REPORT

Direction des missions institutionnelles et des
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NATIONAL REPORT FROM FRANCE TO THE 18TH CONFERENCE OF THE NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION (NIOHC)

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 & Littoral Strategy and the Strategic Review of Defence and National Security according to a new 4 years target and performance contract covering the 2017-2020 period, which has been approved one year ago by Shom's Board.

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

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

2. Surveys

2.1. Coverage of new surveys

NTR. Since the previous NIOHC conference in July 2017, SHOM has not conducted any new survey within the NIOHC region.

2.2. LIDAR Surveys

NTR.

2.3. Shom's survey programme for the region

Survey campaigns are planned by Shom on a regular basis in Djibouti and within the Bab-el-Mandeb Strait to improve the navigational safety. Their achievement level depends on the authorizations received from the concerned Coastal States. Next survey within NIOHC area are planned in 2019 in Djibouti

2.4. New ships

Mid-life upgrade of BHO *Beautemps-Beaupré* has been conducted (between end 2017 and beginning 2018). During dry dock the following hydro-oceanographic systems have been installed: EM712 0,5x1° multibeam echo sounder, SBP27 sub bottom profiler and EA640 single beam echo sounder from Kongsberg Maritime, POSIDONIA-2 deep water & long range USBL system and HYDRINS inertial navigation system from iXblue, Ocean Surveyors 150kHz and 38 kHz vessel mounted ADCP and RapidCast profiling system from Teledyne RDI, SBE21 thermosalinograph and SBE38 temperature sensor from Seabird, MK21 Ethernet data acquisition system from LM Sippican KSS32M marine gravity meter from BGGS, CG5 portable gravity meter from MicroG Lacoste, ACXC80 video monitoring system from Black Box, a complete network system from Hewlett Packard and Quantum, a deployment system for the Kullenberg piston corer from CNNMCO, Bretagne Hydraulique and ENAG.
After sea-trials in February 2018, BHO *Beautemps-Beaupré* is operational to conduct surveys.

2.5. Problems encountered

Difficulties have been encountered to contact Eritrean to seek permission to conduct marine scientific research within their territorial waters.

3. New charts & updates

3.1. ENCs

As of 1st February 2018, SHOM has produced some 600 ENCs, of which 5 ENCs within region J.

The full collection should eventually reach a figure of the order of 900 ENCs, with an approximate rate of 50 new cells per year.

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

No new cells nor new editions have been produced since the last conference.

The current status of ENC production in the region J is detailed in the table below:

Usage Band	Produced Cells	Planned Cells	Percentage
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%

The eight planned cells to be produced in that region are listed below, they will be produced no sooner than 2020:

- 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 Ambado (FR547923)
- Mouillage de l'Etoile (FR547924)

