RÉPUBLIQUE
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SH○M

3oo ans d'hydrographie

Shom operational regional ocean forecasting system

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Why a regional oceanographic forecasting system ?

Shom must provide the **Ministry of Armed Forces** with 3D oceanographic forecasts.
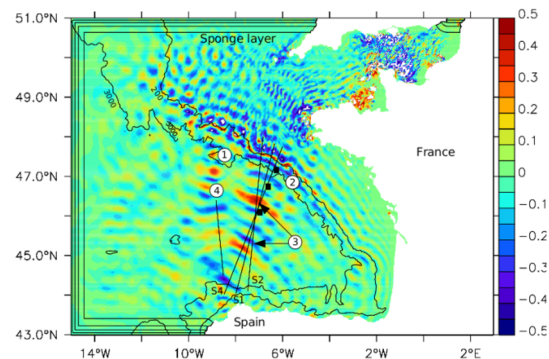
- **CMEMS** forecasts are used for **global** needs,
- **Shom** develops its own **regional** models over the French Navy areas of interest.

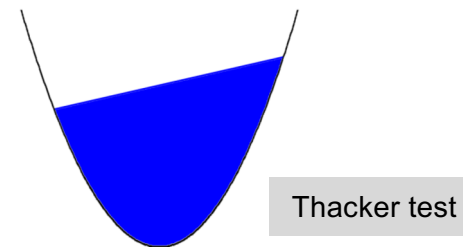The goal is also to meet the maritime **civil stakeholders**' requirements.

Shom HYCOM code

Operational regional models are based on the **HY COM** community code optimized by Shom for :

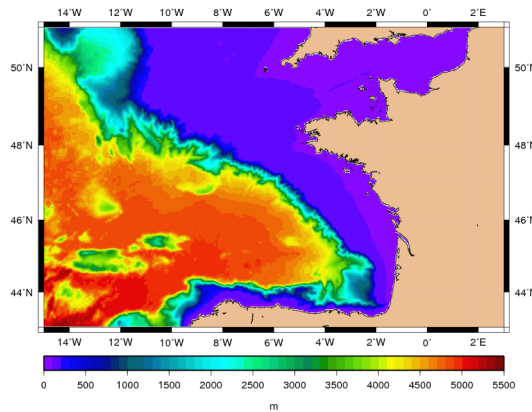- **Tidal modeling** : barotropic and internal tide, wetting and drying

North-South baroclinic current component (m/s)

Thacker test

- **Mesh refinement** (not operational yet) : nested grids / curvilinear grids
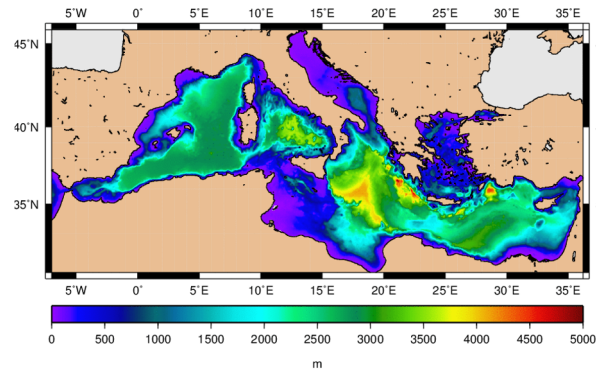- **Wave coupling** (not used in 3D operational models) with Wavewatch III ® code via OASIS coupler

Operational models
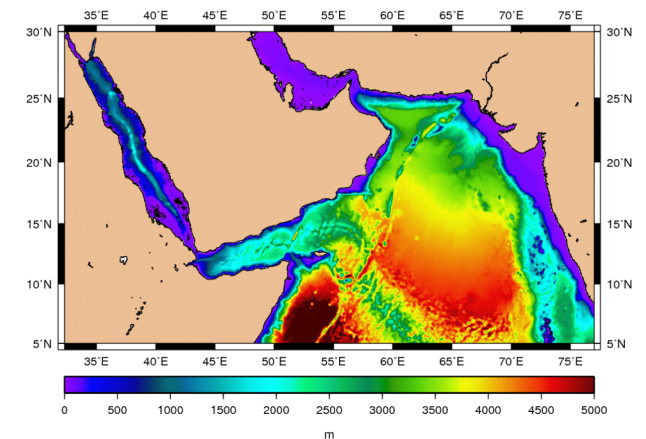
Bay of Biscay model
~1.8 km , 40 layers

