National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since NHC 63th Conference in April 2019.

- Reorganisation of the Finnish Transport and Communications Agency Traficom.
- The hydrographic surveys continues on shallow, nearshore areas with LiDAR and multibeam technologies.
- Production of nautical charts was limited due to the system development projects.
- Project for transformation of bathymetric data to new vertical chart reference FIN N2000 (~BSHC2000) is ongoing and improvement to Bathymetric Data Management System (MERTA) automation tools will be developed by summer 2020
- Project for renewal of the Nautical Chart Production System (AHTI) is in the implementation phase. Deployment of the full use of system will be during spring 2020
- The implementation of the "New vertical chart reference FIN N2000 (~BSHC2000) is ongoing.

1. Finnish Hydrographic Office

Reorganisation of the Finnish Transport and Communications Agency Traficom at the beginning of 2020.

The Finnish HO's tasks and personnel are reorganised into "Hydrography and Fairways" unit under "Transport System Services" business sector. The staff working for hydrography consist 55 experts. Annual budget for hydrographic activities is about 10 million euros.

The FHO has been performing according to the Quality Management System based on the ISO 9001 standard since 2011.

2. Hydrographic surveys

During 2019, hydrographic surveys projects took place in Oulu, Kemi and Tornio fairways on the Bay of Bothnia area. The resurvey of the Tornio fairway was done due to estimated sediment build-up in some parts of the fairway. LiDAR surveys commenced in the Archipelago Sea targeting full coverage from coastline down to 6 m of water depth. Ordinary inland lake surveys, project HAKO2018, on the Lake Saimaa commenced after a one year break.

Task	Surveyed by	Multibeam [km^2]	Line sounding [km^2]
Kemi, Oulu & Tornio BBTOK2019	*Meritaito Oy*	185	
Archipelago Sea areal surveys	*Meritaito Oy*		LiDAR 417
HAKO2018 inland lake surveys	*IIC Technologies Ltd*	67	

Table 1: Survey statistics for 2019.

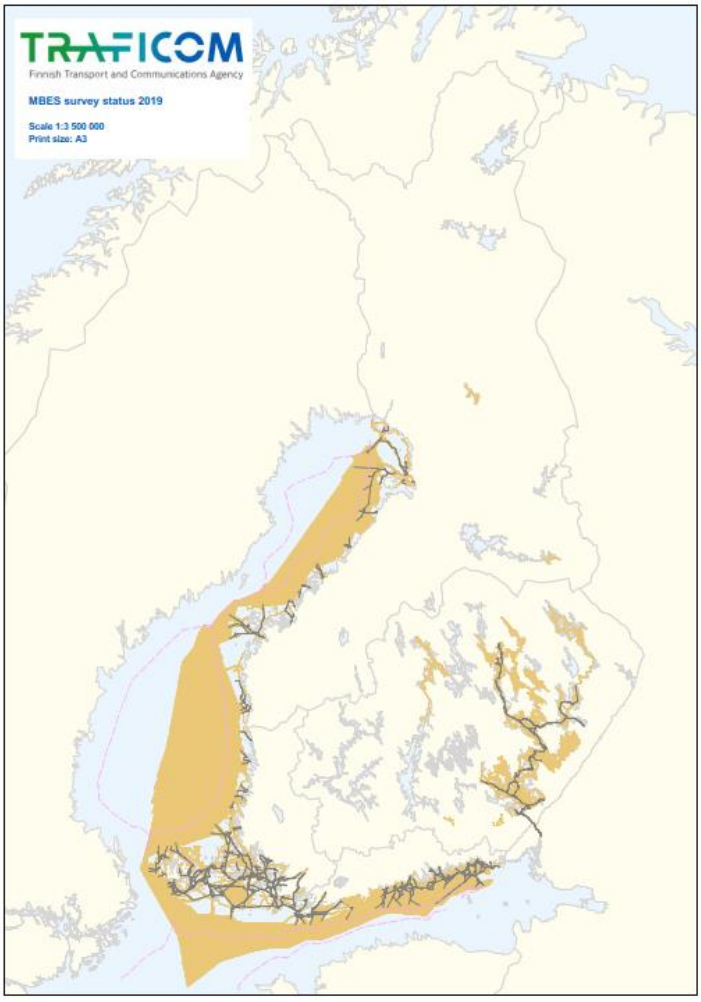


Fig.1. Hydrographic re-survey coverage in 2019 surveyed according to IHO S-44 and FSIS-44 standards.

