

**18TH MEETING OF THE SOUTH WEST PACIFIC HYDROGRAPHIC
COMMISSION (SWPHC18)
VTC, 17-19 February 2020**

NATIONAL REPORTS FROM FRANCE TO THE SWPHC18

References:

- A. IHO Resolution 2/1997 as amended ([sefe doc. C3-04.2A](#), [Appendix to Annex A](#))
- B. IHO Circular Letter 20/2019, The IHO Online Form System for responses to Circular Letters and input to IHO Publications (P-5 and C-55): [link](#)
Online system for P-5 (Yearbook): [link](#)
Online system for C-55 (Status of Surveys and Charting Worldwide): [link](#)

Executive summary

1. Hydrographic Office / Service:

- a) Name of the institution: **Shom**.
- b) Description:

Shom has pursued the achievement of its different commitments based on the National Maritime & Littoral Strategy and the Strategic Review of Defence and National Security according to a 4 years target and performance contract covering the 2017-2020 period. A new *targets and performance contract* came into force on January 1st 2021 for the 2021-2024 period.

In addition to that, survey works are being conducted according to the prioritized 4-years survey plan for waterways under French jurisdiction.

Detailed information to update IHO Publication P-5 is regularly transmitted to IHO secretariat

- c) Submitted by: Ingénieur général (Rear admiral) Laurent Kerleguer, Shom Chief Executive – laurent.kerleguer@shom.fr

Detailed information to update IHO Publication P-5 (*Yearbook*) have been submitted using the online system (reference B).

2. Surveys:

- a) Coverage of new surveys:

Acoustic surveys

Since the previous SWPHC conference in February 2020, Shom's survey unit in the Pacific, GOP, has conducted several surveys to improve and update hydrographic knowledge.

These surveys scheduled in close relation with local governmental authorities in the frame of a prioritized survey plan, to fulfil requirements expressed by local authorities, pilots, fishermen, mining operators and defence.

More precisely, the GOP conducted the following surveys depicted hereafter:

In New Caledonia:

Several surveys of recommended tracks, accesses and passages have been performed all around New-Caledonia, mainly inside the lagoon, as summarized by figure 1 and illustrated by figures 2 to 6.

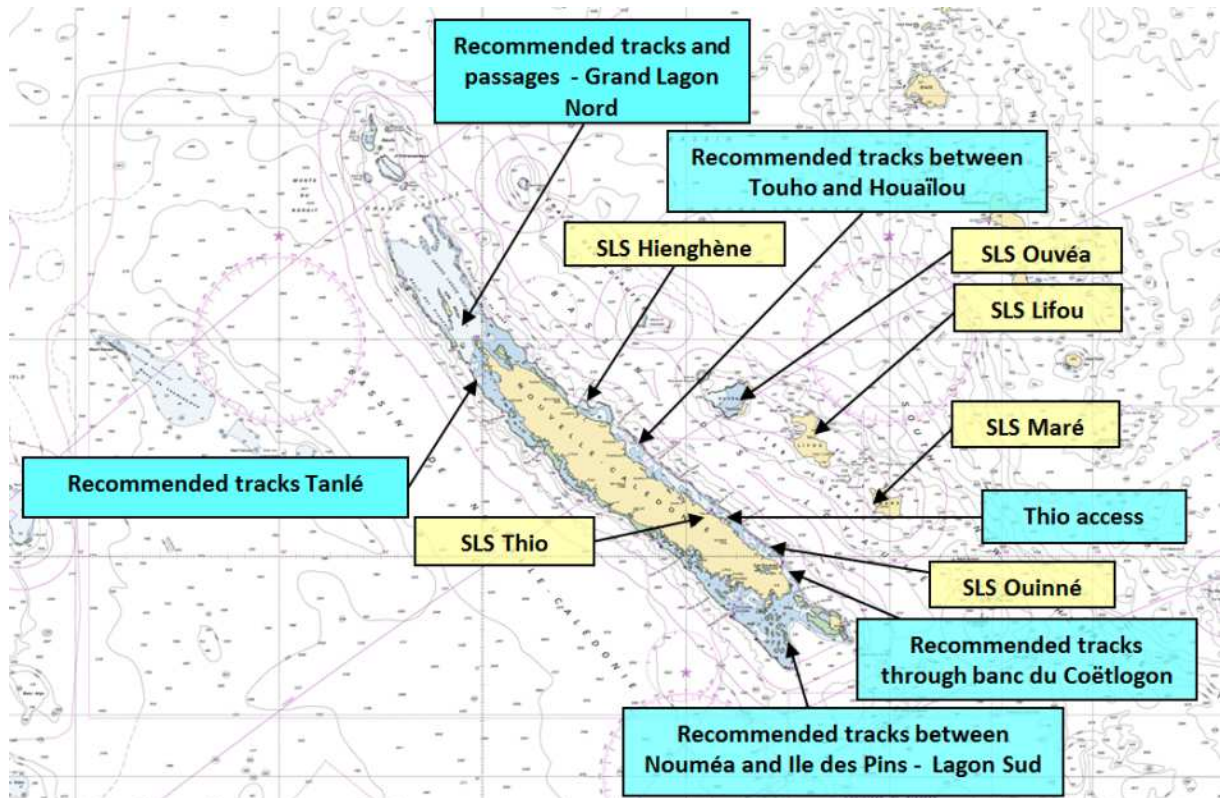


Fig. 1: Locations of the hydrographic works realized in 2020 in New Caledonia

➤ **Surveys:**

- Control survey of a recommended track between Houailou and Touho (figure 2);
- Alternative acces to Thio (figure 3);
- Complementary survey to the second recommended track between Nouméa and Ile des Pins (figure 4);
- Opening of a recommended track through Coëtlogon bank (figure 4);
- Opening of new recommended tracks and passages in unsurveyed areas: Grand Lagon Nord (figure 5);
- Control survey of Tanlé tracks (figure 6);
- Miscellaneous updates in Nouméa harbor.

