



Danish Geodata
Agency

BSHC30 2025

NATIONAL REPORT OF DENMARK

This document
provides an overview of the key activities
undertaken by the Danish Geodata Agency's Hydrographic Office
since the last report presented at RHC meetings where
Denmark is represented.

1. HYDROGRAPHIC OFFICE

1.1. DANISH HYDROGRAPHIC OFFICE

As part of the Danish Geodata Agency (DGA), a government agency under the Ministry for Climate, Energy and Utilities, the Danish Hydrographic Office has responsibility for hydrographic surveys, the production of nautical publications and charts of the waters surrounding Denmark and Greenland as well as for the Danish MSDI.

The Danish Hydrographic Office (Centre for Nautical Charts and Marine Data and parts of Policy and Strategy Division) comprises 80 (full time) employees, collaborating closely with 13 surveyors from the Royal Danish Navy who carries out the hydrographic surveys on Navy ships (Danish Hydrographic Service).

Furthermore, as a representative of the Kingdom of Denmark, the agency assumes hydrographic responsibilities in foreign affairs, security, and defense policy-related matters for the Faroese waters. This entails tasks such as charting boundaries, INT-charts, negotiating international agreements, and actively participating in the International Hydrographic Organization (IHO) and its affiliated working groups.

By working closely with the Danish Maritime Authority and the Ministry for Resilience and Preparedness, responsible for navigation aids like Notices to Mariners and List of Lights, and the Danish Meteorological Institute overseeing tide tables and operational tide gauges, the Danish Geodata Agency ensures seamless maritime governance, fostering safety and efficiency in navigation.



Figure 1. Kingdom of Denmark

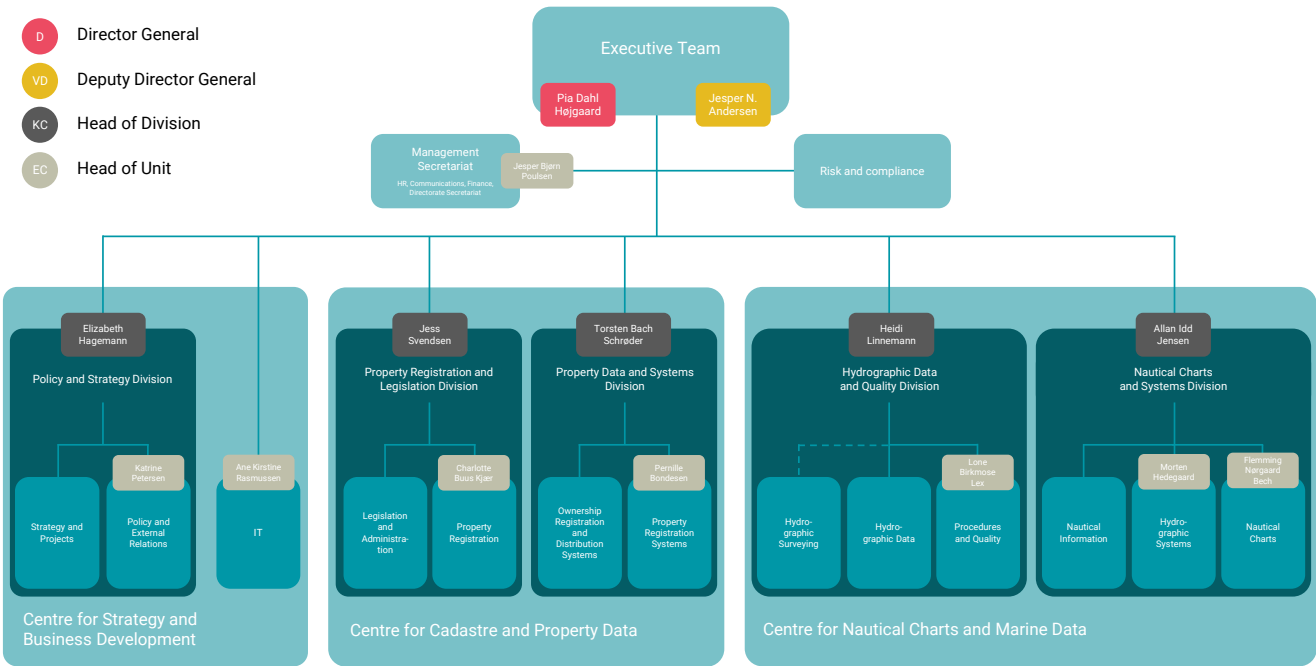


Figure 2. Organization in the Danish Hydrographic Office.

2. SURVEYS

2.1 DENMARK 2024

Surveying initiatives in Danish waters are defined in the Survey Directive which aligns with agreements established during the HELCOM Ministerial Council meetings in September 2001 and October 2013. These agreements prioritize the resurveying of main navigation routes and other significant areas vital for Baltic Sea shipping. Additionally, the incorporation of CAT III areas into the survey plan, as decided in the 2021 HELCOM ministerial meeting, further enhances navigational safety. In addition to the HELCOM prioritization, DK surveyed large parts the inner route in the North Sea, leading traffic safely through the planned off shore windmill areas.

In 2024, the target for surveying Danish waters was set at 22 000 Km of survey lines, yet the actual accomplishment surpassed expectations, covering a total of 26 375.5 Km.

Vessels used for survey in Denmark:

I / F Poul Løwenørn (Danish Maritime Authority)

The surveying vessel FYRHOLM and BIRKHOLM (Danish Navy)

The survey boats SOM-1 and SOM-2 (Danish Navy)

