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Effects of Sampling between Data of Significant Wave Height for Intensity and Duration of Severe Sea Storms

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ABSTRACT

The paper deals with the analysis of severe storms in the central Mediterranean Sea and in the US coasts of the Atlantic and Pacific Ocean. Firstly, we introduce a model for the representation of the sea storms by means of two parameters: the former is given by the maximum value of significant wave height in the actual storm and defines the storm intensity, the latter gives the storm duration. The analysis considers buoy data with different sampling Δt between two consecu- tive records, which varies in the range 0.5 - 6 hours. The sensitivity analysis of the modelled sea storm with the varia- tion of Δt shows as the structure of storms is strongly modified with large values of Δt of order of 3 - 6 hours: both the intensity and the duration may change significantly. The results are of interest to investigate the extreme events in the storms obtained with WAve Model, starting from meteorological data, where the value of Δt of 6 hours is widely applied. The conclusion is that structure of severe storms should be represented with continuous data, with Δt = 0.5 hours; a good representation is also obtained with Δt = 1 hour. The errors with increasing values of Δt are investigated.

KEYWORDS

Sea Storm; Wave; Storm Duration; Storm Intensity

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