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SERVICE HYDROGRAPHIQUE
ET OcéANOGRAPHIQUE
DE LA MARINE

DIRECTION DES MISSIONS
INSTITUTIONNELLES ET DES
RELATIONS INTERNATIONALES

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**FRENCH NATIONAL REPORT
TO THE 10TH MEETING OF THE SOUTH AFRICA AND ISLANDS
HYDROGRAPHIC COMMISSION MEETING**

1. Hydrographic Service: General

An important milestones of the past months has been the approval by SHOM Board of its new targets and performance contract for the 2013-2016 period, which outlines its main orientations and objectives in the forecoming years. This work culminated in the Minister of Defence's visit to SHOM on the 14th of June.



Fig.1: Signing ceremony of SHOM's targets and performance contract for 2013-2016 (Brest - June 14th 2013).

From left to right: SHOM's general director Ingénieur Général Bruno Frachon, Minister of Defence Jean-Yves Le Drian and Naval Chief of Staff Admiral Bernard Rogel, chairman of SHOM Board.

SHOM's next commitments rely on France's National Maritime Strategy and its Defence Policy, which is declined in different themes, in the scope of an national integrated policy :

- Environment protection
- Risk assessment and coastline management

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- Knowledge, research and innovation
- Sustainable development of maritime and littoral economy
- Involvement in International and European policies
- Defence support



It is worth noting that in the meantime, a new prioritized 4-years survey plan for all the waters under French jurisdiction has been approved.



Fig.2a (left)/b (right): National Hydrographic Plan for the 2013-2016

2. Surveys

2.1. Coverage of new surveys

Since the last SAIHC meeting, SHOM has not conducted any new surveys in the region; however, the deployment of BHO *Beautemps-Beaupré* in the region is planned in the second semester of 2014 to conduct:

- surveys of French islands in the South Indian Ocean;
- surveys in the Union of the Comoros to update the original charts produced by SHOM;
- some additional surveys in Madagascar;
- eventually, a survey en-route of a possible gap identified on the Western Indian Ocean Marine Highway.

Besides, since the topographic data determination in the region of Toamasina (Madagascar), SHOM has recently used spatial imagery to determine S-57 vector objects (coastline, foreshore, wharfs, bearings, buoys, etc, ...) in the bay of Bombetoke near Mahajanga that will be used to update nautical chart (operation in progress).

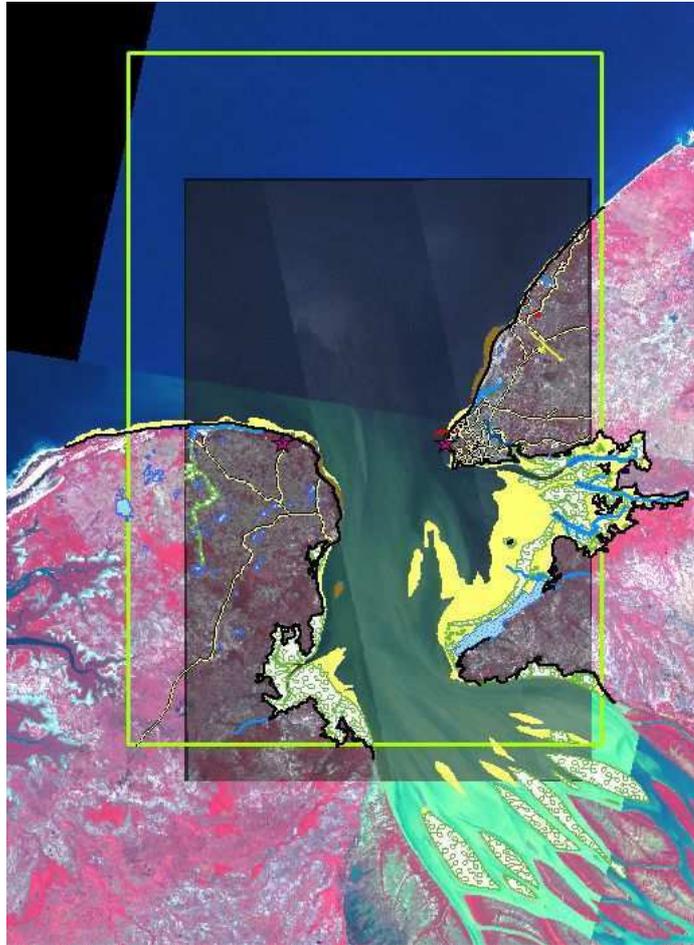


Fig. 3: S-57 topographic objects determination in Mahajanga (Madagascar) using Spot5 and Quickbird spatial imagery.