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

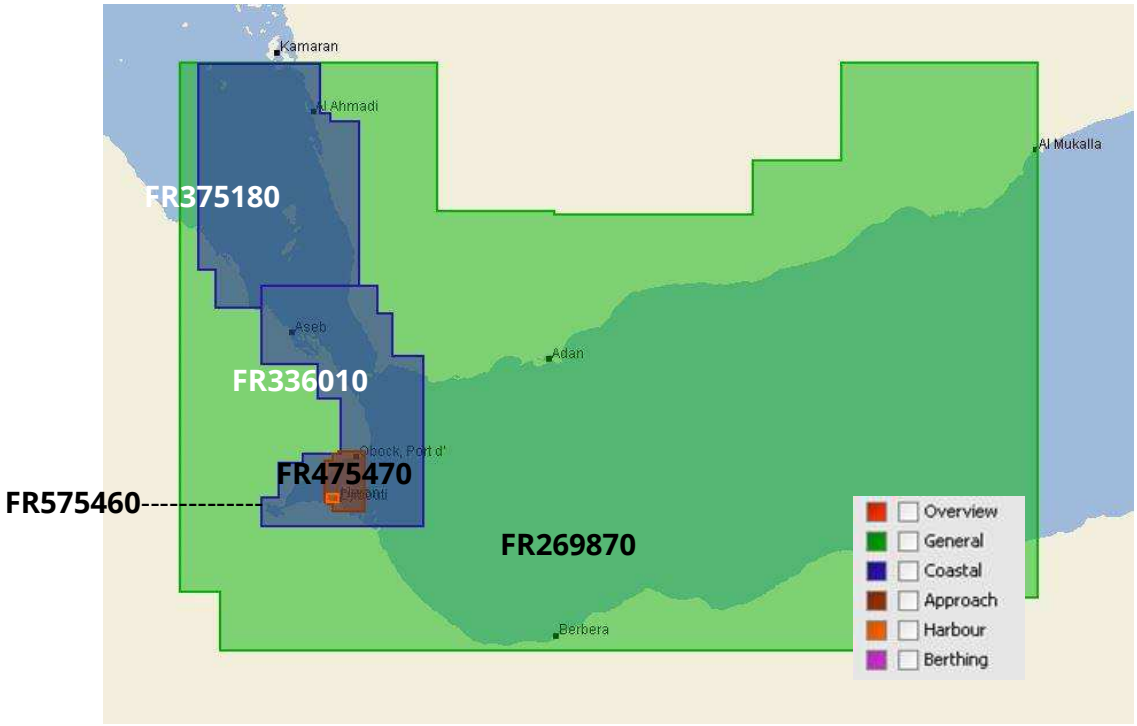


Fig.1: French ENC cells within the NIOHC region (source: www.primar.org).

3.2. ENC Distribution method

All French ENCs (S-63 encrypted format) are distributed to End User Service Providers by PRIMAR RENC. FR is providing 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 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'.

All INT charts under responsibility of SHOM in the region have 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

3.5. National paper charts

No national chart has been produced since the last conference, and none is planned for 2018-2019.

2 new charts are currently designed to cover the western part of the Gulf of Tadjoura and should be produced in 2021:

- FR7848 – Ouest du golfe de Tadjoura
- FR7849 – Ports du golfe de Tadjoura

These future charts may be submitted later as new INT charts to the NIOHC ICCWG.

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

Shom provides all its marine charts in GeoTiff format (update weekly) and in S-57 format when available. These digital marine charts are available through Shom's online store http://diffusion.shom.fr under various licenses 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.

3.7. Problems encountered

NTR.

4. New publications & updates

4.1 New Publications

Since the last NIOHC 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 (Updated publication - 2017) ;
- Radionavigation maritime (91 – Updated publication - 2017) ;
- Stations radio maritimes : Europe – Groenland – Afrique - Asie (Ouest) (92.1 – Updated publication - 2017) ;
- Renseignements sur la sécurité maritime : Europe – Groenland – Afrique - Asie (Ouest) (96.1 – Updated publication - 2017).

4.2. Updated publications

NTR.

4.3. Means of delivery

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 since 2017, new editions of nearly all publications are digital only.

4.4. Problems encountered

NTR.

5. MSI

5.1. Existing infrastructure for transmission

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

Previous 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 J area under Shom responsibility are summed up in the following tables:

Survey Status Updated January 2018		Depth < 200m			Depth > 200m		
		A	B	C	A	B	C
J	Djibouti	11.76 %	46.28 %	41.96 %	92.16 %	0	7.84 %

Charting Status Updated Jun 2017		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

C-55 values for survey status (top table) and charting status (down table). Updated values are highlighted in red.

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-OHI-ACI courses: category B for hydrographic surveyors and category B for nautical cartographers. So far, those courses are provided in French and are open to francophone foreign applicants (training offer: http://www.shom.fr/fileadmin/data/DRH/FOR/Ecole/Catalogue_de_formation/2017-2018/catalogue_formations_2017-2018_WEB.pdf / Modalities: drh-for-eco@shom.fr).

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

Fig.2: Courses and training provided at the Shom hydrographic school (source: shom.fr)

Within the Eastern Atlantic Hydrographic Commission capacity building work programme, Shom has developed a maritime safety information e-learning course (http://rsm-msi.org/), available in French for the moment (will be translated in English in 2018).

One petty officer from Indonesia (PUSHIDROSAL) is currently taking the Shom Cat. B course in hydrography in Brest, another will take the next session (Sept. 2018 to July 2019). One other student from Indonesia will take the Cat. B course in nautical cartography in Brest (Sept. 2018 – May 2019).

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.

Within the NIOHC area, a bilateral arrangement of this kind is concluded between France and the Republic of Djibouti.

An arrangement for the exchange and reproduction of nautical products, in accordance with IHO Resolution 7/1919 as amended (former A3.4) has been concluded with the National Hydrographic Office of India (INHO) on March 8th 2018.

7.3. Definition of bids to IHO CB Work Programme

NTR.

8. Oceanographic activities

8.1. GEBCO/IBC's activities

NTR.

