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SHOM L'océan en référence

Direction des missions institutionnelles
et des relations internationales
Division relations extérieures

BREST, le 07 novembre 2022

N° 36/Shom/DMI/REX/NP

NATIONAL REPORT

SUBJECT : France national report to the 9th Conference of the ROPME Sea Area Hydrographic Commission (RSAHC).

1. HYDROGRAPHIC OFFICE: GENERAL

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 4-year target and performance contract between Shom and the French State. The current target and performance contract came into effect on January 1, 2021 for the period 2021-2024.

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 (Yearbook) is regularly submitted using the online system.

This national report is submitted by RDML Laurent Kerléguer, French national hydrographer and Shom Director General (laurent.kerleguer@shom.fr).

2. SURVEYS

2.1. COVERAGE OF NEW SURVEYS

NTR.

2.2. LIDAR SURVEYS

NTR. Shom does not carry out Lidar surveys in the region.

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2.3. NEW TECHNOLOGIES AND/OR EQUIPMENT

Shom's deployable hydrographic system (for rapid environmental assessment) has been upgraded with a very shallow multibeam echo-sounder (Norbit iWBMSh).

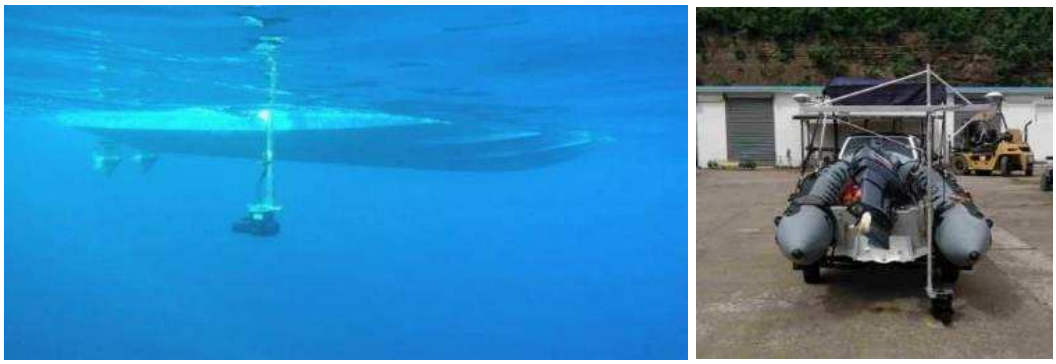

Fig. 1 – MBES Norbit iWBMSh integrated to Shom's deployable hydrographic system

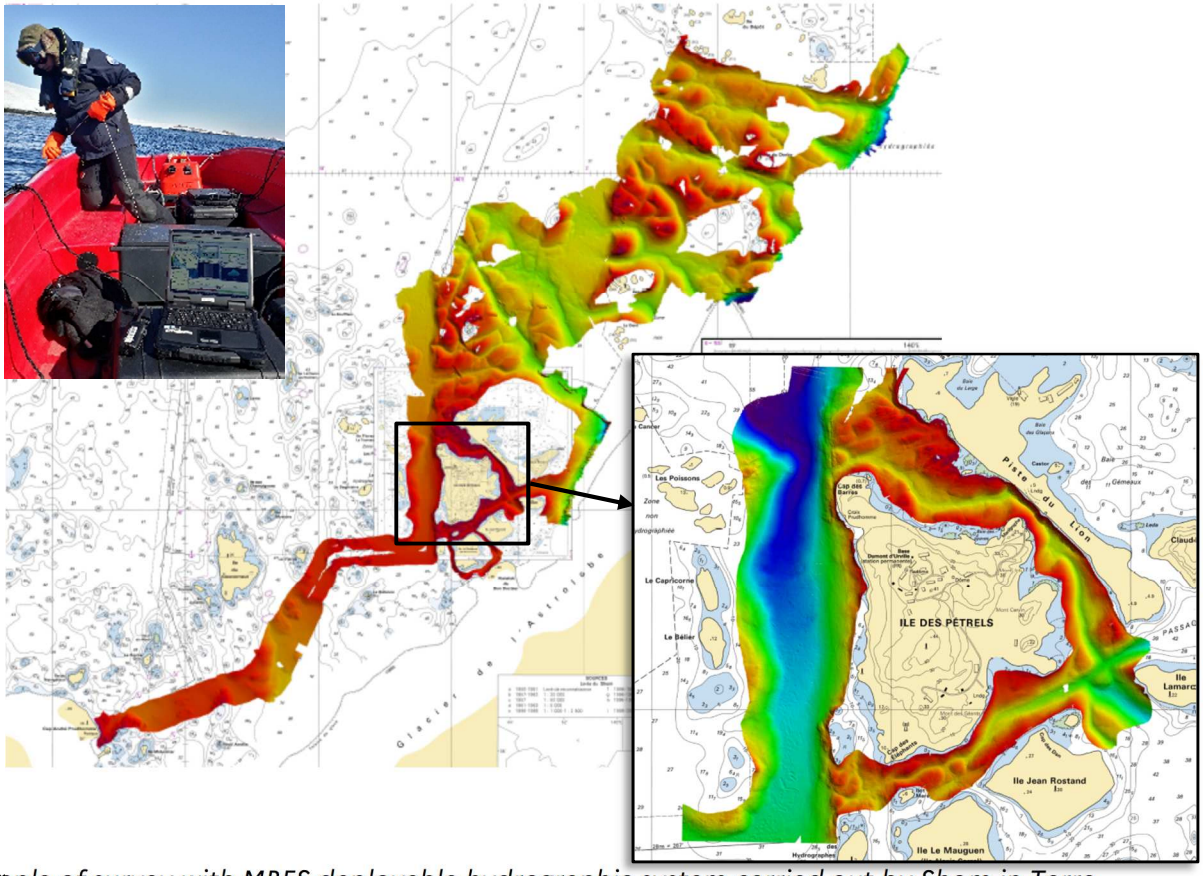

Fig. 2 – Example of survey with MBES deployable hydrographic system carried out by Shom in Terre Adélie (Antarctica) in January 2022

See §10.1 for the preparation of future capacities.

2.4. NEW SHIPS

NTR.

2.5. CROWDSOURCED AND SATELLITE-DERIVED BATHYMETRY - NATIONAL POLICY

Crowdsourced bathymetry – CSB

Shom translated into French the IHO publication B-12 (Edition 2.0.3), Guide on participatory bathymetry. The document is available on https://iho.int/uploads/user/pubs/bathy/B_12_Ed.2.0.3_2020-FR.pdf . France is participating in the revision of the current document.

The French national policy for crowdsourced bathymetry is currently under review.

Satellite-derived bathymetry – SDB

