National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since NHC Virtual Meeting in April 2021.

- The reorganisation of the Finnish Transport and Communications Agency is completed.
- The hydrographic surveys continues on shallow, nearshore areas with LiDAR and multibeam technologies.
- The first set of nautical charts with new chart production system (AHTI) with the new vertical reference system (BSCD 2000) has published.
- The Bathymetric Data Management System (MERTA) in now fully operational and has been integrated with the AHTI.
- The implementation of the "New vertical chart reference FIN N2000" (~BSCD2000) is ongoing.
- A new nautical publication Sailing Directions for Finnish Waters has been published.

1. Finnish Hydrographic Office

The Finnish Transport and Communications Agency Traficom organisation was reviewed during 1st half of 2021 and the new management structure has been in force since 15 June 2021.

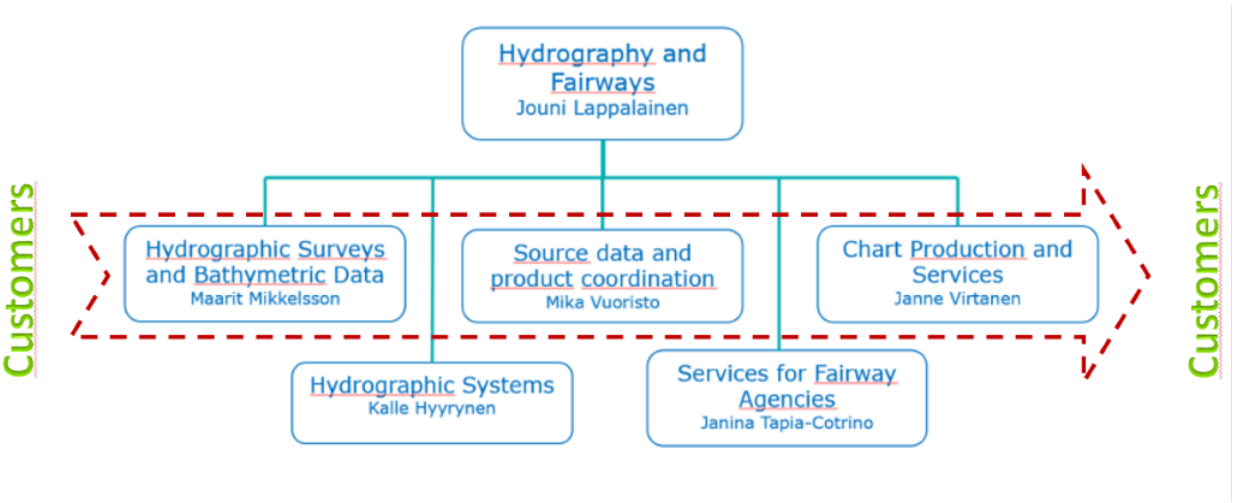


Fig.1. Hydrographic and Fairways unit with underlying teams.

The staff working for hydrography consist 50 specialists and the annual budget for hydrographic activities is about 9 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 2021, hydrographic surveys projects took place in Kokkola area on the Bay of Bothnia area, consisting Port of Kokkola fairway and adjoining shallower fairways. As an option approaches to Pori Mäntyluoto hydrographic fairway surveys were updated. Ordered hydrographic services were limited due to lack of personnel and COVID-19 pandemic restrictions.

Task	Surveyed by	Multibeam [km^2]	Line sounding [km^2]
Kokkola (BBKO2021)	*Arctia Meritaito Oy*	190	
Options (approaches to Pori)	*Arctia Meritaito Oy*	36	

Table 1: Survey statistics for 2021.

Fig.2. Hydrographic re-survey coverage at the end of 2021 surveyed according to IHO S-44 and FSIS-44 standards.

Data from LIDAR2019 surveys is still under processing (Arctia Meritaito Oy) and some parts are still waiting for to be delivered for quality control.

The Finnish part of the HELCOM-BSHC Revised Harmonised Hydrographic Re-Survey Scheme has been enhanced. Aging of Cat I surveys need to be studied.

HELCOM Cat I fairway surveys were updated about 80 km².
HELCOM Cat III new areal survey data to register about 330 km².

3. New Charts and updates

Printed charts

Due to the ongoing Ahti Development Project and ongoing N2000 fairway and nautical chart reform -project, limited amount of new editions of printed charts or ENCs was published in 2021. The chart correction service for both printed and ENC charts has been provided without interruption, though.

Published printed charts	2016	2017	2018	2019	2020	**2021**
General charts	3	1	2	1	-	-
Approach charts	7	9	6	3	-	10
Harbour charts	4	9	1	1	-	4
Chart series	2	1	2	-	-	-
Other charts	**-**	1	-	**-**	**-**	**-**

Table 2. Statistics of published New Editions of Finnish nautical charts in 2016 – 2021.