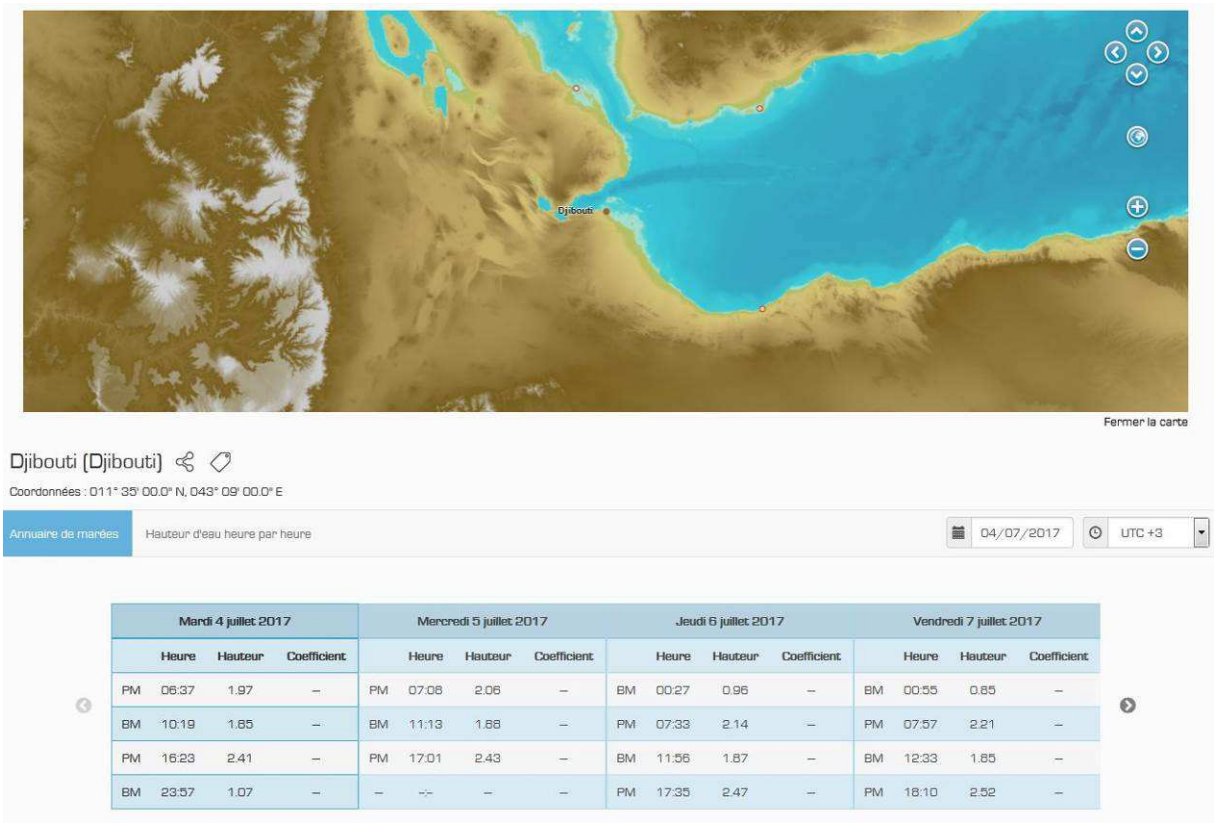
8.2. Tide gauge network

Shom is the national coordinator and reference authority for the observation of the sea level, managing and issuing the resulting data. These missions are carried out under the REFMAR programme. All real time and processed tide gauge measurements collected under that programme are 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.

Fig.3: Shom global tidal network, REFMAR (source shom.fr).

Shom's tidal predictions are available through a web service named maree.shom.fr. This service provides free access of one year of tidal predictions from over 1,000 harbours worldwide.



Mardi 4 juillet 2017				Mercredi 5 juillet 2017				Jeudi 6 juillet 2017				Vendredi 7 juillet 2017			
	Heure	Hauteur	Coefficient		Heure	Hauteur	Coefficient		Heure	Hauteur	Coefficient		Heure	Hauteur	Coefficient
PM	06:37	1.97	–	PM	07:08	2.06	–	BM	00:27	0.96	–	BM	00:55	0.85	–
BM	10:19	1.85	–	BM	11:13	1.88	–	PM	07:33	2.14	–	PM	07:57	2.21	–
PM	16:23	2.41	–	PM	17:01	2.43	–	BM	11:56	1.87	–	BM	12:33	1.85	–
BM	23:57	1.07	–	–	-:-	–	–	PM	17:35	2.47	–	PM	18:10	2.52	–

Fig.4: Tide predictions for Djibouti 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. Participation in IHO Working Groups

See §9.9 International.

