hosted by ITB. The meeting was attended by nine of the ten Members of the Board. Assistant Director Alberto Costa Neves (IBSC Secretary) represented the IHO Secretariat.



Board Members at the welcome ceremony for the IBSC41.

The Board reviewed and recognized 13 programmes for hydrographic surveyors (six at Category "A" and seven at Category "B", including six new programmes) at its annual meeting. There are currently 60 recognized programmes and two schemes of individual recognition from 32 countries around the world.

The Board also reviewed progress made since the last meeting and was able to progress the maintenance of the IHO Publications S-5A and S-8A Standards of Competence for Category "A" Hydrographic Surveyors and Category "A" Nautical Cartographers.

- **IBSC ad hoc Meeting**

The FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) held an ad hoc meeting in Singapore from 5 to 9 November, hosted by the Maritime and Port Authority of Singapore. The meeting was chaired by Mr Adam Greenland (New Zealand) and attended by seven of its Members. The IHO Secretariat was represented by Assistant Director Alberto Costa Neves (IBSC Secretary).

The outcome of IRCC10 and ways of strengthening the engagement with stakeholders were considered. The Board confirmed the "right first time" concept and started the development of frequently asked questions, a checklist for the Secretary to validate the submission for completeness and compliance and a template for the letter of invitation for submissions providing the initial guidance for institutions. The Board also established a lifecycle and timeline for submissions with the relevant templates and information workflow to help institutions to get it "right first time".

During the meeting, the Board reviewed the Guidelines for the Implementation of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, a draft that will be considered at the next meeting (IBSC42). The Board considered mechanisms and resources for the update of C-6 and C-47. Actions for communication and branding were considered during the meeting, including the publication of a flyer, preparation of a banner, participation in relevant events, preparation of articles and the use of social media. The meeting also progressed with the design of a geographical layer displaying all the IBSC Recognized Programmes.

Requests and communications from institutions holding recognized programmes were also considered by the Board. The meeting agreed on its participation in a Stakeholders' Seminar that will be held in Genoa, Italy, on 27 and 28 May 2019, including the potential content and presenters, representatives from Academia, Government and Industry, and focusing on the "right first time" principle and the experiences gained implementing the new standards framework.

The meeting finalized the intersessional review of programmes that were given conditional recognition at IBSC41. Letters informing the submitting organizations were prepared during the meeting. The 2018 review process equaled the 2016 number of 13 programmes recognized, from which six are new programmes.



IBSC Members with the Hydrographer of Singapore, Dr Parry Oei

Provide guidance to training institutions

The IHO Secretariat continuously provided training institutions and other inquirers with guidance regarding the recognition and provision of training and education. This most often occurred as a result of the preparation for the recognition review processes for the IBSC, and during the preparation of CB projects, as well as during seminars and RHC meetings.

Maintain IBSC Publications (C-6, C-47, S-5A/B and S-8A/B)

The IBSC continued the maintenance of the Standards of Competence and issued Edition 1.0.2 of S-5A - *Standards of Competence for Category "A" Hydrographic Surveyors* and Edition 1.0.1 of S-8A - *Standards of Competence for Category "A" Nautical Cartographers* in 2018. The revision process continued during the year by correspondence and through one ad hoc meeting in Singapore. The IBSC established the "Right first time" principle and a lot of effort was devoted to developing templates, frequently asked questions and workflows to support submitting institutions.

New and Revised IHO Publications

The following new IHO publications or revised editions were issued during 2018 and are available from the IHO website.

DATE	Announced Via CL	TITLE
02/02	11	S-11 - Part A – Adoption of revision 3.1.0 of IHO Publications S-11 Part A: <i>Guidance for the preparation and Maintenance of International (INT) Chart and ENC schemes</i>
02/02	12	S-66 – Adoption of revision 1.1.0 of IHO Publication S-66: <i>Facts about Electronic Charts and Carriage requirements.</i>
02/02	13	S-57 – Adoption of revision 4.1.0 of IHO Publication S-57, Appendix B.1, Annex A – <i>Use of the object catalogue for ENC.</i>
13/02	16	C-17 – Adoption of Edition 2.0.0 of the IHO Publication C-17: <i>Spatial Data Infrastructures “The Marine Dimension” – Guidance for Hydrographic Offices.</i>
14/02	18	B-7 – Adoption of the withdrawal of IHO Publication: <i>GEBCO Guidelines</i>
16/07	41	P-7 – IHO Publication: <i>Annual Report of the IHO for 2017.</i>
03/10	47	S-58 – Adoption of Edition 6.1.0 of IHO Publication S-58: <i>ENC Validation Checks.</i>
04/10	49	S-4 – Adoption of Edition 4.8.0 of IHO Publication S-4: <i>Chart specifications of the IHO.</i>
17/12	60	S-100 – Adoption of Edition 4.0.0 of IHO Publication S-100: <i>Universal Hydrographic Data Model.</i>

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

Status Report on Performance Monitoring (2018)

Background

The introduction of IHO performance indicators was firstly decided in 2009 by the 4th Extraordinary International Hydrographic Conference (EIHC-4), together with the adoption of the IHO Strategic Plan. The revised performance indicators was endorsed in 2017 by the 1st IHO Assembly (A-1), together with the adoption of the new IHO Strategic Plan-2017, which are provided at Table 1.

The implementation of performance indicators is described in the IHO Strategic Plan as follows:

The implementation of Performance Indicators is based on a two level approach. *Strategic* level PIs are established by the Assembly as a *top down* process, and *working* level PIs are established by the HSSC and IRCC and their subordinate bodies as a *bottom up* process:

- **Strategic Level PIs (SPIs):** a small number of PIs associated with the objectives of the IHO (1 or 2 SPIs per objective), to be agreed by the Assembly and managed by the Secretary General and the Council;
- **Working Level PIs (WPIs):** PIs associated with the Strategic Directions to be agreed and managed by the HSSC and IRCC and their subsidiary organs.

In this perspective cross-references between the objectives, the Strategic Directions and the PIs are arranged in the following way:

Objectives => Strategic PIs => Strategic Directions => responsible organs => working level PIs

NOTE: The 1st IHO Assembly (A-1) tasked the Council to conduct a comprehensive review of the Strategic Plan and to provide a draft revised Plan, as appropriate, in time for the consideration of the 2nd ordinary session of the Assembly (A-2). The Council was empowered to establish a working group for this discrete purpose. Accordingly, the Council at its first meeting in October 2017 decided to establish the Strategic Plan Review Working Group (SPRWG) which will also review the current Performance Indicators indicated at Table 1, together with Strategic Plan. The Strategic Plan Review Working Group (SPRWG) continued its work throughout the year 2018 and provided an interim report to the second IHO Council in London accordingly. In this respect, **the implementation of Performance Indicators are pending status and subject to outcome of the SPRWG.**

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Table 1

STRATEGIC PERFORMANCE INDICATORS
(Pending status and subject to outcome of the SPRWG)

Objective	Strategic PIs	Reporting Period	Related Strategic Directions
a. To promote the use of hydrography for the safety of navigation and all other marine purposes and to raise global awareness of the importance of hydrography.	SPI 1 Number and percentage of Coastal States providing ENC coverage directly or through an agreement with a third party. (Previous year figures in brackets)	Yearly	1.5; 2.5; 3.1; 3.2; 3.3; 3.4 and
b. To improve global coverage, availability and quality of hydrographic data, information, products and services and to facilitate access to such data, information, products and services.	SPI 2 Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008. SPI 3 Percentage of Coastal States which provide hydrographic services, directly or through an agreement with a third party, categorized by CB phases, as defined by the IHO Capacity Building Strategy.	Quarterly Yearly	2.1; and 4.2
c. To improve global hydrographic capability, capacity, training, science and techniques.	SPI 4 Percentage of “acceptable” CB requests which are planned. (= <i>Percentage of submitted CB requests that were approved</i>) SPI 5 Percentage of planned CB requests which are subsequently delivered	Yearly	1.3; 2.3; 2.4; 3.4; and 4.4

Objective	Strategic PIs	Reporting Period	Related Strategic Directions
d. To establish and enhance the development of international standards for hydrographic data, information, products, services and techniques and to achieve the greatest possible uniformity in the use of these standards.	SPI 6 Number of standards issued (including new editions), per category: - hydrographic standards to enhance safety of navigation at sea, - protection of the marine environment, - maritime security, - economic development.	Yearly	1.3; and 1.4
e. To give authoritative and timely guidance on all hydrographic matters to States and international organizations.	SPI 7 Number of potential new IHO MS (indicated by the start of the application process) relative to the number of “non-IHO” IMO MS.	Quarterly	1.1; 1.2; 2.6; and 4.1
f. To facilitate coordination of hydrographic activities among the Member States.	SPI 8 Increase in participation / membership in RHCs.	Yearly	2.1; and 4.3
g. To enhance cooperation on hydrographic activities among States on a regional basis.	SPI 9 Percentage of available / agreed ENC [production] schemes.	Yearly	2.2; 2.3; and 4.3

List of IHO Secretariat Travel (2018)

