

Direction des missions institutionnelles et
des relations internationales
Division Relations extérieures

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SAINT-MANDE, le 13 juillet 2017
N° 010 Shom/DMI/REX/NP

**FRANCE NATIONAL REPORT
TO THE 14TH CONFERENCE OF THE SOUTH AFRICAN AND ISLANDS
HYDROGRAPHIC COMMISSION (SAIHC)**

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 according to a new 4 years target and performance contract covering the 2017-2020 period, which has recently been approved by Shom's Board. In addition to that, survey works are being conducted according to the prioritized 4-years survey plan for waters under French jurisdiction.

2. Surveys

2.1. Coverage of new surveys

Shom has undertaken survey works with the French Navy Survey Vessel BHO *Beautemps-Beaupré* between June and September 2017 in the following French overseas departments & territories: Mayotte, La Réunion, Tromelin and Iles Glorieuses.

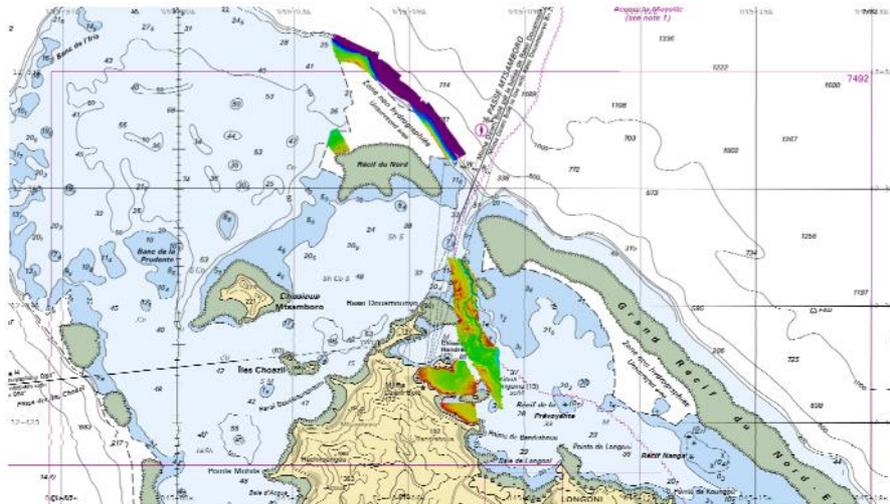


Fig.1: Survey in Mayotte – June 2017 (partial)

More details on the whole campaign will be provided at the next SAIHC conference.

2.2. LIDAR Surveys

LIDAR surveys are achieved within the framework of Litto3D® program. This national programme, based on a partnership between SHOM and the National Geographic Institute (IGN), aims to provide a very high resolution Sea-Land digital terrain model (DTM) of metropolitan and overseas French coasts.

Most of the French overseas coasts in the Indian Ocean within the region have been surveyed: Mayotte, Îles Eparses and La Réunion. Every Litto3D products issued are freely downloadable from SHOM's data portal (data.shom.fr) and from the French Government open platform for public data (data.gouv.fr).

2.3. Shom Survey programme for the region

Survey campaigns are planned by Shom on a regular basis in French overseas territories and areas under French responsibilities to update nautical charts.

Hydrographic vessel *Beautemps-Beaupré* will be deployed in the Indian Ocean in 2019.

3. New charts & updates

With the use of CARIS HPD being fully operational in the production process, SHOM ENC's within the NIOHC region have been updated while being uploaded in CARIS HPD database, including minor changes due to connections of some ENC objects (cartographic objects) with hydrographic objects from the BDGS hydrographic database. These connections allow updating automatically the cartographic products ENC and paper charts.

3.1 ENCs

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On the 13rd of July 2017, SHOM had produced 566 ENC.

In line with the WEND principles, Shom produces its small scale ENC cells as closely as possible to INT chart schemes. The Shom production plan is also compliant with IMO regulations on ECDIS mandatory carriage requirements.

At small and medium scales, the ENC coverage of all vessels categories concerned by mandatory ECDIS carriage rules up to July 2016 in the SAIHC region fulfils SOLAS requirements. The SHOM ENC coverage of the SAIHC area is depicted in the chartlets hereafter.

