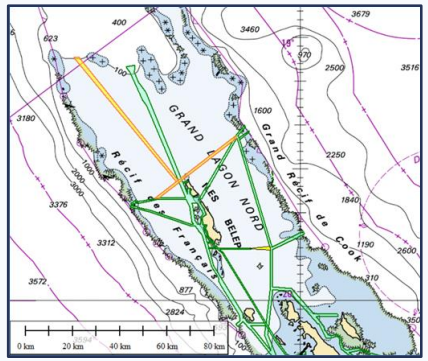
22th Meeting of the South West Pacific Hydrographic Commission

National Report by **FRANCE**

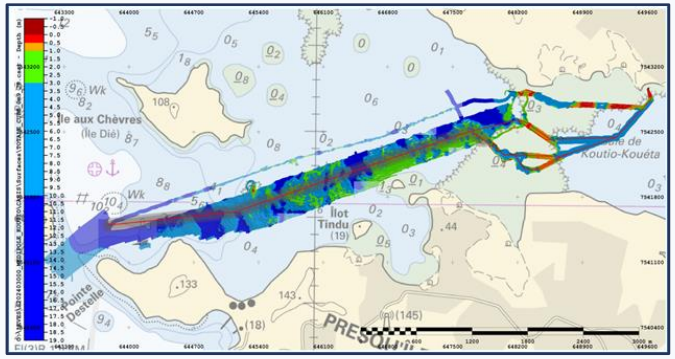
[SWPHC Member]

Main achievements during the year

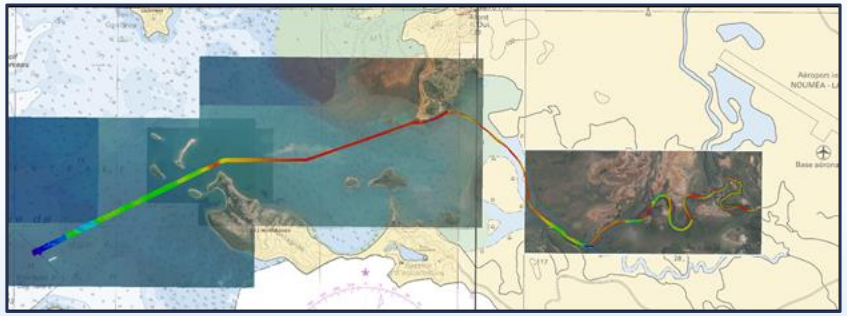
- New-Caledonia : Several surveys have been carried out all around New-Caledonia, mainly in the lagoon.



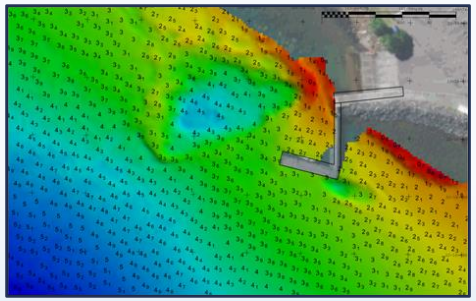
New recommended track (in yellow) in the northern lagoon



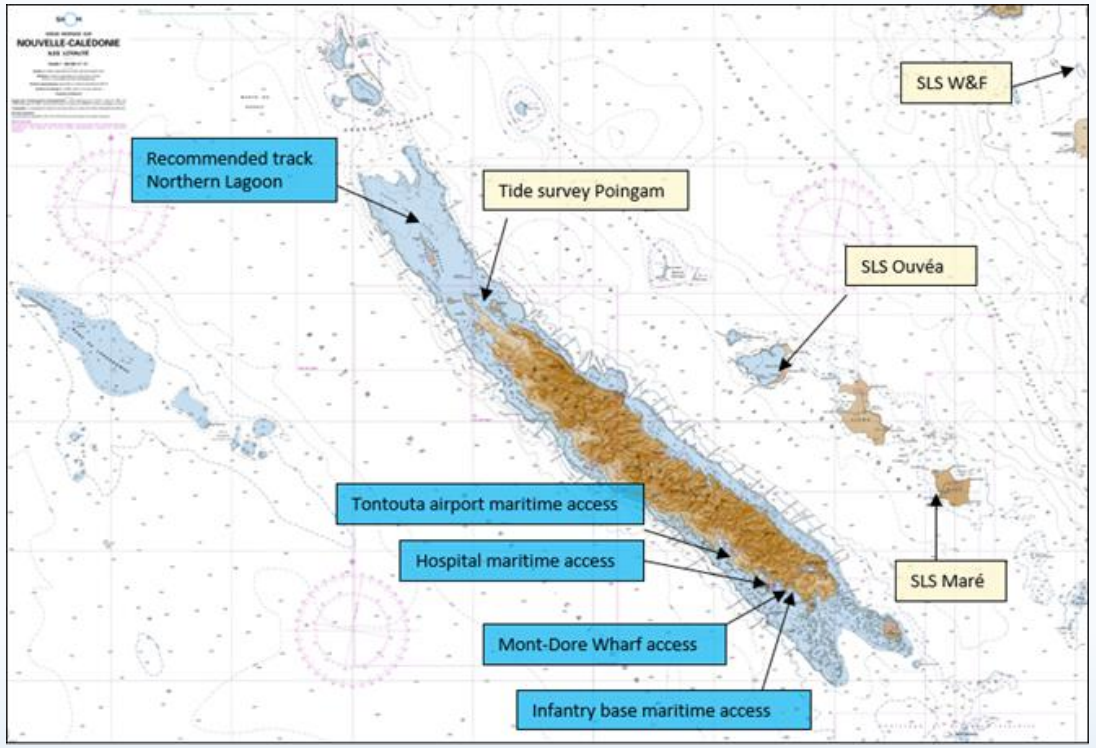
Very shallow survey of the maritime access to the hospital of Nouméa



