



First evaluation of a high resolution model for the Central Mediterranean Sea

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- MedCORDEX2 FPS : Role of the air-sea coupling and small-scale ocean processes on regional climate



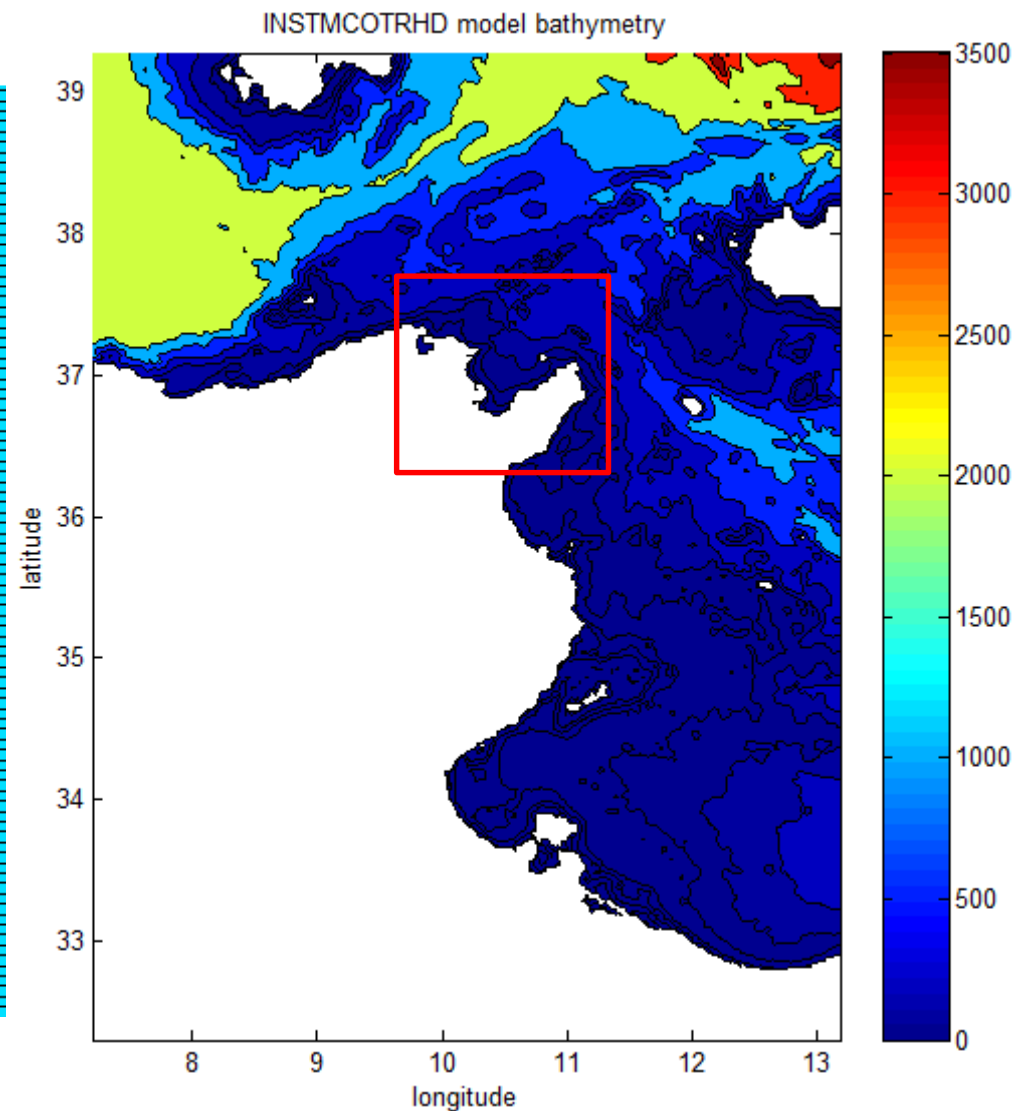
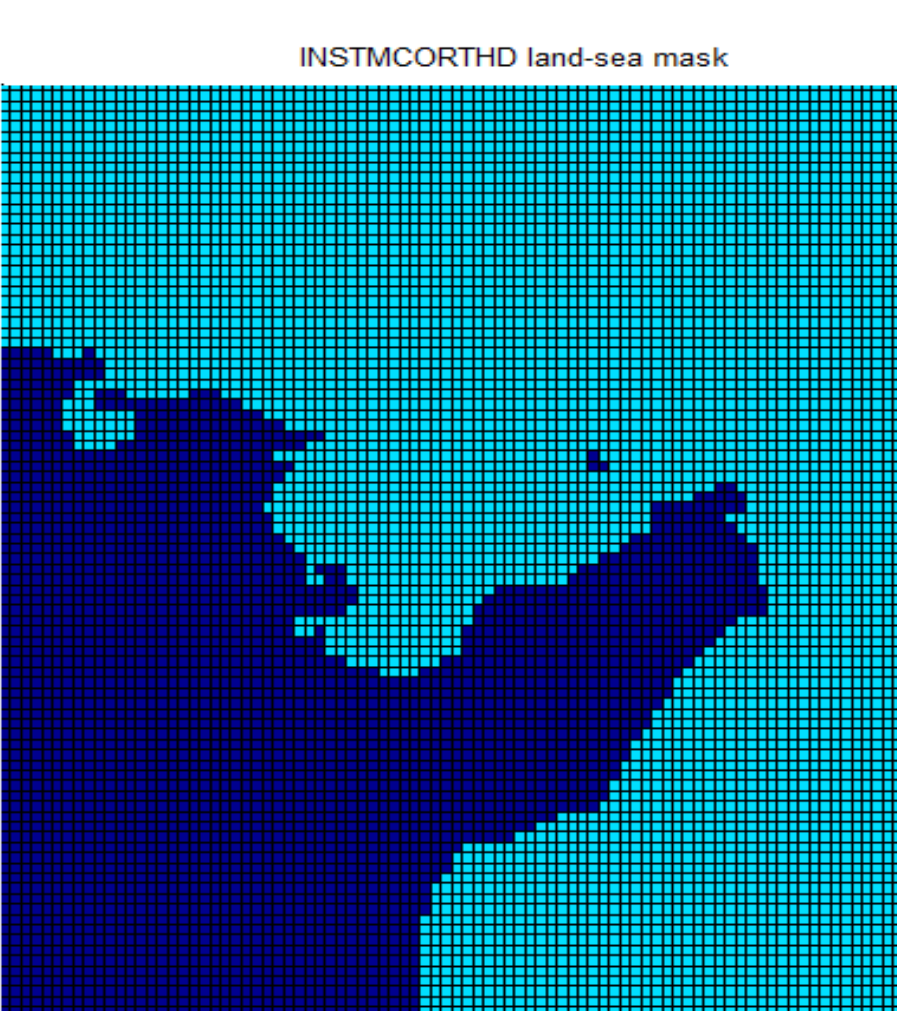
The objective: Set-up a high resolution model for the Central Mediterranean:

- . Provide multi-targeted high resolution maps of T,S,UV (application: e.g. sea energy)
- . Study fine scale structures generated
- . Compare different forcing fields (CMEMS vs RTOFS; ERA-Interim vs GFS/CFS)
- . Include tides, waves, ...

The Model: INSTMCOTRHD

INSTMCOTRHD (POM): ~2 Km (1/52°) 28 VL Inter. surf. flux. (6 hourly); Lateral daily

Bathymetry : Global Multi-Resolution Topography (GMRT, Ryan et al, 2009).