DATE	NAME	MEETING	DESTINATION	COUNTRY
JANUARY				
11 12	IPTES	Chart Project Coordination Meeting	Taunton	UNITED KINGDOM
22 02	COSTA NEVES	MSDIWG-9	Santo Domingo	DOMINICAN REPUBLIC
24 26	KAMPFER	E-navigation underway	Copenhagen	DENMARK
FEBRUARY				
05 07	COSTA NEVES	IALA – IHO Safety of Navigation	Marrakech	MOROCCO
06 07	KAMPFER	IENWG 7	Paris	FRANCE
19 23	KAMPFER	SWPHC 15	Nadi	FIJI
19 23	COSTA NEVES	SWPHC 15	Nadi	FIJI
19 01	WYATT	NCSR 5 & DRWG 16	London	UNITED KINGDOM
20 21	PHARAOH	NCSR 5	London	UNITED KINGDOM
27 28	GUILLAM	IENWG 8	Brussels	BELGIUM
MARCH				
06 08	KAMPFER	EAHC SC 5	Xiamen	CHINA
12 16	KAMPFER	NIPWG 5	Genoa	ITALY
12 16	GUILLAM	NIPWG 5	Genoa	ITALY
12 16	WOOTTON	NIPWG 5	Genoa	ITALY
20 22	IPTES	WENDWG 8	Buenos Aires	ARGENTINA
20 22	GUILLAM	WENDWG 8	Buenos Aires	ARGENTINA
26 28	KAMPFER	USCHC 41	Victoria	CANADA
27 28	JONAS	NSHC 33	Oostende	BELGIUM
APRIL				
03 08	KAMPFER	SWAtHC 12	Montevideo	URUGUAY
03 08	COSTA NEVES	SWAtHC 12	Montevideo	URUGUAY
05	IPTES	Chart Project final selection	London	UNITED KINGDOM
09 12	IPTES	NIOHC 18	Goa	INDIA
09 12	WYATT	NIOHC 18	Goa	INDIA
10 13	PHARAOH	S-100 WG 3	Singapore	SINGAPORE
10 13	WOOTTON	S-100 WG 3	Singapore	SINGAPORE
14 29	COSTA NEVES	IBSC 41	Bandung	INDONESIA
16 20	WYATT	TWCWG 3	Valparaiso	CHILE
MAY				
03 04	IPTES	BASWG 14	Constanta	ROMANIA
06 11	IPTES	FIG 2018	Istanbul	TURKEY
30 01	COSTA NEVES	CBSC 16	Goa	INDIA
14 17	KAMPFER	HSSC 10	Rostock	GERMANY
14 17	GUILLAM	HSSC 10	Rostock	GERMANY
14 17	PHARAOH	HSSC 10	Rostock	GERMANY
16 25	WYATT	MSC 99	London	UNITED KINGDOM
28 02	KAMPFER	IALA 19 th Conference	Seoul	REP KOREA
28 01	PHARAOH	ISO/ TC211	Copenhagen	DENMARK
31	JONAS	IHO – IOC meeting	Paris	FRANCE

Annex C

JUNE

04 06	IPTES	IRCC 10	Goa	INDIA
04 06	COSTA NEVES	IRCC 10	Goa	INDIA
06 08	JONAS	SDB Conference Keynote speaker	Munich	GERMANY
18 20	COSTA NEVES	TC 68	London	UNITED KINGDOM
19 21	WYATT	CSBWG 6	Boulder	USA
25 26	IPTES	WHD Celebrations	Tehran	IR IRAN
26 28	JONAS	HCA 15	Niteroi	BRAZIL
26 28	GUILLAM	HCA 15	Niteroi	BRAZIL

JULY

03 06	IPTES	IOC Executive Council 51	Paris	FRANCE
03 06	WYATT	HSPT 2	Niteroi	BRAZIL
04	JONAS	Fraunhofer IPM	Freiburg	GERMANY
10	JONAS	SEABED 2030 meeting	London	UNITED KINGDOM
10	WYATT	SEABED 2030 meeting	London	UNITED KINGDOM
17 18	KAMPFER	20 th IC ENC SC	Bristol	UNITED KINGDOM

AUGUST

01 03	JONAS	UNGGIM	New York	USA
27 30	KAMPFER	SAIHC 15	Mahe	Seychelles
28 29	JONAS	BSHC 23	Aalborg	DENMARK

SEPTEMBER

03 07	WYATT	IMO-ITU EG 14	London	UNITED KINGDOM
10	JONAS	C-2 Prep Meeting	Svalbard	NORWAY
10	GUILLAM	C-2 Prep Meeting	Svalbard	NORWAY
11 13	JONAS	ARHC 8	Svalbard	NORWAY
11 13	GUILLAM	ARHC 8	Svalbard	NORWAY
10 11	IPTES	Joint CB Meeting	London	UNITED KINGDOM
10 11	COSTA NEVES	Joint CB Meeting	London	UNITED KINGDOM
12	IPTES	Chart Program Liaison visit	Taunton	UNITED KINGDOM
12	COSTA NEVES	Chart Program Liaison visit	Taunton	UNITED KINGDOM
17 20	PHARAOH	S-129 & S-100 TSM Meeting	Busan	REP of KOREA
24	KAMPFER	IALA IHO Technical liaison meeting	Paris	FRANCE
24	PHARAOH	IALA IHO Technical liaison meeting	Paris	FRANCE
24 26	KAMPFER	High Level Visit	Luanda	ANGOLA

OCTOBER

09 11	JONAS	Council Meeting 2	London	UNITED KINGDOM
09 11	KAMPFER	Council Meeting 2	London	UNITED KINGDOM
09 11	IPTES	Council Meeting 2	London	UNITED KINGDOM
09 11	GUILLAM	Council Meeting 2	London	UNITED KINGDOM
09 11	FONTANILI	Council Meeting 2	London	UNITED KINGDOM
15 19	KAMPFER	EAtHC 15	Lagos	NIGERIA
15 19	COSTA NEVES	EAtHC 15	Lagos	NIGERIA
22 25	WYATT	ABLOS BM 25	Doha	QATAR
22 27	GUILLAM	SCUFN 31	Wellington	NEW ZEALAND
29 30	IPTES	Our Ocean Conference 2018	Bali	INDONESIA
29 02	KAMPFER	HGDM 2	London	UNITED KINGDOM
29 02	PHARAOH	HGDM 2	London	UNITED KINGDOM

Annex C

NOVEMBER

06 09	KAMPFER	NCWG 4	The Hague	NETHERLANDS
06 09	GUILLAM	NCWG 4	The Hague	NETHERLANDS
12 16	PHARAOH	ISO/TC211	Wuhan	CHINA
12 16	WYATT	GEBCO 35	Canberra	AUSTRALIA
14 16	IPTES	GEBCO Symposium and GC 35	Canberra	AUSTRALIA
19 21	JONAS	UNWGIC	Deqing	CHINA
20 22	GUILLAM	IENWG 9	Brussels	BELGIUM
26 01	IPTES	MACHC 19	Cartagena	COLOMBIA
26 01	COSTA NEVES	MACHC 19	Cartagena	COLOMBIA

DECEMBER

03 04	IPTES	Visit Panama Maritime Authority	Panama City	PANAMA
03 04	COSTA NEVES	Visit Panama Maritime Authority	Panama City	PANAMA
03 07	WYATT	MSC 100	London	UNITED KINGDOM
10	JONAS	FAMOS Project Conference	Brussels	BELGIUM

Responsibilities of the Secretary-General and Directors in 2018

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;
- Baltic Sea Hydrographic Commission;
- East Asia Hydrographic Commission;
- Nordic Hydrographic Commission;
- North Sea Hydrographic Commission;

and the following Commission:

- Hydrographic Commission on Antarctica.

Abri KAMPFER – Director (Technical Programme)

- HSSC and subordinate bodies;
- Relations with ABLOS, IALA, ICA, IEC, ISO, and other relevant organizations, concerning the HSSC programme;
- Technical Support services;
- Stakeholder Liaison;

and the following Regional Hydrographic Commissions:

- Eastern Atlantic Hydrographic Commission;
- Southern African and Islands Hydrographic Commission;
- South-East Pacific Regional Hydrographic Commission;
- South-West Pacific Hydrographic Commission;
- US Canada Hydrographic Commission.

Mustafa IPTES - Director (Inter-Regional Coordination and Support Programme)

- IRCC, and subordinate bodies, including IBSC and GEBCO;
- Relations with FIG, 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;
- North Indian Ocean Hydrographic Commission;
- ROPME Sea Area Hydrographic Commission;
- South West Atlantic Hydrographic Commission.

Responsibilities of the Staff of the IHO Secretariat in 2018

Managerial Staff

Mr A. PEDRASSANI COSTA NEVES	(Brazil)	ADCC	Cooperation and Capacity Building
Mr Y. GUILLAM	(France)	ADCS	Charting and Services
Mr A. PHARAOH	(South Africa)	ADDT	Digital Technology
Mr D. WYATT	(United Kingdom)	ADSO	Surveying and Operations
Ms G. FAUCHOIS	(France)	MFA	Manager, Finance and Administration

Translators

Ms I. ROSSI		HFrTr	Head French Translator
Ms P. BRIEDA SAUVEUR		FrTr	French Translator
Ms M.P. MURO		SpTr	Spanish Translator

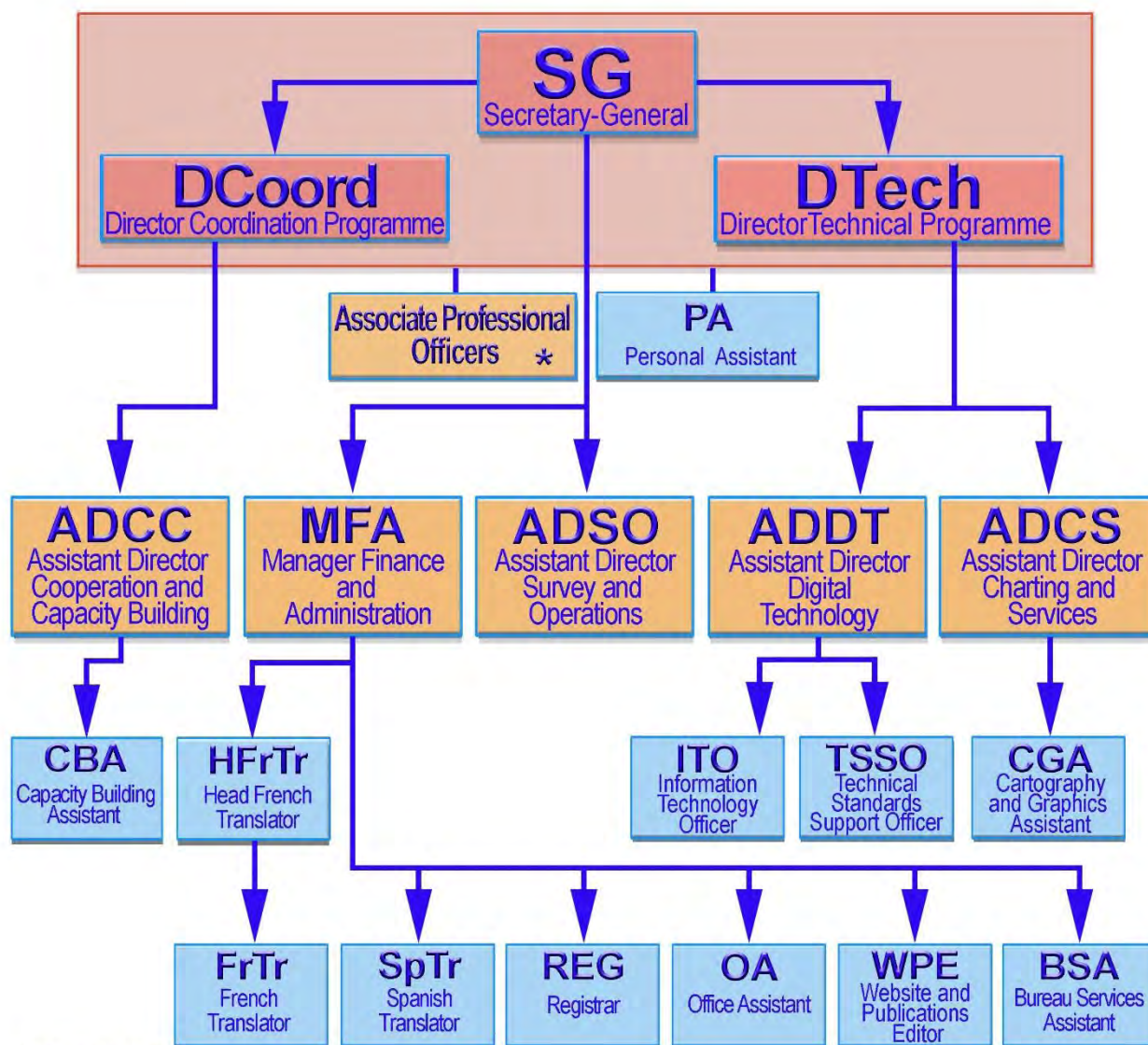
Technical, Administrative and Service Staff

