

# VALIDATION OF THE SAMOA OPERATIONAL FORECASTING SYSTEM IN SPANISH MEDITERRANEAN PORTS.

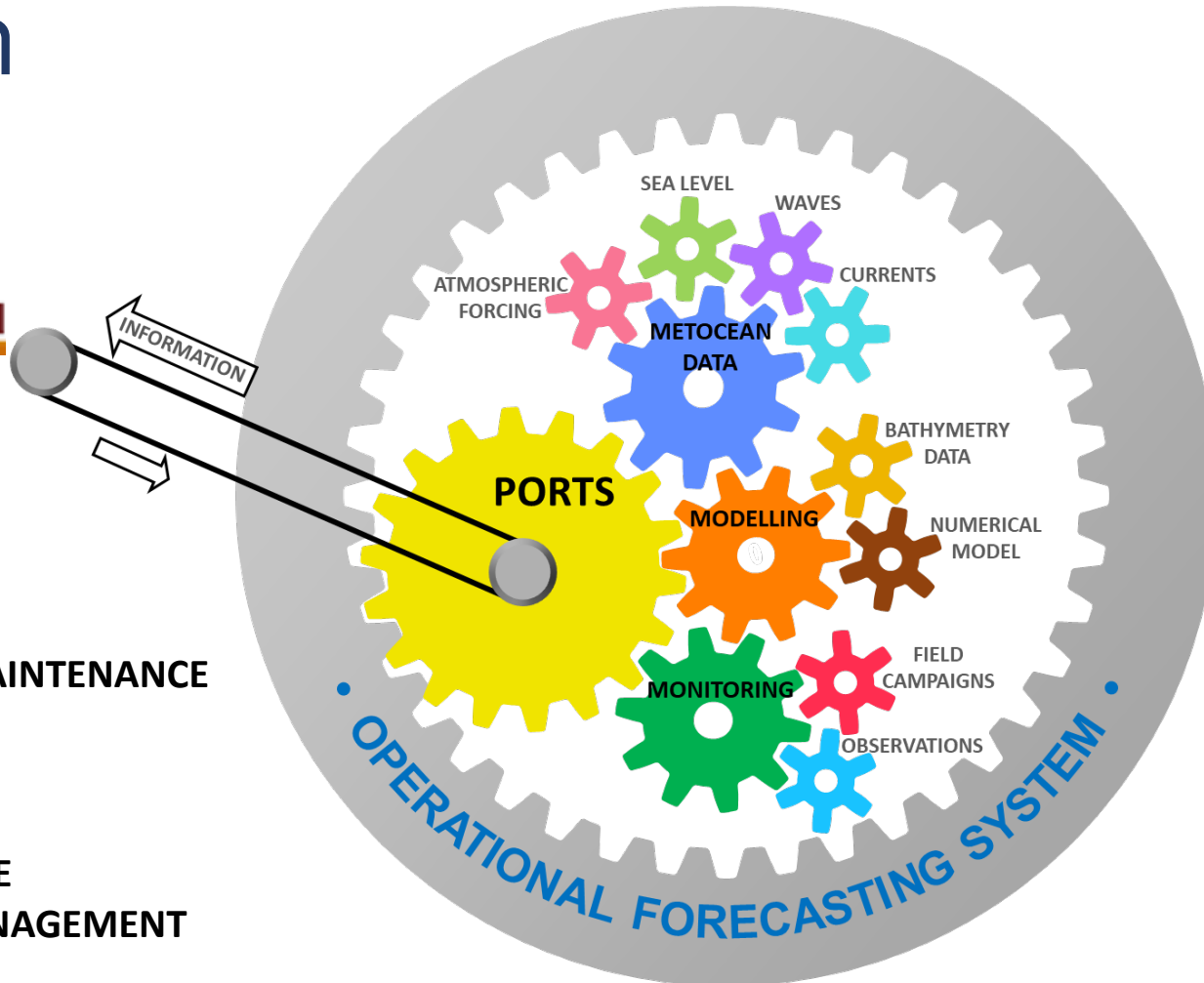
M. LISTE MUÑOZ, M. MESTRES RIDGE, M. ESPINO INFANTES, M. GRIFOLL COLLS, A. SÁNCHEZ-ARCILLA, M. GARCÍA LEÓN, M. GARCÍA SOTILLO, AND E. ÁLVAREZ FANJUL.



