



BALTIC SEA
HYDROGRAPHIC
COMMISSION



Baltic Sea Chart Datum 2000, S-104 and S-111

BOOS Scientific Workshop

10 May 2023 Helsinki, Finland

Thomas Hammarklint



SWEDISH MARITIME
ADMINISTRATION

Baltic Sea Hydrographic Commission (BSHC)



BALTIC SEA HYDROGRAPHIC COMMISSION

Home About Services Relations Working Groups Meetings Contact



The Baltic Sea Hydrographic Commission,

which is an integral part of the International Hydrographic Organisation (IHO), promotes the technical co-operation in the domain of hydrographic surveying, marine cartography and nautical information among the neighboring countries of the Baltic Sea region.

The main objectives of the Commission are the coordination of the production of the Baltic Sea INT Charts, the coordination of hydrographic re-surveys, harmonization of chart datums, harmonization of Baltic Sea ENCs, and the exchange of information and the harmonization of practices with regard to various issues related to hydrography.

The most recent development is the [Baltic Sea Bathymetric Database](#) – accessible via this portal.

International Hydrographic Organization

The International Hydrographic Organization is an intergovernmental consultative and technical organization that was established in 1921 to support safety of navigation and the protection of the marine environment. The object of the Organization is to bring about:

- The coordination of the activities of national hydrographic offices
- The greatest possible uniformity in nautical charts and documents
- The adoption of reliable and efficient methods of carrying out and exploiting hydrographic surveys
- The development of the sciences in the field of hydrography and the techniques employed in descriptive oceanography

You are here: Home

Copyright 2013–2019 Baltic Sea Hydrographic Commission



Chart Datum Working Group (CDWG)



Home ABOUT ▾ SERVICES RELATIONS WORKING GROUPS ▾ MEETINGS AND SEMINARS ▾ CONTACT PRIVACY POLICY

Chart Datum Working Group (CDWG)

"To implement a common reference level in the Baltic Sea"



Photo: Chart Datum Working Group 14th meeting, 28-29 March 2023, Göteborg, Sweden

<https://www.bshc.pro/working-groups/cdwg>

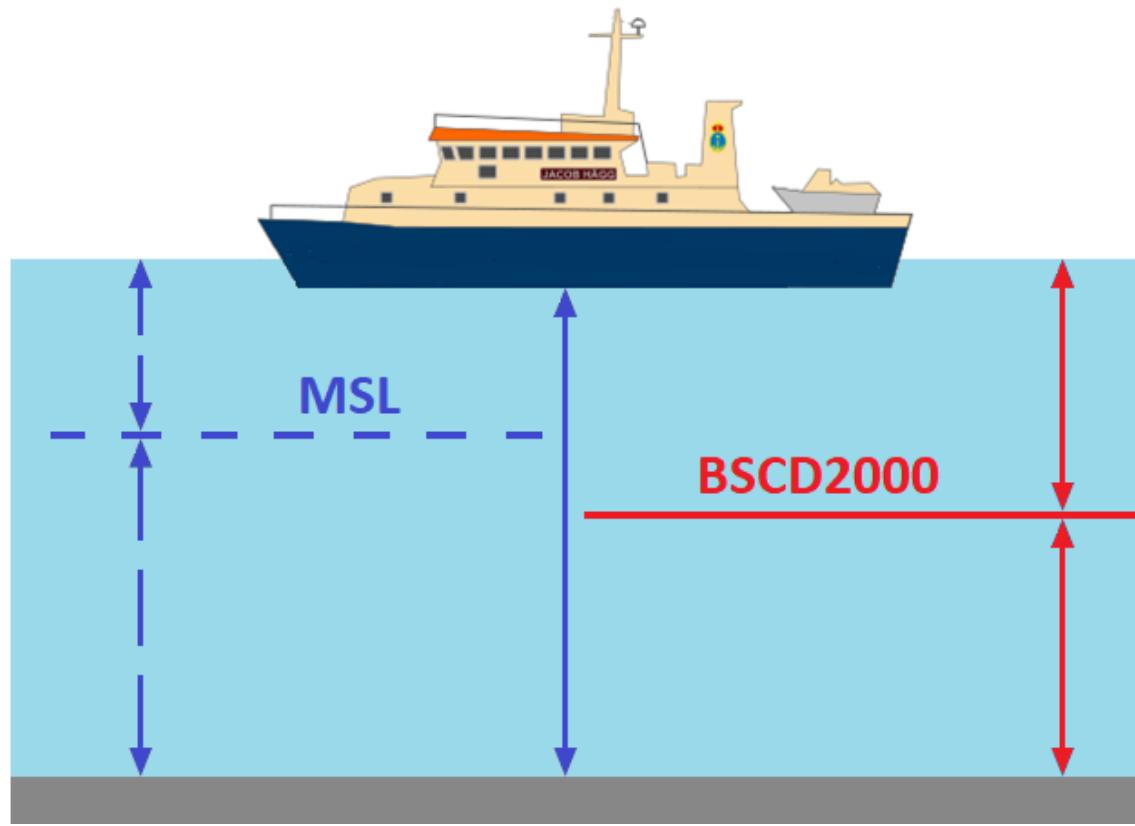
Members of CDWG:

Denmark Mr Nikolaj Møller
Estonia Mrs Gabriela Kotsulim
Finland Mr Jarmo Mäkinen
Germany Dr Patrick Westfeld
Latvia Mr Bruno Špēls
Lithuania Mr Mindaugas Zakarauskas
Poland Mr Witold Stasiak
Russia Mr Leonid Shalnov
Russia Dr Sergey V. Reshetniak
Sweden Mr Thomas Hammarklint (Chair)
Sweden Mr Lars Jakobsson
Sweden Mr Henrik Tengbert

Observers and Experts:

Estonia Prof. Artu Ellmann
Estonia Mr Sander Varbla
Finland Dr Mirjam Bilker-Koivula
Finland Mrs Anni Jokiniemi
Germany Dr Gunter Liebsch
Germany Dr Joachim Schwabe
Latvia Mr Armands Murans
Latvia Mr Krists Dzenis
Latvia Mr Mārtiņš Rēvalds
Lithuania Mr Emīlis Tertelis
Norway Mr Aksel Voldsund
Poland Mr Krzysztof Pyrchała
Poland Mrs Małgorzata Pająk
Poland Dr Monika Wilde-Piórko
Poland Dr Małgorzata Szelachowska
Sweden Prof. Anna Jensen
Sweden Dr Jonas Ågren
Sweden Dr Per-Anders Olsson
Sweden Mrs Johanna Linders

New reference level



The water depth remains!

Baltic Sea Chart Datum 2000 (BSCD2000)

➤ Definition:

The datum refers to each Baltic country's realization of the European Vertical Reference System (EVRS) with land-uplift epoch 2000, which is connected to the Normaal Amsterdams Peil (NAP).

➤ Justification:

The Baltic Sea is an international shallow, non-tidal area in the northern part of Europe with dense traffic. IHO BSHC has approved the name and the adoption of the Baltic Sea Chart Datum 2000 ([specification](#)).

➤ Height systems used as national realization of BSCD2000 (EVRS-based):

Sweden RH2000	Denmark DVR90	Germany DHHN2016
Poland PL-EVRF2007-NH	Lithuania LAS07	Latvia LAS2000,5
Estonia EH2000	Finland N2000	Norway NN2000

➤ Chart datum name to be shown in paper charts and water level information:

Mean Sea Level (Baltic Sea Chart Datum 2000^{national realization name})

Mean Sea Level (Baltic Sea Chart Datum 2000)

Baltic Sea Chart Datum 2000^{national realization name}

Baltic Sea Chart Datum 2000

BSCD2000 (national realization name)

BSCD2000

National realization name

CHART DATUM: Mean Sea Level (Baltic Sea Chart Datum 2000^{RH2000})

REFERENSNIVÅ: Medelvattenytta (Baltic Sea Chart Datum 2000^{RH2000})

SYMBOLS and ABBREVIATIONS: see INT 1

BETECKNINGAR och FÖRKORTNINGAR: se KORT 1

Referensnivå



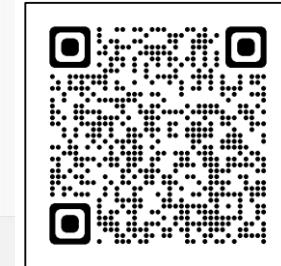
Baltic Sea Chart Datum 2000 in IHO Registry

**BSCD2000 is now included in IHO Geospatial Information (GI) Registry,
as chart datum number 44:**

The screenshot shows the IHO Geospatial Information Registry's Data Dictionary Register. The left sidebar includes links for HOME, HELP&GUIDANCE, GI REGISTERS (selected), PROPOSAL, TEST BED, Open Online Platform, and 2nd GI Registry(Old). The main content area displays the following information for BSCD2000:

[Listed Value] Dictionary Details		
Domain	IHO Hydro	
Name	Baltic Sea Chart Datum 2000	
CamelCase	balticSeaChartDatum2000	
Item Identifier	1213 ?	
Definition	The datum refers to each Baltic country's realization of the European Vertical Reference System (EVRS) with land-uplift epoch 2000, which is connected to the Normal Amsterdams Peil (NAP).	
Data type	Enumerated value	
Associated Attribute	Attribute type Enumerated type	Name Vertical.Datum
Reference		
Reference Source	Baltic Sea Hydrographic Commission	

At the bottom, it says "COPYRIGHT © IHO Geospatial Information Registry. ALL RIGHTS RESERVED." and "KHOA Acknowledgements".



