



National Report of Finland

1. Finnish Hydrographic Office

The Finnish Hydrographic Office (FHO) is responsible for nautical charting over the Finnish sea area and the most important inland water bodies. This covers 98 400 km² and 23% of all regions of Finland.

Staff is now 50 persons, including 7 consultants. Annual budget for hydrographic operations and activities is about 10 million euros.

The FHO has working according to the Quality Management System based on the new ISO 9001 (2015) standard. External Audit (by DNV) has made on 27-26 June 2017.

No changes in organisation since last meeting, but the Ministry of Transport and Communications are planning a major reorganization for the year 2019. According the preliminary plan there will be two administrations to where existing functions from the Finnish Transport Agency, the Finnish Transport Safety Agency and the Finnish Communications Regulatory Authority will be reorganized. In addition, a new state owned Traffic Management Company including i.e. VTS -services will be established.

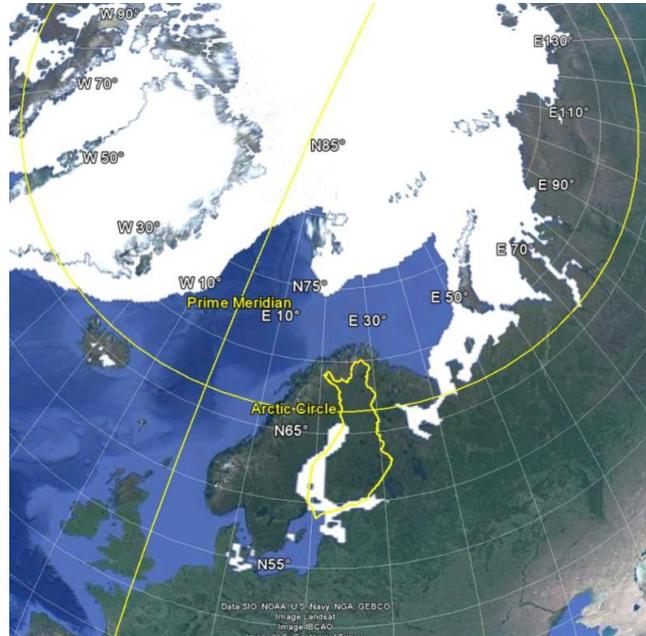


Fig 1: Google Earth with ice coverage March 2013 (NSIDC data)

2. Hydrographic surveys

Finland has succeeded to fulfil the HELCOM ministerial meetings 2001, 2007, 2010 and 2013 decisions on category I and II fairways and shipping routes re-surveys up to today's IHO S-44 ed5 standard. Goals in HELCOM Cat I and II surveys were reached during April 2016. HELCOM Cat I & II areas cover about 62.000 km².

The bathymetric data is utilized also for winter navigation and icebreaker movements in ice conditions.

There were open procurements for three survey tasks; on Shipping Fairways (VAYLA2016) as part of the EU TEN-T CEF funding program FAMOS Freja and on inland lake area in Lake Saimaa Savonlinna - Varkaus 2016 (SAVA2016). In the [Table 1](#) there are statistics of 2016 on these tasks. In [Fig.1](#) there are shown the surveyed HELCOM areas in 2014 and 2015 and [Fig.2](#) shows the re-survey status in Finnish territorial sea and EEZ area.

Task	Surveyed by	Multibeam [km ²]	Line sounding [km ²]
VAYLA2016	Meritaito Oy	300	
Lake Survey SAVA2016	IIC Technologies Ltd	30	35
Saimaa Canal	Meritaito Oy	5	

Table 1: Survey statistics for 2016.

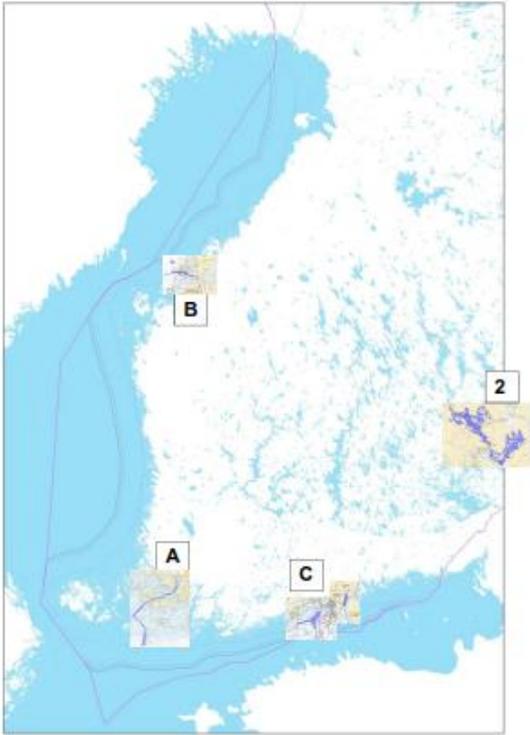


Fig.2. HELCOM hydrographic surveys (A, B and C) in 2016 and inland waters 2016 (2).