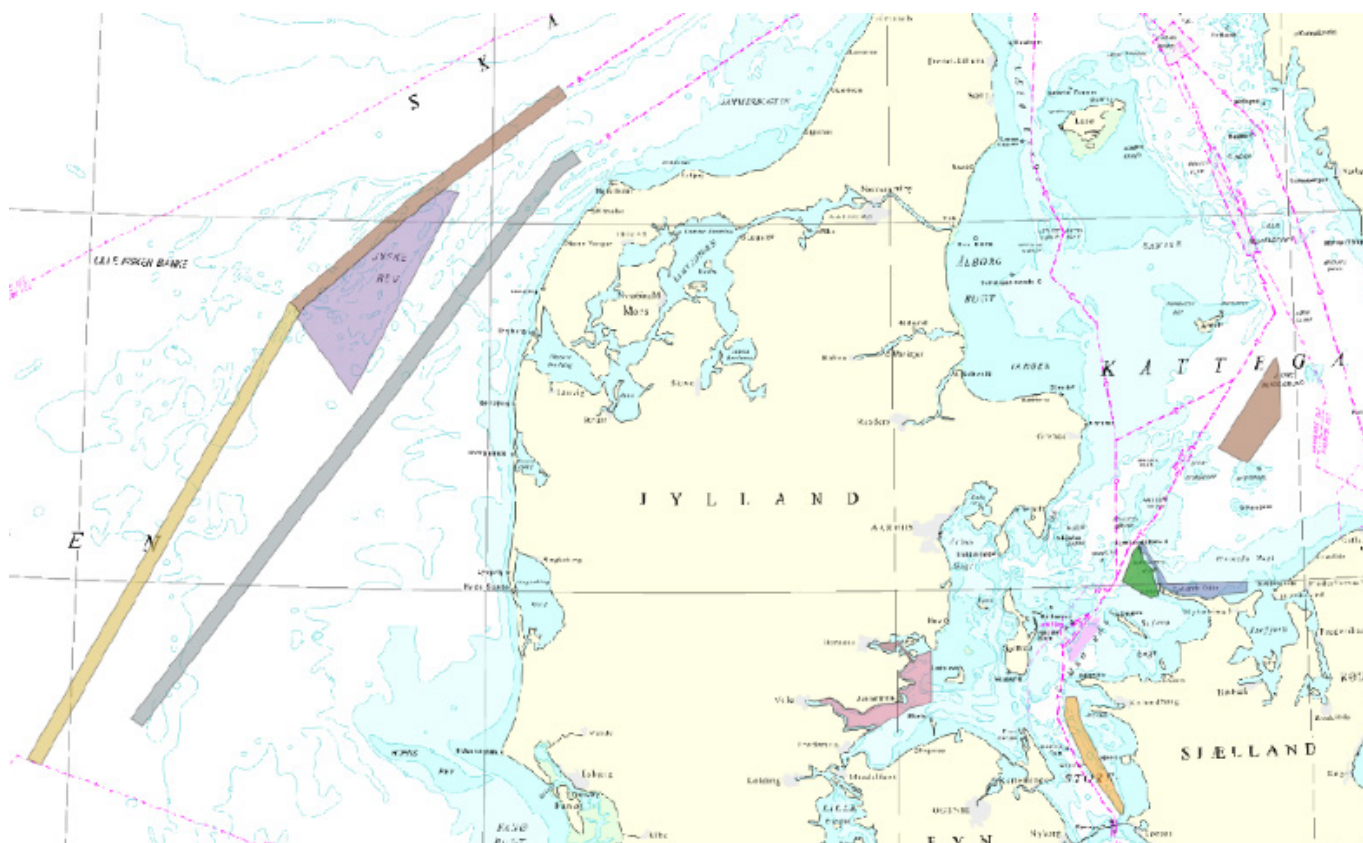


Figure 3: Survey Priorities in Danish waters.



2.2 GREENLAND

The Survey Directive for Greenland is based on the overarching priorities for hydrographic charting established in collaboration with the Government of Greenland. In 2023, these priorities were set out as follows:

PRIORITY 1.

The inland routes between the cities of Greenland's west coast from Nunap Isua (Cape Farewell) to Upernavik

PRIORITY 2.

Survey of sailing routes in coastal areas on the west coast of Greenland, where the general water depth is less than 200 meters and the basis of survey is insufficient. Examples of priority 2 may be coastal areas where inshore sailing is not possible, due to ice conditions and geography and surveys are of older date or completely missing.

PRIORITY 3.

Surveying areas of particular interest for business and tourism development. Examples of priority 3 areas may be: Selected fjords with frequent visits of cruise ships and areas of impending mining where increased sailing with larger ships is expected.

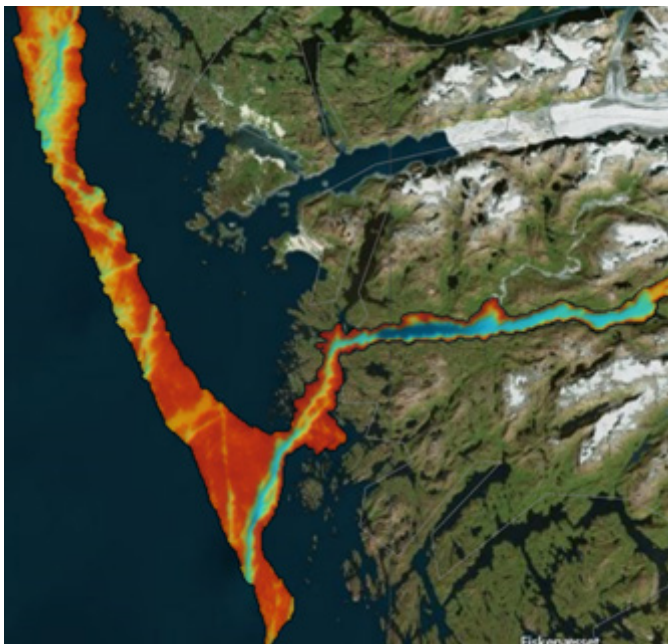


Figure 4 Grædefjord and outer corridor

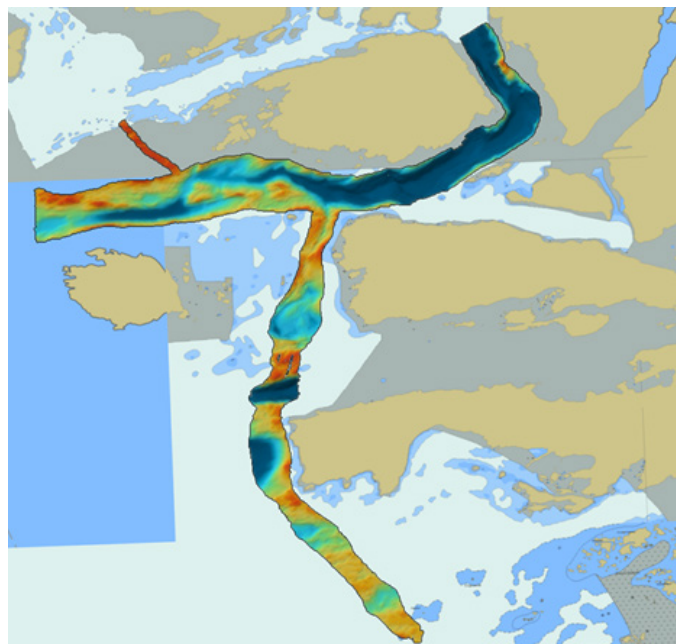


Figure 5 Alannngorsouaq (Kobberminebugten), Simpsons passage and Søndre løb

In 2024, the goal was to survey 6,500 km of surveyed line. We ended up with 4,188.4 km of surveyed line, partly due to other priorities from the Joint Arctic Command in Greenland. Additionally, there was a significant shortage of navigators on the surveying vessel, which resulted in our voyage being shortened. We managed to survey a corridor along the coast from Kangerluarsoruseq (Færingehavn) to Killiit, as well as the approach to Grædefjord and Grædefjord itself. Furthermore, surveys have been carried out in the area between Indre Kitsissut and Alannngorsouaq (Kobberminebugten), through Simpsons Passage and Søndre Løb.