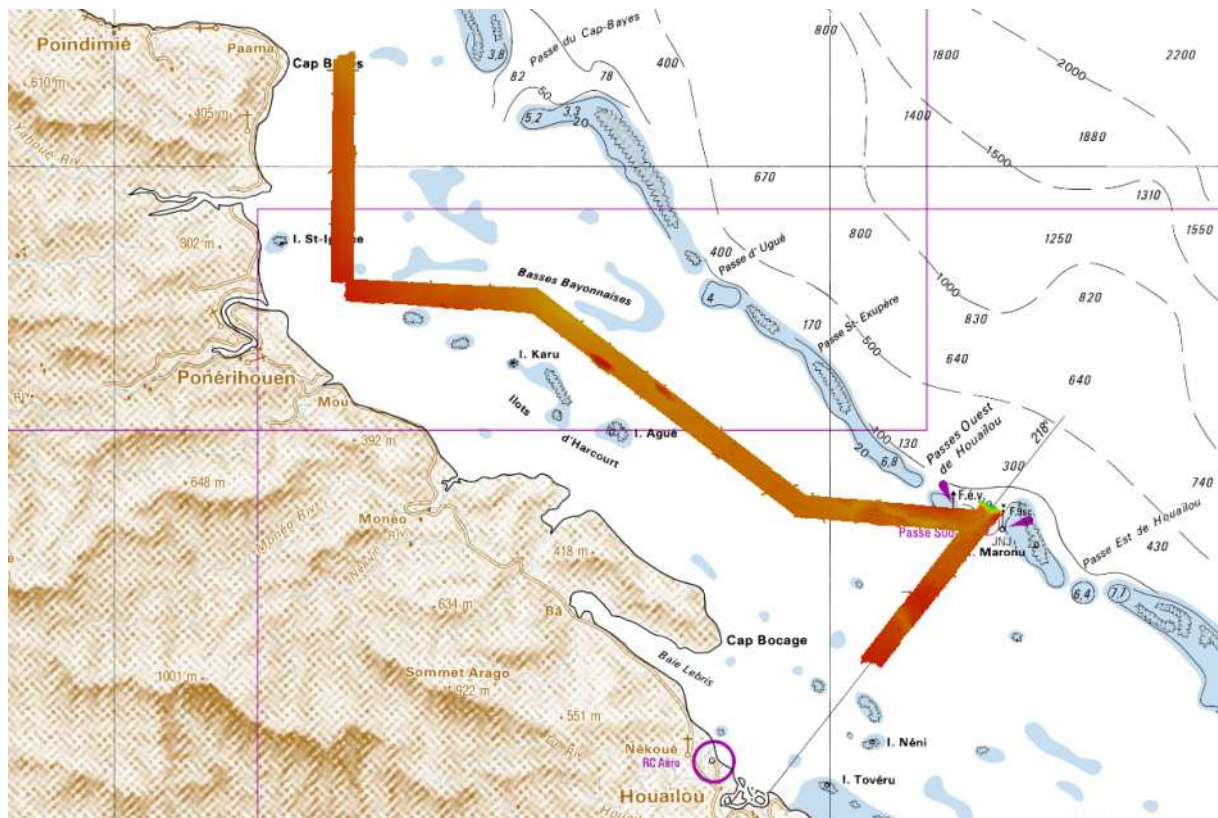


Fig. 2: Control survey of a recommended track between Houailou and Touho

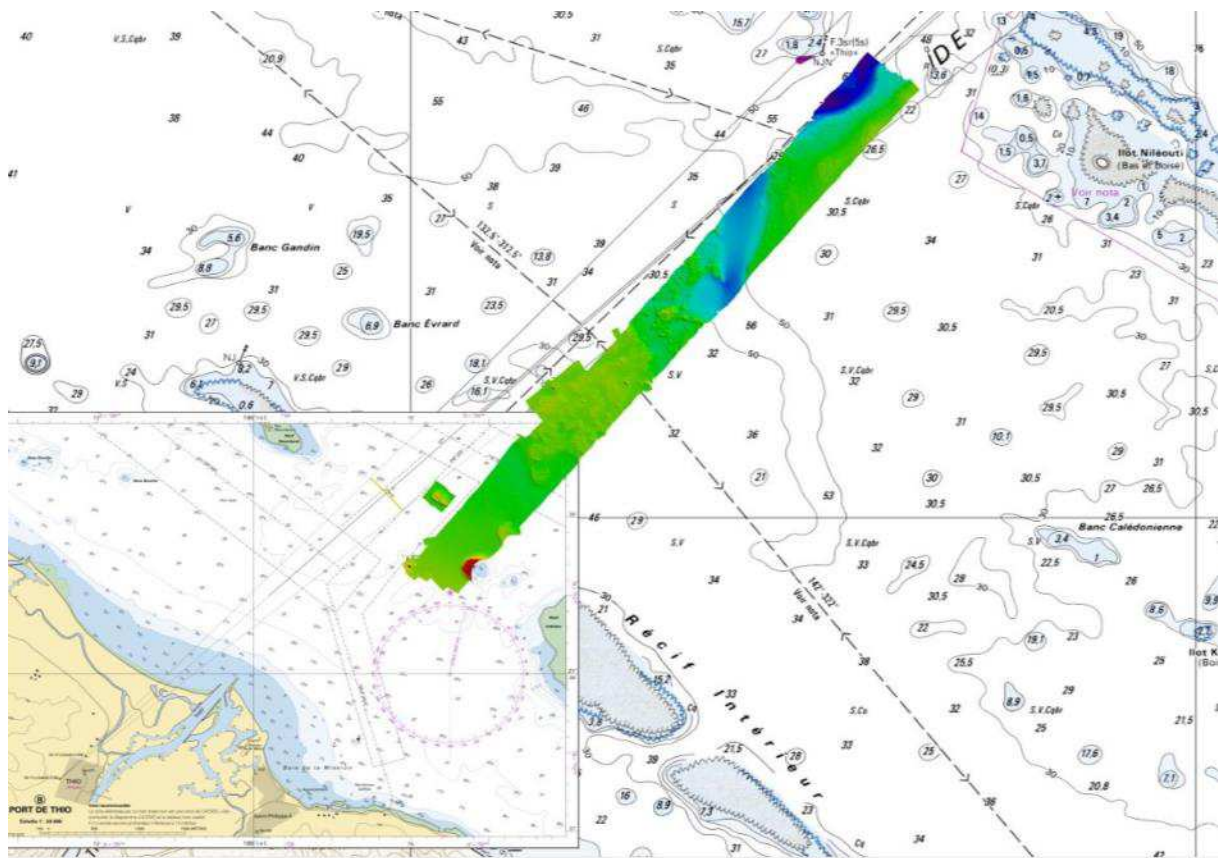


Fig. 3: Alternative acces to Thio

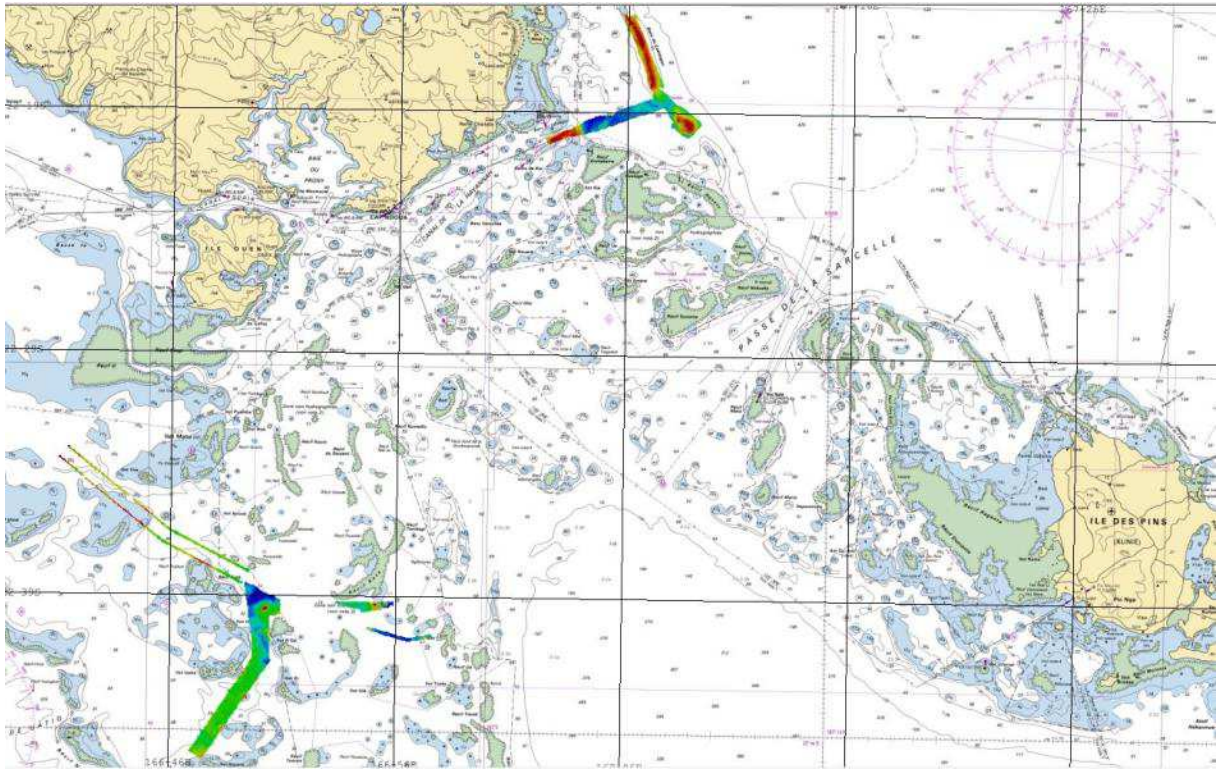


Fig. 4: Complementary survey to the second recommended track between Nouméa and Ile des Pins and opening of a recommended track through Coëtlogon bank

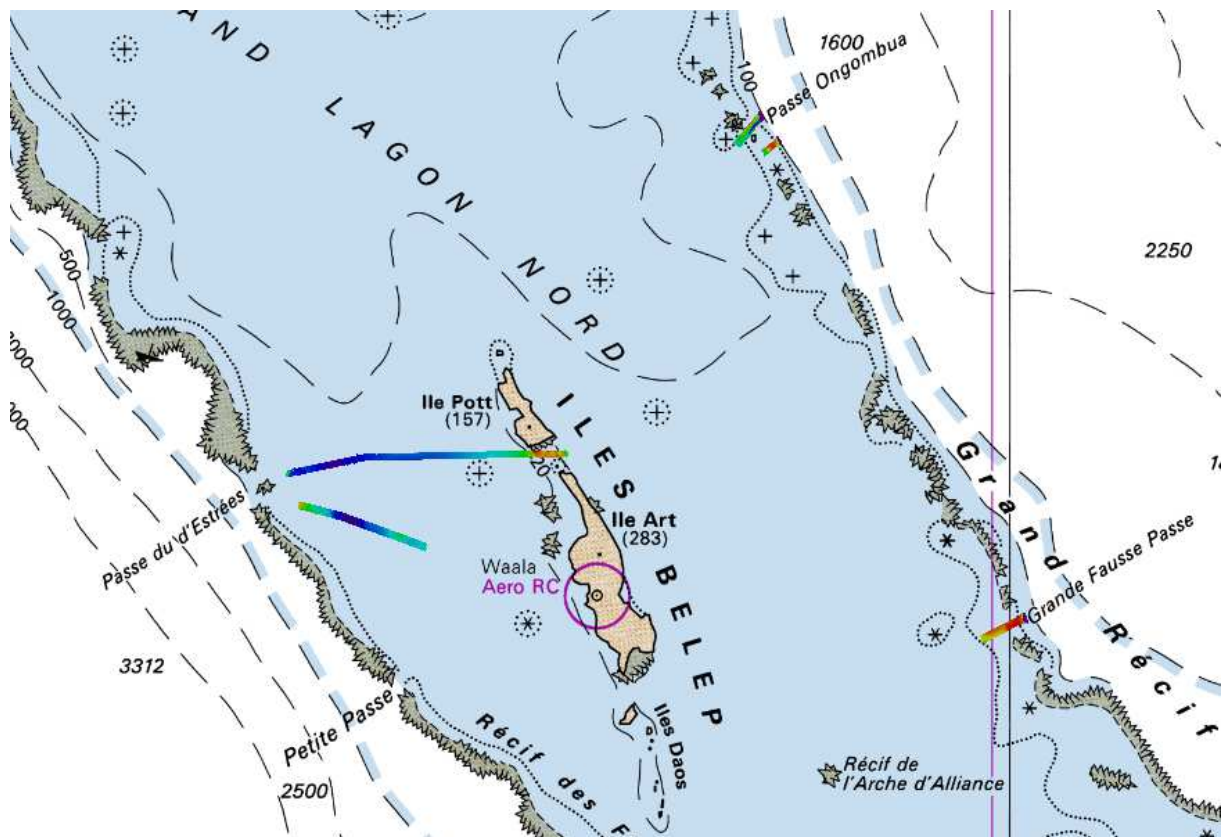


Fig. 5: Opening of new recommended tracks and passages in unsurveyed areas: Grand Lagon Nord

