



High resolution hindcasting of extreme European winter storms

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Due to their severe impacts and damages, including the loss of life, a reliable prediction as well as occurrence assessment of European winter storms on high temporal and spatial resolutions is an important task.

A specific sub-set of recent European winter storms have been identified from the European Centre for Medium-Range Weather Forecasts (ECMWF) reanalysis datasets ERA40 (1958-2002) and ERA-INTERIM (1989-2009), using an objective storm severity index (SSI; Leckebusch et al., 2008). For the selected events a dynamical atmospheric modeling chain consisting of the operational global and regional numerical weather prediction models (GME and COSMO-EU) of the German Weather Service (DWD) is applied. In COSMO-EU (7km horizontal resolution) different dynamical cores as well as different diagnostic schemes for wind gusts are used. Furthermore, for each event multiple simulations with different lead times have been integrated.

The resulting high resolution wind and gust fields are validated against station observations. The analysis concentrates on the influence of model dynamics, gust diagnostic scheme and lead time on the accuracy of the predicted wind and gust fields. Reasons for different lead time behaviour of certain storms will be addressed.