International Hydrographic Review Article

An article about the CDWG work and the implementation of the Baltic Sea Chart Datum 2000 has been published in the International Hydrographic Review (IHR) in May 2020: [THE BALTIC SEA CHART DATUM 2000 \(BSCD2000\) - Implementation of a common reference level in the Baltic Sea](#)

INTERNATIONAL HYDROGRAPHIC REVIEW

MAY 2020



Articles

THE BALTIC SEA CHART DATUM 2000 (BSCD2000)

Implementation of a common reference level in the Baltic Sea
By J. Schwabe¹, J. Agren², G. Liebsch³, P. Westfeld⁴, T. Hamminkint⁵,
J. Mononen⁶ and O. B. Andersen⁷

1. Federal Agency for Cartography and Geodesy (Germany)
2. University of Gävle (Sweden) and Lantmäteriet, the Swedish mapping, cadastral and land registration authority (Sweden)
3. Federal Maritime and Hydrographic Agency (Germany)
4. Swedish Maritime Administration (Sweden)
5. Finnish Transport Agency (Finland)
6. DTU Space (Denmark)

Abstract

The Baltic Sea Chart Datum 2000 (BSCD2000) is a geodetic reference system adopted for Baltic Sea hydrographic surveying, hydrographic engineering, nautical charts, navigational publications and water level information. It is based on the common geodetic standards for the height system (ETRS) and the spatial reference system (ETRS89) in Europe. In particular, the zero level of BSCD2000 is in accordance with the Normaal Amsterdams Peil (NAP). BSCD2000 is about to be adopted as unified chart datum by all the countries around the Baltic Sea. It agrees with most national height realizations used on land. BSCD2000 will facilitate effective use of GNSS methods like GPS, GLONASS and Galileo for accurate navigation and hydrographic surveying in the future.

Résumé

Le Baltic Sea Chart Datum 2000 (BSCD2000) est un système de référence géodésique adopté pour les levés hydrographiques, l'ingénierie hydrographique, les cartes marines, les publications nautiques et les informations sur le niveau de l'eau de la mer Baltique. Il est basé sur les normes géodésiques communes au Système de Référence Vertical Européen (ETRS) et au Système de Référence Terrestre Européen (ETRS89). En particulier, le zéro hydrographique du BSCD2000 est conforme au Normaal Amsterdams Peil (NAP). Le BSCD2000 est sur le point d'être adopté en tant que niveau de référence des cartes commun par l'ensemble des pays bordant la mer Baltique. Il correspond à la plupart des mesures de hauteur nationales utilisées à terre. Le BSCD2000 facilitera l'utilisation efficace des méthodes du GNSS comme le GPS, GLONASS et Galileo pour une navigation et des levés hydrographiques précis à l'avvenir.

INTERNATIONAL HYDROGRAPHIC REVIEW

MAY 2020

4. Practical implications

New nautical products that use BSCD2000 are identified by the chart datum name $BSCD2000^{**}$, where ** denotes the respective national height system realization according to Table 2 (e.g., $BSCD2000^{(NAP)}$ for Sweden).

The main consequence for the mariner is that the charted depth in BSCD2000 changes by a constant value compared to the old zero level. The offset is individual per country or per map sheet, depending on the former MSL-related chart datum. In most cases, this offset will be negative, since the new zero level of the BSCD2000 is in general below the present day MSL for the Baltic Sea (see Figure 6 for a generalized visualization and Figure 7 for a map of the national MSL realizations currently in use). However, for charts of areas strongly affected by postglacial uplift and referring to very old MSL realizations, the change to BSCD2000 may be considerable. Figure 1 gives an impression of the land uplift rates according to the model NKG2016LU (Vestel et al. 2016).

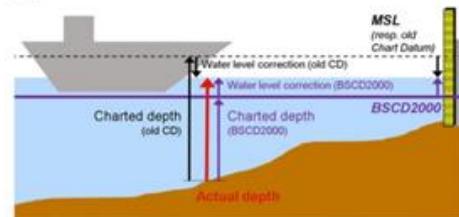


Figure 6: Schematic cartoon of the old MSL-based chart datum and the new BSCD2000

INTERNATIONAL HYDROGRAPHIC REVIEW

MAY 2020

adopt BSCD2000 as the name of their chart datum without having to actually change their charted depths. Therefore, this section only gives an overview about the general situation in the respective countries. Table 2 summarizes the national geodetic reference frames, positioning services and HRS realizations that can be used with BSCD2000. Regularly updated details about the implementation status as well as instructions for users, e.g. leaflets, are provided via the CDWG website (<http://www.baltic-pro/working-groups/cdwg>).

In Sweden and Finland, a calculated MSL has been used as reference level (chart datum) for nautical charts and water level information. The reference level for regularly updated epochs (estimated present-day MSL) was estimated from long time series of annual mean values of mareographic observations. Depths from printed charts needed to be converted semi-automatically by means of a correction formula in order to correct for the time difference and to make the charted depth compatible with the provided water level information. As motivated in Section 2, this two-step approach implied a lot of work to keep the nautical products updated and consistent. At the same time, it was not straightforward and error-prone for the mariner.

Thus, decisions to make a transition to BSCD2000 in Sweden and Finland have come a long way. In Sweden, both water level information and 50% of all nautical charts are now using BSCD2000. In Finland, part of the bathymetric and chart data have already been transformed to BSCD2000. Water level information is ready to be provided in BSCD2000 when first charts will be published in the new datum. Figure 7 details the estimated height of the current calculated MSL relative to BSCD2000 for selected mareographs in Sweden and Finland.

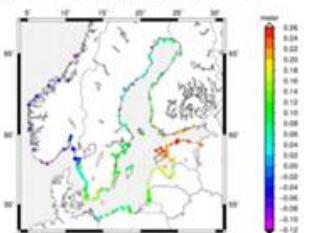


Figure 7: Differences between the reference levels of the old national chart datums with respect to Baltic Sea Chart Datum (BSCD2000). In Sweden and Finland, the old reference levels are equal to the calculated MSL in the year 2020 (according to different national conventions). The values from Norway shows the MSL over the period 1996–2014, relative BSCD2000^(NAP). In Estonia, Latvia and Lithuania, the Kronstadt reference level is used as old chart datum. In Estonia, the local Połtava Height System is used as old chart datum. Notice how positive values abound reduces the magnitude of the calculated MSL relative BSCD2000 in the Bay of Bothnia. It is now just a few cm close to the location of maximum uplift. The values are taken from BOOS (2020).

Swedish Chart Improvement project



CHART DATUM: Mean Sea Level (Baltic Sea Chart Datum 2000^{RH2000})

REFERENSNIVÅ: Medelvattenyta (Baltic Sea Chart Datum 2000^{RH2000})

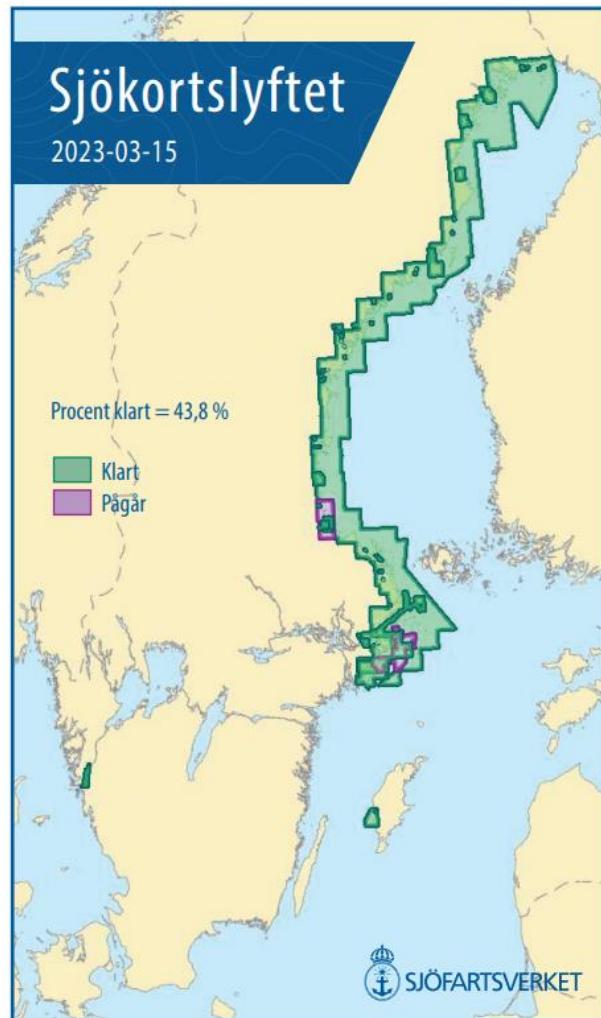
SYMBOLS and ABBREVIATIONS: see INT 1

BETECKNINGAR och FÖRKORTNINGAR: se KORT 1

Referensnivå



Status transition from MSL to BSCD2000 in nautical charts



Updated 2023-03-15



Swedish Sea Level Network



- Real-time data relative BSCD2000 from 60 stations
- 1-minute values with 1 cm accuracy
- Real-time and delayed mode quality control



