

**The 5th Arctic Regional Hydrographic Commission Meeting
28-30 October 2015,
Saint Petersburg, Russian Federation**

Hydrographic National Report of Denmark

October 2015

1. Hydrographic Office

The present report outlines and sums up the activities carried out by the Danish Geodata Agency, with special focus on its hydrographic activities since last ARHC meeting.

The Danish Geodata Agency is now part of the Danish Ministry of Energy, Utilities and Climate. The Ministry consists of the Department, the Geological Survey of Denmark and Greenland, the Danish Meteorological Institute, the Danish Energy Agency, the Danish Geodata Agency, the Danish Energy Regulatory Authority and Energinet.dk.

On September 1, 2015, the Danish Geodata Agency (DGA) changed its organisation and a new internal structure was implemented.

New internal structure in the Danish Geodata Agency September 2015

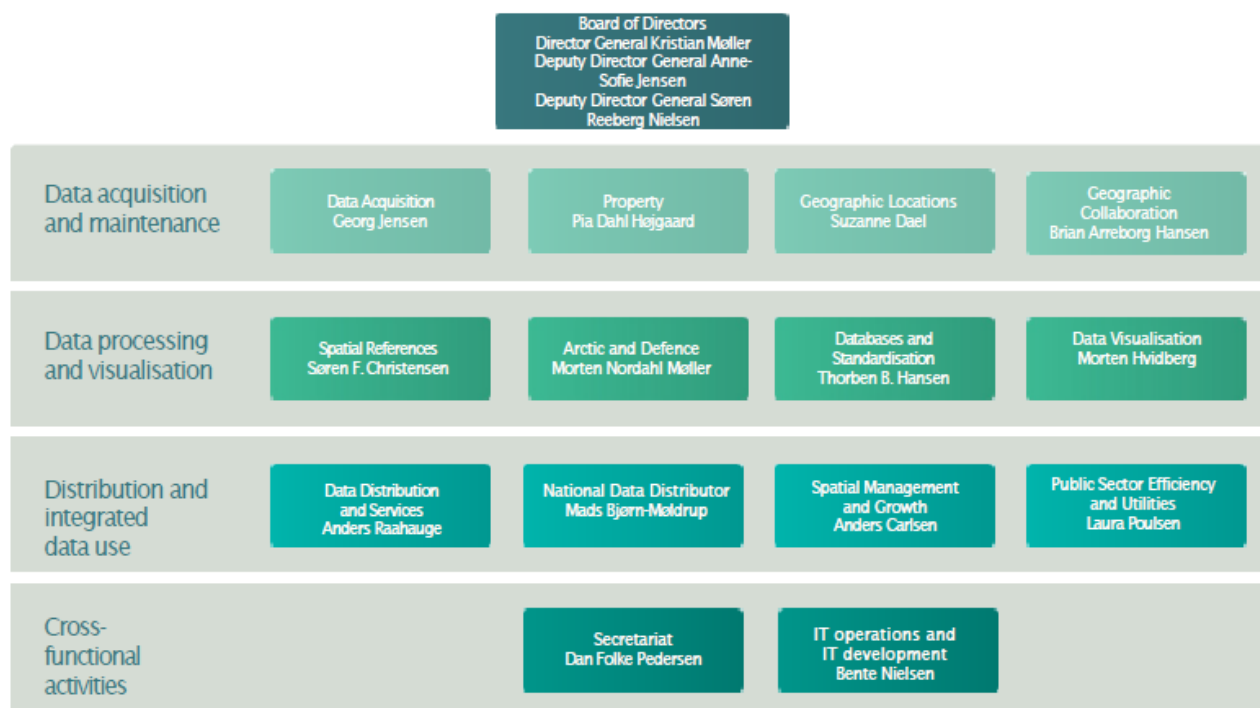


Figure 1. The new internal structure of the Danish Geodata Agency

Among the drivers for the adjustment of the internal structure were:

- More focus on an application orientation (contact with users)
- Better harmonising and streamlining of the data processes
- Anchoring support functions
- Organizing and enhancing the value chain
- Fulfilling and supporting the agency's strategy, which covers the period 2013-2016.
One of main focuses of the strategy is on increasing the use of geodata in the Danish public sector as a means of making public sector administration more efficient.

