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OMCT - New time-series for oceanic mass, angular momentum and sea level variability

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Non-tidal ocean dynamics acting on a wide range of time-scales are imprinted on various geodetic observables including time-variable gravity changes, variations in the Earth's rotation, and changes in sea-level. Independent numerical model estimates, ideally available with short latency, are frequently required to validate, process or interpret those measurements.

While OMCT is routinely used to de-aliase short-term non-tidal ocean mass variability in the GRACE gravity field processing for some years now, we here present an updated model version. This configuration is discretized on regular 1° grid with 20 vertical layers, has a time-stepping of 20 min and includes various numerical adjustments that led to an improved mean circulation. As before, OMCT forcing fields consist of wind stress, surface pressure, 2m-temperatures and freshwater fluxes obtained from ECMWF's numerical weather prediction and re-analysis models.

Here, variability of an OMCT simulation forced by 6-hourly ECMWF operational analyses that form the basis of the new GRACE AOD product RL05 will be evaluated against data from in-situ ocean bottom pressure and satellite altimetry in order to demonstrate recently achieved improvements with respect to the previously available data series from OMCT.