Regional Climate System Modelling
for the European Sea Regions

Universitat Illes Balears
Palma de Mallorca, Spain
14 - 16 March 2018



ERA-Interim /ERA5

GFS or CFSR (coupled)

MED16, MED24
(NEMO model)

RTOFS
(HYCOM model)

INSTMCOTRHD

TIDE (OSUtide)

Wave forcing



USAID
FROM THE AMERICAN PEOPLE



Presently:

One surface forcing : ERA-Interim



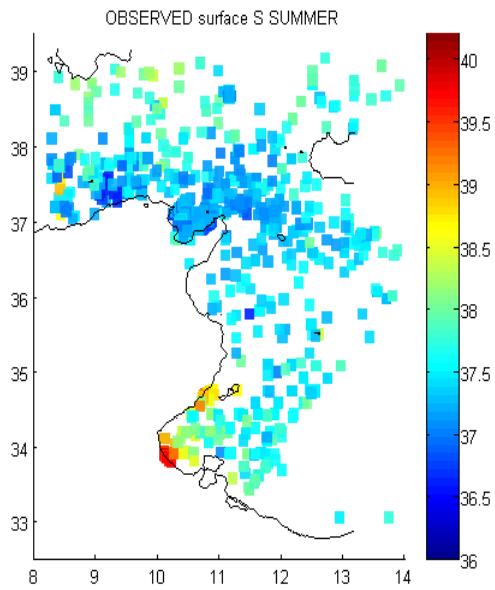
Two ocean forcing :
RTOFS
MED16



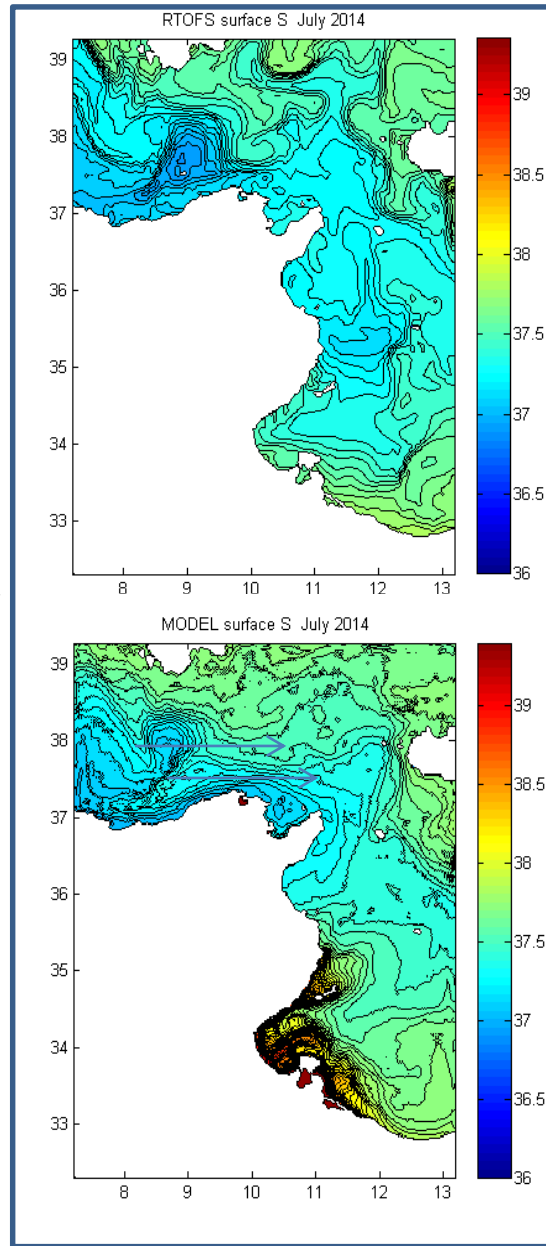
INSTMCOTRHD



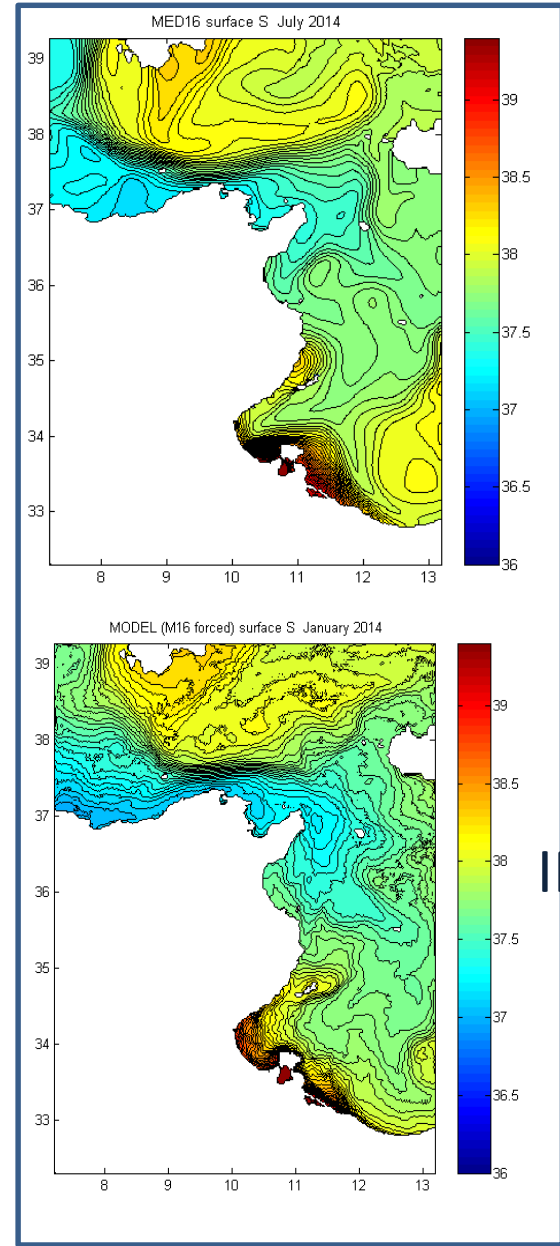
Salinity



RTOFS



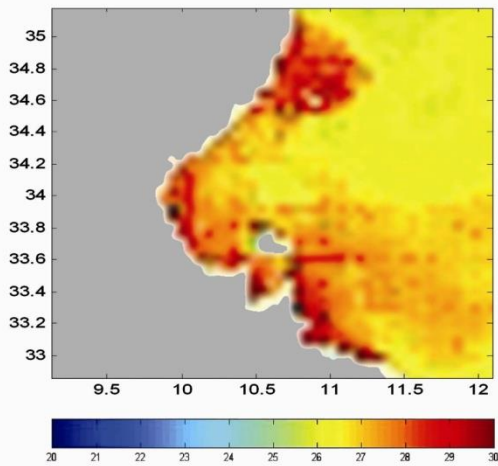
MED16



Anal.

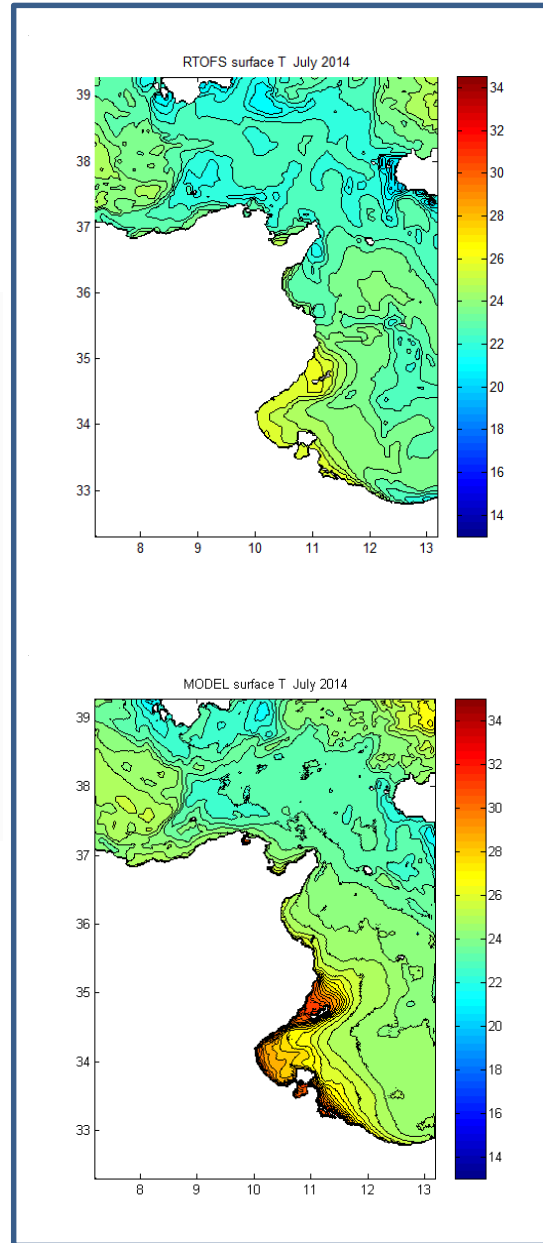
INSTM

Temp.

