



Winter storms with high loss potential in changing climate conditions: a regional view

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The recent published 4th report of IPCC indicates future increase of temperature and extreme events for middle Europe. Due to the low resolution of current global climate models, regional effects can be hardly estimated - especially for parameters like wind speed that is significantly influenced by local-scale settings and orographic effects.

In this contribution, the changes in winter storm activity will be estimated for the region of Baden-Württemberg, located in southwest Germany. The subproject RESTER is part of the programme “challenge of climate change”, which is funded by the state of Baden-Württemberg. Data base for this study is the output of the regional climate Model REMO, which is driven by the GCM ECHAM5. To get an estimation of the reliability of the REMO data, model results for the control period 1971- 2000 are evaluated against point measurements and results from a similar project. The data from the control period are compared against that of the projection period 2021-2050. By applying extreme value statistics, expected changes for the future are quantified. The analysis is focussing on the changes in the probability of occurrence for extreme wind speeds. Filtering the data about the strongest events and using the peaks-over-threshold method (POT), a statistical description for extreme storm events is derived by fitting a generalized pareto distribution (GPD) to the data. Thereby, the statistical return period for arbitrarily strong storms can be estimated and compared for the two considered time periods. Also shown are expected changes in wind direction for the same test region.