Maritime access to the international airport



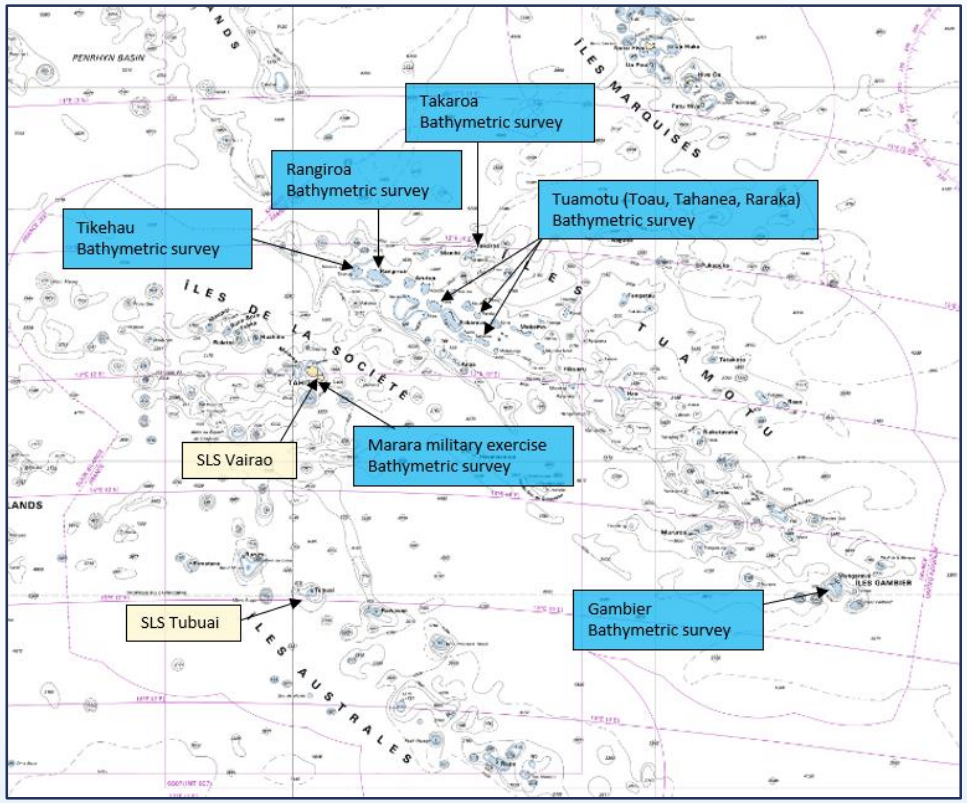
Survey of the wharf of Mont-Dore



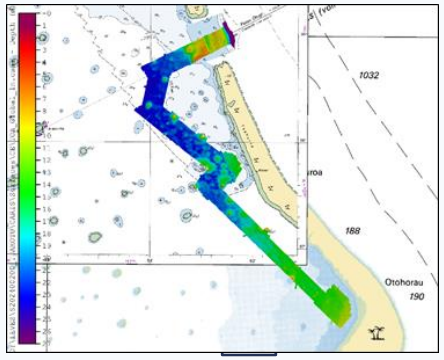
Locations of the hydrographic works realised in 2024 in New-Caledonia

Main achievements during the year

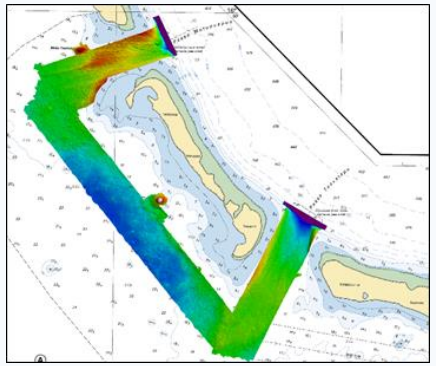
- French Polynesia : Several surveys of recommended tracks, accesses and passages have been performed around French Polynesia



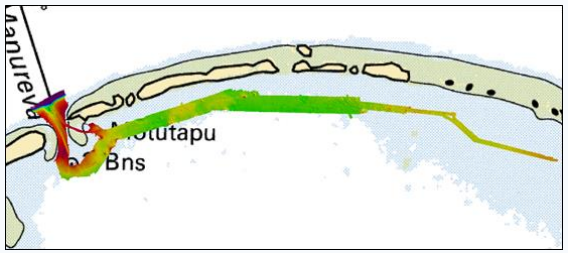
Locations of the hydrographic works realised in 2024 in French Polynesia



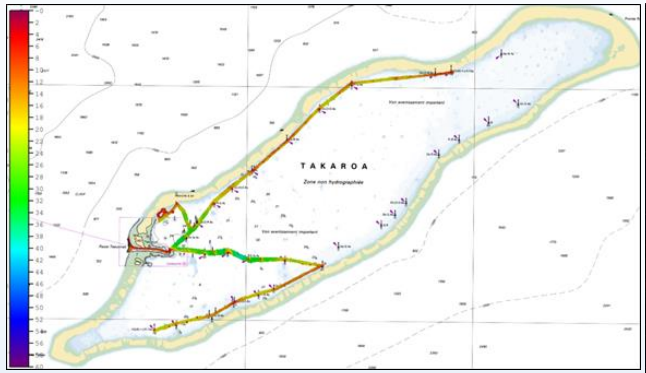
Toau atoll (Tuamotu)



