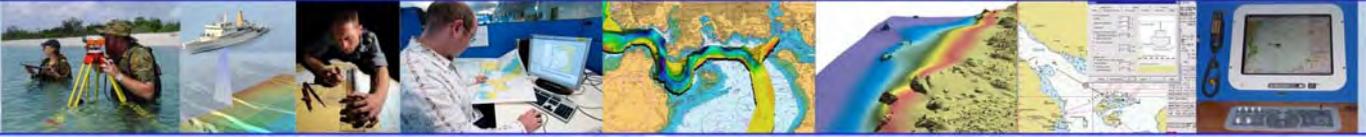




INTERNATIONAL HYDROGRAPHIC BULLETIN



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January - December 2016

JANUARY

4TH MEETING OF THE IHO-EU NETWORK WORKING GROUP Saint-Mandé, France, 18-19 January

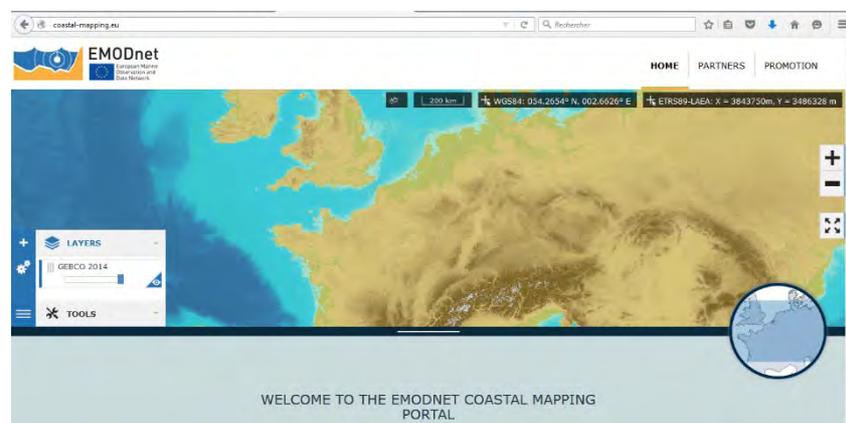
The IHO-EU Network Working Group (IENWG), established by the Inter-Regional Coordination Committee (IRCC) to monitor and deal with the activities and processes developed under the aegis of the European Union (EU), held its fourth meeting in Saint-Mandé, France, on 18 and 19 January 2016, at the invitation of the French Hydrographic Office (SHOM).

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

- Baltic Sea Hydrographic Commission (Sweden),
- Eastern Atlantic Hydrographic Commission (France),
- Nordic Hydrographic Commission (Norway)
- North Indian Ocean Hydrographic Commission (United Kingdom)
- North Sea Hydrographic Commission (Germany),
- South Africa and Islands Hydrographic Commission (France)
- South West Pacific Hydrographic Commission (France).

Apologies had been received from Denmark, representing the Arctic Regional Hydrographic Commission and from Greece, representing the Mediterranean and Black Seas Hydrographic Commission. Director Gilles Bessero represented the IHB.

France, as the Project Coordinator, reported on the 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). The project brings together 11 European Hydrographic Offices. Its objectives are to assess the current availability of digital coastal maps in the EU, to disseminate this information by EMODnet, to share experience of coastal mapping in the EU, to develop standards for best practices and to propose how a future Joint European Coastal Mapping Programme (JECMaP) could operate. The first significant milestone was reached successfully with the opening of a dedicated portal in December 2015 (see <http://coastal-mapping.eu/>).



The meeting noted that the future call for tenders on phase III of the bathymetry component of EMODnet, which was expected in late 2015, had not been issued yet and discussed further the arrangements for preparing a response. The participants agreed that EMODnet-bathymetry should be promoted as the reference dataset in support of UN-GGIM Europe, EuroGOOS and other related European initiatives. The meeting also considered the support that Hydrographic Offices (HOs) could provide to phase III of the component of EMODnet related to human activities and drafted a report inviting the Marine Spatial Data Infrastructures Working Group (MSDIWG) to analyse further the role of HOs. The participants agreed on several actions to strengthen the contribution of Hydrographic Offices to the implementation and further development of the EU Spatial Data Infrastructure framework (INSPIRE) and develop a strategy to promote the use of S-100 - *IHO Universal Hydrographic Data Model*.

The meeting considered the recent development and calls for proposals related to the implementation of Marine Spatial Planning (MSP) and agreed to invite participation to the calls on a case by case basis through the relevant Regional Hydrographic Commissions. France reported on the request that the IENWG be recognized by the European Commission as an observer in the MSP Expert Group.

The meeting reconfirmed its view that EU HOs should liaise with their national maritime administrations to ensure the inclusion of the maintenance of software-based marine equipment (such as ECDIS) on the agenda of the EU Expert Group on the Marine Equipment Directive (MARED). The participants acknowledged the view expressed by the *Comité International Radio-Maritime* (CIRM) that the issue would be best addressed at the level of the International Maritime Organization (IMO), but noted that a common position of the EU IMO Member States would help.

The meeting supported a proposal from France to investigate the feasibility of a project aiming at enhancing the archives held by EU HOs, in particular to support climate change studies and to ensure their conservation and accessibility in the long term. The group agreed to start with an inventory of these archives.

It is planned to hold the 5th meeting of the IENWG on 12 and 13 October 2016, in conjunction with an IHO-EC meeting.

7TH MEETING OF THE MARINE SPATIAL DATA INFRASTRUCTURES WORKING GROUP

Tokyo, Japan, 27-29 January

The Marine Spatial Data Infrastructures Working Group (MSDIWG) was created in 2008 to support the IHO work programme activities related to Spatial Data Infrastructures (SDI) and/or Marine Spatial Data Infrastructures (MSDI), to monitor SDI activities and trends and to promote the use of IHO standards and Member States' marine data in SDI activities. The MSDIWG is also tasked to liaise with other relevant bodies to increase awareness of marine spatial data, to identify ways for the IHO to contribute to the development of SDI/MSDI in support of Member States, to identify possible solutions to any significant technical issues related to interoperability between maritime and land based inputs to SDI and to identify any IHO capacity building requirements related to MSDI. Initially established under the Hydrographic Services and Standards Committee, the Working Group was transferred under the authority of the Inter-Regional Coordination Committee (IRCC) in 2015.

The Working Group held its seventh meeting at the Japan Hydrographic and Oceanographic Department (JHOD) in Tokyo, Japan, from 27 to 29 January. The Chair of the MSDIWG, Mr Jens Peter Hartmann (Denmark), chaired the meeting which was attended by 18 representatives from 13 Member States (Argentina, Brazil, Denmark, France, Germany, Indonesia, Japan, Malaysia, Philippines, Singapore, Spain, Thailand and USA), and nine observers and expert contributors from Caris, ESRI, IIC Technologies, Open Geospatial Consortium (OGC), OceanWise, Seoul University, SevenCs and the Pacific Community (SPC). President Robert Ward and Assistant Director Alberto Costa Neves represented the IHB.



Participants at MSDIWG7 Meeting

The meeting considered the role of the Working Group in updating IHO Publication C-17 (*Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices*) and how to incorporate the necessary information to assist Member States in their provision of hydrographic-related data in support of national and regional developments beyond charting. The meeting agreed that an updated edition of the publication should also identify and promote best practice, indicate existing and new standards, and provide appropriate syllabi for education and training in MSDI. Participants also discussed ways to assess the relevant activities in Regional Hydrographic Commissions in order to be able to provide examples of the benefits of a MSDI and the drawbacks of not having such a system in the near future.

Participants also considered the relevant standards, including those related to new technologies such as the use of aerial vehicles. The meeting was informed of developments for the collection, processing and availability of significant sized datasets in an MSDI and the use of cloud storage

and processing. Participants also considered examples of application for oil spill response and the development of business cases to help in the establishment of MSDIs. The meeting considered the newly created Arctic SDI, the MSDI component to the common operating picture (COP) and the need and suitability of S-100-based product specifications for coastline, administrative borders, installations at sea, restricted areas, ship routes, obstructions and depth contours.

The meeting discussed the communication mechanisms available to raise awareness of the importance of MSDI, to educate decision makers on their roles and responsibilities and to guide hydrographic offices on the establishment of MSDI. It was decided that such communication will be done through the submissions to the International Hydrographic Conference or Assembly, Inter Regional Coordination Committee, Regional Hydrographic Commissions and Capacity Building Sub- Committee, by improving the IHO web pages and by creating "Ambassadors for MSDI". During the meeting a questionnaire developed by Canada to identify aspects of established MSDIs and best practices was reviewed in order to be used during the revision process of C-17.

Participants discussed the progress made with the improved MSDI syllabus submitted to the seventh meeting of the IRCC and the use of e-learning and availability of online learning platforms such as OceanTeacher made available by the International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission (IOC), and other programmes provided by universities and industry members. The MSDIWG7 established four groups for developing a revised framework for the IHO Publication C-17 (Group 1), the identification of case studies and best practices (Group 2), the identification of key datasets for non-navigational purposes (Group 3) and the key messages to be presented to the next International Hydrographic Conference or Assembly to be held in April 2017 (Group 4).

Amongst the improvements to the IHO website the meeting reviewed the creation of a GIS layer to display examples of SDI and MSDI around the world, currently available at:

www.iho.int → Committees & WG → MSDIWG → Body of Knowledge → MSDI Examples (GIS Layer)

The MSDIWG7 meeting was preceded by an Industry Demonstration Workshop (25 January) and by an MSDI Open Forum (26 January) attended by over 100 people. The Open Forum explored the theme: "Contributing to the successful delivery of MSDI". Both events were co-hosted by the JHOD and by the Ocean Policy Research Institute, the Sasakawa Peace Foundation (OPRI-SPF) and were held at Miraikan Hall, in Tokyo, together with a poster session presenting cases of success from government, academy and industry.

The next meeting of the MSDIWG, to be associated with another MSDI Forum, will take place in January/February 2017, in Canada (exact venue and dates to be decided). Further information concerning the meeting, the Industry Demonstration Workshop and the Open Forum presentations are available on the IHO web site at:

www.iho.int → Committees & WG → MSDIWG → MSDIWG7 (and → MSDI Open Forum)

FEBRUARY

6TH ANNUAL INTERNATIONAL E-NAVIGATION UNDERWAY CONFERENCE MS Pearl Seaways, at Sea, 2 - 4 February

The 6th International e-Navigation Underway Conference was organized on the Baltic Sea ferry *Pearl Seaways* from 2 to 4 February by the Danish Maritime Authority and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). The primary focus of the Conference was the collaboration and cooperation now taking place to implement the e-Navigation concept.

The Conference was attended by 140 representatives from many parts of the world representing a cross-section of interests from mariners, maritime administrations, significant flag States, navigation equipment manufacturers, academia and international maritime organizations.



**Secretary-General of IMO, Mr Kitack Lim
addresses the Conference**

Mr Kitack Lim, recently appointed Secretary-General of the International Maritime Organization (IMO), provided the Opening Address in which he highlighted his wish to see the various stakeholders working together to fulfil the IMO's vision for e-Navigation.

President Robert Ward, representing the IHO, addressed the Conference after the Secretary-General and described the underpinning role that the IHO will play in supporting the IHO S-100 - *Universal Hydrographic Data Model*, that has now been designated as an underpinning e-Navigation data exchange framework

standard for e-Navigation. President Ward reported the impending recruitment of an officer at the IHO secretariat who will be dedicated to supporting the IHO digital data standards and in particular S-100.

As a result of the various presentations and discussions that took place over the three days of the Conference, the participants concluded that:



**Secretary-General Lim enjoying a joke with the
Conference participants**

- The stakeholders are cooperating and coordinating and are actively exploring methods to harmonise e-navigation data and communications.
- IALA may be an appropriate organization to coordinate the IMO unplanned output 6 on Maritime Service Portfolios (MSPs) and harmonise the format, structure and communications channels for the exchange of information electronically.
- Recognising the value of the Baltic and International Maritime Council (BIMCO) cyber security guidelines, the e-navigation stakeholders agreed that similar cyber and data security measures must underpin e-navigation.

- Participants recognised that e-navigation should improve the human decision making process, not replace it.
- Participants considered that the concept of the Maritime Cloud could support e-navigation infrastructure and trials are underway.

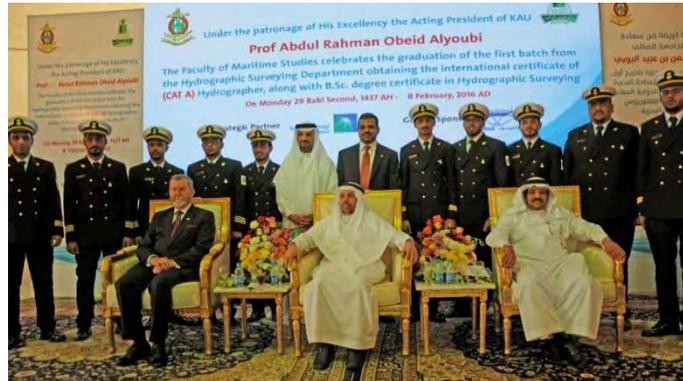
The next e-Navigation Underway Conference in Europe is tentatively planned from 31 January to 2 February 2017.

VISIT TO KING ABDULAZIZ UNIVERSITY AND HYDROGRAPHIC COURSE GRADUATION CEREMONY

Jeddah, Saudi Arabia, 7 - 9 February

At the invitation of the President of the King Abdulaziz University, Jeddah, Saudi Arabia, President Ward visited the Faculty of Maritime Studies and attended the graduation ceremony of the first Category A course to be recognised by the International Board on the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) in Saudi Arabia and in the region.

On 8 February nine students were awarded a Bachelor of Science degree in hydrographic surveying by the Acting President of the King Abdulaziz University, Prof. Abdulrahman Obaid Alyoubi. The four-year course included field studies in Canada, France and The Netherlands. In addition to their degrees, President Ward presented each graduate with a certificate of recognition.



His Excellency Dr Abdul Aziz Al Saab, President of the General Commission for Survey and principal representative of Saudi Arabia to the IHO also attended the graduation ceremony.

President Ward, the President of KAU and the Dean of the Faculty of Maritime Studies flanked by the graduating students, the Vice Dean of the Faculty and the Head of the Department of Hydrographic Surveying



President Ward congratulated the University on its achievement in delivering a very impressive course which he said sets a fine example for the country, the region and the world.

On the previous day, President Ward was given an extensive briefing and tour of the Faculty of Maritime Studies by its Dean, Dr Salem Marzook Alharbi and his academic staff. The President observed the wide range of modern equipment and systems being used during the teaching of hydrography. He also paid a visit to the

dedicated survey motor launch and the newly acquired oceanographic and hydrographic survey ship *Al Azizi*, which was delivered from the builders in France in 2015 and which, along with the existing dedicated hydrographic survey launch, will be used as part of the hydrographic surveying course in the future.

ENC STANDARDS MAINTENANCE WORKING GROUP MEETING IHB, Monaco, 8 - 10 February

The ENC Standards Maintenance Working Group (ENCWG) is a subsidiary Working Group of the Hydrographic Services and Standards Committee (HSSC), and is tasked with the maintenance of the standards that pertain to ENC production and portrayal. The ENCWG Chair, Thomas Mellor (UKHO), convened a Sub-Working Group comprising representatives from several *Expert Contributors* that participate in the ENCWG, in order to review implementation issues identified with the IHO S-52 Presentation Library Edition 4.0.1 and inconsistencies (clarifications) that had been identified in Edition 3.0.1 of IHO publication S-64 - *IHO Test Data Sets for ECDIS*. The meeting took place at the IHB from 8 to 10 February and was attended by seven members from the following companies involved in ECDIS equipment and associated software: Jeppesen, Transas, 7Cs, Wärtsilä SAM Electronics, Navtor and Furuno. The IHB was represented by Assistant Director Anthony Pharaoh.



ENC Standards Maintenance Working Group Meeting

The outcome of the meeting will be considered at the next ENCWG meeting that will take place in Tokyo, Japan from 14 to 18 March. This meeting will be held in conjunction with the S-100 and the Data Protection Scheme Working Groups. It is anticipated that clarifications of the relevant documents will be produced following this meeting.

2ND MEETING OF THE CROWD-SOURCED BATHYMETRY WORKING GROUP

Boulder, Colorado, USA, 10-11 February

The Crowd-Sourced Bathymetry Working Group (CSBWG) has been tasked by the Inter-Regional Coordination Committee (IRCC) to develop a draft IHO publication on policy for trusted crowd-sourced bathymetry (CSB). This CSB Guidance Document will provide guidelines on the collection and assessment of CSB data for inclusion in the global bathymetric data set which is maintained in the IHO Data Centre for Digital Bathymetry (DCDB). This data is intended to be available as a reference for the widest possible use, which may also include nautical charting in some cases.

The Working Group held its second meeting at the offices of the National Oceanographic and Atmospheric Administration (NOAA) - National Centers for Environmental Information (NCEI) in Boulder, Colorado, USA on 10-11 February 2016. The Chair of the CSBWG, Ms Lisa Taylor (USA), chaired the meeting which was attended by representatives from three Member States (Italy, Japan and USA), and observers and expert contributors from Olex AS and Sea ID, which are two



Participants at CSBWG2 Meeting

companies involved in crowd-sourcing technologies. Assistant Director David Wyatt represented the IHB.

The CSBWG received verbal reports from the coordinators of its Correspondence Groups. The reports covered Metadata and Data Formats, Uncertainty, and Systems and Hardware. Discussion sessions were held with the systems developers working on enhancements to the DCDB database and user web-portal and NOAA Legal Counsel for the USA Extended Continental Shelf Project Office. The meeting focused on the structure and contents of the CSB Guidance Document that will be presented as an initial draft to the IRCC at its 8th meeting in Abu Dhabi, UAE in May. Work on this is proceeding well.

It was agreed that a further meeting of the Working Group would be beneficial after IRCC8 and prior to the next International Hydrographic Conference/Assembly and IRRC9 to be held in April and May 2017 respectively. This would assist in ensuring the completion of the guidance document by taking into account any further guidance from the IRCC. A third meeting of the CSBWG is therefore planned for 7-8 November 2016 at the IHB in Monaco.

This meeting will be followed by meetings of the Galway Statement Tri-Partite Implementation Committee and the Atlantic Seabed Mapping International Working Group on the Implementation of the Galway Statement, both of which are actively engaged in crowd-sourced bathymetry initiatives to help improve knowledge in the Atlantic, in particular.

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

MEETING WITH THE DIRECTOR-GENERAL FOR MARITIME AFFAIRS AND FISHERIES

European Commission, Brussels, Belgium, 18 February



On 18 February 2016, IHB Director Gilles Bessero and Ingénieur Général Bruno Frachon, National Hydrographer of France, on behalf of the IHO-European Union Network Working Group (IENWG), met with Mr Joao Aguiar Machado, Director-General for Maritime Affairs and Fisheries, at the European Commission (EC) in Brussels, Belgium. This meeting had been arranged at the end of 2015 following the appointment of Mr Machado. The Directorate-General for Maritime Affairs and Fisheries (DG MARE) is the EC point of contact for the implementation of the Memorandum of Understanding (MOU) on establishing cooperation on maritime affairs between the EC and the IHO that was signed in April 2012.

Mr Machado was assisted by Mr Iain Shepherd, acting Head of DG MARE Unit C/1 - Maritime Policy Atlantic, outermost regions and Arctic, and main point of contact at DG MARE of the IENWG.

Mr Machado acknowledged the importance of the EC-IHO MOU and welcomed the positive outcomes, in particular through the launch of the Coastal Mapping Project led by a consortium of Hydrographic Offices and funded by the EC within the framework of the European Marine Observation and Data Network (EMODnet). He confirmed that there was no alternative to the current mechanism of calls for tenders and public contracts for awarding financial support to HOs. He enquired on the inclusion of the outermost regions of the EU in the Coastal Mapping Project.

The IHO representatives highlighted the wide scope of activities of the IHO and its Member States, encompassing not only the safety of navigation but the support of the whole blue economy, and the relevance of these activities for several EC Directorates-General, including capacity building issues in relation to development aid. They suggested that points of contact be identified in the relevant DGs and that an annual review of items of joint interest be established in order to further develop the synergies between the EC and the IHO, including through better anticipation of the initiatives or needs of the DGs. They noted the need to ensure the sustainability of EMODnet in the long term, building on the operational role of Hydrographic Offices (HOs) and the relevance of the expertise of the HOs in relation to maritime spatial planning and climate change issues.

The current unsatisfactory status of the knowledge of the bathymetry of the seas and oceans and the specific difficulties related to surveying the coastal areas were emphasized. The responsibilities of governments in the provision of hydrographic services and the references to IHO resolutions and recommendations described in the international Convention for the Safety of Life at Sea (SOLAS) were also mentioned.

Director Bessero recalled that three EU coastal States are not yet members of the IHO and noted the importance of the example set by Malta in asking to join the Organization.

The possibility to promote IHO activities at the next European Maritime Day, which will be celebrated in May 2016 in Turku, Finland, was discussed. DG MARE indicated that the programme was already finalized and suggested liaising with the Secretariat of EMODnet to set up a joint stand.

It was agreed in principle to schedule the next meeting between the EC and the IHO in October 2016.

**3ND MEETING OF THE STEERING COMMITTEE
OF THE EAST ASIA HYDROGRAPHIC COMMISSION
Surakarta, Indonesia, 24-26 February**



EAST ASIA HYDROGRAPHIC COMMISSION



The 3rd meeting of the Steering Committee of the East Asia Hydrographic Commission (EAHC) was held in Surakarta, Indonesia from 24 to 26 February, hosted by Dinas Hidro-Oseanografi TNI AL (DISHIDROS), the Navy Hydro-Oceanographic Office of Indonesia, and chaired by Rear Admiral Zaaim Bin Hasan, Director-General of the

National Hydrographic Centre, Malaysia and Chairman of the EAHC. The EAHC Steering Committee meets annually between the triennial meetings of the EAHC to monitor progress in the region and provide an annual forum for the region's Hydrographers to meet.

Representatives from all but one EAHC Member State attended the meeting: China, Indonesia, Japan, Republic of Korea (RoK), Malaysia, Philippines, Singapore and Thailand. The Democratic People's Republic of Korea was not represented. Associate Members Brunei Darussalam and Viet Nam attended the meeting together with the Chair of the GEBCO Guiding Committee (GC). President Ward attended as an invited observer from the secretariat of the IHO.

On the basis of their recent acceptance as Member States of the IHO, Brunei Darussalam and Viet Nam sought full membership of the EAHC. The applications received the support of all the existing Members present, but a final decision must await notification of the approval of the DPRK before full membership can be confirmed.

The meeting received progress reports on the Training and Research Development Center (TRDC), based at the Korean Hydrographic and Oceanographic Agency, in Busan, RoK, established by the Commission to deliver its regional Capacity Building Programme (see: <http://trdc.eahc.asia/>). The increasingly successful implementation of a sustainable and replicating regional capacity building capability was illustrated by the growing number of regional instructors becoming available to conduct training. The TRDC provided a strategic analysis of the current status of the EAHC Capacity Building Programme. This will be used to guide further development of the programme. The Committee endorsed the 2017 work programme and funding bids to be forwarded to the IHO Capacity Building Sub-Committee. President Ward provided a report of IHO activities of relevance to the Commission and the Chair of the GEBCO GC provided a briefing on the IHO-IOC GEBCO project and its involvement with crowd-sourcing for data.

Details of regional Electronic Navigational Chart (ENC) coverage were discussed.

During the meeting, the participants developed a procedure for selecting representatives to serve on the IHO Council when it is formed under the revised Convention on the IHO which is anticipated to enter into force in the near future.

The next meeting of the EAHC Steering Committee will be held in Japan in February 2017.

Prior to the 3rd meeting of the EAHC Steering Committee, President Robert Ward took the opportunity to visit DISHIDROS in Jakarta at the invitation of the Hydrographer of Indonesia, Commodore Daryanto. President Ward delivered a presentation to the staff and invited guests where he discussed current topics being considered in the IHO. He also called on the Chief of Navy, Admiral Ade Supandi, and was able to provide him with a brief on the organizational

impacts for national Hydrographic Offices of the global transition from government mapping agencies moving from the sole production of maps and charts to the provision of geodata services.

3RD SESSION OF THE IMO SUB-COMMITTEE ON NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE

London, United Kingdom, 29 February – 4 March

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). Its functions are to consider technical and operational matters related to the obligations of Governments and operational measures concerning safety of navigation. These include: hydrographic and meteorological services, ships' routing, ship reporting systems, aids to navigation, radio-navigation systems, vessel traffic services, and pilotage; operational requirements and guidelines regarding navigational safety and associated issues, such as regulations for the prevention of collisions and groundings, bridge procedures, voyage planning, avoidance of dangerous situations, places of refuge (including maritime assistance services and relevant aspects of maritime security), carriage requirements, performance standards and operational guidelines for the use of shipborne navigational equipment and other navigational requirements; Governments' obligations and operational measures related to the Global Maritime Distress and Safety System (GMDSS), development and maintenance of the global Search and Rescue (SAR) Plan and the Long Range Identification and Tracking (LRIT) system; operational requirements and guidelines relating to radiocommunications and search and rescue, and, in co-operation with the International Civil Aviation Organization (ICAO), the harmonization of aeronautical and maritime search and rescue procedures; carriage requirements, performance standards and operational guidelines for the use of shipborne radiocommunications and search and rescue equipment; and liaison with the International Telecommunication Union (ITU) on maritime radiocommunication matters.

The 3rd Session of the Sub-Committee (NCSR3) was held at the IMO Headquarters in London, UK from 29 February to 4 March 2016. The IHO was represented by Director Gilles Bessero and Assistant Director David Wyatt, Mr Peter Doherty, Chair of the IHO 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 part of their national delegation.



IMO NCSR 3 in plenary meeting

NCSR3 approved three routing measures, four traffic separation schemes, one inshore route and one area to be avoided, which will be forwarded to the MSC for adoption at its 96th session in May 2016. The Sub-Committee also approved amendments to the General provision on ships' routing (IMO Resolution A.572(14)) regarding the establishment of multiple structures at sea.

The Sub-Committee received reports from the Chair of the IMO NAVTEX Panel, including details on proposed new NAVTEX stations, stations which had recently become operational with the issue of their B1 character, and stations which had become or remained non-operational. The Chair of the IHO WWNWS-SC reported on the activities of the Sub-Committee, highlighting the progress on the S-100-based Product Specification for Navigational Warnings - S-124, and the capacity building training provided to the East Asia Hydrographic Commission and Mediterranean and Black Seas Hydrographic Commission. The Sub-Committee endorsed the proposed amendments to the International SafetyNET Manual and the IMO NAVTEX Manual prepared by the WWNWS-SC and instructed the IMO Secretariat to draft the necessary MSC Circulars for consideration and approval by the MSC at its 96th session in May 2016. The Sub-Committee noted that amendments to the GMDSS Master Plan had been distributed in GMDSS/Circ.18 and Administrations were encouraged to check their national data for accuracy.

The NCSR agreed to advise the MSC that the Galileo system could be recognised as a future component of the World-Wide Radio Navigation System (WWRNS).



Director Bessero in the plenary at NSCR 3

In support of the work item on the development of *Guidelines for the harmonized display of navigation information received via communications equipment and guidelines and criteria for ship reporting systems*, the IHO submitted a document on the contribution of the S-100 framework to the harmonized display of navigation information. The need for coordination between related activities conducted by the IHO and the IMO was highlighted, including the opportunity of activating the IMO/IHO Harmonization

Group on Data Modelling, which had been previously authorized by MSC at its 90th session. Expectations that the output would provide a simplified and more user-friendly display of Marine Safety Information were expressed. The Sub-Committee invited Norway to coordinate a joint proposal from interested Member States and international organizations containing draft *Guidelines for the harmonized display of navigation information received via communications equipment*, for consideration by the NCSR at its fourth session in 2017. Related IMO activities include the development of *Additional modules to the Revised Performance standards for Integrated Navigation Systems (INS)*, for which the Sub-Committee established a Correspondence Group under the coordination of China, the *Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems*, for which the Sub-Committee invited further contribution from the USA and other interested Member States and/or organizations, and the development of *Guidelines on standardized modes of operation (S-mode)*, to be addressed in the post-biennial agenda.

The NCSR endorsed a comprehensive list of conditions which would need to be fulfilled before the Iridium system could be recommended for recognition as a mobile satellite system service provider of the GMDSS. The Sub-Committee recognised that the process had identified a need to review the IMO Resolution A.1001(25), which details the criteria to be met by a provider seeking recognition as a service provider of the GMDSS. The Sub-Committee endorsed the draft outcome of the detailed review of the GMDSS and invited the MSC to approve the review and continue the project in developing the GMDSS Modernization Plan, for which a Correspondence Group was formed, under the coordination of the USA, in anticipation of the Committee's approval.

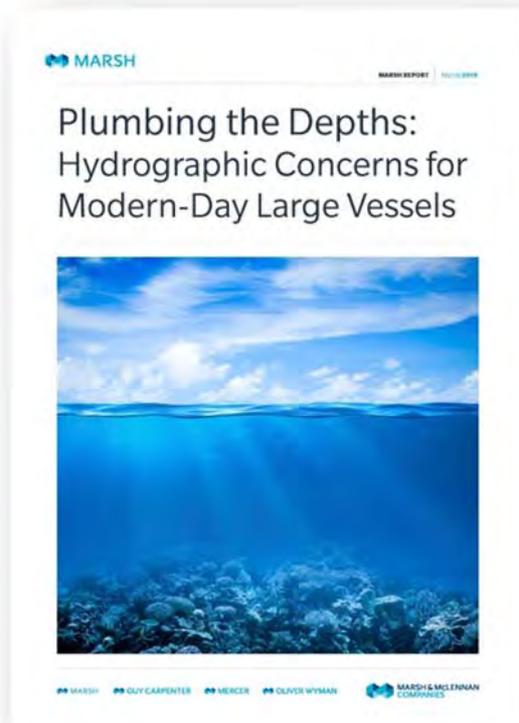
The IHO submitted a document on the monitoring of ECDIS issues and chart coverage. The IHO reported that industry had recently made a request to extend by one year, to 31 August 2017, the transition period for upgrading existing ECDIS systems to meet the revised set of IHO standards which came into force on 31 August 2015 for new ECDIS systems. The Sub-Committee agreed to the one-year extension. Noting the indication in the IHO report of the apparent and inappropriate use of the ECDIS Data Presentation and Performance Check by port State control and vetting inspectors, the Sub-Committee agreed to invite the MSC to note the issue and refer it to the Sub-Committee on Implementation of IMO Instruments (III). The discussion of ECDIS issues was also informed by an off-session presentation coordinated by INTERTANKO, the International Association of Independent Tanker Owners. The presentation reported the wide variations in the skills of "certified ECDIS users", a prevalent lack of awareness of software maintenance requirements and a lack of appropriate procedures aboard ships. The presentation questioned the relevance of some provisions of the IMO ECDIS Performance Standards related to display options. The presentation highlighted the lack of flexibility in setting the safety depth and the difficulty to optimize the anti-grounding function due to the insufficient density of contour lines in most Electronic Navigational Charts.

Mr Ringo Lakeman, The Netherlands, and Mr Nigel Clifford, New Zealand, were re-elected as Chair and Vice-Chair, respectively, of the Sub-Committee for its fourth session scheduled to be held at the IMO Headquarters from 6 to 10 March 2017.

MARCH

MARINE INSURANCE AND RISK MANAGEMENT REPORT HIGHLIGHTS POOR STATE OF SURVEYING AND CHARTING WORLDWIDE

March



Marsh, a global leader in marine insurance broking and risk management, has issued an industry information report that highlights the inherent risks involved in operating ever larger ships in poorly surveyed waters - *Hydrographic Concerns for Modern-Day Large Vessels*. The Marsh Report quotes President Robert Ward, UK National Hydrographer Rear Admiral Tim Lowe, among others.

The report notes that many of the world's charts continue to rely on older or inadequate data that may not be appropriate for the operation of ever-larger, modern vessels. The report also notes that the navigation of largest vessels in inadequately surveyed areas introduces potentially serious additional consequences for ship operators because the marine salvage industry may have difficulty in recovering the largest of stranded or grounded vessels. The report also draws attention to the operational risks involved in the polar regions, where the status of surveying is particularly limited.

The report goes on to encourage governments, mariners and ship operators to contribute to improving the world's charting coverage by investing in surveys and submitting reports and data to Hydrographic Offices and the IHO wherever possible.

The Marsh Report, which is available at:

<https://www.marsh.com/uk/insights/research/hydrographic-concerns-plumbing-the-depths.html>, refers to IHO publication C-55 - *Status of Surveying and Charting Worldwide* as one of its references.

6TH MEETING OF THE IHO/ROK PROGRAMME MANAGEMENT BOARD IHB, Monaco, 3-4 March

The 6th Meeting of the IHO/Republic of Korea (ROK) Programme Management Board (PMB) was held at the International Hydrographic Bureau (IHB), Monaco from 3 to 4 March. The ROK delegation comprised Mr. An-ho Lee, Director of the Marine Territory Division of the Ministry of Oceans and Fisheries and Mr. Woongkyo Song from the International Cooperation Team at the Korea Hydrographic and Oceanographic Agency. The IHO was represented by Mr. Thomas Dehling (Chair of the IHO Capacity Building (CB) Sub-Committee), Director Mustafa Iptes and Assistant Director Alberto Costa Neves (Secretary). Mr. Maxim Van Norden, Programme Manager at the University of Southern Mississippi (USA) and relevant IHB Staff also attended the meeting as invited contributors. The meeting was chaired by Mr. Dehling.



Participants at PMB6

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

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

The PMB considered the management aspects of supporting trainees on the Category "A" Hydrography Programme at the University of Southern Mississippi (USM)/USA and the Category "B" Nautical Cartography Programme at KHOA in order to effectively deliver high level education to participants from developing countries. During the meeting the selection board for the 2016-2017 edition of the Category "A" Programme was established and selected two candidates from Malaysia and Philippines respectively, subject to final acceptance by the USM.

The meeting acknowledged the limited number of qualified candidates that were nominated for the Category "A" Programme this year and agreed on a number of actions to facilitate and guide prospective candidates for future opportunities, including a dedicated page of the IHO website and improved communication with the Member States and Regional Hydrographic Commissions.

