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N° 009 SHOM/DMI/REX/NP

SERVICE HYDROGRAPHIQUE  
ET OcéANOGRAPHIQUE  
DE LA MARINE

DIRECTION DES MISSIONS  
INSTITUTIONNELLES ET DES  
RELATIONS INTERNATIONALES

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**FRANCE NATIONAL REPORT  
TO THE 17<sup>TH</sup> MEETING OF THE MESO AMERICAN AND CARIBBEAN  
SEA HYDROGRAPHIC COMMISSION CONFERENCE**

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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

A large survey was performed by SHOM in January 2016 around St.Martin and St-Barthélemy with the deployment of Ifremer's N/O Atalante, named as SHOM ANTILLES 2016 campaign.

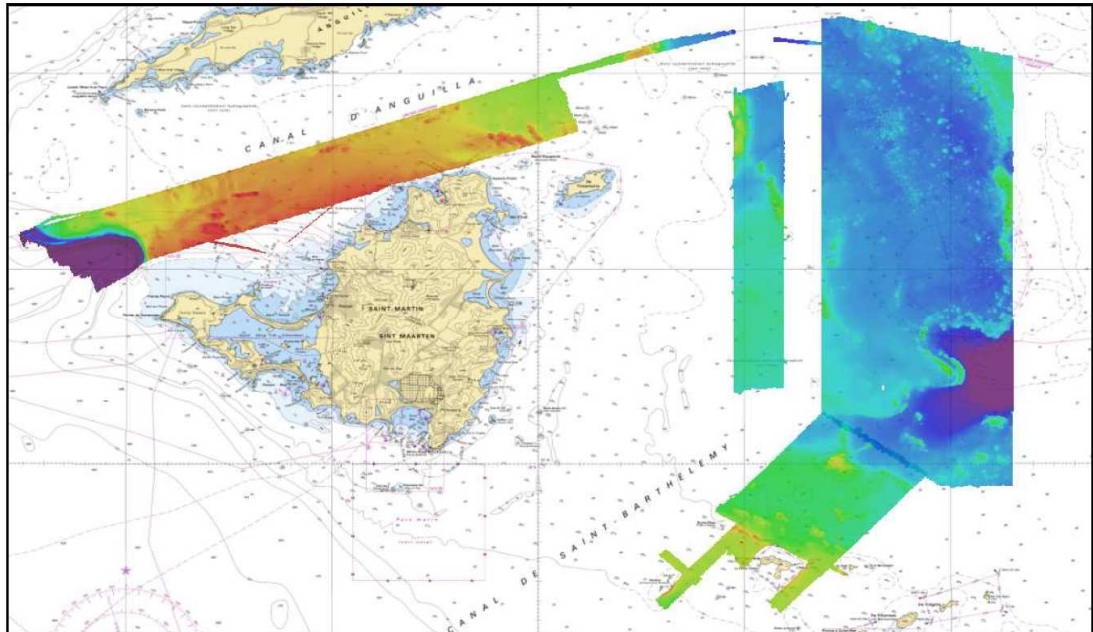


Fig.1:Survey work around St. Martin and St-Barthélemy – SHOM ANTILLES 2016 Campaign

Destinataire : BHI MONACO

Copies intérieures : DG – DMI/REX - Archives (DMIDSD/2.033)

The following surveys have been communicated to the SHOM since the beginning of the year:

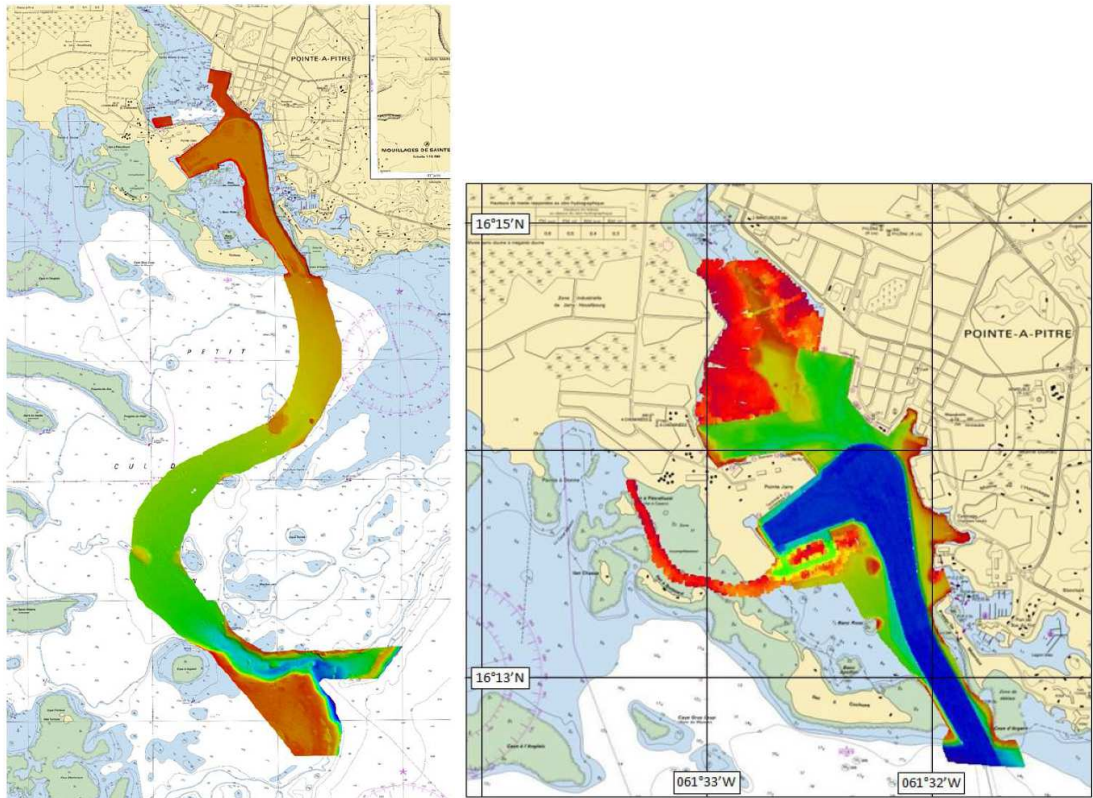


Fig.2: Survey of the access and harbour of Pointe-à-Pitre (survey performed by INGEO – E2015 036 00 et E2016 022 00)

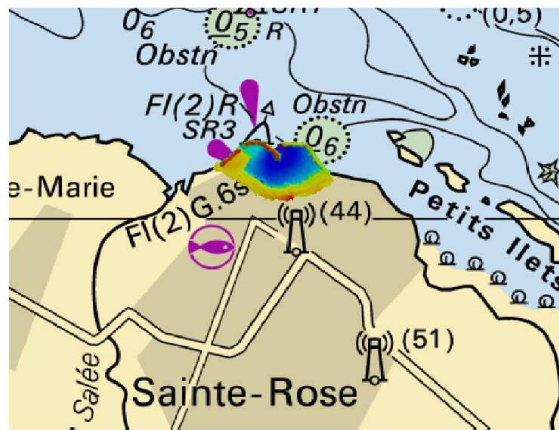


Fig.3: Survey of Sainte-Rose's harbour (Guadeloupe – Conseil général - E2015 056 00)

