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Properties of European Winter Storms in the ECMWF Ensemble Prediction System

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The estimation of the probabilities of the occurrences of severe European winter storms is usually based on historical records or reanalysis datasets. The small number of such storms results in huge uncertainties of the typical characteristics of such events. In the present study, we use the ECMWF EPS dataset in order to extend the basis for such estimations.
The period from 1992 until the beginning of 2010 is used. With up to 51 members, integrated over 10 days with equal spatial resolution, starting up to twice a day, the dataset includes a huge number of storm situations.
Storms are identified and characterized using a wind field tracking algorithm (Leckebusch et. al, 2008). First studies show that the storms identified in the EPS have comparable properties to "real" storms represented by ERA-Interim. The statistical properties are nearly constant over different lead times.
Using ERA-Interim as a reference dataset, the number of storms in the EPS without a counterpart in the Reanalysis varies, depending on the chosen matching criteria. Such "pure" EPS storms are in our interest.
This study shows, that there are no major trends in the "pure" EPS storm characteristics over the prediction period. In particular, "pure" EPS storms fit well into the overall results with respect to the size, the duration, the spatial and temporal distribution in the entire dataset.