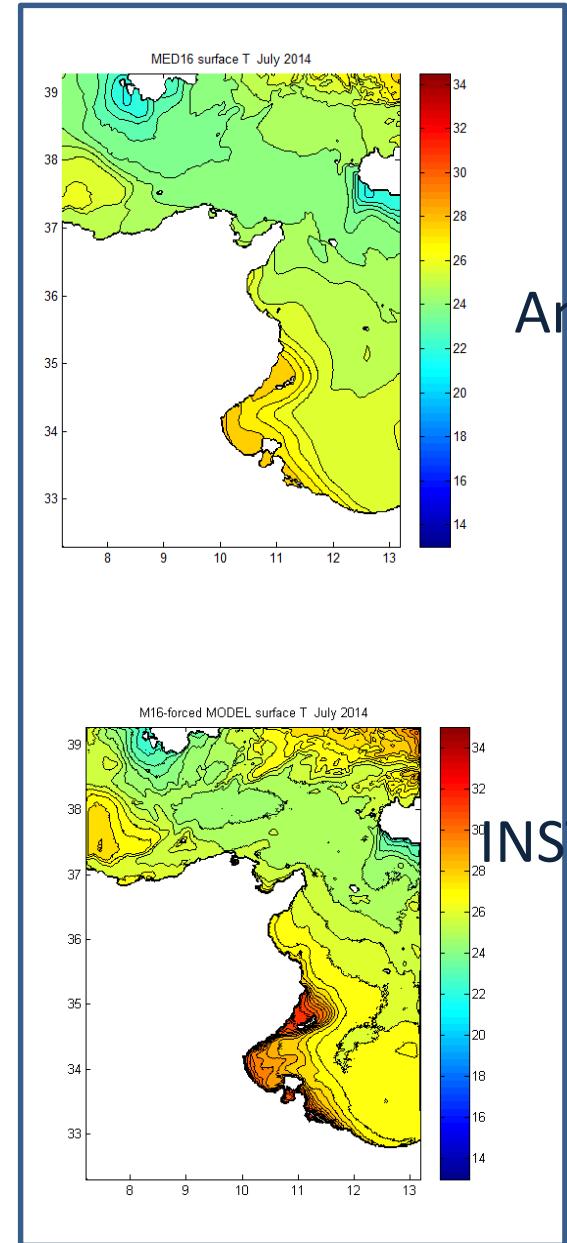


Satellite image summer
30 June to 6 July 2003

RTOFS



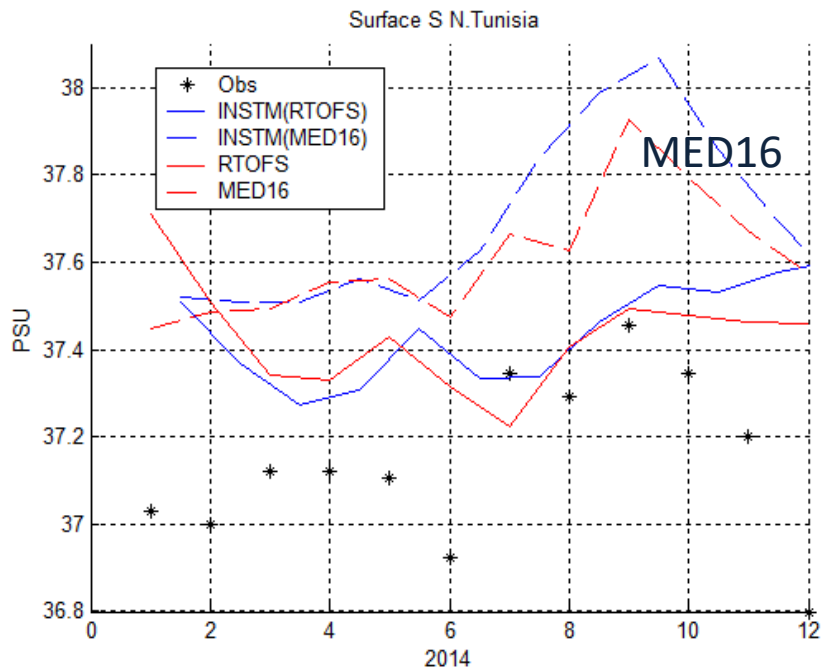
MED16



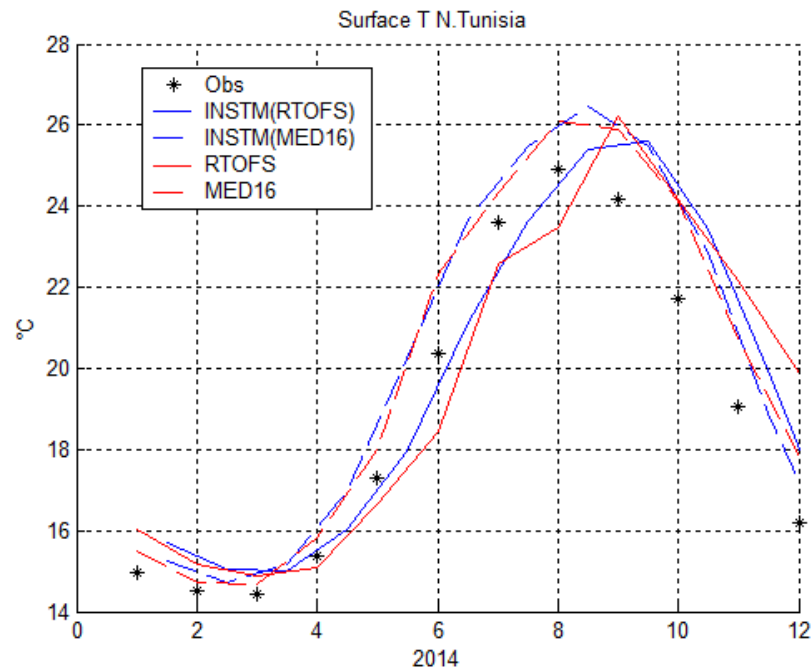
Anal.

INSTM

Salinity

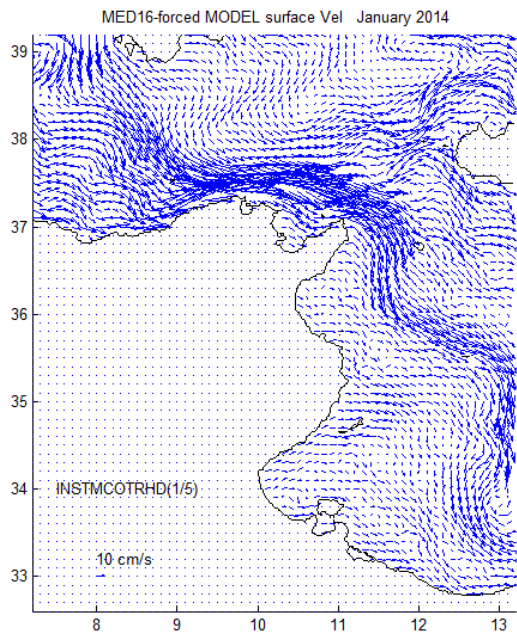
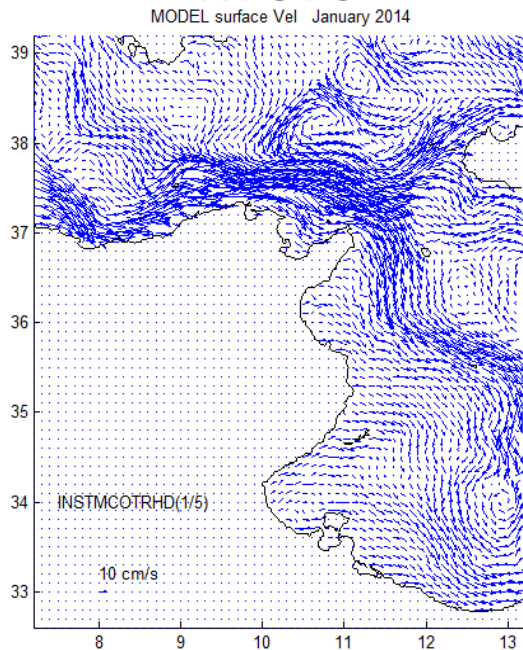


Temp.

