The CYCOFOS new forecasting systems at regional and sub-regional scales for supporting the marine safety

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The Cyprus Coastal Ocean FOrecasting System-CYCOFOS has been providing operational hydrodynamic and sea state forecasts in the Eastern Mediterranean since early 2002. Recently, it has been improved with the implementation of new hydrodynamic, wave and atmospheric models, targeting larger and higher resolution domains at regional and sub-regional scales. For the new CYCOFOS hydrodynamic system a novel parallel version of POM has been implemented. The new flow model covers the Eastern Mediterranean with a resolution of 2 km and the Levantine with 500 m, both nested in Copernicus Marine Environmental Monitoring Service-CMEMS. The CYCOFOS hydrodynamic model is coupled with the latest ECMWF WAM model. The surface currents produced from the Copernicus marine service and CYCOFOS has been incorporated in the wave integration, providing a second independent forcing input to the new CYCOFOS wave model, in addition to the winds. The Weather Research and Forecasting atmospheric model-WRF has been implemented in the same domain as SKIRON atmospheric model, in order to provide the backup forcing for the CYCOFOS models. The improved CYCOFOS forecasting data are used for the EU CISE 2020 project to establish an U Common Information Sharing Environment to improve the Maritime Situational Awareness, particularly for SAR operations, as well as for the MEDESS4MS multi model oil spill prediction service, for operational oil spill predictions in the Mediterranean.