



Future distribution of sea level and wave maxima along the Mediterranean Coast

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Climate change will affect the intensity of marine storms and sea level and consequently the action of surges and waves on the coast. The maximum level that water reaches during a storm along the coast will change, with important consequences on coastal defences and coastal erosion.. This study aims at computing the maximum level water can reach during a storm considering all factors affecting it: surges, waves and sea level rise. This analysis is based on a 7-member model ensemble of regional climate model simulations (covering the period 1951-2050 under the A1B emission scenario). The regional climate models have been developed and used in the CIRCE fp6 project and include interacting high resolution models of the Mediterranean sea. In this study their results have been used for computing the steric sea level change, the wave height and the surge level. Sea level pressure and wind fields are used for forcing a hydro-dynamical shallow water model (HYPSE), wind fields are used for forcing a wave model (WAM), distribution of temperature and salinity is used for computing the steric sea level. The combined results of these three factors along the coastline is discussed. The climate change signal is computed as the difference between severe storm surge statistics in the 1971-2000 and 2021-2050 period. Results show that the decrease of storm surge level and wave height will be able to compensate (at least partially) for the increase of sea level in the next decades.