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Storm surge in the Adriatic Sea: observational and numerical diagnosis of an extreme event

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Abstract. Storm surge events occur in the Adriatic Sea, in particular during autumn and winter, often producing flooding in Venice. Sea levels are forecasted by numerical models, which require wind and pressure fields as input. Their performances depend crucially on the quality of those fields. The storm surge event on 16 November 2002 is analysed and simulated through a finite element hydrodynamic model of the Mediterranean Sea. Several runs were carried out, imposing different atmospheric forcings: wind fields from ECMWF analysis, high resolution winds from the limited area model LAMI and satellite observed winds from QuikSCAT (NASA). The performance of the hydrodynamic model in each case has been quantified. ECMWF fields are effective in reproducing the sea level in the northern Adriatic Sea, if the wind speed is enhanced by a suitable multiplying factor. High resolution winds from LAMI give promising results, permitting an accurate simulation of the sea level maxima. QuikSCAT satellite wind fields produce also encouraging results which claim, however, for further research.

Full Article in PDF (PDF, 634 KB)

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