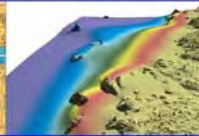
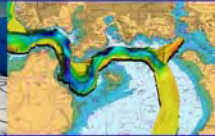




INTERNATIONAL HYDROGRAPHIC BULLETIN



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January - December 2018

JANUARY

13TH MEETING OF THE DATA QUALITY WORKING GROUP (DQWG)

IHO Secretariat, Monaco, 15–19 January

Contribution to the IHO Work Programme 2018	
Task 2.1.2.6	HSSC WGs meetings / DQWG
Task 2.4.9	S-57 Framework / S-67 – <i>Mariners' Guide to Accuracy of ENC</i> s

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 Kampfer, Technical Standards Support Officer Jeff Wootton and Assistant Director Yves Guillam represented the IHO Secretariat.

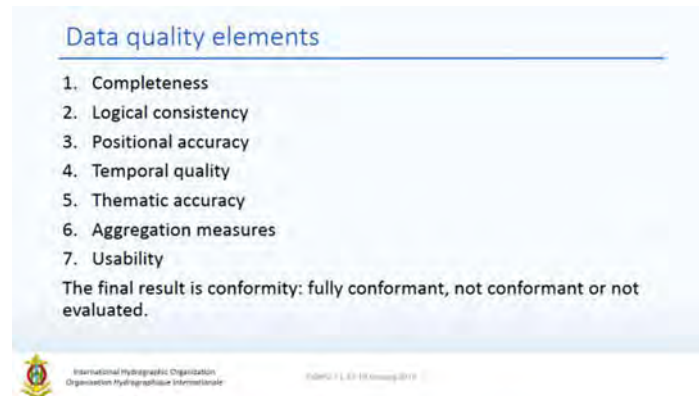


Participants in the DQWG-13 meeting, IHO Secretariat, Monaco

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 INSPIRE¹ technical guidelines for quality elements 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 ENCs*. 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.

The next meeting is planned at the IHO Secretariat, Monaco, from 5 to 8 February 2019. Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > DQWG > DQWG-13 > Documents.

¹ *Infrastructure for Spatial Information in Europe.*

8TH E-NAVIGATION UNDERWAY INTERNATIONAL CONFERENCE

MS Pearl Seaways, at Sea, 24 to 26 January

Contribution to the IHO Work Programme 2018

Task 2.1.6.1 E-navigation Underway
International 2018

The 8th e-Navigation Underway International conference was held from 24th to 26th 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

The conference was attended by 144 delegates, representing 29 countries and 7 international organizations. 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 recognized as the baseline standard for e-navigation.



Abri Kampfer addressing the Conference

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 realized the potential and business cases in e-navigation both in the areas of safety, efficiency and cost reduction.
- Increasing attention is being paid to harmonized 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 realization 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 organizations must prepare.

The presentations from the sessions are provided on the IALA web site at <http://www.iala-aism.org/products-projects/e-navigation/e-nav-underway/e-nav-underway-international-2018/>.

An invitation was issued to the 2018 e-Navigation Underway (North America) Conference to be held in California in the autumn of 2018 and to the second e-Navigation Underway – Asia-Pacific 2018 conference to be held in Seoul, Republic of Korea, from 3rd to 5th June 2018. An invitation was also issued to the 9th e-Navigation Underway International conference to be held on board ship in early 2019.

FEBRUARY

7TH MEETING OF THE IHO-EU NETWORK WORKING GROUP Saint-Mandé, France, 06-07 February

Contribution to the IHO Work Programme 2018	
Task 1.1.4	Attendance 7th IENWG

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 seventh meeting in Saint-Mandé, France, on 6 and 7 February 2018, at the invitation of the French Hydrographic Office (Shom).

The meeting was chaired by Laurent Louvart (France) and attended by representatives from the following Regional Hydrographic Commissions:

- Baltic Sea Hydrographic Commission (Sweden),
- Eastern Atlantic Hydrographic Commission (France),
- Meso American - Caribbean Sea Hydrographic Commission (France),
- Nordic Hydrographic Commission (Norway),
- South Africa and Islands Hydrographic Commission (France),
- South West Pacific Hydrographic Commission (France).
- North Sea Hydrographic Commission (Germany)

Apologies had been received from Denmark, representing the Arctic Regional Hydrographic Commission and Greece representing the Mediterranean and Black Sea Hydrographic Commission. Representatives from the Italian Hydrographic Office and a representative from Ireland participated, both as Associate Members. Director Abri Kampfer represented the Secretariat of the IHO.



Participants to the 7th IENWG meeting

The main objective of the meeting was to finalize the IENWG plenary session programme planned on 27 and 28 February in Brussels. The programme will include feedback on the progress with the European Maritime Spatial Planning directive as an outcome of participation in the Expert Group of States. The deadline for the establishment of Maritime Spatial Plans (MSP) is 2021. Member States are in different stages of their MSP development processes, using different methodologies and tools. Although Hydrographic Offices (HOs) are potentially key players for MSP due to their experience of using many reference data, some are not involved in their national organisation for MSP. IENWG took an action of promoting the role of HOs for MSP and noting a strategy to improve participation will need to be determined.

Progress of the Coastal Mapping Project, funded by the European Commission in support of the development of the European Marine Observation and Data Network (EMODnet) and in particular phase III of the component of EMODnet, was discussed. Discussion will also be required on ways to collaborate with the IHO-IOC/GEBCO Seabed 2030 Project. The meeting also considered the possible development of a European Strategy for High Resolution Coastal Bathymetric Data Acquisition Programmes.

There is an expectation that 14 countries will be represented at the plenary, namely Belgium, Croatia, Denmark, France, Germany, Greece, Ireland, Italy, Latvia, Netherlands, Norway, Portugal, Spain and Sweden. An important anticipated outcome of the plenary will be that Hydrographic Offices should be identified by the Offices of the European Commission as a major network representing significant elements for coastal knowledge and associated policies.

France was re-elected to chair the IENWG. The meeting shared the concern of irregular attendance and participation in work by correspondence from some members.

The IENWG Plenary session will be held in Brussels, Belgium, from 27 to 28 February 2018.

5TH SESSION OF THE IMO SUB-COMMITTEE ON NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE

London, United Kingdom, 19 – 23 February

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.



IMO NCSR 5 Plenary in session

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.

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.

Mr Ringo Lakeman, Netherlands, and Mr Nigel Clifford, New Zealand, were re-elected as Chair and Vice-Chair, respectively, of the Sub-Committee for its sixth session (NCSR 6) scheduled to be held at the IMO Headquarters from 21 to 25 January 2019. The full report of NCSR 5 (NCSR 5/23) will be available on the IMODOCS website (<https://webaccounts.imo.org/>) when issued.

15TH CONFERENCE OF THE SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION AND TECHNICAL WORKSHOP ON IMPLEMENTING HYDROGRAPHIC GOVERNANCE Nadi, Fiji, 20-22 February

15th Conference of the South West Pacific Hydrographic Commission

The Royal Fijian Navy hosted the 15th Conference of the South West Pacific Hydrographic Commission (SWPHC) on 21-22 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 organisations and three representatives from industry also participated, a total of 39 participants. The IHO was represented by Director Abri Kampfer and Assistant Director Alberto Costa Neves.

The meeting was opened by Chief Guest, 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 conducted and plans for expanding the hydrographic service are in place. France reported the progress in New Caledonia, French Polynesia and Wallis & Futuna with new surveys and charts, including seven new ENC's, deployment of new survey systems, increase in the monitoring of sea level and availability of hydrographic-related data.

New Zealand informed 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 the new surveys and chart updated in cooperation with the neighboring countries and the developments in its hydrographic unit.



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

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 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.

The Cook Islands reported 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 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 the efforts to build capacity in the country.

Samoa reported the establishment of the National Hydrographic Committee and the risk assessment conducted by New Zealand and informed 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 a Member State of the IHO.

During the Conference Indonesia, from the neighboring EAHC signed the SWPHC Statutes as Associate Member, in order to facilitate the harmonization of ENCs, 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 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 attention to the beneficiary countries on 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 hold 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. Their presentations are available on the IHO website under the SWPHC page.

Next Meeting

Subject to final confirmation, the next meeting is scheduled in Niue, in February 2019. The Commission re-elected Commodore Fiona Freeman (Australia) and Lieutenant-Commander LCDR Saula Tuilevuka (Fiji) to continue as its Chair and Vice-Chair.

**8TH MEETING OF THE IHO-EU NETWORK WORKING GROUP
AND 9TH MEETING OF THE IHO WITH DELEGATES
OF THE EUROPEAN COMMISSION
Brussels, Belgium, 27 - 28 February**

Contribution to the IHO Work Programme 2018	
Task 1.1.4	Attendance at 8th IENWG Meeting, Plenary Session, and the 9 th IHO-EC Meeting

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 eighth 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 the 28 February. Delegates representing DG-Mare², EuroGOOS³, CPMR, DG-Grow⁴-Copernicus⁵, EMODnet⁶ were present.

The IENWG-8 meeting was chaired by Laurent Louvart (France) supported by Corine Locket (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, Sweden) attended the meetings. Assistant Director Yves Guillaum 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, Sweden).

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.

² Directorate-General – Maritime Affairs and Fisheries.

³ European Global Ocean Observing System.

⁴ Directorate-General – Internal Market, Industry, Entrepreneurship and Small and Medium Size Enterprises.

⁵ European Earth Observation Programme (<http://marine.copernicus.eu>).

⁶ European Marine Observation and Data Network (<http://www.emodnet.eu>).



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*”⁷.

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 Conference⁸ 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.

