

## BSHC24\_C2\_SE\_CDWG Presentation



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BSHC24, 11 September 2019, Gdansk

# Objectives

1. Answers to BSHC23 Action #20-22
2. Status of CDWG work: Meeting 2019 / Summary of implementation
3. Member list of CDWG
4. Proposed CDWG TORs 2019-2020
5. Proposed CDWG Work Programme 2019-2020
6. How member states benefits best of CDWG
7. Actions requested from the BSHC24 Conference

# 1. Answers to BSHC23 Actions #20-22

Actions stated in Action list of the BSHC23 Conference:

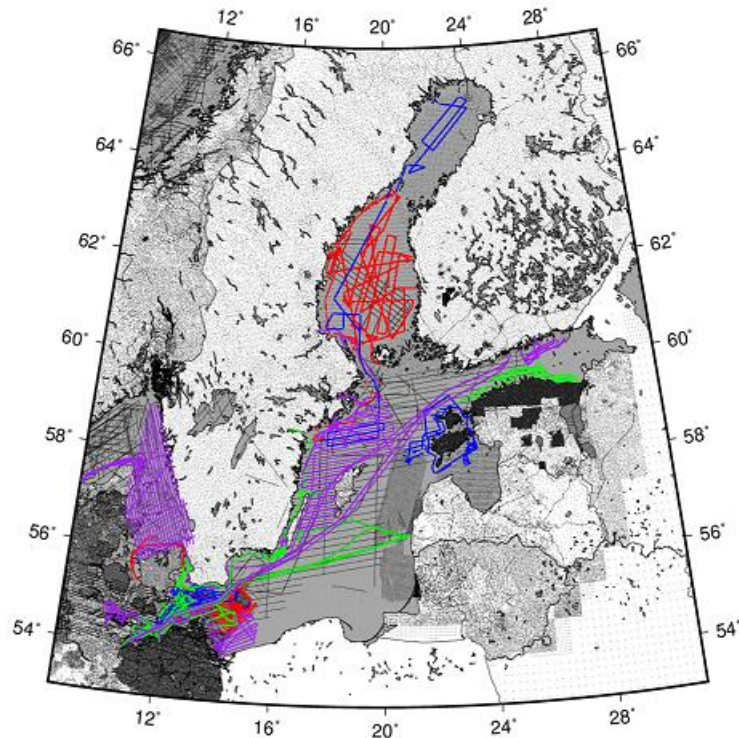
#20: To invite MS to consider gravity measurements and geoid computation

Answer to BSHC24: Include this sentence in the WorkProgramme 2019-2020

#21: Add task to WP to provide an overview where additional gravity measurements are needed

Answer to BSHC24: Include this sentence in the WorkProgramme 2019-2020

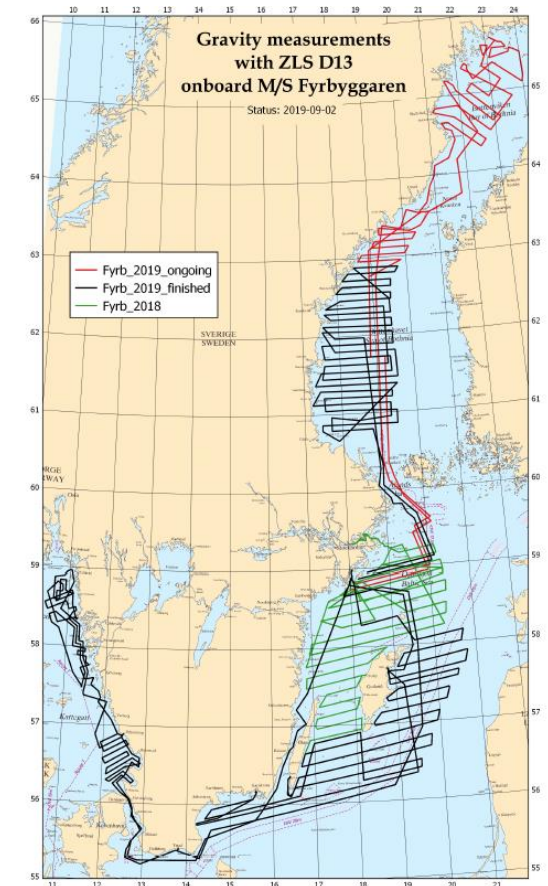
## Marine gravimetry until 2018 (FAMOS)




