



Mediterranean sea level variations with regional acceleration/deceleration during 1993-2008

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With over 16 years of satellite radar altimeter data we investigate the sea-level variation (SLV) of the Mediterranean Sea. The time evolution of the overall mean sea level of the Mediterranean Sea displays a variation consistent with the thermo-steric effect of SLV but not with the global sea level rise. We solve for SLV signals in the form of not only linear trend but also quadratic term (acceleration/deceleration) that is statistically significant, especially in those regions where the trend provides a significant contribution to the overall SLV. We show that the inclusion of the quadratic acceleration term improves the modeling of the Mediterranean SLV trend, and enhances the understanding of the remaining interannual signal (model residuals). The residual low frequency SLV seems to be driven by the North Atlantic Oscillation in wintertime in almost the whole basin with high correlation. The residual high-frequency variability, on the other hand, can be explained by mesoscale phenomena, particularly local eddies and gyres in the Mediterranean Sea.