



INTERCOMPARISON AND VALIDATION OF TWO HIGH RESOLUTION AND COASTAL SCALE OPERATIONAL MODELS BETWEEN THE TYRRHENIAN AND LIGURIAN SEAS

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L. Centurioni⁴, V Faure⁵, J Gatti⁵

1) CNR Ibimet & Consorzio LaMMA, Firenze, Italy

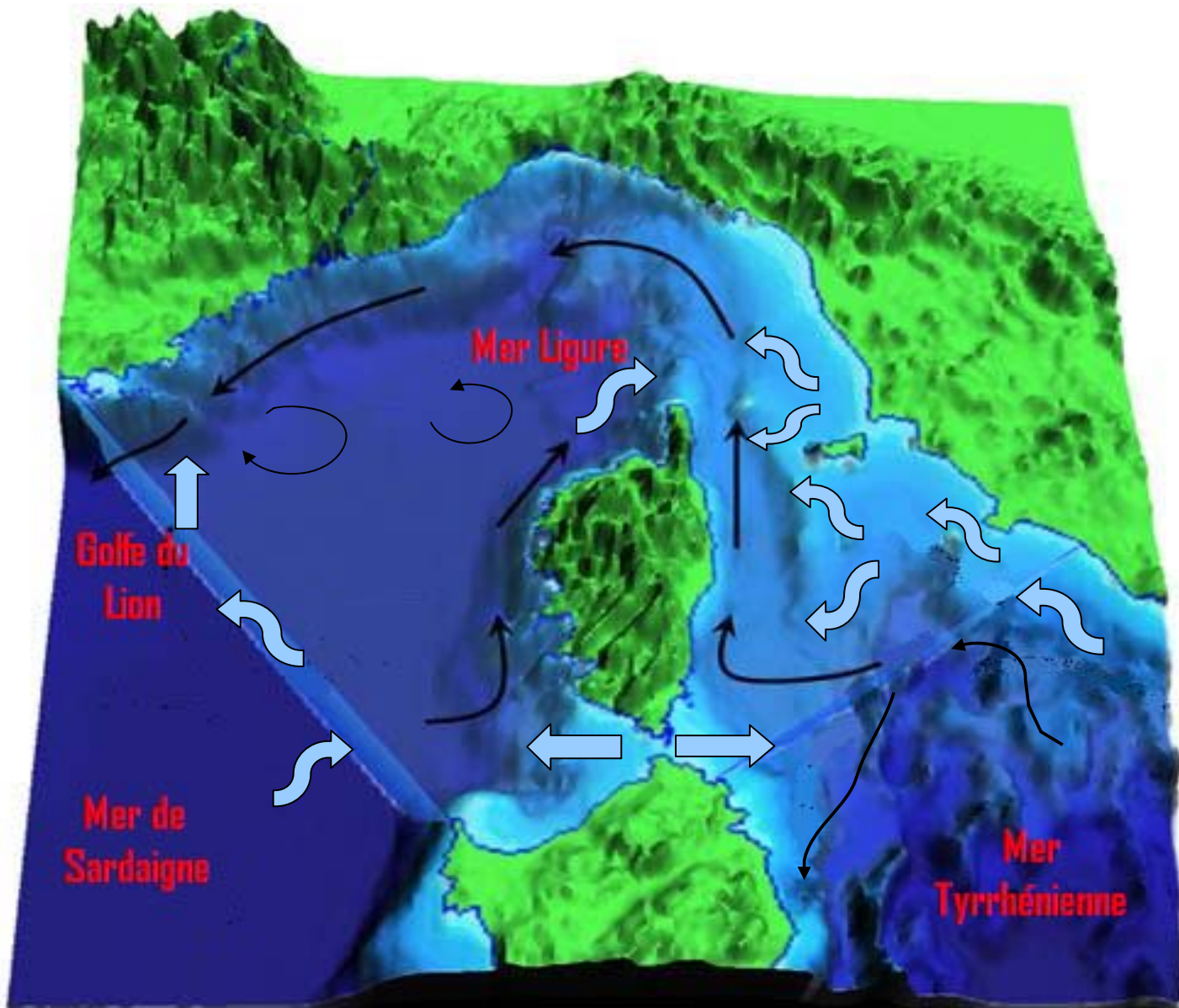
2) IFREMER, France

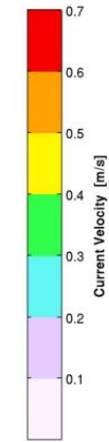
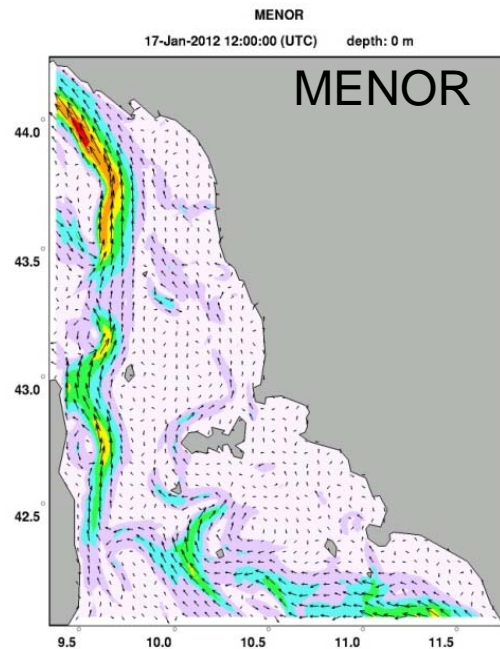
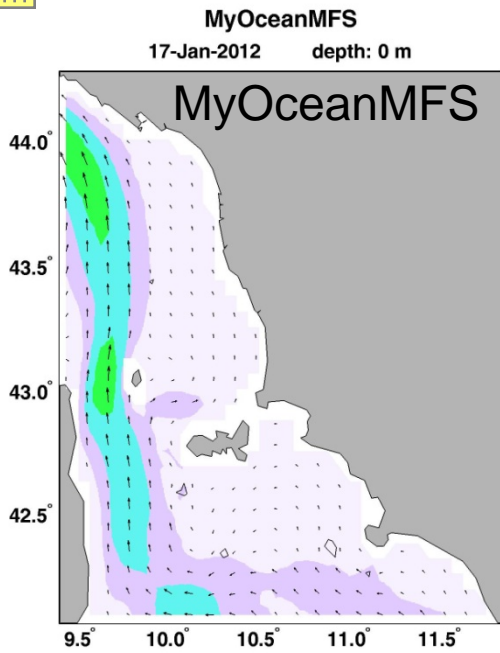
3) OGS, Trieste, Italy