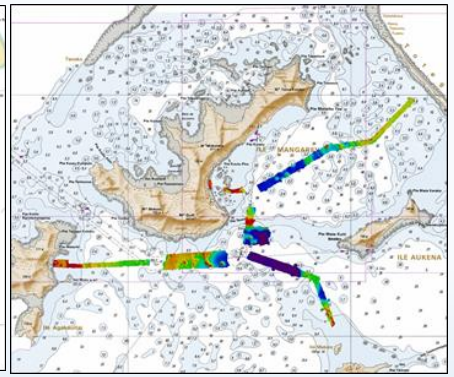
Tahanea Atoll (Tuamotu)



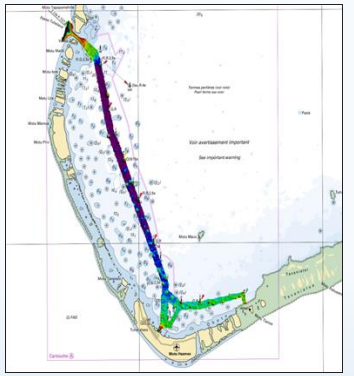
Raraka Atoll (Tuamotu)



Takaroa atoll (Tuamotu)



Gambier islands



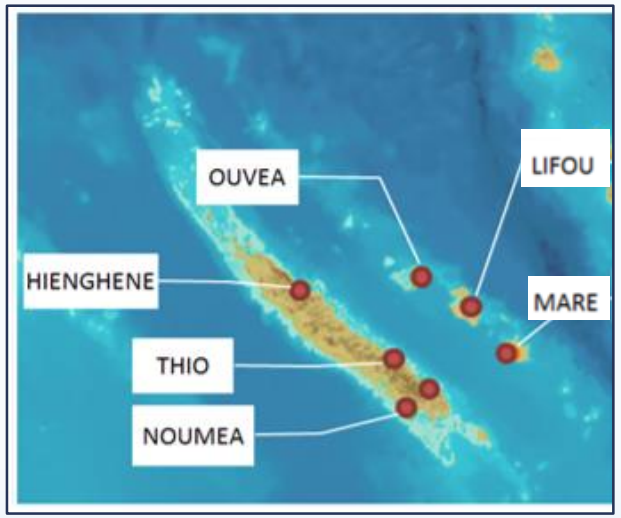
Tikehau atoll (Tuamotu)

Main achievements during the year

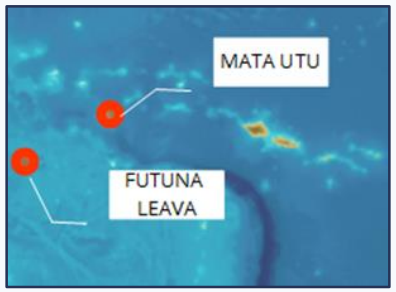
- Sea level station network :

❖Shom is upgrading the network to new standards with remote diagnosis and long life batteries. Polynesia still to be done.

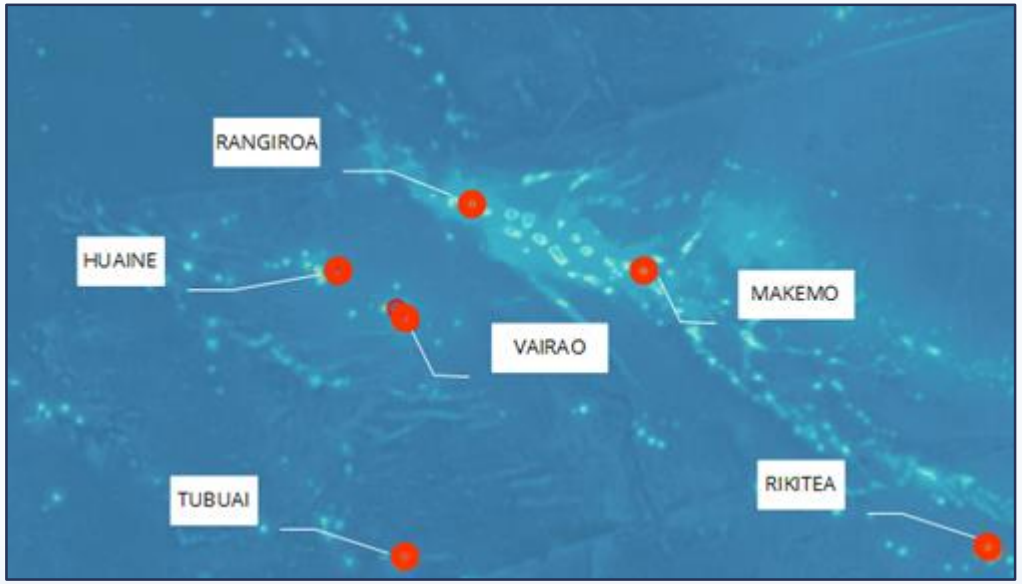
❖Radar and pressure sensors + GNSS antenna. Maintenance every 2years.



