Hydrographic Services and Standards Committee

Report of the Tides, Water Level and Current Working Group

Gwenaële Jan[1], Ruth Farre [2] , Peter Stone[3] , David Wyatt[4]

(1) Chair, Shom, (2) SAN, (3) Vice Chair, elected at TWCWG3, NOAA (4) Secretary, International Hydrographic Bureau

TWCWG activities for HSSC-11

TWCWG objectives

- To monitor developments related to tidal, water level and current observation, analysis, prediction, vertical and horizontal datums;
- To develop and maintain the relevant IHO standards, specifications and publications for which it is responsible in liaison with the relevant IHO bodies and non-IHO entities;
- To develop standards for the delivery and presentation of navigationally relevant surface current/water level information;
- To provide technical advice and coordination on matters related to tides, water levels, currents and vertical datums.

4th meeting of the Tides, Water Level and Currents Working Group (TWCWG)
Busan, Republic of Korea – 8-10 April 2019

https://www.iho.int/srv1/index.php?option=com_content&view=article&id=630&Itemid=371&lang=en

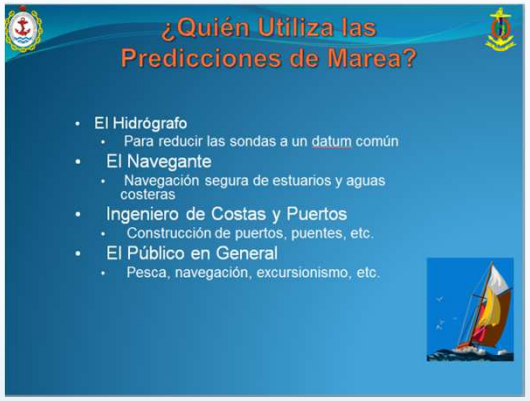
Principal activities and achievements

- **Capacity Building**

☑ Course with the basics for a first learning opportunity on hydrography and tides has been provided (Milestone Sept. 2017): Done.

☑ Modulation of the courses have been delivered in English and in French by P. Contact of the activity (Milestone S.A.N, 2017,-2018) : Done.

☑ Translation of presentations and course material into French, Portuguese and Spanish. Input for this task : The different levels of courses deliveries. (Milestone : 2018). All presentation modules of courses complete, additional materials in process of translation into Spanish. All modules and course materials are available in French (delivered in April, 2018), validation of all material in Portuguese to be completed (Aug 2019).



Ongoing actions :

(1) **Provide feedback** on the existing documents available on IHB web site (TWCWG)

(2) **Translation** in Spanish+ Portuguese to complete the action before submission to the review committee TWCWG and IHB (Milestone end 2019). Final validations to be completed.

Ongoing actions (3) **Through** their appropriate representatives, highlight to meetings the course availability and the intended target audiences

Principal activities and achievements

- **Products specification (PS) S-104 – Water Level Information for Surface Navigation**

☑ Milestone 2017 : Product specification draft writing draft version delivered in 2017, May.

- https://www.iho.int/mtg_docs/com_wg/IHOTC/S-100_PS/S-104_Tidal_Information_for_Surface_Navigation_Product_Specification_Documents/S-104_Tidal_Information_for_Surface_Navigation_Product_Specification_Documents.htm

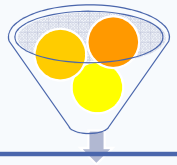
Milestone 2018: dataset for tests ; Prototype S-104 data sets for the end of this year. Action started 2018/02. Progression in the wake of S-111 aligned with the PSs, S-100WG.

Milestone 2019 - 2020 : S-104 PS final document, and Portrayal setup item.

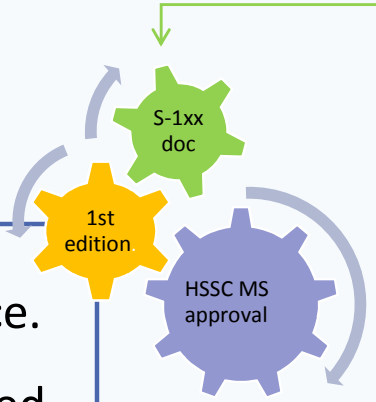
Objective, concern, in IHO framework : Compatibility. Consistency with the S-100WG guidance, and HSSC WGs outputs.

Principal activities and achievements

☑ **S-111** : Current product specification : S-111 PS edition 1.0.1 (2018-12)



- S-111: PS Documentation developed with the S-100WG guidance.
- The PS is in compliance with the HDF5 file formatting as proposed at S-100WG.



2019-2020
For HSSC12

S-104: PS Documentation developed with the S-100WG guidance.