The 9th meeting of the IENWG is planned back-to-back with the EOOS Conference in Brussels, Belgium in November.

⁷ <https://www.youtube.com/watch?v=p3vwngxyXuo>

⁸ European Ocean Observing System: <https://webgate.ec.europa.eu/maritimeforum/en/node/4123>

16TH MEETING OF THE DOCUMENT REVIEW WORKING GROUP OF THE IHO SUB-COMMITTEE ON THE WORLD-WIDE NAVIGATIONAL WARNING SERVICE (DRWG16)

London, UK, 27 February-1 March

Contribution to the IHO Work Programme 2018	
Task 3.5.1	IRCC SC & WG meetings/WWNWS-SC
Task 3.5.2	WWNWS-SC meetings/DRWG
Task 3.5.3	Maintain and extend IHO standards, specifications and publications/S-53
Task 3.5.5	Participate and contribute to the IMO work items on the modernization of the GMDSS and the development of the e navigation implementation plan

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 fifth 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 will be considered by the next (tenth) meeting of the WWNWS-SC (WWNWS10), which will be held from 27-31 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.

The DRWG also reviewed the draft agenda for the proposed joint sessions of WWNWS-SC and the World-Wide Met-Ocean Information Warning Service (WWMIWS) Committee, as well as their individual meeting agenda, in preparation for the meetings in August.

All meeting documents are available on the IHO website

(http://www.iho.int/mtg_docs/com_wg/CPRNW/CPRNW_Doc-review/DRWG16/DRWG16.htm).

The documents, submitted by the DRWG to WWNWS10, will be available on the WWNWS page of the IHO web site. The next meeting is tentatively planned 29-31 January 2019 at IMO in London.

MARCH

THE 8TH MEETING OF THE EAST ASIA HYDROGRAPHIC COMMISSION (EAHC) TRAINING, RESEARCH AND DEVELOPMENT CENTRE BOARD OF DIRECTORS (TRDC-BOD) AND 5TH MEETING OF STEERING COMMITTEE OF THE EAHC Xiamen, China, 05 - 08 March

Contribution to the IHO Work Programme 2018	
Task 3.2.1.3	Attendance at 8th Meeting of the East Asia Hydrographic Commission (EAHC) Training, Research and Development Centre Board of Directors Meeting (TRDC-BOD) and 5th Meeting of Steering Committee of the EAHC.

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 05 to 08 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.

Japan was elected as the new chair of the EAHC SC with Indonesia as the Vice-Chair. The 6th meeting of the EAHC Steering Committee will be held in Indonesia in March 2019.

5TH MEETING OF THE NAUTICAL INFORMATION PROVISION WORKING GROUP (NIPWG)

Genoa, Italy, 12-16 March

Contribution to the IHO Work Programme 2018	
Task 2.1.2.5	Organize, prepare and report meetings of NIPWG
Task 2.5.2	Support the development and implementation of Maritime Service Portfolios (MSP)
Task 2.8.1	Maintain S-12, as appropriate - <i>Standardization of List of Lights and Fog Signals</i>
Task 2.8.3	Maintain S-49, as appropriate - <i>Standardization of Mariners' Routeing Guides</i>



The 5th meeting of the Nautical Information Provision Working Group (NIPWG) took place in Genoa, Italy, from 12 to 16 March, hosted by the Istituto Idrografico della Marina (IIM).

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.

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 Kampfer⁹, Technical Standards Support Officer Jeff Wootton¹⁰, and Assistant Director Yves Guillam.

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 IHO Resolution 2/2007 - *Principles and Procedures for making changes to IHO Technical Standards and Specifications* remains the most important one to be revised. By Decision 12 of the 1st Assembly, the main objective of this revision is to introduce some guidance for conducting impact assessment studies that will support the approval process of S-100-based product specifications. The first proposed amendments will be submitted to the next meeting of HSSC for discussion.

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 (*Catalogues of Nautical Products*). 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 ENCs, 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.

⁹ From 12 to 14 March.

¹⁰ From 13 to 14 March.

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. NIPWG stands ready to coordinate the inputs from the other IHO Working Groups and Sub-Committees (WWNWS¹¹ for instance) involved in the Maritime Services.

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

The 6th meeting of the NIPWG is scheduled to be held in Rostock, Germany, from 14 to 18 January 2019, and the 7th meeting, from 25 to 29 November 2019 in Saint-Petersburg, Russian Federation.



NIPWG-5 participants in Genoa, Italy

¹¹ World-Wide Navigational Warning Service.

8TH MEETING OF THE WORLDWIDE ENC DATABASE (WEND) WORKING GROUP (WENDWG)

Buenos Aires, Argentina, 20 – 22 March

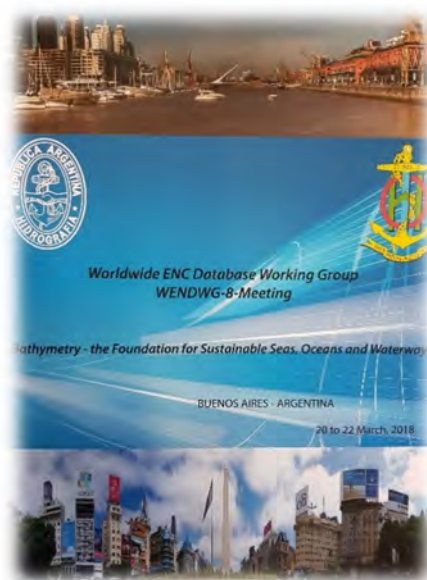
Contribution to the IHO Work Programme 2018	
Task 3.4.1	Organize, prepare and report annual meetings of the WEND Working Group - Foster the implementation of the WEND principles, monitor progress and report to IRCC

The eight 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. 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, EAthC, MACHC, MBSHC, NHC, NSHC, RSAHC, SAIHC, SWAthC and USHC), 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.

The main objectives of the WEND Working Group are to advise the Inter-Regional Coordination Committee (IRCC) and to assist in facilitating a world-wide consistent level of high-quality, updated official ENC data through integrated services that support chart carriage requirements of SOLAS Chapter V and the requirements of the IMO Performance Standards for ECDIS.

Commodore Valentín 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.

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 KHOA¹² in liaison with the IHO Secretariat. The representatives of the six RHCs present, agreed to experiment with INTToGIS II. The task on the

¹² Korea Hydrographic and Oceanographic Agency, Republic of Korea.

monitoring of gaps will be complemented by the updates to the List of Ports database¹³ 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.) to be in a position, 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.

The 9th meeting of the WENDWG is scheduled to be held in Brest, France, in early 2019.



WENDWG-8 participants in Buenos Aires, Argentina

¹³ NGA Publication 150.

**41ST MEETING OF THE UNITED STATES – CANADA
HYDROGRAPHIC COMMISSION (USCHC)
Victoria, British Columbia, Canada, 26 March**

Contribution to the IHO Work Programme 2018	
Task 3.2.15	Attendance of USCHC - USA and 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 Béchard 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 Kampf 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).

The 42nd USCHC meeting will be held in conjunction with the US Hydrographic Conference-2019 which will take place in Biloxi, Mississippi, USA, from 19 to 22 March 2019.

33RD MEETING OF THE NORTH SEA HYDROGRAPHIC COMMISSION (NSHC)

Ostend, Belgium, 27 – 28 March

Contribution to the IHO Work Programme 2018	
Element 3.2.1.9	Attendance of North Sea Hydrographic Commission (NSHC)

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 ENC's 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 dedicated 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 crowdsourcing 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. The next NSHC meeting is scheduled to be held in March 2019 in Reykjavik, Iceland.

APRIL

12TH MEETING OF THE SOUTH WEST ATLANTIC HYDROGRAPHIC COMMISSION (SWAtHC) Montevideo, Uruguay, 5 and 6 April 2018

Contribution to the IHO Work Programme 2018

Task 3.2.13	Attendance of SWAtHC - South West Atlantic Hydrographic Commission
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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.

The next Conference will take place in March/April 2019 in Argentina, the exact date to be decided.



Participants of the SWAtHC12 meeting.

18TH MEETING OF THE NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION

Goa, India, 9-12 April

Contribution to the IHO Work Programme 2018	
Task 3.2.1.8	Attendance of the North Indian Ocean Hydrographic Commission Conference

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 last meetings of the IHO Hydrographic Services and Standards Committee and the Inter Regional Coordination Committee. The meeting also received reports on progress and issues related to the work of the IHO Marine Spatial Data Infrastructures Working Group, relevant activities that had taken place in the International Maritime Organization, 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 emphasise their willingness to engage with the NIOHC and its members to assist the development of hydrographic and cartographic capability within the region.

The UK, the current Vice-Chair of the NIOHC, will assume the Chair of the NIOHC within the next four months in accordance with the Statutes of the Commission. The NIOHC elected Sri Lanka to assume the Vice-Chair position for the next period. Oman indicated they would investigate the hosting of the 19th meeting of the Commission in Muscat, Oman, with proposed dates being 25-28 March 2019. It was agreed to hold an INT Chart Coordination Working Group meeting prior to NIOHC19.



NIOHC18 in plenary session

3RD S-100 WORKING GROUP (S-100WG) MEETING Singapore, 10-13 April

The Maritime and Port Authority of Singapore (MPA) hosted the 3rd S-100 Working Group meeting from 10 to 13 April 2018 in Singapore. Forty eight participants from 22 Member States and 13 Stakeholder organizations attended the meetings. 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 will make provisions 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. As Edition 4.0.0 will not be completed before the 10th Hydrographic Services and Standards Committee (HSSC) meeting, the WG decided to request endorsement via HSSC Circular Letter, after which it will be circulated for Member States final approval.

