20th Meeting of the Southern African and Islands Hydrographic Commission

National Report by France (Shom)

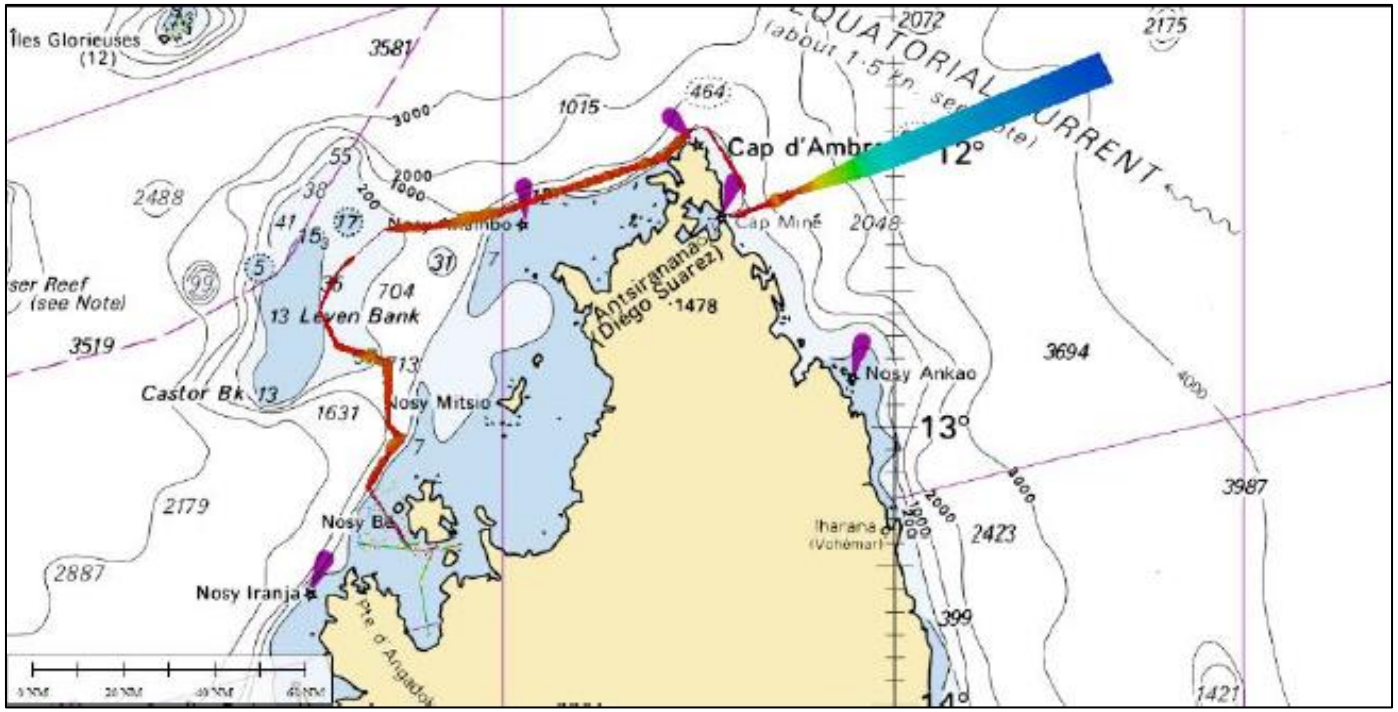
[SAIHC Member State]

SAIHC20, 17 – 19 September 2024

TOP ACHIEVEMENT DURING THE YEAR

Hydro-oceanographic surveys

- BHO *Beautemps-Beaupré* was deployed in Mayotte and Madagascar in August 2023.