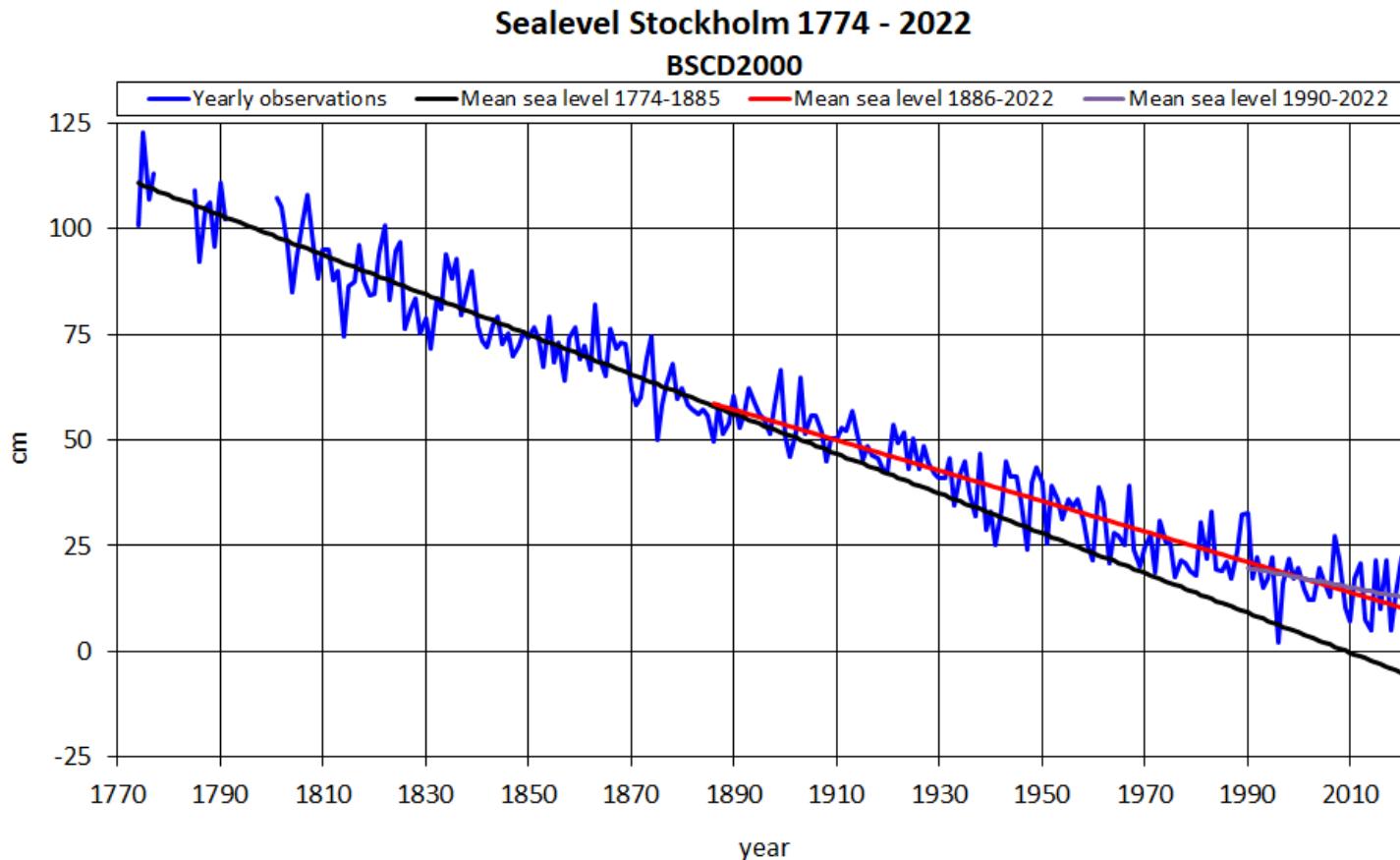
Class I	Upgrade with battery backup
Class II	Upgrade without battery backup
Class III	Unchanged, temporary

27 stations (23 SMHI, 3 SMA, 1 CTH)
27 stations (23 SMA, 3 GBG, 1 SKB)
6 stations (6 SMA)

Present water level information are shown in Wind- and Water Information ([ViVa](#))

Stockholm

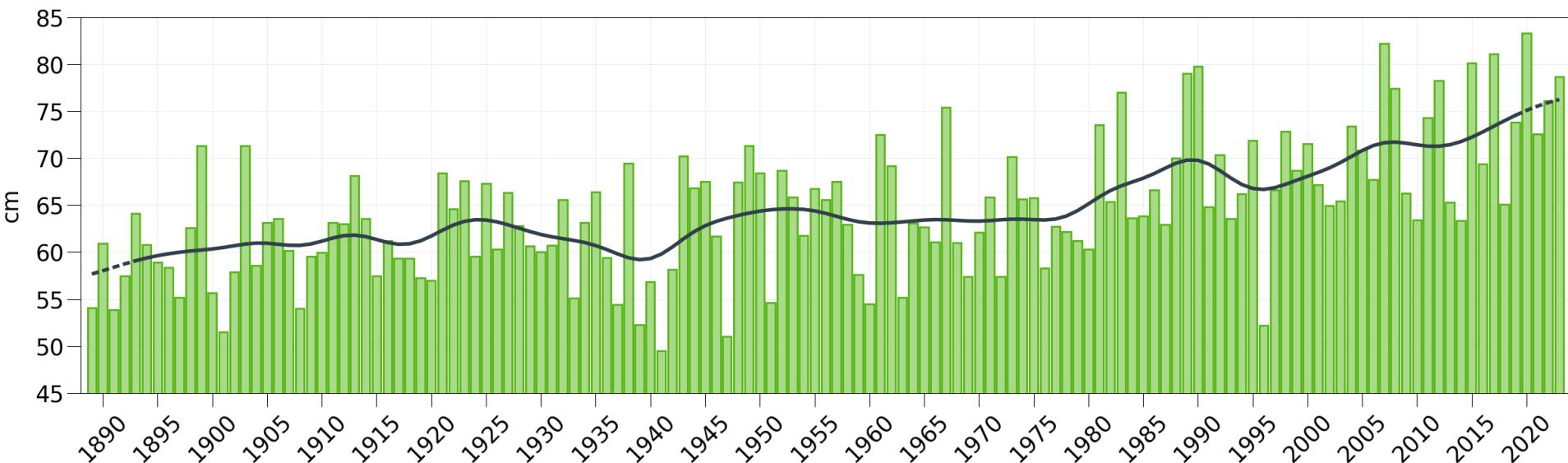
"World's longest sealevel record"



Sea level rise

Stockholm

SMHI



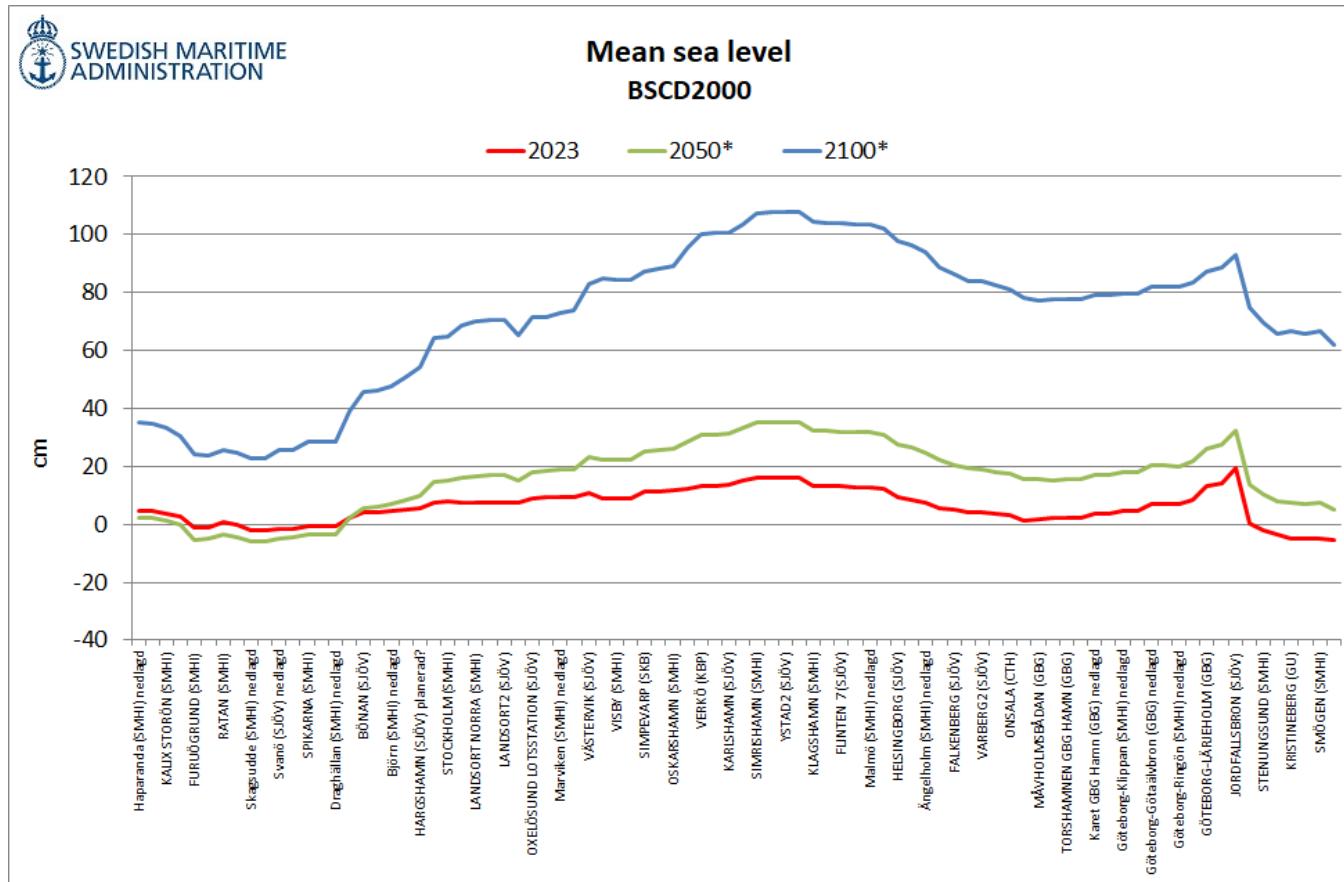
Observed sea level change in Stockholm since 1889

Sea level corrected for the land-uplift (glacial isostatic adjustment)

The black line shows the gauss-filtered (smoothed) average



Changing mean sea level

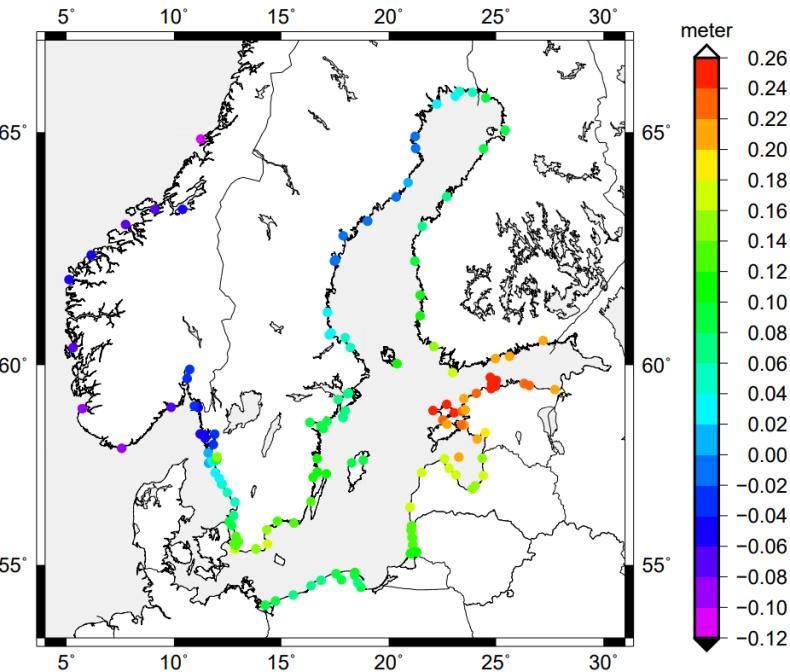
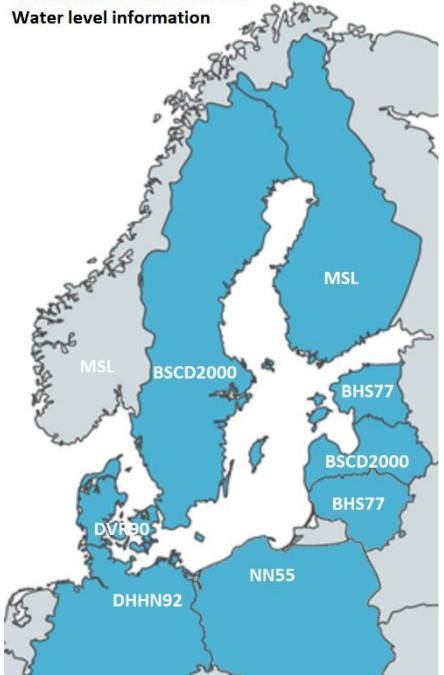