The satellite-derived bathymetry (SDB) has been used since 1987 by Shom to complement traditional surveys (acoustic sounding surveys) to produce nautical charts in the Pacific region (available online https://services.data.shom.fr/geonetwork/srv/eng/catalog.search#/metadata/TRAITEMENT_IMAGE_SPATIOCARTE_MARINE.xml).

Shom is currently conducting a research and development project in the field of SDB, Bathysat project, that will improve performance and quantify vertical uncertainties in accordance with the specifications of the new version of the S-44 (Edition 6.0.0). The results of the study should make it possible to use SDB with no need for calibration with field data.

The research part of the project has been completed in 2020. Results performed on different geographic areas have enabled to evaluate the capacity of the methods on the following objectives:

- to dispense with in situ bathymetric observations for the setting of the SDB;
- to improve the accuracy of the solution faced with the seafloor complexity (reliability and limit of the parameterization of seafloor reflectance inside the model);
- to automate and improve the calculation processes.
- The development part will be completed in September 2022. This stage has enabled Shom to acquire a prototype of the future production line with the following operating concepts:
- to develop, on a case-by-case basis, charting products in remote areas (in the absence of conventional hydrographic surveys);
- to generate seabed morphology products (DTMs) useful in particular for hydrodynamic modelling;
- to have a tool for rapid recognition of the coastal environment: estimation of bathymetric characteristics, turbidity, coastline;
- to detect, on a case-by-case basis, possible morphological changes of the seabed in the coastal strip (high revisit rates) in order to prioritise hydrographic surveys (decision support tool).

2.6. CHALLENGES AND ACHIEVEMENTS

NTR.

3. NEW CHARTS & UPDATES

NTR. Shom does not produce neither paper charts nor ENCs in the ROPME area.

4. NEW PUBLICATIONS & UPDATES

4.1. NEW PUBLICATIONS

NTR.