Surveys were carried out in Greenland waters in June and July, with:

LAUGE KOCH Arctic patrol vessel (Danish Navy)
The survey boat SAR-3 (Danish Navy)



2.3 FAROE ISLANDS

The Faroese Hydrographic Office (part of the Faroese Environmental Agency, Umhvørvisstovan) is responsible for surveying and charting the waters around the Faroe Islands.

The Faroese Hydrographic Office continued to gather bathymetry data with the Faroese Marine Research vessel Jákup Sverri, mainly whilst the vessel is on research trips.

Data using a Kongsberg EM712 multibeam echo sounder based system were gathered during 7 weeks of the Jákup Sverri tours operated by the Faroese Marine Institute (Havstovan). Resulting in approximately 870 hours of survey lines, covering a distance of approximately 5200 nautical miles. These were a combination of passage lines and systematic surveys.

A number of data files were received from Landsverk covering many of the ports and harbours on the Faroe Islands.

2.3.1 FAROE ISLANDS: IMO MEMBER STATE AUDIT

From June 17 to 24, 2024, the IMO Member State Audit Scheme for the Faroe Islands took place. Several Faroese ministries, authorities and institutions were included in the audit, with the Faroese Maritime Authority having the coordinating role. The Faroese HO had presentations on how our obligations according to SOLAS are fulfilled and our office was also visited by the auditors. No further comments were reported to the work carried out by the Faroese HO.

2.3.2 FAROE ISLANDS: NOTICE TO MARINERS TAKEN OVER BY THE FAROES

From January 1, 2025, the Faroese Maritime Authority promulgates navigational notices for Faroese waters. This is done in close cooperation with the Faroese Hydrographic Office.

2.3.3 FAROE ISLANDS: FAROESE DEPTH MODEL

A 50m resolution depth model was developed and made freely available to anyone through foroyakort.fo. The depth model was developed through using all depth data available, both historical and new. The depth model covers the area enclosed by Faroese Coastal ENC, and consists of over 4 million depths, of which around 36.2% are real depths, and the remainder interpolated. The details as to which of the depths are real and interpolated are also included in the model.

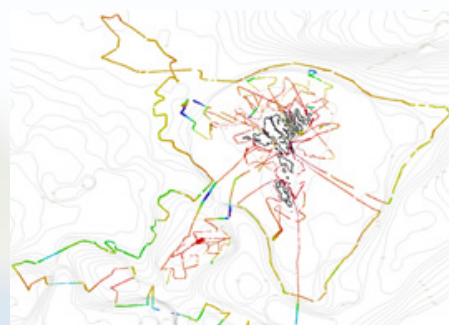


Figure 6: Provided by the Faroese Hydrographic Office.

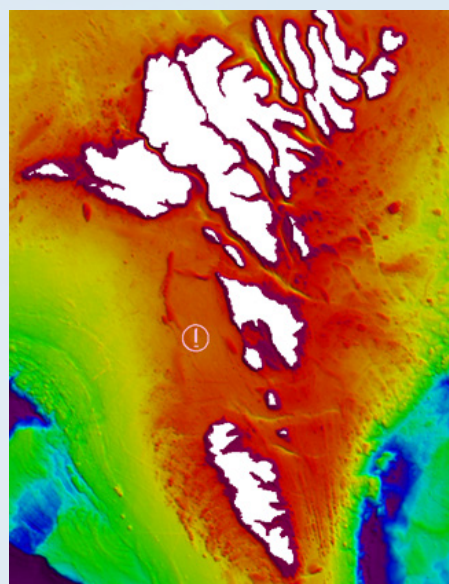


Figure 7: The 50m resolution depth model. FODM2024_50m



3 NAUTICAL CHARTS

UPDATE FROM GREENLAND

With the Danish Government's Budget for 2025, DGA has received baseline funding from 2027 to 2041 to maintain and update existing nautical chart production for Greenlandic waters, with an annual allocation of approximately 24 million DKK (around 3.2 million EUR). This funding ensures the continued maintenance and regular updates of current chart coverage and ENC coverage.

DGA maintains active dialogue with maritime stakeholders through annual visits to Greenland, engaging cruise operators, pilot services, shipping companies, fishing industries, and local authorities to assess navigation requirements and prioritize charting efforts where they provide maximum benefit to maritime safety.

While the West Coast benefits from charts developed using modern positioning standards that facilitate integration of new survey data, certain coastal areas still rely on charts based on older survey methods and relative positioning techniques. Though these existing charts remain functional and reasonably accurate, they cannot easily accommodate modern GPS-based navigation systems or integrate new bathymetric data without establishing updated cartographic foundations through comprehensive re-surveying and chart reproduction.

3.1 ENCS

All paper charts as well as ENCs covering the Danish and Greenlandic waters were produced and updated by DGA. Paper charts and ENCs covering the Faroes waters were produced and updated by the Faroese Hydrographic Office.