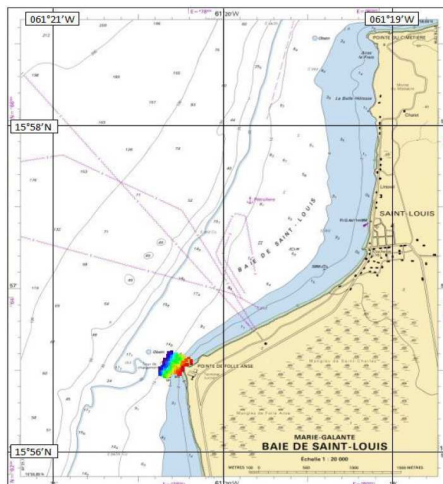


Fig.4: Survey of Saint-Louis's harbour by INGEO (Guadeloupe – E 2016 022 00)

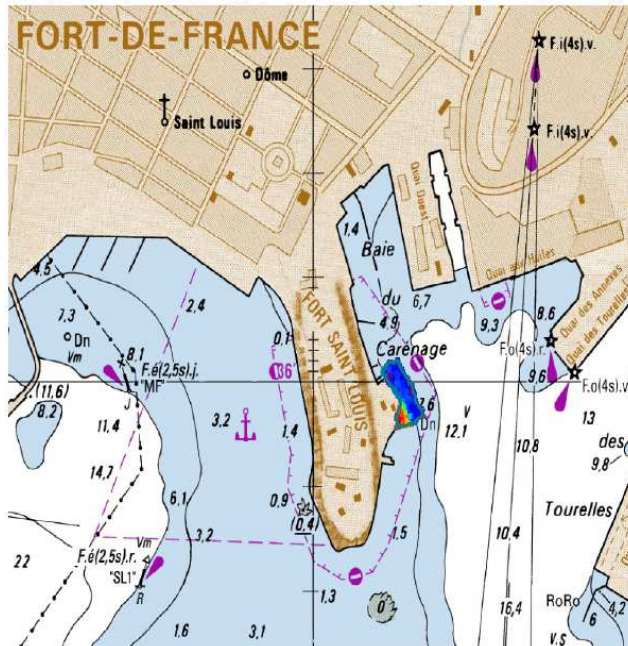


Fig.5: Survey of a new quay at Fort-de-France (survey performed by Cabinet Onfray Clausee et Associés – E2015 045 00)

## 2.2. French Survey Programme for the region

SHOM's 2017-2020 national hydrographic survey programme<sup>1</sup> is detailed in the two next figures, presenting on the one hand the long-term target objectives of CATZOC compliant hydrographic surveying in French Antilles, French Guyana and Clipperton Island waters (fig. 1) and on the other hand the existing surveys coverage related to those three areas (fig.2). The survey work related to those areas for the three next years is detailed hereafter:

- **French Antilles:**

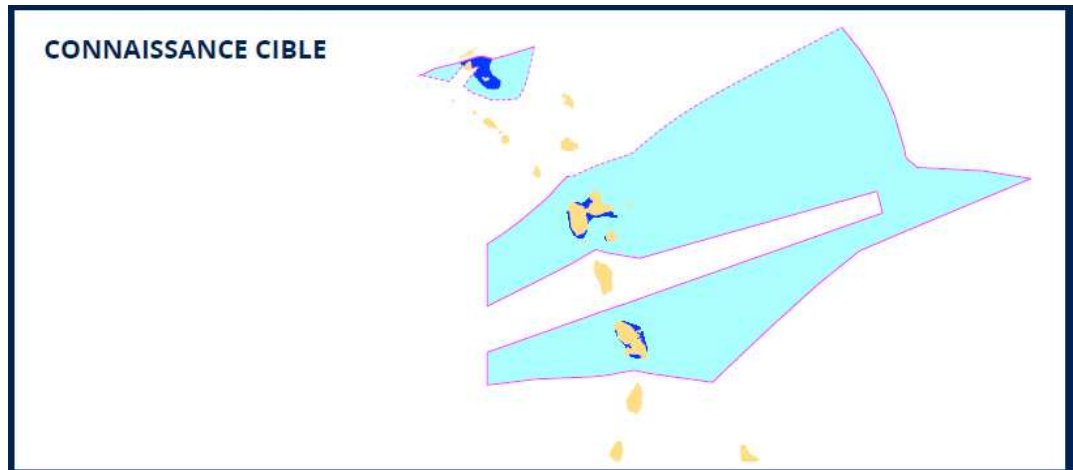
Pursue of survey works in coastal waters with main harbour access channels and anchorage areas of St. Martin and St. Barthélémy in 2019. Opportunity works around Martinique and Guadeloupe.

- **French Guyana:**

Pursue of survey works in coastal waters in order to define bathymetry in fishing areas to support the action of the State at sea. A 3 months deployment of a BH2 survey ship is scheduled by 2018, regarding survey work in French Guyana waters and completing the 2013 survey (see report to the 14<sup>th</sup> meeting of the MACHC).

- **Clipperton Island**

No systematic surveys scheduled, only opportunity works.



<sup>1</sup> [http://www.shom.fr/fileadmin/data/DMI/PLANS/PNH\\_RCO\\_20130103\\_HD\\_01.pdf](http://www.shom.fr/fileadmin/data/DMI/PLANS/PNH_RCO_20130103_HD_01.pdf)

