

Saint-Mandé, le 24 novembre 2016

N° 008 SHOM/DMI/REX/NP

SERVICE HYDROGRAPHIQUE  
ET OcéANOGRAPHIQUE  
DE LA MARINE

DIRECTION DES MISSIONS  
INSTITUTIONNELLES ET DES  
RELATIONS INTERNATIONALES

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**FRANCE REPORT**  
**TO THE 14<sup>TH</sup> MEETING OF THE SOUTH WEST PACIFIC**  
**HYDROGRAPHIC COMMISSION**

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**1. Hydrographic Service: General**

Following up its targets and performance contract for the 2013-2016 period, SHOM is pursuing the achievement of its different commitments based on the National Maritime Strategy and the Defence Policy. Survey works are being conducted according to the prioritized 4-years survey plan for all the waters under French jurisdiction. A new 4 years plan will be submitted to SHOM's board and to French authorities at the end of 2016.

**2. Surveys**

**2.1. Coverage of new surveys**

Since the previous SWPHC conference in February 2015, SHOM 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 fulfill requirements expressed by local authorities, pilots, fishermen, mining operators and defence.

The survey capability in the Pacific area was deeply enhanced in 2015 with the deployment of the NO L'Atalante both in New-Caledonia and in French Polynesia to undertake deep water surveys and survey of remote areas poorly accessible with usual capacities of GOP, the SHOM survey unit in the Pacific Ocean.

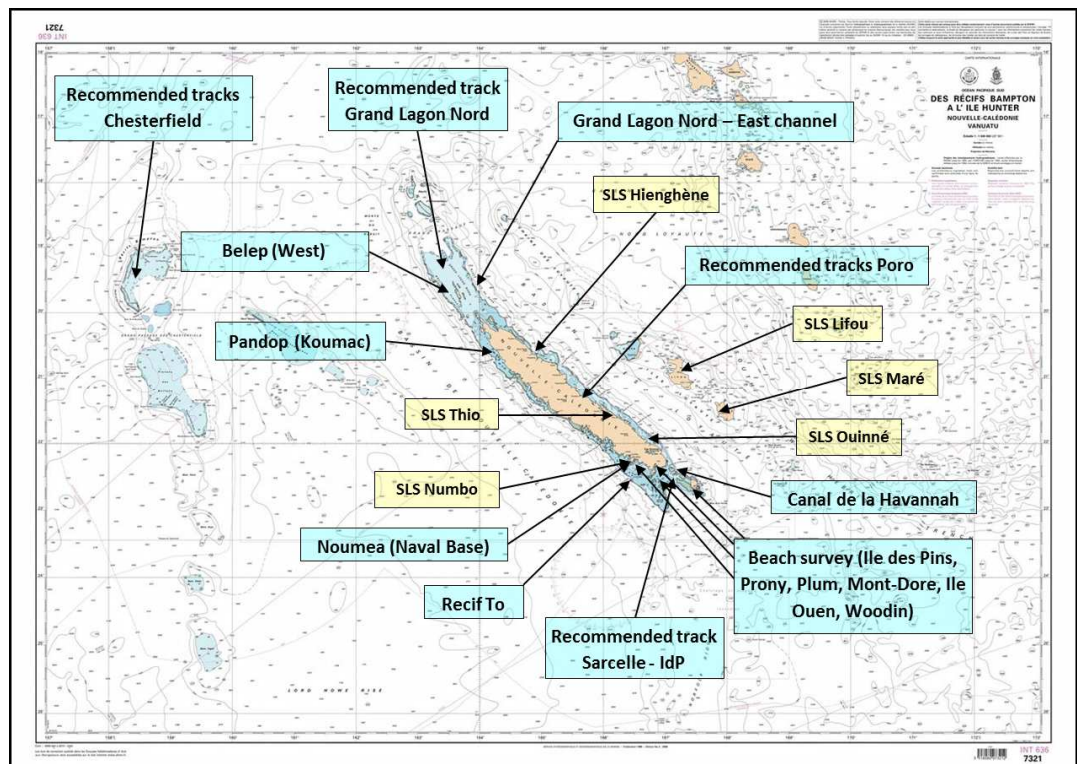
More precisely, the GOP conducted the following surveys depicted hereafter.

**In New Caledonia:**

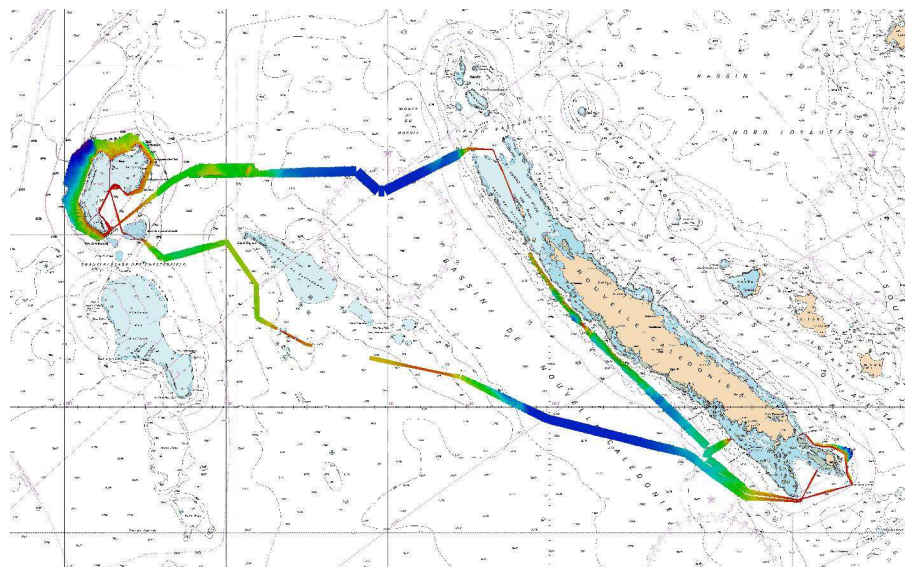
Several surveys of ports, bays, recommended routes and passages have been performed all around New-Caledonia, mainly inside the lagoon, and also on Chesterfield remote islands, as summarized by figure 1 and illustrated by figures 2 to 10:

Destinataire : Président de la CHPSO  
Copie extérieure : Secrétariat général de l'OHI  
Copies intérieures : DG – DMI/REX – Archives (DMIDSD/2.026)

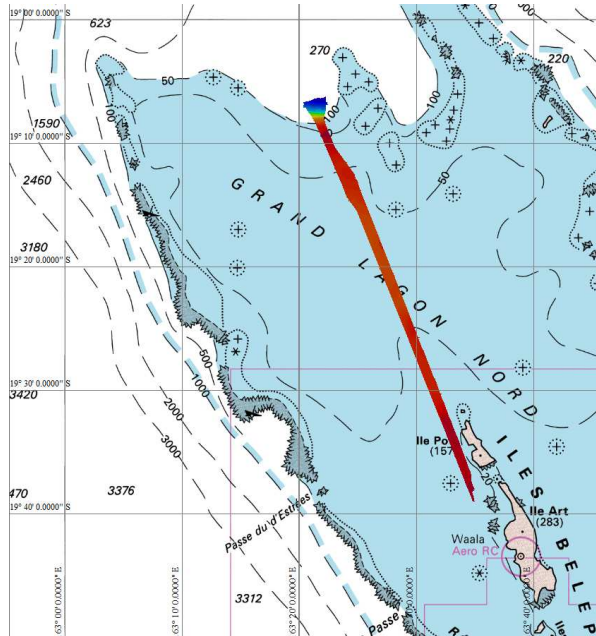
- Surveys:
  - Extension of existent recommended routes to Sarcelle and Ile des Pins, Poro access and Ugué Bay, Havannah Channel, Boulari Pass to Woodin (To Reef), Belep (West)
  - Harbor survey updates in Koumac and Noumea (Naval Base)
  - Opening of new recommended tracks in unsurveyed areas: Chesterfield (Bampton Reefs), Grand Lagon Nord (North channel / East channels)
  - Beach surveys in support to Croix du Sud 2016 exercise
- Deployment and maintenance of Sea Level Stations (SLS) network dedicated to sea level observation and tsunamis warning system.