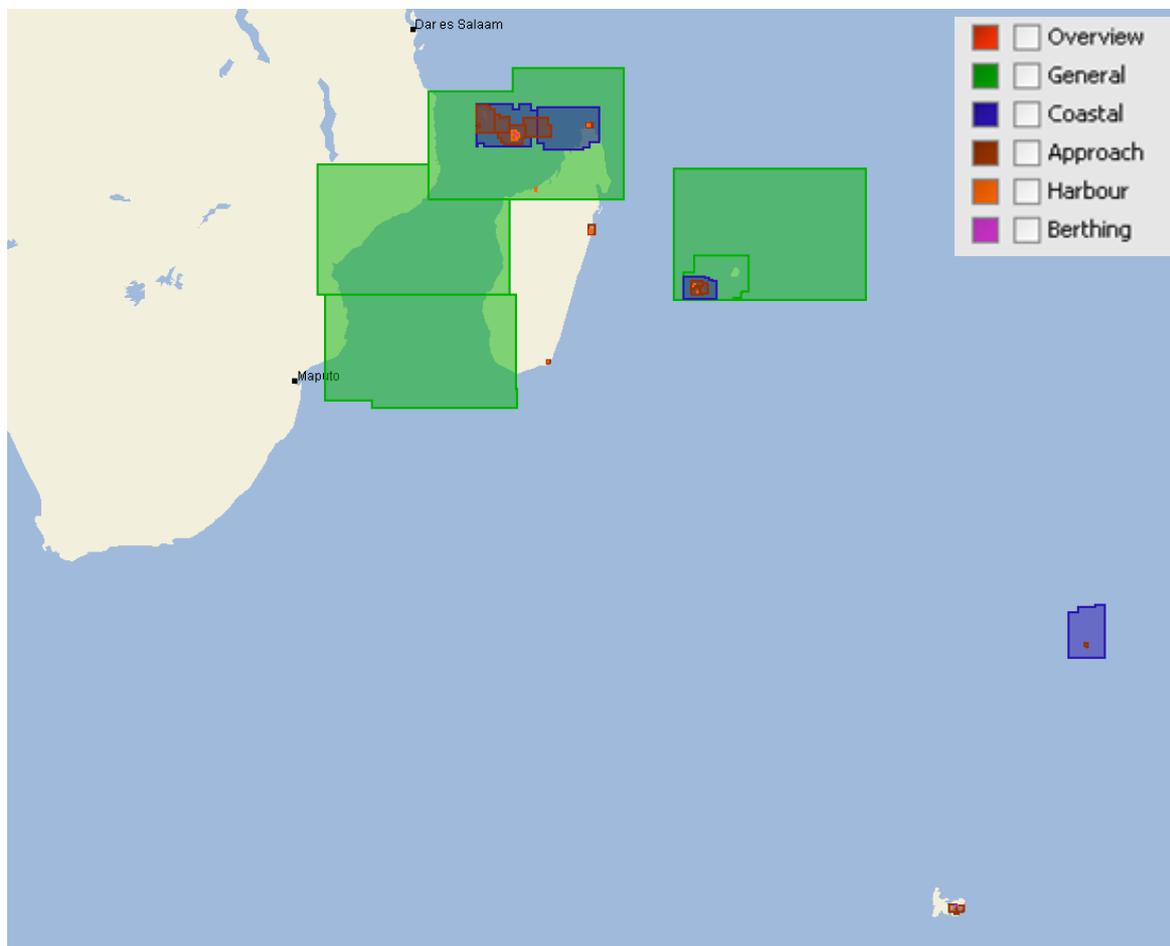


Fig.2: SHOM's ENC production within Region H (source: Primar online catalogue).

Some ENCs were produced since the last conference:

Number	Scale 1:	Title
FR277970	700 000	<i>Partie Nord du Canal du Mozambique</i>
FR277980	700 000	<i>Partie Sud du Canal du Mozambique</i>
FR57685A	8 000	<i>Port de Mahajanga</i>
FR57685A	8 000	<i>Port de Boanamary</i>
FR373500	90 000	<i>Récif du Geysier – Banc de la Zélée</i>

FR574940	22 000	<i>Ile de Mayotte - Partie Ouest, De Chissioua Mbouini à la baie d'Acoua</i>
FR473580	22 000	<i>Iles Kerguelen - Golfe du Morbihan - Partie Est</i>
FR47358A	22 000	<i>Baie Greenland</i>
FR473590	22 000	<i>Iles Kerguelen - Golfe du Morbihan (partie Ouest)</i>
FR57359A	8 000	<i>Pointe Molloy</i>
FR57359B	8 000	<i>Port-aux-Français</i>
FR47170A	22 000	<i>Ile Saint-Paul</i>
FR57495A	12 000	<i>Anjouan - Mouillages de Moutsamoudou et d'Ouani</i>
FR67495B	4 000	<i>Anjouan - Appontement pétrolier d'Ouani</i>
FR67495C	4 000	<i>Anjouan - Port de Moutsamoudou</i>
FR57495D	12 000	<i>Anjouan - Mouillages de Bambao et de Domoni</i>
FR57495E	12 000	<i>Mohéli - Mouillage de Fomboni</i>
FR57495F	8 000	<i>Grande Comore - Mouillage de Moroni</i>

