MyOcean V1 stream2 (June 2011) coordinated validation in IBI

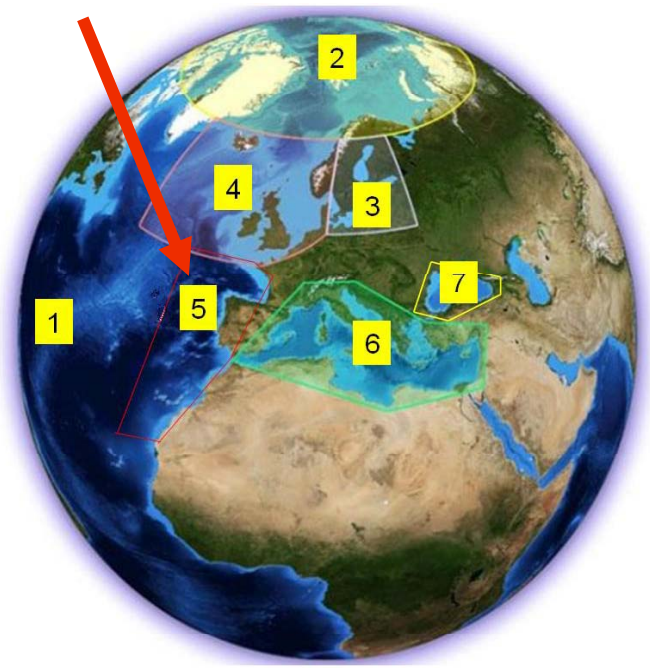
IBI-ROOS Meeting 16-17 February 2011, Exeter

Objectives

To organize the validation of MyOcean V1 stream2 (June 2011) in a coordinated way in IBI area with *Intermediate Users* perspectives

Based on:

- **Available Observing Systems**
- **The main known processes along the IBI *shelf/slope***
- **An integrated point of view (instead of studying the processes locally)**



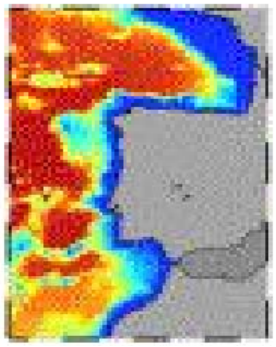
- 1. Global
- 2. Arctic
- 3. Baltic
- 4. NWS
- 5. IBI
- 6. Med Sea
- 7. Black Sea

Previous work

Atlantic- Iberian Biscay Irish- Ocean

BI_ANALYSIS_FORECAST_PHYS_005_001

Atlantic-Iberian Biscay Irish- Ocean Physics Analysis and Forecast



The Operational ESEOO analysis and forecast - eddy resolving 1/20°- forecasting system is running every day providing 3 days of 3D physical Ocean forecast. It is the operational nominal product for the Iberian Biscay Irish Seas.

INFO

DATA ACCESS

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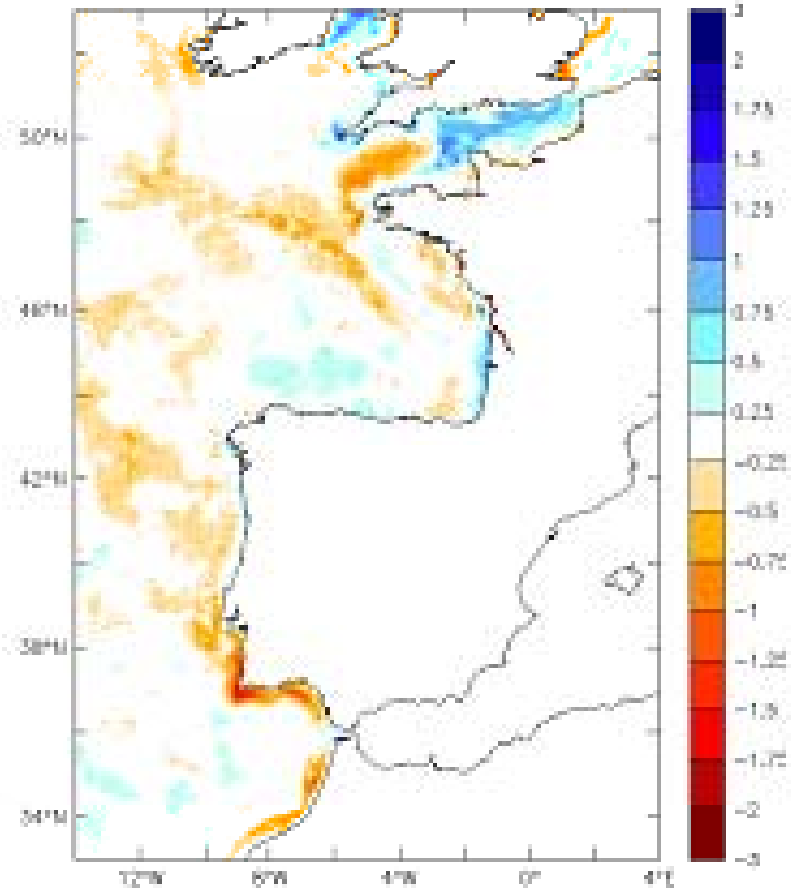
The new regional generation of Mercator Ocean system in the Iberian Biscay Irish (IBI) area

By Sylvain Cailleau[1], Jérôme Chanut[1], Bruno Levier[1], Claire Maraldi[2], Guillaume Reffray[1]

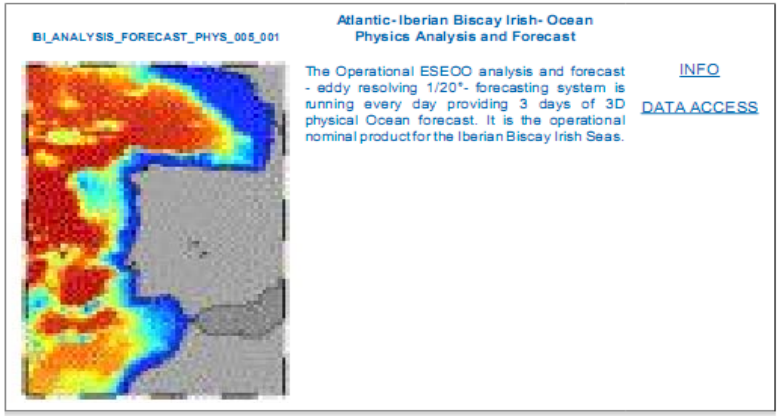
[1] *Mercator Ocean, Toulouse, France*
[2] *LEGOS, Toulouse, France*

RMS (obs-model) SST difference (°C) May-June 2009. IBI simulation



Previous work

Atlantic- Iberian Biscay Irish- Ocean



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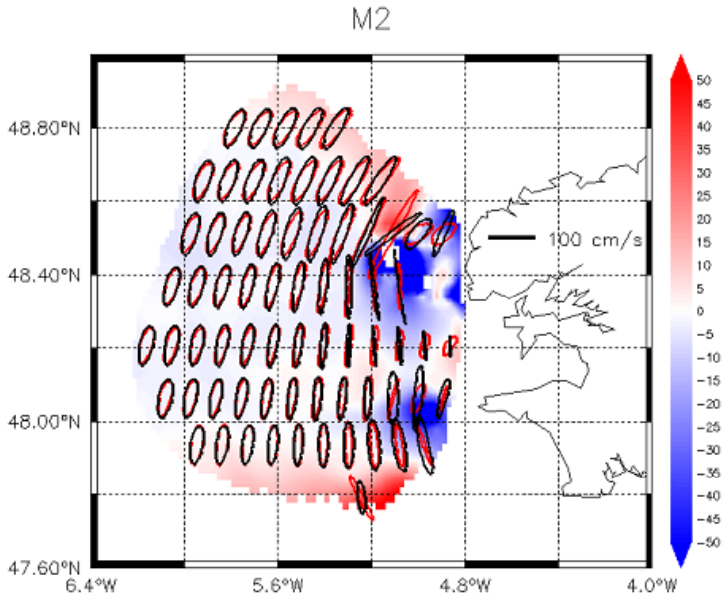
RMS OBS-MODEL (cm/s) zonal/meridional currents at 3 m. May-June 2009.

