Management Tool for a Threatened Mediterranean Ecosystem: The Bay of Monastir (eastern Tunisia coast)

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ECOSYSTEM AND TOOL

A Threatened Mediterranean Ecosystem

The bay of Monastir, located in the southern Gulf of Hammamet, is a shallow area surrounded by shoals and is a receptacle for all kind of material discharged into it. It holds an important economical activity (industry, tourism, fishing and more recently offshore aquaculture) that has generated a dramatic increase in the environmental pressure.

A Management Tool: the INSTMBMZ Model

It is a 3D general circulation model that simulates water temperature salinity, velocity and sea level. It also includes a transport equation coupled with momentum ones to study the transport of river discharge and pollutants poured into the study area. The model is forced by atmospheric weather conditions from the Monastir station and by CMEMS analyses for the lateral boundary conditions. The model covers the Gulf of Hammamet including its southern part. The model grid includes a zooming towards the bay of Monastir reaching 300 m resolution.   Model run : 2008-2020.
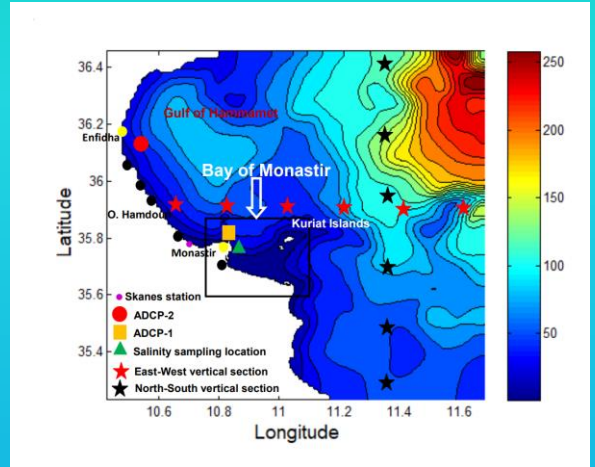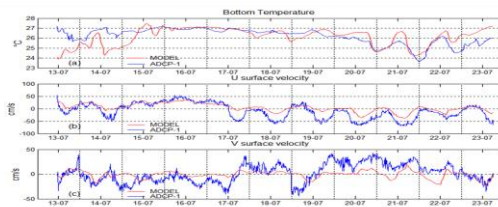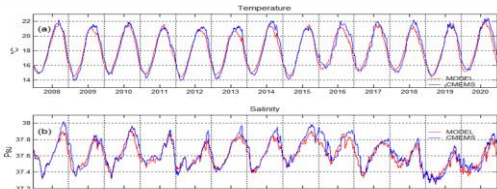

VALIDATION
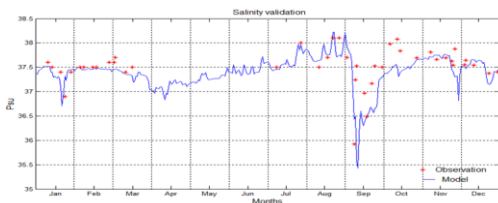
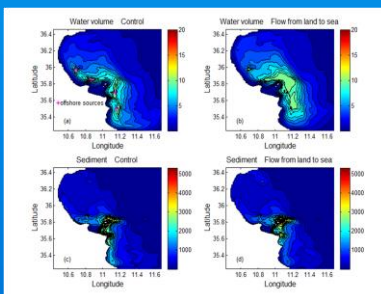S validation with obs.at S location
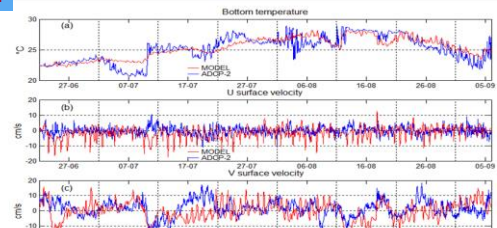
T and V from model and obs. at ADPC-2

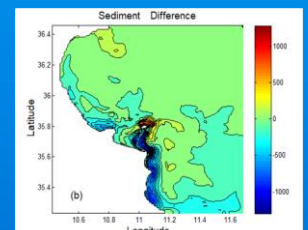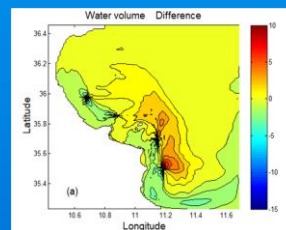T and V from model and obs. at ADPC-1

T and S from model and CMEMS: 2008-2020

APPLICATION

Control case

Land-to-sea case

Matter concentration in water and deposited in the sea bed in the control case and land-to-sea scenario case

Difference in matter concentration (water and deposited in the sea bed) between the land-to-sea scenario case and the control case

DEVELOPMENT

The model will include a more elaborated transport scheme including sediment resuspension.
The model will use atmospheric weather conditions over the entire domain
A biogeochemical model will also be incorporated.

Needs for data along the coast (rivers, sewage, discharge sources …)
Needs marine data at sufficiently high frequency and covering the model domain: Mediterranean Network
Requires closer collaboration with the social-economical sector