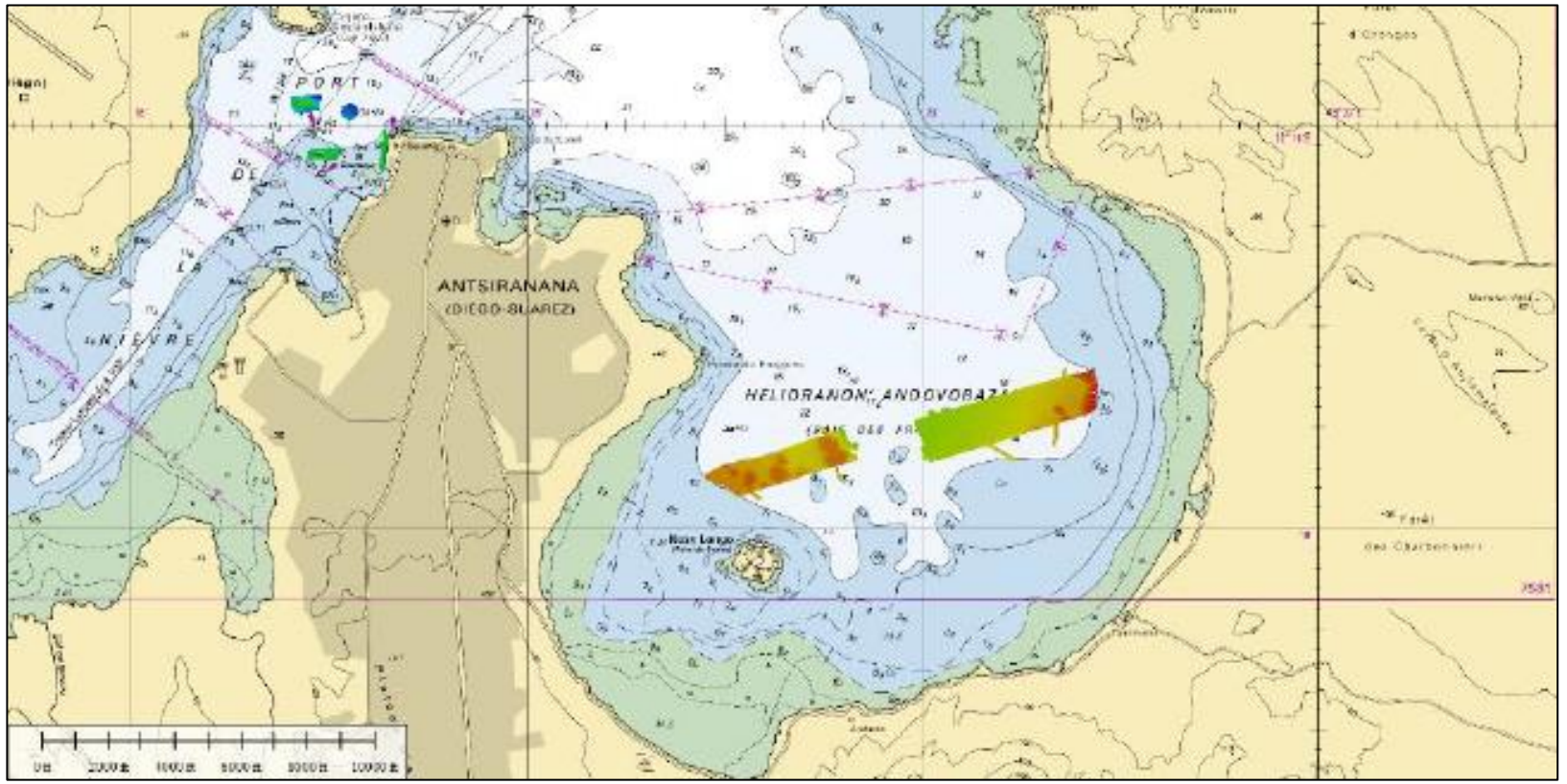


Madagascar Survey (general view) (extract CM6673) – BHO Beautemps-Beaupré

TOP ACHIEVEMENT DURING THE YEAR

International Hydrographic Organization

Hydro-oceanographic surveys

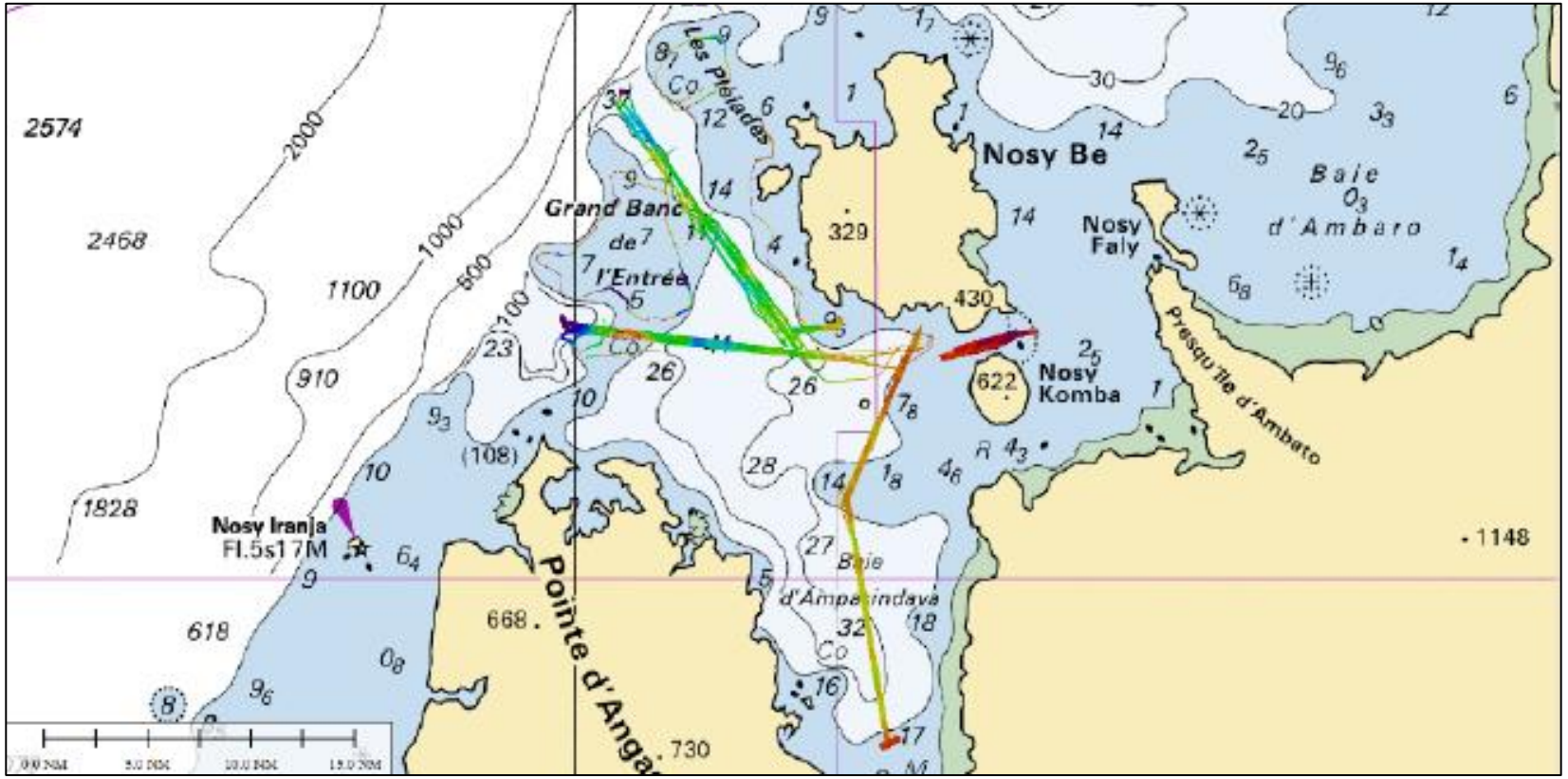


Madagascar-Antsiranana (Diego Suarez) (extract CM7680) – BHO Beautemps-Beaupré

TOP ACHIEVEMENT DURING THE YEAR

International Hydrographic Organization

Hydro-oceanographic surveys

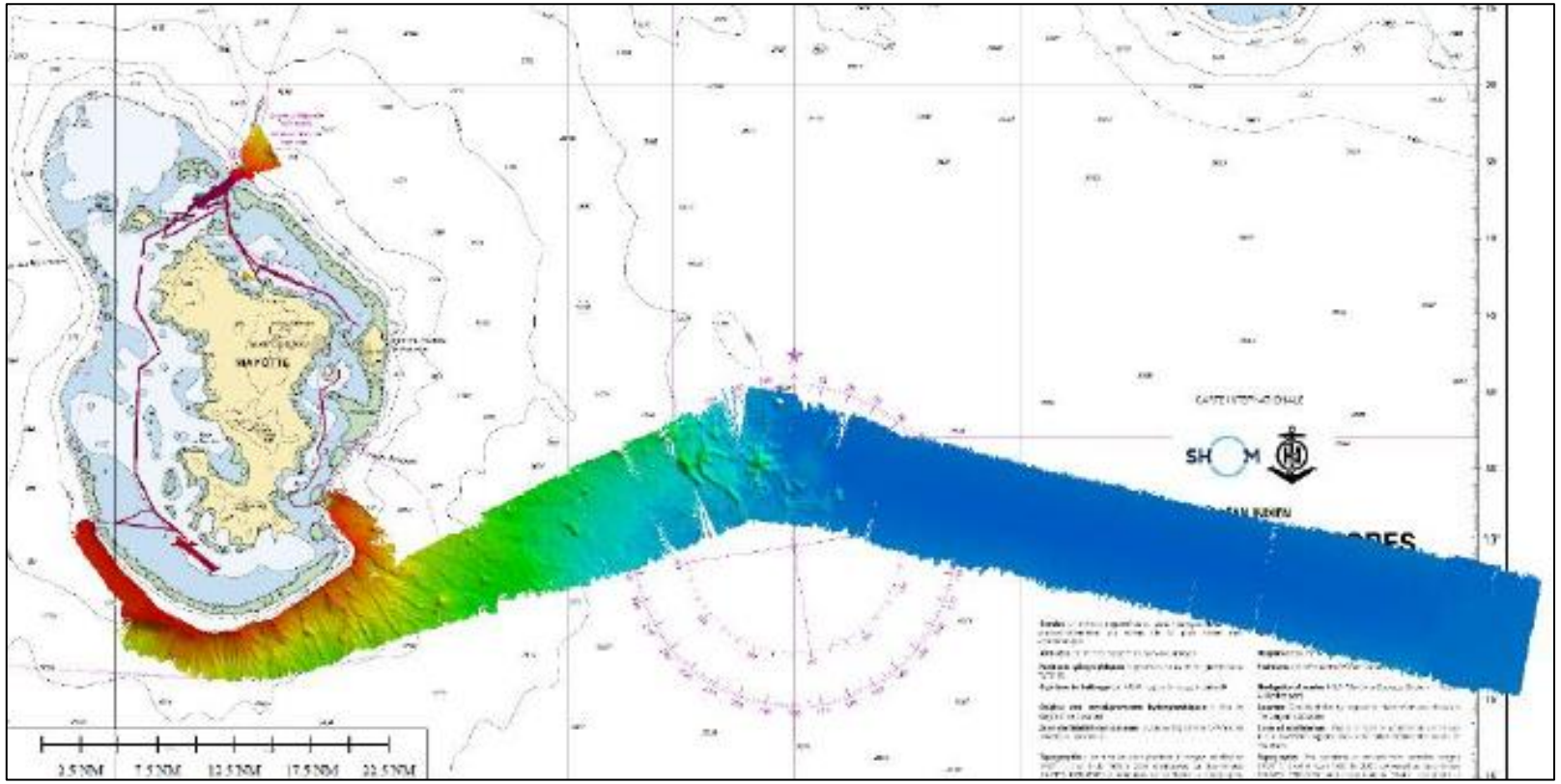


Madagascar - Nosy Be (extract CM7486) – BHO Beautemps-Beaupré