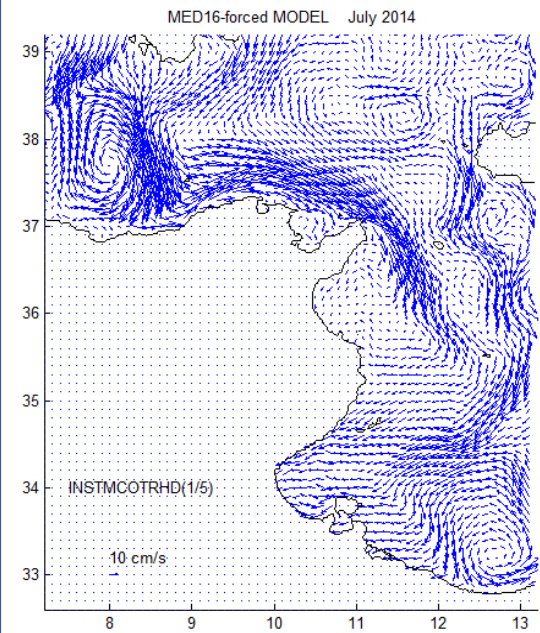
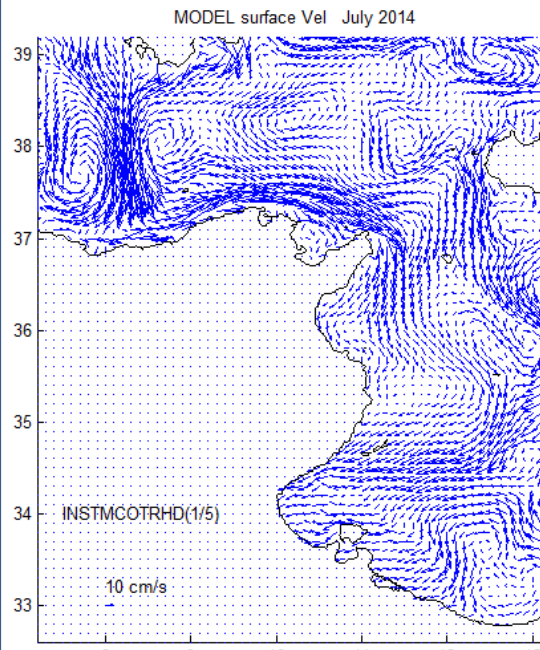