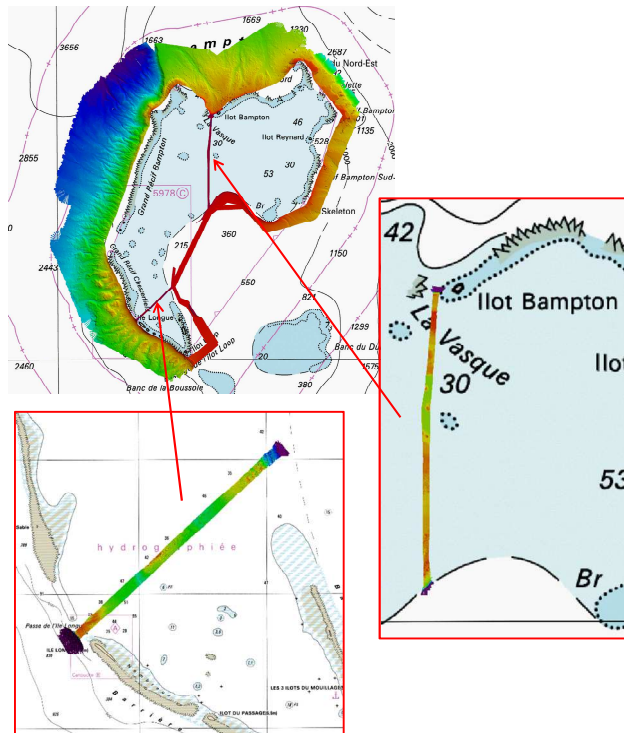
*Fig.1: Survey achieved in New Caledonia by BHNC since February 2015.*



*Fig.2: SHOMCAL2015 campaign (NO L'Atalante) around New-Caledonia*

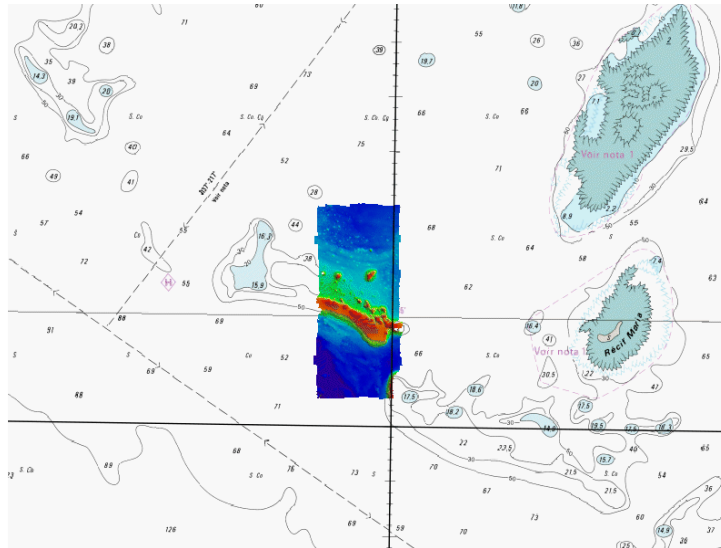


**Fig.3:** SHOMCAL2015 campaign (NO L'Atalante) – Grand Lagon Nord / North channel

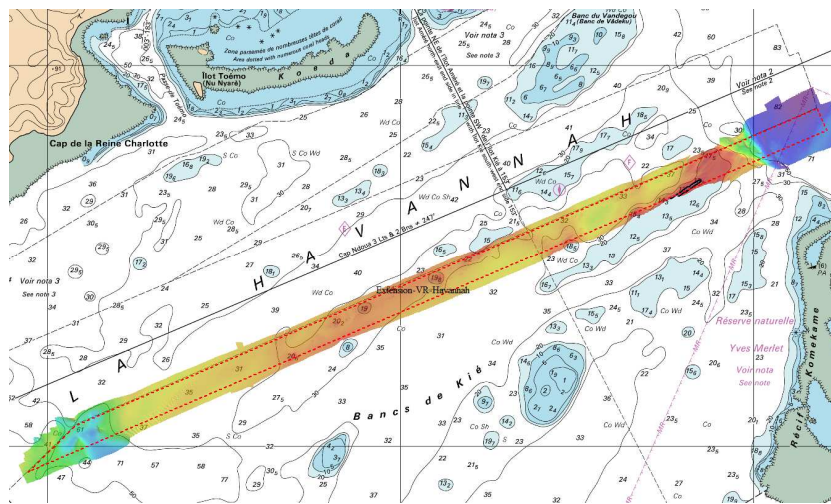


**Fig.4:** SHOMCAL2015 campaign (NO L'Atalante) – Chesterfield Island / Bampton Reefs

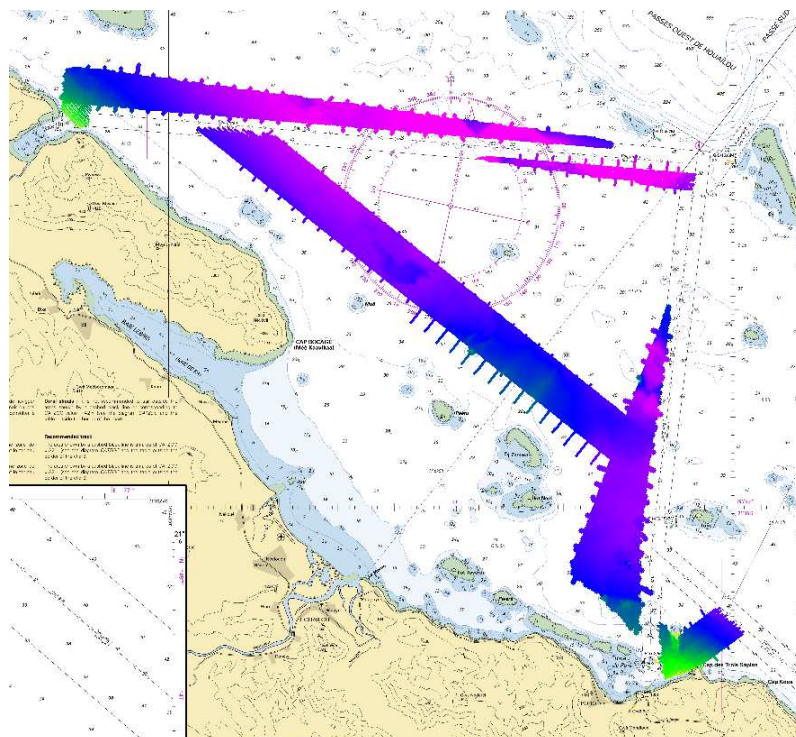




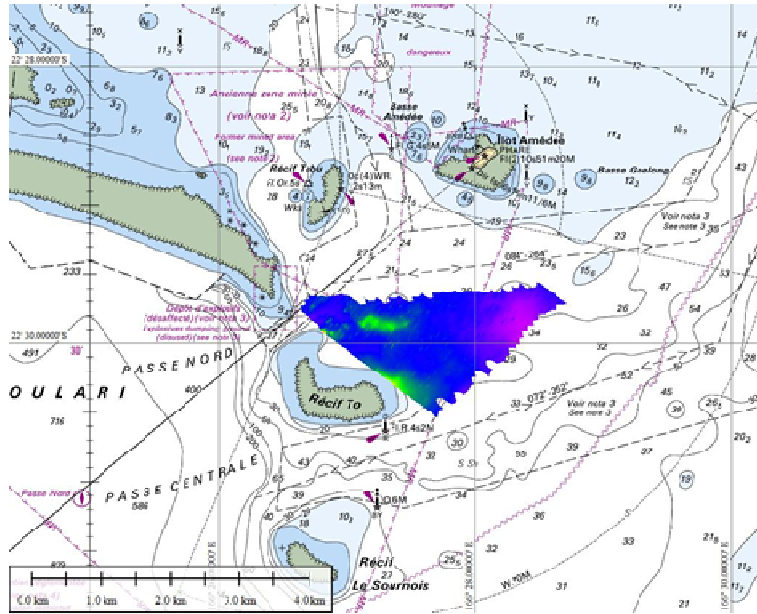
**Fig.5:** SHOMCAL2015 campaign (NO L'Atalante) – Recommended track to Sarcelle and Ile des Pins



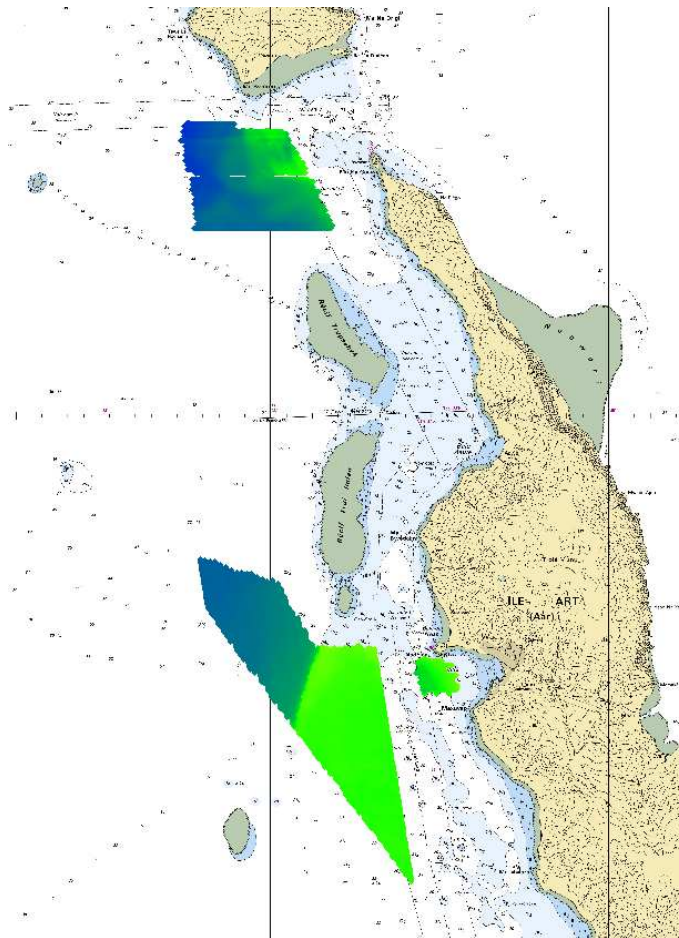
**Fig.6:** SHOMCAL2015 campaign (NO L'Atalante) – Extension of the Havannah Channel



**Fig.7:** Complementary survey to Poro and Ugué Bay approaches.



*Fig.8: Complementary survey to recommended routes through Boulari channel – Récif To*