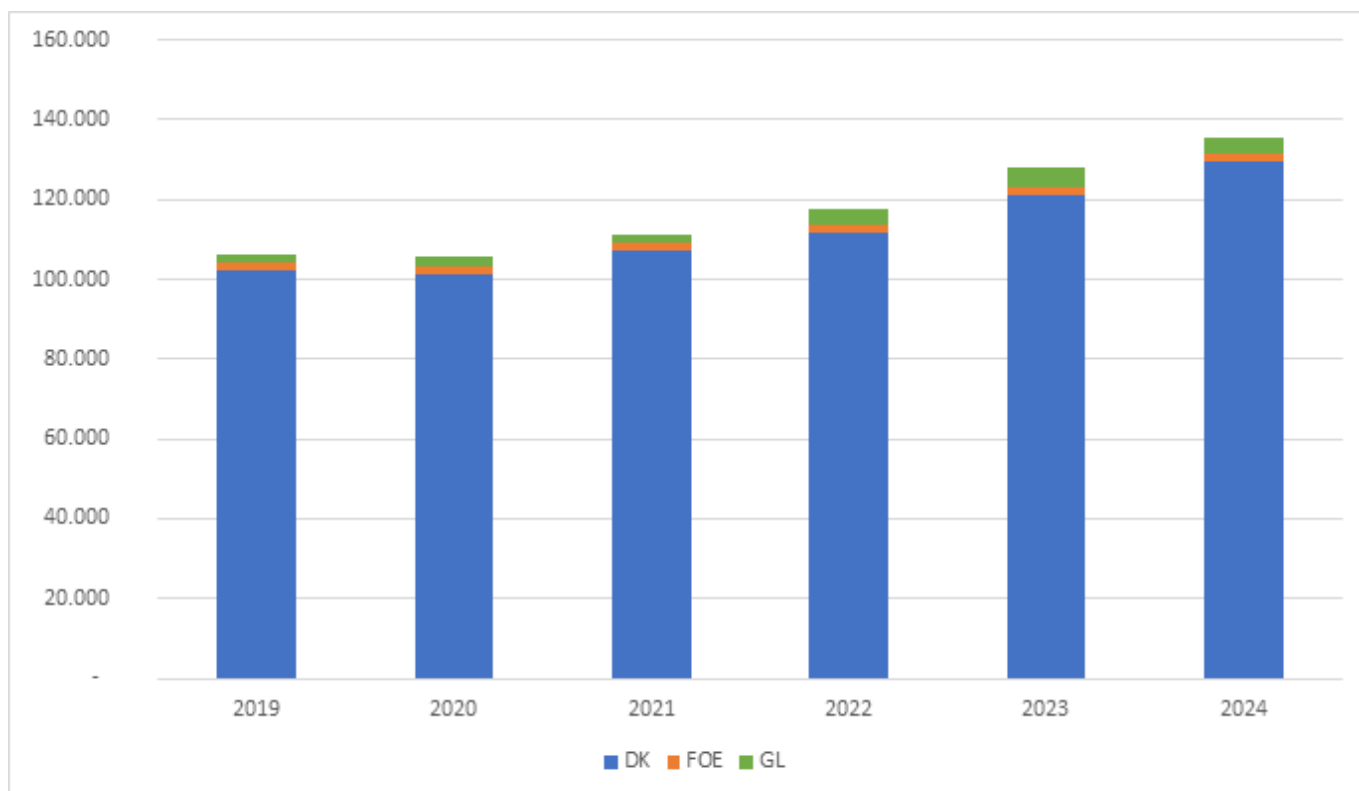


Figure 8: Sales through RENC (2019-2024). Y: Number of sold ENC's. X: Year: The portfolio consists of 333 Danish ENCs, 231 Greenlandic ENCs and 10 Faroese ENCs.

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Usage Band	Number of DK ENCs	Number of GL ENC's	Number of FO ENC's
1 Overview	1	5	0
2 General	9	0	1
3 Coastal	6	59	1
4 Approach	19	111	6
5 Harbour	298	56	2

3.2 PAPER CHARTS

The paper chart portfolio consists of 69 charts covering Danish waters, 114 charts covering Greenlandic waters 8 charts covering Faroese waters.

SALES OF PAPER CHARTS THROUGH OWN DISTRIBUTOR

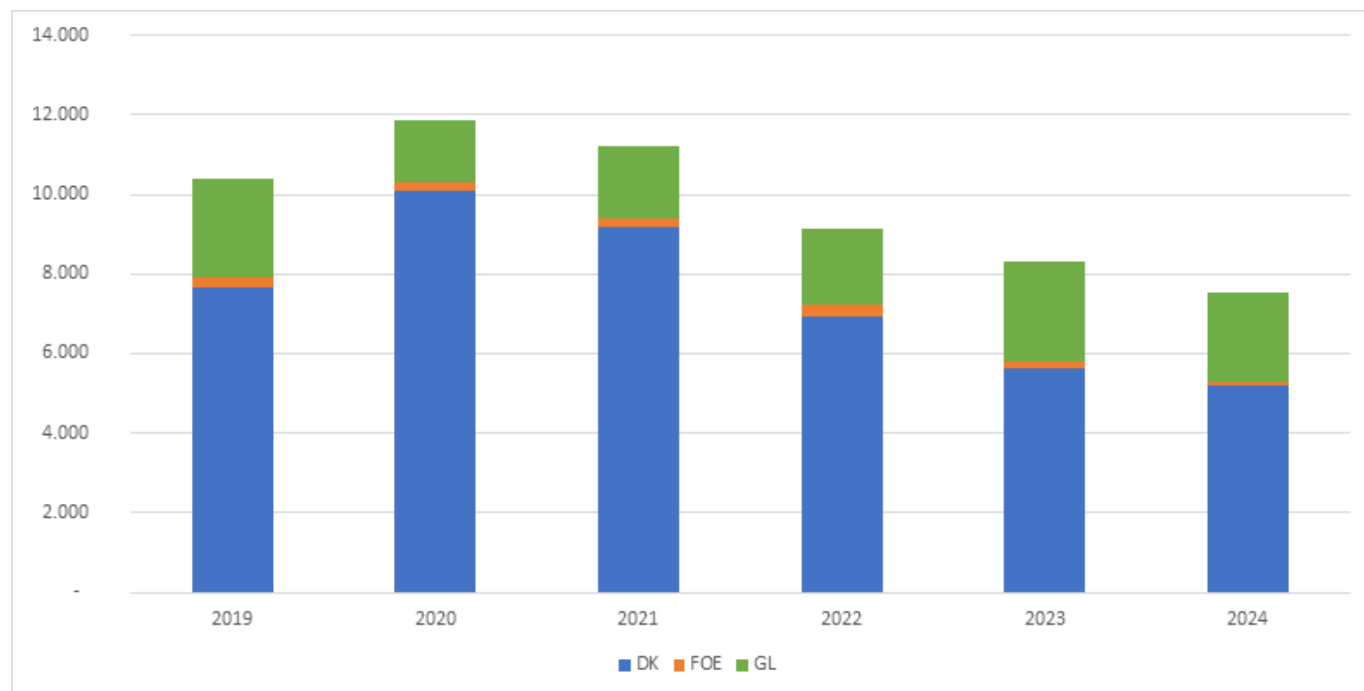


Figure 9: Paper charts total sales 2019-2024. Sales from bilateral agreement are not included. Y: Number of sold charts. X: Year

