

**9TH MEETING OF THE WORLDWIDE ENC DATABASE (WEND)
WORKING GROUP (WENDWG)**

Brest, France, 26 – 28 February

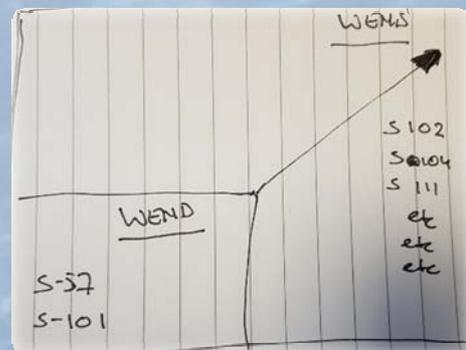
Contribution to the IHO Work Programme 2019	
Task 3.4.1	Organize, prepare and report annual meetings of the WEND Working Group - Foster the implementation of the WEND principles, monitor progress and report to IRCC.

The 9th meeting of the Worldwide ENC Database Working Group (WENDWG) took place in Brest, France, hosted by the Hydrographic and Oceanographic Service of France (Shom), from 26 to 28 February, in conjunction with the 4th joint meeting of the Regional ENC Coordinating Centres (RENC), IC-ENC, PRIMAR and, for the first time, the EA-RECC (Regional ENC Coordination Centre) of the East Asia Hydrographic Commission. The meeting was chaired by Mr Jamie McMichael-Phillips (United Kingdom). Twenty-one delegates from 11 Member States (Brazil, China, Finland, France, Italy, Netherlands, Norway, Republic of Korea, Sweden, United Kingdom and United States) representing 13 Regional Hydrographic Commissions (ARHC, BSHC, EAHC, EAHC, MACHC, MBSHC, NHC, NSHC, RSAHC, SAIHC, SWAtHC, SWPHC and USCHC), the Chairs of the IC-ENC Steering Committee and PRIMAR Advisory Committee and the directors of the RENCs attended the meeting. Director Mustafa Iptes and Assistant Director Yves Guillam (Secretary) represented the IHO Secretariat.

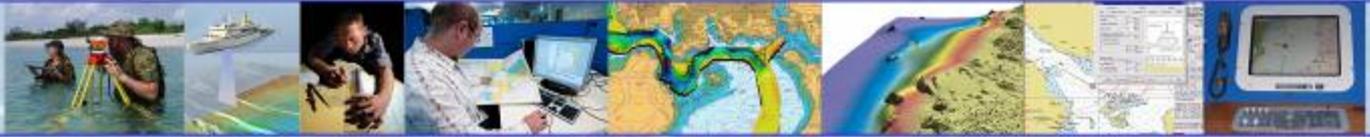
At the opening session of the meeting, Ingenieur general Bruno Frachon, Director General of Shom, welcomed the participants and highlighted the fact that the WENDWG had been a major asset for the last decade for the IHO, when actually entering the digital age with the timely delivery of qualified, updated and consistent ENC for ECDIS. He also stressed the importance of preparing the future.

The Chair reported on the main outcomes of the last IRCC meeting held in Goa, India (June 2018), where the Committee agreed to amend the Terms of Reference of the WENDWG. As a consequence, the WENDWG is now requested to develop options to expand the value of the Worldwide ENC database to all marine data users. In particular, it is tasked to support non-ECDIS maritime community through license management of ENC data as well as the Seabed 2030 Project. Some pragmatic actions were agreed for these purposes, thanks to a joint effort provided by the RENCs with some technical support offered by NOAA/USA.

The IHO Secretariat reported on the decisions and actions from the 2nd meeting of the IHO Council (October



*Conceptual sketch,
“from the WEND to WENS (Worldwide
Electronic Navigation Services)”*



2018) that have an impact on the activities of the WENDWG. Two fruitful workshop sessions were organized to address the different issues raised at the IHO Council. Subsequently, the meeting agreed to submit a proposal at the next IRCC aiming to develop new WEND-like Principles as a possible component of the S-100 Implementation Strategy.

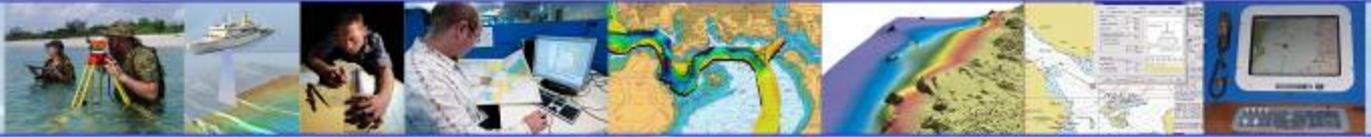
Following the reports provided by the representatives of the RHCs and on a more technical side, several actions were agreed to assess the feasibility of the operational implementation of the IHO Resolution 1/2018 - *Elimination of overlapping ENC data in areas of demonstrable risk to the safety of navigation* -, noting that in some Charting Regions the situation is not improving. The RENCs will try, for instance, to improve their tracking and accounting procedures, in support of ENC Producers and RHCs, while the IHO Secretariat is now preparing the commissioning of the enhanced version of the INTToGIS system (INTToGIS II), which includes an ENC overlap checker function. Thanks to this development supported by KHOA, NOAA for the AIS (Automatic Identification System) traffic density database, NGA for the Worldwide Ports database and the RENCs, the International Charting Coordination Working Groups will soon be able to build their own assessment with regard to ENCs Schemes, ENCs Coverage and Overlaps and possible important CATZOC inconsistencies. The IHO Secretariat commended the ARHC, BSHC, EAHC and MBSHC Charting Regions Coordinators for their involvement in the experimentation phase of INTToGIS II.