*Fig.9: West Belep island's – Recommended routes extension.*

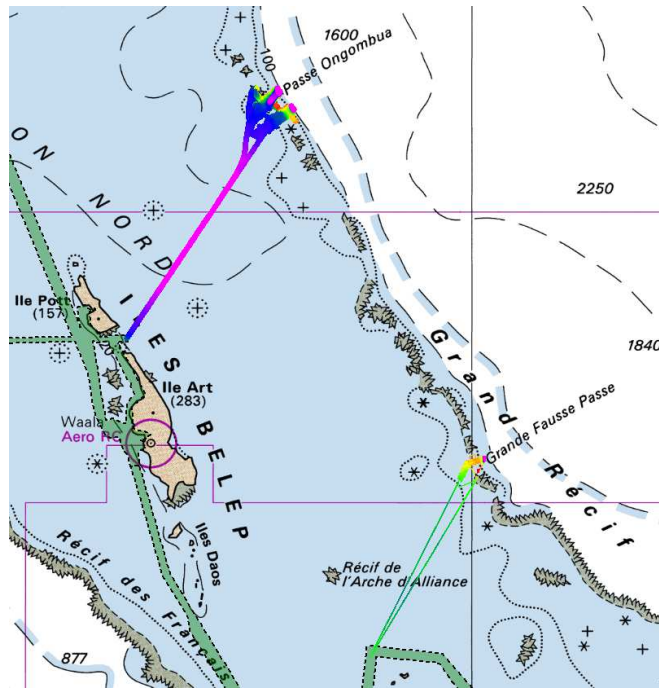


Fig.10: Grand Lagon Nord – Reconnaissance surveys to open new recommended routes to the East.

**In French Polynesia:**

Several surveys and stereopreparation field works (for exploitation of satellite images) have been conducted since February 2015 in the French Polynesian islands: Tahiti, Raiatea, Tauere, Hao, Tureia and Rikitea.

The GOP also conducted surveys in Clipperton Island (northern Pacific) and maintained the Sea Level Stations (SLS) network deployed in French Polynesia.

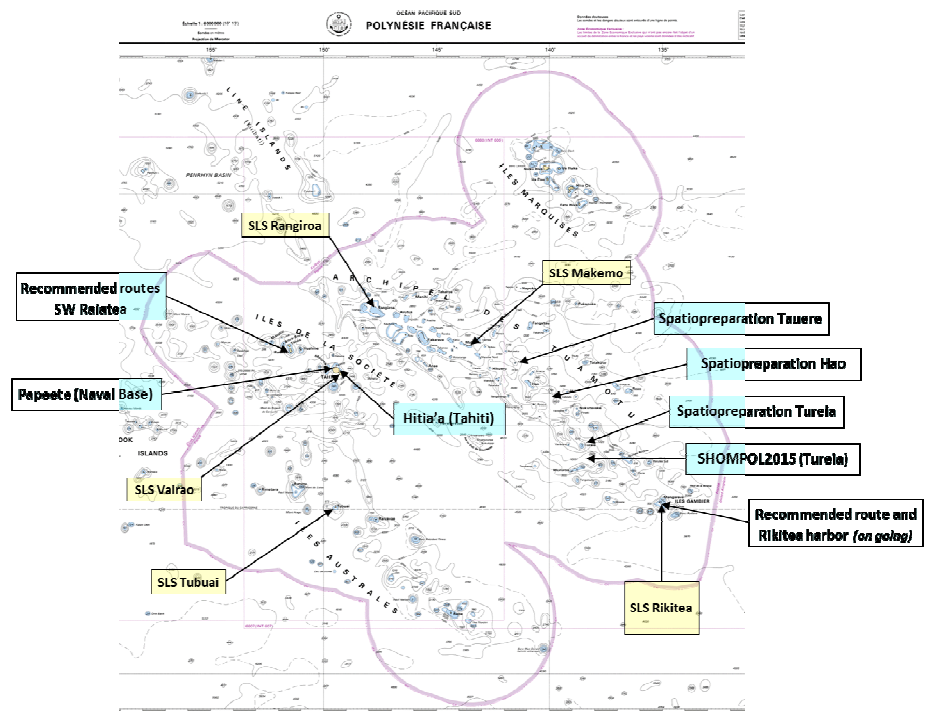
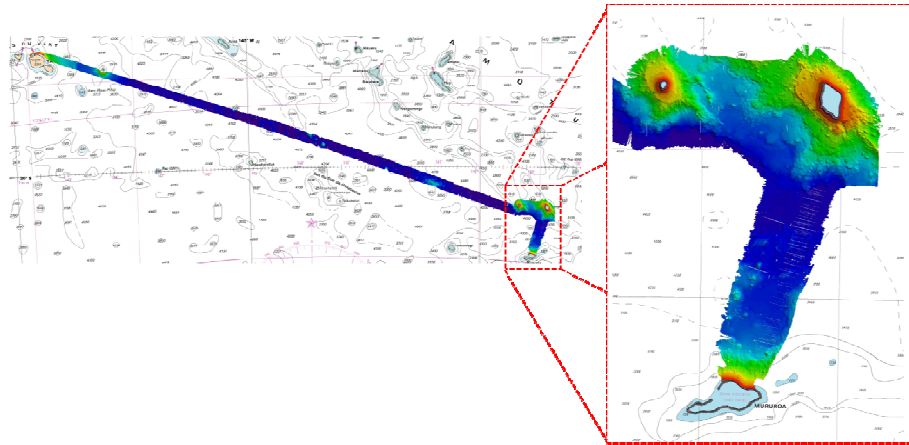
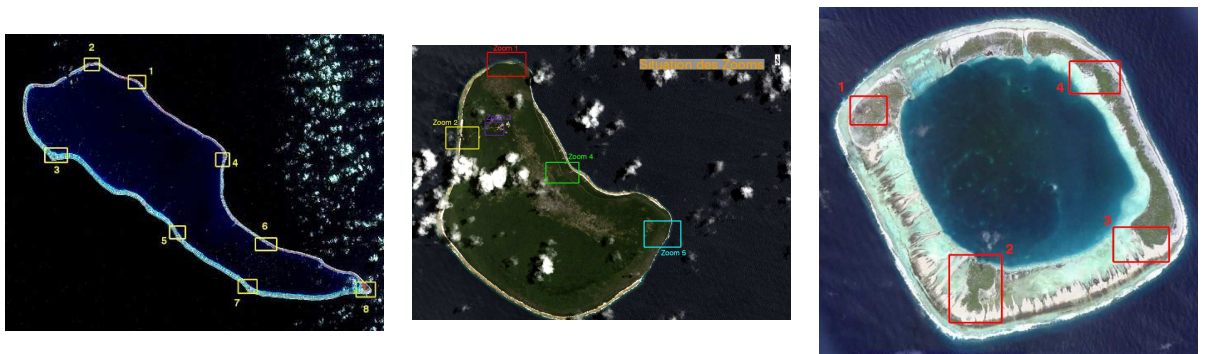


Fig.11: Survey achieved in French Polynesia since February 2015.

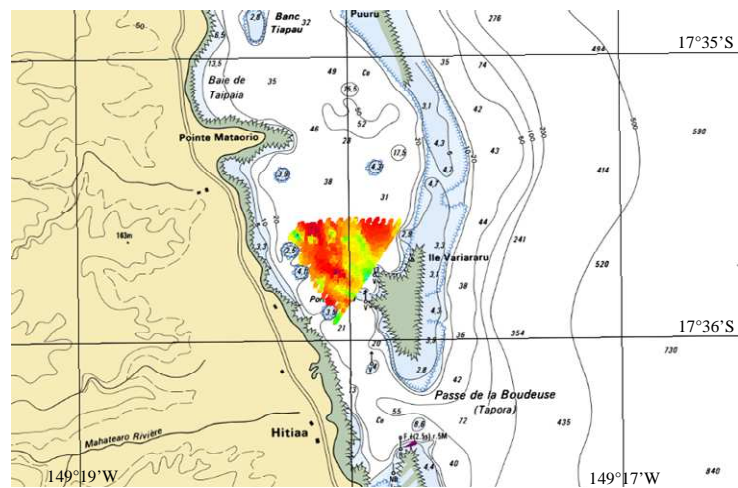




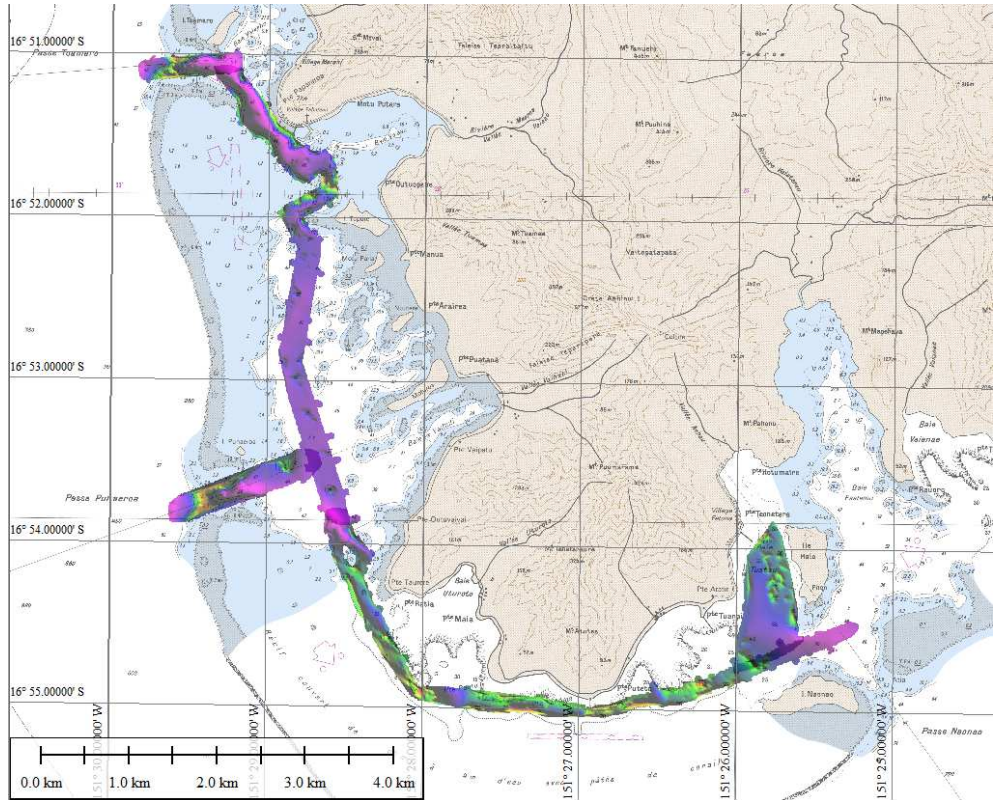
*Fig.12: SHOMPOL2015 campaign (NO L'Atalante) – Tureia, Vananana & Moruroa deep water survey*