Ms I. BELMONTE		WPE	Website and Publications Editor
Ms S. BRUNEL		CBA	Capacity Building Assistant
Ms L. CHAVAGNAS		OA	Office Assistant
Mr D. COSTIN		ITO	Information Technology Officer
Ms C. FONTANILI		PA	Personal Assistant
Mr A. MAACHE		BSA	Bureau Support Assistant
Mr D. MENINI		CGA	Cartography and Graphics Assistant
Ms M. MOLLET		REG	Registrar, Librarian
Mr J. WOOTTON		TSSO	Technical Standards Support Officer

Associate Professional Officers

Mr. J. KIM (until February 2018)	(Republic of Korea)	Capacity Building, Assistant to Council-1 meeting
Dr. H.Y. PARK (from September 2018)	(Republic of Korea)	Standards Support
Dr K. KANEDA (until March 2018)	(Japan)	GIS and IT Projects
N. NAGASAKA (from April 2018)	(Japan)	GIS and IT Projects
Mr A. ASTE (until December 2018)	(Peru)	Council Managing Assistant
Ms K. CROSSETT (from May 2018)	(USA)	Social Media Content and Provision Management

2018
Organizational Diagram of the IHO Secretariat



* Seconded staff

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	<i>Diretoria de Hidrografia e Navegação</i>
DQWG	Data Quality Working Group

E

EAHC	East Asia Hydrographic Commission
EaHC	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
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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

P-7

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 METeological 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
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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	<i>Service hydrographique et océanographique de la marine</i>
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 2018
together with the external auditor report

Foreword to the Finance Report for 2018

Introduction

1.The Secretary General is pleased to present the statements of the finances and accounts of the IHO for the 2018 fiscal year in accordance with the Financial Regulations of the IHO.

Result for the fiscal year 2018

2.The audited financial statements indicate a positive result for 2018 of 213,609.25€ (see Table 10 (English) and 11 (French)). This result comprises a surplus of 145k€ from the budget implementation, a net extraordinary income of 23k€ and the inclusion of depreciable assets of 33k€.

Budget implementation

3.The above noted surplus of 145k€ resulting from conservative budget implementation comprises of an additional income of 53k€ and an underspend of 83k€ in the approved budget.

4.The main sources of additional income are:

- a. Contribution from Member States: Seychelles, Bulgaria.
- b. The reinstatement of a suspended Member State: Dominican Republic.
- c. A better return on investments than was anticipated in the approved budget.

5.The underspend (83k€) is due mainly to the following reasons:

- a. **IT and building maintenance.** Following negotiations with service providers, savings were achieved in IT and building maintenance, which resulted in less expenditure than was allocated in the budget.
- b. **Travel.** Travel expenses were less than anticipated in the budget because several planned high level visits and technical visits could not be carried out in some countries and changes in venue for some meetings and careful choices in travel arrangements resulted in a reduction of some planned costs.

Extraordinary income and expenditure

6.The extraordinary income (23k€ - see table 3) is composed of the payment of contribution arrears by several Member States and the administration fee provided by donors for some CBF activities.

Supplementary remarks

Outstanding financial contributions from some Member States

7.When assessing the positive balance sheet result it should be noted that several Member States failed to pay their annual financial contributions in the course of the fiscal year 2018. At the end of the year, 10 Member States had not paid fully their annual contributions. This amounted to 184k€, which is, in effect, income for 2018 yet to be received and represents 5.8% of the total value of the expected Member States' contributions. The 5.8% receivables of 2018 compare with 11% for 2017 and 10% for the 5-year average. When these debts are eventually cleared, they will be reflected in the relevant yearly accounts as extraordinary income. Accordingly, and has been the practice in all previous years, the outstanding financial contributions are not being subtracted from the effective budget surplus considered in paragraph 18.

The Secretariat's collective medical insurance provider, GAN Insurance, has cancelled the contract as of 31 December 2018, because it was not profitable for the provider for the two consecutive years 2017 and 2018. With the clear intention to re-establish a lasting insurance

shield, the Secretariat negotiated with different insurance companies of solid reputation on a follow-up contract which guarantees comparable conditions to the previous arrangements. These negotiations have been successful for reimbursement claims for the active staff members and a new contract with GENERALI Assurances took effect in April 2019.

8.GENERALI Assurances also offered a new contract to cover claims for medical expenses of retired staff. The proposed premiums were substantially higher than under the previous contract and negotiations were therefore extended. After consultation with the Finance Committee Officers including the Council Chair it is proposed now to accept the contract for retired staff members taking effect by 1st June 2019. The additional costs, however summing up then to altogether 265k€ cannot be covered from the running budget which amounts to 156k€ for medical provisions only. It is therefore proposed to apply an amount of 110k€ out of the 2018 surplus to cover this unplanned financial burden.

Internal Retirement Fund

9.The Internal Retirement Fund (IRF) supports the IHO's long-established independent retirement plan (pension scheme) for a number of the longer-serving and retired members of the Secretariat staff. The pensions of ten retired members and one current member 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 2018 to meet the estimated liabilities of the IRF over its lifetime, decreased by 375,627€ to 3,325,308€. This is due to the death of one retiree and a better return on investment in 2018.

10.The estimated liability on the IRF is calculated and adjusted every year using an actuarial assessment. It is dependent on several factors that are very difficult to predict including the estimate of long-term interest rates, and the longevity of the pensioners in the relatively small cohort of beneficiaries of the pension scheme.

11.An ongoing allocation to the IRF of 70k€ per year is included in the proposed budget for the triennial period 2018-2020.

Capacity Building Fund

12.In 2018 the Capacity Building Fund (CBF) provided direct support to training activities as well as supporting the attendance of participants at various technical workshops and seminars. The fund received 374k€ in external support from the Republic of Korea. Taking into account the budgeted activities, 44% of the technical visits, and 75% of the other CB assignments (seminars, workshops, short and long courses) in the Capacity Building Work Programme were completed in 2018.

Other Funds

13.Relocation Fund. The Relocation Fund is in a healthy position 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 few years without any need to adjust the budget forecast.

14.Conference Fund. The contribution to the Conference Fund from the annual budget will cover the expenses of the triennial Assembly. The costs for the annual Council are allocated separately from this Fund in the operational budget to an annual amount of 20k€ for 2018 to 2020. The Secretariat will propose to rename the Conference Fund into the Assembly Fund prior to Assembly 2 in 2020.

15.Special Projects Fund. At the end of the year, the positive balance of the Special Projects Fund was 42,783€. In 2018 the principal use of the Fund was for contract support for S-100 development activities and to cover the travel expenses of members of the International Board of Standards of Competence (IBSC) responsible for developing a new Standards framework to separate the competency requirements of the Cat A and Cat B syllabi. Some expenses made for the celebration of the IHO centenary were covered from this Fund too.

16. IBSC Fund. 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 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 the fund on 1 January 2018 was 37,163.87€. An amount of 49,696.03€ was received in fees from institutions seeking recognition by IBSC, and 33,502.86€ was spent on travel expenses for the Board members to attend meetings. The Fund is in a healthy financial situation, and is self-sufficient, with a positive balance at the end of 2018 of 63,357.04€.

17. GEBCO Fund. 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 SEABED 2030 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 to administer the project fund as donated by the Nippon Foundation. In 2018 the Secretariat received €1,077,678 for the administration of the second year of the SEABED 2030 project from the Nippon Foundation. At the end of 2017, a balance of €821,317 remained in the SEABED 2030 account. In 2018, €1,509,613 were spent for reimbursement of salaries, operational costs and travel expenses of the operational phase. An amount of €389,382 remains for payment of the forthcoming activities of global and regional data centers forming the infrastructural part of the project.

Proposal for allocation of the 2018 budget surplus

18. As indicated above and reported in the audited financial statements, the effective budget surplus for 2018 was 145k€.

19. Special projects are in particular crucial for the technical development the core S-100 based Product Specifications, the installation of the required infrastructure of the S-100 environment and GIS services maintained by the Secretariat. A smaller portion is allocated to cover the preparatory phase of the 1st Centenary celebrations stretching over a period from 2019 to 2021.

20. Proposal. The Secretary-General proposes that the budget surplus for 2018 of 145k€ be distributed as follows:

- a. 110k€ to cover medical expenses of retired staff
- b. 35k€ to the Special Projects Fund.

Conclusion

21. The Secretary-General is ever mindful of the difficulty in forecasting the income of the Organization, due to non or late payment of financial contributions by Member States and other factors, but by continuing to take a conservative approach to the budget and finances of the Organization, he remains confident in the financial situation of the IHO and its ability to meet all its current obligations.