- Thermal fronts,
- Tide and internal tide,
- Eddies dynamics,
- Slope currents,
- River plumes, …

Mediterranean model
~1.8 km , 32 layers

- Mediterranean northern current,
- Deep convection,
- Eddies dynamics,
- River plumes, …

North-western Indian model
~5 km , 40 layers

- Eddies dynamics,
- Density currents, …

The system is run daily from D-1 to D+5.

Real time defence products

French Navy requirements are driven by different missions

- Deterrence,
- Task force projection,
- Unit projection,
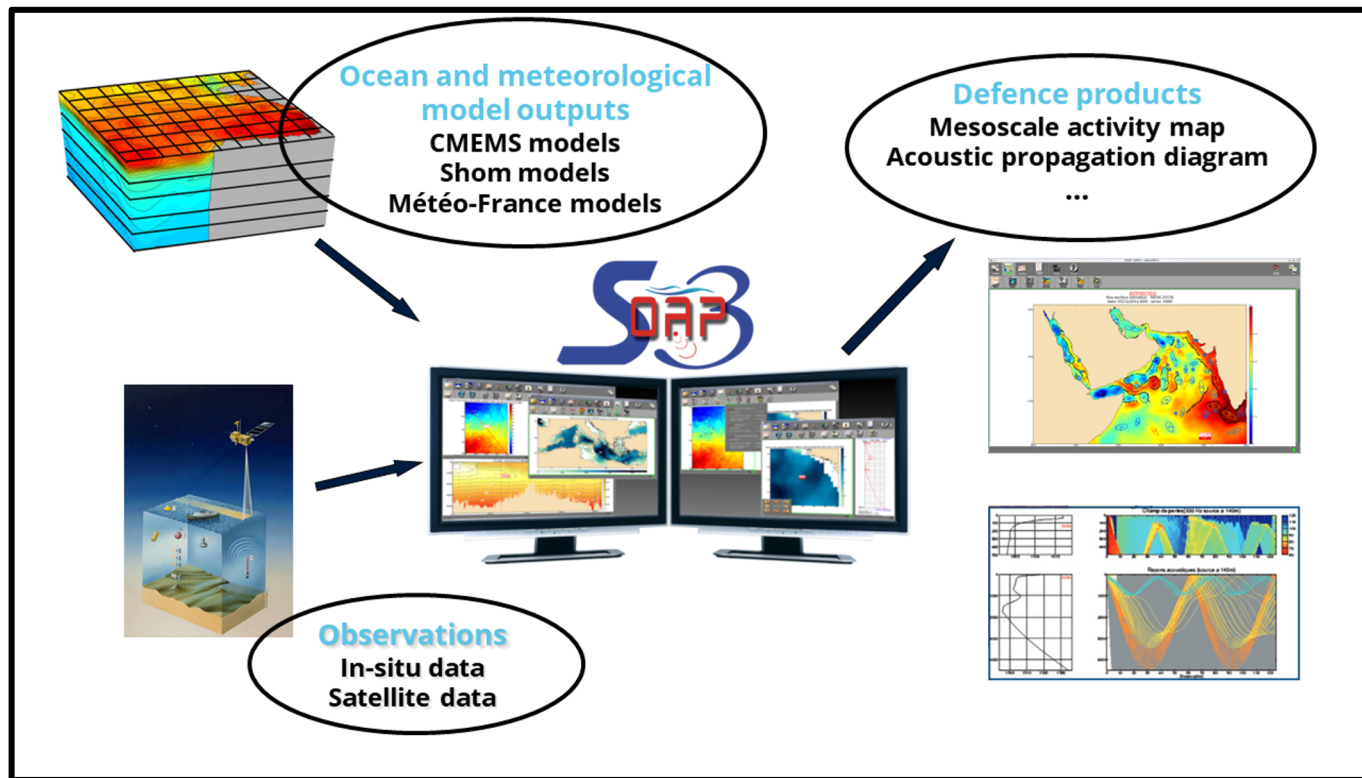- Intelligence and sea policy regulation.

related to different warfare domain

- Anti-submarine warfare,
- Amphibious warfare,
- Mine warfare.

