A comparative validation study based on process-oriented metrics for Mercator's deterministic, global and data-driven systems

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Abstract

Mercator Ocean operates a 10 day numerical forecasting system at 1/12 degree (GLO12), together with a probabilistic configuration at ¼ resolution (GLO-ENS 28 days, 50 members) at preoperational level, and a data driven forecast (GLONET, ¼ degree, 10 days) whose inference runs routinely on EDITO, the European Digital Twin of the Ocean. In the context of IVTT, MOI has been working for 15 years on the validation and the intercomparison of Global systems mainly based on class4 metrics. The rise of data driven systems, trained to minimize RMSD metrics requires to put more focus on process-oriented metrics (Lagrangian, eddy detection, MLD evolution...). This study is based on MOI systems, which offer a wide range of different systems, and takes advantage of the opportunity to use OceanBench, a community-driven evaluation platform dedicated to data-driven models.