

PORT AUTHORITIES RESOURCES TO SUPPORT DECISION MAKING FOR PILOTS. PORTUS-SAMOA SYSTEM

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The relevance of marine physics on daily life at Spain

- An active environment...
 - High seas
 - Large tides, surges
 - High frequency oscillations (Meteo-tsunamis, long waves...)
 - Important winds and currents
- ...for several socioeconomic sectors...
 - Fisheries
 - Search and Rescue
 - Tourism
 - Marine safety
 - ...



26/12/2008 – Three casualties - Puerto de Llançà

Puertos del Estado needs of coastal services and data

Ports need met-ocean info along all their life phases:

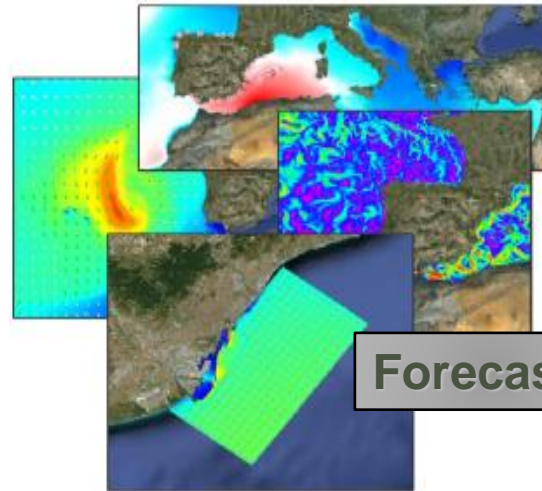
- Design phase (viability, budget, execution plans,...)
- Construction phase (safety, short-term build planning)
- Exploitation phase (operations & port closing, piloting, environmental management, ...)



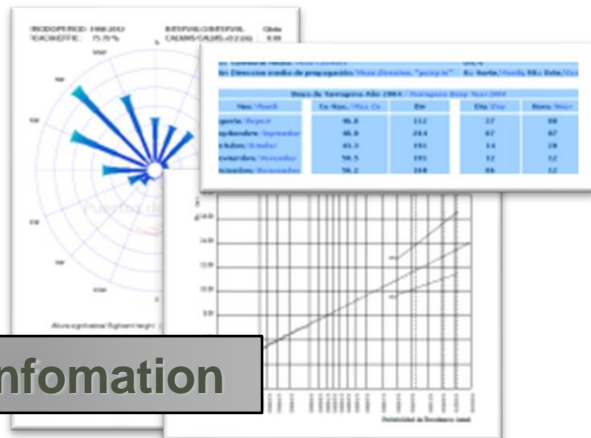
Operational oceanography comes to rescue. Integrated components working together:



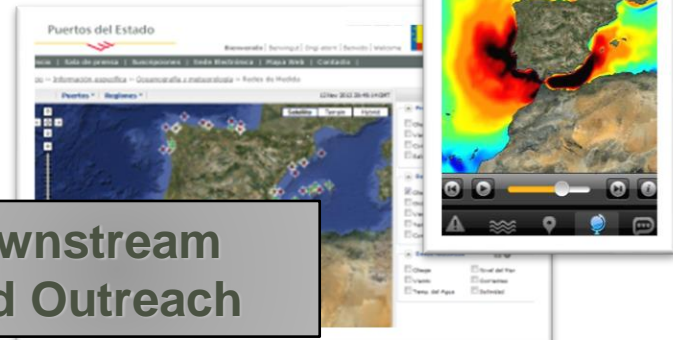
Real time Networks



Forecast



Climate information

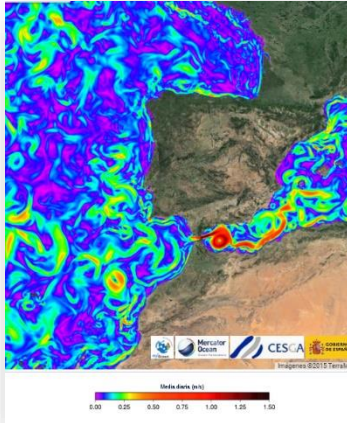


Downstream and Outreach

Operational oceanography: need of solving connected spatial scales

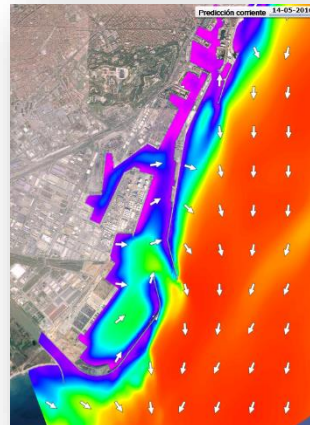
Large scale

Mainly solved by Copernicus service (participation of Puertos del Estado)