In conclusion of a decision made at the 8th meeting of the IRCC, the meeting welcomed the latest version of the IHO ENC Coverage Catalogue, which is now fully aligned with the ENC Data Flow diagram.

The 10th meeting of the WENDWG is scheduled to be held in Hong Kong, China, in February 2020.



WENDWG-9 participants at Shom, Brest, France



6TH CONFERENCE OF THE EAST ASIA HYDROGRAPHIC COMMISSION STEERING COMMITTEE (EAHC-SC) Bali, Indonesia, 20 -22 February

Contribution to the IHO Work Programme 2019

Task 3.2.1.3	Prepare for and report meetings of the Regional Hydrographic Commissions (RHC) / EAHC
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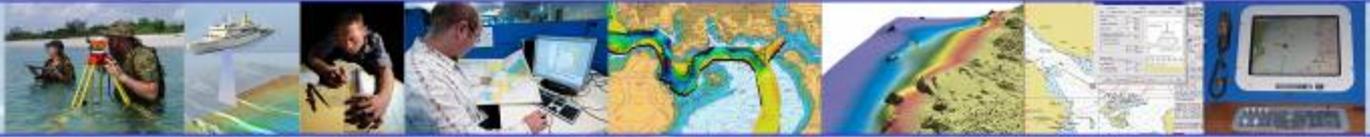
The 6th Conference of the East Asia Regional Hydrographic Commission Steering Committee (EAHC-SC) was held from 20 to 22 February in Bali, Indonesia.



Participants of the 6th Conference of the East Asia Hydrographic Commission Steering Committee in Bali, Indonesia

Fifty seven participants representing nine out of the ten EAHC Members (Brunei Darussalam, China (including Hong Kong), Indonesia, Japan, Malaysia, Republic of Korea, Philippines, Singapore and Thailand) and four observers (Vietnam, Cambodia, United Kingdom and United States of America) participated in the Conference.

The EAHC Conference was chaired by Dr Yukihiro Kato, Chief Hydrographer of Japan, assisted by Mr Shigeru Nakabayashi, from JHOD (Japan Hydrographic and Oceanographic Department). Dr Mathias Jonas, Secretary-General of the IHO, represented the IHO Secretariat. He delivered a report on the relevant issues undertaken since the 2nd IHO Council held in October 2018, under



the three pillars of the IHO Work Programme namely, Corporate Affairs, Hydrographic Services and Standards and Inter-Regional Coordination and Support. In the course of his report he explained the increasing relevance of the IHO contributions to the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), the Secretariat's proposals on how to support the UN Decade of the Ocean Science for Sustainable Development through collaboration with IOC (Intergovernmental Oceanographic Commission) of UNESCO, the joint Sponsorship of the GEBCO Seabed2030 project and the uptake of Crowd Source Bathymetry as a practical activity. He elaborated further on the recent progression within the S-100 framework and the prospects of S-100 related hydrographic standards application through the Member States following a future implementation plan. He finally provided insight on the renewed IHO GIS services and other Secretariat's IT-improvements. For continuation in the IHO Council operations following the second Assembly in 2020, he emphasized the task of EAHC to consider the nomination of Council members to occupy the two Council seats allocated to the EAHC.



Vice Admiral Wuspo Lukito, Vice Chief of Naval Staff of the Indonesian Navy opens the 2019 EAHC-SC Conference with three strikes of the gong.

Recent achievements in Capacity Building and the implementation phase of the East Asia Regional ENC Coordination Center (EA-RECC), now operational in Hong Kong, were considered by the steering committee in greater detail. Hong Kong, China made a proposal on the EA-RECC governance and future financial arrangements for the distribution of ENCs via EA-RECC. The EAHC agreed on the proposed EA-RECC ToR and RoPs and agreed on further deliberations about technical and financial aspects in the course of the current year. Deliberations how to treat the subject of South China ENCs were also considered.

The Steering Committee was informed on the work of the subordinate Working Groups of the EAHC. Singapore proposed the renaming of the S-100 study group as the S-100 working group and to set a target date for full S-101 transition by 2025 for the East Asian region. In order to prepare best for this significant turnover, a proposal for an S-101 based test bed for the Malacca and Singapore Straits was discussed intensively. Consensus was reached that added value for the test bed users could be gained through combination of a variety of S-100 based products, namely S-102, S-104, S-111, S-112 and S-122.