The Danish Geodata Agency in its role as Hydrographic Office has responsibility for hydrographic surveys and charting in Denmark. It is responsible for the production of nautical charts of the waters surrounding Denmark, the Faroe Islands and Greenland, just as the Danish Geodata Agency also represents Denmark internationally within the geodata field. The Danish Geodata Agency is responsible for technical support to delimitation of the Danish maritime boundaries, charting, and issuing Chart Corrections and related nautical publications such as INT 1 and pilots (sailing directions).

The practical work of hydrographic surveys is still done with personnel and ships from the Royal Danish Navy. Survey personnel from the Navy are stationed in the Danish Geodata Agency.

The Danish Geodata Agency works closely together with the Danish Maritime Authority, which is responsible for issuing of Notices to Mariners, List of Lights. Tide tables and operational tide gauges are the responsibility of Danish Meteorological Institute.

General information about the Danish Geodata Agency

The Danish Geodata Agency ensures that geodata covering land and sea are collected, quality assured and accessible through the national spatial data infrastructure. These geodata are used by public authorities for a wide range of administrative purposes, including climate protection, the provision of mobile access to data, information services to citizens and by the police and emergency services when carrying out their tasks. Accurate and precise data are required by public administrators and the Ministry of Defense.

The Danish Geodata Agency employs approximately 300 people.

New organisation from January 2016

As part of the new government's plan "Better balance - Governmental institutions closer to citizens and businesses" it is decided to divide the current Danish Geodata Agency into two separate agencies - the Agency for Data Supply and Efficiency with a location in Copenhagen and the Danish Geodata Agency with a new location in Aalborg, in the northern part of Jutland.

The new Danish Geodata Agency situated in Aalborg will have 117 employees; the agency will be responsible for cadastre and hydrography including the role as the Danish Hydrographic Offices and the Danish MSDI. The remaining tasks in the current Danish Geodata Agency will be transferred to the Agency for Data Supply and Efficiency.

2. Surveys

Coverage of new surveys

The Danish hydrographic survey operations have been carried out in the following areas in 2014:

1. Danish waters inside the Skaw according to the HELCOM RE-SURVEY plan of the Baltic routes and areas.
2. Parts of shipping route in the North Sea, to the north west of Jutland.
3. Shallow inshore routes Grønsund and Bøgestrøm.
4. The west coast of Greenland.
5. Trial surveys were conducted on the east coast of Greenland on an ad hoc basis.

Danish waters:

The hydrographic surveys inside the Skaw are carried out in accordance with the HELCOM Copenhagen Declaration, adopted on 10 September 2001 by the HELCOM Ministerial Meeting. In addition, survey of areas with intense traffic in the North Sea has been initiated.