9.2. Meteorological data collection

NTR.

9.3. Geospatial studies

NTR.

9.4. Disaster prevention

France may have 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 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.

- **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.

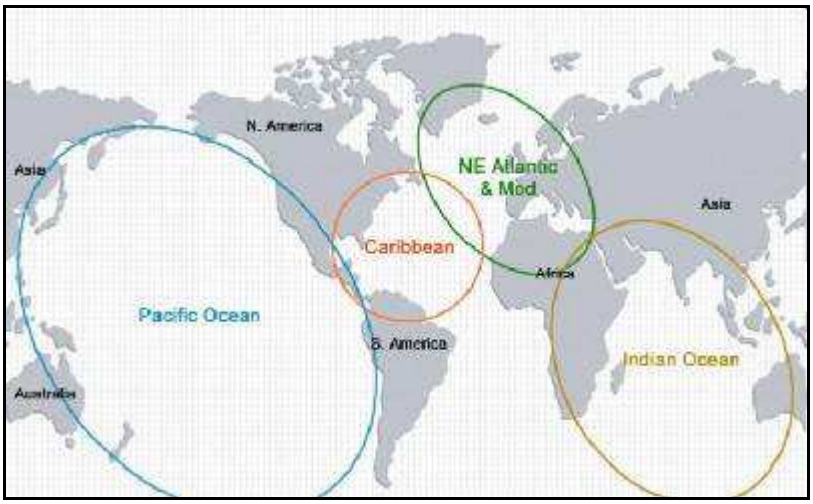


Fig.5: Cooperation areas on tsunami warning system (source COI; UNESCO).

- **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.

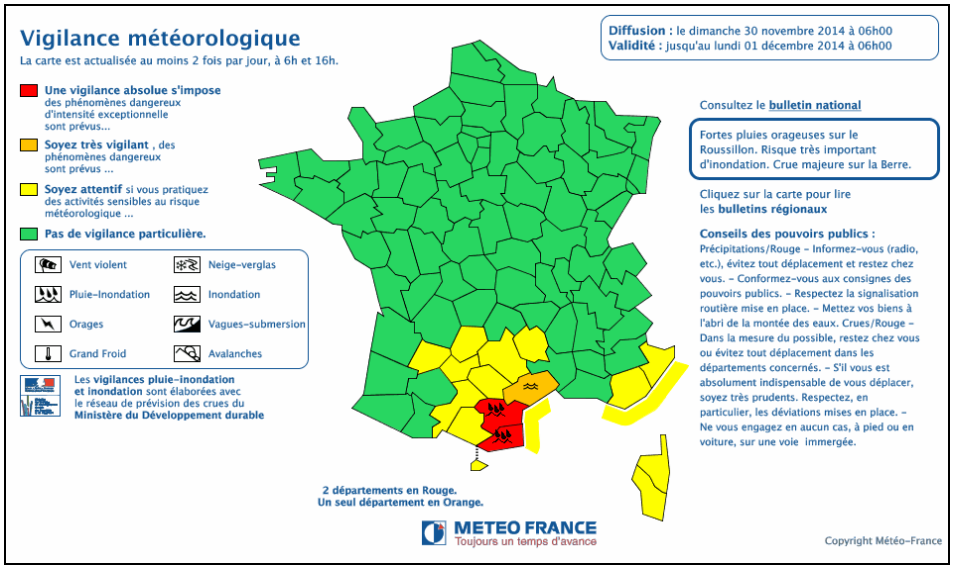


Fig.6: An example of coastal flooding alert (yellow level).
Costs subject to alert are underlined according to the alert level (source www.meteo.fr).

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 Territories of the **SouthWest Indian Ocean**. This phase includes specific development of surge and waves modeling configurations on those territories.

- **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.

9.5. Environmental protection

NTR.

9.6. Astronomical observations

NTR.

9.7. Magnetic/Gravity surveys

NTR.