In the light of the new IHO Convention and the ongoing revision process of IHO Resolution 2/1997 pertaining to the constitution of the Regional Hydrographic Commission, the EAHC decided to establish a Status Amendments Working Group to work out proposals for potential revisions of the EAHC statutes in place to be endorsed by the next EAHC SC in 2020.



An important issue was the consideration of the impressive evolvement of national MSDI activities within the region. The Chair of the EAHC MSDI-WG suggested considering a true regional MSDI approach taking the Baltic Sea and the Arctic region as examples for best practice. The Commission decided on follow-up activities through a comprehensive review of the EAHC-MSDIWG work plan.

These deliberations were followed by the report of the Training, Research and Development Center - Board of Directors - TRDC-BOD. In 2018 the Centre provided courses on the use of GNSS for tide correction for survey and carto production data base system development. The courses on MSI, risk assessment for hydrographic survey and charting management for the safety of navigation have been scheduled in the year of 2019.

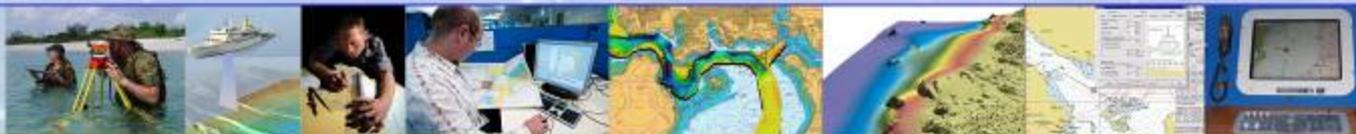
The Steering Committee approved the 2020 capacity building plan including another technical visit to Cambodia and agreed on a review of the 5 year Capacity Building Programme to align better with IHO's and EAHC's strategic goals, to review methods of learning and access to resources, e.g. e-learning, to address user demands for hydrographic and non-hydrographic users. The EAHC Steering Committee agreed to share the basic carto and hydro course syllabi and materials with the RHCs represented at the IHO CBSC.

Japan, as NAVAREA XI Coordinator, reported on recent developments discussed at the last WNWWS-SC meeting in Monaco in August 2018. Japan highlighted that the Operational Manual has to be updated due to new communication providers, namely Iridium, coming into service. Special emphasis was put on the report of the Strategic Team Advance Roadmap (STAR) Task Group. This group is tasked to identify strategic directions for the future targets of EAHC. The Commission agreed to put special emphasis on capacity building, autonomous equipment and MSDI and considered the work of the group as excellent preparatory work for the ongoing IHO Strategic Plan revision process.

United States, as an observer, reported on the availability of updated global geoid model and magnetic field model. The presentation triggered a wider discussion about open data policy, seconded by United Kingdom's observer's presentation on the interrelation of hydrography to the United Nations Sustainable Development Goals (SDG).

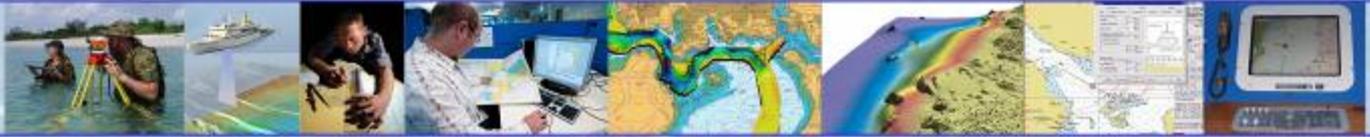
Singapore proposed a resolution to identify appropriate activities within the collaborative framework of the EAHC to respond to the challenge of climate change. Based on the proposal of Singapore, the EAHC-SC agreed to work on a report to address the contribution and support of the Commission in terms of data sharing to support the monitoring and study of climate change and the wider framework of the UN Sustainable Development Goals, namely SDG14. Further work on this topic was put on the EAHC STAR group with a target date for endorsement by EAHC Steering Committee of 31 December 2019.

China reported on the expected completion of the Chinese version of the IHO Hydrographic Dictionary S-32 under the new paradigm. The presentation was supplemented by statements of some of the EAHC-SC members to consider national versions of the dictionary within the years to come.



By means of the individual interventions, numerous participants quoted repeatedly a phrase of the welcome address given by Vice Admiral Wuspo Lukito, Vice Chief of Naval Staff of the Indonesian Navy, to indicate their joint understanding of the EAHC-SC spirit: *Alone you can go fast, together you can go far.*

The next meeting of the East Asian Hydrographic Commission Steering Committee is planned to be held in Tokyo, Japan in the first quarter of 2020.



