

# PRESENTATION REGARDING

- CSB
- GEBCO/SEABED2030
- EMODnet

For BSHC29

# CSBWG

## Crowd Source Bathymetry Working Group

- The WG meetings are held annually as hybrid meetings and the number of participants are normally 50-100 persons.
- CSBWG15 was held in Monaco 23-25 April.
- An IRCC Workshop regarding CSB was held 26 April, aiming to inform HO about CSB, and its possible use for charting.
- CSBWG16 will be held in Wellington, New Zealand the week of 24 March 2025. The plan is to have a workshop for “CSB Open Source Tools” 1 - 2 days before the actual meeting.

# CSBWG

## Crowd Source Bathymetry Working Group

- Presentations held at the meetings are normally available on the CSBWG meeting pages.
- In between CSBWG meetings there are normally an intersessional VTC meeting, where the work item leaders report their progress and requests feedback.
- Next intersessional meeting will be held 15 October from 20:00-23:00 UTC+2.

# CSBWG

## Main topics discussed at the last meetings

- Legal issues: Does a coastal state have any legal right to restrict the collection and use of CSB data? It is neither Scientific Research nor Hydrographic Survey as mentioned in UNCLOS Article 21 (g) and 56(b(ii))
- During CSBWG13 CHS presented that they have had great success in monitoring changes of depths in their rivers and channels by the use of "Trusted data providers". When the CSB data was handled and calibrated they achieved low average differences against areas newly surveyed by Multibeam.
- CHS have developed a method to "rank" data providers by comparison of data of data from other providers.

# CSBWG

## Main topics discussed at the last meetings

- The use of automatic classification/ranking of CSB providers has been mentioned to increase the trustworthiness of the collected data. Start from the bottom, and earn credibility when data fits well to known survey data or higher "ranked" providers.
- NOAA develops an open-source, automated workflow to process CSB. They have had very good results when comparing CSB to modern surveys. I recommend their presentation [NOAA Coast Survey Update](#) available on CSBWG13 homepage. Links to various open source tools can be found here: <https://openbathymetry.cidco.ca/open-source>

# EXAMPLES FROM THE INDUSTRY

- Several examples has been presented during the meetings showing "Better data than from the HO charts". Such data is also frequently used by commercial cruise ships in remote areas where little or no HO data exists.
- The question is though whether the presented charts actually are better or if the presented charts simply has a lower degree of generalization.
- In some examples the charts has much higher number of isolines, but seem to be interpolated from sparse data or officially charted curves.





