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# Multi-Scale Analysis of Coastal Altimetry Data, Multi-Sensor **Observations and Numerical Modelling Over the North Western Mediterranean Sea**

Marco Meloni (1), Bouffard J. (2), Doglioli A. (3), Petrenko A. (3)

1Serco, Italy; 2 Rhea, Belgium c/o ESA/ESRIN; 3 MIO(Mediterranean Institute of Oceanography), France







## **Context and Objectives**

### > Context:

- Slope current and coastal mesoscale plays a key role on the across-shore transport and mixing of natural and anthropogenic elements.
- Critical importance to monitor and forecast the variability of regional dynamics.

### Technical challenge for coastal altimetry:

- Isolate small scale signals wrt Altimetric noise.
- Use relevant diagnostics to properly evaluate new CA processing and corrections.

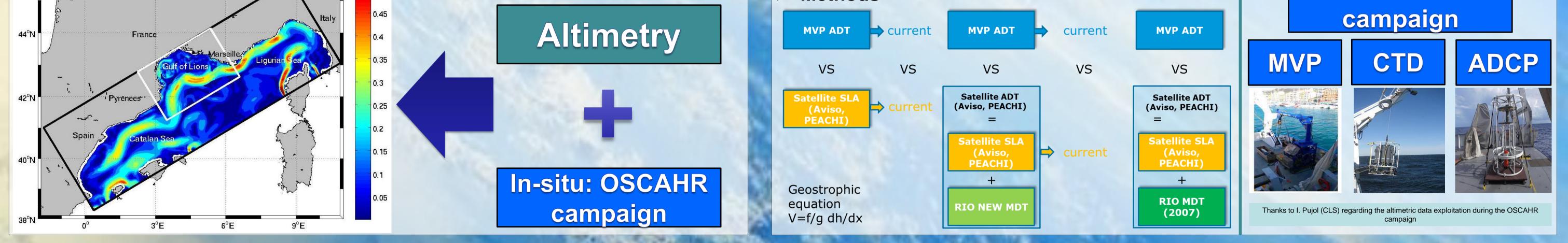
### Study objectives:

- Statistically characterize the NC position and intensity over the NWMed Sea
- Develop New science oriented diagnostics for coastal altimetry

## **Dataset and Methods**

#### Study area 44<sup>°</sup>N Extract from 43°N -2000 Bouffard et al., 2013 42°N Spain 1500 41°N 1000 40<sup>o</sup>N • Mesoscale Current 500 flow pattern thoughout the year 39°N 8°E Methods

## Datasets **AVISO Altimetry PEACHI Altimetry** 10/2005 - 10/2008- 12/2010 - 04/201 GFO(17) Thanks to G. Valladeau (CLS) for PEACHI products data provisioni In-situ: OSCAHR