Yours sincerely,



Dr Mathias JONAS
Secretary-General

INTERNATIONAL PRESENTATION

*PRESENTATION
INTERNATIONALE*

Table 1

International Hydrographic Organization - Organisation Hydrographique Internationale
Comparative Balance Sheet - Bilans comparés
as of 31 December 2018 - au 31 décembre 2018
(expressed in thousands of Euros - exprimé en milliers d'Euros)

	See notes	2018	2017
Immobilisations - Fixed assets			
<i>Valeur nette des immobilisations</i> - Net Tangible assets	4	85	80
Actif circulant - Current assets			
<i>Débiteurs</i> - Debtors	5	427	577
<i>Trésorerie disponible</i>			
Cash at bank and in hand :	10	6 627	6 666
		<u>7 054</u>	<u>7 244</u>
<i>Créditeurs - montants à moins d'1 an</i>			
Creditors - amounts falling due within 1 year	6	-1 813	-1 909
		<u>5 241</u>	<u>5 334</u>
Fonds de roulement - Working capital			
<i>Engagements pour les retraites</i>			
Pension commitments	7	3 845	4 106
		<u>-3 845</u>	<u>-4 106</u>
		0	0
<i>Actif net</i> - Net assets		<u><u>5 325</u></u>	<u><u>5 414</u></u>
Réserves - Reserves			
<i>Capitaux permanents de l'OHI</i> - Accumulated surplus		2 800	2 401
<i>Autres réserves</i> - Other reserves	8+9	2 525	3 013
		<u><u>5 325</u></u>	<u><u>5 414</u></u>

Table 2

International Hydrographic Organization - Organisation Hydrographique Internationale
Comparative Global Income and Expenditure - Charges et revenus comparés
as of 31 December 2018 - au 31 décembre 2018
 (expressed in thousands of Euros - exprimé en milliers d'Euros)

	2018	2017
Revenus - Income	3 503	3 397
Charges opérationnelles - Operating costs	<u>-2 929</u>	<u>-2 858</u>
Résultat opérationnel - Operating result	574	539
Intérêts reçus - Interest received	116	99
Équipement de bureau - Office equipment	-37	-37
Charges financières - Financial costs	-40	-28
Dotations aux fonds dédiés - Transfer to dedicated funds	-399	-288
Résultat annuel - Result for the year	<u>214</u>	<u>286</u>

Etat d'évolution du financement permanent
Statement of changes in permanent funding

	Capitaux permanents de l'OHM Net members funds	Réserve de réévaluation Revaluation Reserve	Autres réserves Other reserves (note 9)	Total
<u>Montants au 1er Janvier 2018 - Available on 1 January 2018</u>	2 402		3 013	5 415
Résultat de l'année - Result for the year	214		-	214
<u>Evolution des fonds dédiés - Evolution of dedicated funds:</u>				
- Dépensé à partir des fonds dédiés - Spent from dedicated funds			-488	-488
- Fonds de retraite interne - Internal Retirement Fund	-50		-	-50
- Fonds pour le déménagement des directeurs - Relocation Fund			-	
- Fonds pour les conférences - Conference Fund			-	
- Fonds pour le Renforcement des Capacités - CB Fund	-100		-	-100
- Fonds pour les Projets spéciaux - Special Projects Fund	-37		-	-37
<u>Mouvements dans l'année - Movements in the year (provisions) :</u>				
- Provision Etats membres - Provision Member States				
- Variation provision du FRI - Changes in IRF requirements	376		-	376
- Dotation du fonds de réserve d'urgence - Allocation to Emergency Reserve Fund	-5		-	-5
<u>Montants au 31 Décembre 2018 - Available at 31 December 2018</u>	<u>2 800</u>		<u>2 525</u>	<u>5 325</u>

Table 3

International Hydrographic Organization - *Organisation Hydrographique Internationale*
Profit and Loss Statement - *Compte d'exploitation*
as of 31 December 2018 - *au 31 décembre 2018*
(expressed in thousands of Euros - *exprimé en milliers d'Euros*)

	2018	2017
Revenus - Income		
<i>Contributions des Etats Membres</i> - Contributions from Member States	3 284	3 135
<i>Imposition interne</i> - Internal tax	197	194
<i>Revenus et dépenses exceptionnelles</i> - Exceptional income and expenditure	23	68
	<hr/> 3 503	<hr/> 3 397
Revenus financiers - Interest received		
<i>Intérêts des placements</i> - bank interest	116	97
<i>Intérêts sur contributions échues</i> - Interest on overdue contributions		3
	<hr/> 116	<hr/> 99
Charges opérationnelles - Operating costs		
<i>Charges de personnel</i> - Personnel costs	2 452	2 402
<i>Déplacements</i> - Long Distance Travel	265	290
<i>Entretien des locaux et équipements</i> - Maintenance of premises and equipment	85	88
<i>Postes et télécommunications</i> - Postage and telephone	31	30
<i>Consultants</i> - Consultancy	25	1
<i>Support administratif pour le Conseil</i> - Administrative support for the Council	27	
<i>Autres publications</i> - Other publications	1	1
<i>Revue I.I.I</i> - I.I.I Review	10	10
<i>Autres coûts opérationnels</i> - Other operating costs	15	17
<i>Fournitures de bureau</i> - Office stationery	11	11
<i>Relations publiques</i> - Public relations	7	6
<i>Charges diverses</i> - Miscellaneous	1	1
	<hr/> -2 929	<hr/> -2 858
Matériel de bureau - Office equipment		
<i>Amortissement des immobilisations</i> - Depreciation	24	22
<i>Autres achats</i> - Other purchases	13	14
	<hr/> -37	<hr/> -37
Charges financières - Financial costs		
<i>Créances douteuses</i> - Bad debts	40	28
	-40	-28
Dotations aux fonds dédiés - Allocation to dedicated funds	-399	-288
Résultat net annuel - Result for the year	<hr/> <hr/> 214	<hr/> <hr/> 286

Table 4

International Hydrographic Organization - Organisation Hydrographique Internationale
Cash Flow Statement - Etat de flux financiers
as of 31 December 2018- au 31 décembre 2018
(expressed in thousands of Euros - exprimé en milliers d'Euros)

	2018	2017
Cash Flow opérationnel - from operating activities		
Résultat opérationnel de l'année - Result for the year	214	286
Ajustements pour - Adjustments for :		
Dépréciation des immobilisations - Depreciation	24	22
Cession d'immobilisations - Sale of fixed assets		
Provision du FRI - IRF provision		
Variation des réserves - Change in reserves		
Intérêts bancaires - Bank interest	-116	97
Charges financières - Financial expenditure	<u> </u>	<u> </u>
Résultat avant variation du fonds de roulement	-92	-74
Result before working capital changes	<u>122</u>	<u>211</u>
Variation des débiteurs - Change in accounts receivable	150	-144
Variation des créditeurs - Change in accounts payable	<u>96</u>	<u>-151</u>
	<u>247</u>	<u>-296</u>
Flux financier opérationnel - Operating cash flow	369	-84
Intérêts réglés - Interest paid	0	0
Ajustement du Fonds de retraite - Retirement fund adjustment	<u>-406</u>	<u>4</u>
	<u>-406</u>	<u>4</u>
Flux financier opérationnel net - Net cash from operating activities	-37	-80
Flux financier des investissements		
Cash flow from investing activities		
Achats d'immobilisations - Purchase of fixed assets	-29	-22
Cessions d'immobilisations - Sale of fixed assets	0	0
Intérêts reçus - Interest received	<u>116</u>	<u>97</u>
Flux net des opérations d'investissement		
Net cash movement from investment activities	<u>87</u>	<u>74</u>
Total des flux financiers - Total cash flows	50	-6
Disponibilités au 1er janvier de l'année		
Cash at 1st January of the year	<u>9 080</u>	<u>9086</u>
Disponibilités au 31 décembre de l'année		
Cash at 31st December of the year	Euros <u>9 130</u>	Euros <u>9080</u>

Table 5

International Hydrographic Organization - Organisation Hydrographique Internationale
Budget Implementation Summary - Compte rendu de l'exécution budgétaire
as of 31 December 2018 - au 31 décembre 2018
(expressed in thousands of Euros - exprimé en milliers d'Euros)

	2018		
	Budget	Actual - Réel	Variance
Revenus - Income			
<i>Contributions des Etats Membres</i> - Contributions from Members States	3 256	3 284	-28
<i>Imposition interne</i> - Internal tax	183	197	-14
<i>Intérêts bancaires</i> - Bank interest	105	116	-11
	<u>3 544</u>	<u>3 596</u>	<u>-53</u>
Charges opérationnelles - Operating costs			
<i>Charges de personnel</i> - Personnel costs	2 452	2 452	
<i>Déplacements</i> - Long Distance Travel	303	265	38
<i>Entretien</i> - Maintenance	111	85	25
<i>Postes et télécommunications</i> - Postage and telephone	35	31	4
<i>Consultants</i> - Consultancy	30	25	5
<i>Support administratif pour le Conseil</i> - Administrative support for the Council	20	27	-7
<i>Autres publications</i> - Other publications	2	1	1
<i>Revue IH</i> - IH Review	10	10	
<i>Autres coûts opérationnels</i> - Other operating costs	19	15	4
<i>Fournitures de bureau</i> - Office stationery	10	11	-1
<i>Relations publiques</i> - Public relations	21	7	14
<i>Charges diverses</i> - Miscellaneous	1	1	
	<u>3 013</u>	<u>2 929</u>	<u>84</u>
Dépenses d'investissement - Capital expenditure			
<i>Amortissement</i> - Depreciation	20	24	-4
<i>Autres achats</i> - Other purchases	16	13	3
	<u>36</u>	<u>37</u>	<u>-1</u>
Autres Dépenses d'investissement (>762€) - Other Capital expenditure (over 762€)			
<i>Achat d'équipement informatique</i> - Purchase of IT equipment	15	12	3
<i>Achat de mobilier</i> - Purchase of furniture	10	13	-3
	<u>25</u>	<u>25</u>	
Charges financières - Financial costs			
	50	40	10
	<u>420</u>	<u>565</u>	<u>-145</u>

Table 6

International Hydrographic Organization - Organisation Hydrographique Internationale
Overdue Contributions - Contributions échues
as of 31 December 2018 - au 31 décembre 2018
(expressed in thousands of Euros - exprimé en milliers d'Euros)

	2018	2017	2016	Total
Argentina - Argentine	21			21
Colombia - Colombie	12	2		14
Dominican Republic - République Dominicaine	5			5
D.P.R. Korea - R.P.D. Corée	16			16
Ecuador - Equateur	20			20
Seychelles	8			8
Tonga	6			6
United Arab Emirates - Emirats Arabes Unis	28			28
Vanuatu	36	36		72
Venezuela	32			32
	184	38	0	222

Suspended IHO Member States	Outstanding Contributions	Payment	Balance
<i>Etats Membres de l'OHI suspendus</i>	<i>Contributions arriérées</i>	<i>Paiement</i>	<i>Solde</i>
Dem. Rep. of the Congo - Rép. démocratique du Congo	8,8		8,8
Serbia - Serbie	24,0		24,0
Syrian Arab Republic - Rép. arabe syrienne	61,0		61,0
	93,8	0,0	93,8

