SERVICE HYDROGRAPHIQUE
ET OCEANOGRAPHIQUE
DE LA MARINE

DIRECTION DES MISSIONS
INSTITUTIONNELLES ET DES
RELATIONS INTERNATIONALES

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FRANCE NATIONAL REPORT
TO THE 12TH MEETING OF THE SOUTH AFRICA AND ISLANDS HYDROGRAPHIC COMMISSION MEETING

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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 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

The hydrographic and oceanographic survey ship *Beautemps-Beaupré* carried out during the second half of 2014 hydrographic surveys in the North-Western part of Madagascar, in the vicinity of the island of Nosy Be and in the Helville harbour. Hydrographic surveys were carried out also in the North and in the South-West part of the Mayotte's lagoon and in Mayotte Longoni harbour.

In the Comoros, hydrographic surveys were conducted in Moroni in the « Grande Comore » island, in Fomboni harbour in Anjouan island and in Pomoni harbour in the Mohéli island. The Vailheu Reef was totally surveyed.

A Bassas da India, in the « Îles Eparses », hydrographic works were performed to ensure the continuity between multibeam echosounder surveys realized outside the lagoon et LIDAR surveys inside the lagoon.

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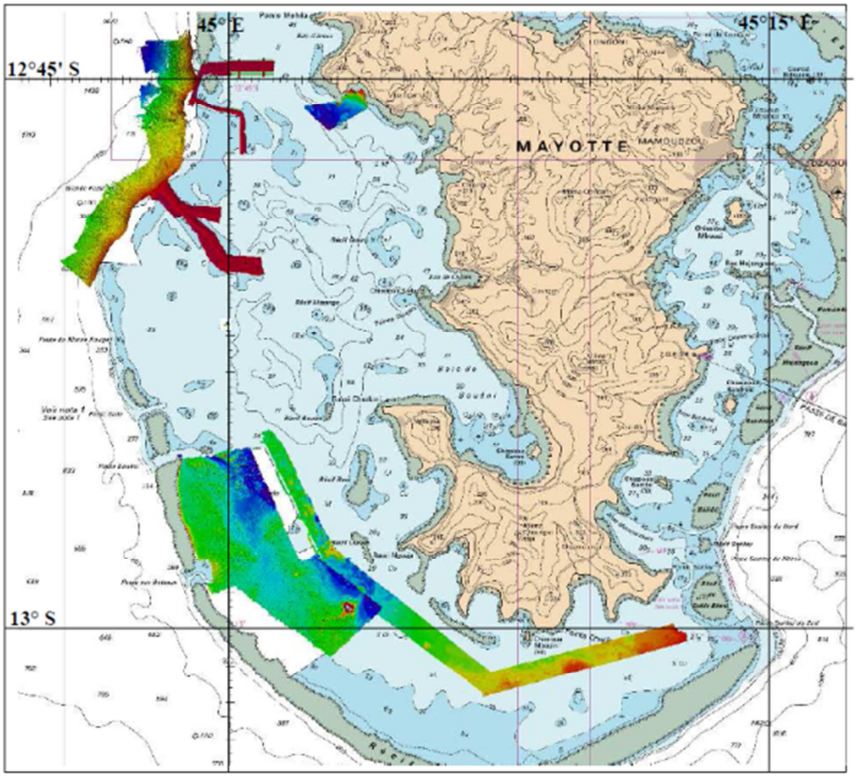

Fig.1: Survey work in Mayotte lagoon and its vicinities.

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 entirely surveyed: Mayotte, Eparses Islands and La Réunion. Every Litto3D products issued are now freely downloadable from SHOM's data portal (data.shom.fr) and from the open platform for public data (data.gouv.fr).

2.3. French Survey programme for the region

SHOM's survey planning for the area is detailed in the two figures hereafter, presenting the long-term objectives regarding the compliance with S-44 and the 2013-2016 survey plan combined with existing surveys: the survey programme for the French responsibilities area in that region is composed of:

- Pursue of survey work in Mayotte waters: 40 days of work achieved in 2014);
- Mozambique Channel (Îles Éparses): 2 days over Bassas da India in 2014;
- Access to the main and secondary harbours were pursued over Madagascar (10 days in 2014) and mostly achieved for Comoros (28 days in 2014).

2.4. New technologies and /or equipment

NTR.

2.5. New ships

NTR.

2.6. Problems encountered

NTR.

3. New charts & updates
3.1. ENCs

On the 1st of June 2015, SHOM had produced some 430 ENCs.
In line with the WEND principles, France produces its small scale ENC cells as closely as possible to INT chart schemes. The French 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 2015 in the SAIHC region fulfils SOLAS requirements.
The SHOM ENC coverage of the SAIHC area is depicted in the chartlets hereafter.