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 element of this Registry.

The next S-100WG meeting is scheduled to take place in Aalborg, Denmark during the week starting 4 March 2019.

3RD ENC STANDARDS MAINTENANCE WORKING GROUP (ENCWG) MEETING

Wollongong, Australia, 16 - 18 April

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.



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).

The date and venue of the next ENCWG meeting are still to be decided.

**3RD MEETING OF THE IHO TIDES, WATER LEVEL
AND CURRENTS WORKING GROUP**
Viña del Mar, Chile, 16-20 April

Contribution to the IHO Work Programme 2018	
Task 2.1.2.7	Attendance of TWCWG3 meeting

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 of 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.



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.



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

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.



TWCWG3 participants visit to the Servicio Hidrografico y Oceanografico Armada de Chile (SHOA) tsunami warning centre in Valparaíso

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)

Republic of Korea offered to host the next meeting of the TWCWG in Busan from 8 to 12 April 2019.



Participants at the 3rd meeting of the TWCWG

MAY

14TH MEETING OF THE BLACK AND AZOV SEAS WORKING GROUP (BASWG) Constanta, Romania, 3-4 May

Contribution to the IHO Work Programme 2018	
Task 3.2.16	Attendance of BASWG - Black and Azov Seas Working Group

The 14th meeting of the Black and Azov Seas Working Group (BASWG14), which is 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 participants of the 14th meeting of the Black and Azov Seas Working Group.

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 next BASWG meeting will be held in May 2020 in Istanbul, Turkey.

26TH CONGRESS OF THE INTERNATIONAL FEDERATION OF SURVEYORS (FIG)

Istanbul, Turkey, 06-11 May

Contribution to the IHO Work Programme 2018	
Task 1.1.15.6	Attendance of FIG2018 Congress - International Federation of Surveyors.

The 26th Congress of the International Federation of Surveyors (FIG) was held in Istanbul, Turkey from 6 to 11 May 2018. The Congress attracted more than 2,300 participants from almost 100 countries. Amongst the participants was the Hydrographer of Chile. The Congress offered more than 63 technical sessions over the four conference days with around 400 presentations, exhibitions and technical and social tours. The IHO Secretariat was represented by Director Mustafa Iptes.

The theme of the 26th FIG Congress was *“Embracing our smart world where the continents connect: enhancing the geospatial maturity of societies”*. It had a clear technical focus to motivate surveyors to improve their qualifications for the “Geospatial Transformation of the World”. The Congress was officially opened by Prof Dr Mustafa Ozturk, Undersecretary of the Ministry of Environment and Urbanization of Turkey. FIG President Dr Chryssy Potsiou (Greece) also provided a presentation in the first plenary session on the achievements during the last four years.



Director Iptes delivering his presentation at the Commission 4 session of the 26th FIG Congress.

Director Iptes attended the plenary sessions of the FIG Congress and contributed to the technical sessions of the FIG Commission 4 (Hydrography) programme which was chaired by Ms. Angela

Etuonovbe (Nigeria). Director Iptes provided a briefing on *“Importance of Land-sea Interface and Improving Data Gathering, Data Management, Maritime Spatial Data”* and highlighted the importance of hydrography, which has a very close relationship with marine cadastre activities. It was confirmed that Gordon Johnston (United Kingdom) and Simon Ironside (New Zealand) will assume the roles of the Co-Chairs of Commission 4 for the next four years.



Some of the participants of the Commission 4 (Hydrography) at the 26th FIG Congress.

The FIG General Assembly elected Prof Dr-ing Rudolf Staiger (Germany) as the new President of FIG for the term of 2019-2022 as the successor of Dr Chryssy Potsiou. The next FIG Event will be the FIG Working Week 2019 which is scheduled to be held in Hanoi, Vietnam from 22 to 26 April 2019.

The details of the Congress are available at the FIG web site (www.fig.net).

**10TH MEETING OF THE HYDROGRAPHIC SERVICES
AND STANDARDS COMMITTEE (HSSC-10)
Rostock-Warnemünde, Germany, 14-17 May**

Contribution to the IHO Work Programme 2018	
Task 2.1.1	Attendance of HSSC Meeting

The 10th meeting of the Hydrographic Services and Standards Committee (HSSC) took place in Rostock-Warnemünde, Germany from 14-17 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 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 included in the next edition (4.0.0) of the S-100 Framework Standard. Endorsement for this Edition will be sought by HSSC letter after which Member States approval will be sought 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 approved 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”

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 endorsed a new review cycle for 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 will be distributed for evaluation and testing under the terms of the new process.



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

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 is planned to be 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.

The 11th HSSC meeting will take place in Cape Town, South Africa from 6 to 9 May 2019 and the 12th meeting is planned to take place in Taunton, United Kingdom in May 2020.

99TH SESSION OF THE IMO MARITIME SAFETY COMMITTEE

London, United Kingdom, 15-25 May

Contribution to the IHO Work Programme 2018	
Task 1.1.8.3	Attendance at IMO MSC meeting

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.



IMO MSC 99 in plenary session

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 come 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 3-7 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 second 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) (marko.rahikainen@trafi.fi), 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 as it was considered 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 metres 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.

Next Sessions

The next sessions of the MSC are scheduled from 3 to 7 December 2018 (MSC100) and 5 to 14 June 2019 (MSC101). In an attempt to clear the backlog of outstanding planned outputs and allow the Working Groups sufficient time to address all the topics with which they are tasked,

the Committee agreed to propose to the IMO Council that the NCSR Sub-Committee should be extended by 3 days as a trial for the next two sessions; therefore NCSR 6 is proposed to take place 16-25 January 2019.

46TH MEETING OF ISO/TC 211

Copenhagen, Denmark, 28 May to 1 June

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 International Hydrographic Organization (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).

The 47th working group and plenary meeting is scheduled to take place from the 12 to 16 November 2018 in Wuhan, China.

19TH IALA CONFERENCE 2018
Incheon, Republic of Korea, 26 May - 2 June

Contribution to the IHO Work Programme 2018	
Task 1.1.6	Attendance of 19 th 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.

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 (.mrn) will be needed for the development of globally-harmonised 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. 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 harmonised 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 harmonisation and for a common global understanding and implementation of modern VTS services.

In the sessions on Positioning, Navigation and Timing (PNT) the importance of resilient 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.

Helped 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 special Conference session of 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.



Participants of the 19th IALA Conference

JUNE

16TH MEETING OF THE IHO CAPACITY BUILDING SUB-COMMITTEE (CBSC16) 30 May - 1 June, Goa, India

Contribution to the IHO Work Programme 2018	
Task 3.3.1	Organize, prepare and report annual meetings of the 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).



Participants of the 16th meeting of CBSC

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 the 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 endeavours 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 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.

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.

The next meeting of the CBSC is planned to be held in Genoa, Italy, from 29 to 31 May 2019, hosted by the Italian Navy Hydrographic Institute, preceded by a one and a half-day CB Stakeholders' Seminar. Following meetings will be held in Poland (2020), Ecuador (2021) and Japan (2022, to be confirmed).

10TH MEETING OF THE IHO INTER-REGIONAL COORDINATION COMMITTEE (IRCC10)

4-6 June, Goa, India

Contribution to the IHO Work Programme 2018	
Task 3.1.1	Organize, prepare and report annual meetings 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 IBSC activities, examined the developments on Crowd-Sourced 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 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 an 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 the progress on Seabed 2030 Project. IRCC endorsed the final draft version of the B-12 Guideline (*IHO Guideline on Crowd-sourced Bathymetry, Edition 1.0.0*) prior to final approval by the Council and 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 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 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 the developments in databases and online services, in particular the IHO Geographic Information System (GIS) tools.

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



The Participants to the IRCC10 Meeting.

The 11th meeting of the IRCC will take place in Genoa, Italy, from 3 to 5 June 2019, hosted by the Italian Hydrographic Institute and the 12th meeting is planned to be held in Poland (2020).

All the documents of the meeting are posted at the IRCC section of the IHO website.

MONACOLOGY

2018

Monaco, 11-15 June

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 1er, from 11 to 15 June, in front of the International Hydrographic Organization headquarters (IHO).

Our 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 resolution 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

1ST S-100 SECURITY (AUTHENTICATION AND DATA ENCRYPTION) MEETING

IHO Secretariat, Monaco, 18 June

Contribution to the IHO Work Programme 2018	
Task 2.3.2	Maintain and extend S-100

The IHO Secretariat hosted an ad-hoc S-100 Security (Authentication and Data Encryption) Meeting on the 18th 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 Kampfner 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 will be included as Part 15 in the new Edition 4.0.0 of S-100 currently in preparation.

68TH SESSION OF THE IMO TECHNICAL COOPERATION COMMITTEE (TC 68)

London, UK, 18 - 20 June

Contribution to the IHO Work Programme 2018	
Task 1.1.8.5	Maintain relationship with the International Maritime Organization (IMO) - TCC

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 Committee re-elected Mr. Zulkurnain Ayub (Malaysia) and Mr. Laurent Parenté (Vanuatu) as Chair and Vice-Chair for 2019. The next session of the Technical Cooperation Committee is scheduled to take place from 25 to 27 June 2019 at the IMO Headquarters.



The IMO Secretary-General addresses the meeting

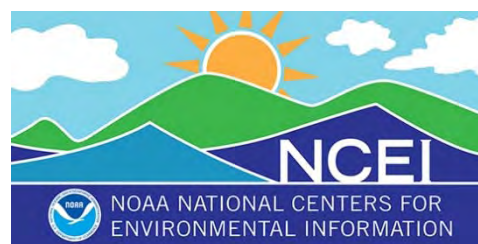
6TH MEETING OF THE CROWDSOURCED BATHYMETRY WORKING GROUP

Boulder, Colorado, USA, 19-21 June

Contribution to the IHO Work Programme 2018	
Task 3.6.4	Attendance of CSBWG6 meeting

The Crowd-Sourced 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 participants of the 6th meeting of the CSBWG between sessions

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 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.