TOP ACHIEVEMENT DURING THE YEAR

International Hydrographic Organization

Hydro-oceanographic surveys

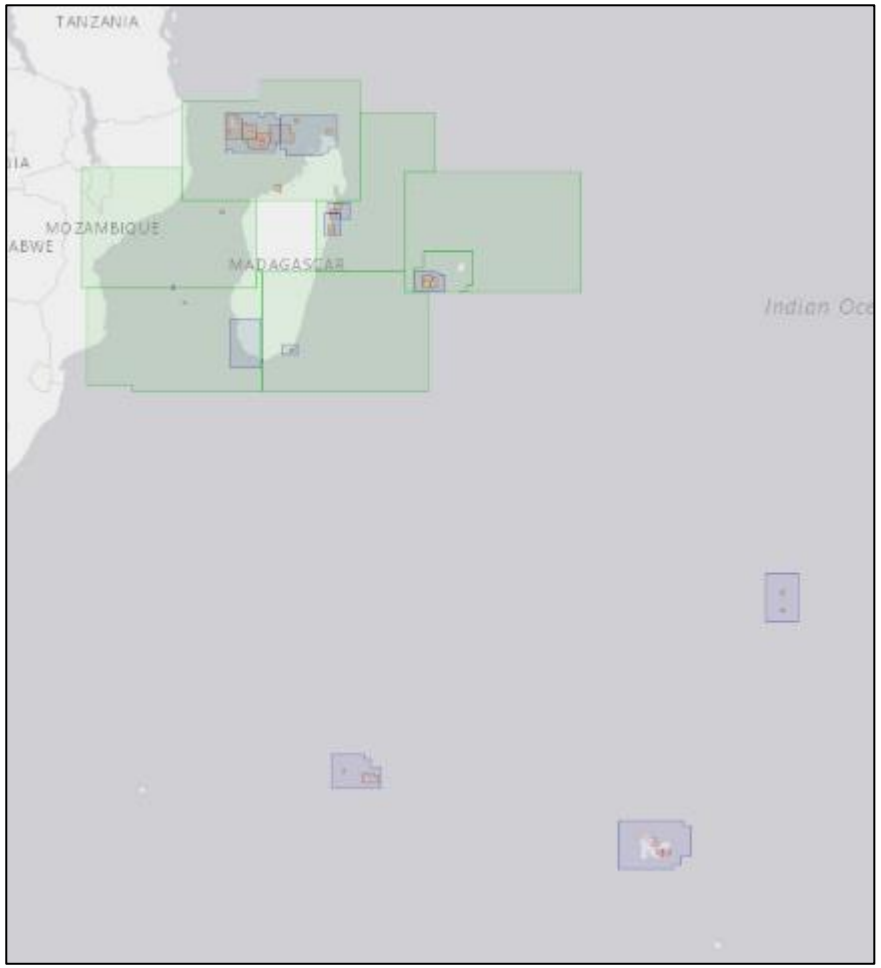


Mayotte (extract CM7490) – BHO Beautemps-Beaupré

TOP ACHIEVEMENT DURING THE YEAR

Charting

- ENC
  - 16 new cells produced (Îles Kerguelen)
  - 87 FR ENCs available in Region H (out of a total of 110 cells planned)
- INT Charts
  - 1 new edition (INT7735 - La Réunion)
  - FR INT scheme complete for Region H
- Nat CHARTS
  - 1 new chart (*FR7828*)



MSI

- NTR (MSI warnings are broadcast through SafetyNet network)