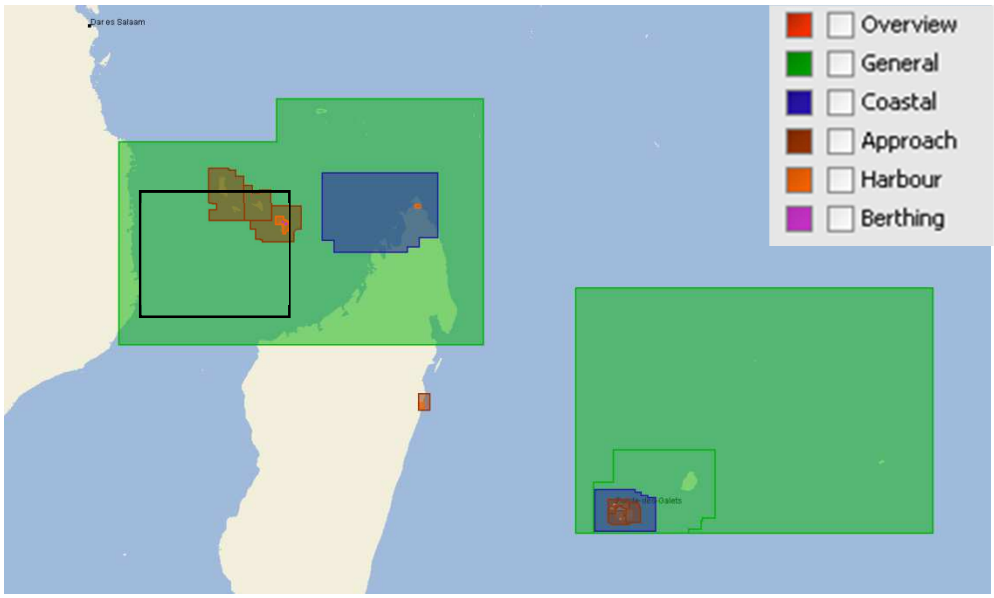

Fig.2: SHOM's ENC production within Region H.

Hereafter are the ENCs produced since the last conference:

Number	New chart (NC) or new edition (NE)	Scale[1] 1:	Title
FR476800	NC	40 000	*North-east coast of Madagascar - Approaches to Antsiranana Bay Replaced GB401116*

Hereafter are the ENCs planned for 2015-2016:

Number	Scale 1:	Title	Comment
FR277970	700 000	*Partie Nord du Canal du Mozambique*	Related to the forthcoming INT 7054 paper chart.
FR277980	700 000	*Partie Sud du Canal du Mozambique*	Related to the forthcoming INT 7053 paper chart.
FR476840	45 000	*Approches de Mahajanga*	
FR576850	8 000	*Ports de Mahajanga et de Boanamary*	

The status of ENC production in the area is:

[1] The mentioned scale is the Standard Compilation Scale (CSCL) of the ENC.

Usage Band	Produced Cells	Planned Cells	%
1	0	0	/
2	3	**7**	**42,8**
3	3	3	100
4	**9**	**10**	**90**
5	9	18	61,1
6	2		
Total	26	35	74,3

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[2] 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[3] 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. Moreover, all up to date French charts are now available by 'Print On Demand' to French forces users only.

Besides, the following new INT charts are planned for the 2014-2017 period:

INT	Scale 1:	Title	Comment
7053	1 000 000	Approches Sud du Canal du Mozambique – Coproduction PT/FR	End of 2015
7054	1 000 000	Canal du Mozambique – Coproduction PT/FR	End of 2015
7062	1 000 000	Approches Nord-Est de Madagascar	Exp. 2017
7064	1 000 000	Approches Sud-Est de Madagascar	Exp. 2016

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)	2	6	33
Medium	4	7	57

[2] Internal reuse, commercial reuse, documentary use or end user
[3] Each licence allows internal reuse of the data for up to 5 workstations. For more information, contact *bp@shom.fr*.

Large (>1/100 000)	3	3	100
Total	9	16	56

Regarding printer nation responsibilities, France has requested the Indian Hydrographic Office to become a printer nation of the new INT7739 (IN2514) covering Port Louis and its approaches.

3.5. National paper charts

No charts were produced since the last Conference.