4.2. UPDATED PUBLICATIONS

Sailing directions, light and fog signal books and radio signal books are no longer published in print form. They are updated on a weekly basis and distributed via the online Shom distribution space (diffusion.shom.fr). Mariners who subscribe to these books are alerted of corrections by e-mail and by the Notice to Mariners (GAN).

4.3. MEANS OF DELIVERY

Nautical publications are available in digital format only (pdf files) on Shom's online shop (http://diffusion.shom.fr).

4.4. CHALLENGES AND ACHIEVEMENTS

NTR.

5. MSI

5.1. EXISTING INFRASTRUCTURE FOR MSI DISSEMINATION

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

MSI Point of contact at Shom:

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5.2. STATISTICS ON WORK OF THE NATIONAL COORDINATOR

NTR.

5.3. NEW INFRASTRUCTURE IN ACCORDANCE WITH GMDSS MASTER PLAN

NTR.

5.4. CHALLENGES AND ACHIEVEMENTS

PING platform:

France is developing its national nautical information platform called PING. This web platform will constitute a shared information system for the transmission, formatting, digitization and posting of nautical information on the Internet.

This platform aims to digitize nautical information as much as possible to promote wide dissemination and integration into user systems (ship navigation systems, shore services systems, user systems, etc.).

The platform will have a portal for humans and programming interfaces (API) for systems, with 3 functional modules:

- production and distribution of navigational warnings,
- transmission of source information by maritime services and users to contribute to nautical information,
- production and dissemination of maritime regulations in a spatialized form.

A mobile application will also be associated with the platform.

The production and digital dissemination of navigation warnings will use the IHO S-124 Navigational warnings standard under development, while ensuring compatibility with the current NAVTEX and EGC systems.

The project is supported by the European Maritime Affairs and Fisheries Fund and the navigation warnings module has been developed and tested in the framework of the European Interreg MED OSMOSIS project.

For the time being, PING is based on the draft S-124 standard. It will be aligned with the first edition of the S-124 standard when it is published.

The goal is to deploy PING operationally in 2023 in metropolitan France and then in the French overseas territories.

It is planned that the source code of PING will be open source.

