

Variation of sea level and net water flux in the Mediterranean Sea

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The sea level, the mass-induced sea level variability and the net mass transport between Mediterranean Sea and the Atlantic Ocean are derived in the interval 2002-2014 from tide gauges and satellite-based observations. In the interval 1960-2014 they are obtained by combining multiple observational datasets and results from a regional climate model simulation.

The decadal variation in mass is the main contributor to the sea level variability in the Mediterranean Sea and appears to be related to changes in the Atlantic Ocean. The decadal variations in net evaporation at the sea-surface, such as the increase since 1970, drive the changes in net inflow at Gibraltar.

Compared to previous analysis, at basin scale an improved agreement between sea level observed by altimetry and derived from the steric-corrected GRACE data is found using sea level data of the ESA Climate Change Initiative (CCI) and release 5 of the GRACE data.

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