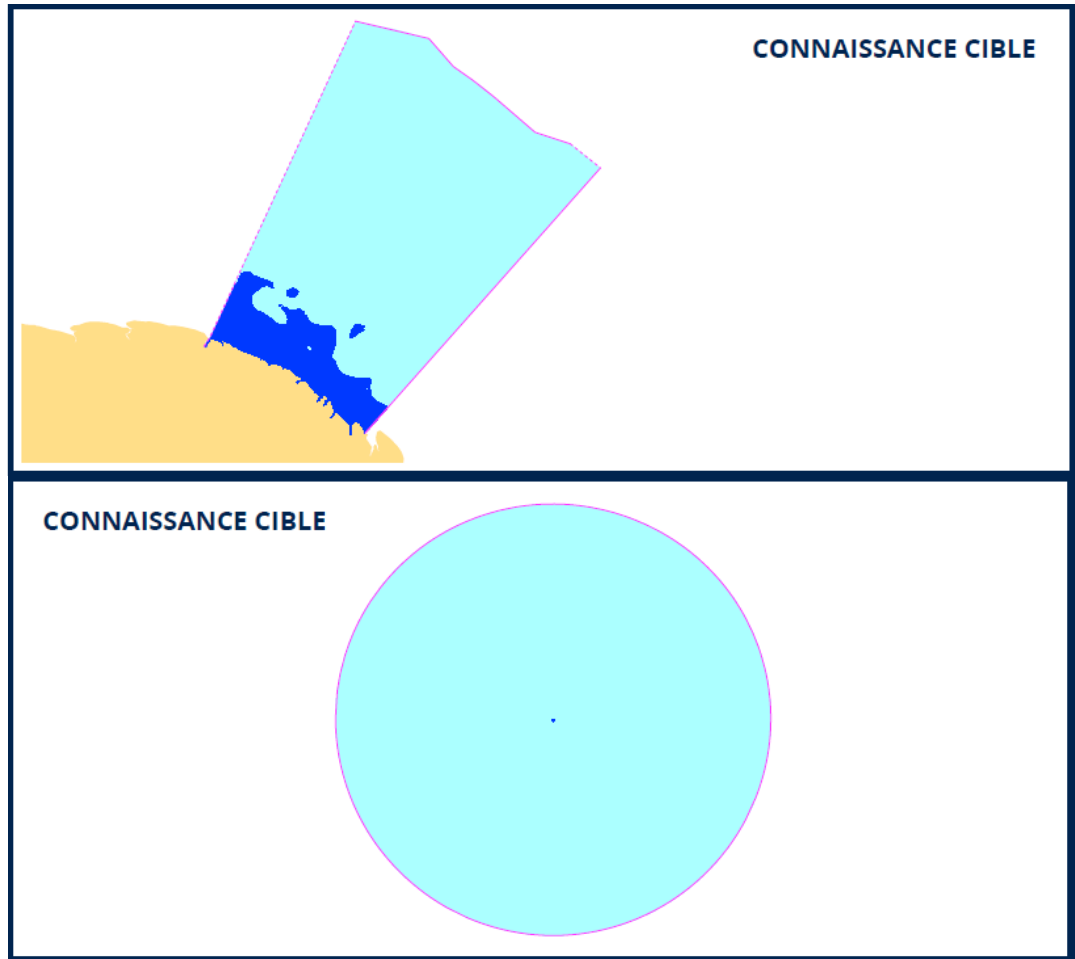
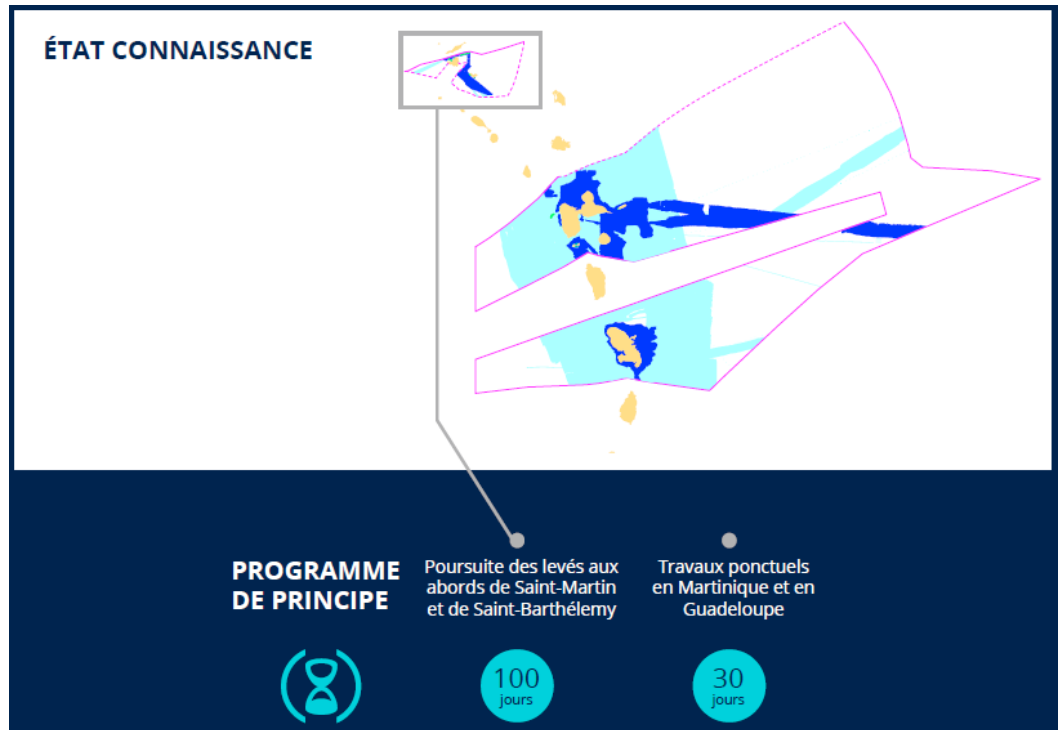


Fig.6-a/b/c: (top to bottom) 2017-2020 NHP objectives for French Antilles, French Guyana and Clipperton Island waters



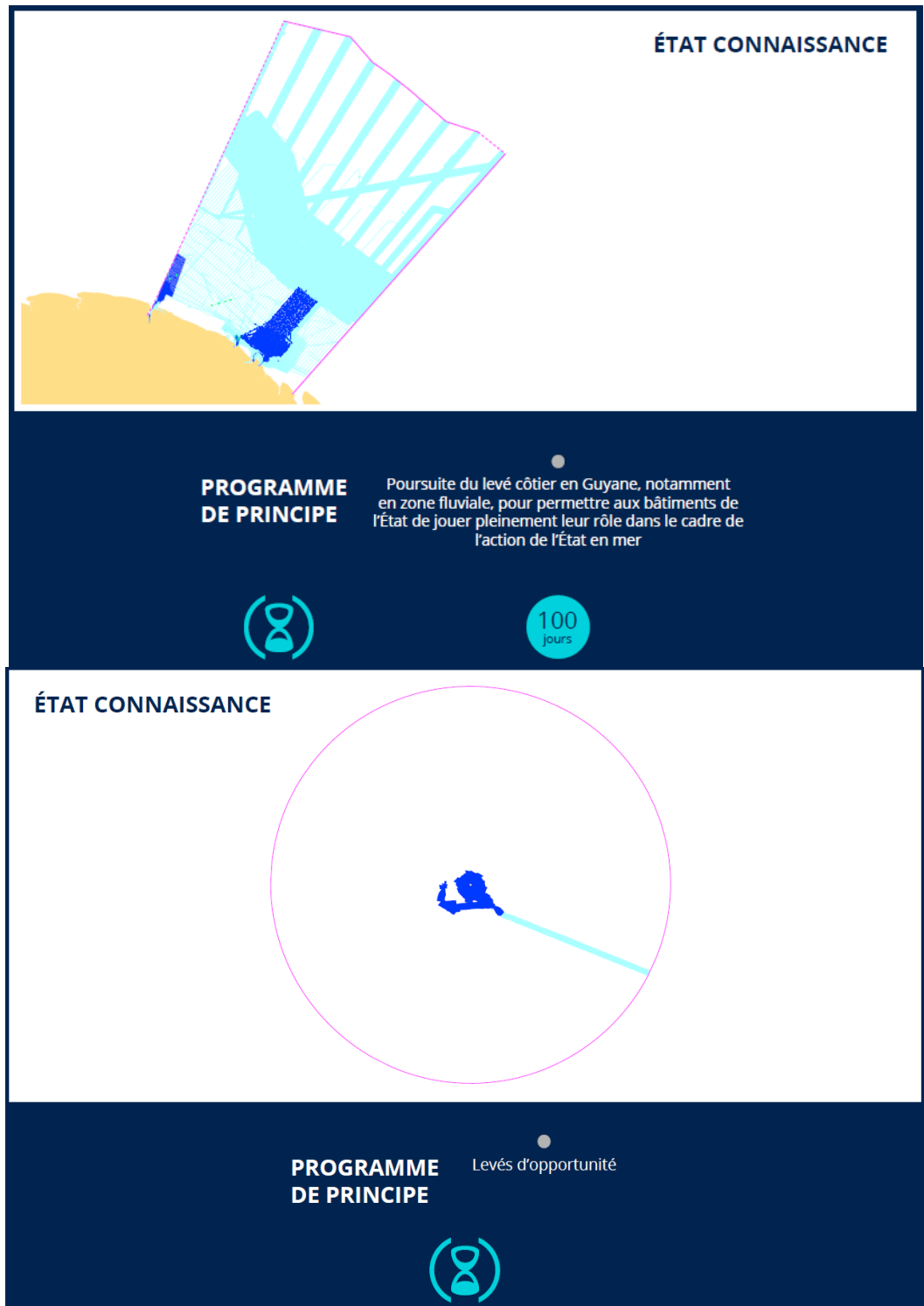


Fig.7-a/b/c: (top to bottom) Existing surveys and survey planned for the 2017-2020 period for French Antilles, French Guyana and Clipperton Island waters

**2.3. New technologies and /or equipment**

NTR.