Fig.3. New Chart catalogue 2022

More information about Finnish nautical charts are available in the Chart Catalogue 2022 Link

The statistics of sold printed charts are presented in the *Table 3*. The overall sales of the nautical chart series increased in 2021. Probably due to the increased domestic tourism and boating. The new revision of the Water Traffic Act most likely had an impact on sales as well.

Printed paper charts	2016	*2017*	*2018*	*2019*	2020	**2021**
AO-size	5761	4656	5155	4136	3579	3923
Chart series	9642	9899	9747	7592	11855	12869
Total sold copies	15043	14555	14902	11728	15434	16792

Table 3. Statistics of sold printed charts 2016-2021.

In addition, there are many adopted printed charts from Finnish area of responsibility sold by UKHO.

ENC production and distribution

The number of sold ENCs and number of ships using ENCs increased slightly in 2021. The ENC Statistics are visible in the *Table 4* and *Table 5*.

Released ENCs	2016	2017	2018	2019	2020	**2021**
New ENCs	17	5	1	**-**	-	1
New editions	38	50	47	13	71	31

Table 4. Statistics of produced Finnish ENC 2016-2021.

Use of ENC	2016	2017	2018	2019	2020	**2021**
ENCs sold annually (excluded trial, training and demo usage)	89927	95193	107101	115462	141973	144916
No of ships (annually)	3212	3659	4492	4698	4841	4921
No of customers (annually)	1054	1232	1467	1439	1401	1411

Table 5. Statistics for the use of Finnish ENCs 2016-2021

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

4. New publications and updates

The new nautical publication Sailing Directions for Finnish Waters has published in December 2021.The publication contains general information about maritime transport and navigation in Finland, aimed particularly at international operators, and channel descriptions for specific areas.

Notices to Mariners are distributed via website including a download service (PDF) and NtM Online web-service. Clients can filter the Notices by time of publication, area of interests or charts in hand.

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. The List 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	2016	2017	2018	2019	2020	**2021**
Notices to Mariners, vol of publications	35	35	35	35	35	35
Number of NtM notices	366	388	366	306	296	340
Number of ER updates	504	668	776	562	595	595

Table 6. Annual statistics for nautical publications 2016-2021

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. Fintraffic (government owned company) is operating the national navigational warnings service.

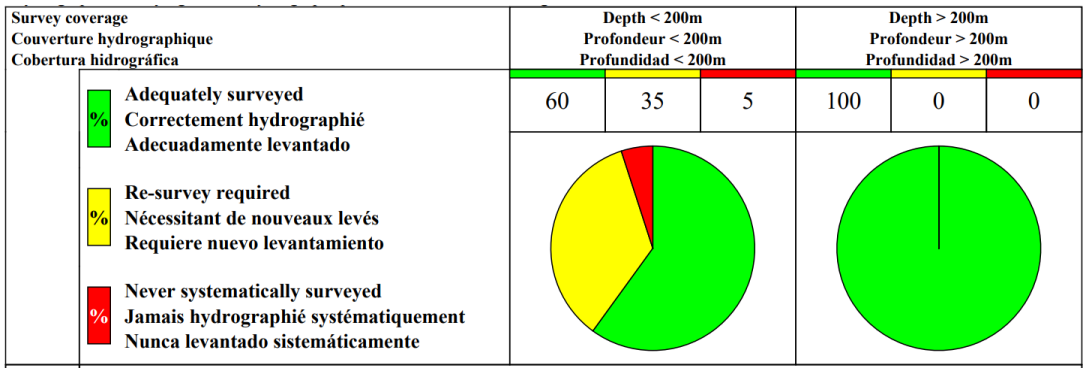
In total 262 navigational warnings were published during 2021.

Publication / Service	2016	2017	2018	2019	2020	**2021**
Navigational Warnings	237	239	200	84	244	262

Table 7. Annual statistics for navigational warnings 2016-2021

6. C-55

Status of hydrographic Surveys



Status of Nautical Charting

Coverage of charts published Couverture des cartes publiées Cobertura de cartas publicadas	Offshore passage Navigation au large Pasaje offshore			Landfall and Coastal passage Atterrissage et navigation côtière Recalada y Pasaje costero			Approaches and Ports Approches et ports Aproches y puertos		
% Covered by INT or other paper charts meeting S-4 Couvert par des cartes papier INT ou autres conformes S-4 Cubiertas por cartas de papel INT o otras cumpliendo S-4	95	0	100	100	0	100	100	0	100
% Covered by RNC meeting S-61 Couvert par des RNC conformes S-61 Cubiertas por RNC cumpliendo S-61									
% Covered by ENC meeting S-57 Couvert par des ENC conformes S-57 Cubiertas por ENC cumpliendo S-57									
	INT	RNC	ENC	INT	RNC	ENC	INT	RNC	ENC

7. Capacity building

Nothing to report.

