

National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since NHC Meeting in April 2022.

- The hydrographic surveys continues on shallow, nearshore areas with LiDAR and multibeam technologies.
- A work to develop S-101 and S-102 production capability is ongoing.
- The bathymetric data migration of the sea area to the Bathymetric Data Management System (MERTA) has progressed well. Work is also progressing in inland waters.
- The implementation of the "New vertical chart reference FIN N2000" (~BSCD2000) is ongoing.

1. Finnish Hydrographic Office

The Finnish Transport and Communications Agency Traficom organisation and management structure has been in force since 15 June 2021.

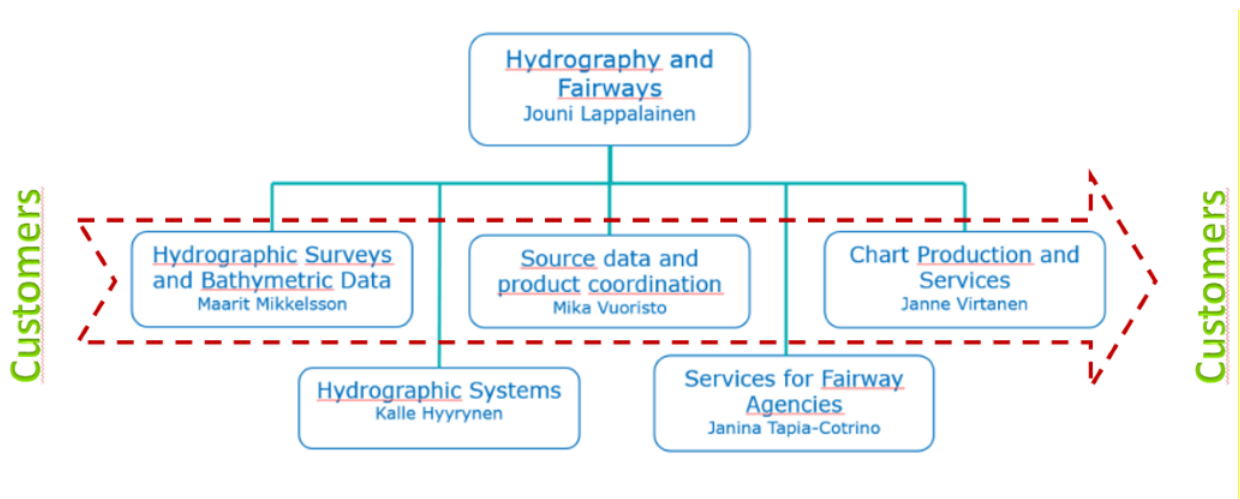


Fig.1. Hydrographic and Fairways unit with underlying teams.

The staff working for hydrography consist 62 employee and the annual budget for hydrographic activities is about 10 million euros.

The FHO is refreshing the Quality Management System based on the ISO 9001 standard for a full external audit.

2. Hydrographic surveys

During 2022, hydrographic surveys took place in Gulf of Finland area consisting Vuosaari fairway and in inland waters the project Haukivesi-Kolovesi was going on. All the data of LIDAR 2019 was delivered and the quality of the data controlled and processed to the Bathymetric Database.

Request for tender for the surveys of Finland territorial sea border base points was published and the contract signed on TopoLidar and areal photography surveys with BSF Swissphoto AG and Tripodi Finland Oy. Surveys will be implemented during 2023 and possibly supplementary vessel surveys as well as calculations and coordinate listing are carried out during 2024.

Task	Surveyed by	Multibeam [km ²]
Vuosaari (VAYLA2022)	<i>Arctia Meritaito Oy</i>	225
Haukivesi-Kolovesi (HKJA 2022)	<i>Clinton Marine Survey AB</i>	175

Table 1: Survey statistics for 2022.



Fig.2. Hydrographic re-survey coverage at the end of 2022 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. Aging of Cat I surveys need to be studied.