Largest gaps in Russian waters in the Finnish Bay

Data from Polish waters will be included in the next phase of STM-FAMOS

Additional measurements have been conducted onboard the Swedish vessel M/S Fyrbyggaren in 2019




Answer to BSHC24: Done 2018-10-17, approved 2018-10-18



# IHO Geospatial Information Registry

Alpha Code Accuracy: Complex Line Symbol

Definition/Description:



KHOA of ROK

HOME

INTRODUCTION

GIS/REG/ERS

PROPOSAL

DATA Registry

[FCD](#)
[Shorts/Spot](#)
[Product Specification](#)
[Agency Code](#)

## FCD Register

- Domain: 
 - Item Type: 
 - Status:

- Search:

Go to Index

Details		Management Details	
Item Type :	Enumerated	Proposal Type :	Addition
Issued :	1992-1993	Submitting Organization :	IMO
Associated Attributes :	<input type="text" value="Sea-Chart-Detain (Value)"/>	Proposed Change :	Addition of an enumerated value for vessel categories
Enumerated Item Name :	Radio Sea Chart Detain 2000	Justification :	The Radio Sea is an international station, now listed only in the northern part of Europe with dense traffic. IMO item has approved the name and the adoption of the Radio Sea Chart Detain 2000.
Enumerated Value Code Number :	44	Proposed :	2000-10-17
Enumerated Value Code In Use :		Accepted :	2000-10-18
Alias :	Unspecified	Assessed :	
Cancel Case :	Radio Sea Chart Detain 2000	Not assessed :	-
Exclusion :	(BOSCH) - The item refers to each Radio Sea chart Detain 2000, which is connected to the National Maritime Port (NMP).	Discontinued :	-
Reference :	Radio Sea Hydrographic Commission		
Exclusion Source :	Unspecified		
Similarity to Name :	Unspecified		
Set :	<input type="text" value=""/>		
Set :	<input type="text" value=""/>		
Remarks :	Unspecified		

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KHOA Acknowledgements

## 2. Status of CDWG work: Meeting 2019 / Summary of implementation

Since the BSHC 23<sup>rd</sup> Conference, *Mr Thomas Hammarklint* has acted as a new Chair

The communication within the CDWG has been done by e-mail correspondence and the CDWG10 meeting. The meeting was held on 5-6 February 2019 in Aalborg, Denmark. 15 delegates attended the meeting. The meeting was very appreciated by the attendees.

The main objectives of the CDWG 11<sup>th</sup> meeting was to update the [TORs](#), [Work programme](#), [List of Actions](#), [national implementation status](#) and plans of the [Baltic Sea Chart Datum 2000](#), coordinate our work and propose an answers to the BSHC23 Action #20-22 etc.

The CDWG work have been presented at the following meetings and conferences in 2018-2019:

- CDWG10, Arkö, 7-8 February
- FAMOS, Malmö, 7-9 March 2018
- GLOSS Workshop, Moscow, 12-16 March 2018
- TWCWG3, Valparaíso, 16-20 April 2018
- BOOS Annual Meeting, Brussels, 21-23 May 2018
- BSHC23, Ålborg, 28-30 August 2018
- FAMOS, Brussels, 11 December 2018
- CDWG11, Ålborg, 5-6 February 2019
- NKG meeting, Lyngby, 11-13 March 2019
- TWCWG4/GLOSSGEXVI, Busan, 8-13 April 2019
- BOOS Annual Meeting, Rostock, 12-13 June 2019
- BSHC24, Gdansk, 10-12 September 2019

