

10th IHO-HSSC Meeting

Report of the Tides, Water Level and Currents Working Group

Submitted by:	Chairman, TWCWG
Related Documents:	Report of TWCWG3 meeting (available from IHO web site).
Related Projects:	None

Chair:	Gwenaële Jan, France
Vice-Chair:	Peter Stone (NOAA, USA)
Secretary:	David Wyatt, IHO
Member States:	Argentina, Australia, Brazil, Canada, Chile, China, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, India, Indonesia, Italy, Japan, Netherlands, Korea Rep of, New Zealand, Norway, Peru, Poland, Portugal, Russian Federation, Singapore, South Africa, Spain, Sweden, Ukraine, UK, Uruguay, USA, Venezuela.
Expert Contributor:	CCOM-UNH, SPAWAR Atlantic, C-Map
Organisations:	IOC-GLOSS
<i>see Annex A for full details</i>	

Meetings Held During Reporting Period

TWCWG3 16-20 April 2018, Viña del Mar, Chile

Next Meeting

TWCWG4 To be defined (2019,)

Work Program

The TWCWG held its 3rd meeting at the Marina Del Rey Hotel, Viña del Mar, Chile, from 16 to 20 April 2018 under the chairmanship of Dr Gwenaële Jan of France. The meeting was attended by 37 delegates from 17 IHO Member States (Australia, Canada, Chile, Finland, France, Germany, Italy, Japan, Netherlands, New Zealand, Norway, Perú, Republic of Korea, South Africa, UK and USA), Center for Coastal and Ocean Mapping/University of New Hampshire (CCOM/UNH) – USA and the IHO Secretariat.

Significant time was set aside to progress the S-100 based Product Specifications, for which the TWCWG is responsible. The draft Product Specification documents progressed. The results of using the test datasets for S-111 – Surface Currents were demonstrated. All participants were encouraged to create datasets compatible with S-104 - Water Level Information for Surface Navigation and S-111 for testing and evaluation. First data sets have been shared between TWCWG2 and TWCWG3 (current from Canada and current from France). First HDF5 following S-111 were produced. A webinar session organized under the initiative of France and Canada was organized (February 2018) to start the demonstration step. The next step will be to produce more S-111 data files from WG members (this is one topic of TWCWG3April 2018.).

At the recent TWCWG3, it was agreed that the S-111 PS is in compliance with the HDF5 file formatting as proposed at S-100WG3. It was considered that the PS is in a mature form. It is now in its 13th version, and has been presented to, and reviewed by, TWCWG several times.

From the 9th meeting of HSSC in November 2017, it was agreed to follow S-100WG guidance for Level Data Transfer standard instead of developing a specific S-112 product specification. The TWCWG3 felt it appropriate to formally present S-111 to HSSC for approval and subsequent publication.

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

The Tides, Water Level and Currents Capacity Building (CB) course was discussed and the contents reviewed. Methods for further development of these courses were agreed as well as identifying the need for closer liaison with the Regional CB Coordinators to assist in selecting appropriate candidates for future courses. It was agreed that there was a need for the course material to be translated into French, Spanish and Portuguese so as to increase its availability as a CB resource. First module of courses is translated in Spanish and in French. Translated documents have been provided to TWCWG for review (April 2018).

The draft Work Plan, attached at Annex B, was discussed and agreed.

Progress on HSSC Action Items

5.7 Tides, Water Level and Currents (TWCWG)

HSSC noted that development of S-112 - Dynamic Water Level Data Transfer – is no longer required as the functionality will be in S-104 – Water Levels - and agreed to reassign the S-112 identifier to another product specification as appropriate.

All actions have been addressed.

Problems Encountered

N/A

Any Other Items of Note

N/A

Conclusions and Recommended Actions

N/A

Justification and Impacts

N/A

Action Required of HSSC

The HSSC is invited to:

- a. Note this report,
- b. review the current version of S-111 and approve it for publication as Edition 1.0.0 in accordance with the requirements of IHO resolution 2/2007, as amended, with a view for formal adoption by IHO Member States on 1 January 2019,
- c. reappoint the TWCWG to continue its work under its current Terms of Reference, see Annex C,
- d. endorse the draft Work Plan at Annex B.

Tides, Water Level and Surface Currents Working Group (TWCWG) – Updated 30 January 2018

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TWCWG WORK PLAN 2019-20**Objective**

- a) To monitor developments related to tidal and water level observation, analysis and prediction and other related information including vertical and horizontal datums;
- b) 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;
- c) To develop standards for the delivery and presentation of navigationally relevant current information; and
- d) To provide technical advice and coordination on matters related to tides, water levels, currents and vertical datum.

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

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A.1	Maintain the list of standard tidal constituents	M		-	Permanent	O	Chris Jones*		Review current list of published tidal constituents
B.1	Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software.	M		-	Permanent	O	Hilde Sande Borck * All		Select Common data set Analyse using different software Predict common set of tides Compare results
C.1	Develop, maintain and extend the standard for digital tide and tidal current tables	H	Prepare final draft Standard	2009	2016 2017 2018 2019	O	Peter Stone* Chris Jones Zarina Jayaswal		
D.1	Develop and maintain a product specification for dynamic application of surface currents in ECDIS (S-111)	H		2013	2017 2018 2019	O	Kurt Hess*, CA		Establish joint project teams as required. Liaise with S-100WG (see F.1) Liaise with industry experts (see G.1)
E.1	Develop and maintain a product specification for dynamic application of water levels in ECDIS	H	Develop draft Product Specifications (S-104) for water level information for surface navigation in S-100.	2009	2017 2018 2019 2020	O	Zarina Jayaswal* Glen Rowe Jimin Ko		Establish joint project teams as required. Liaise with S-100WG (see F.1) Liaise with industry experts (see G.1)