	IBI
Cabo Penas	7/7
Cabo Silleiro	5/9
Estaca bares	9/5
Villano Sisargas	11/9

Modeled (black) observed (red ellipses) M2 tidal ellipses



Process- oriented validation

Answer state-of-the-art questions from an integrated point of view:

- ✓ **Spatial and temporal variability of shelf/slope surface currents and wind-current interactions (scientific and operational interests)**
- ✓ **Contribution of the IPC to the surface transport, spatial and temporal variability**
- ✓ **Contribution of processes as tides and vertical motions an other (local forcings/processes) to the shelf/slope circulation**

Main Processes:

Wind induced current

Slope current

Tides, internal waves, upwelling

Other (local) processes

River plumes dynamics, …

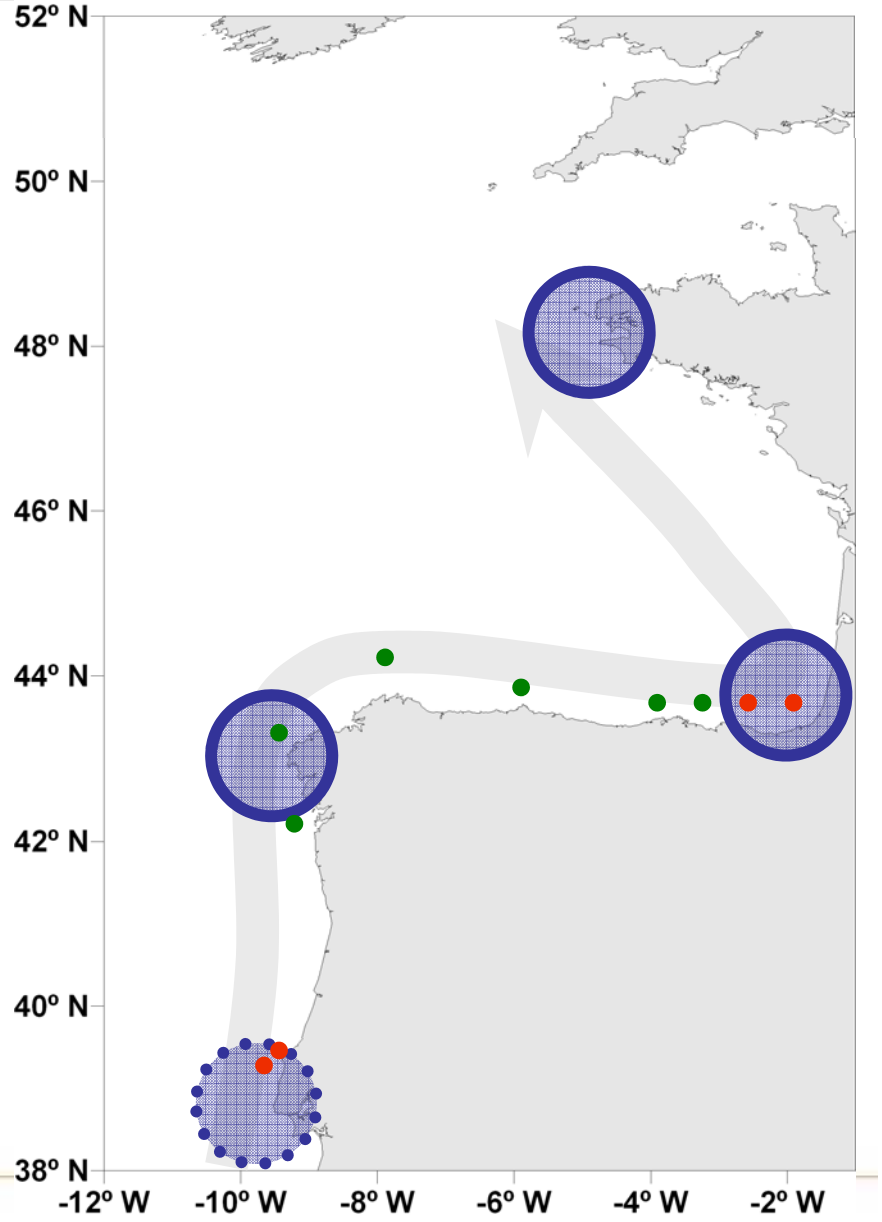
Observing Systems

HF radars (operational/ soon operational)

Offshore buoys (currents and local winds).

Offshore buoys (currents and local winds) + vertical information

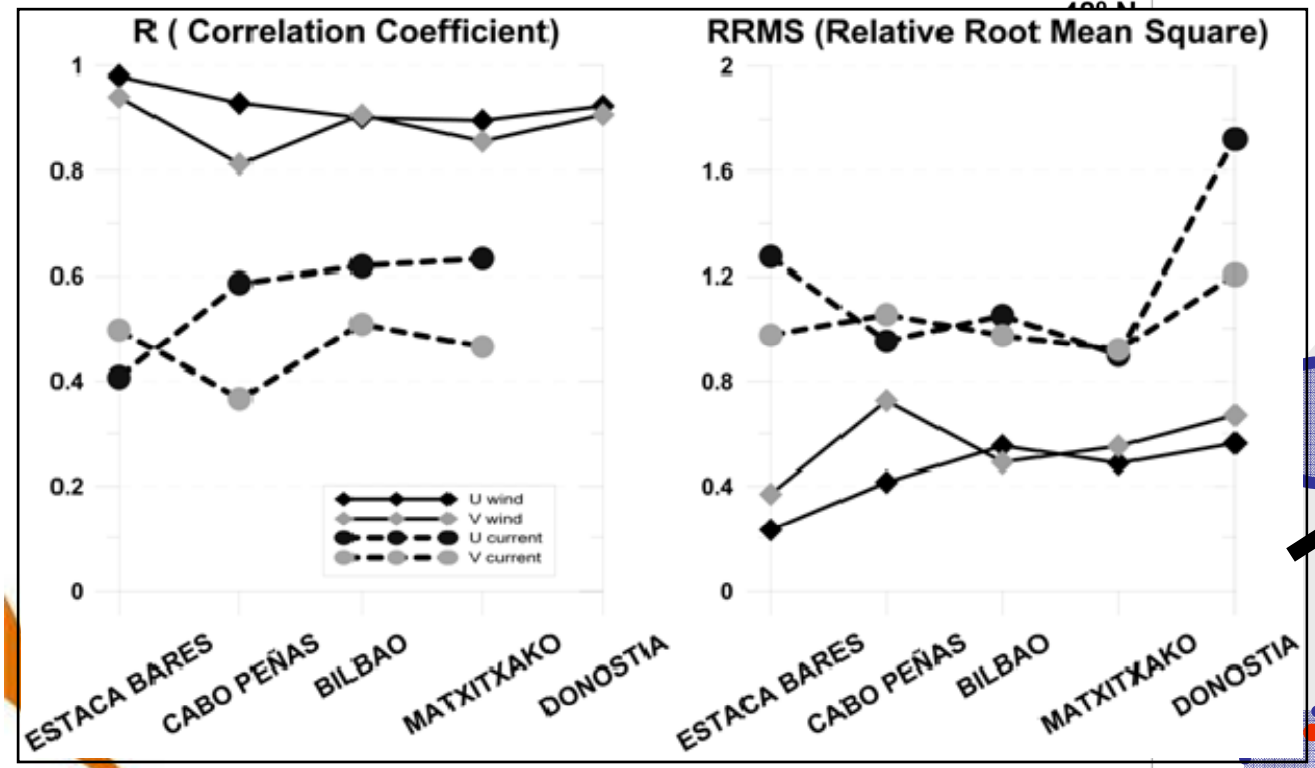
And also: Repeat CTD transects, SST, ocean color, wind data from reanalysis…