Velocity

RTOFS

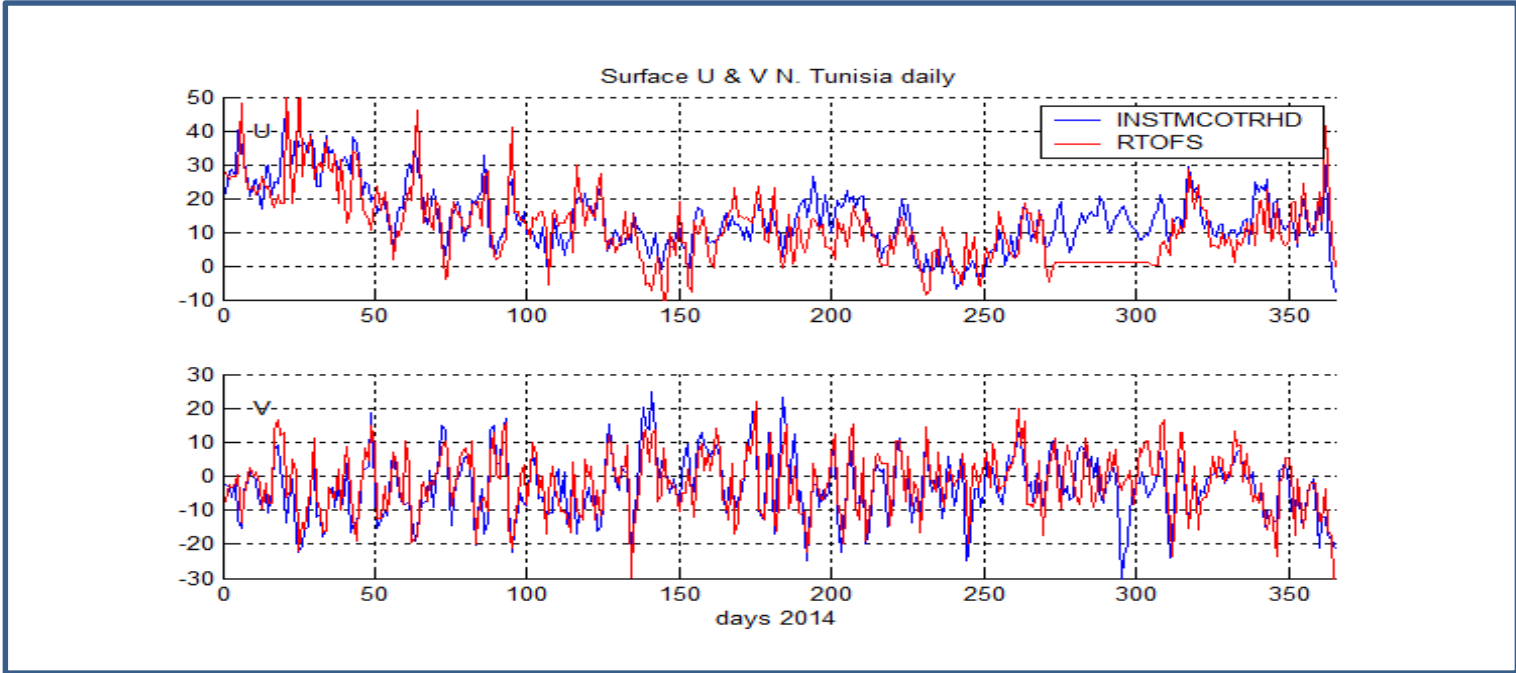


MED16

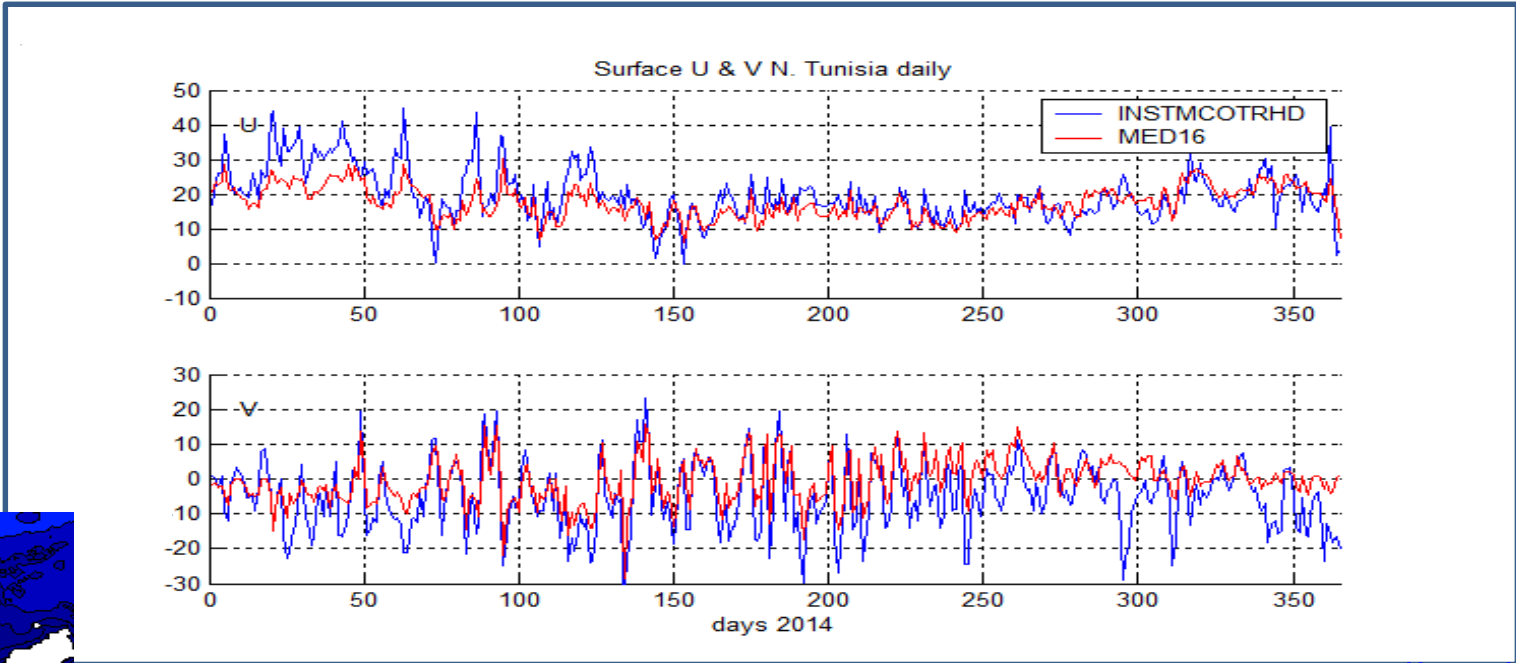


Anal.

INSTM



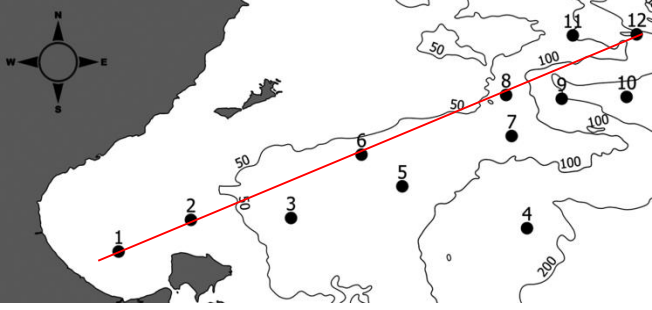
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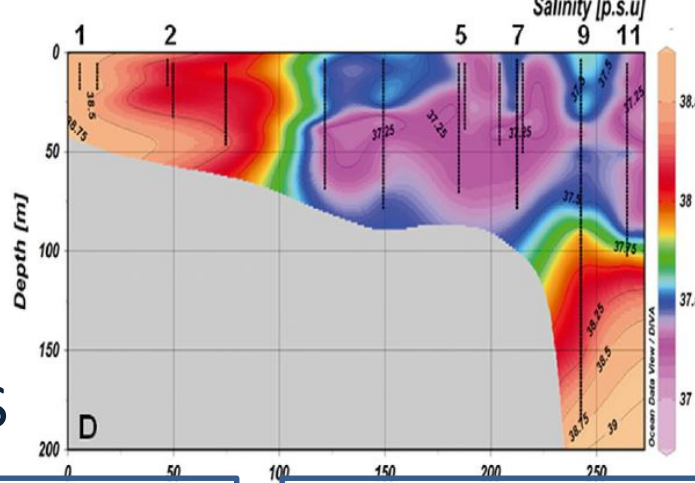
MED16



[Small scale SSS](#)



RTOFS

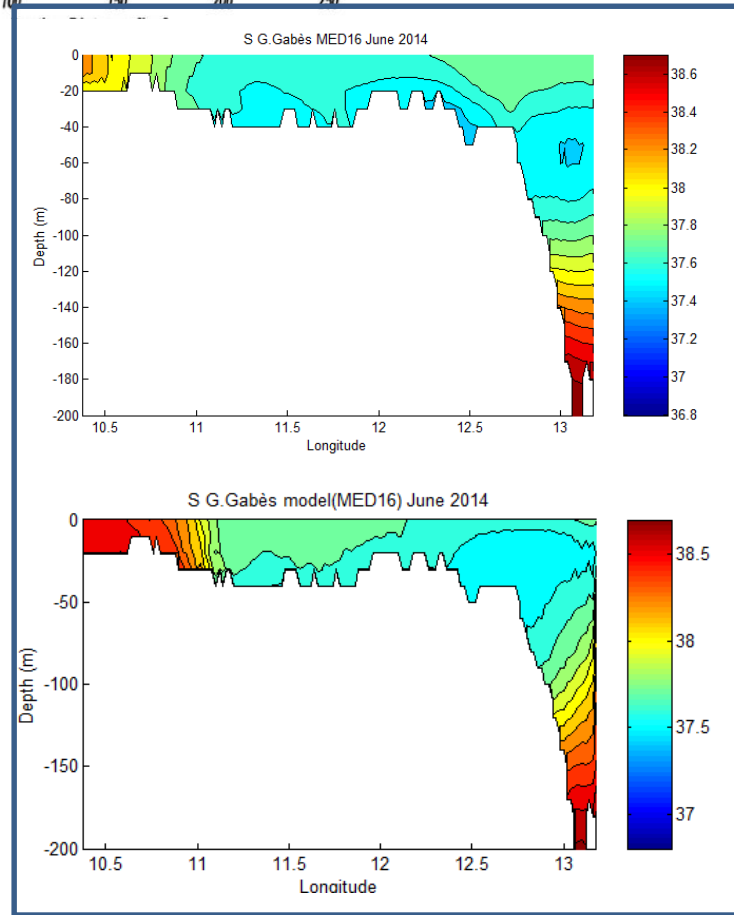
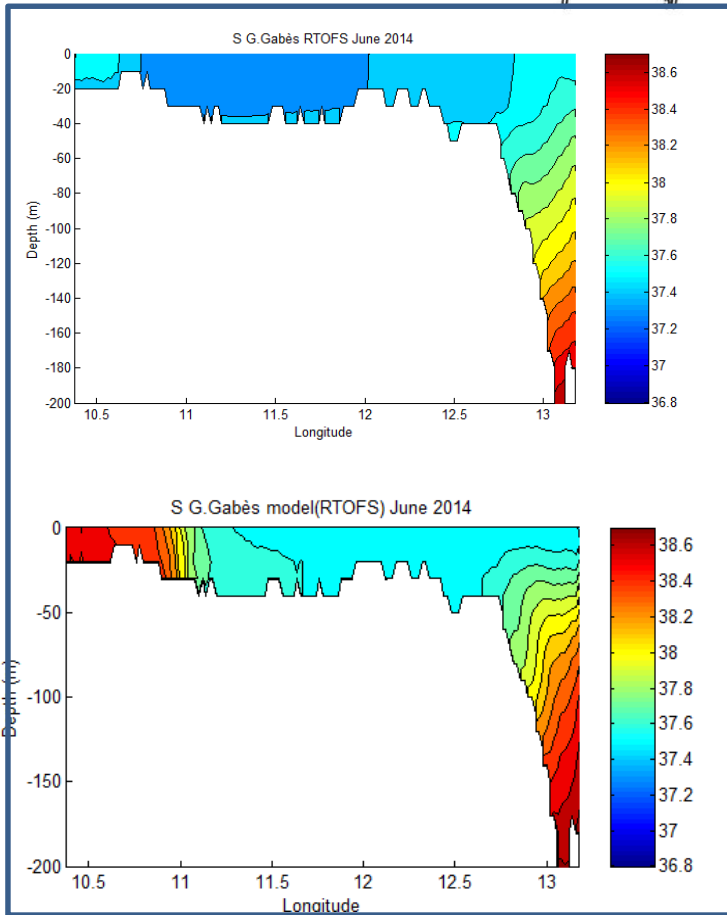