4) Scripps Institution of Oceanography, San Diego, USA

5) IPSO FACTO, Marseille, France

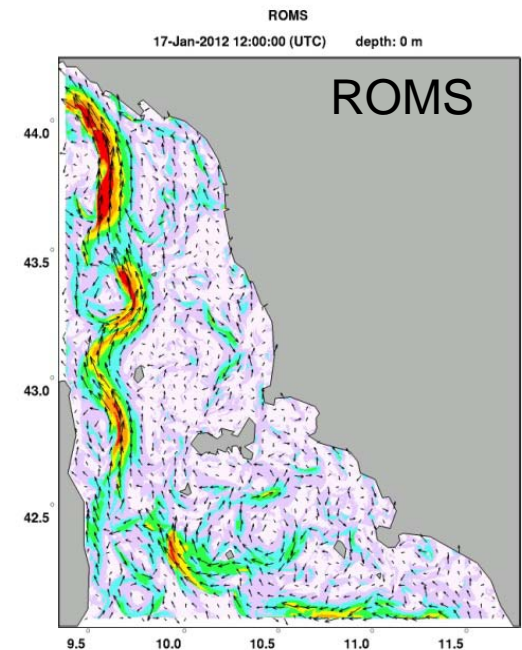
Tuscany-Corsica marine area





Zoom from lower resolution models
(1/16° MFS, 1200 m MENOR)

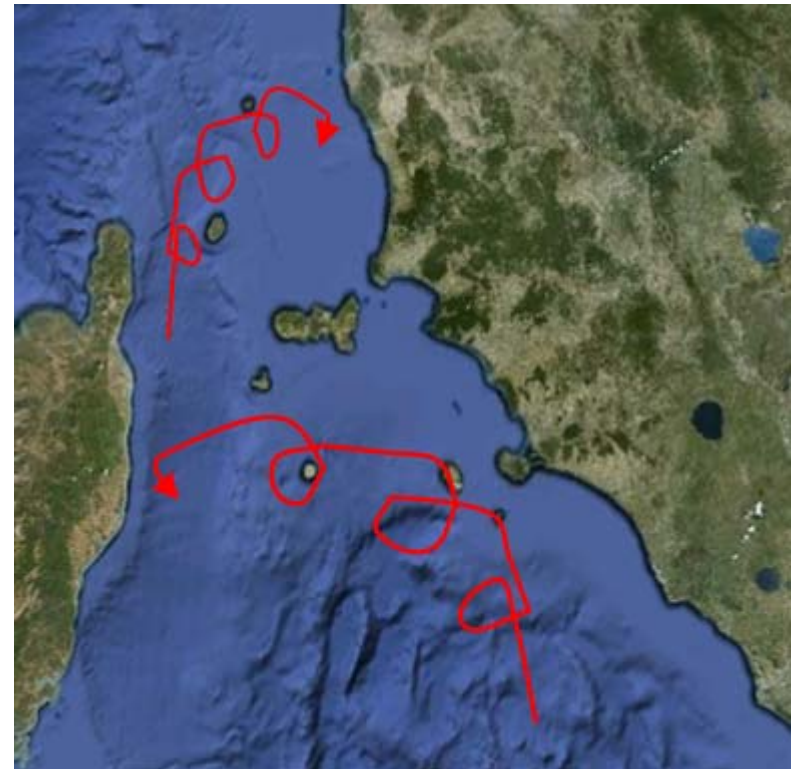
High resolution
model (400 m)