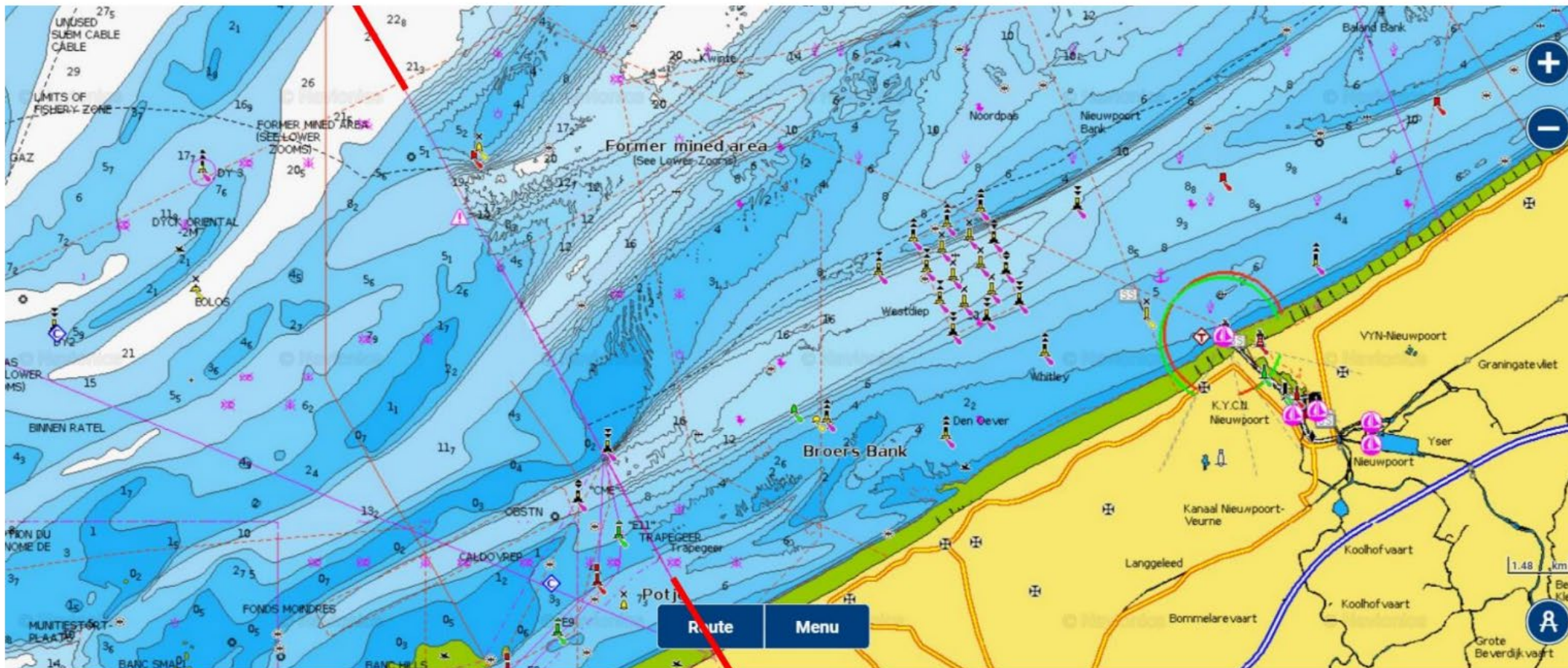
IHO

# EXAMPLES OF BETTER DATA THAN HO DATA

International Hydrographic Organization

## MANUFACTURER 1 (France/Belgium)

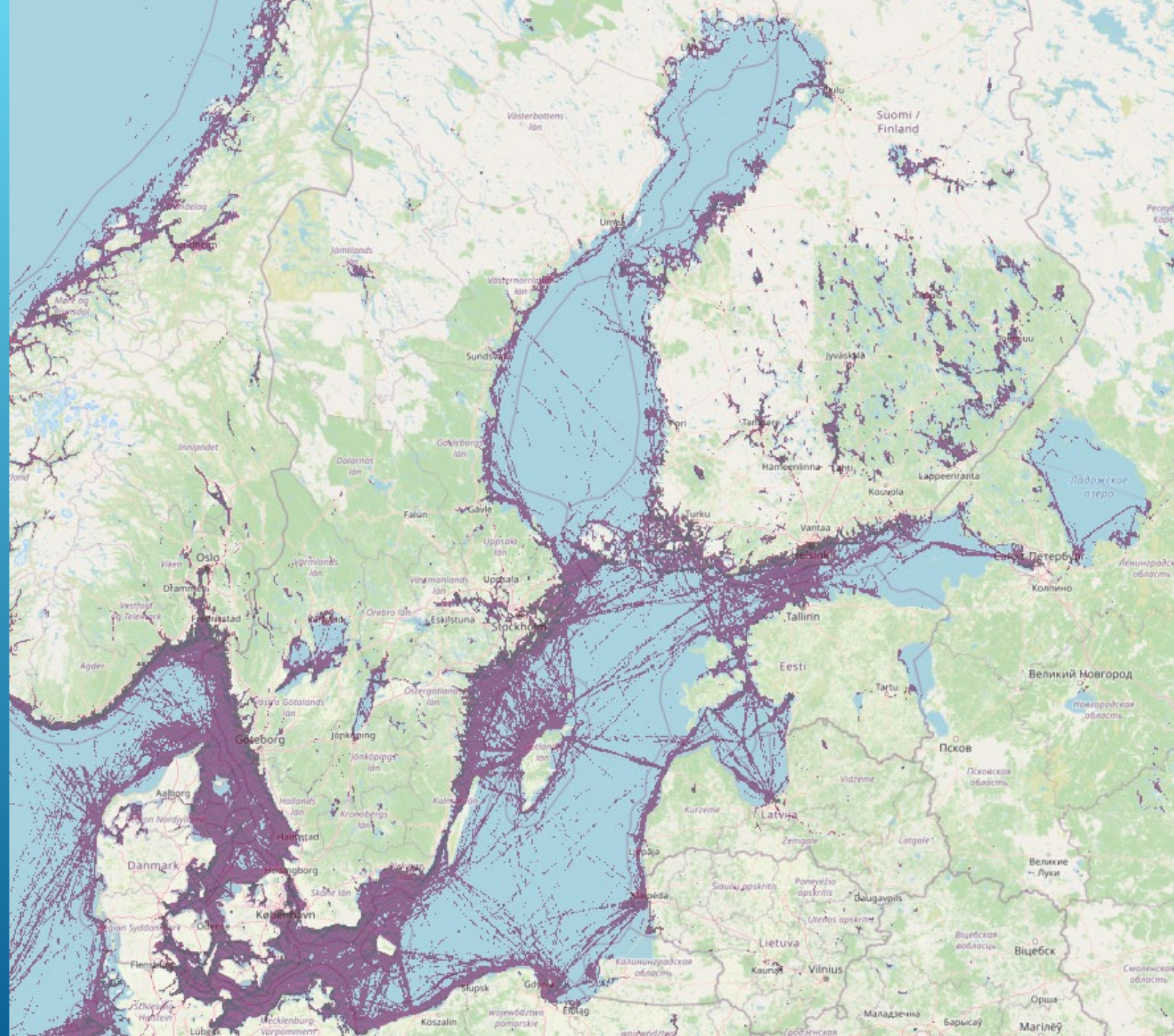
CSB data to on the right side





CSB-DATA  
collected in the  
Baltic area, from  
just one "Plotter"  
manufacturer,  
up to 2020.

PROBABLY **MUCH MORE**  
NOW FOUR YEARS LATER.





# LEGAL ASPECTS OF CSB DATA

During CSBWG 13 - 15 there has been a number of discussions whether or not a Coastal state has any legal right to restrict CSB data.

A presentation regarding this was held by: Steven G. Keating, NGA, United States Observer to the Advisory Board on the Law of the Sea