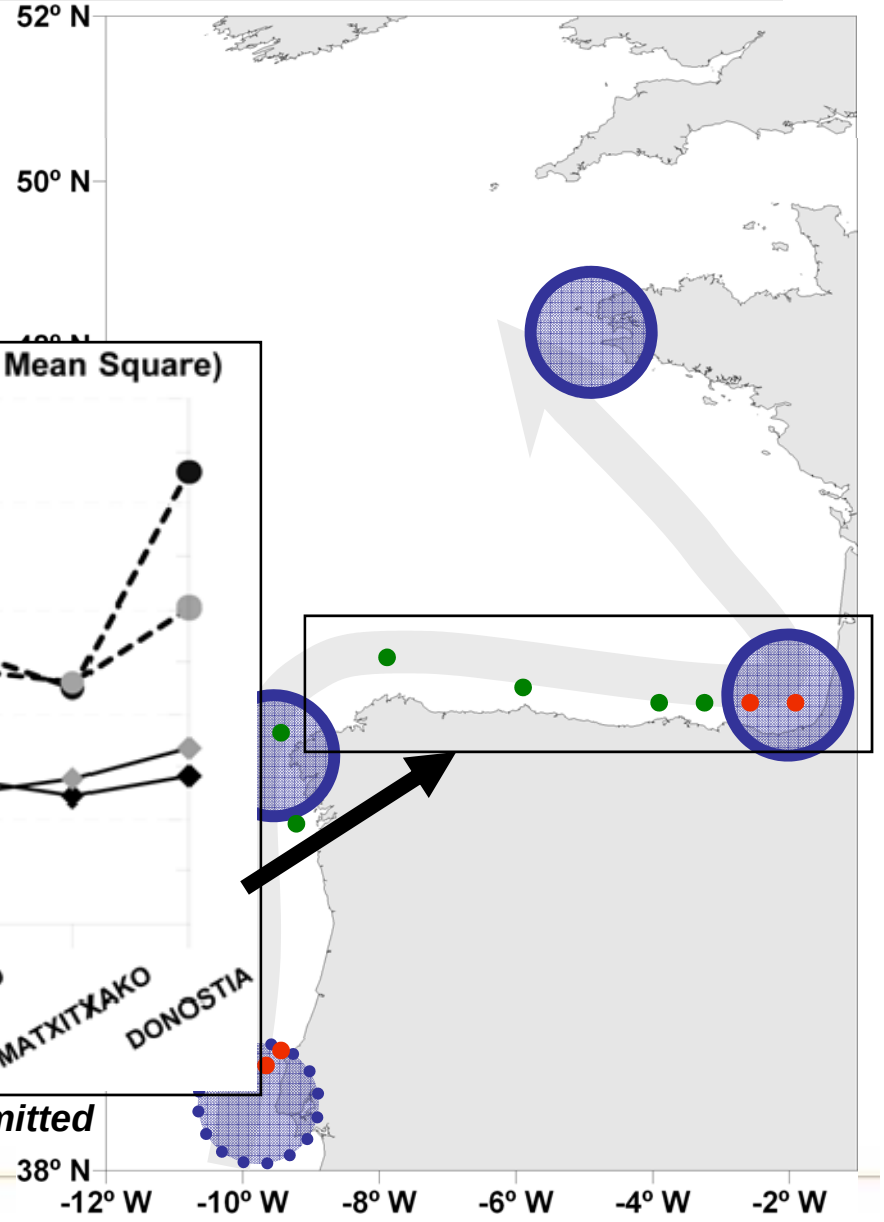


Surface currents and wind-current interactions

Main questions:

- **Winds and surface currents**



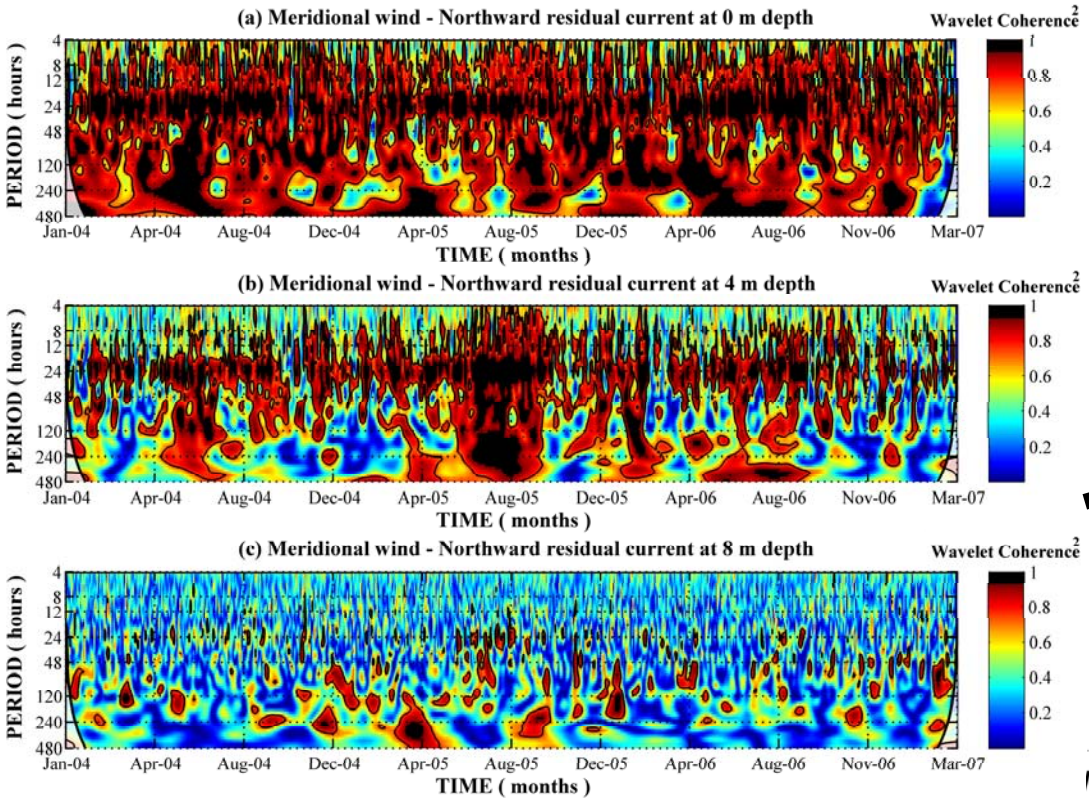


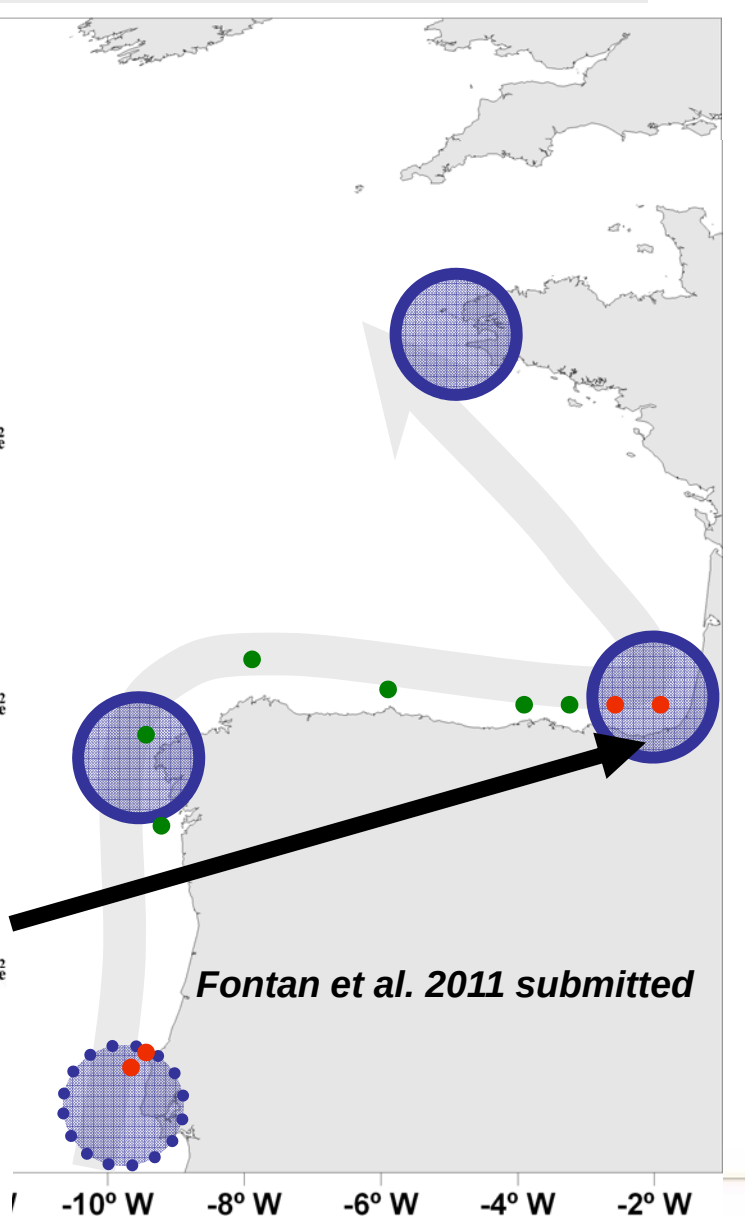
Alzorriz et al. 2011 submitted

Surface currents and wind-current interactions

Main questions:

- Winds and surface currents
- **Wind-current interactions at different scales (and depths)**





Surface currents and wind-current interactions

Main questions:

- Winds and surface currents
- Wind-current interactions at different scales (and depths)

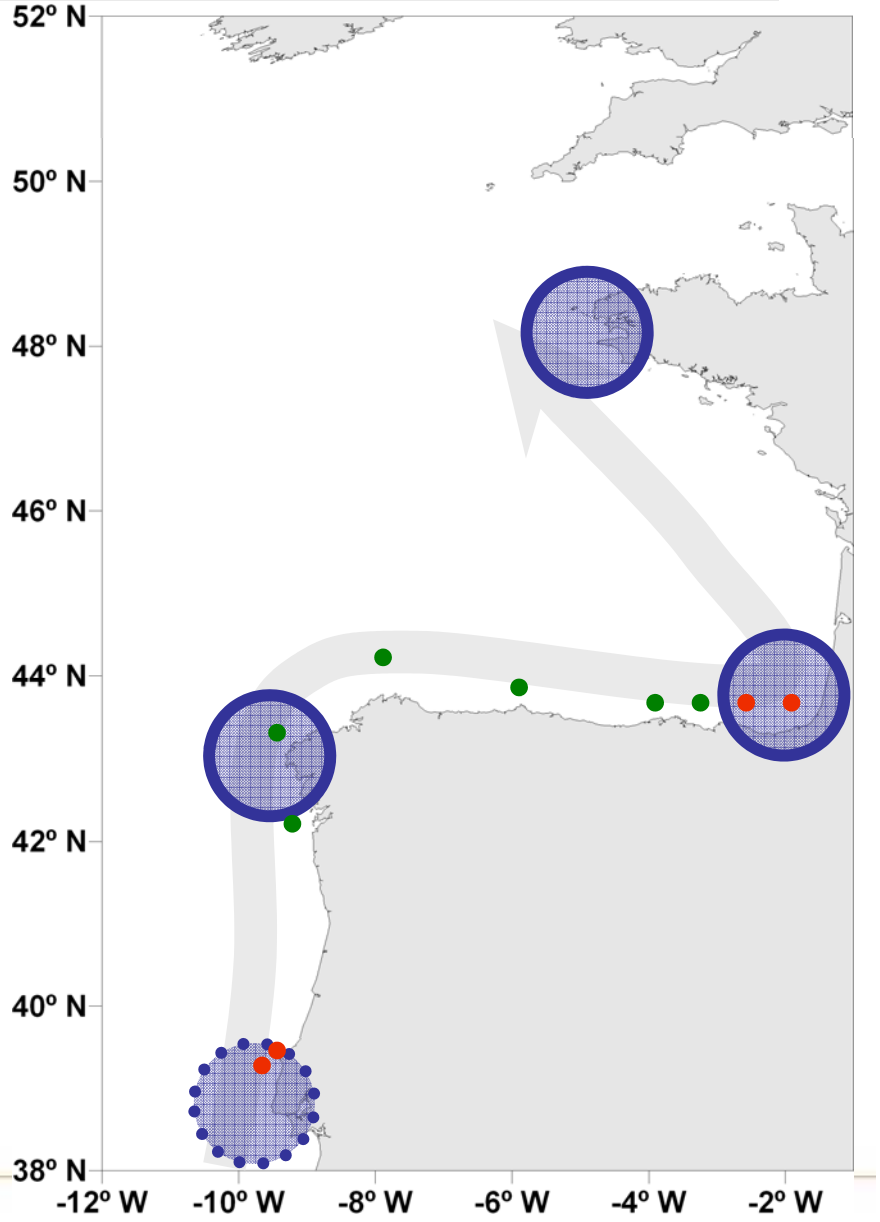
What is the spatial varibility of these processes along the IBI coast?

Does the IBI model reproduce them properly? At a local scale? At a regional scale?

METHODOLOGY

- Wind and current point to point comparisons, analytical models of wind-current interactions

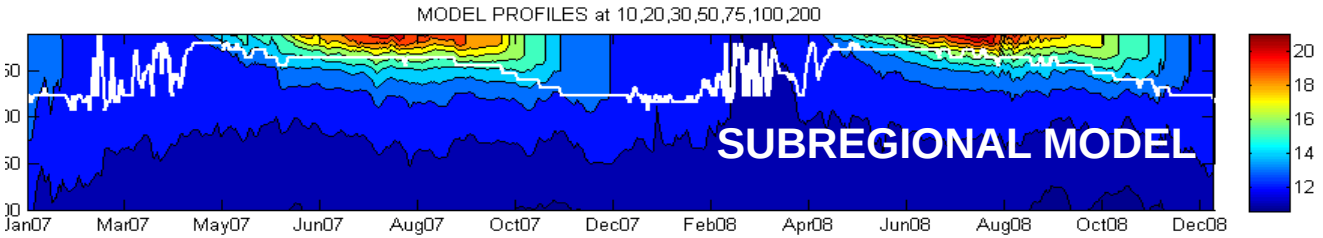
-Spectra and coherence spectra (or wavelets or CCA or others)

