SERVICE HYDROGRAPHIQUE
ET OCEANOGRAPHIQUE
DE LA MARINE

DIRECTION DES MISSIONS
INSTITUTIONNELLES ET DES
RELATIONS INTERNATIONALES

Dossier suivi par
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FRENCH NATIONAL REPORT
TO THE 16TH MEETING OF THE NORTH INDIAN OCEAN 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 France's National Maritime Strategy and Defence Policy. Survey works are being conducted according to the prioritized 4-years survey plan for all the waters under French jurisdiction.

2. Surveys

2.1. Coverage of new surveys

Since the last conference, no new surveys were performed in the region by SHOM.

2.2. New technologies and /or equipment

NTR.

2.3. New ships

NTR.

2.4. Problems encountered

NTR.

3. New charts & updates

With the use of CARIS HPD being fully operational in the production process, SHOM ENCs 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

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connections are important for the production works as they allow updating automatically the cartographic products ENC and paper charts.

3.1. ENCs

SHOM's collection of ENCs has now reached the number of 468 of which 5 cells within that region. In line with the WEND recommendations and guidelines, France produces its small scale ENC cells as closely as possible to INT chart schemes.

Except for editions due to the migration into HPD, neither new cells nor new editions have been produced since the last conference.

The status of ENC production in the area is described by the following figures:

Usage Band	Produced Cells	Planned Cells	%
1	0	0	N/A
2	1	1	100
3	2	2	100
4	1	2	50
5	1	8	12,5
6	0		
Total	5	13	38

Fig.1: French ENC production overview in the NIOHC region.

The eight planned cells to be produced are listed below:

- Mouillage de Tadjoura (FR57519A)
- Mouillage des Boutres (FR57519B)
- Port d'Obock (FR57519C)
- Îles Seba (FR463260)
- Mouillage du Lac Salé (FR547921)
- Mouillage de l'île du Diable (FR547922)
- Mouillage de Khor Ambadu (FR547923)
- Mouillage de l'Etoile (FR547924)

Following is an extract of the online PRIMAR catalogue http://www.primar.org regarding the French ENCs available in the NIOHC region:

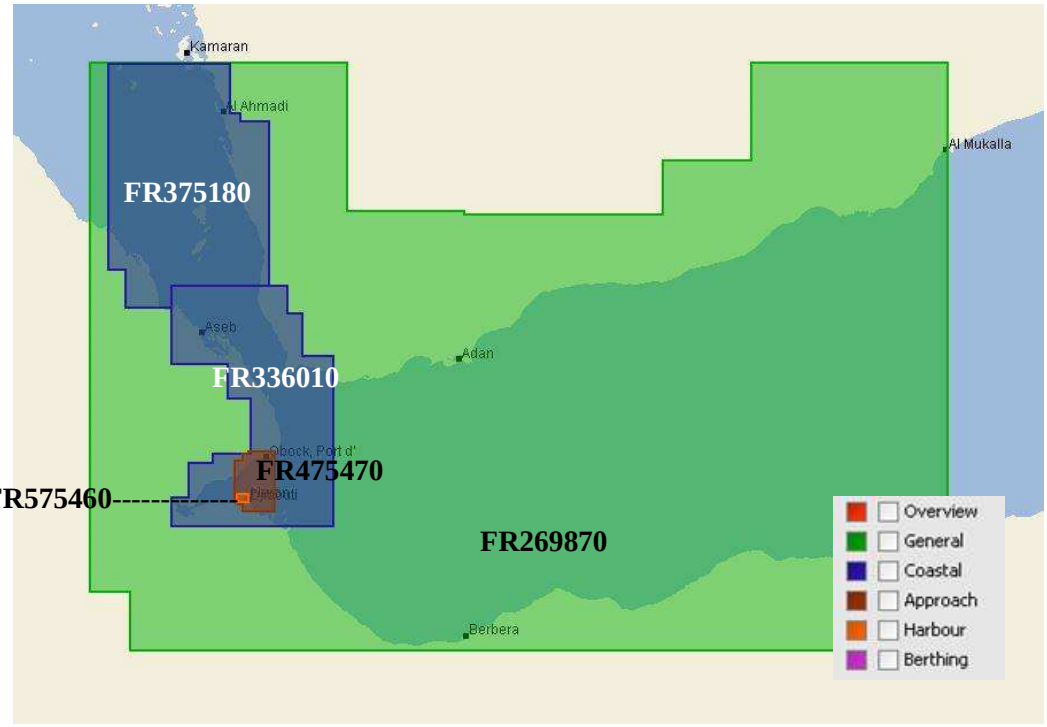

Fig.2: French ENC cells with the NIOHC region (source: www.primar.org).

3.2. ENC Distribution method

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

3.3. RNCs

NTR.

3.4. INT charts

French 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 Defence users.

All INT charts under responsibility of SHOM in the region have all been produced, as detailed in the following table:

Scale	Produced INT charts	Planned INT charts	%
Small (<1/1 000 000)	0	0	N/A
Medium	3	3	100
Large (>1/100 000)	2	2	100
Total	5	5	100

Fig.3: French ENC production overview in the NIOHC region.