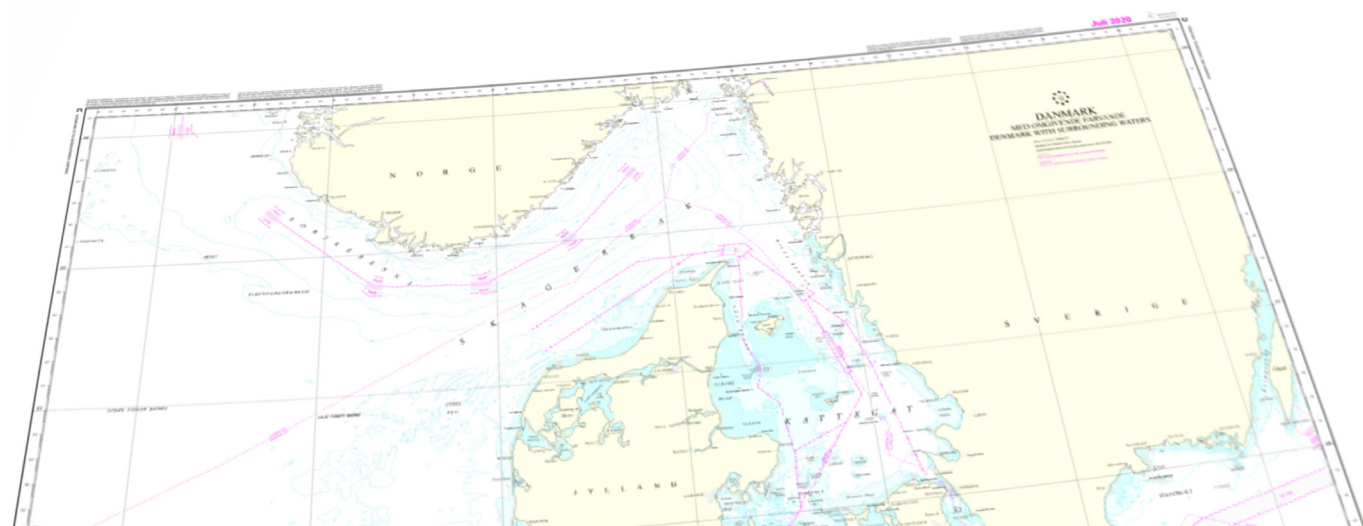
TRANSITION TO PRINT-ON-DEMAND FOR NAUTICAL CHARTS

GST is changing its distribution of nautical charts, transitioning from traditional offset printing to a more flexible Print-on-Demand solution.

With this transition, GST keeps pace with market developments, ensuring that printed nautical charts remain a relevant and up-to-date navigational tool in the future. The new model allows mariners to receive the latest chart editions incorporating the most recent corrections, enhancing safety and reliability at sea.

The change is part of an optimization of the maintenance and distribution of nautical charts. The new model reduces waste, eliminates large stocks of unsold charts, and ensures a more efficient production process.

At the same time, GST is modifying its distribution agreement, allowing multiple parties to become licensed distributors. This aims to create more competition in the market and improve access to updated charts for users.



4 NEW PUBLICATIONS & UPDATES

4.1 NEW PUBLICATIONS

Since the last update, DGA has introduced a new WMS based product catalogue with an overview of all Danish and Greenlandic ENC and paper charts. It can be found here: [Product catalogue - Danish Geodata Agency](#).

4.2 UPDATED PUBLICATIONS

The Danish Notices to Mariners (EfS) are available on the website of The Danish Maritime Authority: [Nautical information | Danish Maritime Authority \(dma.dk\)](#)

The Danish Meteorological Institute updates the tides tables: [Tidevandstabeller \(dmi.dk\)](#)

The Danish Geodata Agency publishes a number of publications, which can be found at the DGA website: [Nautical Publications \(gst.dk\)](#)

DGA also maintain the websites:

Greenland Harbour Pilot ([Greenland Harbour Pilot \(gronlandskehavnelods.dk\)](#))

Danish Harbour Pilot ([Den danske havnelods](#))

Mariners Routing Guide Baltic Sea ([Mariners' Routeing Guide Baltic Sea \(balticsearouteing.dk\)](#))

Navigation.gl ([Home \(navigation.gl\)](#))

Faroese publications can be found on the following website: (<https://www.us.fo/english/hydrographic-office-faroe-islands/>)



5 MSI

NAV Warnings are available in English on the following web page:

[Nautical information | Danish Maritime Authority \(dma.dk\)](https://dma.dk)

NAV Warnings for Faroese Waters are issued by the Faroese Maritime Authority. More information is available here:

<https://fma.fo/notices-to-mariners/>

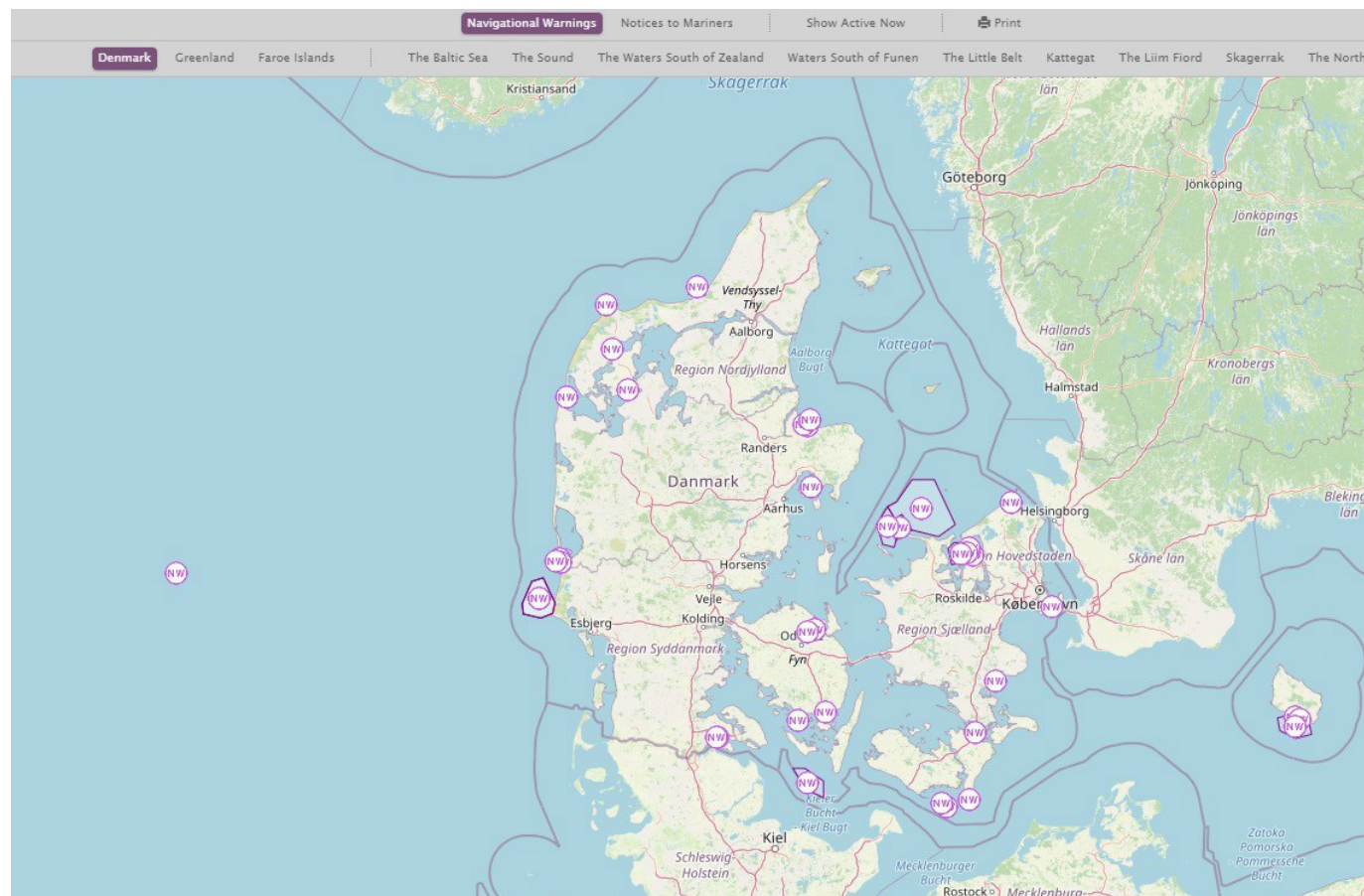


Figure 10. Navigational warnings in Greenlandic waters.



6 C-55

The Danish Geodata Agency and the Faroese Hydrographic Office are currently reassessing their approach to C55, in light of advancements within the IRCC and CBSC framework. As a result of this comprehensive methodology review, updates to C55 may experience delays.

7 CAPACITY BUILDING

No dedicated activities in the period of this report.

8 OCEANOGRAPHIC ACTIVITIES + S-100 OCEANOGRAPHIC SERVICES

8.1 WATER LEVEL MEASUREMENTS AND NEW PUBLISHED VERTICAL REFERENCES

The Danish Meteorological Institute (DMI), Danish Coastal Authority and other governmental bodies maintain an extensive network of tide gauges located across Denmark. The collected data are used in several ways: e.g. for safety of navigation, but they also represent an integral part of the national storm surge monitoring and prediction system. The Danish Technical University maintains a limited number of tide gauge stations in Greenland and The Danish Hydrographic Service collects water level measurements during the yearly hydrographic survey campaign.

The Agency for Climate Data (KDS) has recently published a Lowest Astronomical Tide (LAT) separation model covering the whole Greenlandic EEZ, named GLLAT. A Mean Sea Surface separation model, named GLMSL, has also been published by KDS.

8.2 S-100 SERVICES

The Danish Hydrographic Office has taken initiative to establish a national S-100 coordinating working group together with the Danish Maritime Authority, the Danish Meteorological Institute and Joint GEOMETOC Support Centre, a division under The Danish Ministry of Defence Acquisition and Logistics Organisation.

The primary objective of the national coordinating working group is to foster collaboration among organizations for the development, maintenance, and distribution of S-100 services, such as S-101, S-102, S-104 and S-111.

While coordinating with other Danish authorities responsible for relevant S-100 data, the Danish Hydrographic Office is preparing for transition to S-101 production in accordance with the IHO S-100 timeline. Focus has been on updating the ENC production system and analyzing conversion issues between S-57 and S-101. DGA has produced S-101 and S-102 prototype products within the Baltic Sea e-Nav project.



9 MARINE SPATIAL DATA INFRASTRUCTURE IN DENMARK

DGA is responsible for the Danish Marine Spatial Data Infrastructure (MSDI) and supports various activities related to access to marine data and collaborations in the marine data field in Denmark.

Through the website “The Marine Map of Denmark,” DGA exhibits marine data from a wide range of public authorities and serves as a central entry point for more than 100 marine datasets in Denmark. In 2024, the map portal transitioned to a new ESRI platform, which offers new opportunities for displaying and combining data.

Regarding collaborations in the marine field, DGA seeks to influence various initiatives in the government, business, and research sectors to create better conditions for sharing and accessing marine data. Furthermore, the DGA’s MSDI supports the Denmark’s Maritime Spatial Plan by providing essential marine data, facilitating informed decisions on conservation, renewable energy, and fisheries, ensuring sustainable maritime development in alignment with national goals. Read more here: www.havplan.dk.