**8TH MEETING OF THE ROPME SEA AREA
HYDROGRAPHIC COMMISSION
Islamabad, Pakistan, 18-20 February**

Contribution to the IHO Work Programme 2019	
Task 3.2.1.10	Prepare for and report meetings of Regional Organization for the Protection of the Marine Environment (ROPME) Sea Area Hydrographic Commission



The 8th meeting of the ROPME (Regional Organization for the Protection of the Marine Environment) Sea Area Hydrographic Commission (RSAHC) was held in Islamabad, Pakistan, from 18 to 20 February. The meeting was opened by Captain Muhammad Khalid, Hydrographer of Pakistan, in the presence of Vice Admiral Kaleem Shaukad, Vice Chief of Pakistan Naval Staff. Representatives from RSAHC Member States Islamic Republic of Iran, Oman, Pakistan and Saudi Arabia attended the meeting with United Kingdom attending as an Associate Member and observers from a



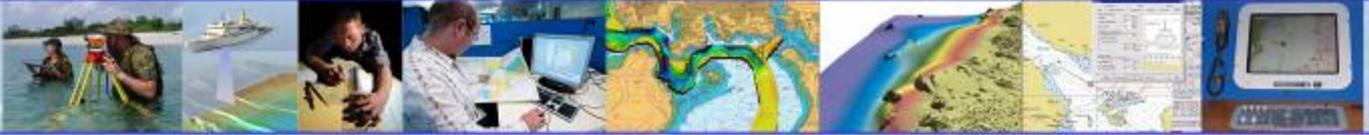
number of organizations, authorities and representatives from industry. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHO Secretariat.



Director Iptes addresses delegates at the Opening Ceremony of RSAHC8

The meeting received national reports from Member and Associate Member States and the IHO Secretariat after which the meeting received reports on the Crowdsourced Bathymetry (CSB) initiative, IHO-IOC GEBCO project, GEBCO Seabed 2030 project and on Worldwide ENC Data Base (WEND) issues. Delegates were encouraged to provide regular updates to the IHO Yearbook (P-5) and IHO publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide*. Details of regional INT Chart and electronic navigational chart (ENC) coverage were

presented by the regional coordinator (Iran); a number of issues were identified and actions were agreed. The NAVAREA IX Coordinator (Pakistan) provided an up-date on issues relating to the World-Wide Navigational Warning Service (WWNWS) and outcomes from related IMO meetings were reviewed. Director Iptes briefed the Commission on current IHO issues and activities as well as the two Council meetings and the forthcoming second session of the IHO Assembly.



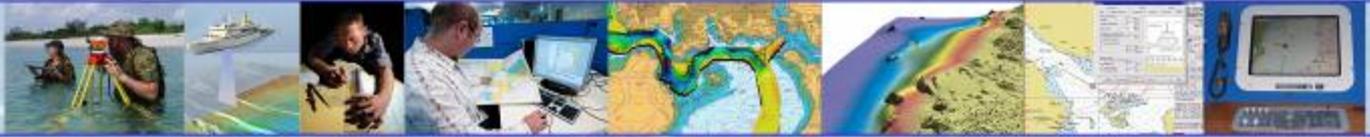
The meeting included presentations from industry representatives that highlighted technologies and training opportunities available to the region. Industry representatives were keen to emphasize their willingness to engage with the RSAHC and its members to assist with the development of hydrographic and cartographic capability within the region. These presentations were followed by a presentation from the regional Capacity Building (CB) Coordinator (Iran). All the presentations generated considerable debate on various issues and regional requirements. A comprehensive list of CB requirements was developed for submission to the IHO Capacity Building Sub Committee (CBSC) that will meet in May in Italy. Presentations were also given on the IHO-IOC GEBCO Project, the Seabed 2030 project and the IHO CSB initiative, all of which supported the request that Member States contribute to the GEBCO programme through the provision of shallow water bathymetric data to the IHO Data Centre for Digital Bathymetry (DCDB).

The participants reviewed the Commission statutes and agreed to an amendment to include a fixed term for the role of Chair with the Vice-Chair automatically taking over as Chair after each meeting. The Islamic Republic of Iran assumed the role of the Chair of the Commission with Oman elected as Vice-Chair. The Commission also confirmed that the Chair (IR of Iran) and Vice-Chair (Oman) would occupy the two seats on the IHO Council allocated to the RSAHC for the period April 2020 to April 2023.

With the objective of increasing participation of member states, the RSAHC decided to have a 2nd Extraordinary meeting of the RSAHC in February 2020 before the 2nd session of the IHO Assembly, which will include a half-day meeting of the INT Chart Coordination Working Group. The venue and dates will be decided later based on hosting proposals from the Member States.



Participants to the RSAHC8 Meeting



7TH MEETING OF THE CROWDSOURCED BATHYMETRY WORKING GROUP

Québec City, Canada 12-14 February

Contribution to the IHO Work Programme 2019	
Task 3.6.4	Develop general guidelines on the use and collection of Crowdsourced Bathymetry (CSB)

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



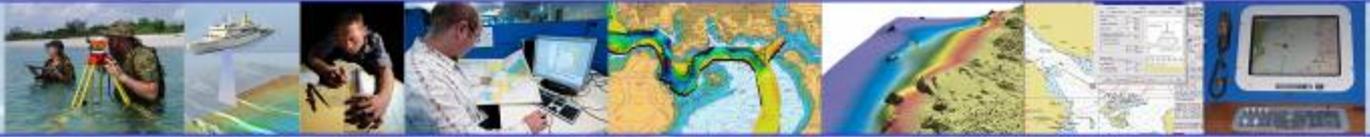
The working group held its 7th meeting in Québec City, Canada from 12 to 14 February 2019. The Chair of the CSBWG, Ms Jennifer Jencks (USA, Director of the DCDB), chaired the meeting which was attended by representatives from eight Member States (Canada, Denmark, India, Italy, New Zealand, Norway, UK and USA), and observers and expert contributors from the ONE Data Technology Co, Dongseo University,

Farsounder INC, Da Gama Maritime Ltd, GMATEK Inc, and Fugro. Assistant Director David Wyatt (Secretary) represented the IHO Secretariat.