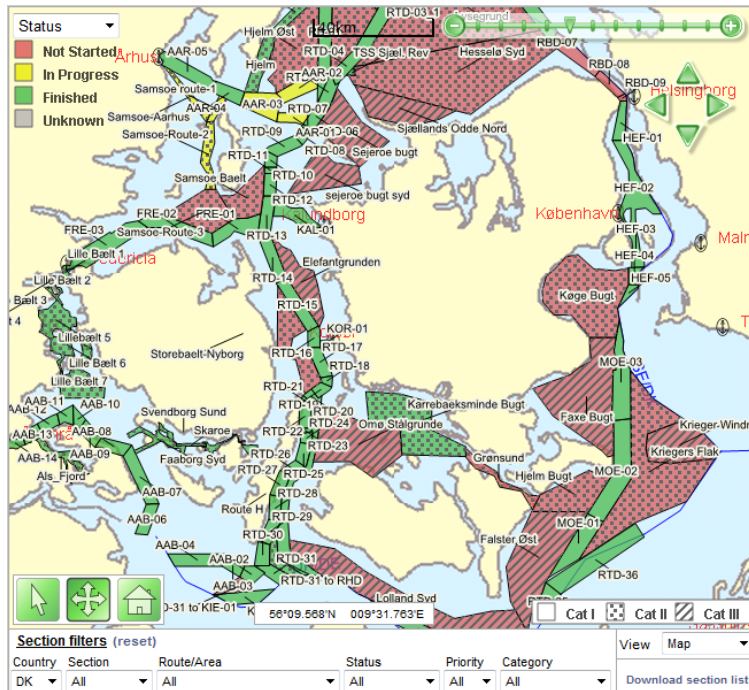


Figure 2. Part of the HELCOM re-survey plan

In accordance with the Declaration a coordinated survey plan has been made for re surveying the Baltic Sea area. Therefore, the main survey effort has been placed on the primary shipping routes through the Danish waters and other areas of interest for navigation. The routes and areas will be re-surveyed to meet the standards of “Special Order” or “Order 1” as set in the International Hydrographic Organisation “Special Publication No 44”.

The Surveys in 2015 will be a continuation of the revised coordinated re-survey plan for the Baltic area.

Greenland waters:

The surveys on the West Coast of Greenland were carried out in the archipelago and near coastal zone, in order to allow safe access to major ports and to locate sheltered coastal fairways. A prioritized program for the resurvey of Greenland waters is in force. The main emphasis is placed on the most populated areas on the West Coast.

In addition to the prioritised program on the west coast, there has been made survey trials on the east coast with the navy arctic patrol vessel, “Ejnar Mikkelsen”.

All surveys were carried out with multibeam echo sounder systems.

The surveys in the Greenland waters in 2015 will be a continuation of the re-surveying program of the inshore routes between ports in Greenland. Some near shore areas and fiords are being surveyed for the safety of cruise ships operating on the west coast.

New ships

A new survey concept for Greenland is under development. The concept aims at a more geographically flexible capacity with one large ship and two in situ launches. This concept is planned to be fully implemented in 2016. As part of implementation of a new concept, the Danish navy arctic patrol vessel “Ejnar Mikkelsen” has been equipped with a RESON 7111 100 KHz multi beam echo sounder. Survey trials were carried out on both sides of Greenland. The results of the trials were very promising.



Figure 3. Danish Navy Arctic patrol vessel with 12 meter launch.

Problems encountered:

No new problems were encountered in 2014.

3. New charts & updates

Charts (paper as well as electronic navigational charts (ENC)) covering the Danish, Faroese and Greenlandic waters are produced and updated by the Danish Geodata Agency.

ENC

The Danish waters have been covered by ENCs in various navigational bands since June 2000. All the agency's ENCs are updated on a weekly basis.

ENC distribution method

In 2014, all the Danish-produced ENCs and updates (ERs) were distributed through a network of PRIMAR and IC-ENC authorized distributors.

Charts

21 new editions were published in 2014.

National paper charts

The chart portfolio of the Danish waters comprises 63 charts, all produced according to international standards.

The chart index showing the Danish waters is available at:

<http://www.danskehavnelods.dk/indexkort/danskezoekort.html>

The chart index showing the Greenlandic waters is available at:

http://www.danskehavnelods.dk/indexkort_gronland/gronlandszoekort.html

Charts (paper as well as electronic navigational charts (ENC)) covering the Danish, Faroese and Greenlandic waters are produced and updated by the Danish Geodata Agency.

Geometric rectification of the Greenlandic charts

The geometric rectification of the Greenlandic charts, mentioned in the Hydrographic National Report 2014, will continue in the coming years. 24 Greenlandic charts have been rectified and published since the start of the project. 8 charts are expected to be rectified and published in a new ESRI production system in 2015.

Faroese waters

All the Faroese paper charts were converted to ENCs and released in 2012.

4. New publications & updates

New publications

- The Greenlandic Harbour Pilot (in Danish) – online publication introduced at new year 2014/2015 (<http://www.gronlandskehavnelods.dk/>). Contains information about 90 Greenlandic harbours.

