

Recent model developments for the IBIROOS area within:

MyOcean, EASYCO, SAMPA
Escenarios, Ensurf, wave forecast

MyO IBI progress:



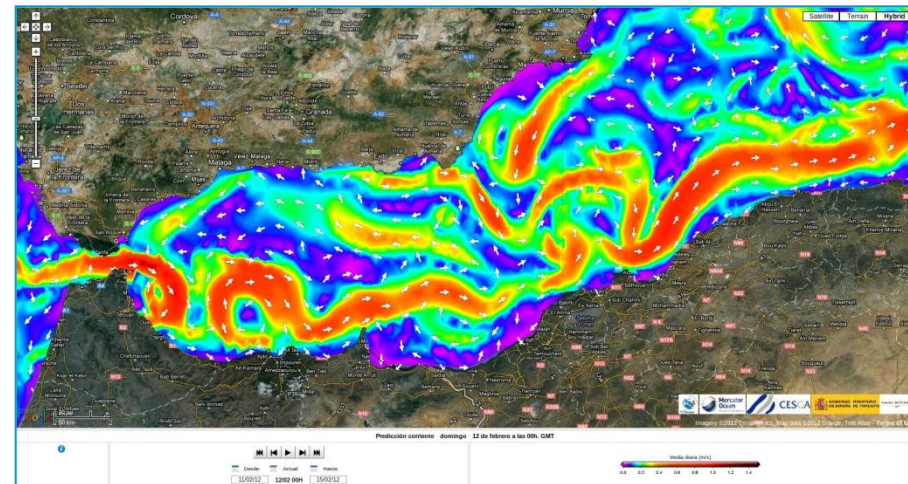
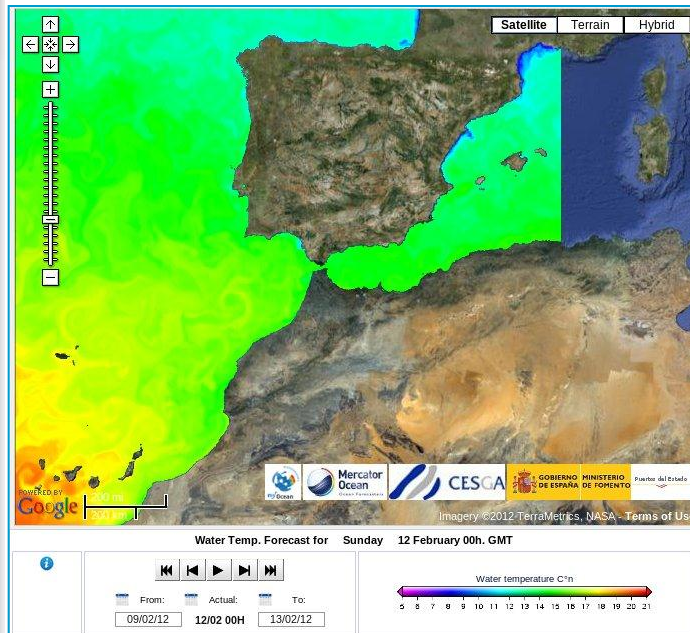
- ✓ Launch of IBI-V2 (10-Jan-2012):
- ✓ New IBI-V2 incorporates:
 - ✓ Fresh water river discharges data (PREVIMER obs & SMHI forecast data from hydrological model)
 - ✓ Bathymetry improved in some areas (i.e. Gibraltar Str. & Gulf of Cadiz areas)

MyO IBI Progress:

New visual interface tool
through Puertos web page
(www.puertos.es)



- ✓ Only surface fields (complement to the MyO WMS tools).



MY OCEAN

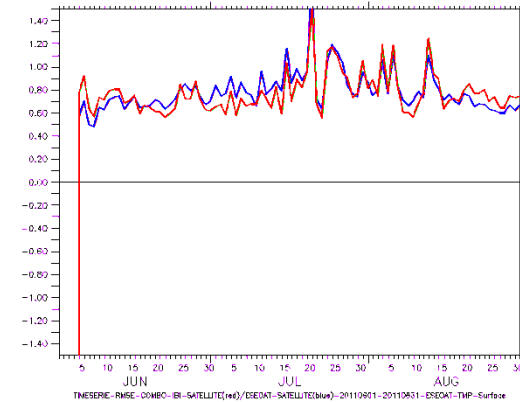
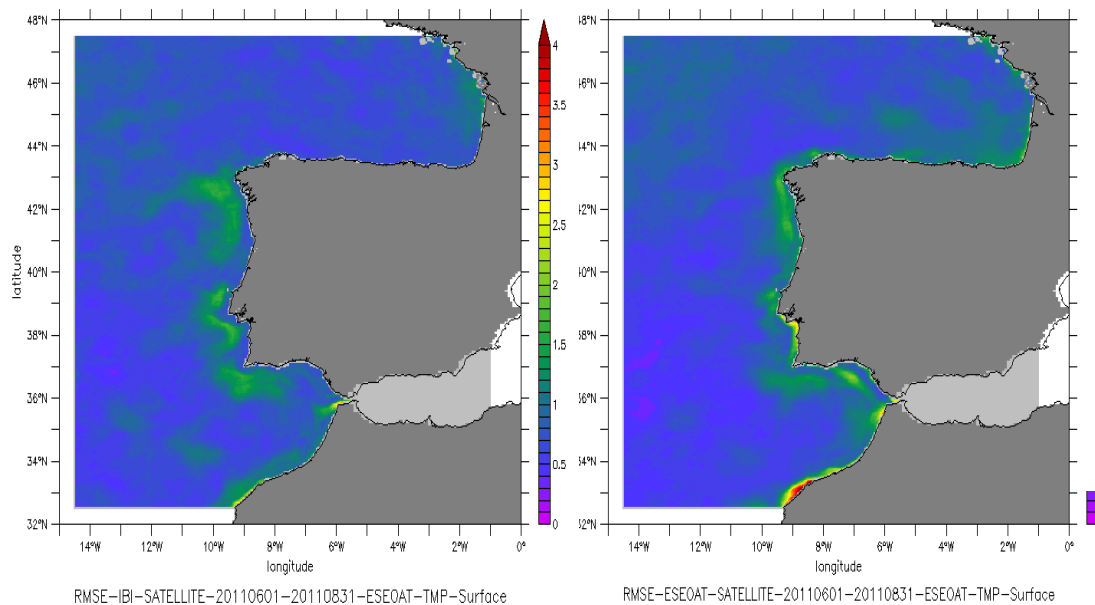
Marine
Core
Service

MyO IBI Progress:



- ✓ **On-line Validation: New metrics**
 - ✓ **New Obs sources: Galician HF radar**
 - ✓ **Comparisons with op forecast systems:**
 - ✓ **The MyO Global System**
 - ✓ **The regional ESEOAT system**

IBI-V1 Vs ESEOAT (IBI-V0) (comparisons with satellite data)



