

Implementation of OceanVar2.0 in the Black and Mediterranean Sea analysis and forecasting systems

Ali Aydogdu¹, M. Adani¹, P. Miraglio¹, D. Bigoni¹, F. Costa¹, J. Pistoia¹, A. Mariani¹, S. Creti¹,
A. Grandi¹, M. Drudi¹, P. Oddo^{1,2}, N. Pinardi^{1,2}, E. Clementi¹

¹CMCC Foundation, ²University of Bologna

The OceanVar data assimilation scheme, utilized within the Copernicus Marine Service Black and Mediterranean Sea analysis and reanalysis frameworks, has recently undergone a significant upgrade (Oddo et al., 2026). The resulting system, OceanVar2.0, is an open-source variational data assimilation code that retains foundational elements from the original framework introduced by Dobricic and Pinardi (2008). For the assimilation of sea level anomaly both the barotropic operator there and dynamic height operator in Storto et al. (2011) are made available. This upgraded system is currently integrated into near-real-time operational chains, which employ NEMO v5 as the hydrodynamic engine. Notably, it incorporates a diffusion operator for the modeling of background error covariances, in addition to the recursive filter to enable more efficient parallelization. This presentation demonstrates the upgraded Copernicus Black Sea Forecasting System (BSFS) and Mediterranean Forecasting System (MedFS) configurations, addresses domain-specific challenges, provides a comparative analysis against the preceding version, and discusses future development plans, with a particular focus on machine learning-based enhancements for representing B as well as assimilating high-resolution space-borne observations.

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