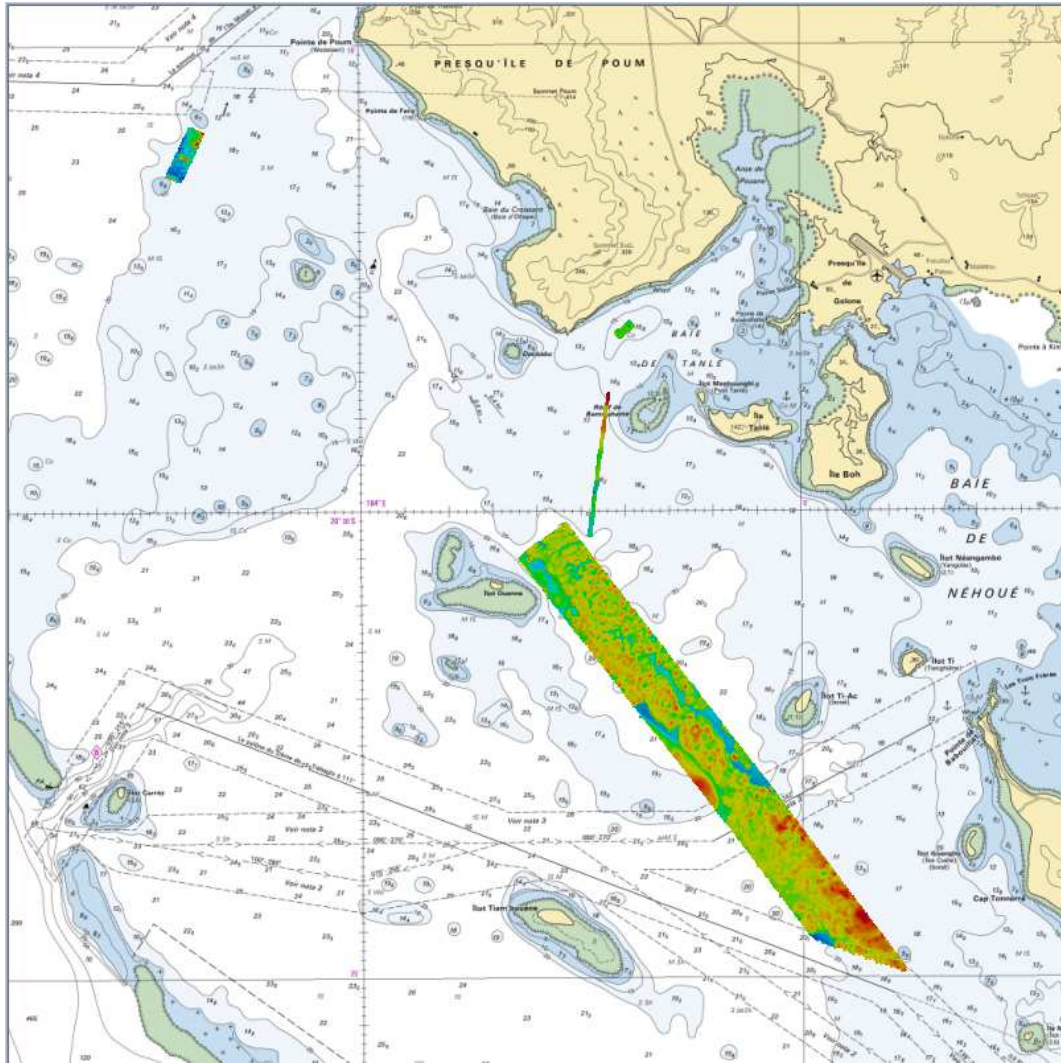


Fig. 6: Control survey of Tanlé tracks

- Maintenance of Sea Level Stations (SLS) network dedicated to sea level observation and tsunamis warning system (figure 1).

In French Polynesia:

The activity of Shom's hydrographic team in Papeete was heavily impacted by the COVID-19 crisis. All the planned bathymetric surveys had to be cancelled, as passengers' movements between the various archipelagos got forbidden. However the maintenance of Sea Level Stations (SLS) network was fulfilled in Vairao (Tahiti), Makemo (Tuamotus) and Tubuai (Australes). Dedicated tide and currents measurements were acquired in Papeete harbor, Bora Bora and Raivavae (Australes). Most of Tahiti and Moorea tide observation sites were controlled.

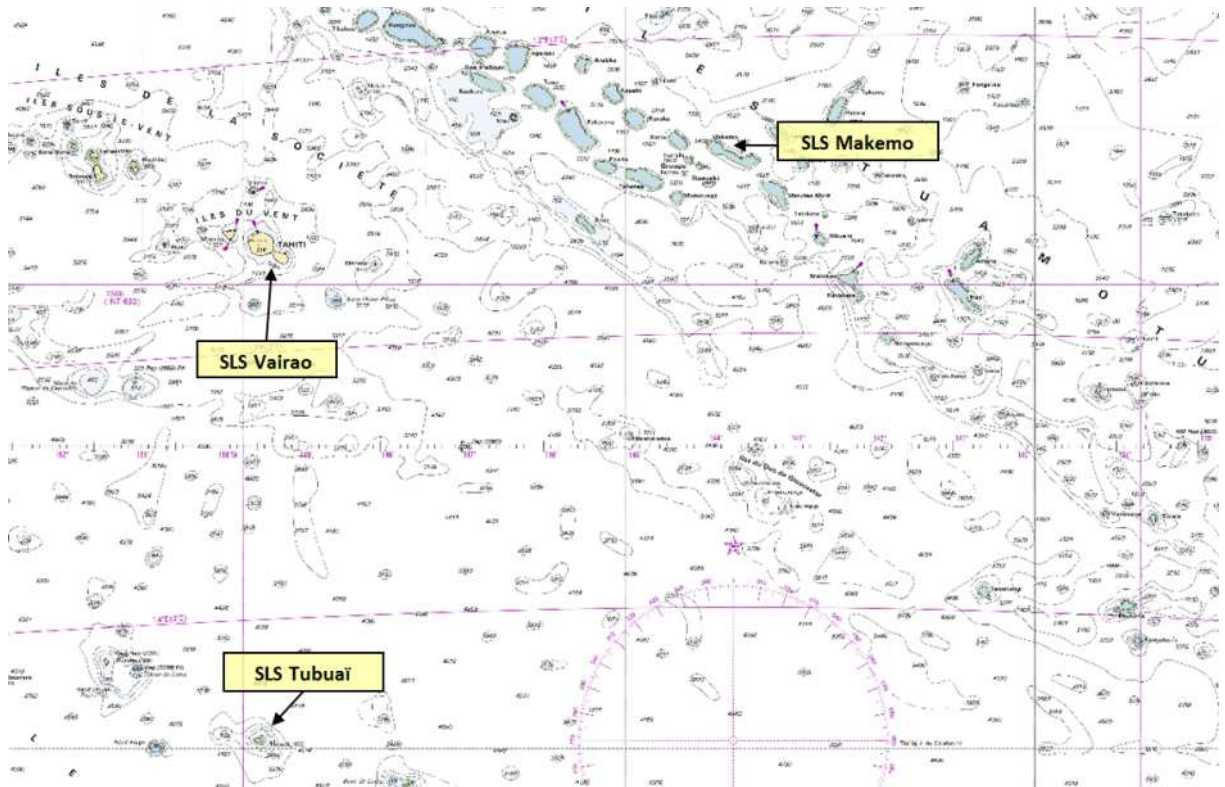


Fig. 7: Maintenance of Sea Level Stations (SLS) network in 2020

In Wallis & Futuna:

In 2020, a simple operation of maintenance was realized on the SLS of Futuna – Leava.

Lidar surveys

These data, critical for coastline management and risks prevention, are freely available through Shom's data portals:

- Data.shom.fr (Shom catalog / Master data / Coastal altimetry): data.shom.fr
- Diffusion.shom.fr: <http://diffusion.shom.fr/pro/risques/altimetrie-littorale/lidar-polynesie-francaise-2015.html> for French Polynesia

and the French Government open platform for public data: data.gouv.fr.

Discussions have significantly progressed with local government of New Caledonia to conduct surveys during a 3-years project starting in 2021, over an area of approximately 1000 km² in the first instance. A call for tenders is currently ongoing. In particular, Shom would be part of the project as assistant project manager and would assist New Caledonia produce their coastal geographical referential. The first areas of interest are Grand Nouméa, Poindimié and Ouvéa.