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# Motivation



## THE INFORMATION SUPPORTS:

- PORT CONSTRUCTION
- PORT INFRASTRUCTURES MAINTENANCE
- PORT ACCESS
- PORT EFFICIENCY
- PORT SAFETY OPERATIONS
- PORT EMERGENCE RESPONSE
- PORT ENVIRONMENTAL MANAGEMENT

# Motivation

## OBJETIVE



Provide to the Spanish Port Authorities of a high-resolution coastal operational prediction system that simulates the hydrodynamic in the Spanish Ports and nearby coastal waters.



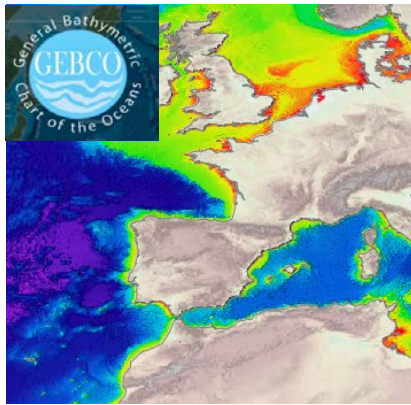
Develop a management tool based on environment knowledge:

- Real-time monitoring
- Forecasting
- Alerts
- Value-added tools (oil-spills, etc.)

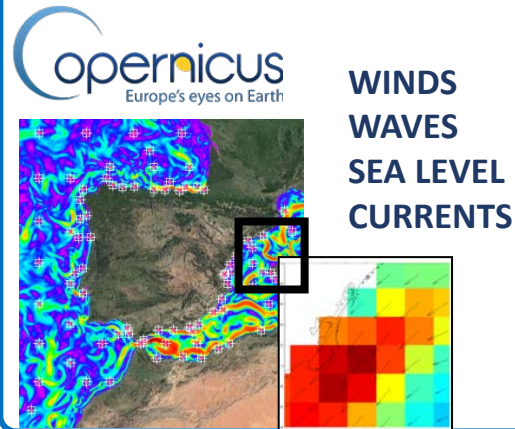
Image Sources: [Puertos del Estado/enisa.europa.edu/adport.ae/matsugov.us/news/port](https://puertosdelestado.es/enisa.europa.edu/adport.ae/matsugov.us/news/port)