Calculated mean sea level for the years 2023, 2050 and 2100. * incl. a predicted sea level rise, +1 m over the years 2020-2100 (IPCC RCP 8.5) and correction for the leveled land-uplift. [Mean sea level relative BSCD2000](#)



Reference levels in the Baltic Sea

Reference levels Baltic Sea
Water level information

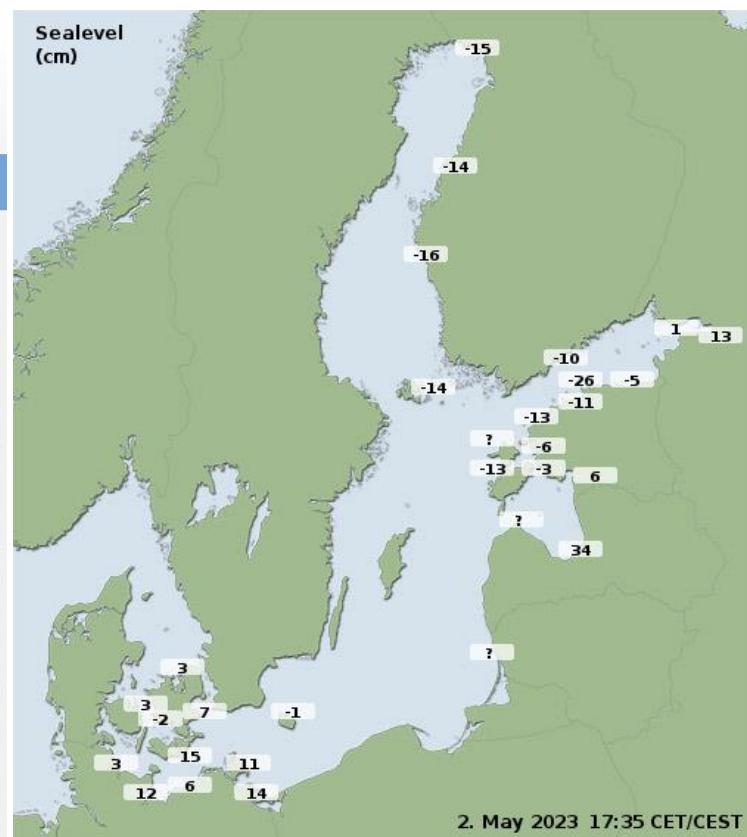
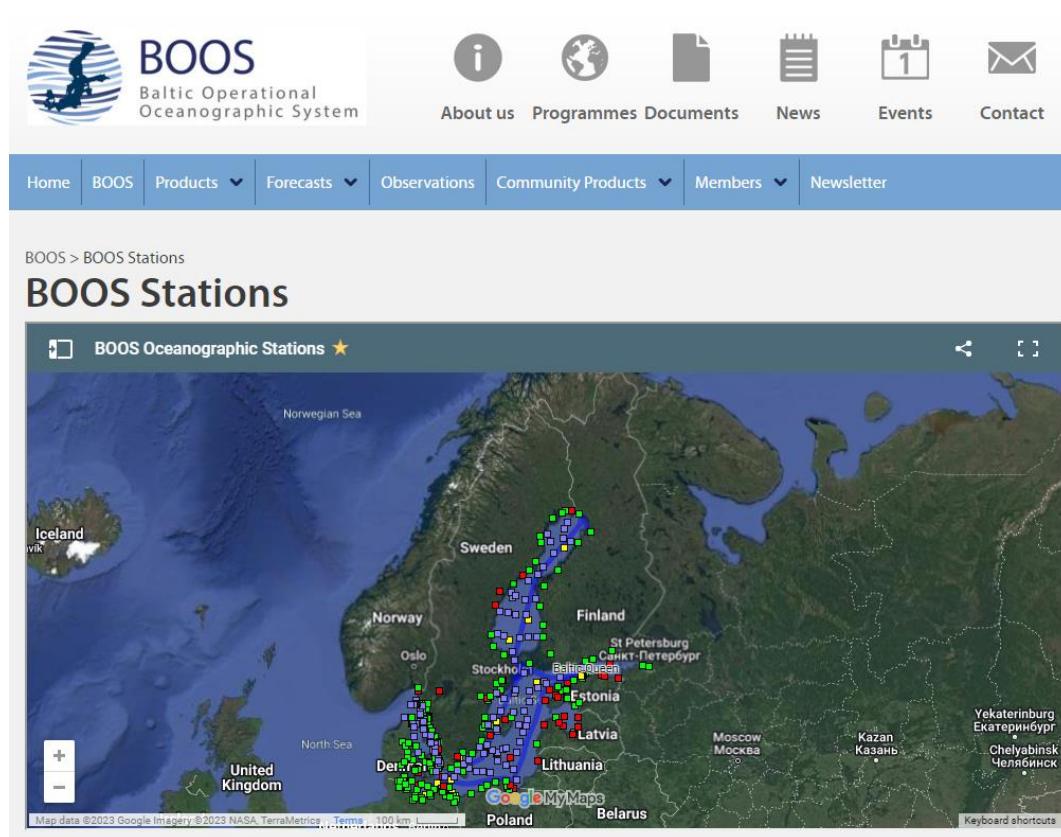


BSCD2000 = Baltic Sea Chart Datum 2000, heights referred to Amsterdam [NAP]
RH2000 = Swedish Height System 2000, heights referred to Amsterdam (NAP)
* = Correction of provided sea level data to BOOS as the Baltic Sea Chart Datum 2000 (BSCD2000)

COUNTRY	OWNER	NR	STATION NAME	LATITUDE	LONGITUDE	BSCD2000 cm	Apparent land uplift cm/year	Correction * to BSCD2000 m
SWEDEN	SMA	258/31088	Haparanda discontinued	65.771667	23.903056	5.9	0.72	0.059
SWEDEN	SMA	59/35103	EA KALIX KARLSBORG	65.788889	23.303333	6.1	0.72	0.061
SWEDEN	SMA	215/31051	KALIX STÖRN	65.696944	23.096511	5.3	0.73	0.053
SWEDEN	SMA	59/35113	KÄRNLÖDEN	65.549722	22.238311	4.4	0.75	0.044
SWEDEN	SMA	250/31051	FURJÖ/GRUND	64.679889	13.220556	0.5	0.72	0.005
SWEDEN	SMA	40/35140	GÅSÖN	64.678611	21.249167	0.8	0.82	0.008
SWEDEN	SMA	205/31053	RATAN	63.986111	20.895000	2.4	0.80	0.034
SWEDEN	SMA	57/35124	HOLMUSD	63.695833	20.347222	1.4	0.80	0.034
SWEDEN	SMA	232/31054	Skagudden discontinued	63.190556	19.012500	-0.4	0.80	-0.004
SWEDEN	SMA	110/35112	SKAGUDJÖE2	63.190556	19.012500	-0.4	0.80	-0.004
SWEDEN	SMA	172/35209	LUNDE	62.880556	17.876389	0.1	0.77	0.001
SWEDEN	SMA	206/31073	Dräghället discontinued	62.333333	17.466667	0.7	0.74	0.007
SWEDEN	SMA	206/31055	SPIKHÄN	62.363333	17.533111	0.7	0.74	0.007
SWEDEN	SMA	66/35127	ÖRNSKÖLDSS	62.363333	17.533111	0.5	0.74	0.005
SWEDEN	SMA	33/35119	BÖRNÄ	60.738611	17.318611	5.0	0.58	0.050
SWEDEN	SMA	34/35119	GÄVLE	60.696560	17.330972	5.0	0.58	0.050
SWEDEN	SMA	206/31075	Björn discontinued	60.633333	17.066667	5.6	0.56	0.056
SWEDEN	SMA	217/31056	FORSMARK	60.408611	18.210033	6.3	0.53	0.063
SWEDEN	SMA	67/35112	LOUDEN	59.341389	18.337222	8.4	0.38	0.084
SWEDEN	SMA	206/31057	STOCKHOLM	59.324167	18.081944	8.5	0.38	0.085
SWEDEN	SMA	173/35112	NYNÄS FISKEHAM	58.917500	17.972222	8.1	0.31	0.081
SWEDEN	SMA	250/31058	LÄNGSÖRT NORRA	58.768889	17.858889	8.3	0.29	0.083
SWEDEN	SMA	207/31076	ÖRNSKÖLDSS	58.768889	17.858889	8.3	0.29	0.083
SWEDEN	SMA	34/35104	E4 BOR SÖDERTÄLJE	59.184722	17.647712	8.2	0.33	0.082
SWEDEN	SMA	10/35118	OXLÖSUND VINTERKLÄSEN	58.661667	17.124722	9.3	0.26	0.093
SWEDEN	SMA	58/35105	JUTEN	58.634167	16.324722	9.8	0.25	0.098
SWEDEN	SMA	207/31059	Marviken discontinued	58.553611	16.837222	9.8	0.25	0.098
SWEDEN	SMA	254/31085	ARKÖ	58.484167	16.960556	9.8	0.25	0.098
SWEDEN	SMA	93/35151	VÄSTERVIK	57.748333	16.752728	11.0	0.16	0.110
SWEDEN	SMA	81/35112	SUTT	57.705833	18.810000	9.0	0.12	0.090
SWEDEN	SMA	208/31060	VISBY	57.639167	18.284444	9.0	0.12	0.090
SWEDEN	SMA	77/35100	ÖRNSKÖLDSSYD	57.440833	18.403333	11.7	0.12	0.117
SWEDEN	SMA	208/31061	ÖLÅNGS NORRA UDDE	57.366111	17.097222	11.6	0.12	0.116
SWEDEN	SMA	208/31062	ÖSKARSHAMN	57.275000	16.478056	12.0	0.10	0.120
SWEDEN	SMA	60/35105	KALMAR	56.658889	16.278333	12.5	0.06	0.125
SWEDEN	SMA	208/31063	KUNGSHOLMSFORT	56.105378	15.589444	13.3	0.01	0.133
SWEDEN	SMA	61/35112	KÄRISHAMN	56.154167	14.821389	13.8	-0.01	0.138
SWEDEN	SMA	254/31083	Åhus discontinued	55.928333	14.328011	15.1	-0.05	0.151
SWEDEN	SMA	232/31064	SINIRISHAMN	55.557500	14.357778	16.0	-0.08	0.160
SWEDEN	SMA	209/31078	Ystad discontinued	55.426944	13.825833	15.8	-0.07	0.158
SWEDEN	SMA	94/35119	YSTAD2	55.422778	13.825556	15.8	-0.07	0.158

