



National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since BSHC 19th Conference in June 2014.

- Hydrographic surveys has been performed as planned
- Production of nautical charts has been performed as planned
- Projects for developing Bathymetric Database, Nautical Chart Production, Source Management and Online Publication systems are on their way.

1. Finnish Hydrographic Office

No changes in organisation since last meeting. Staff is now 52 persons. Yearly budget is about 10 million euros.

The FHO has working according to the Quality Management System (ISO 9001:2008). A full quality auditing by Inspecta was performed successfully, without deviations.

2. Hydrographic surveys

There were open procurements in 2014 for three survey tasks; on Bay of Bothnia Raahe-Oulu-Kemi (BBROK2015) and Bothnian Sea Exclusive Economic Zone (BSEEZ2015) two year projects (part of the EU TEN-T FAMOS Freja project, ~M€ 3,0), on inland lake area in Lake Saimaa one project (~€ 950.000). In the *Table 1* there are statistics of 2014 on these tasks. In *Fig.1* there are shown the surveyed areas in 2014 and 2015.

Task	Service provider	Multibeam [km ²]	Single beam [km ²]
Completed tasks			
The Bothnian Sea BSRK2014	<i>Meritaito Oy</i>	2.500	
The Bay of Bothnia BBKR2014	<i>Meritaito Oy</i>	1.500	
Bay of Bothnia Fairway Surveys	<i>Meritaito Oy</i>	20	
Gulf of Finland Fairway Surveys	<i>Meritaito Oy</i>	102	
Ongoing tasks			
Lake Survey 2014	<i>Meritaito Oy</i>	200	100
The Bothnian Sea BSEEZ2015	<i>Meritaito Oy</i>	7.500	
The Bay of Bothnia BBROK2015	<i>Clinton Mätkonsult Ab</i>	1.300	
Lake Survey 2015	<i>Meritaito Oy</i>		

Table 1: Survey statistics for 2014 and 2015.

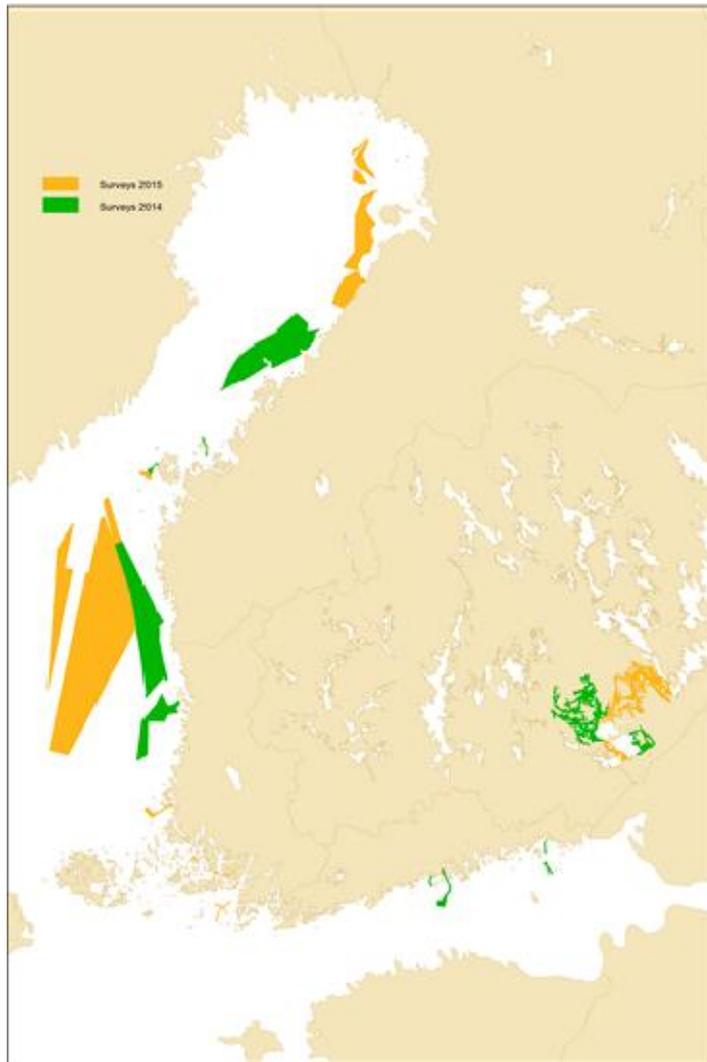


Fig. 1. Hydrographic Surveys in 2014 (green) and in 2015 (orange).