TOP ACHIEVEMENT DURING THE YEAR

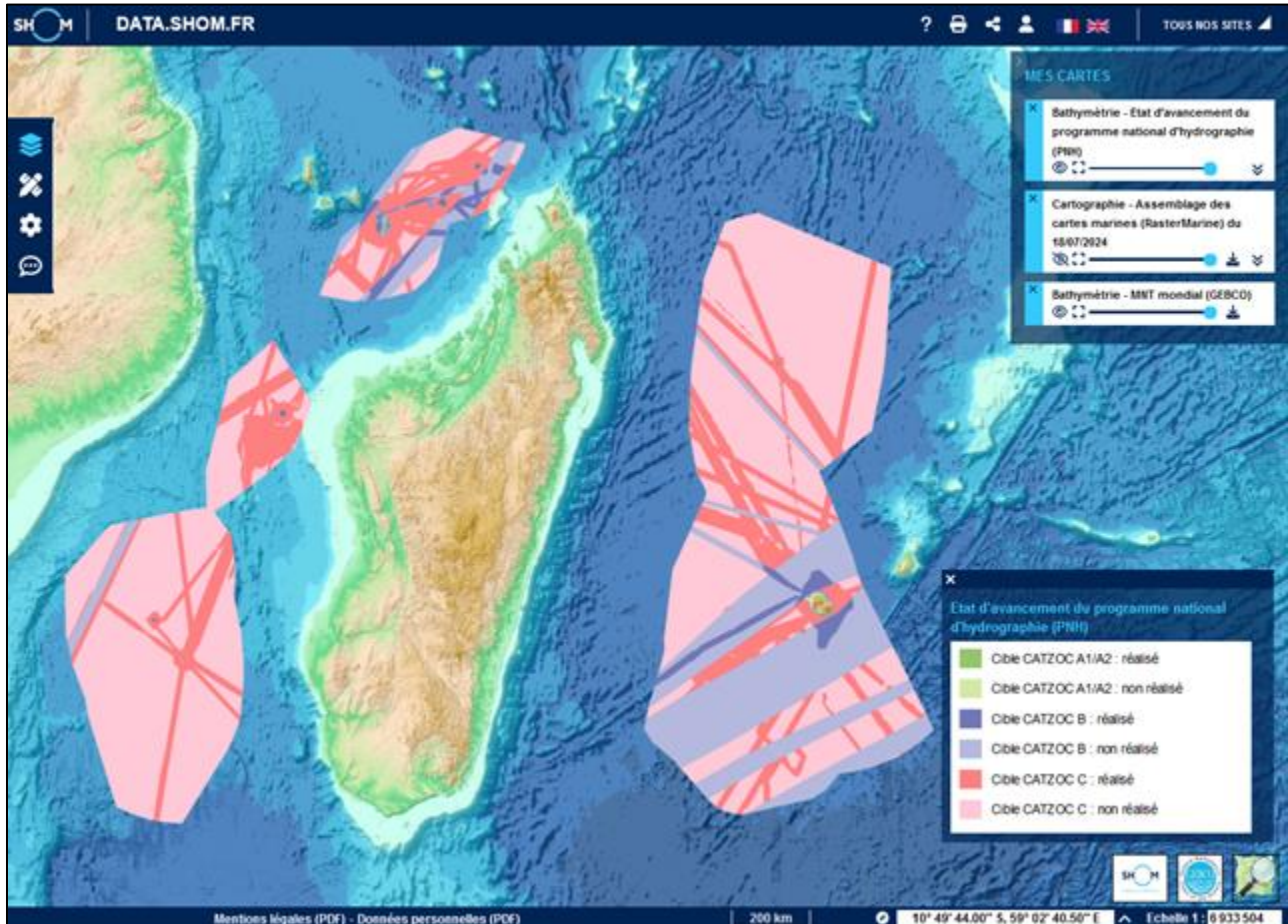
International Hydrographic Organization

MSDI

- data.shom.fr

Latest evolutions:

- New layer
  - National hydrography program : current status
- Updated layers
  - Aids to Navigation (AtoN)
  - Coastal altimetry (Litto3D) : data display improvements
  - GEBCO worldwide bathymetric DTM and global coastline
  - Maritime altimetric references
  - On demand tidal table calculation
  - Tidal table calculations



TOP CHALLENGES AND /OR OBSTRUCTIONS

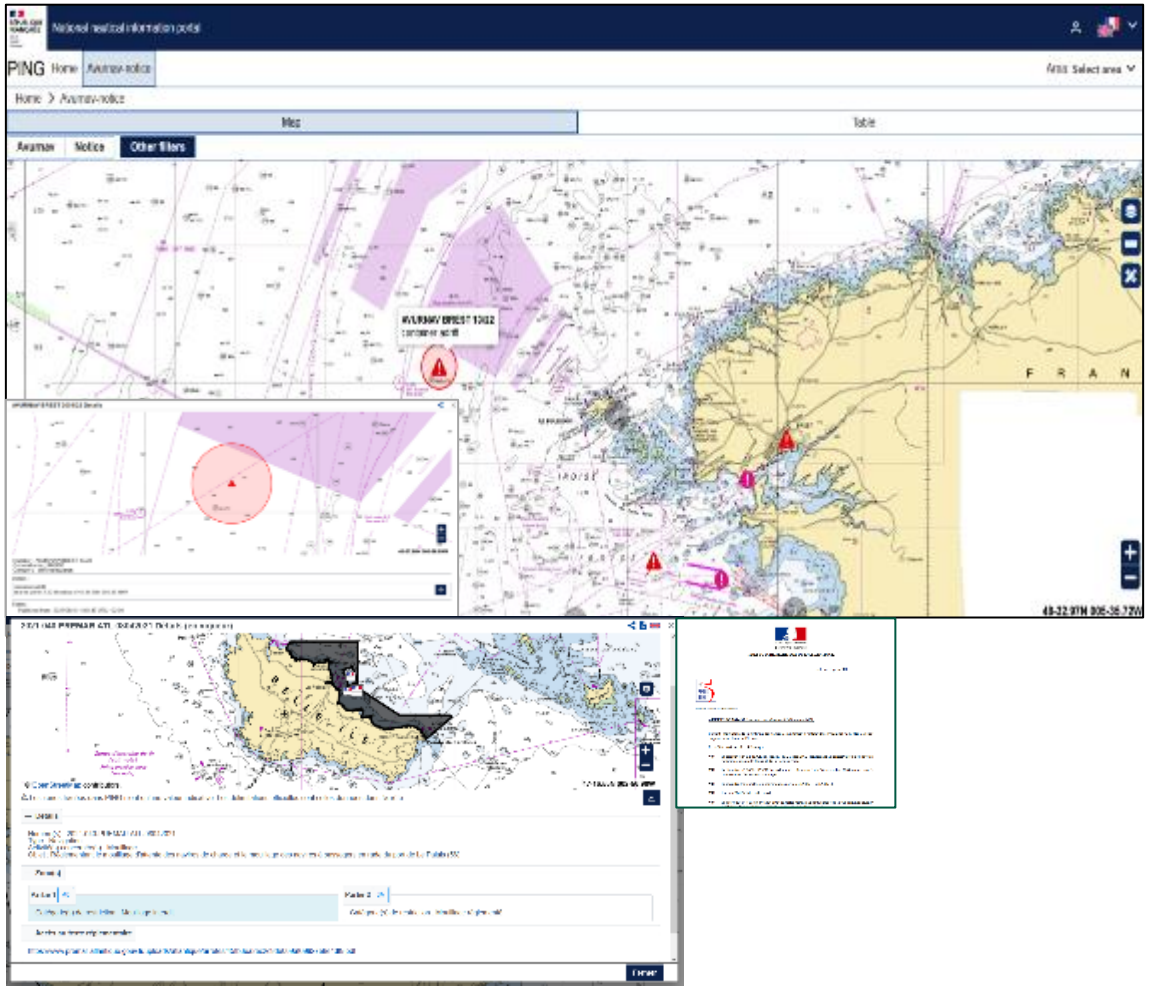
S-124 – French national nautical information platform PING