MY OCEAN

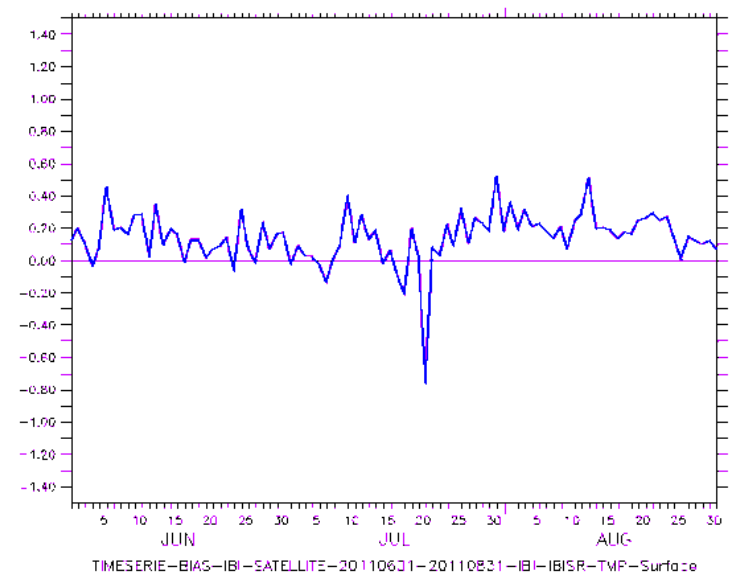
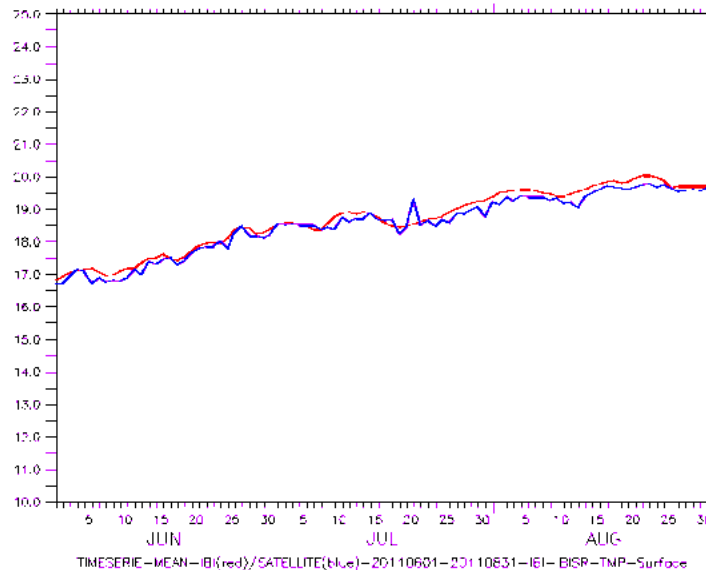
Marine
Core
Service

MyO IBI Progress:



- ✓ **New Delay Mode Validation System to automatically generate monthly & seasonal statistics and metrics.**

Delay Mode Validation (MyOcean V1 vs Sat.):



MyO IBI Progress:



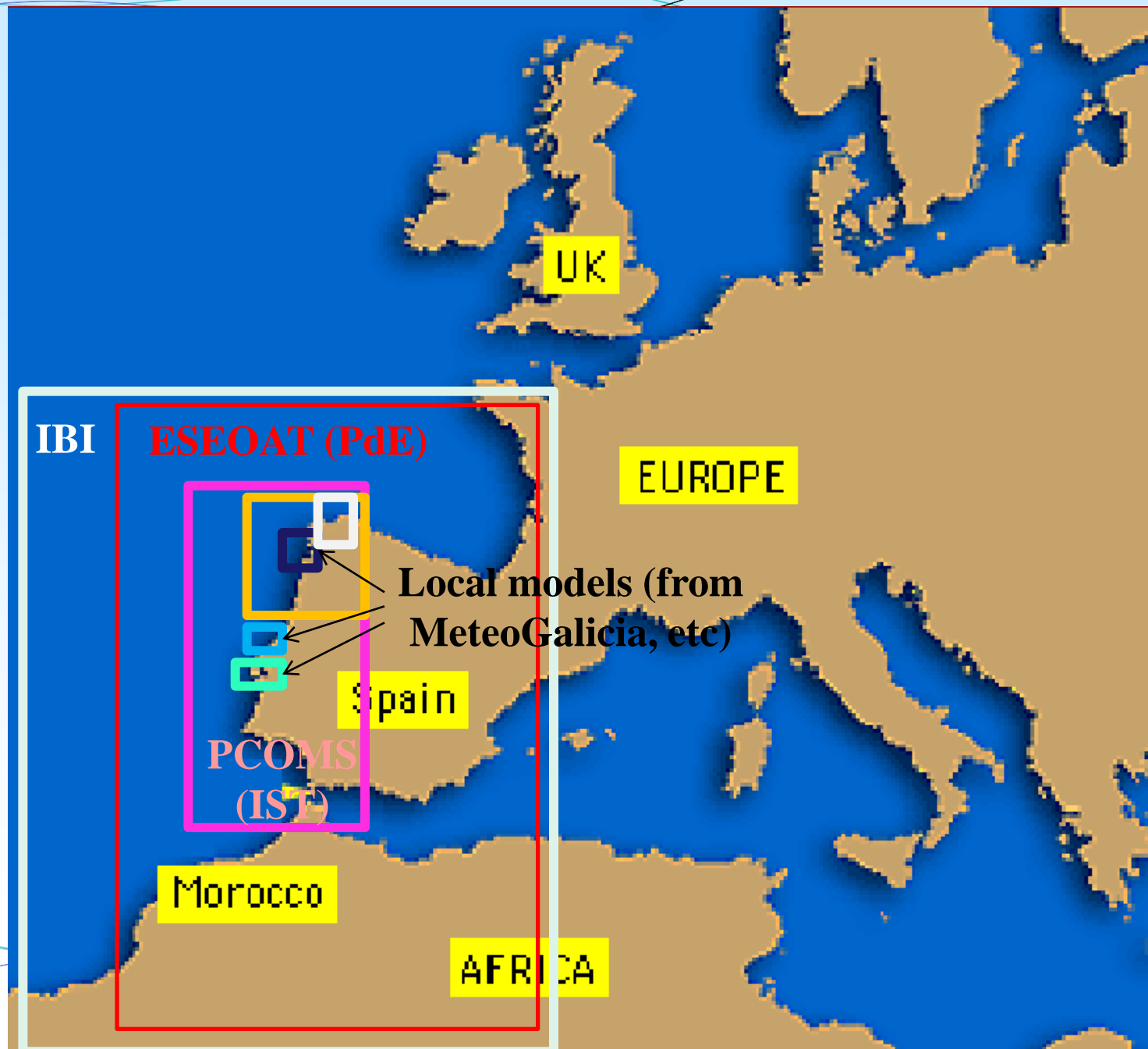
- ✓ **IBI Operational suite:**
 - ✓ **Enhancement of robustness of IBI forecast system**
 - ✓ **minimize hardware failures & outages**
 - ✓ **Improvement of control mechanisms & tools (nagios-based, etc...)**

EASYCO project...

- **PdE role:** Design & performance of an EASYCO Multi-model Comparison Exercise (1 year: 2011)

Main purposes:

- Model validation using available observational sources in order to check model robustness and reliability (SST Satellite data, HF radar currents data, etc.)
- Comparisons between models in the overlapping area in order to analyse performance, variability and statistical parameters.

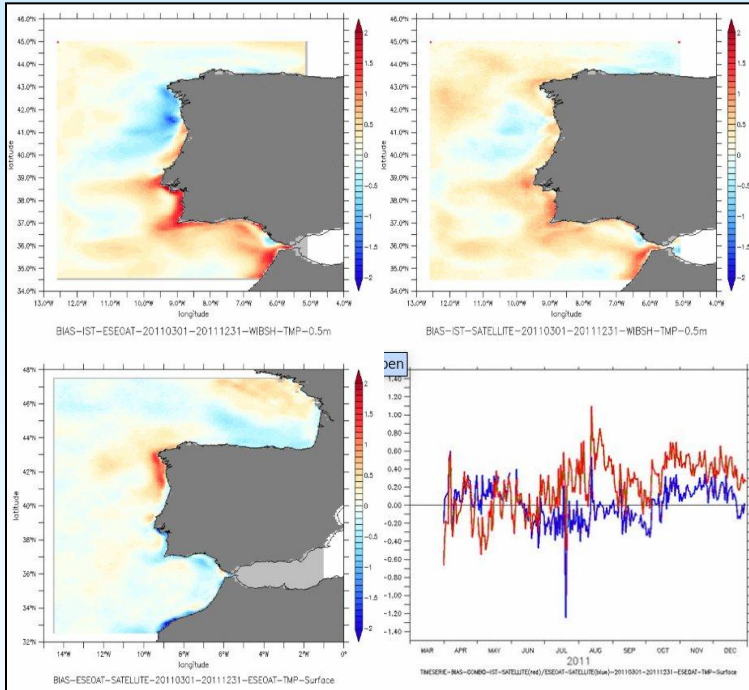


EASYCO project...