Coastal and port scale

Mainly solved by Puertos del Estado activities

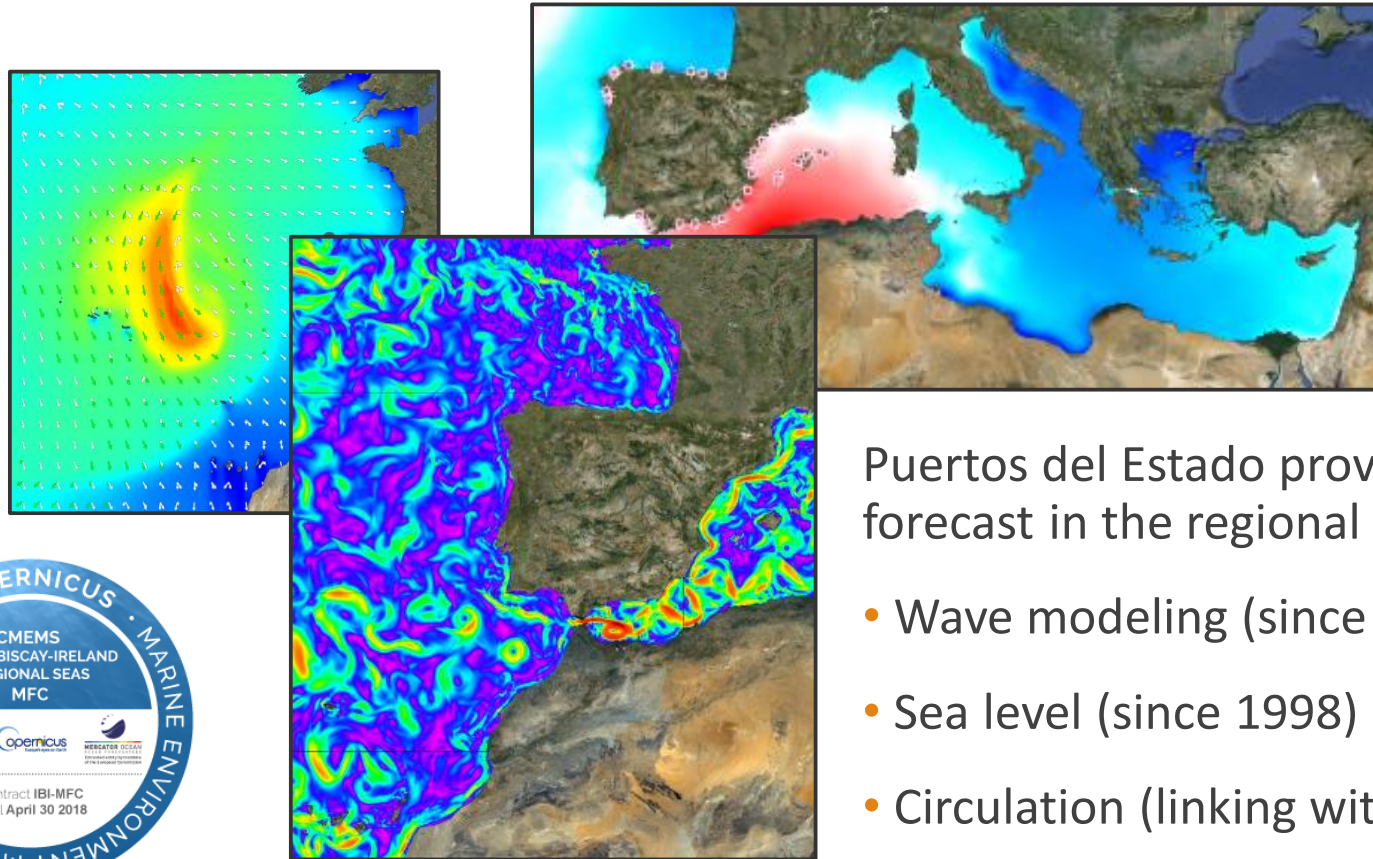


Downstream services

Ports

Intraestructuras,
Piloting,
environmental
issues, etc..

Puertos and CMEMS forecasting core regional service

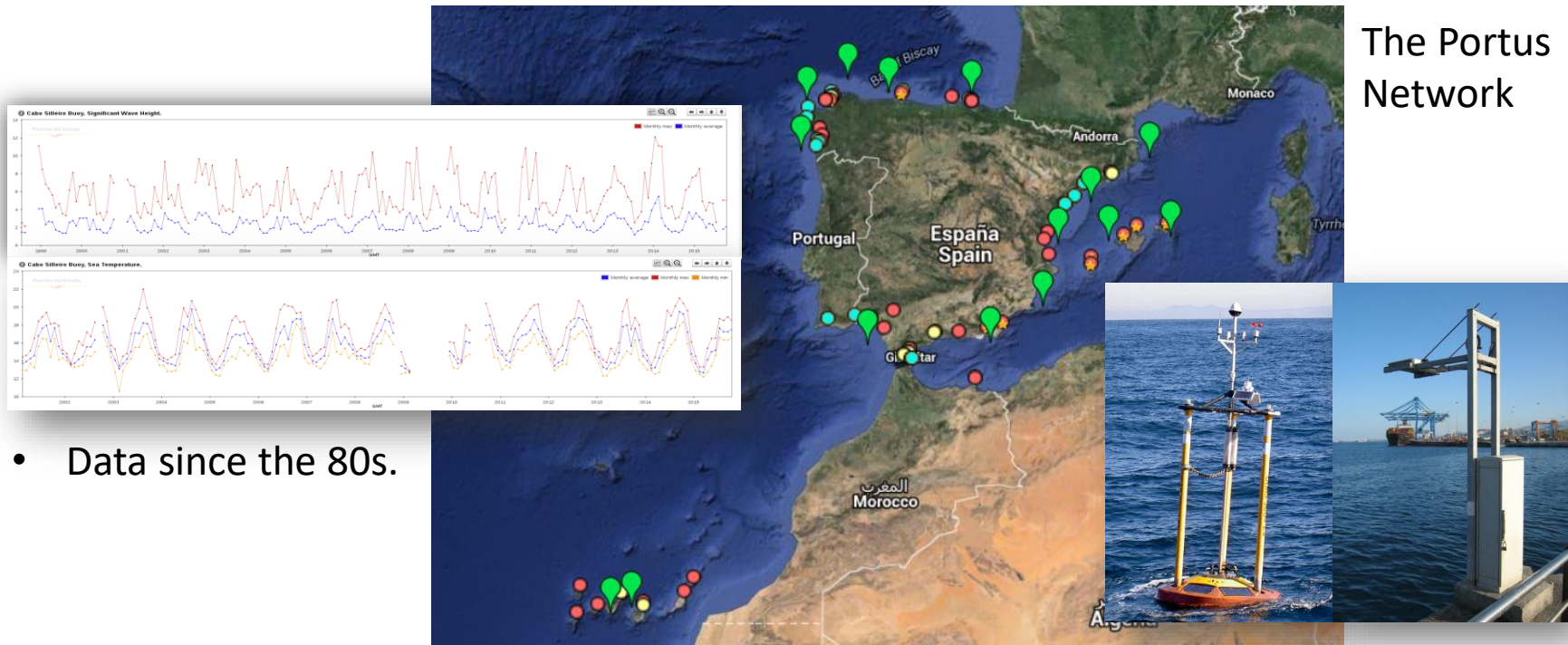


Puertos del Estado provides forecast in the regional service by:

- Wave modeling (since 1995)
- Sea level (since 1998)
- Circulation (linking with CMEMS)

A few words of Puertos work on coastal and port scale: Portus observatory:

- Portus observing system: **25 Buoys, 40 tide gauges, 20 met stations, 8 HF radars.**
- Now, additional data obtained via CMEMS in-situ TAC