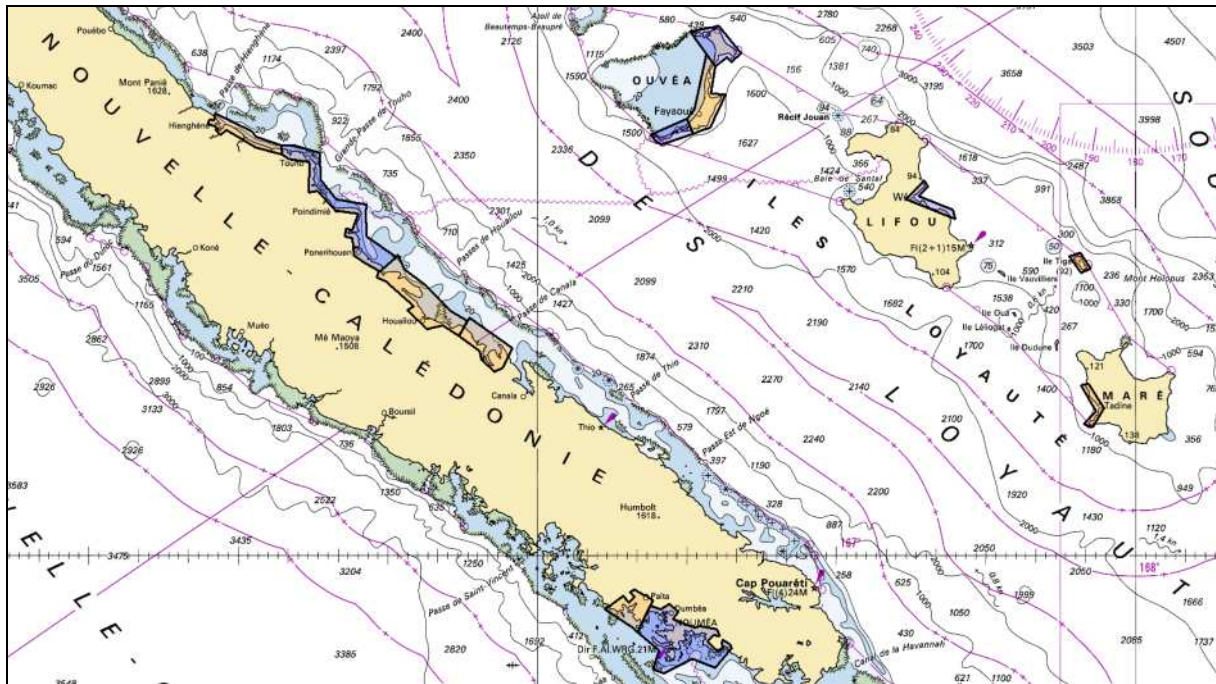


Fig. 8: Areas of interest of the project of Lidar surveys in New Caledonia

b) New technologies and /or equipment:

In New Caledonia:

In 2020, the generalized use of MBES continues to improve the confidence in final bathymetric datasets. Two evolution took place on HSL *Chambeyron* and *Louis Hénin* vessel:

- upgrade in version MkII of the MBES (Kongsberg 2040P), in order to enhance its reliability during very long working session;
- upgrade of the MRU (SBG Ekinox) in *Navsight* version.

The CUBE algorithm was used for data processing, on areas where the morphology does not include too many coral pinnacles.

In French Polynesia:

In the first semester of 2021, HSL *BHPF1* will be equipped with a compact shallow water multibeam echosounders (Norbit). This new capacity should be easily deployable (it is necessary to reach remote survey areas in the vast French Polynesia).

c) New ships: NTR

d) Crowdsourced and satellite-derived bathymetry - national policy:

The satellite-derived bathymetry (SDB) has already been used for many years by Shom to complement traditional surveys (acoustic sounding surveys) to produce nautical charts in the Pacific region

(available

online: https://services.data.shom.fr/geonetwork/srv/eng/catalog.search#/metadata/TRAITEMENT_IMAGE_SPATIOCARTÉ_MARINE.xml).

As an operator of a SDB production line, Shom is currently conducting a research and development project in the field of SDB: Bathysat project.

The objective of the project is to improve performance and quantify vertical uncertainties in accordance with the specifications of the new version of the S-44 (Edition 6.0.0). The results of the study should make it possible to extend the use of the SDB to areas where no field data are available.

The research part of the project has been completed last year. Results performed on different geographic areas (including an area in Pacific Ocean) have enabled to evaluate the capacity of the methods on the following objectives:

- the non-use of bathymetric measurements (to process pure remote SDB analysis);
- the accuracy of the solution faced with the seafloor complexity (reliability and limit of the parameterization of seafloor reflectances inside the model);
- the automation and improvement of the calculation processes.

The development part will start at the beginning of this year with the candidate selected from the analysis of the results of the research phase. The objective of this next step is to develop a prototype of the future production line complying with the following concepts of operation:

- to develop, on a case-by-case basis, charting products in remote areas (in the absence of conventional hydrographic surveys),
- to generate seabed morphology products (DTMs) useful for hydrodynamic modelling in particular,
- to have a tool for rapid coastal environment reconnaissance: estimation of bathymetric characteristics, , turbidity, coastline,
- to detect, on a case-by-case basis, possible morphological changes in the seabed in the coastal strip (high revisit rates) in order to prioritize hydrographic surveys (decision support tool).

e) Challenges and achievements:

The use of the EM2040P MBES on *Louis Hénin* was this year's main achievement but BHNC had to face a few failures (which had a minor impact on surveys operations).

Technical discussions with Kongsberg lead to the release of an upgraded version of this equipment: the three sonar heads are currently being upgraded one after another.

Detailed information about surveys to update IHO Publications P-5 (*Yearbook*) and C-55 (*Status of Hydrographic Surveying and Charting Worldwide*) have been submitted using the online system (reference B).

3. New charts & updates:

a) ENC coverage, gaps and overlaps:

As of 1st of January 2021, Shom has produced some 776 ENCs, of which 245 ENCs within region L.

The full collection should eventually reach a figure of the order of 900 ENCs.

By the end of 2020, the coverage in ENCs directly digitized from paper charts of New Caledonian and French Polynesian waters had been achieved. The remaining ENCs need a new edition or publication of existing paper charts.

In line with the WEND recommendations and guidelines, France produces its small scale ENC cells as closely as possible to INT chart schemes.

The current status of ENC production in the region L is detailed in the table below (*changes in red*):

Usage Band	Produced Cells	Planned Cells	Percentage
1	1	1	100%
2	13	15	87%
3	21	23	91%
4	64	72	89%
5	83	152	97%
6	65		
Total	245	260	94%

The following figures are extracts from the online PRIMAR catalogue <http://www.primar.org> showing Shom ENC coverage within the SWPHC (region L) area:



Fig. 9: Region L - Shom's ENC production - New-Caledonia (Nouvelle-Calédonie)

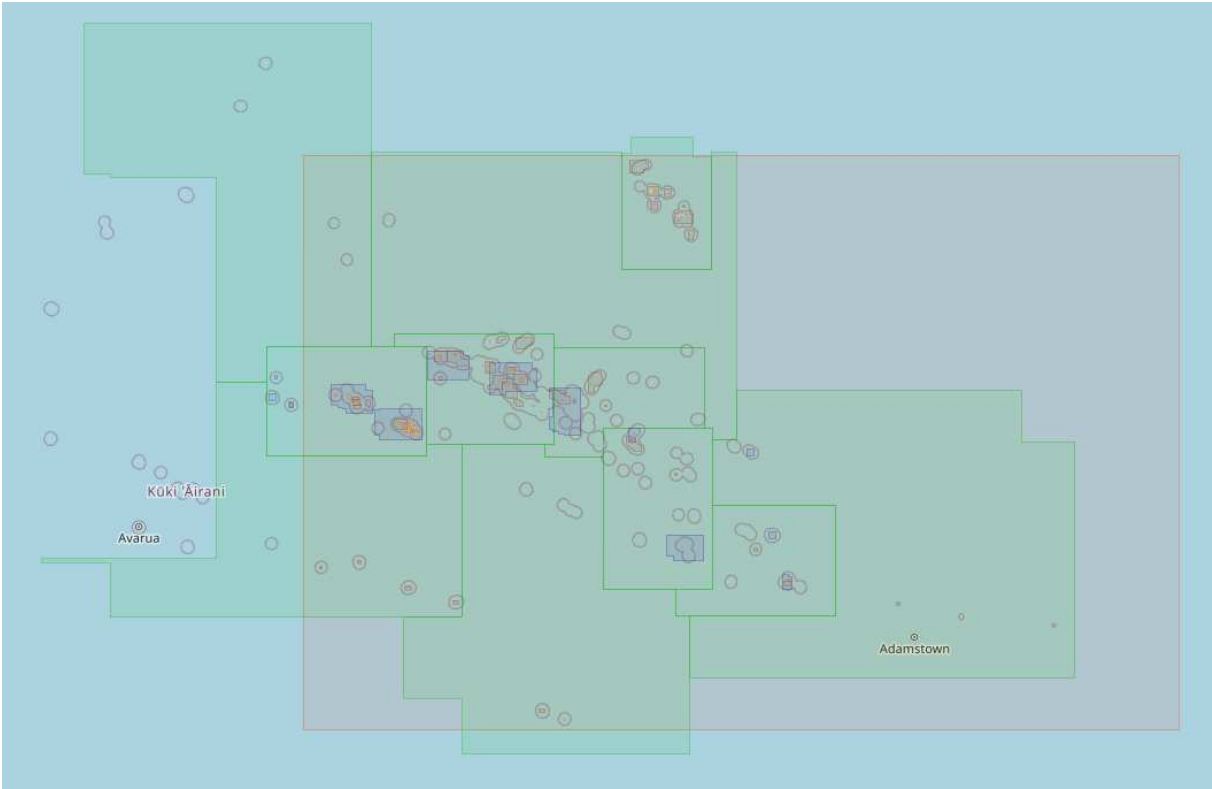


Fig.10: Region L - Shom’s ENC production - French Polynesia (Polynésiefrançaise)

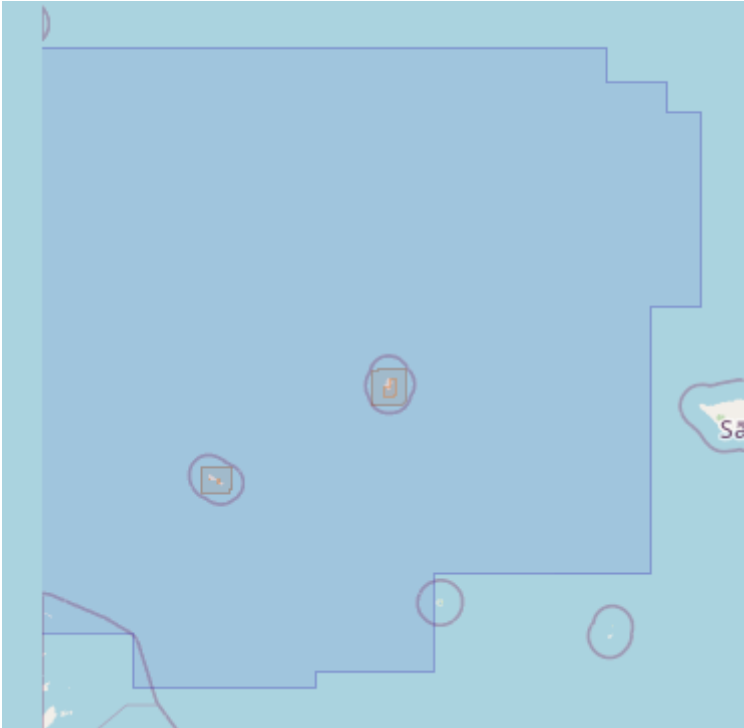


Fig.11: Region L - Shom’s ENC production – Wallis & Futuna

ENC cells produced since the last conference are detailed hereafter:

Number	Scale 1 :	Title
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FR35878A	90 000	ÎleReao
FR35878D	180 000	ÎleMaruteasud
FR35878G	180 000	Île Amanu et Passe de Hao
FR36033A	90 000	Manuae (Scilly)
FR36033B	90 000	Maupihaa (Mopelia)
FR36033C	90 000	Motu One (Bellingshausen)
FR44232A	22 000	Île de Rapa
FR45878B	22 000	ÎleReao - Village Rapuarava
FR45878C	45 000	ÎleRekareka
FR45878E	90 000	Île Maria
FR45878F	45 000	ÎleVairaatea
FR462840	22 000	Partie Sud de Raiatea
FR472810	45 000	Hao
FR473460	45 000	Takaroa et Takapoto
FR47353A	45 000	Ua-Pou
FR473560	45 000	Eiao, Hatutaa et Motu One
FR474560	45 000	De Niau à Fakarava
FR474570	45 000	Raroia et Takume
FR54232B	22 000	Îles Morotiri (Bass)
FR54232C	8 000	Île de Rapa - Baie d'Ha'Urei (Ahurei)
FR566050	22 000	De la Pointe Vénus à Mahaena
FR569560	22 000	De la Pointe Mataorio à la Baie de Taravao
FR569570	22 000	De la Baie de Taravao à la Passe d'Aiurua
FR57281A	22 000	Hao - De la Passe Kaki aux mouillages d'Otepa
FR573050	22 000	De la Passe d'Aiurua à la Passe Havae
FR57353I	12 000	Ua-Huka - Baie Haavei
FR57456B	22 000	De la passe Otugi aux mouillages Nord et Sud
FR57457A	12 000	Raroia - De la passe Ngarue au mouillage Ngarumaoa
FR577640	22 000	Abords nord-ouest de l'Île des Pins - Baie de Gadji et Mouillage de Uapan
FR65878H	12 000	Îlot Amanu - Passe Fafameru et Teikiri - Village Ikitake
FR67281B	8 000	Hao - Passe Kaki
FR67281C	8 000	Hao - Zone portuaire Nord
FR67281D	8 000	Hao - Mouillages d'Otepa

FR67346A	8 000	Takaroa - Passe Teauonae
FR67353B	8 000	Ua-Pou - Baie d'Haakuti
FR67353C	8 000	Ua-Pou - Baie d'Hakahetau
FR67353D	4 000	Ua-Pou - Baie d'Hakahau
FR67353E	8 000	Ua-Pou - Baie de Vaiehu
FR67353F	8 000	Ua-Pou - Baie d'Hakamaii
FR67353G	8 000	Ua-Pou - Baie d'Hakatao
FR67353K	8 000	Ua-Huka - Baie d'Hane
FR67455G	4 000	Motutunga - Passe Nord-Ouest
FR67455J	12 000	Tahanea - Passes de Motupuapua, Teavatapu et Otao
FR67455K	8 000	Passes et mouillages - Arutua - Passe Porofai
FR67456A	4 000	Anse Amyot

ENC cells planned for 2021 are listed below:

Number	Scale 1:	Title
FR272680		Nouvelle-Calédonie – Îles Loyauté
FR364210		Îles Tuamotu
FR372610		De Fakarava à Makemo
FR46279C		Maria
FR473140		Ahe
FR474620		Amanu
FR474630		Katiu
FR57757A		Baie de Kouaoua
FR57757B		Baie de Canala
FR577630		Abords Sud-Ouest de l'île des Pins – Baies de Kuto et de Kanuméra
FR67356A		Eiao - Baie de Vaituha
FR67462A		Amanu - Passes
FR67463A		Katiu - Passe de Pakata

b) ENC distribution method:

All French ENCs (S-63 encrypted format) are distributed to End User Service Providers by PRIMAR RENC. France supports the WEND working groupworkplan for improving the implementation of WEND principles.

c) RNCs: NTR

d) INT charts:

Here are the INT charts produced since the last conference:

INT	Scale 1:	Title	Comment
653	1 600 000	De l'Ile Malden aux Iles de la Société	FR7368 – Limited Edition
654	1 580 000	De Tahiti aux Îles Marquises	FR7371 – Limited Edition
655	1 500 000	De Mururoa à Ducie Island	FR7370 – New Edition
656	1 500 000	Des Îles Tuamotu aux Îles Australes	FR7347 – Limited Edition
657	1 500 000	Des Southern Cook Islands aux Îles de la Société et Australes	FR7369 – Limited Edition

Besides, the following INT charts are planned for the 2021-2022 period:

INT	Scale 1:	Title	Comment
6843	300 000	Nouvelle-Calédonie (partie Sud-Est) - Iles Loyauté	FR6686
6844	300 000	Nouvelle-Calédonie (partie Sud) - Ile des Pins	FR6768
6900	10 000	Port de Nouméa	FR7643

Concerning New Caledonia's coastal scheme, France is currently producing five 1: 300 000 charts covering the main island and its vicinities. Therefore, France has submitted these five charts under national numbers **FR7760**, **FR7761**, **FR7762**, **FR6686** and **FR6768** to the Region L INT scheme. They have been approved with INT numbers **6840**, **6841**, **6842**, **6843** and **6844**. The first three have been published in 2017-18, the other two are scheduled for 2021 and 2022.

Here is the overall INT chart production status for that region (*changes in red*):

Scale	Produced INT charts	Planned INT charts	%
Small (<1/1 000 000)	7	7	100%
Medium	3	5	60%
Large (>1/100 000)	10	10	100%
Total	20	22	91%

e) National paper charts:

Since the last SWPHC meeting, the following national paper charts have been edited:

National	Scale 1 :	Title	Comment
6033	174 000	Archipel de la Société	Limited Edition
6207	30 000	Île Raivavae (Vavitu)	New edition
6284	30 000	Partie Sud de Raiatea	New edition

6420	175 000	De Mataiva à Rangiroa et Makatea	Limited Edition
6424	40 000	Île Tubuai	New edition
6604	150 000	De Mururoa à Fangataufa	Limited Edition
6688	592 000	Îles de la Société	Limited Edition
6689	595 000	Îles Tuamotu (Partie Ouest)	Limited Edition
6690	592 000	Îles Tuamotu (partie centrale)	Limited Edition
6691	578 000	Îles Tuamotu (partie Est)	Limited Edition
6692	574 000	Des Îles Tuamotu aux Îles Gambier	Limited Edition
6955	173 000	Approches des Îles de Tahiti et de Moorea	Limited Edition
7073	Div.	Ports et mouillages de la côte Sud-Est	New edition
7246	6 000 000	Polynésie française	Limited Edition
7260	175 000	De Apataki à Fakarava	Limited Edition
7357	500 000	Îles Marquises (FenuaEnata)	Limited Edition

The following charts are planned to be issued in 2021/2022:

National	Scale 1 :	Title	Comment
5878	Div.	Îlots dans l'archipel des Tuamotu	New Edition
6176	30 000	Maupihaa (Maupélie)	New Edition
6279	Div.	Iles Rimatara et Maria	New Edition
6282	30 000	Passes entre les Iles Raiatea et Tahaa	New edition
6283	30 000	Île Tahaa	New Edition
6421	175 000	Îles Tuamotu - Îles Arutua, Apataki, Kaukura, Niau	New Edition
6434	30 000	Huahine	New Edition
7011	60 000	De la Presqu'île Neuméni à Port-Ounia	New Edition
7213	25 000	Maupiti	New Edition
7281	75 000	Hao	New Edition
7314	50 000	Ahe	New Edition
7373	80 000	Rangiroa	New Edition
7458	50 000	Aratika	New Edition
7462	60 000	Amanu	New Edition
7463	50 000	Katiu	New Edition
7464	50 000	Motutunga	New Chart
7465	50 000	Tahanea	New Chart
7755	60 000	De Ponérihouen au Cap Dumoulin	New Edition

7757	20 000	Baie de Canala et de Kouaoua	New Chart
7765	25 000	Abords Est de l'île des Pins – De l'île Kunumbot à l'île Nuami	New Chart

f) Other charts, e.g. for pleasure craft:

Shom provides georeferenced marine charts in GeoTiff and S-57 format when produced. These digital marine charts are now available through Shom's online store <http://diffusion.shom.fr> under various licenses¹ according to the purpose of use. These data can be used with GIS or cartographic software for commercial or private purposes.

A S-57 license² allows unlimited download of updated versions for 12 months from the date of purchase.

g) Challenges and achievements

The development of ENC coverage is achieved to meet the challenges of navigation, particularly the cruise industry, which is developing strongly in the region, seeking new ports of call and an increase in the maximum allowable draughts.

Detailed information about charting to update IHO Publications P-5 (*Yearbook*) and C-55 (*Status of Hydrographic Surveying and Charting Worldwide*) have been submitted using the online system (reference B).