I add some of his presented slides to this presentation (slightly modified).

# KEY CONCEPTS

## ▶ Hydrography

- ▶ That branch of applied science which deals with the measurement and description of the physical features of the navigable portion of the EARTH's surface and adjoining coastal areas, with special reference to their use for the purpose of NAVIGATION.

*IHO Hydrographic Dictionary, S-32*

## ▶ Bathymetry

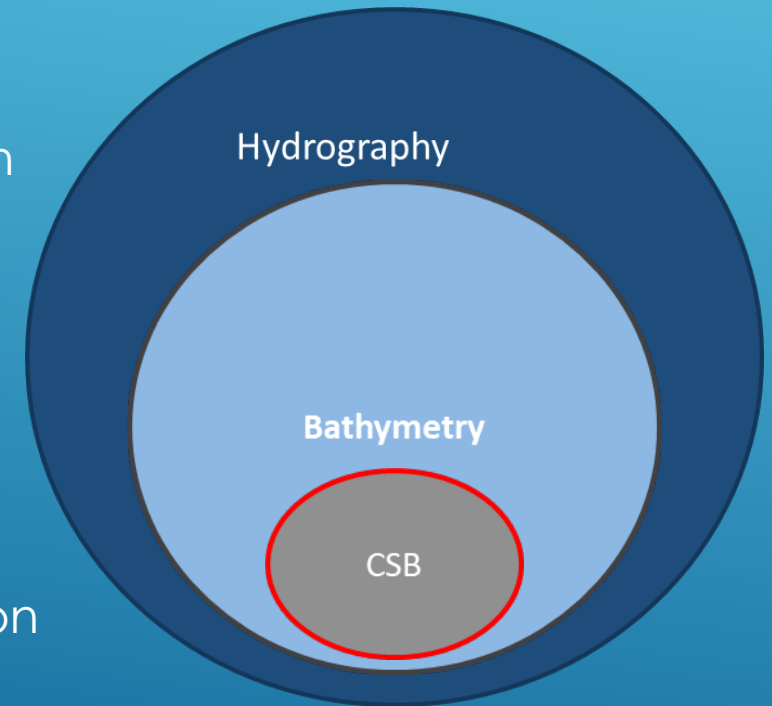
- ▶ The determination of ocean depths. The general configuration of the SEA FLOOR as determined by profile analysis of depth data.