CTD data 2008-2009
Bellaaj Zouari et al., 2018

MED16

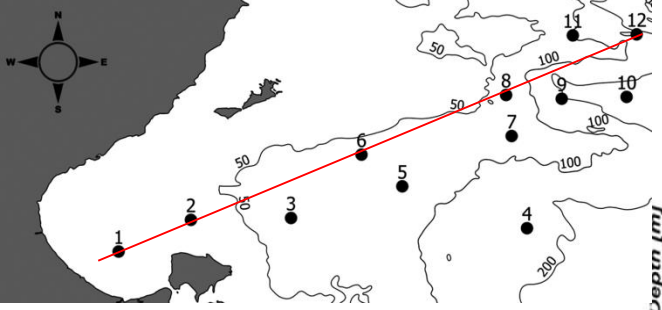
June

S

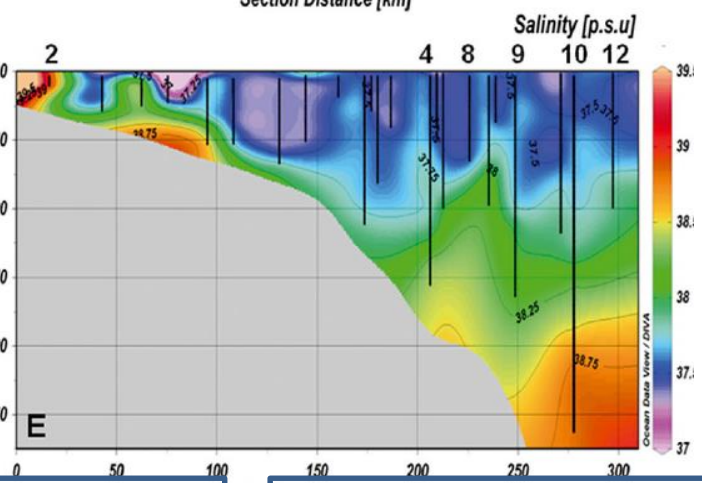


Anal.

INSTM



RTOFS

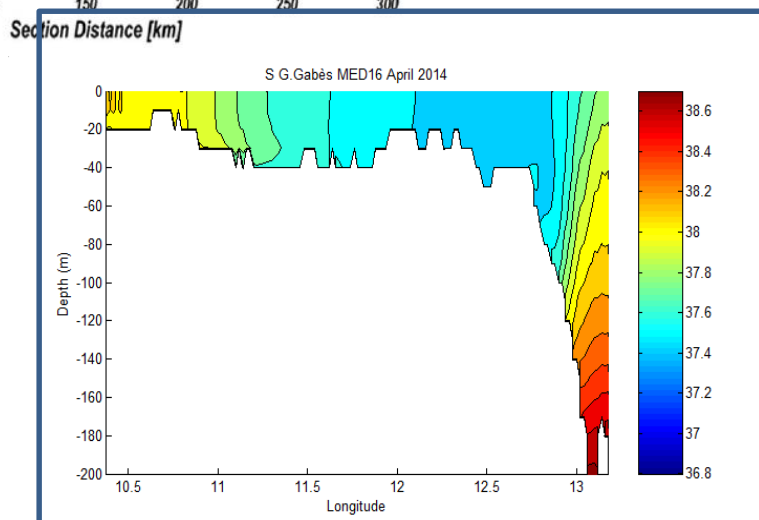
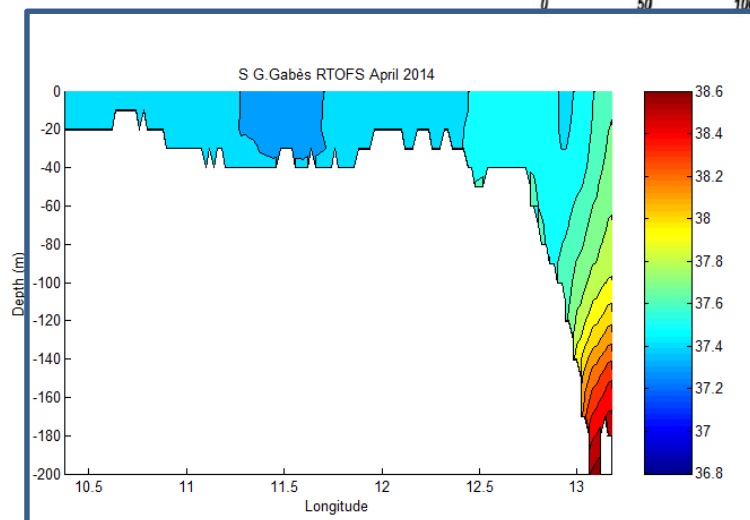


MED16

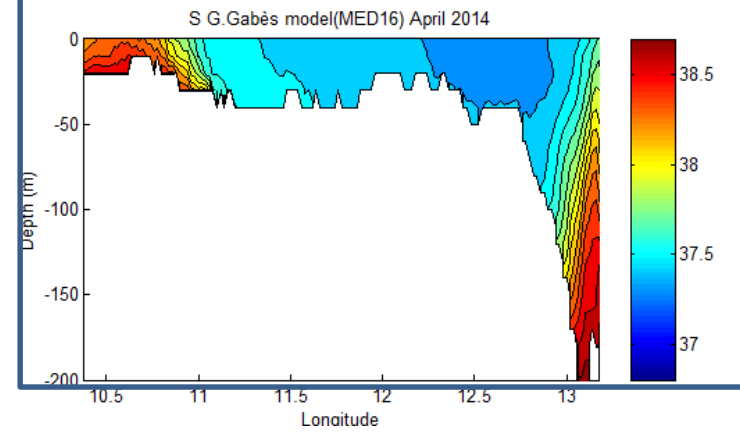
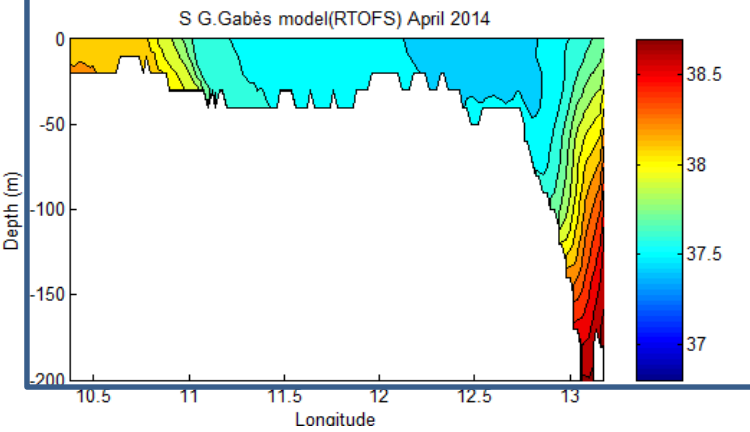
CTD data 2008-2009
Bellaaj Zouari et al., 2018

April

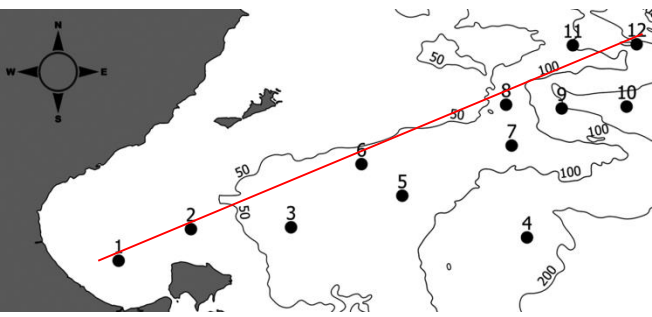
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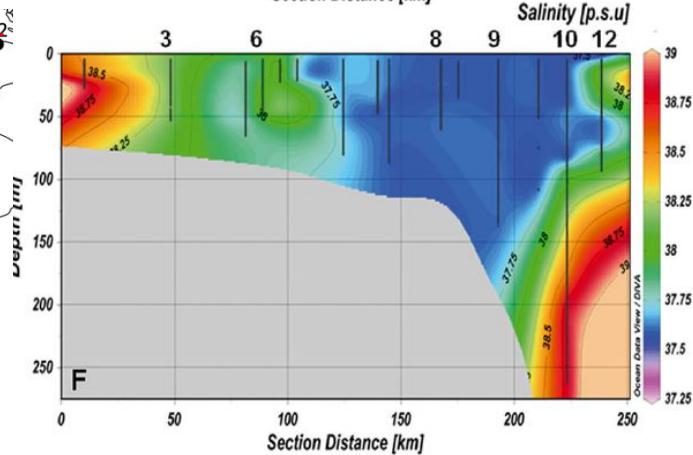
Anal.