During the meeting the ROK confirmed that the support for CB activities in 2016 will be at the same level as the 2015 contribution. The ROK also expressed its interest in supporting the further development of the Capacity Building Management System (CBMS) by working with the IHB. The meeting was also briefed on CB activities being conducted by the East Asia Hydrographic Commission Technical, Research and Development Center (TRDC) and its developments on e-learning to better assist the international hydrographic community.

The seventh meeting of the PMB will take place in the Republic of Korea in February or March 2017 (exact venue and dates to be decided).

6TH MEETING OF THE WORLDWIDE ENC DATABASE (WEND) WORKING GROUP (WENDWG) Stavanger, Norway, 8-10 March

The sixth meeting of the Worldwide ENC Database Working Group (WENDWG) was held from 8 to 10 March in Stavanger, Norway, hosted by the Norwegian Hydrographic Service (NHS). The meeting was chaired by Mr Jamie McMichael-Phillips, UKHO. Twenty-four delegates from 16 Member States (Argentina, Brazil, Canada, Finland, France, Germany, Italy, Japan, Norway, Oman, Poland, South Africa, Sweden, Turkey, United Kingdom, USA), representing 11 Regional Hydrographic Commissions (ARHC, BSHC, EAHC, MACHC, MBSHC, NHC, NSHC, RSAHC, SAIHC, SWAtHC, USCHC), two Regional ENC Coordinating Centres (IC-ENC and PRIMAR), and the IHB attended the meeting. Additionally, four expert contributors from industry and academia had been invited by the WENDWG Chair to participate as observers. Director Mustafa Iptes and Assistant Director Yves Guillam (Secretary) represented the IHB.



Most of the decisions and actions arising from the 5th meeting of the WENDWG were implemented or complete. As a result, the meeting concentrated on the main work items of the WENDWG 2015-16 Work Programme, as approved at the 7th meeting of the Inter-Regional Coordination Committee (IRCC-7).

One of the main objectives of the WENDWG is to monitor the application of the WEND Principles by Hydrographic Offices and the Regional Hydrographic Commissions (RHCs). As reported to the IMO, global ENC coverage has reached the point where further progress is primarily dependent upon new surveys or re-surveys being carried out in the areas not yet covered by ENCs. Yet, for various reasons, there remain numerous cases of overlapping ENCs, which is contrary to the ENC production principles established by the IHO. It was agreed that the situation is not improving: one of the reasons identified is that most of the RHCs do not set up "Approved" ENC Schemes as they do for INT paper charts. IC-ENC provided a comprehensive report on the unpredictable behaviour of ECDIS in situations where overlapping data occurs. This was followed by very fruitful discussions.

Results Summary Table

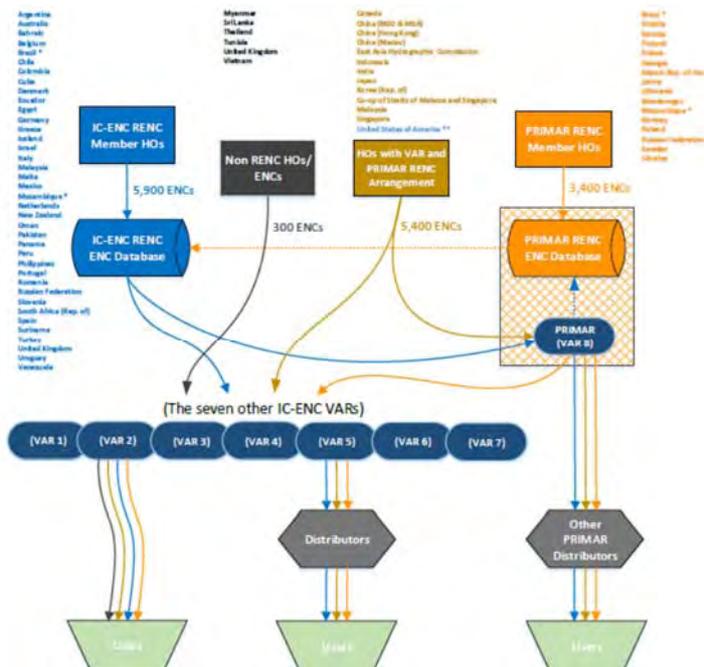
ECDIS	Scenario	Plan	Zoom	Pick Report
A	1	See Annex 2 Figure 1 & 2	See Annex 2 Figure 1	
	2	See Annex 2 Figure 3		
	3	See Annex 2 Figure 4		
B	1	See Annex 2 Figure 5		
	2	See Annex 2 Figure 6		
	3	See Annex 2 Figure 7		
C	1	See Annex 2 Figure 8, 9 & 10		
	2	See Annex 2 Figure 11, 12 & 13		
	3	See Annex 2 Figure 14, 15 & 16		
D	1	See Annex 2 Figure 17		
	2	See Annex 2 Figure 18		
	3	See Annex 2 Figure 19		
E	1	See Annex 2 Figure 20		
	2	See Annex 2 Figure 21		
	3	See Annex 2 Figure 22		

Significant display issues
Some unexpected display or reporting issues but usable
Operating as generally expected - only minor issues

© IHO 2016. All rights reserved. IHO ENC Catalogue and ENC Data Flow Diagram

It was agreed by the Working Group and supported by the industry stakeholder participants that CIRM be invited to distribute the IC-ENC Report on overlapping ENC data to ECDIS manufacturers in order to provide a better understanding of the consequences in ECDIS operating software when uploading or displaying ENCs. A set of associated actions to improve the situation was also decided. In particular, it was decided that the IHO ENC Catalogue should display Approved ENC Schemes as additional layers, and that the IRCC and the WENDWG should prepare a Conference/Assembly Proposal, focused on the navigationally-significant overlapping issues, to be considered at the next International Hydrographic Conference or Assembly in April 2017.

The meeting was informed that progress had been made by several regional International Charting Coordination Working Groups (ICCWG) that are now using ENC coverage as part of their systematic risk assessment analysis protocols. It is considered that the RHCs that are now doing this will benefit further as soon as they can maintain and keep such studies updated for the various categories of SOLAS vessels. A database, that will facilitate the identification of the ports and locations where large scale ENC coverage is missing, will be developed by the IHB, starting in 2016, with initial support provided by the USA (National Geospatial Agency's World Port Index (Publication 150) will be used).



The RENCs reported on their harmonization activities and provided an up to date ENC data flow diagram to illustrate the few remaining distribution issues still to be resolved. Discussions on ENCs that are currently only available through “exclusive” distributor arrangements, rather than via the WEND system, led to a couple of actions agreed by Jeppesen and the UKHO in order to improve the *accessibility* of these ENCs in the future.

A final proposal on Temporary & Preliminary Notices to Mariners (T&P NtMs) and the related Admiralty Information Overlay, delivered by the UKHO as part of their AVCS service, was agreed. It will be included in the WENDWG Chair’s report to the IRCC,

the main recommendation relating to safety of navigation being that “*AIO must be withdrawn where the primary charting authority produces T&P NtMs for its ENC*”.

Following the retirement of Mr Sean Hinds (Canada), Mr John Nyberg was elected as Vice-Chair of the WENDWG. The next meeting of the WENDWG will take place consecutively when the Joint RENC meeting takes place in early February 2017 in the USA.

Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > WENDWG > WENDWG-6. Reference documents are also now available at www.iho.int > Committees & WG > WENDWG > WENDWG Repository.

**14TH MEETING OF THE IHO DOCUMENT REVIEW WORKING GROUP
OF THE SUB-COMMITTEE ON THE WORLD-WIDE NAVIGATION
WARNING SERVICE (DRWG14)
London, UK, 8-10 March**



***DRWG participants at IMO Headquarters with the lens exhibit
from Orfordness Lighthouse in the background***

The Document Review Working Group (DRWG) of the IHO Sub-Committee on the World-Wide Navigation 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 8 to 10 March under the chairmanship of Mr Peter Doherty (USA). The meeting was held in the week following the third session of the IMO Sub-Committee on Navigation, Communications and

Search and Rescue (NCSR3), to take advantage of the presence of WG Members who had previously attended NCSR3 (France, UK, USA, IMO, World Meteorological Organization [WMO], International Mobile Satellite Organization [IMSO], Inmarsat, Iridium and IHB). The IHB was represented by Assistant Director David Wyatt.

The WG undertook editorial reviews 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 Warning Service*. The outcomes will be considered by the next (eighth) meeting of the WWNWS-SC (WWNWS8), which will be held 12-16 September 2016 in Ålesund, Norway.

The outcomes of NCSR3 relevant to the WWNWS-SC were reviewed, which included a number of Correspondence Groups and groups developing equipment guidelines in which WWNWS-SC members should be involved. The Chair provided a brief on his recent presentation to the IOC Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG) that resulted in agreement by the TOWS-WG for greater engagement with the WWNWS-SC.

There was widespread support for a combined WWNWS-SC and Regional Capacity Building (CB) Coordinators' workshop, proposed to be held during WWNWS8, to discuss all aspects of the planning, coordination and delivery of the IHO CB Maritime Safety Information training course.

The WG also reviewed the draft agenda for WWNWS8, including the draft programme for the proposed joint CB Workshop. These documents will be available on the WWNWS page of the IHO web site.

16TH MEETING OF THE NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION Chittagong, Bangladesh, 14-16 March

The 16th meeting of the North Indian Ocean Hydrographic Commission (NIOHC) was held in Chittagong, Bangladesh, from 14 to 16 March, under the chairmanship of Rear Admiral Makbul Hossain, Chairman of the National Hydrographic Committee of Bangladesh. Participants were welcomed at the opening ceremony by Vice Admiral Mohammad Nizamuddin Ahmed, Chief of Naval Staff of the Bangladesh Navy.

NIOHC Member State representatives from Bangladesh, Egypt, India, Myanmar, Pakistan, Saudi Arabia, Sri Lanka, Thailand and the United Kingdom attended the meeting together with representatives of Associate Members from Australia, France, Oman, the Seychelles and the United States. The Russian Federation and Sudan were represented as Observer States. Representatives of the IHO-IOC GEBCO Project and several commercial companies also attended as invited observers. Director Iptes and Assistant Director Wyatt represented the IHB.



Participants at NIOHC16

The NIOHC received national reports from Member States and Associate Member States, a report from the IHB as well as summary reports on the 7th meetings of the IHO Hydrographic Services and Standards Committee and the Inter Regional Coordination Committee held during the previous year and presentations about progress of the IHO-IOC GEBCO Project. The meeting also received reports on progress and issues related to the IHO Worldwide ENC Database concept and the associated Regional ENC Coordinating Centres, the report on the INT chart scheme of Region J, an update on the work of the IHO Marine Spatial Data Infrastructures Working Group, relevant activities that had taken place in the International Maritime Organization, an update from the NAVAREA VIII Coordinator and the outcomes of the 7th meeting of the World-Wide Navigational Warning Service Sub-Committee.

Director Iptes reported on the IHO Work Programme and the Organization's activities during the previous year. As at previous meetings, time was devoted to discussing regional requirements for capacity building (CB). A comprehensive CB plan was developed for submission to the 14th meeting of the IHO Capacity Building Sub-Committee (CBSC14) later in the year. Assistant Director Wyatt provided a progress report on the IHO crowd-sourced bathymetry programme, which generated numerous comments and questions.



Director Iptes addressing the NIOHC16 plenary

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 in the development of hydrographic and cartographic capability within the region.

The Member States reviewed the Statutes of the NIOHC and, in preparation for the approval

of the amendments to the IHO Convention, spent time drafting a new annex detailing the processes and procedures for selecting the NIOHC's representatives for the new IHO Council. Director Iptes also provided the Commission with general information on the next International Hydrographic Conference / Assembly and the revised structure of the IHO, in particular about the IHO Council.

The current Vice-Chair of the NIOHC, Egypt, will assume the Chair of the NIOHC within the next four months in accordance with the Statutes of the Commission. The NIOHC elected India to assume the Vice-Chair position for the next period. Egypt volunteered to host the 17th meeting of the Commission in Alexandria, Egypt, tentatively scheduled during the week of 13 to 17 February; it was agreed to hold an INT Chart Coordination Working Group meeting prior to NIOHC17.

17TH MEETING OF THE ASIA-PACIFIC HEADS OF MARITIME SAFETY AGENCIES

Queenstown, New Zealand, 14-16 March



The Asia-Pacific Heads of Maritime Safety Agencies (APHoMSA) serves a similar function for the regional coordination and implementation of IMO rules and instruments and for

knowledge sharing and capacity building that the Regional Hydrographic Commissions provide for the IHO. The IHO, represented by the secretariat of the IHO, is a permanent observer organization at the meetings of APHoMSA.

The 17th annual Meeting of APHoMSA was held in Queenstown, New Zealand from 14 to 16 March. The Maritime Safety Agencies of Australia, Chile, China, Cook Islands, Fiji, Hong Kong - China, Japan, Kiribati, Republic of Korea, Malaysia, New Caledonia, New Zealand, Niue, Philippines, Singapore, Solomon Islands, Tuvalu, United States and Viet Nam were represented. The IHO, International Maritime Organization (IMO), Pacific Community, International Association of Aids to Navigation and Lighthouse Authorities and the Secretariat of the Pacific Regional Environment Programme were also represented. President Robert Ward attended on behalf of the IHO.

President Ward provided a report on the status of provision of hydrographic and nautical charting services in all countries in the APHoMSA region. He provided a country by country assessment and, in particular, emphasized the currently unsatisfactory provision of Maritime Safety Information (MSI) despite a significant number of the participant organizations having received IHO-sponsored MSI training in recent times. He went on to point out that, in most cases, the trainees were employed in national Maritime Administrations represented in APHoMSA.

President Ward stressed the role that national Maritime Administrations should play in ensuring that appropriate hydrographic and nautical charting services are in place in their jurisdictions in conformance with the obligations placed on States through the relevant articles of the Convention for the Safety of Life at Sea, for which Maritime Administrations are normally answerable in the IMO. He went on to remind the representatives of the Administrations at the meeting that the effective provision of hydrographic services is specifically examined in the IMO mandatory Audit Scheme and that the IHO stood ready to assist those States that may require support.

The next meeting of APHoMSA will take place from 21 to 24 March 2017 in Langkawi, Malaysia.

CONCURRENT MEETINGS OF THE S-100 WORKING GROUP
(S-100WG)
THE ENC STANDARDS MAINTENANCE WORKING GROUP
(ENCWG)
AND THE DATA PROTECTION SCHEME WORKING GROUP
(DPSWG)

Tokyo, Japan, 14 – 18 March

The Japan Hydrographic and Oceanographic Department (JHOD) hosted concurrent meetings of the S-100, ENC Standards Maintenance and Data Protection Scheme Working Groups (WG) in Tokyo, Japan from 14 to 18 March. The meeting schedule included joint sessions to discuss items of mutual interest, as well as separate sessions for items pertaining to each group. Sixty participants from 18 Member States, 15 stakeholder organizations, and one academic institution attended the meetings.



Meeting participants on the first day

The S-100WG reviewed proposals for corrections, clarifications and extensions to the next edition of S-100 - *Universal Hydrographic Data Model*. Proposals to add *Tagged Image File Format* (TIFF) and *Hierarchical Data Format* (HDF5), as encoding formats to S-100 were agreed. The addition of a *Scaled Vector Graphics* (SVG) profile for the creation of symbols was also agreed. The meeting also agreed to make provision for the introduction of *Supertype/Subtype relationships*, and discussed whether PDF should be included as a support file format. Other proposals that were discussed included the use of *unique identifier* and the development of a model for system *alerts and indications*.

The S-100WG reviewed the Terms of Reference and Rules of Procedure of the newly formed Project Teams that will work on product specifications for S-121 (Maritime Limits and Boundaries) and Under Keel Clearance Management Information and agreed the commencement of their activities. Reports were also provided on the status of the S-101 (next generation Electronic Navigational Chart), S-111 (Surface Current) and S-102 (Bathymetric Surface) Product Specifications.

The S-102 Project Team (PT) sub-group worked on the development of a portrayal model for the next edition of the S-102 product specification. The S-101 PT sub-group worked on completing the product specification document, the Data Capture and Encoding Guide (DCEG) document and the draft versions of the S-101 feature and portrayal catalogues. Reports were also provided on the S-101 ENC data editor, the S-101 ENC viewers, and the S-57 to S-101 data converters that are

currently being developed by stakeholder organizations. An update on the current status of the activities related to the development of the S-100 Registry was also provided.

The ENC Standards Maintenance Working Group (ENCWG) reviewed proposals for clarifications and corrections to the current editions of S-52 - *Specifications for Chart Content and Display Aspects of ECDIS*) and S-64 - *IHO Test Data Sets for ECDIS*. A sub-group was convened to complete a revised edition of S-58 - ENC Validation Checks. The meeting discussed issues relating to the portrayal of boundary lines for non-official data, the use of isolated danger symbols in unsurveyed areas, guidance on the offset of the magnetic variation (MAGVAR) symbol on line features, and the portrayal of omnidirectional lights. Proposals were also considered for the encoding and portrayal of Virtual Automatic Identification System (V-AIS) features and above water building features.

The Data Protection Scheme Working Group (DPSWG) reviewed the draft edition (2.0) of S-63 - *IHO Data Protection Scheme*, which aims to be less ENC-centric and will support S-100 and S-10x requirements. The WG discussed how to deal with data integrity within S-100 and S-10x product specifications, and what extensions will be needed to the current S-100 metadata section to support this requirement. The meeting also reviewed the current status of the S-63 Security Scheme, and discussed issues relating to cyber security on board ships, and what impact this may have on the provision of S-100 based products and services.

The next S-100WG meeting is scheduled from 15 to 17 March 2017 and the next ENCWG and DPSWG meetings from 20 to 22 March 2017.

2ND MEETING OF THE NAUTICAL INFORMATION PROVISION WORKING GROUP (NIPWG)

Monaco, 21 - 24 March

The 2nd meeting of the Nautical Information Provision Working Group (NIPWG) took place at the International Hydrographic Bureau (IHB), Monaco, from 21 to 24 March.

The NIPWG is the IHO Working Group reporting to the Hydrographic Services and Standards Committee (HSSC) that is responsible for the development of specifications in support of the e-navigation services that are intended to provide mariners with harmonized up-to-date information on integrated displays in the future.

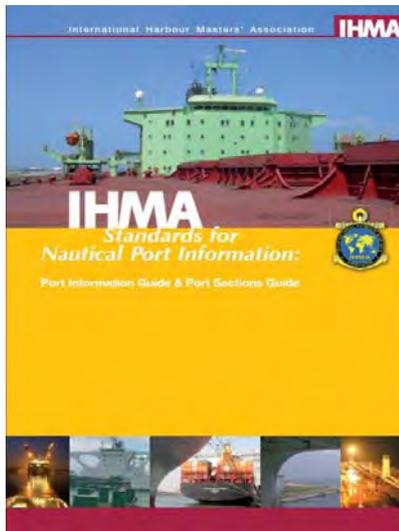
The meeting was chaired by Mr Jens Schröder-Fürstenberg, Germany. Nineteen delegates from 14 Member States (Brazil, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Republic of Korea, Russian Federation, Spain, Sweden, United Kingdom, USA) and eight stakeholder organizations attended the meeting. The IHB was represented by Assistant Director Yves Guillam. Director Gilles Bessero welcomed the participants and highlighted the importance of the working group in preparing tomorrow's services in support of mariners. He also drew attention to the need to focus not only on the building blocks for digital information services, but also on the overall architecture of the services, confirming the IHO's request for tangible outputs from NIPWG to address e-navigation and Maritime Service Portfolios (MSP) issues.



Participants at the NIPWG-2 Meeting

The meeting considered the continuing active development of S-100-based product specifications that relate to the tasks assigned to the NIPWG. The meeting noted the challenges already experienced as part of the paradigm shift from paper and text-based Sailing Directions to providing this information as digital data under the e-navigation concept, in particular the challenges of modelling nautical information associated with imprecise geographical positions and/or extent (for example, radio ranges, applicability of rules and regulations, and so on.).

Following a presentation by the representative of the International Harbour Masters' Association (IHMA) on the development of web-based Port Information Guides, which would benefit from further standardization, the NIPWG agreed to investigate the possible gaps in its existing data modelling to better meet the additional users' requirements identified by the IHMA.



Presentation by IHMA



**From Port Information Guide to AVANTI
(Access to Validated Nautical Information)**

The meeting made some progress on long pending portrayal issues related to the IHO Product Specification S-122 - *Marine Protected Areas*, building on the guidance provided by the 7th meeting of HSSC in 2015. Following discussions on the portrayal of “rules and regulations”, such as MARPOL¹, some Expert Contributors volunteered to undertake investigations and to share the lessons learned at a NIPWG Visualization Workshop tentatively scheduled for May 2017. A thorough review of progress in the active development of four other S-100-based product specifications under the NIPWG work programme was carried out. As instructed by the HSSC, a work plan to develop IHO S-128, the product specification related to catalogues of nautical products, was considered.

Actions were agreed to further improve coordination between the IHO and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) for the development of S-100-based product specifications, in particular through contributing to the IALA Workshop on *Shore-based maritime services: from theory to practical use*, planned in May 2016 in Portugal.

The participants in the meeting considered that many IHO Member States have yet to realize the implications of the move towards the digital delivery of nautical information under the e-navigation framework, and the need to participate pro-actively in the development of the MSPs and associated standards.

The next meeting of the NIPWG will take place in Busan (Republic of Korea) from 5 to 9 December 2016.

All the documents considered at the meeting are available on the IHO web site at www.iho.int > Committees & WG > NIPWG > NIPWG-2.

¹ The International Convention for the Prevention of Pollution from Ships.

APRIL



10TH CONFERENCE OF THE SOUTH-WEST ATLANTIC HYDROGRAPHIC COMMISSION (SWATHC)

Buenos Aires, Argentina, 7-8 April

The 10th Conference of the South-West Atlantic Hydrographic Commission (SWAtHC) was hosted by the Hydrographic Office of Argentina (*Servicio de Hidrografía Naval - SHN*) on 7 and 8 April 2016. Fifteen delegates attended the meeting, chaired by Captain Rubén Alberto Frattini, acting Director of the SHN. All three IHO Member States of the Commission, Argentina, Brazil and Uruguay, were represented together with the Associate Member, Paraguay. Two industry stakeholders (Caris and Kongsberg Maritime) participated in the meeting as Observers. The IHB Directing Committee was represented by Director Gilles Bessero. Dr Antonio Marcelo Serangeli, Undersecretary of State for Defence Research, Development and Production delivered the opening address on behalf of the Minister of Defence of Argentina, highlighting the importance of hydrography through its underpinning role in the submission of Argentina for the extension of its continental shelf which had been recently approved by the United Nations Commission on the Limits of the Continental Shelf.



Dr Serangeli, Undersecretary of State for Defence Research, Development and Production of Argentina, at the right, addressing the Conference

The approval of the report of the 9th Conference was confirmed and the status of the list of actions was reviewed.

Argentina, Brazil and Uruguay reported on their national activities since the 9th Conference. The Commission noted the progress reported by Brazil in developing an IC-ENC branch covering South America. The first validations of ENC are expected during the first semester of 2016. Brazil, as Chair of the SWAtHC Planning Committee (*Comité de Planeamiento*), then reported on the intersessional work conducted through the Committee, addressing notably the maintenance and implementation of the regional INT and ENC schemes and the establishment of a

pluriannual capacity building programme. The Commission noted the progress in the co-production by Argentina and Uruguay of INT Chart 2010 (De Arroyo del Chuy a Mar de Plata). The Commission considered the work plan of the Committee for the next intersessional period and agreed to add an item on the analysis of the use of risk assessment methodologies to prioritize survey requirements. The chairmanship of the Committee was handed over to Uruguay for the next three-year period.

In addition to providing a briefing on current IHO issues and the work of the IHB, Director Bessero provided advice on the regional selection of the members of the future IHO Council. The Commission agreed that the seat on the Council allocated to the SWAtHC would be taken by the Chair and decided to revise the Statutes of the Commission accordingly.



Participants in the 10th SWAtHC Conference

Noting the lack of progress in implementing the recommendations of the IHO Technical Visit conducted in Paraguay in 2014, the Commission reiterated its request that a representative participates in the Planning Committee and invited Paraguay to submit a national report at the next SWAtHC meeting and identify any further requirements for assistance.

Argentina, as Chair of the Commission, reported on the work of the Inter-Regional Coordination Committee, Worldwide ENC Database Working Group and Hydrographic Services and Standards Committee. The Commission agreed consequential actions. Brazil reported on the activities of the Inland ENC Harmonization Group.

Argentina and Brazil reported on testing successfully contingency arrangements between the Coordinators of NAVAREAs V and VI and signed an agreement formalizing their joint contingency plan.



***The national Hydrographers of Argentina and Brazil
after signing the agreement on the contingency plan for NAVAREAs V and VI***

The industry representatives briefed the Commission on their latest developments related to data acquisition and processing.

It was proposed that the next Conference take place in March 2017 in Brazil, the exact date and venue to be decided before 1 September 2016. In accordance with the statutes of the Commission, the chairmanship will be transferred to Brazil within 45 days from the closure of the Conference.

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



60TH MEETING OF THE NORDIC HYDROGRAPHIC COMMISSION (NHC)

Stavanger, Norway, 11-13 April

The 60th meeting of the Nordic Hydrographic Commission (NHC) was hosted by Norway from 11 to 13 April 2016, in Stavanger. Sixteen delegates attended the meeting, chaired by Mr Evert Flier, Director of the Norwegian Hydrographic Service (NHS). The five Nordic States (Denmark, Finland, Iceland, Norway and Sweden) were represented. The IHB Directing Committee was represented by Director Gilles Bessero.



Participants in the 60th NHC Meeting

Following the opening of the meeting by the Chair and the review of the status of the list of actions from the previous meetings, Director Bessero briefed the Commission on current IHO issues and IHB activities. The meeting considered reports on national activities since the 59th meeting and reviewed on-going initiatives and projects of common interest related to surveys, nautical charting, nautical publications, the provision of official services to the leisure market, the development of marine spatial data infrastructures (MSDI) and the provision of capacity building. Iceland reported that the Government of Iceland had concluded that the current rate of progress of surveying Icelandic waters was unacceptable and therefore decided to launch a programme aiming at a complete survey of the Exclusive Economic Zone within ten to fifteen years. Norway reported that a socio-economic study had been initiated to justify the budgetary requirements of NHS. The results were expected by September and would be shared within the Commission. Norway reported also on the progress of a bilateral cooperation project with Albania aiming at developing an ENC production capability: the first ENC is expected to be released for distribution later in April.

The work of the IHO Inter-Regional Coordination Committee (IRCC), MSDI Working Group, Worldwide ENC Database Working Group and IHO-European Commission Working Group was considered. The two Regional ENC Coordinating Centres, Primar and IC-ENC, reported on their activities. The Commission expressed its expectation that the outstanding issues related to the Admiralty Information Overlay (AIO) service provided by the UKHO be resolved by the 8th IRCC meeting in May 2016.

Noting that the number of members of the NHC would result in only one seat being allocated to the Commission in the future IHO Council and that all five NHC members were members of more than one Regional Hydrographic Commission (RHC), the meeting considered a procedure to allocate the NHC seat. The Commission agreed that under these circumstances, only one

Member State would declare its preference to be counted in the NHC and occupy the seat allocated to the NHC, thereby leaving the other Members of the NHC to be counted in other Commissions. It was agreed that Sweden would declare its interest in being counted in the NHC and occupy the Council seat allocated to the NHC for the first mandate.

On the occasion of the meeting, Finland and Sweden signed a bilateral cooperation agreement.



Signature of a bilateral cooperation agreement by the Hydrographers of Finland and Sweden

In accordance with the order defined by the statutes, Denmark took over the chairmanship at the end of the meeting. The next meeting will be hosted by Denmark in March 2017, exact date and venue to be decided.

All the documents of the meeting are posted in the NHC section of the IHO website.

PRESIDENT VISITS ITALIAN HYDROGRAPHIC OFFICE

Genoa, Italy, 14 April

After the annual meeting of the Comité International Radio-Maritime (CIRM), the President visited the Italian Hydrographic Institute (Istituto Idrografico della Marina (IIM)) in Genoa on 14 April, where he was greeted by Commodore Luigi Sinapi, the Hydrographer of Italy.



The President was briefed on the recent achievements of the IIM and plans for the future. This includes an increased role in international activities including more active participation in the work of the IHO.

President Ward was able to meet the staff working on the IIM's extensive chart and nautical publications portfolio as well as visiting several historical exhibits and viewing the increasing range of products and services aimed at recreational boaters.



**ANNUAL MEETING OF
THE COMITÉ INTERNATIONAL RADIO-MARITIME (CIRM)
Santa Margherita Ligure, Italy, 12 to 14 April**



The Comité International Radio-Maritime (CIRM) held its Annual Meeting in Santa Margherita Ligure, Italy from 12 to 14 April. CIRM is the international organization representing the maritime electronics industry in the development of relevant international regulations and standards and enjoys observer status with the IHO as a Non- Governmental International Organization. CIRM maintains an active role in the IHO Hydrographic Services and Standards Committee (HSSC), with a number of its members also participating as Expert Contributors in various HSSC Working Groups.

The Conference featured three days of presentations, seminars and a workshop on topics including cyber security, developments in navigation and communication, and voyage data recorders and included a dedicated session on ECDIS, and another on the use of non-Type Approved electronic equipment on the bridges of ships.

The meeting featured a number of guest speakers from across the shipping industry, including representatives of the International Association of Classification Societies (IACS), International Association of Independent Tanker Owners (INTERTANKO), International Chamber of Shipping (ICS), Flag State Administrations and insurance organizations.

President Ward represented the IHO at the Annual Meeting. In the session on ECDIS, Mr Thomas Mellor, Chair of the IHO ENC Standards Maintenance Working Group, provided an update of progress on the relevant IHO standards governing ECDIS and Commodore Luigi Sinapi, the Hydrographer of Italy spoke about progress in the provision of ENCs and the underlying issues of limited availability of good hydrographic data and how quality and reliability are depicted on charts and ENCs.

The next Annual Meeting of CIRM will take place in Singapore in 2017.

39TH MEETING OF THE FIG/IHO/ICA INTERNATIONAL BOARD ON STANDARDS OF COMPETENCE FOR HYDROGRAPHIC SURVEYORS AND NAUTICAL CARTOGRAPHERS (IBSC)

Brest, France, 4-15 April

The FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) is a joint board of the International Federation of Surveyors (FIG), the International Hydrographic Organization (IHO), and the International Cartographic Association (ICA). The IBSC is responsible to promote, develop and maintain international standards of competence for hydrographic surveyors and nautical cartographers, to review training and education programmes seeking recognition, to provide support and guidance to institutions seeking advice and to conduct onsite visits to institutions holding recognized programmes. The 39th meeting of the IBSC was held in Brest (France) at the *Service Hydrographique et Océanographique de la Marine* (SHOM), from 4 to 15 April under the chairmanship of Nicolas Seube (France, IHO representative). The meeting was attended by the ten Members of the Board. The Board welcomed Commodore Rod Nairn from Australia as a new IBSC Member representing the IHO. Assistant Director Alberto Costa Neves (IBSC Secretary) represented the IHB.



The IBSC with Director-General of SHOM, IGA Bruno Frachon (center) and IPETA Ronan Le Roy (first left).

The Board reviewed a record number of 18 programmes for hydrographic surveyors and nautical cartographers at its annual meeting: 16 programmes for hydrographic surveyors (8 at Category "A" and 8 at Category "B", including three new programmes), one new programme for nautical cartographers at Category "B" level and one new scheme for individual recognition at national level.

The result was significant and the Board was able to grant recognition to 11 programmes for Hydrographic Surveyors (four at Category "A" level and seven at Category "B" level), including one new programme. The Board was also pleased to grant recognition to a new programme for Nautical Cartographers (the ninth of its kind) and to a new scheme for individual recognition (the second to be recognized). Seven of these thirteen submissions were recognized with conditions that the Board expects will be fulfilled in a short time. Worth noting is the increasing number of institutions successfully using e-learning and blended-learning tools to deliver parts of programme content.

The Board also reviewed progress made during the intersessional period in the revision of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. The Board was able to complete the work on the Standards of Competence for Hydrographic Surveyors Category "A" (IHO Publication S-5A), incorporating a significant number of suggestions and recommendations received from the broad hydrographic community. The draft S-5A will be submitted to the next meeting of the Inter-Regional Coordination Committee (IRCC8) for endorsement. Subject to that endorsement and subsequent approval by the three parent organizations, the new Publication S-5A will be in force by September 2016 and will supersede the existing Publication S-5 Edition 11.1.0.

Progress was also achieved in the revision of the Standards of Competence for Nautical Cartographers and the Board was able to complete the first draft of IHO publication S-8B that will be introduced to IRCC8 for information and feedback, before distribution to the wide community for comments. The Board established ad-hoc working groups to continue the development of S-8B and to issue the first draft of S-8A in order to seek stakeholder feedback. Both S-8B and S-8A will be submitted to the 9th session of the IRCC in 2017. Subject to endorsement by IRCC and to the subsequent approval process, the new publications will eventually replace the current S-8 Edition 3.1.0.

The IBSC considered the ever increasing workload brought about by the large number of submissions for recognition, the maintenance of the Standards of Competence, the support and guidance to institutions seeking advice and the onsite visits to institutions holding recognized programmes. This workload is leading to the need for longer meetings and for continuous work during the intersessional period. This heavy workload is also impacting on the demands placed on the IHO Secretariat that supports the work of the Board.

The need to further support the institutions that submit programmes and schemes for recognition also occupied the Board during the meeting. The Board agreed to establish templates and checklists that will facilitate the preparation and improve the quality of the documentation submitted to the IBSC, thereby helping the institutions to ensure that their programmes comply with the Standards of Competence.

The Board elected Mr. Adam Greenland (FIG) as the Chair for the next three years. Mr. Ron Furness (ICA) and Captain Nickolás Roscher (IHO) were elected as Vice-Chair 1 and Vice-Chair 2, respectively. The new Chair and Vice-Chairs will take office on 30 September 2016.

The next meeting of the IBSC will take place from 20 to 31 March 2017 in Wellington, New Zealand. It is expected that more than 20 programmes and schemes will be reviewed during that meeting, together with the continuation of the maintenance of the Standards of Competence.