*IHO Hydrographic Dictionary, S-32*

## ▶ Crowdsourced bathymetry

- ▶ Crowdsourced bathymetry (CSB) is the collection and sharing of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.\*

*Definition from IHO Publication B-12, Guidance on Crowdsourced Bathymetry*



# KEY CONCEPT: ROUTINE MARITIME OPERATIONS (RMO)



This is a term of art **not defined** in treaty or code, but for the purposes of CSB, RMO is intended to mean maritime operations which are not hydrographic surveying nor Marine Scientific Research, but rather activities such as transiting from one point to another, passenger carriage, yachting, fishing, towing, etc.





# WHAT CSB IS NOT

- **Hydrographic Surveying**

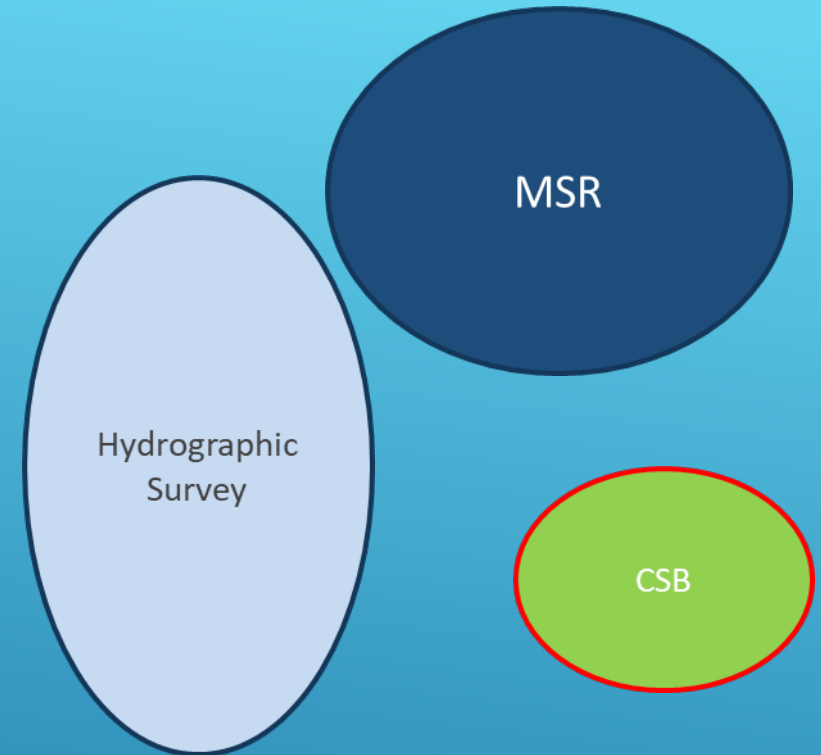
A SURVEY *having for its principal purpose* the determination of DATA relating to bodies of water. A hydrographic survey may consist of the determination of one or several of the following classes of DATA: DEPTH of water; configuration and NATURE OF THE BOTTOM; directions and force of CURRENTS; HEIGHTS and TIMES of TIDES and water stages; and location of topographic features and fixed objects for survey and navigation purposes.

From IHO Hydrographic Dictionary, ENG ID 5244

- **Marine Scientific Research (MSR)**

Not defined in UNCLOS, though not for want of trying. See Marine Scientific Research, A revised guide to the implementation of the relevant provisions of the United Nations Convention on the Law of the Sea.

- Provisions governing MSR appear throughout UNCLOS (see Arts. 21, 40, 56, 143, 238-257, 263, 264, 266, 270, 275, 297, etc.)



# REGARDING MS RESPONSES TO IHO CL 21/2020

- ▶ If the answer is "**No**" for a sea area received data will be filtered out, but stored. Can be retrieved once the answer is changed to a "Yes".  
No possibility for a HO to download data. Presence of such data can be made available upon request.
- ▶ If the answer is "**Inform Hydrographic Office of new dataset to allow review of data**", DCDB considers you informed as soon as the data is published and the dataset can be downloaded by the HO for review. If the data is delivered directly to DCDB there is no process for "review" prior to publication, but possibly if the data is provided via a "Trusted Node".
- ▶ If the answer is "**Inform Hydrographic Office of new dataset to allow review of data, provide copy of dataset**" DCDB considers you informed as soon as the data is published and the dataset can be downloaded by the HO.
- ▶ If the answer is "**All data to be reviewed by Hydrographic Office before ingestion into DCDB.**" No data will be included in DCDB database prior to HO-review. *(Used by Denmark)*

# Geographic Filtering



Coastal states were in 2020 requested by the IHO to indicate their position on the public sharing of CSB data collected within waters subject to their national jurisdiction.