# SAMOA - System of Meteorological and Oceanographic Support for Port Authorities

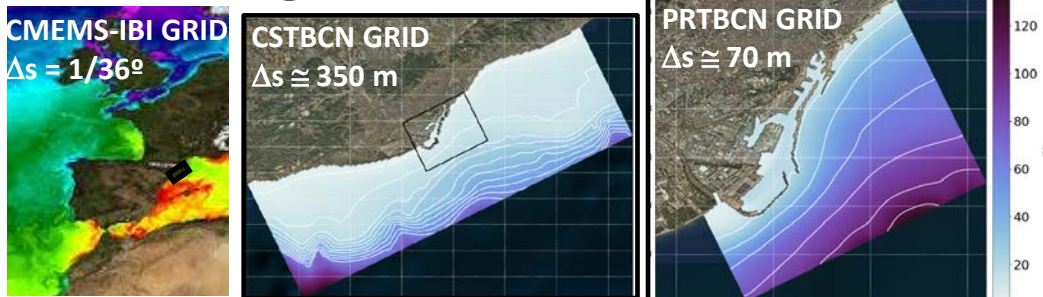
## 1. Bathymetry Data



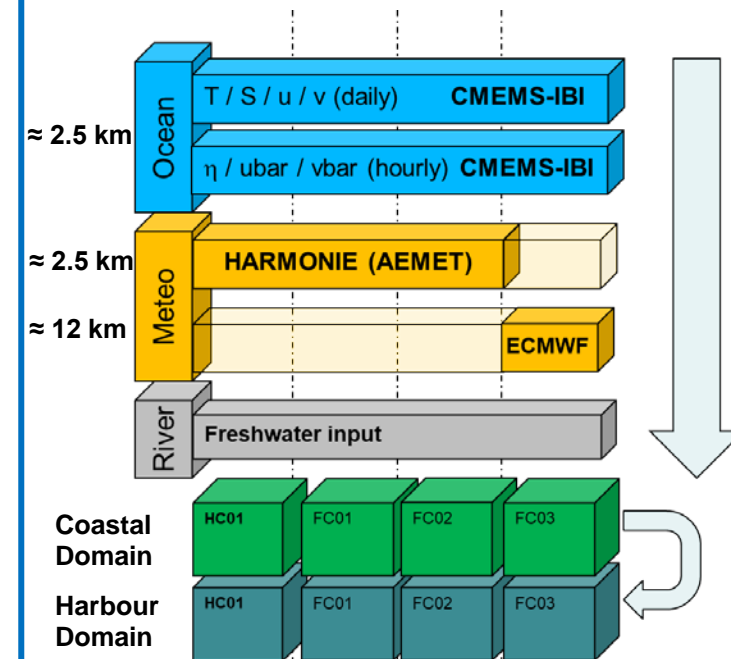
## 2. Metocean Data



## 3. Downscaling



## 4. SAMOA Operational Scheme

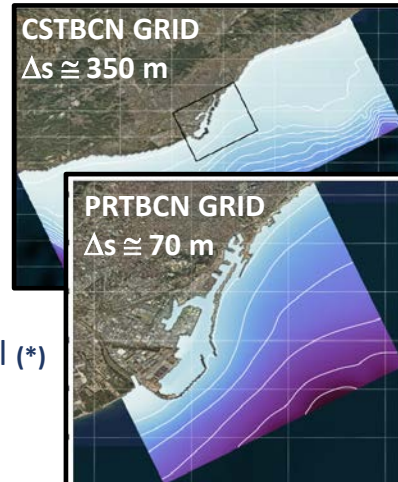


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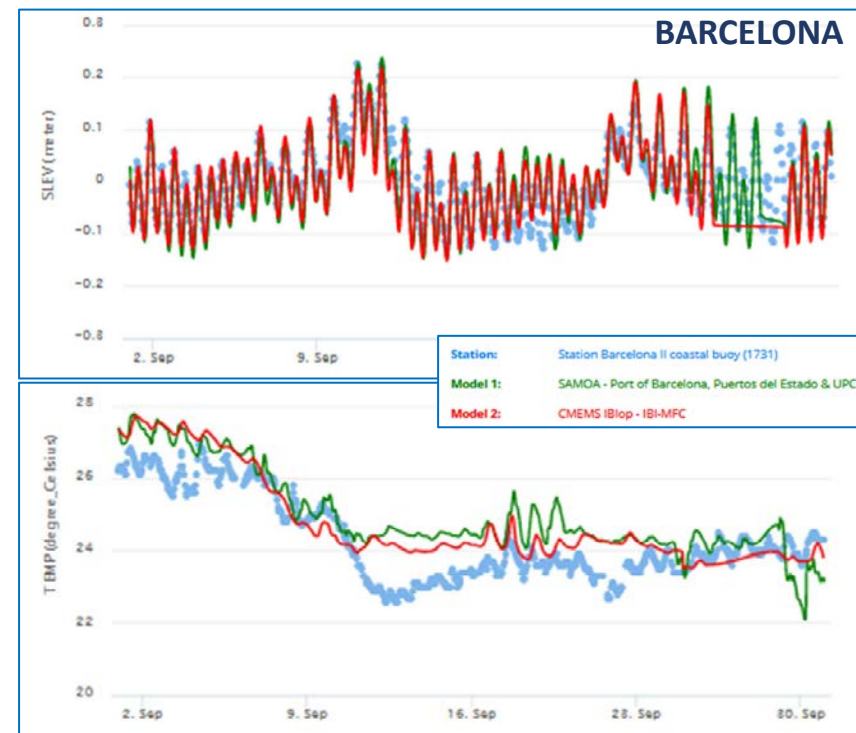
## 5. Model Setup



- 3-D Hydrodynamic Model (\*)
- 2 nested regular grids
- Vertical discretization:
  - 20-sigma levels
- Turbulence closure scheme for vertical mixing:
  - generic length scale (GLS) tuned to behave as k-epsilon.