Reference levels used in the Baltic Sea, Marine Copernicus and EMODNET Data Portals and differences with respect to the Baltic Sea Chart Datum 2000 (BSCD2000). In Sweden and Finland, the old reference levels are equal to Mean Sea Level (MSL) transferred to year 2023 (according to different national conventions). The values from Norway shows the MSL over the period 1996-2014, relative BSCD2000. In Estonia, Latvia and Lithuania, the Kronstadt was previously used as chart datum. In Poland, the local Polish Height System Amsterdam NN₅₅ was used as chart datum. Notice how postglacial rebound reduces the magnitude of the MSL in the Bay of Bothnia. The values are shown in this [Table](#).

BOOS Stations and Sealevel



BOOS-BSHC Memorandum of Understanding (MoU)

Memorandum of Understanding between BOOS and BSHC on transition to a harmonised vertical reference on the Baltic Sea

Noting that

- the IHO Baltic Sea Hydrographic Commission Conference (BSHCC19) has approved the goal to have a harmonised vertical reference for Baltic Sea for all water level and depth related information (e.g. tides, mareographs, interpolation and prediction of water levels, nautical charts). Chart datum Working Group was established to promote transition to the harmonised vertical reference which will be based on the European Vertical Reference System,
- the Baltic Oceanographic Observation System (BOOS) has a similar goal to have a harmonised vertical reference based on European Vertical Reference System on Baltic Sea,
- and both organisations expect that there will be many benefits with mutual co-operations and other relevant bodies

both organisations agree to co-operate on the transition to a common vertical reference for depth and water level information, with the aim to avoid duplication of work and to maximize mutual assistance.

Signatures

Tallinn, 30 June 2014



Urmas Lips
BOOS Chair

Riga, 12 June 2014

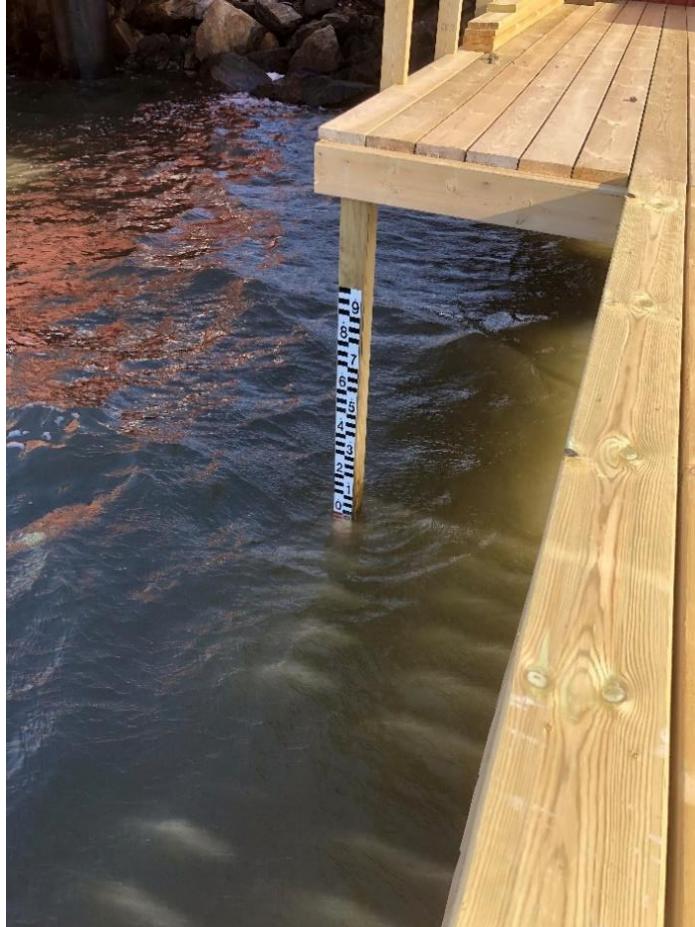


Taivo Kivimäe
BSHC Chair



New reference level in Sweden

SMA and SMHI presents sea
level data relative BSCD2000
since 3rd June 2019



SMHI oceanographic warning and forecasting service

- A transition to BSCD2000 (RH 2000) has been implemented at SMHI, where forecasts, warnings and current sea level are issued relative BSCD2000.
- A new impact-based and regional adapted warning system has also been introduced, which includes yellow, orange and red warning, where red is the most serious.

Högt vattenstånd			
Varningsnivå	Gul	Orange	Röd
Område	cm i RH 2000		
Grupp 1 (Västra Götalands län, Hallands län, Skåne län)	90	130	180
Grupp 2 (Kalmar län, Östergötlands län, Gotlands län, Södermanlands län, Stockholms län)	80	110	-
Grupp 3 (Blekinge län, Uppsala län, Gävleborgs län, Västernorrlands län)	90	130	-
Grupp 4 (Västerbottens län, Norrbottens län)	100	150	-

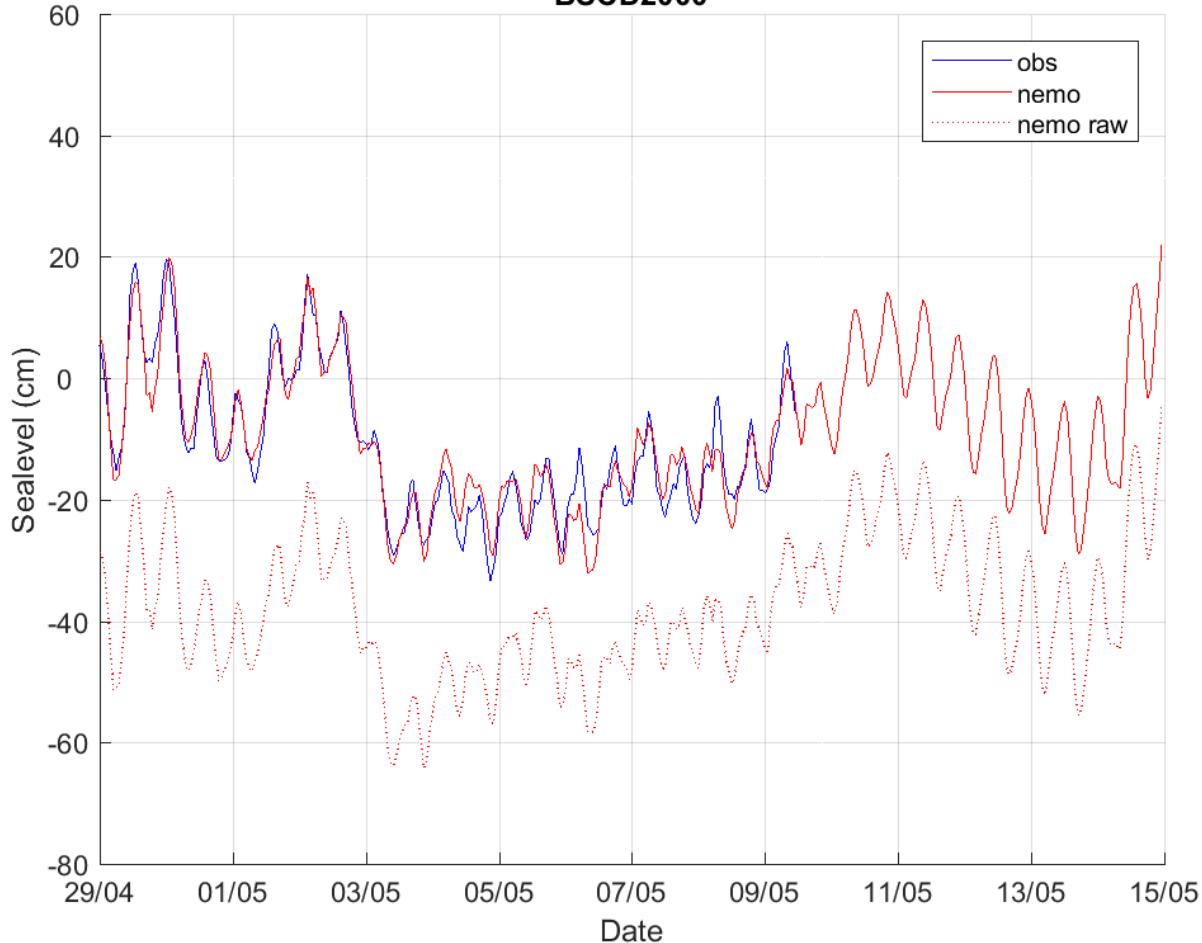
Lågt vattenstånd	
Varningsnivå	Gul
Område	cm i RH 2000
Skagerrak, Kattegatt, Södra Östersjön, Mellersta Östersjön, Norra Östersjön, Ålands hav	-80
Sydvästra Östersjön, Öresund, Bältan	-50
Södra Bottnahavet, Norra Bottnahavet, Norra Kvarken, Bottenviken	-90