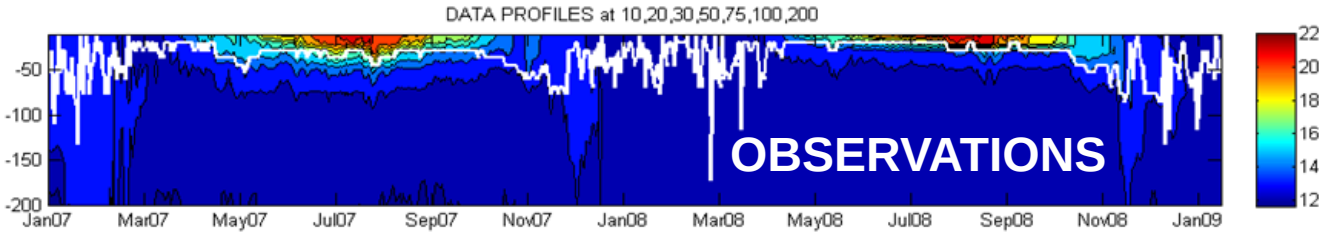


Slope current and surface transport

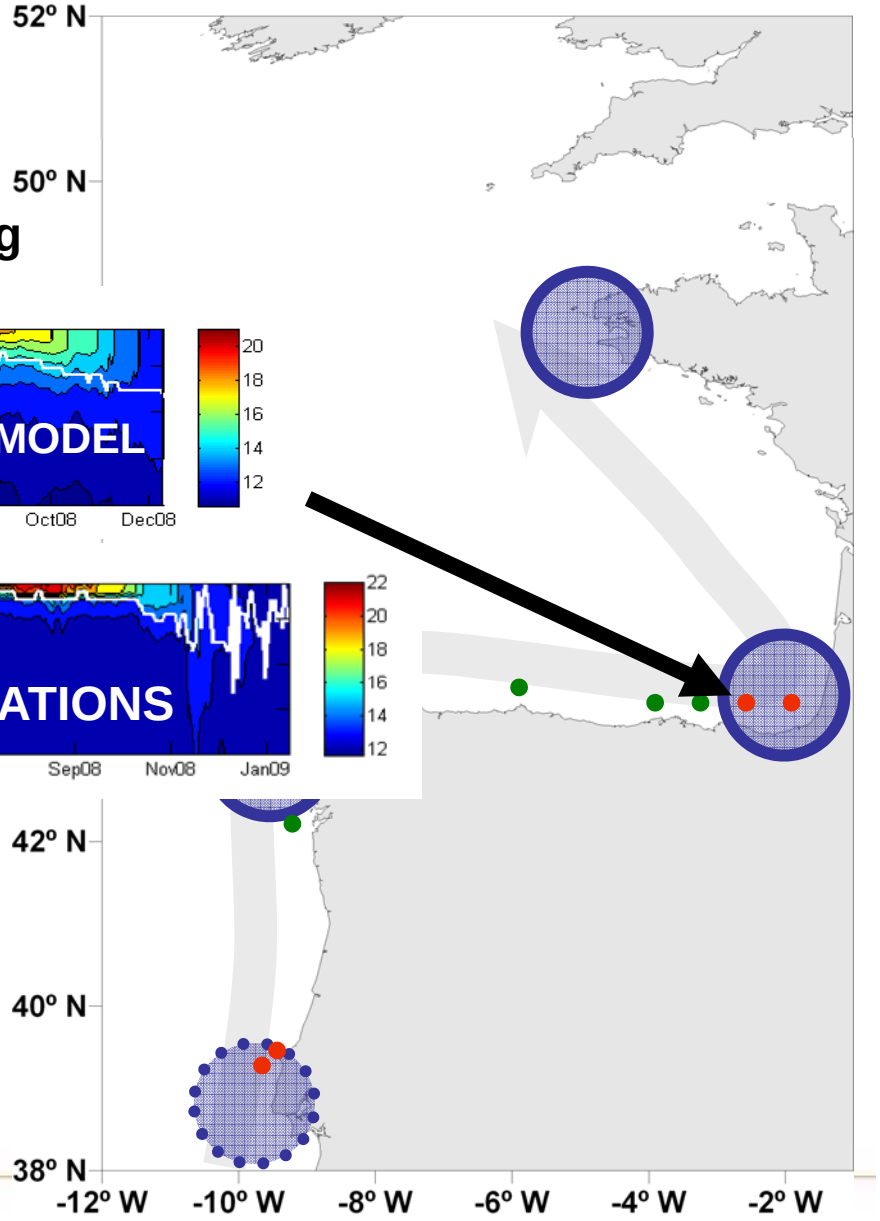
Main questions:

- **Stratification conditions, vertical mixing**





Rubio et al. 2010

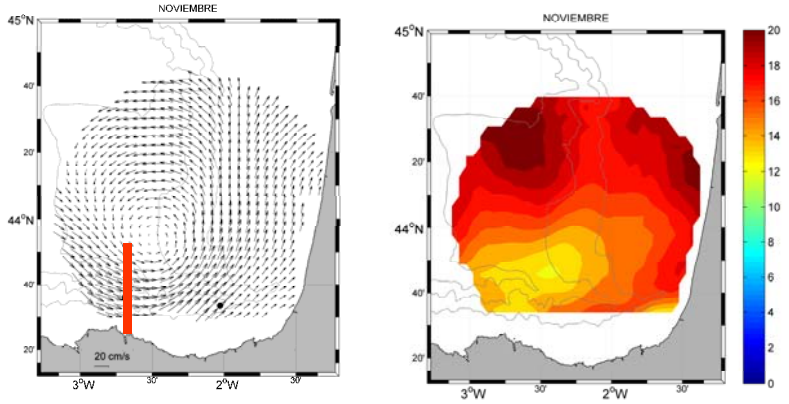


Slope current and surface transport

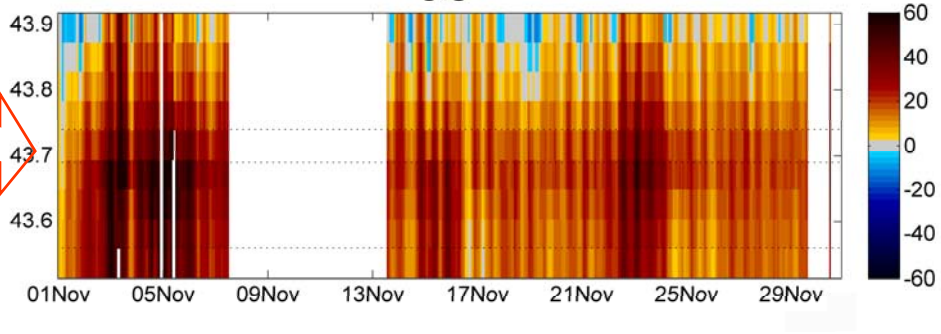
Main questions:

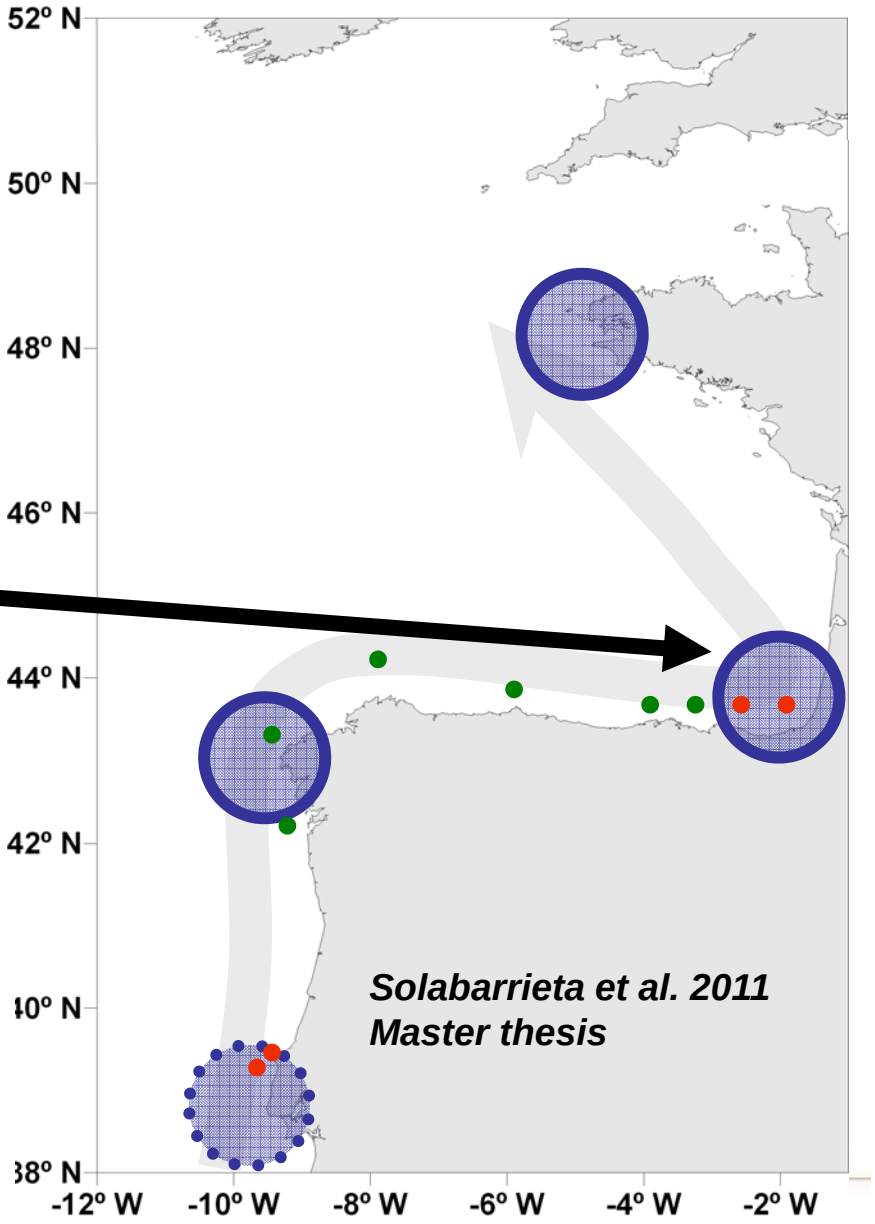
- Stratification conditions, vertical mixing
- **Surface signal of the slope current (time and space variability)**

NOVEMBER 2009 MEAN SURFACE FIELD



E-W CURRENT



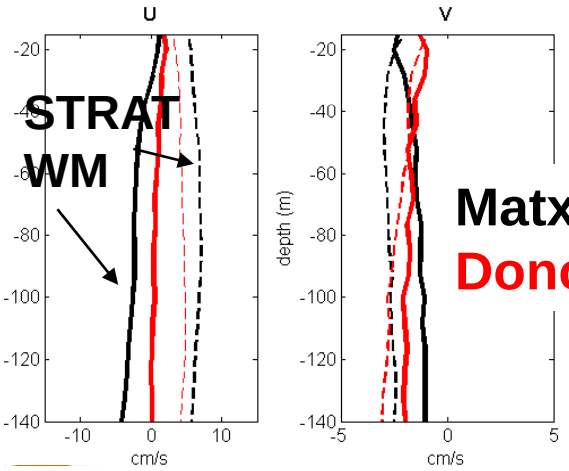


Slope current and surface transport

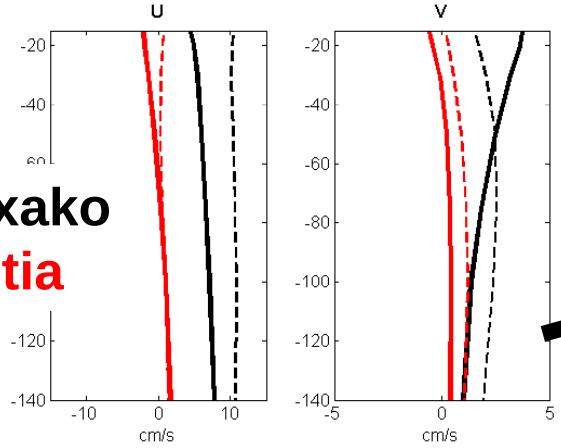
Main questions:

- Stratification conditions, vertical mixing
- Surface signal of the slope current (time and space variability)
- **Vertical structure of the slope current**