The 6th meeting of the CSBWG in plenary session

It was agreed that the next meeting of the working group should progress the work in preparing Edition 2.0.0 and the expanded tasks to be undertaken by the CSBWG. It is therefore planned to hold a 7th meeting of the CSBWG in Québec City, Canada on 12-14 February 2019. In addition, to assist with planning, it was agreed the 8th meeting of the CSBWG would be held at the IHO, Monaco, in late November/early December 2019 and the 9th meeting would be held in Stavanger, Norway, in June 2020.

The report of the meeting and the supporting papers will be available from the CSBWG section of the IHO web site: www.iho.int > Committees & WG > IRCC > CSBWG

3RD S-101 PROJECT TEAM MEETING
IHO Secretariat, Monaco, 19 - 21 June

Contribution to the IHO Work Programme 2018	
Task 2.3.4	Develop and maintain S-10x Product Specifications. Hosting of the 3 rd S-101 Project Team Meeting.

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.

It is anticipated that Edition 1.0.0 of S-101 will be published in December 2018 for testing and evaluation. Under the new Review Cycle for the WG/PT Development Phase of Product Specifications, agreed at the 10th Hydrographic Services and Standards Committee (HSSC) meeting, the S-100WG will be able to produce “Revision” editions of the standard to accommodate stakeholder feedback. It is anticipated that S-100 Edition 2.0.0 will be published in 2020.

The date and venue of the 4th S-100PT meeting has yet to be decided.

IHO HYDROGRAPHIC COMMISSION ON ANTARCTICA

15th Conference, Niteroi, Brazil, 26-28 June

Contribution to the IHO Work Programme 2018	
Task 3.2.2	Organize, prepare for and report meetings of Hydrographic Commission on Antarctica (HCA)

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 initiative of IHO Member States which are Member States of the Antarctic Treaty too, the HCA seeks to coordinate hydrographic activities so as 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). 19 delegates from 10 Member States (Australia, Brazil, Chile, Colombia, Italy, Russian Federation, South Africa, United Kingdom, USA, Venezuela), one stakeholder organization (IAATO¹⁴), 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.



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

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.

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 demonstrate 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 crowd-sourced 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.

¹⁴ IAATO: The International Association of Antarctic Tour Operators.

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 this 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 centred 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 favourite 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.



Impressions of the arrangements made by the host to celebrate the event of HCA-15



Since the HCA-15 was coincidentally timed with the Football World Cup in Russia. The HCA members did not miss to collectively watch the game of the Brazilian team against Serbia and congratulated the winner.

The Chair of the HCA Hydrographic Priorities Working Group (HPWG) provided a comprehensive analysis of the charting coverage (INT paper charts and ENCs) 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 campaign to survey. The Commission agreed that the use of backscatter technology should gain more attention since it bridges well to scientific domains like 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 42st 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 of July 2019. Since the Czech Republic is not an IHO Member, the Secretariat accepted the organizing role for the event.

JULY

2ND MEETING OF THE IHO HSSC PROJECT TEAM ON STANDARDS FOR HYDROGRAPHIC SURVEYS (HSPT2) Niterói, Brazil 3-6 July

Contribution to the IHO Work Programme 2018	
Task 2.1.2.9	Attendance of HSPT2 meeting

The Project Team on Standards for Hydrographic Surveys (HSPT), which is tasked by the IHO Hydrographic Services and Standards Committee (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.



2nd meeting of the HSSC HSPT in plenary session

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 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. The next HSPT meeting (HSPT3) is planned for 12-15 March 2019 in Wollongong, Australia, with a possible fourth meeting towards the end of the year to prepare the final draft for submission to HSSC in 2020.

All the relevant meeting documents and presentations, as well as the final meeting report, will be available from the HSPT section of the HSSC webpage

(https://www.iho.int/mtg_docs/com_wg/HSSC/HSPT/HSPT2/HSPT2.htm).

AUGUST

8TH SESSION OF THE UN COMMITTEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT (UN-GGIM)

New York, USA, 30 July - 3 August

Contribution to the IHO Work Programme 2018	
Task 1.1.12	Maintain relationship with United Nations (UN) organizations based in New York, including:
Task 1.1.12.1	- the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) and - WG on Marine Geospatial Information



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 organisations – amongst them IHO, represented by the Secretary-General of the IHO, Dr Mathias Jonas.

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.





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

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.

The next Session of the Committee is planned at the UN Headquarters, New York, from 29th July to 2nd August 2019.

15TH CONFERENCE OF THE SOUTHERN AFRICA AND ISLANDS HYDROGRAPHIC COMMISSION (SAIHC) AND SEMINAR FOR RAISING HYDROGRAPHIC AWARENESS

Eden Island, Seychelles, 27 - 30 August

Contribution to the IHO Work Programme 2018	
Task 3.2.1.11	Attendance of SAIHC – 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.



Participants of the 15th SAIHC Conference

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.

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, 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.

Next Meeting

Subject to final confirmation, the next meeting is scheduled in Nairobi, Kenya on 2 to 5 September 2019. The Commission re-elected Rear Admiral Tim Lowe (UK) and Captain Theo Stokes (South Africa) to continue as its Chair and Vice-Chair.

All papers and presentations for the Seminar and the Conference are available on the SAIHC15 document page on the IHO website (<http://www.iho.int>).

**23RD CONFERENCE OF THE BALTIC SEA
HYDROGRAPHIC COMMISSION**
Aalborg, Denmark, 27-29 August

Contribution to the IHO Work Programme 2018	
Task 3.2.1.2	Attendance of BSHC23 meeting

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.



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

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 the five (Denmark, Finland, Germany, Sweden, Russian Federation) of the nine BSHC members will be present at the Council. He encouraged the remaining 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 one 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 WNNWS 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 standpoint 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 necessary amendments of the Statutes of the BSHC in order to reflect changes of the IHO convention properly. As 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. It was agreed that the next meeting of the BSHC will be hosted in Gdansk by Poland in the second week of September 2019. All available documents of the meeting are posted on the BSHC page of the IHO website as well as under www.bshhc.pro.

10TH MEETING OF THE IHO WORLD-WIDE NAVIGATIONAL WARNING SERVICE SUB-COMMITTEE

IHO, Monaco, 27 - 31 August

Contribution to the IHO Work Programme 2018	
Task 3.5.1	Attendance of WWMWS-SC meeting

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 - 1 March 2018) were discussed.



Joint WWNWS10 and WWMWS1 in plenary session

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.


The next meeting of WWNWS-SC will be held in Halifax, Canada, 26 to 30 August 2019. Details will be published on the WWNWS-SC page of the IHO website when available.

When finalized the report of WWNWS10 will be posted in the IHO website, where all the meeting documents are already available (www.iho.int > Committees & WG > WWNWS-SC > WWNWS10)

SEPTEMBER

8TH CONFERENCE OF THE ARCTIC REGIONAL HYDROGRAPHIC COMMISSION (ARHC) AND OPEN FORUM *IMPROVING MARINE KNOWLEDGE IN THE ARCTIC*

Longyearbyen (78° N), Svalbard, Norway, 11–13 September

Contribution to the IHO Work Programme 2018		 Kartverket
Task 3.2.1.1	Prepare for and report meetings of the Regional Hydrographic Commissions (RHC) / ARHC	

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.

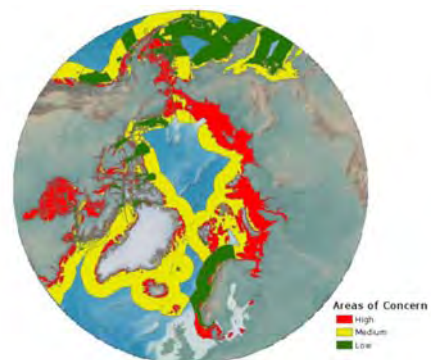


Participants in ARHC-8, Longyearbyen (78°N), Svalbard, Norway

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 PAME¹⁵. 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. An 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.

¹⁵ PAME: Arctic Council's working group on the Protection of the Arctic Marine Environment.

11TH JOINT IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMP CAPACITY BUILDING COORDINATION MEETING

HQS Wellington, London, UK, 10 and 11 September

Contribution to the IHO Work Programme 2018	
Task 3.3.6	Organize, prepare and report on meetings with other organizations, funding agencies, private sector and academia

The 11th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMP Capacity Building (CB) Coordination Meeting was held on 10 and 11 September 2018, onboard the HQS Wellington, Headquarters of the International Maritime Pilots' Association (IMP) in London, UK. The annual meeting brought together ten representatives from the IHO, IMO, WMO, IOC, IALA, FIG and IMP. 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/IMP Capacity Building Coordination Meeting at the IMP'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 as the technical visits to Angola, Madagascar, Trinidad and Tobago and Tunisia were also considered, along with the coming seminars preceding the EAtHC, 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 current 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 find adequate people, to raise awareness on the importance of the maritime and marine environment and to promote opportunities. Representatives of the organizations were informed on the planned IHO CB Stakeholders' Seminar which will be held in Genoa, Italy, on 26 and 27 May 2019, preceding the IHO CBSC17 meeting.

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.

The next Joint CB Coordination Meeting will take place on 10 and 11 September 2019 in London, UK, and will be hosted by IMO (to be confirmed).

