

Report of the Tidal Working Group (DRAFT)



BUNDESAMT FÜR
SEESCHIFFFAHRT
UND
HYDROGRAPHIE

Chair: Andreas Boesch

NSHC39

17-18 March 2026

Aberdeen

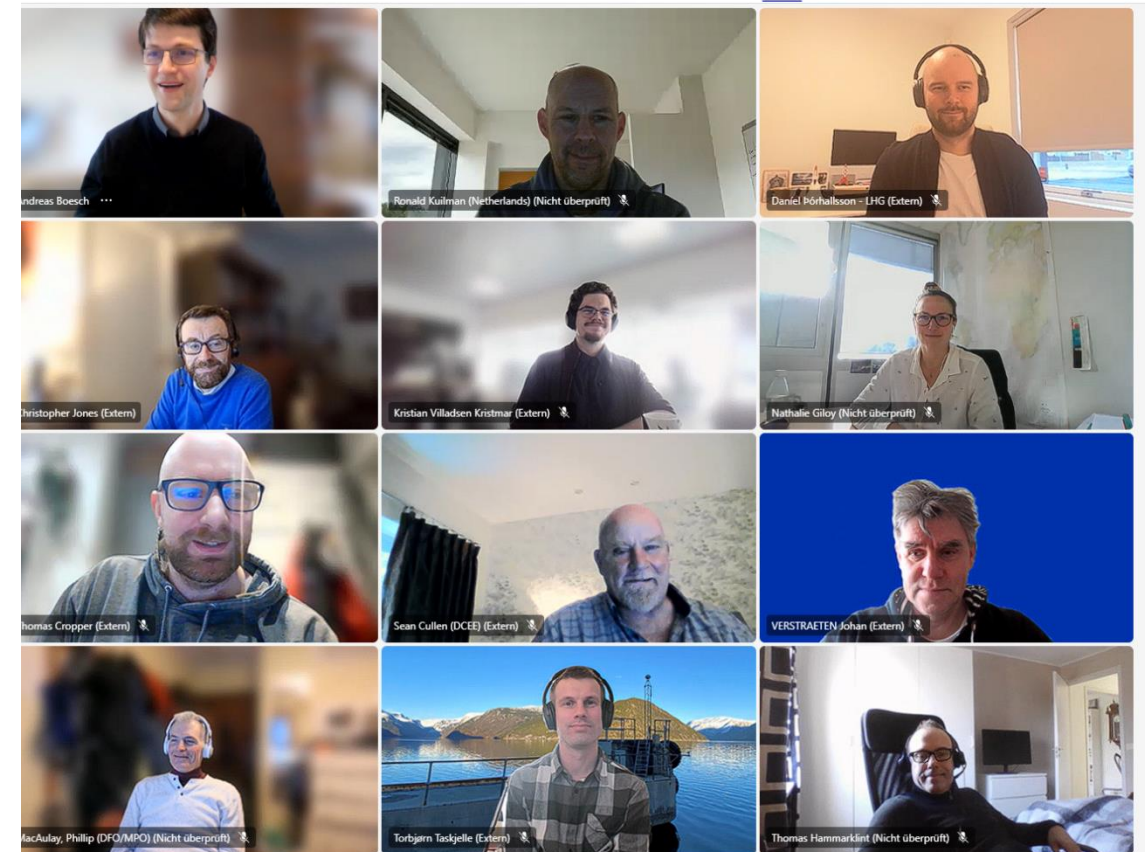


Photo: Tidal Working Group 28th meeting, 3 February 2026, VTC

Status of Working Group

“To provide technical advice and promote co-ordination on tidal issues especially within the North Sea Hydrographic Commission (NSHC)”

- Communication within the TWG mainly by e-mail correspondence
- One VTC meeting (TWG28; see next slide)
- Websites:
 - [Public Website](#)
 - [IHO Portal](#)
 - [Online work space](#) (password-protected)

List of members

All NSHC member states have nominated delegates to the working group:

Country	Name
Belgium	Johan Verstraeten
Denmark	Nicki Riber Andreasen Kristian Villadsen Kristmar
France	Gaël Andre
Germany	Andreas Boesch (Chair)
Iceland	Since TWG28: Daníel Þórhallsson
Ireland	Sean Cullen
Netherlands	Ronald Kuilman
Norway	Since TWG28: Torbjørn Taskjelle
Sweden	Thomas Hammarklint
United Kingdom	Chris Jones

