

## Storm Surge and Wave Climate Changes in the Western Mediterranean

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Sea surface dynamics (i.e. sea level and waves) are main climate drivers of coastal flooding and erosion. In the western Mediterranean basin, the analysis of changes in waves and storm surge due to climate change is indeed particularly relevant for coastal management. This study analyzes sea surface dynamic climate changes in the western Mediterranean region under climate scenarios of Representative Concentration Pathways RCP4.5 and RCP8.5, for a short-term time slice (2026-45) and long-term time slice, 2081-2100.

Regional climate projections of storm surge and waves have been developed with a spatial resolution lower than 10km and hourly time resolution. WavewatchIII and ROMS models are used to numerically simulate wave and storm surge sea surface dynamics respectively. Hourly marine wind and sea level pressure fields from a set of Regional Climate Models from CMIP5 (Med-Cordex and Euro-Cordex source) were used as forcings in the simulations to get multi-model projections. In addition, a historical reconstruction during the reference period 1985-2005 using atmospheric forcings from Era-Interim reanalysis was also carried out in order to analyze the bias in the sea surface dynamic projections. The spatial and time resolution of the regional projections allows the analysis of changes not only in mean climatologies but also in extreme events and storminess. Results are discussed and compared with previous studies (e.g. Lionello et al. 2008).