

Shom

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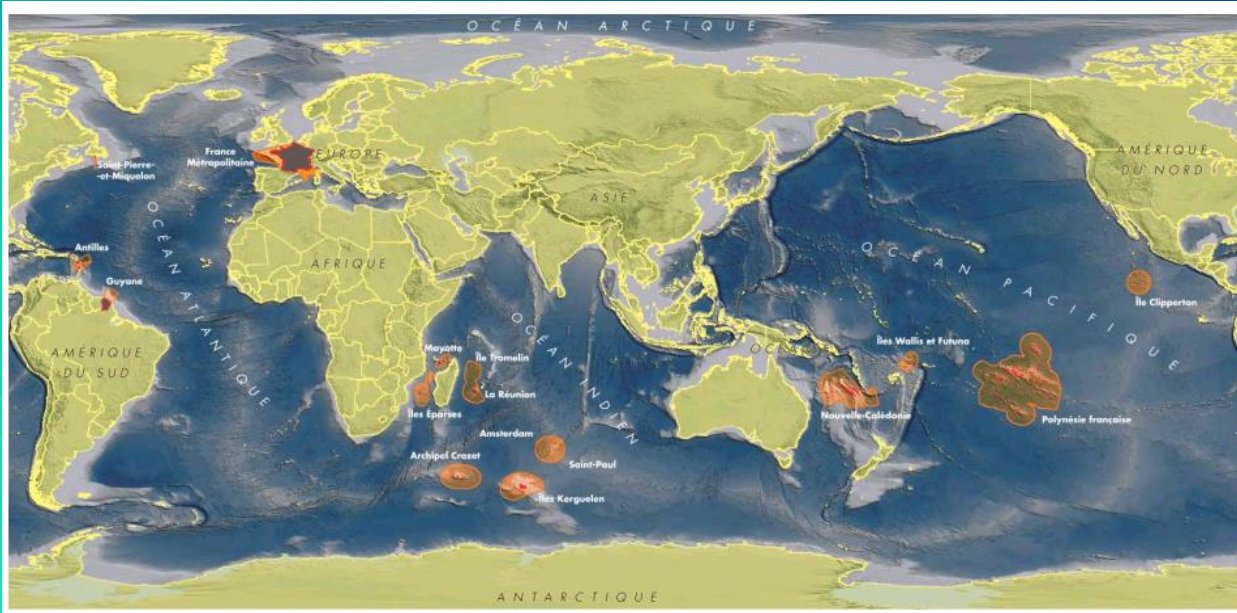
The French hydrographic office (Shom) is a public administrative institution under the supervision of the Ministry for Armed Forces.

Its main missions are to ensure the safety of navigation as national hydrographic service, support to government maritime and coastal policies, and support to Defense.



USE CASE

Coastline characterization and bathymetry mapping based on satellite images processing



Application: Coastal and bathymetry mapping

Location: French EEZ (11 million sq. km)

Products: Pléiades Neo, Pleiades, SPOT 6/7,
Sentinel 2



Challenge

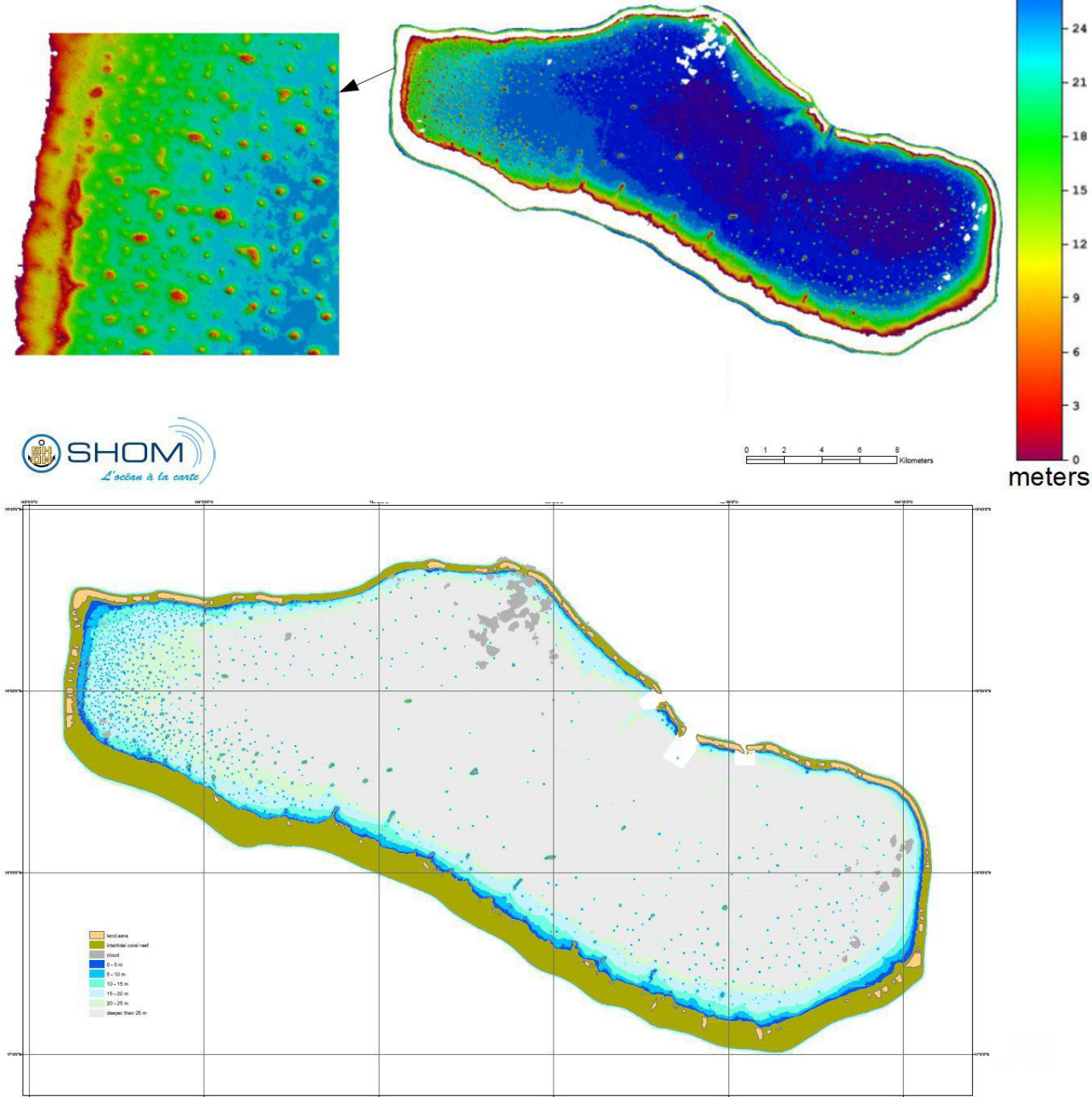
Surveying with ship and airborne sensors is necessarily linked with constraints (difficulty or impossibility to access for political or meteorological reasons, unsafe for surface navigation: rocks, upwelling, waves), high costs and delays.

