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Quantifying transport ability of hindcast and forecast ocean models

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In the last years, there has been much interest in uncertainty quantification involving trajectories in ocean data sets. As more and more oceanic data become available the assessing quality of ocean models to address transport problems like oil spills, chemical or plastic transportation becomes of vital importance. In our work we are using two types of ocean models: the hindcast and the forecast in a specific domain in the North Atlantic, where drifter trajectory data were available. The hindcast approach requires running ocean (or atmospheric) models for a past period the duration of which is usually for several decades. On the other hand forecast approach is to predict future stages. Both ocean products are provided by CMEMS. Hindcast data includes extra observational data that was time-delayed and therefore to the original forecast run. This means that in principle, hindcast data are more accurate than archived forecast data. In this work, we focus on the comparison of the transport capacity between hindcast and forecast products in the Gulf stream and the Atlantic Ocean, based on the dynamical structures of the dynamical systems describing the underlying transport problem, in the spirit of [1]. In this work, we go a step forwards, by quantifying the transport performance of each model against observed drifters using tools developed in [2].

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