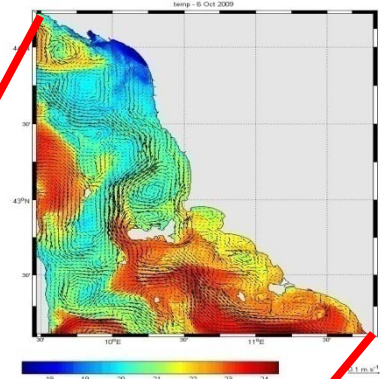


INTEREST OF MESOSCALE CIRCULATION THIS AREA

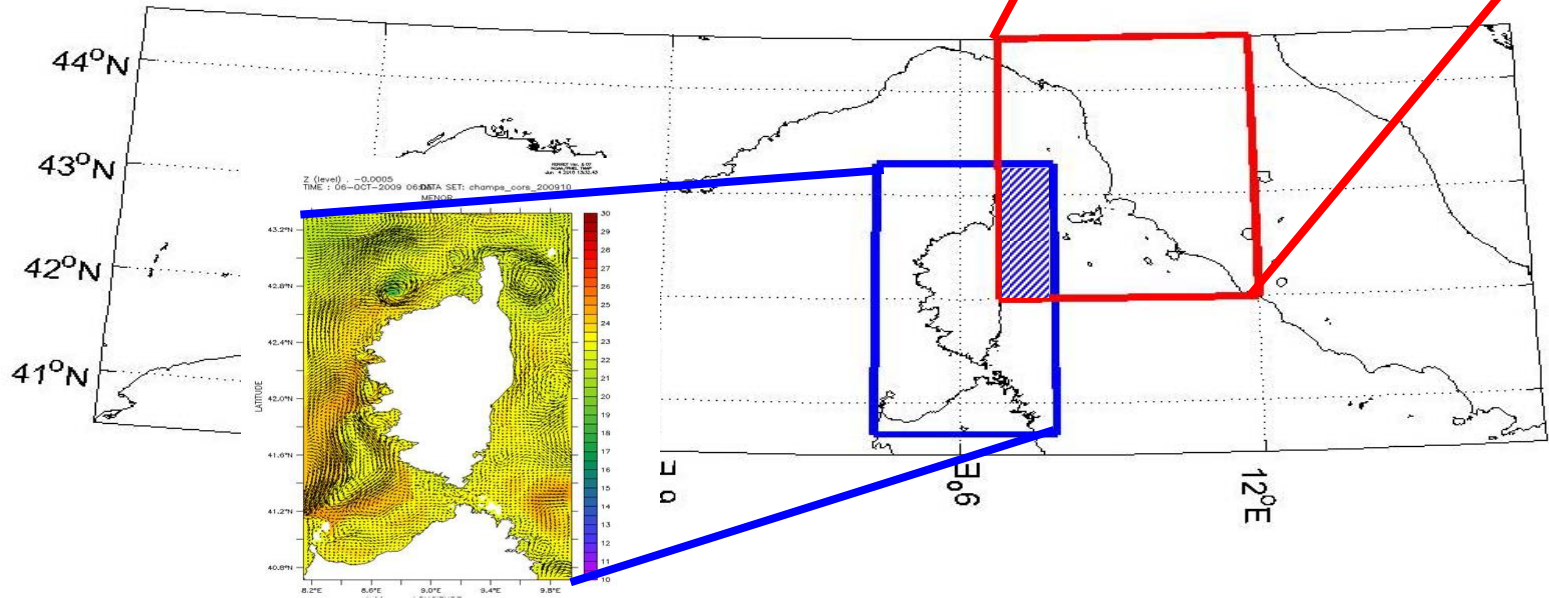
Capability to predict and monitor the transport and the spread of :

- CHEMICAL TOXIC SUBSTANCES
- PLASTIC LITTERS
- ACCIDENTAL POLLUTION
- ...





DOMINI DI CALCOLO UTILIZZATI NEI MODELLI IDRODINAMICI



lfremer

SAME RESOLUTIONS: 400 m, 30 vertical levels

SAME FATHER MODEL: MENOR 1200 m

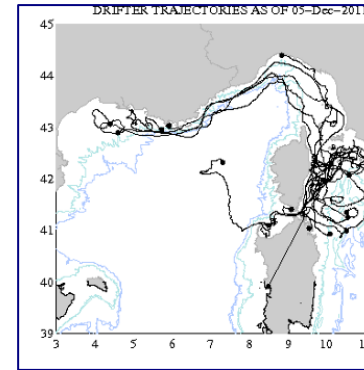
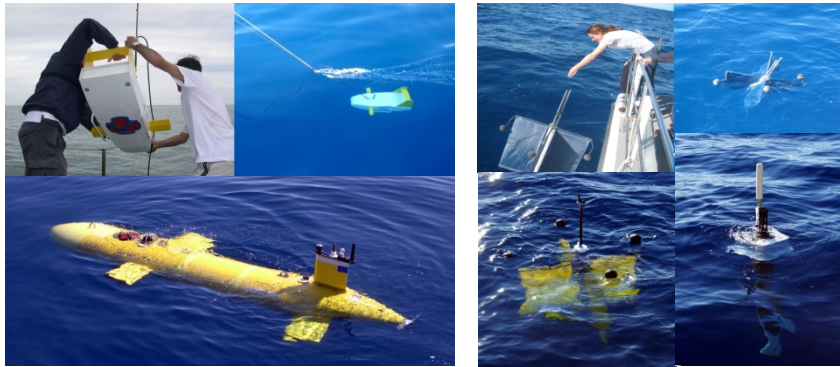
DIFFERENT ATMOSPHERIC FORCING: MM5- LaMMA WRF

DIFFERENT SOURCE CODES: MARS3D - ROMS

Two cruises: May and October 2011



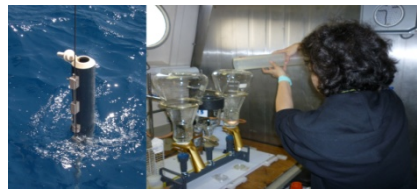
- Currents (ADCP + drifters + ARVOR C float)



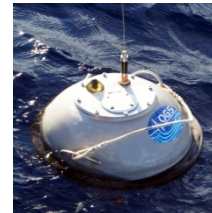
- Sediments



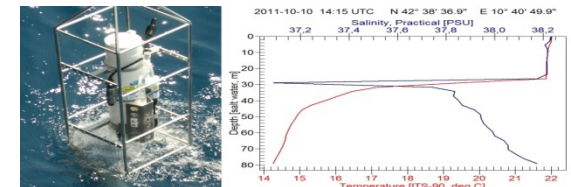
- Chlorophyll (Niskin)



