

9th Tides Water Levels and Currents Working Group Hybrid – IHO Secretariat, Monaco 19-22 September 2024

Contribution to the IHO Work Programme 2024

Task 2.1.2.7 Attendance of TWCWG9

High level summary:

- The TWCWG 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. In addition, the TWCWG is responsible for developing the S104 and S-111 Product Specifications.
- TWCWG9 primarily focused on progress relating to the development of Ed. 2.0.0 of S-104 and S-111.
- TWCWG9 also discussed harmonisation across IHO Technical Standards, Updates from Member States, relevant Capacity Building activities and the IAPSO led initiative to develop a best practice guide.

Details:

Meeting was Chaired by Mr Christopher Jones (UK), supported by Vice-Chair Ms Ruth Farre (RSA). The IHO was represented by Assistant Director Mr Sam Harper. The meeting was attended by representatives from Argentina, Australia, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Indonesia, Italy, Japan, Netherlands, New Zealand, Norway, Peru, Republic of Korea, Romania, South Africa, Spain, Sweden, UK and USA. Expert contributors from PRIMAR, Portolan Services, SevenCs, WR Systems, NOC and All4Land were in attendance.

The 9th meeting of the International Hydrographic Organization's (IHO) Tides, Water Levels, and Currents Working Group (TWCWG) was held from November 19 to 22, 2024, at the IHO headquarters in Monaco. The Meeting was Chaired by Mr Christopher Jones (GBR), supported by Vice-Chair Ms Ruth Farre (RSA). The IHO was represented by Secretary General Mathias Jonas, Director John Nyberg and Assistant Director Sam Harper. This hybrid event marked the first in-person meeting in several years, combining physical attendance with virtual participation to accommodate members across various time zones. The Chair welcomed 57 member states, along with representatives from industry and other organizations, emphasizing the significance of the group's collective work and the challenges of implementing new product specifications within the framework of the S-100 Implementation Decade (2020–2030). He acknowledged the dedication of participants, particularly those joining virtually from different time zones, and reiterated the importance of continuing with in-person meetings to foster collaboration and progress.

The Chair underscored the priority of addressing S-104 (Water Level Information for Surface Navigation) and S-111 (Surface Currents) product specifications, as these are key components of the broader S-100 framework. Both specifications, which are in their 2.0.0 editions, are critical for Phase 1 route monitoring mode and are aligned with the timelines set by the International Maritime Organization (IMO) and the IHO for modernizing electronic navigation charts (ENCs). During the opening remarks,

IHO Secretary General Mathias Jonas and Director John Nyberg highlighted the importance of the TWCWG's work in advancing maritime safety, climate resilience, and the integration of tide and current data into ENC's. They praised the group's efforts in addressing challenges such as sea-level rise and its implications for navigation and coastal management.

A key focus of the meeting was the intersession activities that had taken place since TWCWG8. These activities centred on advancing S-104 and S-111, with both now nearing completion and awaiting member state endorsement. The Chair reported on the collaborative work undertaken by project teams and sub-working groups, as well as the harmonization of these efforts within the broader S-100 framework. He also noted the importance of ongoing dialogue with the International Association for the Physical Sciences of the Oceans (IAPSO) and its Best Practice Study Group on harmonic analysis. Additionally, updates were provided on amendments to the TWCWG's terms of reference (TORs) to reflect evolving requirements, including a focus on gender neutrality.

Member State Updates

A number of member states provided updates on their activities relevant to TWCWG. Japan discussed the impact of the 2024 Noto Peninsula earthquake on their chart datum models, emphasizing the need for Ellipsoidally Referenced Surveys (ERS) to address land uplift issues. Chile highlighted progress in producing tidal and current data and their collaboration with Argentina to develop ENC's for the Beagle Channel. Sweden shared advancements in the Baltic Sea Chart Datum 2000 project, which integrates a stable geoid model to address challenges posed by sea-level rise and land uplift. Brazil outlined its extensive tide gauge network, challenges posed by seasonal variations in riverine environments, and advancements in hydrodynamic modelling to support navigation. Norway provided insights into its efforts to expand tide gauge networks and address user demands for data related to storm surges, climate change, and port operations.

S-104 and S-111 Updates

An overview of the latest updates to S-104 was provided by the Project Team lead which included adding attributes for uncertainty, adopting a fileless cancellation method for datasets and enhancing interoperability with S-98 standards. These changes were aimed at addressing user feedback and ensuring compatibility with related products such as S-102 (Bathymetric Surface). However, member state surveys revealed that only 50% of respondents were confident in their ability to produce and implement S-104 products, highlighting a need for further guidance and training.

Similarly, an overview of the latest S-111 updates was provided which included new attributes for uncertainty in speed and direction and improvements in metadata and grid spacing. While these updates were welcomed, member states survey responses indicated that only one-third of participants felt ready to produce S-111 products. The importance of conducting these light impact studies to assess the readiness of member states and stakeholders to adopt these specifications was noted by the group and stimulated much discussion on potential strategies to improve comprehension and support for implementation.

Harmonization with Technical Standards

The meeting also included discussions on harmonization with technical standards. Collaboration with the S-100 Working Group was emphasized to ensure consistency in validation checks, metadata practices, and product specifications. The need to accommodate multiple vertical datums within S-102 and S-111 products was identified as a critical challenge, requiring advanced validation processes and technical solutions. The group explored potential solutions, including the use of polygon-based vertical datum regions and the development of cross-product validation tests to address overlaps.

Capacity Building

Capacity building was another key theme of the meeting. Member states were encouraged to share their methodologies and experiences in generating S-104 products, with a focus on compiling best practices and creating resources for wider dissemination. The establishment of a GitHub repository for TWCWG documents and tools was highlighted as an important step toward fostering collaboration and knowledge sharing. However, it was noted that only a small percentage of participants were proficient in using GitHub, prompting a recommendation to provide training at future meetings.

Updates from Other relevant Bodies

Collaboration with external organizations, such as the IOC's Global Sea Level Observing System (GLOSS), was discussed in detail. GLOSS provided updates on its efforts to streamline tide gauge networks and address challenges related to data attribution and coordination. The group explored opportunities for joint projects, including the development of unified data portals and the integration of tide and current data into climate resilience initiatives. Similarly, feedback from the IOC's Tsunami and Other Hazards Warning and Mitigation Systems (TOWS) program highlighted the need for enhanced resolution in sea-level monitoring to improve tsunami detection and warnings.

The meeting concluded with a review of challenges and recommendations. Issues such as vertical datum complexities, cross-border data integration, and user feedback on ENCs were highlighted as areas requiring further attention. The group also explored the potential for developing an additional specification, tentatively referred to as S-105, to address gaps left by the streamlined S-104 and S-111 specifications. While this idea received support, it was agreed that further discussions and a detailed proposal would be needed before proceeding.



Upcoming meetings:

TWCWG10 Will be held in late September 2025, location tbc.