The [CDWG website](#) have been updated with a lot of new information

Next meeting (CDWG12) will be held in Gdansk, Poland, 3-4 March 2020



# Summary of implementation status 2019:

Country	Status	Other remarks
Denmark	Chart datum in practice close to EVRS-based chart datum.	Will follow the Swedish approach and implement BSCD2000 when Sweden do in waters close to Denmark.
Estonia	All decisions are taken and the implementation is ongoing. Used in charts and water level information from 2018-01-01. <a href="#">Notices to Mariners 2017-12-01</a> . New reference <a href="#">homepage</a> and <a href="#">booklet</a> . <a href="#">Water level presented</a> both in BK77 and EH2000/BSCD2000.	Levelling for national height system has been finalized. Data in depth database will be transformed. New charts with the new reference will be produced continuously, the first charts have been produced in 2018 and will continue in 2019. The changes is up to 30 cm in new charts.
Finland	Ongoing. All decisions are taken. Implementation plan finalized. N2000/BSCD2000 is the Finnish realization of EVRS. Earliest in 2019 starting from the north part of the Bay of Bothnia. <a href="#">Notices to Mariners 2018-04-12</a> .	Finnish Meteorological Institute (FMI) has started a project concerning water level information in the Baltic Sea. Differences between MSL and N2000/BSDC2000 are provided as a <a href="#">table</a> .
Germany	EVRS realization in use in practice. The vertical chart datum of BSCD2000 is close to the national height system of Germany (ETRS1989+DHHN2016). All published products always refer to this datum.	The database refers to national height system. A decree to use DHNN2016 for all German waterlevel stations in the Baltic Sea will hopefully be issued by the responsible ministry in Germany. BSH (Federal Maritime and Hydrographic Agency) and WSV/WSA (Federal Waterways and Shipping Administration) will then have to follow the decree. "It would be very helpful to have an official document of our CDWG at hand. So its time to publish the ' <a href="#">Specification of the BSCD2000</a> ' ASAP ☺"
Latvia	BAS77 still used. New national height system LAS2000,5 (EVRS-based) into use in 2015. Further decisions on implementation will be made after clarifying the Baltic Sea geoid.	Differences between BAS77 and Baltic Sea Chart Datum 2000 known and can be accessed by web-application and info in all nautical charts how to transform depths to EVRS.
Lithuania	BHS77 still used. National height system LAS07 (EVRS-based) came into force 2016-01-01.	National height system is LAS07 (EVRS based), into use in 2016. The difference between BHS77 and LAS07 is well known (about 13 cm) and is also written in nautical charts. Tide gauges in Lithuania belongs to the Lithuanian Hydrometeorological Service.
Poland	Ongoing. Currently - mean sea level (MSL). From the beginning of 2020 all depths at nautical charts should be referred to PL-EVRF2007-NH (Amsterdam).	Poland have an legal act about datum, which allows to use both PL-KRON86-NH (Kronstadt 86) and PL-EVRF2007-NH (Amsterdam) at Polish waters until the end of 2019. Institute of Meteorology and Water Management (IMWM) runs the Polish water level stations. The difference between the old and new datum is less than 9 cm.
Russian Federation	Actions and plans are dependent on the implementation of new state coordinate system.	Decisions of the transition will not be done earlier than 2020. A new State Coordinate System 2011 (GSK-2011) for consumers, navigation, geodesy and cartography implemented 1 January 2017.
Sweden	Ongoing. All decisions are taken. Many charts already published. Water level information will be related to RH2000/BSCD2000 from 2019-06-03. The difference between mean sea level and BSCD2000 at the water level stations are presented in this <a href="#">table</a> . <a href="#">Notices to Mariners 2019-04-18</a> .	Implementation is a part of the "Chart Improvement Project", to be concluded on time at the latest in 2021. Cooperation with SMHI on water level information. <a href="#">New Info Sheet about BSCD2000 from SMA/SMHI</a>

# Notices to mariners

Example from Sweden, 2019-04-18

<http://www.sjofartsverket.se/UfsPdf/751EN.pdf>

2019-04-18

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No 751

## ***ANNOUNCEMENTS***

**\* 13917**

**New reference system for sea level, nautical charts and warnings. BSCD 2000.**

See: 2018:716/13140

On June 3, 2019, Sweden's national reference system for heights and depths will be changed to the 'Rikets Höjdsystem 2000', or RH 2000. (International name Baltic Sea Chart Datum 2000, BSCD2000)

The zero level in RH 2000 is fixedly linked to land, and is not affected by land uplift, changes in sea level or geographical variations.

