



Reducing uncertainties in regional projections of future winter storm losses in Germany

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To estimate future winter storm losses from climate model projections, it is of great importance to be able to accurately estimate the dependence of realised losses from simulation based wind speeds. Meteorological conditions as well as local vulnerabilities vary between different regions in Germany, a fact which must be reflected in any wind-loss transfer function used.

In an earlier study, a storm-loss model was presented, in which transfer functions between wind speeds and residential building losses were derived on district level. However, due to limited loss data availability and large variability in the occurring losses, these transfer functions are subjected to large uncertainties. This study presents an approach to reduce the complexity of the storm-loss model (i.e. the number of parameters used) by grouping districts exhibiting similar wind-loss dependencies. In this way, the statistical data base for calibration of the wind-loss transfer function is increased, while conserving information about local differences.

Using this revised storm-loss model, an ensemble of RCM model projections following the SRES-A1B scenario is analysed with respect to changes in future losses. Besides analysing mean yearly losses, extreme value analysis is used to study changes in return characteristics of high impact storm events. It is found that future losses in Germany are expected to raise about 20% compared to 20th century climate conditions. While losses in southeast Germany are found to increase only by a few percent, for northwest Germany increases in losses can be found to be even more than 50%.