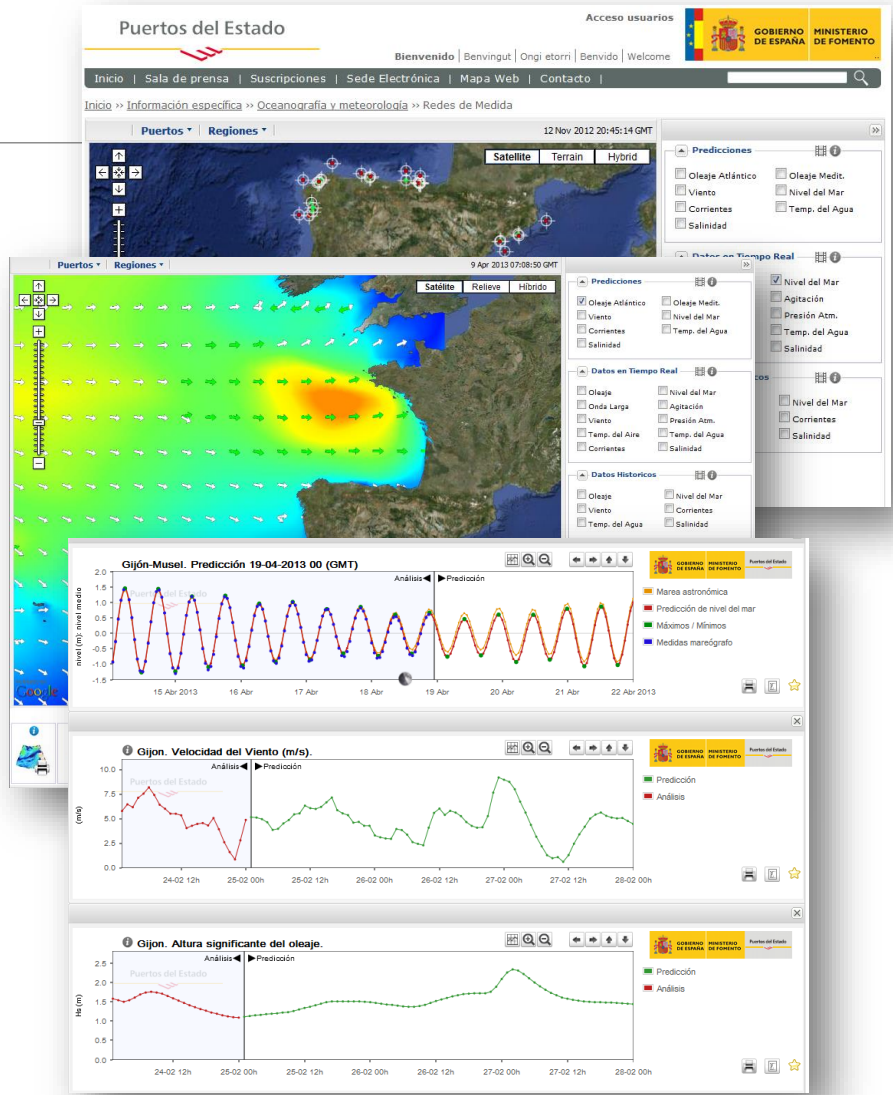
Deep water buoy network

- 15 stations
- Depths larger than 400 m
- Multi-parameter
- Real time, satellite transmission
- Almost 20 years of time series in most of the stations.



The web: portus.puertos.es

- All information available on the same interface (all scales spatial and temporal)
- Updated real time
- 8.000 users daily