Table 7

International Hydrographic Organization - Organisation Hydrographique Internationale
Creditors - Créditeurs
as of 31 December 2018 - au 31 décembre 2018
(expressed in thousands of Euros - exprimé en milliers d'Euros)

<u>Contributions reçues d'avance</u>	<i>Reçues en 2018 pour les prochaines contributions</i>	<i>Reçues en 2017 pour les prochaines contributions</i>
Contributions received in advance	Received in 2018 for future contributions	Received in 2017 for future contributions
Argentina - Argentine	0	7
Australia - Australie	32	32
Belgium - Belgique	52	52
Bangladesh - Bangladesh	28	0
Brazil - Brésil	0	5
Brunei	20	0
Cameroon - Cameroun	0	13
Cyprus - Chypre	97	97
Egypt - Egypte	28	28
Estonia - Estonie	0	0
Finland - Finlande	32	0
France - France	56	56
Iceland - Islande	12	12
Iran - Iran	0	55
Ireland - Irlande	16	16
Jamaica - Jamaïque	12	0
Latvia - Lettonie	12	12
Mauritius - Maurice	12	12
Mexico - Mexique	0	36
Montenegro - Montenegro	0	0
Morocco - Maroc	16	16
Mozambique	8	0
Myanmar - Myanmar	20	20
Netherlands - Pays-Bas	65	65
New Zealand - Nouvelle-Zélande	16	16
Nigeria - Nigeria	0	40
Oman - Oman	8	8
Pakistan - Pakistan	0	16
Papua New Guinea - Papouasie Nouvelle Guinée	16	0
Poland - Pologne	12	12
Portugal - Portugal	69	0
Romania - Roumanie	12	12
Russian Federation - Fédération de Russie	60	0
Saudi Arabia - Arabie saoudite	52	52
Singapore - Singapour	109	109
South Africa - Afrique du Sud	16	16
Sri Lanka - Sri Lanka	0	2
Suriname - Suriname	0	8
Sweden - Suède	44	0
Thailand - Thaïlande	44	44
Tonga - Tonga	0	2
Turkey - Turquie	61	61
Uruguay - Uruguay	0	20
	<u>1 037</u>	<u>945</u>
<u>Créditeurs et charges à payer - Creditors and accruals</u>		
Plan de pensions - Pensions plan payments	38	16
Charges à payer - Accruals	119	96
Autres créditeurs - Other	15	0
	<u>172</u>	<u>112</u>

Table 8

International Hydrographic Organization - Organisation Hydrographique Internationale
Notes to the Financial Statements - Notes relatives aux états financiers
as of 31 December 2018 - au 31 décembre 2018
(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:

- 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 International 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)

Équipement 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 (5 years)

IT Equipment - 33.33% per annum on cost (3 years).

Table 8

(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 - Retirement fund

L'OHI gère un fonds de pension dénommé Fonds de retraite interne (FRI).

Un membre du personnel actif et 10 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). A compter de l'année 2005, les pensions ont été réglées à partir des avoirs du FRI, au lieu d'être réglées à partir du budget de l'OHI, comme ce fut le cas de 2000 à 2004.

The Organization operates a benefit pension scheme known as the Internal Retirement

Fund (IRF). One current staff member and 10 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 from dedicated IRF accounts as opposed to a payment from the IHO budget as in previous years (from 2000 to 2004).

g) 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 3/12èmes 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).

h) 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 asset, 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 & GEBCO Fund) are included in the budget.

Table 8

<u>2 Information relative au personnel - Employee Information</u>	2018	2017
Charges de personnel - Personnel costs :		
<i>Secrétaire général et directeurs - Secretary general and directors</i>	485	494
<i>Salaires du personnel - Salaries to Staff Members</i>	1 347	1306
<i>Cotisations aux régimes de retraite - Payment to retirement funds</i>	381	370
<i>Primes d'assurance - Medical insurance costs</i>	127	125
<i>Allocations au personnel - Allowances</i>	59	56
<i>Autres charges de personnel - Other staff expenses</i>	49	51
<i>Personnel temporaire - Temporary staff</i>		
<i>Formation - Training</i>	4	
	2 452	2402

L'effectif moyen annuel se décompose comme suit :

The average number of employees during the year was made up as follows :

<i>Secrétaire général et directeurs - Secretary general and directors</i>	3	3
<i>Personnel de cat. A - Category A Staff</i>	5	5
<i>Personnel de cat B - Category B Staff</i>	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

	<i>Mobilier & Instruments Furniture & Instruments</i>	<i>Biblio- thèque Library</i>	Total
Valeurs d'acquisition - Cost			
<i>Au 1er janvier de l'année - At 1 January 2018</i>	325	37	362
<i>Solde des mouvements de l'année - Net change during the year *</i>	29	0	29
<i>Au 31 décembre de l'année - At 31 December 2018</i>	354	37	390
<i>* Achats moins mises au rebut - Purchases less scrapping of equipment</i>			
Amortissements - Depreciation			
<i>Au 1er janvier de l'année - At 1 January 2018</i>	-281	0	-281
<i>Amortissements de l'année - Depreciation for the year</i>	-24	0	-24
	-306	0	-306
Valeur nette - Net book value			
<i>Au 31 décembre de l'année n-1 - At 31 December of previous year</i>	44	37	80
<i>Au 31 décembre de l'année n - At 31 December of current year</i>	48	37	85

5 Débiteurs - Debtors

	2018	2017
<i>Contributions restant dues (nettes de provision) Overdue contributions less provision</i>	205	379
<i>TVA récupérable - VAT recoverable</i>	36	62
<i>Avances au personnel et charges constatées d'avance Prepayments and Staff advances</i>	186	136
	427	577

Table 8

<u>6 Crédeurs - Creditors</u>	2018	2017
<i>Contributions reçues en avance</i> - Prepaid contributions	1 038	953
<i>Garantie au FRI</i> - Guaranty to the IRF	603	845
<i>Crédeurs et charges à payer</i> - Creditors and accruals	172	112
	<u>1 813</u>	<u>1 909</u>
<u>7 Engagements pour la retraite - Pension Commitments</u>	2018	2017
- <i>Dépôts à terme du FRI</i> - IRF Bank deposits	2 722	2886
- <i>Disponibilités banque SMC</i> - SMC Bank deposits	519	375
	<u>3 241</u>	<u>3 261</u>
- <i>Garantie du Secrétariat</i> - Secretariat Guaranty	603	845
- <i>Estimation de l'engagement de retraite du personnel</i> Estimated net liabilities for existing and former Staff Members	<u>3 845</u>	<u>4 106</u>
<u>8 Fonds dédiés (pour des opérations ultérieures) Dedicated funds for future operations</u>	2018	2017
- <i>Fonds pour les conférences</i> - Conference Fund	272	252
- <i>Fonds de déménagement</i> - Relocation Fund	236	231
- <i>Fonds de rénovation et d'amélioration</i> - Renovation and Enhancement Fund	65	79
- <i>Fonds pour le renforcement des capacités</i> - Capacity Building Fund	863	1 146
- <i>Fonds pour les projets spéciaux</i> - Special Projects Fund	43	91
- <i>Fonds pour la GEBCO</i> - GEBCO Fund	665	881
- <i>Fonds de la bibliothèque de présentation</i> - Presentation Library Fund	46	40
- <i>Fonds pour la conférence ABLOS</i> - ABLOS Conference Fund	08	8
- <i>Fonds IBSC</i> - IBSC Fund	63	25
<u>9 Réserves - Reserves</u>		
- <i>Fonds de réserve d'urgence</i> - Emergency Reserve Fund	265	260
	<u>2 526</u>	<u>3 013</u>
<u>10 Réserve de trésorerie en fin d'année - End of Year Cash Reserve</u>	2018	2017

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.

Table 8

<u>Trésorerie de l'OHI - IHO Cash balances</u>	6 627	6 666
<i>(dont positions financières en devises - voir note 11 - including foreign exchange holdings - see note 11)</i>		
<i>Moins - Less</i>		
- Contributions de l'année suivante - Contributions received in advance	-1 038	-953
- Valeur des fonds dédiés - Dedicated funds	-2 260	-2 753
	<u>3 329</u>	<u>2 961</u>
- Garantie en faveur du FRI - Guaranty to the IRF	-603	-845
- Trésorerie disponible - Net available Cash	<u>2 725 *</u>	<u>2 116</u>
* <u>45 semaines de fonctionnement</u>	45 weeks of operations	
<u>Total du budget de l'année suivante (2019) - Total budget for 2019 :</u>	3 174	<i>(hors fonds dédiés)</i>
- Besoins financiers totaux (Art.17 & 18) = 17 semaines		
Total IHO financial requirements (Art. 17 & 18) = 17 weeks		
Art.17 Réserve de trésorerie opérationnelle (3 mois) :	-794	
Art.17 Operating Cash Reserve (3 months) :		
Art.18 Fonds de réserve d'urgence (1 mois) :	-265	
Art.18 Emergency Reserve Fund (1 month) :		
	<u>1 667</u>	<i>Excédent de trésorerie disponible</i>
		<i>Cash surplus</i>

11 Positions financières en devises - Foreign Exchange Holdings 2018 2017

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 balances 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 :

- Positions en USD - USD holdings	506	869
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Ces positions en devises sont sujettes à revalorisation, en fonction de la variation des taux de change.

These holdings are liable to re-valuation, according to exchange rates fluctuations.

12 Engagements de caution - Guarantee commitments

Personne visée: Monsieur Naohiko NAGASAKA, 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 1 300€

Durée du bail: 3 ans (10/04/2018 - 10/04/2021)

Person concerned: Mr. Naohiko NAGASAKA, seconded by the Japan Coast Guard to the IHO, as Lessee of his apartment

Subject: surety on the tenant's monthly rent payment of € 1,300

Length: Length of lease: 3 years (10/04/2018 - 10/04/2021)

Personne visée: Monsieur PARK Hee Yoon, détaché du gouvernement de la République de Corée auprès de l'OHI, en qualité de locataire de son domicile.

