Geophysical Research Abstracts
Vol. 12, EGU2010-7952, 2010
EGU General Assembly 2010

XXIst century storm surge and surface wave climate in the Mediterranean Sea under different climate change scenarios

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In this contribution we investigate the expected XXIst century storm surge and surface gravity wave climate in the Mediterranean Sea under different scenarios of greenhouse gases (GHG) emissions. The storm surge climate is modelled with the HAMSOM model at 1/4º x 1/6º of spatial resolution in a domain covering the whole Mediterranean and a sector of the NE Atlantic ocean. The wave climate is modelled with the WAM model at 1/6º of spatial resolution covering the Western Mediterranean. Both models are forced with the results of the ARPEGE climate model, which provides 6h fields of atmospheric pressure and 10-meters wind with a spatial resolution of $\sim$50km.

Two simulations are run for the 1960-2000 period in order to establish the quality of model results and to calibrate them. In the first run, a dynamic downscalling of ERA40 reanalysis fields is used, while in the second one the atmospheric model is forced with observed concentrations of GHG. Once the reliability of the simulations is assessed comparing the results with measurements and with other hindcasts three more simulations are run for the 2000-2100 period following the B1, A1B and A2 SRES scenarios. Expected changes in the mean value, seasonal cycle and spatio-temporal variability patterns of the main variables will be presented. Special attention will be paid to establish the confidence of the results.