9.8. 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 some of the latest evolutions:

- Improved content for oceanographic data : finer description of swell characteristics, automatic and tailored oceanographic report
- Improved cartographic tools
- Timeline function : time synchronisation of layers to produce animated features
- New layer on administrative limits
- New bathymetric terrain models
- Maritime archives: old charts and survey sheets have been scanned and are now available on the web site

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

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

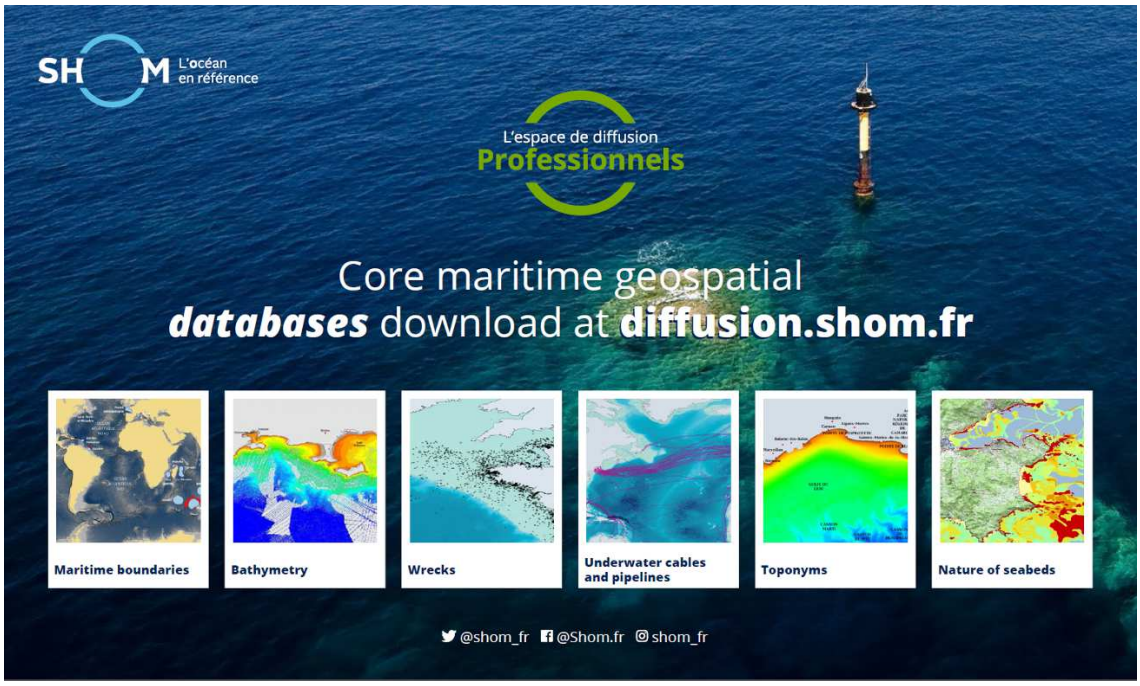


Fig.7: open data (diffusion.shom.fr)

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:

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

Not all these information are available on NIOHC region.

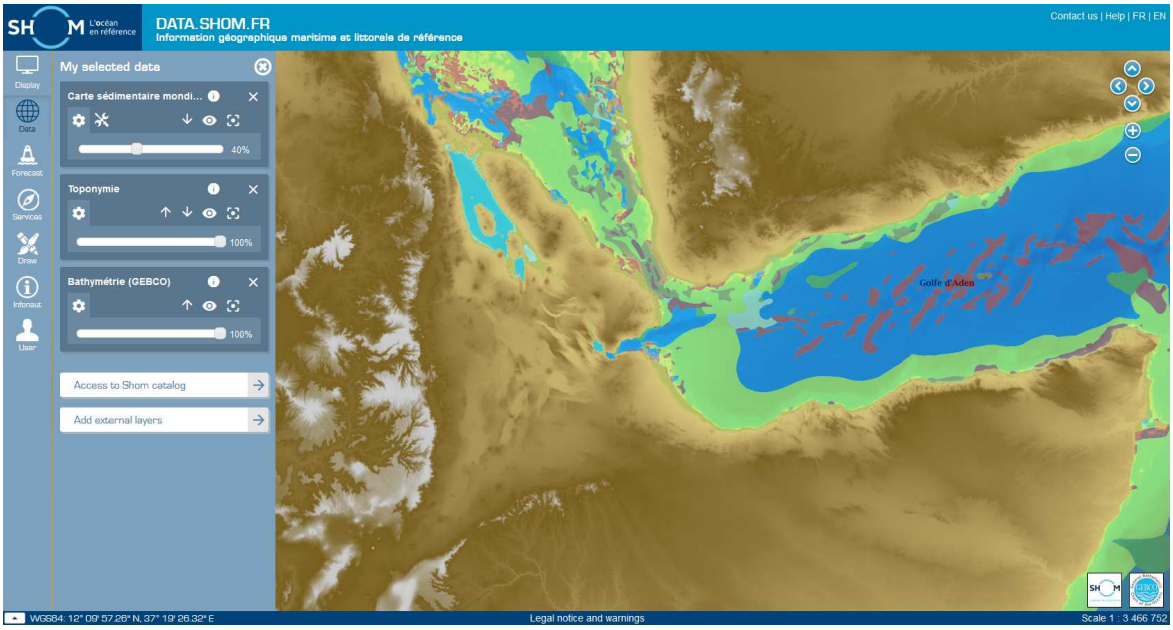


Fig.8: sediment types and Toponyms (data.shom.fr)