Objet: caution solidaire du locataire portant sur un paiement mensuel de 1 300€

Durée du bail: 3 ans (01/10/2018 - 30/09/2021)

Person concerned: Mr PARK Hee Yoon, seconded by the Republic of Korea to the IHO, as Lessee of his apartment

Subject: surety on the tenant's monthly rent payment of € 1,300

Length: Length of lease: 3 years (01/10/2018 - 30/09/2021)

AUDITORS REPORT

RAPPORT DU COMMISSAIRE AUX COMPTES

BALANCE SHEET

(expressed in Euros)

ASSETS	31/12/2018	LIABILITIES	31/12/2018
I. CASH AT BANK AND IN HAND		I. PROVISION FOR THE PENSIONS	
IHO - Bank current accounts	1 071 078,49	Provision to ensure pensions to IRF staff and retirees	2 047 325,65
IHO - Bank deposit accounts	5 555 161,77		
Petty cash	959,83		
	6 627 200,09	II. VARIOUS CREDITORS	
II. VARIOUS DEBTORS		Value of External Pension Plans	539 805,84
Purchases made in advance	7 145,06	A.M.R.R Supplementary Retirement Scheme	17 253,74
Outstanding bills	43 783,18	Accruals (outstanding bills, telex, telephone)	118 634,64
Advance to staff	46 795,03	Travel claims & wages	635,93
Claim for refunding of VAT	36 212,77	Various creditors	5 392,80
Interest from Deposit to be received	88 004,01	Deposits received for Conference (stands)	9 335,00
	221 940,05		691 057,95
III. OUTSTANDING CONTRIBUTIONS		III. CONTRIBUTIONS RECEIVED IN ADVANCE	
Contributions for the year	171 672,33	Received in advance or in excess	1 038 226,76
Contributions for previous years	38 275,76		
Contributions for suspended MS	93 112,84	IV. CAPITAL	
Provision for doubtful contributions	-96 969,30	Emergency Reserve fund	264 516,67
Interest remaining due on contributions	-1 131,77	Staff Retirement fund (IRF)	1 277 982,35
	204 959,86	Conference Fund	272 085,31
IV. INTERNAL RETIREMENT FUNDS ASSETS		Relocation Fund	236 113,56
Retirement cash invested (IRF)	2 721 956,47	Renovation and Enhancement Fund	64 907,83
Retirement cash invested (External Pension Plans)	519 375,32	Capacity Building Fund	862 581,48
	3 241 331,79	Special Projects Fund	42 783,19
V. FURNITURE AND EQUIPMENT		GEBCO fund	664 715,88
Depreciation of assets	353 693,59	Presentation Library Fund	45 502,15
	-305 635,77	ABL0S Conference fund	8 424,16
VI. LIBRARY		IBSC Fund	63 357,04
	36 663,99		3 802 969,62
	84 721,81	Net yearly operating profit	213 609,25
	10 380 153,60	Net Members Fund	2 586 964,37
			2 800 573,62
			6 603 543,24
			10 380 153,60

BILAN
(exprimé en Euros)

ACTIF	31/12/2018	PASSIF	31/12/2018
I. TRÉSORERIE DISPONIBLE		I. PROVISION POUR LES PENSIONS DU	
OHI - Comptes courants bancaires	1 071 078,49	Provision pour couvrir les pensions du personnel (retraités et actifs relevant du FRI)	2 047 325,65
OHI - Comptes de dépôt & placement monétaire	5 555 161,77		
Espèces en caisse	959,83		
	6 627 200,09	II. CREDITEURS DIVERS	
II. DEBITEURS DIVERS		Plans de pensions externes	539 805,84
Prestations effectuées d'avance	7 145,06	Retraite complémentaire A.M.R.R	17 253,74
Factures non encaissées	-43 783,18	Charges à payer (factures, télécommunications, etc..)	118 634,64
Avances au personnel	46 795,03	Salaires et notes de frais	635,93
Demande de remboursement de TVA	36 212,77	Créditeurs divers	5 392,80
Intérêts sur placements à recevoir	88 004,01	Montants reçus pour la prochaine Conférence (stands)	9 335,00
	221 940,05		691 057,95
III. CONTRIBUTIONS		III. CONTRIBUTIONS RECUES EN AVANCE	
Contributions pour l'année en cours	171 672,33	Reçues en avance ou en excédent	1 038 226,76
Contributions échues (années précédentes)	38 275,76		
Contributions (Etats membres suspendus)	93 112,84	IV. CAPITAUX PERMANENTS	
Provision pour contributions	-96 969,30	Fonds de réserve d'urgence	264 516,67
Intérêts restant dus sur contributions échues	-1 131,77	Fond de Retraite Interne (FRI)	1 277 982,35
	204 959,86	Fonds pour les conférences	272 085,31
IV. TRÉSORERIE DES FONDS DE RETRAITE		Fonds pour le déménagement des directeurs	236 113,56
Trésorerie disponible (FRI)	2 721 956,47	Fonds de rénovation et d'amélioration	64 907,83
Trésorerie placée (Plans externes)	519 375,32	Fonds pour le renforcement des capacités	862 581,48
	3 241 331,79	Fonds pour les projets spéciaux	42 783,19
V. MOBILIER & EQUIPEMENTS		Fonds pour la GEBCO	664 715,88
Amortissement des immobilisations	-305 635,77	Fonds de la bibliothèque de présentation	45 502,15
VI. BIBLIOTHEQUE		Fonds pour la conférence ABLOS	8 424,16
	36 663,99	Fonds IBSC	63 357,04
	84 721,81		3 802 969,62
	10 380 153,60	Résultat opérationnel net de l'année en cours	213 609,25
		Capitaux nets permanents	2 586 964,37
			2 800 573,62
			6 603 543,24
			10 380 153,60

International Hydrographic Organization - *Organisation Hydrographique Internationale*
Profit and Loss Statement - *Compte d'exploitation*
as of 31 December 2018 - *au 31 décembre 2018*
(expressed in Euros - *exprimé en Euros*)

2018

Revenus - Income

<i>Contributions des Etats Membres</i> - Contributions from Member States	3 283 845,12
<i>Imposition interne</i> - Internal tax	196 890,15
<i>Revenus et dépenses exceptionnelles</i> - Exceptional income and expenditure	22 615,97

3 503 351,24

Revenus financiers - Interest received

<i>Intérêts des placements</i> - bank interest	115 753,16
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115 753,16

Charges opérationnelles - Operating costs

<i>Charges de personnel</i> - Personnel costs	2 452 320,57
<i>Déplacements</i> - Long Distance Travel	264 792,00
<i>Entretien des locaux et équipements</i> - Maintenance of premises and equipment	85 161,93
<i>Postes et télécommunications</i> - Postage and telephone	30 999,85
<i>Consultants</i> - Consultancy	25 251,83
<i>Support administratif pour le Conseil</i> - Administrative support for the Council	26 658,12
<i>Autres publications</i> - Other publications	895,08
<i>Revue hydrographique internationale</i> - LH Review	10 000,00
<i>Autres coûts opérationnels</i> - Other operating costs	14 616,47
<i>Fournitures de bureau</i> - Office stationery	10 530,04
<i>Relations publiques</i> - Public relations	7 054,02
<i>Charges diverses</i> - Miscellaneous	660,48

-2 928 940,39

Matériel de bureau - Office equipment

<i>Amortissement des immobilisations</i> - Depreciation	24 251,92
<i>Autres achats</i> - Other purchases	12 859,64

-37 111,56

Charges financières - Financial costs

<i>Créances douteuses</i> - Bad debts	-10 243,20
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-40 243,20

Dotations aux fonds dédiés - Allocation to dedicated funds

-399 200,00

Résultat net annuel - Result for the year

213 609,25

International Hydrographic Organization - Organisation Hydrographique Internationale
Notes to the Financial Statements - Notes aux états financiers
 (expressed in Euros - exprimé en Euros)

1 Accounting Policies - Principes comptables

Basis of accounting - Principes comptables de base

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 International 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

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:

- *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*

2 Presentation of the IHO - Présentation de l'OHI

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.

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 Unies 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 Secrétaire général et les deux directeurs sont élus par les Etats Membres de l'OHI lors des sessions ordinaires de l'Assemblée.

3 Employee Information - Information relative au personnel

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

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.

The average number of employees during the year was made up as follows :

L'effectif moyen annuel se décompose comme suit :

Secretary general and directors - <i>Secrétaire général et directeurs</i>	3
Category A Staff - <i>Personnel de cat. A</i>	5
Category B Staff - <i>Personnel de cat B</i>	12
	20

4 Contributions received in advance - Contributions reçues d'avance

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 48731: Contributions received in advance.

Income from these contributions is accounted for on the 1st January of the following year.

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 48731: Contributions reçues

d'avance. Le revenu de contributions est comptabilisé au 1er janvier de l'exercice concerné.

5 Dedicated funds for future operations - Fonds dédiés (pour des opérations ultérieures)

CONFERENCE FUND - Fonds pour les Conférences

The Conference Fund allows the expenses linked to the Int. Hydrographic Assembly to be met.

Le fonds pour les Conférences permet la couverture des dépenses de l'Assemblée hydrographique internationale.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	252 085,31 €
Budget Allocation 2018 - <i>Dotation budgétaire pour 2018</i>	20 000,00
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>272 085,31 €</u>

RENOVATION AND ENHANCEMENT FUND - Fonds de rénovation et d'amélioration

The renovation fund is maintained 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.

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.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	79 292,31
Expenditure - <i>Dépenses</i>	-14 384,48
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>64 907,83 €</u>

RELOCATION FUND - Fonds pour le déménagement des directeurs

This fund is intended to cover the removal and relocation expenses for the internationally recruited members of staff.

Ce fonds est destiné à couvrir les dépenses de déménagement des membres du personnel recrutés sur le plan international.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	231 113,56
Budget Allocation 2018 - <i>Dotation budgétaire pour 2018</i>	5 000,00
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>236 113,56 €</u>

ABLÓS CONFERENCE FUND - Fonds pour les conférences ABLÓS

The ABLÓS Fund supports the operational costs for the ABLÓS conference which is held every other year.

Le fonds ABLÓS couvre les dépenses d'une conférence qui se tient tous les 2 ans.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	8 424,16
Registrations fees - <i>Recettes conférence octobre 2019</i>	
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>8 424,16 €</u>

GEBCO FUND - Fonds pour la Carte Générale Bathymétrique des Océans

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.

Ce fonds a été créé 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.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	881 154,15
<u>Income - Revenus :</u>	
Budget Allocation 2018 - <i>Dotation budgétaire pour 2018</i>	38 200,00
Subvention from the Government of Monaco - <i>Subvention reçue du Gouvernement de Monaco</i>	8 300,00
Sponsorship GEBCO symposium	13 896,15
Transfer from Nippon Foundation - <i>Transfert de la Nippon Foundation</i>	2 427 691,75
<u>Expenses - Dépenses :</u>	
Financial assistance to attend GEBCO meetings - <i>Assistance financière à des participants</i>	-15 854,48
SEABED 2030	-1 509 613,35
University of New Hampshire	1 179 058,34
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>664 715,83 €</u>

PRESENTATION LIBRARY FUND - Fonds pour la bibliothèque de présentation

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.