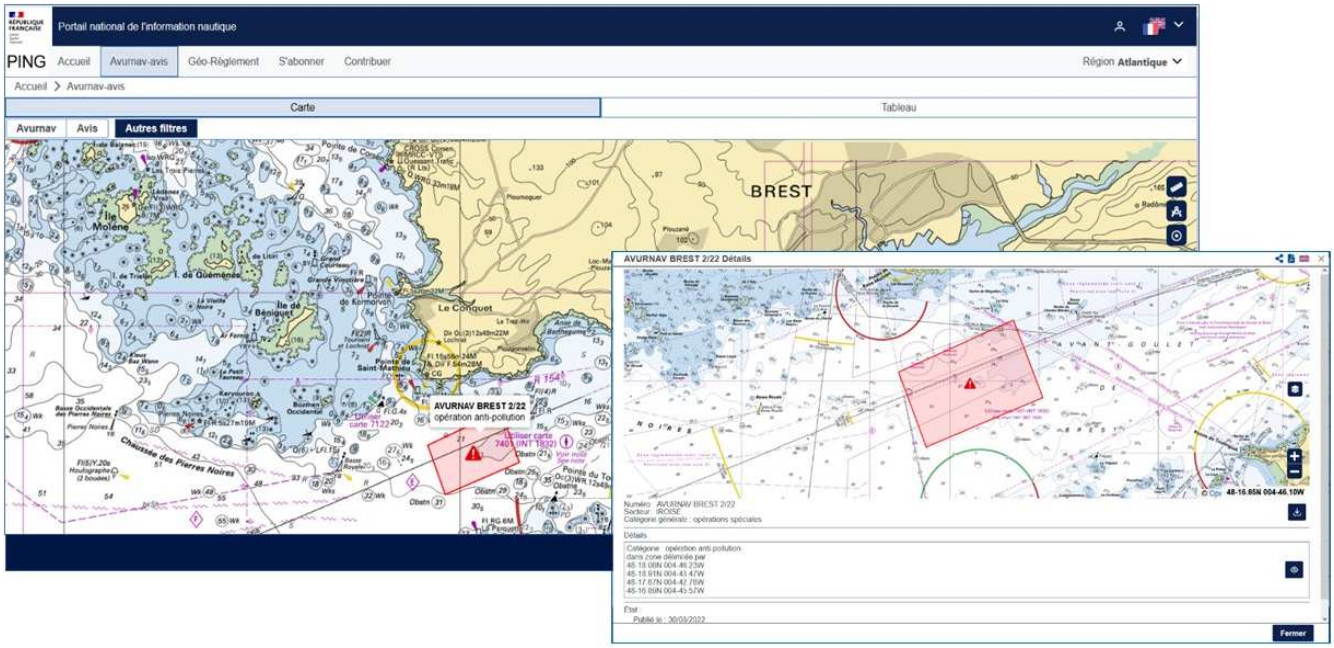

Fig. 3 – Views of the PING portal under test - Viewing navigation warnings

6. C-55 – LATEST UPDATES

NTR. Shom is not PCA in the ROPME area.

7. CAPACITY BUILDING

7.1. OFFER OF CAPACITY BUILDING

Shom school offers FIG-OHI-ACI (category B) courses in hydrography and marine cartography. These courses are given in French and are open to French-speaking foreign candidates (depending on available places). The training offer is presented on the Shom website: https://www.shom.fr/sites/default/files/2020-10/Offre_formation_2020-2021_Web.pdf.

A training course in hydrography accredited in category A FIG-OHI-ACI is provided by ENSTA Bretagne (https://www.ensta-bretagne.fr/en/hydrography-and-oceanography).

Fig. 4 – Courses and training provided at the Shom hydrographic school (source: shom.fr)

7.2. TRAINING RECEIVED, NEEDED, OFFERED

NTR.

7.3. PROJECT MANAGEMENT ASSISTANCE FOR THE CONSTRUCTION OF HYDRO-OCEANOGRAPHIC VESSELS

Shom has a recognized know-how in the construction of hydro-oceanographic vessels (from 8m launches to 100m vessels). It masters the entire process from the expression of needs to the implementation of systems. It puts its expertise at the service of shipyards, within the framework of new constructions or modernizations for:

- Studies to define, on the basis of an expression of need, the complete specifications in terms of hydro-oceanographic equipment (including computers), as well as the fitting out of

premises and scientific spaces of hydro-oceanographic ships. Shom provides intellectual services such as the drafting of the metrological survey essential to the proper integration and control of the systems, the specification of the batches of spare parts adapted to the ship's missions, the interface plans, the acceptance book and the ship's logbook (in its field of competence).

- Equipment acceptance and integration: supervision of equipment integration (mechanical, interfacing, metrology, etc.), acceptance tests in the factory, in port and at sea.
- Training and assistance: training of personnel who will implement the equipment, but also of personnel who will maintain the systems, transfer of skills, handling of warranty calls after delivery of the vessel to the end customer. A Shom hydrographic engineer is deployed to the Nigerian Naval Hydrographic Office for one year for the training on the new French-built hydrographic vessel Lana.

Fig. 5 – Nigerian hydrographic ship Lana built by the French shipyard OCEA with the support of Shom (Source: OCEA)

7.4. STATUS OF NATIONAL, BILATERAL, MULTILATERAL OR REGIONAL DEVELOPMENT PROJECTS WITH HYDROGRAPHIC COMPONENT

NTR.

7.5. DEFINITION OF PROPOSALS AND REQUESTS TO THE IHO CBSC

NTR.

8. OCEANOGRAPHIC ACTIVITIES

8.1. GENERAL

NTR.

8.2. GEBCO/IBC'S ACTIVITIES

Data on transits in French and international waters were provided to IHO DCDB and for integration into the GEBCO grid in 2018.

The survey coverage and associated metadata available on the IHO DCDB site are provided via the *EMODnet Bathymetry* portal supported by the European Union (https://www.emodnet-bathymetry.eu/). The last update of all these bathymetric resources was performed in December 2020.

8.3. 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 freely accessible on the web http://data.shom.fr/#donnees/refmar for all areas under French jurisdiction. Shom itself operates and maintains a large tidal network reporting in real time, RONIM, which is a major contribution to REFMAR.

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

No tide gauge is implemented in the ROPME area.

8.4. NEW EQUIPMENT

NTR.