*Fig.13: Spatiopreparation work over Hao, Tureia & Tauere.*



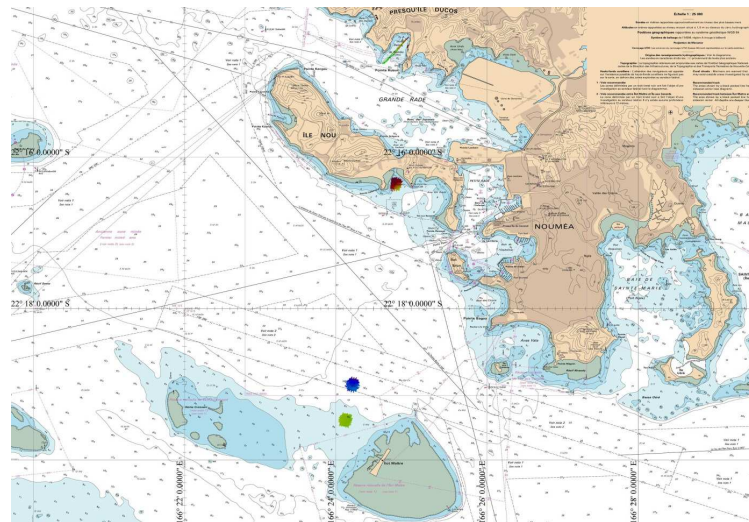
*Fig.14: Tahiti – Hitia'a – Bathymetric and magnetometric surveys in support to archaeological research*



*Fig.15: SW Raiatea – Recommended routes*

## 2.2. LIDAR surveys

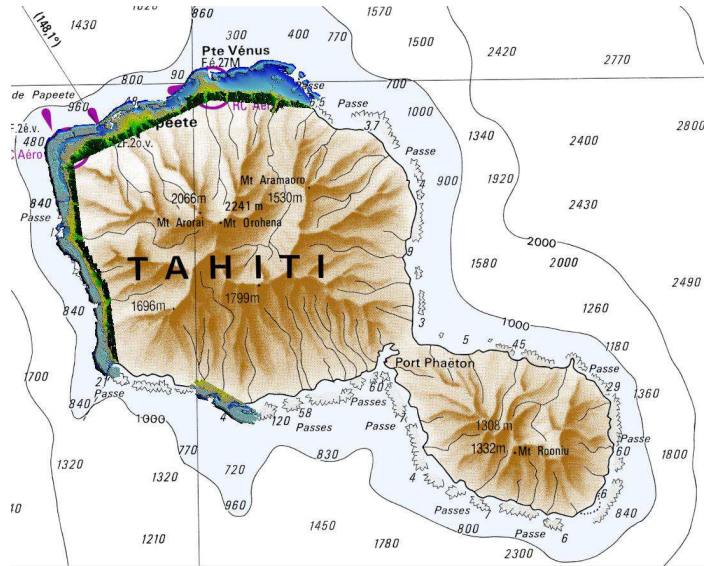
The SHOM’s survey unit based in New Caledonia was directly involved in the survey patches achieved for quality control purposes of future lidar surveys within the New Caledonian lagoon, as spotted on the following figure:



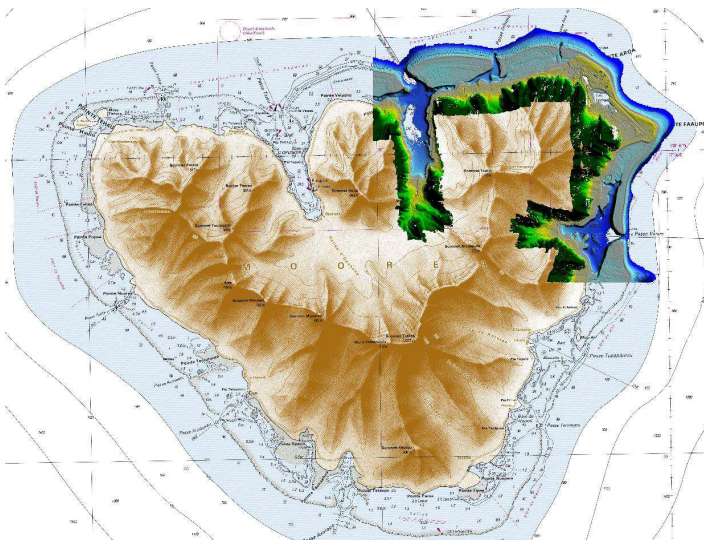
*Fig. 16: Survey patches for LIDAR quality control purposes.*

Regarding French Polynesia, three Airborne Bathymetric LIDAR surveys have been realised in June 2015:

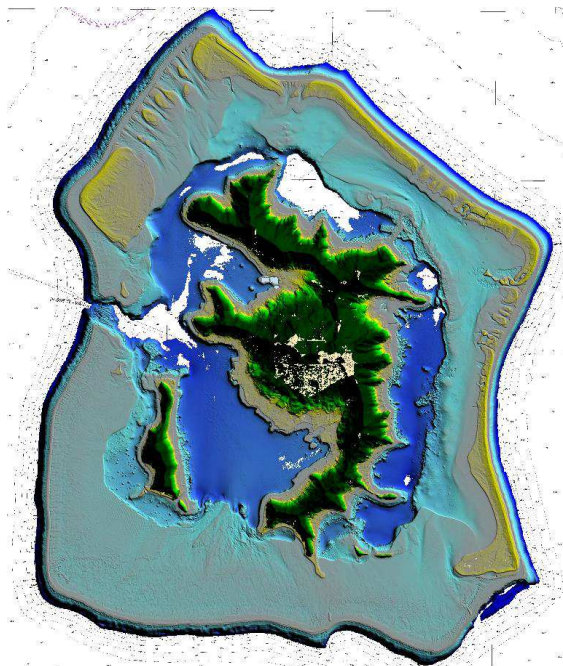




*Fig. 17: Tahiti (northern and western part),*



*Fig. 18: Moorea (eastern part)*



*Fig. 19: Bora-Bora*

These data, critical for coastline management and risks prevention, are freely available on: <http://diffusion.shom.fr/produits/altimetrie-littorale/lidar-polynesie-francaise-2015.html>

### 2.3. French Survey programme for the region

SHOM's survey planning for New Caledonia, French Polynesia and Wallis et Futuna waters is currently detailed in its 2013-2016 national hydrographic programme, presenting the survey objectives regarding the compliance with S-44 combined with existing surveys for those three areas. The next national hydrographic programme, covering the 2017-2020 period, will be issued by the end of 2016.

- **New Caledonia:**

Prioritized survey works defined by the hydrographic commission of New Caledonia, in the frame of the cooperation in hydrography between The State and the government of New Caledonia (convention related to competences transfer, signed on March 2012).

- **French Polynesia:**

Survey works in lagoon waters (using deployable equipment) and opportunity surveys.

- **Wallis et Futuna:**

Survey works in lagoon waters (using deployable equipment) and opportunity surveys.

### 2.4. New technologies and /or equipment

By the end of 2017, SHOM's units in the Pacific shall be equipped with shallow water deployable multibeam echosounder systems. Most of the equipment available from the shelf have been tested since 2013 to design GOP multibeam capability, suitable for SHOM small units based in the Pacific.

Regarding data management, the GOP uses the same MSDI centric, processing and compiling tools and software as the ones used by mainland survey units.

### 2.5. New ships

NTR.

### 2.6. Problems encountered

SHOM may learn by accident of surveys performed by third parties in its areas of charting responsibility, and has to insist to obtain communication of IHO-compliant data relevant to INT charts and nautical information.