Hereafter are the ENC's planned for 2017-2019:

Number	Scale 1:	Title	Comment
FR476840	45 000	<i>Approches de Mahajanga</i>	Expected in 2017 - INT 7724 Ought to replace GB400701
FR274890	700 000	<i>Approches Sud-Est de Madagascar</i>	Expected in 2017 - INT 7064 Ought to replace GB200760
FR274870	700 000	<i>Approches Nord-Est de Madagascar</i>	INT7062 Ought to replace GB200759
FR57349A	22 000	<i>Ile Tromelin</i>	Expected in 2017.
FR464970	45 000	<i>Ile de la Possession - Île de l'Est</i>	Expected in 2017.
FR56497A	8 000	<i>Ile de la Possession - Baie du Marin - Port Alfred</i>	Expected in 2017.
FR364980	180 000	<i>Iles Crozet</i>	Related to INT 7747. Expected in 2017.
FR46498A	45 000	<i>Ile aux Cochons - côte Est, mouillage de la Meurthe</i>	Related to INT 7747.

			Expected in 2017.
FR47170B	22 000	<i>Ile Amsterdam</i>	Expected in 2017.
FR57170C	12 000	<i>Mouillage de l'île Saint-Paul</i>	Expected in 2017.
FR36643E	90 000	<i>Îles Glorieuses</i>	
FR36643D	90 000	<i>Îles Bassas da India</i>	
FR46643C	45 000	<i>Île Europa</i>	
FR56643B	12 000	<i>Mouillage nord d'Europa</i>	
FR56643A	12 000	<i>Île Juan de Nova</i>	
FR348520	90 000	<i>De la rivière Antsena au Cap Tanjo (Baie de Bombetoka)</i>	Ought to replace GB300701
FR361560	90 000	<i>De l'île Sainte-Marie à Tamatave</i>	Ought to replace GB300678

The status of ENC production in the area is:

Usage Band	Produced Cells	Planned Cells	%
2	5	7	71
3	4	9	44
4	14	19	74
5	12	27	59
6	4		
Total	39	62	63

3.2.ENC Distribution method

All Shom 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 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 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.

Shom charts now include a QR Code to direct access to NTM applicable to that chart. Moreover, all up to date Shom charts are now available by 'Print On Demand' to French navy users.

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The overall planning of SHOM for INT charts production in the region is as follows:

Scale	Produced INT charts	Planned INT charts	%
Small (<1/1 000 000)	4	6	67
Medium	4	7	57
Large (>1/100 000)	4	5	80
Total	12	18	67

Regarding printer nation status, Shom request to the Indian Hydrographic Office to become a printer nation of the INT7739 (IN2514), covering Port Louis and its approaches, is still pending.

3.5.National paper charts

Some charts were produced since the last Conference.

National	INT	New chart (NC) or new edition (NE)	Scale 1:	Title
7685	7725	NC	10 000	Ports de Mahajanga et de Boanamary (Madagascar) <i>Replaces FR6078</i>
7797	7054	NC	1 000 000	Partie Nord du Canal du Mozambique
7798	7053	NC	1 000 000	Partie Sud du Canal du Mozambique
7183	7736	NE	60 000	La Réunion - Partie Nord - De la Pointe des Châteaux à la Pointe de la Rivière du Mât
6497	/	NE	75 000	Ile de la Possession, Ile de l'Est
7171	(7748)	NE	350 000	Approches des îles Saint-Paul et Amsterdam

Besides, the following charts are planned for the 2017-2019 period:

National	INT	New chart (NC) or new edition (NE)	Scale 1:	Title
7684	7724	NC (2017)	50 000	Approches de Mahajanga (Madagascar) <i>Replaces FR6077</i>
7487	7062	NC (2018)	1 000 000	Approches Nord-Est de Madagascar
7489	7064	NC (2017)	1 000 000	Approches Sud-Est de Madagascar
7495	/	NC (2017)	Div.	Ports et mouillages de l'Archipel des Comores <i>Replaces FR4806 and FR3698</i>
7358	/	NE (2017)	35 000	Iles Kerguelen - Golfe du Morbihan - Partie Est
7359	/	NE (2017)	35 000	Iles Kerguelen - Golfe du Morbihan (partie Ouest)

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

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 2 types of licences according to the purpose of use (internal or commercial). These data can be used with GIS or cartographic software for commercial or private purposes. A S-57 licence allows unlimited download of updated versions for 12 months from the date of purchase.