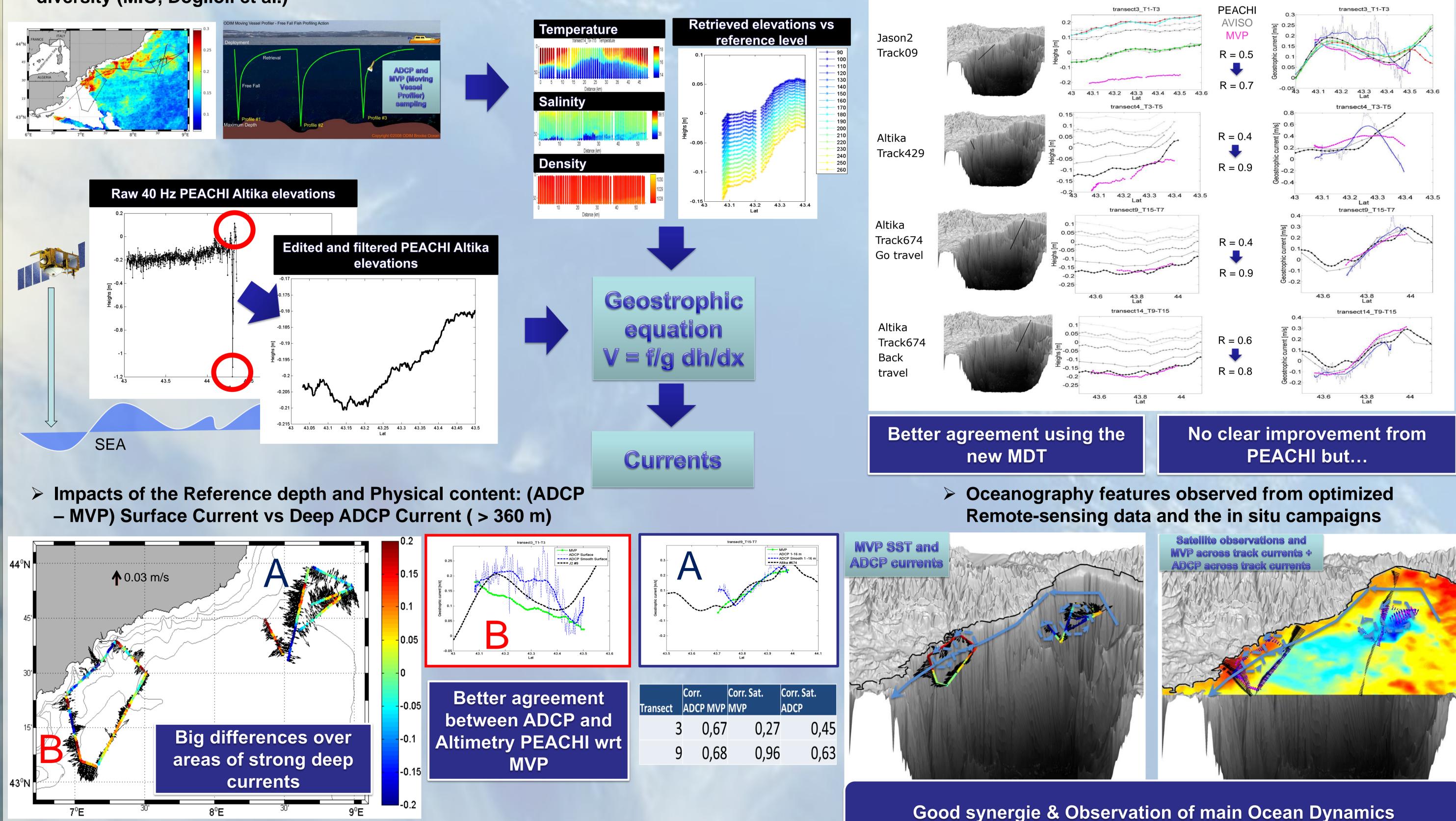


## **OSCAHR** (Observing Submesoscale Coupling At High Resolution) vs Altimetry

- > 2015 OSCAHR campaign Explore the link between fine-scale physics and phytoplankton diversity (MIO, Doglioli et al.)
  - **ADCP** and **Raw 40 Hz PEACHI Altika elevations**
- **MVP dynamic heights and Current** retrieval algorithm

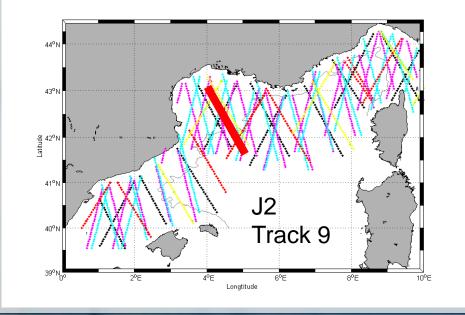


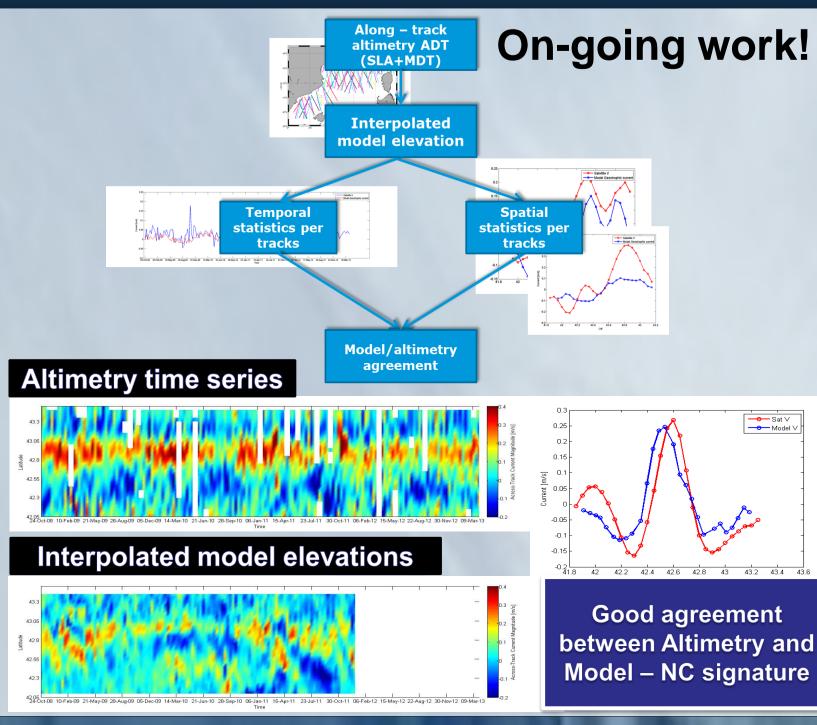
Impacts of the postprocessing on the retrieved currents



## Symphonie Model vs Altimetry

- a 3D > Symphonie, is primitive equation, free surface, sigma coordinate ocean model.
- > Components of current, and salinity temperature are computed.
- Model validated in different studies: Hu et al. (2009), Bouffard et al. (2008, TAO), Kersale et al. (2013), Gatti et al. (2006) etc.





### Conclusions

Multi-Scale Analysis of Coastal Altimetry Data, Multi-Sensor Observations and Numerical Modelling Over the NWMed - Small Scale dynamics

Analysis of IN SITU Measurements

**Impacts of Altimetry** Processing

**Numerical Simulations (SYMPHONIE MODEL)** 

Validation of coastal altimetry **Statistics + Physical Oceanography** 

Definition of new science oriented diagnostics particularly relevant for high resolution altimetry (Sentinel-3, Sentinel-6).