



The wave forecasting component of the Mediterranean Monitoring and Forecasting Centre in the framework of the Copernicus Marine Environment Monitoring Service

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Within the framework of the Copernicus Marine Environment Monitoring Service (CMEMS) an operational wave forecasting system for the Mediterranean Sea has been implemented by the Hellenic Centre for Marine Research (HCMR) and evaluated through a series of pre-operational tests and subsequently for one full year of simulations (2014). The system is based on the WAM Cycle 4.5.4 model and it has been developed as a nested sequence of two computational grids (coarse and fine) to ensure that occasionally remote swell propagating from the North Atlantic (NA) is correctly entering into the Mediterranean Sea (MED) through Gibraltar Straits. The Mediterranean model has a grid spacing of $1/240$ with spectral resolution of 32 frequency bins and 24 directional bins. It is driven with 6-hourly analysis and 5-days forecast 10m ECMWF winds operating in shallow mode with shoaling and refraction due to bathymetry and surface currents which are provided in off-line mode by the CMEMS. Extensive statistics on the system performance have been calculated, by comparing the model results with available satellite and buoy data. In general the comparisons show a fairly good agreement between the altimeter wave heights and the wave model results. However, there are considerable deviations between model outputs and in-situ observations at individual coastal locations which often characterized by a complex topography and/or orography. The latter are mainly found in the Adriatic, Aegean and Ligurian Seas. The slight underestimation of wind speeds in these regions partly contributes to the observed deviations. In conclusion, the comparisons between measurements and model data demonstrate that the new forecast system works properly and provides reliable forecasts.