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 6^{ème} réunion, le comité des normes et services hydrographiques a 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.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	40 002,15	
Income - Revenus :		
Sales of the publication "Presentation Library" - <i>Ventes de la publication "Bibliothèque de présentation"</i>	5 500,00	
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>		45 502,15 €

EMERGENCY RESERVE FUND - Fonds de réserve d'urgence

As announced in FCCI. 6/2003, the amount of the Emergency Reserve Fund shall not be less than 1/12th of the annual operating budget.

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.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	259 725,00	
Additional allowance to meet Financial Regulations Art.18 requirements - <i>Allocation complémentaire pour satisfaire les dispositions de l'article 18 du règlement financier</i>	4 791,67	
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>		264 516,67 €

INTERNAL RETIREMENT FUND - Fonds de retraite interne (FRI)

Amount of social liability on 01/01/2018 - *Montant de la dette sociale au 01/01/2018* 3 730 958,78 |

Support from 2017 result - *Affectation du résultat 2017* 50 000,00 |

Budget allocation 2018 - *Dotation budgétaire 2018* 70 000,00 |

The additional support is provided in order to build up the IRF so that it can fund the pensions of the remaining potential IHO pensioners.

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

A partir de 2016, une provision, 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

Contributions received from staff - <i>Cotisations reçues (membres du personnel)</i>	13 618,57	
Interests received from Deposit Accounts - <i>Intérêts perçus par le fonds (D/A)</i>	42 132,86	
Pensions paid from IRF - <i>Pensions réglées par le fonds (FRI)</i>	-205 774,86	
		3 700 935,35
Variation of IRF liability during the year - <i>Variation annuelle de la dette sociale du FRI</i>		-375 627,35
Balance of IRF on 31/12/2018 - <i>Solde du compte FRI au 31/12/2018</i>	1 277 982,35	
Provision for the pensions on 31/12/2018 - <i>Provision pour les pensions au 31/12/2018</i>	2 047 325,65	
Amount of IRF social liability on 31/12/2018 - <i>Montant de la dette sociale du FRI au 31/12/2018</i>		3 325 308,00 €

CAPACITY BUILDING FUND (CBF) - Fonds pour le renforcement des capacités

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.

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.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	1 145 818,41
<u>Income - Revenus:</u>	
IHO Budget Allocation 2018 - <i>Dotation budgétaire de l'OHI pour 2018</i>	206 000,00
Support from 2017 result - <i>Affectation du résultat 2017</i>	100 000,00
Support from the Republic of Korea - <i>Soutien reçu de la République de Corée</i>	374 448,00
Support from Japan - <i>Soutien reçu du Japon</i>	2 610,00
	1 828 906,41
<u>Expenses - Dépenses :</u>	
Activities supported by the Rep.of Korea - <i>Activités financées par la Rep. de Corée</i>	-348 341,74
Activities supported by Japan - <i>Activités financées par le Japon</i>	-304 069,30
Activities supported by IHO Capacity Building Fund - <i>Activités financées par le fonds de l'OH</i>	-313 913,89
	-966 324,93
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>862 581,48 €</u>

SPECIAL PROJECTS FUND - Fonds pour les projets spéciaux

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

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

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	78 023,30
IHO Budget Allocation 2018 - <i>Dotation budgétaire de l'OHI pour 2018</i>	50 000,00
Support from 2017 result - <i>Affectation du résultat 2017</i>	37 000,00
Expenses in relation to celebration of IHO centenary	-26 493,86
Expenses in relation to WP 3.3.9 - <i>Maintain IHO Publications (C-6, C-47, S-5, S-8)</i>	
<i>Dépenses en connection avec l'élément 3.3.9 du programme de travail : Maintien des publications OHI</i>	
Travel expenses - <i>Frais de voyages</i>	-4 905,53
Portolan project S122 - S123	-25 000,00
ITC Technologies	-45 840,72
Primar S100	-20 000,00
Amount of fund on 31st December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>42 783,19 €</u>

IBSC FUND - FONDS IBSC

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.

Le Fonds sert à couvrir les dépenses opérationnelles autorisées du Comité.

A partir de 2015, l'OHI en tant que secrétaire de l'IBSC, a repris le rôle de trésorier du Fonds.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	37 163,87
IHO Budget Allocation 2018 - <i>Dotation budgétaire de l'OHI pour 2018</i>	10 000,00
Fees levied on institutions seeking recognition by IBSC - <i>Honoraires facturés aux institutions souhaitant obtenir l'homologation IBSC</i>	49 696,03
Travel expenses - <i>Frais de voyages</i>	-33 502,86
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>	<u>63 357,04 €</u>

The ABLOS, GEBCO and IBSC funds are all operated as part of the consolidated IHO bank accounts
Les fonds ABLOS, GEBCO et IBSC sont tous gérés par le biais des comptes bancaires consolidés de l'OHI.



Independent auditor's report

International Hydrographic Organization
4, Quai Antoine 1er
98000, Monaco
MONACO

Report on the audit of the financial statements

Our opinion

In our opinion, International Hydrographic Organization's financial statements present fairly, in all material respects, the balance sheet of the Organization as at December 31, 2018, 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.

What we have audited

International Hydrographic Organization's financial statements comprise:

- the balance sheet as at December 31, 2018;
- the profit and loss statement for the year then ended; and
- 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 responsibilities 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.

Independence

We are independent of the Organization in accordance with the International Ethics Standards Board for Accountants' Code of Ethics for Professional Accountants

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(IESBA Code). We have fulfilled our other ethical responsibilities in accordance with the IESBA Code.

Basis of accounting and restriction on distribution and use

We draw attention to Note 1 “Accounting policies” to the financial statements, which describes the basis of accounting. The financial statements are prepared for the Organization’s member states. As a result, the financial statements may not be suitable for another purpose. Our report is intended solely for the Organization’s member states and should not be distributed to or used by parties other than the Organization’s member states. Our opinion is not modified in respect of this matter.

Other information

The Secretary General is responsible for the other information. The Annual Report 2018 – Part 2 – Finances – Table 3 constitutes the other information for the year ended December 31, 2018. It includes the financial statements referred to here above and our auditor’s report thereon as well as the Profit and Loss Statement as of 31 December 2018.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon except for the financial statements subject to our auditor’s report.

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information; we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Secretary General and those charged with governance for the financial statements

Secretary General is responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards as adopted by the European Union, and for such internal control as Secretary General determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

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In preparing the financial statements, 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 basis of accounting unless Secretary General either intends to liquidate the Organization or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Organization's financial reporting process.

Auditor's responsibilities for the audit of the financial statements

Our objectives are 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 can 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 on the basis of these financial statements.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional scepticism 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 resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order 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.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by Secretary General.

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- Conclude on the appropriateness of 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 a 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 continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, 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: 24 Avril 2019

Claude Palmero

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BALANCE SHEET
(expressed in Euros)

ASSETS	31/12/2018	LIABILITIES	31/12/2018
I. CASH AT BANK AND IN HAND		I. PROVISION FOR THE PENSIONS	
IHO - Bank current accounts	1 071 078,49	Provision to ensure pensions to IRF staff and retirees	2 047 325,65
IHO - Bank deposit accounts	5 555 161,77		
Petty cash	959,83		
	6 627 200,09	II. VARIOUS CREDITORS	
II. VARIOUS DEBTORS		Value of External Pension Plans	539 805,84
Purchases made in advance	7 145,06	A.M.R. Supplementary Retirement Scheme	17 253,74
Outstanding bills	43 783,18	Accruals (outstanding bills, telex, telephone)	118 634,64
Advance to staff	46 795,03	Travel claims & wages	635,93
Claim for refunding of VAT	36 212,77	Various creditors	5 392,80
Interest from Deposit to be received	88 004,01	Deposits received for Conference (stands)	9 335,00
	221 940,05	III. CONTRIBUTIONS RECEIVED IN ADVANCE	691 057,95
III. OUTSTANDING CONTRIBUTIONS		Received in advance or in excess	1 038 226,76
Contributions for the year	171 672,33		
Contributions for previous years	38 275,76	IV. CAPITAL	
Contributions for suspended MS	93 112,84	Emergency Reserve fund	264 516,67
Provision for doubtful contributions	-96 969,30	Staff Retirement fund (IRF)	1 277 982,35
Interest remaining due on contributions	-1 131,77	Conference Fund	272 085,31
	204 959,86	Relocation Fund	236 113,56
IV. INTERNAL RETIREMENT FUNDS ASSETS		Renovation and Enhancement Fund	64 907,83
Retirement cash invested (IRF)	2 721 956,47	Capacity Building Fund	862 581,48
Retirement cash invested (External Pension Plans)	519 375,32	Special Projects Fund	42 783,19
	3 241 331,79	GEBCO fund	664 715,88
V. FURNITURE AND EQUIPMENT		Presentation Library Fund	45 502,15
Depreciation of assets	353 693,59	ABLOS Conference fund	8 424,16
	-305 635,77	IBSC Fund	63 357,04
VI. LIBRARY			3 802 969,62
	36 663,99	Net yearly operating profit	213 609,25
	84 721,81	Net Members Fund	2 586 964,37
	10 380 153,60		2 800 573,62
			6 603 543,24
			10 380 153,60

INITIALLED FOR IDENTIFICATION
PRICEWATERHOUSECOOPERS

International Hydrographic Organization - Organisation Hydrographique Internationale
Profit and Loss Statement - *Compte d'exploitation*
as of 31 December 2018 - au 31 décembre 2018
(expressed in Euros - exprimé en Euros)

		2018
Revenus - Income		
<i>Contributions des Etats Membres</i> - Contributions from Member States		3 283 845,12
<i>Imposition interne</i> - Internal tax		196 890,15
<i>Revenus et dépenses exceptionnelles</i> - Exceptional income and expenditure		22 615,97
		3 503 351,24
Revenus financiers - Interest received		
<i>Intérêts des placements</i> - bank interest		115 753,16
		115 753,16
Charges opérationnelles - Operating costs		
<i>Charges de personnel</i> - Personnel costs	2 452 320,57	
<i>Déplacements</i> - Long Distance Travel	264 792,00	
<i>Entretien des locaux et équipements</i> - Maintenance of premises and equipment	85 161,93	
<i>Postes et télécommunications</i> - Postage and telephone	30 999,85	
<i>Consultants</i> - Consultancy	25 251,83	
<i>Support administratif pour le Conseil</i> - Administrative support for the Council	26 658,12	
<i>Autres publications</i> - Other publications	895,08	
<i>Revue hydrographique internationale</i> - I H Review	10 000,00	
<i>Autres coûts opérationnels</i> - Other operating costs	14 616,47	
<i>Fournitures de bureau</i> - Office stationery	10 530,04	
<i>Relations publiques</i> - Public relations	7 054,02	
<i>Charges diverses</i> - Miscellaneous	660,48	
		-2 928 940,39
Matériel de bureau - Office equipment		
<i>Amortissement des immobilisations</i> - Depreciation	24 251,92	
<i>Autres achats</i> - Other purchases	12 859,64	
		-37 111,56
Charges financières - Financial costs		
<i>Créances douteuses</i> - Bad debts	40 243,20	
		-40 243,20
Dotations aux fonds dédiés - Allocation to dedicated funds		
		-399 200,00
Résultat net annuel - Result for the year		
		213 609,25

INITIALLED FOR IDENTIFICATION
PRICEWATERHOUSECOOPERS

International Hydrographic Organization - Organisation Hydrographique Internationale
Notes to the Financial Statements - Notes aux états financiers
(expressed in Euros - exprimé en Euros)

1 Accounting Policies - Principes comptables

Basis of accounting - Principes comptables de base

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 International 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

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:

- 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

2 Presentation of the IHO - Présentation de l'OHI

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.