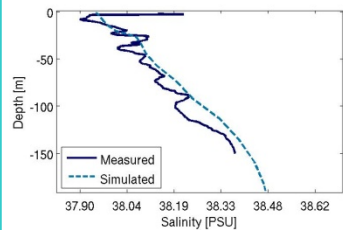
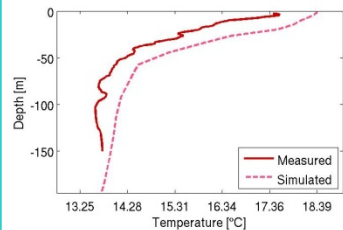
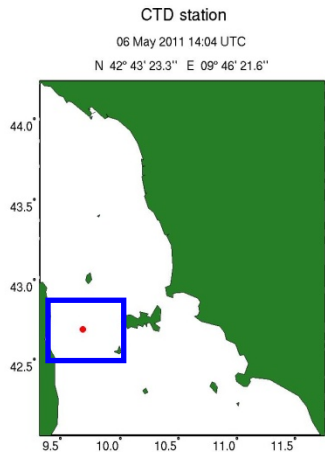
- Waves (Buoy)



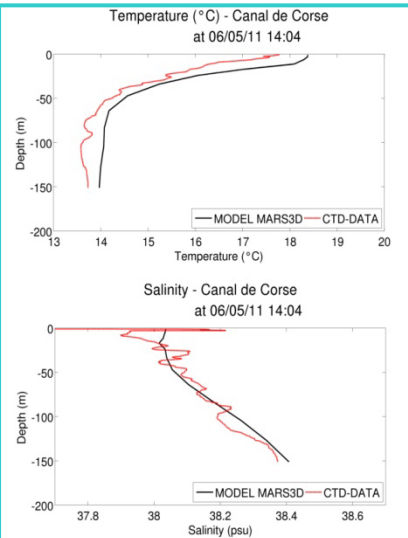
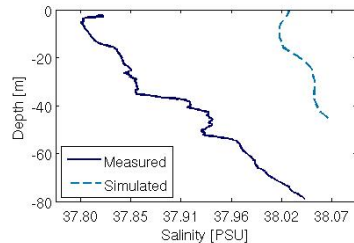
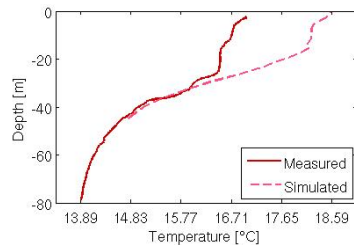
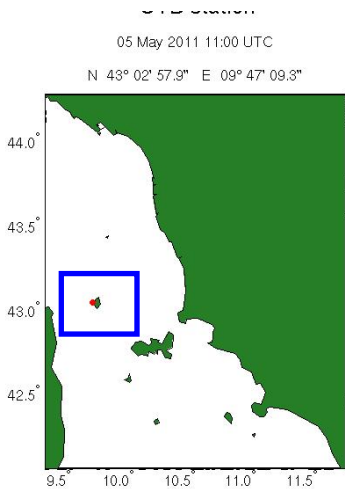
- Temp. and Salinity (CTD/floats)



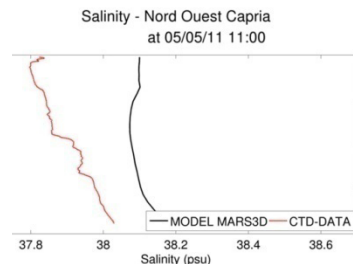
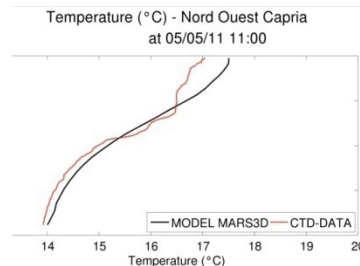
CTD vs HIGH RESOLUTION MODELS



Tuscany ROMS



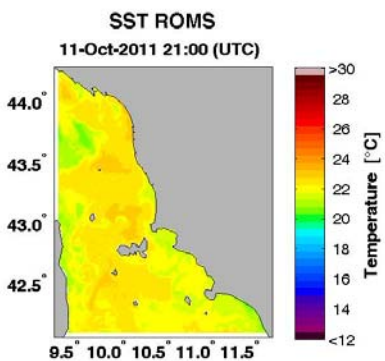
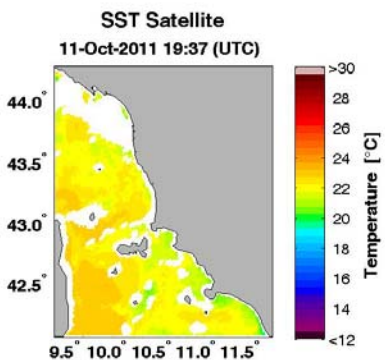
Corse – MARS3D