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 French Geographic Institute (IGN), aims to provide a very high resolution Sea-Land digital terrain model (DTM) of metropolitan and overseas French coasts.

So far, most of the French overseas coasts within the region have been entirely surveyed: Mayotte, Eparses Islands and La Reunion.

Concerning Mayotte, a Litto3D product has been delivered to the project partners last December. This initial delivery was completed last March by a Litto3D composite product providing an enhanced bathymetric coverage around the island, made from LIDAR data completed by former SHOM's bathymetric survey data to improve the coverage of the lagoon.

Every Litto3D product issued is now downloadable for free from SHOM's data portal (data.shom.fr).

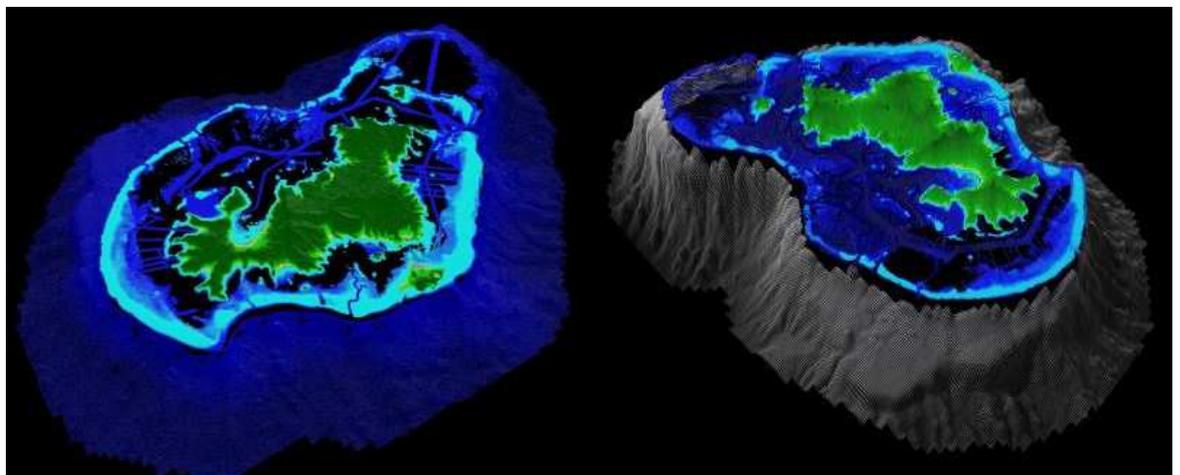


Fig.4: Bathymetric coverage improvement between original Litto3D® DTM product (left) and composite DTM product (right) issued for Mayotte.

2.3. French Survey program for the region

SHOM's survey program regarding waters under French jurisdiction has been issued for the period 2013-2016 (see annex I for details). In accordance with this program, SHOM is actually planning a 10 months deployment of a survey ship 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. ENC's

On the 1st of June 2013, SHOM had produced some 381 ENC's. The full collection with French Waters should reach a figure around 677 ENC's. 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.

The ENC coverage of all HSC lines in the SAIHC will fulfil SOLAS requirements in 2013 with the release of medium scale ENC's in the area (2 of 3 produced at the date of the report). The delay in fulfilling those requirements is first due to the difficulty to transpose existing charts (due to their geodetic systems) and then to the late availability of recent surveys data and recent charts necessary to produce ENC's.

On the other hand, Mutsamudu harbour (Anjouan) access will be covered with a large scale chart scheduled in 2014.

The SHOM ENC coverage and updates in the SAIHC area is depicted in the chartlets hereafter:



Fig.5: SHOM's ENC production within Region H.