French sea level station in New Caledonia



French sea level station in Wallis & Futuna



Sea level station in French Polynesia

Main Challenges regarding surveys

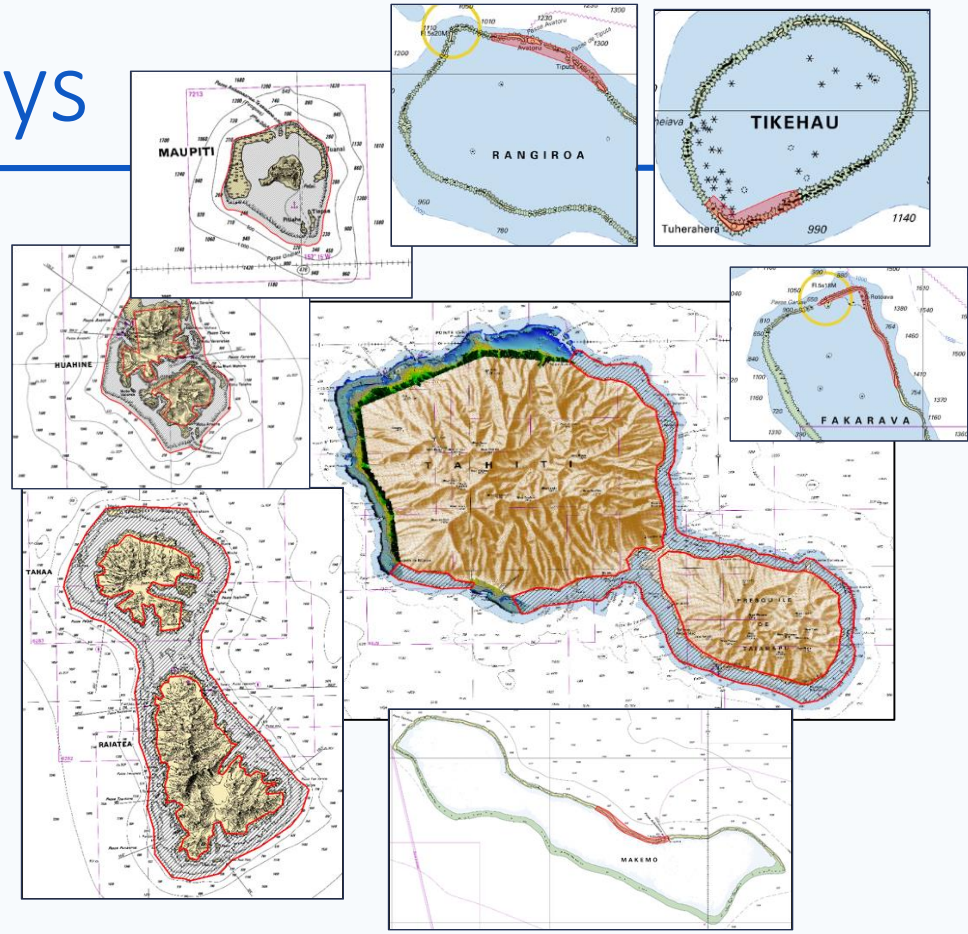
- LiDAR surveys :

❖ Lidar survey in French Polynesia to start by May 2025 and last 2 years (842km²).

❖ In New-Caledonia a lidar survey project currently suspended due to budgetary issues.

- **New survey capacity :**

❖ 2 new patrol boats in the Pacific : equipped with a removable shallow water (<150m) MBES deployed through a moon pool. By 2026, 2 additional patrol boats are planned to join the pacific French forces.



Planned Lidar surveys in red

French Navy overseas patrol boat Auguste Benebig
(Source : Marine Nationale)