**In the interest of the maritime community, it is reminded that survey results should be communicated to the IHO recognised charting authority (in accordance with M-3 resolution 1/2006 and S-4 resolution A-402.1 and B-635.4).**

## 3. New charts & updates

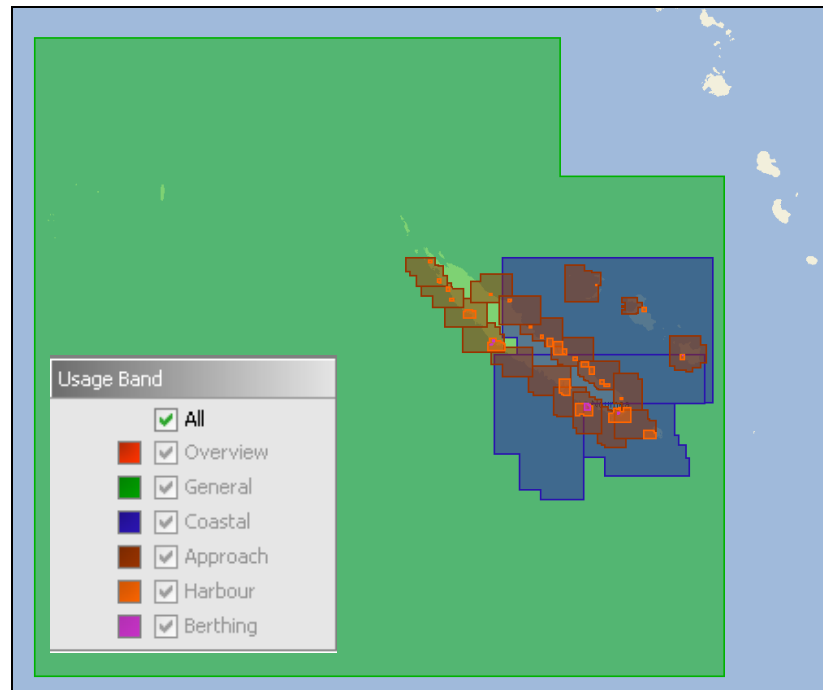
### 3.1. ENC's

On the 10<sup>th</sup> of October 2016, SHOM had produced some 522 ENC's, of which 110 ENC's within region L, at an approximate rate of 40 per year. The full collection should eventually reach a figure of the order of 900 ENC's.

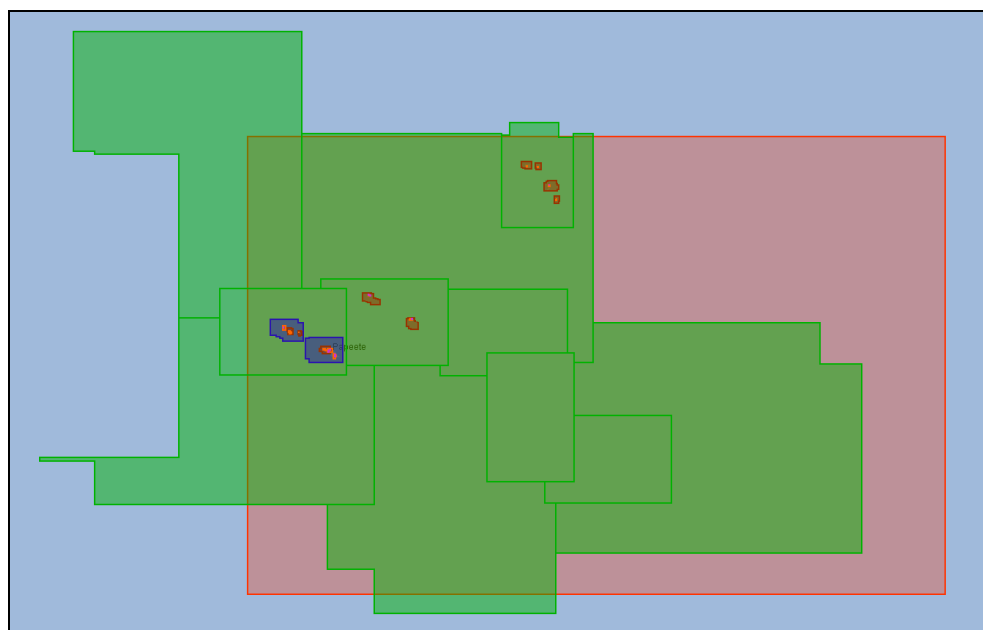
By the end of 2016, 60% of the ENC's planned for New Caledonian waters will be produced. The full ENC coverage is planned to be effective in 2018.

Concerning French Polynesian waters, the most frequented routes used by passengers and fret vessels (not concerned by IMO Mandatory ECDIS carriage regulation) are covered by ENC's.

The SHOM ENC coverage of the SWPHC area is depicted in the chartlets below:



*Fig.20: Region L - SHOM's ENC production - New-Caledonia (Nouvelle-Calédonie)*



*Fig.21: Region L - SHOM's ENC production - French Polynesia (Polynésie française)*





*Fig.22: Region L - SHOM's ENC production – Wallis & Futuna*

ENC cells produced since the last conference are detailed hereafter:

Number	Scale 1:	Title	Comment
FR477550	45 000	Ponérihouen to Cap Dumoulin	New publication
FR57755A	12 000	Baie de Poro	New publication
FR57755B	12 000	Baie Ugué	New publication
FR273470	700 000	South Pacific Ocean - Archipel des Tuamotu to Iles Australes	New publication
FR273700	700 000	South Pacific Ocean - Pukarua to Ducie Island	New publication
FR574660	12 000	Archipel de la Société - Bora Bora	New publication
FR67466A	4 000	Archipel de la Société - Bora Bora - Passe Teavanui	New publication

ENC cells planned for 2017/2018 are listed below :

Number	Scale 1:	Title	Comment
FR473190	45 000	De l'île Pam au cap Colnett	New publication
FR57319A	12 000	Baie de Pam	New publication
FR47319B	22 000	Havre de Balade	New publication
FR47319C	22 000	Port de Pouébo	New publication
FR473180	45 000	De Poum à l'île Pam	New publication
FR270490	350 000	Des îles Loyauté à l'île Hunter	New publication
FR47049A	22 000	Ile Walpole	New publication
FR47049B	22 000	Ile Matthew	New publication
FR47049C	22 000	Ile Hunter	New publication
FR477580	22 000	Îles Belep - Îles Pott et Art - Îles Daos du Nord	New publication
FR47758A	22 000	Récifs d'Entrecasteaux - Île de la Surprise	New publication
FR377620	180 000	Nouvelle-Calédonie (partie Ouest)	And new paper chart
FR377610	180 000	Nouvelle-Calédonie (partie Nord-Est)	And new paper chart
FR377600	180 000	Nouvelle-Calédonie (partie Nord) – Récifs d'Entrecasteaux	And new paper chart

FR470980	22 000	Baies d'Ouarai et Chambeyron - Passes d'Ouarai et d'Isié	New publication
FR57011A	12 000	Port-Ounia	New publication
FR573510	12 000	De la Passe de Goyeta à la Passe de Koné - Abords de Koné	New publication
FR57168A	12 000	Coupée du Cap Goulvain	New publication
FR571971	12 000	Baie de Bourail	New publication
FR471972	22 000	Coupée Mara et Baie de Moindou	New publication
FR47052A	45 000	Mouillage de Uapan	New publication
FR56820B	12 000	Baie de Doking	New publication
FR57259A	12 000	Baie de l'Allier (Baie de Puan) - Mouillage de La Roche	New publication
FR57259D	12 000	Baie du Nord (Baie de Waeko)	New publication
FR57259B	12 000	Baie de Niri (Baie de Wabao)	New publication
FR57218A	12 000	Passe du Coëtlogon	New publication
FR47218B	22 000	Mouillages de Fayaoué et de Mouly	New publication
FR47218D	22 000	Mouillage de Beautemps-Beaupré	New publication
FR55978B	12 000	Iles Chesterfield - Mouillage de l'île Longue	New publication
FR35978C	90 000	Récifs et îles Chesterfield	New publication
FR35978D	90 000	Atoll de Huon	New publication
FR55978E	12 000	Mouillage de l'île Huon	New publication
FR462840	22 000	Partie Sud de Raiatea	New publication
FR56434B	8 000	Passe Farerea	New publication
FR472130	22 000	Maupiti	New publication
FR57213A	8 000	De la Passe 'Onoiau au Village	New publication
FR461650	22 000	Rurutu	New publication
FR56165A	8 000	Baie d'Avera	New publication
FR56165B	8 000	Baie de Moerai	New publication
FR462070	22 000	Ile Raivavae (Vavitu)	New publication
FR56207A	8 000	Passe Nord de l'île Raivavae	New publication
FR46279A	22 000	Rimatara	New publication
FR46279B	45 000	Maria	New publication
FR464240	22 000	Ile Tubuai	New publication
FR56424A	12 000	Passes et mouillages de Tubuai	New publication
FR467400	22 000	De Maraa à Faaa	New publication
FR468280	22 000	Côte Sud-Ouest de Tahiti - De Atehiti à Maraa	New publication
FR463200	22 000	Makatea	New publication
FR56320A	8 000	Port de Temoa	New publication
FR364200	90 000	De Mataiva à Rangiroa et Makatea	New publication
FR364210	90 000	Archipel des Tuamotu - Iles Arutua, Apataki, Kaukura, Niau	New publication
FR466050	22 000	De la Pointe Vénus à Mahaena	New publication
FR47248A	45 000	Apataki	New publication
FR57248B	8 000	Passe Tehere (Aimonu) - Mouillage de Roto Ava	New publication
FR57248C	8 000	Passe Pakaka (Haniuru) - Quai de Niutahi	New publication
FR47248D	22 000	Lagon Ouest - De la Passe Tehere à la Passe Pakaka	New publication
FR372600	90 000	De Apataki à Fakarava	New publication
FR472930	45 000	Manihi	New publication

FR57293A	4 000	Passe Tairapa	New publication
FR474590	22 000	Tikehau	And new paper chart
FR57459A	8 000	Tikehau - Mouillage de Tuherahera	And new paper chart
FR57459B	4 000	Tikehau - Passe Tuhejava	And new paper chart

The current status of ENC production in the region L is (updated values are highlighted):

Usage Band	Produced Cells	Planned Cells	%
1	1	1	100%
2	12	12	100%
3	6	23	26%
4	32	68	47%
5	44	150	46%
6	15		
<b>Total</b>	<b>110</b>	254	<b>43%</b>

### 3.2. ENC Distribution method

All French ENCs (S-63 encrypted format) are distributed to End User Service Providers by PRIMAR RENC. FR is providing its support to the work plan of the WEND working group for improving the implementation of WEND principles.