The Finnish part of the HELCOM-BSHC Revised Harmonised Hydrographic Re-Survey Scheme has been enhanced and the database updated. The HELCOM survey plan is the driving force to perform the hydrographic surveys in Finnish waters. For 2014 HELCOM Category II surveys have been completed in the Bothnian Sea and southern Bay of Bothnia totalling roughly 4.000 km². Further ~7.200 km² in the Bothnian Sea EEZ and ~1.300 km² in the Bay of Bothnia have been procured. All 2014 field hydrographic surveys have been completed and some data deliveries and validation is still pending.

As a total Baltic Sea re-survey scheme, the requirements of the HELCOM Moscow 2010 Ministerial Declaration are fulfilled by all Baltic Sea countries. This was reported to HELCOM Ministerial Meeting on 3 October 2013. The Ministerial Meeting appreciated the re-survey work.



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 partially funded FAMOS Freja (2014-2016) project headed by Swedish Maritime Administration for support on completing the HELCOM Cat I&II surveys, improving the Baltic Sea Geoid model and to renew the chart production system.

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

Hydrographic data processing and management

The renewal of the Bathymetric database has taken its first steps in late 2013 and during 2014.

External human resources has been rent from private companies in order to ease workload on data processing and validation tasks.

Several data sets of bathymetric data have been provided for the Baltic Sea Depth Model within the limits of Finnish national legislation. Information will be updated continuously after new surveys.

3. Nautical Charts

Printed charts

Printed charts in 2014 have been produced generally according to the plans. New editions were published on four chart series (D,E,J,P) and 25 nautical charts. Three totally new harbour charts (127, 162 and 167) were also published. Continuous updating of the printed charts has been improved.

Statistics for sold charts are shown in *Table 2*. In addition to these there are many adopted charts sold by UKHO and BSH.

The Finnish nautical charts has been published and marketed by *Karttakeskus Oy*. The number of sold printed chart was increased about 10 % in 2014.

Chart product (printed)	2010	2011	2012	2013	2014
<i>International traffic</i>					
General charts	2539	1772	1620	1977	1984
Coastal charts					
Approach charts	6098	3580	5379	4943	5434
Harbour charts	659	732	1267	1313	2162
Chart series (inland areas)	1672	2103	1998	1490	1538
<i>Domestic traffic</i>					
General & approach charts	1423	1384	1000	748	645
Chart series (sea areas)	14674	11695	11116	11489	12600
Chart series (inland areas)	2218	1862	1503	1913	2496
Other charts	222	5	0	0	0
Total sold copies	30387	23470	24006	24078	26 859

Table 2 Statistics of sold Finnish nautical charts in 2010 – 2014.



During spring 2015 two nautical chart series for yachtsmen will be published, see cover pages with index of new bathymetric data in the charts. *Fig. 2.*

- B (Helsinki-Parainen. Gulf of Finland)
- C (Ahvenanmaa, Åland. Archipelago Sea- Sea of Åland.)



Fig.2. New editions of nautical chart series for leisure craft spring 2015. New bathymetric data ■

ENC production and distribution

ENC production and distribution has been mainly according to the plans. In 2014 3 new cells and 43 New Editions have been released. During the spring 2014 many new harbour cells will be published covering large scale special chart of chart series. The number of ENC Statistics are in *Table 3* and *Table 4*.