WORKSHOP FOR INT CHART / ENC COORDINATORS

IHB, Monaco, 25 April

The first workshop for INT Chart / ENC Coordinators took place at the IHB in Monaco on 25 April, the day before the 2nd meeting of the Nautical Cartography Working Group (NCWG). Twenty delegates from 12 Member States (Australia, Brazil, Canada, Finland, France, Germany, Japan, Korea (Rep. of), Netherlands, Norway, United Kingdom, USA), and the IHB Directing Committee attended the workshop. The INT Chart / ENC Coordinators of 14 out of 15 charting regions were present or represented. The workshop was moderated by Assistant Director Yves Guillam, supported by Mr Daniel Menini and Mr Yong Baek from the IHB.



Participants in the Workshop for INT Chart / ENC Coordinators

President Robert Ward welcomed the participants to the workshop. He highlighted the importance for them to make the best of the information session on the use of the new web based services for the maintenance of S-11 Part B – *Catalogue of INT charts*, for efficiency purposes in their region on one hand, and for improving the quality of the database in general on the other.

After a short overview of the relevant standards and publications, and a review of the fundamental principles that drive the concept of INT Charts and ENCs schemes, the Coordinators delivered their self-assessment reports. Most of the Coordinators consider that the INT chart schemes are now mature. As a consequence, the workload for maintaining the catalogue of INT charts for each region is manageable, notwithstanding the fact that reaching agreement between States is sometimes complex. One concern is the potential for inconsistencies between INT chart schemes and ENC coverage schemes, when they are established. It was also noted that the monitoring of INT chart production and ENC coverage varies significantly from region to region. A principal objective of the workshop was to inform the Coordinators of the available tutorials and tools that can facilitate their day-to-day tasks. A comprehensive demonstration of the new INTToGIS web-based INT chart scheme management tool was provided.

President Robert Ward closed the workshop by leading a discussion on the future of the INT chart concept. He invited the workshop participants to consider the fact that the ECDIS mandatory carriage requirements may lead to a reduction in the need for INT charts by some ships, however, a significant number of vessels are not obliged to carry ECDIS. He also pointed out that only about 80% of the charts planned in the INT scheme have been produced so far and the number of new INT charts has fallen from about 40 to 15 charts per year since 2011. Taking all these facts into account, the workshop participants confirmed the need to maintain the INT chart concept for the foreseeable future, at least for small scale charts.

Further information concerning the workshop is available on the IHO web site at www.iho.int > Committees & WG > NCWG > NCWG-2 and Workshop > Documents.

The screenshot displays the 'INTERNATIONAL CHART Web Manager' interface. At the top, there are navigation links: MEMBER MANAGER, MANUAL DOWNLOAD, ADCS, LOGOUT, and BASE Map. Below the navigation is a search bar and a filter panel on the left with fields for INT No., INT Region, Pub Year, Prod Nation, Status, and CHART Scale. The main area shows a map with various chart boundaries and a table of chart data below it. The table has columns for INT No., ProdId, INT Region, INT Title, Producer, Nat No., S.Limit, N.Limit, W.Limit, E.Limit, Tol.D.Prim, Tol.Sd, Action, Revision, and Proc.

INT No.	ProdId	INT Region	INT Title	Producer	Nat No.	S.Limit	N.Limit	W.Limit	E.Limit	Tol.D.Prim	Tol.Sd	Action	Revision	Proc
1781	PLAN-A	E	Plan A - Haskis...	SE	532	61°42.36'N	61°43.81'N	01°20.60'E	01°20.50'E	2008		Modify	ADCS	ADCS R
1954	MAIN	G	Rade et Port de...	FR	7570	14°38.63'N	14°42.67'N	01°20.68'W	01°20.56'W	1997		Modify	ADCS	ADCS R
2202	MAIN	I	Western Approac...	GB	3174	28°40.50'N	28°47.50'N	03°23.80'E	03°23.50'E	2012		Modify	ADCS	ADCS R
2289	MAIN	I	Klamm 'Ald AIL	GB	1283	29°32.05'N	30°07.04'N	04°25.50'E	04°28.70'E	2008		Modify	ADCS	ADCS R
6957	PLAN-A	L	Plan A - Pesse...	FR	7466A	16°20.96'S	16°28.33'S	151°46.00'W	151°46.40'W	2016		Modify	ADCS	
6955	MAIN	L	Bora-Bora	FR	7406	16°36.42'S	16°24.49'S	151°48.83'W	151°40.40'W	2016		Modify	ADCS	
1070	MAIN	G	Abouch du Por...	FR		33°55.80'N	33°59.83'N	00°40.11'W	00°35.00'W	2016		Modify	ADCS	
1540	MAIN	D	Conzary Firth...	GB	1880	57°38.93'N	57°44.03'N	00°42.78'W	00°38.00'W	1990		Modify	ADCS	ADCS R
1540	PLAN-A	D	Plan A - Inverg...	GB	1880	57°40.84'N	57°41.59'N	00°41.20'W	00°40.40'W	1990		Modify	ADCS	ADCS R

The web management interface of the INTGIS chart database

1ST MEETING OF THE IHO TIDES, WATER LEVEL AND CURRENTS WORKING GROUP

Niterói, Brazil, 25-29 April

The newly-formed Tides, Water Level and Currents Working Group (TWCWG) has inherited the work previously undertaken by the Tides and Water Levels Working Group and the Surface Current Working Group. It 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. The Working Group held its 1st meeting at the Directorate of the Centro de Hidrografia da Marinha - Marinha do Brasil (CHM), Niterói, Brazil from 25 to 29 April under the chairmanship of Ms Gwenaële Jan of France. The meeting was attended by 25 delegates from 13 IHO Member States (Australia, Brazil, Canada, Finland, France, Germany, Japan, Netherlands, Norway, Peru, Russian Federation, UK and USA), the Centre for Coastal and Ocean Mapping (CCOM)/ University of New Hampshire - USA, SPAWAR Atlantic - USA, Jeppesen and the IHB. David Wyatt, IHB Assistant Director, represented the IHB.



TWCWG1 plenary in session

Significant time was set aside to progress the three S-100 based Product Specifications, for which the TWCWG is responsible. One and half days of breakout sessions enabled participants to focus on the draft Product Specification documents as well as making significant progress on the feature attributes and metadata. The results of using the test datasets for S-111 – *Surface Currents* – were demonstrated. It was agreed to seek amendments to the titles

of S-104 and S-112, to make them better describe their intended use; the proposed new names were suggested as S-104 – *Water Level Information for Surface Navigation* – and S-112 – *Dynamic Water Level Data Transfer*. These proposals will be submitted for consideration by the 8th meeting of HSSC in November. It was noted that at least one national vertical datum in use was not included in the S-100 list of vertical datums, which highlighted the need to ensure that all currently in use vertical datums are included.



TWCWG1 participants visit Ilha Fiscal tide station

Further progress was made on a standard for digital tide tables with the refinement of a list of fundamental attributes being generated by the USA. Although some inputs had been received, it was agreed to highlight the inventory of tide gauges and current meters, and the list of Actual Tides On-line Links through Regional Hydrographic Commissions with the purpose of raising awareness and encouraging additional inputs. Due to the increased use of Vertical Reference Frame datums based on the Global Navigation Satellite System (GNSS) for the reduction of soundings, it was agreed to create a repository in the TWCWG section of the IHO website where details of these datums could be posted.

As instructed by HSSC, proposed revised wording of IHO Resolution 3/1919, as amended, was agreed. The proposed revision will be submitted for adoption by IHO Member States.

The experiences gained in delivering two Tides, Water Level and Currents Capacity Building courses were discussed. Methods for further development of these courses were agreed as well as identifying the need for closer liaison with the Regional Capacity Building Coordinators to assist in selecting appropriate candidates for future courses.

Canada offered to host the next meeting of the TWCWG in Victoria, Vancouver Island between 8 to 12 May 2017.

The report of the meeting and all documents will be available from the TWCWG section of the IHO website.

2ND MEETING OF THE NAUTICAL CARTOGRAPHY WORKING GROUP (NCWG)

IHB, Monaco, 26 – 29 April 2016

The second meeting of the IHO Nautical Cartography Working Group (NCWG) took place at the IHB in Monaco from 26 to 29 April. The meeting was chaired by Mr Jeff Wootton (Australia), supported by Andrew Heath-Coleman, Secretary (UK). Twenty-three delegates from 19 Member States (Australia, Brazil, Canada, Egypt, Finland, France, Germany, Iran (Islamic Rep. of), Italy, Japan, Korea (Rep. of), Latvia, Netherlands, Norway, Spain, Sweden, Turkey, United Kingdom, and USA), two Expert Contributors (Esri, Jeppesen.) Assistant Director Yves Guillam and Mr Yong Baek, Project Officer seconded by the Republic of Korea, represented the IHB.



NCWG-2 gather on the rooftop of the IHO Headquarters

Director Gilles Bessero welcomed the members and opened the meeting inviting participants to think “outside the box” when addressing some of the important work items on the agenda such as the future of the paper chart. Director Bessero and President Robert Ward participated in several of the discussions, providing useful views and guidance to the meeting participants.

The Nautical Cartography Working Group is now well established and working under its Terms of Reference that were approved at the 7th meeting of the Hydrographic Services and Standards Committee (HSSC-7) in November 2015. The Working Group, which combines elements of disbanded working groups that separately covered data portrayal on paper charts and electronic charts, is much more focused on the chart content itself and the portrayal requirements than on the sole maintenance of IHO Publication S-4 - *Regulations for the International (INT) Charts and Charts Specifications of the IHO* – even though the consideration of clarifications or revisions to S-4 remains relevant for assisting cartographers in their day-to-day work. A recent example was the need to clarify how to chart an important sub-surface floating pipeline. In relation to the three (English, French, Spanish) new editions of the IHO Publication INT 1 – *Symbols, Abbreviations and Terms used on Charts*, that have been issued by Germany, France and Spain

respectively since the last meeting, several proposals were discussed to establish a repository of high resolution symbols in order to avoid further duplication of effort by other Hydrographic Offices that issue their own version of INT 1 and implementers of the standards.

The meeting noted that new technologies and very high resolution screens may offer, in the future, the possibility of redesigning symbols used in ECDIS for an improved portrayal of the main layer of information (the electronic navigational chart - ENC) in combination with other S-100-based products.

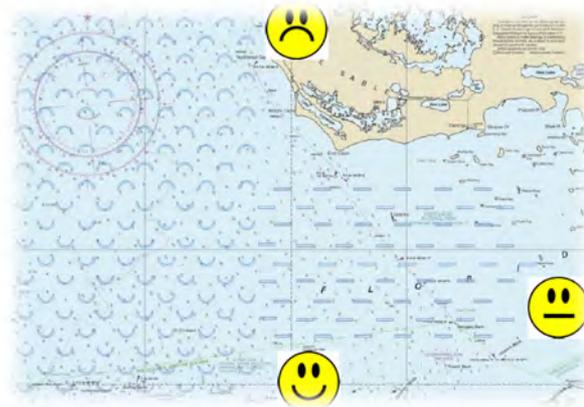
The Working Group considered the first tranche of portrayal requirements for S-100-based product specifications (weather overlays, S-101 ENC, marine protected areas, quality of bathymetric data / category of zones of confidence [CATZOC] ...) received from other working groups, following a proposal agreed at the HSSC-7 to trial an all-encompassing process that involves all relevant IHO working groups and other stakeholders (industry, academia). In that context, it was agreed to set up a small portrayal sub-working group to establish a protocol to assist developers of S-100-based product specifications in drafting portrayal submissions. The establishment of an integrated project team drawing on the different working groups to address portrayal issues in the development of S-101 was also discussed.

The Working Group continued work on its proposal for the preparation of a draft new edition 3.0.0 of IHO Publication S-11, tentatively entitled "Guidance for the Preparation and Maintenance of International Chart and ENC Schemes - Catalogues of INT Charts and ENCs".

The Chair of the NCWG informed the participants that he will step down from his position at the end of September 2016 when he retires from service in Australia. In the absence of any candidate to replace the recently retired Vice-Chair, NCWG members were invited to consider nominating for the position of Vice-Chair as soon as possible in view of an election by correspondence.

The plenary meeting was followed by a meeting of the correspondence group on the future of the paper chart that had been identified by HSSC-7 as a high priority work item.

Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > NCWG > NCWG-2.



An example of a potential portrayal of unambiguous and self-explanatory symbolization for the CATZOC bathymetric data quality indicator presented at the meeting

MAY

AWARENESS SEMINAR ON AIDS TO NAVIGATION FOR LUSOPHONE COUNTRIES

Lisbon, Portugal, 2 - 3 May

A two-day Awareness Seminar on Aids to Navigation for Lusophone Countries was organized by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and the Portuguese Lighthouse Authority in Lisbon, Portugal, from 2 to 3 May. The International Hydrographic Organization (IHO) and the International Maritime Organization (IMO) contributed to the seminar, organized under the UN concept of "Delivering as One".

The seminar was attended by 37 participants from Brazil, Cape Verde, Equatorial Guinea, Guinea Bissau, Mozambique, Portugal, Sao Tome and Principe, Timor-Leste and Industry Stakeholders. Angola was the only Member of the Community of Portuguese Language Countries (CPLP) not participating. Assistant Director Alberto Costa Neves represented the IHO.



Admiral Fragoso, Chief of Naval Staff and National Maritime Authority of Portugal, addressing the seminar

The welcome addresses were delivered by Admiral Luis Manuel Forneaux Macieira Fragoso, the Chief of Naval Staff and National Maritime Authority of Portugal, by Vice Admiral Antonio Silva Ribeiro, Director-General of the National Maritime Authority of Portugal and by Rear Admiral Jean-Charles Leclair, Dean of the IALA World Wide Academy.

The objective of the seminar was to raise awareness on the international obligations of authorities responsible for the safety of navigation world-wide, and in particular in Africa, where six Members of the CPLP are located. From these only Mozambique is an IHO Member State, although all of them are Members of the IMO.

The international obligations arising from the IMO International Convention for the Safety of Life at Sea (SOLAS) and its relationship with the three sponsoring organizations (IMO, IHO and IALA) were presented. One of the key messages delivered was the willingness of these organizations to help coastal States prepare for the IMO Member State Audit Scheme (IMSAS) and to respond to the recommendations raised by the auditing teams.

Capacity Building and the "Delivering as one" concept were also addressed by the seminar with a view to promote the existing possibilities within the IMO, IHO and IALA to help coastal States further develop their capabilities for the benefit of the maritime community and for the continuous support to their national economic infrastructures. The concept of National Coordinating Committees as a high level forum for maritime stakeholders was also discussed, considering the benefits of integrating the national efforts to address the key priorities for the national infrastructure.



The seminar participants

Participants were briefed on the services required to be provided by coastal States in accordance with SOLAS and the need to establish the infrastructure for the provision of such services. Other associated topics included e-Navigation, Vessel Traffic Services, ship's routing and reporting, ECDIS and ENC's, Aids to Navigation, the IHO Universal Hydrographic Data Model (S-100) and risk assessment and management,

At the end of the seminar the participants agreed to work closely together, taking advantage of their common language to share experiences, address common issues, identify potential donor support, work in risk reduction and cooperate in capacity building. The meeting agreed to build an internet portal to address maritime-related issues. IHO Publications C-55 – *Status of Hydrographic Surveying and Charting Worldwide* and P-5 – *IHO Year Book* were presented and the participants provided inputs and updates.

In the continuation of the two-day seminar, the participants remained for three additional days at the invitation of the Portuguese Maritime Authority to receive in-depth information on aids to navigation, visit the Portuguese Lighthouse Authority, identify existing gaps in service provision, discuss further cooperation and visit industry partners.

13TH MEETING OF THE BLACK AND AZOV SEAS WORKING GROUP (BASWG)

Istanbul, Turkey, 3-4 May

The 13th meeting of the Black and Azov Seas Working Group (BASWG13), which is a Working Group of the Mediterranean and Black Seas Hydrographic Commission (MBSHC), was held in İstanbul, Turkey, on 3 and 4 May 2016 under the chairmanship of Captain (PhD) Erhan Gezgin, Hydrographer of Turkey. Fifteen delegates attended the meeting. Five Black Sea States were represented: Bulgaria, Georgia, Romania, Turkey and Ukraine. The Coordinator of the Regional International Charting Coordination Working Group (ICCWG - Region F) (France) attended the meeting also. The IHB was represented by Director Mustafa Iptes. Director Iptes provided a briefing on current IHO issues and the work of the IHB.



The participants of the 13th meeting of the Black and Azov Seas Working Group.

The Member States reported on their national activities since the last meeting of the MBSHC. 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. The status of Maritime Safety Information coverage in the Black Sea was also discussed at the meeting. Georgia announced the establishment of a new NAVTEX station promulgating coastal warnings in the Georgian language.

The preparations for the XIXth International Hydrographic Conference / 1st Session of the IHO Assembly which will be held in April 2017 were also discussed at the meeting and Director Iptes provided the Working Group with detailed information.

The activities and the new developments of the BASWG will be reported to the next meeting of the MBSHC in Montenegro, in July 2017.

Captain Gezgin was re-elected as Chair of the BASWG. The next BASWG meeting will be held in 2017 in Constanța, Romania.

11TH MEETING OF THE DATA QUALITY WORKING GROUP Arlington, Virginia, USA, 10 - 12 May

The 11th meeting of the IHO Data Quality Working Group (DQWG) was hosted from 10 to 12 May 2016 in Arlington, Virginia, USA, by the National Oceanic and Atmospheric Administration (NOAA) at a venue made available by the Radio Technical Commission for Maritime Services (RTCM). The meeting was chaired by Mr Antti Cástren (Finland). Nine delegates from seven Member States (Australia, Finland, France, Italy, Netherlands, United Kingdom, and USA) and one expert contributor from industry (Jeppesen Marine) attended the meeting. Additional NOAA representatives, including the Chair of the S-100 Working Group, participated in some sessions. Assistant Director Yves Guillam represented the IHB.



Participants in the DQWG-11 meeting, Arlington, USA

The meeting began with a comprehensive review of the work items and priorities of the DQWG work programme, focusing on the milestones and the ways and means to deliver expected outputs in a relatively short timeframe. This review was intended to assist in reconsidering the role of the DQWG and the continuation of its activities. It was agreed that the DQWG should focus on delivering the data quality elements of the IHO S-101 – *ENC Product Specification*, and once this had been achieved, an evaluation of its remaining tasks could be completed at its next session, prior to the HSSC-9 meeting in 2017.

Following these agreed priorities, the meeting worked on the finalization of the data quality model and the decision tree for designating the quality of bathymetric data in S-101. Considering the effort that would be required of Hydrographic Offices to implement a new scheme, the group decided to recommend retaining the current CATZOC threshold values for data quality. As a consequence, the transition from S-57 to S-101, as far as the quality of bathymetric data is concerned, should be more easily implemented and automated.

Fruitful discussions were sparked by two papers that covered guidance on assessing respectively temporal variations of the seafloor and overlapping depth-related features, in particular for areas of mobile seafloor. It was suggested to forward these papers to the North Sea Hydrographic Commission (NSHC) Resurvey Working Group prior to the 32nd Conference of the NSHC. Other actions that were agreed included inviting the S-101 Project Team to consider the definition of new attributes regarding swept areas and deep water routes. It was also

decided to review the data quality criteria contained in the European INSPIRE Directive to derive enhancements to the relevant sections of S-100 if needed.

Interesting presentations in relation to data quality were delivered on crowd-sourced bathymetry and on the next edition of the *Bowditch's American Practical Navigator* which is in preparation. Contributions can be emailed directly to Bowditch2017@nga.mil.

The next meeting of the DQWG is scheduled to take place from 13 to 15 June 2017 in The Hague, Netherlands.

Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > DQWG > DQWG-11.

96TH SESSION OF THE IMO MARITIME SAFETY COMMITTEE

London, United Kingdom, 11-20 May

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 96th session of the MSC (MSC96) was held at the IMO Headquarters in London, UK, from 11 to 20 May. Director Gilles Bessero and Assistant Director David Wyatt represented



IMO MSC 96 in plenary session

the IHO. In addressing the agenda of the session in his opening statement, the Secretary-General of IMO, Mr Kitack Lim, highlighted the importance of maritime security in relation to world trade, referring to the comments of the United Nations Secretary-General, Mr Ban Ki-moon, on maritime trade and the importance of shipping during his recent visit to the IMO. Mr Lim particularly noted that anti-piracy and cybersecurity as well as on going issues with domestic passenger ship safety and unsafe mixed migration by sea were all topics of major concern to the MSC.

Unsafe Mixed Migration by Sea

The Committee approved the draft of a MSC Circular on *Unsafe Mixed Migration by Sea*, which sets out guidance on actions and a standard reporting format for mariners to provide timely and accurate information on migrant incidents and on suspected smugglers and vessels to the IMO via the Facilitation module in GISIS. The draft will be further reviewed at MSC97 together with any additional information received from Member States on cases including reports of incidents at sea.

e-Navigation

The Committee agreed to include in the post-biennial agenda (2018-2019) an output on *Develop guidance on definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs)*, for which two sessions were agreed and assigned the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) as the coordinating body. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) offered to contribute to the coordination of the work related to the development of MSPs. The IHO recommended the activation of the IMO-IHO Harmonization Group on Data Modelling

(HGDM) established at MSC 90 to progress this output. The MSC agreed to invite the IHO to submit a proposal to MSC or NCSR to activate the HGDM.

Hydrography and Charting



Celebrating European Maritime Day hosted by Romania

The MSC addressed various matters related to hydrography and nautical charting resulting from the 3rd session of the NCSR held in March this year. The main items included adopting and amending a number of routeing measures, traffic separation schemes and mandatory ship reporting systems. The Committee approved the recognition of Galileo

as part of the Worldwide Radio Navigation System and endorsed the view that Iridium could become a mobile satellite service provider of the Global Maritime Distress and Safety System (GMDSS) subject to compliance with outstanding issues reported to NCSR3. The MSC agreed that the development of new performance standards for ship-borne GMDSS equipment should apply to all providers of new equipment and to current service providers when equipment is up-dated and up-graded. The MSC agreed to a new unplanned output to be completed at the next session of NCSR on drafting amendments to SOLAS Chapter IV by removing references to Inmarsat and making the wording generic to accommodate future service providers. The Committee approved the outcome of the Detailed Review of the GMDSS and the continuation of the project in developing the Modernization Plan. The MSC noted the information provided by Member States on incidents involving non-SOLAS vessels in the Polar Regions and requested further submissions and additional data on incidents in preparation for a post-biennial planned output. Panama drew attention to the inauguration of the expanded Panama Canal and the associated training facility.

Maritime Cybersecurity

The Committee developed a draft version of an MSC Circular on *Guidance on maritime cyber risk management*. It was widely agreed that industry was awaiting such guidance to enable it to start implementing appropriate cyber risk management processes. The MSC approved the draft guidance for use as interim MSC Guidelines that would be forwarded to the 41st meeting of the Facilitation Committee for further consideration and finalization with a view to issuing a FAL/MSC Circular.

Next Sessions

The next sessions of the MSC are scheduled from 21 to 25 November 2016 (MSC97) and 7 to 16 June 2017 (MSC98).

39TH MEETING OF THE UNITED STATES OF AMERICA CANADA HYDROGRAPHIC COMMISSION (USCHC)

16 May, Halifax, Canada

The 39th meeting of the United States of America – Canada Hydrographic Commission (USCHC) was held on 16 May in Halifax, Nova Scotia, Canada. USCHC39 took place in conjunction with the Canadian Hydrographic Conference 2016. The meeting was co-chaired by the Hydrographer General of Canada and the Director, Office of Coast Survey of the USA, Mr Denis Hains and Rear Admiral Gerd Glang respectively. Twenty eight participants attended the meeting including representatives from the Canadian Hydrographic Service (CHS) and the Departments of National Defence (DND) and Fisheries and Oceans (DFO), from the National Oceanographic and Atmospheric Administration (NOAA), National Geospatial-Intelligence Agency (NGA), US Navy and US Army Corps of Engineers (USACE), and also from the United Kingdom Hydrographic Office (UKHO). Director Mustafa Iptes represented the IHB.



The participants of the USCHC39 meeting.

The USCHC39 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 Working Group, Crowd-Sourced Bathymetry Working Group, IHO/IOC GEBCO Project and FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC). Director Iptes 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 XIXth International Hydrographic Conference / 1st Session of the IHO Assembly to be held in April 2017 and the revised structure of the IHO.

Some of the topics provoking in-depth discussions included:

- The INT Chart Programme review (from the USCHC perspective);
- Marine Spatial Data Infrastructures (MSDI);
- Crowd-sourced bathymetry; and,
- The future of the paper chart.

Several technical presentations were also made that were complementary to the discussions, including: “Building a decision tree to obtain a complete and coherent coastal chart coverage for ENCs” (USA); “Sensor-Derived [Bathymetry] Policy and Localized Chart Updates” (USA); “A Data Access Centre of Expertise” (Canada); and, “A Satellite-Derived Bathymetry Pilot Study” (USA).

The 40th USCHC meeting will be held in conjunction with the US Hydrographic Conference-2017 which will take place in Galveston, Texas, USA, from 20 to 23 March 2017.

WORKSHOP ON SHORE-BASED MARITIME SERVICES - FROM THEORY TO PRACTICAL USE

Lisbon, Portugal, 24 - 26 May

In support of the E-navigation Strategy Implementation Plan adopted by the International Maritime Organization (IMO), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) convened a workshop on shore-based maritime services. The workshop was co-hosted by the Norwegian Coastal Administration and the Portuguese Lighthouse Authority in Lisbon, Portugal, from 24 to 26 May.

The workshop was attended by 61 participants representing a cross-section of stakeholders, including national maritime authorities, lighthouse authorities, pilotage and vessel traffic service operators, industry, academia and five international organizations. The IHO was represented by Director Gilles Bessero and Dr Edward Hosken, from the UK Hydrographic Office, as Vice-Chair of the IHO Nautical Information Provision Working Group (NIPWG). In addition to the IALA Secretariat and the IHO, the following international organizations were represented: the Comité International Radio-Maritime (CIRM), the International Maritime Pilots' Association (IMPA) and the World Meteorological Organization (WMO).



The workshop participants

Following the welcome addresses delivered by the Secretary General of IALA, Mr Francis Zachariae, and the Director of the Lighthouse Authority of Portugal, Captain Carlos Soares, Director Bessero provided the keynote address in which he described how the concept of Maritime Service Portfolios (MSP) had been introduced during the development of the e-navigation strategy implementation plan and reviewed the different aspects and issues that may need to be considered to further develop and implement the concept of MSP.



Director Bessero and Dr Hosken addressing the workshop

The remainder of the first day was devoted to topical presentations addressing MSP requirements and current developments. In particular, Dr Hosken described the work of the NIPWG in relation to the transition from paper-based nautical publications to S-100 based products while Dr Jürgen Holfort, Head of the German Ice Service and representing the WMO, reviewed the development of S-100 based product specifications related to meteorological and oceanographic information.

The second day of the workshop was organized in three parallel working group sessions addressing respectively the development of a roadmap for delivering MSP within the scope of IALA, a methodology for producing MSP for IALA members and the structure of an IALA guideline on MSP.

The workshop met again in plenary during the third and last day to review and discuss the reports of the working groups and draw a set of conclusions. The conclusions of the workshop were:

1. *The draft IALA Guideline on MSPs should be coordinated with other relevant international organisations and be proposed as a starting point to develop IMO guidelines supporting the output on MSPs agreed at MSC96 (the 96th session of the IMO Maritime Safety Committee).*
2. *IALA should participate in the IMO-IHO Harmonization Group on Data Modelling (HGDM), using as a baseline IHOs S-100 standard framework to harmonize and standardise formats for the collection, exchange and distribution of data, processes and procedures for the collection and development of open standard interfaces.*
3. *IALA should define the format and structure for those MSPs within the remit of IALA, engaging with other organisations as required. Development of some other MSPs will require IALA to engage with the responsible authorities / service definition owners.*
4. *The current list of 16 MSPs requires further refinement and should not be seen as the definitive/finalised list of MSPs.*
5. *Phased implementation should be used to further develop and implement MSPs, with the first phase being based on existing technology and systems and the second phase being introduction of additional equipment based on benefit rather than mandate.*
6. *Security, including ship-borne, cyber and shore-side, should be taken into account in the development and deployment of MSPs.*

7. *Product specification developers across all domains should promulgate draft and completed S-100 product specifications to make them available from a single location on the S-100 GI Registry on the IHO web site.*

The conclusions highlight the underpinning role of the IHO S-100 standard in the development of the format and structure of MSPs and also support the recent proposals discussed in the IMO to use the HGDM as a coordinating organ.

14TH MEETING OF THE IHO CAPACITY BUILDING SUB-COMMITTEE

Abu Dhabi, UAE, 24 to 26 May

The 14th meeting of the Capacity Building Sub-Committee (CBSC14) was held in Abu Dhabi, United Arab Emirates (UAE) from 24 to 26 May, hosted by the General Headquarters (GHQ) Armed Forces, Military Survey Department of the UAE. The meeting was chaired by Mr Thomas Dehling (Germany) and attended by 26 participants representing the 15 Regional Hydrographic Commissions (RHC), 10 Member States and 2 observer organizations. The IHB was represented by Director Mustafa Iptes and Assistant Director Alberto Costa Neves (CBSC Secretary).



Participants of the 14th meeting of the IHO Capacity Building Sub-Committee (CBSC14)

The Sub-Committee considered the revision of the IHO Strategic Plan (2009) and the need to better reflect the strategic aspects of the IHO CB Strategy. They also assessed the status of capacity building in the RHC, including those who provide support to the regions in need. The Sub-Committee received information on regional projects for hydrographic risk assessment, survey priorities and requirements, e-learning, and developments related to the revision of the syllabuses for Category A and Category B hydrographic and nautical cartography training.

Methods to evaluate success were considered by the participants in terms of subjective aspects of improving hydrographic awareness, provision of Marine Safety Information, coverage of adequate hydrographic surveys and ENC and protection of the marine environment. The Sub-Committee also discussed objective aspects of successful capacity building such as attracting funding for the Capacity Building Work Programme (CBWP) and the number of courses and training provided, visits executed and students trained. The evolution of the status of each coastal State in relation to the three phases of the CB Strategy was considered by the meeting as a strategic performance indicator for excellence.

The meeting made progress on further improvements to the administration of the CBWP by adopting amendments to two CB Procedures and three new draft CB Procedures that will be trialled until the next meeting to gather feedback. One of these new CB Procedures aims at improving the assessment of the phases of Capacity Building as the basis for monitoring performance at the strategic level. The requirement for strong support from the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC) and the NAVAREA Coordinators to implement phase 1 (Collection and circulation of nautical information, necessary to maintain existing charts and publications up to date) is expected.

RHC CB Coordinators were briefed on the preparation of the three-year work plan that will be submitted to the 1st Session of the IHO Assembly for the period 2018-2020. The 2017 CB Management Plan (CBMP) was reviewed and approved by the meeting as the basis for the 2017 CBWP. The meeting endorsed the closed 2015 CBWP and updated the 2016 CBWP. The CBSC expressed continued concern on the limited financial resources available to execute the full 2017 CBWP.

The report of CBSC14 will be posted on the CB section of the IHO website. The next meeting of the CBSC is planned to be held in Paramaribo, Suriname, from 7 to 9 June 2017.

39TH SESSION OF THE ANTARCTIC TREATY CONSULTATIVE MEETING Santiago, Chile, 23-27 May

The 39th Antarctic Treaty Consultative Meeting (ATCM) took place in Santiago, Chile from 23 to 27 May 2016. The IHO is an invited expert organization and was represented at the meeting by Captain Hugo GORZIGLIA, former Hydrographer of Chile and former IHB Director with specific responsibility for the Antarctic region.

The meeting was opened by the Minister of Foreign Affairs of Chile, Mr. Heraldo Muñoz accompanied by senior officers from the Chilean Ministry of Defence. The session was attended by over 400 people representing 53 countries and eight international organizations including the IHO.



Heads of Delegations and Observer Organizations at the Opening Ceremony.

In the opening session the Minister of Foreign Affairs of Chile highlighted that ATCM was the most important international meeting related to the Antarctic continent. He noted that the meeting provided the opportunity to celebrate the 25th anniversary of the Madrid Protocol that deals with Antarctic environmental protection as well as 100 years since the Chilean expedition by Pardo Pilot to rescue the 22 members of Sir Ernest Shackleton's British expedition who were stranded but survived in Antarctica for two years.

At the first plenary session, Captain Gorziglia presented the IHO report on the status of hydrographic surveys and nautical cartography in the Antarctic region. He highlighted the role being played by the IHO Hydrographic Commission on Antarctica (HCA) and its members, as well as the contribution being made by different international organizations in order to support activities in Antarctica.

He drew attention to the limited availability of reliable charts of the sea areas and the underlying fact that very little depth data existed for the Antarctic region. He suggested that all vessels entering Antarctic waters should be invited to gather depth data using their existing equipment. This collected data should then be forwarded to the Hydrographic Offices responsible for producing the nautical charts and supporting bathymetric maps of the region.

After the plenary session, the meeting was split into two Working Groups. There were several matters of interest to the IHO discussed in the second Working Group that dealt

with science, operations and tourism. Five Information Papers (IP) provided information directly relevant to the IHO and the HCA:

- IP 37 Search and Rescue (SAR) Initiatives Affecting Antarctica (USA)
- IP 50 Colombia contribution to Maritime Safety in Antarctica (Colombia)
- IP 68 Russian hydrographic studies in the Southern Ocean in the season 2015-2016 (Russian Federation)
- IP 97 CHILE SHOA Cooperation in the production on Nautical Charts in Antarctica Area (2010- 2020 Program) (Chile)
- IP 109 XVIII Combined Antarctic Naval Patrol 2015-2016 (Argentina-Chile)

During the discussions in the Working Group Captain Gorziglia suggested that it would be useful to examine in much more detail the impact of the unacceptable state of hydrographic surveys and nautical charting covering Antarctic waters, particularly in relation to safety, operations and research in the region.

Captain Gorziglia proposed that the IHO could be invited to deliver a seminar on the status of hydrography in the Antarctic, similar to the one organized by the IHO at the 31st meeting of the ATCM held in Ukraine in 2008. Chile and Ecuador supported this proposal. This resulted in the Working Group agreeing to include a new priority item in its work programme relating to hydrographic surveying in Antarctica, and to consider the issue in 2018.