3.5. National paper charts

No national chart has been produced since the last conference, and none is planned for 2016.

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 license allows unlimited download of updated versions for 12 months from the date of purchase.

3.7. Problems encountered

NTR.

4. New publications & updates

4.1. New Publications

NTR.

4.2. Updated publications

Since the last NIOHC conference, new editions have been issued for the following publications:

- Livre des feux et signaux de brume LC : Océan Atlantique (Est) – Océan Indien (Ouest) – Océan Pacifique (2015) ;
- Radionavigation maritime (2015) ;
- Radiocommunications maritimes, volume 2 : Afrique – Asie – Australasie (2015) ;
- Stations radio-météorologiques, volume 1 : Europe, Afrique et Asie (2015).

4.3. Means of delivery

SHOM continues to increase the production of its digital nautical publications. At the end of 2015, 86 % of SHOM's nautical publications were available in digital format (weekly updated pdf files) on its online store diffusion.shom.fr.

4.4. Problems encountered

NTR.

5. MSI Existing infrastructure for transmission

5.1. New infrastructure in accordance with GMDSS Master Plan

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

5.2. New infrastructure in accordance with GMDSS Master Plan

NTR.

5.3. Problems encountered

NTR.

6. C-55 Latest update

The C-55 database for French areas of responsibilities is updated by SHOM on a yearly basis. The last C-55 update by France has been transmitted to the IHB on August 28th 2015. The C-55 charting and surveying status values regarding Region J under SHOM responsibility are summed up in the following table (changes from the last update are highlighted in red):

Survey status		Depth < 200m			Depth > 200m		
		A	B	C	A	B	C
J	Djibouti	25.5	15.5	59	71.4	0	28.6

Charting status		Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
		A	B	C	A	B	C	A	B	C		
J	Djibouti	100	0	NA	100	0	100	81	0	50	100	100

Fig. 4: C-55 updated values for survey status (top table) and charting status (down table)

7. Capacity Building offer of and/or demand for Capacity Building

7.1. Training received, needed, offered

Initial training capabilities provided by SHOM, described hereunder, are also presented in its annual report available on www.shom.fr. It includes the following FIG-IHO-ACI courses: category A & B for hydrographic surveyors, category B for nautical cartographers courses.

Fig.5: Courses and training provided at the SHOM hydrographic school.

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 French national coordinator and reference authority for the observation of the sea level, managing and issuing the resulting data. Besides, SHOM manages its own tidal network named 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.

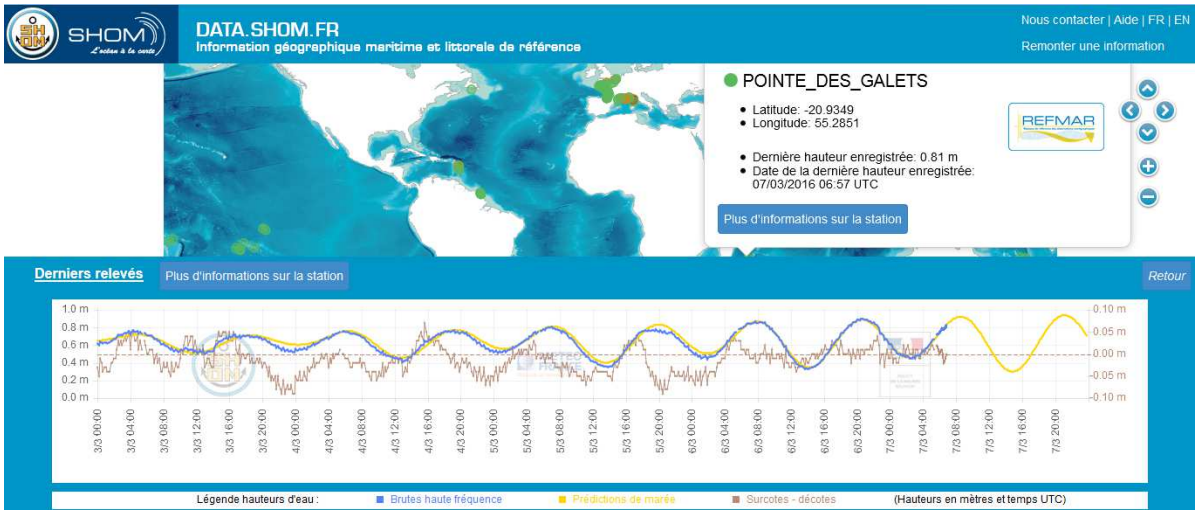

Fig.6: : Real time measurements from REFMAR tidal network now available on SHOM's web portal with tidal prediction and computed surges (source: data.shom.fr)

In February 2016, SHOM has organized, in partnership with UNESCO's 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.