To this date, 35 coastal states **(green)** have replied positively.

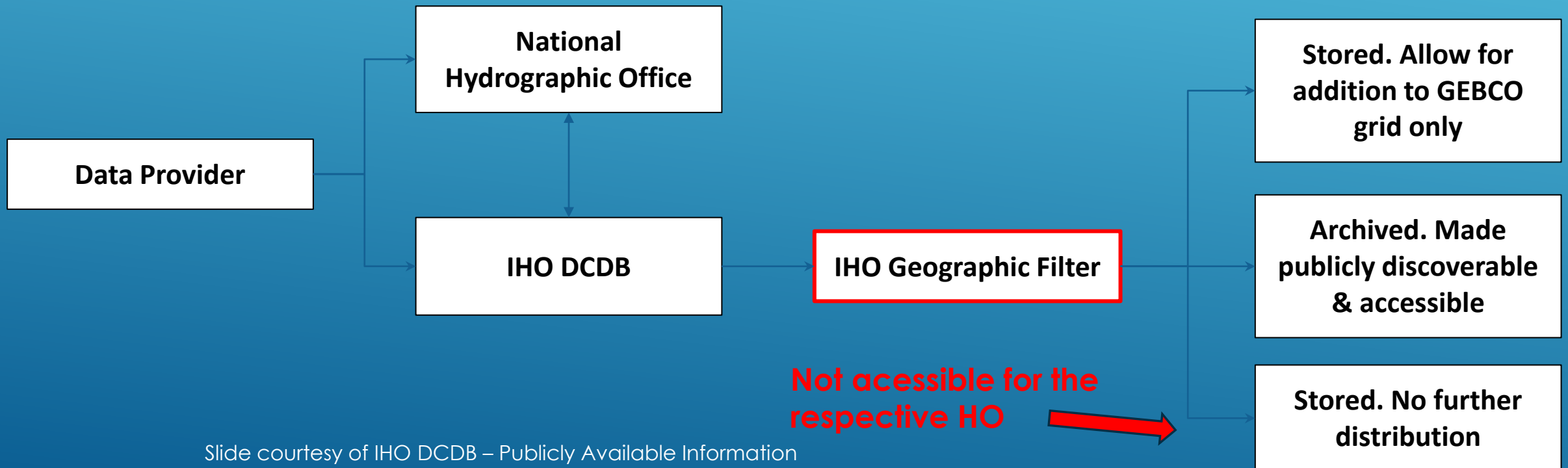
**To at least one Sea Area**

Slide courtesy of IHO DCDB – Publicly Available Information




# Geographic Filtering

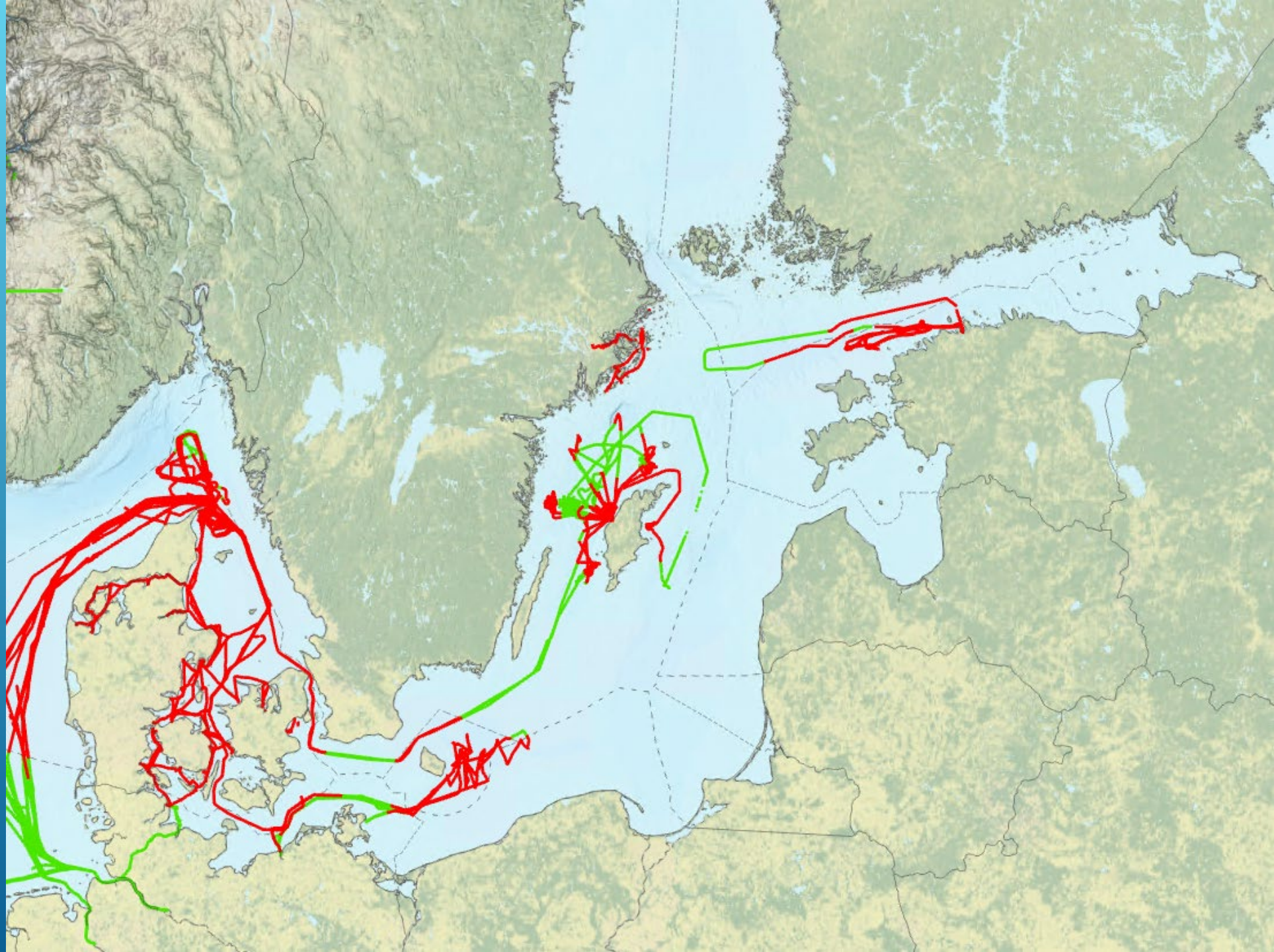
In response to feedback provided to the IHO, the DCDB implemented (and continues to update) a geographic filter for incoming data to take into account coastal countries' positions on the distribution of CSB collected in their areas of jurisdiction.