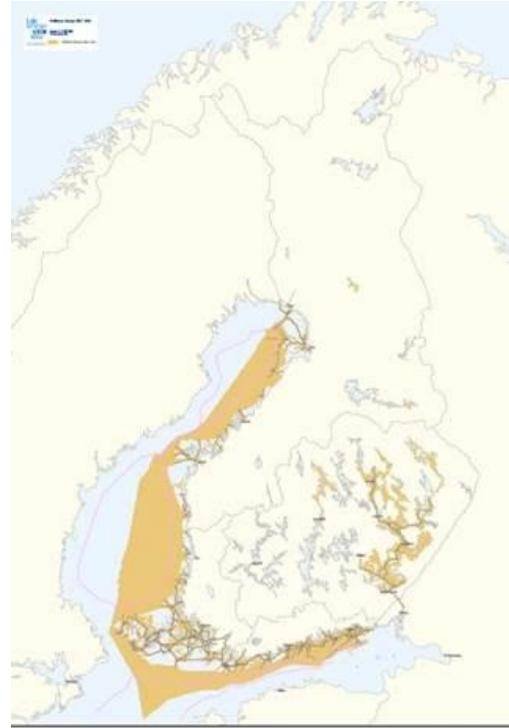


Fig. 3. Hydrographic re-survey coverage in 2016

The Finnish part of the HELCOM-BSHC Revised Harmonised Hydrographic Re-Survey Scheme has been enhanced and the database updated. The HELCOM survey plan has been the driving force to perform the hydrographic surveys in Finnish waters.

Co-operation with Swedish Maritime Administration in procurement and service provider work supervision has been most helpful.

Finland is participating into a EU INEA CEF Transport TEN-T grant program FAMOS Freja (2014-2016) and FAMOS Odin (2016-2018), headed by Swedish Maritime Administration for support on completing the HELCOM Cat I&II surveys. Finland has received about 7 M€ funding from EU TEN-T grant programs for about 41.000 km² of hydrographic surveys during 2005 – 2016 and renewing the bathymetric database.

[Link](#) to Finnish Transport Agency Hydrographic Survey Program 2015-2020.



Hydrographic data processing and management

The renewal of the Bathymetric Data Management System (MERTA) is continuing. The system will cover tools for validating, updating and storing hydrographic survey data and it will stand for a primary data source for chart production i.e. bathymetric surfaces and other waterborne activities use i.e. fairway maintenance. The purchase contract for the MERTA was signed December 2016 with Teledyne Caris Inc and the installation and configuration of the pilot system started at the end of 2016. According the timetable, the MERTA will be taken into use February 2018.

External human resources have been contracted from private companies in order to fulfil obligations and ease workload on data processing and validation tasks.

3. Nautical Charts

Printed charts

The FHO has not published printed charts on Arctic waters.

On Baltic Sea Area Printed charts in 2016 have been produced generally according to the plans. Continuous updating of the printed charts covers now all Approach and Harbour scale charts in the Baltic Sea waters. [Link](#) to new chart catalogue 2017.

Statistics for sold printed charts are shown below in Table 2.

Chart product (printed)	2011	2012	2013	2014	2015	2016
<i>International traffic</i>						
General charts	1772	1620	1977	1984	1874	1241
Coastal charts						
Approach charts	3580	5379	4943	5434	3939	2800
Harbour charts	732	1267	1313	2162	718	991
Chart series (inland areas)	2103	1998	1490	1538	1412	1525
<i>Domestic traffic</i>						
General & approach charts	1384	1000	748	645	747	341
Chart series (sea areas)	11695	11116	11489	12600	16574	7419
Chart series (inland areas)	1862	1503	1913	2496	1750	698
Other charts	5	0	0	0	74	28
Total sold copies	23470	24006	24078	26 859	27088	15043

Table 2 Statistics of sold Finnish nautical charts in 2011 – 2016.

There was a significant drop on the sales of paper charts.