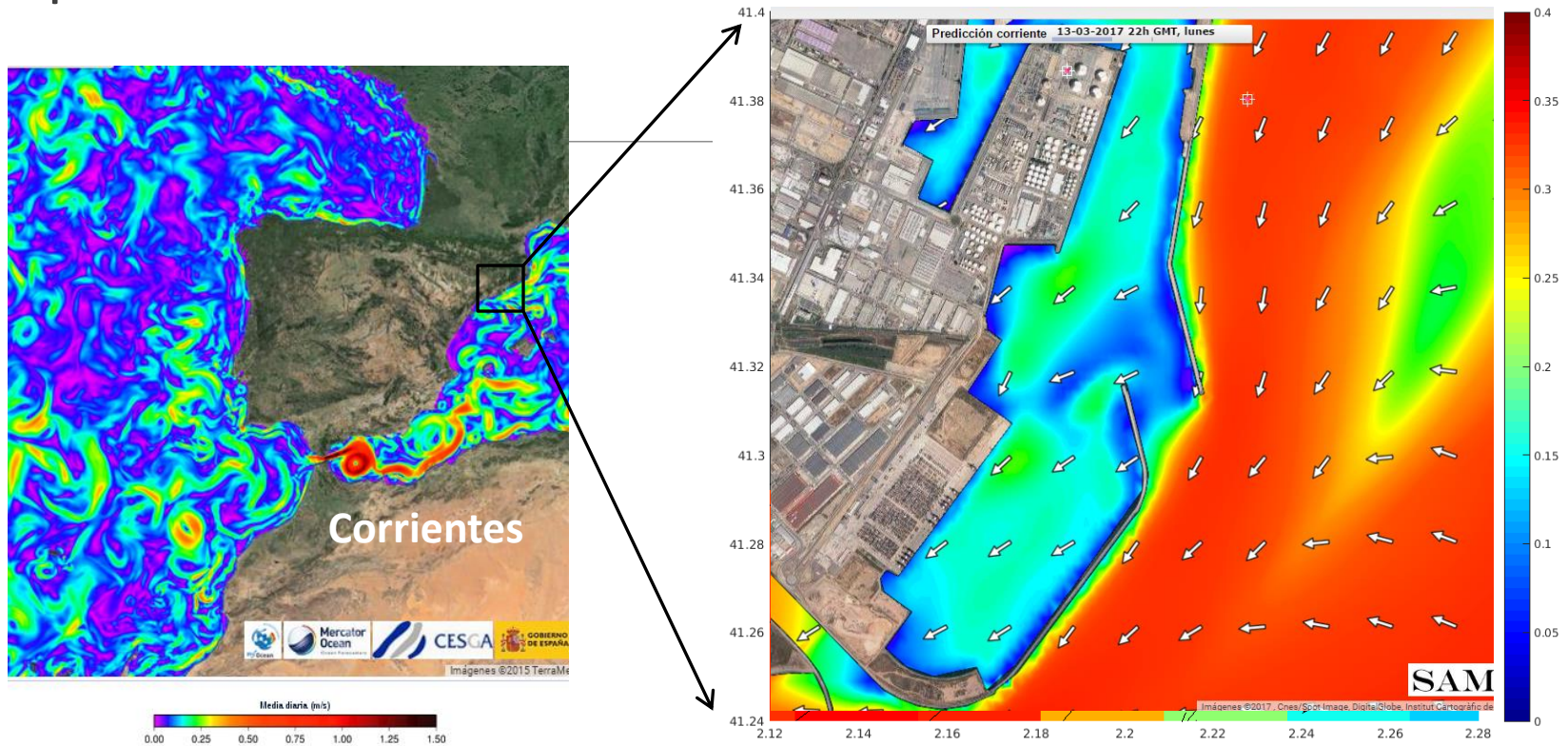


The Imar App

- Simplified information
- Oriented to location

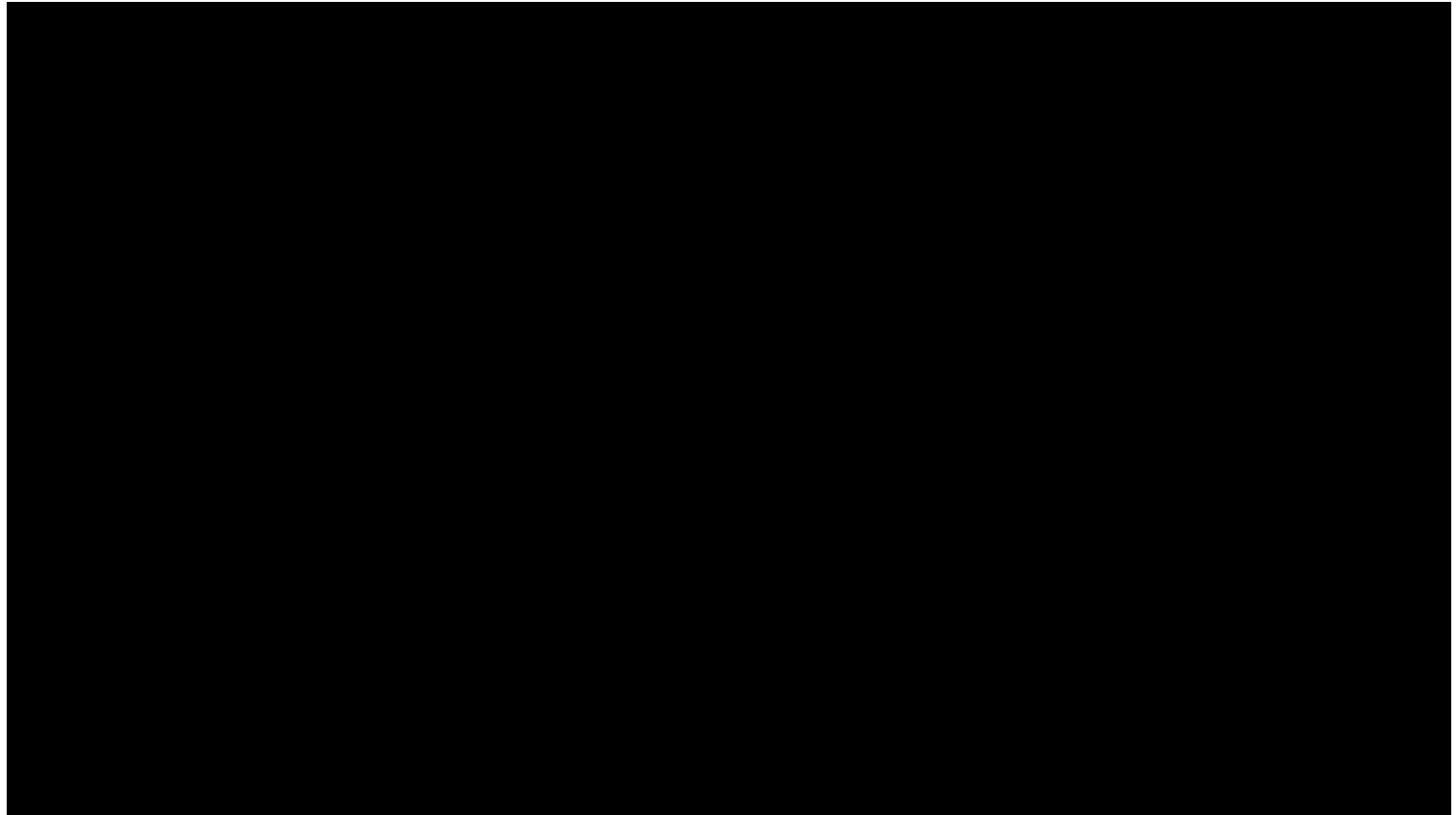


The spatial scale problema for port operations

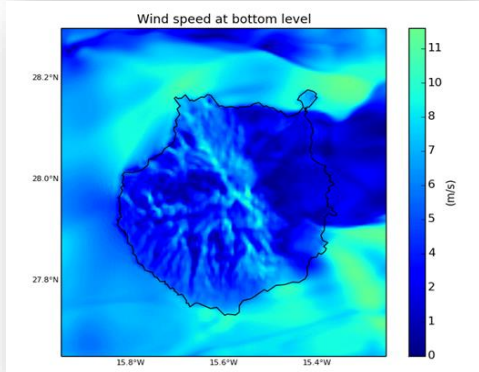


We need downscaling!

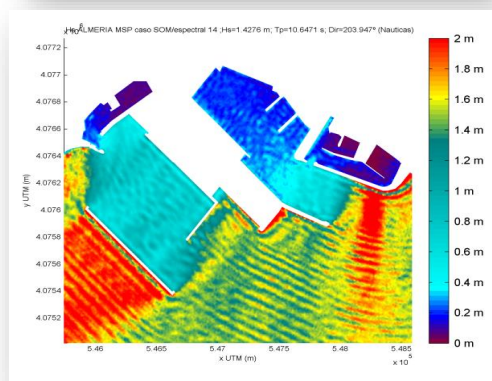
Downscaling process visualised



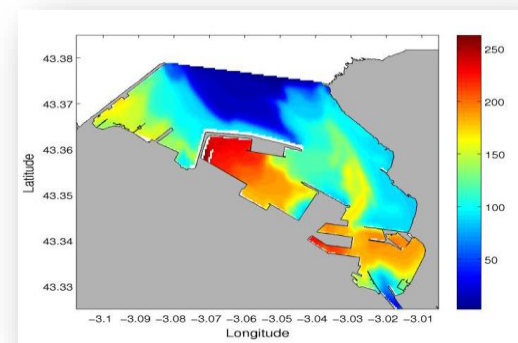
A few words of Puertos work on coastal and port scale: SAMOA, 66 coastal models (daily executed)