Shared information system for the transmission, formatting, digitization and posting of nautical information on the Internet

This platform is structured around 3 modules:

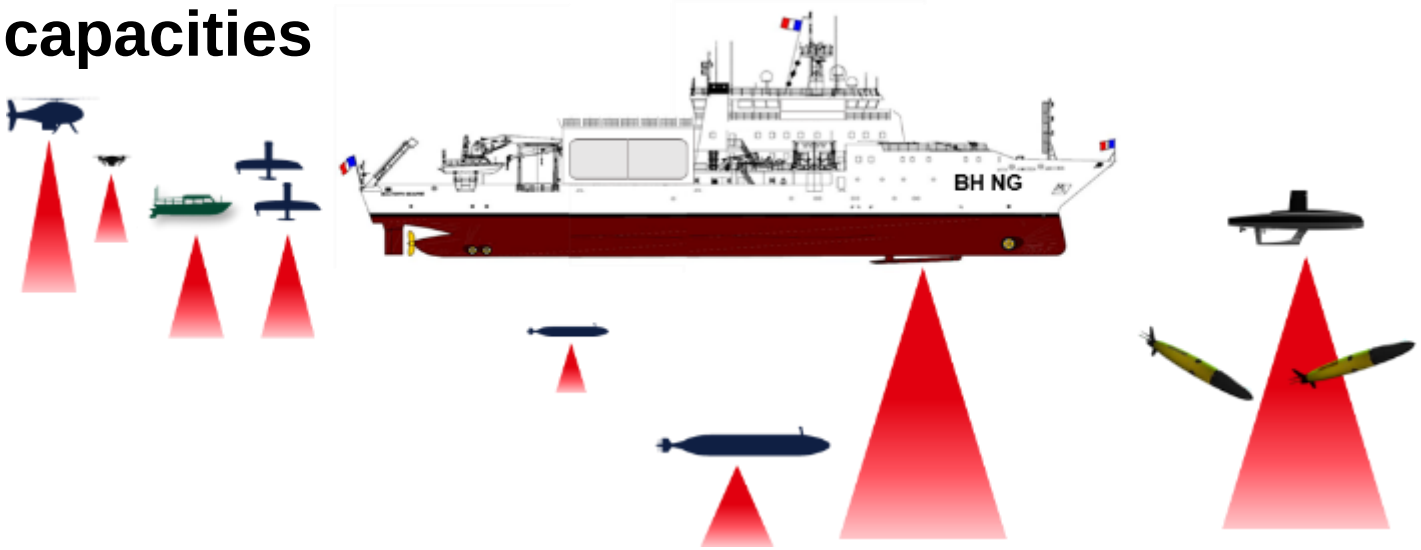
- production and diffusion of navigational warnings,
- transmission of source information by maritime services and users in order to contribute to nautical information,
- production and diffusion of maritime regulations in a spatialized form.

Production and dissemination of navigational warnings in compliance with S-124 (as soon as the specification standard is operational) with compatibility with the current NAVTEX and EGC systems



Transformation of the hydro-oceanographic capacities

- **Sketch up of the expected capacities**



- **Ship Dimensions** (range)
  - Length: 90 metres
  - Gross tonnage: 3,000 tonnes
  - Average operating speed: 10 knots
  - Maximum crew : 80 (29 for specialists)

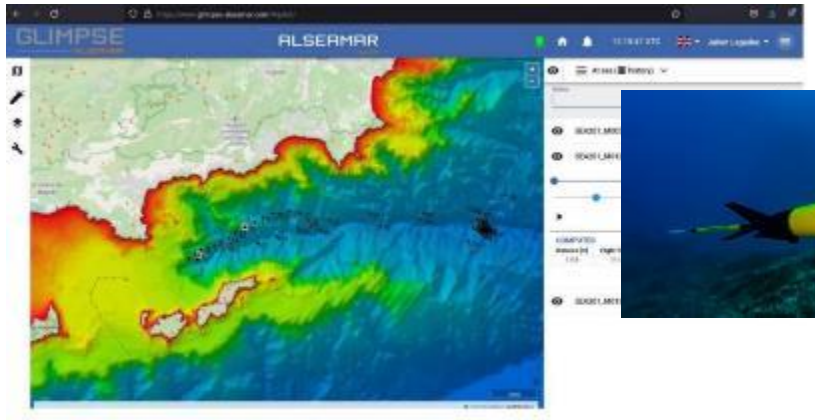
- **Full hydroacoustic suite**
  - MBES (shallow, medium, large class), SBP, SBES, ADCP, …

- **Scientific facilities**
  - Handling equipment
    - Stern and mid-ship ‘A’ frame
    - Comprehensive winch suite
  - Laboratories (humid and air-conditionned)