To implement this initiative, a Working Paper should be submitted by one or several Antarctic Treaty Member States for consideration by the 40th ATCM in 2017, introducing the theme and inviting the IHO to deliver such a seminar at the 41st ATCM in 2018. Members of the IHO HCA, all of whom are States Parties to the Antarctic Treaty, are the obvious candidates to take the lead in supporting this important opportunity. Accordingly, this will be discussed during the forthcoming meeting of the HCA in Tromsø, Norway in late June.

The documents of the meeting are available through the ATCM website at http://www.ats.aq/devAS/ats_meetings.aspx?lang=e.

8TH MEETING OF THE IHO INTER-REGIONAL COORDINATION COMMITTEE

Abu Dhabi, UAE, 29-31 May

The eighth meeting of the Inter-Regional Coordination Committee (IRCC8) was held in Abu Dhabi, United Arab Emirates (UAE), from 29 to 31 May, hosted by the General Headquarters (GHQ) Armed Forces, Military Survey Department of the UAE. The meeting was attended by the Chairs, or their representatives, of the 15 Regional Hydrographic Commissions (RHCs) and the IRCC subordinate bodies (except the FIG-IHO-ICA International Board on Standards of Competence (IBSC)) and 20 observers. A total of 41 participants were present. The meeting was chaired by Dr Parry Oei (Singapore). The IHB was represented by President Robert Ward, who also attended as Chair of the IHO Hydrographic Commission on Antarctica, Director Mustafa Iptes (IRCC Secretary) and Assistant Director Alberto Costa Neves.



The Participants of the IRCC8 Meeting

The IRCC reviewed the reports and activities of the RHCs and its subordinate bodies, proposed amended Terms of Reference for Member States' consideration and approval and considered the need to have a better communication strategy in order to promote the success stories of the IHO. The meeting was informed of the developments in Electronic Navigational Charts (ENC) for the leisure market and the requirement for authoritative and standardised chart products for Electronic Chart Systems (ECS) on ships that are not subject to the ECDIS carriage requirements of SOLAS² so as to support national maritime administrations. The meeting noted the increasing level of capacity building activities in West Africa under the effective leadership of Morocco and with key contribution from France. The Committee also noted the high level of engagement and capacity building in the South-West Pacific; a good example being the support provided to Fiji by South West Pacific Hydrographic commission (SWPHC) Members and regional bodies following Tropical Cyclone *Winston*.

With respect to the Arctic Regional Hydrographic Commission, the meeting noted the development of the Arctic Voyage Planning Guides, the efforts to resolve ENC overlaps and the project to develop an Arctic Marine Spatial Data Infrastructure (MSDI) in coordination with other organizations, and the engagement with stakeholders in relation to crowd-sourced bathymetry, satellite-derived bathymetry and hydrographic risk assessment.

The Committee was informed about the approval of the SafetyNET and NAVTEX Manuals by the International Maritime Organization following the new review process endorsed at IRCC7 and subsequently approved by the IHO Member States. Noting the increased cooperation between NAVAREA and METAREA Coordinators, the Committee acknowledged the need for more

² SOLAS: International Convention for the Safety of Life at Sea.

engagement of Member States, National MSI Coordinators and Observers in matters related to the World-Wide Navigational Warning Service.

The meeting welcomed the development of new Capacity Building (CB) Procedures, including one to assess and monitor the CB phases in coastal States, and the continued support from the Republic of Korea and from the Nippon Foundation of Japan to the CB Fund.

The meeting noted with concern several issues related to ENC coverage. Little progress has been made to resolve existing ENC overlaps, some of the top 2000 ports still lack adequate ENC coverage and some ENCs are not available through or distributed through the RENC distribution system. Difficulties in providing ENC updates at the same frequency as the equivalent paper chart updates was also discussed. The meeting observed that progress in improving coverage is now largely dependent upon new surveys being conducted in those areas where the existing data is insufficient to support the production of ENCs. The Committee agreed guidance on the conditions under which Marine Information Overlays (MIO) could be issued to assist in drawing attention to any differences between a published paper chart and a corresponding ENC or to assist in displaying Temporary & Preliminary Notices to Mariners on ECDIS.

The Committee was informed about progress in updating IHO Publication C-17 *Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices*. The Committee also noted the progress of the work of the Crowd-Sourced Bathymetry Working Group and its preparation of a Guidance document on Crowd-Sourced Bathymetry.

The Committee endorsed the draft new edition 1.0.0 of IHO Publication S-5A *Standards of Competence for Category "A" Hydrographic Surveyors* to be circulated for Member States consideration and approval, and approved the work plan for the development and adoption of the draft new editions 1.0.0 of the IHO Publications S-8B *Standards of Competence for Category "B" Nautical Cartographers* and S-8A *Standards of Competence for Category "A" Nautical Cartographers*. The meeting commended the work done by the IBSC with respect to the review of an increasing number of course submissions and the revision of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers.

The meeting noted the work done by the GEBCO Guiding Committee and its subordinate bodies, especially the evolution of the GEBCO grids, the incorporation of shallow water bathymetry in the GEBCO dataset, the current status of digitizing the GEBCO chart series with the support of Italy and Japan and the organization of the Forum for the Future of Ocean Floor Mapping (F-FOFM).

The meeting discussed the revision of the IHO Strategic Plan and agreed on the need to implement a more pragmatic performance monitoring system. The meeting acknowledged also the need to raise awareness of the role of hydrography and the importance of improving knowledge of the seas and oceans in support of the Agenda 2030 Sustainable Development Goals, disaster risk reduction and the integrity of the oceans.

The next meeting of the IRCC will be held in Paramaribo, Suriname from 12 to 14 June 2017, preceded by the 15th meeting of the Capacity Building Sub-Committee (CBSC15) from 7 to 9 June.

RETIREMENT OF MRS BARBARA WILLIAMS

31 May

On 31 May, after 37 years' service, Mrs Barbara Williams retired from her position as Head of Registry at the International Hydrographic Bureau (IHB) in Monaco. During her long and devoted career serving the International Hydrographic Organization (IHO) she has seen the IHB offices move from their original site on the north side of Port Hercule to their current location. She served under seven Presidents from Rear Admiral G. S Ritchie to Robert Ward and saw 12 Directors serve their terms.

Starting in January 1979 as the Directors' Secretary, under a Directing Committee led by Rear Admiral Steve Ritchie, she then took up the role of Superintendent, which evolved into the position of Head of Registry that she held until her retirement. As Directing Committees served their terms, Mrs Williams became recognized by all within the IHB and the wider IHO Member States as an impressive source of organizational and procedural history, to whom successive Directing Committees have been able to turn to obtain valuable background concerning previous decisions and why certain methods have been followed.



Mrs Barbara Williams with the current Directing Committee of the International Hydrographic Bureau

Mrs Williams was a familiar and friendly face known to many of the longer serving delegates attending Conferences and the many Working Groups meetings held in Monaco. Not only will she be greatly missed by her colleagues and friends in the IHB staff, her influence and work will be much missed by the entire IHO community, all of whom wish her a very long, relaxing and happy retirement.

JUNE

WORKSHOP OF THE CHAIR GROUP OF THE IHO HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE (HSSC) Paris/Saint-Mandé, France, 1 - 2 June

At its 7th meeting in November 2015, the IHO Hydrographic Services and Standards Committee (HSSC) agreed to delegate the preparation of the Committee's contribution to the preparation of the 19th International Hydrographic Conference / 1st Session of the IHO Assembly to be held in April 2017 to its Chair Group. The Chair Group comprises the Chairs of the HSSC subordinate bodies, the Chair, Vice-Chair, Secretary and Assistant Secretary of the HSSC.

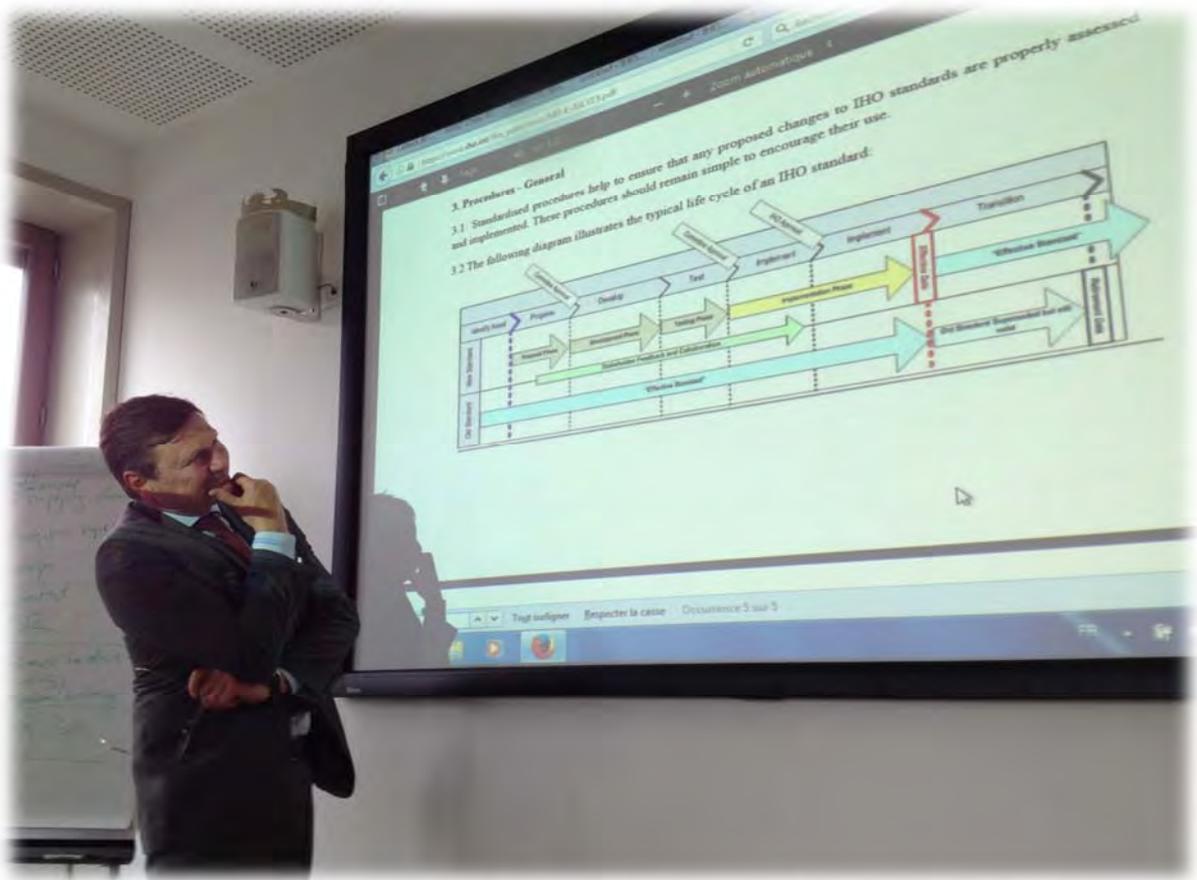
The Chair Group met as a dedicated workshop hosted by the French Hydrographic Office of France (SHOM) in Paris/Saint-Mandé, France, on 1 and 2 June 2016. It was attended by 9 of the 13 members of the Chair Group. The members who were not able to participate had provided written inputs prior to the meeting. Dr Mathias Jonas, National Hydrographer of Germany and Chair of the HSSC, chaired the workshop.



Participants in the HSSC Chair Group Workshop

The workshop reviewed the current version of the IHO Strategic Plan and concluded that a full-scale revision was not required. Several proposed amendments related to the scope of the HSSC were developed. The main items for the next cycle of the Committee's work programme were identified and the associated performance indicators were agreed. The development of the draft work programme will be progressed subsequently for further consideration at the 8th meeting of the HSSC in November 2016.

At the request of the Chairs of the HSSC Working Groups, the adequacy of IHO Resolution 2/2007 - *Principles and procedures for making changes to IHO technical standards and specifications* was also considered. The members of the workshop did not identify any compelling evidence that a revision of the Resolution would improve the efficiency of the existing procedures and agreed to take no further action on this issue.



IHO Resolution 2/2007: To be or not to be-[revised] ... that is the question

**49TH SESSION OF THE EXECUTIVE COUNCIL OF THE
INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC)
Paris, France, 7–10 June**

The 49th Session of the Executive Council of the Intergovernmental Oceanographic Commission (IOC) of UNESCO met in Paris, France from 7 to 10 June under the Chairmanship of Professor Peter M. Haugan (Norway). 39 of the 40 Member States of the IOC Executive Council were represented (except Côte d'Ivoire), plus 16 other Member States and several international organizations attending as Observers. Among the delegations, the Hydrographers from the following IHO Member States were present: Brazil, Germany, Russian Federation and Turkey. The IHO was represented by Director Mustafa Iptes.

Dr Vladimir Ryabinin, the Executive Secretary of the IOC, reported on the implementation of the IOC programme since the previous session as well as on the budget situation. He emphasized the important work carried out by the Commission in relation to the IOC Capacity Development Strategy, the Secretariat's new initiative on developing the IOC communication strategy and the preparation of the IOC Global Ocean Science Report.

The Sub-Groups and Working Groups of the IOC reported their annual activities to the Executive Council. The Executive Council reviewed the strategic developments of the Commission and its contribution to and role in recent international frameworks in particular the implementation of the Agenda 2030 Sustainable Development Goals.

The Executive Council considered the report - "IOC Role in Support of the General Bathymetric Chart of the Oceans (GEBCO) Project, State of Progress in the Associated Review" submitted by the Review Group established by the IOC Assembly. The Group comprised representatives of IOC Member States and one expert each from the GEBCO Guiding Committee and relevant IOC technical and regional subsidiary bodies and chaired by Dr Alexander Postnov (Russian Federation), Vice-Chair of the IOC.

The Review Group reported that the majority of the IOC technical and regional subsidiary bodies had an interest in the GEBCO products and found them useful for their activities. Taking this into account, the Review Group recommended that IOC should continue its involvement in the GEBCO project and collect and integrate the IOC user requirements for GEBCO products on a regular basis. The Executive Council expressed concern that the level of active involvement by the IOC in the GEBCO project has diminished and noted that the project relies mainly on support from the IHO. Director Iptes intervened during the discussions and stated the IHO position on GEBCO governance.

The Executive Council then decided:

- to enhance IOC involvement in the GEBCO project,
- to establish a regular working group of representatives of IOC technical and regional subsidiary bodies to identify IOC user requirements and potential contributions to GEBCO products tasking it to collect, integrate and assess the user needs and requirements and potential contributions to GEBCO data and products; and to identify potential contributions to GEBCO data and products.

On the occasion of this session of the Executive Council, the IOC also celebrated "UN World Oceans Day" on 8 June with special lecture sessions and poster exhibitions.

The Executive Council decided to hold the 29th session of the Assembly for a duration of six working days at UNESCO Headquarters in Paris, at dates to be decided between 19 and 30 June 2017, preceded by a one-day session of the Executive Council (50th session).



The 49th Session of the Executive Council of the IOC

42ND MEETING OF ISO/TC 211

Tromsø, Norway, 13-17 June

The Technical Committee (TC) 211 - *Geographic information/Geomatics* of the International Organization for Standardization (ISO) held its 42nd Plenary Meeting and Working Group Meeting Week in Tromsø, Norway from 13 to 17 June.

The ISO/TC211 deals with the development of standards and specifications in the geospatial domain and is currently responsible for maintaining 72 ISO standards. The International Hydrographic Organization (IHO) is a Class A liaison member of ISO/TC211 and participates in its standards development and maintenance activities. The ISO/TC211 19100 series of standards and specifications underpins the IHO S-100 Universal Hydrographic Data Model.

The meeting was hosted by Standards Norway, one of the four Standardisation Organisations in Norway and co-organized by the Norwegian Mapping Authority and the Ministry of Local Government and Modernisation. IHB Assistant Director Anthony Pharaoh represented the IHO at the meeting.



Participants to the 42nd ISO/TC211 Meeting

Mexico and Mongolia were accepted as participating and observing members of the TC respectively. ISO/TC211 has now 37 participating and 30 observing members. An application from Small Business Standards, a European non-profit association representing European small and medium-size enterprises, to become a class “A” liaison member was accepted. Mr Olaf Østensen (Norway), Mr Chris Body (Australia) and Ms Jeanne Foust (USA) were nominated as ISO/TC211 representatives to the 6th session of the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM), which is scheduled to take place in New York, USA from 1 to 5 August.

The following Working Groups (WG) met during the course of the week: WG 1 (Framework and reference model), WG 4 (Geospatial services), WG 6 (Imagery), WG 7 (Information communities) and WG 10 (Ubiquitous public access). There were also meetings of the following Maintenance Groups (MG): Programme Maintenance Group (PMG), Terminology Maintenance Group (TMG), XML Maintenance Group (XMG), Harmonized Model Maintenance Group (HMMG) and Ontology Maintenance Group (GOM).

The plenary meeting approved working draft studies for new work items dealing with “*The International Terrestrial Reference System (ITRS)*,” “*Spatial referencing by coordinates*” (part 1 fundamentals), “*Positioning services*,” “*Good practices for address assignment schemes*” and “*Data product specifications*” to be added to the programme of work. It also approved committee draft revisions for the following documents; “*Schema for coverage geometry and functions*” (19123-2 Part 2) and “*Filter encoding*” (19143).

The outcome of the meeting week which is relevant to the IHO will be reported to the 8th meeting of the Hydrographic Services and Standards Committee (HSSC) in November.

Since the establishment of TC211 in 1994, Mr Olaf Østensen and Ms Bjørnhild Sæterøy (Standards Norway) have provided the secretariat function for the Technical Committee. After 22 years of excellent leadership and service, they have stepped down from this position. A notable achievement during their tenure was ISO/TC211 being awarded the Lawrence D. Eicher Leadership Award by the 33rd ISO General Assembly (in 2010) as an acknowledgement of “*the importance of the Technical Committees (TC) activities and the dedication and hard work of its members*”.



Mr Olaf Østensen and Ms Bjørnhild Sæterøy accepting the Lawrence D. Eicher Leadership Award on behalf of ISO/TC211

Following offers from China, Sweden and Turkey, Sweden (represented by the Swedish Standards Institute) was chosen to take over the secretariat of the TC from January 2017.

The 43rd ISO/TC211 meeting will take place in Redlands, California, USA from 28 November to 2 December 2016. The 44th meeting is expected to take place in Stockholm, Sweden in May or June 2017.

MONACOLOGY

2016

Monaco, Principauté de Monaco, 13-17 June

Monacology is an annual event for school children held in Monaco that aims to raise awareness about the environment and sustainable development. *Monacology 2016* took place on Quai Antoine 1er, from 13 to 17 June, directly below the offices of the International Hydrographic Bureau (IHB), the secretariat of the IHO.

Hydrography was presented in *Monacology 2016* for the fourth year running, with an interactive display and stand. More than 400 pupils from local schools in Monaco and neighbouring France visited the IHO display and took part in activities guided by the IHB staff.

Director Mustafa Iptes represented the IHB at the inauguration of Monacology by HSH Prince Albert II of Monaco.



*Director Iptes at the inauguration of Monacology 2016
honoured by HSH Prince Albert II of Monaco*

The underlying theme of *Monacology 2016* was “Pollution caused by plastic bags and refuse”. 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 completing a magnetic puzzle chart of the Mediterranean Sea and 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” in recognition of their efforts, while the most “active” schools received a GEBCO globe as recognition of their efforts.



One of the active schools wins a GEBCO globe



One of the "Junior Hydrographers"

IHO-IOC GEBCO
(GENERAL BATHYMETRIC CHART OF THE OCEANS)
Forum for Future Ocean Floor Mapping, Monaco, 15 – 17 June



Arctic-Antarctic Mapping Workshop participants

pers, scientists, cartographers and hydrographic surveyors gathered to discuss ways to progress new editions of the International Bathymetric Chart of the Southern Ocean (IBCSO) and the International Bathymetric Chart of the Arctic (IBCA), what additional data has been gathered but is not reflected in the maps and how to obtain this additional and very useful data. The chairs of the Arctic Regional Hydrographic Commission (ARHC), Mr Denis Hains, Hydrographer-General of Canada, and the Hydrographic Commission on Antarctica (HCA), Mr Robert Ward, President of the IHB Directing Committee, gave presentations on the current state of charting and the problems that the lack of bathymetric data for the regions is causing.

The polar mapping workshop was followed by a day of briefings for graduates of the Nippon Foundation Ocean Mapping course at the University of New Hampshire, USA. Approximately 45 alumni students were welcomed to the IHO by President Robert Ward, before receiving briefings on the Forum and their role in it. Mr Yohei Sasakawa, Chairman of the Nippon Foundation, joined the alumni for part of their meeting.

The Forum opened at the Musée océanographique in Monaco with approximately 200 delegates from a wide community of participants, including hydrographers, oceanographers, cartographers, and representative from industry, science and academia. The Forum was honoured by the presence of His Serene Highness Prince Albert II of Monaco, who opened the Forum and inaugurated the associated GEBCO and Nippon Foundation posters display. During his address Mr Yohei Sasakawa challenged the delegates to complete mapping the ocean floor by 2030. Seven IHO Member States were represented by their national Hydrographers and senior representatives from a number of other IHO Member States' Hydrographic Offices were also present. Opening addresses were delivered by President Ward and Dr Thorkild Aarup, representing the Executive Secretary of the IOC. These addresses were followed by thought-provoking presentations by Dr Robert Ballard, Dr Larry Mayer, Mr David Heydon, Mrs Kristina Gjerde, Ms Jyotike Virmani and Mr Bjorn Valving. Mr Simon Winchester, notable author and

A series of meetings and workshops were held in Monaco from 15 to 17 June as part of the Forum for Future Ocean Floor Mapping organized by the GEBCO Guiding Committee (GGC), under the joint auspices of the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Organization (IOC) of UNESCO and supported by the Nippon Foundation of Japan.

The Forum was preceded by a Polar Mapping Workshop held in the Headquarters of the IHO on 12 and 13 June, at which around 40 ocean map



HSH Prince Albert II of Monaco
opening the Forum
at the Musée océanographique
in Monaco

raconteur, closed the first day with his observations on the history and significance of the oceans to mankind.



Panel sessions during Day Two of the Forum

The second day of the Forum consisted of four panel sessions which addressed:

- The Use of bathymetry: the deep ocean perspective,
- The Use of bathymetry: the coastal perspective,
- New tools and techniques in ocean mapping, and
- Mapping the world ocean floor.

These panel sessions generated active participation with all aspects of the four themes being explored through wide-ranging comments and discussion. These sessions led into a third day, that consisted of four focus group sessions, which explored the issues raised on the second day and discussions on how to take the key items forward to develop a roadmap for the next 10-15 years of GEBCO activity and to provide input to the Forum communiqué.

The documentation related to the Forum is available on the GEBCO page of the IHO website at:

www.iho.int/mtg_docs/com_wg/GEBCO/FOFF/index.htm

32ND CONFERENCE OF THE NORTH SEA HYDROGRAPHIC COMMISSION Dublin, Ireland, 21-23 June

The 32nd Conference of the North Sea Hydrographic Commission (NSHC) was hosted by the Irish Maritime Administration, in Dublin, from 21 to 23 June. This was the first NSHC Conference hosted by Ireland. The Conference took place in Dublin Castle and was chaired by Captain Marc van der Donck, the Hydrographer of the Netherlands. 26 delegates, the Manager of the GEBCO Digital Atlas and seven Observers from industry attended the Conference. The ten IHO Member States of the Region (Belgium, Denmark, France, Germany, Iceland, Ireland, Netherlands, Norway, Sweden and United Kingdom) were represented together with the USA. The IHB was represented by Director Gilles Bessero.



Participants of the NSHC-32

The first half-day was devoted to a closed session attended only by the Members of the Commission and the IHB representative. In his opening remarks, the Chair noted the relevance of the theme of the World Hydrography Day to the activities of the Commission. The closed session considered governance issues related to the establishment of the IHO Council and to the management of the Commission. The Conference agreed on the procedures to select the Member State(s) which will occupy the Council seat(s) allocated to the Commission and to prepare the input of the Commission to the Council. Director Bessero briefed the delegates on current IHO issues and IHB activities. The Commission considered the activities of IHO bodies affecting its work, including the Inter-Regional Coordination Committee, the Working Group on the World-wide ENC Database and the IHO-European Union (EU) Network Working Group. The final item of the closed session was devoted to the consideration of the preliminary results obtained by the NSHC Tidal Working Group in relation with the realization of North Sea wide vertical reference surfaces. The Commission provided guidance to the Working Group for the continuation of this work item.

The subsequent open sessions addressed a broad scope of issues related to survey policies and technologies, including satellite derived bathymetry, charting and marine spatial data infrastructures (MSDI). Both the Member States and the industry representatives reported on relevant developments and on-going national and regional programmes. The Commission agreed to suspend further development of the North Sea Bathymetric Database pending the

outcome of the EU Call for tenders on high resolution seabed mapping and the results of the EU Coastal Mapping Project.

The activities and work plans of the North Sea International Charting Coordination Working Group (NICCWG), Resurvey Working Group and Baltic Sea-North Sea MSDI Working Group were considered and endorsed. Noting that the North Sea ENC Harmonization Group had no further issue to consider at the regional level, the Conference agreed to disband the group and tasked the NICCWG to monitor and address any future ENC scheme issues.

Germany informed the Commission of a ruling of the Court of Justice of the European Union³ which concludes that “*geographical information extracted from a topographic map (...) retains, following its extraction, sufficient informative value to be classified as ‘independent materials’ of a ‘database’ (...)*”. Through this ruling, the Court indicates that the concept of “database” must be interpreted widely, as collections of works and/or other data, in any form, without technical or material restrictions - therefore applying also to analogue databases - and stresses the functional nature of database protection⁴.

At the end of the Conference, Captain Declan Black, Ireland, took over the chairmanship and Ms Virginie Debuck, Belgium, became Vice-Chair. The next Conference is expected to take place toward the end of March 2018 in Belgium, exact date and venue to be decided later.

³ See

<http://curia.europa.eu/juris/document/document.jsf?text=&docid=170741&pageIndex=0&doclang=EN&mode=req&dir=&occ=first&part=1>

⁴ Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases.

VISIT TO THE SECRETARIAT OF THE ARCTIC COUNCIL

Tromsø, Norway, 27 June

In the lead-up to the 14th Conference of the IHO Hydrographic Commission on Antarctica (HCA), President Robert Ward took the opportunity to call on the Director of the Permanent Secretariat of the Arctic Council, which is located in Tromsø, Norway.

The President introduced the IHO and the Arctic Regional Hydrographic Commission (ARHC) to Mr Magnús Jóhannesson, Director. Mr. Jóhannesson confirmed that the application of the IHO to be recognised as an Observer organization in the Arctic Council will be considered when the Council next meets in 2017. This will then enable the Arctic Regional Hydrographic Commission to present its views directly to the Council.



The President and the Director of the Secretariat of the Arctic Council

5TH MEETING OF THE ATLANTIC SEABED MAPPING INTERNATIONAL WORKING GROUP (ASMIWG)

Galway, Ireland, 29 June

The Atlantic Seabed Mapping International Working Group (ASMIWG) was established in 2015 to address seabed mapping issues related to the implementation of the *Galway Statement* of 2013 through which the European Union (EU), the United States of America (USA) and Canada agreed to join forces on Atlantic Ocean Research.



Participants at the 5th meeting of ASMIWG

The 5th meeting of the ASMIWG was held at the Marine Institute in Rinnville, Galway, Ireland, on 29 June. The meeting was chaired by Mr Alan Stevenson, British Geological Survey (BGS) /EuroGeoSurveyMarine Geology Expert Group (EGS MGEG) with representatives from the EU, Canada and USA as well as representatives from the European Commission (EC) and Non-Governmental Organizations. Assistant Director David Wyatt represented the IHO and the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) Project.

The ASMIWG reviewed progress since its previous meeting and the direction and guidance provided from the Canada-EU-US Tripartite Implementation Committee meeting held on 13 June. The meeting received information on recent North Atlantic transects undertaken in *L'Atalante*, a research vessel operated by Institut français de recherche pour l'exploitation de la mer (IFREMER) (French Research Institute for Exploration of the Sea) and *Celtic Explorer*, a research vessel operated by the Marine Institute of Ireland (INFOMAR), as well as the planned transect by the Canadian Coast Guard vessel *CCG Louis S. St-Laurent* en route to the Arctic.

The Chair provided a brief update from the NOAA/National Centers for Environmental Information (NCEI) on progress with the developments to the IHO Data Centre for Digital Bathymetry (DCDB) and the North Atlantic Data Viewer, where data gathered during transects will be made publically available. Additionally update briefs were provided on the activities of the Ocean Literacy WG, the European Marine Observation and Data Network (EMODnet), International Research Ship Operators (IRSO), IHO Crowd-sourced Bathymetry WG, GEBCO Forum for Future Ocean Floor Mapping, European Global Ocean Observing System (EGOOS) and Atlantic Ocean Research Alliance Coordination and Support Action (AORA CSA). The Chair provided information on kick-off meetings for "A Trans-Atlantic assessment and deep-water ecosystem-based spatial management plan for Europe" (ATLAS) and "Deep-sea Sponge Grounds Ecosystems of the North Atlantic" (SponGES).

Mr Craig McLean (USA) and Ms Sigi Gruber (EC) provided details of the recent Tripartite Implementation Committee meeting; the outcomes included that Canada would assume the position of Chair of the ASMIWG from 1 January 2017 and that the position of Research Vessel Coordinator (RVC) would be funded by the Canadian Hydrographic Service (CHS) initially for a period of two years. The RVC would be responsible for identifying transect opportunities, liaising with appropriate authorities and organizations to obtain vessel berths and time, and filling the berths with suitably qualified personnel to gather and process the data obtained for inclusion in the AORA database.

Taking into account the outcomes of the Tripartite Implementation Committee meeting and its directive to the ASMIWG, a draft 'Next steps' document and recommendations were created; this will also identify an outline plan for a pilot project area and subsequent up-scaling of the work towards a campaign mapping approach. It was noted that the document should be completed by the end of 2016 and presented to the Implementation Committee by February 2017.

Participants were briefed on the new website (<http://www.atlanticresource.org>) created to support the ASMIWG activities and into which all meeting documents and presentations would be placed. The Implementation Committee confirmed the next, and sixth, meeting of the ASMIWG would take place in Rostock, Germany, immediately after the Hydro 2016 conference, which will be held from 8 to 10 November 2016, with a further meeting in the USA in April/May 2017.

The meeting was followed by a public arts, music and marine science fusion titled '*The Longest River*'. *The Longest River* was an attempt to express why deep ocean research is so captivating, yet so complicated. It was noted that it is only in recent times that the importance and relevance of this research to our daily lives has become apparent. The event, which was hosted by Dr Peter Heffernan, Chief Executive of the Marine Institute, included participation by Mr Kevin Vickers, Ambassador of Canada to Ireland, Ms Máire Geoghegan-Quinn, former European Commissioner responsible for research, innovation and science, Mr John Bell, Director of the EC Bioeconomy Directorate, Mr Craig McLean, Assistant Administrator for Oceanic and Atmospheric Research at NOAA, USA, and Professor Andrew Wheeler, Chair of Geology and Head of Geology at the School of Biological, Earth and Environmental Sciences at the University College Cork, Ireland. The event was attended by over 100 members of the public as well as the ASMIWG participants.



'The Longest River' arts, music and marine science fusion

IHO HYDROGRAPHIC COMMISSION ON ANTARCTICA 14TH CONFERENCE

Tromsø, Norway, 28-30 June

The IHO Hydrographic Commission on Antarctica (HCA) operates in a similar way to the other 15 Regional Hydrographic Commissions that encompass the world. It 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. The 14th Conference of the HCA could not be held in Ecuador as planned because of the earthquake that struck that country in April. Instead the Conference was held at the Fram Centre in Tromsø, Norway from 28 to 30 June, thanks to an offer from the Norwegian Hydrographic Service (NHS) to arrange an alternative venue at short notice.

The Conference was chaired by IHB President Robert Ward, supported by Assistant Director Yves Guillam, Secretary (IHB). 21 delegates from 14 Member States (Argentina, Australia, Brazil, Chile, China, Colombia, France, India, Italy, Korea (Rep. of), Norway, United Kingdom, USA, Venezuela), four stakeholder organizations (COMNAP⁵, GEBCO/IBCSO⁶, IAATO⁷, IALA⁸), three expert contributors (Kongsberg Marine, Norwegian Polar Institute, Teledyne-Caris), attended the meeting. Apologies were received from Japan, New Zealand, Peru, the Russian Federation, South Africa and Spain, who were unable to attend.



*Participants gathered nearby the Fram Centre, Tromsø, Norway
at the 14th Conference of the IHO Hydrographic Commission on Antarctica*

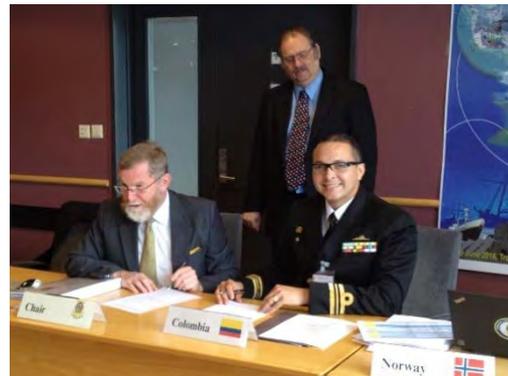
⁵ COMNAP: The Council of Managers of National Antarctic Programs.

⁶ GEBCO/IBCSO: The General Bathymetric Chart of the Oceans / The International Bathymetric Chart of the Southern Ocean.

⁷ IAATO: The International Association of Antarctic Tour Operators.

⁸ IALA: The International Association of Marine Aids to Navigation and Lighthouse Authorities.

Following the signature of the statutes of the HCA by the representative of Colombia at the opening of the Conference, the HCA now comprises 24 Member States that are also signatory nations to the Antarctic Treaty.



The Conference agreed to amend the Statutes of the HCA in order to provide greater flexibility in the timing of its conferences and to conform with the planning cycle of the IHO that will enter into force when the revised Convention on the IHO enters into force, as expected shortly. The list of ATCM⁹ Resolutions that are relevant to the HCA and are annexed to the Statutes will also be updated.