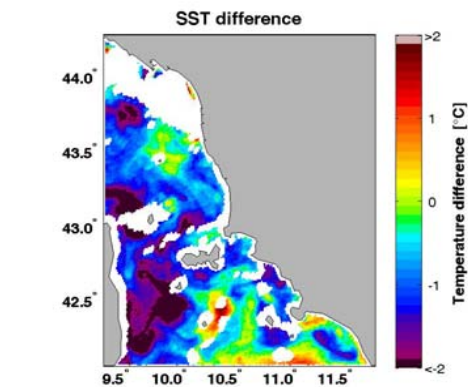
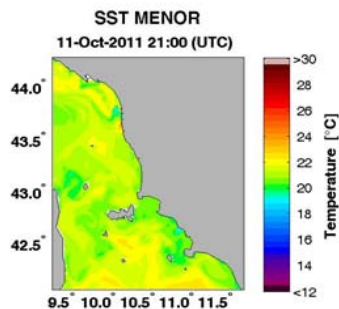
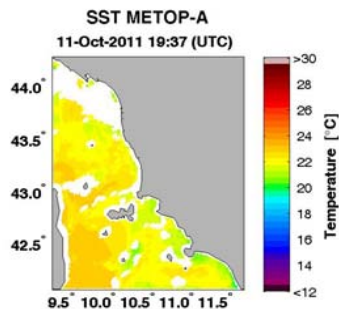
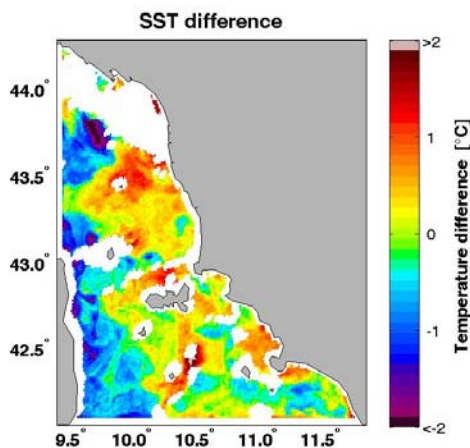
1. CORSICA CHANNEL:
Temperature and salinity gradients are well reproduced in stratified Corse channel, and match very well the measures.

2. NORTH WEST CAPRAIA:
The salinity shows an important bias in both models and the surface temperature is overestimated.

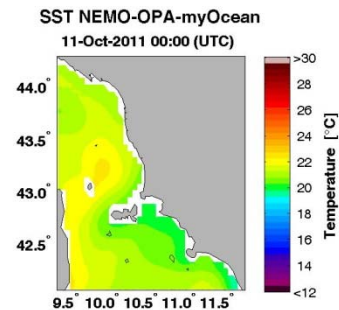
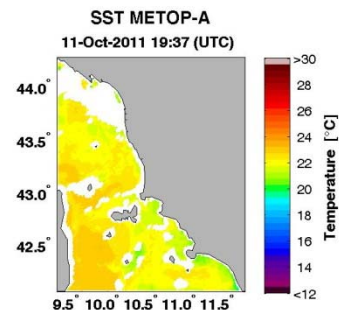
SST SATELLITE vs LOW and HIGH RESOLUTION MODELS