The TWG27 meeting

- VTC meeting
- 3 February 2026
- 13 participants (including 3 expert contributors)

The agenda included presentations and discussions related to the group's work packages (WP):

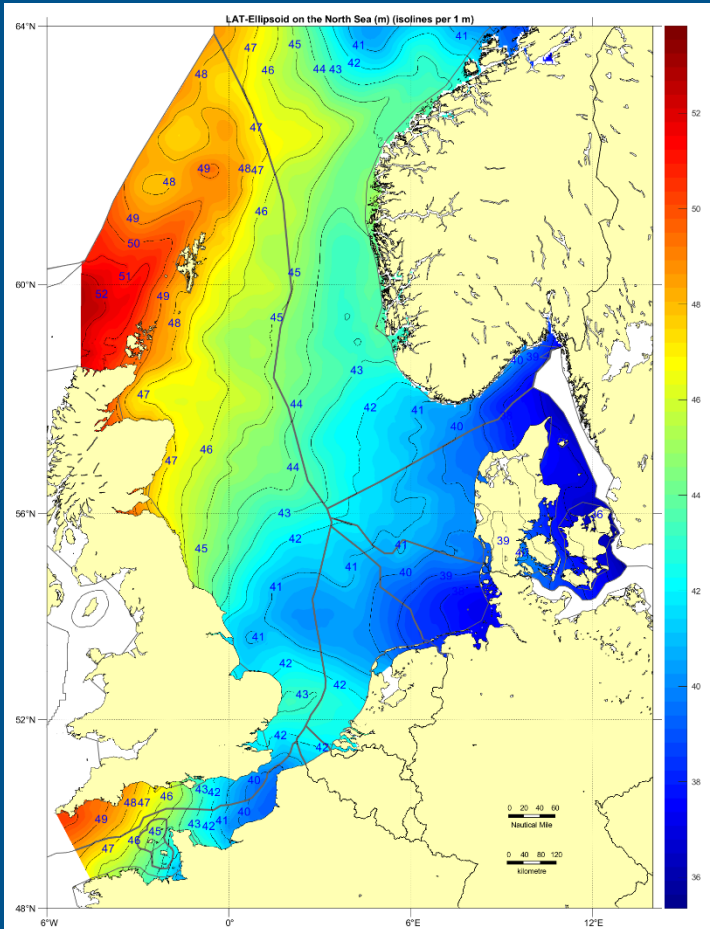
- LAT/CD/Reference Systems (WP 16/04, WP 18/01, WP 18/02, WP 22/01)
- Implementation of S-104/S-111 (WP 24/01)
- Data Rescue and Data Archaeology (WP 24/02)

as well as further topics contributed by the participants.

- ✓ The minutes and presentations are available on the [TWG Website](#)

Harmonisation of LAT / CD surfaces

National LAT/CD surfaces relative to ellipsoid (2025)



- Full coverage of the North Sea with LAT/CD surfaces
- One update since TWG27 (2025): Germany
- Baltic Sea Chart Datum (BSCD) to be included in future comparisons of CD surfaces:
 - Gain better understanding of differences between BSCD and LAT-based CD in the transition region of North Sea and Baltic Sea
- Differences along maritime boundaries meet the specified limit of 50% max. TVU:

Status: LAT/CD differences along maritime boundaries

	BE	DK	FR	DE	NL	NO	UK
BE							
DK							
FR							
DE							
NL							
NO							
UK							

Legend:

- no common boundary
- Differences everywhere below 50% of max. TVU (S-44 Order 1a)
- Differences everywhere below max. TVU (S-44 Order 1a)
- Differences (partly) larger than max. TVU (S-44 Order 1a)

01/2026

just very few segments above 50% max. TVU

S-104 / S-111 implementation

A questionnaire was conducted in 2025 to collect standardized information from the Member States on the implementation status. ([Full results](#))

Main results:

- Some countries are already producing test datasets. Others are in a stage between initial preparations and development.
- RENCs (IC-ENC or PRIMAR) will be used for data distribution.