- 10 High resolution (1 Km) atmospheric models (by AEMET)



- 17 High resolution wave systems (5 m) in 2 steps

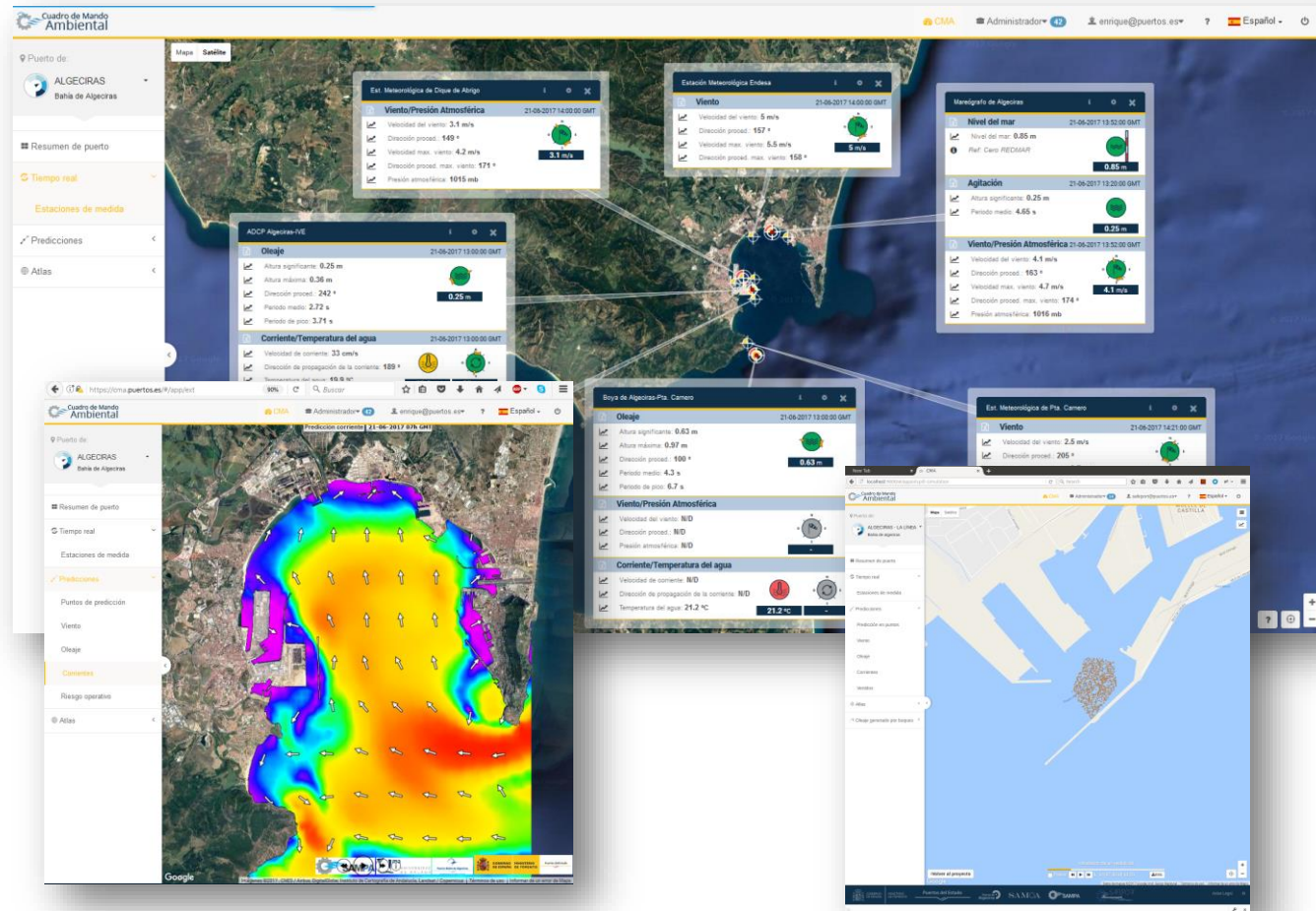


- 11 High resolution circulation systems (50 m) in 2 steps

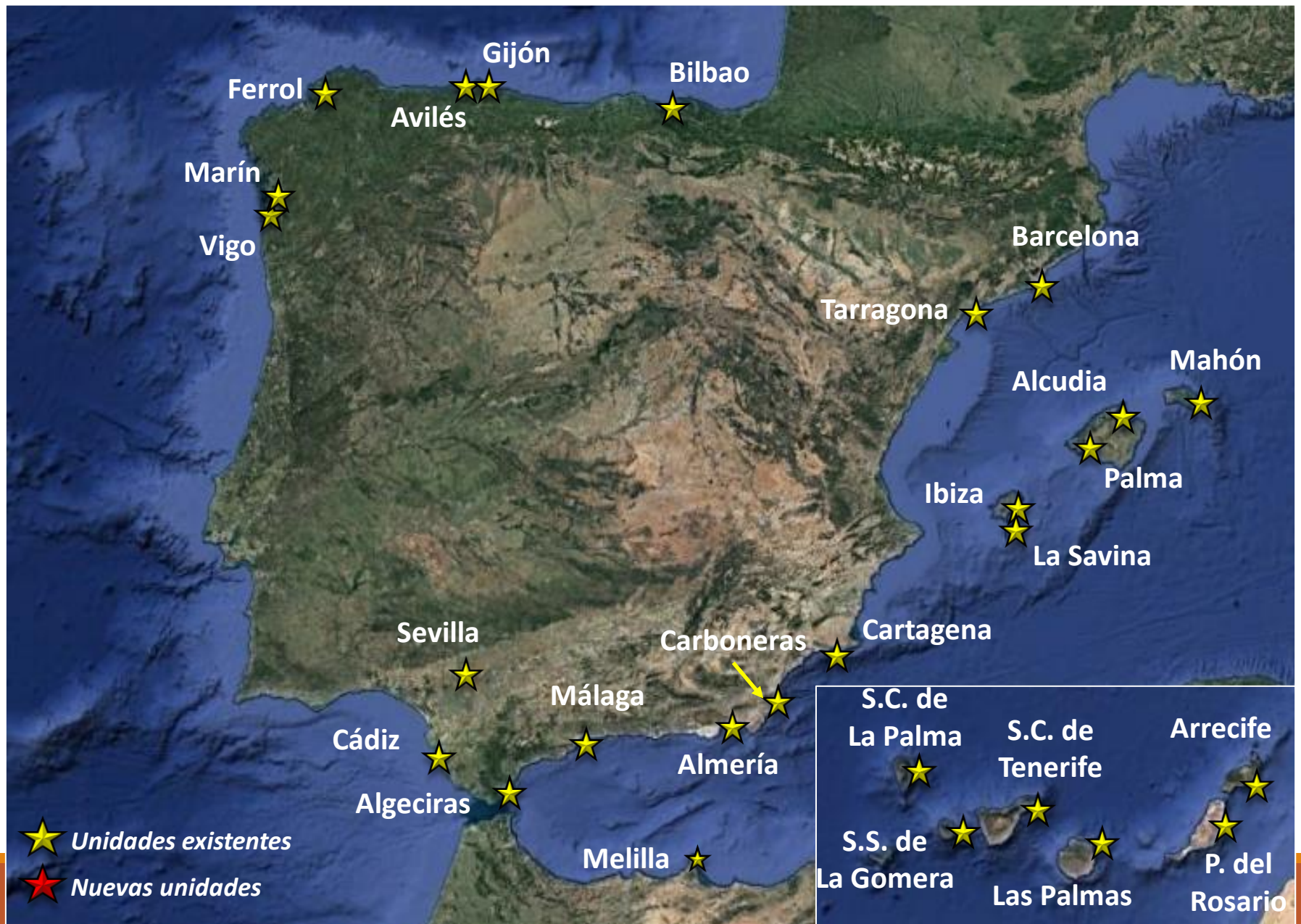
Added value tools: the CMA and the Alert System

The CMA: a Visualization and Alert Tool, tailored for the Port:

- Managed by the Ports
- Tailored User Alerts (e-mail and SMS)
- Flexible and modular