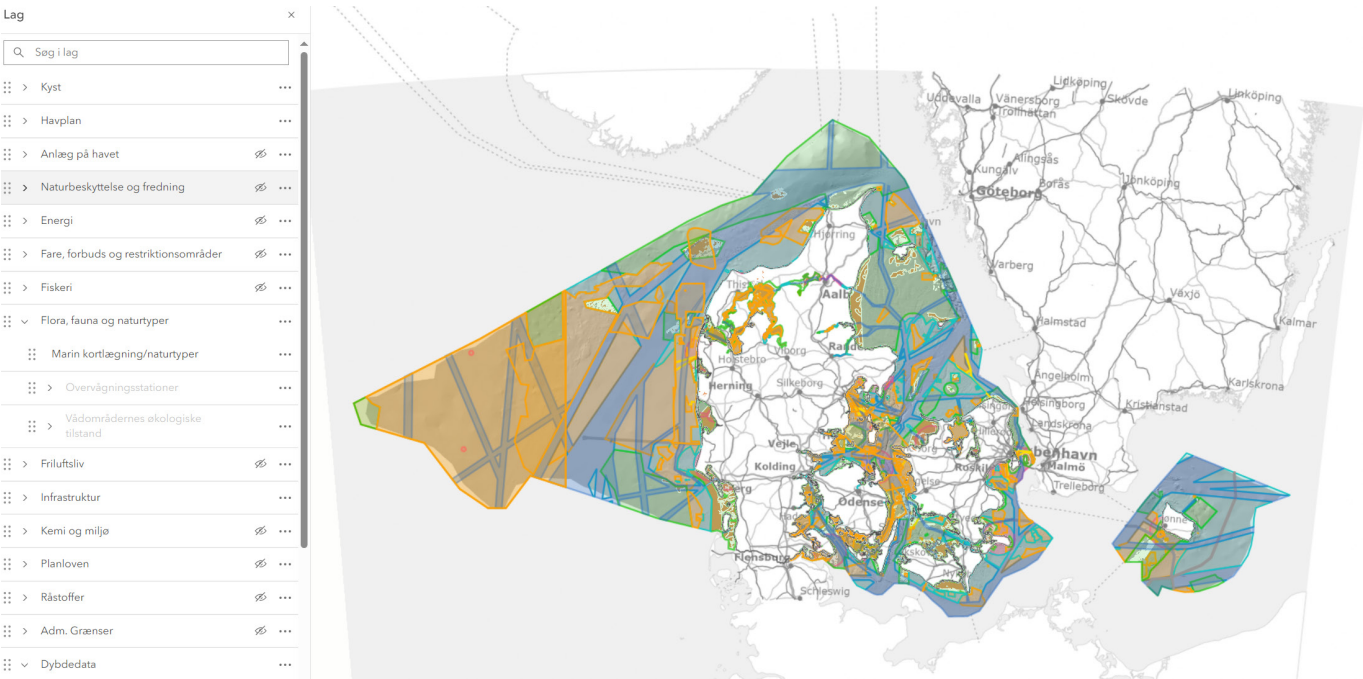


Figure 11. The Danish MSDI Map viewer.



10 INNOVATION

10.1 DENMARK'S DEPTH MODEL (DDM) VERSION 2.0

During 2024 DGA released Denmark's Depth Model (DDM) 2.0 – a new version with improved compilation of bathymetric data as well as entirely new data sources like satellite-derived and crowdsourced bathymetry. The model has a grid resolution of 50 meters and constitutes a significant contribution to the European Marine Observation and Data Network (EMODnet) Bathymetry initiative. The model is publicly available and can be accessed through the DGA's website. For more information on the release, see [Danish Geodata Agency has released an improved depth model](#).

10.2 MAPPING WITH SATELLITES

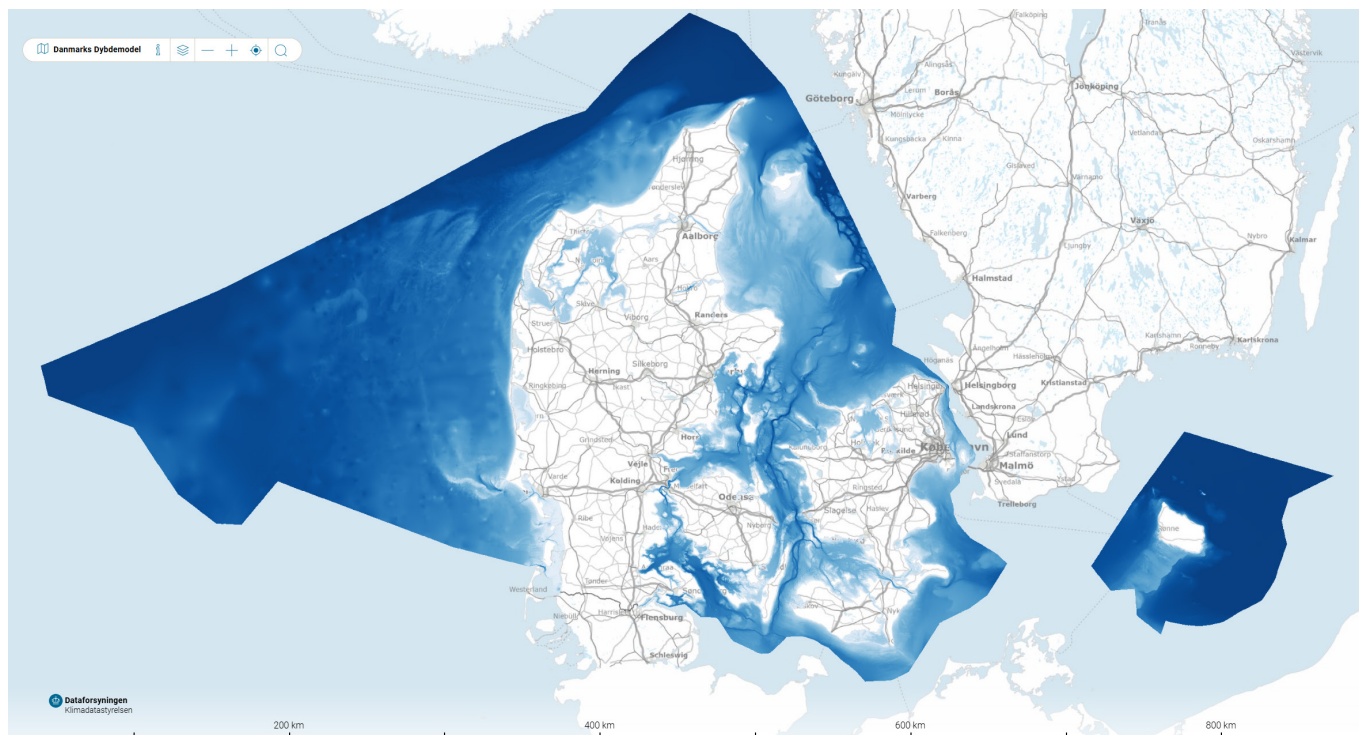


Figure 12: Denmark's Depth Model version 2.0. Source: Masetti, G., Sigaard Granding, P., Langdahl, K., Mondberg Schwenger, L., Villadsen Kristmar, K. (2024). Denmark's Depth Model version 2.0 – Improved compilation of bathymetric data within the Danish waters. *The International Hydrographic Review*, 30(2), pp. 56-69. <https://doi.org/10.58440/ihr-30-2-a17>.

DGA has a number of innovative projects and activities where satellites play a key role. Here EO (Earth Observation) data and services lay the foundation for many of the marine and maritime applications. The ESA's Copernicus Programme is a central component in these activities as data provider and gives easy access to satellite data and services that can be used to derive a variety of useful information such as coastline, intertidal zones and potential dangers to navigation. In addition, higher resolution satellite imagery can give deeper insights into selected areas of interest.