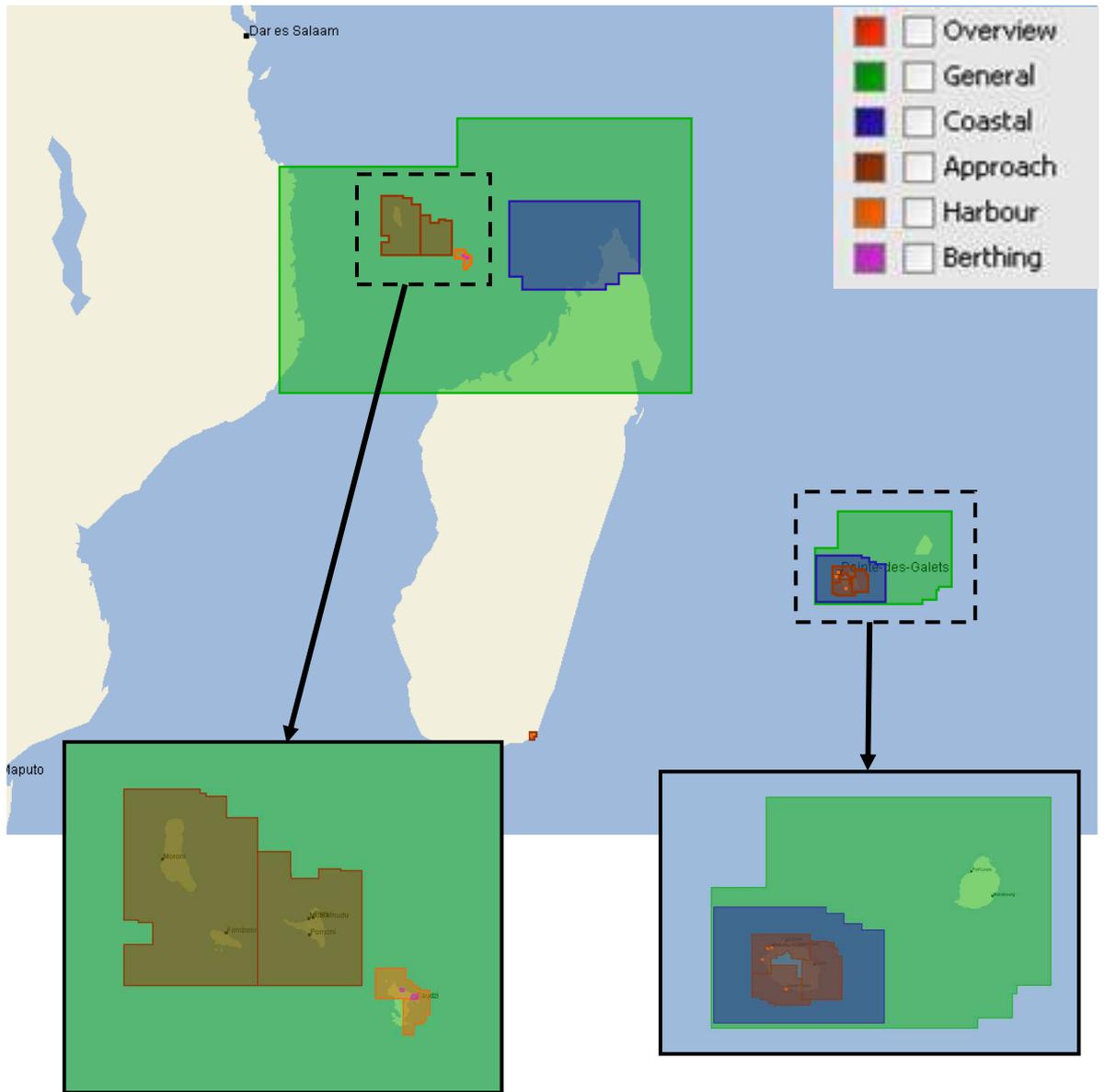


Fig.6: Region H ENC updates issued by SHOM.

The ENC cells produced since the last conference are as follows:

Number	New chart (NC) or new edition (NE)	Scale 1:	Title
FR574920	NE	35 000	<i>Ile de Mayotte - partie Nord</i>
FR473280	NE	60 000	<i>Ile de La Réunion - partie Sud</i>
FR476780	NC	150 000	<i>Ile Anjouan</i>
FR476790	NC	150 000	<i>Iles Grande Comore et Mohéli</i>

Hereafter are the ENC cells planned for 2013-2014:

Number	Scale 1:	Title	Comment
FR476770	150 000	<i>Île de Mayotte</i>	High speed crafts
to be determined	20 000	<i>Mouillages de Mutsamudu</i>	New paper chart, high speed crafts
FR374900	350 000	<i>Archipel des Comores</i>	New paper chart
FR476800	40 000	<i>Madagascar – Baie d’Antsiranana</i>	New paper chart
FR576810	15 000	<i>Madagascar – Port d’Antsiranana</i>	New paper chart
FR476820	50 000	<i>Madagascar – Abords Nord de Toamasina</i>	New paper chart
FR576830	15 000	<i>Madagascar – Port et passes de Toamasina</i>	New paper chart
FR274880	1 000 000	<i>De l’île de la Réunion à l’île Rodrigues</i>	New paper chart

The status of ENC production in the area is:

Usage Band	Produced Cells	Planned Cells	%
1	0	0	/
2	2	5	40,0
3	2	3	66,7
4	6	9	66,7
5	7	18	50,0
6	2		
Total	19	35	54,3

3.2. ENC Distribution method

All French ENCs are distributed to End User Service Providers by PRIMAR RENC. FR is providing its support to the IC-ENC-PRIMAR Cooperation Committee working groups to develop a RENC-to-RENC cooperation concept.

3.3. RNCs

NTR.

3.4. INT charts

See next section for details.

SHOM’s INT chart production overall plan:

Scale	Produced INT charts	Planned INT charts	%
Small (<1/1 000 000)	1	4	25
Medium	3	7	43
Large (>1/100 000)	2	3	67
Total	6	14	43

3.5. National paper charts

Here are the charts produced since the last SAIHC conference:

National	INT	New chart (NC) or new edition (NE)	Scale 1 :	Title
7486	7055	NE	1 000 000	Canal du Mozambique - Partie Nord (<i>New Survey</i>)
7677	/	NC	156 000	Mayotte - Replaces FR6237
7678	/	NC	156 000	Anjouan/Mohéli (Comoros Islands) - Replaces FR6238
7679	/	NC	156 000	Comores/Mohéli (Comoros Islands) - Replaces FR6239
7681	/	NC	15 000	Baie de Diego Suarez – Baie des Français – Port de la Nièvre – Port d’Antsiranana - Replaces FR 4697 (Madagascar)
7683	7723	NC	15 000	Mouillages et passes de Tamatave – Replaces FR6150 and FR6527 (Madagascar)

The following charts are planned for the 2013-2015 period:

National	INT	New chart (NC) or new edition (NE)	Scale 1:	Title
TBD	/	NC	TBD	Port de Mahajanga (Madagascar) – Replaces FR6078 ¹
TBD	/	NC	TBD	Approches de Mahajanga (Madagascar) – Replaces FR6077 ²
7487	7062	NC	1 000 000	Approches Nord-Est de Madagascar
7488	7063	NC	1 000 000	De l’Île de la Réunion à L’Île de Rodrigues
7489	7064	NC	1 000 000	Approches Sud-Est de Madagascar
7490	7710	NC	350 000	Des Comores au récif du Geyser - Replaces FR5983
7495	/	NC	Div.	Ports et mouillages de l’ Archipel des Comores – Replaces FR4806 and FR3698
7680	/	NC	40 000	Baie de Diego Suarez - Replaces FR 4696 (Madagascar)
7682	7722	NC	50 000	Abords nord de Tamatave - Replaces FR6318 (Madagascar)

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

NTR.

3.7. Problems encountered

NTR.

¹ France works on a cartographic project for the area of Mahajanga (Madagascar). A proposal is to be sent to the region H ICCWG coordinator.

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4. New publications & updates

4.1. New Publications

Since the last conference, the following publications have been issued:

Type	Nr	Title
LL	LC	Atlantic Ocean (East) - Indian Ocean (West) - Pacific Ocean (2013)
RSX	91	Maritime Radionavigation (2012)
DIV	135A	Tide Table 2013 - Vol. 2 – Overseas ports
DIV	145A	Tide Table 2014 - Vol. 2 – Overseas ports

IN: Sailing Directions; RSX: Radio Signals; LL: List of Lights; DIV: Miscellaneous

4.2. Updated publications

NTR.

4.3. Means of delivery

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 (<https://www.shom.fr/boutique/>).

On the other hand, SHOM launched in July 2013 a new MSI report service: this new website (<http://infonaut.data.shom.fr/>), accessible to all mariners, allows them to report directly any discrepancies between the field and SHOM's product.

4.4. Problems encountered

NTR.

5. MSI Existing infrastructure for transmission

5.1. New infrastructure in accordance with GMDSS Master Plan

NTR.