- Includes added value tools (i.e. On-line oil-spill model)



Módulo 1: CMA



SAMPACma alert and automatic report system

SMS and e-mail

SMS SampaMatic:

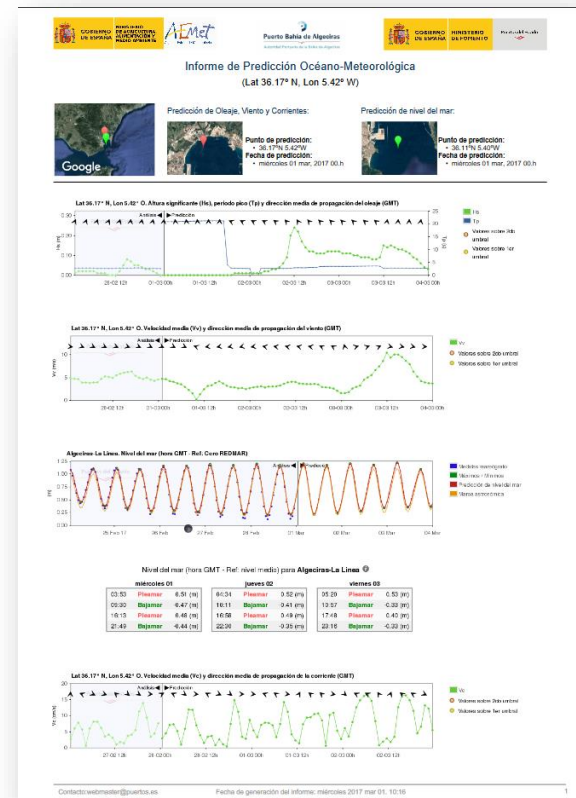
Alerta por viento > 9 m/s
activada en Estrecho 1 desde
17/Mar 19h hasta 18/Mar 01h
(máximo 9.7 m/s en 17/Mar 22h)

Fully customized by user:

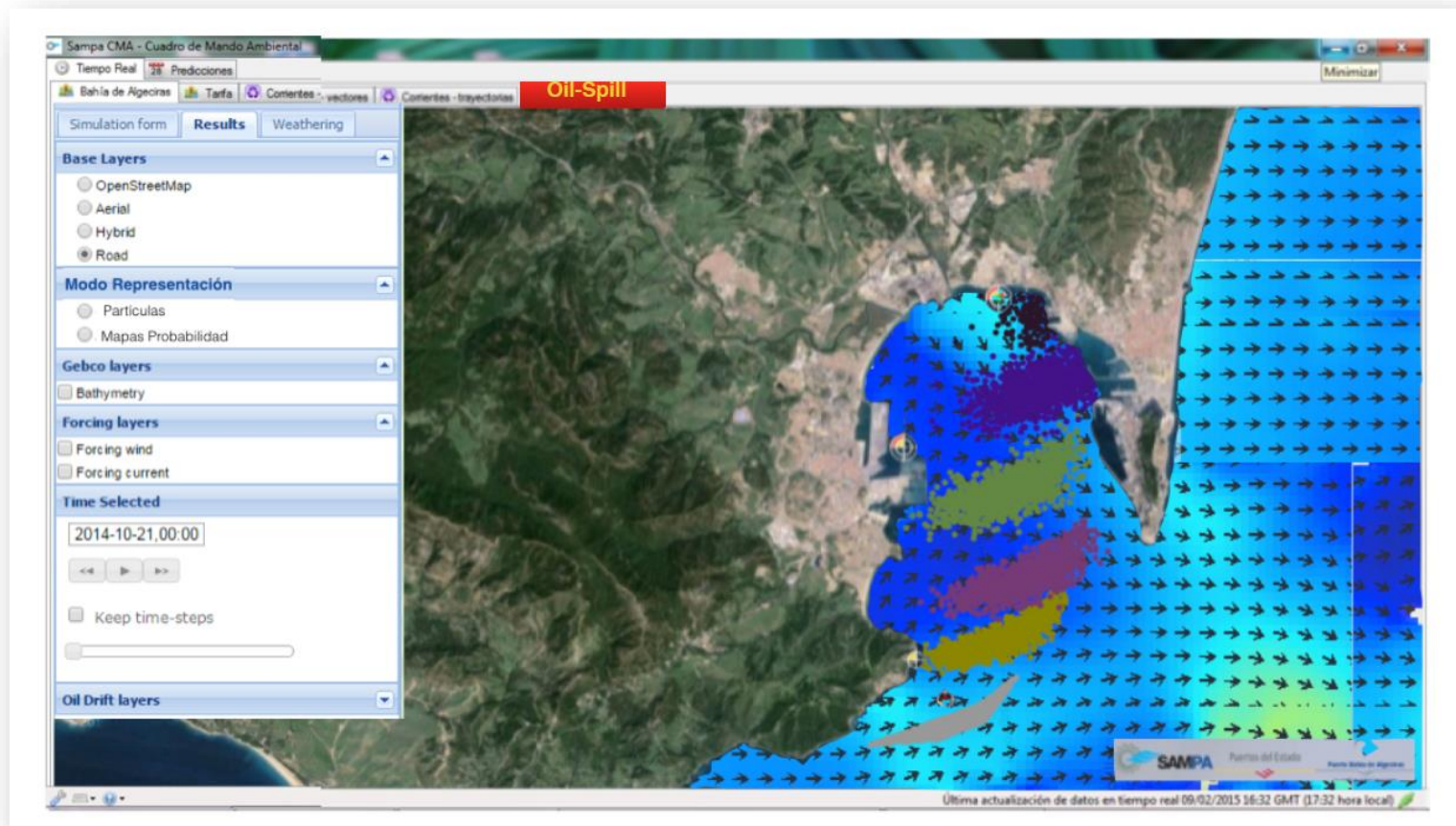
- Selection of point
- Combination of alert criteria
- Selection of thresholds