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 Unies 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 de deux directeurs. Le Secrétaire général et les deux directeurs sont élus par les Etats Membres de l'OHI lors des sessions ordinaires de l'Assemblée.

3 Employee Information - Information relative au personnel

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

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.

The average number of employees during the year was made up as follows :

L'effectif moyen annuel se décompose comme suit :

Secretary general and directors - Secrétaire général et directeurs

3

Category A Staff - Personnel de cat. A

5

Category B Staff - Personnel de cat B

12

20

4 Contributions received in advance - Contributions reçues d'avance

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 48731: Contributions received in advance.

Income from these contributions is accounted for on the 1st January of the following year.

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 48731: Contributions reçues

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d'avance. Le revenu de contributions est comptabilisé au 1er janvier de l'exercice concerné

5 Dedicated funds for future operations - Fonds dédiés (pour des opérations ultérieures)

CONFERENCE FUND - Fonds pour les Conférences

The Conference Fund allows the expenses linked to the Int. Hydrographic Assembly to be met.
Le fonds pour les Conférences permet la couverture des dépenses de l'Assemblée hydrographique internationale.

Amount of fund on 1 January 2018 - Montant du fonds au 1er janvier 2018	252 085,31 €	
Budget Allocation 2018 - Dotation budgétaire pour 2018	20 000,00	
Amount of fund on 31 December 2018 - Montant du fonds au 31 décembre 2018		272 085,31 €

RENOVATION AND ENHANCEMENT FUND - Fonds de rénovation et d'amélioration

The renovation fund is maintained 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.
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.

Amount of fund on 1 January 2018 - Montant du fonds au 1er janvier 2018	79 292,31	
Expenditure - Dépenses	-14 384,48	
Amount of fund on 31 December 2018 - Montant du fonds au 31 décembre 2018		64 907,83 €

RELOCATION FUND - Fonds pour le déménagement des directeurs

This fund is intended to cover the removal and relocation expenses for the internationally recruited members of staff.
Ce fonds est destiné à couvrir les dépenses de déménagement des membres du personnel recrutés sur le plan international.

Amount of fund on 1 January 2018 - Montant du fonds au 1er janvier 2018	231 113,56	
Budget Allocation 2018 - Dotation budgétaire pour 2018	5 000,00	
Amount of fund on 31 December 2018 - Montant du fonds au 31 décembre 2018		236 113,56 €

ABLOS CONFERENCE FUND - Fonds pour les conférences ABLOS

The ABLOS Fund supports the operational costs for the ABLOS conference which is held every other year.
Le fonds ABLOS couvre les dépenses d'une conférence qui se tient tous les 2 ans.

Amount of fund on 1 January 2018 - Montant du fonds au 1er janvier 2018	8 424,16	
Registrations fees - Recettes conférence octobre 2019		
Amount of fund on 31 December 2018 - Montant du fonds au 31 décembre 2018		8 424,16 €

GEBCO FUND - Fonds pour la Carte Générale Bathymétrique des Océans

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.
Ce fonds a été créé 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.

Amount of fund on 1 January 2018 - Montant du fonds au 1er janvier 2018	881 154,15	
Income - Revenus :		
Budget Allocation 2018 - Dotation budgétaire pour 2018	38 200,00	
Subvention from the Government of Monaco - Subvention reçue du Gouvernement de Monaco	8 300,00	
Sponsorship GEBCO symposium	13 896,15	
Transfer from Nippon Foundation - Transfert de la Nippon Foundation	2 427 691,75	
Expenses - Dépenses :		
Financial assistance to attend GEBCO meetings - Assistance financière à des participants	-15 854,48	
SEABED 2030	-1 509 613,35	
University of New Hampshire	-1 179 058,34	
Amount of fund on 31 December 2018 - Montant du fonds au 31 décembre 2018		664 715,88 €

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PRESENTATION LIBRARY FUND - Fonds pour la bibliothèque de présentation

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.

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 6^{ème} réunion, le comité des normes et services hydrographiques a 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.

Amount of fund on 1 January 2018 - Montant du fonds au 1er janvier 2018	40 002,15	
<u>Income - Revenus :</u>		
Sales of the publication "Presentation Library" - Ventes de la publication "Bibliothèque de présentation"	5 500,00	
Amount of fund on 31 December 2018 - Montant du fonds au 31 décembre 2018		<u>45 502,15 €</u>

EMERGENCY RESERVE FUND - Fonds de réserve d'urgence

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.

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.

Amount of fund on 1 January 2018 - Montant du fonds au 1er janvier 2018	259 725,00	
Additional allowance to meet Financial Regulations Art 18 requirements - Allocation complémentaire pour satisfaire les dispositions de l'article 18 du règlement financier	4 791,76	
Amount of fund on 31 December 2018 - Montant du fonds au 31 décembre 2018		<u>264 516,76 €</u>

INTERNAL RETIREMENT FUND - Fonds de retraite interne (FRI)

Amount of social liability on 01/01/2018 - Montant de la dette sociale au 01/01/2018	3 730 958,78	
Support from 2017 result - Affectation du résultat 2017	50 000,00	
Budget allocation 2018 - Dotation budgétaire 2018	70 000,00	
The additional support is provided in order to build up the IRF so that it can fund the pensions of the remaining potential IHO pensioners. 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 <i>A partir de 2016, une provision, 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</i>		
Contributions received from staff - Cotisations reçues (membres du personnel)	13 618,57	
Interests received from Deposit Accounts - Intérêts perçus par le fonds (D/A)	42 132,86	
Pensions paid from IRF - Pensions réglées par le fonds (FRI)	-205 774,86	
		3 700 935,35
Variation of IRF liability during the year - Variation annuelle de la dette sociale du FRI		-375 627,35
Balance of IRF on 31/12/2018 - Solde du compte FRI au 31/12/2018	1 277 982,35	
Provision for the pensions on 31/12/2018 - Provision pour les pensions au 31/12/2018	2 047 325,65	
Amount of IRF social liability on 31/12/2018 - Montant de la dette sociale du FRI au 31/12/2018		<u>3 325 308,00 €</u>

CAPACITY BUILDING FUND (CBF) - Fonds pour le renforcement des capacités

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.

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.

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Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	1 145 818,41	
<u>Income - Revenus:</u>		
IHO Budget Allocation 2018 - <i>Dotation budgétaire de l'OHI pour 2018</i>	206 000,00	
Support from 2017 result - <i>Affectation du résultat 2017</i>	100 000,00	
Support from the Republic of Korea - <i>Soutien reçu de la République de Corée</i>	374 448,00	
Support from Japan - <i>Soutien reçu du Japon</i>	2 640,00	
		1 828 906,41
<u>Expenses - Dépenses :</u>		
Activities supported by the Rep.of Korea - <i>Activités financées par la Rep. de Corée</i>	-348 341,74	
Activities supported by Japan - <i>Activités financées par le Japon</i>	-304 069,30	
Activities supported by IHO Capacity Building Fund - <i>Activités financées par le fonds de l'OHI</i>	-313 913,89	
		-966 324,93
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>		862 581,48 €

SPECIAL PROJECTS FUND - Fonds pour les projets spéciaux

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

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

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	78 023,30	
IHO Budget Allocation 2018 - <i>Dotation budgétaire de l'OHI pour 2018</i>	50 000,00	
Support from 2017 result - <i>Affectation du résultat 2017</i>	37 000,00	
Expenses in relation to celebration of IHO centenary	-26 493,86	
Expenses in relation to WP 3.3.9 - <i>Maintain IHO Publications (C-6, C-47, S-5, S-8)</i>		
<i>Dépenses en connection avec l'élément 3.3.9 du programme de travail : Maintien des publications OHI</i>		
Travel expenses - <i>Frais de voyages</i>	-4 905,53	
Portolan project S122 - S123	-25 000,00	
IIC Technologies	-45 840,72	
Primar S100	-20 000,00	
Amount of fund on 31st December 2018 - <i>Montant du fonds au 31 décembre 2018</i>		42 783,19 €

IBSC FUND - FONDS IBSC

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

Le Fonds sert à couvrir les dépenses opérationnelles autorisées du Comité.

A partir de 2015, l'OHI en tant que secrétaire de l'IBSC, a repris le rôle de trésorier du Fonds.

Amount of fund on 1 January 2018 - <i>Montant du fonds au 1er janvier 2018</i>	37 163,87	
IHO Budget Allocation 2018 - <i>Dotation budgétaire de l'OHI pour 2018</i>	10 000,00	
Fees levied on institutions seeking recognition by IBSC - <i>Honoraires facturés aux institutions souhaitant obtenir l'homologation IBSC</i>	49 696,03	
Travel expenses - <i>Frais de voyages</i>	-33 502,86	
Amount of fund on 31 December 2018 - <i>Montant du fonds au 31 décembre 2018</i>		63 357,04 €

The ABLOS, GEBCO and IBSC funds are all operated as part of the consolidated IHO bank accounts
Les fonds ABLOS, GEBCO et IBSC sont tous gérés par le biais des comptes bancaires consolidés de l'OHI.

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