HELCOM Cat I fairway surveys were updated about 225 km².

HELCOM Cat III new areal survey data to register about 370 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 ENC's was published in 2022. The chart correction service for both printed and ENC charts has been provided without interruption, though.

Published printed charts	2017	2018	2019	2020	2021	2022
General charts	1	2	1	-	-	2
Approach charts	9	6	3	-	10	12
Harbour charts	9	1	1	-	4	3
Chart series	1	2	-	-	-	1
Other charts	1	-	-	-	-	-

Table 2. Statistics of published New Editions of Finnish nautical charts in 2017– 2022.



Fig.3. New Chart catalogue 2023.

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 decreased in 2022. It was likely influenced by the fact that new editions of popular nautical chart series were not published in 2022.

Printed paper charts	2017	2018	2019	2020	2021	2022
AO-size	4656	5155	4136	3579	3923	3732
Chart series	9899	9747	7592	11855	12869	6623
Total sold copies	14555	14902	11728	15434	16792	10355

Table 3. Statistics of sold printed charts 2017-2022.

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

ENC production and distribution

The ENC Statistics are visible in the *Table 4* and *Table 5*.

The number of ships and number of customers using ENCs increased in 2022.

Released ENCs	2017	2018	2019	2020	2021	2022
New ENCs	5	1	-	-	1	4
New editions	50	47	13	71	31	46

Table 4. Statistics of produced Finnish ENC 2017-2022.

Use of ENC	2017	2018	2019	2020	2021	2022
ENCs sold annually (excluded trial, training and demo usage)	95193	107101	115462	141973	144916	142429
No of ships (annually)	3659	4492	4698	4841	4921	5307
No of customers (annually)	1232	1467	1439	1401	1411	1512

Table 5. Statistics for the use of Finnish ENCs 2017-2022.

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. The publication's coverage of information content has been extended through 2022. [Link to Sailing Directions](#)

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. [Link to NtM service](#)

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. [Link to List of Lights](#)

Finnish nautical publications are also available in Primar's Nautical Publication Service.

Publication /service	2017	2018	2019	2020	2021	2022
Notices to Mariners, vol of publications	35	35	35	35	35	36
Number of NtM notices	388	366	306	296	340	292
Number of ER updates	668	776	562	595	595	580

Table 6. Annual statistics for nautical publications 2017-2022.

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.

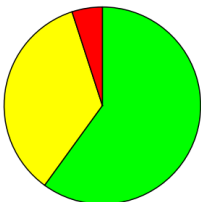
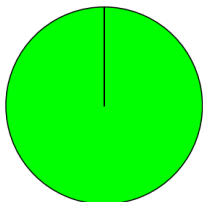
In total 202 navigational warnings were published during 2022.

Publication / Service	2017	2018	2019	2020	2021	2022
Navigational Warnings	239	200	84	244	262	202

Table 7. Annual statistics for navigational warnings 2017-2022.

6. C-55

Status of hydrographic Surveys

Survey coverage Couverture hydrographique Cobertura hidrográfica	Depth < 200m Profondeur < 200m Profundidad < 200m			Depth > 200m Profondeur > 200m Profundidad > 200m		
	■ Adequately surveyed Correctement hydrographié Adecuadamente levantado ■ Re-survey required Nécessitant de nouveaux levés Requiere nuevo levantamiento ■ Never systematically surveyed Jamais hydrographié systématiquement Nunca levantado sistemáticamente	60	35	5	100	0
						

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		
<p>% 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</p> <p>% Covered by RNC meeting S-61 Couvert par des RNC conformes S-61 Cubiertas por RNC cumpliendo S-61</p> <p>% Covered by ENC meeting S-57 Couvert par des ENC conformes S-57 Cubiertas por ENC cumpliendo S-57</p>	95	0	100	100	0	100	100	0	100
	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 published in the end of 2021 and the reform has now progressed as far as the Quark region (see figure 4).