Besides, the following charts are planned for the 2014-2017 period:

National	INT	New chart (NC) or new edition (NE)	Scale 1:	Title
TBD	/	NC	TBD	Port de Mahajanga (Madagascar) – Replaces FR6078[4]. Scheduled in 2016
TBD	/	NC	TBD	Approches de Mahajanga (Madagascar) – Replaces FR6077[5]. Scheduled in 2016.
7495	/	NC	Div.	Ports et mouillages de l'Archipel des Comores – Replaces FR4806 and FR3698

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

Type	Title
L	LC--FNA : Océan Atlantique (Est) – Océan Indien (Ouest) – Océan Pacifique – Edition 2015
RSX	91--RNA : Radionavigation maritime – Edition 2015
RSX	924-RNA : Radiocommunications maritimes – Volume 4 : système mondial de détresse et de sécurité en mer (SMDSM) – Edition 2014

RSX: Radio stations; L: List of Lights

4.2. Updated publications

NTR.

4.3. Means of delivery

At the beginning of 2015, 75 % of nautical publications were available in digital format on SHOM's online store (diffusion.shom.fr). Regarding that region, all publications are available in digital format, excepted the L8 nautical instructions, scheduled for 2016.

[4] Regarding this cartographic project over Mahajanga (Madagascar), a proposal will be submitted to the region H ICCWG coordinator.

[5] Same comment as for FR6078.

SHOM continues to increase the production of its digital nautical publications. From now, publications are still available in paper form but most of them are now available, by subscription, in digital format (weekly updated pdf files) on SHOM's online store which opened in June 2013 (diffusion.shom.fr/).

4.4. Problems encountered

NTR.

5. MSI Existing infrastructure for transmission

Besides, 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 update

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 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)	100	0	0	**15**	16	**69**
Mayotte et Glorieuses – ~~France~~France	70	20	10	51	0	49
La Réunion et Tromelin – France	40	30	30	**19**	1	**80**
Terres Australes françaises (Crozet, Kerguelen, Amsterdam, Saint-Paul)	6	0	94	**20**	15	**66**
Comores (Union des)	36	0	64	**28**	0	**72**
Madagascar (République de)	1	0	99	**12**	0	**88**

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~~France	100	0	100	100	0	**100**	75	0	50	100	100
La Réunion et Tromelin – ~~France~~France	100	0	NA	100	0	100	100	0	75	100	100
Terres Australes françaises (Crozet, Kerguelen, Amsterdam, Saint-Paul)	100	0	NA	100	0	33,33	56	0	0	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	**40**	0	**33,3**	100	100

Fig. 4: 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

Last year, the deployment of BHO Beautemps-Beaupré in the region has provided with the setup 'Sea ridings' opportunities for the benefit of Madagascar (2 trainees) and the Union of Comoros (2 trainees). Both coastal states could then benefit from the experience of experienced hydrographic team conducting surveys in their area of interest. The experience was even broaden to some personnel of the *Société Comorienne des Ports* (SCP) as Beautemps Beaupré had a stopover in Moroni.

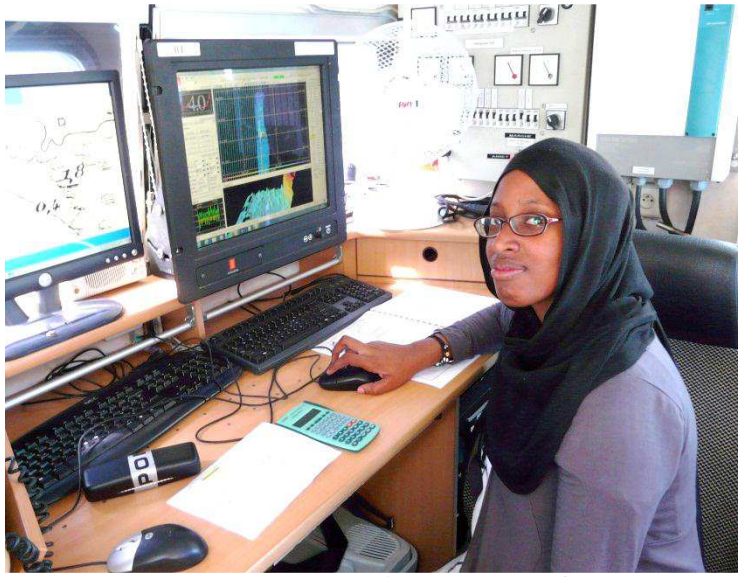

Fig. 5: 'Sea riding' training surveys on one of Beautemps-Beaupré survey launches with SCP.

For the record, initial training capabilities provided by SHOM can be consulted through its training catalogue available on www.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 the hydrographic services requirements 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.
In this scope, a new technical agreement has been signed between France and the Union of Comoros regarding hydrography, oceanography and marine cartography on September 4th 2014 in Moroni. This agreement then officialises the fulfilment of Union of Comoros' SOLAS responsibilities in terms of hydrography and marine cartography, making the Union of Comoros a co-producer of its nautical documentation.