## 6. System Validation

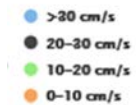
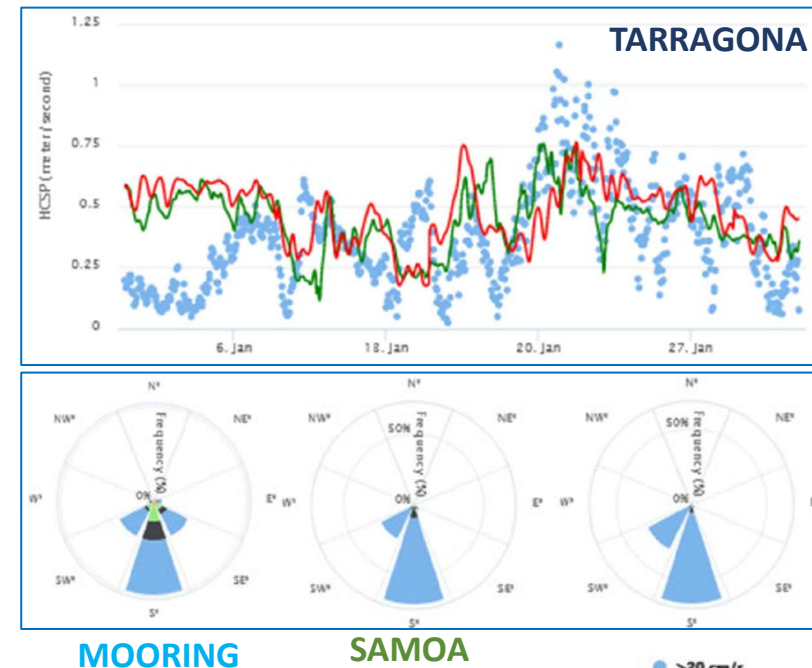
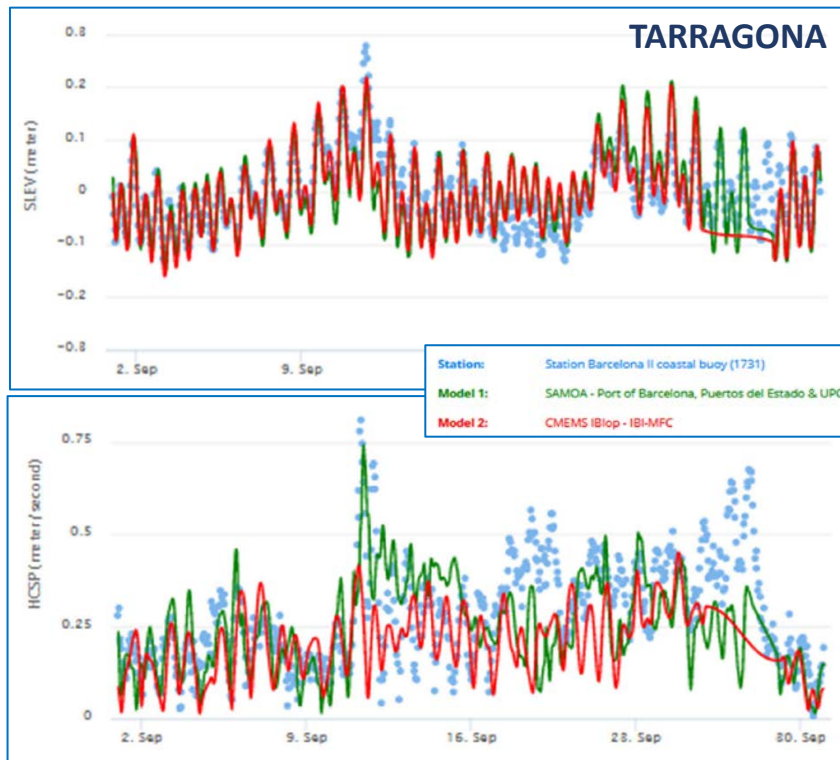


\*Shchepetkin, A. F., & McWilliams, J. C. (2005). The regional oceanic modeling system (ROMS): a split-explicit, free-surface, topography-following-coordinate oceanic model. *Ocean Modelling*, 9(4), 347-40