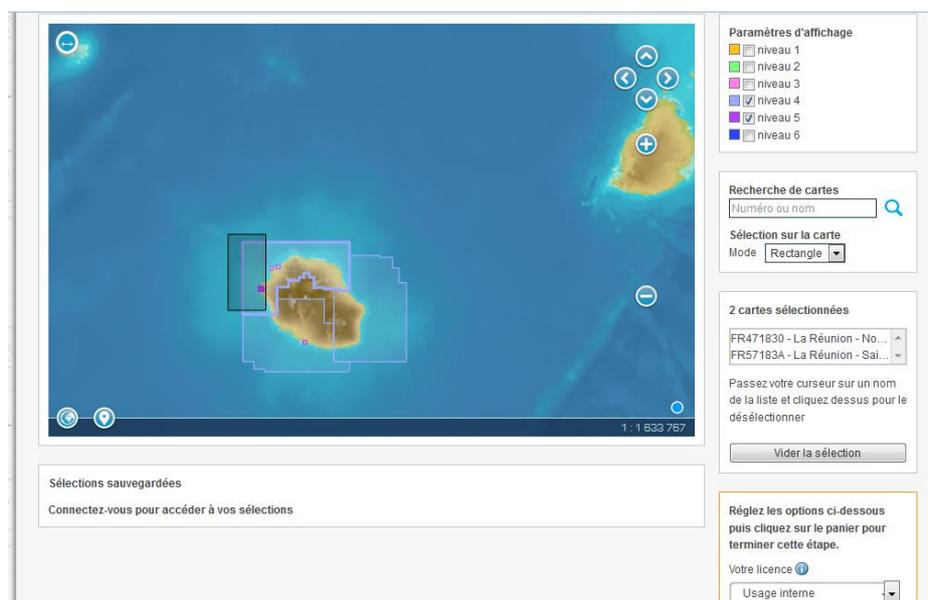


Fig.3: S-57 data purchase on Shom's online store diffusion.shom.fr.

3.7. Problems encountered

NTR.

4. New publications & updates

4.1 New Publications

Since the last conference, the following publications relevant for the region have been issued:

Type	Title
L	LC--FNC : Océan Atlantique (Est) – Océan Indien (Ouest) – Océan Pacifique – Edition 2017
RSX	921-RNC : Stations Radio Maritimes – Volume 1 : Europe – Groenland - Afrique – Asie (Ouest) – Edition 2017
RSX	924-RNC : Radiocommunications maritimes - Système mondial de détresse et de sécurité en mer (SMDSM) – Edition 2016
RSX	961-RNC : Renseignements sur la Sécurité Maritime – Volume 1 : Europe – Groenland - Afrique – Asie (Ouest) – Edition 2017

RSX: Radio stations; L: List of Lights

4.2. Updated publications

NTR.

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4.3. Means of delivery

Since the end of 2016, all nautical publications have been 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.

5.2. Problems encountered

NTR.

6. C-55 Latest update

The last C-55 update by France has been transmitted to the IHB on June 30th 2017. The C-55 charting and surveying status values regarding Region H areas under SHOM responsibility are summed up in the following tables:

Survey Status	Depth < 200m			Depth > 200m		
	A	B	C	A	B	C
Iles Éparses - France (Bassas de India, Europa et Juan de Nova)	2,4	9,1	88,5	0,1	6,6	93,4
Mayotte et Glorieuses – France	2,2	25,5	72,2	0	16,7	83,3
La Réunion et Tromelin – France	35,4	35,5	29,1	0,1	2,2	97,7
Terres Australes françaises (Crozet, Kerguelen, Amsterdam, Saint-Paul)	0	0	100	0	0	100
Comores (Union des)	0,2	15,5	84,3	0	16,1	83,9
Madagascar (République de)	0,1	3,2	96,7	0	1,5	98,5

Charting Status	Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
	A	B	C	A	B	C	A	B	C		
Iles éparses - France (Bassas de India, Europa et Juan de Nova)	100	0	NA	0	0	0	0	0	0	100	100
Mayotte et Glorieuses – France	100	0	100	100	0	100	75	0	75	100	100
La Réunion et Tromelin – France	100	0	NA	100	0	100	100	0	100	100	100
Terres Australes françaises (Crozet, Kerguelen, Amsterdam, Saint-Paul)	100	0	NA	100	0	33,33	56	0	12,5	100	100
Comores (Union des)	100	0	100	100	0	100	20	0	0	100	100
Madagascar (République de)	100	0	33,33	10	0	7,69	60	0	60	100	100

Fig. 3: C-55 values for survey status (top table) and charting status (down table). Updated values are highlighted.