4. New publications & updates:

a) New Publications: NTR

b) Updated publications:

Publications are updated weekly in accordance with the Shom Notices to Mariners.

c) Means of delivery, e.g. paper, digital:

All nautical publications are available in digital format only (pdf files) on Shom's online shop (diffusion.shom.fr).

d) Challenges and achievements: NTR

Detailed information to update IHO Publication P-5 (*Yearbook*) have been submitted using the online system (reference B).

5. MSI:

a) Existing infrastructure for MSI dissemination:

Shom's notices to mariners (GAN) are exclusively available under digital formats on Shom website: <http://diffusion.shom.fr/gan>.

In SWPHC area, Shom has delegated its duties of national coordinator to two maritime authorities:

¹ Internal reuse, commercial reuse, documentary use or end user.

² Each license allows internal reuse of the data for up to 5 workstations. For more information, contact bps@shom.fr

- in New Caledonia, to the Commandant de la zone maritime for Nouméa, with operating organism: **MRCC NOUMEA** for regions in NAVAREA X and XIV areas,
- in French Polynesia, to the Commandant de la zone maritime Polynésie française, with operating organism: **JRCC Tahiti**, for regions in NAVAREA XIV area.

Hereafter are listed the coordinates of those authorities:

Area	Phone number	Fax number	Email address
New Caledonia	+687 292 121	+687 292 303	operations@mrcc.nc
French Polynesia	+689 40 541 615	+689 40 423 915	contact@jrcc.pf

MSI Point of contact at Shom:

M. Alain PAIRE
 Head of Regional Team
 French Hydrographic Office
 13, rue du Chatellier – CS 92803 - 29228 BREST CEDEX 2 – FRANCE
 Tel : + 33 (0) 256 31 23 03
 email : na-om@shom.fr

b) Statistics on work of the National Coordinator:

See appendix C

The Shom only plays a control and coordination role of local and coastal warnings issued by its national delegated coordinators (MRCC Nouméa and JRCC Tahiti).

c) New infrastructure in accordance with GMDSS Master Plan:

There is no NAVTEX station related to French overseas territories in the Pacific, MSI warnings are broadcast through SafetyNet network.

d) Challenges and achievements: NTR

Detailed information about MSI to update IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*) have been submitted using the online system (reference B).

The national self-assessment of MSI is submitted in Annex C.

6. C-55:

C-55 charting and surveying status updated values regarding Region L area under Shom responsibility are summed up in the following tables:

Survey Status		Depth < 200m			Depth > 200m		
Updated December 2020		A	B	C	A	B	C
L	French Polynesia	53.6	11.8	34.6	28.4	0.2	71.4
	New Caledonia	29.3	17.8	52.9	21.9	0.2	77.9
	Wallis & Futuna	32.7	47.3	20.0	22.5	0.0	77.5

ChartingStatus Updated January 2021		Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
		A	B	C	A	B	C	A	B	C		
L	French Polynesia	100	0	100	100	0	100	75	0	92	100	96
	New Caledonia	100	0	100	100	0	100	92	0	100	100	100
	Wallis & Futuna	100	0	NA	100	0	NA	100	0	100	100	100

These figures have been provided using the online system (reference B) to update IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*).

7. Capacity Building:

a) Offer of and/or demand for Capacity Building:

Training:

Initial training capabilities provided by Shom include the following FIG-OHI-ACI courses: category B for hydrographic surveyors and category B for nautical cartographers. So far, those courses are provided in French and are open to francophone foreign applicants.

SHOM L'océan en référence

TRAINING COURSES PROVIDED BY SHOM SCHOOL

BS/L3+ HYDRO*

- 2 to 8 petty officers/ 2 foreign students/ 10 students UBO
- 14 months
- based on application file
- manoeuvring and navigation Training
- specific course on hydrography and oceanography
- on board end-study project

C SYSRES-HOM

- 2 to 5 hydrographers petty officers
- 9 months
- based on application file
- information technology theoretical and practical training (application to hydrography IT)
- Practical internships in SHOM IT department and survey unit (GHOA)

C SUP HYDRO***

- 2 to 5 hydrographers petty officers
- 4 months
- based on application file
- advanced technical training on hydrography
- team management training

NAUTICAL CARTOGRAPHER TRAINING COURSE*

- 2 to 8 trainees
- 9 months
- based on diplomas or competitive exam
- general training on hydrography and geosciences
- specific training on nautical cartography
- end-study technical project

SHOM school support to L'ENSTA Bretagne

HYDROGRAPHIC ENGINEER**

- Average number of students: 36 months (+12 months for French military students)
- Duration: based on diplomas or competitive exam
- Admission: see: www.ensta-bretagne.fr

www.shom.fr
@shom_fr | shom.fr | shom_fr

Fig.12: Courses and training provided at the Shom hydrographic school (source: shom.fr)

A category A course for hydrographic surveyors is provided at ENSTA Bretagne.

Assistance for the construction of hydro-oceanographic vessels:

Shom has a recognized know-how in the field of hydro-oceanographic vessel construction (from the 8m launch to the 100m ship), has the mastery of the whole process from the expression of needs to the implementation of systems. He puts his expertise at the service of shipyards, within the framework of new construction or modernization for:

- Studies, in order to define, on the basis of an expression of need, the complete specifications in terms of hydro-oceanographic equipment (including IT), as well as the layout of the premises and scientific areas of a hydro-oceanographic vessel. Shom provides intellectual services such as the drafting of the metrology survey essential for the proper integration and control of systems, the specification of spare parts batches adapted to the ship's missions, the interface drawings, the recipe book and the ship's logbook (in its field of expertise).
- Reception and integration of equipment: supervision of the integration (mechanical, interfacing, metrology...) of equipment, factory, harbor and sea acceptance tests.
- Training and assistance: training of the personnel having to implement the equipment, but also of the personnel ensuring the maintenance of the systems, transfer of skills, handling of warranty calls after delivery of the vessel to the final customer.



Fig. 13: Nigerian hydrographic vessel Lana built by the French shipyard OCEA with Shom support

- b) Training received, needed, offered : NTR
 - c) Status of national, bilateral, multilateral or regional development projects with a hydrographic component. (In progress, planned, under evaluation or study) : NTR
 - d) Description of proposals and requests to the IHO/CBSC: NTR
8. Oceanographic activities:
- a) General : NTR
 - b) GEBCO/IBC's activities, GEBCO Seabed 2030 activities:

On waters under French jurisdiction in the SAIHC region, Shom's bathymetric data are accessible:

- in the form of regional or coastal bathymetric DTMs:
<http://diffusion.shom.fr/pro/risques/bathymetrie.html?p=1>
- in the form of bathymetric datasets (soundings):
<http://diffusion.shom.fr/pro/amenagement/bathymetrie/lots-bathy.html>;
<https://www.emodnet-bathymetry.eu/search>

Data relative to transits in French waters and overseas waters have been provided to IHO DCDB and for integration into the GEBCO grid in 2018.

Note that the distribution of coverage survey polygons along with associated metadata on the IHO DCDB website, is ensured for Shom, through the EMODnet Bathymetry portal supported by the European Union. An update of all this bathymetric resources has been updated in December 2020.

c) Tide gauge network:

Shom is the national coordinator and reference authority for the observation of the sea level, collection, processing and dissemination resulting data.

Shom's own network RONIM is present in the Pacific with one station in Nouméa (New-Caledonia). 13 other tide gauges are operated and maintained by Shom under agreements with local authorities. These missions are carried out under the REFMAR programme. All real time and processed tide gauge measurements collected under that programme are freely accessible on the web <http://data.shom.fr/#donnees/refmar> for all areas under French jurisdiction.

This network is recognized as an important tool for coastal operational oceanography, risk assessment, studies on the evolution of the mean sea level, etc.

Since the last conference, regular or occasional maintenance interventions have been carried out on the network of tide gauges deployed in the French Pacific territories:

New Caledonia

Tide gauges network in New Caledonia is composed of 6 stations: Hienghène, Numbo (Nouméa), Maré, Lifou, Thio, Ouinné and Ouvéa.

The maintenance operations are funded on a 6 years basis.

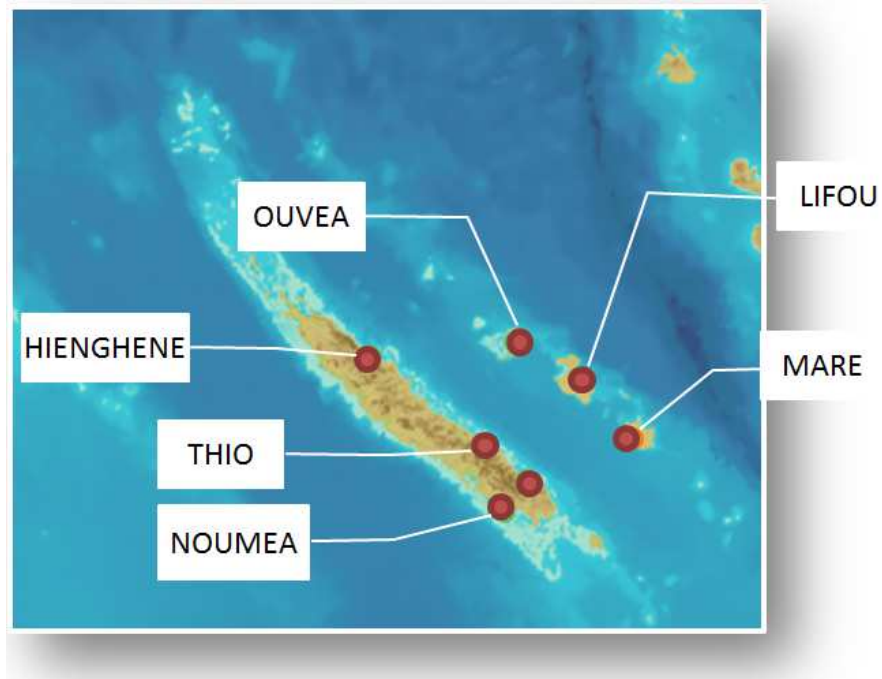


Fig. 14: Tidal gauges network covering New Caledonia.