The participants of the CSBWG Industry Workshop between sessions

Prior to the meeting, an Industry Workshop was conducted with representatives from CIDCO, Da Gama Maritime, EGS Survey (representing ICPC), ECC, ESRI, FarSounder, Fugro, GMATEK, Hypack, Leeway Marine, Olex, ONE Data Technology, Secunda, SevenCs/ChartWorld and Teledyne CARIS. The representatives were given an overview of the IHO CSB initiative, which was followed by short presentations on current



industry partner projects, examples of CSB data usage by hydrographic offices and habit mapping projects and technology perspectives. AORA/ASMIWG, Sea-ID, NF-GEBCO Seabed 2030 and James Cook University gave presentations by remote link. The Workshop participants then considered how to expand the initiative into the various maritime sectors, what methodologies were appropriate to incentivize data gathering activities, how the data could be made available and what recognition strategies were desirable.

The CSBWG briefly reviewed the final draft version of the B-12 Guidelines which was presented to Member States for adoption via IHO Circular Letter 11/2019. A full explanation was provided on the background to the generation of Edition 2.0.0 within such a short timeframe. The WG decided to start considering ways of obtaining user community feedback and comments at its next meeting, which will allow some operational experience to be gained with the current version.



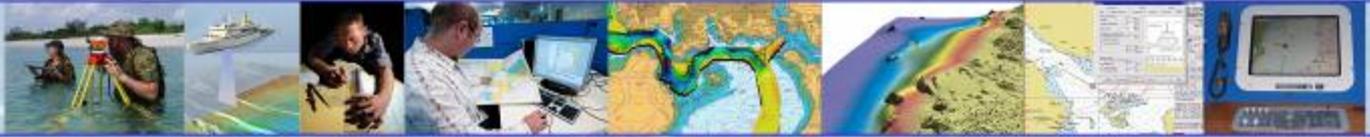
The participants of the 7th meeting of the CSBWG between sessions

The participants also considered the outreach and recognition strategies, which should be developed. The group focused on the Research vessel, Cruise Liner and recreational leisure sectors, including the Super Yacht community, as being the ones most likely to be able to contribute the most needed data. It was agreed that representation at a number of events and meetings was essential to raise awareness and to

progress the five headline topics (need, how, what, incentives and benefits) to increase contributions and participation. It was agreed that leading organizations and companies within each sector could be identified and approached to act as CSB ambassadors. It was proposed that the first three CSB ambassadors should be Carnival on behalf of the cruise industry, Fugro on behalf of the marine survey industry and PGS on behalf of the seismic survey industry. Additionally, it was agreed that closer liaison needed to be established with other IHO bodies as well as the Seabed 2030 project, in particular the Chairs of the Data Quality Working Group (DQWG) and Marine Spatial Data Infrastructure Working Group (MSDIWG) should be invited to future meetings. It was suggested that the Director and Deputy Director of the Seabed 2030 project should be invited to participate and that close harmonization of the outreach activities of both groups should be a priority.



It was agreed that the next meeting of the working group should consider whether the development of a S-100 based Product Specification was desirable, taking into consideration the expert advice available within the IHO Secretariat. It is therefore planned to hold the 8th meeting of the CSBWG at the IHO Secretariat, in Monaco, from 22 to 24 October 2019. In addition, to assist with planning, it was agreed that the 9th meeting would be held in Stavanger, Norway, in June 2020.



**16TH CONFERENCE OF THE SOUTH WEST PACIFIC
HYDROGRAPHIC COMMISSION
AND
TECHNICAL WORKSHOP ON RESPONSE TO DISASTERS
AND DATA DISCOVERY
Niue, 11-15 February**

Contribution to the IHO Work Programme 2019	
Task 3.2.1.14	Prepare for and report meetings of the South West Pacific Regional Hydrographic Commission (SWPHC)

16th Conference of the South West Pacific Hydrographic Commission

The 16th Conference of the South West Pacific Hydrographic Commission (SWPHC) was hosted by the Department of Transport and the Department of Justice, Lands and Survey of Niue from 13 to 15 February in the Scenic Matavai Resort. Representatives from all nine Member States of the Commission (Australia, Fiji, France, New Zealand, Papua New Guinea, Tonga, United Kingdom, United States of America and Vanuatu), and from all eight Associate Members (Cook Islands, Indonesia, Kiribati, Nauru, Niue, Palau, Samoa and Solomon Islands) attended the conference. Three Observer States (Marshall Islands, Tokelau and Tuvalu), the Pacific Community (SPC) and six representatives from industry also participated, a total of 55 participants representing all the coastal States in the region. The IHO Secretariat was represented by Director Abri Kampfer and Assistant Director Alberto Costa Neves.