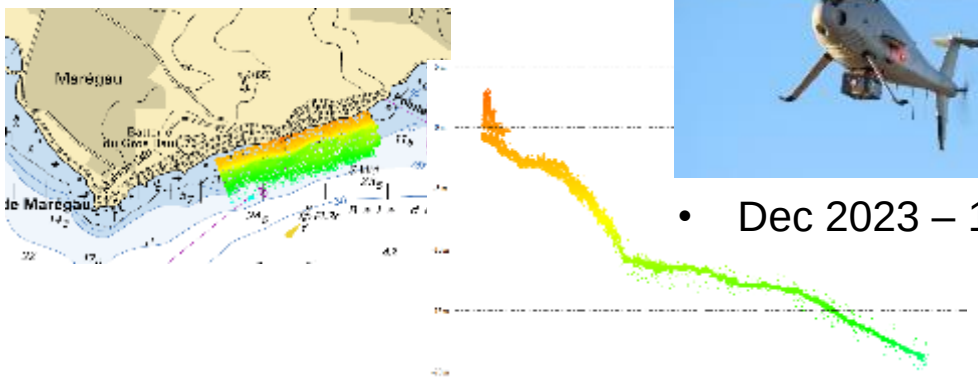
- **Mobile vehicles**
  - 2 medium class USV
  - 1 hydrographic survey launch
  - 1 large oceanic class USV (not on board)
  - Micro AUVs
  - 1 AUV 6000
  - Gliders
  - 1 micro and medium class UAV

Transformation of the hydro-oceanographic capacities

- **Latest experiments & ops**
- August 2023 – 2 gliders Sea Explorer (Alseamar) // July 2024 – **1st operational survey**



- October 2023 – 1 USV DriX (eXail)

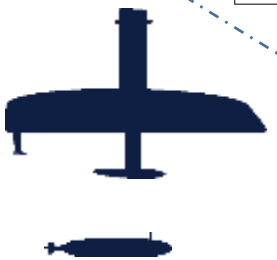


- Dec 2023 – 1UAV S100 (Schiebel) / Lidar VQ840G (Riegl)

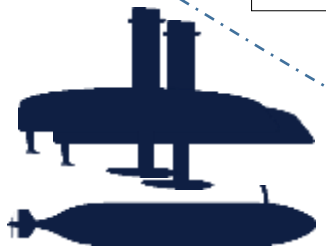
Transformation of the hydro-oceanographic capacities is underway!