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.

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TRAINING COURSES PROVIDED BY SHOM SCHOOL

Course	Average number of students	Duration	Admission	Curriculum
BS HYDRO*	8 petty officers / 2 foreign military officers	14 months	based on application file	<ul style="list-style-type: none"> maneuver and navigation Training specific course on hydrography and oceanography on board end-study project
C BYSREB-HOM	3 to 5 hydrographers petty officers	9 months	based on application file	<ul style="list-style-type: none"> information technology theoretical and practical training (application to hydrography II) Practical internships in SHOM IT department and survey unit (GHOA)
C SUP HYDRO	2 to 5 hydrographers petty officers	3 months	based on application file	<ul style="list-style-type: none"> advanced technical training on hydrography team management training
NAUTICAL CARTOGRAPHER TRAINING COURSE*	1 to 8 trainees	9 months	based on diplomas or competitive exam	<ul style="list-style-type: none"> general training on hydrography and geosciences specific training on nautical cartography end-study technical project

SHOM school support to ENSTA Bretagne**

Program	Average number of students	Duration	Admission	Curriculum
HYDROGRAPHIC ENGINEER	2 French military engineers and 20 civil students	36 months (+12 months for French military students)	based on diplomas or competitive exam	see www.ensta-bretagne.fr
MASTER ON HYDROGRAPHY	5 French or foreign civilian students	24 months	based on diplomas	see www.ensta-bretagne.fr

Logo ENSTA - Ecole Nationale Supérieure des Techniques Avancées - 195 DNE 02 / Fédération internationale des Sciences - Organisation Hydrographique Internationale - Association cartographique internationale (AIC)
*Recognized training course at category B level by FIG-IHO-ACI International board
 **Recognized training course at category A level by FIG-IHO-ACI International board

Fig.5: Courses and training provided at the Shom hydrographic school (source: shom.fr)

As for the SAIHC region, Shom will provide a French speaking MSI instructor to the next regional MSI workshop that will be held in Cape Town, 5 to 7 September 2017. This will enable Francophone countries of the SAIHC region to be able to take part to this workshop.

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 IHO CB Work Programme

NTR.

8. Oceanographic activities

8.1. GEBCO/IBC's activities

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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. This mission is 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.

Like REFMAR's other partner organizations, Shom contributes by providing data from its own global tidal network, the RONIM network.

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

In October 2016, a team from French mapping agency (IGN), working in collaboration with Shom, performed maintenance and control work on both tide gauge stations at Réunion Islands (Pointe des Galets and Sainte-Marie).



Fig.6: Shom global tidal network, REFMAR (source shom.fr).

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

SHOM L'océan en référence

Espace de Diffusion | Sélection d'un port | Générer une vignette | En savoir plus | EN | FR |

Horaires des marées

Choix du port

Lundi 24 juillet 2017				Mardi 25 juillet 2017			Mercredi 26 juillet 2017		
	Heure	Hauteur	Coefficient	Heure	Hauteur	Coefficient	Heure	Hauteur	Coefficient
PM	01:32	0.89	–	PM	02:13	0.87	PM	02:55	0.84
BM	07:58	0.18	–	BM	08:38	0.20	BM	09:19	0.25
PM	14:27	0.98	–	PM	15:09	0.94	PM	15:52	0.89
BM	20:34	0.33	–	BM	21:14	0.35	BM	21:55	0.38

Fig.7: Tide predictions for Toamasina (Tamatave) available through Shom's web portal (source: maree.shom.fr)

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

- **Tsunami :**

SHOM is maintaining a large real time tide gauge network RONIM, an important tool for coastal operational oceanography, risk assessment, studies on the evolution of the mean sea level, etc. Having tide gauges in Europe and in the French overseas territories, SHOM is contributing to Tsunami warning in Pacific Ocean, Indian Ocean, Caribbean Sea and Mediterranean Sea.

