



Impact of currents and futures altimetric missions on ocean analysis and forecasting

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Mercator Ocean, as a major operational oceanography center, must adapt its modeling and data assimilation systems regarding new measurements technologies. As satellite altimetry is one of the major observing systems to constrain ocean models, it is a main concern to assess the impact of the current and future altimeter constellation. The study is based on the OSSE/OSE's (Observing System Simulation Experiments/Observing System Experiments) methods. OSSEs are carried out with a global $1/4^\circ$ modeling and data assimilation system similar to the operational one but using simulated dataset of observations (altimetry here) in order to assess their contribution and to test the sensitivity of results to different parameters (errors, observation density, type of observations). The SAR technology allows a lower measurement noise close to 1 cm and much better than the LRM's 3cm noise. It is important to assess and quantify its impact on operational systems with data assimilation. Simulated data sets are extracted from a global free $1/12^\circ$ run and assimilated in the global $1/4^\circ$ modeling and data assimilation system. Using the $1/12^\circ$ simulation is justified by the fact that mesoscale variability is better represented than in a $1/4^\circ$ one. OSEs are carried using the operational system where some observations have been retrieved. This technic allows to assess wich is the contribution of each altimeter data set in the whole prediction/analysing system. The main goal is to assess how the reduction of measurement noise (SAR/LRM) and number of satellites impact the analysis and forecast errors at global and regional (i.e. Gulf Stream, Agullas Current) scales.