SPECIFICALLY, DGA IS ENGAGED IN THE FOLLOWING PROJECTS:

- Satellite Mapping of Near-Coast Areas in Greenland

The project is running until mid-2025 and aims to enhance maritime navigation and safety around Greenland's coast. It targets the implementation of innovative satellite technology to accurately map coastlines, intertidal zones and areas of navigational risk. The expected outcomes include datasets that can significantly contribute to the understanding of Greenland's coastal environments and facilitating safer navigation.

Collaboration with the local users and stakeholders in Greenland is a key for the success of the project, and data will be made available to the users for planning purposes. The priority of selected pilot areas has been done in close collaboration with the Department for Housing and Infrastructure in Greenland.



Figure 13. Project inspiration.

- Lake Volta Project: Satellite-Aided Identification

Through collaboration with the Danish Maritime Authority and the Ghana Maritime Authority, DGA is engaged in a project aimed at improving navigational safety on Lake Volta in Ghana, the largest artificial reservoir in the world based on surface area. Leveraging a combination of satellite-aided identification and crowdsourced data collection, the DGA assesses danger zones within predefined areas on Lake Volta, Ghana.

The obtained data and results inform the creation of hazard maps of Lake Volta, empowering end-users with vital information regarding navigational risks and fostering capability enhancement. Furthermore, the outcomes allow DGA to better understand the limitations and benefits of crowdsourced data collection and satellite data analysis.

10.3 SUCCESSFUL IMPLEMENTATION OF ENC GRIDGING IN DENMARK

Denmark has successfully implemented a structured gridding system for ENC products, enhancing data consistency and supporting future e-navigation needs.

The project prepares for seamless integration with the S-100 framework, facilitating efficient updates and improved interoperability.

The new grid structure simplifies data management and strengthens international collaboration on maritime navigation. Through strategic planning and strong interdepartmental cooperation, the transition was completed on time and within scope.

This initiative marks a significant step toward modernizing Denmark's digital nautical charts, benefiting both national and global maritime users.

10.4 TRANSITION TO BALTIC SEA CHART DATUM 2000 (BSCD2000)

DGA transitioned in November 2024 from Mean Sea Level (MSL) to BSCD2000 as the chart datum for the Baltic Sea, aligning with Baltic Sea Hydrographic Commission (BSHC) recommendations.

For most Danish waters, this shift to BSCD2000 is primarily administrative, affecting only chart metadata since BSCD2000 closely matches the previous MSL datum. However, around Bornholm island, depths within the 20-meter contour have been adjusted by 10 centimeters.

Updated paper charts for Bornholm reflecting these new depths and chart datum have already been published. The remaining paper charts will receive updates during their regular reprinting schedule.

10.5 CROWD SOURCED BATHYMETRY ACTIVITIES

The Danish Geodata Agency (DGA) is continuously involved in a variety of Crowd Sourced Bathymetry (CSB)-related activities, leveraging internal resources over several years to explore and intensify these efforts with an open mind towards success.

These activities include the Ocean Intelligent project, which successfully installed a CIDCO HydroBlock on a Royal Arctic Line container-ship and collected data over multiple voyages between Nuuk and Ilulissat.

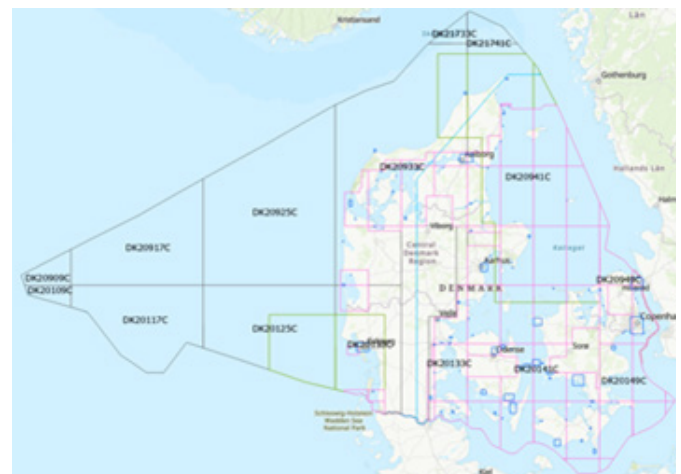
The DGA also participates in the Mobispaces project, which involves continuous collection of CSB data within the Danish Exclusive Economic Zone (EEZ) onboard the DTU Aqua research vessel Dana IV, with this data integrated into the Danish Digital Model version 2 (DDM v2).

Furthermore, the DGA is participating in beta testing the International Hydrographic Organization (IHO) Data Centre for Digital Bathymetry (DCDB) CSB Member State App.

Finally, the DGA has successfully collected quasi-CSB data (position data of safe passage, without echosounder measurements) on Lake Volta in Ghana as part of the "Enhancing Navigational Safety on Lake Volta" activity, which is part of the Maritime Strategic Sector Cooperation between Denmark and Ghana.



Figure 14: Satellite image of the northern part of Lake Volta. The image is from the Sentinel-2 mission, ESA.



11.1 INTERNATIONAL ACTIVITIES



DGA and the Faroese Hydrographic Office actively participate in numerous International Hydrographic Organization (IHO) working groups under both the IHO's Inter-Regional Coordination Committee (IRCC) and Hydrographic Services and Standards Committee (HSSC). DGA also represents Denmark at the IHO Council.

Furthermore, the DGA provides support to the Danish Maritime Authority and the Danish Emergency Management Agency in relevant activities and discussions at the International Maritime Organization (IMO) and International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) levels. As the national hydrographic authority, the DGA serves as the primary expert on hydrographic affairs for the Danish Government as a whole. This expertise ensures that Denmark's interests and obligations related to

hydrography are effectively addressed on the international stage.

11.2 OTHER PROJECTS

The Danish Geodata Agency supports the Danish Defence with access to nautical charts, marine geodata, and special geospatial products, along with advice aimed at assisting the Defence in addressing national and international tasks and fulfilling international obligations towards NATO, allies, and other partners.

11.3 NAUTICAL CHARTS FOR MINING PROJECTS IN GREENLAND

In early 2025, the Danish Geodata Agency (DGA) published a Guidance Document on Nautical Charts for Mining Projects in Greenland, establishing clear procedures for obtaining required nautical charts. As the sole legal authority and copyright holder for nautical chart production in Greenland, DGA must be contacted early in any mining project development process.

Early engagement with DGA is essential since nautical chart production is a complex, multi-year process that requires coordination with ongoing production schedules. Mining companies must ensure their marine surveys meet DGA's specific technical standards before the data can be used for chart production.

This early collaboration helps avoid costly delays and unnecessary rework while ensuring the final nautical charts meet all project requirements and regulatory standards.





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