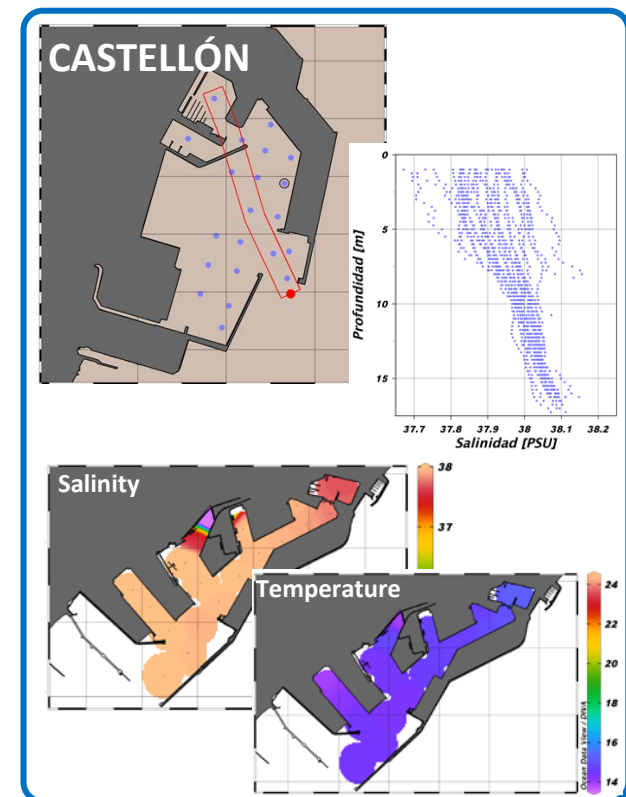
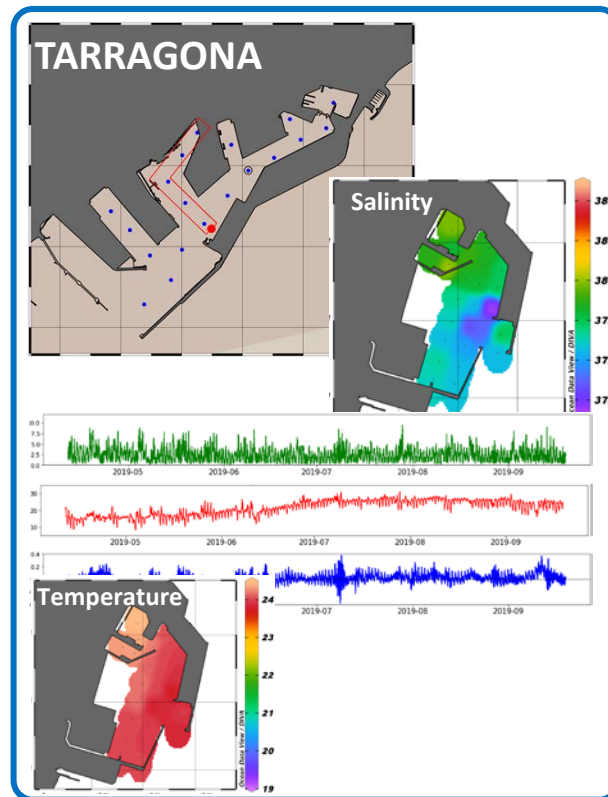
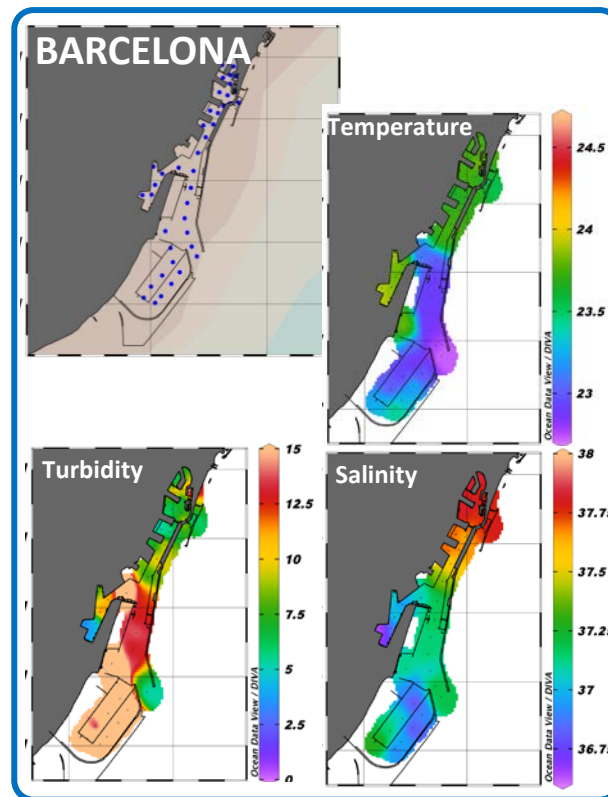
# SAMOA - System of Meteorological and Oceanographic Support for Port Authorities

## 6. System Validation



# SAMOA

## FIELD CAMPAIGNS



# FUTURE PLANS

- ❖ To improve the SAMOA system to refine and increase the quality of the numeric predictions, validating and calibrating the System from field campaigns dataset and observations.
- ❖ To provide the Spanish Port Authorities of a high-resolution coastal operational prediction system that accurately simulates the hydrodynamic in the Spanish Mediterranean Ports.



# END

Acknowledges:



Laboratori d'Enginyeria Marítima  
UPC - BARCELONATECH

Puertos del Estado



SAMOA<sup>2</sup>

Copernicus  
Europe's eyes on Earth



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