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Intraseasonal evolution of the number of wind storm events in the multi-model DEMETER data base

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The assessment of systematic errors in seasonal climate forecasts is a prerequisite for proper analyses of the predictability of a certain parameter. In this study, the number of winter (NDJFMA) wind storm events and its intraseasonal evolution in the DEMETER hindcasts are analysed. The models of the DEMETER data base from the ECMWF, MetOffice and Meteo France, run from 1959 to 2001, are used and compared with the ERA40 reanalysis.

Wind storm events are identified by means of a tracking algorithm based on exceedances of the local 98% percentile of the 10m wind speed. Two conditions must be satisfied for an event to be counted. First, the event must last for a certain amount of time (e.g. 24h), and second, the event's area must exceed a minimum size at each time step of its lifetime.

The absolute and relative number of events per month in the considered period over the North Atlantic/European region in DEMETER is analysed and compared with ERA40. In ERA40, the mean absolute number of events per month increases from 4 in November to its peak of 6 in January and then decreases to about 1 in April. For the DEMETER models it is shown that there are statistically significant biases in both the absolute and relative (to the model's long-term seasonal mean) number. These biases differ for different months and models. Whereas the ECMWF model in DEMETER is very close to the reanalysis, the MetOffice model overestimates (underestimates) the number of events early (late) in the season by about 15%, whereas for the Meteo France model exactly the opposite is true.

A correction scheme is presented to overcome these biases. The scheme considers the

deviations between the model and ERA40 in several wind speed classes. In this way the deviations to ERA40 are successfully reduced by up to 80%, and the deviations are no longer statistically significant.