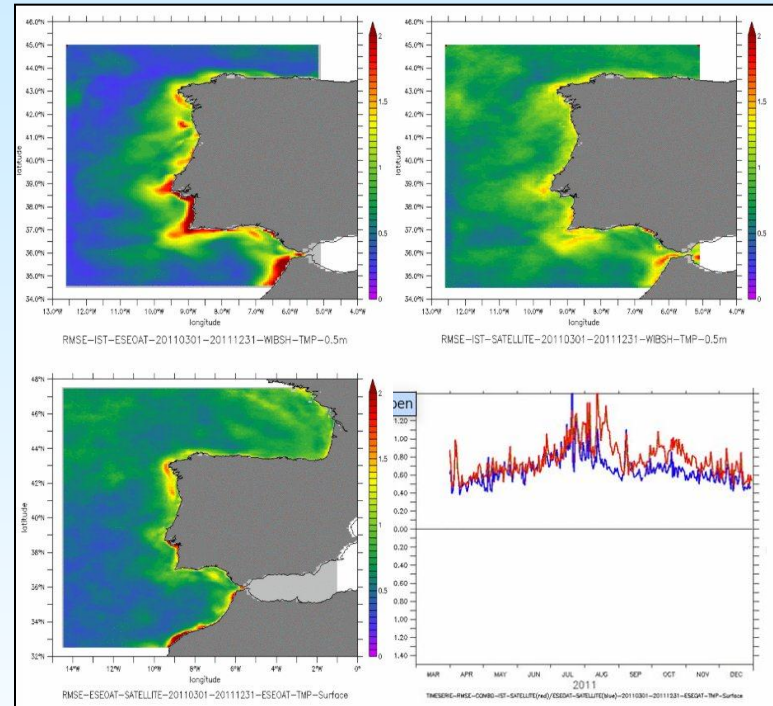
■ Current status:

- 1.- CAL-VAL tool-box is mature. modular and flexible
- 2.- Present Data sources:
 - Regional models: ESEOAT, IBI (new MyO), PCOMS
 - Observational data: ARGO FLOAT, Satellite data (L4 MF products)...
 - Climatologies: WOA 2009
- 4.- Comparisons:
 - Model VS Climatology
 - Model VS observational data
 - Model VS Model
- 5.- Outputs:
 - Fields: different levels and sections in the study area
 - Statistics: 15-days time series of statistical parameters: bias, RMSE and spatial correlations.

Some outputs: PCOMS (IST) -VS- ESEOAT as compared with satellite data

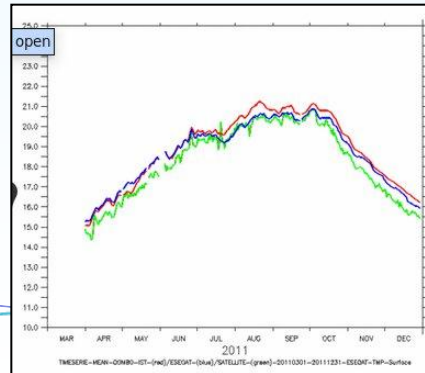


↑
BIAS



↑
RMSE

MEAN SST →



"Investing in our common future."





The SAMPA system

An operational oceanography system
for the straits of Gibraltar

The SAMPA team

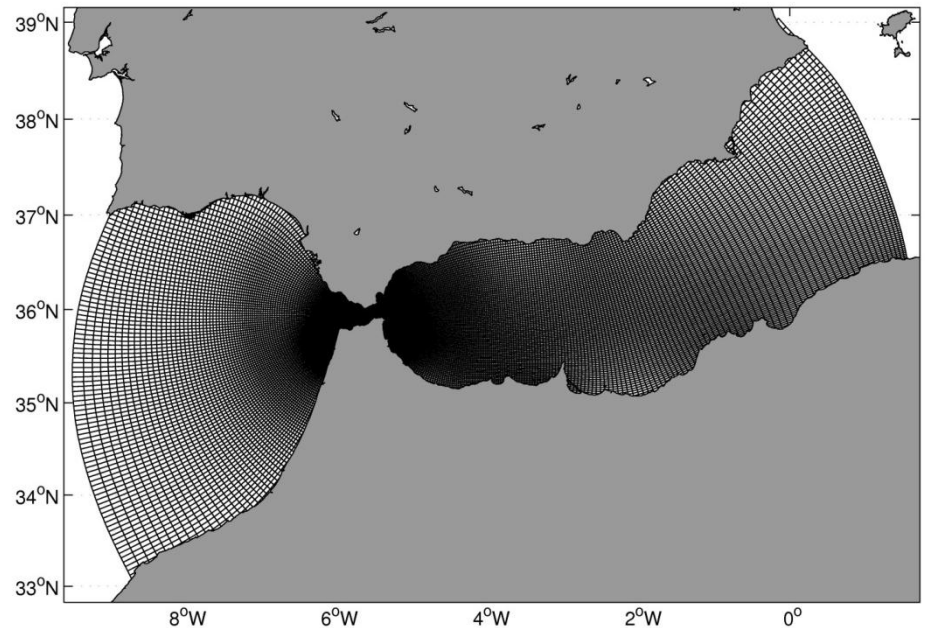
The SAMPA system

An operational oceanography system
for the straits of Gibraltar



The ocean model

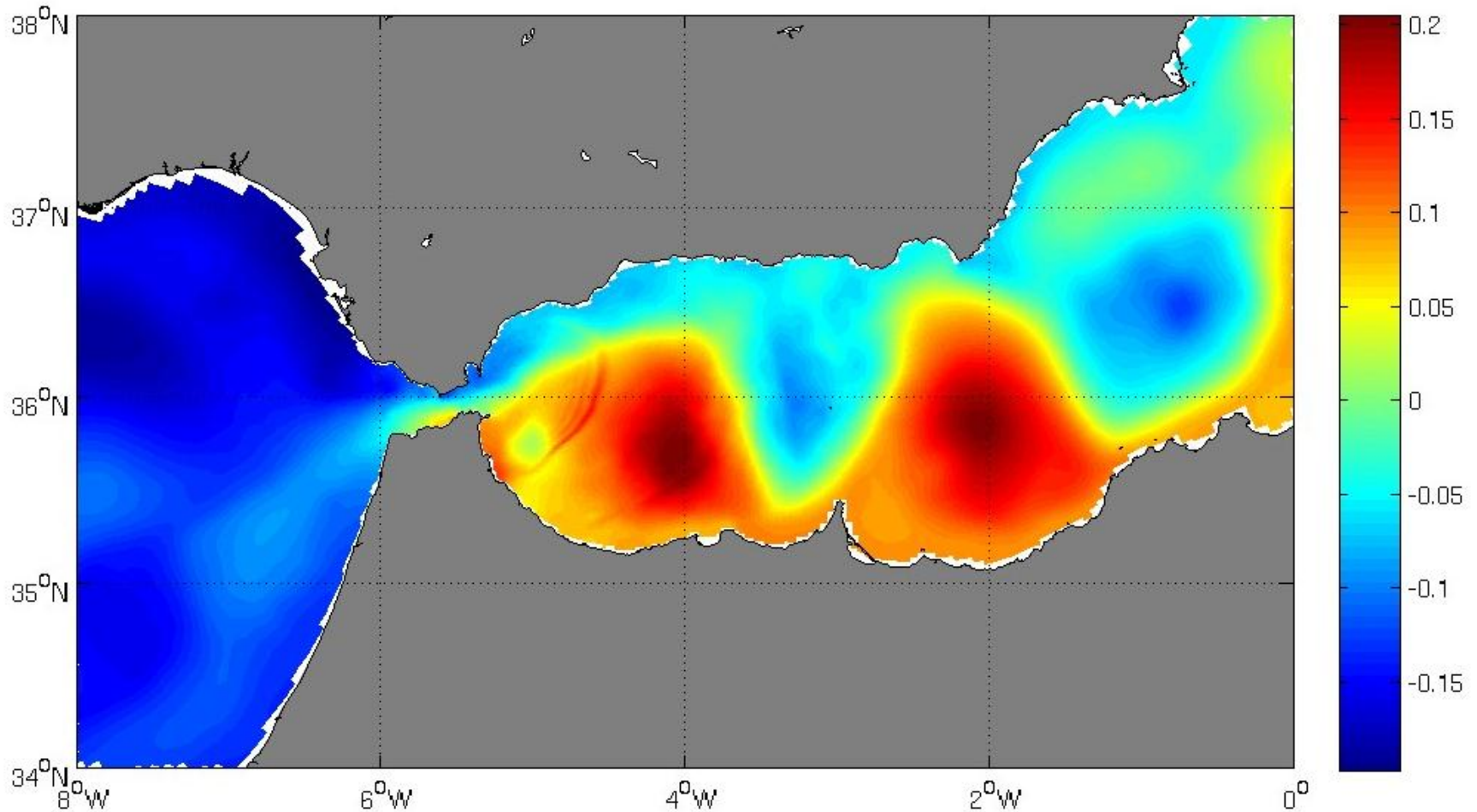
- Developed by UMA
- MITgcm model
- 200 m resolution at the inner part. 46 z-levels
- Tidal forcing from LEGOS-POC/CLS.
- Nested into MyOcean Med model
- Barot. atmospheric pressure forcing nested in Puertos Nivmar system
- Implemented at Puertos Supercomputer (4 nodes-32 cores dedicated)



