National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since BSHC Virtual Meeting in September 2020.

- The hydrographic surveys continues on shallow, nearshore areas with LiDAR and multibeam technologies.
- Production of nautical charts was limited due to the ongoing system development projects.
- Bathymetric Data Management System (MERTA) and Nautical Chart Production System (AHTI) have been taken in operational use.
- 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 was reviewed during 1st half of 2021 and the new management structure has been in force since 15 June 2021.

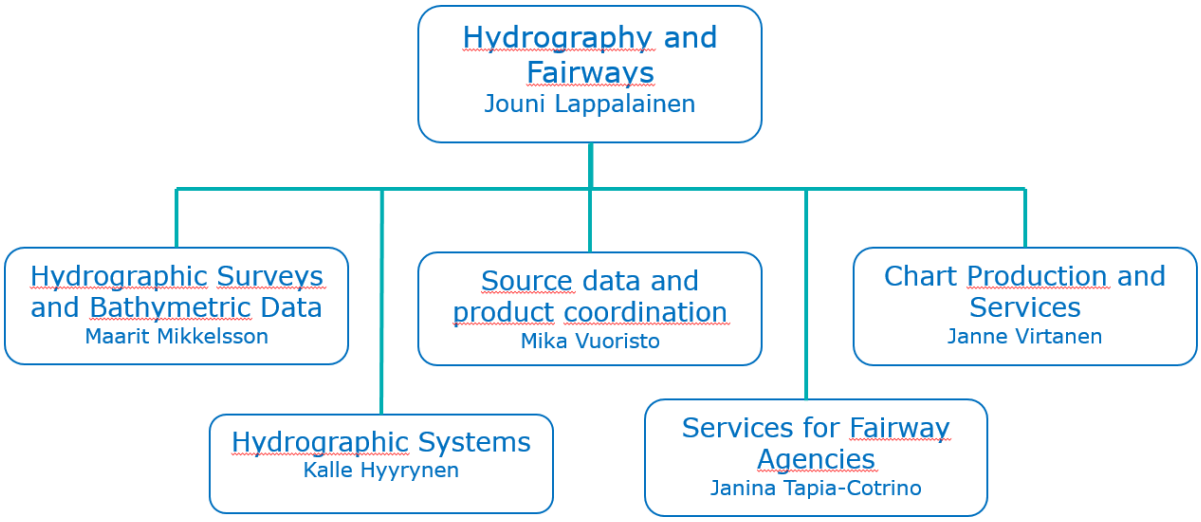


Fig.1. Hydrographic and Fairways unit with underlying teams.

The staff working for hydrography consist 51 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 2020, hydrographic surveys projects took place in Vaasa area on the Bothnia Sea area. LiDAR surveys continued in the Archipelago Sea targeting full coverage from coastline down to 6 m of water depth. The contract HAKO2018, on the Lake Saimaa was terminated and canceled caused by COVID-19 pandemic. Due to the COVID-19 pandemic data deliveries from areal surveys (~570 km^2) in the Gulf of Finland were delivered late.

Task	Surveyed by	Multibeam [km^2]	Line sounding [km^2]
Vaasa (BSVA2020)	*Meritaito Oy*	550	
Archipelago Sea areal surveys	*Meritaito Oy*		LiDAR total area 3700 of which data acquired ~500,

Table 1: Survey statistics for 2020.