OBSERVATIONS

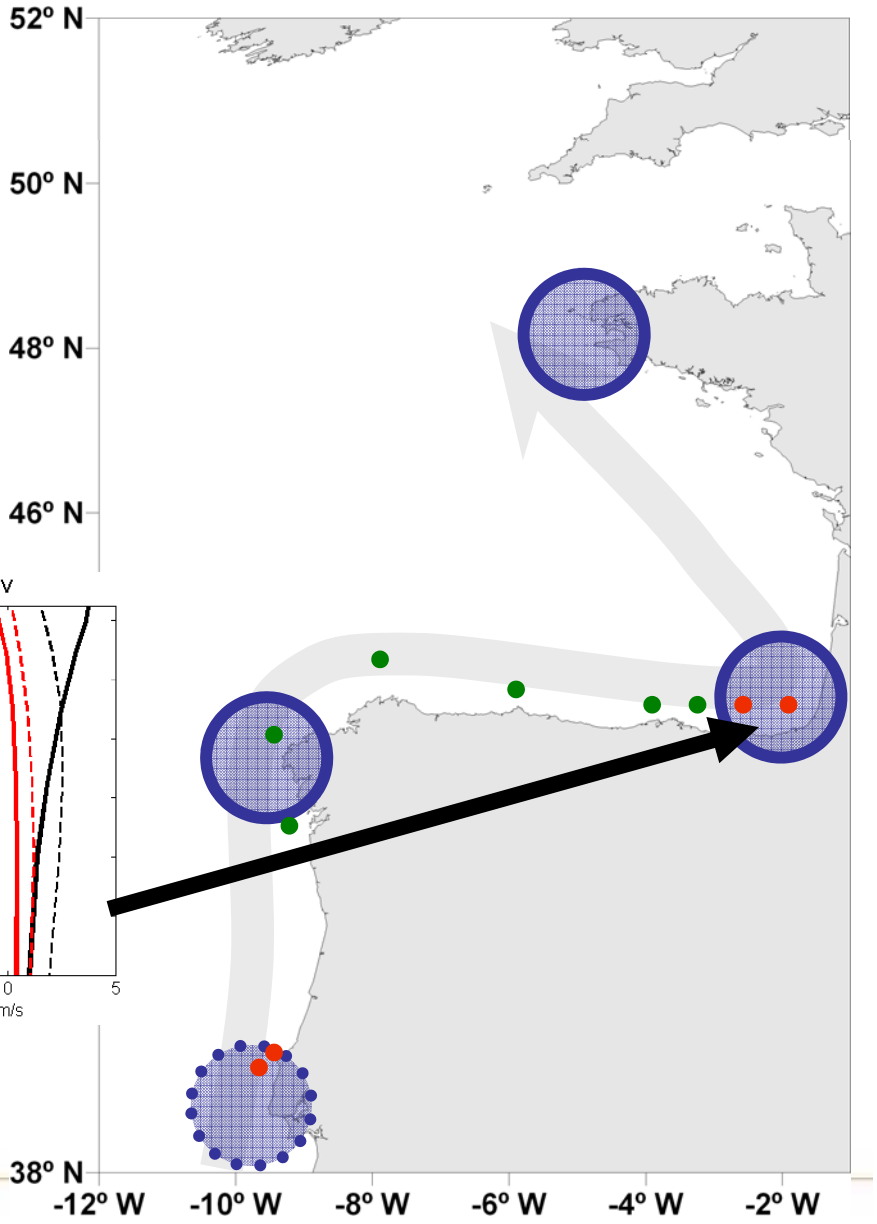


MODEL



Matxitxako
Donostia

Rubio et al. 2010



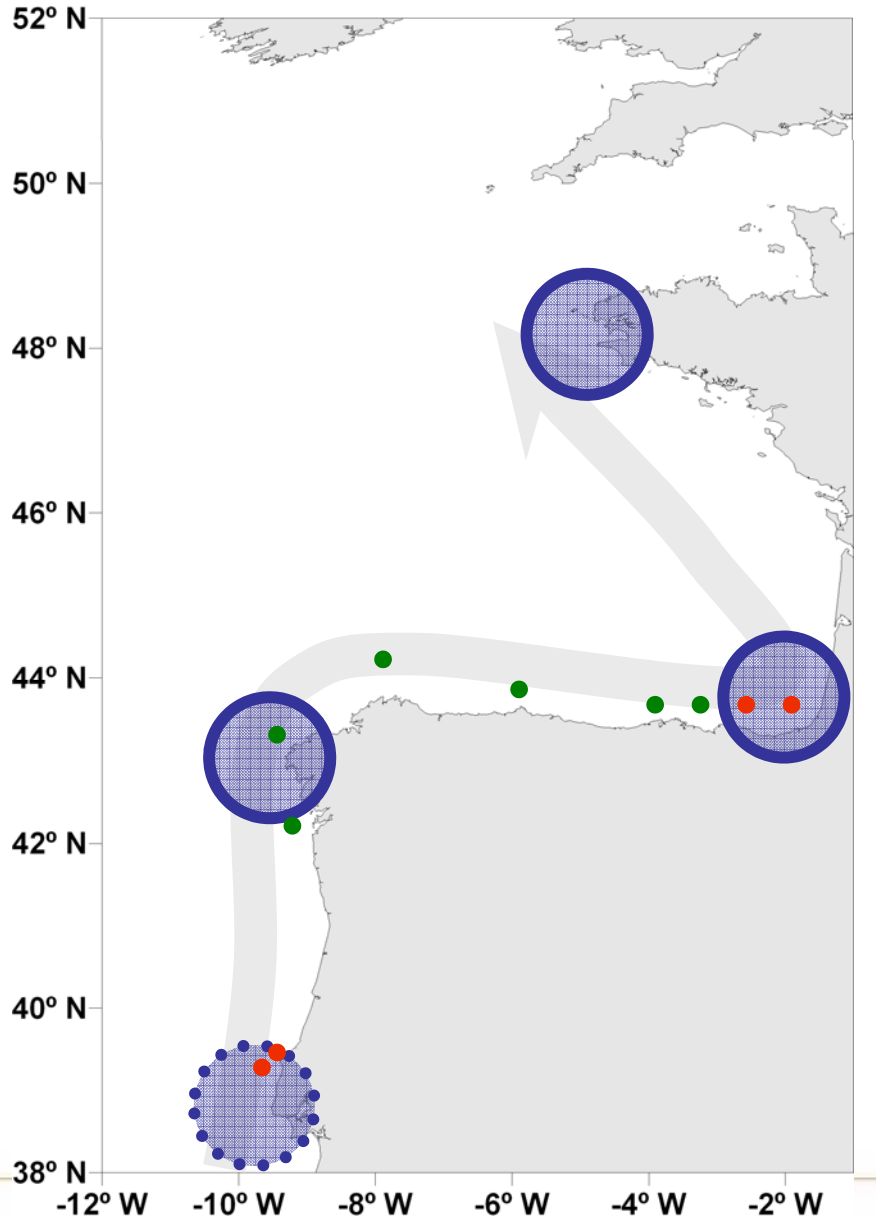
Slope current and surface transport

Main questions:

- Stratification conditions, vertical mixing
- Surface signal of the slope current (time and space variability)
- Vertical structure of the slope current

- **What is the spatial varibility of these processes along the IBI coast?**
- **Does the IBI model reproduce them properly? At a local scale? At a regional scale?**

METHODOLOGY
- Current point to point comparisons focusinf at diffrerent time scales
- Joint analysis of in-situ + satellite information



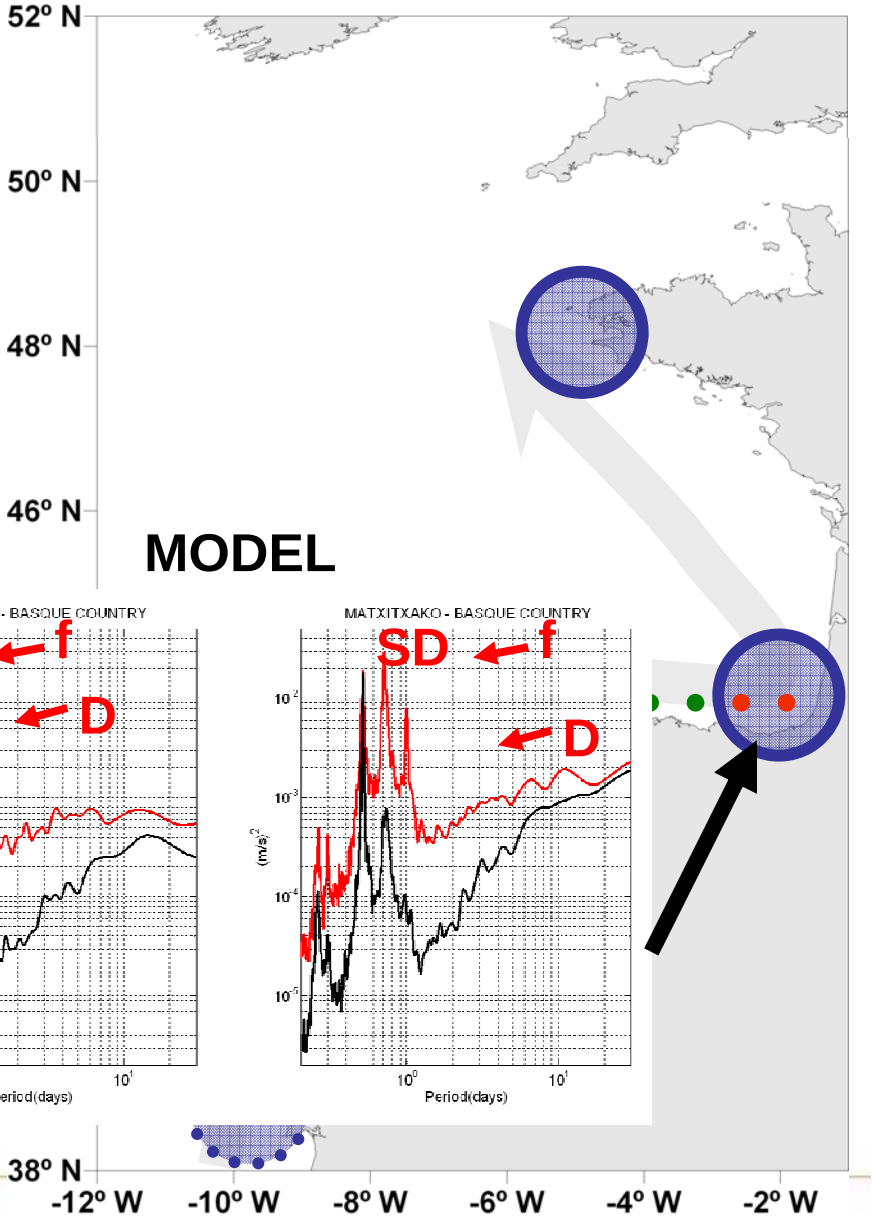
Contribution of other processes to the surface ciculation

Main questions:

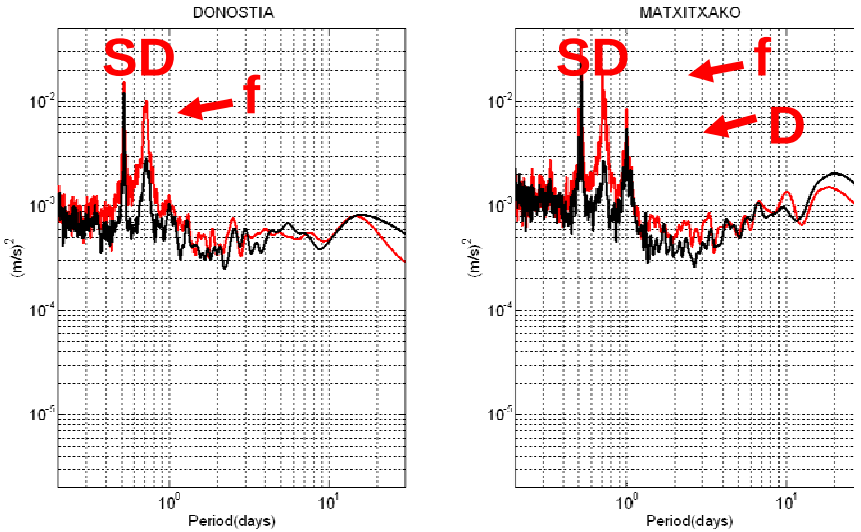
- Tides, intertial waves

10-40 m

100-140 m



OBSERVATIONS

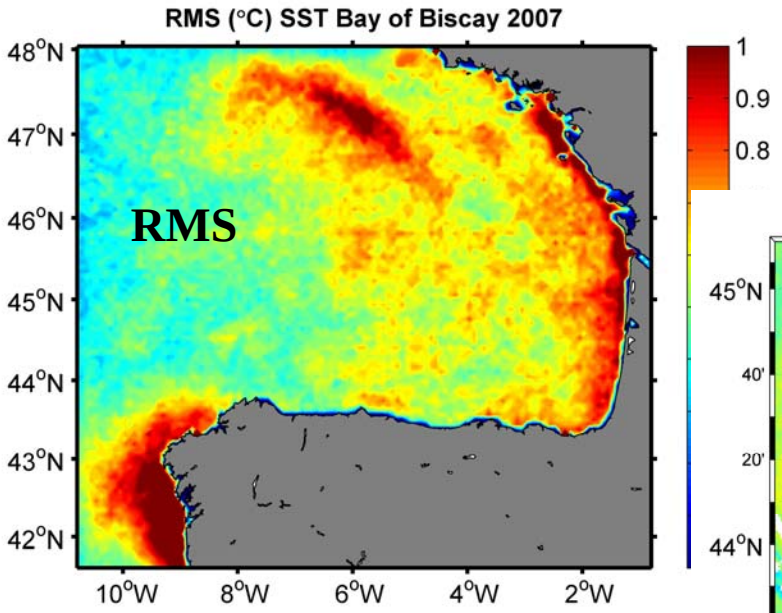


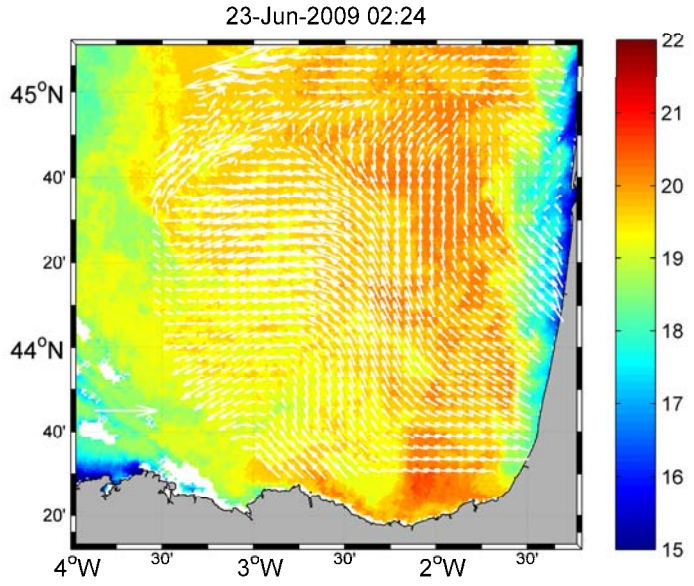
MODEL

Contribution of other processes to the surface ciculation

Main questions:

- Tides, intertial waves
- Upwelling processes
- ….





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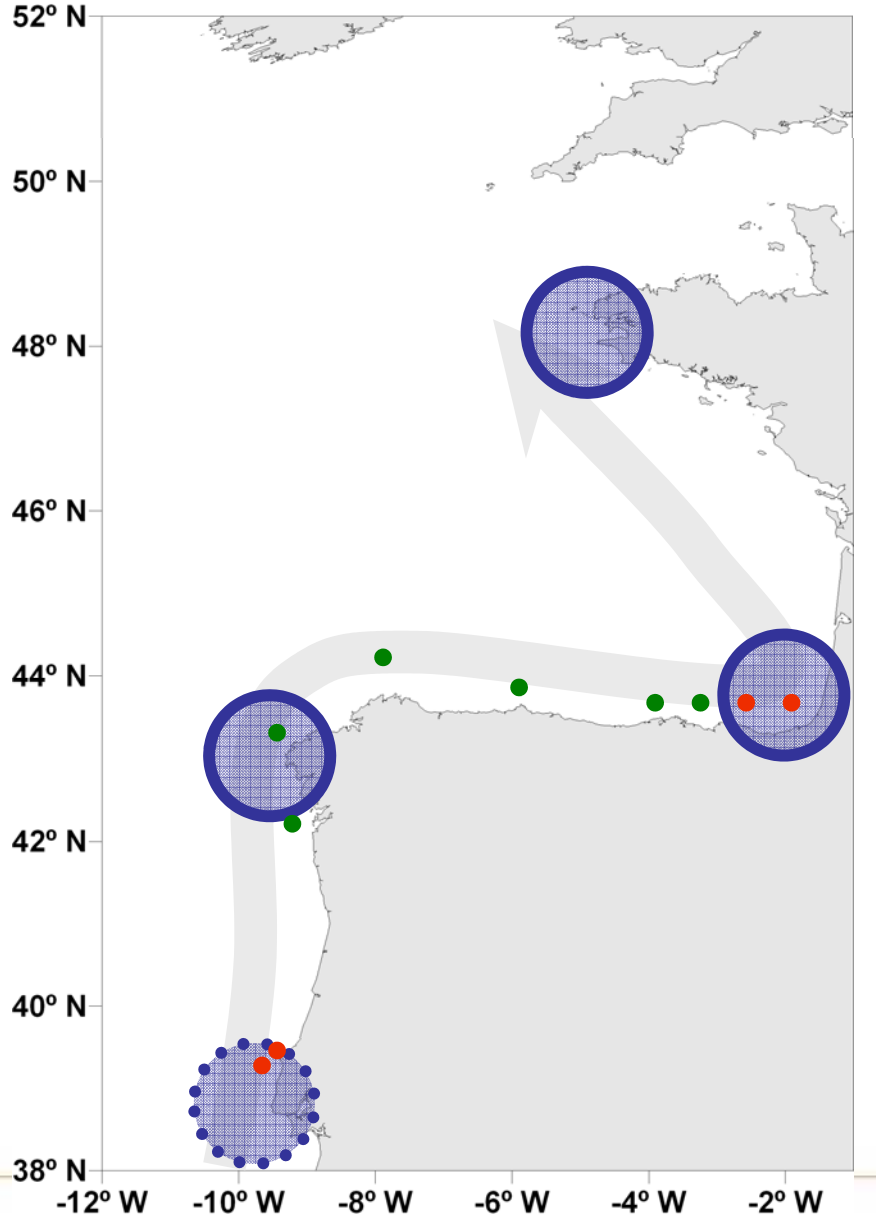

Summary / next steps

Main ideas

- Process oriented validation
- Focus on surface circulation
- IBI area integrated approach

Potential benefits

- Scientific <-> Operational
- Feedback for observing systems developments

Next steps

- Define key actors / systems
- Framework for progress