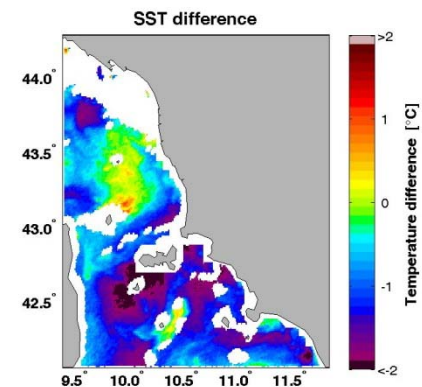
T° ROMS - T° SATELLITE



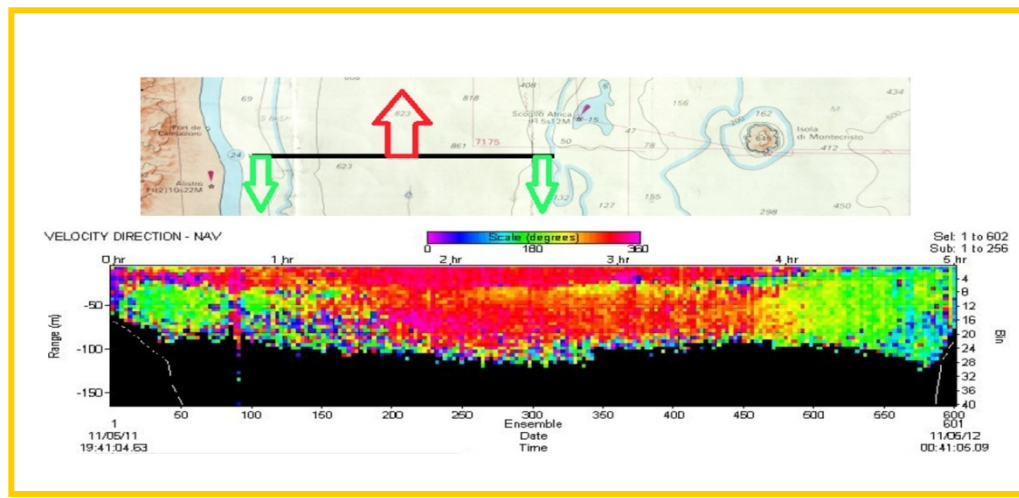
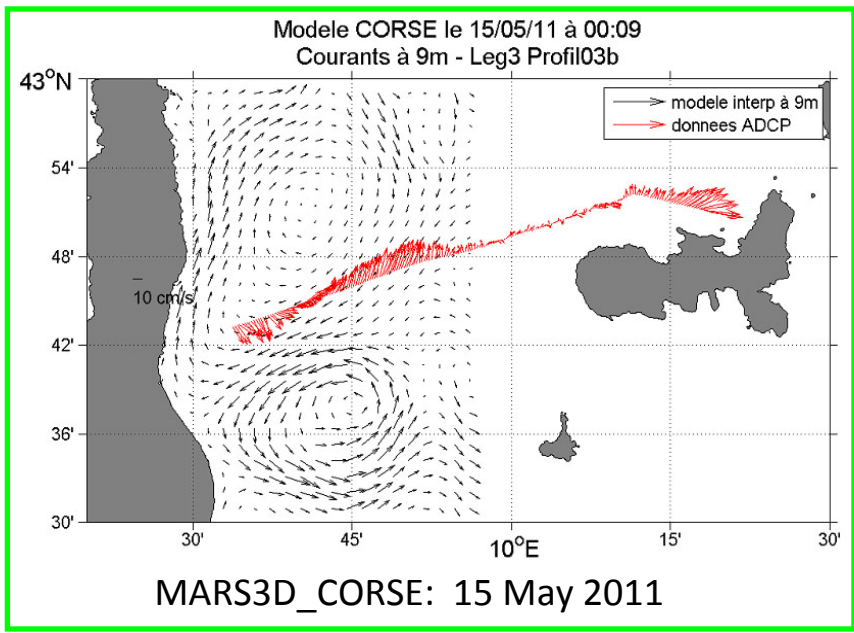
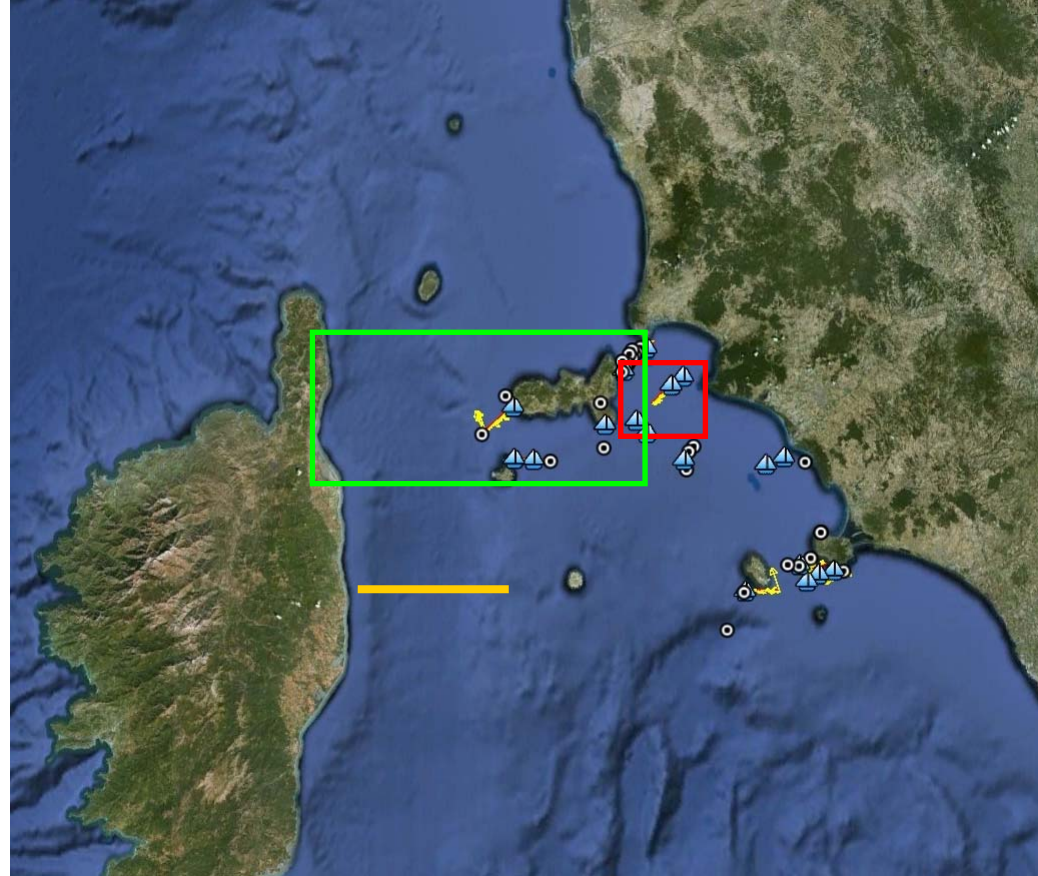
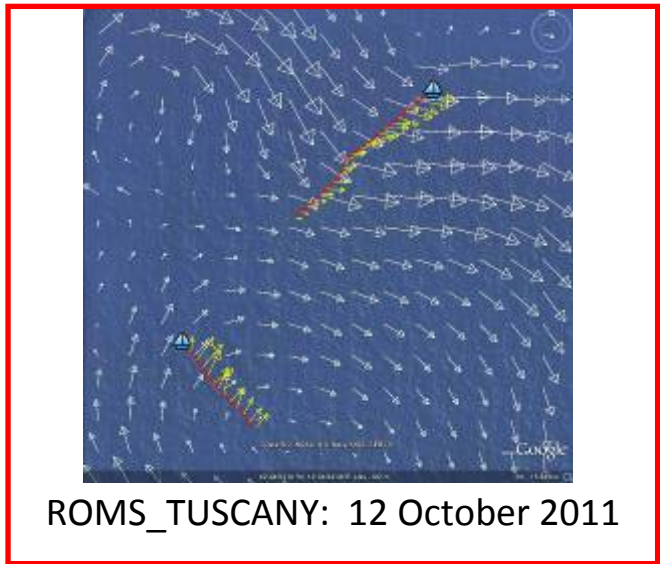
T° MENOR - T° SATELLITE



