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Validation of GLORYS ocean bottom pressure using global high resolution GRACE mascon solutions

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We present the comparison of oceanic mass variations deduced from GLORYS1V1 (GLobal Ocean ReanalYses and Simulations) eddy-resolving ocean model and derived from a global high resolution GRACE (Gravity Recovery And Climate Experiment) mascon solution (Rowlands et al., 2010), for the period 2003-2008.

Compared to the classical spherical harmonic solutions, the mascon (mass concentration) technique allows the retrieval of mass variations at the Earth's surface with higher temporal and spatial sampling (2 degrees and 10 days). The forward modeling of hydrology using GLDAS (Global Land Data Assimilation System) also reduces the leakage of continental hydrology into the oceans, demonstrating that the global mascon solution developed at NASA Goddard Space Flight Center (Rowlands et al., 2010) is optimal for studying global oceanic circulation.

GLORYS1V1 is the first implementation of the global eddy-resolving (1/4 degree) ocean reanalysis performed by Mecator-Océan, covering the ARGO period (2002-2008). The model assimilate sea-surface height variations from radar altimetry (AVISO), sea-surface temperature (Reynolds) and in-situ temperature and salinity measurements (CORIOLIS).We also show the comparison, in terms of ocean bottom pressure variations, with the 1/4 degree operational (PSY3) models.

In addition, we compare and validate both GLORYS and GRACE estimated bottom pressure variations to an independent datasets of bottom pressure records.