**2.4. New ships**

NTR.

**2.5. Problems encountered**

NTR.

### 3. New charts & updates

#### 3.1. ENC's

On the 9<sup>th</sup> of November 2016, SHOM's collection of ENC's has now reached the number of 525 of which 29 cells within that region: neither new cells nor new editions have been produced since the last MACHC conference.

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 B is detailed in the chartlets below:

Usage Band	Produced Cells	Planned Cells	Percentage
1	0	0	N/A
2	3	3	100%
3	4	4	100%
4	9	12	75%
5	9	32	41%
6	4		
<b>Total</b>	29	51	57%

The following figure is an extract of the online PRIMAR catalogue <http://www.primar.org> with the SHOM ENC coverage within the MACHC (region B) area:

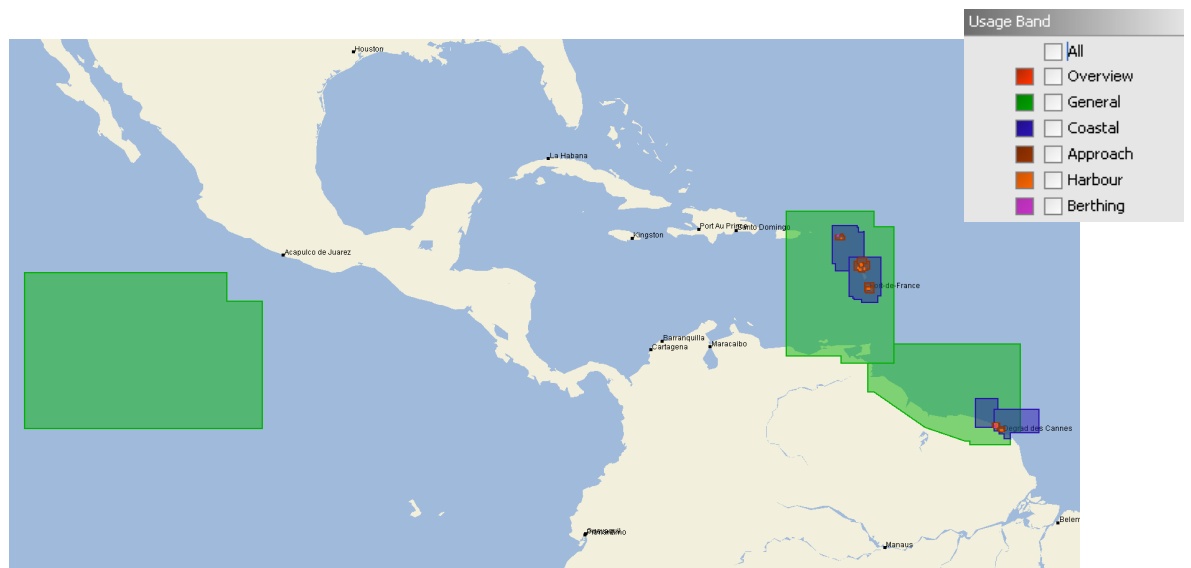
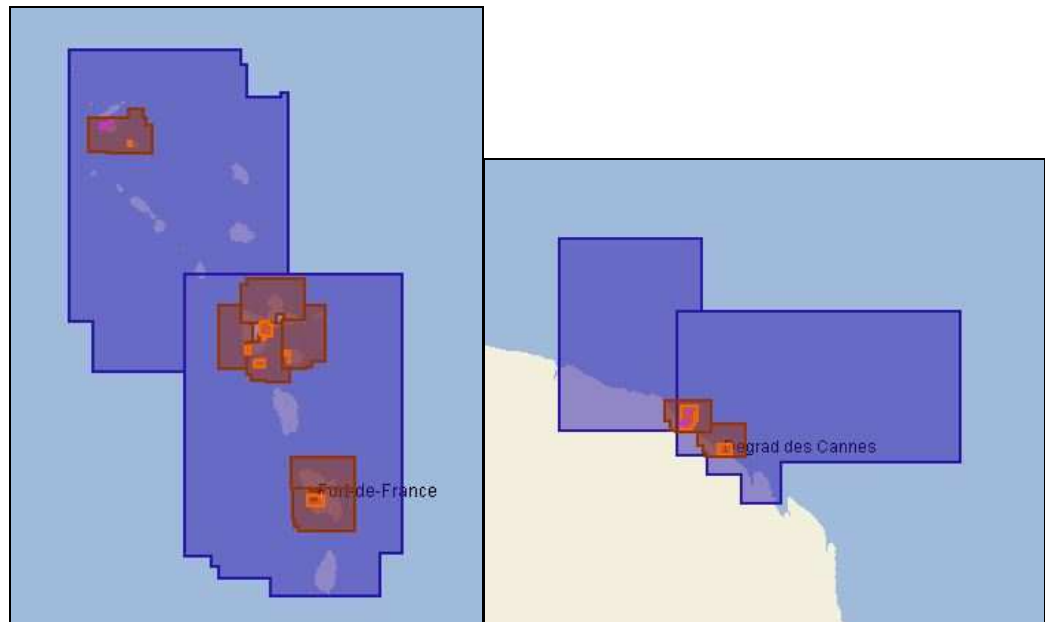
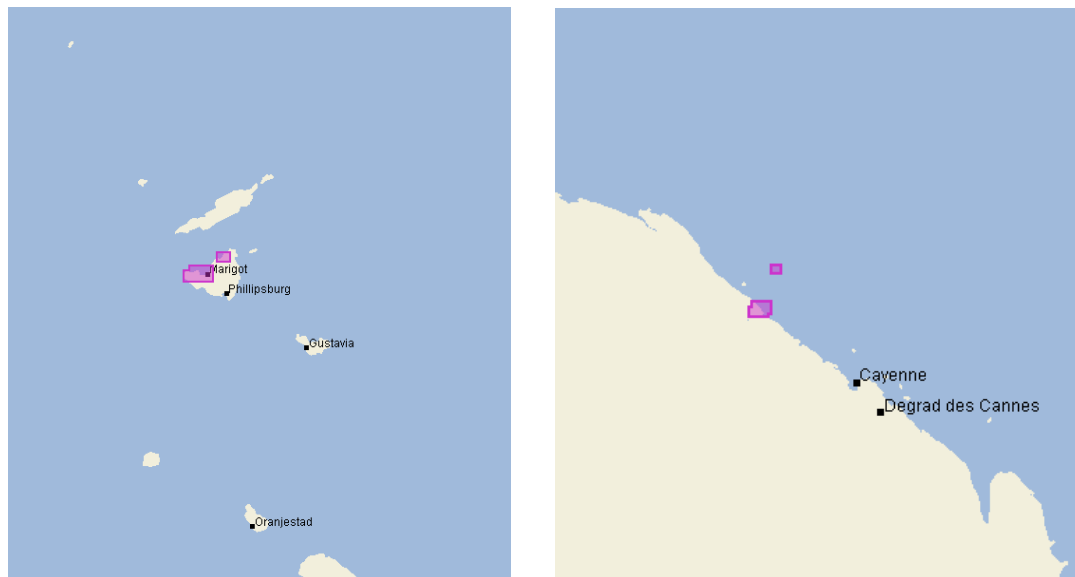