T° MyOcean - T° SATELLITE

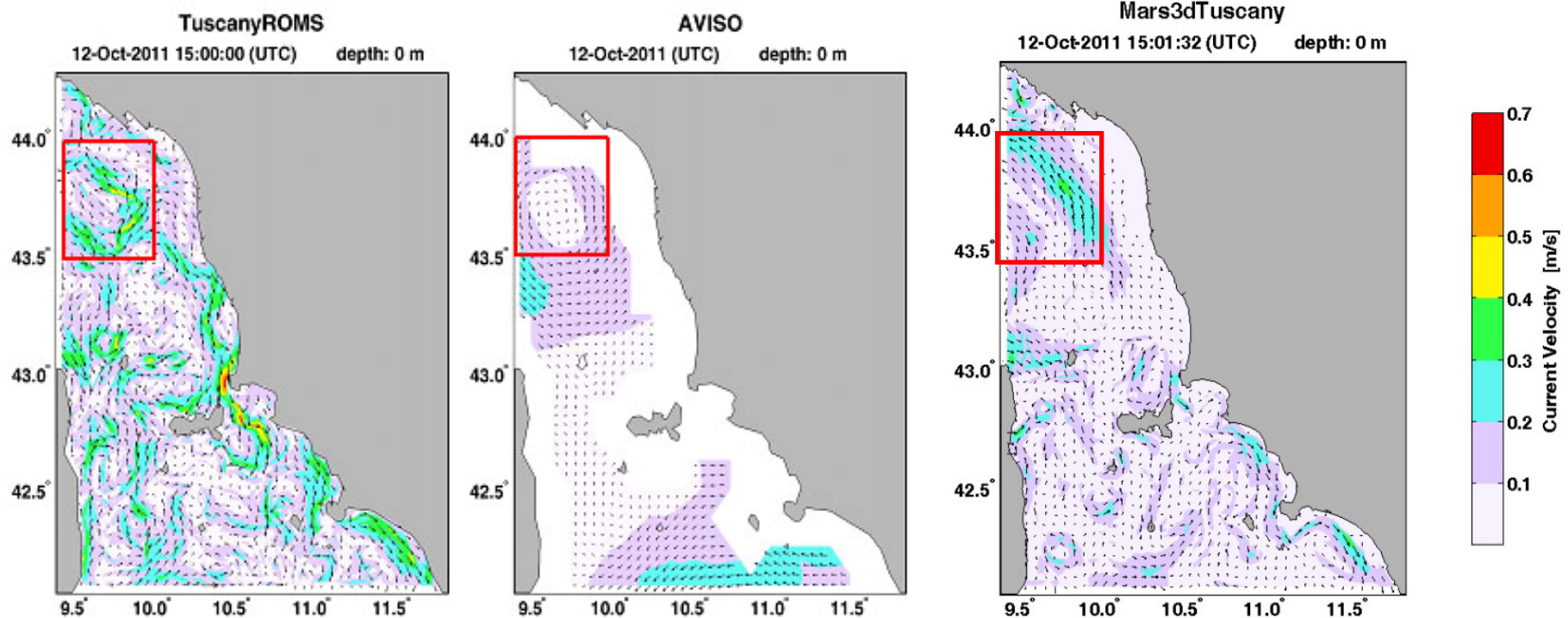


ADCP vs HI. RES. MODELS



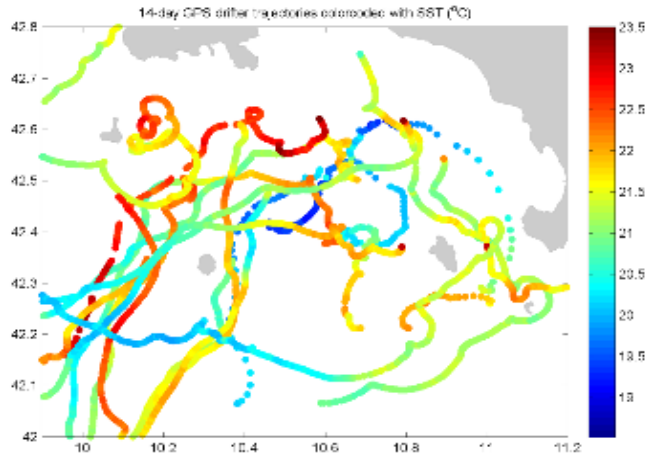
ALTIMETRY vs HIGH RESOLUTION MODELS

example at North of the shelf

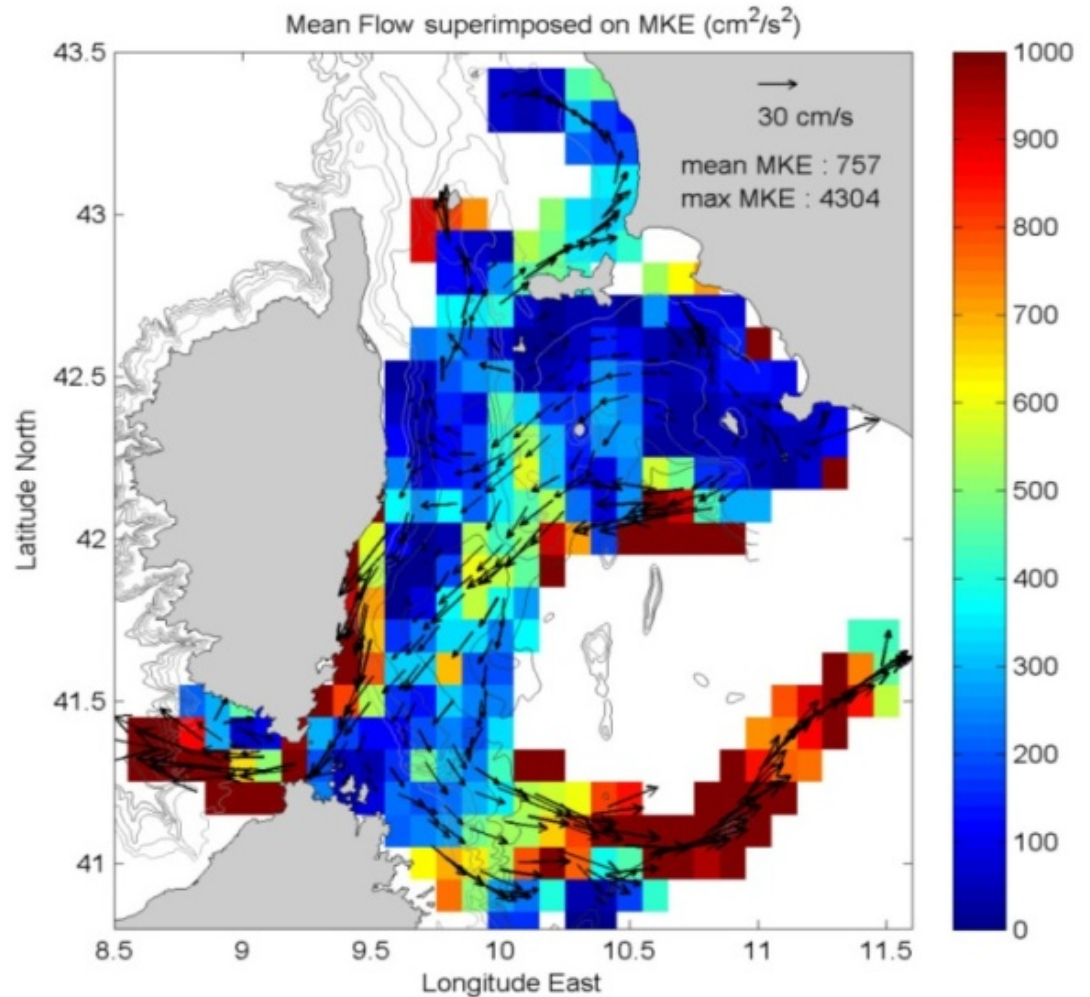


17 DRIFTERS in october 2011

Trajectories and temperature

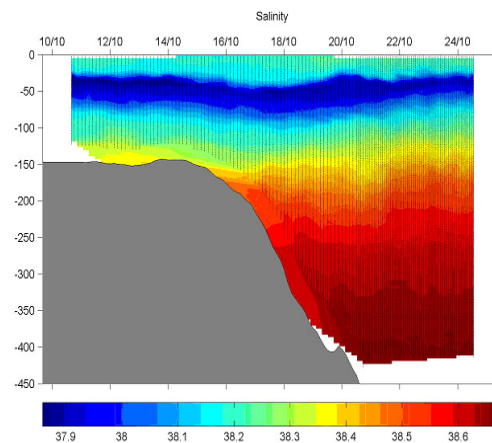
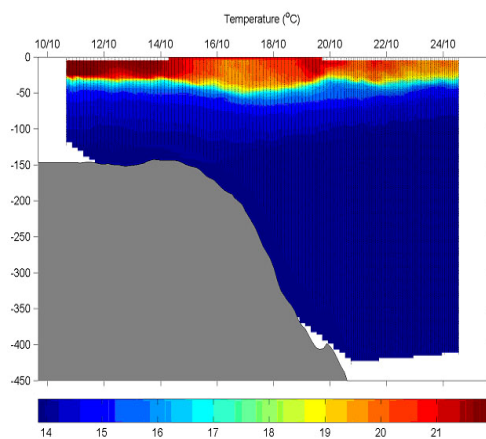