8.5. CHALLENGES AND ACHIEVEMENTS

NTR.

9. SPATIAL DATA INFRASTRUCTURES

9.1. STATUS OF MSDI

Shom develops and maintains a MSDI covering all maritime areas under French jurisdiction. The information thus compiled is accessible through 3 portals:

- data.shom.fr
- diffusion.shom.fr
- maritimelimits.gouv.fr

9.2. RELATIONSHIP WITH THE NSDI

The various maritime geographical information produced by Shom are referenced on the French NSDI (https://www.data.gouv.fr/).

9.3. INVOLVEMENT IN REGIONAL OR GLOBAL MSDI EFFORTS

Shom contributes to the IHO MSDIWG.

9.4. NATIONAL IMPLEMENTATION OF THE SHARED DATA PRINCIPLES – INCLUDING ANY NATIONAL DATA POLICY AND IMPACT ON MARINE DATA

In accordance with France open data policy, Shom has opened access to its basic data: bathymetric data, wrecks, cables, seabed types, maritime limits & boundaries, toponymic databases, port information, and maritime regulations, etc. These data are distributed under a Creative Commons "CC-BY-SA 4.0" license or an open license, depending on the case.

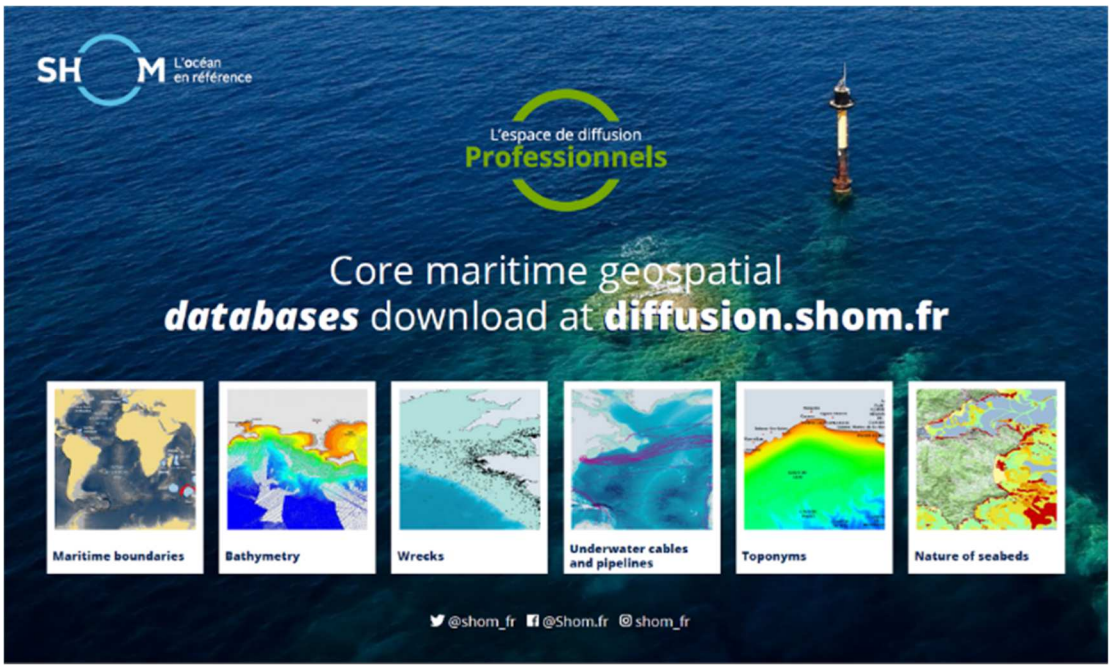

Fig. 6 – Access to Shom's open data (diffusion.shom.fr)

9.5. MSDI NATIONAL PORTALS

Data on data.shom.fr portal are organised according to the following topics:

- Master data: cartography, maritime boundaries, maritime and coastal database, coastal altimetry, bathymetry, vertical datums, sedimentology, geophysics, tides, currents and historical data;
- Oceanographic forecasts: waves, meteorology, water level, hourly surface hydrodynamic, daily mean 3D hydrodynamic and oceanogram;
- Coastal observations: sea level (REFMAR), sea surface current and sea bottom turbidity.

Not all this information is available on the ROPME region.