French Polynesia

Shom operates six tide gauges in French Polynesia: Vairao (Tahiti), Huahine, Rangiroa, Makemo, Rikitea and Tubuai. Maintenance operations on the existing gauges are carried on a yearly basis. The funding of their maintenance lasts until October 2021: the local authorities have been solicited to finance on a longer period of 6 years.



Fig. 15: Tidal gauges network covering French Polynesia waters.

Wallis & Futuna

The funding of these two SLS maintenance lasts until December 2021: Shom has poor visibility until now on a renewed financing scheme.



Fig. 16: Tidal gauges in Wallis & Futuna Islands

d) New equipment:

The COVID-19 crisis delayed Shom's project of a convergence on a similar hardware standard for SLS in metropolitan France and in the Pacific. The renewal of data loggers, transmission equipments and supervision software and some compatibility tests with the radar sensor are being run in Brest and Papeete. The expected results are: a better reliability, improved transmission rates and lower maintenance requirements. It is expected that tide gauges in the Pacific will benefit from these improvements in 2022.

e) Challenges and achievements:

Distances and complex funding issues make it difficult to maintain the Sea Level Stations in French Polynesia and in Wallis & Futuna. It is secured until the end of 2021, but financing scheme has to be renewed for these 2 territories over the long haul: a 6 years basis (like in New Caledonia) is currently discussed with local authorities.

9. Spatial data infrastructures:

a) Status of MSDI:

Shom develops and maintains a MSDI covering all maritime areas under French jurisdiction. The information thus compiled is accessible through 3 portals:

- data.shom.fr (<https://data.shom.fr>)
- diffusion.shom.fr (<https://diffusion.shom.fr>)
- limitesmaritimes.gouv.fr (<https://limitesmaritimes.gouv.fr/> or <https://maritimelimits.gouv.fr/>)

In addition, local authorities manage MSDI portals:

- New Caledonia: <https://georep.nc/>
- French Polynesia: <https://www.tefenua.gov.pf/>

b) Relationship with the NSDI:

The various maritime geographical information produced by the Shom are referenced on the French NSDI (<https://www.data.gouv.fr/>).

c) Involvement in regional or global MSDI efforts:

The head of GOP is the French representative in the newly created SWPHC MSDIWG.

d) National implementation of the Shared Data Principles – including any national data policy and impact on marine data:

Since December 3rd 2017, in accordance with France open data policy, Shom has widely opened up access to its core data: bathymetric data, wrecks, cables, bottom types, maritime limits, and toponyms databases are distributed under Creative Commons « CC-BY-SA 4.0 » licence.

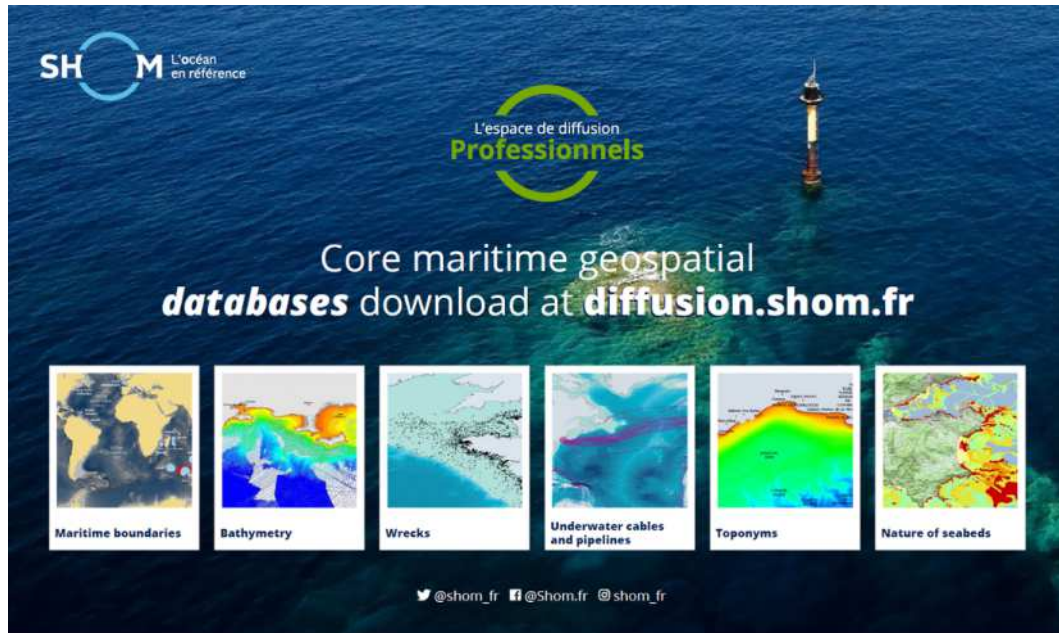


Fig.17: Open data (diffusion.shom.fr)

e) MSDI national portal:

Since the launch of Shom's maritime and coastal geographic information portal data.shom.fr, further developments have been implemented with new online services data layers on a regular basis.

Data available on that portal are organised according to the following topics:

- Master data: charts, maritime boundaries, maritime and coastal databases, coastal altimetry, bathymetry, vertical datums, sedimentology, tides and currents and marine archives;
- Oceanographic forecast: sea state, meteorology, sea level, hydrodynamic;
- Coastal observations: HF radar and tide gauge data

Not all these information are available on SWPHC region.

Hereafter are listed some of the latest evolutions:

- Annual edition of wrecks and obstructions layer, tides predictions...
- Outer limit of the territorial sea of French Polynesia (decree No 2020-590 of 18 May 2020)
- Maritime Altimetric References
- New tools and services (<https://services.data.shom.fr/support/fr>)

Those evolutions can all be followed via Shom's Twitter account (@shom_en& @shom_fr).

A detailed description of the portal functions and contents is available on Shom website (<https://services.data.shom.fr/support/fr>).

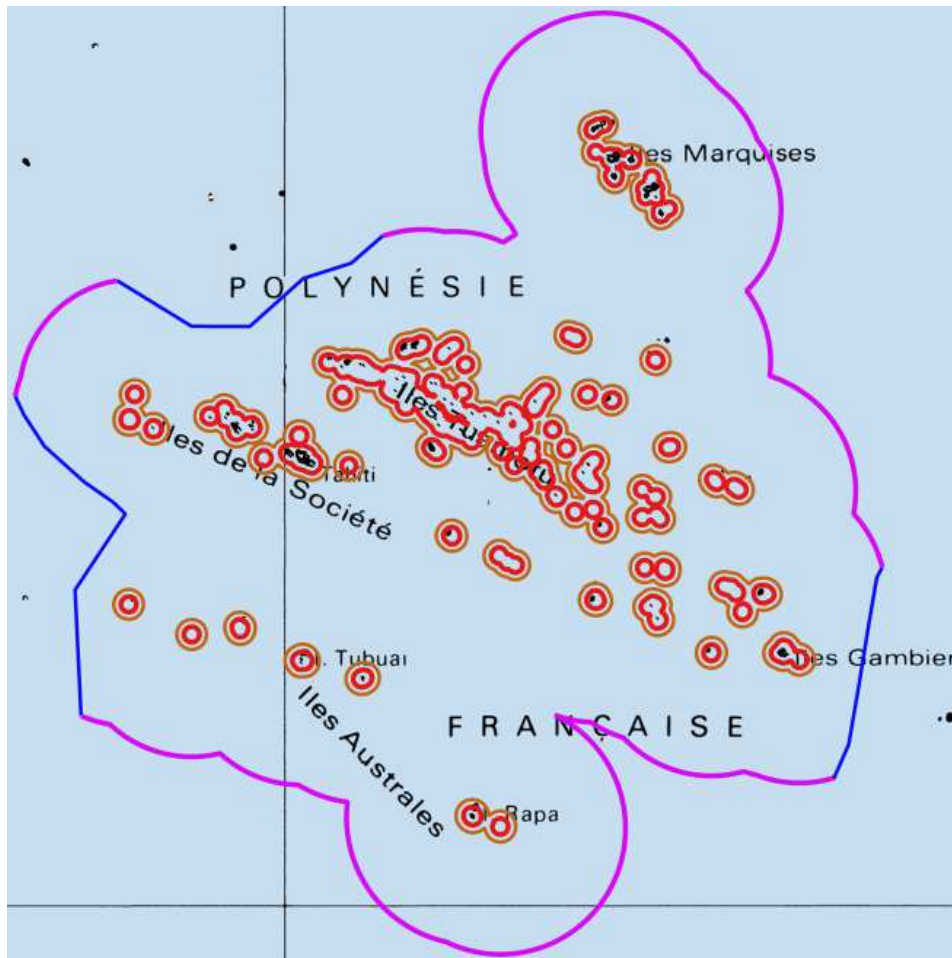


Fig.18: Outer limits of the territorial sea (in red), the contiguous zone (in orange), the EEZ (in magenta) and maritime boundaries (in blue) of French Polynesia (data.shom.fr)

These maritime limits are also available on the French maritime limits portal: <https://maritimelimits.gouv.fr/>

f) Best practices and lessons learned: NTR

g) Challenges and achievements: NTR

10. Innovation:

a) Use of new technologies:

See 2) a) Use of LIDAR technology and 2) d) SDB.

b) Risk assessment:

Shom has finished in 2020 the development of a prototype tool called “Deseasion platform”. It is a multicriteria decision tool, for hydrographic risk assessment and cost-benefit analysis. It will be used in the coming years in order to improve the national hydrographic survey programme.

c) Policy matters : NTR

11. Other activities:

a) Participation in IHO meetings:

Because of its overseas territories and primary charting responsibilities, France, represented by Shom, is a member or associate member in 9 regional hydrographic commissions.