Participants in the 16th Conference of the South West Pacific Hydrographic Commission



The conference was opened by the Hon. Pokotoa Sipeli (Niue's Minister of Infrastructure), and chaired by Commodore Fiona Freeman (Australia). Each of the coastal States provided an update on their activities since the last meeting that took place in Fiji in 2018.

The conference noted the support provided by the five Primary Charting Authorities (PCA) to the Small Islands Developing States (SIDS) and the recent developments in surveys, charting and maritime safety information (MSI). New Zealand informed the participants on the progress with surveys and charting made in-house and abroad through the Pacific Regional Navigation Initiative (PRNI) for five SIDS. Australia reported on the developments in its own waters and on the two supported SIDS. UK described the developments in the five SIDS and its overseas territories, by means of the Commonwealth Marine Economies (CME) Programme. Progress was also noted by the US in support of its overseas territories and three supported SIDS. France reported on the progress in its overseas territories and domains in the region.

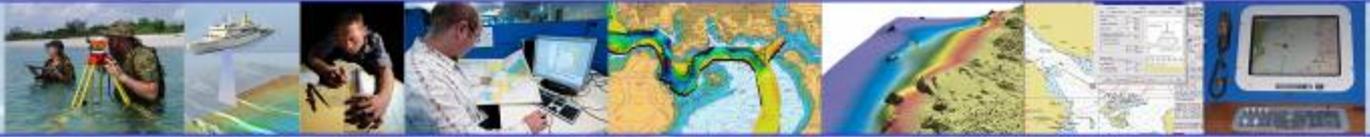
SPC briefed the Commission on the development of its Pacific Safety of Navigation Project and the progress conducting hydrographic and geodetic surveys, implementing Aids to Navigation and supporting data discovery in the region. SPC presented the work of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and its World-Wide Academy, and informed the meeting on the establishment of the International Maritime Organization's regional representative, stationed at SPC's Fiji office.

The conference assessed the impact of capacity building through regional programs and through the IHO Capacity Building Programme. This continuous support has proved valuable for raising awareness on the importance of hydrography and bringing maturity in all phases of capacity building. The reports from the two NAVAREA Coordinators (Australia and New Zealand) indicated significant improvements in the provision of MSI in the region.

Participants showed renewed interest for progressing their marine spatial data infrastructure (MSDI) due to the significant impact it can bring to the national economy. They received briefings on the status of the GEBCO Seabed 2030 Project and the possibilities for contributing with data, both existing or through new surveys.

The conference noted with satisfaction that there are few ENC overlaps in the region and none with significant navigational risk. The International Charting Coordination Working Group (ICCWG) also reported progress to remediate the existing CATZOCs that are unassessed.

Other relevant agenda items involved data discovery and portals, response to disasters, outcomes of relevant IHO bodies and the need to establish tide gauges, seeking cooperation with existing international and regional projects. The revision of the IHO Resolutions 1/2005 *IHO Response to Disasters* and 2/1997 *Regional Hydrographic Commissions* were also discussed in order to provide input from the region.



Participants in the Workshop on Response to Disasters and Data Discovery preceding the SWPHC16

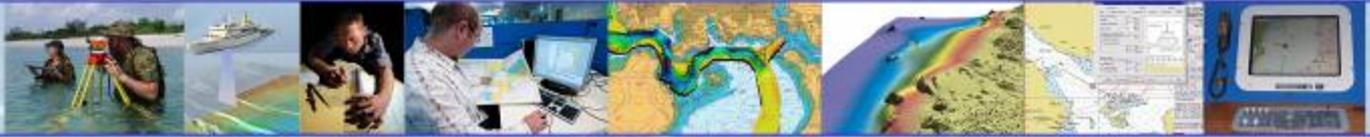
IHO/SWPHC Technical Workshop on Response to Disasters and Data Discovery

The 16th Conference of the Commission was preceded by a technical workshop on *Response to Disasters and Data Discovery*, sponsored by the IHO capacity building fund. The aim of the session on Response to Disasters was to make SIDS in the region aware of the role of the IHO and the SWPHC in the aftermath of a disaster and to understand what procedures are needed to identify appropriate action and support. Another objective was to provide guidance to SIDS to establish national procedures and guidelines.

The session on Data Discovery aimed at providing an overview of discovery tools, search capabilities, use of metadata and data, mechanisms to share data (release agreements, bilateral arrangements) and the establishment of geospatial portals. Fourteen presenters briefed the participants to the workshop. Their presentations are available on the IHO website under the SWPHC page.

Next Meeting

The next meeting is scheduled in Wollongong, Australia, from 10 to 14 February 2020 (subject to confirmation). The Commission re-elected Commodore Fiona Freeman (Australia) as Chair and elected Mr Robson Tari (Vanuatu) as the Vice-Chair.



