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Mediterranean cyclones simulation: the effects of a high-resolution marine model.

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The present study aims at investigating the effects of resolution of Mediterranean sea in model simulation of extratropical cyclones. A climatology of XX century cyclones is reproduced using a global AOGCM interacting with a very high resolution Mediterranean model (atmospheric component T159, oceanic 2 degrees resolution, Mediterranean Sea 1/16 degree -CMCCmed simulation-). The analysis is repeated without the Mediterranean component (-CMCC simulation-) and the results of the two simulations are analyzed applying an objective cyclones tracking tool. Several statistics are computed: cyclogenesis density, cyclone intensity, seasonality and deepening rate. The CMCCmed simulation is characterized by higher 2m-temperature, which is linked to stronger surface fluxes and, ultimately, reflects in more vigorous cyclongenesis, greater cyclones intensity and deepening rate.