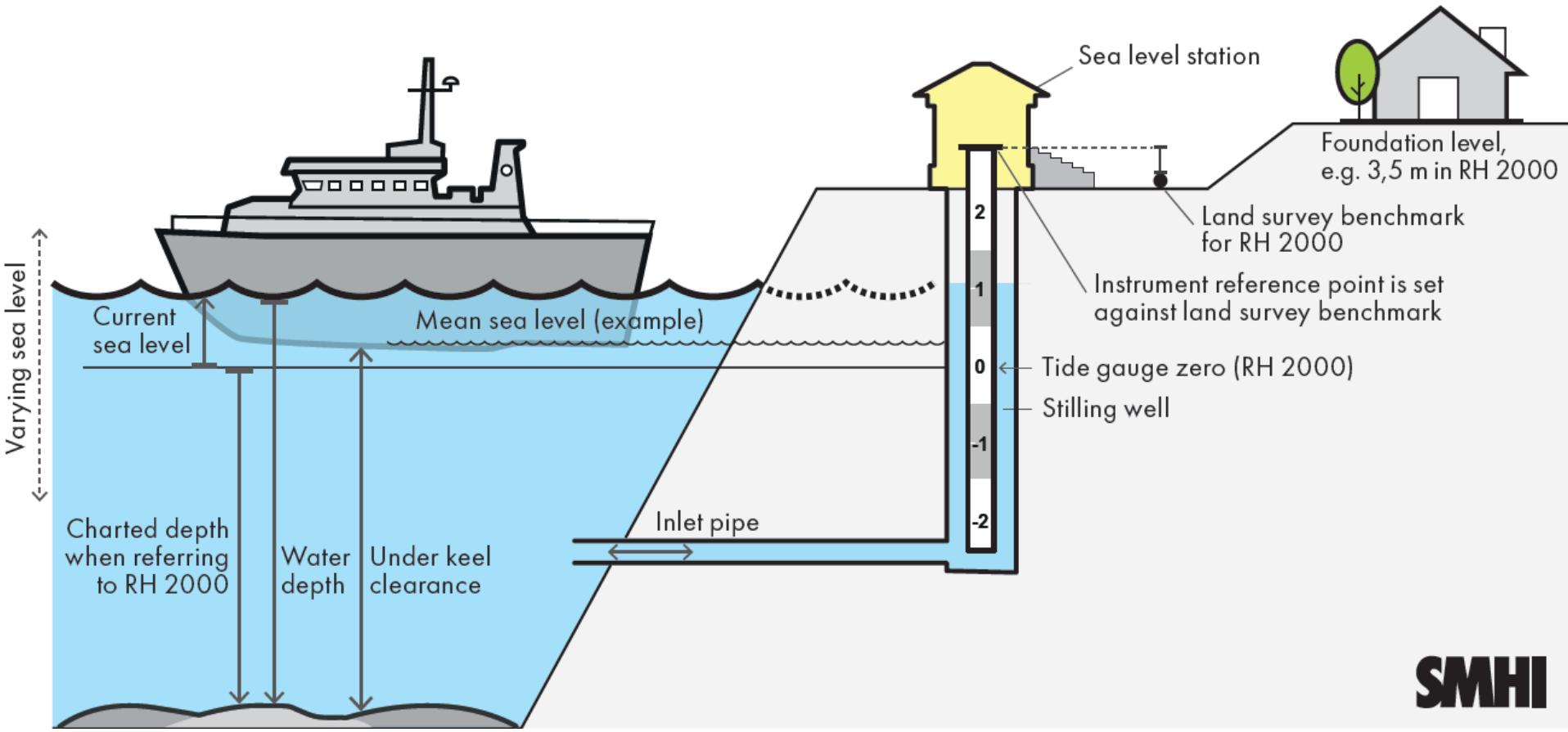
Sealevel forecast relative Baltic Sea Chart Datum (BSCD2000)



Göteborg-Krossholmen (SMHI)
2023-04-29 to 2023-05-14
BSCD2000



A uniform reference system from land to sea



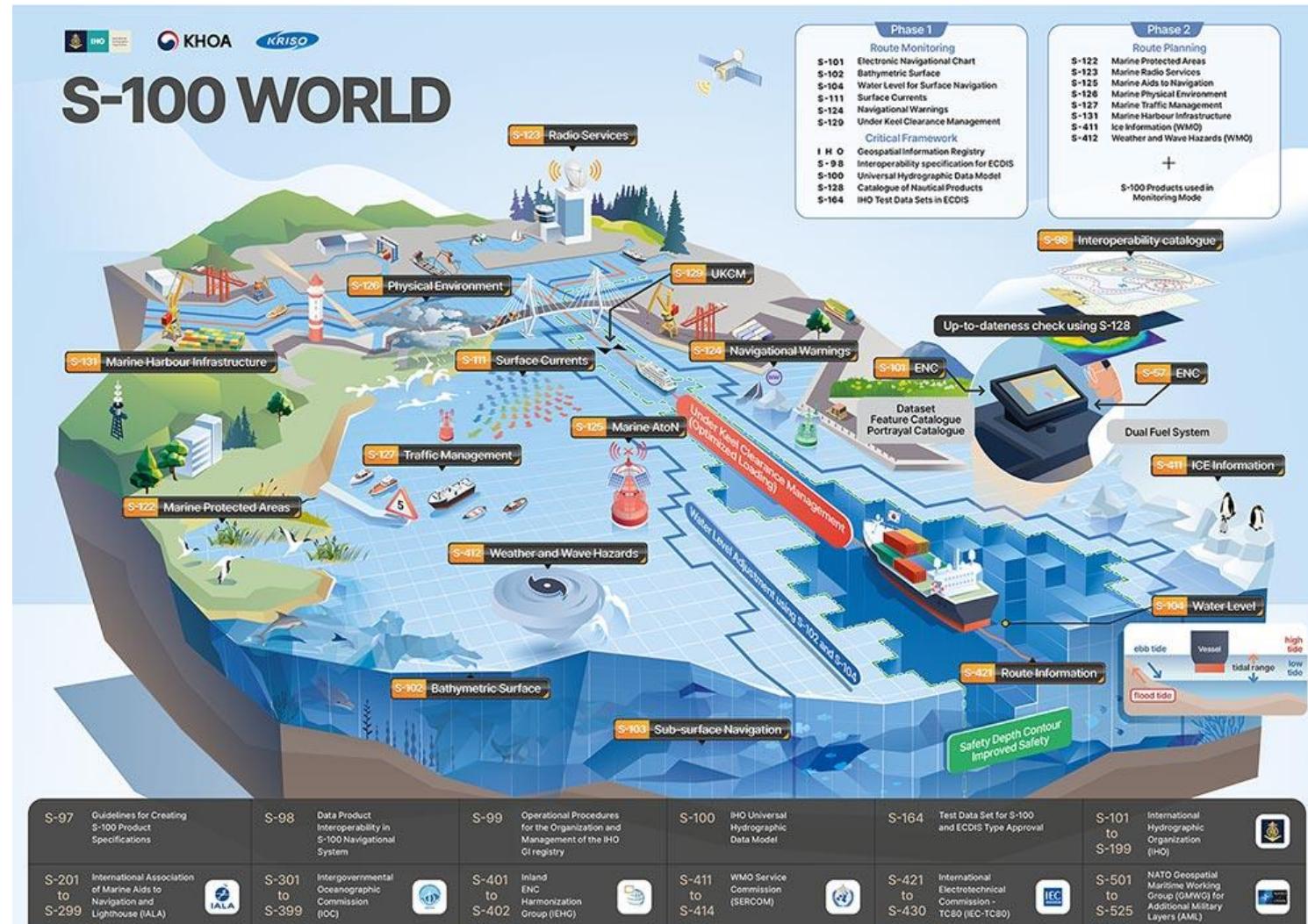
SMHI



Future Maritime Services S-100



IHO



SWEDISH MARITIME
ADMINISTRATION

S-100 Implementation

IHO S-100 Implementation Strategy

Table A – IHO list of S-100 products with special focus

First step – Route monitoring mode

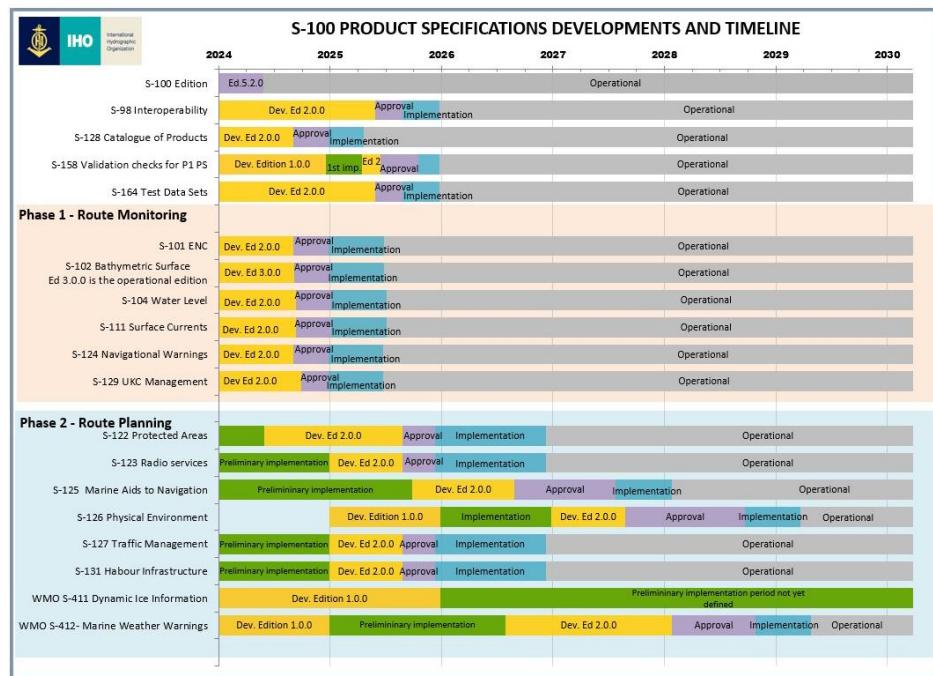
S-101	Electronic Navigational Chart (ENC)
S-102	Bathymetric Surface
S-104	Water Level Information for Surface Navigation
S-111	Surface Currents
S-124	Navigational Warnings
S-129	Under Keel Clearance Management