Reports by e-mail



Oil spill integrated in CMA



Samoa and Samoa 2

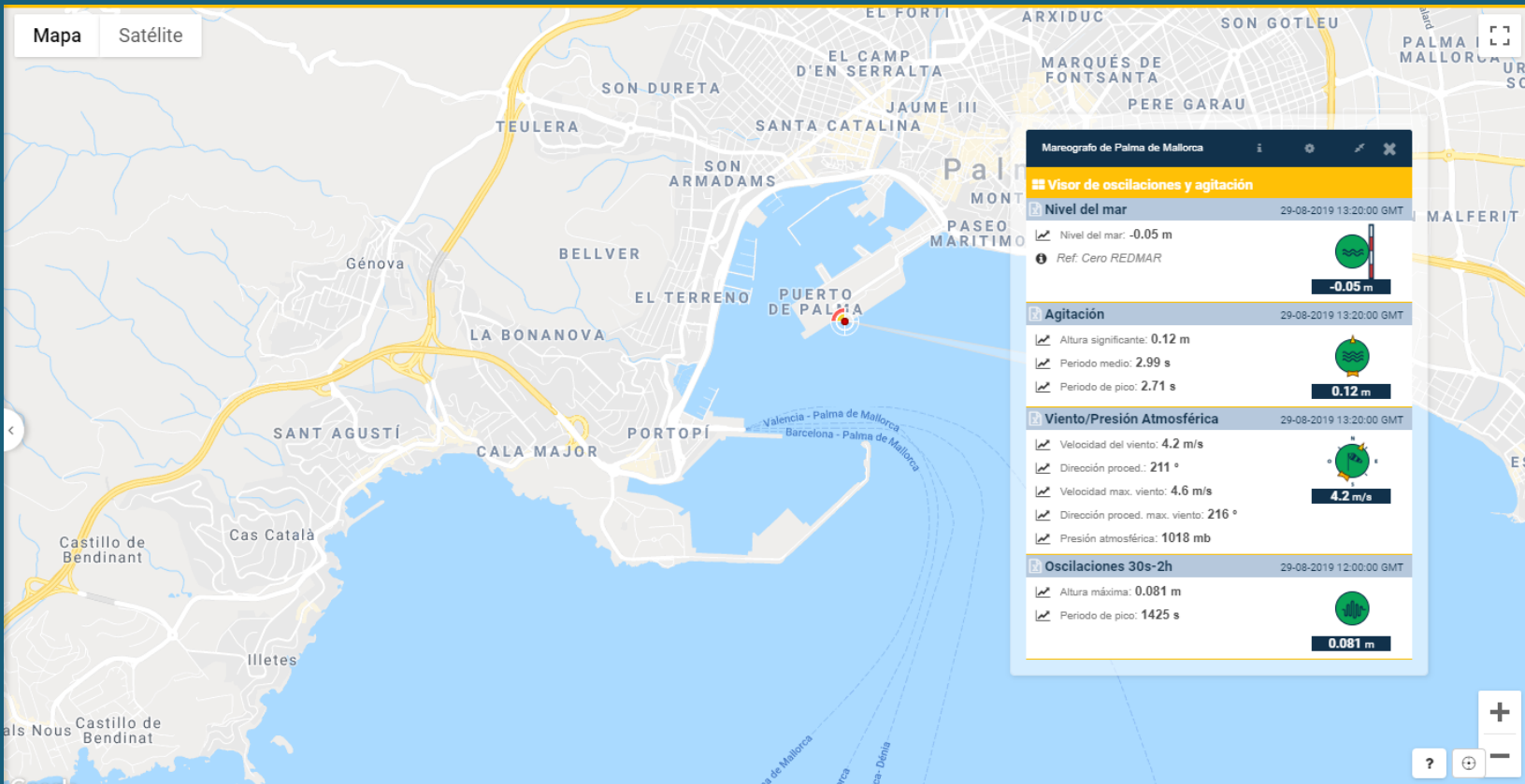
Producto o servicio	Situación en 2018 (SAMOA)	Previsión 2021 (SAMOA +SAMOA 2)
Software de visualización y alerta (CMA)	25 puertos	44 puertos
Previsión atmosférica de 1 Km	10 puertos	20 puertos
Previsión de agitación	10 puertos	21 puertos
Previsión de circulación	9 puertos	31 puertos
Previsión atmosférica de muy alta resolución		17 puertos
Previsión de rebase		4 puertos
Previsión de onda larga		6 puertos
Campañas de medida en puertos		10 puertos
Estación meteorológica en mareógrafo	13 puertos	18 puertos
Estación GNSS en mareógrafo	3 puertos	8 puertos

Ports de Balears- Why have we implemented SAMOA?

