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3D dynamics in the Strait of Messina

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A very high resolution, 3D numerical model has been implemented to investigate the three-dimensional structure of the hydrodynamics of the Strait of Messina. Obtained results have been compared with results of previous numerical models for the simulation of the dynamics of the Strait of Messina and against observations. Runs performed with and without the presence of Coriolis force elucidate the relevance of Earth rotation for the small-scale and mesoscale strait dynamics. In particular, the role of near-strait climatologic as well anomalous stratifications in the generation and evolution of tidally induced baroclinic currents within the Strait is investigated. Based on these results, a discussion on the influence of large-scale circulation and variability patterns on the Strait dynamics is presented