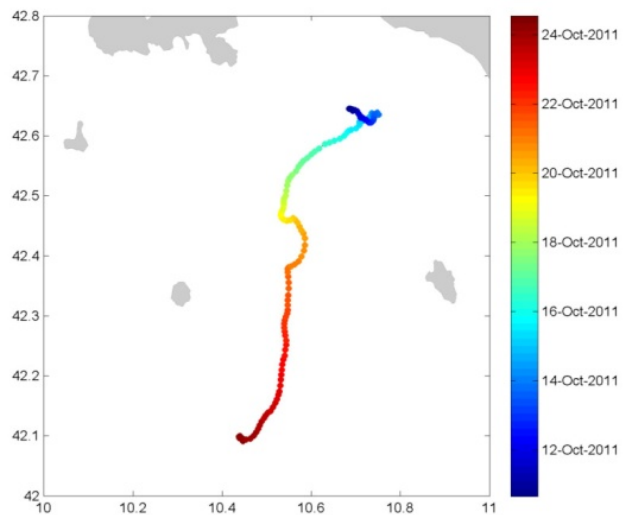


Mean flow and mean kinetic energy



FLOAT ARVOR C:

1 profile/3hours - more than 200 profiles in 15 days



WORK IN PROGRESS

1. Two high resolution operational models have been implemented on the sea area between Tuscany and Corsica.
2. Preliminary comparison between data and models results has been done.
3. Further work on calibration and validation of the models is in progress