INSTM



RTOFS

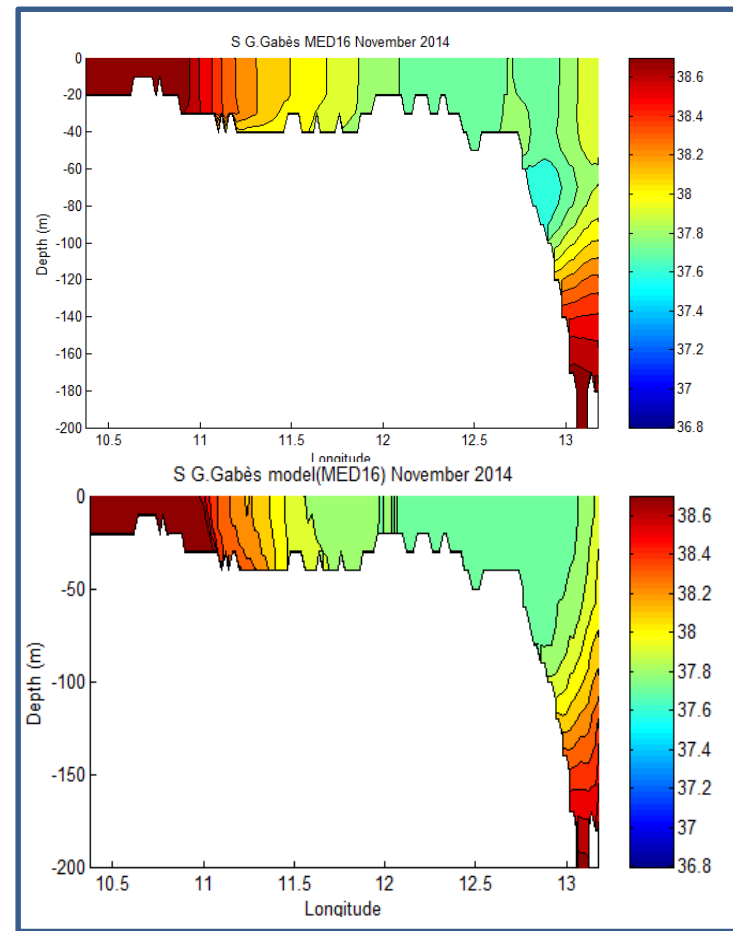
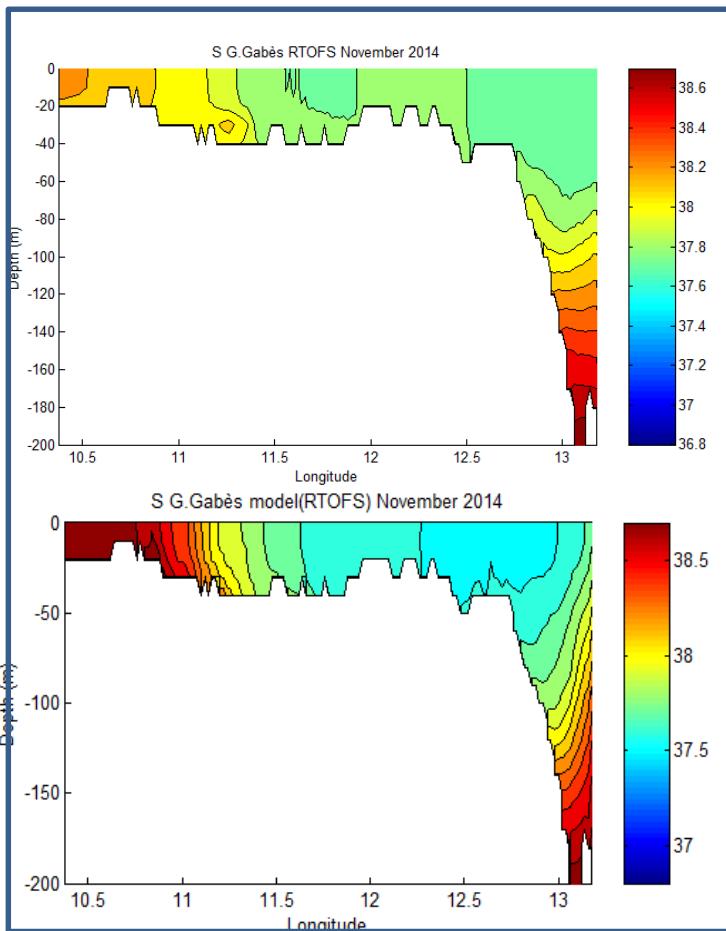


CTD data 2008-2009
Bellaaj Zouari et al., 2018

November

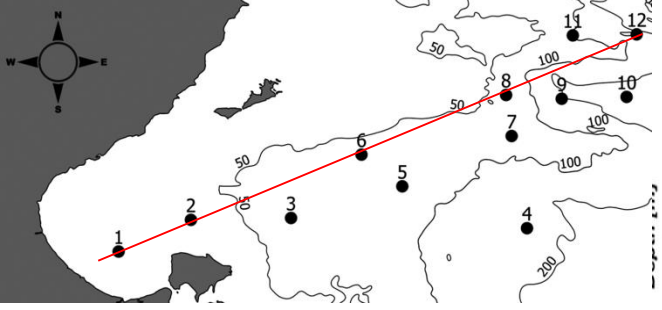
MED16

S

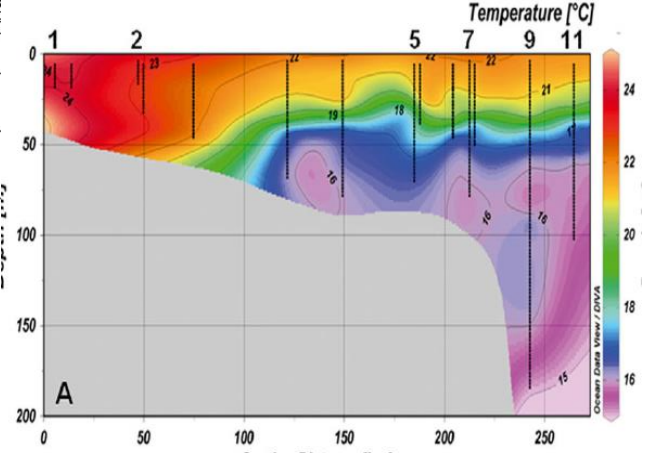


Anal.