The Finnish part of the HELCOM-BSHC Revised Harmonised Hydrographic Re-Survey Scheme has been enhanced. The HELCOM survey plan was the driving force to perform the hydrographic surveys in Finnish waters until 2017. The focus of hydrographic surveys has now moved towards the inadequately surveyed coastal nearshore areas. As a total Baltic Sea re-survey scheme, the requirements of the HELCOM Copenhagen 2013 Ministerial Declaration are in progress in all Baltic Sea countries. The Finnish shallow nearshore HELCOM Cat III areas will be included into the next version of the Re-Survey Scheme.

Finland has participated in the EU INEA CEF Transport TEN-T grant program FAMOS Odin (2016-2019) application, headed by Swedish Maritime Administration for support on renewing the bathymetric DB and chart production system. FAMOS Odin has provided fruitful co-operation platform for benchmarking various HO activities.

3. New Charts and updates

Printed charts

Due to the ongoing Ahti Development Project only the most important printed charts for commercial shipping were published in 2019.

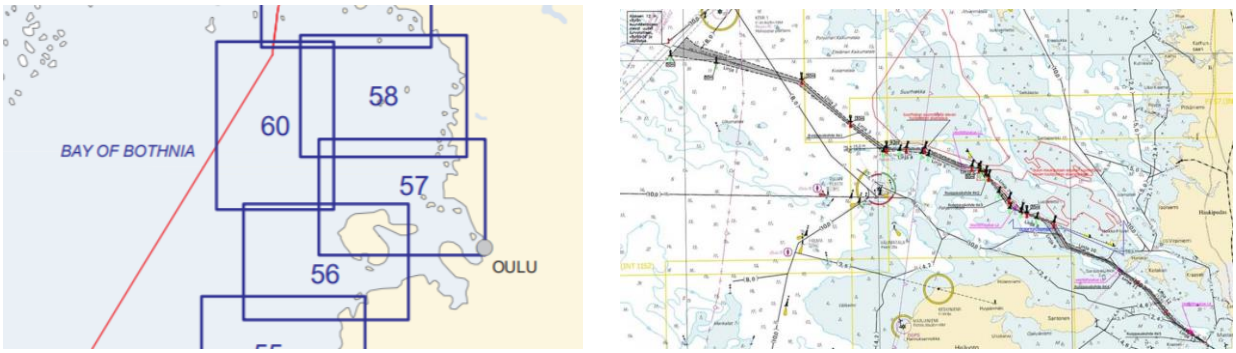


Fig.4. New editions of INT charts for new fairway to Oulu harbour 2019.

Published printed charts	2012	2013	2014	2015	2016	2017	2018	**2019**
General charts	3	2	4	3	3	1	2	**1**
Approach charts	10	18	13	11	7	9	6	**3**
Harbour charts	6	10	8	2	4	9	1	**1**
Chart series	3	3	4	2	2	1	2	**-**
Other charts			**-**			1		

Table 2. Statistics of published New Editions of Finnish nautical charts in 2012 – 2019.

Fig.5. New Chart catalogue 2020.

More information about Finnish charts for navigation here.

Statistics of sold printed charts are presented in the *Table 3*. In addition, there are many adopted printed charts from Finnish area of responsibility sold by UKHO. The overall sales in 2019 has decreased, as there has been only few new editions.

Printed paper charts	2013	2014	2015	2016	*2017*	*2018*	**2019**
AO-size	9186	10225	7330	5761	4656	5155	**4136**
Chart series	14892	16634	19738	9642	9899	9747	**7592**
Total sold copies	24078	26 859	27088	15043	14555	14902	**11728**

Table 3. Statistics of sold printed charts.

ENC production and distribution

The number of sold ENCs increased about 10 % and amount of ships using ENCs increased about 5 % in 2019. The numbers of ENC Statistics are shown in *Table 4* and *Table 5*.

Releasd ENCs	2013	2014	2015	2016	2017	2018	**2019**
New ENCs	4	3	25	17	5	1	**-**
New editions	33	43	48	38	50	47	13

Table 4. Statistics of produced Finnish ENCs.

Use of ENC	2013	2014	2015	2016	**2017**	2018	**2019**
ENCs sold annually (excluded trial, training and demo usage)	61022	69982	77533	89927	95193	107101	**115462**
No of ships (annually)	1908	2270	2713	3212	3659	4492	**4698**
No of customers (annually)	669	793	898	1054	1232	1467	**1439**

Table 5. Statistics for the use of Finnish ENCs

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.

4. New publications and updates

Notices to Mariners are distributed from website as download service (PDF) and NtM Online web-service with capability of viewing the Notices filtered by time of publication, area or charts affected.

The Lists of Lights are published for coastal areas and inland waterways. The Lake Saimaa area is now included as a part of the publication for inland waterways. Lists of Lights are available as downloadable PDFs and in addition, information of lights can be search based on ID, area of interest or related chart product.