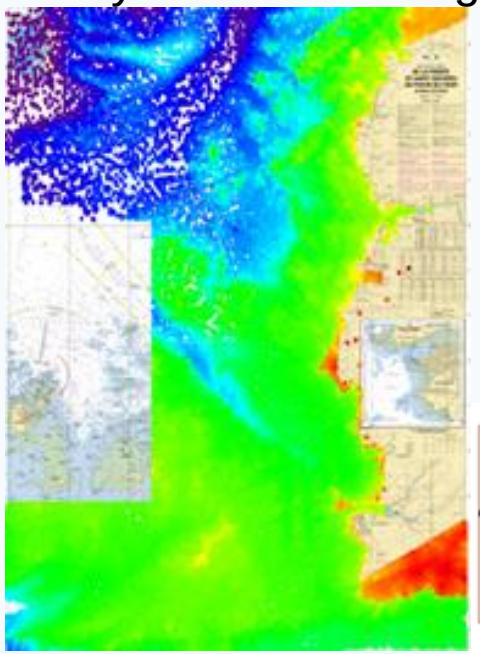
Main Challenges regarding surveys

First feedback: two-thirds time savings

- Automatic generalization of bathymetry

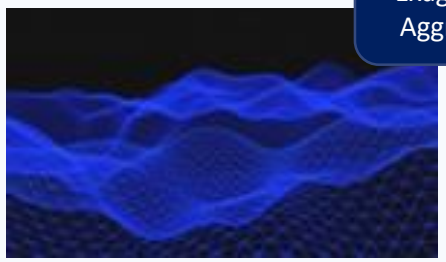
❖Calhypso : a major step forward

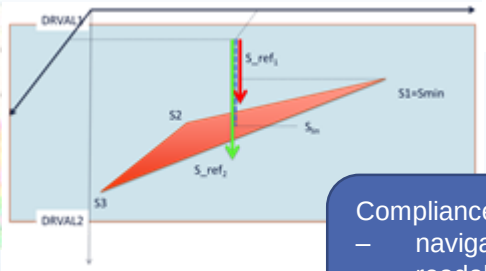
Bathymetric knowledge



65 500 000 soundings

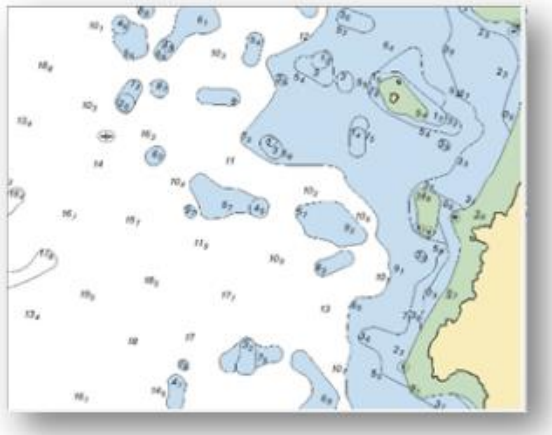
Smoothing
Exaggeration
Aggregation





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

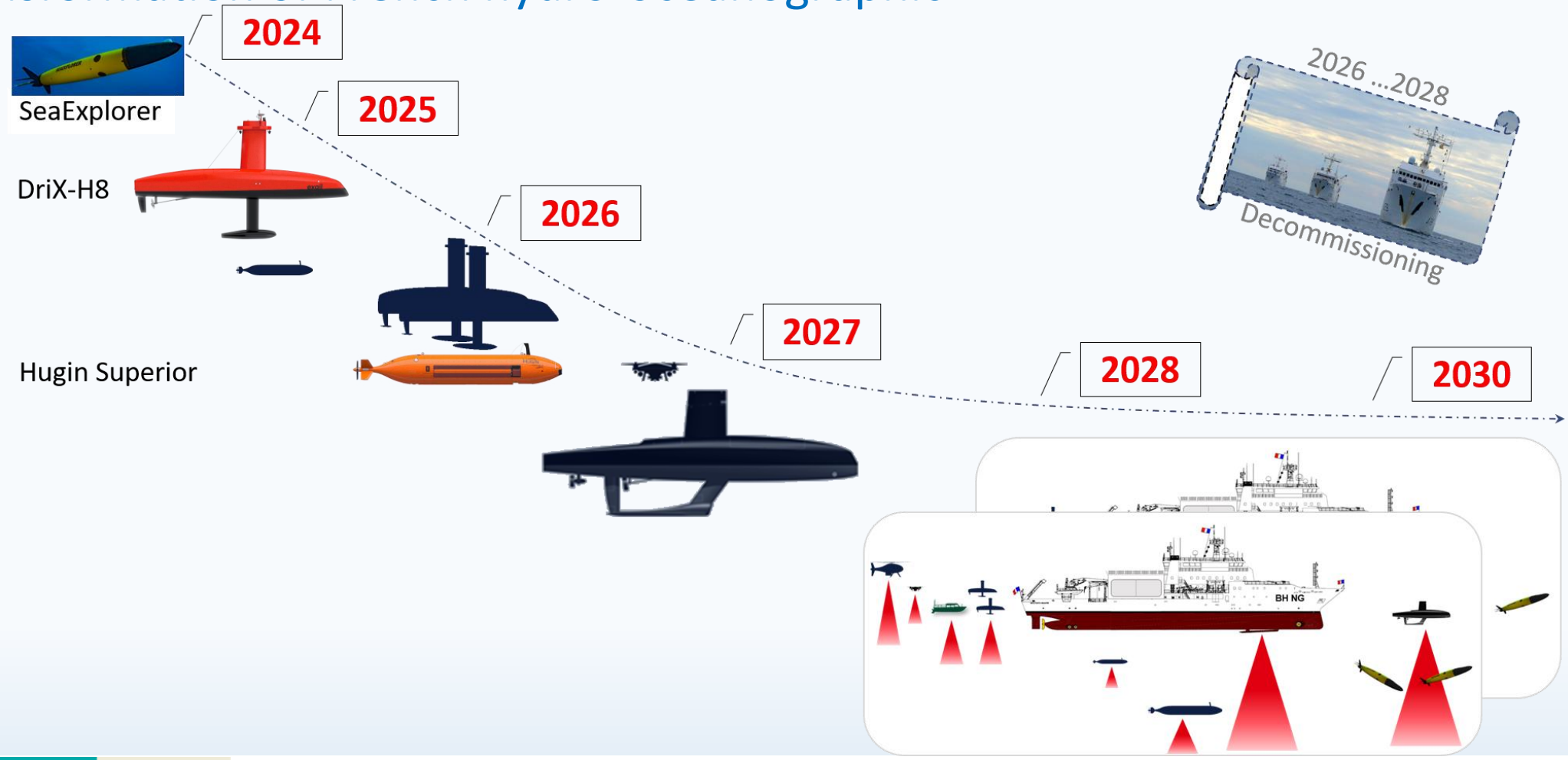
Automated generalized chart



1 417 depth contours
3 033 soundings

Main Challenges regarding surveys

- Transformation of French hydro-oceanographic



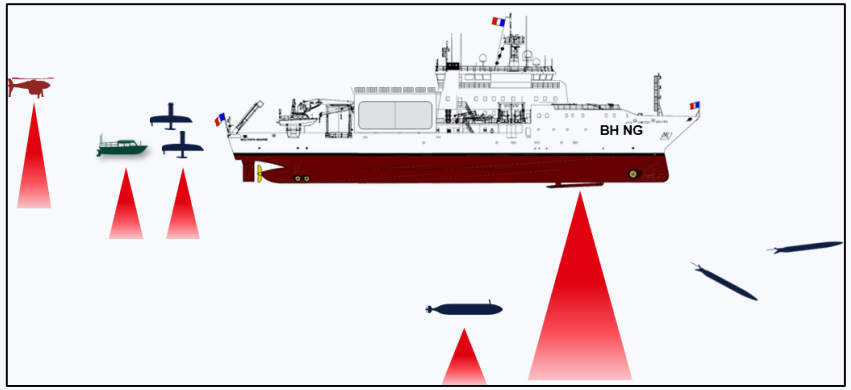
Main Challenges regarding surveys

- Sketch up of France's two future hydrographic vessels

❖**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, SBP, SBES, ADCP, …

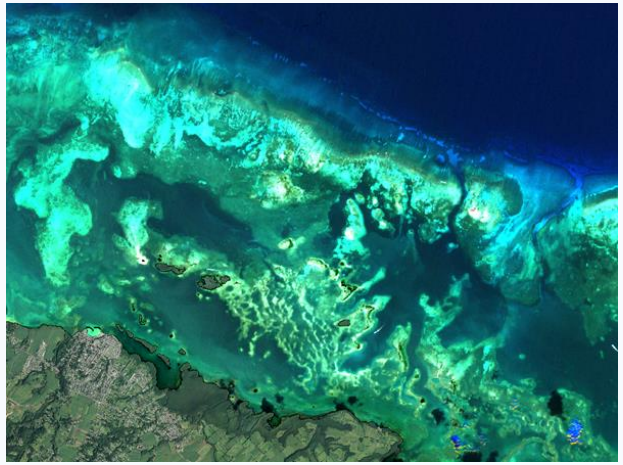