Fig.8: ENC coverage within Region B area.



**Fig.9:** ENC coverage focus (UB 3-6) on French Antilles (left) and French Guyana (right).



**Fig.10:** ENC coverage focus (UB 6) on French Antilles (left) and French Guyana (right).

SHOM's ENC production plan is depicted in the following table:

<b>Port/Area</b>	<b>Usage Band</b>	<b>Corresponding FR Paper Chart</b>	<b>Date of issue</b>
Havre du Robert et Baie du François	5-6	7088 (chart + inset A)	2017
Havre de la Trinité et Baie du Galion	5	7087	2017
Saint-Pierre, Case-Pilote, Cul-de-Sac du Marin, Baie du Vauclin	5	7089 (insets A,B,C & D)	2017
Grand Cul-de-Sac Marin – De la Baie du Lamentin à Port-Louis	5	7324	2017
Ports et mouillages de Grande-Terre, de Marie-Galante et de la Désirade :	5	7102 (insets A,B,C,D & E)	2017

Saint-François, Le Moule, Grande Anse, Sainte-Anne et anse Accul, Petit Havre			
Anse Deshaies, Anse de Malendure, Anse à la Barque	5	7482 (insets A,B & C)	2017
Ports du Larivot et de Cayenne	5	7377	2017
Rivière de Sinnamary	4-5	5884 (chart + inset A & B)	2017
Embouchure du fleuve Maroni	4	7376 (inset A & B)	2017

### 3.2. ENC Distribution method

All French ENC's (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>2</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>3</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 include a QR Code to direct access to NTM applicable to that chart. Moreover, all up to date French charts are now available by 'Print On Demand' to French forces users.

SHOM's INT chart production plan for this region is completed:

Scale	Produced INT charts	Planned INT charts	Percentage
<b>Small</b> (<1/1 000 000)	1	1	100
<b>Medium</b>	4	4	100
<b>Large</b> (>1/100 000)	0	0	/
<b>Total</b>	5	5	100

### 3.5. National paper charts

No charts were published or edited since the last conference.

Some charts are planned to be issued in 2017/2018

:

<sup>2</sup> Internal reuse, commercial reuse, documentary use or end user.

<sup>3</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).



National	INT	Scale 1:	Title
6892	/	15 000	Baie de Fort-de-France
7100	/	15 000	Abords de Pointe-à-Pitre
7378	/	15 000	Accès au Degrad des Cannes
7472	/	Various	Ports et mouillages de Saint-Martin (Sint Maarten) et de Saint-Barthélemy
7471	/	60 000	D'Antigua à Saint-Barthélemy

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

A sedimentary chart (G chart) derived from the national chart FR7374 "Côte de la Guyane française" (1:500 000) was published since the last MACHC conference. This chart gives information about the nature of bottom including the material of which it is composed and its physical characteristics.

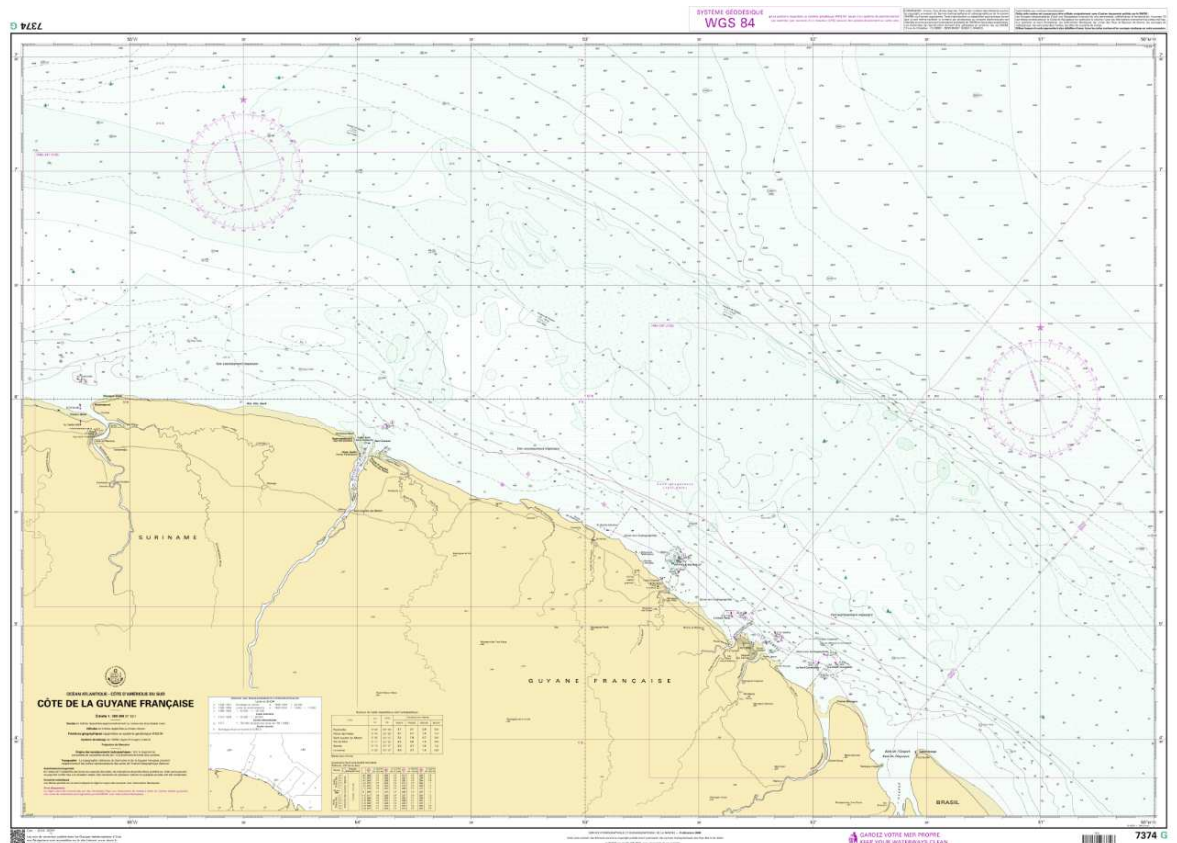


Fig.11: Sedimentary chart FR7374G (1:500 000).