France may also have Navy ships deployed in the NIOHC region, ready to provide support in case of an emergency. France also provides technical support and has a rapid response survey capacity in case of a disaster.

The point of contact at SHOM in case of a 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.

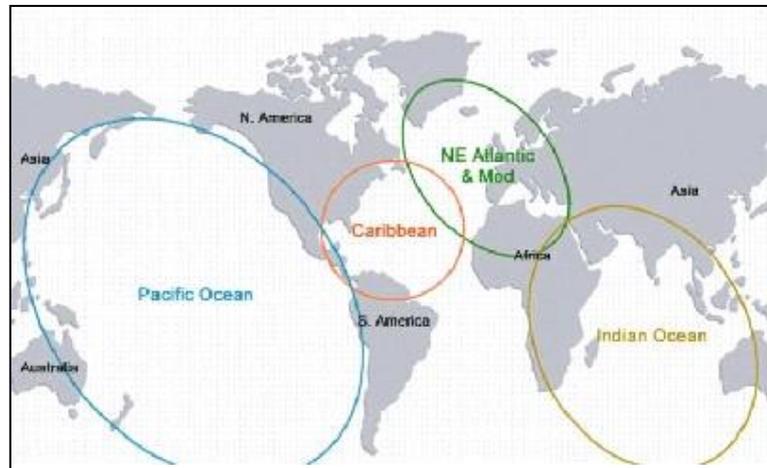


Fig. 8: Cooperation areas on tsunami warning system (source COI ; UNESCO).

- **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.

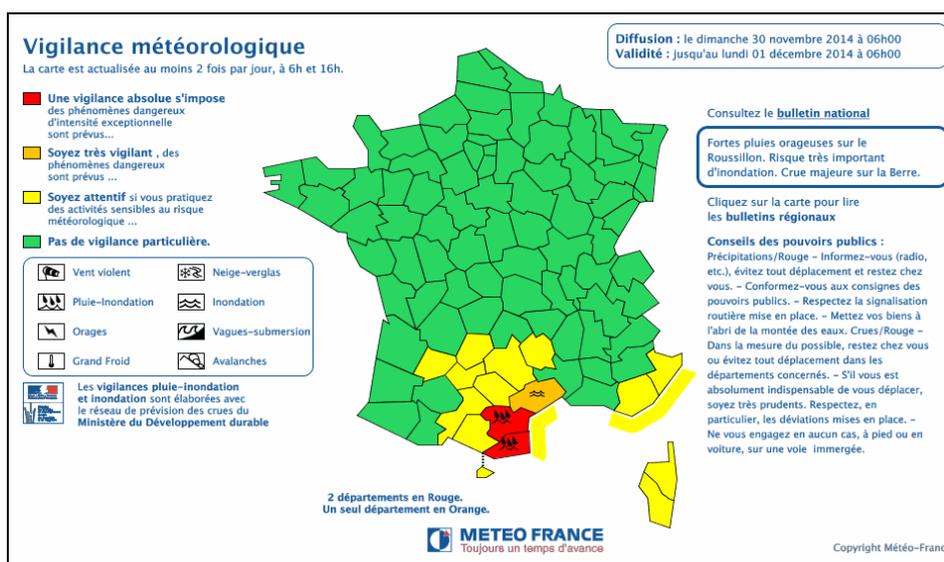


Fig.9: An example of coastal flooding alert (yellow level).

Costs subject to alert are underlined according to the alert level (source 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 French overseas Departments (La Réunion and Mayotte) of the **SouthWest Indian Ocean**. This phase includes specific the development of surge and waves modeling configurations on those territories.