2024

2025



2026



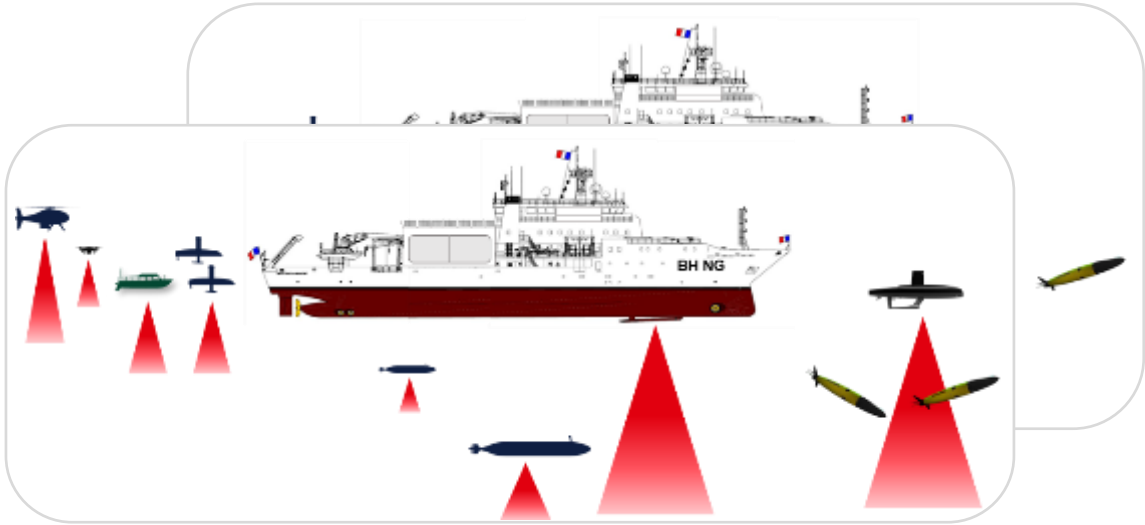
2027

2028

2029

2026 ...2028

Decommissioning



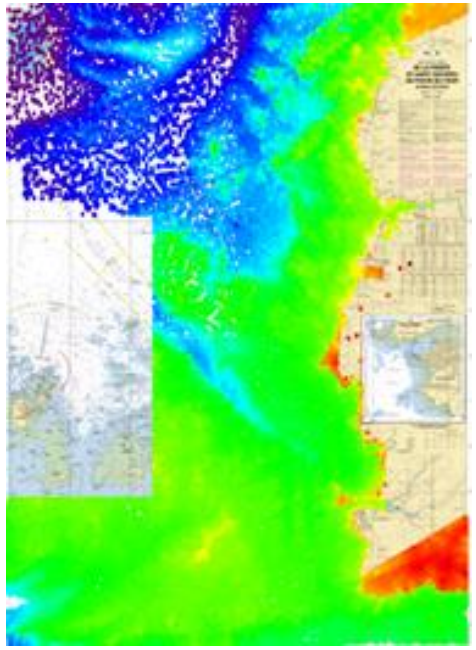
TOP CHALLENGES AND /OR OBSTRUCTIONS

First feedback: two-thirds time savings

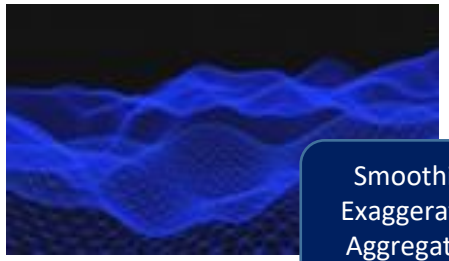
Automatic generalization

Calhypso : a major step forward

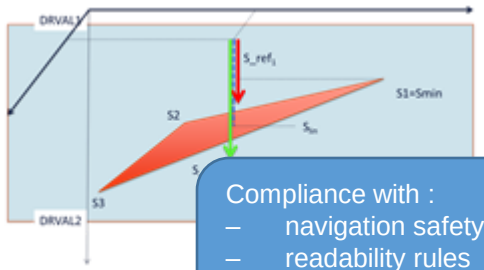
Bathymetric knowledge



65 500 000 soundings

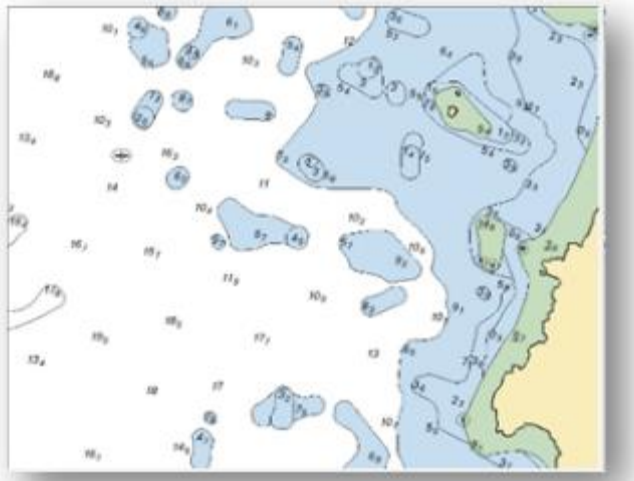


Smoothing
Exaggeration
Aggregation



Compliance with :
- navigation safety rules
- readability rules
- geomorphological relevance rules
- topological consistency rules

Automated generalized chart

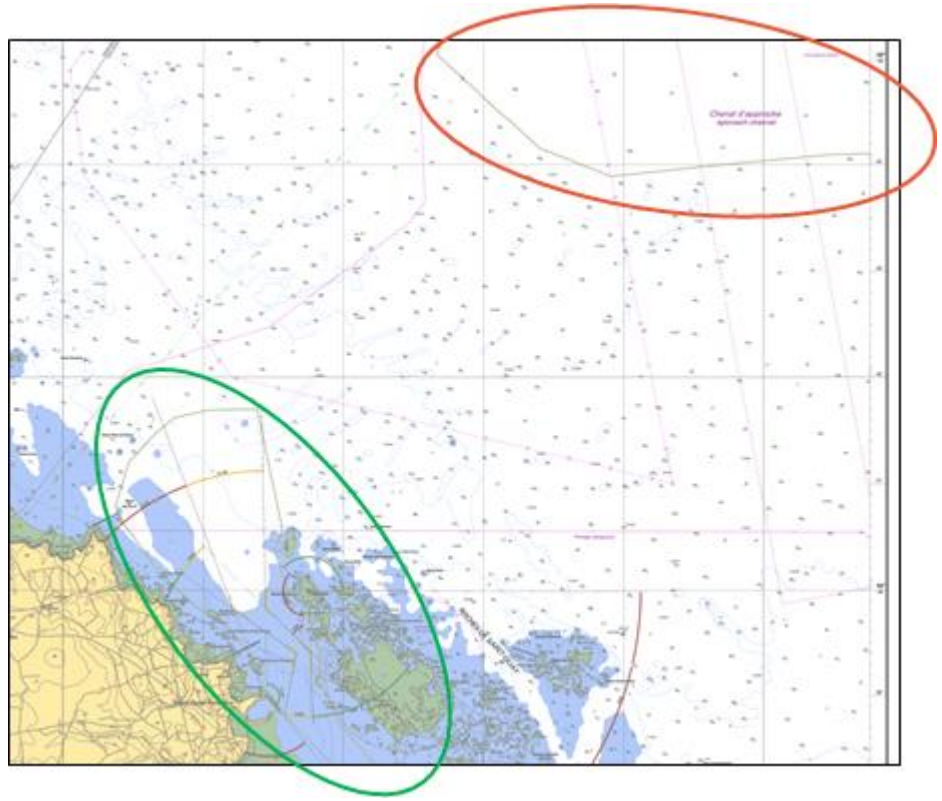


1 417 depth contours
3 033 soundings

TOP CHALLENGES AND /OR OBSTRUCTIONS

International Hydrographic Organization

Unified Cartographic Source (FCU)



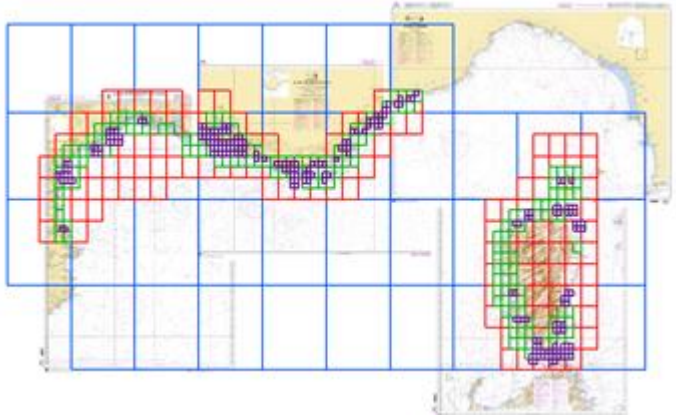
A single charting scale per area

A chart will be a **view/extraction from the FCU**

Limited number of **compilation scales : 6**

Used of **gridded cartographic Source** and **Automation**

Start of production mid-2024 by France



Gamme	maximumDisplayScale S-101 (CSLC S-57 – Compilation)	minimumDisplayScale S-101
UB1	1 : 1 500 000	/
UB2	1 : 350 000	1 : 1 500 000
UB3	1 : 90 000	1 : 350 000
UB4	1 : 22 000	1 : 90 000
UB5	1 : 8 000	1 : 22 000
UB6	TBD(*)	1 : 8 000