Critical Framework

	IHO Geospatial Information Registry
S-98	Interoperability Specification
S-100	Universal Hydrographic Data Model
S-128	Catalogue of Nautical Products
S-164	Test Data Set for S-100 and ECDIS Type Approval

Second step – Route planning mode

S-122	Marine Protected Areas
S-123	Marine Radio Services
S-125	Marine Aids to Navigational (AtoN)
S-126	Marine Physical Environment
S-127	Marine Traffic Management
S-131	Marine Harbour Infrastructure



This S-100 timeline is updated: 02.07.2024



Real Time Hydrographic and Environmental Information Service

Infrastructure



Co-financed by the Connecting Europe Facility of the European Union

Gravity surveys

Hydrographic surveys

Bathymetry database

Geoid model

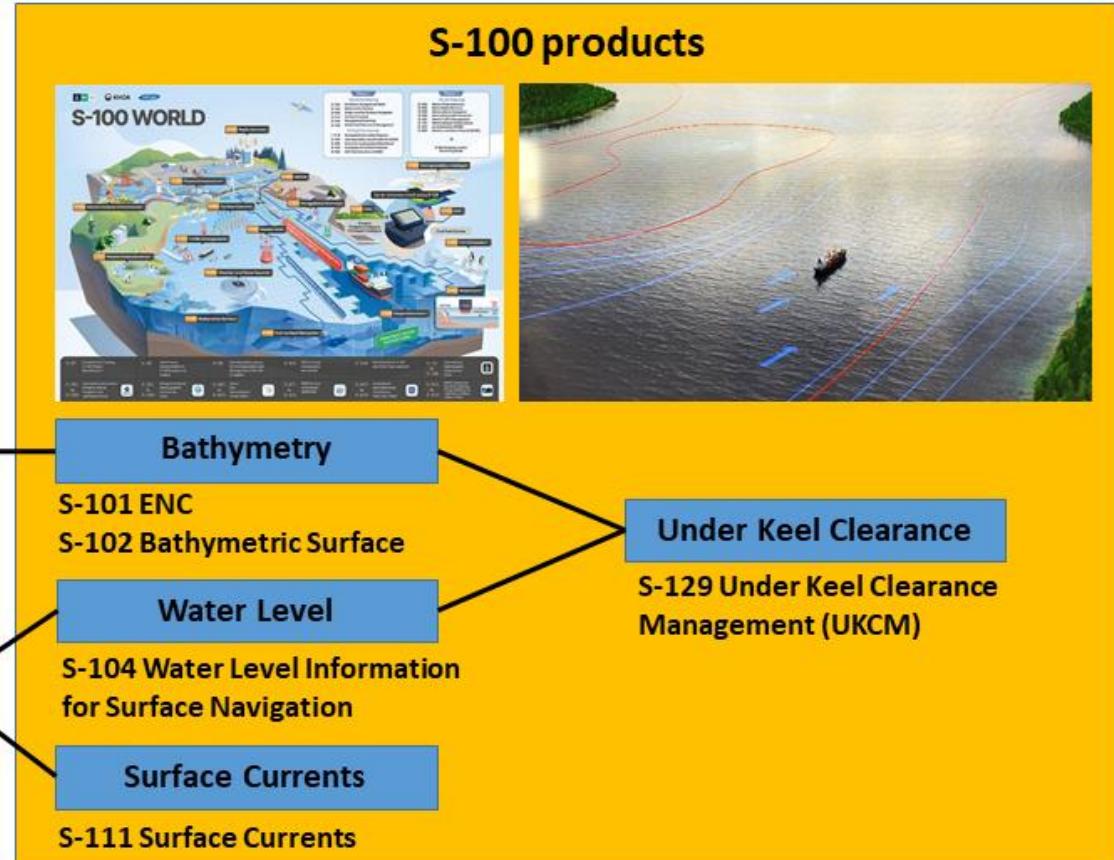
Baltic Sea Chart Datum 2000

Oceanographic observations

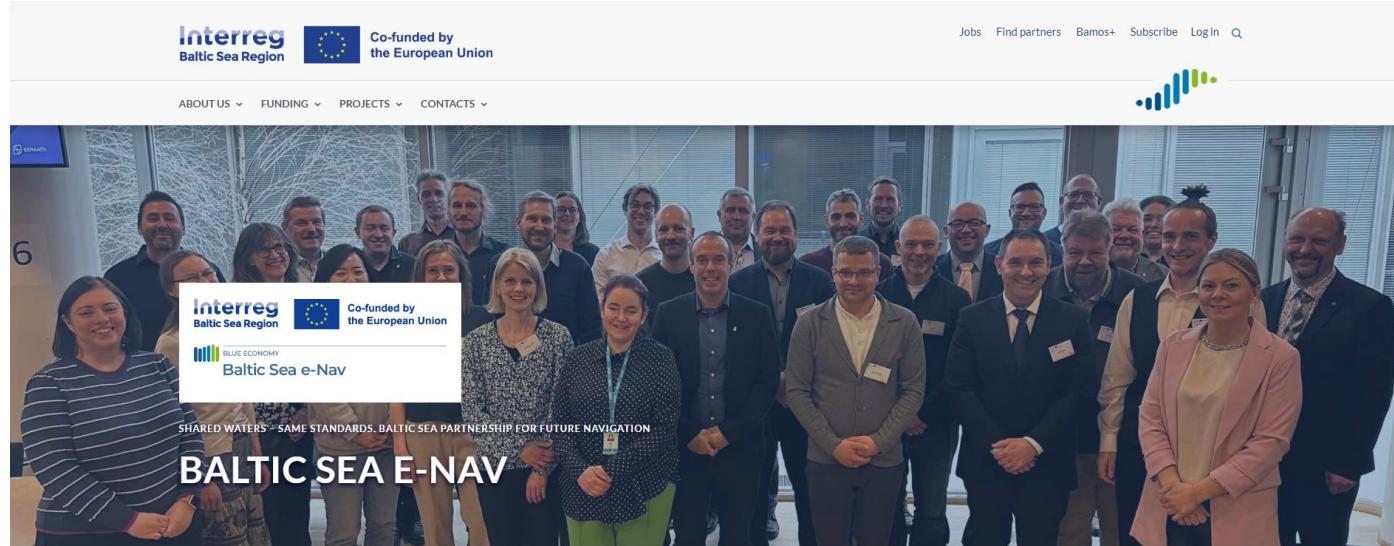
Oceanographic model



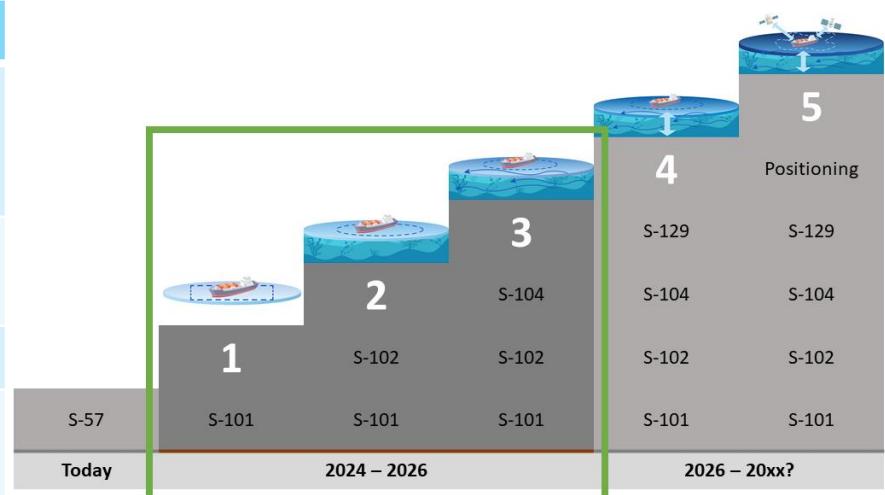
COPERNICUS
MARINE ENVIRONMENT MONITORING SERVICE
Providing PRODUCTS and SERVICES for all marine applications