### 3.7. Problems encountered

NTR.

## 4. New publications & updates

### 4.1. New publications

Radio Signals 93.1 (Radiocommunications portuaires – Océan Atlantique) was released in June 2016. It supersedes 2012 edition of Radio Signals 93.

### 4.2. Updated publications

A new edition of the list of lights LD (Saint-Pierre-et-Miquelon – Petites Antilles – Guyane) was released in June 2016.

A new edition of Radio Signals 96.2 (Stations météorologiques – Pacifique Sud-Ouest, Amériques et Antarctique) was released in May 2016.

A new edition of Radio Signals 92.4 (Radiocommunications maritimes – Le SMDSM) was released in October 2016.

#### 4.3. Means of delivery

By the end of 2016, all nautical publications are available in digital format (pdf files) on Shom's online shop (diffusion.shom.fr). Most publications are still available on paper, but from now on, new editions of nearly all publications will be only digital.

### 5. MSI Existing infrastructure for transmission

Since January 1st 2014, SHOM's notices to mariners (GAN) are exclusively available under digital formats, either downloadable on shom.fr or by annual subscription (CD-rom).

#### 5.1. New infrastructure in accordance with GMDSS Master Plan

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

Hereafter are listed the French overseas territories POCs for NAVAREA IV and XII:

AREA	COUNTRY	NAME	TELEPHONE	FACSIMILE	EMAIL
IV	French Antilles	Adjoint Mer Antilles (C)	+596 (0)5 96 39 50 59 +596 (0)6 96 28 40 82	+596 (0)5 96 39 51 65	<a href="mailto:opsmer.faa@wanadoo.fr">opsmer.faa@wanadoo.fr</a>
IV	French Guyana	Adjoint Mer Guyane (A)	+594 (0)5 94 39 56 69	+594 (0)5 94 39 55 85	<a href="mailto:nauticinfo.guyane@dirisi-cayenne.fr">nauticinfo.guyane@dirisi-cayenne.fr</a>
XII	Clipperton (Île)	MRCC Papeete	+689 (0) 40 54 16 16 +689 (0) 40 54 16 15	+689 (0) 40 42 39 15	<a href="mailto:mrccepapeete@mail.pf">mrccepapeete@mail.pf</a>

#### 5.2. Problems encountered

NTR.

### 6. C-55 Latest update

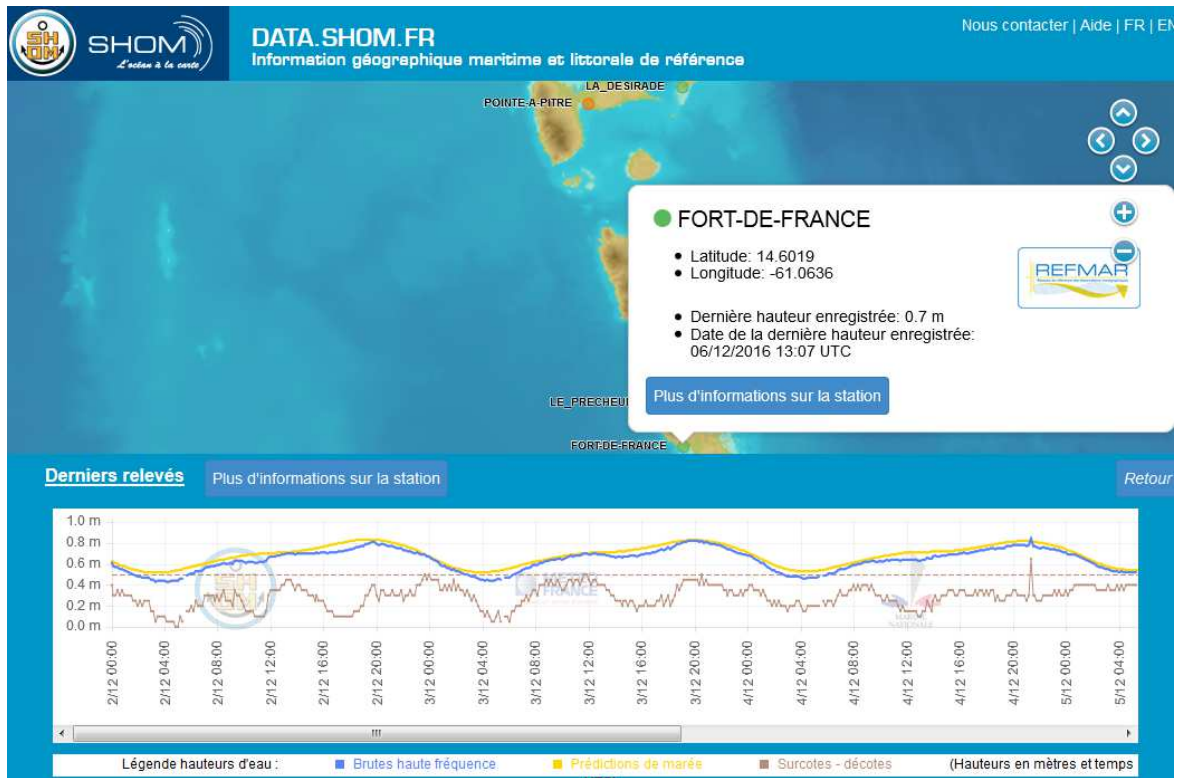
The last C-55 update by France has been transmitted to the IHB on August 28<sup>th</sup> 2015. The C-55 charting and surveying status values regarding Region A and B areas under SHOM responsibility are summed up in the following tables:

Survey Status		Depth < 200m			Depth > 200m		
		A	B	C	A	B	C
A	France - Clipperton Island	73,7	0	26,3	1,9	0	98,1
B	France - French Antilles	68,9	2	29	16,8	0,1	83,1
	France - Guyane	29,8	0	70,2	2,6	0	97,4

Charting Status		Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
		A	B	C	A	B	C	A	B	C		
A	France - Clipperton Island	100	0	100	0	0	NA	0	0	0	100	100
B	France - French Antilles	100	0	NA	100	0	100	100	0	85,71	100	100
	France - Guyane	100	0	100	100	0	66,67	100	0	50	100	100

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





*Fig.13: 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>.

- Within the REFMAR network, 10 French permanent tide gauges are located in the region:
- Guadeloupe : Pointe-à-Pitre (SHOM/Météo-France/DM Guadeloupe), Deshaies (IPGP) and La Désirade Island (IPGP)
  - Martinique : Fort-de-France (SHOM/Météo-France/marine nationale), Le pêcheur (CG Martinique), Le Robert (CG Martinique).
  - Saint-Martin : Le Marigot (CT Saint-Martin).
  - French Guyana : Îles du Salut (SHOM/DM Guyane), Îlet La mere (DM Guyane) and Degrad des cannes (DM Guyane).

Sea level data are available on Shom webportal (<http://data.shom.fr/#donnees/refmar>).

More information about SHOM's involvement can be found through the following link: [http://refmar.shom.fr/fr/sea\\_level\\_news\\_2012/t2/coordonner-l-alerte-aux-tsunamis-dans-les-petites-antilles-source-deal-guadeloupe](http://refmar.shom.fr/fr/sea_level_news_2012/t2/coordonner-l-alerte-aux-tsunamis-dans-les-petites-antilles-source-deal-guadeloupe)

### 8.3. New equipment

A new tide gauge was installed in May 2016 on Saint-Martin Island by the local authority with technical assistance from Shom.