Publication /service	2013	2014	2015	2016	2017	2018	**2019**
Notices to Mariners, vol of publications	33	34	34	35	35	35	**35**
Number of NtM notices	422	397	391	366	388	366	**306**
Number of ER updates	431	534	605	504	668	776	**562**

Table 6. Annual statistics for nautical publications

5. MSI

Finnish Transport and Communications 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.

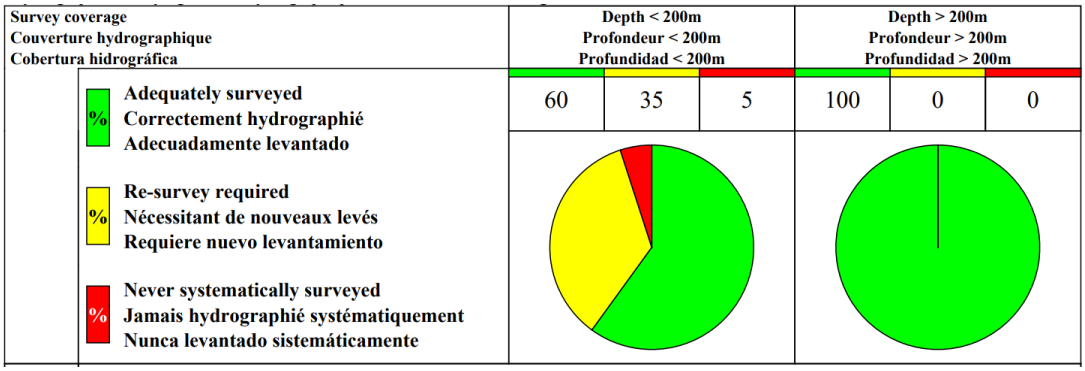
In total 84 navigational warnings were published during 2019.The number of warnings in 2019 is exceptionally low, partly because new criteria for issuing navigational warnings were tested, partly because, for example, there was less pipeline layoff in the Gulf of Finland

Publication / Service	2013	2014	2015	2016	2017	2018	**2019**
Navigational Warnings	276	234	236	237	239	200	**84**

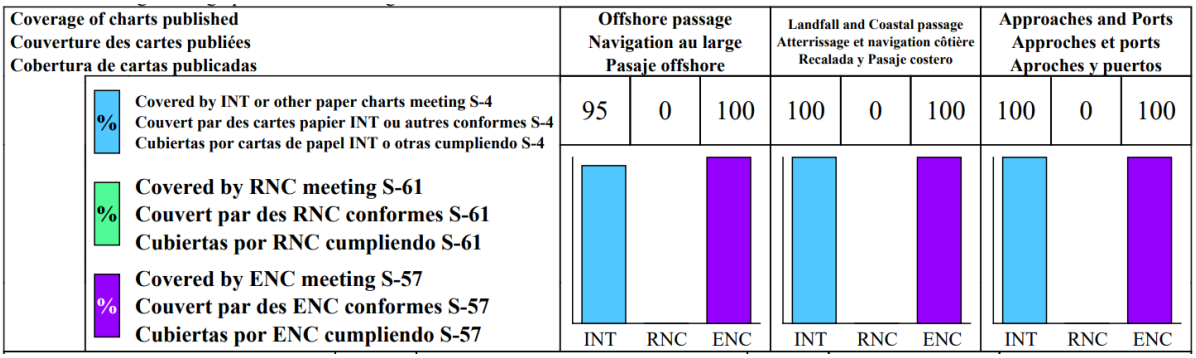
Table 7. Annual statistics for navigational warnings

6. C-55

Status of hydrographic Surveys



Status of Nautical Charting



7. Capacity building

Nothing to report.

8. Oceanographic activities

The implementation project for "New vertical chart reference N2000" (Batic Sea Chart datum 2000) has started with data conversation, planning and customer information. Implementation plan for changing Finnish nautical charts and related data to the new datum has approved 2018. BSCD 2000 will be introduced on the nautical charts, starting 2020 with a new hydrographic chart data management and production system AHTI.