LIAISON VISIT TO THE 10TH COURSE OF THE IHO-NIPPON FOUNDATION CHART PROJECT

United Kingdom Hydrographic Office, Taunton, UK, 12 September

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 is 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 will end on 14 December 2018. It is attended by students from Brunei Darussalam, Croatia, Indonesia, Pakistan, Philippines, Poland and Sri Lanka.

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.



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

**13TH CONFERENCE OF THE EAST ASIA HYDROGRAPHIC
COMMISSION (EAHC)
& SEMINARS TO CELEBRATE WORLD HYDROGRAPHIC DAY 2018
Jakarta, Indonesia and Putrajaya, Malaysia, 17-20 September**

Contribution to the IHO Work Programme 2018	
Task 1.3.3	Celebrate World Hydrography Day including the preparation of information to support the themes
Task 3.2.1.3	Prepare for and report meetings of the Regional Hydrographic Commissions (RHC) / EAHC

A Seminar, titled “Bathymetry – the foundation of sustainable seas, oceans and waterways” to celebrate World Hydrographic Day 2018 was held on 17th September in Jakarta, Indonesia. The Seminar, organized by the Hydrographic Service of Indonesia (Pushidrosal) was attended by more than two hundred attendees and presented a range of high quality speakers who provided a greater image of the national importance of hydrography for Indonesia and the East Asian region. The Secretary-General of the IHO, Dr Mathias Jonas delivered a keynote, titled “Digital Hydrography – bringing marine knowledge into action”. He responded to various questions from the audience pertaining to the relation between IHO and IMO, the collaboration with Geoinformation industry and his prospects for the conduct of the SeaBed2030 project.

The 13th Conference of the East Asian Regional Hydrographic Commission (EAHC) was held from 18 – 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 Peoples 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 about 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 second 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 about 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 Train 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 amongst 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.

6TH S-100 TEST STRATEGY MEETING (TSM) AND 4TH S-129 UNDER-KEEL CLEARANCE

Project Team Meeting, Busan, Republic of Korea, 17-20 September

Contribution to the IHO Work Programme 2018	
Task 2.1.2.3	Organize, prepare and report meetings of HSSC working groups

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.



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

The S-129 Under-Keel Clearance Project Team (PT) meeting took place on the 17th and 18th of September and the S-100 TSM took place from the 18th to the 20th of 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.

The next meeting is scheduled to take place at the IHO Secretariat, Monaco in September 2019.

IHO-IALA COORDINATION MEETING

Saint-Germain-en-Laye, France, 24 September

Contribution to the IHO Work Programme 2018	
Task 1.1.6	Annual IALA-IHO Secretariat Liaison 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 the 24th September 2018. The meeting was attended by six IALA representatives and Director Abri Kampfer and Assistant Director Tony Pharaoh represented the IHO.



Participants of the second IHO - IALA Coordination Meeting

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 second meeting of the IMO-IHO Harmonization Group on Data Modelling (HGDM). This meeting will take 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 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.

The next IHO-IALA Coordination meeting is planned to take place in February 2019.

HIGH LEVEL CAPACITY BUILDING VISIT TO ANGOLA

Luanda, 25-28 September

Contribution to the IHO Work Programme 2018

Task 1.3.2.1

Undertake high-level visits to Governments of non-MS

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



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

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”.

In the third part of his programme, Director Kampfer participated in the IHMSA 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), IHMSA 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 IHMSA to pursue this activity, including taking steps to initiate the process for Angola to become an IHO Member State.



Participants of the IHMSA Workshop on Navigational Safety

OCTOBER

**15TH CONFERENCE OF
THE EASTERN ATLANTIC HYDROGRAPHIC COMMISSION
Lagos, Nigeria, 17-19 October
&
REGIONAL AWARENESS SEMINAR
ON MARITIME GEOSPATIAL KNOWLEDGE
Lagos, Nigeria, 15-16 October**

Contribution to the IHO Work Programme 2018	
Task 3.2.1.4	Attendance of EAtHC15 Conference
CBWP P-04	Regional Awareness Seminar on Maritime Geospatial Knowledge

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.

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.



Participants of EAtHC15

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) is underway. The meeting was informed that a hydrographic service is now 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, is 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 is 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 CD Okafor from Nigeria and Rear Admiral Carlos Ventura Soares assumed duties, respectively, as Chair and Vice-Chair at the end of the Conference. The next Conference is expected to take place in Lisbon, Portugal in the week of 28 September to 2 October 2020.




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.

31ST MEETING OF THE IHO-IOC GEBCO SUB-COMMITTEE ON UNDERSEA FEATURE NAMES (SCUFN) Wellington, New Zealand, 23 - 27 October

Contribution to the IHO Work Programme 2018			
Task 3.6.1	Organize, prepare and report annual meetings of ... associated bodies including...SCUFN		
			

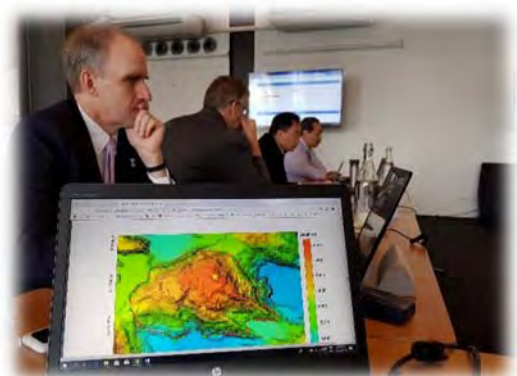
The 31st meeting of the IHO-IOC GEBCO Sub-Committee on Undersea Feature Names (SCUFN) was hosted by the New Zealand Geographic Board, the National Institute of Water and Atmospheric Research (NIWA), GNS Science and Land Information New Zealand (LINZ), in Wellington, New Zealand, from 23 to 27 October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

OUR OCEAN CONFERENCE 2018

Bali, Indonesia, 29-30 October

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.

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.



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

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 Pudjiastutin, 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 his statement on
"Seabed 2030 Project" at the
OOC2018.***

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.

The 2019 edition of the Our Ocean Conference (OOC2019) will be hosted by Norway, in Oslo on 24 and 25 October 2019. Additional information with regards to Our Ocean Conference-2018 is available at the conference web site:

<https://ourocean2018.org>

2ND IMO/IHO HARMONIZATION GROUP ON DATA MODELLING (HGDM)

IMO, London, UK, 29 October to 1 November

Contribution to the IHO Work Programme 2018	
Task 2.1.5.1	Attendance of IMO/IHO HGDM meeting

The second 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 Kampfer 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.

NOVEMBER

FIG/IHO/ICA INTERNATIONAL BOARD ON STANDARDS OF COMPETENCE FOR HYDROGRAPHIC SURVEYORS AND NAUTICAL CARTOGRAPHERS (IBSC) AD HOC MEETING 5 - 9 November 2019, Singapore

Contribution to the IHO Work Programme 2018	
Task 3.8.4	Review the IBSC standards and maintain IBSC Publications, including C-6, C-47, S-5A/B and S-8A/B. Monitor, control and update of the IBSC Standards in S-5A/B and S-8A/B. Provide guidance to training institutions.

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).



IBSC Members with the Hydrographer of Singapore, Dr Parry Oei

The IBSC is responsible for reviewing the recommended standards of competence for hydrographic surveyors and nautical cartographers, to maintain and promulgate all publications and documents resulting from the tasks carried out by the Board and review the syllabi of programmes submitted by hydrographic offices, institutions and learned bodies. It also provides advice and comments on such syllabi by comparison with the recommended minimum standards, awards certificates of programme recognition where appropriate and reviews the procedures for submitting programmes for recognition.

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 paired the 2016 number of 13 programmes recognized, from which six are new programmes.

The next meeting of the Board (IBSC42) will be held in Honolulu (HI), USA, from 25 March to 5 April 2019, hosted by the NOAA/University of New Hampshire Joint Hydrographic Center at the facilities of the University of Hawaii.

4TH MEETING OF THE NAUTICAL CARTOGRAPHY WORKING GROUP (NCWG)

Scheveningen, The Hague, Netherlands, 6 – 9 November

Contribution to the IHO Work Programme 2018		
Task 2.1.2.4	Organize, prepare and report meetings of NCWG	

Hosted by the Hydrographic Service of the Royal Netherlands Navy, the fourth 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/ICPC¹⁶), 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 meeting 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 HSSC-11, in May 2019. 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

¹⁶ International Cable Protection Committee

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.

At the end of the meeting, the working group welcomed the offer by Sweden to host the 5th meeting of the NCWG in Stockholm in November 2019.

47TH MEETING OF THE INTERNATIONAL ORGANIZATION FOR STANDARDIZATION – TECHNICAL COMMITTEE 211 (ISO/TC 211)

Wuhan, China, 12 to 16 November

Contribution to the IHO Work Programme 2018	
Task 1.1.10	Attendance of the ISO/TC211 Meeting

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.

The ISO/TC211 deals with the development of standards and specifications for the geospatial domain. The International Hydrographic Organization (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 and dependant Product Specifications. Assistant Director Anthony Pharaoh represented the IHO Secretariat at the 47th ISO/TC211 Working Group and Plenary meetings.



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.

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 Git¹⁷ repository (at <https://github.com/ISO-TC211>). The repository also includes best practice guidance on the use of UML¹⁸ for the suite of 19100 standards. A new standard (19170) on discrete global grid systems with relevance for IHO standardisation 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. The 48th working group and plenary meeting is scheduled to take place from 3 to 7 June 2019, in Slovenia.

¹⁷ A digital directory or storage space that can be used to store and access multiple versions of project files.