Number of releases	2010	2011	2012	2013	2014
<i>New ENCs</i>	54	14	8	4	3
<i>New editions</i>	23	1	44	33	43
<i>Total amount of enc-cells</i>	151	205	192	180	175

Table 3. Statistics of produced Finnish ENCs



Use of ENC	2010	2011	2012	2013	2014
No of ships 31.12	1153	1094	1239	1286	1417
No of customers 31.12	340	396	453	474	529
No of licenced cells (ENCs sold annually)	86407	88831	90043	98221	100856

Table 4: Statistics for the use of Finnish ENCs

A pilot project for developing a new chart service for governmental use i.e. the Finnish Navy and the Finnish Coast Guard was continued. Furuno Finland Oy was acting as a partner for the project. The service in the pilot project utilise the solutions developed by Electronic Chart Centre (ECC, Norway). From the service the official electronic chart data can be used in the non-ECDIS equipped vessels.

Quality control of ENCs has been further improved in the chart production process. Some software tools for hydrographic data quality control and operation guidance have been enhanced.

Chart data processing and management

The new system for Source data management "LOKI" was adopted in June 2013. "LOKI" speed up performance of passing through time of source data, offers better tools for analysing source data and control of workflow. Second phase of the development work of the LOKI and TM Online publication system is on the way and will be completed during first quarter of 2016.

Harmonization of depth information in ENC –project with Sweden continues on 2015. Harmonizing of existing chart data is almost done. Approach scale printed chart plot and S-57 export from the Aland Sea test area were completed on December of 2014 and analysis have been done by FMA and FTA. Project continues by testing other navigational purposes in the same area in the Sea of Aland. Full report is available to BSHC20 by Depth Harmonisation WG.

Finland follows a decision made in 2013 to add 15 m depth curve and depth areas for 0-3m, 3-6m, 6-10m, 10-15m, 15-20m to nautical chart products. Creating more depth areas has increased the processing time significantly especially when areas with new ranges are merged to the old data. Evaluation of displaying more than two coloured areas for shallow waters on printed chart is in progress.

4. Nautical publications

NtMs has been published as planned and according to defined quality targets. The publication of printed version of NtM was ceased 1st Jan 2015. A project for develop an On Line Web Service of NtMs and List of Lights was started on Q1/2015. Statistics are shown in [Table 5](#).



Publication / Service	2010	2011	2012	2013	2014
<i>Notices to Mariners, volume of publications</i>	28	31	32	33	34
<i>Number of NtM Notices</i>	596	680	398	422	397
<i>Number of ER -updates</i>	477	766	449	431	534
<i>Charts in chart updating service</i>		38	56	82	86

Table 5: Statistics for nautical publications

5. MSI

In total 234 navigational warnings were published during 2014 (2011: 248, 2012:265, 2013:276). Since February 2015 local warnings have been send out only in English. Warnings in Web Service are also in Finnish and in Swedish.

6. C-55

C-55 has been updated during spring 2015.

7. Capacity building

Nothing to report.

8. Oceanographic activities

The FHO has taken part in the 7th meeting of BSHC Chart Datum Working Group (CDWG) meeting on 11 - 12 March 2015 in Tallinn. The CDWG work concerns harmonization of the vertical datums in the Baltic Sea nautical charts and other navigational products.

FHO has started a research project "Transition to BSHC Chart Datum". Objectives is to study what effects there are to data, products and services in Finnish Transport Agency and find out solutions how the transition can be done. The deadline for the work is December 2015.

The FHO has been in contact to the Finnish Geospatial Research Institute of National Land Survey concerning FAMOS activity 2 geoid modelling for the Baltic Sea which supports the work of CDWG.

9. Other activities

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

The FHO has continued the implementation of "Open Data" services. The new services for viewing and downloading data was opened (WMS, WFS, file download



service) [link](#). Some feature classes has been opened by open data license but some navigation critical feature classes are still licensed under specific terms.

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

10. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since BSHC 19th Conference 2014.