8. Oceanographic activities

The implementation project for "New vertical chart reference N2000" (Baltic Sea Chart datum 2000) is ongoing. BSCD 2000 vertical reference will be introduced on the nautical charts with a new hydrographic chart data management and production system AHTI. The first new charts with new vertical reference were publish in the end of 2021.

The reform will renew Finnish nautical charts in stages over the course of approximately 5–6 years, starting from the Bay of Bothnia and proceeding south. Affecting commercial seafarers in particular, the reform will also concern recreational boaters.

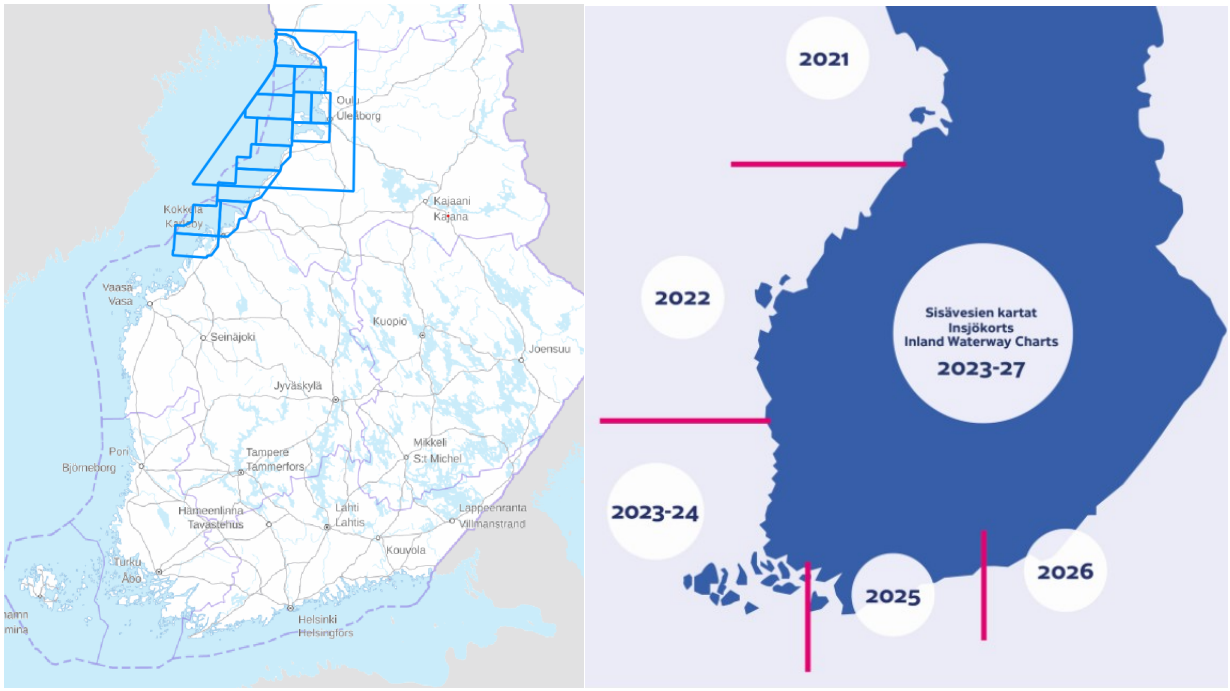


Fig.4. The Finnish N2000 charts coverage (Baltic Sea Chart Datum 2000) as of March 2022 and the schedule for N2000 charts.

Chartlink showing the progress of N2000 fairway and nautical chart reform.

9. Spatial data infrastructure

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 survey data processing and management

The improvements to the Bathymetric Data Management System (MERTA) are now completed providing tools for data migration and high level automation for the data maintenance. The MERTA, as March 2022, holds 34 % of all FHO MBES datasets and 21 % of all other datasets (i.a. Single Beam and LiDAR).

Chart data processing and management

ENC and Paper Chart Production System (AHTI) have been taken into full operational use.

Nautical chart production system implementation, data migration, system integrations and deployment (2017-2021):
- ✓ 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
- ✓ Final acceptance of the delivery Q4/20
- ✓ Full production/first products Q2/2021

11. Other activities

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

Finland is member of the IHO Council and take 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
- HSSC/HSWG
- IRCC/WEND-WG (representing BSHC)
- IRCC/MSDIWG
- Baltic Sea Hydrographic Commission including BSHC/BSICCWG (Chair), BSHC/MWG (Chair), BSMSIWG, BSHC/CDWG, BSHC/BS-NSMSDIWG, BSHC/BSBDWG
- Nordic Hydrographic Commission including NHC/NCPEG, NHC/NSEG
- Arctic Region Hydrographic Commission (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 Virtual Meeting in April 2021.