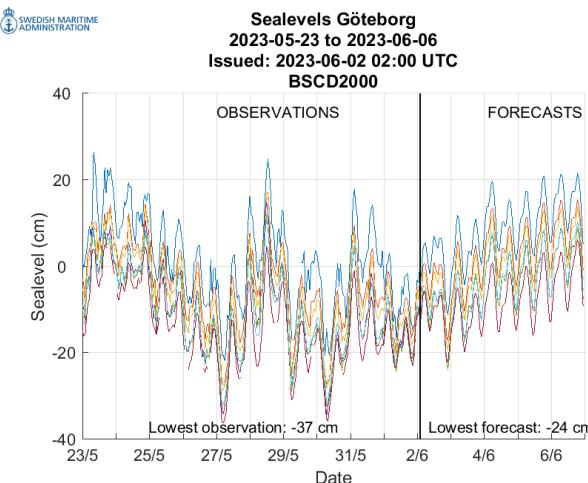
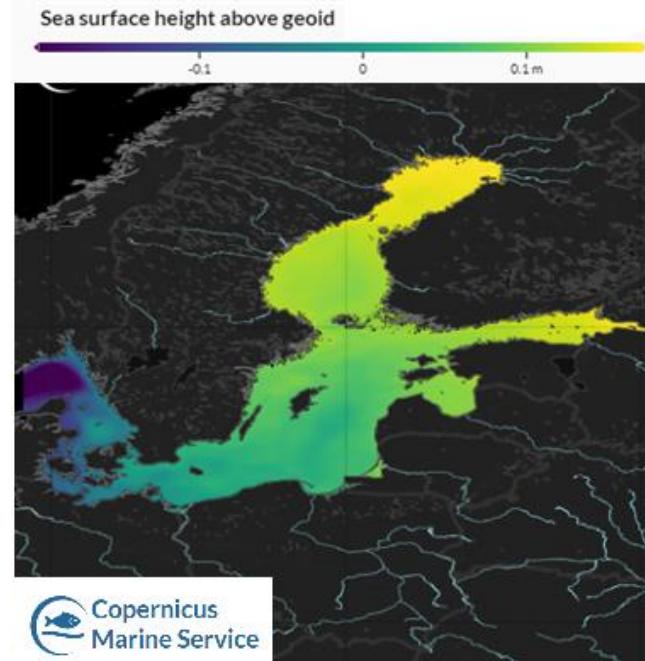
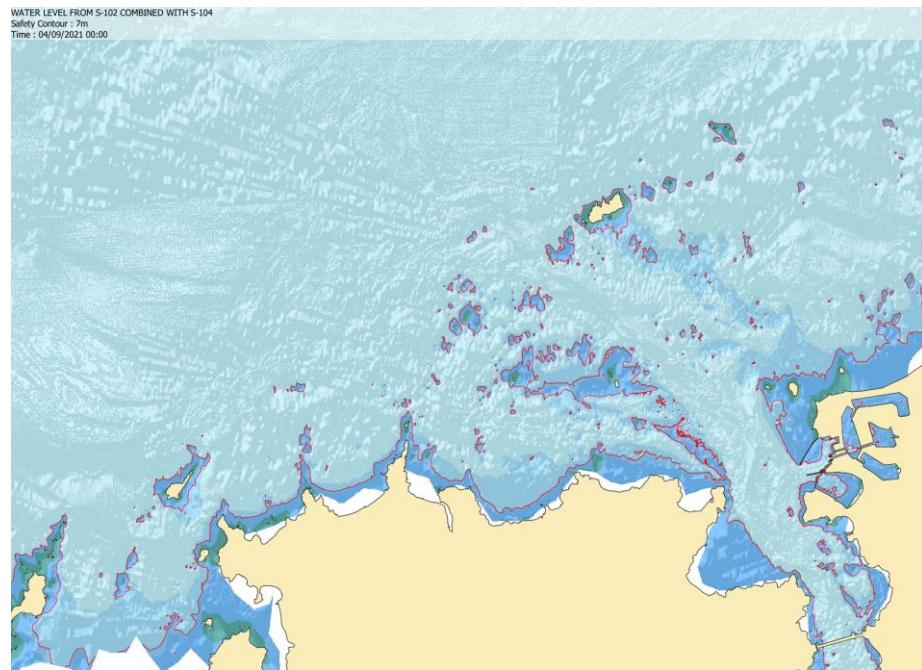
Baltic Sea e-Nav Interreg project 2023-2026



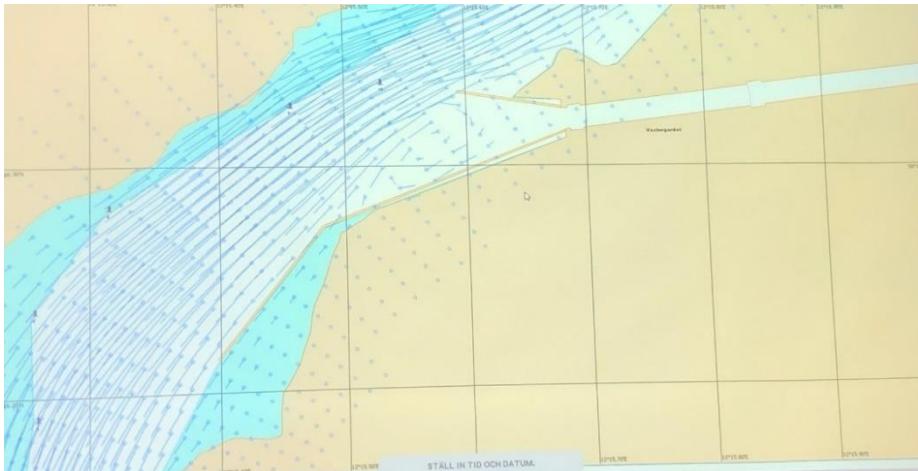
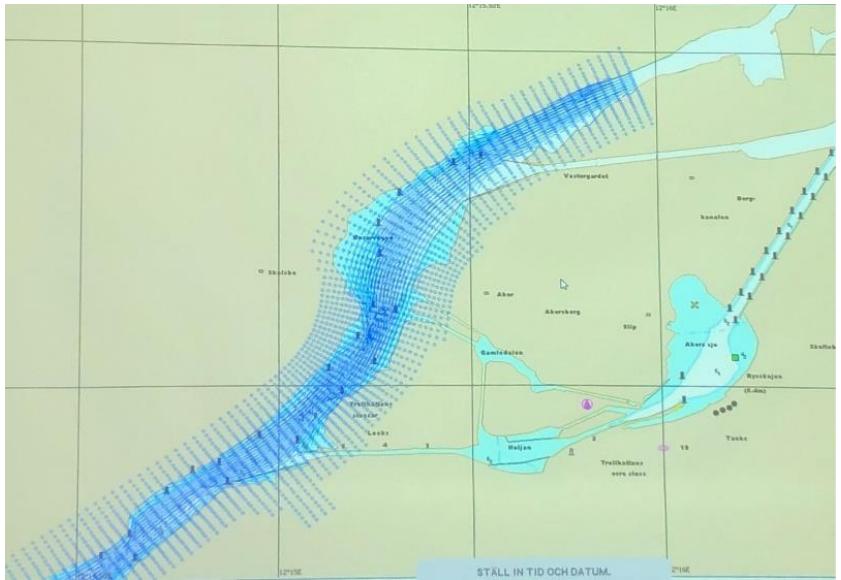
Goal	Period
Develop production capabilities for S-101 ENC, S-102 bathymetry and to some extent S-104 water level	2023-2025
Establish harmonization rules for S-10x-products, under the BSHC umbrella	2024-2026
Test, evaluate and refine the S-10x products	2025
Commercial rollout for S-101 and S-102 in the Baltic Sea. S-104 in parts of FI.	2026



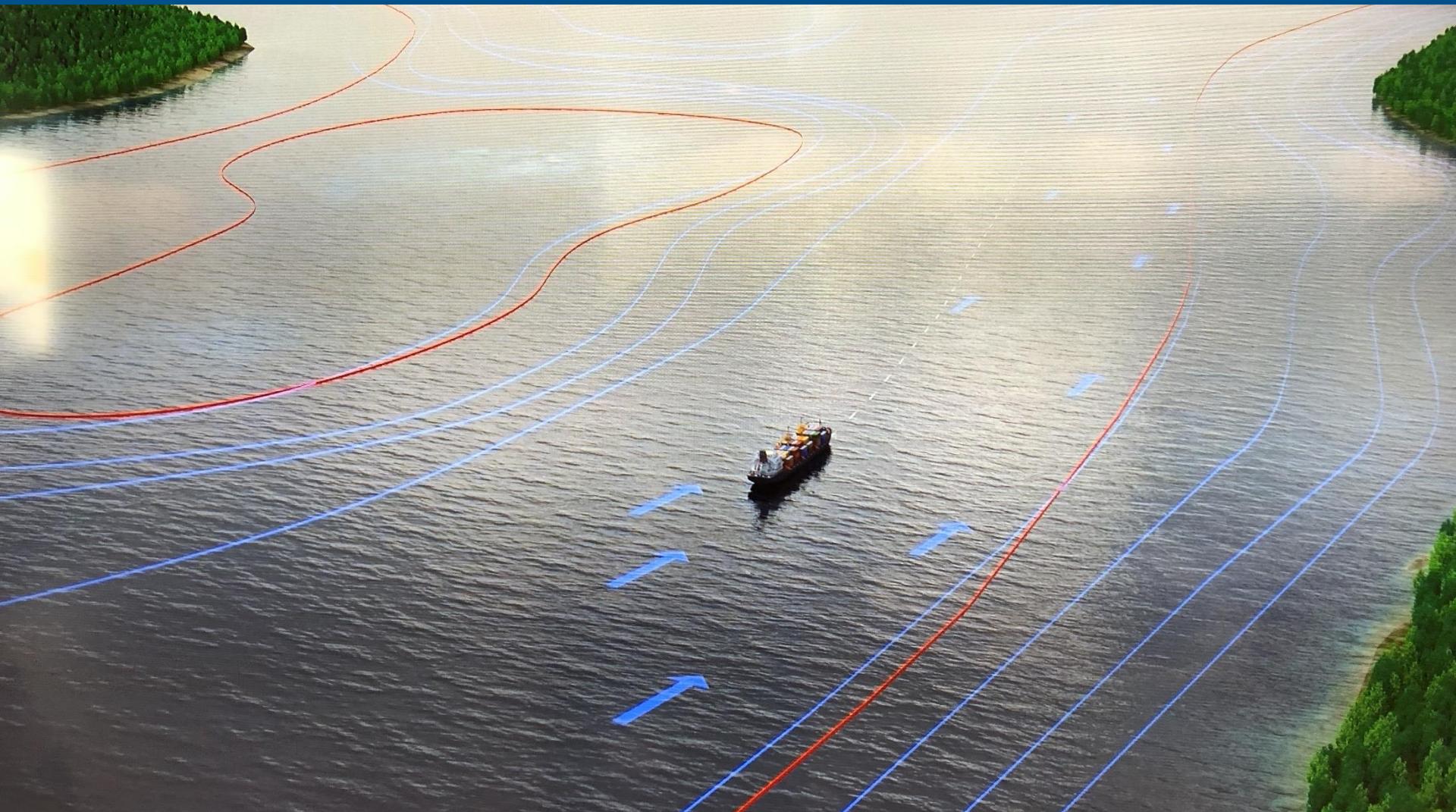
S-104 Water Level



S-111 Surface Currents



Future Navigation



SWEDISH MARITIME
ADMINISTRATION

Chart Datum, Water Level and Currents Working Group (CDWCWG)



Home ABOUT ▾ SERVICES RELATIONS WORKING GROUPS ▾ MEETINGS AND SEMINARS ▾ CONTACT PRIVACY POLICY

Chart Datum, Water Level and Currents Working Group (CDWCWG)

"To implement a common reference system, S-104 and S-111 in the Baltic Sea"



Photo: Chart Datum Working Group 14th meeting, 28-29 March 2023, Göteborg, Sweden



Thanks!



Thomas Hammarklint
Swedish Maritime Administration (SMA)
Thomas.Hammarklint@sjofartsverket.se