Challenge 1 : Bathymetry estimation

- Seabed identification in shallow water
- Spectral band analysis with algal and mineral reflectance

Challenge 2 : Coastline mapping

- Database updating for isolated rocks and obstructions detection and shoreline infrastructures
- Positional accuracy in different places of the world





Solution & Results

Shom has a multi-mission with high resolution multispectral imagery -

- Pleiades Neo give a real benefit for high spectral and spatial resolution
- The Shom SDB processing workflow will be updated with Pleiades Neo in 2023

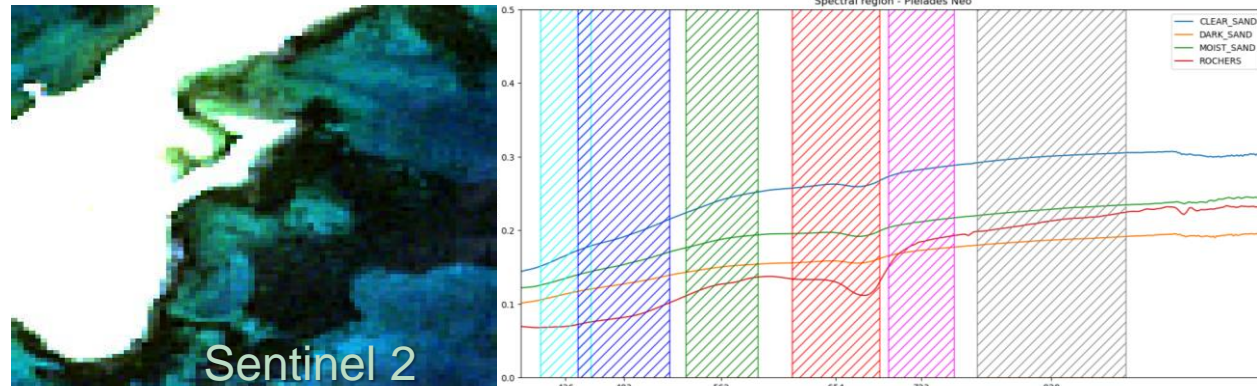
Environmental constraints :

- Atmospheric condition, clouds and shadows
- Sea surface condition (waves, swell), surface reflection ('glint'), no turbidity
- Satellite and solar angle limitation

Pléiades Neo Imagery helped to:

- **Determining the nature of algal and mineral seabed**
- **Localizing dangerous rocks for navigation**
- **Updating coastline database**

Shallow water in St Pierre & Miquelon (France)



Pleiades Neo Spectral band on mineral reflectance



Solution & Results

Shom has a multi-mission with optical imagery

- Pleiades Neo give a real benefit for high resolution

Pléiades Neo Imagery is adapted to:

- Detecting new harbour infrastructures
- Updating coastline database



Harbour infrastructures in La Ciotat (France) with Pleiades Neo



Solution & Results

Shom survey units work from decades on hydrography and geodesy in different part of the world, including French Polynesia and New Caledonia.

The aim of this first stage is to estimate the quality of image positioning accuracy expectations, we work on landscapes with complex orthorectification :

- No block adjustment can be done in the remote island;
- In some islands like atolls, the landmass is poor and reduce possibility for geometric processing;
- In the coastal regions, GCP has to be manually controlled by an operator, due to possible specular effects and changing landscape.
- The differences are variable and range from 3 to 7,5 meters
- Ortho Pléiades Neo Imagery can be optimizing manually by ground survey data



St Pierre & Miquelon (France)

Photo n°1 : 005 / S6-2 / 5 m à 11h56Z

Ground control point are easy to identify with Pléiades Neo high resolution



Benefits

- **Determining the nature of algal and mineral seabed**
- **Localizing dangerous obstructions and rocks for navigation**
- **Updating charts and database on coastline and harbour infrastructures**
- **New developments are expected in 2023 to evaluate the contribution of Pléiades Neo sensors in the Shom's bathymetric processing workflow.**

Organisations Involved:



Hao Atoll
Identifying

- coral patches
- harbour infrastructures