Hereafter are listed some of the latest evolutions:

- Worldwide sediments map (edition);
- Gravity stations (edition);
- Tide prediction service: updated set of parameters (edition);
- New tools and services (https://services.data.shom.fr/support/fr);
- Redesigned drawing tool and new tools.

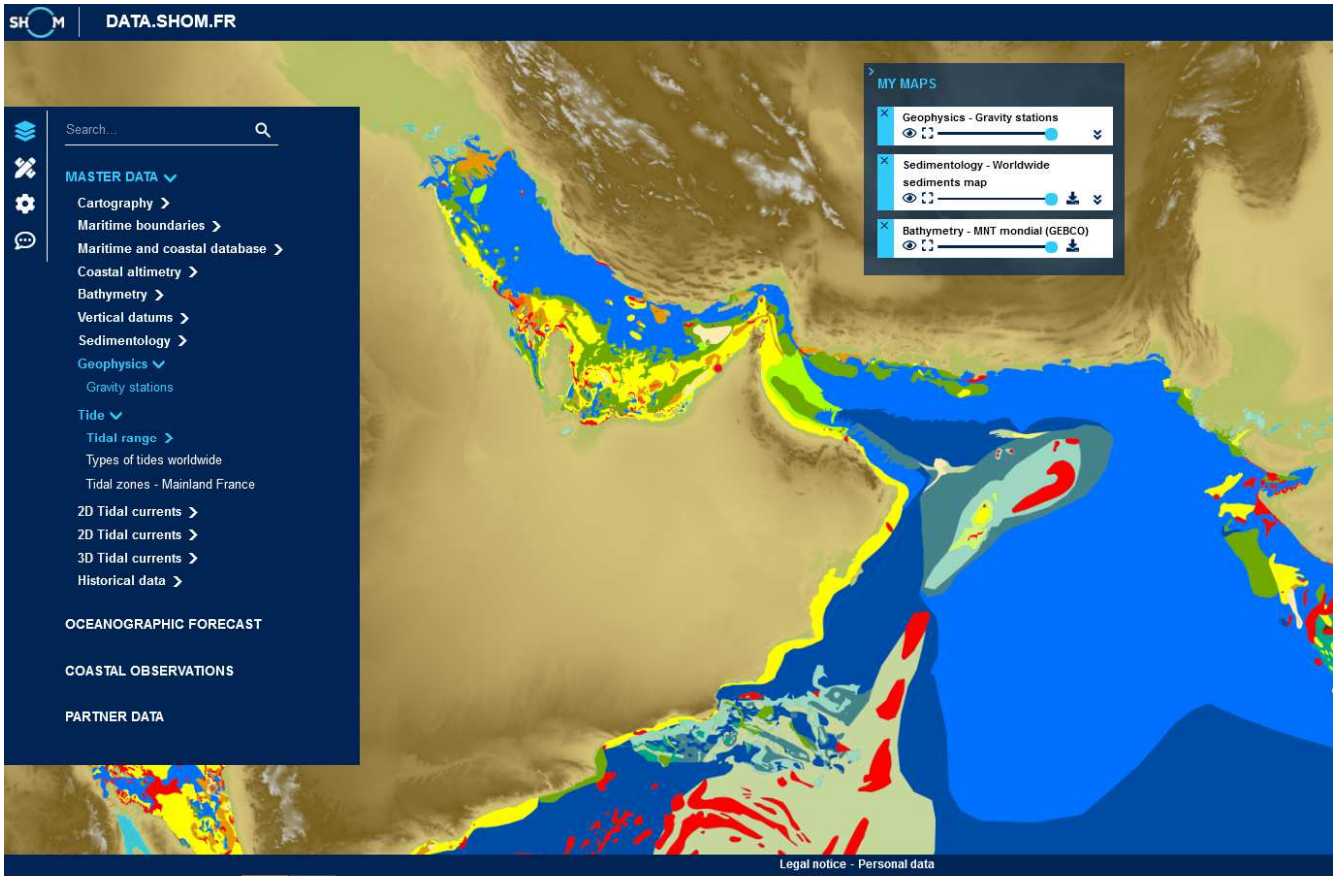

Fig. 7 – Worldwide sediment map layer (data.shom.fr)

A detailed description of the portal functions and contents is available on Shom website (https://services.data.shom.fr/support/fr).