Operational starting March this year

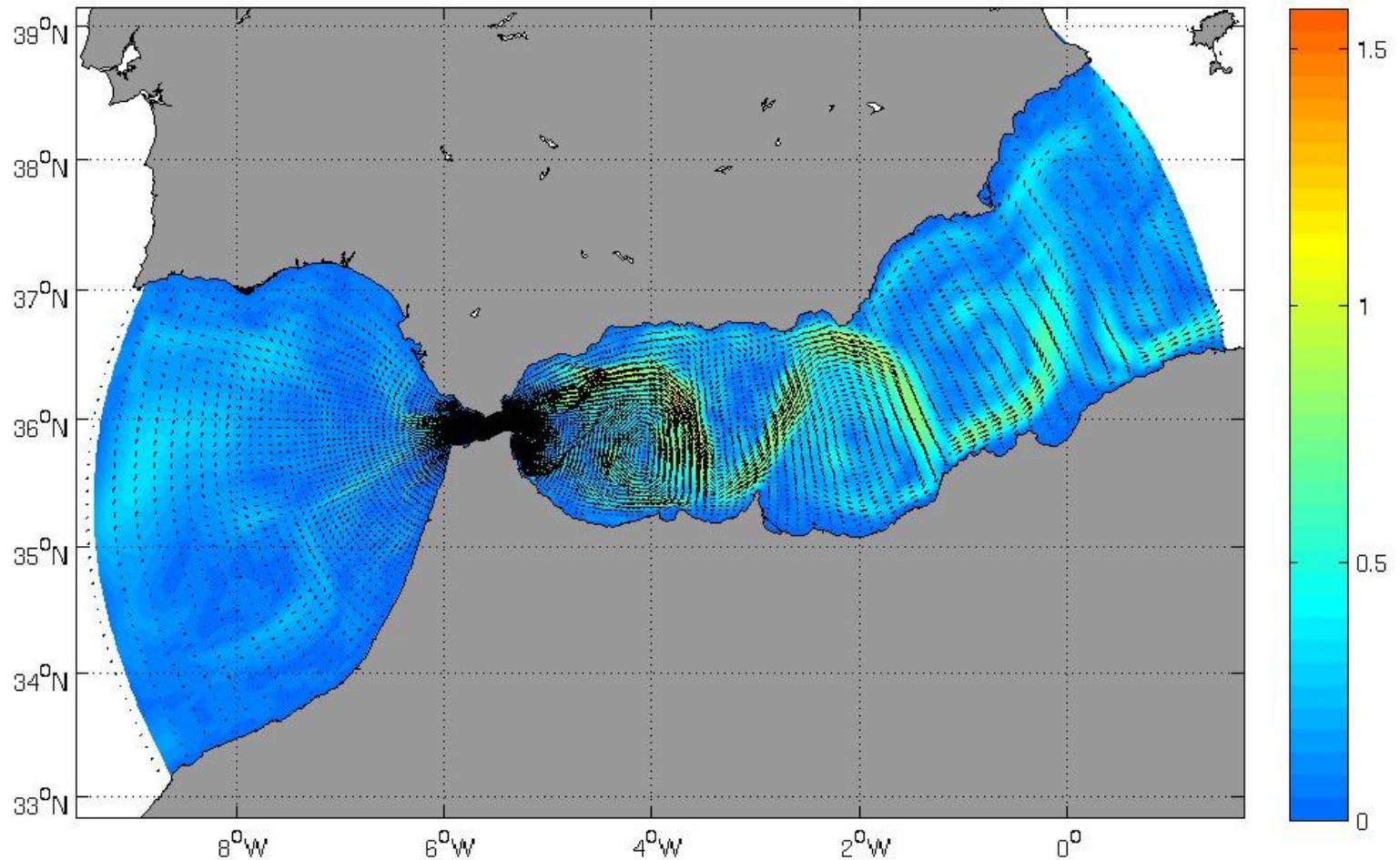
The ocean model

- Sea level snapshot



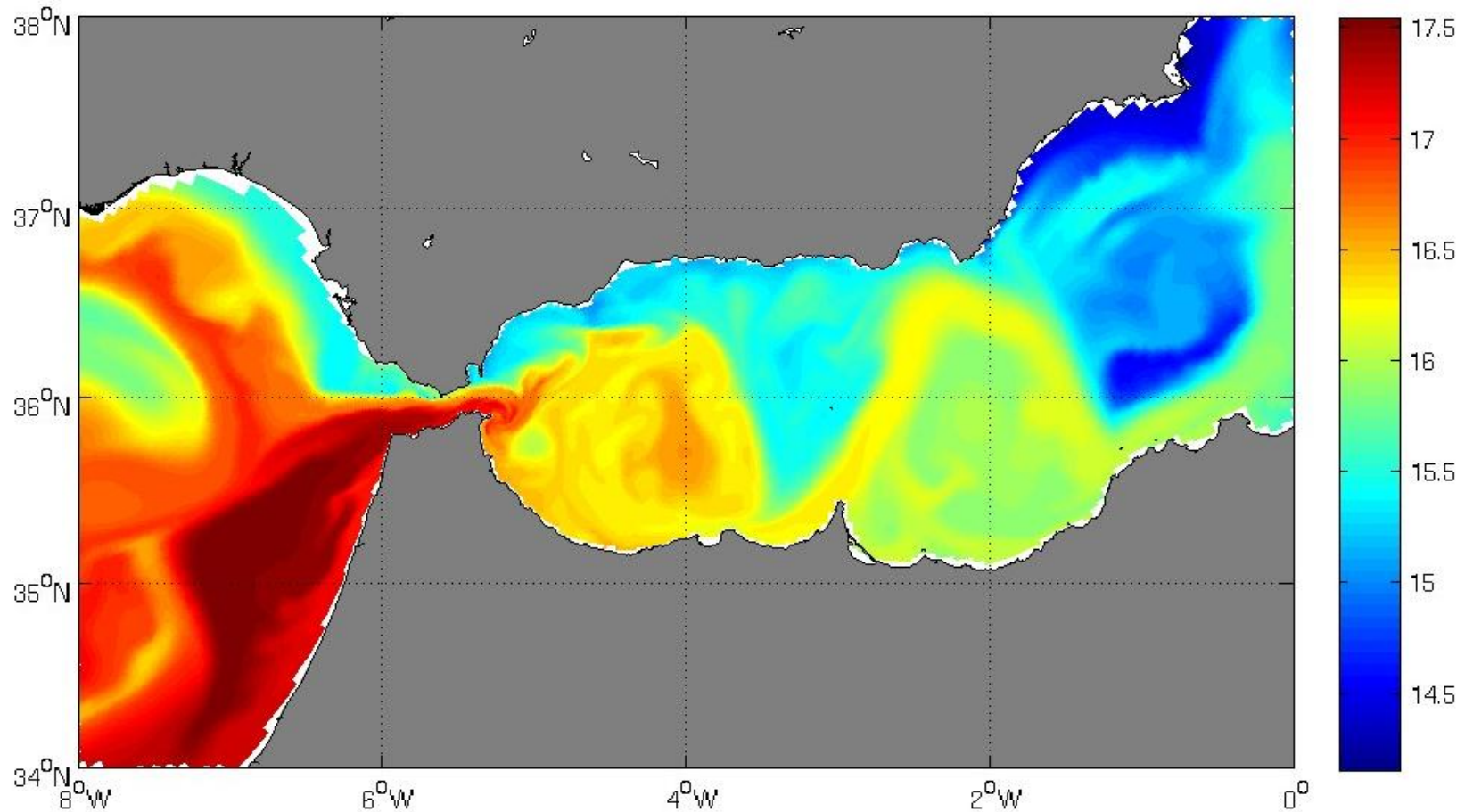
The Ocean model