The change means that observations, forecasts, and warnings in the Swedish Maritime Administration's and Swedish Meteorological and Hydrological Institute's (SMHI) viewing services from 3 June 2019 refer to the new reference level and no longer to the 'mean sea level'.

The Swedish Maritime Administration is gradually adapting the charts to the new reference system. This is a time consuming process. During the transition period, it is important to know which reference system is used in the different charts. If the text "Baltic Sea Chart Datum 2000", or "BSCD2000" is printed in the chart, the update has been performed.

More information: [www.sjofartsverket.se/RH2000](http://www.sjofartsverket.se/RH2000) and [www.smhi.se](http://www.smhi.se)

[www.sjofartsverket.se/RH2000](http://www.sjofartsverket.se/RH2000)

[www.smhi.se](http://www.smhi.se)

# Difference between old reference system and BSCD2000

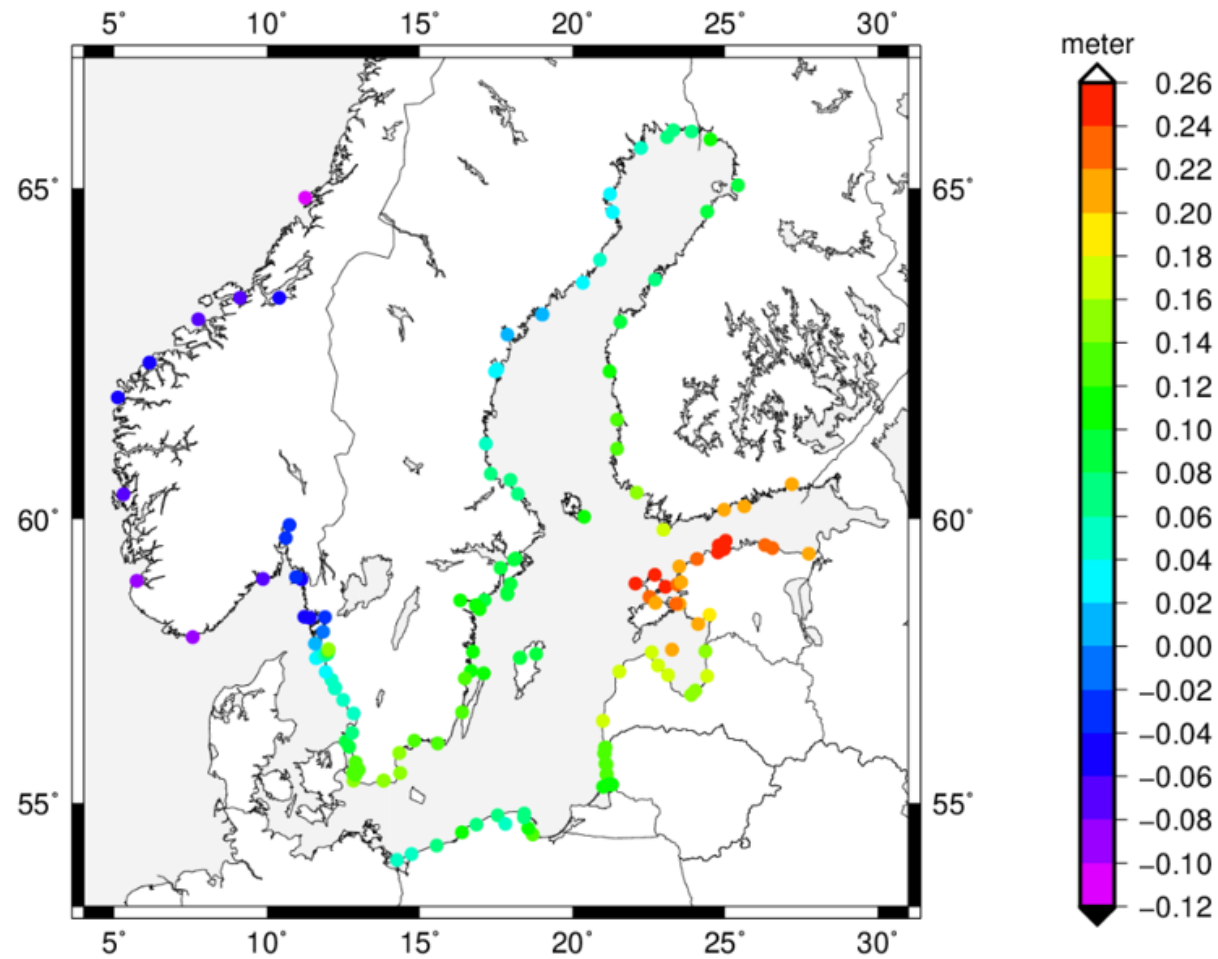


Fig. 4b: Differences between the reference levels of the old national chart datums with respect to BSCD2000. In Sweden, Finland and Norway, the old reference levels are equal to Mean Sea Level transferred to year 2019 (according to different national conventions). In Estonia, Latvia, Lithuania and Poland, the Kronstadt reference level is used as old chart datum. Notice how postglacial rebound reduces the magnitude of the mean sea level in the Bay of Bothnia; it is now just a few cm near the land uplift maximum.



### 3. CDWG Member list

#### Members of CDWG:

Denmark	PhD Joanna Gerlings
Denmark	Mr Philip Sigaard Christiansen
Estonia	Mrs Gabriela Kotsulim
Finland	Mr Jyrki Mononen
Finland	Mrs Janina Tapia Cotrino
Germany	Dr Patrik Westfeld
Latvia	Mr Armands Murans
Lithuania	Mr Mindaugas Zakarauskas
Poland	Cdr Sławomir Lipiński
Poland	Mr Witold Stasiak
Russia	Capt S. Travin
Russia	Mr Leonid Shalnov
Russia	Dr Sergey V. Reshetniak
Sweden	Mr Thomas Hammarklint
Sweden	Mr Lars Jakobsson
Sweden	Mr Henrik Tengbert

#### Representative of BOOS:

Sweden	Mr Thomas Hammarklint
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#### Observers:

