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The forcing of sea level in the Mediterranean Sea between 1960-2000

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Sea level trends and interannual variability in the Mediterranean Sea is explored by comparing observations with hindcasts from one 2d model, a regional 3d model and the Mediterranean component of a global 3d model for the period 1960-2001. The direct atmospheric forcing as model by the 2d model was found to account for about 50% o the variability. The steric effects as estimated by the models account for about 20% of the variance. The steric variability as calculated by the 3d models is correlated with the steric variability estimated from a regional climatology. Moreover the sea level residuals calculated by subtraction of the 2d model output from the observations is significantly correlated at a low level (0.4) with the steric signals. After the removal of the atmospheric and the steric effect the sea level records indicate a period where sea level was stable (1960-1975) and a period (1975-2001) where sea level was rising with rates in the range 1.1-1.8 mm/yr. This residual trend must be due to either local land movements or a global signal and the various alternatives are discussed.