¹⁸ Universal Modelling Language

IHO-IOC
GEBCO (GENERAL BATHYMETRIC CHART OF THE OCEANS)
PROJECT ANNUAL MEETINGS
Canberra, Australia, 12 – 16 November

Contribution to the IHO Work Programme 2018	
Task 3.6.1	Attendance of GEBCO Guiding Committee (GGC) and associated bodies including TSCOM, SCRUM and GEBCO symposium



Information New Zealand (LINZ) in Canberra, Australia, from 12 to 16 November 2018:

A series of meetings related to the IHO-IOC GEBCO (General Bathymetric Chart of the Oceans) project were hosted by Geoscience Australia and Land



- 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



TSCOM, SCRUM and OWG in plenary session

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.

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 were 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



James Johnson, Chief Executive officer, Geoscience Australia, opening of the GEBCO Symposium

For the eleventh 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. The associated presentations will be available from the GEBCO web site at;

(https://www.gebco.net/about_us/gebco_symposium/).

GEBCO Guiding Committee

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.



GEBCO Guiding Committee members at GGC35

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 centers. 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 draft consolidated GEBCO Work Plan and budget will be reported to the 11th meeting of the IHO Inter-Regional Coordination Committee (IRCC) and the 30th meeting of the IOC Assembly, for consideration and endorsement of the parent organizations.

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.

All meeting documents and reports will be available from the IHO website (IHO → Committees and Working Groups → IRCC → GEBCO).

The next GEBCO annual meetings are tentatively planned to take place in November 2019 in Durham, New Hampshire, USA. It was noted that France (Shom) and the IOC were investigating hosting the annual meeting in 2020.

THE 1ST WORLD GEOSPATIAL INFORMATION CONGRESS (UNWGIC)

Deqing, China, 19 - 21 November

Contribution to the IHO Work Programme 2018	
Task 1.1.12	Maintain relationship with United Nations (UN) organizations based in New York, including:
Task 1.1.12.1	- the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) And WG on Marine Geospatial Information

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 is 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 Crowd Source 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.

The next Conference is planned for 2021 at the same place, since Deqing claims to be purposely built as "the City for Geospatial Science and Development".

9TH MEETING OF THE IHO-EU NETWORK WORKING GROUP AND EUROPEAN OCEAN OBSERVING SYSTEM (EOOS) CONFERENCE

Brussels, Belgium, 20 – 23 November

Contribution to the IHO Work Programme 2018		
Task 1.1.4 Participation in the 9 th IENWG Meeting		

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-Agri¹⁹ of the European Commission, hosted by DG-Mare². Delegates representing DG-Mare²⁰, EuroGOOS²¹ and EMODnet²² were present. The IENWG-9 meeting was followed by the 2018 EOOS Conference²³, 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 Guillaum 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.

First, the members noted the “*call to action*” from EOOS, most of the themes being of interest to the IHO community and aligned with the MoU²⁴ 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 standardized and operationalized within and across regional seas, building on the work done via existing regional coordination frameworks;

¹⁹ Directorate-General – Agriculture.

²⁰ Directorate-General – Maritime Affairs and Fisheries.

²¹ European Global Ocean Observing System.

²² European Marine Observation and Data Network (<http://www.emodnet.eu>).

²³ www.eoosconference2018.eu

²⁴ Memorandum of Understanding.

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 crowd-sourcing 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 destabilisation effect in the economy of ENC (and S-57 data) production, maintenance and distribution for Hydrographic Services whose budget relies substantially on the licencing revenues and sales.

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 work programme.



Four Member States (France, Italy, Netherlands, and Portugal) presented technical posters (7) at the EOOS Exhibition. One of which was a summary of a presentation²⁵ already given by Ellen Vos (Netherlands Hydrographic Service) at the European Inspire²⁶ 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

²⁵ "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>

²⁶ Infrastructure for Spatial Information in Europe.

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.

**2ND MEETING OF THE IHO HYDROGRAPHIC DICTIONARY
WORKING GROUP (HDWG2)
IHO Secretariat, Monaco, 27-28 November**

Contribution to the IHO Work Programme 2018	
Task 2.8.2	Maintain S-32- Hydrographic Dictionary

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 Kampf, 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



Participants of the 2nd meeting of the HDWG in Monaco

maintained reference version to 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, (6-9 May 2019) and subsequently at IRCC11 in Genoa, Italy, (3 - 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.

All the relevant meeting documents and presentations, as well as the final meeting report, will be available from the HDWG section of the IHO website in due course.

(https://www.iho.int/mtg_docs/com_wg/CHD/HDWG2/HDWG2.htm)

**19TH MEETING OF THE MESO AMERICAN –
CARIBBEAN SEA HYDROGRAPHIC COMMISSION (MACHC)
AND
SEMINAR ON HYDROGRAPHIC GOVERNANCE AND DEALING
WITH MARITIME DISASTERS**

Cartagena de Indias, Colombia, 26-30 November

Contribution to the IHO Work Programme 2018	
Task 3.2.1.5	Prepare for and report meetings of the Meso American – Caribbean Sea Regional Hydrographic Commission (MACHC)

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 on the progress done by the MICC and 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 is 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 is 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.



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)

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.

Distinguished Service Medal of Colombian Maritime Authority

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.



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

Next Meeting

Next MACHC meeting will be held in Santo Domingo, Dominican Republic, in November/December 2019, preceded by a two-day CB Seminar on Hydrographic Governance.

DECEMBER

HIGH LEVEL VISIT TO PANAMA

Panama City, 3-4 December

Contribution to the IHO Work Programme 2018	
Task 1.3.2.1	Undertake high-level visits to Governments of non-MS

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.



The IHO Team and H.E. Minister Jorge Barakat Pitty, accompanied by PMA Executive Team, at the Panama Maritime Authority.

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 on the Panama Canal. The IHO Team also had a tour on the 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.

100TH SESSION OF THE IMO MARITIME SAFETY COMMITTEE

London, United Kingdom, 3-7 December

Contribution to the IHO Work Programme 2018

Task 1.1.8.3

MSC

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 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 brought in 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 or not to MASS and then to determine the most appropriate way to address MASS operations. The MSC approved an intersessional Working Group meeting, 2-6 September 2019, 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



IMO MSC 100 in plenary session

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 meeting

of the Committee. Noting the lengthy process for revisions to SOLAS, the MSC agreed a resolution urging administrations to take action to apply relevant provisions 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.

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 session 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



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

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.

Office Bearers

The MSC unanimously re-elected Mr Bradley Groves, Australia, as Chair and Mr Juan Carlos Cubisino, Argentina, as Vice-Chair of the Committee for 2019.

Next Sessions

The next session of the MSC is scheduled from 5 to 14 June 2019 (MSC101).

NEW HYDROGRAPHERS

NEW HYDROGRAPHER OF BRAZIL



Vice Admiral ANTONIO FERNANDO GARCEZ FARIA

1. PERSONAL DATA

Date of Birth	06/20/1962
Place of Birth	Rio de Janeiro
Marital Status	Married
Spouse's Name	Cláudia Valéria Pereira Sardinha
Daughter	Milena

2. CAREER

Midshipman	12/13/1983
Ensign	08/31/1984
Lieutenant (Junior Grade)	08/31/1986
Lieutenant	08/31/1989
Lieutenant Commander	08/31/1995
Commander	04/30/2001
Captain	12/25/2006
Rear Admiral	03/31/2012
Vice Admiral	03/31/2016

3. COMMISSIONS

- Directorate of Hydrography and Navigation (Head) Directorate of Education (Head)
- Naval War College (Director)
- Naval General Staff (Deputy Chief of Budget and Planning) Office of the Commander of the Navy (Deputy Chief)
- Directorate of Hydrography and Navigation (Deputy Director Interim)
- Hydrographic Navy Center (Director)

- Third Naval District (Chief of Staff)
- Oceanographic Ship "Antares" (Commanding Officer)
- Brazilian Naval Commission in Washington (Student of the Course: "Operational Oceanography")
- Oceanographic Support Ship "Barão de Teffé"
- Hydrographic Ship "Canopus"
- Ship-School "Custódio de Melo" (Midshipman)

4. COURSES

- Naval Academy
- Hydrography for Officers (International Hydrographic Organization CAT A Course)
- Masters of Sciences in "Operational Oceanography" - Naval Postgraduate School (EUA)
- Philosophy Doctor in "Physical Oceanography" - Naval Postgraduate School (EUA)
- Staff to Senior Officers - Naval War College
- Politics and Maritime Strategy - Naval War College

5. AWARDS

- Defense Merit Order (Degree of Officer)
- Naval Merit Order (Degree of "Comendador") Army Merit Order (Degree of "Comendador")
- Air Force Merit Order (Degree of "Comendador") Military Justice Merit Order (Degree of "Alta Distinção") Victory Medal
- Marechal Cordeiro de Farias Merit Medal Military Gold Medal (Platinum Ribbon) Peacemaker Medal
- Santos Dumont Merit Medal
- Tamandaré Merit Medal
- Commander Vital de Oliveira Award Medal
- Sea Service Merit Medal (Two Anchors)
- Cartographic Merit Order (Degree of "Comendador")

NEW HYDROGRAPHER OF CANADA



Dr. Geneviève Béchard

On February 21, 2018, Dr. Geneviève Béchard will be joining the Department as Director General, Canadian Hydrographic Service.

With close to 30 years of experience in the federal public service, Geneviève is coming to the Department with extensive experience in leading national program development and implementation in science & technology organizations.

She spent much of her career at Natural Resources Canada where she held positions with increasing responsibility including Director of Applications Division in the Canada Center for Remote Sensing, Director of Programs and Planning and Operations, and Director of Central Canada Division - Geological Survey of Canada. Since 2012, she has been Director General of Monitoring and Data Services at the Meteorological Service of Canada, Environment and Climate Change Canada. In this role, she has ensured delivery of continuous weather, water quantity and climate data services to Canada.

