



Questionnaire to BSHC Member States on their implementation status of the transition to a Harmonised Vertical Reference, Baltic Sea Chart Datum 2000 (BSCD2000).

Please return to Thomas Hammarklint by email (thomas.hammarklint@sjofartsverket.se) at the latest by **17 March 2023**.

Member state	Germany
Date of reply	12.08.2021
Point of Contact	BSH, Dr. Patrick Westfeld, patrick.westfeld@bsh.de

1. Are all the decisions done to implement the Baltic Sea Chart Datum 2000?

1.1. When the decisions has been done or planned to be done?

All decisions have been made.

1.2. What are the national decisive organizations?

German Federal Maritime and Hydrographic Agency (BSH).

2. What is the national status of implementation of chart datum?

2.1. What actions have already been done?

In August 2021, BSCD2000 (realized by ETRS89/DHHN2016) was officially introduced as chart datum for German waters in the Baltic Sea. The announcement was made in [Notices to Mariners](#) (NfS, 1/2022). The label BSCD2000^{DHHN2016} was first used for chart '36 (INT 1352) – Travemünde to Gedser Odde', published in early 2022.

2.2. What actions have been planned to be executed and what is the schedule?

None.

2.3 Which ENC Approach have been updated with the new reference datum? If possible, attach a chart datum overview covering Your countries nautical charts, designed graphically or as a table, updated around January, 2021. Also, if possible, include an attribute to each named chart describing the CD difference to BSCD2000 in cm (CD minus BSCD2000). Example attached at the end of the Questionnaire (Annex).

There is no need to update an ENC approach because the CD realization has not change.

2.4 If you implemented the attribute VERDAT in S-57 (ENC), are You using VERDAT=3 (Mean Sea Level)?

Yes.



3. Has Your country established the national realization of EVRS and are the water level stations connected to this new height system (BSCD2000)?

3.1 Which organization/-s is responsible for the water level stations/data in Your country?

Federal Waterways and Shipping Administration (WSV).

3.2 Which reference are used today to present water level information? Does Your country planning to present water level information referring to BSCD2000? Doing it already today? Date decided for change the reference to BSCD2000?

Water level information are provided with respect to DHHN2016 (gauge zero point), and thus with respect to BSCD2000.

3.3 Are there any plans for digital service/-s intended for the users to have the option to choose MSL or BSCD2000 as the reference level for water level information?

Not at the moment.

3.4 GNSS supported UKC control/confirmation is probably the reality in a few years. We also need reliable water level predictions for carrying out optimal loading and real time water level data to check the GNSS data. Do we need a shared service in the Baltic Sea for water level information (predictions/real-time), which fulfils nautical needs and demands?

Yes.

3.5 Do we need to work together with the development of the IHO S-104 standard?

Yes, if there is consensus on 3.4.

4. Are the relevant national contacts and interest groups defined for the change of chart datum and water level reference?

4.1. What are the essential national interest groups in Your country?

From user side, all operators using (hydrographic) survey data. From administrative side, primarily the German Federal Maritime and Hydrographic Agency (BSH), and partly the German Waterway and Shipping Administration (GDWS) and the German Federal Institute of Hydrology (BfG).

4.2. Are the relevant point of contacts known and contacts been made to them?

Yes.



4.3 Are You planning any information campaign about the change of chart datum and water level reference? If, yes have you published information about this somewhere?

No because CD realization did not change.

5. Have You identified any obstacles or major issues concerning transition to the harmonized vertical reference?

No.

6. Connections to neighbouring countries

6.1. Which are the relevant countries to cooperate?

Denmark, Sweden, Poland.

6.2. Are the needed points of contacts already known?

Yes.

6.3. What actions have been agreed with the relevant countries (e.g. synchronising plans and schedules)?

Synchronised measurement campaigns and R&D knowledge exchange.

7. Are there any needs for support from BSHC?

No.

8. Do you have any other proposals or guidance to the CDWG to help and foster the transition process?

The activities to prepare the first version of the BSCD2000 chart datum grid are in the final stage. Gravimetric FAMOS geoid solutions have been computed by four institutions. Together with the other members of the former FAMOS group, JS is now working on the construction of the grid seamlessly tailored to the national reference frames and geoid models on land. It is planned to submit a proposal with short explanations about the grid to the CDWG in due time. In order to start the implementation process (including final documentation, public release and outreach, scientific publication), a decision to approve the BSCD2000 grid is necessary.

9. Are you using GNSS and GNSS augmentation services for referring to your (bathymetric) surveys to the chart datum?

9.1 What GNSS augmentation service is used for hydrographic surveys? (If there are several augmentation services, list all of them.)

SAPOS satellite positioning service of the German land survey authorities and commercial PPP services.



9.2 To which coordinate system, and vertical reference level/frame the GNSS augmentation service is referred to? (If there are several systems in use, list all of them.)

ETRS89/DREF91/2016 and DHHN2016.

9.3 Does your HO require, in-house or procured, that Hydrographic survey system shall be prepared to be able to measuring the GNSS-height and refer the depth to the geoid?

At BSH, depths measured refer to the geoid. Depending on the application/product, physical heights are transformed later in the course of the data processing chain to water level dependent values (e.g. LAT transformation for North Sea chart production).

9.4 Do you discuss within your HO the need of an altimetric measured Mean Sea Surface (MSS)? (For example, in order to support hydrodynamic models, shipping and / or adjust existing depth data)?

Yes, partly.

9.5 Has your HO assessed the need for dynamic geodetic reference systems (time-dependent transformation relationship) between primarily national and global reference frames?

No.