



## **Terrestrial water storage contribution to sea level at interannual to multidecadal time scales**

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Using outputs of a 56-yr long (1950-2006) run of the ISBA/TRIP hydrological model developed at CNRM/MeteoFrance, forced by atmospheric data, we have estimated the terrestrial water storage (TWS) contribution to the global mean sea level. We focus on interannual to multidecadal time scales. At interannual time scale, global TWS produces global mean sea level fluctuations of amplitude in the range 2-4 mm. Longer term oscillations are also observed. Over 1950-2006, we compare the interannual/decadal global TWS (expressed in equivalent sea level) to observed global mean sea level (from tide gauge data complemented by satellite altimetry since 1993) corrected for thermal expansion (seasonal terms and trend removed). For the recent years (i.e., since 2002), we compare interannual TWS from two sources (the ISBA-TRIP estimate and the GRACE-based TWS) to observed (altimetry-derived) global mean sea level corrected for steric effects -using different ocean temperature and salinity data bases- (seasonal cycle and trend removed).