7.3. Definition of bids to IHOCBC

NTR.

8. Oceanographic activities

8.1. GEBCO/IBC's activities

8.2. Tide gauge network

SHOM is the French national coordinator and reference authority in the field relating to the observation of the sea level and the management and issue of the resulting data. SHOM also dispose of its own tidal network named RONIM.

These missions are carried out under the REFMAR program. Real time and processed tide gauge measurements are now accessible on web http://refmar.shom.fr/home/ in overseas areas under French jurisdiction.

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

685	Océan indien	ILE SAINT-PAUL	●	LEGOS
690	Océan indien	ILE POSSESSION CROZET	●	LEGOS
601	Océan indien	POINTE DES GALETS	●	SHOM / DEAL Réunion / Météo France
620	Océan indien	DZAOUDZI	●	SHOM / CG Mayotte / DM SOI / Météo France
606	Océan indien	SAINTE-MARIE	●	SHOM, CINOR, CCI de La Réunion
680	Océan indien	KERGUELEN	●	LEGOS

Fig.7: FR tidal station within the SAIHC region (source REFMAR).

The Toamasina tidal station belongs to Madagascar but is operated and maintained by SHOM for the benefit of the FTM.

In February 2016, SHOM will organise, in partnership with UNESCO's Intergovernmental Oceanographic Commission (IOC) the 2016 edition of the *REFMAR Days* at UNESCO headquarter in Paris. This event is a 5 days meeting focused on the status of sea level observation and its multiple applications.

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 own large real time tide gauge network named RONIM, an important tool for coastal operational oceanography, risk assessment, studies on the evolution of the mean sea level, etc. With 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 SAIHC 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 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.

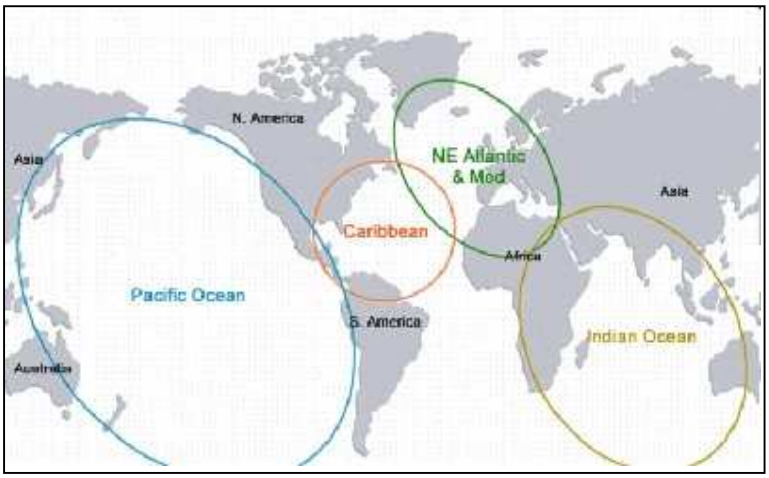

Fig.8: Cooperation areas on tsunami warning system (source COI ; UNESCO).

- **Coastal flooding :**

SHOM is associated with *Météo-France* in the provision of an alert system against coastal flooding named *Vigilance Vagues Submersion.* 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 overseas is currently under study.

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:

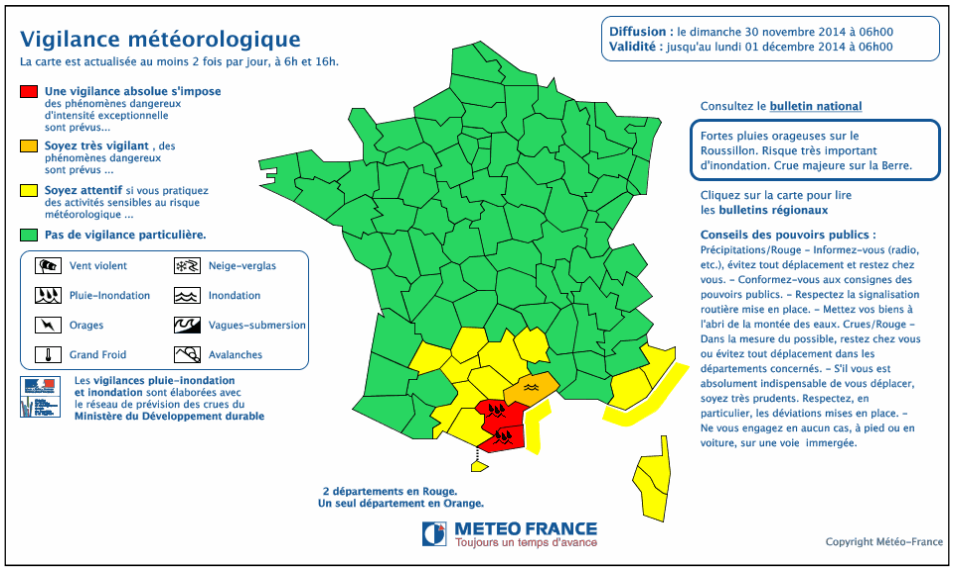

Fig.9: An example of coastal flooding alert over Mediterranean costs (yellow level). Costs subject to alert are underlined according to the alert level (source www.meteo.fr).

- **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

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:

- http://zerohydro.data.shom.fr: online service to edit the vertical datum of your bathymetric dataset,
- 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.
- New seabed, tidal and 3D-currents layers available (mainland only),
- Vertical reference surface layers generated from geoid/spheroid separation model (mainland only),
- Updated raster layer of SHOM's nautical charts completed for large scale;

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

Moreover, *ocean modelling forecasts* are available both in visualization and download under Open-Data Licence. Time and Space exploration (5 days timeframe), editable color patterns,

profile extraction and overlaying with other data sources are some of the interactive tools that comes along with those exclusive data.

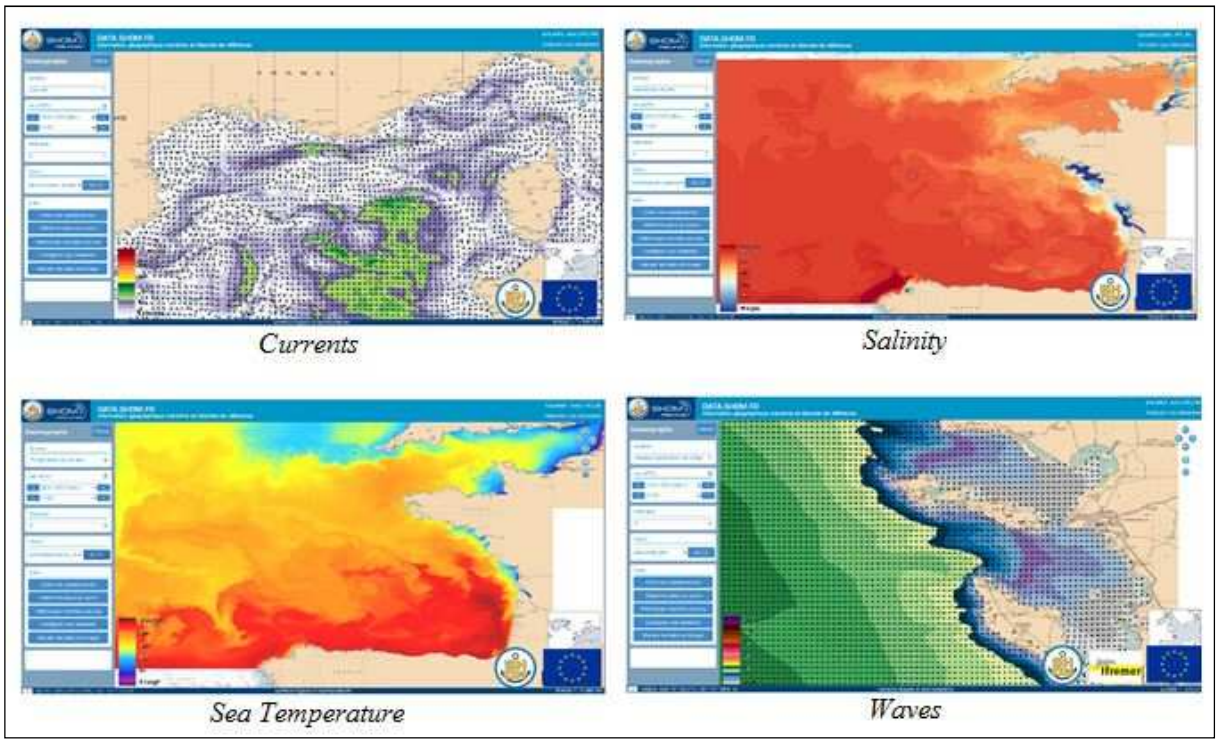

Fig.10: Oceanographic forecasts on SHOM's data portal (data.shom.fr)

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.*

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
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 CB projects opportunities, and to think about perspectives on that matter. France is fully supportive to that approach and wishes such discussion to take place at the forthcoming SAIHC Conference