Since 2014, 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 licences<sup>1</sup> according to the purpose of use. These data can be used with GIS or cartographic software for commercial or private purposes.

A S-57 license<sup>2</sup> allows unlimited download of updated versions for 12 months from the date of purchase.

### 3.3. RNCs

NTR.

### 3.4. INT charts

*See next section for details.*

French charts now include a QR Code to direct access to NTM applicable to that chart. All up to date charts are now made available through 'Print On Demand' (POD). Moreover, a dedicated POD capability has been set at Navy Headquarters in Toulon to fulfill the needs of the Force d'Action Navale.

Here are the INT charts produced since the last conference:

INT	Scale 1:	Title	Comment
6882	60 000	Du Mont Dore à Port-Boisé	New edition
6940	10 000	De la Passe de Taapuna au Chenal de Faaa. Port de Papeete	New edition

<sup>1</sup> Internal reuse, commercial reuse, documentary use or end user

<sup>2</sup> Each licence allows internal reuse of the data for up to 5 workstations. For more information, contact [bp@shom.fr](mailto:bp@shom.fr).



6955	20 000 6 500	Bora-Bora Passe de Teavanui	Publication
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Besides, the following INT charts are planned for the 2017-2018 period:

INT	Scale 1:	Title	Comment
	300 000	Nouvelle-Calédonie (partie Nord) – Récifs d’Entrecasteaux	FR7760 to be published INT number to be attributed
	300 000	Nouvelle-Calédonie (partie Nord-Est)	FR7761 to be published INT number to be attributed
	300 000	Nouvelle-Calédonie (partie Ouest)	FR7762 to be published INT number to be attributed
	300 000	Nouvelle-Calédonie (partie Sud-Est) - Iles Loyauté	FR6686 to be edited INT number to be attributed
	300 000	Nouvelle-Calédonie (partie Sud) - Ile des Pins	FR6768 to be edited INT number to be attributed
6880	60 000	De Port-Ounia au Can Ndoua	FR6986
6881	60 000	De l’île d’Ouen à l’Île des Pins	FR6933

Concerning New Caledonia’s coastal scheme, France is planning to produce five 1:300000 scheme 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. Regarding French waters around Wallis & Futuna, SHOM produces the chart **FR7283** at scale 1:1M and has submitted it for inclusion in the Region L INT scheme.

These new INT chart proposals have been submitted to the Regional Charting Coordinator through the INTtoGIS online manager interface.

Here the overall INT chart production status for that region:

Scale	Produced INT charts	Planned INT charts	%
<b>Small (&lt;1/1 000 000)</b>	7	7	100%
<b>Medium</b>	0	<b>5</b>	0%
<b>Large (&gt;1/100 000)</b>	<b>8</b>	10	80%
<b>Total</b>	<b>15</b>	<b>22</b>	<b>68%</b>

### 3.5. National paper charts

Here are the charts produced since the last conference:

National	INT	Scale 1 :	Title
7755	/	60 000	De Ponérihouen au Cap Dumoulin ( <i>Replace 3475 / 6528 / 6529</i> )
6820	/	35 000	Mouillages de l’île Lifou – Baie du Santal
7281	/	75 000	Hao
7455	/	Diverses	Archipel des Tuamotu - Passes et Mouillages

The following charts are planned in 2017/2018:

<b>National</b>	<b>INT</b>	<b>Scale 1:</b>	<b>Title</b>
7273	/	60 000	De Nouméa à la Baie de Saint-Voncent
6949	/	60 000	Abords de Thio – Du Cap Bégat à l’île Toupéti
7459	/	Diverses	Tikehau

### **3.6. Other charts, e.g. for pleasure craft**

NTR.

### **3.7. Problems encountered**

NTR.

## **4. New publications & updates**

### **4.1. New Publications**

Since the last SWPHC conference, a new edition has been issued for the following publication:

- Livre des feux et signaux de brume LC : Océan Atlantique (Est) – Océan Indien (Ouest) – Océan Pacifique (2016) ;
- Radiocommunications maritimes : Afrique – Asie – Australasie (92.2 – 2015) ;
- Radiocommunications maritimes : Le système mondial de détresse et de sécurité en mer (91 – 2016) ;
- Radiocommunications portuaires : Mer Méditerranée, Océans Indien, Pacifique et Austral (93.2 – 2016)
- Stations radiométéorologiques : Pacifique Sud-Ouest, Amériques et Antarctique (96.2 – 2016).

### **4.2. Updated publications**

NTR.

### **4.3. Means of delivery**

In October 2016, 97 % of nautical publications were available in digital format on SHOM’s online store ([diffusion.shom.fr](http://diffusion.shom.fr)). Regarding that region, all nautical publications are available in digital format.

### **4.4. Problems encountered**

NTR.

## **5. MSI Existing infrastructure for transmission**

In SWPHC area, SHOM has delegated its functions of national coordinator to two maritime authorities:

- 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 region in NAVAREA XIV area.

Hereafter are listed the coordinates of those authorities:

Area	Phone number	Fax number	Email address
New Caledonia	+687 292 332	+687 292 303	<a href="mailto:operations@mrcc.nc">operations@mrcc.nc</a>
French Polynesia	+689 40 541 615	+689 40 423 915	<a href="mailto:contact@jrcc.pf">contact@jrcc.pf</a>

**5.1. New infrastructure in accordance with GMDSS Master Plan**  
NTR.

**5.2. Problems encountered**  
NTR.

## 6. C-55 Latest update

The last C-55 update by France has been transmitted to the IHB on August 28<sup>th</sup> 2015. The C-55 charting and surveying status values regarding Region L areas under SHOM responsibility are summed up in the following tables:

Survey status		Depth < 200m			Depth > 200m		
		A	B	C	A	B	C
L	Polynésie française	38,9	5,2	55,9	7,7	0,1	92,2
	Wallis et Futuna - France	40	0	60	8,1	0	91,9
	Nouvelle Calédonie - France	43,1	5,4	51,5	3	0,1	96,9

Charting status		Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
		A	B	C	A	B	C	A	B	C		
L	Polynésie française	100	0	100	33	0	73,91	58	0	25,58	100	96
	Wallis et Futuna - France	100	0	NA	100	0	NA	75	0	100	100	100
	Nouvelle Calédonie - France	100	0	100	100	0	42,86	74	0	74	100	100

Fig. 23: C-55 update values for survey status (top table) and charting status (down table). Updated values are red colored.

## 7. Capacity Building Offer of and/or demand for Capacity Building

### 7.1. Training received, needed, offered

Initial training capabilities provided by SHOM include the following FIG-IHO-ACI courses: category A & 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 à la carte*

## TRAINING COURSES PROVIDED BY SHOM SCHOOL

Course Name	Average number of students	Duration	Admission	Curriculum
<b>BS HYDRO*</b>	8 petty officers / 2 foreign military officers	14 months	based on application file	<ul style="list-style-type: none"> <li>manoeuver and navigation Training</li> <li>specific course on hydrography and oceanography</li> <li>on board end-study project</li> </ul>
<b>C SYSREB-HOM</b>	3 to 5 hydrographers petty officers	9 months	based on application file	<ul style="list-style-type: none"> <li>information technology theoretical and practical training (application to hydrography IT)</li> <li>Practical internships in SHOM IT department and survey unit (GHQA)</li> </ul>
<b>C SUP HYDRO</b>	2 to 5 hydrographers petty officers	3 months	based on application file	<ul style="list-style-type: none"> <li>advanced technical training on hydrography</li> <li>team management training</li> </ul>
<b>NAUTICAL CARTOGRAPHER TRAINING COURSE*</b>	1 to 8 trainees	9 months	based on diplomas or competitive exam	<ul style="list-style-type: none"> <li>general training on hydrography and geosciences</li> <li>specific training on nautical cartography</li> <li>end-study technical project</li> </ul>
<b>SHOM school support to ENSTA Bretagne**</b>				
<b>HYDROGRAPHIC ENGINEER</b>	2 French military engineers and 20 civil students	36 months (+12 months for French military students)	based on diplomas or competitive exam	see <a href="http://www.ensta-bretagne.fr">www.ensta-bretagne.fr</a>
<b>MASTER ON HYDROGRAPHY</b>	5 French or foreign civilian students	24 months	based on diplomas	see <a href="http://www.ensta-bretagne.fr">www.ensta-bretagne.fr</a>

\*Recognized training course of category B level by IHO-ICAO International Joint  
\*\*Recognized training course of category A level by IHO-ICAO International Joint

Fig.24: Courses and training provided at the SHOM hydrographic school (source: shom.fr)

## 7.2. Status of national, bilateral, multilateral or regional development projects with hydrographic component

For the countries benefiting from SHOM support to meet their hydrographic services obligations spelled out by the SOLAS convention, France fosters a mechanism of gradual transfer of responsibilities through State-to-State administrative arrangements. This mechanism relies on training at SHOM facilities and the formalisation of the respective responsibilities for maritime safety information, hydrographic and charting activities.