- Circulation Snapshot



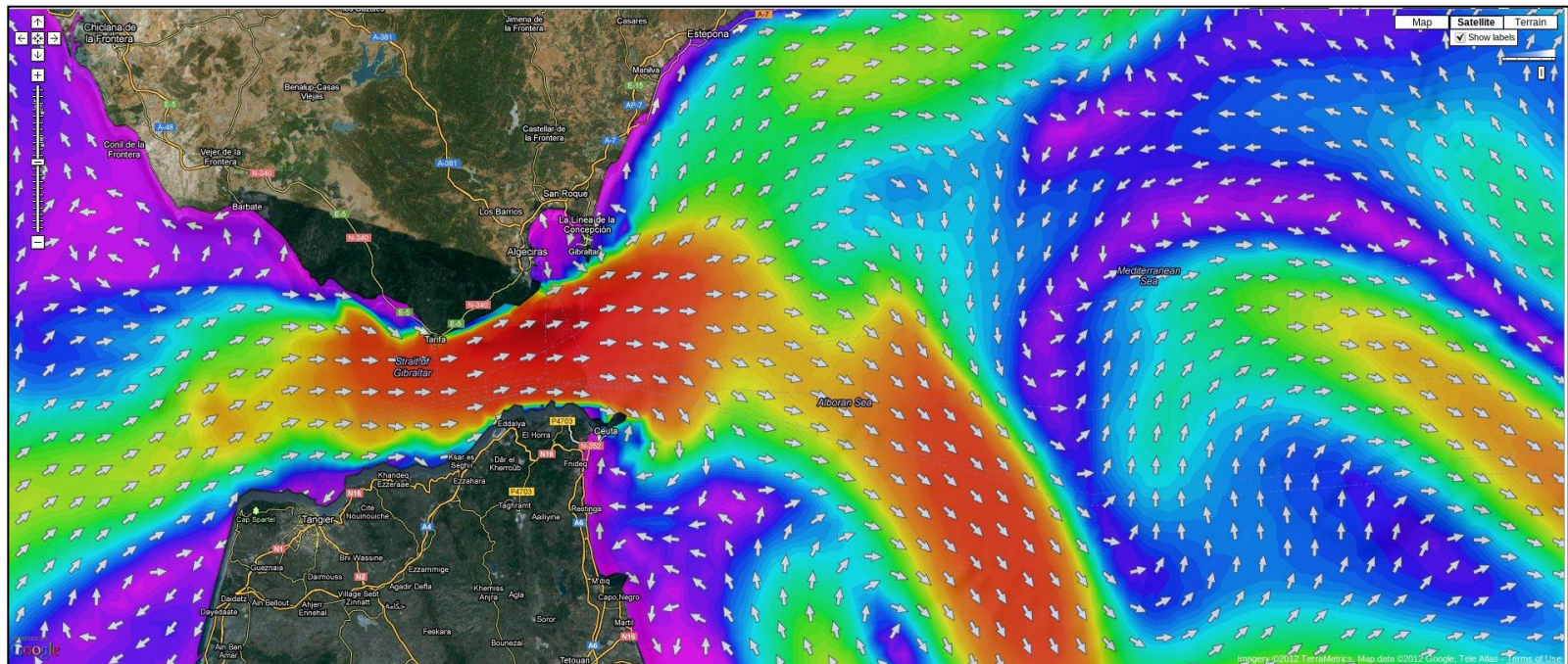
The Ocean model

- SST snapshot



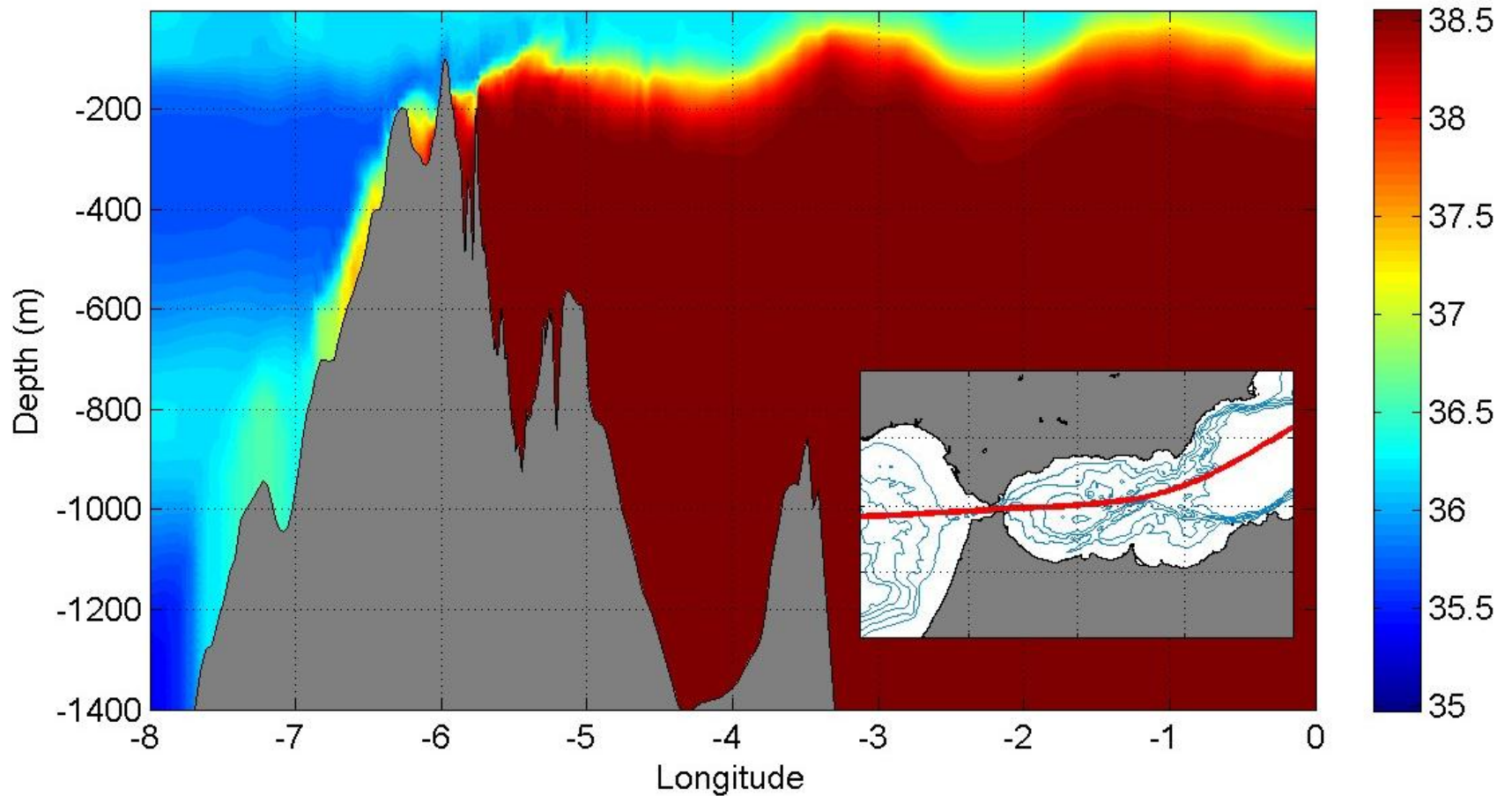
The Ocean model

- Surface currents Snapshot:



The Ocean model

- Salinity vertical section



Escenarios Project

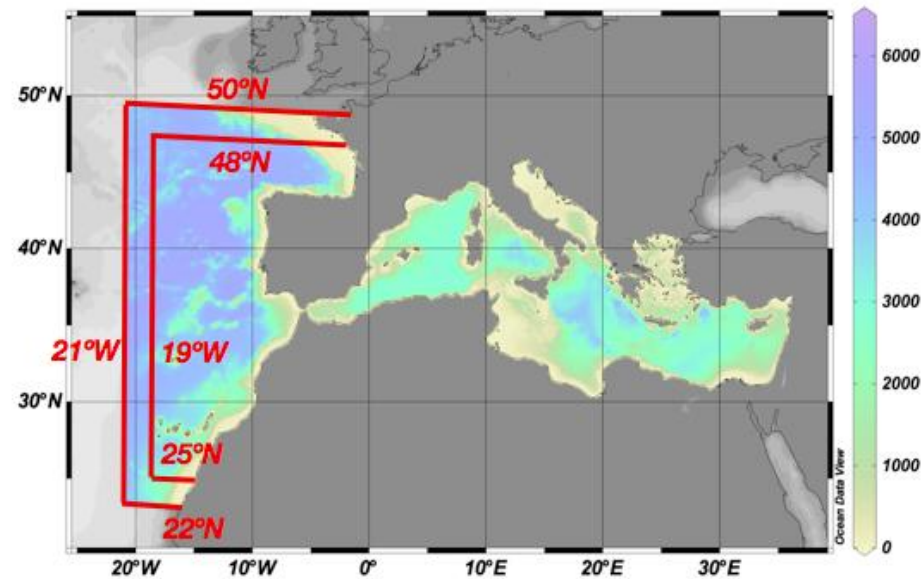
AEMET-Puertos del Estado-Imedea

Goals

- To obtain marine climate change scenarios, forcing ocean models with future climate projections generated by regional atmospheric models
- To perform hindcasts with regional ocean models by means of 20th century reanalysis simulations

Model Configuration

- IBMED12 configuration= NEMOMED12 model code + (ATLN+MED) domain
 - NEMOMED12 code (NEMO 3.2 version adapted to Mediterranean): able to customize domains at 1/12°.
 - ORCA12v2 bathymetry (1/12°), with local modifications in Gibraltar
 - Closed boundary in Atlantic Ocean. Lateral strip along the Atlantic boundary for temperature and salinity boundary conditions



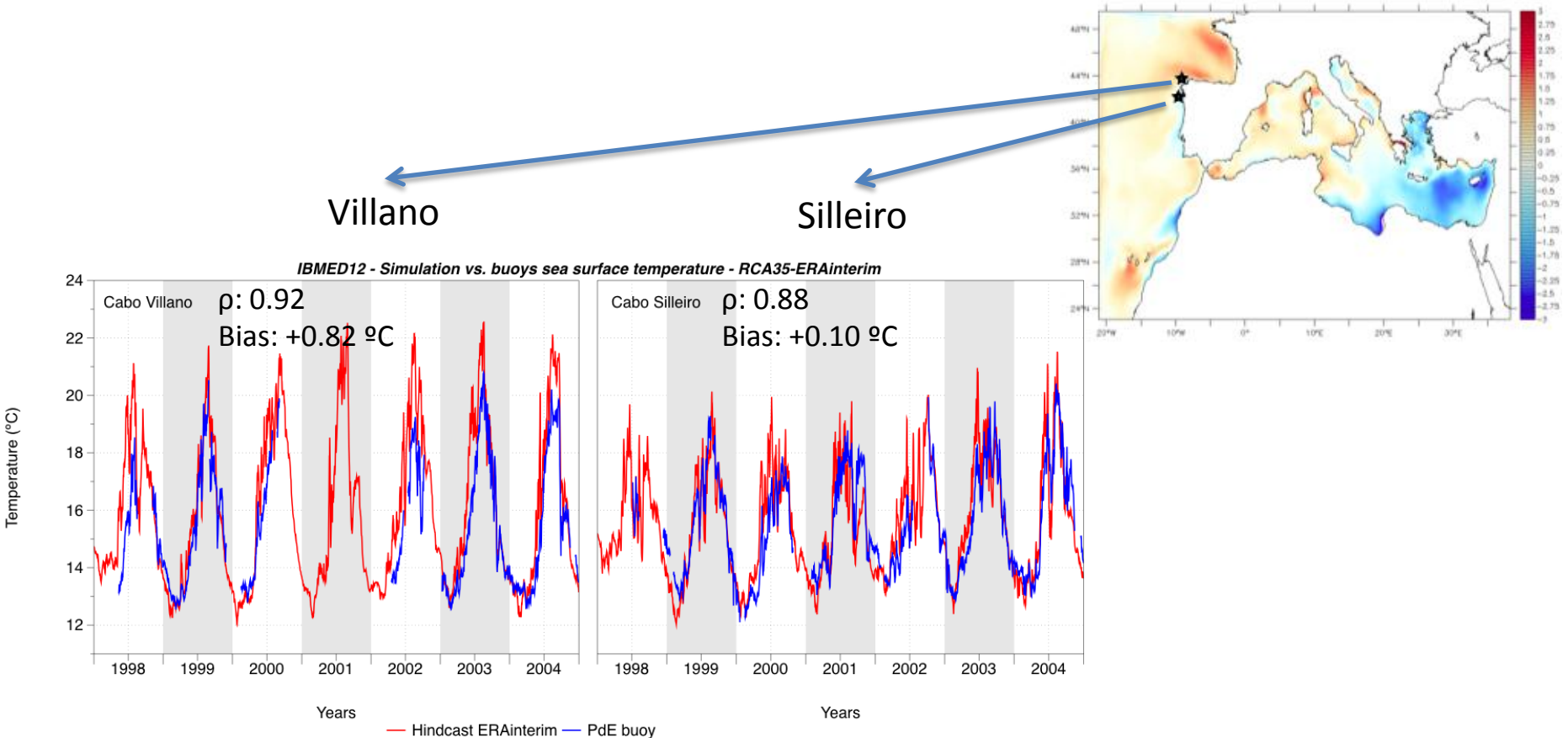
Description of runs

- Atmospheric forcings (momentum, heat, freshwater, SST) dynamically downscaled with RCA3.5 regional atmospheric model:
 - Hindcasts:
 - ERA-interim (1989-2004) (**done**)
 - ERA40 (1960-2000) (**being finished this week**)
 - A1B Scenario:
 - HADCM3 (1960-2050)
 - ECHAM5 (1960-2050)
- Ocean initial and boundary conditions from climatologies
- Rivers runoff from climatologies