Updated publications

The Danish Maritime Safety Authority updates the following publications and reports online:

- [Navigation through Danish Waters](#)
- [Tide tables for Danish, Faroese and Greenland waters](#)

The Danish Geodata Agency's online publications:

- Charts and publications catalogue (in Danish)
- Kort 1/INT 1 (bilingual)
- Søkortrettelser/Chart Corrections (bilingual)
- Bag om søkortet/Behind the nautical chart (in Danish/in English)
- The Mariner's Handbook (in Danish)
- The Danish Harbour Pilot (in Danish)

The Danish Geodata Agency's printed publications:

- Charts and publications catalogue (in Danish)
- Kort 1/INT 1 (bilingual)
- The Greenlandic Pilot (West Greenland) - (in Danish)
- The Greenlandic Pilot (East Greenland (in Danish)
- The Greenlandic Harbour Pilot (in Danish)
- The Faroese Pilot (in Danish)
- The Faroese Harbour Pilot (in Danish)
- The Danish Harbour Pilot (in Danish)

5. MSI

NAV Warnings, Information to mariners and oceanographic forecasts are available in English on the following web pages:

Navigational warnings Denmark:

<http://www.dma.dk/Ships/Sider/MaritimeSafetyInformation.aspx>

Meteorological warnings and forecasts Denmark:

<http://www.dmi.dk/en/vejr/>

<http://ocean.dmi.dk/anim/index.uk.php>
<http://ifm.fcoo.dk/index.asp>

Meteorological warnings and forecasts Faroe Islands:
<http://www.dmi.dk/en/faeroerne/>
<http://ocean.dmi.dk/anim/index.uk.php>

Meteorological warnings and forecasts Greenland:
<http://www.dmi.dk/en/groenland/>
<http://ocean.dmi.dk/anim/index.uk.php>

6. S-55

State of surveys updated March 2015

Area	A1	A2	B1	B2	C1	C2	Comment
Denmark south	95	100	5	0	0	0	Contributes to the HELCOM harmonised re-survey programme.
Denmark Faeroes	100	100	0	0	0	0	Revision of ports and resurveys ongoing
Denmark Greenland	25	20	25	10	50	70	The coastline of Greenland is very complex and the total sea area of the EEZ is ca. 2.000.000 square kilometres. Due to permanent ice cover, the limit for navigable waters has been set to 75 degrees northern latitude. Thus the percentages are rough approximations. The East coast is sparsely populated and only surveyed near populated areas. A prioritised programme is in force to resurvey navigable routes to and between populated areas on the West Coast of Greenland, to modern standards.

7. Capacity Building

Status of national, bilateral, multilateral or regional development projects with hydrographic component (In progress, planned, under evaluation or study)

New technologies and/or equipment

All ships in the Danish survey fleet are equipped with Reson 7125 200/400 KHz SW2 multibeam systems. Test trials will be conducted in 2013 with the aim to survey directly on a LAT-model of the waters around Greenland. This method will, if successful, make tide gauges redundant for surveys.

8. Oceanographic activities

Tide gauge network

The Danish Meteorological Institute maintains a network of water level stations spread across Denmark. The data are used in several ways, primarily for navigation safety, but are also an integral part of the national storm surge monitoring and prediction system. Data updated are transferred from each station to the oceanographic database every ten minutes.

The Danish Defence is maintaining three oceanographic monitoring stations. These three stations are located at Drogden and at two sites in Storebælt (the Great Belt). These data are transferred to the database every 30 minutes. Online observations and fore-casts are available in Danish on the web site: <http://fcoo.dk/>

Greenland LAT-oide project

During the 2014 survey season, the Danish Geodata Agency has launched a pilot project, with the aim of testing the feasibility of surveying directly on the spheroid. The project involves, setting up numerous tidegauges ashore with the purpose of tying the local LAT levels to a general LAT model developed by the Danish space agency. The general LAT model is claimed to be valid from open sea and until 5 miles from the shore. The project is not yet finalised. The results will be reported later in 2015.