# CSB-DATA collected in the Baltic area and available in IHO-DCDB

-  Public data
-  Restricted data

*This image is a special  
extraction made by DCDB for  
this presentation*

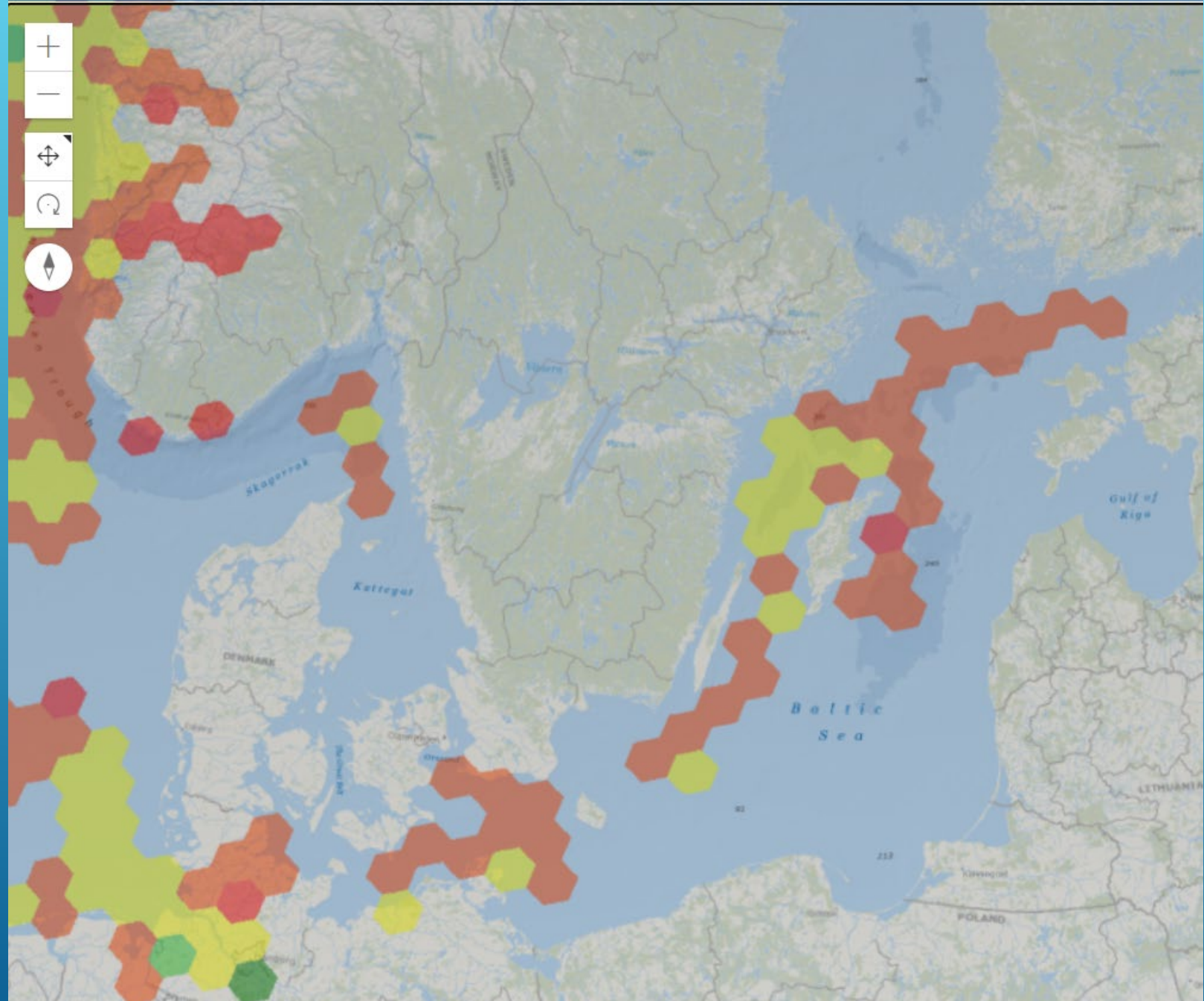




PUBLIC CSB-DATA in  
IHO-DCDB  
as shown in the  
DCDB Dashboard

[http://csb-pointstore-  
dashboard.s3-website-us-west-  
2.amazonaws.com/](http://csb-pointstore-dashboard.s3-website-us-west-2.amazonaws.com/)