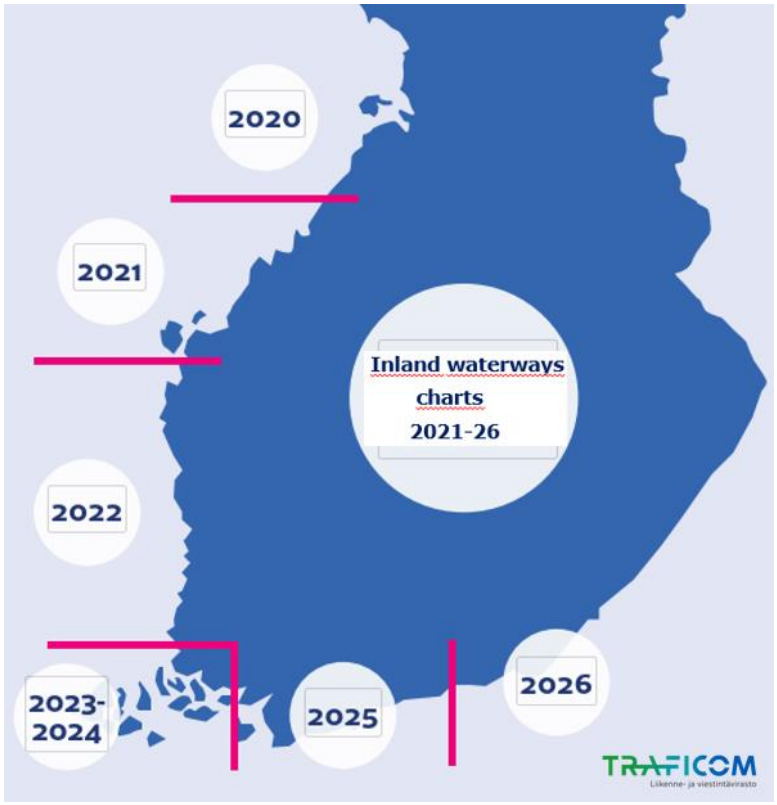


Fig.7. New vertical system N2000 (Baltic Sea Chart Datum 2000)

9. Spatial data infratructure

National Geodata Portal

The non-navigational use of hydrographic data has increased exceedingly. A viewing service is in use via the interface of National Geodata Portal providing Inspire specific national spatial data sets, for example. The FHO is actively supporting hydrographic data to the National Geodata Portal. The metadata of FHO is also available at the National Geodata Portal.

Open data view and download services

File download service for viewing and downloading datasets
- Web Map Service
- Web Feature Service
- Tiled map service (WMTS) for viewing FHO nautical chart data in raster format

The data available from these services is not suitable for navigation and does not meet the requirements for an official nautical chart.

Links:
Finnish Transport and Communications Agency (The new data viewing and download service)
https://julkinen.traficom.fi/oskari/?lang=en

National Geodata Portal Paikkatietoikkuna:
http://www.paikkatietoikkuna.fi/?lang=en

10. Innovation

Hydrographic data processing and management

The transformation of bathymetric data to the new vertical chart reference N2000 (~BSCD2000) is ongoing. The aim is that the transformation process of bathymetric data follows at least the schedule of the project of N2000 (~BSCD2000). Improvements to the Bathymetric Data Management System (MERTA) is in progress. The aim is to develop the function of combined depth models of the bathymetry data deconflicted with information from the Finnish Transport and Infrastructure Agency and migration tools,

New automatic methods for bathymetric data processing i.e. contouring and sounding selection are in use in regular process.

Chart data processing and management

ENC and Paper Chart Production System (AHTI) and related services procurement
System renewal project is in the deployment phase. New system has been deployed partially into the production for nautical chart data management, but full nautical chart production is not yet started for product publishing and maintenance.

The critical tasks that are still unfinished and prevent the full production start-up with the new system are related to the cartographic data migration from the old system and paper chart portrayal.

Target for the full production start-up with the new system and finalizing the system renewal project is Q1-Q2/20.

Nautical chart production system implementation, data migration, system integrations and deployment (2017-2020):

- ✓ System delivery contract signed 9/17
- ✓ Delivery (Drop 3), data migrations and system integrations accepted 3/19
- ✓ Partial production start-up (data management) 4/19
- ✓ Full production start and final acceptance of the delivery Q1-Q2/20

11. Other activities

FHO has Bilateral Arrangements with UKHO (adoptions of printed Charts), Norway (ENC RENC services), Sweden, Estonia and Germany.

Finland has been a member of the IHO Council and taking part of the HSSC and IRCC meetings.
Finnish experts are actively working in;

- HSSC/NCWG (as Chair)
- HSSC/ENCWG
- HSSC/S-100WG and HSSC/S-101PT
- HSSC/DQWG
- HSSC/NIPWG (as Vice Chair)
- HSSC/TWCWG
- IRCC/WEND-WG (representing BSHC)
- IRCC/MSDIWG
- Baltic Sea Hydrographic Commission including BSHC/BSICCWG (Chair), BSHC-HELCOM/MWG (Chair), BSHC/BSDIWG, BSHC/BS-NSMSDIWG, BSHC/CDWG

- Nordic Hydrographic Commission including NHC/NCPEG, NHC/NSEG
- Arctic Region Hydrographic Commission (as Associate Member) including ARHC/OTWG and ARHC/ARMSDIWG.

Finland is member of the PRIMAR and contribute actively the work of PRIMAR PAC and WGs.

11. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since NHC 63rd Conference in April 2019.