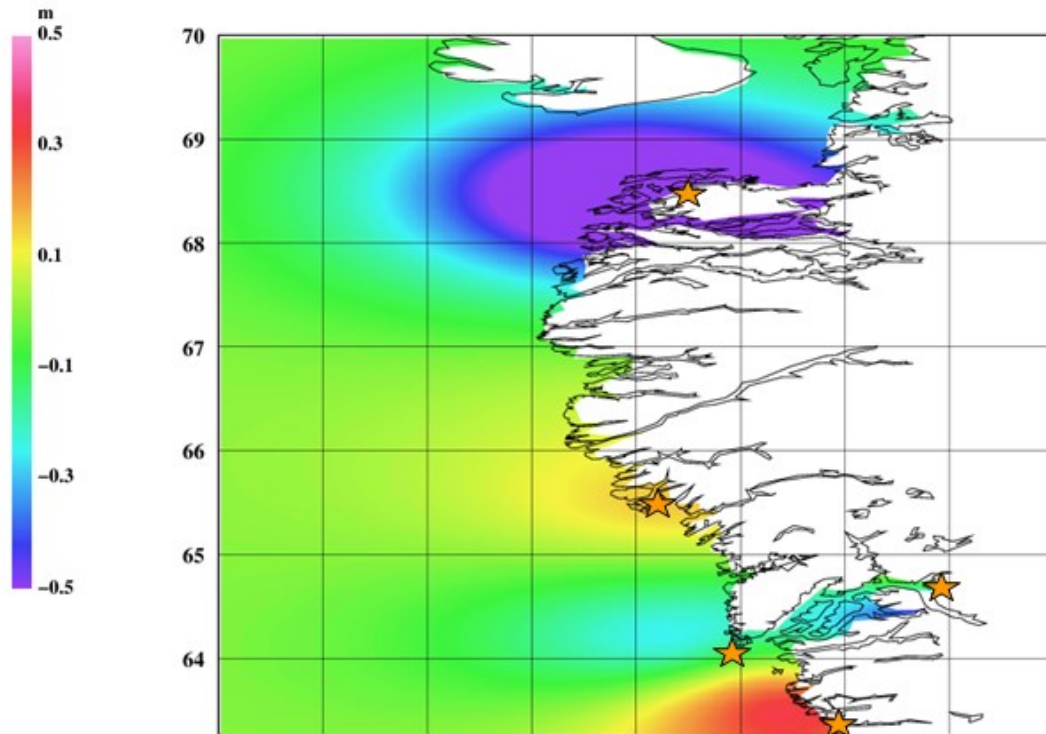


Figure 4. Observed differences between LAT-observations and ocean model.

UNCLOS

The Danish Geodata Agency is actively involved in the work of The United Nations Convention on the Law of the Sea (UNCLOS) in the waters around Greenland and the Faroe Islands.

The Danish Geodata Agency is responsible for the data quality assessment on existing bathymetric data and planning and technical specifications for new surveys. There have been no new UNCLOS surveys in 2014 in the Danish area of interest.

9. Other activities

Participation in IHO Working Groups

The Danish Geodata Agency has the chairmanship for the IHO MSDI Working Group and the Baltic Sea and North Sea MSDI Working Group (BS-NSMSDIWG).

The Danish Geodata Agency has been involved in the work done by CSPCWG, SNPWG, TSMAD, DIPWG, DQWG, EUWG and HSSC.

National

Within the framework of the Danish "Basic Data Programme", which was launched on January 1, 2013, a large proportion of the geodata held by GST are now available for commercial and non-commercial purposes - free of charge. This includes topographic data (maps), the cadastral map and the Danish Elevation Model. It does not include nautical charts and underlying data from hydrographic surveys.

The Basic Data Programme is part of the national eGovernment Strategy for 2011-2015. The programme contains a number of specific improvements and initiatives in public sector basic data that underpin greater efficiency and economic growth. Basic data are widely used throughout the public sector and are an important basis for public authorities to perform their tasks properly and efficiently. Basic data are also a potential driver for innovation, growth and job creation in the private sector.

In 2014 it was decided to establish a Danish Marine Spatial Data Infrastructure. 11 Danish agencies will participate on a voluntary basis.

International

The Danish Geodata Agency is also active in the HELCOM Monitoring Working Group.

Websites

The Danish Geodata Agency:

[http://www.gst.dk/English/
navigation-gl.gst.dk/English/](http://www.gst.dk/English/navigation-gl.gst.dk/English/)

The Danish Maritime Authority:

<http://www.dma.dk/>

Danish Meteorological Institute:

<http://www.dmi.dk>