



EOT08a - a new global ocean tide model derived by empirical analysis of multi-mission altimetry data.

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Harmonic analysis of cross-calibrated multi-mission altimetry data has been used to derive a new empirical global ocean tide model, EOT08a. In general, observing diurnal and semidiurnal ocean tides by satellite altimetry with repeat cycles of 10 (17 or 35) days causes severe alias effects - with solar constituents not at all visible from altimeters with sun-synchronous orbits. However, the combined altimeter time series of TOPEX and Jason1 and of TOPEX-EM, the extended mission on its shifted ground track, provide data periods, long enough to resolve and separate all major tidal constituents. Additional time series from ERS2, ENVISAT, and GFO further improve the spatial resolution and allow a sufficient decorrelation of major constituents analysed on a dense equidistant grid. Bottom pressure records are used as independent data to validate the new model and the reduction of variances of crossover differences are taken as a measure for enhancements. Compared to other state-of-the-art models, EOT08a show essential improvements in particular in shallow water. Even in deep ocean some large scale pattern with low residual tidal signals are evident. Thus, EOT08a has the potential to improve the de-aliasing for GRACE gravity field modelling.