SYMPOSIUM OP'24 ADVANCING OCEAN PREDICTION SCIENCE FOR SOCIETAL BENEFITS

Production Centre

The Copernicus Mediterranean Analysis and Forecasting Physical System: recent upgrades and validation

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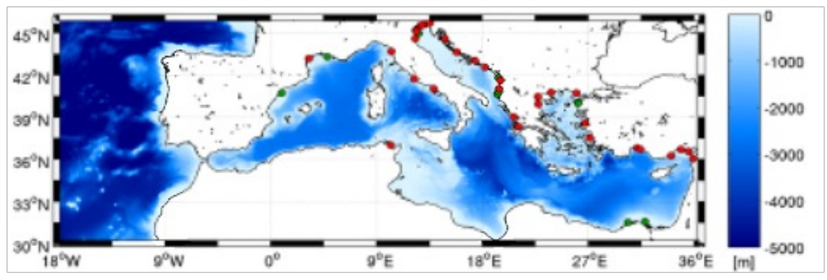
Introduction

- **Copernicus Marine MedFS** Mediterranean Analysis and Forecasting System
- Daily production of 10-days forecast
- Delivered data: U,V,W,T,S,SSH,MLD
- Yearly upgrades of the system

ECMWF atmospheric fields:

Spatial resolution: 1/10°
Temporal resolution:
Forecasts: 1hr – 3hrs – 6hrs
Analysis: 6hrs



Land river runoff:
Surface boundary condition for **39** major rivers with annual mean discharge > 50 m^3/s using climatological monthly mean values
Po river daily observations

Lateral Boundary conditions:
Atlantic: Daily NRT analyses and forecasts from Copernicus Global Forecasting System (GLO-MFC) @ 1/12, 50 vert lev.
Dardanelles: box model (Maderich et al. 2015) daily clim. + Temperature from GLO-MFC

MedFS Upgrades in Dec. 2024

Mediterranean system – MedFS EAS8

Model (NEMO v4.2 - WW3 v6.07)

- Resolution: 1/24, 141 vertical levels
- Tides (8 components)
- 39 rivers from climatology (Po river observed)
- Heat flux correction with Sat. SST at 00:00 UTC

Assimilation system (OceanVar)

- Resolution: 1/24, 141 vertical level
- Data Assim.: T/S, and SLA

From Dec 2024

Mediterranean system – MedFS EAS9

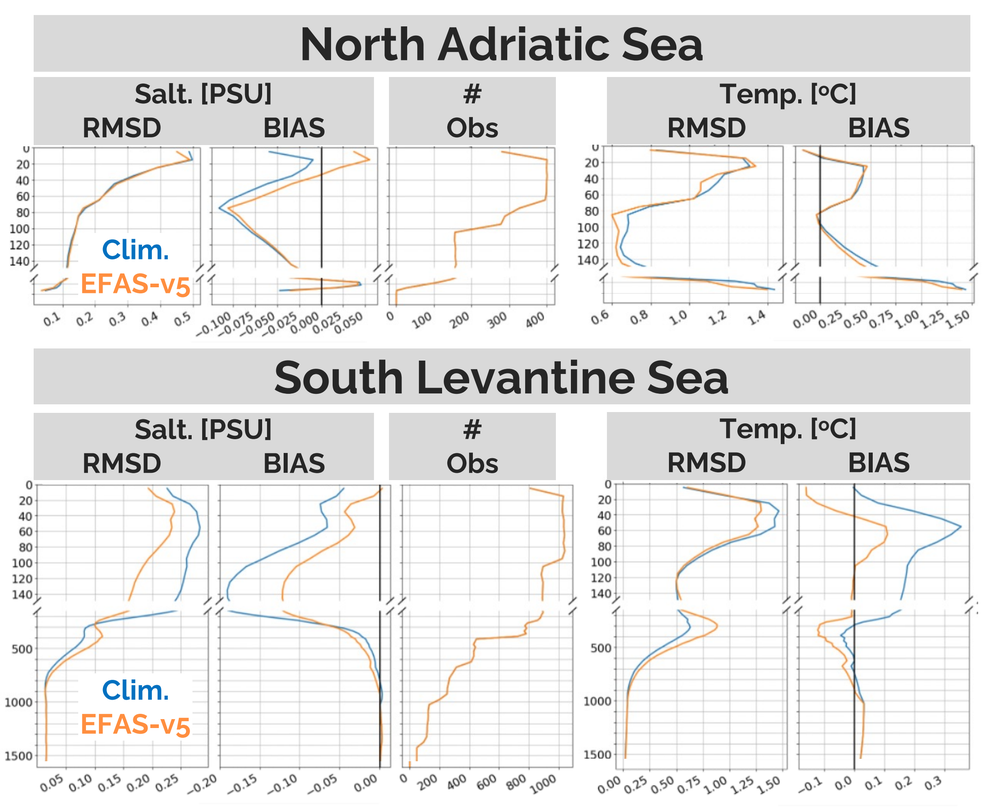
Model (NEMO v4.2 - WW3 v6.07)