The HCA reviewed progress since its 13th Conference held in 2013, and received reports from COMNAP, GEBCO/IBCSO, IAATO, IALA, as well as from the IHO Member States. National reports from the IHO Member States, who were not present, were noted. Presentations were also given by the expert contributors. Each focused their presentations on the Antarctic environment. Two presentations delivered by the representative of the Norwegian Polar Institute were well received and gave the opportunity to identify ways to strengthen links between the HCA and SCAR¹⁰ and other scientific institutes who collect bathymetric data in Antarctica. Participants agreed that the Secretariat of the IHO should investigate the possibility of engaging with SCAR's Standing Committee on Data Management (SC-ADM).

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 and its stakeholders by establishing a recognized and interoperable GIS-based repository that will enable existing data coverage to be identified. The HCA secretariat (IHB) will investigate enhancements to the HCA GIS on-line database portal by linking to certain HCA Member States, who already run operational maritime geoportals (Colombia, France, Republic of Korea...). In addition, it was also decided that the HCA Members will re-evaluate the existing data layers available in the IHO HCA GIS database, as well as the potential to extend linkages between the IHO INTToGIS INT chart coordination system and other Antarctica geoportals (such as Quantarctica, led by the Norwegian Polar Institute, etc.).

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 through access to AIS data were very useful in verifying the existing maritime shipping routes (MSR) used to set survey and charting priorities in the HCA and resulted in the identification of two new MSRs.

⁹ Antarctic Treaty Consultative Meeting.

¹⁰ SCAR: The Scientific Committee on Antarctic Research.



***President Robert Ward interviewed by TV Norway,
and thanking Messrs. Evert Flier and Noralf Slotsvik (NHS),
for their outstanding support***

The representative of Chile reported on its representation of the IHO-HCA at the 39th session of the ATCM and indicated the possibility that the IHO might present a seminar on the status of hydrography in Antarctica back-to-back with the 41st session of the Antarctic Treaty Consultative Meeting (ATCM) due to take place in the Czech Republic in 2018.

Subject to confirmation by the host country, it was agreed that the 15th Conference of the HCA will take place in New Zealand in June 2017. The 16th Conference of the HCA is tentatively planned to take place in conjunction with the 41st session of the ATCM in the Czech Republic in 2018, thereby maximizing attendance and participation of HCA Members at both its own Conference and the proposed seminar on the status of hydrography in Antarctica.

JULY

12TH SESSION OF THE IMO-ITU EXPERTS GROUP London, United Kingdom, 11-15 July



12th session of the IMO-ITU EG

The Experts Group (EG) established jointly by the International Maritime Organization (IMO) and the International Telecommunication Union (ITU) consists of people active in IMO and ITU in relationship to all aspects of maritime communications. The ITU is a specialized agency of the United Nations (UN) which is responsible for issues that concern information and communication technologies, including aeronautical and maritime navigation. The function of the IMO/ITU EG is to advise on the development of future requirements for

maritime radiocommunications taking into account the operational needs as defined by IMO and the regulatory needs as defined by ITU. The 12th session of the IMO/ITU EG (IMO/ITU EG12) was held at the IMO Headquarters in London, UK, from 11 to 15 July under the chairmanship of Mr Christian Rissone (France). Assistant Director David Wyatt represented the IHO. The session was opened by Mr H Yamada, Senior Deputy Director, Subdivision for Operational Safety and Human Element, Maritime Safety Division at the IMO.

The Group addressed a number of topics of direct interest to IHO Member States resulting from discussions at the 96th session of the IMO Maritime Safety Committee (MSC96), 3rd session of the IMO Sub-committee on Navigation, Communications, and Search and Rescue (NCSR3), outcomes of the ITU World Radiocommunication Conference 2015 (WRC-15) and in preparation of WRC-19. The IHB submitted one comment paper and made a number of interventions, which were mainly to clarify misunderstanding of the Worldwide Navigation Warning Service (WWNWS) processes, NAVAREA and METAREA Coordinator responsibilities and the nature of Maritime Safety Information (MSI).

In particular the Experts Group considered the *Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems*, additional modules to the *Revised Performance Standards for Integrated Navigation System (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of navigation information received via communications equipment* and *Guidelines for the harmonization display of navigation information received via communications equipment*. The IHB submitted comments in relation to these items, which were included in the revised draft amendments to resolutions MSC.252(83) (*Revised Performance Standards for Integrated Navigation Systems (INS)*), MSC.306(87) (*Revised Performance Standards for Enhanced Group Call (EGC) Equipment*) and MSC.148(77) (*Revised Performance Standards for Narrow-Band Direct-Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships (NAVTEX)*), which will be submitted to NCSR4 for consideration.

The Group considered the use of Automatic Identification Systems (AIS) on unmanned craft, their operations and dynamic navigation markers, noting that Recommendations ITU-R M.585-7 and M.1375-5 did not address these issues. The Group noted that these Recommendations did

not provide guidance for the assignment of identification to AIS devices used to mark a dynamic navigation hazard, which could improve navigation safety if separately distinguished from aids to navigation.

The Group reviewed, in detail, the report of the Correspondence Group (CG) on the Modernization of the Global Maritime Distress and Safety System (GMDSS) and comments were prepared for further consideration by the CG in preparing their report to NCSR4.

The Experts Group considered the compatibility of multiple GMDSS satellite services with respect to the delivery of MSI. The Group noted that the formatting of Enhanced Group Call (EGC) message content, the routing of messages from the originators (MSI providers and SAR operators) to the satellite service providers for broadcasting and the requirement for MSI providers to monitor their broadcasts were of particular relevance. The IHB highlighted the guidance on the standardisation and the harmonizing of the format of EGC messages contained in the Joint IMO/IHO/WMO MSI Manual and the International SafetyNET Manual.

The Group noted the concerns of the MSI providers in meeting the requirement to monitor their broadcasts when transmitted via multiple satellite service providers, which could cause cost increases. The Group discussed the issue of interoperability for the shore elements of the system. The future development of NAVDAT and its potential place alongside the NAVTEX system network were considered.

The Group discussed the application by *Thuraya* and *Iridium* for recognition as mobile satellite service providers; of particular concern was out-of-band-emission interference and the Group considered the IMO should invite the ITU to take appropriate regulatory measures to ensure full protection of the availability of the frequency bands to be used by new recognised GMDSS satellite service providers for the provision of GMDSS services.

The Experts Group discussed draft definitions of Autonomous Maritime Radio Devices (AMRD) for consideration by the ITU and the need to consider the operational and safety of navigation aspects and which devices should be displayed by AIS and on an ECDIS.

In closing the meeting, Mr Ashok Mahapatra, Director IMO Maritime Safety Division, noted the progress on the GMDSS Modernization Plan in preparation for NCSR4; he also noted the progress on the IMO positions for various WRC agenda items. He acknowledged the efforts on the recognition of new mobile satellite service providers and the progress in resolving a number of important issues.

The next session of the IMO/ITU EG is scheduled from 10 to 14 July 2017 (*IMO/ITU EG13*). The meeting report and associated documents will be available on the IMO website under IMODOCS in due course.

22ND SESSION OF THE INTERNATIONAL SEABED AUTHORITY Kingston, Jamaica, 12-22 July

The International Seabed Authority held its twenty-second annual session at its headquarters in Kingston, Jamaica from 12 to 22 July with a crowded agenda, including elections to its executive Council, two subsidiary organs and of a Secretary-General to steer its activities for the next four years.



*The Secretary-General of ISA and President of the IHO Secretariat
with Mr Tidiani Couma, representative of Monaco to the ISA*

The Authority's supreme organ, the Assembly elected Md. Khurshed Alam (Bangladesh) as its President for 2016. The Council elected Mariusz Orion Jędrysek (Poland) as its President for the current session. President Robert Ward represented the IHO during the first week of the session.

Among the items on the Council's agenda was consideration of a proposed Agreement on Cooperation between the IHO and the ISA. This was agreed and resulted in the Agreement being signed on 14 July on behalf of the IHO by President Ward and on behalf of the ISA by its Secretary-General Mr. Nii Allotey Odunton of Ghana.

President Ward addressed the Council where he introduced the IHO. He went on to remind the Council that less than 10% of the area under its jurisdiction has been measured directly and that this situation can best be addressed by introducing policies that oblige at least some level of the depth data being collected as part of the exploration and environmental assessment arrangements, to be made more widely available. He reminded the Council that this would follow the growing trend in other parts of the world's sea areas – where the policy is to *measure once – and use many times*. He highlighted also that adopting or encouraging such a regime in the ISA of making fundamental depth data more widely available would also directly support the recently adopted Agenda 2030 Sustainable Development number Goal 14 - concerning the sustainability of ocean activities.

The President expanded upon this theme at a side event where he briefed approximately 40 delegates, who chose to attend.

As a result of the IHO representation at the Assembly and Council meetings of the ISA several groups representing ISA licensees (Contractors) and the Secretariat expressed interest in further developing the ISA protocols to ensure that bathymetric data collected under the ISA regime is made available to the IHO Data Centre for Digital Bathymetry (DCDB) and the IHO-IOC GEBCO project.

AUGUST

GRADUATION RECOGNITION CEREMONY FOR MASTER OF SCIENCE DEGREE IN HYDROGRAPHIC SCIENCE University of Southern Mississippi, USA, 04 August

Four students sponsored by the Republic of Korea (ROK) through the IHO Capacity Building programme successfully completed a Master's Degree in hydrographic science at the University of Southern Mississippi (USM), USA, in August. The four successful students were from the national hydrographic services of Bahrain, Mauritius, Nigeria and Romania. They were part of the 17th graduating class and all obtained high marks on the course. Formal graduation will take place at the end of the year; however, a recognition ceremony was held shortly after the completion of the course to mark the achievements of all the graduates before they return to their host organizations to take up operational roles in hydrography.

The Master's Degree meets the Category A recognition requirements of the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) operated jointly by the Fédération Internationale des Géomètres (FIG), the International Hydrographic Organization (IHO) and the International Cartographic Association (ICA).

The recognition ceremony was held at the Gulf Park Campus of the USM on Tuesday, 04 August. Dr. Rodney D Bennett, President of the University of Southern Mississippi also attended the ceremony which was declared open by Dr Steve Miller, Vice President for Gulf Park Campus of the USM. This was followed by a brief speech from IHB Director Mustafa Iptes and Dr Chaeho Lim (Representative of the donor state, ROK). A keynote address was delivered by Captain Brian D. Connon (US Navy), Director of the Maritime Safety Division, US National Geospatial-Intelligence Agency. The ceremony closed with the presentation of certificates and prizes by Dr Karen S. Coats, Dean of the Graduate School of the USM and Captain Raymond "Rich" Delgado III (US Navy), Chief of Staff, Meteorology and Oceanography Command and Hydrographer of the US Navy.

As well as the four IHO Capacity Building programme alumni, there were nine other successful students from the Netherlands, Saudi Arabia, USA, and from the commercial hydrographic surveying sector.

It is expected that the Republic of Korea and the IHO will be able to offer further sponsored places on the course in future years. Prospective applicants should make early preparations to ensure that they have the necessary qualifying credentials, particularly English language proficiency and academic recognition well in advance of the next call for application, which is likely to occur in September.



Graduands receive their certificates of recognition

Left to Right:

Mr Maxim van Norden (Coordinator of the USM CAT A Programme)

Mr Devendra Ragoonath Madhow (Ministry of Housing & Lands, Mauritius)

Lt Cdr Babatunde Luqman Akanbi (Nigerian Navy)

Dr Chaeho Lim (Director of Nautical Chart Division, KHOA, ROK)

Mr Mustafa Iptes (Director, IHO)

Mr Jasim Butaiba (Survey & Lands Bureau, Bahrain)

Lt Lucian Dutu (Romanian Navy)

6TH SESSION OF THE UN COMMITTEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

3 - 6 August, New York, USA



The sixth 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 3 to 6 August.

The UN-GGIM reports to the UN Assembly via the UN Economic and Social Council (ECOSOC). 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 in to account the role of geospatial data in monitoring and achieving the Sustainable Development goals agreed under the UN 2030 Agenda for Sustainable Development.

Mr Wu Hongbo, UN Under-Secretary-General for Economic and Social Affairs opened the meeting, highlighting that ECOSOC had recently adopted a draft resolution (E/2016/L.28) entitled “*Strengthening institutional arrangements on geospatial information management*”. The adopted Resolution, in effect, confirms the UN-GGIM as a permanent UN subordinate body and enables greater institutional support to be provided to the UN-GGIM.

Nearly 300 participants representing more than 80 UN Member States and Observer Organizations, including the IHO, participated in the Session. A representative of the US Hydrographic Office (Office of Coast Survey) was present in the US delegation. The Hydrographic Offices of Cuba, New Zealand, Oman and the Philippines were, in effect, represented since their national delegations were led by their parent organizations. President Robert Ward represented the IHO.

The sixth Session was preceded by 28 associated side meetings covering regional GGIM meetings and discussions in support of several working groups supporting the GGIM.

A number of the items on the agenda of UN-GGIM6 were of direct relevance to IHO Member States, particularly in relation to the contribution of hydrographic data and services to national and regional spatial data infrastructures.

Progress in the development and maintenance of relevant IHO standards was presented to the Committee as part of a combined report of the IHO, the International Organization for Standardization (ISO) and the Open Geospatial Consortium (OGC). The Committee expressed its thanks for the continuing work of the IHO, ISO and OGC with respect to standards, harmonization and implementation, and the usefulness of the two reference documents produced by the three organizations. Several Member States indicated that the reference documents are now being used as a means of highlighting the fundamental importance of the adoption and use of geospatial standards in order to enhance data inter-operability and access in their countries.

The Committee reviewed the progress being made by its working group (WG) on global fundamental geospatial data themes. There was some discussion on the usefulness of a minimum list of fundamental geospatial data themes rather than data sets. The WG was invited to report its progress to the next session.



The Committee reconfirmed its acknowledgment that open data, data sharing policies, and the use of volunteered geographic information are critical to advancing the use of geospatial information. These are all subjects currently under the purview of the Marine Spatial Data Infrastructure Working Group (MSDIWG) and the Crowd-Sourced Bathymetry Working Group of the IHO.



Chair of ISO Technical Committee 211 on Geographic information/Geomatics, Mr Olaf Østensen and President Ward

The Committee's Expert Group on the *Application of Geospatial Information related to Land Administration and Management*, provided its report and observations. President Ward drew the Committee's attention to the fact that the subjects under consideration of this expert group applied equally to the coastal areas, seas and oceans. He drew attention to the ongoing work in the IHO of assisting Member States to contribute to national and regional spatial data infrastructures and invited the Committee to consider whether the scope of study should be widened beyond the terrestrial domain to specifically include coastal waters, the seas and the oceans. As a result, the Committee:

... recognized the need to consider the marine environment – shorelines, coastal waters, seas and oceans – as a key component of the spatial data infrastructure that underpins the administration and management of land, marine spaces, and the national geospatial resources of many littoral Member States.

This statement reinforces the role of the MSDIWG and the priority that is placed on MSDI in the IHO Work Programme.

Copies of all the papers and report of the meeting are available on the GGIM website at: <http://ggim.un.org>

The seventh Session of UN-GGIM will take place at the UN Headquarters during the first week of August 2017.

SCAR BIENNIAL MEETINGS

Kuala Lumpur, Malaysia, 20 - 30 August



The 34th biennial meetings of the Scientific Committee on Antarctic Research (SCAR) and an associated Open Science Conference took place in Kuala Lumpur, Malaysia from 20 to 30 August. The event brought together the world's leading Antarctic scientists. SCAR is a body of the International Council for Science (ICSU), and is charged with the initiation, promotion and coordination of scientific research in Antarctica and the Southern Ocean. SCAR also provides international, independent scientific advice to the Antarctic

Treaty System and other bodies. SCAR is affiliated to the IHO Hydrographic Commission on Antarctica (HCA).

President Robert Ward, who is Chair of the HCA, attended the following side meetings related to hydrography that were organised as part of the SCAR Conference: the Standing Committee on Antarctic Data Management (SC-ADM), the Standing Committee on Antarctic Geographic Information (SC-AGI), the Antarctic Sea-ice Processes and Climate Expert Group (ASPeCt), and the International Bathymetric Chart of the Southern Ocean (IBCSO) Expert Group.

The President provided a status report on the bathymetry of the Southern Ocean and the need to obtain significantly more data than presently existed. He reminded the participants of Resolution 5/2014 of the Antarctic Treaty Consultative Meeting (ATCM) that encourages States to ensure that all vessels operating in Antarctica collect hydrographic and bathymetric data on all voyages. He pointed out that all ships operating in the region are capable of obtaining depth measurements in coastal waters using their standard navigational sensors and that all suitably equipped ships should be taking measurement in deeper waters as well. He described the long-standing IHO-IOC General Bathymetric Chart of the Ocean (GEBCO) project and the supporting IHO Data Centre for Digital Bathymetry as the only comprehensive global bathymetric database. He appealed to all those present to consider ways to make archived depth data already collected as part of scientific research discoverable and therefore more widely available as part of the global bathymetric data set.

13TH CONFERENCE OF THE SOUTHERN AFRICA AND ISLANDS HYDROGRAPHIC COMMISSION (SAIHC)

Cape Town, South Africa, 30 - 31 August

The 13th Conference of the Southern Africa and Islands Hydrographic Commission (SAIHC) was held from 30 to 31 August 2016 in Cape Town, South Africa. Six Member States: France, Mauritius, Mozambique, Norway, South Africa and the United Kingdom were represented at the meeting. India also participated as an invited member. Comoros, Malawi, Namibia and Portugal, attended as Associate Members and delegates from the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the South African Maritime Safety Authority (SAMSA) and the two Regional Electronic Nautical Chart (RENC) organizations: IC-ENC and PRIMAR also participated in the meeting. Industry participants from C-MAP Norway, Fugro Survey Africa, Kongsberg Maritime, Oceaneering South Africa, Teledyne CARIS and Underwater Surveys also attended the meeting. President Robert Ward and Assistant Director Anthony Pharaoh represented the IHB. The meeting was chaired by Captain Abri Kampffer (national Hydrographer of South Africa).

The 13th Conference was preceded by a meeting of the regional International Charting Coordination Working Group (ICCWG) during which the status of INT chart production in the region was discussed. A presentation on the INTOGIS online catalogue application was provided, followed by an “*IALA Safety of Navigation Conference*”. These events took place on 29 August.



Participants of the 13th SAIHC Conference

Each of the participating Member and Associate Member States presented at the Conference a briefing on the status of hydrography and charting priorities in their areas of responsibility. There were reports, presentations and discussions on Satellite Derived Bathymetry, GEBCO activities, the IHO capacity building programme for the region, the status of IHO publication C-55, procedures for marine disasters, maritime safety information for NAVAREA VII and the Norwegian Mareano Project (<http://www.mareano.no/>). The two RENC organizations provided feedback on the status of ENC distribution in the region. Presentations were also delivered by each of the industry participants.

The report provided by Mauritius highlighted the significant progress that has been made with the development of the Mauritian hydrographic infrastructure and capabilities. This has been achieved through the very successful capacity building efforts from both the IHO Capacity Building Programme and the continuing support from the Government of India through the

Indian National Hydrographic Office which is deploying its ships regularly to conduct surveys in Mauritius, providing training and compiling nautical charts on behalf of the country. Associate Members Angola, Kenya, Madagascar, Seychelles and Tanzania were not able to attend the meeting and did not submit national reports.

South Africa (Captain Abri Kampfer) was re-elected as Chair for the next term and UK was elected to hold the position of Vice Chair. The next conference is proposed to take place in late September 2017 in Mauritius, subject to confirmation.

All papers and presentation for the Working Group meeting and the Conference are available on the SAIHC13 document page on the IHO website (<http://www.iho.int>).

SEPTEMBER

TOWARDS COP22 – AFRICAN MINISTERIAL CONFERENCE ON OCEAN ECONOMIES AND CLIMATE CHANGE

Mauritius, 1-2 September



At the invitation of the World Bank, President Robert Ward represented the IHO at an African Ministerial Conference on Ocean Economies and Climate Change held on 1 and 2 September in Mauritius. The invitation came as a result of several meetings between IHB Director Mustafa Iptes and the World Bank, where Director Iptes was exploring opportunities for assistance from the Bank for hydrographic capacity building. During the

discussions Director Iptes highlighted the fundamental and underpinning role that hydrography, and in particular bathymetric data, plays in all aspects of human activity in, on and under the sea. As a result, the World Bank now better recognizes that hydrography should be considered as part of any wider programmes that it supports to develop the blue economy and invited the IHO to participate in the African Ministerial Conference.

The Conference, organised by the Government of Mauritius and the World Bank, brought together Ministers from 15 African countries together with leading experts from development partners, the private sector, scientists, and academia. The purpose of the Conference was to prepare to present an 'African Package' to the 22nd session of the Conference of the Parties (COP 22) to the UN Framework Convention on Climate Change (UNFCCC) in Marrakesh, Morocco in November 2016 and to help attract transformational investment packages for ocean-related development for Africa as part of the broader global ocean action agenda.

The Conference developed a communiqué that will be presented to COP22. Among its various calls for action, the communiqué highlights the need for investments and developments that are sustainable and environmentally sensitive and are backed up by appropriate environmental and scientific studies.

In that context, national Hydrographic Offices, as the principal custodians of the authoritative national bathymetric data base and the IHO through its Data Centre for Digital Bathymetry and its co-governance of the IHO - IOC General Bathymetric Chart of the Oceans (GEBCO) project, have important roles that they can play.

The Conference was informed that a growing number of countries, many of them IHO Member States, either have or are planning to implement Marine Spatial Plans. This adds further weight to the need for those Hydrographic Offices that are not already a key part of their national spatial data infrastructure to consider how they may be recognised and become more involved in supporting activities that go beyond charting and safety of navigation.

During a break in the Conference, key personnel from the Mauritius Hydrographic Unit met the President and discussed hydrographic progress in the country, including the recent establishment of an in-country inshore surveying capability, and the very successful capacity building efforts



from both the IHO Capacity Building Programme and the continuing support from the Government of India through the Indian National Hydrographic Office which is deploying its ships nautical charts on behalf of the country.

**THESIS JURIES OF THE MASTERS OF SCIENCE (MSc) IN
HYDROGRAPHY AND IN HYDROGRAPHIC ENGINEERING
AND DATA PROCESSING
ENSTA Bretagne, Brest, France, 1-2 September**

**ENSTA**
Bretagne
*Graduate and Post-graduate
Engineering
School and Research Institute*



***LCDR Indragiri Yani Wardhono
(Indonesia)
and Assistant Director Yves Guillam,
Secretariat of the IHO***

ENSTA Bretagne is the French Graduate School which offers a Category A curriculum in hydrography recognized by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. The School proposes four Master of Science (MSc) programmes, respectively in Hydrography, Hydrographic Engineering and Data Processing, Operational Oceanography, and Marine Geophysics, the latter being associated with a Research Master at the University of Brest, France.

At the invitation of Dr Nathalie Debese of the Hydrography Department at ENSTA Bretagne, Assistant Director Yves Guillam, Secretariat of the IHO, chaired five MSc thesis juries on hydrographic topics on 1-2 September.

The five students were from Cameroon (1), China (2), France (1) and Indonesia (1). Four of the theses covered the automatic definition of bathymetric optimal surface for shallow water surveys, inspection technologies for hydro dams and infrastructures, automatic and statistical comparisons of bathymetric surveys in lakes and dam reservoirs, technical specifications of a new Remotely Operated Underwater Vehicle (ROV) sonar developed for mine-hunting. The wide spectrum of the research topics investigated in these theses illustrated that hydrography is much more than nautical charting.

The fifth research project, sponsored and managed by ENSTA Bretagne and the French national Hydrographic Service (SHOM), sought to develop a mathematical methodology to be used both by hydrographers and cartographers for decision support processes when handling new survey data within an area already surveyed and/or charted. LCDR Indragiri Yani Wardhono from the Indonesian national Hydrographic Service (DISHIDROS) was awarded his MSc diploma for his research on this topic.

8TH MEETING OF THE IHO WORLD-WIDE NAVIGATIONAL WARNING SERVICE SUB-COMMITTEE

Ålesund, Norway, 12-16 September

The 8th meeting of the World-Wide Navigational Warning Service (WWNWS) Sub-Committee (WWNWS8) was hosted by the Norwegian Coastal Administration (NCA) and was held at the Quality Waterfront Hotel, Ålesund, Norway, from 12 to 16 September under the chairmanship of Mr Peter Doherty of the United States of America. Mr Arve Dimmen, Director of Maritime Safety at the NCA, welcomed the meeting which was attended by 38 delegates from 18 IHO Member States, the Secretariat of the International Maritime Organization (IMO), the Secretariat of the World Meteorological Organization (WMO), the Secretariat of the International Mobile Satellite Organization (IMSO), the Chairs of IMO NAVTEX and International SafetyNET Coordinating Panels, Inmarsat, Iridium and the IHB. The delegates included representatives of 16 NAVAREA Coordinators, one Sub-Area Coordinator and three National Coordinators.



*Welcoming address by Mr Arve Dimmen,
Director of Maritime Safety, Norwegian Coastal*

The Sub-Committee received Maritime Safety Information (MSI) self-assessment reports from all 21 NAVAREAs and from the Baltic Sea Sub-Area, as well as reports from the Secretariats of the IMO, WMO and IMISO. The outcomes from the 14th meeting of the Document Review Working Group (8-10 March 2016) were discussed; in particular the proposed editorial amendments to the IMO resolutions A.705(17) – *Promulgation of Maritime Safety Information*, A.706(17) – *World-Wide Navigational Warning Service* – and A.1051(27) – *IMO/WMO World-Wide Met-Ocean Information and Warning Service*.

The delegates received briefings on e-Navigation and a new e-Broadcast system from Australia, SONSAT (Security of Navigation, Stabilisation, Advice and Training, including the Admiralty Warning and Navigational Information Service (AWNIS)) from the United Kingdom and developments in the provision of mobile satellite Global Maritime Distress and Safety System

(GMDSS) services from Inmarsat and Iridium. The meeting also received a progress report on the development of the S-124 Product Specification on Navigational Warnings from the chair of the S-124 Correspondence Group.



*Capacity Building discussions on board
MS Richard With*

The Sub-Committee embarked on the ferry *MS Richard With* to hold focused sessions covering various aspects of Capacity Building (CB). The sessions were led by the CB Regional Coordinator of the East Atlantic Hydrographic Commission (EAtHC), Mr Eric Langlois (France). The sessions considered progress reports on the delivery of MSI training courses, and 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 Cape Town, South Africa, 28 August to 1 September 2017; details will be published on the WWNWS-SC page of the IHO website when available. It is planned that the meeting will be followed by a Capacity Building MSI Training Course for the Southern African and Islands Hydrographic Commission (SAIHC) region.

When finalized the report of WWNWS8 will be posted on the IHO website, where all the meeting documents are already available (www.iho.int > Committees & WG > WWNWS-SC > WWNWS8)

4TH S-100 TEST STRATEGY MEETING

Rostock, Germany, 13 – 16 September

The 4th S-100 Test Strategy Meeting took place at the offices of the Federal Maritime and Hydrographic Agency of Germany (Bundesamt für Seeschifffahrt und Hydrographie) from 13 to 16 September. The meeting was attended by representatives from IHO Member States (Germany, Republic of Korea United Kingdom, USA - National Oceanic and Atmospheric Administration (NOAA), Naval Oceanographic Office (NAVO) and Space and Naval Warfare Systems Command (SPAWAR)), and expert contributors from Furuno, ESRI, the Korea Research Institute of Ships and Ocean Engineering (KRISO), IIC Technologies, SevenCs, Teledyne Caris and Transas. The meeting was chaired by Ms Julia Powell (USA – Chair of the S-100 Working Group) and the IHB was represented by Assistant Director Anthony Pharaoh and Mr Yong Baek (seconded officer from the Republic of Korea and S-100WG Vice Chair).



Participants to the 4th Test Strategy Meeting

The main item of discussion focused on the draft version of the S-100 Interoperability Catalogue, which has been jointly developed by IIC Technologies and C-Map, under contract to the US-NOAA. The catalogue is the main component of an S-100 Interoperability Specification which will describe how different S-100 based products interoperate within a single system such as an ECDIS.

The Chair of the Nautical Information Provision Working Group (NIPWG), Mr Jens SCHRÖDER-FÜRSTENBERG provided a report on the product specifications being developed by the NIPWG and highlighted some potential interoperability issues.

An update was provided on the S-412 Weather Overlay product specification currently under development by the Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) of the World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission (IOC).

The meeting discussed issues relating to S-100 portrayal and the language used for encoding conditional symbolization procedures.

There were presentations and discussion on the S-100 test bed projects under development. These included items such as the S-101 data viewers being developed by the Korea Hydrographic and Oceanographic Agency and the US-SPAWAR, the S-57 to S-101 data converter application developed by ESRI and various S-10x test datasets.

All the meeting documents are available in the IHO website (www.iho.int > Committees & WG > HSSC > S-100WG).

The next S-100 Test Strategy Meeting is scheduled to take place in the USA or Canada in September 2017.

29TH MEETING OF THE IHO-IOC GEBCO SUB-COMMITTEE ON UNDERSEA FEATURE NAMES Boulder, Colorado, USA, 19-23 September

The 29th meeting of the IHO-IOC GEBCO Sub-Committee on Undersea Feature Names (SCUFN) was hosted at the National Center for Environmental Information (NCEI) of the National Oceanic and Atmospheric Administration (NOAA), in Boulder, Colorado, USA, from 19 to 23 September. SCUFN is tasked with selecting 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, widely used in scientific publications also, 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 25 participants, including 10 of the 12 SCUFN members (five IOC and five IHO representatives), together with 14 observers including Mr Shin Tani (Chair of the GEBCO Guiding Committee) and Mr Osamu Miyaki (IOC Secretariat). Assistant Director Yves Guillam (SCUFN Secretary) represented the IHO Secretariat.

The meeting was opened by the Chair of SCUFN who welcomed all the participants and introduced the two new SCUFN Members: Ms Roberta Ivaldi (Italy, IHO representative) and Ms Ksenia Dobrolyubova (Russian Federation, IOC representative). He also paid tribute to Mr Norman Cherkis who informed the members in August that he wished to step down from his position in SCUFN. In accordance with the SCUFN Terms of Reference, the Secretary informed the meeting of several further anticipated changes to the membership due to occur in 2018 and presented the timeline for the IHO and IOC Secretariats to prepare calls for nominations to fill vacancies.



Participants of the SCUFN-29 meeting

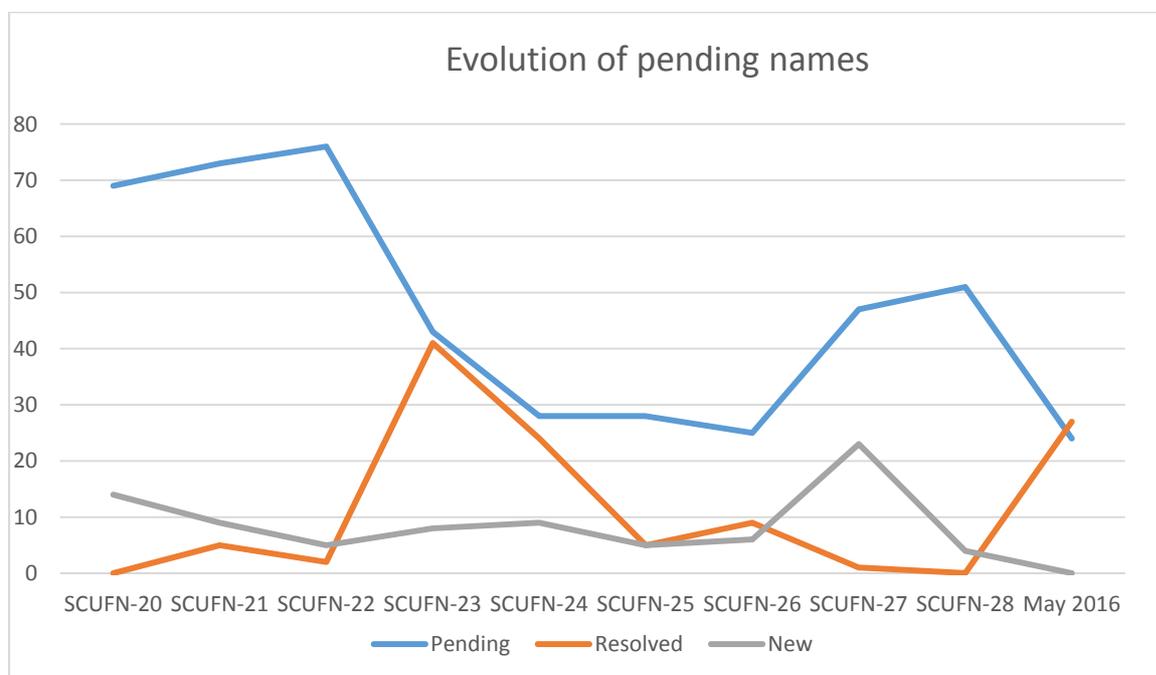
The Sub Committee considered proposals for 133 undersea feature names, submitted by various bodies and supporting organizations from the following countries: Brazil (7), China (50), Denmark (1), Dominican Republic (2), France (1), Japan (23), Republic of Korea (2), Malaysia (4), New Zealand (31), Russian Federation (1), UK (3) and USA (8). The Sub Committee decided to follow the experimental fast-track procedure in its review of the proposals made by Canada (12) and New Zealand (84) related to names that already appear on nautical charts. It was agreed that for the time being SCUFN could not consider in a systematic manner the other 139 names that had been proposed by Canada for international recognition by SCUFN because they relate to features located in its territorial sea. This outstanding task will be addressed later, subject to the establishment by the IHO Hydrographic Services and Standards Committee (HSSC) of an S-100 Undersea Feature Names Project Team for which draft Terms of Reference were endorsed at the meeting, thanks to input provided by Canada.

While a large number of the names proposed to the Sub Committee were accepted, decisions on some others were postponed for further consideration for various reasons, including the increasing number of submissions now being received and the lack of time available during the meeting.