Real time defence products

Operational Oceanographic Forecasting and Analysis System (SOAP)

- Raw products,
  - current, temperature, salinity maps
  - profiles

- Derived products
  - mixed layer depth
  - minimum celerity depth
  - geometric acoustical products

- Analyzed products
  - mesoscale activity map
  - thermal front analysis
  - oceanic and acoustic reports

Specific civil uses – examples of government policy support

- **MSFD framework** : regional models outputs are used in order to generate the French Exclusive Economic Zone's seascapes.
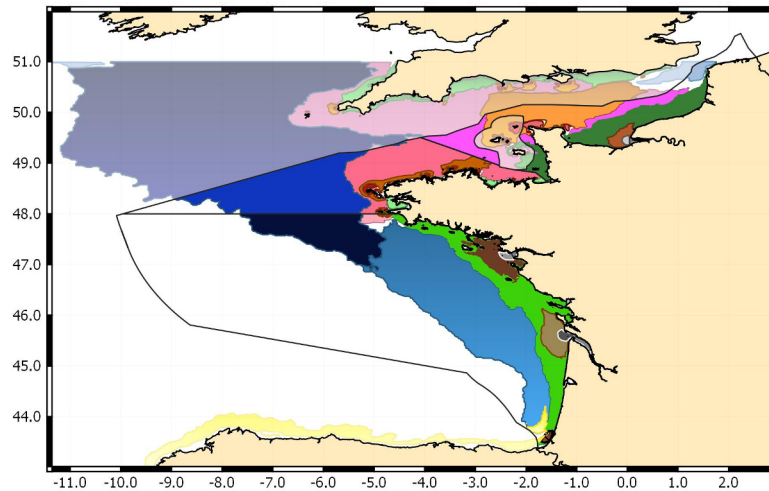
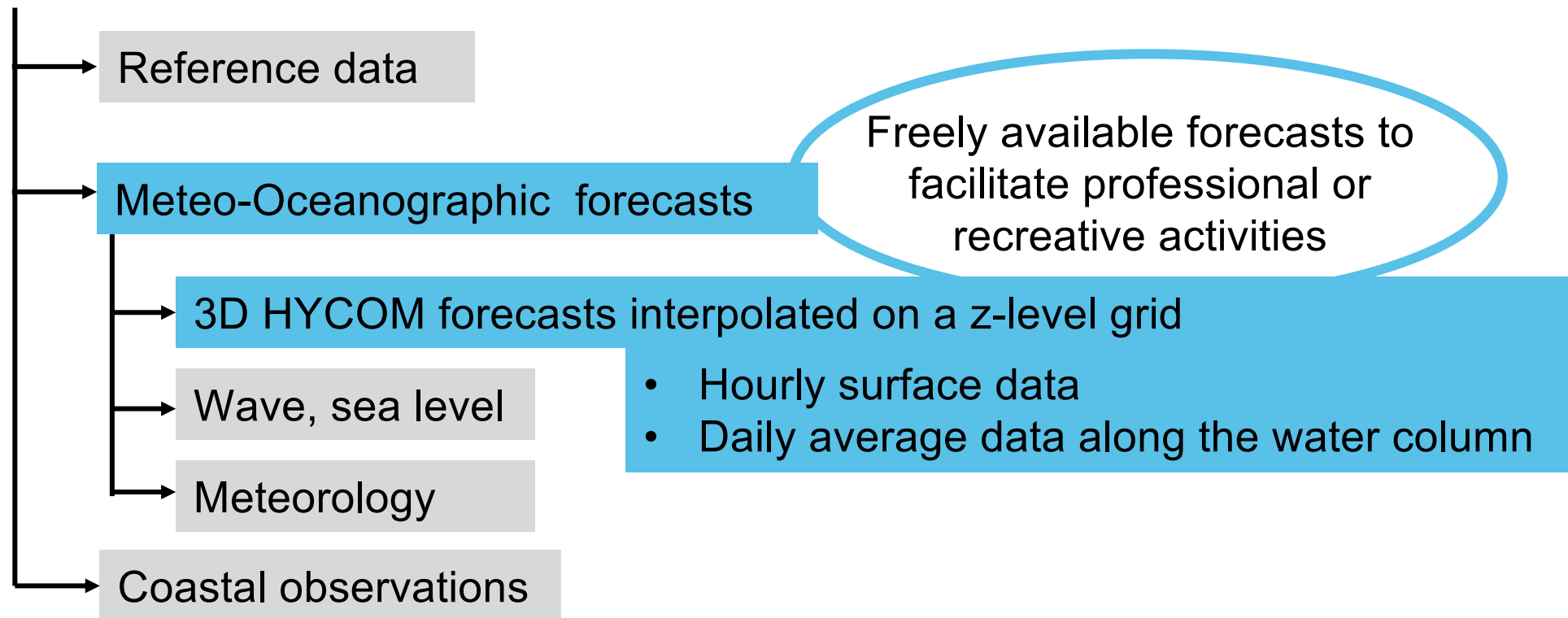*Tew-Kai et al. 2020, J. Mar. Sci. Eng*
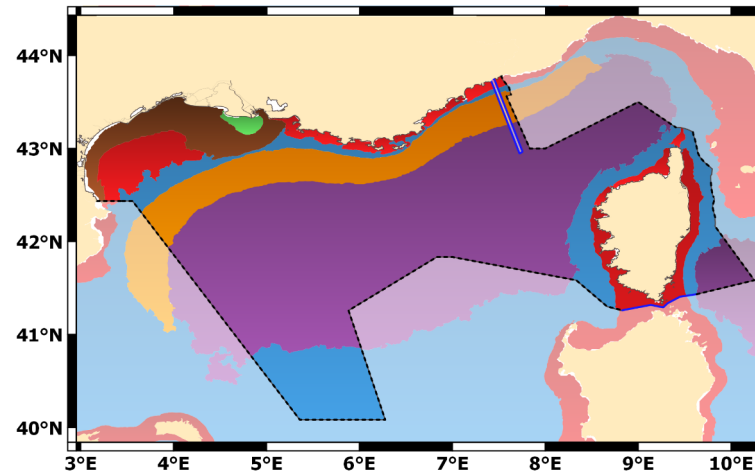
Quilfen et al. 2021, EuroGOOS Conference