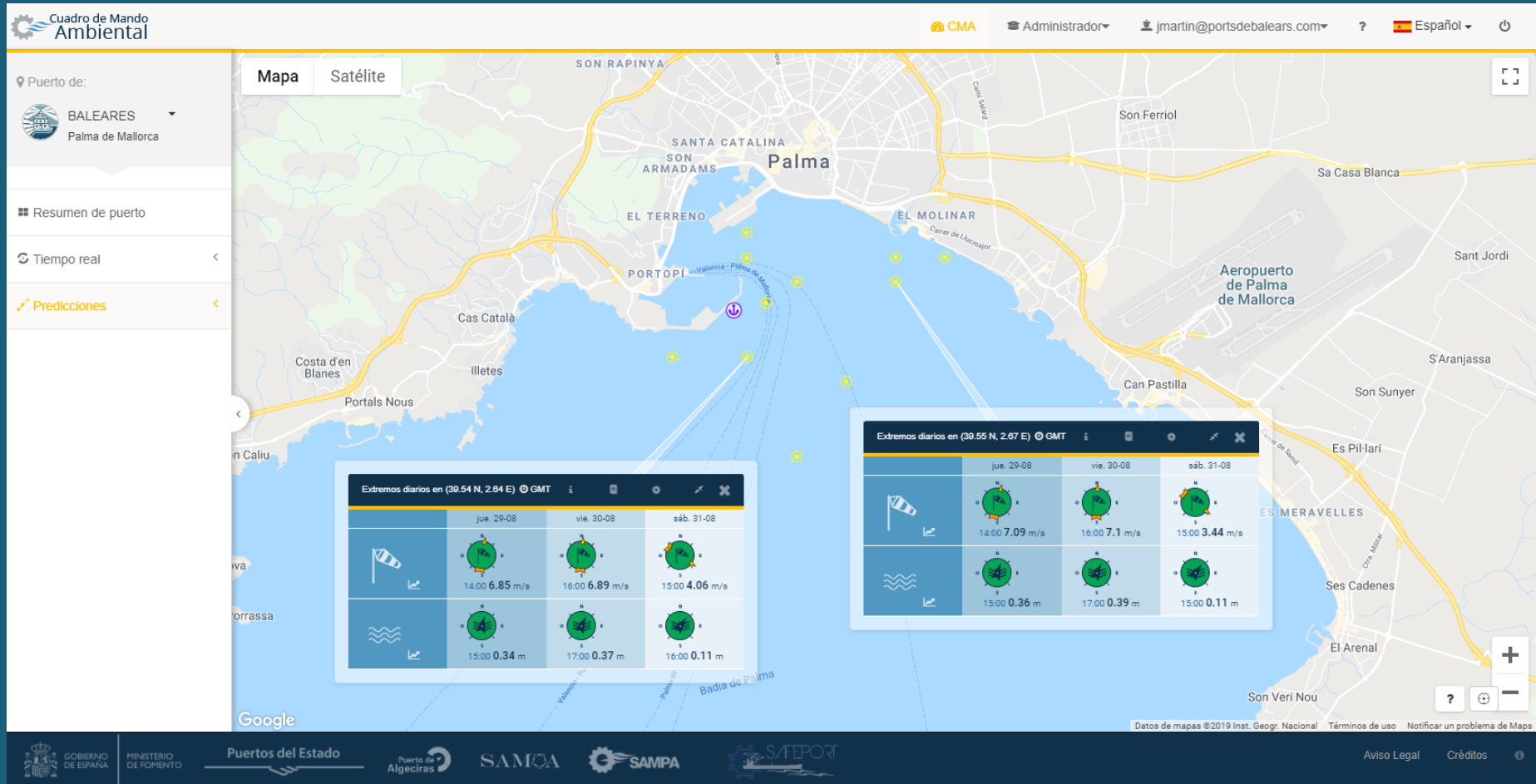
- IT IS ALIGNED WITH OUR MISSION AND VALUES.
- IT IS COHERENT WITH THE THREE CERTIFICATES RECENTLY OBTAINED:
 - ✓ It improves on the service provided to the Port Community.
 - ✓ It brings an improvement to environmental performance.
 - ✓ It contributes to a more effective management supported by new technologies.



Real-time measurements through tide gauges:



Predictions at defined points:



Definition of general and specific alerts:

The screenshot shows the 'Alertas' (Alerts) management interface. The top navigation bar includes the 'Cuadro de Mando Ambiental' logo, user information (CMA, Administrador, jmartin@portsdebalears.com), and language settings (Español). The main content area is divided into 'Alertas Generales' and 'Alertas Particulares' tabs. A search bar for 'Usuario' is present. Below is a table listing alerts with columns for 'Puerto', 'Lugar', 'Descripción', 'Operaciones', and 'Estado'. The table contains five entries for 'Balears' with various alert points and descriptions like 'POSIB CIERRE PALMA'. At the bottom, there are buttons for 'Eliminar', 'Activar Alerta', 'Desactivar Alerta', and 'Nueva Alerta'. A note at the bottom states: 'El servicio de alertas por sms tiene un coste asociado. Por ello, hay un máximo de 5 alertas por sms por usuario. Utilízelo con moderación.'

	Puerto	Lugar	Descripción	Operaciones	Estado
<input type="checkbox"/>					
<input type="checkbox"/>	Balears	Punto 813142041	POSIB CIERRE PALMA		●
<input type="checkbox"/>	Balears	Punto 8163029	POSIB CIERRE ALCUDI		●
<input type="checkbox"/>	Balears	Punto 2101105	POSIB CIERRE SAVINA		●
<input type="checkbox"/>	Balears	Punto 8235026	POSIB CIERRE MAÓ		●
<input type="checkbox"/>	Balears	Punto 8058102	POSIB CIERRE EIVISSA		●

Nueva Alerta

1. Selecciona el puerto
Balears
2. Selecciona el punto
[Empty dropdown]
3. Configura la alerta:

Mapa | Satélite

Cancelar Crear nueva Alerta



Conclusions

- Monitoring and forecasting sea environment is a **NEED** for harbor authorities and society
- The investment in Operational oceanography produces an important large **ECONOMIC RETURN**
- The knowledge of marine environment is basic for **SAFETY**
- Society, and Ports in particular, can reach this knowledge thanks to operational oceanography, combining properly in-situ measurement, numerical modeling, downstream and outreach activities!