Geneviève holds a Ph.D. in Biology from Carleton University, as well as a Master and a Bachelor of Science in Applied Microbiology.

NEW HYDROGRAPHER OF COLOMBIA



**Vice Admiral Mario Germán RODRÍGUEZ VIERA,
Maritime General Director**

Mario Germán RODRÍGUEZ VIERA was born in Buga on September 19, 1965. He joined the Naval School in June 1982. He graduated in June 1986 as Ensign, in June 2014 he was promoted by the National Government to the rank of Rear Admiral and in June 2018 to the rank of Vice Admiral.

His professional training includes the following qualifications:

- ✓ Professional in Naval Sciences and Naval Engineering with a specialization in Electronics from the Naval School of Cadets;
- ✓ War College Specialist in Command and Staff (2002);
- ✓ Specialist in Higher Management ,Military University Nueva Granada (2002);
- ✓ Masters Degree in Defence and National Security (2013);
- ✓ Masters Degree in Strategic Leadership specializing in Management, International Iberoamerican University, Puerto Rico Headquarters (2014);
- ✓ He graduated from the Higher Business Administration Programme,INALDE Business School Institute, University of La Sabana (2013);
- ✓ He received a Doctorate from the University of California FCE for his academic and professional accreditation in the Civil Service;
- ✓ He served on board the following units:
 - Head of Operations and Deck of the ARC SEBASTIAN DE BELALCAZAR in the Pacific Naval Force;
 - Chief of Operations of the ARC GLORIA Trainingship;
 - Head of Operations of ARC CARTAGENA DE INDIAS;
 - Second in Command ARC RAFAEL CASTILLO Y RADA in the Caribbean Naval Force; and Commander of the following Units: ARC ANDAGOYA, ARC MEDARDO MONZÓN and ARC BUENAVENTURA;
- ✓ Ashore he held the following positions:
 - Chief of Operations of the Specific Command of San Andrés and Providencia in the Caribbean Naval Force;
 - Commander of the Pacific Coastguard Command in the Pacific Naval Force;

- Colombian Liaison Officer at the JIATF-SOUTH Agency in Key West, United States; and
- Director of Naval Operations of the National Navy;
- ✓ As Admiral, he held the following posts:
 - Commander of the Naval Fleet,
 - Commander of the Naval Force of the East,
 - Head of Human Development and Family, and
 - Head of Training, Education and Naval Instruction.

During his outstanding career he has been awarded different decorations and medals, among those which stand out are:

- The Order of Boyacá in the Grand Officer degree,
- The Order of Military Merit Antonio Nariño Knight Commander grade,
- The Order of Naval Merit Almirante Padilla Knight Commander grade,
- The Cross of the Air Force to Aeronautical Merit Official Category,
- The Medal of Distinguished Services in Public Order for the third time,
- The Medal of Distinguished Services to the Defence Ministry,
- The Medal of Distinguished Services to the Colombian Military Forces,
- The Medal of Distinguished Services to the National Navy,
- The Medal of Distinguished Services to the Marine Infantry,
- The Medal of Distinguished Services to the Submarine Force Medal,
- The Medal of Distinguished Services to the Naval Aviation,
- The Medal of Distinguished Services to the Naval Intelligence,
- The Medal of Distinguished Services to the Surface Force,
- The Medal of Distinguished Services to the Coastguard Corps,
- The Medal of Faith in the Cause of the National Navy,
- The Medal of Faith in the Cause of the National Army,
- The Medal of Order to Personal Freedom GAULA (Police and Military Forces) in the degree to the Great Honor,
- The Medal of Distinguished Services to Logistics Rafael Tono,
- The Medal of Distinguished Services to Engineering, and
- The Medal of Distinguished Services to the Maritime General Directorate.

Since January 4, 2018 he has served as General Maritime Director. His career has spanned 35 years in the National Navy.

NEW HYDROGRAPHER OF JAPAN



Vice Admiral Yukihiro KATO (Ph.D)

1. Date of Birth: 3rd October 1961

2. Education:

PhD Science, Kyushu University in March 1997 Master Degree (Geology), Graduate School of the Hokkaido University in March 1986

3. Assignment History:

- April 2018: Chief Hydrographer of Japan
- April 2016: Director of Technology Planning and International Affairs Division, JHOD (Hydrographic and Oceanographic Department, Japan Coast Guard)
- April 2014: Chief of Owase Coast Guard Office, 4th Regional Coast Guard Headquarters
- April 2013: Director of Oceanographic Data and Information Division,
- JHOD April 2010: Director of Hydrographic Survey Division, JHOD April 2009: Director of Chart and Navigational Information Division,
- JHOD April 2007: Director of Continental Shelf Surveys Office, JHOD April 1987: Joined Hydrographic Department of Japan Maritime Safety
- Agency (Predecessor of JHOD)

4. Interests / Hobby:

Walking

NEW HYDROGRAPHER OF MALAYSIA



First Admiral Hanafiah BIN HASSAN

QUALIFICATIONS/EDUCATION

- 1992 : Certificate of Hydrographic Surveyor Category B (Hydrographic Department Japan Maritime Safety Agency, Tokyo)
- 1998 : Certificate of Hydrographic Surveyor Category A (National Hydrographic School, Goa India)
- 2002 : International Oceanographic Data Exchange, Japan
- 2003 : Diploma (Defense Strategic) Universiti Malaya
- 2004 : International Oceanographic Data Exchange (Ocean Teacher), Belgium
- 2013 : Master (Defence Strategic), Defence College
- 2016 : Defence Studies, National Defence University Beijing

WORK HISTORY

- Jan 1989 - Feb 1990 : Navigation & Executive Officer, KD KELEWANG
- Feb 1990 - Mar 1991 : Welfare Officer, MWL 1
- Mar 1991 - Jan 1995 : Field Surveying Officer, KD MUTIARA
- Jan 1995 - Feb 1997 : Exchange Officer, RNZN
- Feb 1997 - Feb 1999 : Staff Officer 3, RMNHD
- Feb 1999 - Jan 2000 : Staff Officer 2, RMNHD
- Jan 2000 - Dec 2001 : Senior Hydrographer, KD PERANTAU
- Dec 2001 - Jan 2003 : Executive Officer, KD PERANTAU
- Jan 2003 - Jan 2004 : Staff College (HIGATE)
- Jan 2004 - Apr 2005 : Staff Officer 2 Planning
- Apr 2005 - Aug 2006 : Staff Officer 1 Oceanography
- Aug 2006 - Jan 2008 : Staff Officer 1 Hydrography
- Jan 2008 - Jan 2010 : Commanding Officer, KD MUTIARA
- Jan 2010 - Jan 2011 : Defence College

Jan 2011 – Jul 2011 : Director Of Hydrography
Jul 2011 – Apr 2018 : Senior Director of Hydrography
Apr 2018 - Now: Director General of NHC

PUBLICATIONS & PAPERS

Oct 2004 : The Electronic Navigational Chart (ENC) - It's Impact on Surveying, Charting and Safety of Shipping at Sea. North Indian ENC Symposium 2002. New Delhi, India.
Apr 2005 : Privatisation Concept for Hydrographic Ships. Special Paper to Armed Forces Council.

LANGUAGES

Melayu : Excellent (Writing, Speaking and Listening)
English : Good (Writing, Speaking and Listening)

ACCREDITATION

1999 : Excellent Service Award
2004 : Excellent Service Award

ORDERS, DECORATIONS & MEDALS

- Warrior of Military Service (2012)
- Companion of the Crown of Selangor (2012)
- Officer of Military Service (2007)
- Malaysian Service Medal (2006)

NEW HYDROGRAPHER OF MAURITIUS



Commander, IN Rahul Hitesh Bhatt

1. Details of Family

- (a) **Name of Spouse** : Uttara Bhatt
- (b) **Children** : Siddhant Bhatt (08 Yrs)
Saaransh Bhatt (03 Yrs)

2. Education Qualification :

<u>Academic Degree / Diploma Certificate</u>	<u>Main Field of Study</u>	<u>From</u>	<u>To</u>	<u>Name and Location of Institution of Learning</u>
Bachelor of Sciences	Naval Sciences	Jul 2001	Jun 2004	Naval Academy, Goa / Goa University
Cat 'B' course	Hydrography	Jun 2006	Dec 2006	National Institute of Hydrography
Master of Science / CAT 'A' certification recognised by the International Hydrographic Organisation (IHO)	Hydrography	Mar 2011	Mar 2012	National Institute of Hydrography / Goa University

3. Professional Experience:

<u>Employee / Name of Organization</u>	<u>From till date</u>	<u>Title of Post</u>	<u>Nature of duties</u>
IN Ship Sarvekshak	Dec 06 – Jul 09	Watch Keeping Officer	Assistant Hydrographer and Navigating Officer, Communications Officer and other miscellaneous duties
National Defence Academy	Jul 09-Mar 11	Divisional Officer	Training Officer-cadets in Naval subjects and in their overall development
National Institute of Hydrography	Mar 11 – Mar 12	Student Officer	Student Officer
IN Ship Jamuna	Mar – Sep 12	Watch Keeping Officer	Senior Hydrographic Surveyor

IN Ship Makar	Sep 12 – Nov 14	Watch Keeping Officer	Senior Hydrographic Surveyor
IN Ship Makar	Nov 14-Oct 16	Executive Officer	Second in Command of ship, Logistic Officer duties and other miscellaneous duties
National Institute of Hydrography	Oct 16	Nov 17	Imparting instructions on Hydrographic Practices
Mauritius Hydrographic Unit	Dec 17	Till Date	Officer-in-Charge

4. **Achievements and Innovations.**

(a) As a commissioning crew of the first of its class twin Hull catamaran Ship INS Makar, I was involved in commissioning and acceptance trials of advance survey equipment like Autonomous Underwater Vehicle (AUV), hull mounted Sub Bottom Profiler, magnetometer, ship fitted Multibeam Echo Sounding system etc.

