



Storm surge scenario simulations in the Northern Adriatic Sea

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It is important to compute future climate projections for extreme storm surges at northern coast of the Adriatic Sea, which is very vulnerable because of its flat morphology around a large shallow water area. The area at risk includes a unique cultural, environmental heritage and important economic activities. This study uses the sea level pressure and wind fields computed by a regional climate model as forcing fields for a shallow water model, which computes the sea level oscillations. The forcing fields have been computed by the REGCM model, for the present climate 1961-1990, A2 and B2 scenario 2071-2100. Generalized Extreme Value analysis of the resulting time series is used for the estimate of values of return times in the range from 1 to 100 years. This study has mainly a methodological value, showing the feasibility of such estimate without the need of further downscaling. In fact, since it is based on single model 30-year long simulation, issues such as interdecadal variability and intermodel variability cannot be addressed. Moreover, the resulting distribution looks marginally unaccurate, as it overestimates the occurrence of medium intensity surge events and differences between A2 and B2 cannot be described as a climate change signal that increases with the GHG concentration level. In future climate scenarios, results suggest a lower intensity of intense (2-year return value) surge events during Fall, but higher exceptional (100-year return value) surges in November and January, with B2, actually, producing the highest level.