



Decadal predictability of winter windstorm frequency in Eastern Europe

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Winter windstorms are one of the most impact relevant extreme-weather events in Europe. This study is focussed on windstorm frequency in Eastern Europe at multi-year time scale.

Individual storms are identified by using 6-hourly 10m-wind-fields. The impact-oriented tracking algorithm is based on the exceedance of the local 98 percentile of wind speed and a minimum duration of 18 hours. Here, storm frequency is the number of 1000km-footprints of identified windstorms touching the location during extended boreal winter from October to March.

The temporal development of annual storm frequencies in Eastern Europe shows variations on a six to fifteen years period. Higher than normal windstorm frequency occurred end of the 1950s and in beginning of the seventies, while lower than normal frequency were around 1960 and in the forties, for example. The correlation between bandpass filtered storm frequency and North Atlantic sea surface temperature shows a significant pattern with a positive correlation in the subtropical East Atlantic and significant negative correlations in the Gulfstream region. The relationship between these multi-year variations and predictability on decadal time scales is discussed. The resulting skill of winter wind storms in the German decadal prediction system MiKlip, based on the numerical earth system model MPI-ESM, will be presented.