INSTM



RTOFS

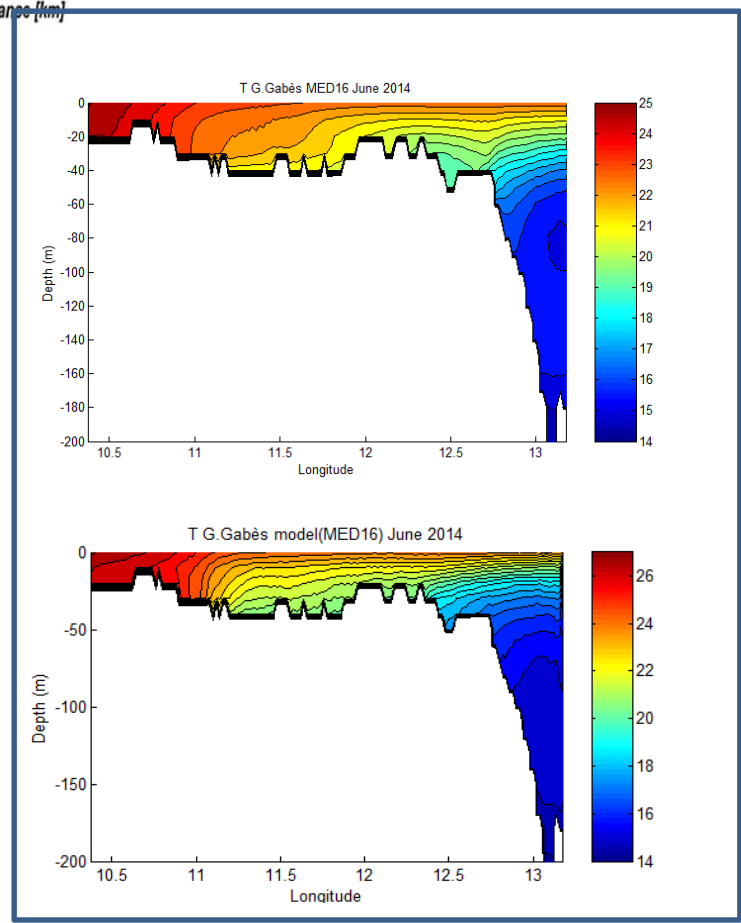
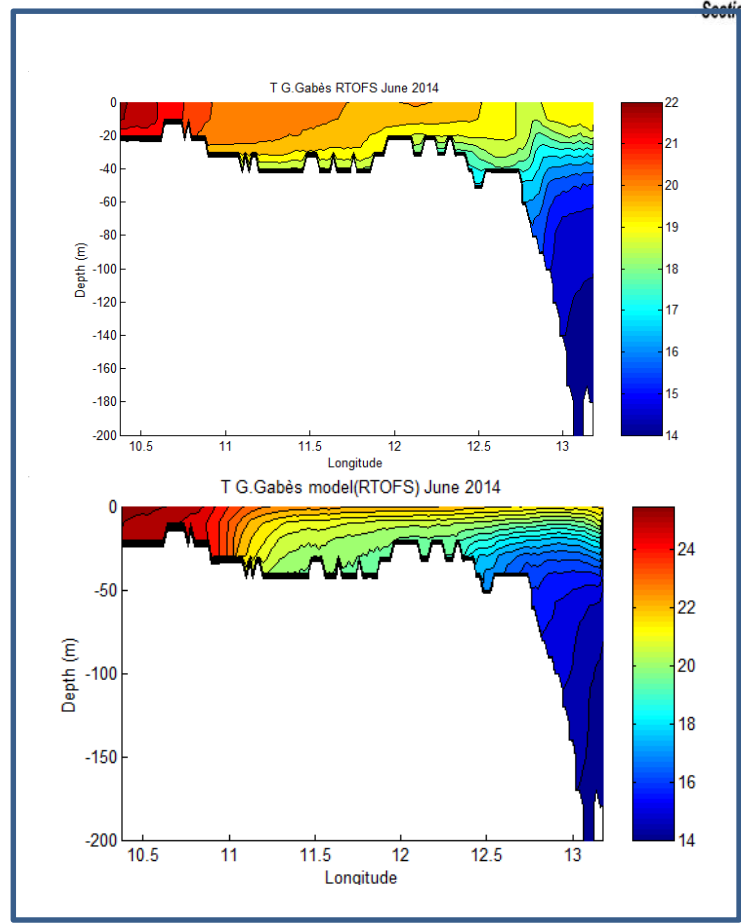


MED16

CTD data 2008-2009
Bellaaj Zouari et al., 2018

June

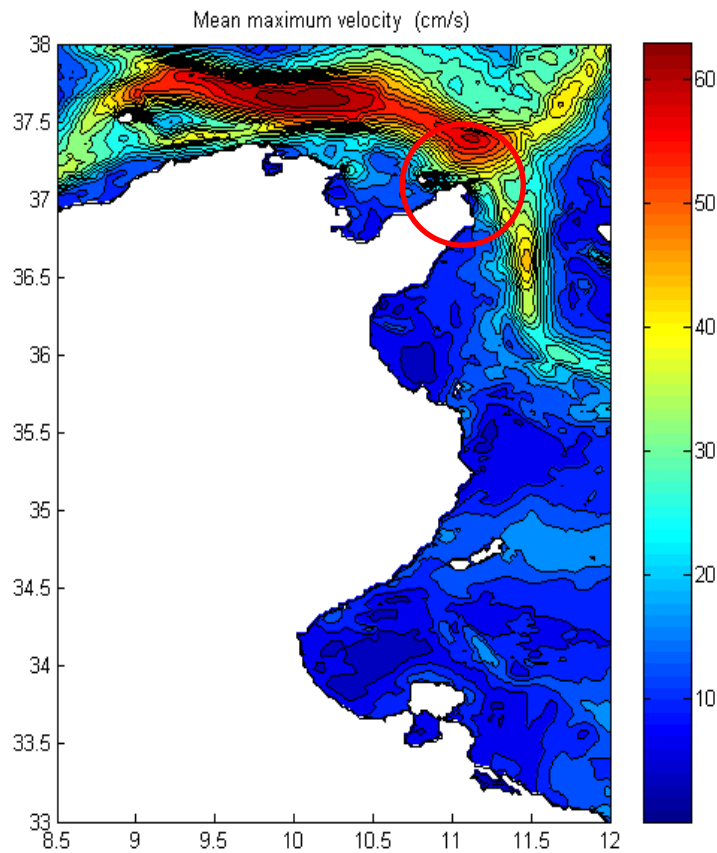
T



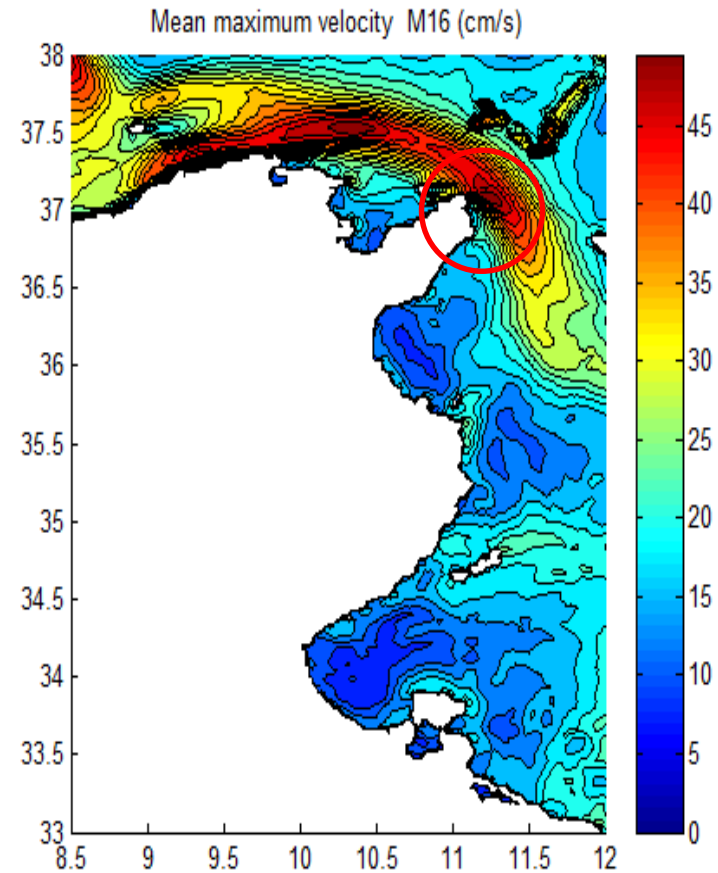
Anal.

INSTM

INSTM(RTOFS)



INSTM(MED16)



Maximum Velocity
for ocean energy application

CONCLUSION

- A High resolution model for the Central Mediterranean has been set up
- Two different ocean forcing reanalysis sources were used : RTOFS and MED16
- A first simulation : the year 2014.
- Different behaviours were found: weaker Atlantic Current in MED16
- Shallow areas are better simulated in the INSTM model (Gulf of Gabès)

NEXT:

- Use two atmospheric forcing : ERAInterim/ERA5 and GFS/CFS
- Add tides and waves
- 10-year simulation : 2008-2017.



EVALUATION OF OCEAN SYNTHESSES

COST Action ES1402

<http://www.eos-cost.eu>

A COST Action to **improve the coordination** of European efforts

in the evaluation of ocean syntheses:

- better understanding of the value and use of ocean syntheses
- promote the use of ocean syntheses

Chairs:

Aida Alvera-Azcárate (University of Liège, BE)

Keith Haines (University of Reading, UK)

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