### 8.4. Problems encountered

Routine maintenance work on tide gauges network was carried without major incident to report. In Guyana, intense corrosion and failures of electronic have led to replacement of several pieces of equipment in the station.

## 9. Other activities

### 9.1. Meteorological data collection

NTR.

### 9.2. Geospatial studies

NTR.

### 9.3. Disaster prevention

- **Tsunami :**

SHOM contributes to tsunami warning for the Caribbean via the Pacific Tsunami Warning Centre (PTWC) which is responsible for regional coordination. The importance of the development of real-time tide gauges on French coast and operated by SHOM, IPGP, CG Martinique, is recognised as a key component for the development of a regional tsunami warning system.

France may have Navy ships in the MACHC 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 disaster is ICETA Jean-Christophe ROSADA. His division can be reached 24/7 by fax +33 298 221 665 or email [coord.navarea2@shom.fr](mailto:coord.navarea2@shom.fr)

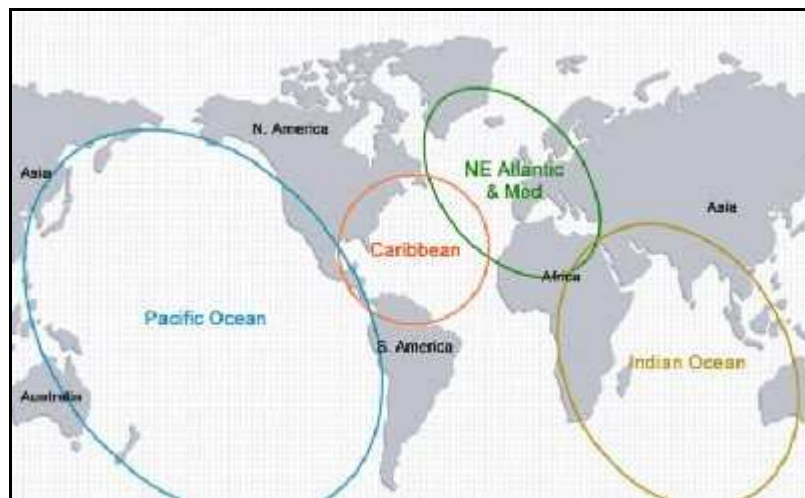
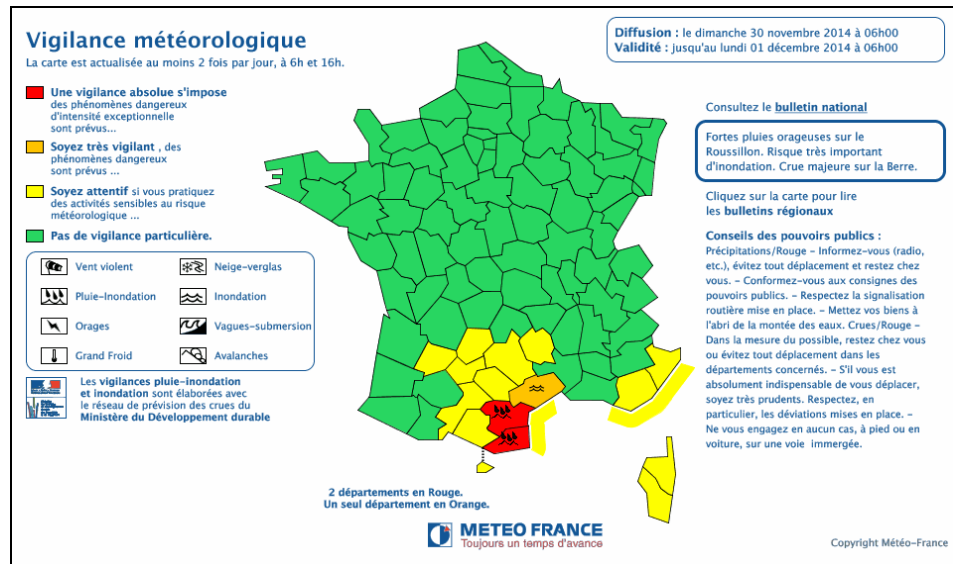


Fig.14: Cooperation areas on tsunami warning system (source IOC ; UNESCO).

- **Coastal flooding :**

SHOM is associated with *Météo-France* in the provision of an alert system against coastal flooding named *Vigilance Vagues Submersion (VVS)*. This allows for a better anticipation of this destructive phenomenon and protection of the populations living in the littoral area of Metropolitan France. An extension of that alert system towards French overseas departments is currently under work.

SHOM provides the tidal predictions, expertise and models in coastal hydrodynamics and real time tide gauge observations as well as information relative to extreme sea levels and bathymetry. *Météo-France*'s marine forecasters examine and compile the data and produce a map depicting the level of coastal flooding threat together with the risk of tall waves for each French metropolitan department.



**Fig.15:** An example of coastal flooding alert (yellow level).  
 Costs subject to alert are underlined according to the alert level (source [www.meteo.fr](http://www.meteo.fr)).

Besides, the HOMONIM Project in partnership between Shom and Météo-France, launched in 2011 aims at improving the VVS alert system through 3 axis:

- Extension of real time sea level observation capability,
- Production of a first range of multi-scale bathymetric digital terrain models, crucial to improve coastal hydrodynamics modeling,
- Improvement of wave and surge modeling with the implementation of new modeling chain based on HYCOM and WAVEWATCH III models.

After a first phase (2011-2015) focused on France mainland coasts, a second phase of that project was initiated at the end of 2015, to end in 2019. One of its main axis consists of completing and improving storm surge forecast capabilities on overseas territories, precisely French Antilles, French Guyana and French overseas Territories of the SouthWest Indian Ocean. This phase includes specific the development of surge and waves modeling configurations on those territories.