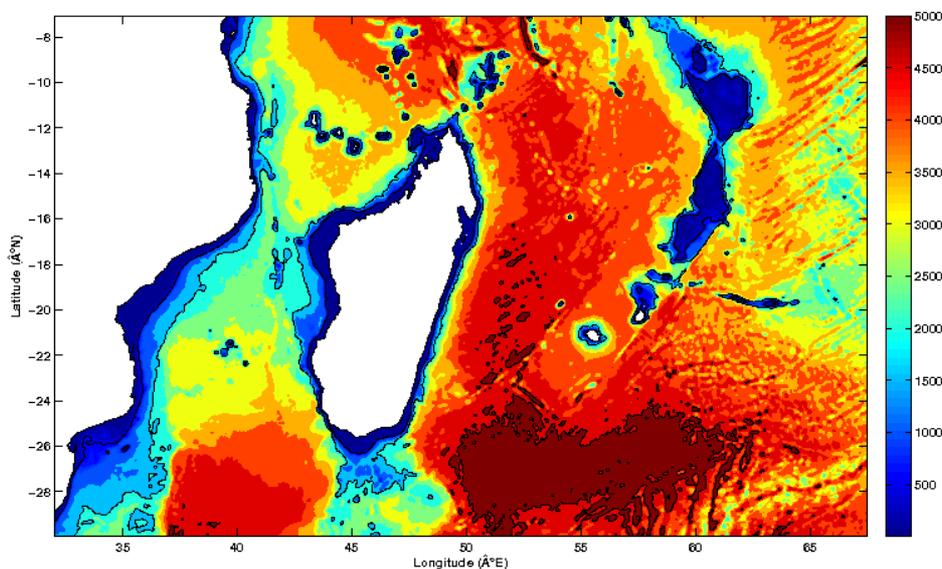


Fig.10: HYCOM 3.2km resolution grid with GEBCO bathymetry used to generate Storm surge and currents forecasts (source HOMONIM project).

- **Oil spills:**

SHOM is an active member of the inter-agency drifting committee which is activated by the maritime prefecture every time there is an oil spill. The POLMAR safety plan for the sea was signed on 23rd November 2004 and aims at enabling France to face in a reactive manor a potential wide spread of marine pollution, by ensuring the efficient coordination of national operations and support from public services.

9.4. Environmental protection

NTR.

9.5. Astronomical observations

NTR.

9.6. Magnetic/Gravity surveys

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9.7. MSDI Progress

New products and services are available on Shom’s maritime and coastal geographic information portal (data.shom.fr). Hereafter are listed some of the latest ones:

- Maritime archives: old charts and survey sheets have been scanned and are now available on the web site,
- New service on oceanography: 4 days forecast (on a harbour or a specific location).

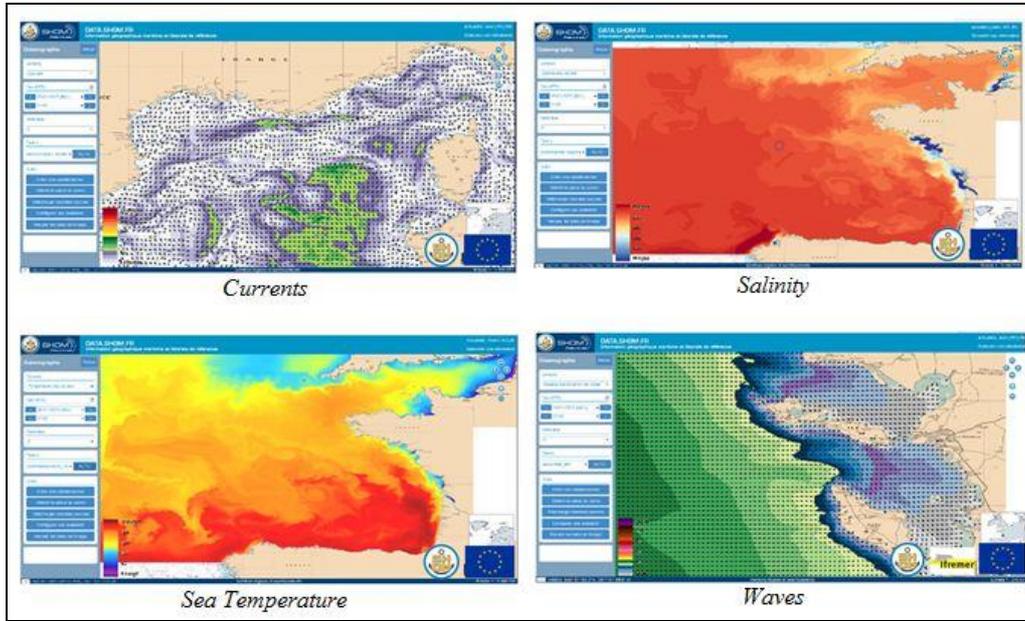


Fig.11: Oceanographic forecasts on Shom’s data portal (data.shom.fr)