### 7.3. Definition of bids to IHOCBC

NTR.

## 8. Oceanographic activities

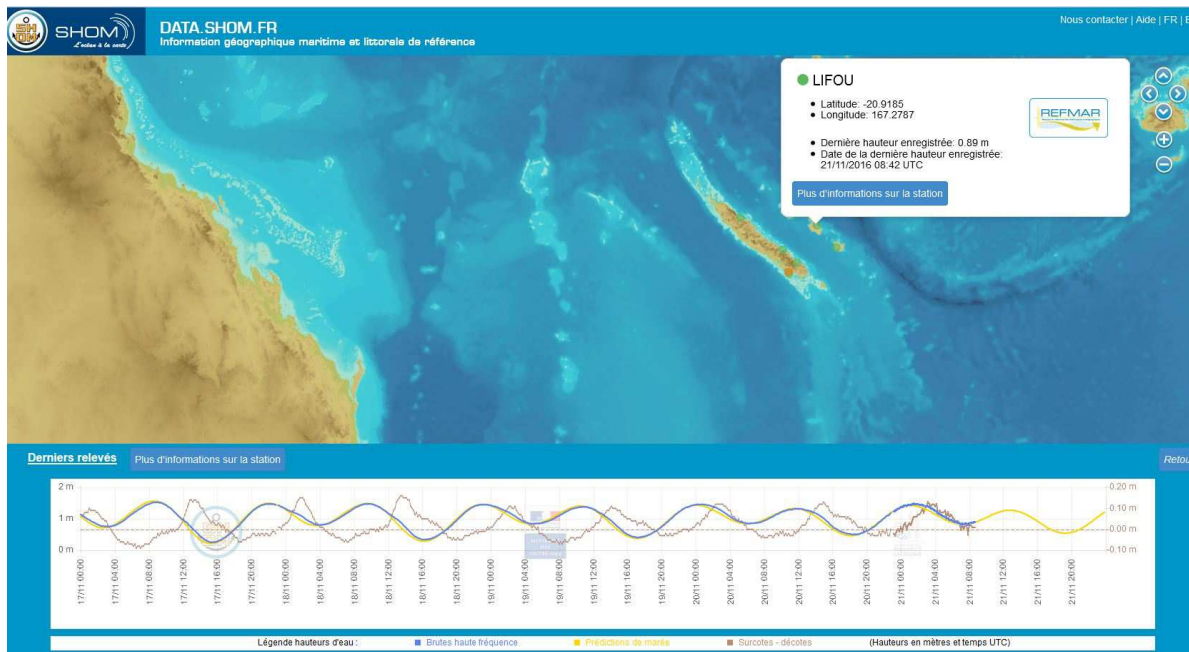
### 8.1. GEBCO/IBC's activities

NTR.

### 8.2. Tide gauge network

SHOM is the national coordinator and reference authority for the observation of the sea level, managing and issuing the resulting data. Besides, including these produced by SHOM tidal network, RONIM. These missions are carried out under the REFMAR programme. All real time and processed tide gauge measurements collected under that programme are now accessible on web <http://data.shom.fr/#donnees/refmar> in 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.



*Fig.25: Real time measurements from REFMAR tidal network on SHOM's web portal (source: data.shom.fr)*

Since May 2016, SHOM's tidal predictions are available through a new web/smartphone/tablet-friendly online service named [maree.shom.fr](http://maree.shom.fr). This service provides free access of one year of tidal predictions from over 1,000 harbours worldwide.

In February 2016, SHOM has organized, in partnership with UNESCO Intergovernmental Oceanographic Commission (IOC), the 2016 edition of the *REFMAR Days* at UNESCO headquarter in Paris. This 5 day meeting focused on the status of sea level observation and its multiple applications. About 200 people from 20 countries attended the event.

Presentation and information material presented at the event can be downloaded on: <http://refmar.shom.fr/journees-refmar-2016/programme>.

Since the last conference, several installation or maintenance work have been carried out.

### **New Caledonia**

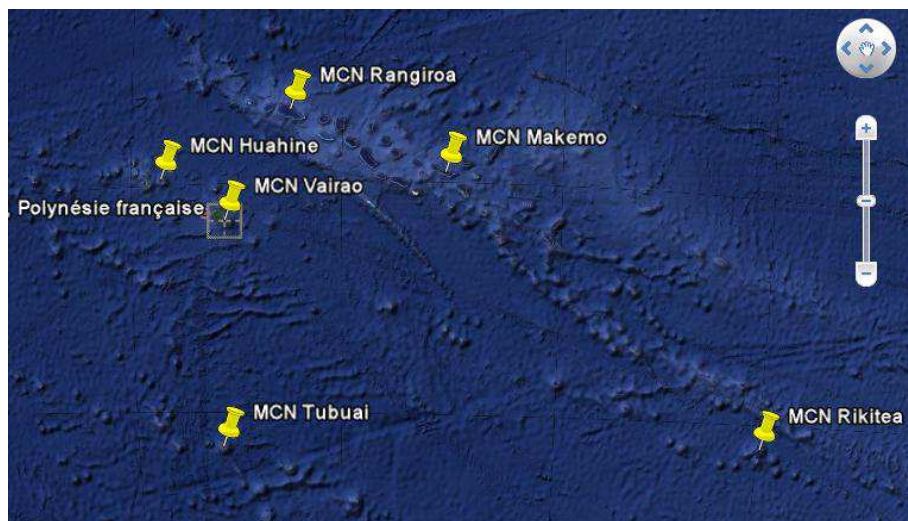
Tide gauges network in New Caledonia is composed of 6 stations: Hienghène, Numbo (Noumea), Maré, Lifou, Thio and Ouinné. Maintenance operations on the existing gauges are carried on a yearly basis (fig. 26). A new gauge was installed in Thio (Grande Terre) in 2015. The network over the Loyalty Islands will be completed in 2017 with the set-up of a new station in Ouvea.



*Fig. 26: Tidal gauges network covering New Caledonia and its vicinity.*

### **French Polynesia**

Maintenance of the existing tide gauges in the Pacific permanent network was conducted on the six existing tide gauges. Makemo station was installed in 2014 (fig.27).



*Fig. 27: Tidal gauges network covering French Polynesia waters.*



## Wallis & Futuna

Futuna Island benefits from a permanent observatory since 2011. In 2014 a permanent tide gauge was also installed on Wallis Island. These stations are fitted with radar sensor, permanent GNSS and satellite real-time transmission. They are maintained on a year basis.



*Fig. 28: Tidal gauges in Wallis & Futuna Islands*

Work is in progress in New Caledonia, Wallis and Futuna and French Polynesia to enhance SHOM's permanent tide gauges performances by enabling real-time data transmission, and to increase the network coverage in appropriate locations.

### 8.3. New equipment

NTR.

### 8.4. Problems encountered

NTR.

## 9. Other activities

### 9.1. Meteorological data collection

NTR.

### 9.2. Geospatial studies

NTR.

### 9.3. Disaster prevention

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](mailto:coord.navarea2@shom.fr).

- **Tsunami :**

In French Polynesia, SHOM is involved in the development of the tsunami alert system, under the leadership of the CEA and the University of French Polynesia, and with the participation of other partners such as CNES, Météo-France and BRGM.

Some of France’s Pacific sea-level observatories are part of the IOC GLOSS system for a global monitoring of sea level change. Nuku Hiva (Marqueses Islands), Noumea (Numbo – New Caledonia), Papeete (Tahiti) and Rikitea (Gambier Islands) are already included in the so-called “GLOSS Core Network”. During the last GLOSS meeting held in Goa, India, in 2015, the assembly accepted French proposal to extend this core network with Futuna, Rangiroa, Makemo and Tubuai observatories.

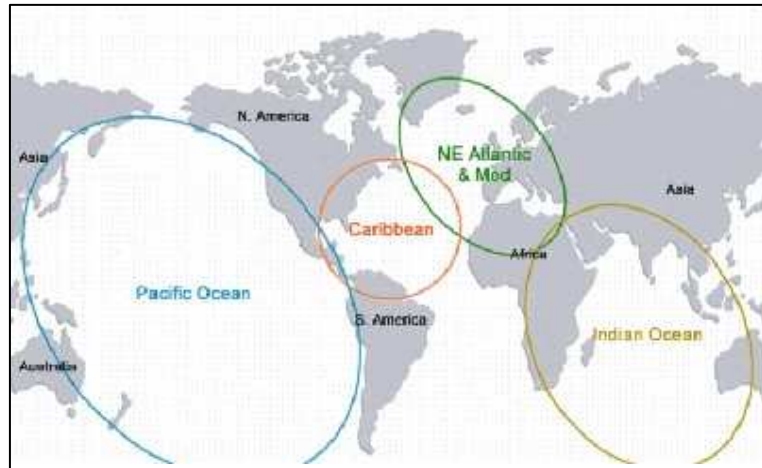


Fig.29: Cooperation areas on tsunami warning system (source COI; UNESCO).

- **Coastal flooding :**

Tide gauges real time transmission can be used for Tsunami warning as well as coastal flooding warning. In France, the French Meteorological office (Météo-France) has been operating a storm surge warning system in collaboration with SHOM since October 2011. This system is to be extended to French Polynesia, where a strong swell warning is already in place, operated by Météo-France (fig. 30).

