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Oil spill forecasting systems uncertainty assessment in the Aegean Sea

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The Aegean Sea is one of the world's busiest waterways, combined with complex and intense weather and sea current patterns with strong seasonality, complicated coastline and bathymetry. Therefore, the uncertainty assessment of the oil spill forecasting systems in this region is of great interest. The purpose of this study is to evaluate the impact of the uncertainty of the atmospheric forcing on the performance of the oil spill modelling and the dispersion of the pollutants in the marine environment. Ensemble simulations were carried out using the ECMWF Ensemble Prediction System and the oil spill model MEDSLIK II. The Aegean Sea was chosen as the study area performing ensembles of 50 members with seven days forecast lead time, during different seasons. Three types of oil were chosen representing lighter, medium and heavier oil spills, covering also a wide range of oil densities. The oil spill duration and the spill rate were chosen taking into account significant accidents of the past like for instance the Prestige case. Preliminary results suggest that the model errors in the oil spill trajectories are sensitive to the atmospheric forcing uncertainties.

Keywords: Aegean Sea, MEDSLIK II, Oil spill, ensemble simulation, uncertainty