Finland	Mrs Mirjam Bilker-Koivula
Finland	Katri Leinonen
Sweden	Dr Jonas Ågren
Sweden	Dr Per-Anders Olsson
Sweden	Mr Mikael Stenström
Norway	Mr Aksel Voldsund
Germany	Dr Gunter Liebsch

## 4. Proposed CDWG TORs 2019-2020 (no changes)



BSHC Chart Datum Working Group

### **BSHC Chart Datum Working Group Terms of Reference 2019-2020 5 February 2019**

**To be approved by the BSHC 24<sup>th</sup> Conference, 10-12 September 2019**

The BSHC18 (September 2013) decided to continue CDWG work and wished the harmonized Baltic Sea vertical reference to be implemented.

#### **The Working Group should**

1. To continue implementation of the Baltic Sea Chart Datum 2000 (EVRS with land-uplift epoch 2000).
2. To prepare the road map for transition, including e.g:
  - to establish a network of relevant bodies involved into the transition and efficiently communicate and give guidance within this network
  - to invite relevant bodies to inform the users
  - to review of progress of national plans and actions
  - to propose harmonization actions.
3. To cooperate with relevant bodies on water level related issues e.g:
  - to promote studies on the validation, status and distribution of water level information, and to promote studies on interpolation and prediction of water levels
  - to promote studies on displaying schemes for joint Baltic Sea water level information
  - to promote studies on recommendations to IHO bodies how the sea level and its variations should be shown on nautical paper and ENC charts and publications, and conveying water level information to mariners [ref. IHO Technical Resolutions].
4. To further development of a common harmonized height reference, including further development of a common geoid model for the whole Baltic Sea area and supporting geoid and oceanographic studies relevant to these purposes.
5. To cooperate with relevant international bodies, for example organizations responsible for delivering water level information (e.g. BOOS and NOOS) and geodetic infrastructure (e.g. EUREF and NKG).
6. To liaise with relevant IHO bodies and study relevant IHO resolutions and specifications.