In addition to consideration of the naming proposals, the Sub Committee considered several “corporate” issues, including:

- The maintenance and improvement of the GEBCO Gazetteer interface,
- The ways and means to improve the efficiency and quality of SCUFN activities (inter connexion of the web services that already exist: the IHO SCUFN webpage, the internal SCUFN submission and review web services developed by the Republic of Korea, and the GEBCO Gazetteer itself maintained by NOAA),
- The future of SCUFN (membership, scope, new Edition of B-6 – *Standardization of Undersea Feature Names (Guidelines, Proposal Form Terminology)* – including the integration of a fast-track procedure for existing names which are already charted, the capitalization of best practices, the relations between naming authorities in common areas of interest, etc.),
- 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.

As a consequence of a contract awarded in 2015, the SCUFN Members were pleased to note a decrease in the total number of *pending* names (proposals and related actions) between 2015 and 2016.



The next meeting of the Sub Committee (SCUFN-30) is scheduled to take place in Genoa, Italy from 2 to 6 October 2017.

21ST CONFERENCE OF THE BALTIC SEA HYDROGRAPHIC COMMISSION

Klaipeda, Lithuania, 27-29 September 2016

The 21st Conference of the Baltic Sea Hydrographic Commission (BSHC21) was held in Klaipeda, Lithuania, from 27 to 29 September, under the Chairmanship of Mr. Leonid Shalnov (Russian Federation). All full members of the Commission (Denmark, Estonia, Finland, Germany, Latvia, Poland, Sweden and the Russian Federation) and associate member Lithuania were represented at the Conference. The United Kingdom and the United States of America were also represented at the Conference as Observers. The IHO Secretariat was represented by Director Mustafa IPTES.

BSHC21 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 20th meeting. They also presented new developments with regard to surveying, chart production and maritime traffic management. Director Iptes 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 next IHO Assembly and the revised structure of the IHO.

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), Baltic Sea Marine Spatial Data Information Working Group (BSMSDIWG) and the Chart Datum Working Group (CDWG). The Commission considered the outcome of the 8th meeting of the Inter-Regional Coordination Committee (IRCC) and the 6th meeting of World Wide ENC Database Working Group (WEND-WG).

The Member States reviewed the Statutes of the BSHC and agreed on amendments proposed by Sweden related to the preparation of BSHC conferences. Considering that the IHO Council will be established at the 1st Assembly of the IHO in 2017, the members of the BSHC discussed the possible options for designating the Member(s) that will occupy the seat(s) on the IHO Council allocated to the Commission and agreed on the relevant procedures.

At the end of the meeting, Mr Mindaugas Cesnauskis, (Lithuania) was elected as the new Chair of the BSHC. Considering that Lithuania is not a member of the IHO, it was agreed by the Commission that Mathias Jones (Germany), as Vice Chair, will deal with IHO related issues on behalf of the Chair. It was also agreed that the next meeting of the BSHC will be hosted in Rostock by Germany in September 2017. All available documents of the meeting are posted on the BSHC page of the IHO website.



The Participants of the 21st Conference of the Baltic Sea Hydrographic Commission.

OCTOBER

6TH CONFERENCE OF THE ARCTIC REGIONAL HYDROGRAPHIC COMMISSION (ARHC) AND OCEAN INNOVATION 2016 CONFERENCE Iqaluit, Nunavut, Canada, 3 – 6 October

The 6th conference of the Arctic Regional Hydrographic Commission (ARHC) was held in Iqaluit (ᐃᖃᓗᐃᑦ), Nunavut, Canada on 3 and 6 October, back-to-back with the *Ocean Innovation 2016* Conference that took place on 4 and 5 October. The *Ocean Innovation* Conference is the premier Canadian oceans conference.

22 participants representing four of the five ARHC Members (Canada, Denmark, Norway, and the USA), two Observer States (Finland and Iceland) and one Observer from Indigenous and Northern Affairs Canada. The Russian Federation was unable to be represented at the Conference but provided written inputs that were taken into account or noted. The Conference was chaired by Mr Denis Hains, Director General of the Canadian Hydrographic Service and Hydrographer-General of Canada. Assistant Director Yves Guillam represented the IHO Secretariat.



Participants in ARHC-6, Iqaluit (ᐃᖃᓗᐃᑦ), Canada

As a result of the imminent entry into force of the Protocol of Amendments to the Convention on the IHO, discussions began with a proposal to align the existing Statutes of the ARHC with the new terminology and conditions set out in the new IHO basic documents, including a new annex to the Statutes describing the process adopted for the selection of a State to occupy the seat on the IHO Council allocated to the ARHC. As a result, the Russian Federation was designated to be the first to occupy the seat when the IHO Council is established at the IHO Assembly in April 2017. Formal signing of the amended statutes of ARHC by all Members will take place after a final check of the text and will be done by correspondence or during a special meeting of the ARHC that may take place in the margins of the 1st session of the IHO Assembly in April 2017.

All participants reported on their activities in the Arctic region and the challenges they face. In particular, the delegation from Denmark reported on the challenges in Greenland waters in relation with the reorganization of the Danish Geodata Agency. It was agreed by Canada and Norway to discuss further the scope and management of the Arctic International Charting Coordination Working Group so that ENC and INT chart coverage and maintenance issues can be considered together. The Conference agreed to establish the Arctic Regional Marine Spatial Data Infrastructure Working Group (ARMSDIWG), the Terms of Reference of which were approved.

Following the visit paid in June 2016 by the President of the IHB Directing Committee to the Director of the Secretariat of the Arctic Council it is likely that the ARHC, through the IHO, will be recognized as an Observer to the Arctic Council at the next Ministerial meeting in May 2017. ARHC Members confirmed their readiness to provide further input and support as soon as the Organization is recognized as an Observer to the Arctic Council. The Commission agreed that ARHC's involvement might then not be limited only to the Arctic Council working group on the Protection of the Arctic Marine Environment (PAME).

Fruitful discussions took place on crowd-sourced bathymetry, on surveys using autonomous vehicles, on the need to engage with the cruise shipping industry.

In accordance with the established policy of rotation of the Chair, Denmark was elevated from the position of Vice-Chair to take over the Chair at the end of the meeting. Norway was elected to occupy the resultant vacant Vice-Chair position.

Having considered the provisional dates for the first session of the IHO Council, planned in Monaco from 17 to 19 October 2017, the Conference noted Denmark's offer to host the next meeting in Greenland in August or September 2017. Specific dates and details of the venue will be provided in due course.

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Ocean Innovation 2016 is a biannual conference bringing together representatives from Newfoundland and Northern communities, scientists, stakeholders and policy makers. They discuss challenges and opportunities pertaining to sustainable development of ocean resources, sovereignty, climate change and coastal and maritime infrastructure in the region, including Arctic. *Ocean Innovation 2016* was attended by about 110 participants and chaired by Mr Gerald Anderson, Director Development & Engagement, Fisheries and Marine Institute of Memorial University of Newfoundland (Canada) and Vice-President, Indigenous, University of the Arctic. The Conference participants were briefed on the project development, challenges and potential benefits of new deep water port in Qikiqtarjuaq, along the Northern Passage. Presentations given by ARHC representatives, all very well received, were:

- *Northern Marine Transportation Corridors*, by Denis Hains, ARHC Chair (Canada);
- *Working Towards a Marine Spatial Data Infrastructure (MSDI) in the Arctic*, by Sebastian Carisio, new-elected Chair of the ARHC MSDI Working Group (USA);
- *Charting of Greenland waters – challenges and possibilities*, by Jens Peter Hartmann, Chair of the IHO MSDI Working Group (Denmark).

HIGH LEVEL CAPACITY BUILDING VISIT TO AZERBAIJAN

Baku, 5-6 October

IHB Director Mustafa Iptes paid a High Level Capacity Building visit to Baku, Azerbaijan on 5 and 6 October 2016.

In the first part of his programme, Director Iptes visited the Azerbaijan Navy Headquarters and called on Captain Shahin Mammadov, Chief of Staff of the Azerbaijan Naval Forces. He presented the activities of the IHO and underlined the importance of hydrography and hydrographic services to any coastal State and discussed the benefits of becoming a Member State of the IHO. Director Iptes also visited the Azerbaijan Navigation and Cartography Department of the Ministry of Defense and had a meeting with Commander Davud Baghirli, the Hydrographer of Azerbaijan, during his visit.

In the second part of the programme, Director Iptes visited the Azerbaijan State Maritime Administration where he met Captain Shahlar Mammadov, Deputy Head of the State Maritime Administration. Director Iptes was informed that Azerbaijan, as a maritime State in the Caspian Sea region, is actively considering becoming a member of the IHO and has a positive desire to join the IHO in the near future.



*Director Iptes and Captain Shahlar Mammadov,
Deputy Head of the State Maritime Administration.*

66TH SESSION OF THE IMO TECHNICAL COOPERATION COMMITTEE (TC 66)

London, UK, 10 - 12 October 2016

The 66th session of Technical Cooperation Committee of the International Maritime Organization (IMO) (TC 66) was held at the IMO Headquarters in London, UK, from 10 to 12 October 2016. The IHO was represented by Assistant Director Alberto Costa Neves.

In his opening address, the IMO Secretary-General, Mr Kitack Lim, highlighted the theme for the World Maritime Day 2016, "Shipping: indispensable to the world" and the importance of cooperation for the implementation of the IMO Integrated Technical Cooperation Programme (ITCP). The review of the report of the 2015-2016 ITCP acknowledged the contribution from the IHO, and in particular, the provision of experts and consultants on a no-fee basis for the execution of the IMO/IHO Multi-Beam Training Course for safety of navigation in port operations held in Malaysia. The delegation from Malaysia thanked the IHO for supporting the training.

The IHO had submitted a document commenting on improving partnership arrangements, by identifying a number of common capacity building objectives faced by the IMO and the IHO. The IHO suggested that collaboration in several areas of common interest could make a difference, particularly in relation to helping coastal States to meet their obligations as set out in Chapter V of the International Convention for the Safety of Life at Sea (SOLAS).

The document was well received. Brazil supported the development of mechanisms to strengthen the partnership arrangements between the IMO and the IHO. IALA drew attention to the additional strong connection between hydrography and aids to navigation services required under SOLAS Chapter V. The topics canvassed in the document will be further considered during the annual meeting of the Joint IHO-IMO-IOC-WMO-IALA-IAEA-FIG Capacity Building Group that will take place in London on 15-16 November 2016. The document submitted to IMO/TC 66 is available at: http://www.iho.int/mtg_docs/CB/CBM/Papers/papers.html

The Committee considered the 2030 agenda for sustainable development, the strategy required to ensure consistent funding for the ITCP, the status, the importance and the difficulties in the development of the Country Maritime Profiles, the results of the IMO Member States Audit Scheme and their importance in determining the technical assistance to be provided. The Committee further considered the impact assessment of the ITCP for the period 2012-2015 where nearly 29 million pounds were allocated (76% executed), delivering 704 activities to 15,215 people around the world.

The IMO Secretary-General invited the representatives of the international and regional organizations and donor agencies to a working lunch, during which he highlighted the importance of cooperation for capacity building. During the meeting the IHO representative had the opportunity to speak to the representatives of several national delegations in order to raise awareness of the IHO activities at regional and national levels, particularly in areas where capacity building is key to developing hydrographic services.

The Committee re-elected Mr. Zulkurnain Ayub (Malaysia) and Mr. Laurent Parenté (Vanuatu) as Chair and Vice-Chair for 2017. The next session of the Technical Cooperation Committee is scheduled to take place from 26 to 28 June 2017 at the IMO Headquarters.



The IMO Secretary General addresses the working lunch with partner organizations and donor agencies highlighting the importance of cooperation for capacity building.

29TH MEETING OF THE INTERNATIONAL RESEARCH SHIP OPERATORS

Anacapri, Italy, 10-13 October

The 29th meeting of the International Research Ship Operators (IRSO) was held in Anacapri on the Island of Capri, Italy, from 10 to 13 October. The IRSO forum was founded in 1986 and is a group of research ship operators representing 49 organisations from 30 countries who manage over 100 of the world's leading marine scientific research vessels. IRSO members gather annually to share information and solve problems of mutual interest to better support the marine scientific community's research efforts at sea. IRSO also acts as a voice to promote the research ship community and provide expert advice to other bodies as required.



President Robert Ward was invited by IRSO to provide a briefing on the role of the IHO and in particular, the status of bathymetric knowledge of the world's seas and oceans and how IRSO members may assist. The President informed the meeting that mankind currently has higher resolution maps of the Moon and Mars than it does of most of the world's seas, oceans and coastal waters. In that context, he encouraged the IRSO membership to influence the programming of their research vessels such that all vessels collect bathymetric data whenever possible, regardless of the principal scientific task or the location and to make data that has already been collected discoverable by providing metadata or making the data available through the IHO Data Centre for Digital Bathymetry (DCDB). Several IRSO members reported that they had previously offered data to their national Hydrographic Offices, but were rebuffed, on the basis that their data was not of sufficient quality. The President's message that the IHO is re-invigorating its long standing interest in crowd-sourced bathymetry was very well received. The majority of the IRSO members were unaware of the very significant lack of bathymetric knowledge of the seas and oceans and were mostly unaware that data collected by their ships would be useful, even if the quality was limited.

On completion of the meeting, the IRSO members involved in the Atlantic Ocean Research Alliance (AORA) met briefly to discuss how they can best contribute to the cooperative science observing initiative being pursued by the European Union (EU), USA and Canada to improve scientific knowledge in the northern Atlantic – including bathymetry. AORA is the result of the “Galway Statement on Atlantic Ocean Cooperation” concluded in May 2013. In addition to representatives from the Canadian, US and several EU Hydrographic Offices, the IHO Secretariat participates as an Observer in AORA. The President provided further advice on the need for all vessels involved in AORA to measure the depth and to make the data available through the IHO DCDB.

The next meeting of IRSO will take place from 17 to 20 October 2017 in Yokohama, Japan.

IHO-IOC GEBCO
(GENERAL BATHYMETRIC CHART OF THE OCEANS)
PROJECT ANNUAL MEETINGS
Valparaíso, Chile, 10 – 14 October

A series of meetings related to the IHO-IOC GEBCO (General Bathymetric Chart of the Oceans) project were held in Valparaíso, Chile from 10 to 14 October 2016:

- 10 and 11 October: Joint meeting of the Technical Sub-Committee on Ocean Mapping (TSCOM) and the Sub-Committee on Regional Undersea Mapping (SCRUM);
- 12 October: GEBCO Science Day; and
- 13 and 14 October: 33rd Meeting of the GEBCO Guiding Committee (GGC).

The IHO Secretariat was represented at the joint TSCOM and SCRUM meeting by Assistant Directors Anthony Pharaoh and David Wyatt who were joined by Director Mustafa Iptes for the GEBCO Science Day and the meeting of the GGC.

TSCOM and SCRUM

The joint meeting of TSCOM-SCRUM was co-chaired by Dr Karen Marks (USA), Chair of TSCOM, and Prof. Martin Jakobsson (Sweden), Chair of SCRUM.

Update reports were provided on the following regional mapping projects: Indian Ocean Bathymetric Compilation (IOBC), North Atlantic Seabed Mapping Project, International Bathymetric Chart of the Arctic Ocean (IBCAO) and International Bathymetric Chart of the Southern Ocean (IBCSO).

The participants considered in detail the proposed Seabed 2030 Project. The Seabed 2030 Project Establishment Team presented a draft Roadmap and Business Plan, which were discussed in detail. A number of challenges and gaps were identified, which needed further investigation. It was recognised that its relationship with the GGC and with other bodies required further consideration. Prof. Jakobsson resigned as Chair of SCRUM and Ms Vicki Ferrini (Lamont Doherty Earth Observatory, USA) was appointed as the new Chair.



*Director Iptes addressing the opening
of the IHO-IOC GEBCO Science Day*

Science Day

For the eleventh consecutive year, the GEBCO project organized a “Bathymetric Science Day”. The Science Day, which included a poster session and involved contributions from a broad spectrum of institutions involved in all aspects of ocean mapping, featured presentations on a diverse range of topics. The associated presentations will be available from the GEBCO web site at : (<http://www.gebco.net/about-us/meetings-and-minutes/gebco-meetings-2016.html>)

GEBCO Guiding Committee



GEBCO Guiding Committee members at GGC33

The majority of the IHO representatives on the GEBCO Guiding Committee were present; only Captain Norhizam Hassan (Malaysia) and Ms Marzia Rovere (Italy) were unable to attend. Representatives of Chile, Republic of Korea and USA attended the meeting as observers.

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) highlighted difficulties that had been experienced with regard to some submissions considered at the recent SCUFN29 meeting in Boulder, Colorado, 19-23 September 2016. He presented some proposed revision to the SCUFN Terms of Reference (ToRs) and Rules of Procedure (RoPs), which are aimed at clarifying the procedures for future meetings. The GGC advised the SCUFN Chair to request the IHO-IAG ABLOS to provide relevant technical clarification and guidance that would enable the further development of suitable texts for the revision of the ToRs and RoPs so as to enable SCUFN to better consider proposals that occur in the sea area between national territorial waters and the Area Beyond National Jurisdiction. It was proposed that the texts, once adjusted, should be included in the report of the 29th meeting of SCUFN and subsequently considered for endorsement by the GGC by correspondence.

The GGC discussed 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. It was noted that different strategies would be required for each of these groups. The GGC devoted considerable time to discussions on the proposed Seabed 2030 Project, including its structure, governance, oversight and reporting. The Seabed 2030 Project Establishment Team presented a draft Roadmap and Business Plan and requested GGC endorsement to continue the development of the project, including a submission to the Nippon Foundation for funding support.

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 9,000€ was maintained for 2017 to cover emergent items. The draft consolidated GEBCO Work Plan and budget will be reported to the 9th meeting of the IHO Inter-Regional Coordination Committee (IRCC) and the 29th meeting of the IOC Assembly, for consideration and endorsement.

The next GEBCO annual meetings are scheduled to take place from 13 to 17 November 2017 in Busan, Republic of Korea.

**EXTRAORDINARY SUMMIT OF THE ASSEMBLY
OF THE AFRICAN UNION ON MARITIME SECURITY, SAFETY
AND DEVELOPMENT
Lomé, Togo, 10-15 October**



The African Union (AU) convened, in liaison with the Government of Togo, an Extraordinary Summit of the AU Assembly on Maritime Security, Safety and Development which took place in Lomé, Togo from 10 to 15 October.

The Summit was organized under the aegis of the AU 2050 Integrated Marine Strategy adopted in 2012 and followed the Summit of Heads of State and Government on Maritime Safety and Security in the Gulf of Guinea that was held in Yaoundé, Cameroon in June 2013.

The Lomé Summit was composed of three main segments. From 11 to 14 October, the Permanent Representatives Committee and the Executive Council of the AU met in a closed session to discuss and finalize the draft of an “African Charter on Maritime Security, Safety and Development”. In parallel, a series of side-events addressing the theme of the Summit was held from 10 to 14 October together with an exhibition of posters and demonstrations illustrating activities and tools related to maritime safety and security. Finally, the Heads of State and Governments met on 15 October to review and approve the draft Charter.

The side-events brought together up to 500 participants from 25 different countries, representing the different branches of the maritime sector - including international and regional organizations, national maritime administrations, navies, port authorities, industry, academia - and also the civil society.

About 120 experts invited by the Government of Togo took part in the different panel discussions composing the side-events. The IHO was represented by Ingénieur général Bruno Frachon, national Hydrographer of France, as Regional Coordinator for Capacity Building of the Eastern Atlantic Hydrographic Commission, and Director Gilles Bessero. They took part in the panel discussions related to maritime safety and security issues and to governance issues. Director Bessero participated also in the panel discussions on the blue economy.

The interventions of the IHO representatives focused on the importance of hydrography as underpinning all marine activities, the poor status of hydrographic surveys in African waters, the lack of appropriate arrangements for providing hydrographic services in general and maritime safety information in particular in many African countries, the way forward to improve this situation and the role of the IHO in relation to standardization, training and capacity building. Dr Vladimir Ryabinin, Executive Secretary of the Intergovernmental Oceanographic Commission (IOC), and Mr Chris Trelawny, Special Advisor to the Secretary-General of the International Maritime Organization (IMO) were involved in the panel discussions related respectively to governance issues and maritime safety and security issues.

A summary of the panel discussions was presented at the closing session of the side-events by Mr Lionel Zinsou, former Prime Minister of Benin. He described the oceans as the “best kept secret of Africa” and noted that the development of the blue economy is dependent on a safe and secure marine environment. Mr Lionel Zinsou welcomed the interest of several landlocked

States in maritime affairs and highlighted the importance of close intergovernmental cooperation and information sharing in order to address the threats associated with illegal activities at sea conducted by unconventional actors that are considered more powerful than most African States individually. His summary was followed by three successive closing addresses by Mr Karmenu Vella, European Commissioner for Environment, Maritime Affairs and Fisheries, Mr Jean-Yves Le Drian, Minister of Defence of France, and Mr Robert Dussey, Minister of Foreign Affairs of Togo.



Director Bessero in discussion with Dr Nkosazana Dlamini Zuma, Chairperson of the AU Commission with Mr Robert Dussey, Minister of Foreign Affairs of Togo in the background

With the kind assistance of Professor Adote Blivi, IOC focal point for Togo, several posters provided by the IHO Secretariat and by the French Hydrographic Office (SHOM) were displayed in the exhibition complementing the side-events. The IHO display was presented by Director Bessero to Her Excellency Dr Nkosazana Dlamini Zuma, Chairperson of the AU Commission, and by Ingénieur général Frachon to Commissioner Karmenu Vella.



Opening Ceremony of the Summit of the Heads of State and Government

Following a lively opening ceremony, the Heads of State and Government convened for the Summit in a closed session under the chairmanship of His Excellency Idriss Deby Itno, President of the Republic of Chad and Chairperson of the AU. The Summit adopted the African Charter on Maritime Security, Safety and Development with the aim to “solidify Africa’s commitment to an efficient and effective management of its oceans, seas and waterways so as to ensure sustainable, equitable and beneficial exploration of these critical resources.”

According to the unofficial copy of the Charter made available by the news media “Jeune Afrique”, the Charter commits signatories to implement environmental protection, develop the blue economy and act on maritime crime as well as trafficking in drugs, arms and people. The text commits signatories to creating national and regional institutions to promote maritime safety and security. It invites the signatories to delimit their maritime domains according to the relevant international principles and standards. Although the text does not contain any explicit references to hydrography, the article on Safety of Navigation refers to the provision of appropriate and standardized “aids to navigation” and the article on the Exploitation of the Maritime Domain invites the signatories to “explore” (and exploit) their maritime domain in accordance with the relevant international principles and standards. The Charter encourages marine scientific research activities in support of development.

The Charter provides for the establishment of a Maritime Safety and Security Fund and invites both the Flag States and the Coastal States to share the financial obligations associated with maritime safety and security in the African maritime areas.

The Charter will enter into force 30 days after the 15th ratification by an AU Member State. Its implementation will be monitored by a dedicated Ministerial Committee composed of 15 AU Member States.

associated road map, benchmarking the annual budgets allocated for data collection through the *Copernicus* programme (satellite data, ~ 150 M€), the Data Collection Framework (fisheries data, ~ 60 M€) and EMODnet (< 5 M€) confirming that the support for collecting hydrographic data “where it is needed to develop innovation and jobs, where it is not good enough to meet user requirements” remained insufficient. He also confirmed that EMODnet operations were funded until 2020 and that DG Mare was preparing for the next phases of activity. One of the main topics of the workshop concerned the Coastal Mapping Project which sparked discussion on whether Hydrographic Offices were interested in standards other than those existing for bathymetry! This provided the opportunity for the representative of the IHO Secretariat to introduce the S-100 framework (S-102 in particular), refer to the IHO project team on hydrographic surveys scoping, and to report on the contacts already established with the Chairs of the Backscatter Working Group of GeoHab (Marine Geological and Biological Habitat Mapping).

The meeting agreed on the proposals prepared by the French Hydrographic Office (SHOM), as leader of the Coastal Mapping Project Consortium, to develop a European strategy by Regional Hydrographic Commissions for coastal bathymetry. SHOM also reported on the development of the first components for the implementation of the European directive establishing a framework for maritime spatial planning (MSP). The representative of the BSHC (Sweden) provided a status report on the FAMOS project (Finalising Surveys for the Baltic Motorways of the Sea), co-funded by the EU.



FAMOS Project (Source: Swedish Maritime Administration)
+ 10 cm draft → + 20 kUSD profit (per port call)
assuming typical Aframax tanker = 3 USD profit per barrel

The meeting agreed in principle to highlight these promising results as part of the World Hydrography Day 2017 theme at the European Maritime Day planned in Poole, UK, in May 2017.

The IENWG agreed on the need to consider the impact of the proposed amendment to IHO Resolution 3/1919 - *Datums and Bench Marks* (see IHO CL 27/2016) on INSPIRE technical guidelines but noted that the INSPIRE Technical Working Group for Coordinate Reference Systems and Grid Systems is now disbanded.

It is planned to hold the 6th meeting of the IENWG on 16 March 2017 in Paris if possible, in conjunction with the 2nd International Conference on Marine/Maritime Spatial Planning to be held in UNESCO from 15 to 17 March and co-organized by the Intergovernmental Oceanographic Commission (IOC) and the European Commission.

14TH CONFERENCE OF THE EASTERN ATLANTIC HYDROGRAPHIC COMMISSION Cádiz, Spain, 18-20 October

The 14th Conference of the Eastern Atlantic Hydrographic Commission (EAtHC-14) was held from 18 to 20 October 2016, in San Fernando, Cádiz, Spain and hosted by the Hydrographic Office of Spain (Instituto Hidrográfico de la Marina - IHM). Due to the non-availability of the Director of the Department of Surveying, Oceanography and Charting of the Royal Navy of Morocco (DHOC), the Conference was chaired by Commander Hassan Ouahid, Head of the Hydrographic Section of DHOC. Simultaneous translation from French to English and vice versa was provided.

The Conference was attended by 28 delegates. Five IHO Member States of the Region (out of six), three Associate Member States (out of nine) and two Observer States (out of eleven) were represented. Representatives from the IHO-IOC GEBCO Project, from the UNESCO IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and connected seas (ICG/NEAMTWS), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), two expert contributors from industry (Kongsberg Maritime, Teledyne-Caris), two Regional ENC Coordinating Centres (IC-ENC, PRIMAR) participated as observers. Director Gilles Bessero and Assistant Director Yves Guillam represented the IHO Secretariat.



Participants of EAtHC-14, Cádiz, Spain

The Conference was opened by Rear Admiral Ricardo Hernandez Lopez, Chief of Staff to the Admiral of the Spanish Fleet and by Captain Juan Antonio Aguilar Cavanillas, Director of the IHM.

The Chair reported on EAtHC achievements since the previous Conference in 2014 through a comprehensive report highlighting the main events and topics of interest to Regional Hydrographic Commissions in general and to the EAtHC in particular.

Director Bessero provided a briefing on current IHO corporate, technical and cooperation issues. He offered an overview of the preparation of the 1st Session of the IHO Assembly and highlighted the practical consequences for the IHO Member States of the ratification on 8 August 2016 of the Protocol of Amendments to the IHO Convention. As a consequence, the process for the selection of the EAtHC Member State that will occupy the seat on the IHO Council allocated to the Commission was adopted. In response to the IHO Secretariat report on the activities and current issues addressed by the Hydrographic Services and Standards Committee (HSSC), the Hydrographer of Spain confirmed his intention to continue contributing, on a case-by-case basis, to the translation of IHO technical standards into Spanish.

The Chair reported on the goals and calendar of the Mandatory Audit Scheme of the International Maritime Organization (IMO) in relation to the status of hydrographic services in coastal States. UK informed the Conference that it had provided some assistance to a coastal State in relation to responding to the preparatory questionnaires and offered to assist other coastal States on request. However, no feedback from the coastal States that had been audited prior to EAtHC-14 was provided and no request for assistance for the preparation of the forthcoming audits was submitted during the Conference. Due to the unplanned absence of the representative of the Maritime Organisation for West and Central Africa (MOWCA), it was not possible to consider how the Memorandum of Understanding on cooperation between the IHO and MOWCA that had been signed in July would affect the activities of the Commission and the relations with MOWCA's specialized organs.

All the coastal States participating in the Conference reported on their activities, progress and difficulties. Most of the Western Africa coastal States continue to express concerns about lack of expertise and training opportunities, despite several training sessions sponsored by the IHO in accordance with the recommendations of the IHO Western Africa Action Team in the 2000's. The Conference took note that very few initiatives aimed at setting up national hydrographic committees or national hydrographic services, or joining the IHO were reported by those States. Clearly, there is a need to re-consider the relationship between those coastal States and the EAtHC and the IHO. This is hopefully what could be achieved through the "HydroMAOC" project led by France (as regional Capacity Building Coordinator). The objectives of the project are to define, conduct and implement a consistent set of actions to develop hydrography in Western and Central Africa. France delivered the report of the definition study supporting this project addressing education, equipment, and empowerment issues as well as associated funding strategies.

The status and implementation of the regional INT and ENC charting schemes were reviewed by the regional coordinator for INT Region G (France). The coordinator reminded the participants of the new regime decided by the Inter-Regional Coordination Committee (IRCC) for the monitoring and the management of INT charts, as well as of the operational use of INTtoGIS services for the maintenance of the INT charts catalogue database (S-11 Part B). All participants were invited to take advantage of the methodologies available for conducting risk-assessment studies as far as the ENC coverage is concerned, not only in relation to international shipping in the approaches of the main harbours, but also in support of the cruise industry, submarine cable, and oil and gas industry activities.

Ingénieur général Bruno Frachon, national Hydrographer of France, reported on the participation of Director Gilles Bessero and himself at the African Union Extraordinary Summit on Maritime Security and Safety and Development in Africa, held in Lomé (Togo) from 13 to 15 October (see separate bulletin report).



Spain succeeds Morocco as Chair of the EATHC

In accordance with the Statutes of the Commission, Spain took over the chair at the end of the Conference. The next Conference is expected to take place in Nigeria in 2018. The venue and exact dates are expected to be decided by the end of November 2016.

LIAISON VISIT TO THE 8TH IHO-NIPPON FOUNDATION CHART PROJECT COURSE FOR NAUTICAL CARTOGRAPHERS

United Kingdom Hydrographic Office, Taunton, UK, 24 October

Director Mustafa Iptes and Mr Kentaro Kaneda (Project Officer seconded to the IHO Secretariat from Japan) visited the United Kingdom Hydrographic Office (UKHO) on 24 October to meet and brief the trainees attending the eighth 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 8th course started on 5 September 2016 and will end on 16 December. It is attended by students from Bangladesh, Colombia, Cuba, Georgia, Latvia, Philippines and Viet Nam.

Director Iptes 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 important coordination and standardization role of the IHO and its Capacity Building programme were also described. 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 trainees of the 8th CHART Course and the IHO visit team

23RD BUSINESS MEETING OF THE ADVISORY BOARD ON THE TECHNICAL ASPECTS OF THE LAW OF THE SEA

Seoul, Republic of Korea, 26-27 October

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



ABLOS Members gathered for ABLOS BM23 in Seoul

23rd Business Meeting of ABLOS



ABLOS BM23 plenary in session

The 23rd Business Meeting of ABLOS was held at the Ramada Hotel in Seoul on 26 and 27 October. It was followed by a seminar titled '*Roles of the Law of the Sea and the Hydrography in Asian Region*' on 28 October.

ABLOS members and IHO appointed observers from Australia, Canada, Denmark, Japan, the Republic of Korea and the United Kingdom were present, as well as two invited observers from Qatar. The Chair, Mr John Brown (IHO – UK), welcomed all Board members and observers to the meeting.

The meeting continued its preparations for the 9th ABLOS Conference, which is planned to be held in Monaco on 10 and 11 October 2017. Detailed information for the Conference will be announced by IHO Circular Letter and on the ABLOS page of the IHO web site when available.

The meeting discussed the revisions of Chapter 3 to Edition 5.0.0 of IHO publication C-51. The Editorial Board, under the leadership of Mr Chris Carleton, will review the draft revision in preparation for submission to the 9th meeting of the IHO Hydrographic Services and Standards Committee in November 2017 for its endorsement and subsequent IHO and IAG approval.

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

The meeting reviewed the Terms of Reference and Rules of Procedure of the Board, as a catalyst for in depth discussions on the future of ABLOS and its role. The status of current Board members was reviewed, it was noted that the current terms of three IAG appointed members would all end in July 2019; it was agreed that a search for new members should be started early to avoid having unfilled vacancies.

The ABLOS meeting was followed by a Law of the Sea Seminar, which was hosted by the Korea Hydrographic and Oceanographic Agency (KHOA) and the Hydrographic Society of Korea. The Seminar was opened by Mr Jae-Hyung Ryoo, Director General of KHOA and was attended by approximately 45 delegates from across the region, including China and Japan as well as representatives from France and Qatar and a wide selection of Korean government ministries, technical authorities and universities.



ABLOS 23 “Roles of the Law of the Sea and the Hydrography in Asian Region” Seminar

The Seminar covered presentations on: *What is ABLOS, Application of Marine Seismic Survey to UNCLOS Outer Limits of the Continental Shelf and Naming of Undersea Features, Maritime Jurisdiction and Electronic Charting including S-121, Accuracy Assessment of Some Potential GNSS Positioning Techniques for Ellipsoidally Referenced Hydrographic Surveys, Characteristics of Marine Shallow Gas in the Korean Seas, Disappeared Sea Naming Issues with Special Reference to Korea Strait, Maritime Boundary Delimitation between South Korea and China, National Oceanographic Forecasting System: Now and Future, China’s Policy and Perspective on Unsettled Territorial and Boundary Disputes, Historic Trends of Global Maritime Delimitation, and The Impact of Sea Level Rise on Maritime Boundary Delimitation.* The presentations were followed by question and answer sessions for the participants.

Date of Next Meetings

The 24th ABLOS Business Meeting will be held in Monaco and is planned for 9 and 12 October 2017, in conjunction with the 9th ABLOS Conference; details will be made available on the IHO website as the planning progresses.

Availability of Documents

The documents considered by the Business Meeting and the presentations given at the Seminar will be available from the ABLOS section of the IHO website (IHO → Committees and Working Groups → HSSC → ABLOS).

