

9th IHO-HSSC Meeting

Report of the Tides, Water Level and Currents Working Group

Submitted by:	Chairman, TWCWG
Related Documents:	Report of TWCWG2 meeting (available from IHO web site).
Related Projects:	None

Chair:	Gwenaële Jan, France
Vice-Chair:	Louis Maltais, Canada
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

TWCWG2 25-29 May 2017, Victoria, BC, Canada

Next Meeting

TWCWG3 16-20 April 2018, Valparaíso, Chile

Work Program

The TWCWG held its 2nd meeting at the Chateau Victoria Hotel and Suites in Victoria, British Columbia, Canada, from 8 to 12 May 2017 under the chairmanship of Ms Gwenaële Jan of France. The meeting was attended by 27 delegates from 13 IHO Member States (Australia, Brazil, Canada, Finland, France, Germany, Japan, Netherlands, Norway, Peru, Republic of Korea, South Africa and USA), the Space and Naval Warfare Systems Command (SPAWAR) Atlantic – USA and the IHO Secretariat.

Significant time was set aside to progress the S-100 based Product Specifications, for which the TWCWG is responsible. One and a half days of breakout sessions enabled participants to focus on the draft Product Specification documents, and make significant progress on further developing the draft specifications. The results of using the test datasets for S-111 – Surface Currents were demonstrated. All participants were encouraged to create datasets compatible with S-104 - Water Level Information for Surface Navigation and S-111 for testing and evaluation. It was agreed to seek, through the HSSC, guidance from the S-100WG on the need for S-112 - Dynamic Water Level Data Transfer, rather than a generic S-100 Data Transfer standard. This proposal is submitted for consideration by the 9th meeting of HSSC in November.

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.

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

Progress on HSSC Action Items

HSSC8-5.8:

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. consider development of a generic S-100 Data Transfer standard rather than continue development of S-112 (Dynamic Water Level Data Transfer)
- 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 22 June 2016

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Annex A to TWCWG Report to HSSC9

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TWCWG WORK PLAN 2018-19**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 2.7.2.3)
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 <u>and tidal current tables</u> (IHO Task 2.7.3)
D	Develop, maintain and extend a Product Specification for the transmission of real-time tidal data (IHO Task 2.7.4)
E	Develop, maintain and extend a Product Specification for the transmission of real-time surface current data (S-111 – IHO Task 2.13.3)
F	Develop, maintain and extend a Product Specification for dynamic surface currents in ECDIS (S-111) (IHO Task 2.13.4)
G	Develop, maintain and extend a Product specification for dynamic tides <u>water level</u> in ECDIS (S-104) (IHO Task 2.7.5)
H	Liaise with S-100WG on tidal <u>water level</u> and current matters relevant to ECDIS applications
I	Liaise with industry experts on the development of product specifications for tides <u>water level</u> and currents
J	Prepare and maintain an inventory of tide <u>water level</u> gauges and current meters used by Member States and publish it on the IHO/TWCWG web site (IHO Task 2.7.2.4)
K	Review feedback <u>and maintain the Actual Tides and Currents On-Line links as published on the IHO TWCWG website</u> of on-line real-time water level observation document
L	Maintain and extend the relevant IHO standards, specifications and publications as required (IHO Tasks 2.7.2 and 2.13.2)
M	Conduct the 2016 and 2017 <u>at least annual</u> meetings of TWCWG and its sub-group(s) and project team(s) (IHO Tasks 2.7.1 and 2.13.1)
N	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	Hilda Hilde Sande Borck* All		Select Common data set Analyze 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 <u>final</u> draft Standard	2009	2016 2017 2018	O	Peter Stone* Chris Jones Zarina Jayaswal		
D.1	Develop and maintain a standard for the transmission of real time tidal data (S-112)	H		2009	2017 2018 2019	O	Chris Jones* All		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.1)
E.1	Develop and maintain a product specification for the transmission of real time surface current data (S-111)	H		2013	2017 2018	O	Kurt Hess* Louis Maltais		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.1)
F.1	Develop and maintain a product specification for dynamic application of navigationally significant surface currents in ECDIS (S-111)	H		2013	2017 2018	O	Louis Maltais* Kurt Hess		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.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
G.1	Develop and maintain a product specification for dynamic application of tides <u>water levels</u> in ECDIS	H	Prepare-Develop draft Product Specifications (S- 1xx104) for tidal-water level <u>information for surface navigation</u> data in S-100. Prepare draft Portrayal model for tidal data in S-100.	2009	2017 2018 2019	O	Zarina Jayaswal* Glen Rowe Jimin Ko Peter Stone* Zarina Jayaswal		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.1)
H.1	Liaise with S-100WG on tidal-water level and current matters relevant to ECDIS applications	H		-	Permanent	O	Gwenaële Jan Kurt Hess		Establish joint project teams as required.
I.1	Liaise with industry experts on the development of product specifications for tides <u>water levels</u> and currents	H		-	Permanent	O	All		

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
J.1	Maintain an inventory of tide-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.
K.1	<u>Review and maintain the Actual Tides and Currents On-Line links as published on the IHO TWCWG website</u> Review feedback of on line real time water level observation document	L		-	Permanent	O	Zarina Jayaswal David Wyatt* All		
L.1	Maintain and extend the relevant IHO standards, specifications and publications	M M	Review wording of IHO Resolution 3/1919, as amended, in light of revised definitions for MSL and LAT	2014	2015 2016 2017	O C	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
N.1	Develop and maintain material for <u>CB course on Tides and Tide gauges</u>	H	Delivery in 2015 <u>Complete translate of course material into French, Spanish and Portuguese by 2018 in liaison with Regional CB Coordinator requirements</u>	-	Permanent	O	Ruth Farre* <u>Louis Maltais</u> Peter Stone Zarina Jayaswal <u>Gwenaële Jan</u> <u>Cesar Borba</u>		Adapt currently available course material to create a course suitable for delivery in support of CBSC requests

Meetings (Task M)

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	Valparaíso, Chile	TWCWG-3

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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

- a) 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.
- b) To support the development and maintenance of related specifications in liaison with the relevant IHO bodies and non-IHO entities;
- c) 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 NGO, 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.