Simulation forced with RCA3.5-downscaled ERAinterim

Sea Surface Temperature vs Puertos del Estado buoys

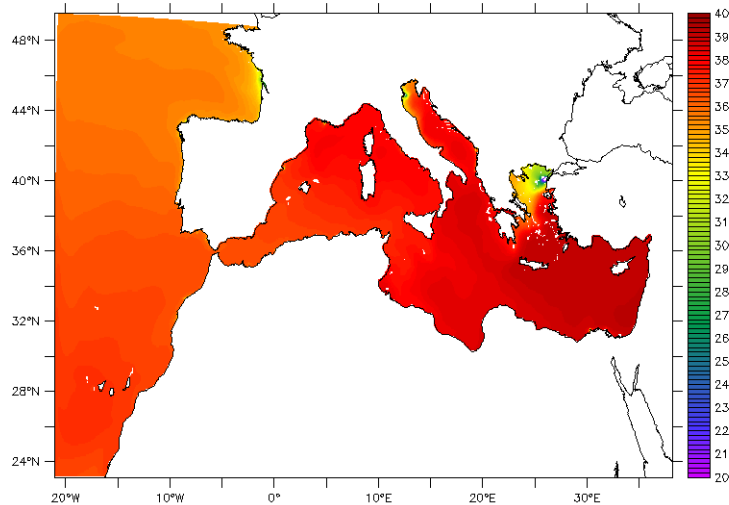
Simulation vs. Levitus 94



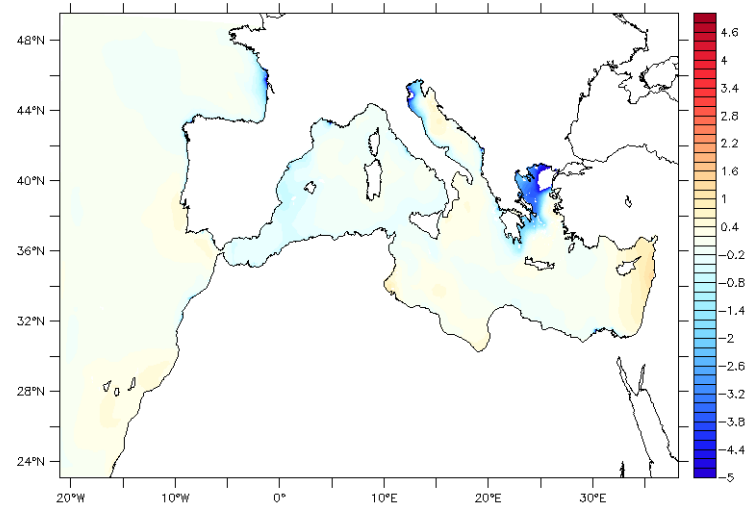
Simulation forced with RCA3.5-downscaled ERAinterim

Sea Surface Salinity (psu) – 1990-2004

RCA35-ERAinterim forced simulation



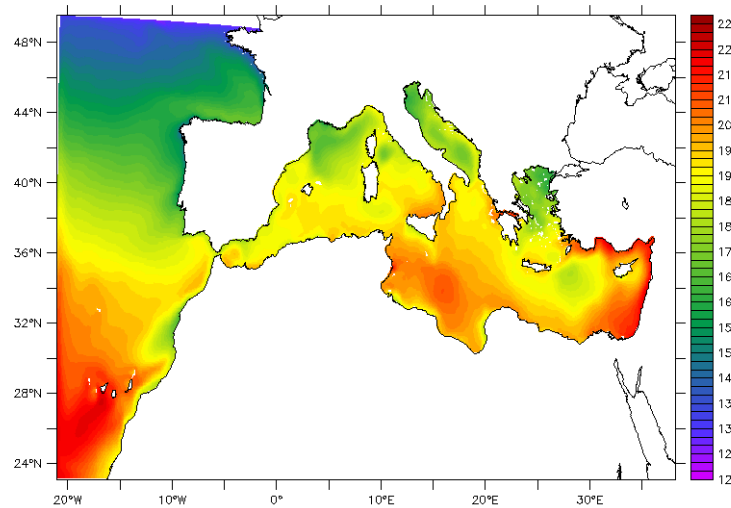
Simulation vs. Levitus 94



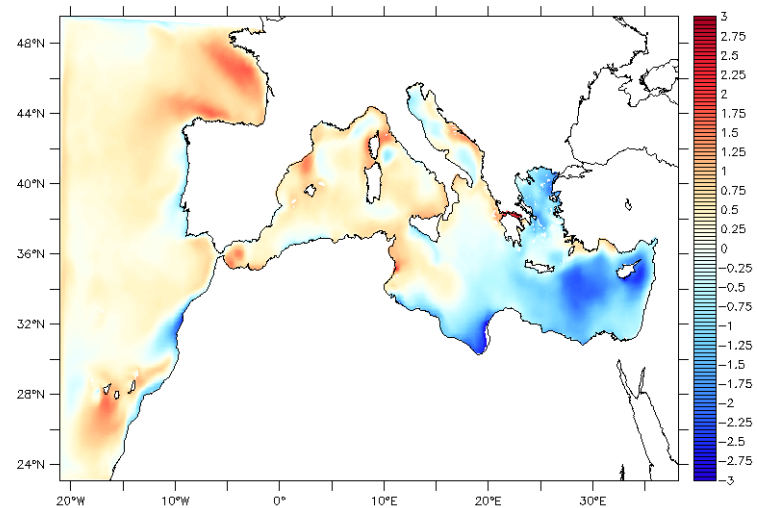
Simulation forced with RCA3.5-downscaled ERAinterim

Sea Surface Temperature (°C) – 1990-2004

RCA35-ERAinterim forced simulation



Simulation vs. Levitus 94





ENSURF: activities during last year

- System migrated to a 24/7 supported machine
- BMA results for the Spanish harbours presented in several meetings, and one paper accepted in Ocean Science
- OPPE automatic near-real time QC now applied to all tide gauges in IBIROOS In situ-Tac, including surge or residual sea level computation -----> BMA application for all the IBIROOS coastline will be possible soon
- MyO IBI Forecast System sea level products now included in ENSURF, providing first sea level validation of this system