S-104 specific:

- Most countries plan to produce water level forecasts using hydrodynamic models. Some countries use a hybrid method, e.g. a combination of hydrodynamic models with observations or statistical tools. (See Table 1 on next slide)
- Most countries look into the possibility of providing tidal (astronomical) predictions in the S-104 format.
- Horizontal reference system: Mostly WGS84 (EPSG: 4326), Also: EPSG 4258 and 32631.
- The vertical reference system of S-104 matches the one of S-102 for all countries.
- Temporal resolutions: Mostly 15 minutes, in some cases other resolutions between 10 and 60 minutes.

S-111 specific:

- Almost all countries plan to produce surface current data using hydrodynamic models. (See Table 2 on next slide)
- Some countries look into the possibility of providing real-time observations or tidal (astronomical) predictions.
- The chosen depth or layer thickness of the currents varies between the countries or has not yet been determined
- Temporal resolutions: between 10 and 60 minutes.
- No country has concrete plan to provide information on uncertainties.

Several Member States have reported on their progress of S-104 and S-111 implementation at the TWG28 meeting.

Which type of water level data do you plan to produce?

(see Section 7.1 of product specification)

	NL	SE	DE	UK	NO	DK	FR	BE
Real-time observation	In the far future	No	No	No	No	Undecided	around tide gauge sites	Maybe
Astronomical prediction	Maybe	No	Maybe	Maybe	Yes (12/2025)	Undecided	Yes (Mid 2026)	Yes (Q4 2026)
Analysis method (statistical or other indirect methods)	Maybe	No	No	No	No	Undecided	No	No
Hybrid method (combination of methods)	Maybe	No	Yes (2026)	Yes (unknown)	Yes (12/2025)	Undecided	No	No
Forecast (Hydrodynamic models)	Yes (2026)	Yes (01/2028)	See hybrid method	Yes (unknown)	See hybrid method	Undecided	Yes (2027)	Maybe

Table 1: Planned types of S-104 data by country (with time frame if provided)

Which type of surface current data do you plan to produce?

(see Section 7.1 of product specification)

	NL	SE	DE	UK	NO	DK	FR	BE
Historical observation	No	No	No	No	No	Undecided	No	No
Real-time observation	Maybe	No	No	No	No	Undecided	No	Maybe
Astronomical prediction	Maybe	No	No	Yes	No	Undecided	Yes (Mid 2026)	No
Analysis method (statistical or other indirect methods)	No	No	No	No	No	Undecided	No	No
Hybrid method (combination of methods)	No	No	No	No	No	Undecided	No	Yes
Forecast (Hydrodynamic models)	Yes (2026)	Yes (2029)	Yes (2026)	Yes	Yes (12/2025)	Undecided	Yes (2028)	No

Table 2: Planned types of S-111 data by country (with time frame if provided)



Open actions from NSHC related to the TWG

One action item from NSHC assigned to the TWG:

No/year agenda item	Subject	Decision / Action	Responsible	Time frame	Status
Action 4/2024 C.3	TWG	The Commission tasked the TWG to report to NSICCWG on the progress of S-104 and S-111 implementation coordination. Reference: Decision 6/2023 C.2	TWG Chair	Continuous	

Answer:

The report on the implementation status of S-104/S-111 has been sent to the NSICCWG chair on ??? and is available on the TWG webpage.

Proposed amendments to

- the Terms of Reference
- the Work Plan
- the List of Actions

Terms of Reference:

- No changes

Work Plan:

- No changes

List of Actions:

- Remove 5 items that were marked “closed/done” at TWG27
- Change status of AP 27/02 to “done”
- 3 new action items:

Item Number (TWG/Item)	Objective (Why/Priority)	Task Description (What/How)	HO Involved	Status	Corresponding Work Plan Item
AP 28/01	Investigate CD differences at the border between North Sea and the Baltic Sea	Include BSCD in the comparison of CD surfaces	SE, NL	TWG29	WP 18/01
AP 28/02	Coordinate implementation of S-104/S-111	Create a draft of harmonisation guidelines for S-104 and S-111	SE, All	TWG29	WP 24/01
AP 28/03	Coordinate implementation of S-104/S-111	Conduct new questionnaire on implementation status of S-104/S-111	Chair	TWG29	WP 24/01

Actions for the NSHC 39th Conference

The NSHC is invited to:

1. note the report
2. endorse the answer given from the TWG on the NSHC37 Action
3. endorse the amendments to the List of Actions
4. give further guidance to TWG, as seen appropriate