## 5. Proposed CDWG Work Programme 2019-2020 (changes in red)



BSHC Chart Datum Working Group

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### **Proposed BSHC Chart Datum Working Group Work Programme 2019-2020 5 February 2019**

**To be approved by the BSHC 24<sup>th</sup> Conference, 10-12 September 2019**

Note: This Work Programme includes those Tasks which were identified as the priority issues and which are expected to be fostered during 2019-2020 bearing in mind the resources the BSHC members have.

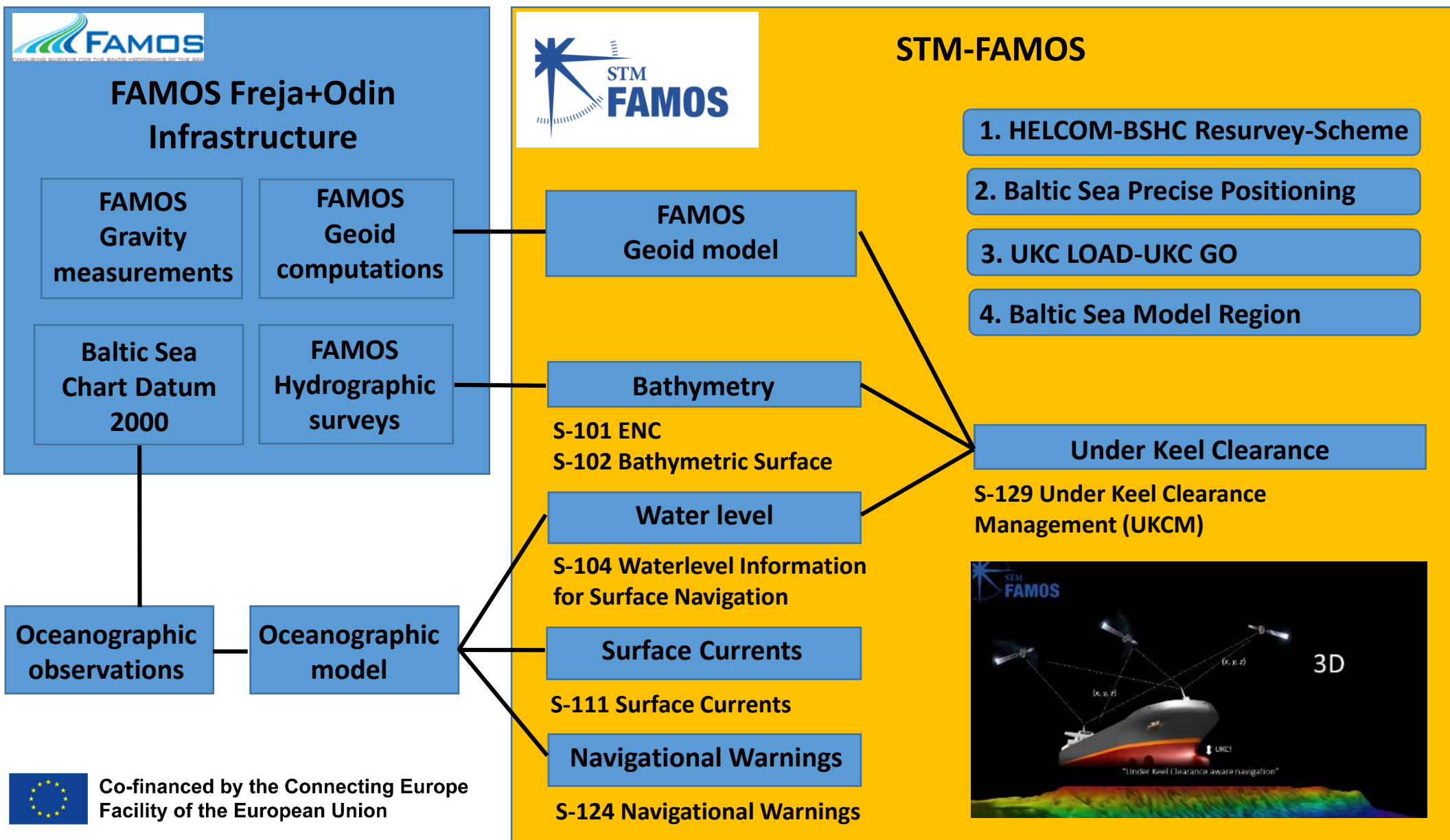
#### Tasks:

1. Guide the implementation process of vertical reference within the Baltic Sea region.
  - a. To monitor and follow up the status of the relevant actions identified.
  - b. To ensure efficient communication with relevant bodies.
  - c. To propagate and explain the idea of harmonized chart datum.
  - d. To foster national efforts for realization of S-104 in the Baltic Sea.
2. Review of progress of national plans and actions.
3. Propose harmonization actions.
4. Promote studies and further development of a common geoid model and dynamic topography for the whole Baltic Sea, mainly by supporting and collaborating with relevant projects, e.g. organizing ship time for gravity measurements. **Invite member states to consider gravity measurements and provide an overview where additional gravity measurements are needed.**
5. Promote improvement of precise real-time GNSS navigation for the future.
6. Cooperate with BOOS and other relevant institutes and organizations.
7. Support other IHO working groups and European projects in issues concerning vertical references.

## **6. How member states benefits best of CDWG**

- Sending representatives to meetings
- Answering to questionnaires – helps coordination of implementation
- Fostering national transition to the Baltic Sea Chart Datum 2000 (BSCD2000)
- Supporting complementary gravity surveys and common geoid model computation in the Baltic Sea – e.g participating in FAMOS until 2019 (and future STM-FAMOS)

# STM-FAMOS Concept

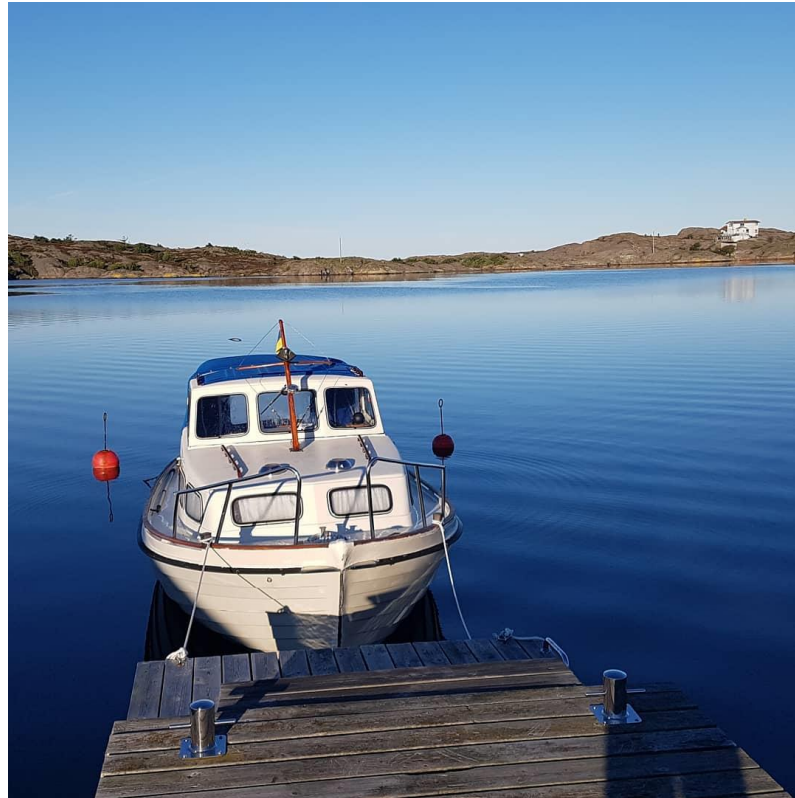




## **7. Actions requested from BSHC 24<sup>th</sup> Conference**

1. Note this report
2. Support gravity measurements and geoid computation (BSHC23 Action #20)
3. Endorse the proposed CDWG TORs 2019-2020
4. Endorse the proposed CDWG Work Programme 2019-2020
5. Approve the answers to BSHC23 Actions #20-22
6. Give further guidance to CDWG, as seen appropriate
7. Decide on continuation of CDWG work

**Thank you for your attention!**



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