9.6. BEST PRACTICES AND LESSONS LEARNED

Between July 2019 and June 2020, a UX designer from the "designers of general interest" (DIG) program supported by the French interdepartmental digital direction (DINUM) was tasked with improving the user experience of dissemination portals including data.shom.fr. Based on feedback from portal users, a new portal ergonomics with, in particular, a more prominent cartography and a redesigned drawing tool has been defined. This new portal was opened in June 2021.

Among the new features of this new version of data.shom.fr:

- A more fluid interface with repositionable windows;
- A more user-friendly drawing tool;
- A redesigned catalogue of available layers;
- New measurement tools: surface calculation and azimuth distance;
- A complete version in English.

9.7. CHALLENGES AND ACHIEVEMENTS

NTR.

10. INNOVATION

10.1. USE OF NEW TECHNOLOGIES

As part of the preparation phase for the replacement of the hydro-oceanographic fleet (CHOF project), an agreement was signed with the procurement agency of the French DoD (DGA) for a period of three years in order to conduct experiments and modernise hydrographic data processing techniques.

A first experiment was carried out in September 2020 with 2 Unmanned Surface Vehicles DriX from iXblue; many other experiments were carried out in 2021: in January with Autonomous Underwater Vehicle Gavia from Teledyne; in May and June with USV Inspector and AUV A18D from ECA; in August with 2 gliders Sea Explorer from Alseamar and a last one in October with deep sea AUV HUGIN Superior from Kongsberg Maritimes. Other experiments are planned in 2022 and in the coming years. Beyond the evaluation of the hydrographic performance of these new platforms, these experiments should make it possible to adapt the organisation and processes in order to get the best out of these new technologies.

Fig. 8 – Experiment of USV DriX deployed from BHO Beautemps-Beaupré (Source: iXblue, 2020)

Fig. 9 – Experiment of AUV HUGIN deployed from BHO Beautemps-Beaupré (Source: Marine nationale, 2021)

10.2. RISK ASSESMENT

Shom completed in 2020 the development of an experimental tool called "Deseasion platform". It is a multi-criteria decision tool for hydrographic risk assessment and cost-benefit analysis. It will be used in the coming years to improve the national hydrographic survey program.

10.3. POLICY MATTERS

NTR.

11. OTHER ACTIVITIES

11.1. PARTICIPATION OF IHO MEETINGS

Due to 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
ENCWG		✓	ENC Standards Maintenance Working Group
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
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
NSHC		✓	North Sea Hydrographic Commission
RSAHC		✓	ROPME Hydrographic Commission
S100WG		✓	S-100 Working Group

SAIHC		✓	Southern Africa and Islands Hydrographic Commission
HSWG		✓	Hydrographic Surveys Working Group
SWPHC		✓	South-West Pacific Hydrographic Commission
TWCWG		✓	Tidal, Water Level and Currents Working Group
WEND		✓	Wold-Wide Electronic Navigational Chart Database
WWNWS		✓	World-wide Navigational Warning Service Sub-Committee

11.2. METEOROLOGICAL DATA COLLECTION

NTR.

11.3. GEOSPATIAL STUDIES

NTR.

11.4. PREPARATION FOR RESPONSES TO DISASTERS

France may have Navy ships in the ROPME Sea Area 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 alert

NTR.

- Coastal flooding

NTR.

- Oil spills

NTR.

11.5. ENVIRONMENTAL PROTECTION

NTR.

11.6. ENGAGEMENT WITH THE MARITIME ADMINISTRATION

NTR.

11.7. AIDS TO NAVIGATION MATTERS

NTR.

11.8. MAGNETIC AND GRAVITY SURVEYS

NTR.

11.9. INTERNATIONAL ENGAGEMENTS

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 formalization of the respective responsibilities for maritime safety information, hydrographic and charting activities.

Within the ROPME area, there are no such agreements.

12. CONCLUSIONS

Shom supports any initiative aimed at improving hydrographic knowledge and navigation safety, insofar as the data collected benefit the cartographic authorities and the updating of the nautical documentation of this region.

LISTE DE DIFFUSION

DESTINATAIRES :

- RSAHC CHAIR (ONHO - OMAN)
- IHO SECRETARIAT

COPIES INTÉRIEURES :

- DG
- DMI
- DMI/REX
- ARCHIVES (DMIDSD 2.035)