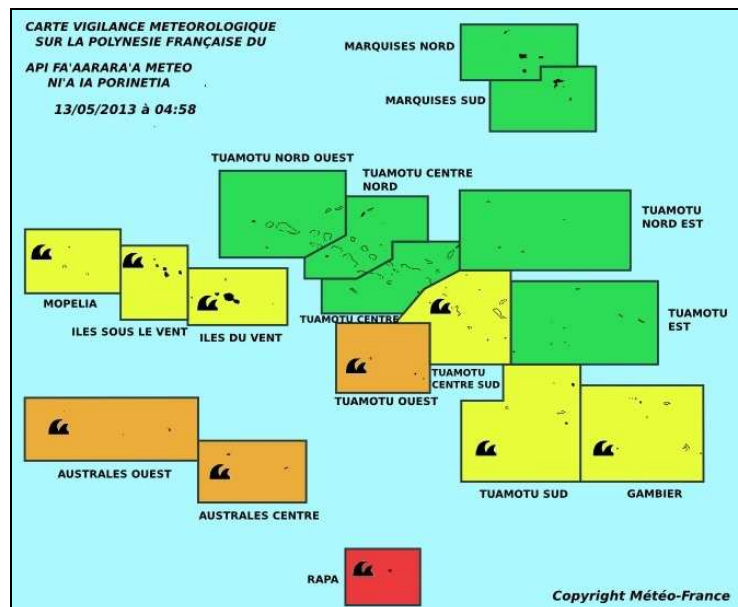


Fig. 30: Strong swell warning system over French Polynesia waters (source: météo-france).

Joint efforts are undertaken to improve storm surge modelling, including at the coastline using observations, tide predictions, atmospheric pressure and wind forecasts.

- **Oil spills :**

NTR.

#### **9.4. Environmental protection**

NTR.

#### **9.5. Astronomical observations**

NTR.

#### **9.6. Magnetic/Gravity surveys**

NTR.

#### **9.7. MSDI Progress**

Since the launch of SHOM's maritime and coastal geographic information portal [data.shom.fr](http://data.shom.fr), further developments have been implemented with new online services data layers on a regular basis. Hereafter are listed the some of the latest evolutions:

- The portal is now displayed in Google Mercator (EPSG:3857).
- Drawing tools have been directly added to the main portal <http://data.shom.fr/#dessin>. Users can now create objects, save their map and print it, export and import in KML format.
- The nautical info feedback service has also been integrated to the portal <http://data.shom.fr/#infonaut/>
- The metadata catalog is based on the Geonetwork solution that offers a user-friendly interface to read ISO 19115/19139 XMLs.
- Layers can be interrogated to retrieve attributes of objects.
- New high (10-20m) and medium (100m) resolution DTM Layers (open data).
- An online DTM creator will soon be launched.
- Wind forecasts (direction and speed) from *Météo France's* ARPEGE meteorological model ARPEGE are now available with SHOM's ocean modeling forecasts.

Those evolutions can all be followed via SHOM's Twitter account (@shom\_fr),

A detailed description of the portal functions and contents is available on SHOM website (<http://www.shom.fr/les-services-en-ligne/portail-datashomfr/>). Data available on that portal are organised according to the following topics listed below: *tides, tidal currents, bathymetry, cartography, maritime and littoral databases.*

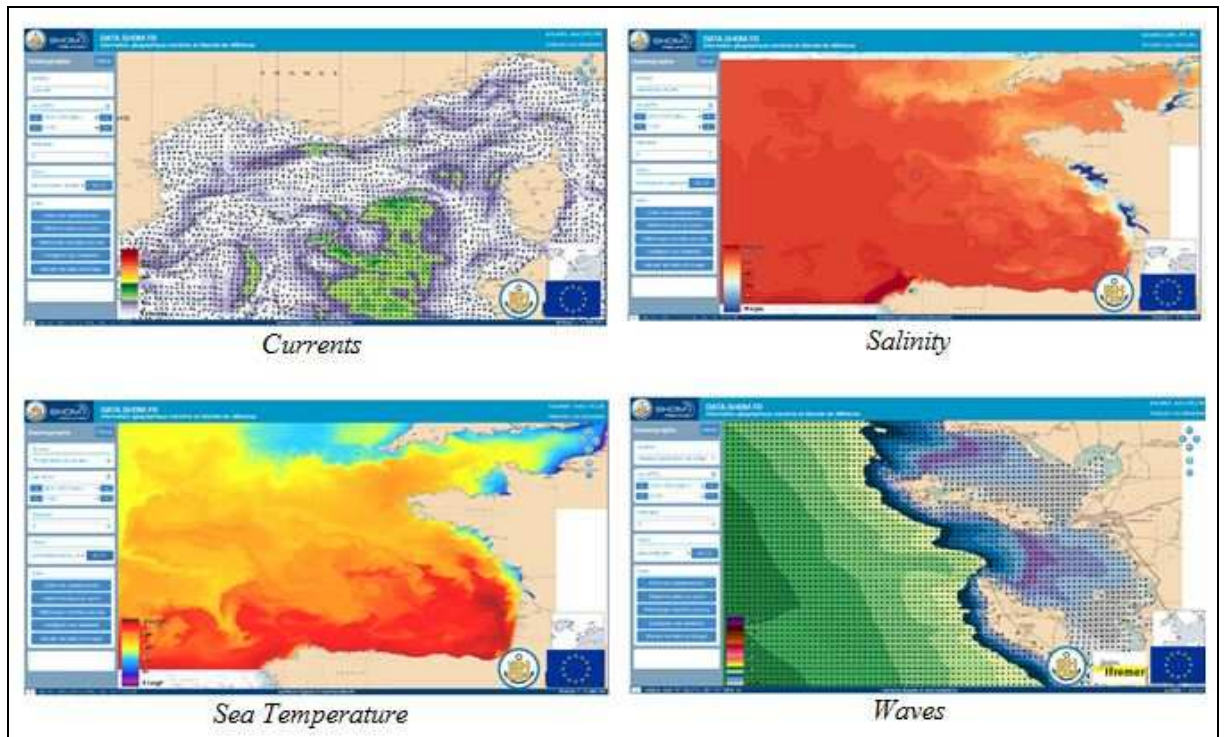


Fig.31: Oceanographic forecasts on SHOM's data portal (data.shom.fr)

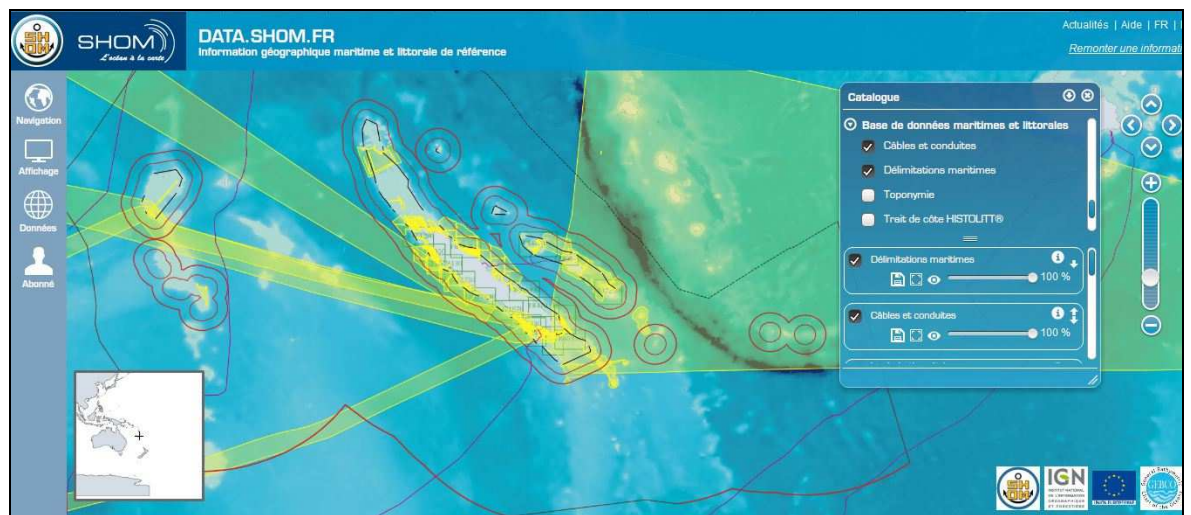


Fig.32: SHOM's data portal (data.shom.fr)

## 9.8. International

Due to 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 (former CPSCWG)
ENCWG		✓	ENC Working Group ( former TSMADWG/DIPWG)
DPSWG		✓	Data Protection Scheme Working Group
DQWG		✓	Data Quality Working Group -Last meeting in 1996



EAIHC		✓	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, formerly known as the Committee on Hydrographic Requirements for Information Systems (CHRIS)
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 (former SNPWG)
NSHC		✓	North Sea Hydrographic Commission
RSAHC		✓	ROPME Hydrographic Commission
S-100WG		✓	S-100 Working Group (former TSMADWG/DIPWG)
SAIHC		✓	Southern Africa and Islands Hydrographic Commission
SWPHC		✓	South-West Pacific Hydrographic Commission
TWCWG	✓	✓	Tidal, Water Level and Currents Working Group (former TWLWG/SCWG)
WEND		✓	World-Wide Electronic Navigational Chart Database
WWNWS	✓	✓	World-wide Navigational Warning Service Sub-Committee, formerly known as the Promulgation of Radio Navigational Warnings Sub-Committee (PRNW)

## 10. Conclusions

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