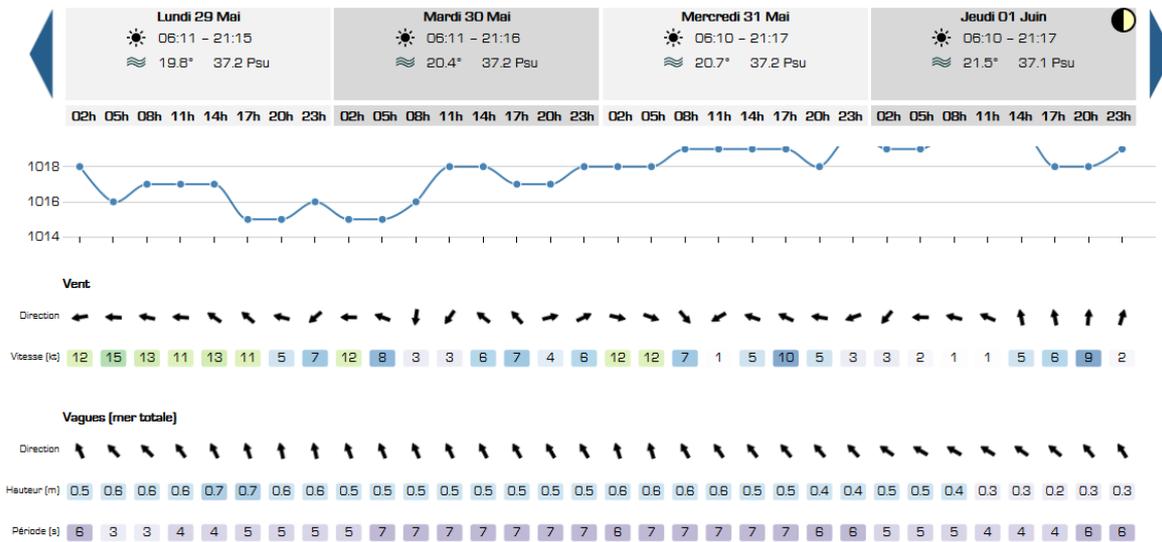


Fig.12: 4 days oceanographic forecast on a specific location (data.shom.fr)

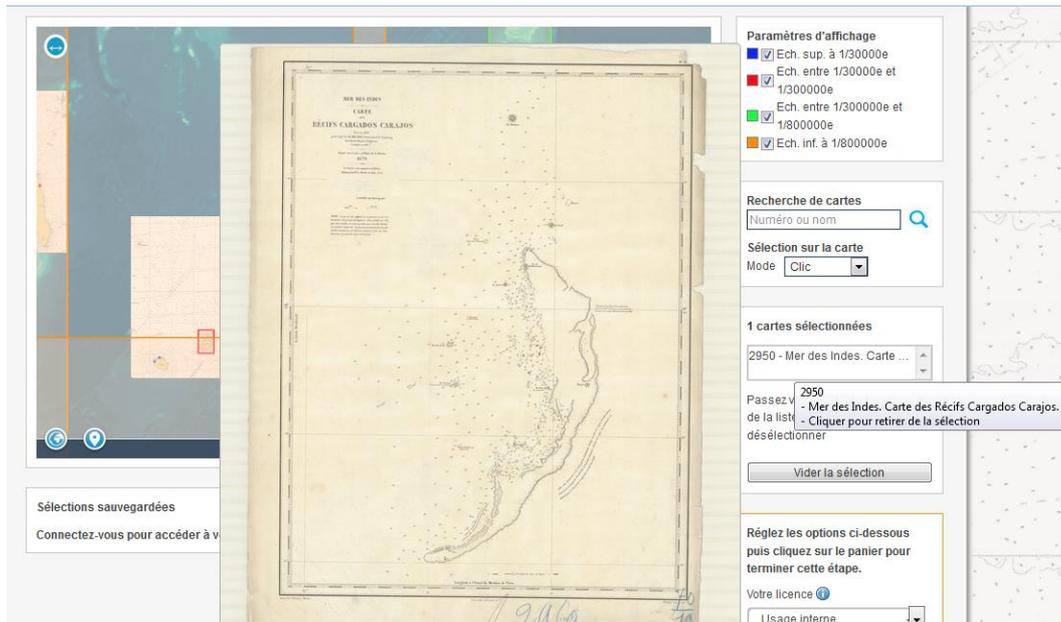


Fig.13: nautical charts and survey minutes (diffusion.shom.fr)

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.*

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 (<http://www.shom.fr/les-services-en-ligne/portail-datashomfr/>).

9.8. International

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 (former CPSCWG)
ENCWG		✓	ENC Working Group (former TSMADWG/DIPWG)
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, 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
S100WG		✓	S-100 Working Group (former TSMADWG/DIPWG)
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 (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

In line with the IHO Capacity Building Strategy, France supports Regional Hydrographic Commissions in considering larger capacity building projects opportunities, including the use of new technologies.

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