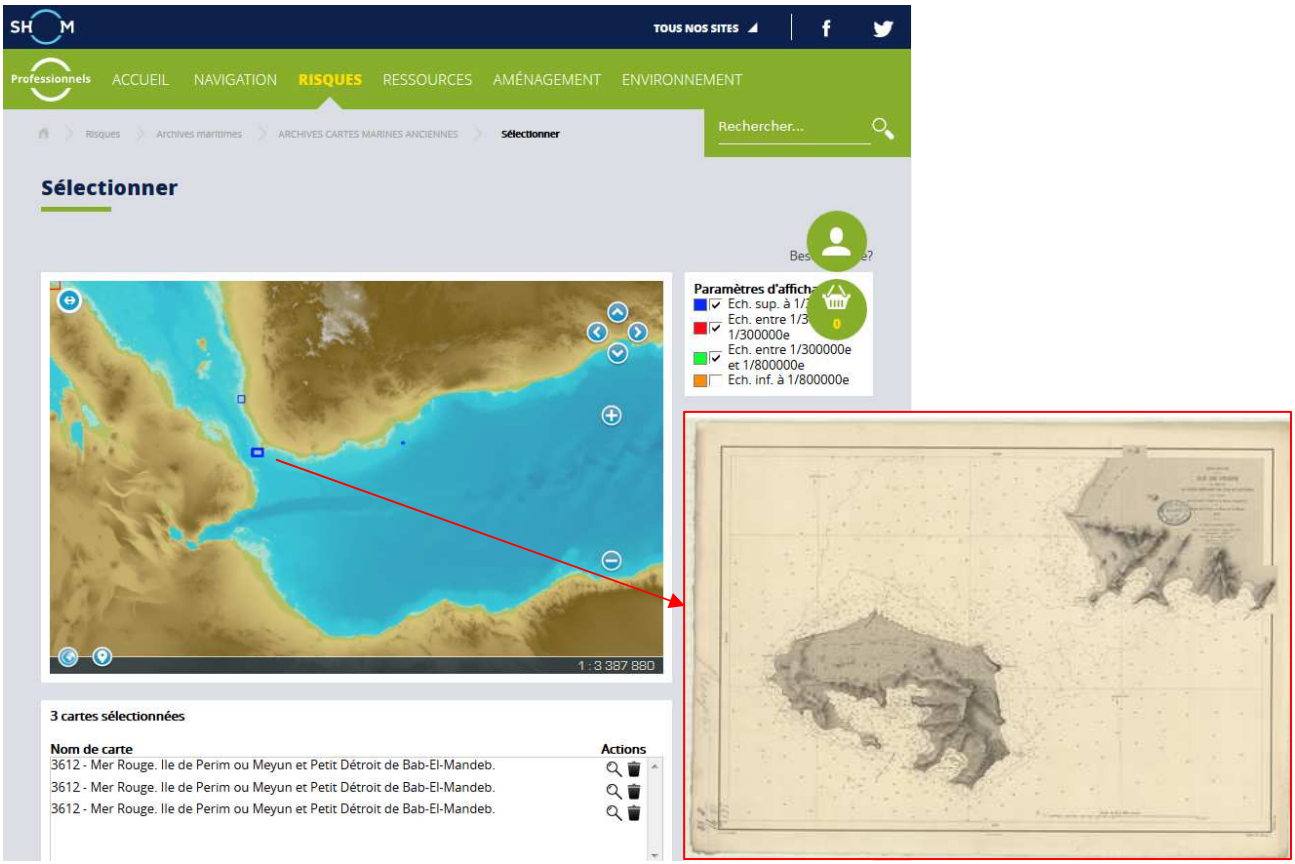


Fig.9: Archives: nautical charts and survey fair sheets (diffusion.shom.fr)

9.9. 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		✓	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

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.

Destinataire	:	OHI
Copies intérieures	:	DG – DMI - DMI/REX – GOP - Archives (DMIDSD/2.015)