



ORCA12, a global ocean-ice model at $1/12^\circ$: successes, shortcomings and their impact on ocean forecasting

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Mercator-Ocean currently uses ORCA12, a global $1/12^\circ$ model based on the NEMO modelling platform, which is at the core of CMEMS. The ORCA12 model has also been used by the DRAKKAR group to perform multi-decadal simulations forced by the atmosphere, without data assimilation. In these forced ocean-ice experiments, the benefit of the $1/12^\circ$ resolution appears clearly, for the representation of fronts and mesoscale eddies. However, the pathways of energetic currents are not yet robust at $1/12^\circ$: the North Atlantic current is an example, as is the Agulhas retroflexion. The time-mean currents in ORCA12 are found to be sensitive to parameterizations, numerical schemes, and atmospheric forcing. These sensitivities are not unexpected, considering the highly nonlinear dynamics of eddy-induced mean recirculations and flow-topography interactions. We attempt to quantify the influence of biases in the position of energetic currents on the error growth during a forecast.