5.2. Problems encountered

NTR.

6. C-55 Latest update

The last C-55 update for the region is dated May 2010. A new Region H update has been sent to the IHB on August 26th 2013. 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
H	Iles Éparses - France (Bassas de India, Europa et Juan de Nova)	100	0	0	14	15	71
	Mayotte et Glorieuses – France	70	20	10	51	0	49
	La Réunion et Tromelin – France	40	30	30	15	1	84
	Terres Australes françaises (Crozet, Kerguelen, Amsterdam, Saint-Paul)	6	0	94	19	15	66
	Comores (Union des)	36	0	64	20	0	80
	Madagascar (République de)	1	0	99	9	0	91

Charting Status	Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
	A	B	C	A	B	C	A	B	C		
H Illes 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	50	75	0	50	100	100
La Réunion et Tromelin - 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	0	20	0	0	100	100
Madagascar (République de)	100	0	33,33	10	0	7,69	25	0	0	100	100

Fig. 6: C-55 update 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

A regional training course on hydrography and marine cartography held in Abidjan, Côte d'Ivoire, from November 19 to December 1st 2013. Most of the 22 attendees, representing 11 countries, including a representative from a SAIHC associate member (Madagascar), were professionals in the field of hydrography and are expected to be involved in hydrographic survey and nautical publications activities after the course. The course focused on these two areas regarding the following topics:

- Hydrography: theory, survey practice and data processing;
- Marine Cartography: the principles of paper chart and electronic charts processing.

The course globally reached its achievement that was to provide a general overview in order to make people aware of the crucial importance of having competencies in hydrography and nautical cartography as components of maritime safety.

7.2. Status of national, bilateral, multilateral or regional development projects with hydrographic component

NTR.

7.3. Definition of bids to IHOCBC

NTR.

8. Oceanographic activities

8.1. GEBCO/IBC's activities

NTR.

8.2. Tide gauge network

Data from the main tide gauge networks in the Indian Ocean (RONIM from SHOM, ROSAME from LEGOS) are available on the REFMAR web portal, operated by SHOM (<http://refmar.shom.fr>), together with the necessary metadata. When possible, raw data are available in near real time. Most of those data are also available on the IOC sea level facility website.