- **Drift studies and projects** : collaboration with Météo-France, IRSN (French public expert in nuclear and radiological risks), Cedre (expert in accidental water pollution), the French maritime authorities…
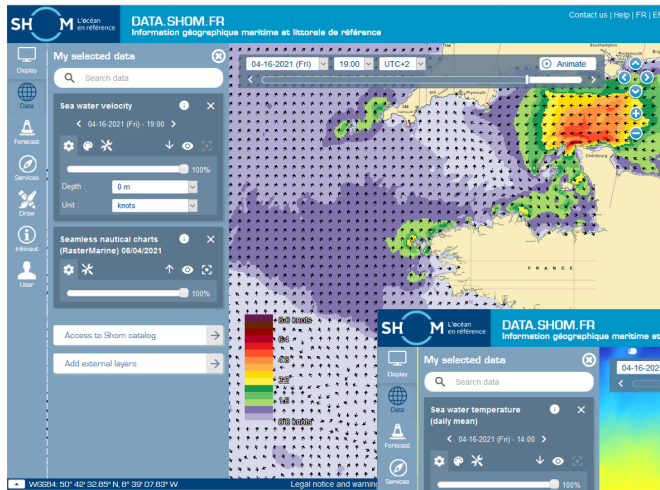
Civil uses – data.shom.fr web portal