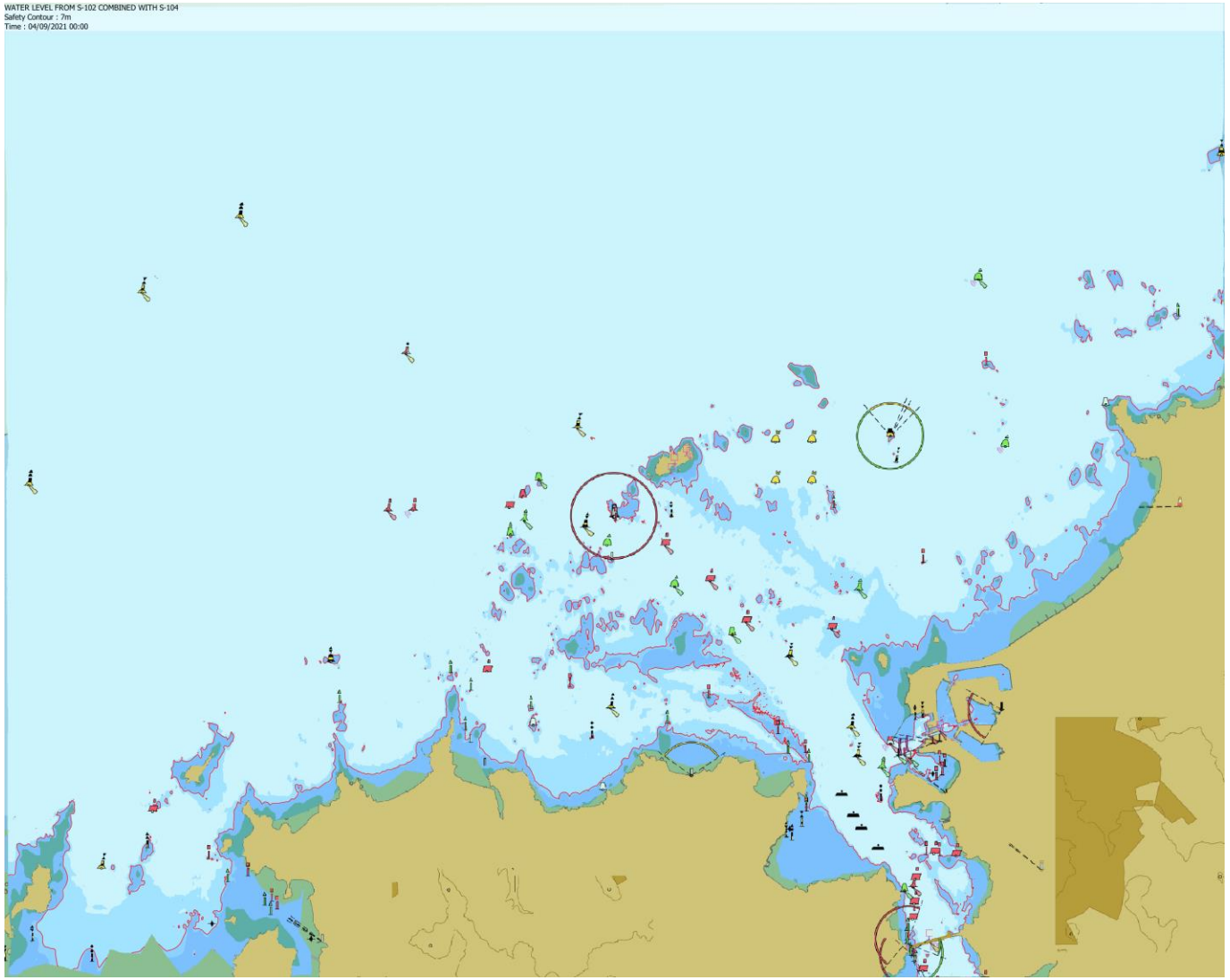
TOP CHALLENGES AND /OR OBSTRUCTIONS

International Hydrographic Organization

S-100 strategy

Moving forward S-100 Phase 1 products

Exemple of S-102 and S-104 combined to show users the benefits of the S-100 world



TOP CHALLENGES AND /OR OBSTRUCTIONS

Crowdsourced bathymetry - CSB

- 22 November 2022, Publication of an instruction of the French Prime Minister on crowdsourced bathymetry

- Data from crowdsourced bathymetry in French waters are transmitted as a priority to the Shom, or alternatively to one of the following trusted third parties :
  - the European Marine Observation and Data Network EMODnet, via its "Data Ingeneering" portal EMODnet, via its Data Ingestion Portal (https://submission.emodnetingestion.eu/);
  - the IHO Data Centre for Digital Bathymetry (DCDB - https://www.ngdc.noaa.gov/iho/).

- CSB data : in accordance of the IHO B-12 publication, collected with **standard navigation instruments** (No MBES or other scientific equipment) during **routine manoeuvers**

- CSB data in FR waters to be transmitted to Shom by the trusted nodes before dissemination. Only the validated data sets transmitted by Shom can be distributed through EMODnet Bathymetry and DCDB

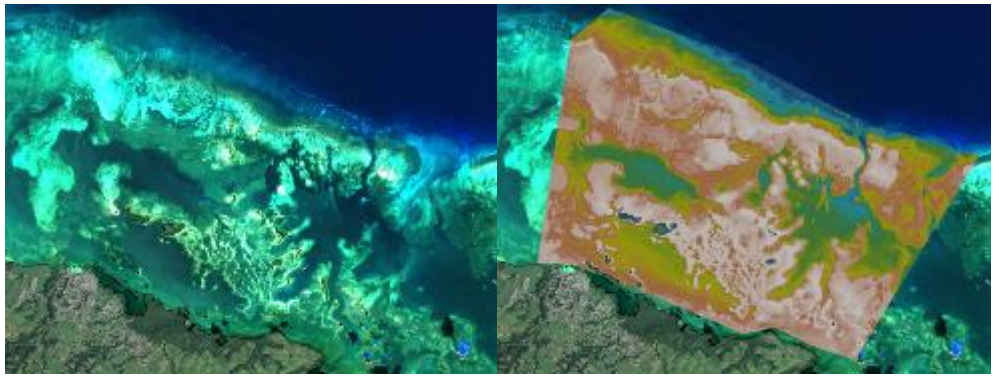
TOP CHALLENGES AND /OR OBSTRUCTIONS

International Hydrographic Organization

Satellite-derived bathymetry - SDB

Development of new SDB modeling chain > Bathysat Project

- As efficient and automated as possible
- Producing SDB without any in-situ bathymetric data
- Being able to estimate the reliability of the products
- Being in control of the overall system



Orthorectified satellite images (multispectral sensor)

TOP CHALLENGES AND /OR OBSTRUCTIONS

Satellite-derived bathymetry - SDB

Progress of the Bathysat Project

- 2020: research part completed
- September 2022: development part completed
  - Acquisition of 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)

Projections

- 2023 : Performing of the industrialization part
- End of 2024: fully operational solution
- In the meantime: test of the new SDB products in Mayotte Lagoon for comparison with existing bathymetric surveys + assessment of seabed evolution

TOP CHALLENGES AND /OR OBSTRUCTIONS

International Hydrographic Organization

Training

Progress

- Two civil servants from the Comoros National Maritime Affairs Agency (Ministry of Transport) on training at the Shom School ;
- They will be following the 2024-2025 session of the cat.B hydrography course (L3 hydro).

Projections

- Beginning of September 2024 : start of training ;
- End of May 2025 : End of training.

ACTIONS REQUESTED FROM SAIHC20

1. To take note of the French national report

Thank you for your attention