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

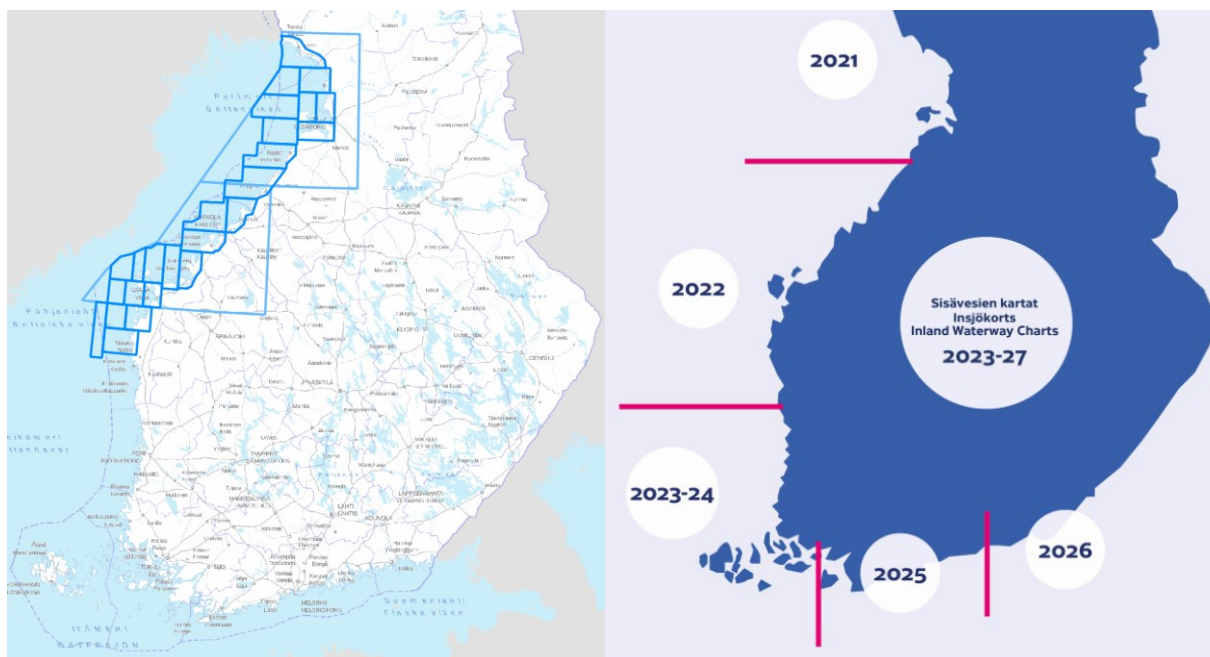


Fig.4. The Finnish N2000 charts coverage (Baltic Sea Chart Datum 2000) as of January 2023 and the schedule for N2000 charts.

[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. Especially, there has been a lot of requests for wind farm projects.

Traficom's open data view and download services

Finnish Transport and Communications Agency's services for data viewing and downloading include

- Web Map Service (WMC) - nautical charts in raster format
- Tiled map service (WMTS) - nautical charts in raster format
- Web Feature Service (WFS) - nautical chart data
- Web Coverage Service (WCS) - bathymetric data

Link to services:

<https://julkinen.traficom.fi/oskari/?lang=en>

Link to interfaces:

<https://www.traficom.fi/en/news/spatial-dataset-material/calls-interfaces>

The datasets available from above services are not suitable for navigation and does not meet the requirements for an official nautical chart.

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.

Link to 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 February 2023, holds 67 % of all FHO MBES datasets and 37 % 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 since December 2020. Since then all the product types have been published from the AHTI system. The work to develop S-101 and S-102 production capability is on-going:

- a new test environment has been deployed
- data model adjustments for the source and products.

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
- HSSC/MASSPT
- 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 PRIMAR WGs.

11. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since NHC Meeting in April 2022.