DATA.SHOM.FR **provides access to Shom data and in particular to Shom 3D oceanographic forecasts along the French coasts.**

Reference data

Meteo-Oceanographic forecasts

Freely available forecasts to facilitate professional or recreative activities

3D HYCOM forecasts interpolated on a z-level grid

Wave, sea level

Meteorology

- Hourly surface data
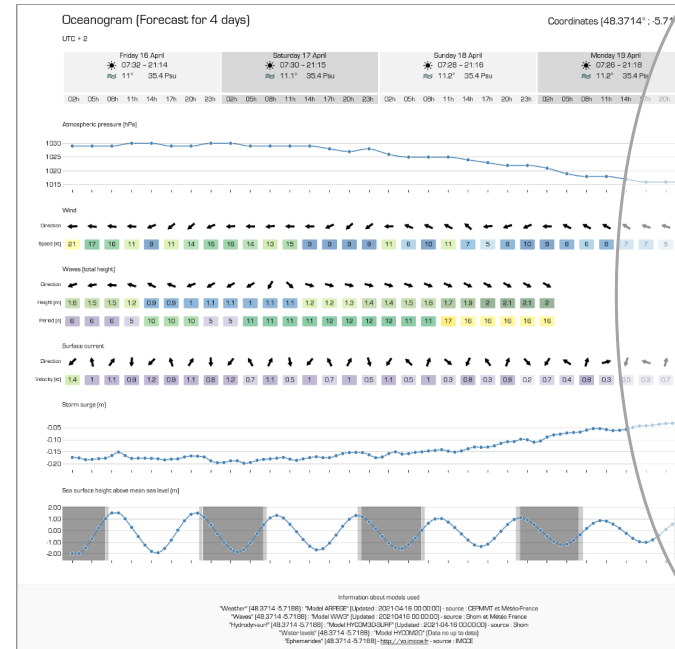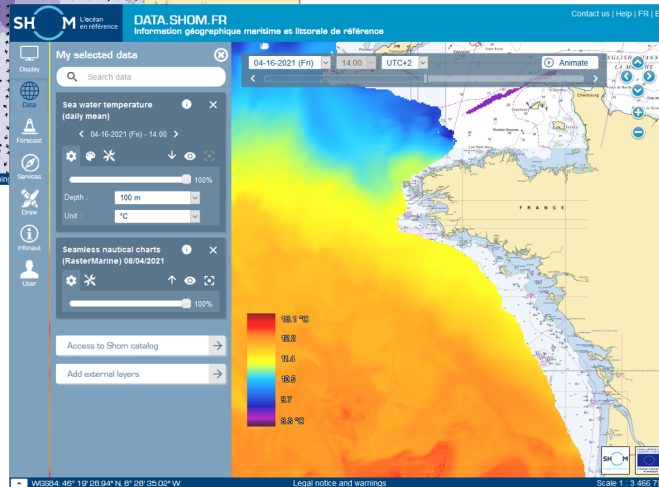- Daily average data along the water column

Coastal observations

Civil uses – data.shom.fr web portal

2 ways of visualizing 3D oceanographic forecasts

Forecasts maps

Sea surface temperature & salinity

Atm pressure

Wind

Waves

Surface current

Storm surge

Sea surface height

Oceanogram with all the available forecasts at the point of interest

+ manual or automatic download of NetCDF files since 2016

Civil uses – data.shom.fr web portal

For more information :

- ### data.support@shom.fr

- ### Youtube Shom tutorials

Analysing oceanographic forecasts

https://www.youtube.com/watch?v=rpTCmz2cf0E

Generating oceanograms

https://www.youtube.com/watch?v=h_83AQKSiX8

Downloading forecast files

https://www.youtube.com/watch?v=NCZJVsKF-6s