- **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.*

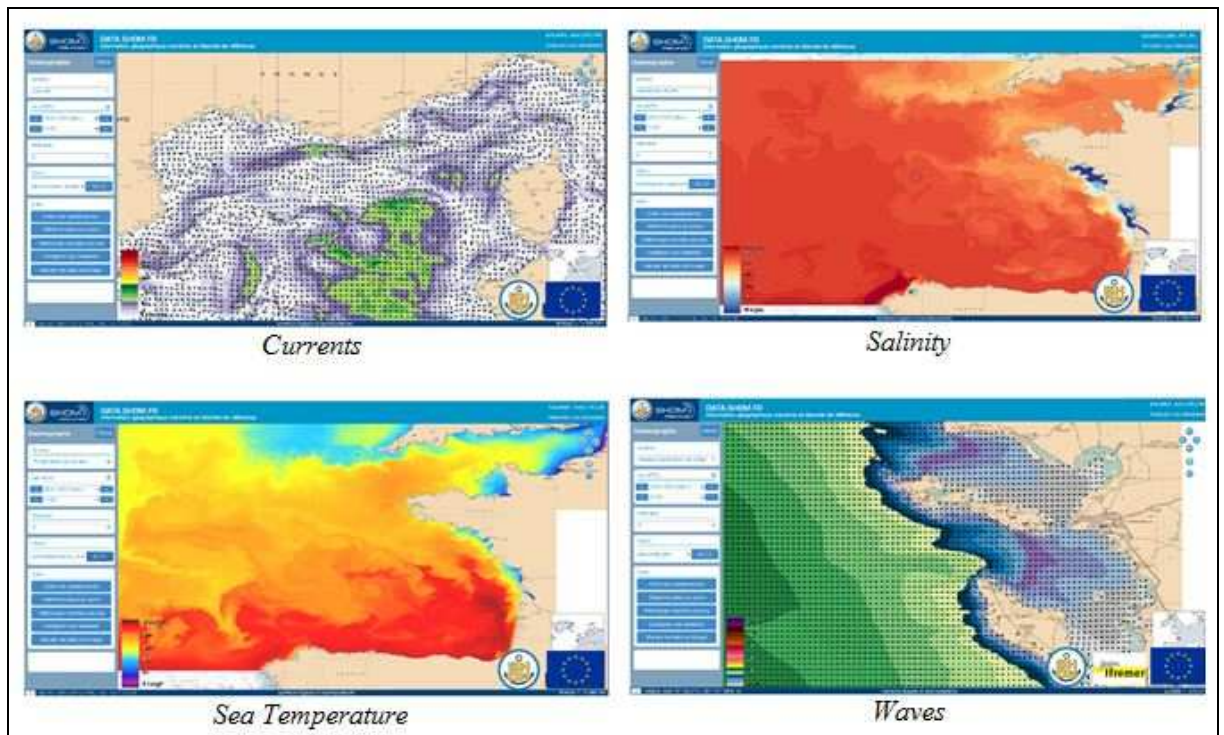


Fig.15: Oceanographic forecasts on SHOM's data portal (data.shom.fr)

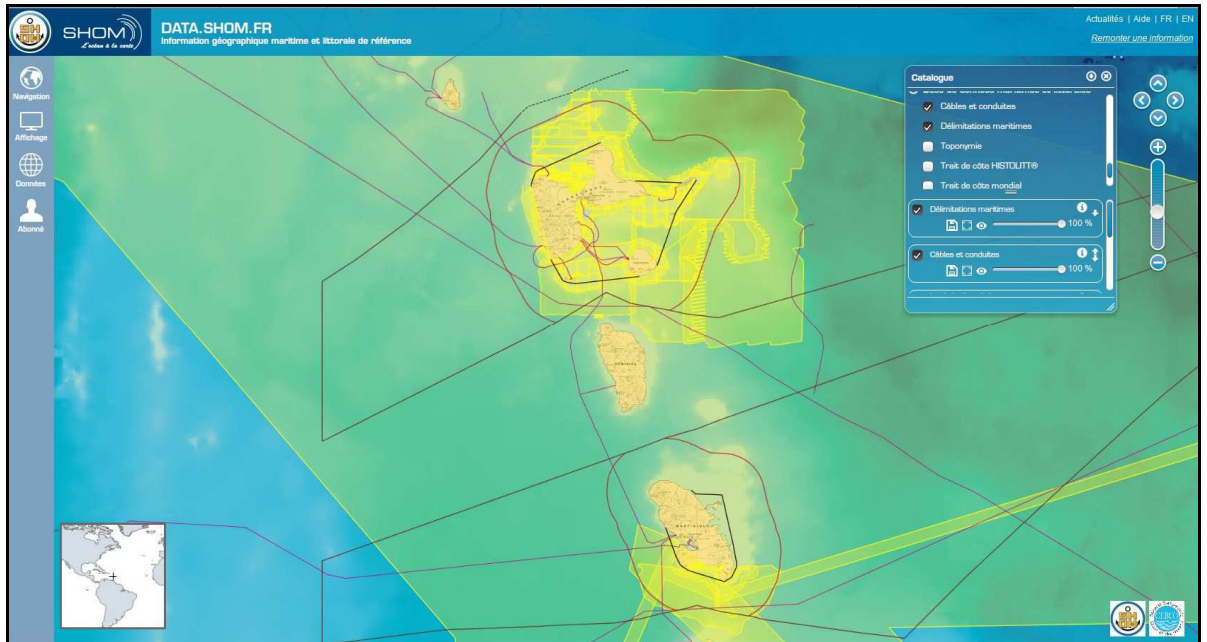


Fig.16: SHOM's data display over French Antilles (source: data.shom.fr)

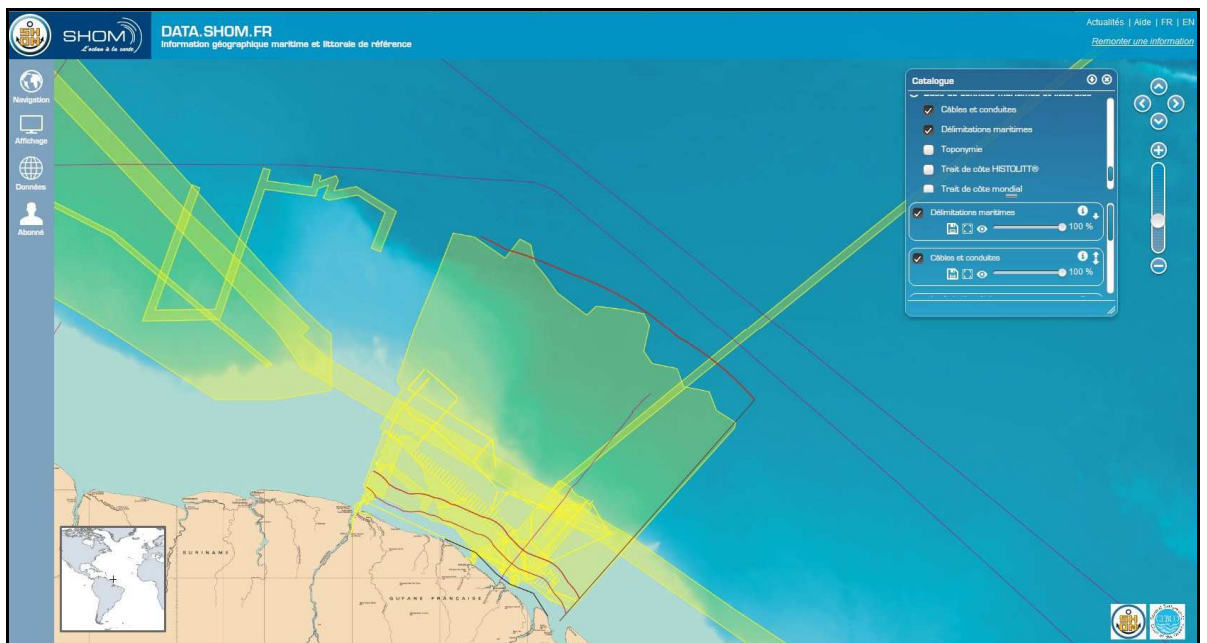


Fig.17: SHOM's data display over French Guyana (source: data.shom.fr)

### 9.8. International

Because of its overseas territories and primary charting responsibilities, France, represented by SHOM, is either full member or observer in 9 hydrographic commissions amongst the 15 organized by the IHO members States.

The detail of SHOM's involvement in 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. Conclusion

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.