The detail of Shom's involvement in other IHO activities is listed in the table hereafter:

Name	Chair / Vice chair	Member	Observations
CBSC		✓	Capacity Building Sub-Committee
NCWG		✓	Nautical Cartography Working Group
ENCWG		✓	ENC Standards Maintenance Working Group
DPSWG		✓	Data Protection Scheme Working Group
DQWG		✓	Data Quality Working Group -Last meeting in 1996
EAtHC	✓	✓	Eastern Atlantic Hydrographic Commission
FC		✓	Vice-chairman of Finance Committee
GEBCO		✓	Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of Oceans (GEBCO)
HCA		✓	Hydrographic Commission on Antarctica
HDWG	✓	✓	Hydrographic Dictionary Working Group
HSSC	✓	✓	Hydrographic Services and Standards Committee
IENWG	✓	✓	IHO-European Union Working group
IRCC		✓	Inter-Regional Coordination Committee
MACHC		✓	MESO American & Caribbean Sea Hydrographic Commission
MBSHC		✓	Mediterranean and Black Seas Hydrographic Commission
MSDIWG		✓	Marine Spatial Data Infrastructure Working Group
NIOHC		✓	North Indian Ocean Hydrographic Commission
NIPWG		✓	Nautical Information Provision Working Group
NSHC		✓	North Sea Hydrographic Commission
RSAHC		✓	ROPME Hydrographic Commission
S100WG		✓	S-100 Working Group
SAIHC		✓	Southern Africa and Islands Hydrographic Commission
HSPT	✓		S-44 Hydrographic surveys Project Team
SWPHC		✓	South-West Pacific Hydrographic Commission
TWCWG	✓	✓	Tidal, Water Level and Currents Working Group
WEND		✓	World-Wide Electronic Navigational Chart Database
WWNWS		✓	World-wide Navigational Warning Service Sub-Committee

b) Meteorological data collection: NTR

c) Geospatial studies : NTR

d) Preparation for responses to disasters:

France may have Navy ships in the SWPHC region ready to provide support in case of an emergency. France also provides technical support and has a rapid response capacity for environmental data in case of a disaster.

The point of contact at Shom in case of a marine disaster is the head of the maritime safety information division. This division can be reached 24/7 by fax +33 298 221 665 or email coord.navarea2@shom.fr.

Tsunamis

Shom contributes to the deployment and maintenance of most of the French sea-level stations in the Pacific. These observatories contribute to the tsunami warning system. Some of these sea-level observatories are part of the IOC GLOSS system for a global monitoring of sea level change.

Futuna (Wallis&Futuna), Papeete, Rikitea, Rangiroa, Makemo, Tubuai, Nuku Hiva (French Polynesia), and Noumea (Noumea – New Caledonia) observatories are already included in the so-called “GLOSS Core Network”.

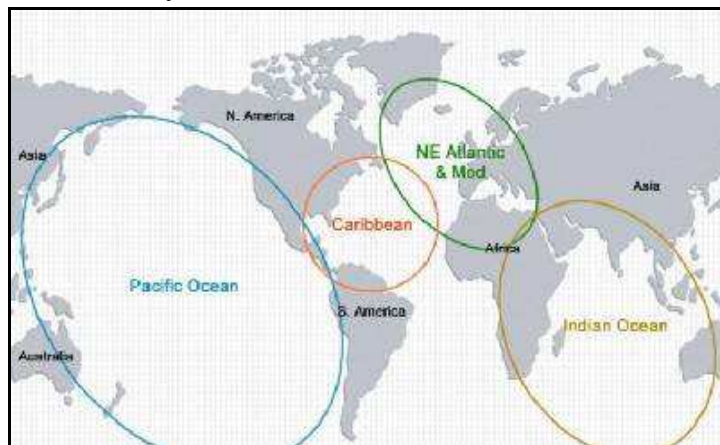


Fig.19: Cooperation areas on tsunami warning system (source COI; UNESCO).

Coastal flooding

Shom is not currently working on any development of storm surge or wave forecasting capabilities in the coastal areas of the French Pacific territories.

e) Environmental protection : NTR

f) Engagement with the Maritime Administration: NTR

g) Aids to Navigation matters: NTR

h) Magnetic and gravity surveys: NTR

i) International engagements: NTR

j) Others: NTR

12. Conclusions:

a) *Areas of significant achievement*

Although the COVID-19 crisis struck the world in 2020, New Caledonia was spared: the impact on the hydrographic operations was rather low (only two surveys were cancelled). The New Caledonia hydrographic base was able to pursue its generalised use of MBES, improving greatly the quality and efficiency of bathymetric surveys.

b) *Areas of particular concern*

The COVID-19 crisis had a severe impact of the French Polynesia hydrographic base: the planned bathymetric surveys had to be cancelled and the delivery of a compact MBES was delayed for 6 months. Even huge efforts in 2021 will not be sufficient to catch up.

The funding of the maintenance in operational conditions of the French tide gauges network in the Pacific, which is essential for the tsunami warning system and the study of sea level evolution, remains uncertain for French Polynesia and Wallis & Futuna, which raises questions about the very sustainability of the network.

c) *Any other matters of interest to the SWPHC*

The first airborne bathymetric lidar survey in New Caledonia should take place mid-2021: Shom will assist the local authorities.

Shom supports any initiatives aiming at improving the maritime knowledge and the navigation safety, as far as the data collected benefit the charting authorities and the update of nautical documentation of that region.

Input to the IHO Publication P-5 (*Yearbook*)

Country: France
Organization: Shom

Online system used to update P-5

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting
Worldwide*)

Country: France
Organization: Shom

Online system used to update P-5

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N° SIRET : 130 003 981 000 11

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MINISTÈRE DES ARMÉES

National MSI Self-Assessment

Country: FRANCE

Organization: Shom

1. Maritime area

[Describe maritime area including details of the geographic boundaries]

The maritime area includes all maritime areas under French jurisdiction within the South West Pacific: it includes coastal waters (up to 250 NM) of French Polynesia, New Caledonia and Wallis and Futuna.

2. Operational Points of Contact for the National Coordinator

INSTITUTION	TELEPHONE	FACSIMILE	EMAIL
Shom , overseas office of the “Information and Nautical publication” department of the “Maritime Products and services” division	+33 2 56 312 303 +33 2 56 312 439 +33 2 56 312 273	/	na-om-all@shom.fr dops-psm-na-om@shom.fr

3. GMDSS Master Plan

[Report on the status of the GMDSS Master Plan: Is it up to date? When was the last update?]

The French GMDSS Master Plan is compiled in the Shom publication “Maritime radiocommunications” reference n°924-RNC available on-line :<https://diffusion.shom.fr/pro/rsx-92-4-radiocommunications-maritimes-systeme-mondial-de-detresse-et-de-securite-en-mer-smdsm.html>

The publication is regularly updated (last version October 30th 2019).

[Specifics of equipment used and software version with date up-dated]

Equipment Type for Ports and Local Area	Software Version	Date of Up-date
No NAVTEX station in French overseas territories within the SWPHC region. Coastal warnings broadcasted through SAFETYNET		
Terrestrial radiocommunications HF, MF and VHF means		

[Detail the number of warnings identified as immediate priority (requiring transmission within 30 minutes) and the average elapsed time for passing to NAVAREA coordinator, as reported to the last RHC meeting]:

Year Y-2	Year Y-1	Year Y
----------	----------	--------

Total	Average elapsed time	Total	Average elapsed time	Total	Average elapsed time
xx	xx.x Mins	xx	xx.x Mins	xx	xx.x Mins

4. NAVTEX Coverage:

[Diagram of NAVTEX stations and service areas within maritime area; Contact details for NAVTEX Stations; Confirm operational status has been validated.]

Not applicable.

Coastal warnings broadcasted by SafetyNET in French overseas territories.

5. Operational Issues:

[New infrastructure in accordance with GMDSS Master Plan; Problems encountered?]

NTR

6. Contingency Planning

[Provide information regarding contingency plans that have been established and future plans where appropriate. Also report on any testing of the plan that has been conducted]

NTR

7. Capacity Building

[Demands for Capacity Building, Training requested or received, any offered, status of national, bilateral, multilateral or regional development projects with MSI component]

8. Other Activities

[Participation in other IHO or IMO Working Groups, Regional Hydrographic Commissions, regional conferences related to MSI over past year]

NTR

9. National Maritime Website

[(Address, statistics (if permitted by national legislation; how often is the information on your web site updated? Do you display the date and time of the last update on your web site?)]

French overseas territories POCs for NAVAREA X and XIV:

Area	Phone number	Fax number	Email address
New Caledonia NAVAREA X and XIV	+687 292 121	+687 292 303	operations@mrcc.nc
	https://www.mrcc.nc/		
French Polynesia NAVAREA XIV	+689 40 541 615	+689 40 423 915	contact@jrcc.pf
	http://www.jrcc.pf/		

10. Recommendations

[If any]

NTR

11. Summary

[Please provide a short summary of this paper which will be included in the final report of the meeting.]

Shom, as French national MSI coordinator, do not transmit MSI within the SWPHC region.

Shom controls and coordinates the warnings issued by its national delegated coordinators.