Principal activities and achievements

- **Vertical Reference Frame**

  From TWCWG 2017 : Increase information on IHB TWCWG web page. 2nd term of 2017

  => Since April, 2018, TWCWG focuses discussion on vertical reference frame : Geoid, mean sea level, national projects highlights

- **Increase interactions with NSHC and intersessionnal activities**

☑ Participation at NSHC meeting 2017-10 : TWCWG members, 1 TWCWG member participated to IOC/GLOSS 2017-07, TWCWG, USA. Next NSHC : 2020

☑ GLOSS meeting : Engage with IOC Secretariat and GLOSS Programme lead to advance proposal for collocated meeting (GLOSS, TWCWG) => 2019-04 (Busan, Republic of Korea) : pair meetings and joint session IHO-TWCWG & IOC-GLOSS group of experts

Principal activities and achievements

- **Data archeology**

2019 task TWCWG : “Investigate what historical data is held and to consider preserving it as digital data for future use (All MS TWCWG)“ (TWCWG3 report, 2018).

Ongoing action + reinforced by the GLOSS group actions.

☑ **From HSSC10 : Possible GLOSS session** on data archeology with TWCWG participation.

☑ Done during the joint session GLOSS & TWCWG 2019-04

Note: There is a strong recommendation (from more and more Services, ex: EU) to pay attention to this activity. Interest for climate science, data rescue.

Principal activities and achievements

- Paper for consideration by HSSC11/IRC11 : Revision of IHO Resolution 2/2007
  - Executive summary: Final consolidated version of the IHO Resolution 2/2007 as amended, is submitted for endorsement
  - Related documents: IHO Publication M-3 / IHO CL 51/2018 – Outcome of the 2nd meeting of the IHO Council
  - Related projects: S-1xx based products and all IHO Standards

  The TWCWG formally presents resolution 2/2007 as amended to HSSC for approval and subsequent publication,

- Comparing tidal analysis methodologies using long term data sets: Increased activities in 2019 (TWCWG4). Next step defined during TWCWG4: Develop a work plan with milestones to add new test data sets and conduct standardized analysis. Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software.

- GLOSS and TWCWG activities: TWCWG4 and GLOSS pair meeting highlighted 3 strong common points of interest: The data (measurements data, quality control, data management), the capacity building and data archeology actions. This synergy can in the future promote and strengthen the knowledge communication and cooperation. We thank IHO and IOC support for making the joint meetings a reality.

  A significant discussion was heard on capacity building of IHO and how GLOSS group of experts could assist with those efforts. GLOSS highlighted their water level manuals which are located on their website as a potential contribution. Both groups agreed that greater partnering in capacity building would benefit both groups.

Problems or outstanding issues

Product specification : Current (S-111), water level (S-104)

- Generate more S-111 and S-104 dataset: 2019-04: More Members States are volunteering to contribute to this task + KHOA will continue testing of datasets against S-104 and S-111 PS as they are developed.
- S-104 product specification documentation: Principal contact for S-104 (AUS) agreed to finalize the next version of S-104 and circulate for comment.
- Lack of available shared tools to encode and view HDF5 files is being met thanks to:
  - 1) Members of S-100 WG provided useful information on S-100 viewer and catalogue.
  - 2) TWCWG tools development and data sets

- There is a need for S-100WG guidance and implementation strategy to provide information that will help TWCWG to influence/channel data sets test design: Show cases for surface current and water level; S-111 and S-104.

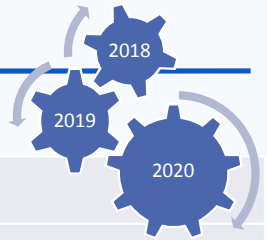
  - 2019 context: Data test sets is increasing and ready for uploading to the website (a S-100 based Product Specification).
  - 2019 next step: Test endbedment evaluation ; Portrayal work along. Need to receive from S-100WG guidance and implementation strategy

Action requested of HSSC

The HSSC is invited to:

- Note the TWCWG report,
- review the IHO 2/2007 resolution as amended and submitted for endorsement,
- reappoint the TWCWG to continue its work under its current Terms of Reference, (Annex C),
- endorse the draft Work Plan at Annex B of the report to HSSC-11.

Future work programme



Tasks	
A	Maintain the list of standard tidal constituents (IHO Task 2.8.4)
B	Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software
~~C~~	~~Develop, maintain and extend a Product Specification for digital tide and tidal current tables (IHO Task 2.3.4)~~
D	Develop, maintain and extend a Product Specification for dynamic surface currents in ECDIS (S-111) (IHO Task 2.3.4)
E	Develop, maintain and extend a Product specification for dynamic water level in ECDIS (S-104) (IHO Task 2.3.4)
F	Liaise with S-100WG on water level and current matters relevant to ECDIS applications (IHO Task 2.3.5)
G	Liaise with industry experts on the development of product specifications for water level and currents
H	Prepare and maintain an inventory of water level gauges and current meters used by Member States and publish it on the IHO/TWCWG web site (IHO Task 2.8.5)
I	Review and maintain the Actual Tides and Currents On-Line links as published on the IHO TWCWG website
J	Maintain and extend the relevant IHO standards, specifications and publications as required (IHO Tasks 2.8.4 and 2.1.8)
K	Conduct the at least annual meetings of TWCWG and its sub-group(s) and project team(s) (IHO Tasks 2.1.2.7)
L	Develop and maintain material for course on Tides, Water Levels and Currents

Thank you