(b) Preparation and documentation of detailed Standard Operating Procedures of all the Survey Equipment (including advanced survey equipment suite) and software's supplied to the ship

(c) As the executive officer of the INS Makar, numerous modifications were undertaken for improvement in the design aspects of the ship towards enhancing efficiency, safety and habitability of the ship's crew.

(d) As an Instructor at NIH, I was involved in preparation of documents which covered theory, concepts and operational procedures of the state of art equipment like Autonomous Under Water Vehicle and Remotely Operated Vehicle. In addition a hand book on Global Navigation Satellite System and Side Scan Sonar was also prepared.

NEW HYDROGRAPHER OF PAKISTAN



1. SERVICE HISORY

Captain Muhammad Khalid PN has joined Pakistan Navy in 1990 and Hydrographic service in 1998. During the 27 years of service, has served at distinguished Naval & Hydrographic appointments. Major appointments are as follows:

At Present: Hydrographer Pakistan Navy

- **2015-17** Commanding Officer Hydrographic cum Oceanographic Vessel BEHR PAIMA
- **2014-15** Commanding Officer Trailing Suction Hopper Dredger BEHR KUSHA
- **2014** Second-In-Command Hydrographic cum Oceanographic Vessel BEHR PAIMA
- **2013** Staff Officer (Operations) of Auxiliary Squadron comprising Hydrographic cum Oceanographic ship and Dredging Vessel
- **2010** Senior Surveying Officer of Hydrographic cum Oceanographic ship – responsible for planning all hydrographic / oceanographic surveys, their execution, data processing / product preparation and cruise / survey reports
- **2007-2009** Staff Officer (Hydrography and Oceanography) at National Hydrographic Office – Responsible for overall prioritization, Issuance of relevant instructions, management of national hydrographic and naval oceanographic surveys
- **2005-2006** Staff Officer (Hydrography) at Naval Headquarters, (NHQ) – Responsible for processing hydrographic and oceanographic related cases with at NHQs
- **1998-2004** Survey Officer onboard Hydrographic cum Oceanographic ship – Remained involved at field level hydrographic and physical oceanographic surveys

2. PROFESSIONAL QUALIFICATION

- MS Physical Oceanography from Naval post Graduate School, Monterey – USA
- Post Graduate Diploma hydrographic Surveying from Plymouth university – UK
- Advance Hydrographic Survey Course (Cat A) – UK
- Basic Hydrographic Survey Course (Cat B) – IMA Italy
- Attended EEZ protection Course from HMS Collingwood – UK
- On Job Training with Turkish Hydrographic, Oceanographic and Navigation Department – Istanbul Turkey

NEW HYDROGRAPHER OF PORTUGAL



Rear admiral CARLOS VENTURA SOARES

Rear admiral Carlos Ventura Soares was born in Mozambique in 1963. He joined the Portuguese Navy in 1981. After completing the Naval Academy he served as executive officer for three years on board of a Landing Craft Unit and a Large Patrol Craft. After specializing in Hydrography in 1990 (Category A), he started working as an Hydrographer at the Portuguese Hydrographic Institute (IH), Hydrographic Survey Team, participating and directing several harbour, coastal and oceanic surveys, on board of hydrographic survey vessels. In 1995, after two years at the Naval Postgraduate School, Monterey, United States of America, he achieved a Master of Science in Physical Oceanography. Since then, as an Oceanographer at IH, Oceanography Division, he directed several scientific and military oceanography projects, including scientific cruises on board of oceanographic research vessels.

In September 2001 he was appointed Head of Oceanography Division at the IH. In September 2004 he was also appointed Commanding Officer of the Portuguese Hydrographic Ships Group. He left the Oceanography Division in November 2005 and the Hydrographic Ships Group in January 2006. During the first semester of 2006 he served as Academic Director of the School of Hydrography and Oceanography at the IH and he also worked in the Research and Development area at the same Institute. In June 2006 he was appointed Technical Director of the IH and he remained in that position until September 2012. He became Documentation Director and Director-General Senior Advisor in the Institute (2013-2014). Following this he was appointed Director of the Portuguese Lighthouse Authority and Director of the Sea Rescue Institute (ISN) (2014). He kept the first appointment until September 2016 when he was promoted to flag officer and appointed as Portuguese Maritime Authority Deputy Director-General and Portuguese Maritime Police Deputy Commander. He took up the position of Director-General of the IH (National Hydrographer) on July 2, 2018.

Rear admiral Carlos Ventura Soares attended the Junior Naval War College Course (1996) and the Intermediate Naval War College Course (2004) at the Portuguese Naval War College. He also attended the National Defence Course at the National Defence Institute (2010-2011) and the Flag Officer Promotion Course (2012-2013) at the Military High Studies Institute. He did research activity in Oceanography and he published several papers in national and international scientific journals. He was the Portuguese representative at the Scientific Committee of the NATO Undersea Research Centre in the period 2001-2006. He was also member of the Portuguese Committee for the Intergovernmental Oceanographic Commission – IOC/UNESCO (2004-2012).

NEW HYDROGRAPHER OF SPAIN



Commander José Daniel GONZÁLES-ALLER LACALLE

CURRENT PROFESSIONAL SITUATION

Organization: Spanish Navy

School, Office or Department: Instituto Hidrográfico de la Marina

Position: Commander – Director

Rank: Captain

TRAINING

Diploma	School	Date
Higher Military Training	Spanish Naval School	16/07/1987
Course of Specialization in Hydrography	Navy School of Hydrography	16/07/1991
Diploma in Hydrographic Surveying	Navy School of Hydrography Royal Navy Observatory University of Cadiz	31/07/2001
University Master's Degree in Security and Defense	UNED	21/12/2011

OTHER COURSES

- Aptitude in Statistics
- AEMET Meteorology Course for Navy Officers
- Work Processes in the Navy
- Contracts
- Technical Hydrographic Courses: GPS Positioning; Side Scan Sonar

PREVIOUS SCIENTIFIC AND PROFESSIONAL WORK

Head of Research Cruises

Position	Organization	Date
Head, Cruise of the Exclusive Economic Zone	Ministry of Defense	September 2007
Head, Antarctic Hydrographic Survey	Ministry of Defense	February 2009
Head, AP Argentina Cruise	Ministry of Defense	March 2008
Head, “Wrecks Cádiz 2010” Cruise	Ministry of Defense & Ministry of Culture	Sept – Oct 2010
Head, Antarctic Hydrographic Survey	Ministry of Defense	February 2012

Post onboard Navy vessels

Vessel	Post	From	To
Landing Vessel “Castilla”	Candidate Officer	January 1987	July 1987
Destroyer “Langara”	Propulsion Officer	July 1987	September 1988
Minesweeper “Genil”	Navigating Officer and Second in Command	September 1988	September 1990
Hydrographic Vessel “Antares”	Hydrographic Officer	July 1991	July 1993
Hydrographic Vessel “Rigel”	Second in Command	July 1993	September 1995
Hydrographic Vessel “Antares”	Commanding Officer	September 1995	September 1997
Hydrographic Vessel “Malaspina”	Second in Command	September 1997	September 1999
Hydrographic Vessel “Malaspina”	Commanding Officer	March 2005	March 2007
Amphibious Assault Ship GALICIA	Second in Command	April 2014	April 2016

Land-based Posts

Organization	Position	From	To
Instituto Hidrográfico de la Marina	Head, Physical Oceanography and Physiography Section	September 2001	June 2003
Instituto Hidrográfico de la Marina	Head, Navigational Section	June 2003	March 2005
Instituto Hidrográfico de la Marina	Head, Hydrography Section	April 2007	April 2014
Logistic Support Command	Head, Naval Platform Section	September 2016	June 2018

NEW HYDROGRAPHER OF URUGUAY



Captain Pablo A. TABAREZ

Captain Pablo Andrés TABAREZ is currently serving as Head of the Oceanographic, Hydrographic and Meteorological Office of the Navy (SOHMA).

He joined the national Navy of Uruguay in 1987, graduating from the Naval Academy in 1991.

He served as Junior Officer in the Naval Fusiliers Corps, Oceanographic, Hydrographic and Meteorological Office of the Navy (on many occasions as Head of Division, Head of Department, Deputy Chief and Consultant). He also serviced on board the scientific vessel “Oyarvide”, Maritime Traffic Directorate, Coordinating Office for the project of the Continental Shelf; he was a military Observer in the Democratic Republic of Congo.

He studied the specialization of Hydrography at the International Maritime Academy of Trieste (Italy) followed by the Hydrographic Data Management Course in the same Academy.

He was based in the Oceanographic, Hydrographic and Meteorological Office of the Navy (SOHMA), carrying out hydro-oceanographic surveys on the Río Uruguay, Río de la Plata, Rio Negro, and the Atlantic Ocean and in the waters of the Antarctic Peninsula.

On board the vessel “Oyarvide” he carried out, amongst other tasks, the required hydrographic surveys to collect basic information to be submitted to the United Nations Commission, for the project related to the extension of the Continental Shelf.

He has been a member of national and international Commissions, representing the SOHMA, the national Navy and the national Defence Ministry as a consultant and delegate. He is still actively involved in them.