COASTAL CRETE: A high-resolution operational forecasting system for the coastal area of Crete, Eastern Mediterranean

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The coastal area of Crete is an area of increasing interest in view of the oil/gas exploration activities in the broader sea area of the island, the approved by EU EastMed gas pipeline layout and the enlargement of the Suez Canal that will increase the maritime traffic in the area. National and local authorities in Crete, like ports and the coast guard, who are involved in maritime safety, the tourism industry and policy makers, are key end users' groups who can benefit from high spatial and temporal resolution forecasting products to support their offshore activities in the coastal sea area of Crete. To this end,a high-resolution operational ocean forecasting system, namely COASTAL CRETE, has been developed for the coastal area of Crete. COASTAL CRETE implements advanced numerical hydrodynamic and sea state models, nested in CMEMS Med MFC products and produces 5-day hourly and 6-hourly averaged forecasts of important marine parameters, such as sea currents, temperature, salinity and waves. The COASTAL CRETE high-resolution (~ 1km)hydrodynamic model is based on a modified POM novel parallel code implemented by CYCOFOS in the East Med and the Levantine Basin, while for wave forecasts, the ECMWF CY46R1 parallel version has been implemented with a resolution of ~1.8 km. The hydrodynamic model has been evaluated against its parent model and with satellite Sea Surface Temperature data with good statistical estimates. Similarly, the wave model is calibrated with in-situ data provided from the HCMR buoy network operating in the area. Nested, finer grid (~250 m) hydrodynamic and wave models are also implemented to provide on demand information and services to local end users. COASTAL CRETE products are made available through ADAM (Advanced geospatial Data Management platform) developed by MEEO S.r.l. (https://explorer-coastal-crete.adamplatform.eu/).