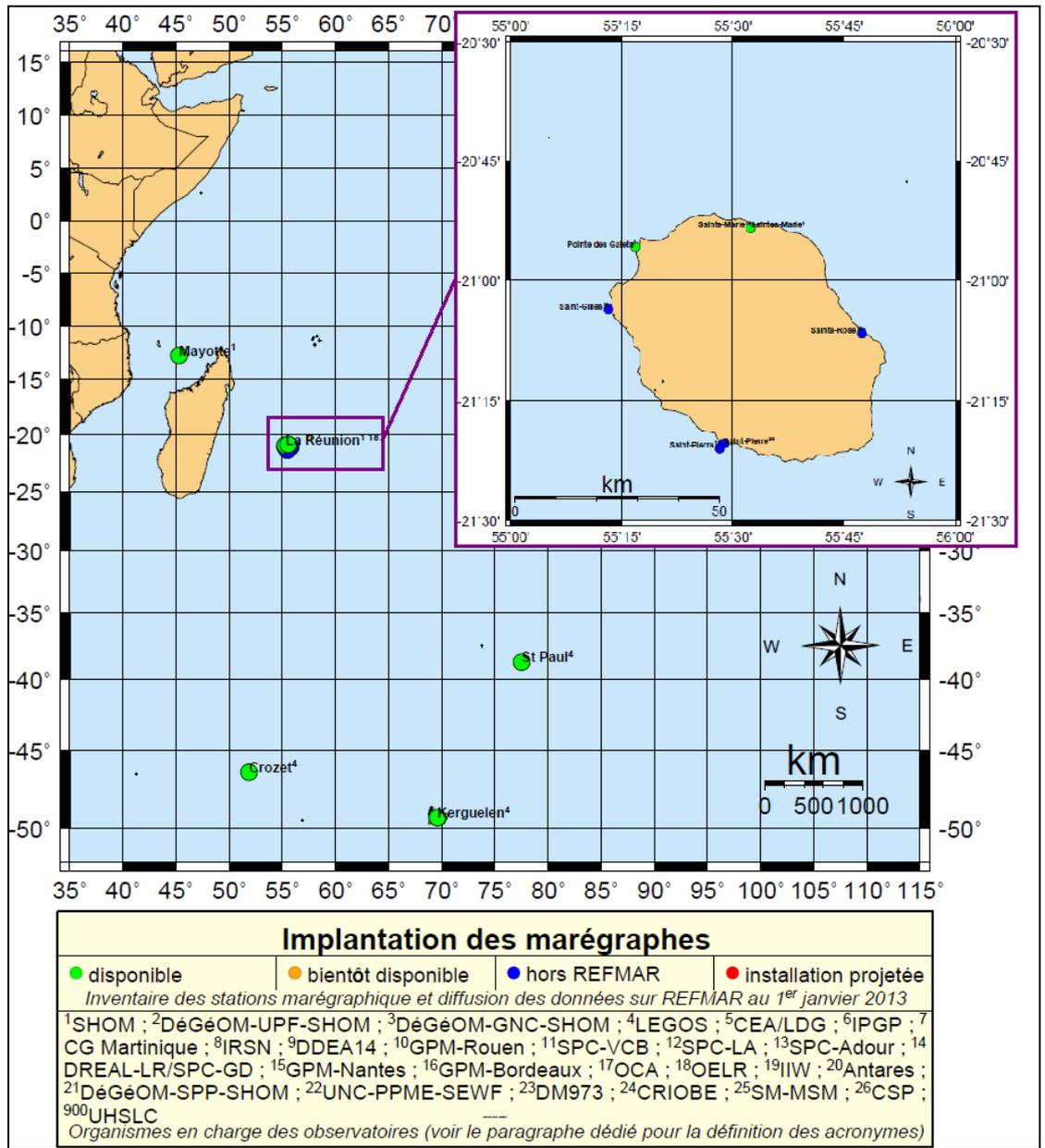


Fig. 7: French tide gauges in the Indian Ocean :

Green dots are already available on REFMAR website and blue dots are still under progress.

SHOM is encouraging French tide gauge owners to upgrade the quality of their instruments using radar sensors rather than pressure sensors and developing real time transmissions.

In June 2013, SHOM organized the “REFMAR days”, a special meeting dedicated to sea level in order to exchange on tide gauge instruments, data quality and research results on tide modelling, tsunamis and storm surges warning. This event has been the occasion to gather the French scientific community working on sea levelling, but also to share our work and experience to foreign French-speaking countries.

8.3. New equipment

SHOM released an edition of its tidal prediction software SHOMAR (for 150 metropolitan France harbours and more than 1 000 overseas and foreign harbours): Each SHOMAR edition is usable for 2 years. The current version 2013 January 1st, is valuable up to 2014 December, 31st. SHOMAR software is compatible with various Windows® operating systems such as NT, 2000, XP, Vista and Seven.





In 2012, SHOM's first smartphone application for tide predictions has been launched for IOS and Android. The user can choose a port, ask for tide predictions and display the tide graph or moon phase. For offshore users who do not have access to Wifi or 3G network, it is possible to pre-download the one-year tide predictions for selected ports.

8.4. Problems encountered

NTR.

9. Other activities

9.1. Meteorological data collection

NTR.

9.2. Geospatial studies

NTR.

9.3. Disaster prevention

- **Tsunami :**

Four SHOM's tide gauges contribute to Tsunami warning in the Indian Ocean by broadcasting their sea level data in real time through GTS (Global Telecommunication System). In particular, SHOM operates a real time tide gauge in Toamasina along the East coast of Madagascar, in collaboration with the Direction of Meteorology and Hydrology of Madagascar.

The French Meteorological office (Météo-France) is the national contact point for reporting to IOTWS Intergovernmental Coordination Group under UNESCO.

- **Coastal flooding :**

Tide gauge's real time transmission can be used for Tsunami warning as well as coastal flooding warning. However, no regional system seems to be coordinated. Regarding French islands in that region, flash flooding caused by Tropical storm's heavy rain remains the main issue.

- **Oil spills:**

NTR.

9.4. Environmental protection

NTR.

9.5. Astronomical observations

NTR.

9.6. Magnetic/Gravity surveys

NTR.

9.7. MSDI Progress

Since 2007 SHOM has undertaken the construction of a spatial data infrastructure through the INFRAGEOS-H@ project which has since then been dealing with the evolution of the hydrographic databases, and paved the way to metadata management and view web services.