**14TH MEETING OF THE DATA QUALITY WORKING GROUP (DQWG)
IHO Secretariat, Monaco, 5 – 8 February**

Contribution to the IHO Work Programme 2019

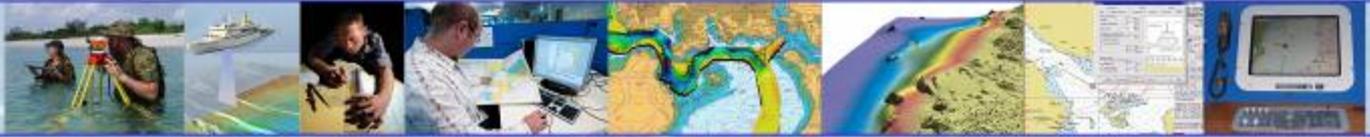
Task 2.1.2.6	Organize, prepare and report meetings of DQWG
Task 2.4.9	Maintain S-67 – Mariners’ Guide to Accuracy of ENC’s

The 14th meeting of the Data Quality Working Group (DQWG) took place at the IHO Secretariat, Monaco, from 5 to 8 February.



Participants in the DQWG-14 meeting, IHO Secretariat, Monaco

Director Abri Kampfer welcomed the participants and gave a short opening address stressing the transversal role of the DQWG in the IHO and the large expectations from Member States to get data quality guidance for harmonizing purposes. The meeting was chaired by Mr Rogier Broekman (Netherlands). Thirteen delegates from 11 Member States (Brazil, Canada, Denmark, Finland, France, Italy, Japan, Netherlands, Norway, United Kingdom and United States) attended the meeting. The Secretary-General of the IHO made an intervention during the meeting, highlighting the increasing interest in data quality in support of marine knowledge, decision



making by mariners and the development of autonomous shipping. The IHO Secretariat was represented by Technical Standards Support Officer Jeff Wootton and Assistant Director Yves Guillam. Assistant Director Alberto Costa Neves attended the meeting as well, mainly as liaison for MSDI, C-55 and Capacity Building/Educational matters, in relation to data quality and data integrity.

Following the review of the Terms of Reference of the DQWG, the meeting agreed to submit an amendment for the approval of the HSSC, aiming to offer the possibility for the DQWG to provide advice related to data quality in all areas and not only limited to Product Specifications managed by the S-100WG.

The Chair provided a status report on the harmonization of data quality indicators, describing how IHO Members allocate S-44 values for different types of survey techniques (including crowd sourced bathymetry, satellite derived bathymetry, LIDAR) and translate these to CATZOC values. Examples of generalization (aggregation) issues of current CATZOC values across ENC compilation scales were also discussed, while steadily keeping in mind the key objective that the DQWG is tasked to develop guidance on quality aspects that will help the Member States to allocate meaningful quality values of bathymetric data in future S-101 ENC. To this end, a document will be created describing the conversion of S-57 (M_QUAL/CATZOC) to S-101 (Quality of Bathymetric Data).

The DQWG reviewed all the comments received on its first draft of the Data Quality Checklist for Product Specifications that is planned to become a component of Part C of IHO Publication S-97 – *IHO Guidelines for Creating S-100 Product Specifications*. Graphical examples still need to be included in this Part C.

The Chair reported that the DQWG had received requests to review the data quality components of the S-101, S-102 and S-127 Product Specifications. These were checked against the draft Part C, with feedback to be provided to the responsible Working Groups.

During an interactive workshop, the meeting considered methodologies for the display of quality information. A benchmarking of proposals and current standards was made, for two user modes: route planning and route monitoring. While noting the obstacles of an evolution of the regulations and ECDIS standards in the short term, several findings were identified during the workshop that will help to define a new portrayal concept. When finalized, it will be submitted to the other HSSC Working Groups for testing, and possible implementation in the design of future S-101 ECDIS.





The DQWG reviewed the significant number of comments and concerns received on the draft Publication S-67 - *Mariners' Guide to Accuracy of Depth Information in ENC's* - and agreed to propose a new way forward at the next HSSC meeting.

The next meeting is planned at the IHO Secretariat, Monaco, from 4 to 7 February 2020.

Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > DQWG > DQWG-14 > Documents.



6TH MEETING OF THE NAUTICAL INFORMATION PROVISION
WORKING GROUP (NIPWG)
AND
IHO DIGITAL NAUTICAL PUBLICATIONS STAKEHOLDERS' FORUM
Rostock, Germany, 28 January -1 February

Contribution to the IHO Work Programme 2019	
Task 1.4.4	Conduct biennial IHO stakeholders' forums (Digital Nautical Publications)
Task 2.1.2.5	
Task 2.5.2	Organize, prepare and report meetings of NIPWG
Task 2.8.1	Support the development and implementation of Maritime Services
Task 2.8.3	Maintain S-12, as appropriate - <i>Standardization of List of Lights and Fog Signals</i>
	Maintain S-49, as appropriate - <i>Standardization of Mariners' Routeing Guides</i>



The 6th meeting of the Nautical Information Provision Working Group (NIPWG) took place in Rostock, Germany, hosted by the Federal Maritime and Hydrographic Agency (BSH) from 28 January to 1 February. A stakeholders' forum on nautical digital publications with the theme *Presentation of Nautical Publication Information on future S-100 based ECDIS* took place at the Penta Hotel, Rostock, on 29 January.