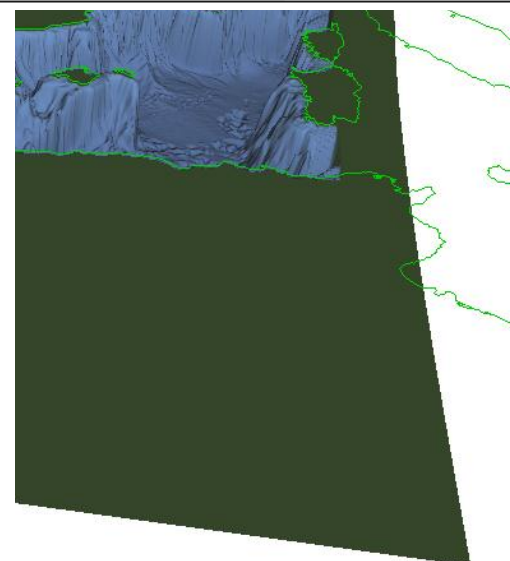
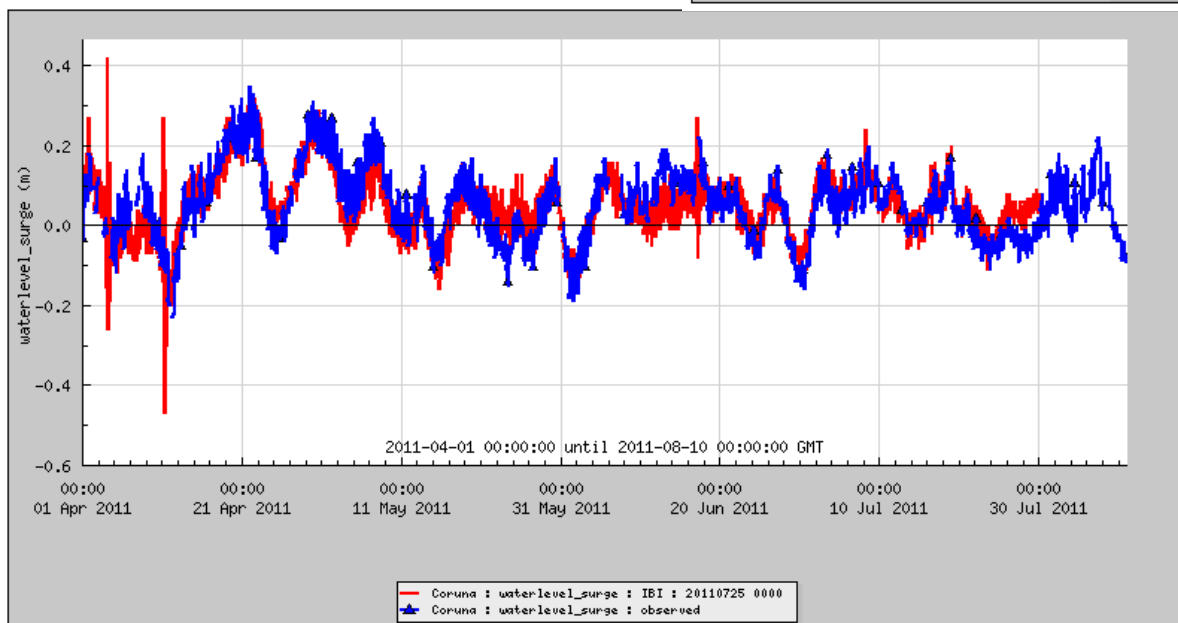
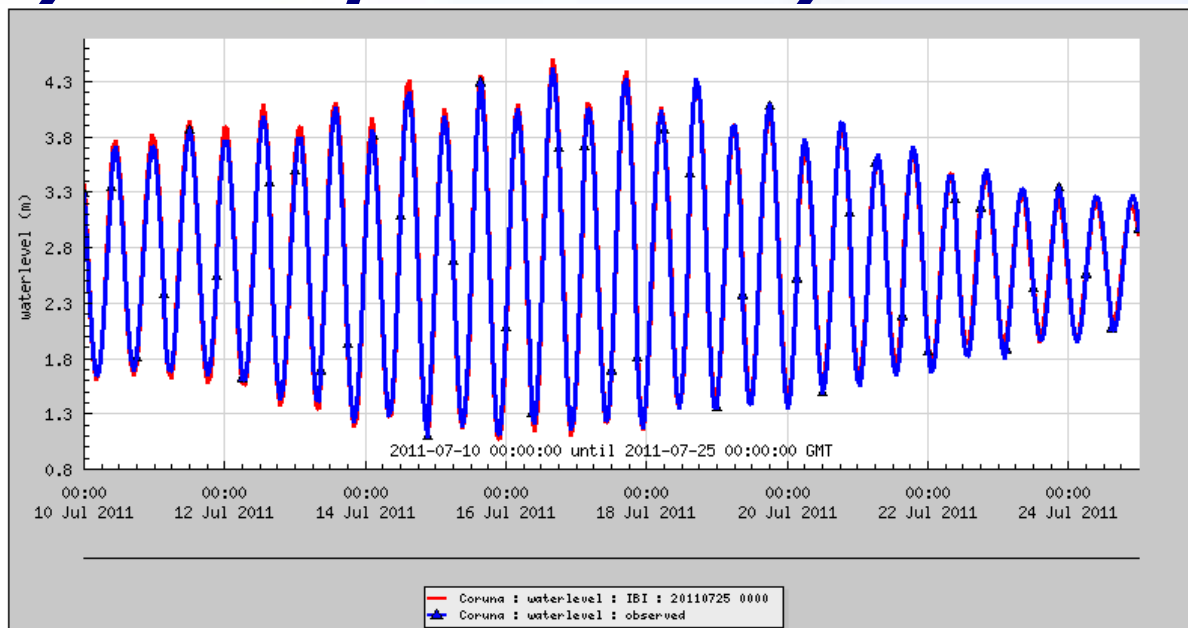
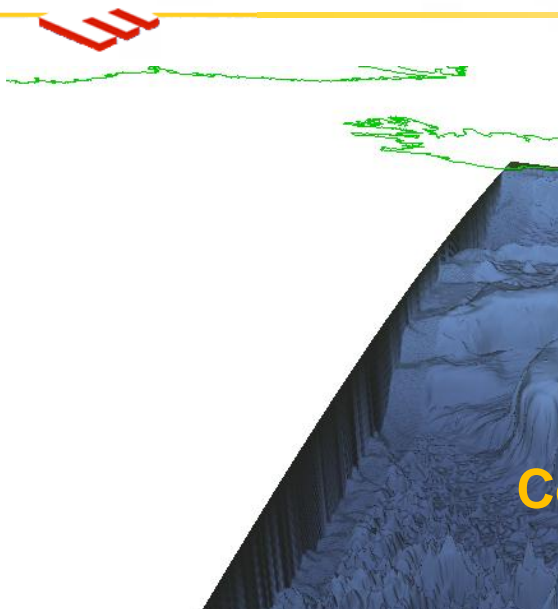


ENSURF: delayed /pending tasks

- Inclusion of PREVIMER and other forecasts in the region
- Integration of new French tide gauge data (stopped during the summer of 2011), with different sampling and format (through IBIROOS In-situ Tac)
- Integration of new UK stations (idem)
- Design of a better visualization interface coherent with the one of Puertos del Estado
- Extension of the BMA to non-Spanish harbours

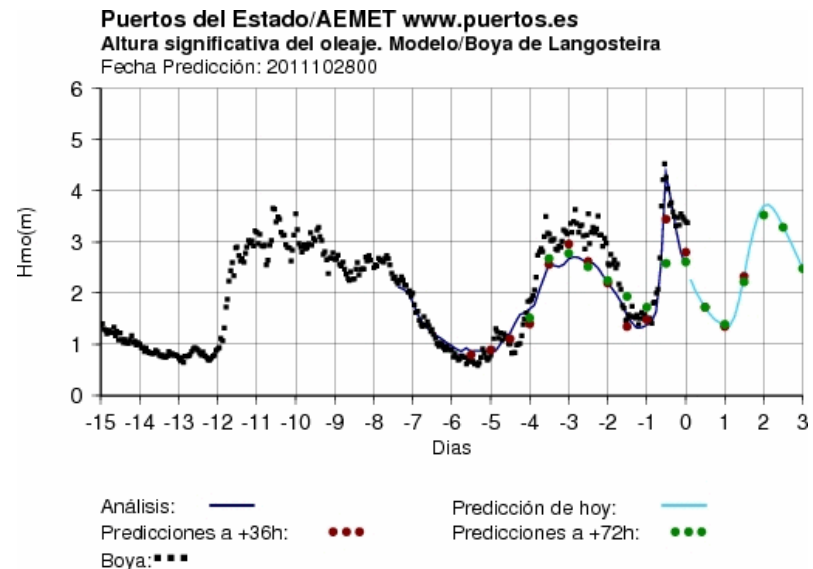
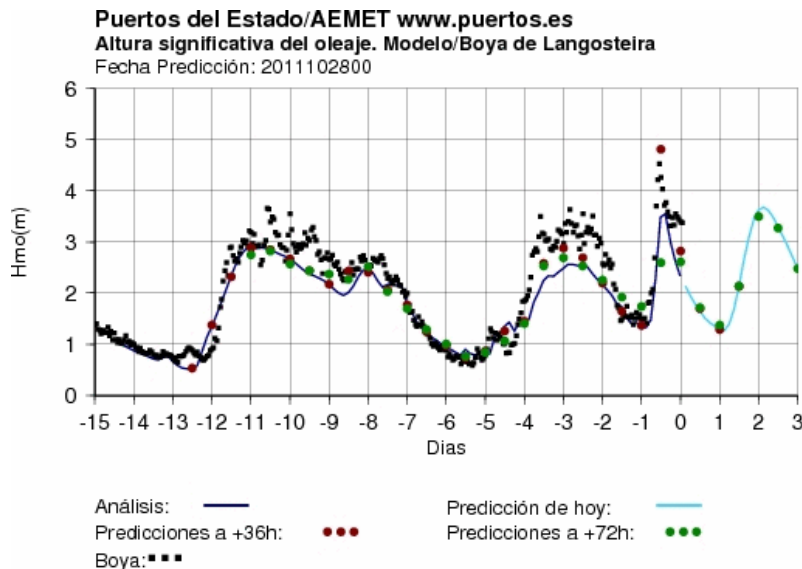


Inclusion of MyO IBI operational system



Upgrade in wave forecast

- Wind resolution, time update and model version changed.



New wave forecast local model for Bilbao

