[Title]
On the use of ARPEGE down-scaled winds in the wave model MFWAM and the storm surge model HYCOM

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Keywords (10 words max):
wave model, storm surge, down-scaled, wave height, peak period, swell

Abstract (500 words max):[1]

One of the main objectives of the European research project INCREO is to improve the wind forcing for the wave and storm surge models. For this purpose a down-scaling technique is implemented in the french atmospheric model Arpege. More than 20 severe storms conditions during the last forty years are selected in order to investigate the impact of using such wind fields in the wave and storm surge forecasting systems. The operational wave model of Météo-France MFWAM is used in this study. The wave model MFWAM is based on the ECWAM code with a new dissipation by wave breaking developed by Ardhuin et al. (2010). Another new term describing the damping of swell by the air friction is also used. In other respects, The operational surge model of Météo-France is a barotropic 2-dimensional version of HYCOM model.

The results from the wave model are compared to the available altimeter data. The statistical analysis shows that the bias and root mean square errors are well reduced when using the down-scaled ARPEGE winds in comparison with the wind forcing from interpolated Era-interim winds. The same trend is observed when the results are compared to French buoys in the Mediterranean sea and the Atlantic ocean. The impact of down-scaled winds are also discussed regarding to storm surges results during the events in the Mediterranean sea and the Atlantic ocean.

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[1] Abstracts should be provided in Arial font size 11 point. The body of the text should be no more than 500 words, not including references.