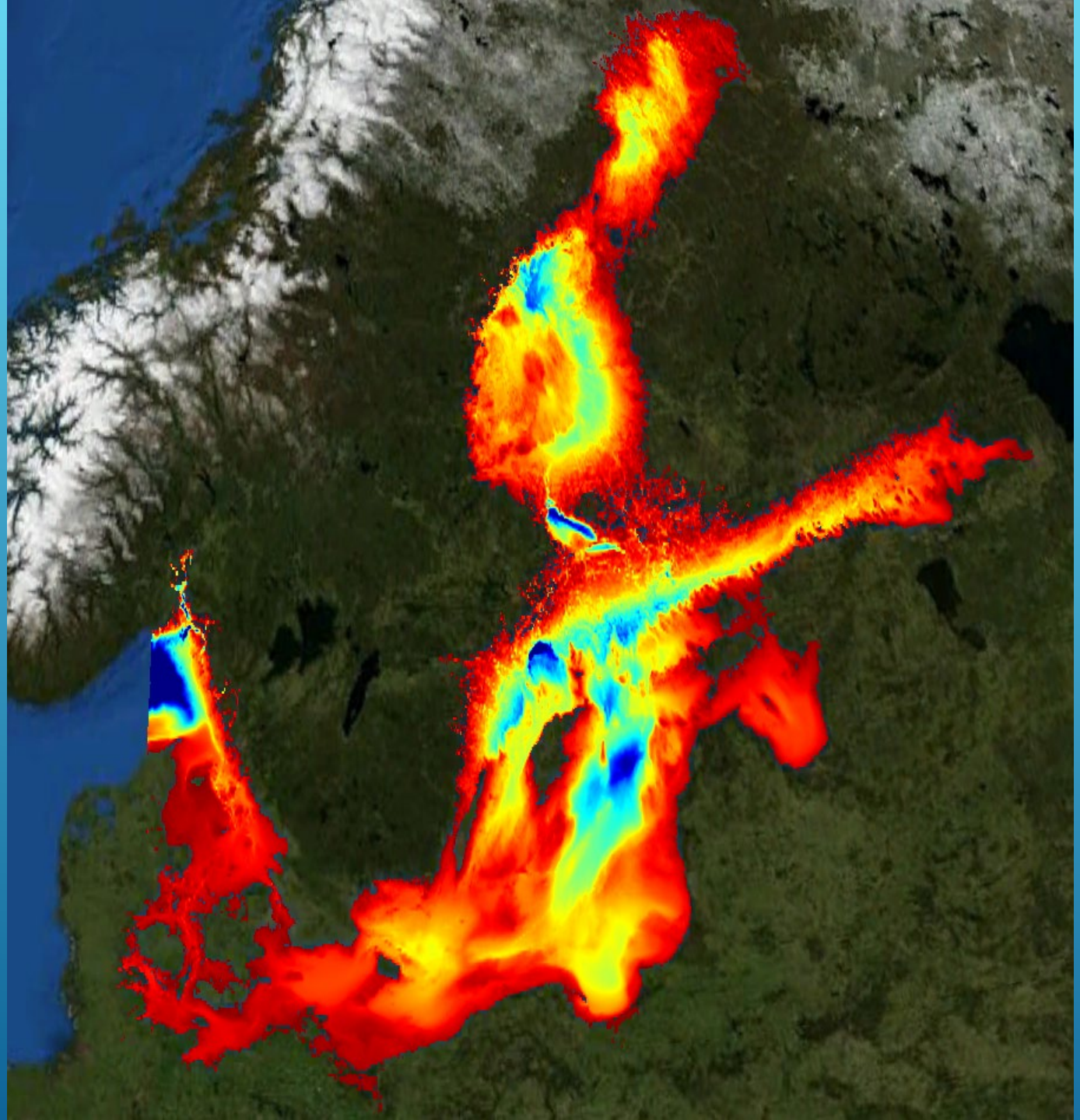
This site only shows data from  
areas that has responed  
positive on the CL21/2020





# EMODNET BATHYMETRY

New EMODnet - DTM  
delivered in June for  
the 2022-2024 project



# Next EMODnet Bathymetry project 2025-2026

- ▶ The procurement is ongoing and contract is scheduled can be signed around 20 December 2024.
- ▶ Possible renewed contract, without new procurement, might be signed for a 30 month period starting in December 2025, ending mid 2029.



# Basic steps for an EMODnet Bathymetry project

- ▶ Gather information of possible new data contributions.
- ▶ Prepare and assist in creation of metadata for data to be delivered. Metadata (per survey) in SeaDataNet, following the CDI (Common Data Index) specification, or described as a Composite DTM in the IFREMER SEXTANT database.
- ▶ Support providers regarding metadata and data preparations.
- ▶ Gather data (EMODNET format required for partners and subcontractors) and check that there is proper metadata connected to all cells.
- ▶ Assign metadata to data from non partners/subcontractors to each dataset.
- ▶ Merge all source datasets and checks that no large error occurs.
- ▶ Adding elevations (Copernicus) along the coastlines to assist interpolations.
- ▶ Interpolation of all regional data in one large DTM using 1/32 Min. resolution.
- ▶ QC and comparison against earlier deliveries

# EMODnet assistance

- ▶ SMA as regional coordinator for the Baltic Sea Area can provide support to a provider for CDI-Metadata creation.
- ▶ For Caris Bathymetry Database users, scripts (created by other HO:s) could possibly be provided that can be adjusted to help in extraction of metadata and data.
- ▶ If merged data exists in high resolution in a plain ASCII file, GMT tools can be used to extract data (min, max and average) in a fast and simple way.

# Actions requested by the BSHC29

1. Note this report
2. Consider if BSHC should sign an MOU with SEABED 2030
3. MS are encouraged to state the legal status for CSB as requested in the IHO-CL 21/2020
4. MS are encouraged to approach ships owners associations, in respective MS, to encouraged ships owners to contribute with CSB data to IHO-DCDB, especially for those going to remote places.
5. Take any further actions as appropriate