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
F.1	Liaise with S-100WG on water level and current matters relevant to ECDIS applications	H		-	Permanent	O	Gwenaële Jan Kurt Hess Zarina Jayaswal		Establish joint project teams as required.
G.1	Liaise with industry experts on the development of product specifications for water levels and currents	H		-	Permanent	O	All		
H.1	Maintain an inventory of water level gauges and current meters used by Member States and publish it on the IHO/TWCWG web site.	H		-	Permanent	O	David Wyatt* All		Initial inventory from TWCWG members available on IHO web site.
I.1	Review and maintain the Actual Tides and Currents On-Line links as published on the IHO/TWCWG website	L		-	Permanent	O	David Wyatt* All		
J.1	Maintain and extend the relevant IHO standards, specifications and publications	M		-	Permanent	O	Gwenaële Jan	IHO Resolutions in M-3 S-60 User's Handbook on Datum Transformations involving WGS 84	See IHO CL10/2017 dated 1/02/2017

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
L.1	Develop and maintain material for CB course on Tides and Tide gauges	H	Complete translate of course material into Spanish and Portuguese by 2018 in liaison with Regional CB Coordinator requirements	-	Permanent	O	Ruth Farre* Peter Stone Zarina Jayaswal Gwenaële Jan Cesar Borba José Ramón Torres García		Adapt currently available course material to create a course suitable for delivery in support of CBSC requests

Meetings (Task K)

Date	Location	Activity
25-28 Mar 2014	Wollongong, Australia	TWLWG-6
3-5 Jun 2014	Québec City, Canada	SCWG-2
21-24 April 2015	Silver Spring, Maryland, USA	TWLWG-7
13-15 May 2015	Tokyo, Japan	SCWG-3
25-29 April 2016	Niterói, Brazil	TWCWG-1
8-12 May 2017	Victoria, Canada	TWCWG-2
16-20 April 2018	Viña del Mar, Chile	TWCWG-3
8-12 April	Busan, Republic of Korea	TWCWG-4

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Tides, Water Level and Currents Working Group (TWCWG)

Terms of Reference and Rules of Procedure

References: *6th HSSC Meeting (Viña del Mar, Chile, November 2014)*
7th HSSC Meeting (Busan, Republic of Korea, November 2015)

1. Objective

- e) To provide technical advice and coordination on matters related to tides, water levels, currents, relevant oceanographic data and vertical datum, including integrated water level/current data models.
- f) To support the development and maintenance of related specifications in liaison with the relevant IHO bodies and non-IHO entities;
- g) To develop and maintain the IHO publications for which the WG is responsible.

2. Authority

This WG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC approval.

3. Composition and Chairmanship

- a) The WG shall comprise representatives of IHO Member States (MS), Expert Contributors (EC), observers from accredited NGIO, and a representative of the IHO Secretariat. A membership list shall be maintained and posted on the IHO website.
- b) EC membership is open to entities and organizations that can provide a relevant and constructive contribution to the work of the WG.
- c) The Chair and Vice-Chair shall be a representative of a MS. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Assembly and shall be determined by vote of the MS present and voting.
- d) If a secretary is required it should normally be drawn from a member of the WG.
- e) If the Chair is unable to carry out the duties of the office, the Vice-Chair shall act as the Chair with the same powers and duties.
- f) ECs shall seek approval of membership from the Chair.
- g) EC membership may be withdrawn in the event that a majority of the MS represented in the WG agrees that an EC's continued participation is irrelevant or unconstructive to the work of the WG.
- h) All members shall inform the Chair in advance of their intention to attend meetings of the WG.
- i) In the event that a large number of EC members seek to attend a meeting, the Chair may restrict attendance by inviting ECs to act through one or more collective representatives.

4. Procedures

- a) The WG should:
 - (i) monitor and develop the use of tidal, water level, current information and relevant oceanographic data including integrated water level/current data models;
 - (ii) advise on the use of vertical datums;
 - (iii) advise on tidal, water level and current observation, analysis and prediction;
 - (iv) advise on matters concerning exchange, distribution and use of tidal, water level, current

- information and relevant oceanographic data related data/information;
- (v) study principles and contribute to the development of improved methods for conveying tidal, water level, current information and relevant oceanographic data to mariners and other users;
 - (vi) keep under review the relevant IHO publications and resolutions in order to advise HSSC on their updating;
 - (vii) draft or revise guidance document(s), resolutions and specifications as appropriate and as instructed by HSSC; and
 - (viii) consider new related topics as instructed by HSSC and advise HSSC accordingly.
- b) The WG should work by correspondence, teleconferences, group meetings, workshops or symposia. The WG should meet about once a year. When meetings are scheduled, and in order to allow any WG submissions and reports to be submitted to HSSC on time, WG meetings should not normally occur later than nine weeks before a meeting of the HSSC.
 - c) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only MS may cast a vote. Votes at meetings shall be on the basis of one vote per MS represented at the meeting. Votes by correspondence shall be on the basis of one vote per MS represented in the WG.
 - d) The date and venue of group meetings shall normally be announced by the Chair at least six months in advance.
 - e) The draft record of meetings shall be distributed by the Chair (or the secretary) within six weeks of the end of meetings and participants' comments should be returned within three weeks of the date of despatch. Final minutes of meetings should be posted on the IHO website within three months after a meeting.
 - f) Sub-working groups and project teams may be created by the WG or proposed to HSSC to undertake detailed work on specific topics. The terms of reference and rules of procedure of the sub-working groups and project teams are determined or proposed by the WG as appropriate.
 - g) The WG should liaise with other IHO bodies, international organizations and industry to ensure the relevance of its work.
 - h) The WG should prepare annually a report on its activities and a rolling two-year work plan, including expected time frame.