Sales reduction has contributed because:

- Change of publishing house (including marketing and distribution)
- Increased use of ENC on SOLAS vessels and digital charts in chart plotters



- Economic downturn
- Limited number new editions of most selling charts
- A growing amount of adopted charts sold by UKHO

ENC production and distribution

The FHO has not published ENCs on Arctic waters.

Use of ENC	2011	2012	2013	2014	2015	2016
<i>ENCs sold annually (excluded trial and demo usage)</i>	47430	50832	61022	69982	77533	89927
<i>No of ships(annually)</i>	1772	1769	1908	2270	2713	3212
<i>No of customers (annually)</i>	498	595	669	793	898	1054

Table 3: Statistics for the use of Finnish ENCs

A new ENC/S57 data service for governmental users i.e. the Finnish Navy and the Finnish Coast Guard and also for derived digital product producer's use was taken into operational use.

Chart data processing and management

The new version for Source data management software, LOKI was completed in April 2016. LOKI speeds up source data registration and offers sophisticated tools for source data analysis and workflow control.

Study to determine specifications and a portfolio for Bathymetric Surface products (based on IHO/S-102), was continued as a part of Smart Marine Fairway Project under FTA's DIGI 2016 - 2020 Program.

4. Nautical publications

NtMs has been published according to the plans. Notices to Mariners are distributed from website as download service (PDF), free of charge. In the beginning of 2017 the additional NtMs Online web-service was opened, with capability of viewing the Notices filtered by time of publication, area or charts affected.

All printed Lists of Lights were substituted by downloadable online publications in 2016. The tables of lights are separated into two different publications for coastal areas and inland waterways.

5. MSI

Finnish Transport Agency is responsible for safety radio communications in Finnish territorial waters and for distress radio communications in the deep channels of the Saimaa waterways system.



In total 237 navigational warnings were published during 2016. From February 2015 also local warnings are read in Turku Radio only in English (in web-service also in Finnish and in Swedish).

Publication / Service	2010	2011	2012	2013	2014	2015	2016
Navigational Warnings	244	248	412	276	234	236	237

Table 4: Statistics for navigational warnings

6. C-55

C-55 was updated during spring 2015. Next update will be done in Autumn 2016.

7. Capacity building

Nothing to report.

8. Oceanographic activities

An implementation project to change the vertical datum of nautical charts and navigational information has been launched. Charts and associated data will be reduced from current MSL-based system to EVRS (European Vertical Reference System) -based system. The FHO is chairing BSHC Chart Datum Working Group (CDWG). The CDWG work concerns harmonization of the vertical datums in the Baltic Sea nautical charts and other navigational products.

The FHO has acquired shipborne gravity surveys in the Sea of Bothnia during 24 September to 30 October 2015. Gravity surveys are done within FAMOS activity 2 geoid modelling for the Baltic Sea supporting the transition to the Baltic Sea Chart Datum 2000. Gravity surveys consists around 3800 km survey line length. Surveys has been done in co-operation with the Finnish Geospatial Research Institute of National Land Survey and Deutsches GeoForschungs Zentrum using Meritaito Ltd as a contractor for survey vessel.

Airborne bathymetric LiDAR has been piloted during 2016.

Satellite bathymetry on sample sites on the coast of Finland and inland lakes has been studied.

9. Other activities

Based on the updated Bilateral Arrangement the adoptions with UKHO have been expanded as the technical challenges regarding with streamlining the adoption process were solved.

The FHO has continued the development of "Open Data" services. The new versions of view and download services were released (WMS, WMTS, WFS, file download service) [link](#). The licensing was changed to use mainly Creative



Commons terms and conditions. Some navigation critical feature classes are still licensed under restrictions.

Finland is participating to the following IHO Committees and WGs: HSSC, HSSC/NCWG (Chair), HSSHC/S-100 WG, HSSC/ENCWG, HSSC/DQWG, HSSC/NIPWG, HSSC/TMCWG, IRCC/WEND-WG (representing BSHC), IRCC/MSDIWG, BSHC (Member), NHC (Member), ARHC (Associate Member), BSHC/CDWG (Chair), BSHC/BSICCWG (Chair), BSHC/BSMSDIWG, BSHC-HELCOM/MWG (Chair), NHC/NCPEG and NHC/Workshop on validation of multibeam data.

Finland is member of PRIMAR and is actively participating Advisory committee and its WGs.

10. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since ARHC 6 Meeting 2016.