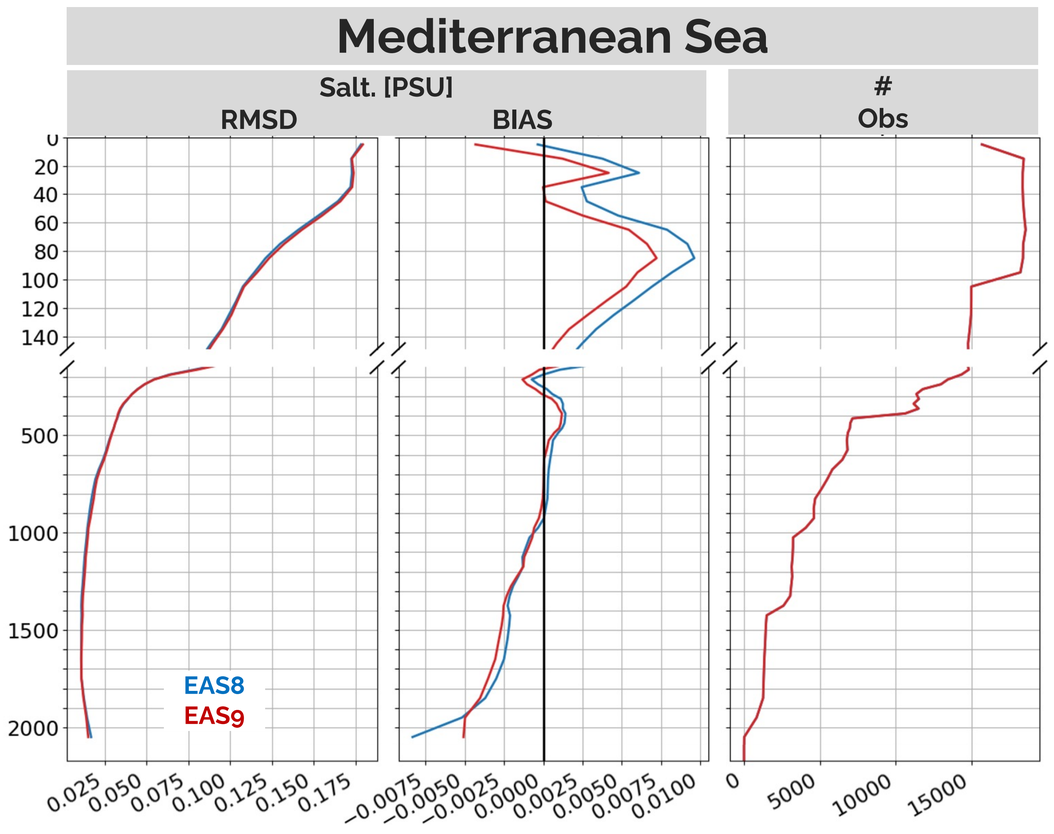
- Resolution: 1/24, 141 vertical levels
- Tides (8 components)
- 39 rivers from EFAS-v5
- Heat correction with Sat. SST at 05:00 UTC

Assimilation system (OceanVar)

- Resolution: 1/24, 141 vertical level
- Data Assim.: T/S, and SLA
  + T/S from Gliders & 5HZ SLA

MedFS EAS9 Validation





Differences in quality @ sub-basin scale using EFAS-v5 river runoff:

North Adriatic (12 rivers) decrease in freshwater results in salinity increase → from negative to positive Bias at surface

South Levantine area (including Nile) reduced Temperature & Salinity RMSD & Bias up to 150m

Differences in quality @ basin scale including all upgrades (EAS9 system):

Improvement: Salinity Bias is reduced in the upper water column up to 150m

Ocean Predict In partnership with unesco Intergovernmental Oceanographic Commission

2021 2030 United Nations Decade of Ocean Science for Sustainable Development