❖**Scientific facilities**
- ➢ Handling equipment
- ➢ Laboratories (humid and air-conditionned)

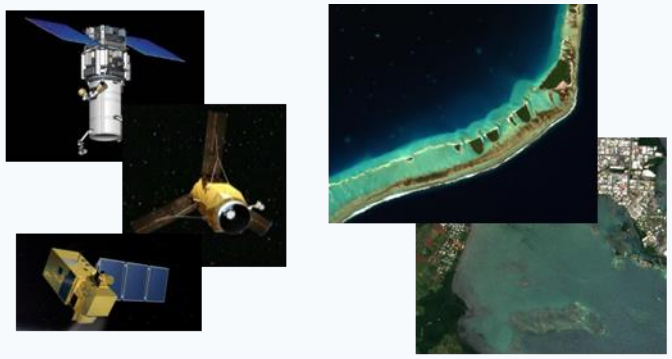


❖ **Mobile vehicles**
- ➢ 2 USV
- ➢ 1 hydrographic survey launch
- ➢ USV oceanic (not on board)
- ➢ Gliders
- ➢ 1 AUV 6000
- ➢ 1 UAV

Main Challenges regarding surveys

- **New Satellite-derived bathymetry (SDB) modeling chain key performances (1/2)**
  - High automatization level
  - No need for in-situ bathymetric data
  - Qualified products out
  - Not a black box





Orthorectified satellite images (multispectral sensor)

Bathysat

Bathy product

Map of uncertainties

Metadata

Main Challenges regarding surveys

- **Bathysat project results and perspective (2/2)**

- 2020-22: research phase

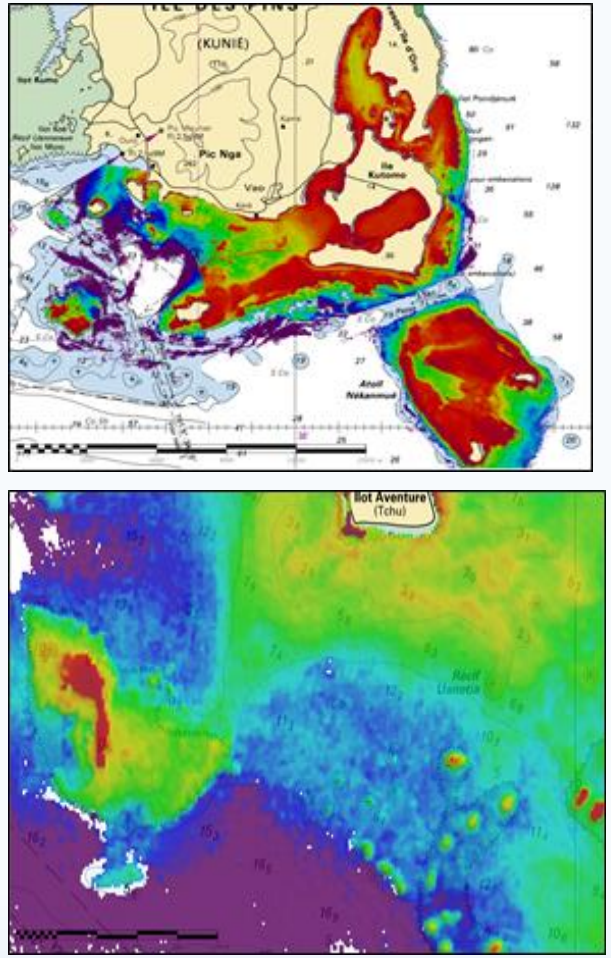
❖ to develop, on a case-by-case basis, charting products in remote areas (in the absence of conventional hydrographic surveys)