Mr Thomas Dehling, National Hydrographer of Germany, welcomed the participants and gave an opening address stressing the importance of NIPWG activities for the evolution of navigational concepts and systems. The meeting was chaired by Mr Jens Schröder-Fürstenberg (Germany). Twenty-seven delegates from 15 Member States (Brazil, Canada, Denmark, Estonia, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Republic of Korea, Spain, United Kingdom and United States) and seven expert contributors (Anthropocene Institute, IEC, KRISO, National Taiwan Ocean Centre, Portolan Sciences, United Navigation, University of New Hampshire) attended the meeting. Nine other stakeholders (Bimco¹, CIRM², Furuno, ICS³, IHMA⁴, Intertanko⁵,

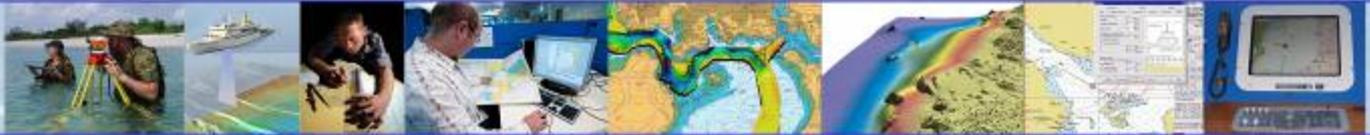
¹ Baltic and International Maritime Council.

² Comité International Radio-Maritime.

³ International Chamber of Shipping.

⁴ International Harbour Masters Association.

⁵ International Association of Independent Tanker Owners.

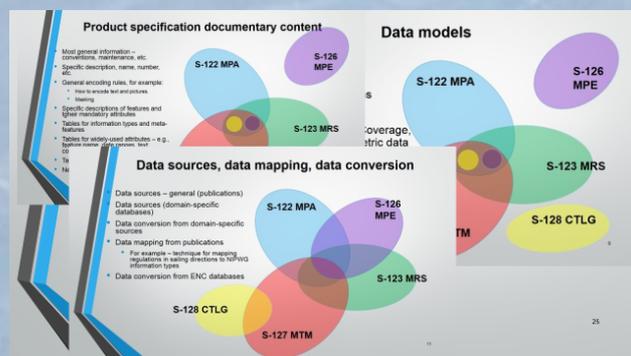


SevenCs, Chartworld, HS-Wismar⁶), participated in the forum, either being physically present or through video teleconference links. The IHO Secretariat was represented by Assistant Director Yves Guillam.

The NIPWG Chair opened the stakeholders' forum introducing the challenges, such as data quantity, data portrayal, data access, data governance and data interoperability, which the working group are facing before being able to move forward and test the initial provision of digital nautical information under the S-100 framework. In response, all the presentations delivered by the stakeholders provided a better understanding on how the provision of S-100 based products should be done and could enable the evolution of navigational concepts (front-of-bridge ECDIS folio versus electronic back-of-bridge folio, overlays, autonomous shipping, etc.). The need for the regulations to evolve in parallel was acknowledged as well as the obstacles faced by the industry if a consistent system "package" (standards, updated nautical products to be used in conjunction with S-101 updated ENC's and data governance and dissemination) was so far not proposed by the IHO.

The meeting reviewed the good progress made on the development of the S-12x product specifications that are under the remit of NIPWG. The support provided by the IHO Special Projects Fund was acknowledged, without which no progress could be done due to the complexity of these products. It was subsequently agreed that it would now be useful to initiate prototyping the implementation of existing S-12x products in a S-100 based environment in order to explore data flows, governance architecture and service delivery mechanism. This bottom-up approach would also be very beneficial to the development of the implementation strategy for the regular and harmonized production and dissemination of S-100 based products. An architectural display of S-100 based products was presented and will be refined for further discussions at HSSC.

While addressing the various complex issues relating to these product specifications whether they are in progress, under development or adopted, questions were raised on the similarities and differences between them and the subsequent need for some wise harmonization process for both the product specifications and data sets. An initial comparison was also made between S-121 and S-122 data sets and encoding concepts. A couple of options were also discussed to ensure alignment and synchronization, without duplication, between products and features contained in S-201 versus S-125 and S-101.



⁶ University of Applied Sciences, Technology, Business and Design.



The representative of Canada, also Chair of the S-124 Correspondence Group (Navigational Warnings), gave a status report of the development of the product specification, presented the tests carried out in Canada, both by the Hydrographic Service and the Coast Guard.

The participants were informed on the outcomes of the workshop on the development of the XML structure for Notices to Mariners (NtM) that took place in Genoa, Italy in September 2018. It was agreed that INT-1 symbols should be available in SVG format with a unique identifier and a text description in a symbol registry.

The 7th meeting of the NIPWG is scheduled to be held in Saint-Petersburg, Russian Federation, from 25 to 29 November 2019, and the 8th meeting, in September 2020 in France.



NIPWG-6 participants in Rostock, Germany