Late 2011, a second SDI step has been launched with the ENTREPOT® project. Its objectives are to identify and distribute non-navigational products and their metadata through a portal based on web services. This platform also intends to provide specific services like dynamic cartography or vertical reference information.

At this stage, the SDI construction has reached the following results:

- Hydrographic databases migration to the new systems is nearly achieved as tides, submarine cables, wrecks, bathymetry and administrative limits are currently managed in SHOM SDI. The migration of the last two layers (landmarks and beacons) will take place in September.
- Most products have their metadata written and available on the French geocatalogue (www.geocatalogue.fr), and the metadata working group created in 2012 is spreading good practices at SHOM.
- Last January, SHOM opened a maritime and coastal geographic information portal which offers a large set of view and download services at <http://data.shom.fr>. All the services are compliant European directive INSPIRE.

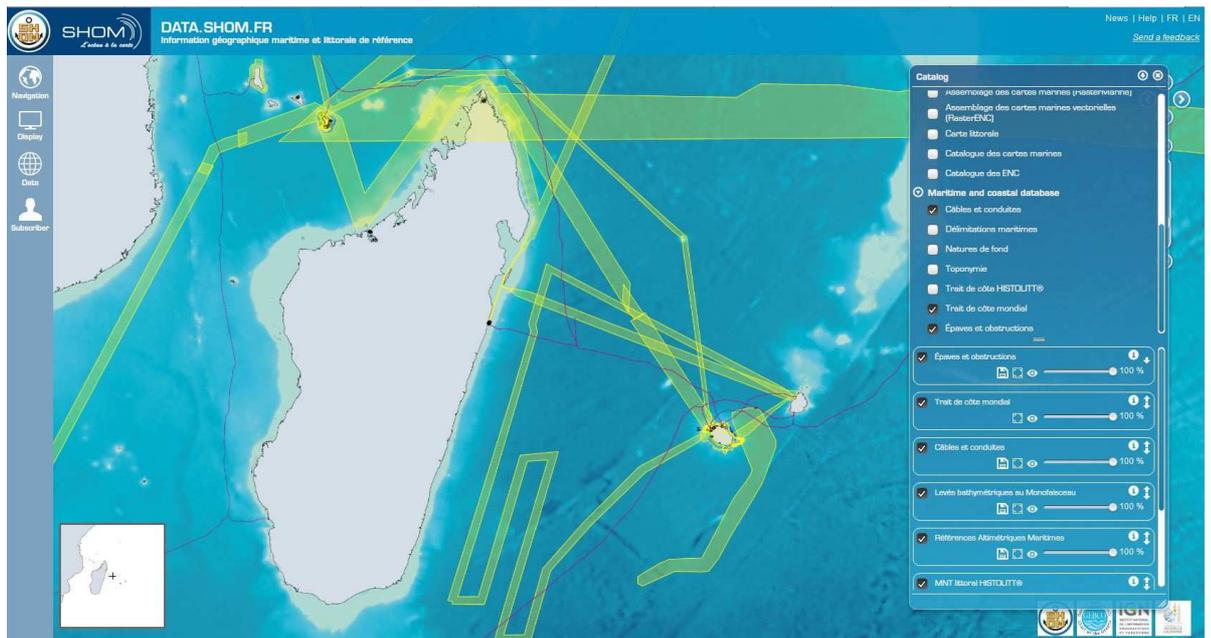


Fig.8: SHOM's data portal (data.shom.fr)

Two additional services have recently been added to this portal:

- a nautical information feedback service (infonaut.data.shom.fr) which allows all users to send back to SHOM any information concerning depth, wrecks, coastlines, buoys,
- a dynamic cartographic environment (cartodyn.data.shom.fr) which allows all users to create their own maps taking benefit from data.shom.fr tools and data.

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 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
CSPCWG		✓	Chart Standardisation and Paper Chart Working Group
DIPWG		✓	Digital Information Portrayal Working Group, former CSMWH
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)
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
NSHC		✓	North Sea Hydrographic Commission
RSAHC		✓	ROPME Hydrographic Commission
SAIHC		✓	Southern Africa and Islands Hydrographic Commission
SNPWG		✓	Standardisation of Nautical Publications Working Group
SWPHC		✓	South-West Pacific Hydrographic Commission
TSMAD		✓	Transfer Standard Maintenance and Application Development
TWLWG	✓	✓	Tidal and Water Level Working Group
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)

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.

