

CMEMS Black Sea Monitoring and Forecasting Centre: an overview on service and scientific developments in 2016-2021 and future perspectives

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Abstract

Introduction. Copernicus Marine Service (CMEMS) includes the Black Sea Monitoring and Forecasting Center (BS-MFC) for the provisioning of high quality forecast products and past reconstruction of the ocean state in the Black Sea. The BS-MFC is implemented by an international consortium since 2016, led by IO-BAS (Bulgaria) and including CMCC (Italy), ULiege (Belgium), HZG (Germany), USOF (Bulgaria), NIHWM (Romania), together with expertise from University of Bologna (Italy), ITU (Turkey) and DEU (Turkey). **Methods and Results.** For each Production Unit - Physics, Biogeochemistry and Waves – an operational service and scientific evolution plans have been implemented. Every day, BS-MFC delivers analysis and 10-days forecast products for essential variables, including biogeochemistry and waves, at the spatial resolution of about 3 km. NRT systems are forced by ECMWF IFS atmospheric forcing, at 12.5 km horizontal resolution and 3-6 hours frequency in time. Twice per year, BS-MFC delivers MY products (reanalysis) starting from 1992 (1979 for BS-WAV). Systems are forced by ECMWF ERA5 atmospheric forcing, at 30 km horizontal resolution and 1-hour frequency in time. Details will be provided for each PU in dedicated sections. **Conclusions.** A description of the BS-MFC evolution in terms of service and scientific developments carried out during the last 4-years and future plans are described, with a focus on NRT and MY products, with the scope to support users and downstream services as well as contributing to next generation of forecasting and observing systems in the Black Sea region.

Keywords: Black Sea, CMEMS, Physics, Biogeochemistry, Waves, Product Quality, Operational Oceanography, Forecast, Reanalysis, Ocean Monitoring, Data Assimilation, Observations