❖ to generate seabed morphology products (DTMs) useful in particular for hydrodynamic modelling

❖ to have a tool for rapid recognition of the coastal environment

❖ 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)

- 2023-2024 : trials, ground truth
- 2025 : industrialization & **fully operational solution** : average 5 to 6 areas/year



SDB product on "Ile des Pins" south of New Caledonia (10m resolution)

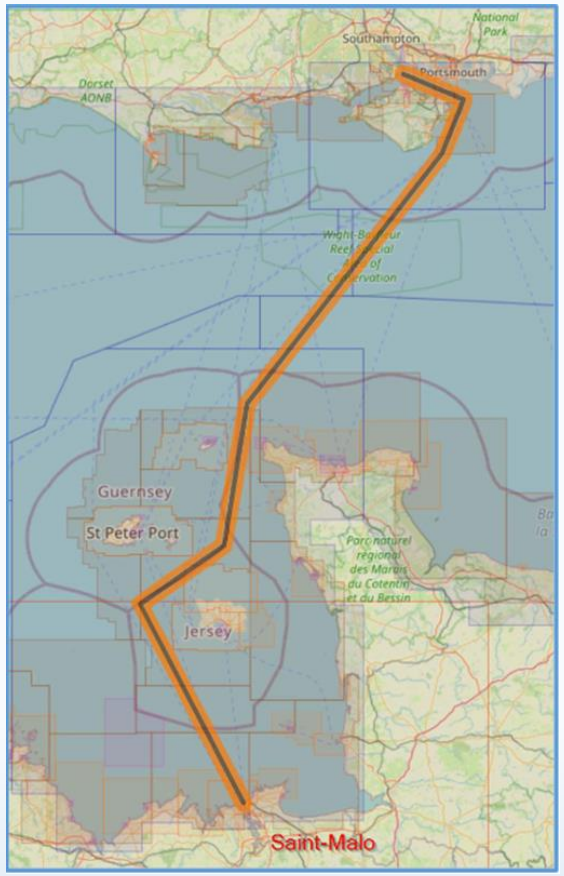
Main Challenges regarding new charts

- **UKHO – Shom S-100 ECDIS collaboration**

> Project as a risk assessment on the Dual Fuel mode of ECDIS

High level goals

- ❖ Develop S-101 understanding, from data production to ECDIS display
- ❖ Safety case to support IMO approval of the S-100 ECDIS systems
- ❖ Develop RENC capability and support industry on S-100 ECDIS
- ❖ Build a testing framework for similar S-100 ECDIS testbed project



> 3-phase project

Phase 1 : Data production

- ❖ S-57 to S-101 conversion
- ❖ ENC updating
- ❖ ENC scheming (paper chart vs gridding)

Phase 2 : Data distribution

- ❖ HO to RENC data delivery
- ❖ RENC validation
- ❖ Cybersecurity : encryption, signatures, licensing, compression

Phase 3 : Data display

- ❖ Sea trials

Main Challenges regarding MSI

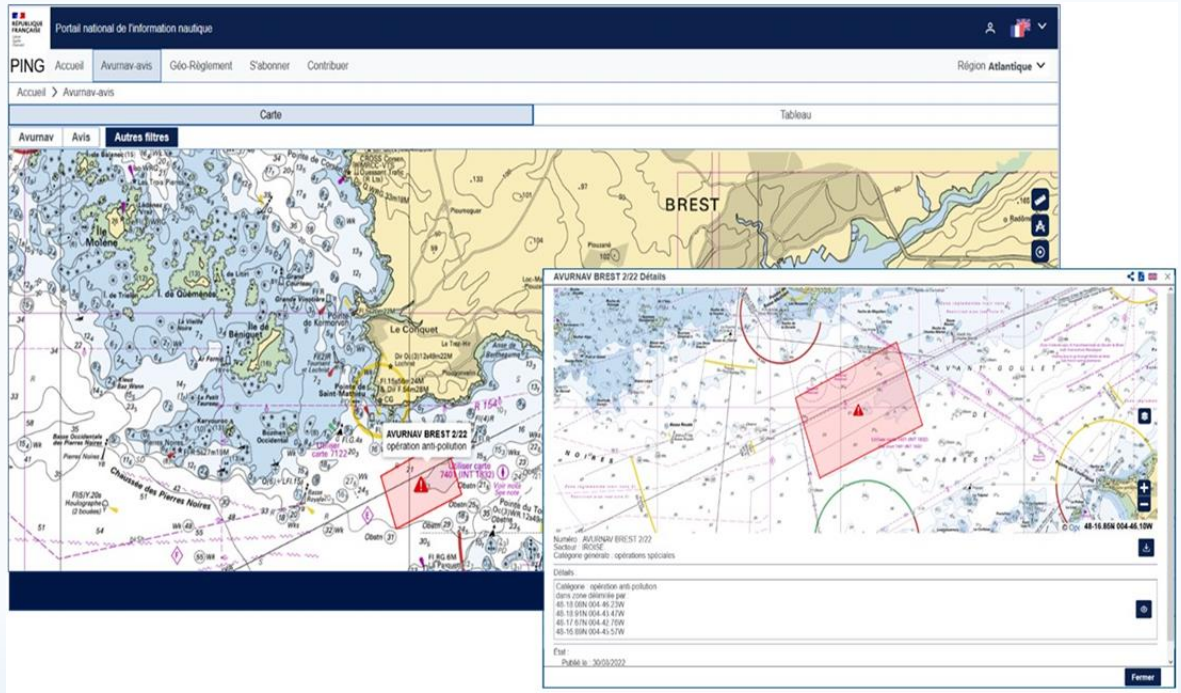
- **French National Nautical Information Platform: PING (programmed in 2026 in the region)**