NOVEMBER

IHO-NIPPON FOUNDATION ALUMNI WORKSHOP-2016 2-4 November, Bangkok, Thailand

The International Hydrographic Organization (IHO) and Nippon Foundation (NF) Alumni Workshop was held from 2 to 4 November in Bangkok, Thailand organized by the IHO and supported by the Nippon Foundation of Japan. The Nippon Foundation has funded selected international trainees to attend courses in nautical cartography at the United Kingdom Hydrographic Office (UKHO) for the last eight years. Since 2014 the training has been conducted under the auspices of a Memorandum of Understanding (MoU) signed between the IHO and NF, known as the IHO-NF CHART (Cartography, Hydrography and Related Training) Project. The course in “Marine Cartography and Data Assessment” delivered for the CHART Project is recognized at the Category B level by the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) in accordance with IHO Publication S-8 - *Standards of Competence for Nautical Cartographers*.



***Vice Admiral Charin Boonmoh (Director General of the Thailand Hydrographic Office),
Mr. Mustafa Iptes, (IHO Director)
and Mr. Mitsuyuki Unno (Executive Director of Nippon Foundation).***

The objectives of the Alumni Workshop were to strengthen the IHO-NF Alumni network, to encourage cooperation between the fellows, to further develop global linkages and to obtain feedback from the alumni. Of the total of 51 fellows, 18 alumni from 16 countries (Algeria, Bulgaria, Egypt, Estonia, Indonesia, Malaysia, Mexico, Myanmar, Solomon Islands, Spain, Suriname, Trinidad and Tobago, Uruguay, Vietnam, Japan and Thailand), were available to participate in this event. Mr. Mitsuyuki Unno (Executive Director of the Nippon Foundation), Mr. Yu Nakahiro (representative of the Nippon Foundation), Mr. Jeff Bryant (International Capacity Building Manager of the UKHO), Mr. Derek Aldridge (cartography trainer from the UKHO), Mr. Shinichi Toyama (representative of the Japan Hydrographic and Oceanographic Department)

also attended the workshop. The IHO Secretariat was represented by Director Mustafa Iptes, Assistant Director Alberto Costa Neves and Dr. Kentaro Kaneda (Project Officer seconded to the IHO Secretariat by Japan).

The Workshop was opened by Director Iptes. This was followed by keynote speeches delivered by Mr. Mitsuyuki Unno and Vice Admiral Charin Boonmoh (Director General of the Thailand Hydrographic Office). Following the presentations given by the representatives of the IHO, UKHO and NF which informed the participants about the background of the IHO-NF cooperation and development of the CHART Project, the alumni described their experiences and the lessons learned during and after the training programme, their professional progress since their training, and their expectations for future developments in their hydrographic services.

The presentations from the alumni showed that all alumni continue to work on nautical cartography or related matters since the completion of the training programme and that about half of the alumni are in a position to teach nautical cartography to their staff or to students in formal education and training programmes. Most of the alumni now hold key positions in the establishment and development of cartographic production and the publication of ENCs. For the majority of the alumni the workshop was their first participation in an international meeting which provided them with additional confidence and experience to further develop their work.

The workshop provided opportunities to discuss the ways and means to continue developing nautical cartography worldwide in line with the objectives of the IHO and of the Nippon Foundation, including the need for a Category "A" cartographic training programme.

The alumni all agreed that hearing about the work and developments in other hydrographic offices can help to establish benchmarks and identify success stories to help promote their work both within their chains of command and with other national, regional and international organizations.



Participants of the IHO-NF Alumni Workshop-2016

3RD MEETING OF THE CROWD-SOURCED BATHYMETRY WORKING GROUP

Warnemünde, Germany, 7-8 November

HYDRO 2016 CONFERENCE

Warnemünde, Germany, 8-10 November

The Crowd-Sourced Bathymetry Working Group (CSBWG) has been tasked by the Inter-Regional Coordination Committee (IRCC) to develop an IHO publication that provides guidance on the collection and use of Crowd-Sourced Bathymetry (CSB). This 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 third meeting at the offices of the Leibniz Institute for Baltic Sea Research (IOW) in Warnemünde, Germany on 7 and 8 November. The new Chair of the CSBWG, Ms Jennifer Jencks (USA, and Director of the DCDB), chaired the meeting which was attended by representatives from ten Member States (Canada, Denmark, Finland, France, Germany, India, Italy, Norway, Portugal and USA), and expert contributors from SevenCs and Sea-ID. Secretary-General Robert Ward and Assistant Director David Wyatt represented the IHO Secretariat. Mr Serge Gosselin (Canada) was elected as Vice-Chair of the working group to occupy the previously vacant position.



*The participants of the 3rd meeting of the CSBWG
between sessions*

The CSBWG received verbal reports from the coordinators of its correspondence groups that had been tasked with drafting specific sections of the guidelines. During the meeting the various draft sections of the guidelines were developed further. It was agreed that an initial draft version will be circulated to IHO Member States and targeted stakeholders for their comments in preparation for the presentation of a final draft to the IRCC at its 9th meeting in Paramaribo, Suriname, in June 2017.

It was agreed that a further meeting of the working group would be beneficial to review the comments received on the initial draft prior to the IRCC9. It is therefore planned to hold a fourth meeting of the CSBWG on 15 and 16 February 2017 at the University of New Hampshire, USA. This will follow a meeting of the Atlantic Seabed Mapping International Working Group, which is actively engaged in crowd-sourced bathymetry initiatives to help improve knowledge of the Atlantic seafloor.

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](#)



Several members of the CSBWG took the opportunity to attend the Hydro 2016 Conference organised by the International Federation of Hydrographic Societies (IFHS), which took place during and after the meeting of the CSBWG, from 8 to 10 November. The IFHS is an observer organization to the IHO.

The IHO Secretary-General delivered a welcoming speech, together with Dr Mathias Jonas, National Hydrographer of Germany and Chair of the IHO Hydrographic Services and Standards Committee. Both provided additional presentations on the work and the perspectives of the IHO and, in particular, its relevance to the Conference attendees. Hydro 2016 was attended by over 300 people from 20 countries with over 50 companies exhibiting their services.

GEO-XIII PLENARY

Saint Petersburg, Russian Federation, 9 - 10 November

GEO, the “Group on Earth Observations” is a voluntary partnership of governments and international organizations. GEO was launched in 2003 in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 (Group of Eight) leading industrialized countries. GEO is coordinating efforts to build a Global Earth Observation System of Systems (GEOSS) in order to exploit the growing potential of Earth observations to support decision making in an increasingly complex and environmentally stressed world.

GEO’s Members now include 103 Governments and the European Commission. In addition, 77 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations. The IHO was recognized as a Participating Organization in 2006. GEO meets annually in plenary session. Its strategic guidance is provided by a Ministerial Summit which takes place about every three years. The GEOSS Implementation Plan has been steered by the GEO Co-Chairs (four Members: China, European Commission, South Africa, and USA) and the Executive Committee (sixteen Members selected on a geographical basis).

The 13th GEO Plenary Session (GEO-XIII) took place in Saint Petersburg, Russian Federation on 9 and 10 November 2016, chaired by Dr. Philemon Mjwara (South Africa) who is one of the Co-Chairs of the GEO. The meetings were combined with an exhibition illustrating contributions to GEOSS from Member States, Participating Organizations and industry. More than 400 representatives from Members and Participating Organizations and Observers attended the plenary. Director Mustafa Iptes represented the IHO.

The plenary considered the advancement of the Vision of GEO and examined progress towards the GEO Strategic Objectives and Ministerial commitments, as well as the challenges, opportunities and the areas in need of additional investment. The meeting also discussed the GEOSS Implementation Plan in particular the coordination of earth observations, data sharing, the development of tools to improve delivery and the use of earth observation data and information.



The plenary meeting discussed the GEO Engagement Strategy, Engagement Priorities for 2017-2019 and challenges and opportunities related to Commercial Sector engagement in GEO in particular mutual advantages including capacity building, raising awareness and knowledge sharing.

The meeting also considered the potential contributions by GEO and the Earth observations community to the UN’s 2030 Agenda for Sustainable Development Goals (SDG). The report on “The Earth Observations in Service of the 2030 Agenda for Sustainable Development Initiative” was noted. The Initiative aims to organize and realize the potential of Earth observations and geospatial information to advance the 2030 Sustainable Development Agenda and enable societal benefits through achievement of the SDGs. The Initiative also encompasses activities advancing the provision, access, discoverability, and applicability of Earth observations and geospatial information for use with the SDGs, and assesses data and information needed to be

available for the SDGs, while working with GEO data activities, national statistical agencies and others.

The plenary reviewed and subsequently approved the 2017-2019 GEO Work Programme and the 2017 budget. The GEO Work Programme includes 31 Community Activities, 22 Initiatives, four Flagship projects and 10 Foundational Tasks. Among the GEO Initiatives, the “*Oceans and Society: Blue Planet Initiative*” aims to ensure the sustained development and use of ocean and coastal observations for the benefit of society. Specific activities of the *Blue Planet Initiative* include:

- implementation of a Communication and Engagement Strategy;
- the production of a special issue of the Journal of Operational Oceanography on ocean observing for societal benefits; and
- organizing and hosting the 3rd Blue Planet Symposium – “*The Role of the Oceans in Earth’s Life-Support System*” in College Park, Maryland, USA, from 31 May to 2 June 2017 (see <http://symposium.geoblueplanet.com/>).

The IHO Secretariat in consultation with the Chairs of the relevant IHO organs (notably the GEBCO Guiding Committee and the Marine Spatial Data Infrastructure Working Group) will consider how the IHO might contribute to the Blue Planet Symposium.

Revised Rules of Procedure of the GEO were also approved at the plenary meeting. The next meetings will be held in Washington DC, USA in 2017 and Tokyo, Japan in 2018.

All the documents considered at the meeting and the IHO Statement provided for GEO-XIII plenary are available at:

<http://www.earthobservations.org/geo13.php>

6TH MEETING OF THE ATLANTIC SEABED MAPPING INTERNATIONAL WORKING GROUP (ASMIWG)

Warnemünde, Germany, 11 November

The Atlantic Seabed Mapping International Working Group (ASMIWG) was established in 2015 to address seabed mapping issues related to the implementation of the *Galway Statement* of 2013 through which the European Union (EU), the United States of America (USA) and Canada agreed to join forces on Atlantic Ocean Research.



Participants at the 6th meeting of ASMIWG

The 6th meeting of the ASMIWG was held at the offices of the Leibniz Institute for Baltic Sea Research (IOW) in Warnemünde, Germany, on 11 November. The meeting was chaired by Mr Alan Stevenson, British Geological Survey (BGS)/EuroGeoSurvey Marine Geology Expert Group (EGS MGEG) with representatives from the EU, Canada and USA as well as representatives from the European Commission (EC) and Non-Governmental Organizations. Assistant Director David Wyatt represented the IHO and the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) Project.

The ASMIWG reviewed progress since its previous meeting and the direction and guidance provided from the Canada-EU-US Tripartite Implementation Committee. The meeting received information on a recent North Atlantic transect undertaken from 22 July to 5 August in the Canadian Coast Guard vessel *CCG Louis S. St-Laurent* en route to the Arctic.

A brief update was received from the NOAA/National Centers for Environmental Information (NCEI) on progress with developments to the IHO Data Centre for Digital Bathymetry (DCDB) and the North Atlantic Data Viewer. Details of a draft document being developed as an IHO guide for the submission of data to the DCDB were provided. The briefing also highlighted two new datasets received from Portugal and Spain covering their Continental Shelf extension submissions. Additionally update briefs were provided on the activities of the Ocean Literacy WG, the European Marine Observation and Data Network (EMODnet), International Research Ship Operators (IRSO), IHO Crowd-Sourced Bathymetry WG, the GEBCO Seabed 2030 Project, “A Trans-Atlantic assessment and deep-water ecosystem-based spatial management plan for Europe” (ATLAS) and “Deep-sea Sponge Grounds Ecosystems of the North Atlantic” (SponGES) and Atlantic Ocean Research Alliance Coordination and Support Action (AORA CSA). The Marine Institute of Ireland (Infomar) informed the meeting that it had provided data from recent transects to the BBC for use in the Blue Planet II television series.

Taking into account the Tripartite Implementation Committee directive to the ASMIWG, a standard report template was provided by the EC for the generation of the 'Next steps' document and recommendations. This would report on activities to date, proposals for future actions and the identification of pilot project areas, highlighting the benefits of each area. These areas would be generated from a series of prioritised 400 square-mile rectangles covering unsurveyed sections of the North Atlantic, the limits of which, it was agreed, would follow the limits detailed in IHO publication S-23 – *Limits of Oceans and Seas*. It was noted that the report should be submitted to the Implementation Committee by the end of January 2017.

Participants were briefed on the developments of the AORA website (<http://www.atlanticresource.org>) in support of the ASMIWG activities and the SharePoint application for use by ASMIWG members to share documents and into which all meeting documents and presentations have been placed. At the end of the meeting Mr Stephen Locke (Natural Resources Canada) took over the role of Chair of the ASMIWG

The Implementation Committee confirmed that the next, and seventh, meeting of the ASMIWG would take place at the University of New Hampshire, USA on 15 and 16 February 2017.

24TH SESSION OF THE IMSO ASSEMBLY London, United Kingdom, 15-17 November

The International Mobile Satellite Organization (IMSO) is the inter-governmental organization whose primary purpose is the oversight of certain public satellite safety and security communication services provided by mobile satellite communication systems. IMSO also acts as the Coordinator of the international system for the Long Range Identification and Tracking of Ships (LRIT), appointed by the International Maritime Organization (IMO) to ensure the operation of the LRIT system worldwide by auditing and reviewing the performance of the system. The governing body of the organization is the Assembly of the Parties which meet every



Mr Kitack Lim, SG of IMO, addressing the IMSO Assembly

two years. IMSO comprises 102 Member States. The 24th session of the IMSO Assembly was held at the IMO Headquarters in London, UK, from 15 to 17 November under the chairmanship of Mr Dikko Tahir Bala (Nigeria), who was elected at the beginning of the Assembly. Assistant Director David Wyatt represented the IHO.

In his opening address, Mr Kitack Lim, Secretary General of the IMO noted that IMSO would continue to monitor the LRIT and Global Maritime Distress and Safety System (GMDSS) service providers as well as the technical assessment of potential new GMDSS mobile satellite service providers. He said that the cooperation between IMO and IMSO remained important and was an area for delegates to keep in mind when considering the restructuring of IMSO later in the Assembly.

The Assembly agreed that the International Agreement on the use of Inmarsat Ship Earth Stations (SES) within Territorial Seas and Ports will need to be altered if additional GMDSS mobile satellite service providers are recognized by the IMO. It was noted this could be either through termination of the current Agreement, establishment of a new Agreement for each new provider or the amendment of the existing SES Agreement to make it more generic.

The meeting addressed a number of other topics of direct interest to IHO Member States, in particular the GMDSS and potential new GMDSS mobile satellite service providers. The IMSO Directorate gave a presentation providing insight information relating to the activities of the Directorate to oversee GMDSS services. The IHO representative made an intervention, which was to clarify a number of concerns raised at the 8th meeting of the IHO Worldwide Navigation Warning Service Sub-Committee (WWNWS-SC). These concerns relate to the monitoring of broadcasts of Warning Messages by NAVAREA Coordinators, the potential increase in costs to NAVAREA Coordinators as a result of the introduction of a second GMDSS mobile satellite service provider and the need for equipment interoperability.

The Assembly received a presentation from the satellite service provider Iridium, which briefed the Assembly on developments to Iridium's future services and the work being undertaken to address the conditions identified at the third session of the IMO Sub Committee on Navigation, Communications and Search and Rescue (NCSR3), which need to be fulfilled prior to consideration for recognition by the IMO as a GMDSS mobile satellite service provider.

A considerable portion of the Assembly was devoted to the proposed restructuring of the IMSO Directorate and the associated budget implications and financial plan for the period 2017-2018.

The next session of the IMSO Assembly is scheduled for the period October-November 2018.

The meeting report and associated documents will be available on the IMSO website under the IMSO Members Area in due course.

**8TH MEETING OF THE IHO HYDROGRAPHIC SERVICES
AND STANDARDS COMMITTEE (HSSC)
IHO Secretariat, Monaco, 15-18 November**

The eighth meeting of the Hydrographic Services and Standards Committee (HSSC) was hosted by the IHO Secretariat in Monaco, from 15 to 18 November 2016. The meeting was opened by Robert Ward, Secretary-General of the IHO, and Dr Mathias Jonas, National Hydrographer of Germany, and Chair of the HSSC.



***Opening of the meeting by Robert Ward, Secretary-General of the IHO
and Dr Mathias Jonas (Germany), Chair of the HSSC***

HSSC-8 was attended by 74 representatives from 22 Member States, nine international organizations accredited as observers and the IHO Secretariat. Director Gilles Bessero and Assistant Directors Tony Pharaoh and Yves Guillam provided the input from the IHO Secretariat and secretariat support. Jeff Wootton, recently appointed as Technical Standards Support Officer, demonstrated the use of the IHO Geospatial Information Registry (registry.iho.int).

The Chair Group, composed of the Chair and Vice-Chair of the HSSC, the Chairs of its subordinate bodies and representatives of the IHO Secretariat, met on 14 November to discuss the major items on the agenda and prepare consolidated proposals for further consideration by the Committee.

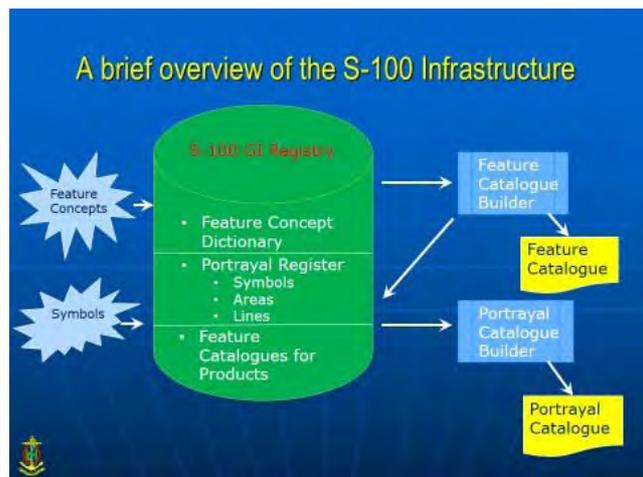
The Committee reviewed the activities, proposals, and work plans of its subordinate bodies and the decisions of other organs and organizations affecting its work. Following this review, the Committee agreed on the key messages to be delivered to the 1st session of the IHO Assembly (A-1) in April 2017, in relation to hydrographic standards and services. The Committee endorsed the input from the Chair Group related to the revision of the IHO Strategic Plan and the preparation of the draft 3-year Work Programme of the IHO for 2018-2020 that will be submitted to the Assembly for its consideration.

The main outcomes of the meeting are given below:

S-100 development and related activities

The Committee acknowledged the significant efforts of the S-100 Working Group (S-100WG) and the outstanding support provided by the Republic of Korea (ROK) to progress the upgrade of the web interface of the S-100 Registry.

The delegation of the ROK reported on the first sea-trial of S-10x test data sets, including dynamic data such as S-111 (*Surface Currents*) and S-112 (*Dynamic Water Level Data Transfer*), together with static data such as S-101 (*ENCs*) and S-102 (*Bathymetric Surface*) data.



The Committee endorsed the draft new Edition 3.0.0 of S-100 - *IHO Universal Hydrographic Data Model* and welcomed the progress of the work of the Project Teams responsible for developing product specifications: S-101 (*ENCs*), S-121 (*Maritime Limits and Boundaries*), S-124 (*Navigational Warnings*)¹¹ and S-129 (*Under Keel Clearance Management Information*). The Committee noted that the complexity of S-100 developments and the limited resources available had resulted in some delays to progress. Taking in to account the various user requirements together with the constrained resources available, the Committee invited the Nautical Information Provision Working Group to place priority on the development of two product specifications related to nautical information: S-122 (*Marine Protected Areas*) and S-123 (*Radio Services*).

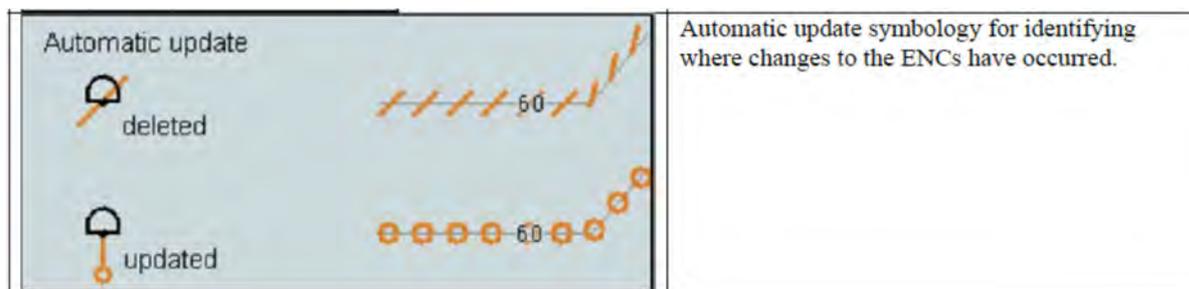
The Committee decided to disband the Data Protection Scheme Working Group (DPSWG) and to continue the development of the protection scheme (the S-63 equivalent component) of S-100 based-products as well as the monitoring of cyber security requirements through a Project Team under the S-100WG. The expertise required to support the Secretariat as Scheme Administrator for the existing S-63 - *Data Protection Scheme* will now be under the responsibility of the ENC Standards Maintenance Working Group (ENCWG).

The Committee endorsed the proposal of the Chair of the Hydrographic Dictionary Working Group (HDWG) to seek contractor support for the development of an experimental multi-lingual wiki-based demonstrator to support a subsequent upgrade of IHO Publication S-32 - *Hydrographic Dictionary*. The Committee tasked the HDWG to develop a draft policy and road-map taking into account the S-100 framework.

ECDIS matters and Nautical Cartography

The Committee endorsed the principles of the draft revised editions of S-58 - *ENC validation checks*, S-65 - *ENCs: Production, Maintenance and Distribution Guidance* and S-66 - *Facts about Electronic Charts and Carriage Requirements* proposed by the ENCWG and tasked the working group to finalize the drafts and forward them to the Secretariat for subsequent consideration by IHO Member States. The Committee also endorsed the ENCWG proposal to use ECDIS Chart 1 to assist mariners in checking ECDIS operating with Edition 4.0 of the IHO S-52 *Presentation Library*.

¹¹ This Project Team reports to the World-Wide Navigational Warning Service Sub-Committee (WWNWS SC) and keeps the HSSC informed.



Example of new symbols introduced in Edition 4.0 of the IHO S-52 Presentation Library

The Committee tasked the Secretariat, in liaison with the ENCWG, to describe the procedure in a new edition of the IHO webpage on “*ECDIS Data Presentation and Performance Check in Ships*”.

In response to the concerns raised in a submission from the International Association of Independent Tanker Owners (INTERTANKO), the Committee tasked the ENCWG and the Nautical Cartography Working (NCWG) to draft a consolidated, authoritative IHO document addressing the issue of “equivalent” Temporary and Preliminary Notices (T&Ps) for ENCs, with the intention of distributing the completed document to Hydrographic Offices, Port State Control (PSC) authorities and mariners. In order to facilitate this task, the Committee requested the Secretariat to invite IHO Member States to liaise with their national maritime administration in order to provide feedback on PSC issues related to the carriage and operation of ECDIS.

The Committee endorsed proposed changes to Edition 4.6.0 of S-4 - *Chart Specifications of the IHO* and tasked the NCWG to finalize the draft new edition 4.7.0 and forward it to the Secretariat for subsequent consideration by the IHO Member States. The Committee reached a similar decision with regard to the new draft Edition 3.0.0 of S-11 Part A - *Guidance for the Preparation and Maintenance of International Chart Schemes*, which now includes a separate section on ENC schemes. The Committee reminded the NCWG of the importance of completing its work item on the future of the paper chart.

The provisional results of a study addressing the possible development of an additional bathymetric layer for S-57 ENCs that would provide higher density contour lines to mariners were presented by Germany. The Committee agreed that this matter should be considered further, under a new task and work item of the ENCWG. The representatives of the stakeholders took this opportunity to highlight the pressing requirement for all IHO Member States that produce ENCs to populate them with *assessed* CATZOC values (1 to 5) to assist mariners in their decision-making process for safe navigation.

Consideration of the need to establish a Hydrographic Surveys Working Group

The Committee considered the report provided by the Chair of the Hydrographic Surveys Scoping Project Team (H2S PT) established in 2015, and decided to establish a Project Team on Standards for Hydrographic Surveys (HS PT), primarily tasked to review S-44 - *IHO Standards for Hydrographic Surveys*, draft a new edition, if appropriate, and identify additional tasks, if any, that might require the establishment of a standing Hydrographic Surveys Working Group.

Relations with Stakeholders

The Committee welcomed the various presentations given by the stakeholders and expert contributors and benefited in particular from the user perspective provided by the representative of INTERTANKO. The Committee invited the IHO Secretariat to monitor the activities of the newly established Marine Domain Working Group of the Open Geospatial Consortium and agreed a set of enabling actions to address the topics reported in the presentation provided by the representative of the International Cable Protection Committee (ICPC) that might impact current charting specifications, the GEBCO Seabed 2030 project and the on-going development of S-100-based product specifications in relation to the protection of cables. Taking note of the terms of the MoU on cooperation between the IHO and ICPC and the subsequent creation of an ICPC Focus Group, the Committee agreed to initiate the development of a road-map to guide the practical implementation of the MoU. The representative of the

Comité International Radio-Maritime (CIRM) informed the Committee on the development of e-navigation training. The Committee welcomed the participation of a representative of the International Maritime Organization (IMO). He provided input to further develop the draft submission on activating the IMO/IHO Harmonization Group on Data Modelling (HGDM) that is being prepared by the IHO Secretariat, at the invitation of the IMO Maritime Safety Committee, for consideration by the 4th session of the IMO Sub-Committee on Navigation, Communications and Search and Rescue.

Next Meetings

The next meeting of the HSSC (HSSC-9) is scheduled from 6 to 10 November 2017, in Ottawa, Canada. HSSC-10 is scheduled to be held in Rostock, Germany in May 2018. The Committee agreed to schedule HSSC-10 and subsequent annual HSSC meetings in May in order to provide its input to the annual meetings of the Council scheduled in October.

More Information

All documents considered at the meeting and further information are available on the IHO web site at Home > Committees & WG > HSSC.

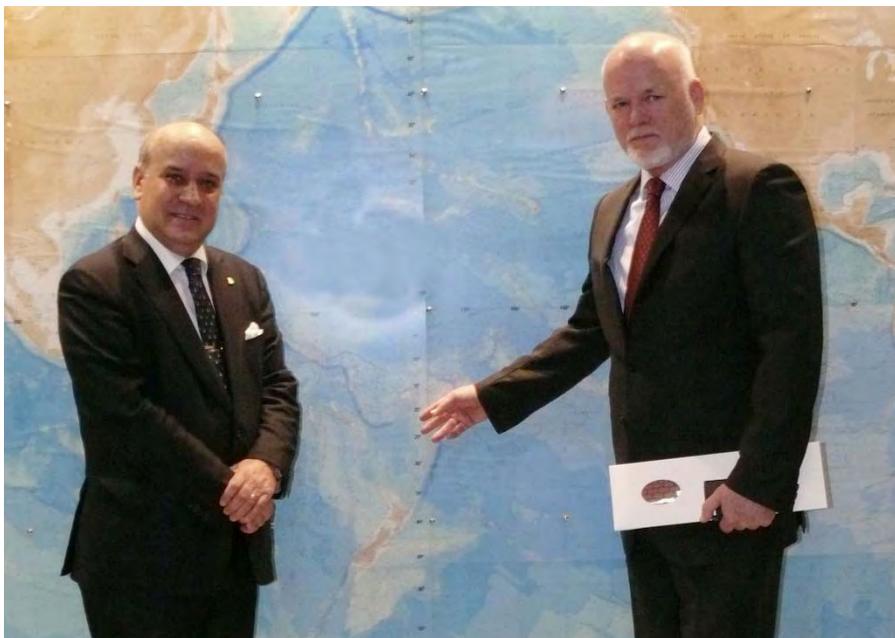


HSSC-8 participants

**VISIT BY THE PRESIDENT
OF THE UNITED NATIONS GENERAL ASSEMBLY
IHO Secretariat, Monaco, 21 November**

HE Peter Thomson, permanent representative of Fiji to the United Nations (UN), and current President of the UN General Assembly (UNGA) visited the IHO Secretariat on 21 November as part of his official visit to Monaco. He was accompanied by Ms Signe Schelde Poulsen, Special Assistant to the President of the UNGA and Mr Abdelghani Merabet, Senior Advisor during his visit.

The UNGA is one of the six principal organs of the United Nations and the main deliberative, policymaking and representative organ of the UN in which all member nations have equal representation. The UNGA elects its President for each session. HE Peter Thomson was elected by the UNGA on 13 June 2016 to serve as President of its seventy-first session, which runs from September 2016 to September 2017.



HE Peter Thomson and Director Mustafa Iptes

HE Peter Thomson was welcomed by Director Mustafa Iptes and received a briefing on the role of the IHO and its relationship with several UN bodies including the UN Initiative on Global Geospatial Information Management (UN-GGIM), the International Maritime Organization, the Intergovernmental Oceanographic Commission and the International Seabed Authority (ISA).

The President of the UNGA expressed his pleasure to visit the IHO headquarters and highlighted his particular interest in promoting interest in ocean affairs as the former President of the ISA Council in the 2015-2016 session and now the President of the UNGA. He emphasized the importance of the forthcoming high-level United Nations Conference to support the implementation of Sustainable Development Goal 14: *Conserve and sustainably use the oceans, seas and marine resources for sustainable development*, which will be convened in New York, from 5 to 9 June 2017, coinciding with World Oceans Day. The Conference will be co-hosted by the Governments of Fiji and Sweden. The IHO will be represented by Secretary-General Robert Ward.

The visit continued with a tour of the IHO headquarters and in particular the Chart Room where HE Peter Thomson received a presentation on GEBCO (General Bathymetric Chart of the Oceans) charts and INT (International) charts.



President of the UNGA Thomson and Director Iptes discuss on INT charts.

97TH SESSION OF THE IMO MARITIME SAFETY COMMITTEE London, United Kingdom, 21-25 November



IMO MSC 97 in plenary session

The Maritime Safety Committee (MSC) is the highest technical body of the International Maritime Organization (IMO). The functions of the MSC are to consider matters related to aids to navigation, construction and equipment of vessels, rules for the prevention of collisions, handling of dangerous cargoes, maritime safety procedures, hydrographic information, salvage and rescue and any other issues directly affecting maritime safety. The 97th session of the MSC (MSC97) was held at the IMO Headquarters in London, UK, from 21 to 25 November. 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 the importance of maritime security in relation to world trade, he noted with concern the recent reports of attacks on warships and *MV Galicia Spirit* in the Bab el Mandeb; he reminded flag States of their obligations to conduct threat assessments and set security levels for ships in accordance with SOLAS and the International Ship and Port Facility Security (ISPS) Code. He also highlighted the on-going work to protect maritime transport from cyber threats as well as on going issues with domestic passenger ship safety and unsafe mixed migration by sea which were all topics of major concern to the MSC. In addition to addressing the formal agenda in his opening speech, the Secretary-General of IMO hosted the annual awards ceremony for Exceptional Bravery at Sea.

Unsafe Mixed Migration by Sea

The Committee reviewed the MSC.1/Circ.896/Rev.2 – *Interim measures for combating unsafe practices associated with the trafficking, smuggling or transport of migrants by sea* – and invited Member States and international organizations to report incidents with information via the facilitation module in the Global Integrated Shipping Information System (GISIS).

Hydrography and Charting

The MSC addressed various matters related to hydrography and nautical charting resulting from the 3rd session of the Sub-Committee on Navigation,



Mr Kitack Lim presents Captain Radhika Menon (India) with the certificate for Exceptional Bravery at Sea on behalf of her crew of the M/T Samourna Swarajya for her display of great determination and courage in rescuing seven fishermen from the sinking boat Durgamma after it had been adrift for six days in fierce rain, high winds and rough seas, at great risk.

Communications, and Search and Rescue (NCSR3) held in March this year. The main items included adopting amendments to resolution A.572(14), as amended, – *General provisions on ships’ routeing* – on establishing multiple structures at sea to be distributed as a MSC circular once confirmed by the IMO Assembly at its next meeting. The Committee approved MSC.1/Circ.1364/Rev.1 – *Amendments to the International SafetyNET Manual* – and MSC.1/Circ.1403/Rev.1 – *Amendments to the IMO NAVTEX Manual*. IHO made an intervention proposing an earlier entry-into-force date and to delete the requirement of providing at least 12 months notification; the MSC decided to refer this proposal to the NCSR Sub-Committee for further consideration. The Committee also authorized the NCSR Sub-Committee to establish an Expert Group on ships’ routeing at future sessions.

Global Maritime Distress and Safety System (GMDSS)

The Committee approved MSC.1/Circ.1551 – *Navigational Warnings concerning endangering the Safety of Navigation* – to ensure appropriate navigational warnings were issued in accordance with resolution A.706(17), as amended, – *World-Wide Navigational Warning Service* – prior to operations which might threaten the safety of navigation. The MSC considered information provided by the United Kingdom on the Inmarsat FleetBroadband Maritime Safety Data Service (MSDS) for recognition and use in the GMDSS. It was agreed that the NCSR Sub-Committee should consider how the process should be undertaken and whether it should be considered as a new application or as an up-grade to the existing services; further the NCSR should report to the next session of the MSC with advice on which requirements of resolution A.1001(25) – *Criteria for the provision of Mobile Satellite Communication Systems in the Global Maritime Distress and Safety System (GMDSS)* – should be applicable.

Maritime Cybersecurity

The Committee reviewed the MCS.1/Circ.1526 – *Interim guidelines on maritime cyber risk management* – and decided to wait for the 41st session of the IMO Facilitation Committee (FAL41) to complete its work on facilitation aspects before any further consideration to the possible mandatory nature of the Guidelines.

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 2017.

Next Sessions

The next sessions of the MSC are scheduled from 7 to 16 June 2017 (MSC98) and May 2018 (MSC99).