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 maintains its large real time tide gauge network RONIM as 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 systems in Pacific Ocean, Indian Ocean, Caribbean Sea and Mediterranean Sea.
France has Navy ships in the NIOHC 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, head of the maritime safety information division. His division can be reached 24/7 by fax +33 298 221 665 or email coord.navarea2@shom.fr

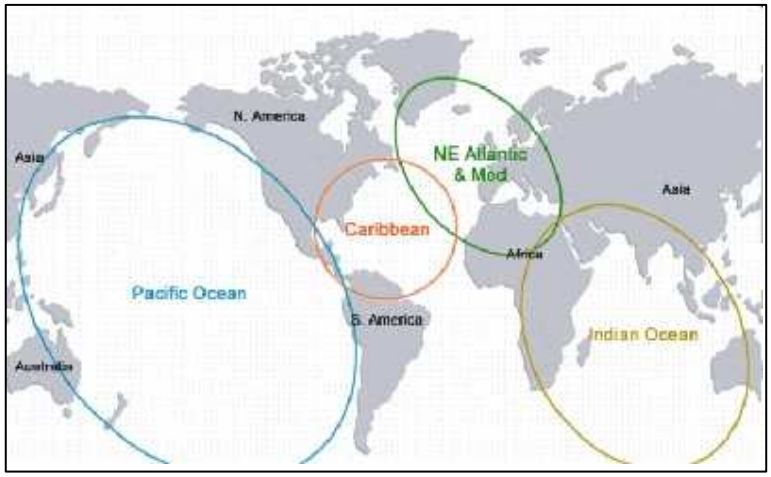

Fig.7: Cooperation areas on tsunami warning system (source COI ; UNESCO).

- **Coastal flooding**

SHOM is associated with Météo-France in the provision of an alert system against coastal flooding named Vigilance Vagues Submersion. This allows for a better anticipation of this destructive phenomenon and protection of the populations living in the littoral area of Metropolitan France.

In that scope, SHOM provides Météo-France with tidal predictions, expertise and numerical models in coastal hydrodynamics, and real time tide gauge observations as well as information relative to records of 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 large waves for each French metropolitan department. The system is progressively extended to overseas departments.

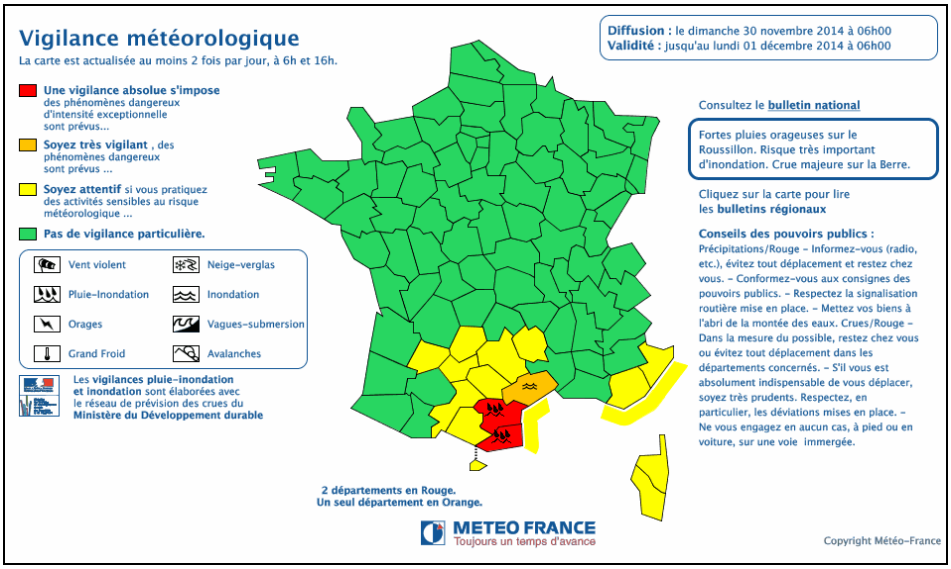

Fig.8: An example of coastal flooding alert over Mediterranean costs (yellow level). Costs subject to alert are underlined according to the alert level (source www.meteo.fr).

- **Oil spills**

In case of an important oil spill, SHOM is a member of the "drift experts committee" in charge of assessing the spill trajectory, and provide its capabilities in observing and modelling the surface currents.

9.4. Environmental protection

SHOM is a contributor (lead for descriptors "Hydrography" and "Energy") to the assessments undertaken to comply with the European Union "Maritime Strategy Framework Directive" fostering a good environmental status of the waters of the Union.

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, further developments have been implemented with new online services data layers on a regular basis. Hereafter are listed the some of the latest ones:

- An advanced tidal prediction online service to generate tidal predictions at any point, even from external harmonic constants and to perform harmonic analysis of your own observation dataset.
- http://data.shom.fr/#donnees/refmar, a new service to visualize and download tide gauge data via OGC's Sensor Observation Service.
- New medium (100m) and high (20-10m) resolution DEM under OpenData License; New LIDAR coastal DEM.
- Updated Baselines layer.

- Vertical reference surface layers generated from geoid/spheroid separation model.

Evolutions can be followed via SHOM's Twitter account (*@shom-fr*),

9.8. International

Because of its overseas departments and 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
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		✓	Wold-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

One of the outcomes of the 13th Conference of Capacity Building Sub-Committee is to encourage Regional Hydrographic Commissions to consider larger capacity building projects opportunities, and to think about perspectives on that matter. France is fully supportive to that approach.