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

This platform is structured around 3 modules:

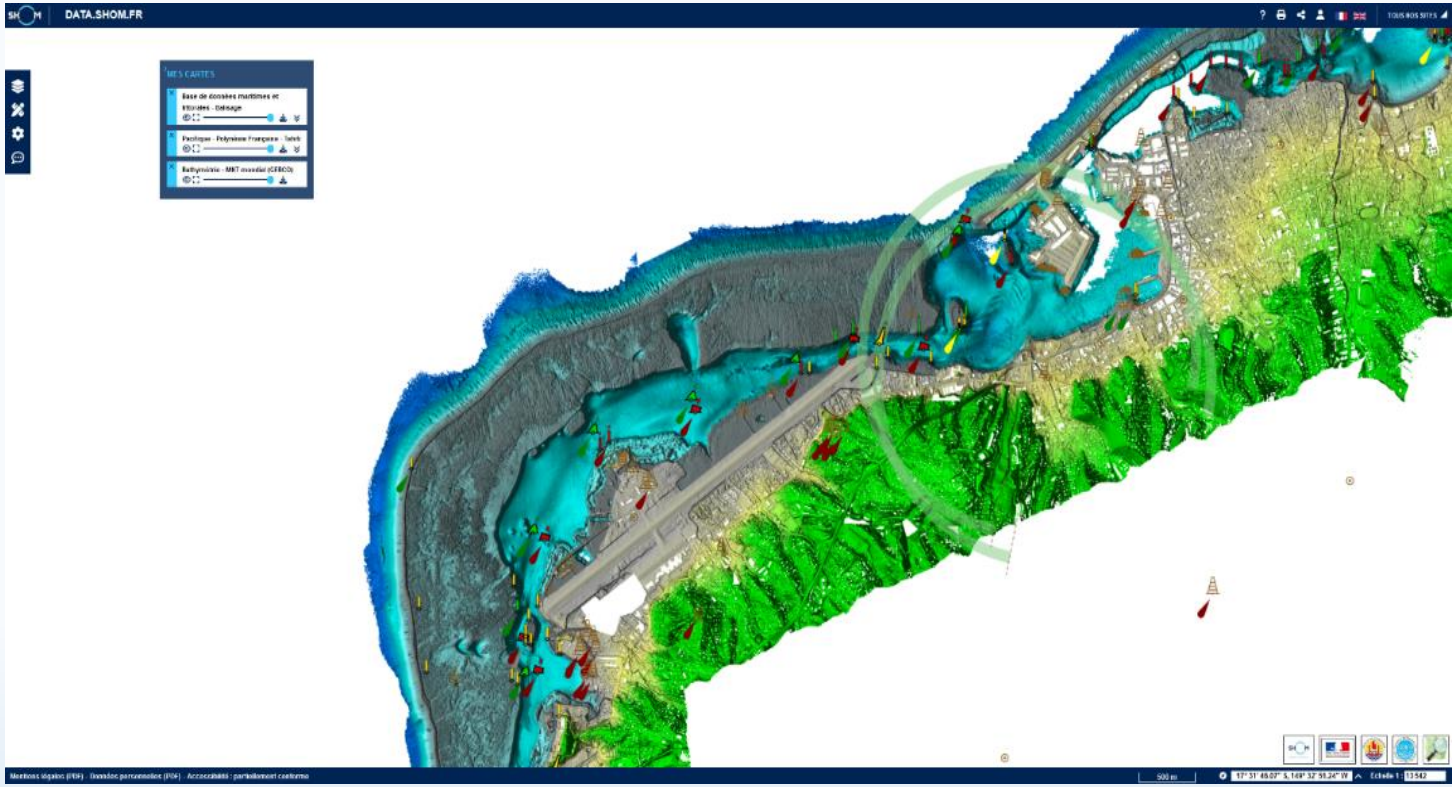
- ❖ production and diffusion of navigational warnings,
- ❖ transmission of source information by maritime services and users in order to contribute to nautical information,
- ❖ production and diffusion of maritime regulations in a spatialized form.

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



Main Challenges regarding MSDI

- **data.shom.fr and diffusion.shom.fr (latest evolutions)**
  - ❖ National hydrography program – current status (new);
  - ❖ Bathymetric DTM of Tahiti and Moorea (edition);
  - ❖ Topo-bathymetric DTM of Tahiti (new);
  - ❖ Topo-bathymetric DTM of Moorea (new);
  - ❖ Tidal table calculations (edition);
  - ❖ On demand tidal table calculation (edition);
  - ❖ Aids to Navigation (edition);
  - ❖ Bathymetric measurements (edition).



Action requested from SWPHC:

-To take note of France national report

Thank you for your attention