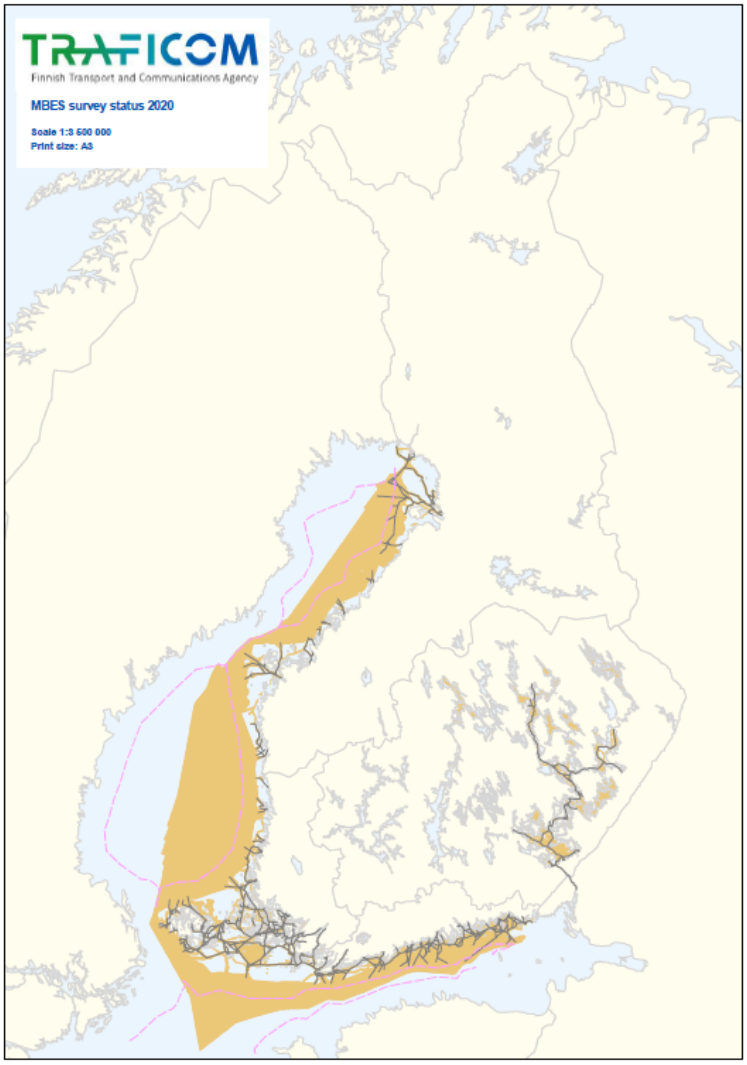


Fig.2. Hydrographic re-survey coverage in 2020 surveyed according to IHO S-44 and FSIS-44 standards.

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 have been included into the new version of the Re-Survey Scheme.

3. New Charts and updates

Printed charts

Due to the ongoing Ahti Development Project and ongoing N2000 fairway and nautical chart reform -project, no new editions of printed charts or ENCs was published in 2020. The chart correction service for both printed and ENC charts has been provided without interruption, though.

Published printed charts	2013	2014	2015	2016	2017	2018	2019	**2020**
General charts	2	4	3	3	1	2	1	-
Approach charts	18	13	11	7	9	6	3	-
Harbour charts	10	8	2	4	9	1	1	-
Chart series	3	4	2	2	1	2	-	-
Other charts		**-**			1			

Table 2. Statistics of published New Editions of Finnish nautical charts in 2013 – 2020.

Fig.3. New Chart catalogue 2021

More information about Finnish nautical charts are available in The Chart Catalogue 2021 Link

The statistics of sold printed charts are presented in the *Table 3*. The overall sales of the nautical chart series increased in 2020. 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	2013	2014	2015	2016	*2017*	*2018*	*2019*	**2020**
AO-size	9186	10225	7330	5761	4656	5155	4136	**3579**
Chart series	14892	16634	19738	9642	9899	9747	7592	**11855**
Total sold copies	24078	26 859	27088	15043	14555	14902	11728	**15434**

Table 3. Statistics of sold printed charts 2013-2020.

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 increased about 10 % and number of ships using ENCs increased about 20 % during 2020. The ENC Statistics are visible in the *Table 4* and *Table 5*.

Released ENCs	2013	2014	2015	2016	2017	2018	2019	**2020**
New ENCs	4	3	25	17	5	1	**-**	**-**
New editions	33	43	48	38	50	47	13	**71**

Table 4. Statistics of produced Finnish ENC 2013-2020s.

Use of ENC	2013	2014	2015	2016	2017	2018	2019	**2020**
ENCs sold annually (excluded trial, training and demo usage)	61022	69982	77533	89927	95193	107101	115462	**141973**
No of ships (annually)	1908	2270	2713	3212	3659	4492	4698	**4841**
No of customers (annually)	669	793	898	1054	1232	1467	1439	**1401**

Table 5. Statistics for the use of Finnish ENCs 2013-2020

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

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	2013	2014	2015	2016	2017	2018	2019	**2020**
Notices to Mariners, vol of publications	33	34	34	35	35	35	35	**35**
Number of NtM notices	422	397	391	366	388	366	306	**296**
Number of ER updates	431	534	605	504	668	776	562	**595**