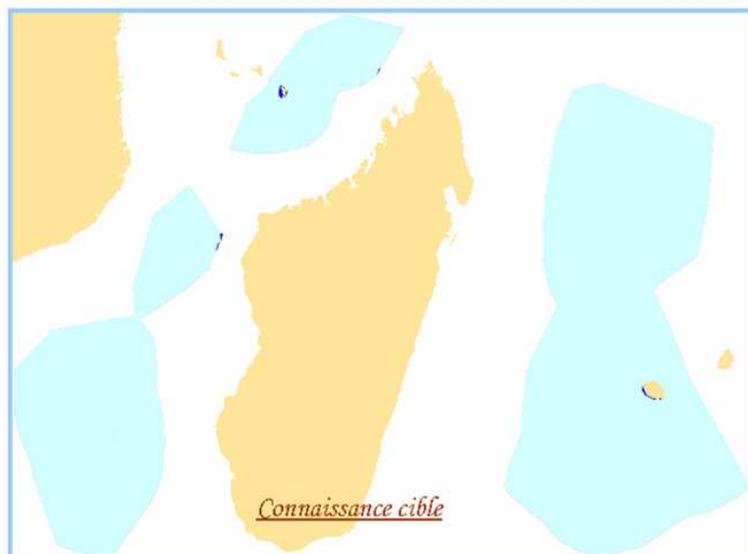
Concerning SHOM's cooperation with other countries within the area, an administrative agreement is currently being negotiated with the Union of Comoros.

10. Conclusions

SHOM will continue to support actively capacity building initiatives within the SAIHC area, as it remains essential for most of the coastal states in this region to be able to concretize the multiple benefits hydrography could bring. Therefore, SHOM fully endorses the capacity building strategy review that is currently being carried out.

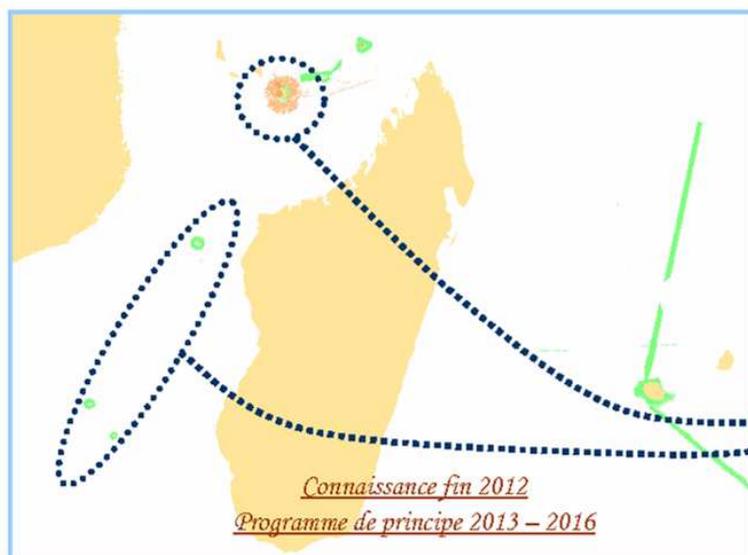
ANNEX I

2013-2016 French survey program for the SAIHC region



La Réunion, Mayotte, îles Éparses

Répartition de la connaissance cible par ordre S-44 de l'OHI	Surface (km ²)	Ordre spécial	Ordre 1a	Ordre 1b	Ordre 2
ZEE et extension juridique du plateau continental	1 090 370	/	/	0.1%	99.9%



Répartition de la superficie par niveau de qualité (%)	Levés réalisés après 1980. Qualité généralement conforme aux normes en vigueur	Levés réalisés entre 1950 et 1980. Qualité pouvant nécessiter des reprises partielles (ordre 2 S-44)	Levés réalisés avant 1950. Qualité insuffisante non conforme aux normes en vigueur	Zone non connue
État connaissance fin 2012	2.5%	0.3%	0%	97.2%
État connaissance cible	50.1%	0.2%	0%	49.7%
État connaissance fin 2016	2.6%	0.3%	0%	97.1%

Programme de principe 2013 – 2016 :

- poursuite des levés à Mayotte (100 j) ;
- levés d'opportunité dans les îles du canal de Mozambique (20 j).