DECEMBER

14TH CONFERENCE OF THE SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION AND TECHNICAL WORKSHOP FOR PACIFIC ISLAND COUNTRIES AND TERRITORIES ON FORMULATING AND IMPLEMENTING STRATEGIC DEVELOPMENT PLANS FOR HYDROGRAPHY Nouméa, New Caledonia, 28 November - 2 December

14th Conference of the South West Pacific Hydrographic Commission

The Government of New Caledonia, the French Hydrographic Office (*Service Hydrographique et Océanographique de la Marine - SHOM*) and the Pacific Community (SPC) jointly hosted the 14th Conference of the South West Pacific Hydrographic Commission (SWPHC) from 30 November to 2 December in Nouméa, New Caledonia. Representatives from all eight Member States of the Commission (Australia, Fiji, France, New Zealand, Papua New Guinea, Tonga, UK, USA), and six of the seven Associate Members (Cook Islands, Kiribati, Niue, Samoa, Solomon Islands, Vanuatu) attended the meeting. Two Observers (New Caledonia, Tuvalu), five international organisations and nine representatives from industry also participated, a total of 46 participants. The IHO was represented by Secretary-General Robert Ward and Assistant Director Alberto Costa Neves.

The meeting was opened by Captain Éric Mevelec, Director of the Department of Maritime Affairs in New Caledonia, on behalf of the President of the Government of New Caledonia, Mr. Philippe Germain, and chaired by Commodore Brett Brace (Australia).

Each of the coastal States present provided an update on their activities since the last meeting that took place in the Cook Islands 19 months previously. The Commission acknowledged the achievements and developments in Fiji, where the profile of hydrography has been raised and appropriate legislation and foreign agreements were established. Papua New Guinea reported that it had signed a cooperative agreement with Australia to ensure that it is able to properly meet its international obligations under the International Convention for the Safety of Life at Sea (SOLAS). It reported also the establishment of a network of tide gauges, and informed on the funding for hydrographic surveys provided by the Asian Development Bank. Tonga reported that it had established a National Hydrographic Coordinating Committee and that the Navy is now tasked with the collection of hydrographic data for which it will shortly acquire a new vessel that was capable of conducting hydrographic surveys.



14th Conference of the South West Pacific Hydrographic Commission

The Cook Islands reported the establishment of its National Hydrographic Coordinating Committee and a bilateral agreement with New Zealand. Kiribati has adopted a new Maritime Act and acceded to the SOLAS Convention. Solomon Islands has provided hydrographic surveying and charting awareness to tertiary institutions and government agencies, established chart sales services to the local shipping industry and foreign vessels entering its waters and started conducting hydrographic surveys. Vanuatu reported significant progress towards becoming a Member State of the IHO.

The meeting was informed of recent technical visits to Kiribati, Niue, Samoa, Tuvalu and Vanuatu conducted under the auspices of the IHO capacity building work programme with support from New Zealand and the United Kingdom. Member States in the region also reported on the developments and progress in chart production systems and new chart releases and the support being provided to Pacific Island Countries and Territories (PICTs) through the New Zealand Pacific Region Navigation Initiative (PRNI), from the United Kingdom Commonwealth Marine Economies (CME) Programme and from the Geoscience Division of the Pacific Community (SPC). SPC briefed the Commission on the development of its proposed Safety of Navigation Strategy and the progress being made in developing its hydrographic capacity. New Zealand reported on the recent outcomes from its evidence-based hydrographic risk assessment initiative to identify priorities and areas where chart remediation should be a priority. The Commission members reviewed their requirements for further capacity building support and agreed on priorities to be submitted to the next meeting of the IHO Capacity Building Sub-Committee that will take place in June 2017.

The Commission was informed about the impact of significant natural disasters that have taken place in the region since the last meeting, in particular the severe tropical cyclone PAM in March 2015 affecting Vanuatu mainly and the severe tropical cyclone WINSTON which struck Fiji in February 2016 and the very recent earthquake that struck southern New Zealand in November. The Chair of SWPHC in close coordination with the IHO Secretariat monitored the impact of these disasters and undertook a coordinating role, as guided by IHO Resolution 1/2005 as amended.

IHO SWPHC Technical Workshop for PICTs on Formulating and Implementing Strategic Development Plans for Hydrography

The 14th meeting of the Commission was preceded by a workshop for PICTs on *Formulating and Implementing Strategic Development Plans for Hydrography* sponsored by the IHO capacity building fund and delivered by representatives from the Primary Charting Authorities in the region, IHO and International Association of Aids to Navigation and Lighthouse Authorities (IALA). The workshop was intended to provide the representatives of the PICTs 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 30 participants to the workshop over two days. Their presentations are being made available on the IHO website under the SWPHC page.



IHO SWPHC Technical Workshop

Australasian Hydrographic Society's Patron Gold Medal

During the meeting of the SWPHC, Mr. Ron Furness, Vice President of the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) presented the Australasian Hydrographic Society's Patron Gold Medal to the IHO Secretary-General Robert Ward. The medal is the Society's highest individual recognition to its members, to be granted for the most significant service to industry and the Society, or technical and academic achievements in hydrography or related sciences, over an extended period.



Mr. Ron Furness presented the Australasian Hydrographic Society's Patrons Gold Medal to the IHO Secretary-General Robert Ward

Next Meeting

Subject to final confirmation, the next meeting is scheduled in South Tarawa, Kiribati, in February or March 2018. The Commission re-elected Commodore Brett Brace (Australia) to continue as its Chair and elected Lieutenant-Commander Gerard Rokoua (Fiji) as its Vice-Chair.

43RD MEETING OF ISO/TC 211 Redlands, USA, 28 November - 2 December

The Technical Committee (TC) 211 - *Geographic information/Geomatics* of the International Organization for Standardization (ISO) held its 43rd Plenary Meeting and Working Group Meeting in Redlands, USA from 28 November to 2 December.

The ISO/TC211 deals with the development of standards and specifications in the geospatial domain and is currently responsible for maintaining 72 ISO standards. The International Hydrographic Organization (IHO) is a Class A liaison member of ISO/TC211 and participates in its standards development and maintenance activities. The ISO/TC211 19100 series of standards and specifications underpins the IHO S-100 Universal Hydrographic Data Model.

The meeting was hosted by the Esri Corporation based in Redlands, USA. Assistant Director Anthony Pharaoh represented the IHO Secretariat at the meeting.



Participants to the 43rd ISO/TC211 Meeting

Applications for external Class A liaison membership from the Calendaring and Scheduling Consortium (CalConnect) and the European Umbrella Organization for Geographic Information (EUROGI) were approved. CalConnect is a non-profit partnership between vendors of calendaring and scheduling systems and tools, and their users. The EUROGI brings together all organizations in Europe who use and/or produce geospatial information. The meeting also agreed to establish an internal liaison agreement with ISO/TC 20 Sub Committee 14, dealing with space systems and operations.

The following new projects were approved by the meeting:

- ISO 19160-3, Addressing – Part 3: Address data quality. (This standard extends Part 1: Conceptual model, and Part 2: Good practices for address assignment schemes).
- ISO 19150-4, Ontology - Part 4: Service ontology. (This standard extends Part 1: Ontology Framework, Part 2: Rules for developing ontologies in the Web Ontology Language (OWL), and Part 3: Semantic operators).

The following standards were approved to undergo a systematic review: ISO 19118 – Encoding; ISO 19141- Schema for moving features; ISO 19149 – Rights expression language for geographic information (GeoREL) and ISO 19156 – Observations and measurements. The meeting agreed that there is a need to review the ISO 19152 (Land Administration Domain Model - LADM) Standard.

The plenary meeting agreed that the TC211 should be represented at the subsequent joint workshop of the United Nations Expert Group on Land Administration Management (UN EG LAM) and Global Land Tool Network/Fédération Internationale des Géomètres (GLTN/FIG) which will take place in Delft, Netherlands in March 2017.

The next (44th) ISO/TC211 meeting will take place in Stockholm, Sweden from 29 May to 2 June 2017. A workshop on “Integrating Geospatial and Statistical Standards” will take place during the meeting week.

Since the establishment of the Technical Committee in 1994, Mr Olaf Østensen and Ms Bjørnhild Sæterøy (Norway) have provided the Chair and secretariat functions of the Technical Committee. After 22 years of excellent leadership and service, they have stepped down and Ms Christina Wasström (Sweden) has taken over as Chair.

4TH SUSTAINABLE OCEAN SUMMIT (SOS 2016)

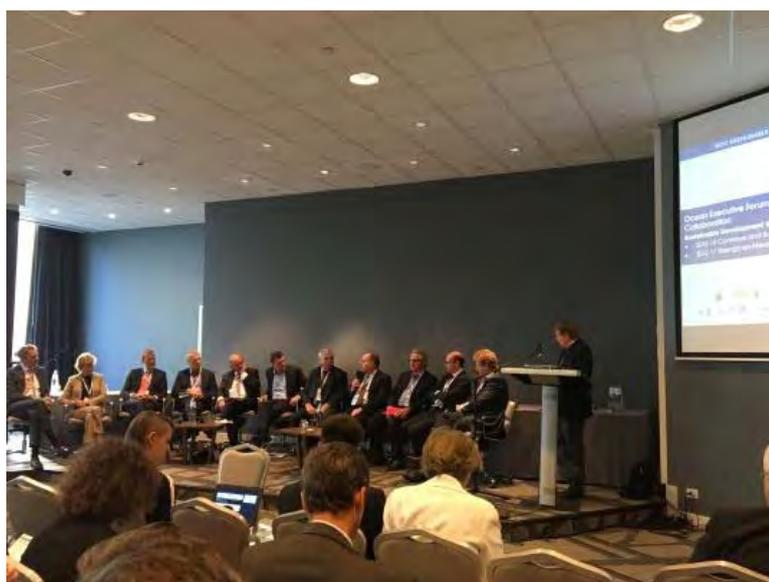
Rotterdam, Netherlands, 30 November - 2 December



The World Ocean Council (WOC) held its 4th Sustainable Ocean Summit in Rotterdam, Netherlands from 30 November to 2 December. WOC is a non-governmental, not-for-profit organization registered in the United States and the United Kingdom. It has been established as an international multi-industry business leadership alliance on ocean sustainability, science and stewardship. WOC was accredited as an observer to the IHO earlier this year.

WOC initiated the series of Sustainable Ocean Summit (SOS) in 2010 with the aim to provide a cross-sectoral platform for leadership companies and organizations to advance the development and implementation of industry-driven solutions to ocean sustainability challenges. SOS 2016 was the fourth edition and the first one to occur on an annual basis. The SOS 2016 theme was “Ocean 2030: Sustainable Development Goals and the Ocean Business Community”.

The Summit attracted more than 200 participants representing the various marine industries, including shipping, oil and gas, fisheries, aquaculture, tourism, renewable energy, ports, dredging, cables, as well as the maritime legal, financial and insurance communities and related intergovernmental and non-governmental organizations, including UN Programmes and Agencies, the International Maritime Organization, the International Oceanographic Commission and the European Commission. Director Gilles Bessero represented the IHO.



The Ocean Executive Forum at SOS 2016

The Summit featured seven plenary sessions and five groups of three parallel sessions. The sessions addressed a variety of topics such as projections on the future of the ocean economy in the context of the UN sustainable development goals, the role of maritime clusters, the role of industry in the implementation of the sustainable development goals, the implication for industry of the development of international instruments on regulating areas beyond national jurisdictions, “green shipping”, marine spatial planning, accelerating investment for ocean sustainable development, etc. Director Bessero opened the session on “smart ocean - smart industries: industry data collection and sharing to improve ocean knowledge” with a presentation on “Chart the Oceans by 2030: what role for industry”.

A welcome reception was hosted by the government of the City of Rotterdam, represented by Alderman Pex Langenberg, in charge of Transport, Sustainability and Culture.

**10TH ANNIVERSARY OF CONTRIBUTIONS
BY THE REPUBLIC OF KOREA
TO THE IHO CAPACITY BUILDING PROGRAMME
IHO Secretariat, Monaco, 7 December**

The 10th anniversary of continuous support by the Republic of Korea (ROK) to the IHO Capacity Building (CB) Programme was acknowledged by a special meeting held at the IHO Secretariat, Monaco on 7 December. The ROK delegation comprised Director General of Korea Hydrographic and Oceanographic Agency (KHOA) Mr Ryoo Jae-hyung, Mr Kim Baek Soo, Mr Kang Seongmin, Prof. Choi Yunsoo and Ms Yu Aeri. The IHO was represented by Secretary-General Robert Ward, Directors Mustafa Iptes and Gilles Bessero, Assistant Director Alberto Costa Neves, Project Officer seconded to the IHO Secretariat by the ROK Baek Yong and Accounting and Administration Assistant Sandrine Brunel.



***Participants at 10th Anniversary of Contributions by the ROK
to the IHO Capacity Building Programme***

The ROK's support to the IHO Capacity Building Programme was initiated in 2006 under the terms of a Memorandum of Understanding (MoU) between the IHO and the ROK. A total of two million Euros has been provided over the last ten years which has made up a significant part of the CB Fund used to support the annual IHO CB Work Programme (CBWP). The MoU was renewed in 2011 when a Programme Management Board (PMB) was established to manage the IHO-ROK Programme of Technical Cooperation which meets annually and reviews the implementation of the ROK's contribution. The ROK's contribution has supported education programmes in hydrography and cartography, training for trainers' courses, seminars and short courses on hydrographic surveys, ENC quality assurance, marine spatial data infrastructures, law of the sea, and tides and water levels, amongst others.

The meeting was opened by Secretary-General Ward and Director General Ryoo who both highlighted the contribution of the ROK and the achievements that it has made possible. Ms Yu reviewed the ROK's contribution to CB Programme during the last 10 years and Director Iptes provided his assessment of the positive impact on the CB Programme and the aims of the IHO. The meeting reviewed the current training and education activities, in particular the Category "A" Hydrography Programme at the University of Southern Mississippi (USM), USA and the

Category "B" Marine Geospatial Information Programme at KHOA, Busan sponsored by the ROK. The meeting was also briefed on Training for Trainers (TFT) activities being conducted by the East Asia Hydrographic Commission's Training, Research and Development Center (TRDC) hosted by KHOA and its support to the regional hydrographic community.

Mr Baek presented a review of the Technical Cooperation Projects that have also been supported by the ROK in addition to its contribution to the CB programme. The meeting considered potential ways of developing further cooperation in this area. The meeting also agreed on the need to revise the current MoU in order to update its content and include technical cooperation.

During the meeting Director General Ryoo indicated that he expected ROK's support for CB activities would continue in the future. At the end of meeting, Secretary-General Ward thanked the Republic of Korea on behalf of the IHO Member States for its continuing and generous support to the IHO Work Programme, not only in the area of capacity building, but increasingly in several important areas of the IHO technical work programme and for its support of the Secretariat through the secondment of officers.

INAUGURAL MEETING OF THE S-121 MARITIME LIMITS AND BOUNDARIES PRODUCT SPECIFICATION PROJECT TEAM

New York, USA, 5 - 9 December

The S-121 Project Team (PT) is a subsidiary body of the S-100 Working Group, and is tasked with the development of an S-100 conformant Product Specification for Maritime Limits and Boundaries.

The Project Team held its first meeting at the offices of the United Nations Division for Ocean Affairs and the Law of the Sea (UN DOALOS), in New York, USA from 5 to 9 December. Meeting participants included the Chair of the IHO-IAG Advisory Board on the Law of the Sea (ABLOS), John Brown (UK), and representatives from the following IHO Member States: Australia, Canada, France, Korea (Rep of), Netherlands, Sweden and USA.. Assistant Director Anthony Pharaoh represented the IHO Secretariat.



Participants to the 1st S-121 Meeting

Following a discussion on the scope and terms of reference of the Project Team, a presentation was provided by the UN DOALOS representative (Robert Sandev) highlighting examples of the deposit of charts and lists of coordinates made in support of submissions and determinations made under the terms of the UN Convention on the Law of the Sea in relation to maritime boundaries. This was followed by an online video presentation on the S-100 Standard, the IHO Geospatial Information Registry and the process to be followed when developing an S-100 based Product Specification. The presentation was provided by the Chair of the S-100 Working Group, Julia Powell. The IHO Secretariat representative reported on the request from the 8th meeting of the Hydrographic Services and Standards Committee (HSSC) that the draft S-121 Product Specification be completed as soon as possible in accordance with the agreed plan for the project.

Presentations were delivered by each of the Member State representatives on their approach to maritime boundary delineation and the preparation of their national submissions to the UN/DOALOS. There was also a discussion on the need to make provision to accommodate legal instruments in the maritime boundary submission mechanism. This was followed by an online video discussion and presentations on the International Organization for Standardization (ISO) - Land Administration Domain Model (LADM) Standard (19152) and the INSPIRE (Infrastructure for Spatial Information in Europe) Cadastral Parcels specification which is a framework (set of rules) for describing how cadastral parcels can serve as references for creating a European Spatial Data Infrastructure.

The meeting reviewed the draft S-121 Product Specification document and this was followed by a review of the feature, attribute and code-list requirements. There was also a discussions on the implementation requirements, data formats and additional work required.

The next S-121 PT meeting is scheduled to take place in Ottawa, Canada during the latter part of 2017.

3RD MEETING OF THE NAUTICAL INFORMATION PROVISION WORKING GROUP (NIPWG)

Busan, Republic of Korea, 5 – 9 December

The 3rd meeting of the Nautical Information Provision Working Group (NIPWG) took place in Busan, Republic of Korea, from 5 to 9 December, hosted by the Korea Hydrographic and Oceanographic Agency (KHOA).

The NIPWG is the IHO working group reporting to the Hydrographic Services and Standards Committee (HSSC) that is responsible for the development of specifications in support of the e-navigation services that are intended to provide mariners with harmonized up-to-date information on integrated displays in the future.

The meeting was chaired by Mr Jens Schröder-Fürstenberg (Germany). Thirty-one delegates from 13 Member States (Finland, France, Germany, Italy, Japan, Netherlands, Norway, Republic of Korea, Russian Federation, Spain, Sweden, United Kingdom, United States) and four stakeholder organizations (Anthropocene Institute, Korean Hydrography and Research Association, Korean Research Institute of Ships & Oceans Engineering, University of New Hampshire) attended the meeting. The IHO Secretariat was represented by Assistant Director Yves Guillam. Mr Lim Chaeho, Director of KHOA Nautical Chart Division, welcomed the participants on behalf of the Director General of KHOA, stressing the importance of the activities of the NIPWG for developing future e-navigation products and services.



Participants of the NIPWG-3 Meeting

The meeting considered the continuing development of S-100 based product specifications assigned to the NIPWG. The course of actions was adjusted in accordance with the decisions made, and priorities given at the eighth meeting of HSSC two weeks earlier. It was agreed to put on hold and benchmark S-126 (*Physical Environment*) with existing features of physical characteristics of other product specifications such as S-111 (*Surface Currents*), S-411 (*Ice Information*) and S-412 (*Weather Overlay*) which are developing at a faster pace. It was also decided to speed up the finalization of S-122 (*Marine Protected Areas*) and S-123 (*Radio Services*) product specifications through out-sourcing, due to the lack of resources and expertise available in the group since some expert contributors from industry had been obliged to step down recently.

Following a presentation on the test strategy for S-100 based products, the working group decided to develop and maintain a matrix of interoperability issues based on the results of testbeds and experimentations such as the sea trial of S-101 (*Electronic Navigational Charts*), S-124 (*Navigational Warnings*), S-111 and S-112 (*Dynamic Water Level Data Transfer*) conducted by KHOA in October 2016. The NIPWG also started to review the IHO Resolutions in

M-3 that are under its remit. Proposals to amend them will be made through the normal procedure via the HSSC except for IHO Resolution 4/1967 as amended (*Submarine Cables*). Noting the vital importance of submarine cables, a revised text developed through the efficient relationship established by NIPWG with the representative of the International Cable Protection Committee (ICPC) will be submitted directly by Germany, as Chair of both the NIPWG and the HSSC, as a proposal to the 1st Session of the Assembly.

The NIPWG considered the objectives and the preparation of the workshop on the visualization of nautical information that will be kindly hosted by the University of New Hampshire, United States, from 22 to 26 May 2017. The meeting agreed that it would be a good opportunity to enlist representatives from the Nautical Cartography Working Group (NCWG) so they can share their expertise on portrayal issues. Practical examples illustrating of the problem of depicting uncertainty in some nautical information (“fuzzy” areas) will be collected prior to the workshop.

During the meeting, several members provided top level presentations of development in their countries that have direct links to the development of e-navigation. Norway provided an update on the development of the digital application named “the Norwegian Pilot”, while the Republic of Korea introduced the SMART project, which aims to demonstrate the benefits of the e-navigation concept.



NIPWG Members were also invited to liaise with their national International Maritime Organization (IMO) representatives to seek support for the activation of the IMO/IHO Harmonization Group on Data Modelling. All agreed that more guidance was required to ensure the proactive development of the IMO’s Maritime Service Portfolios within the NIPWG.

All the documents considered at the meeting are available on the IHO web site at:

www.iho.int > Committees & WG > NIPWG > NIPWG-3.

The 4th meeting of the NIPWG is scheduled to be held in conjunction with the workshop on the visualization of nautical information at the University of New Hampshire, Durham, NH, United States from 22 to 26 May 2017.

17TH MEETING OF THE MESO-AMERICAN - CARIBBEAN SEA HYDROGRAPHIC COMMISSION (MACHC)

Belem, Brazil, 14-17 December

The 17th Meeting of the Meso-American - Caribbean Sea Hydrographic Commission (MACHC) was held in Belem, Brazil from 14 to 17 December with 61 participants representing 11 Member States, 11 Associate Members, one observer country, seven observer organizations, and five commercial companies. Secretary-General Robert Ward and Assistant Director Alberto Costa Neves represented the IHO Secretariat.



Participants to the 17th Meeting of the Meso-American - Caribbean Sea Hydrographic Commission

The meeting was hosted by the Directorate of Hydrography and Navigation (DHN) at hotel *Princesa Louçã* and chaired by Captain Marc van der Donck, National Hydrographer of the Netherlands and Chair of the Commission. The meeting was opened on behalf of the Brazilian Navy Commander by Vice-Admiral Alipio Jorge Rodrigues da Silva, Commander of the 4th Brazilian Naval District and by Vice-Admiral Marcos Olsen Sampaio, National Hydrographer of Brazil.

As a lead-up to the meeting, IHO capacity building seminars on hydrographic governance and on satellite derived bathymetry were held. Speakers from IHO Member States, the IHO Secretariat and the International Association of Aids to Navigation and Lighthouse Authorities (IALA) took part. Secretary-General Ward also delivered a presentation at a parallel event organized by the Brazilian Maritime Authority raising awareness of the importance of hydrography for the safety of navigation, for the protection of the marine environment and for national economic development.

The seminars were followed by meetings of the MACHC Integrated Chart Coordination Committee (MICC), the Capacity Building Committee (CBC), the Marine Economic Infrastructure Program (MEIP) Working Group and the Risk Assessment Working Group (RAWG). Ms Dawn Seepersad from the University of the West Indies (UWI) described her research topic on Risk Assessment in Maritime Navigation for the Greater Caribbean Region. The Commission

subsequently decided to create a correspondence group to support the UWI risk assessment research and participants were invited to contribute.

The Brazilian Oceanographic Vessel *Antares* made a port call during the period of the meeting and the MACHC attendees were invited to a reception onboard the vessel. Participants also had the opportunity to visit the Centre for Hydrographic Surveys and Aids to Navigation (AtoNs) for the Eastern Amazonia, operated by the Brazilian Navy.

The agenda of the Commission meeting was arranged according to themes: reports from countries and organizations, surveying and risk assessment, spatial data infrastructures, nautical charts and publications, and capacity building. In addition to the delivery of national reports from each of the countries represented at the meeting, presentations were provided by the observing organizations and by industry stakeholders invited to the meeting to complement the various agenda topics.

The meeting was told of the level of technical engagement in the work of the MICC and of the significant progress in ENC coverage in the region with 37 new ENCs. The meeting was also informed of the outcomes of the cruise port gap analysis and the actions countries are taking to fill the gaps, with two new ENCs produced based on this analysis.

As a direct consequence of the report from the Chair of the World-Wide Navigational Warning Service Sub-Committee and the assessment of Maritime Safety Information in the region Barbados immediately began supporting the issuing of Notices to Mariners and navigational warnings informing the mariners on the inconsistencies between AtoNs and the nautical charts of its waters.

In the context of the passage of Hurricane Matthew and the impact it had in Haiti the meeting reviewed IHO Resolution 1/2005 – *Response to Disasters* and agreed on several proposed adjustments to the Resolution. The meeting was informed of the substantial improvements in determining the accuracy uncertainty of satellite derived bathymetry and on its assimilation with various other measures leading to new strategies for its use.

Briefings were delivered on the status of the work of the Regional ENC Coordinating Centres, on the importance of Inland ENCs in the region, on developments for chart on demand, on the outcomes of the 3rd Mexican Hydrographic Conference, and the potential benefits of the recognized Hydrographic Certification Scheme granted to Canada by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, contributing to the standards of competence and labor mobility on a global basis for Hydrographic Offices, Ports and other organizations requiring professional competencies amongst their contractors.

A number of changes to the Statutes of the MACHC were made as a consequence of the entry into force of amendments to the Convention on the IHO. A process was included to determine the selection of Members to occupy the seats on the IHO Council allocated to the Commission. Brazil and the Netherlands were selected to occupy the two seats allocated to the MACHC once the IHO Council is established during the first Session of the IHO Assembly.

Rear-Admiral Fernando Alfonso Angli Rodríguez (Mexico) and Ms. Kathryn Ries (USA) were elected respectively as the Chair and Vice-Chair for the next two years.

Next meeting will be held in Varadero, Cuba from 29 November to 2 December 2017, preceded by a two-day Awareness Seminar on 27-28 November.

NEW HYDROGRAPHERS

NAMES	COUNTRIES	DATES
Vice Admiral Marcos SAMPAIO OLSEN	Brazil	2016
Vice Admiral Arata SENGOKU (Ph.D)	Japan	2016
Commander Leonardo TUN HUMBERT	Mexico	2016
Ms Birte NOER BORREVIK	Norway	September 2016
Rear Admiral António Manuel DE CARVALHO COELHO CÂNDIDO	Portugal	2016

* No C.V. received

** Nomination reported to the IHB in 2016

NEW HYDROGRAPHER OF BRAZIL

Vice-Admiral Marcos SAMPAIO OLSEN



Vice-Admiral Marcos SAMPAIO OLSEN was born in Fortaleza, CE, Brazil, on March 08th, 1961. In 1979 he joined the Brazilian Naval Academy on Villegagnon Island, Rio de Janeiro. Upon graduation, in 1982, he was commissioned as Ensign and assigned to the Brazilian Fleet. He is a Submariner specialist.

He attended numerous military courses, including the Command and Staff Course at the Brazilian Naval War College and the *“Advanced Course in Hemispheric Defense and Security”* – Inter-American Defense College, Washington DC.

He served on the following Brazilian Navy ships: Commanding Officer of Minesweeper *“ATALAIA”*, Executive Officer of Submarine *“TAMOIO”*, Commanding Officer of Submarine *“TAPAJÓ”* and Executive Officer of Aircraft Carrier *“SÃO PAULO”*. His career includes the Brazilian Delegation Inter-American Defense Board – USA, Director of Civilian Personal of the Navy, Commanding Officer of Submarine Force and Chief of Staff of the Command of Naval Operations.

NEW HYDROGRAPHER OF JAPAN

Vice Admiral Arata SENGOKU (Ph.D)



1. Date of Birth: 5th August 1957

2. Education: Graduated from Graduate School of the University of Tokyo in March 1984

3. Assignment History:

April 2016:	Chief Hydrographer of Japan
April 2014:	Chief of Miyagi Coast Guard Office, 2nd Regional Coast Guard Headquarters, JCG
April 2011:	Director of Technology Planning and International Affairs Division, JHOD
April 2010:	Director of Environmental and Oceanographic Research Division, JHOD
April 2007:	Director of Hydrographic Survey Division, JHOD
April 2005:	Director of Chart and Navigational Information Division, JHOD
March 2004:	Director of Hydrographic and Oceanographic Department, 7th Regional Coast Guard Headquarters, JCG
January 1994	Visiting Scholar at University of Texas , Austin, USA
April 1983:	Joined Hydrographic Department (Predecessor of JHOD) of Japan Maritime Safety Agency

4. Interests / Hobby: Walking, Tennis, Gardening

NEW HYDROGRAPHER OF THE MEXICO

Commander Leonardo TUN HUMBERT

The Commander Leonardo TUN HUMBERT of the General Corps, a Specialist in Hydrography and Cartography, is the new Director of Hydrography of Mexico from 1st May 2016.



After finishing his military training, he served on different vessels of the Navy's Secretariat to serve as Officer in different tasks. From 2003 to 2008, he served as Head of different departments inside the Sub-Directorate-General of Oceanography, Hydrography and Meteorology. Between 2005 and 2012 he was Second-in-Command of the research vessels "Río Tuxpan", "Río Suchiate" and "Antares", as well as Commander of "Antares". From 2013 he was Deputy Director of Oceanography at the Oceanographic Institute of the Gulf and the Caribbean Sea and from 2013 to 2016 he served as Director of this same Institute.

He graduated from the Heroic Military School of the Navy in 1994 with a degree in Naval Sciences. In 2002 he graduated in Hydrography and Cartography in the Oceanographic Institute of the Gulf and the Caribbean Sea. In 2003 he specialized in harbour and coastal hydrography at the International Maritime

Academy in Trieste, Italy. In 2006 he obtained a Postgraduate Diploma in Oceanographic Charting at the University of New Hampshire, sponsored by the Nippon Foundation and supported by the IHO-IOC GEBCO Project.

EDUCATION

1994 Engineer in Naval Sciences, Heroic Naval Military School;

1996 English language Course, Heroic Naval Military School;

Military Intelligence Course for Officers;

Helicopter Control Officer Course;

Advanced Fire Prevention Course;

In 2002, he graduated in Hydrography and Cartography from the Oceanographic Institute of the Gulf and the Caribbean Sea.

In 2003 he attended the Course of Harbour and Coastal Hydrography at the International Maritime Academy in Trieste, Italy.

In 2006, he obtained a Postgraduate Diploma in Oceanographic Charting at the University of New Hampshire, sponsored by the Nippon Foundation and supported by the IHO-IOC GEBCO Project.

In 2010 he graduated in the Course of Naval Command from the Centre of High Naval Studies.

PROFESSIONAL EXPERIENCE

October 1994 Officer in charge in the ship "Hidalgo";

November 1995 Electrical Officer in the ship "Hidalgo";

December 1997 Officer in charge in the ship "Abasolo";

June 2001 Officer in Electronics in the ship "Abasolo";

January 2003	Department Head in the Sub-Directorate-General of Hydrography and Cartography;
February 2005	Second-in-Command of the research vessel “Río Tuxpan”;
June 2006	Head of the Department of Coordination in Logistics in Sub-Directorate-General of Oceanography, Hydrography and Meteorology;
August 2007	Second-in-Command of the research vessel “Río Suchiate”;
August 2008	Head of Department of Foreign Hydrographic Affairs at the Sub-Directorate-General of Oceanography, Hydrography and Meteorology;
July 2011	Second-in-Command of the research vessel “Antares”;
February 2012	Commander of the research vessel “Antares”;
January 2013	Deputy Director of Oceanography at the Oceanographic Institute of the Gulf and the Caribbean Sea;
February 2013	Director of the Oceanographic Institute of the Gulf and the Caribbean Sea;
May 2016	Director of Hydrography at the Sub-Directorate-General of Oceanography, Hydrography and Meteorology.

DECORATIONS

Sixth Class Perseverance, 18th July 1998;

First Place recognition during the Speciality Course in Hydrography and Cartography, 26th November 2002;

Fifth Class Perseverance, 1st August 2003;

Fourth Class Perseverance, 18th July 2008;

Third Class Perseverance, 20th September 2013;

NEW HYDROGRAPHER OF NORWAY

Ms Birte NOER BORREVIK



Ms Birte Noer Borrevik took up the post as Director Hydrographic Service for the Norwegian Mapping Authority on 1 September.

Ms Borrevik graduated from the University of Stavanger in 1980 with a BSc in Petroleum Technology.

Her career has been built upon various technical and managerial positions in the Upstream Petroleum business, both in Norway and abroad prior to assuming the position of Director, NHS.

Her most recent appointments have been:

- Project General Manager BP Norway 2001-2003
- Project excellence function BP world wide 2003-2006
- VP Projects and Technology Norwegian Energy Company ASA 2006-2011
- HSE and Operations Manager Explora Petroleum AS 2011-2016

THE NEW HYDROGRAPHER OF PORTUGAL

Rear Admiral António Manuel DE CARVALHO COELHO CÂNDIDO

Born in Lisbon in 1961, **Rear Admiral António Manuel de Carvalho Coelho Cândido** graduated at the Portuguese Naval Academy in 1984. He holds the Generals and Flag Officers Promotion Course from the Portuguese Joint Command and Staff College and from the National Defense Institute, the National Defense Course and the Emergency and Disaster Management Course.

His first assignment was as the Executive Officer in the Patrol Boat NRP CUANZA. He completed the Electronics Specialization Course in 1987 and then was appointed to the frigate NRP ROBERTO IVENS, as the Head of Weapons Engineering Department.



After a year of weapons courses in the US, António Cândido served more than 6 years in the MEKO Class Frigates as Deputy of Weapons Engineering Department, NRP ALVARES CABRAL, and as Head of Department, NRP VASCO DA GAMA serving in home waters and STANAVFORLANT after taking the RN OST in 1992 and 1996, and deploying to Guinee-Bissau during the 1998 crises. In 1999 he assumed command of NRP JOÃO ROBY.

Ashore, Rear Admiral Cândido served as Head of Weapons and Engineering Department in the Frigates Squadron, as Head of C3I Division and Detection and Navigation Systems Division in the Directorate of Fleet Maintenance. Promoted to Captain in 2006, he was appointed Commander of Madeira Maritime Zone and at the same time Director of MRCC Funchal, Captain of the Port of Funchal and Commander of the Regional Maritime Police. In 2011 he served as Captain of the Port of Lisbon and Commander of the Regional Maritime Police.

Following promotion to Rear Admiral he moved to Azores, where he took command of the Azores Maritime Zone and at the same time Director of MRCC Delgada and Commander of the Regional Maritime Police.

He joined the Portuguese Hydrographic Institute as the National Hydrographer in November 2015.

His awards include among others the Distinguished Services Medal (3), Military Merit Medal (2nd class) and the "*Cruz Merito Naval con Distintivo Blanco*".



Rear Admiral Cândido is married to Filomena and has one son.