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

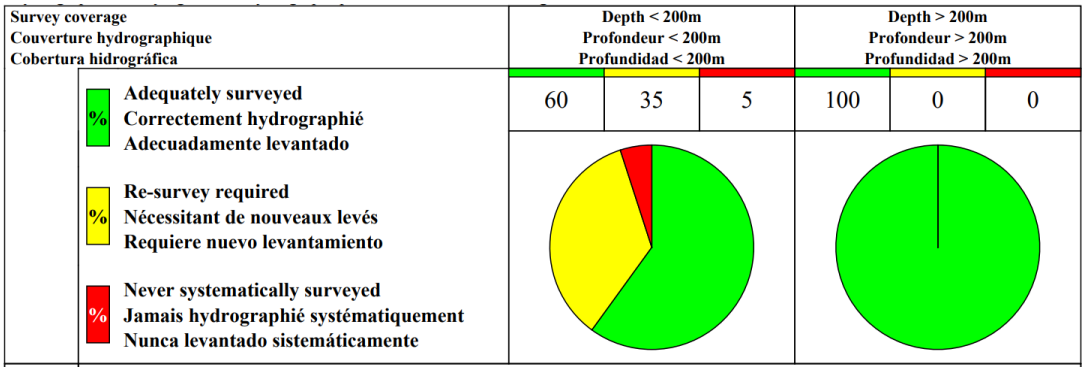
In total 244 navigational warnings were published during 2020.

Publication / Service	2013	2014	2015	2016	2017	2018	2019	**2020**
Navigational Warnings	431	234	236	237	239	200	84	**244**

Table 7. Annual statistics for navigational warnings

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 with data conversation and preparations for chart publication. BSCD 2000 will be introduced on the nautical charts, starting 2021 with a new hydrographic chart data management and production system AHTI.

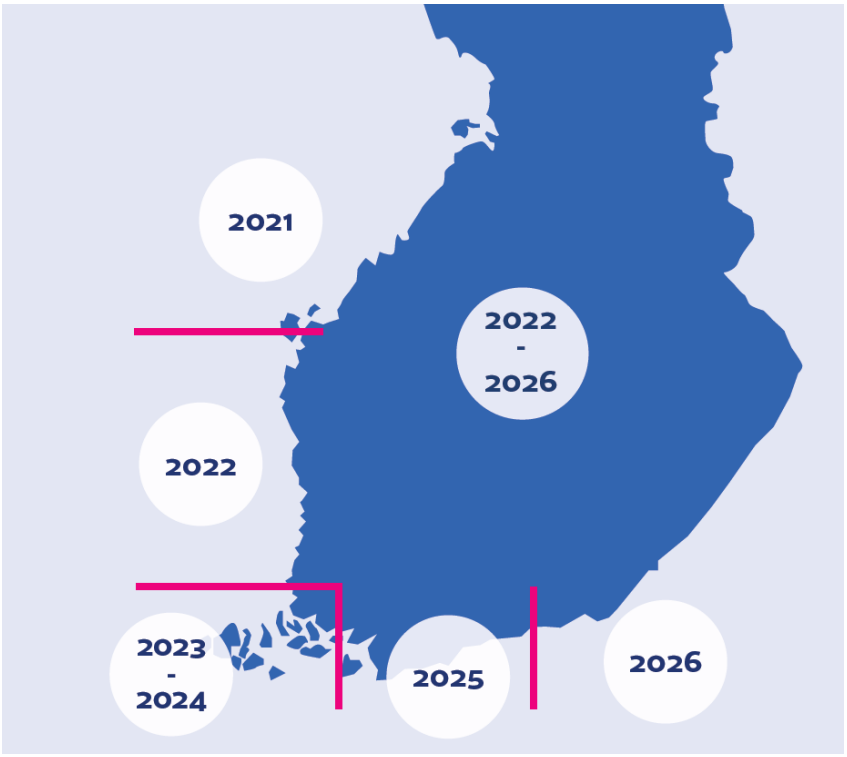


Fig.4. New vertical system N2000 (Baltic Sea Chart Datum 2000)

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 survey data processing and management

The improvements to the Bathymetric Data Management System (MERTA) have been taken into full operational use. The new system includes automatic methods for maintaining bathymetric data and developed tools for bathymetric data migration.

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
- 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 BSHC Virtual Meeting in September 2020.