Geophysical Research Abstracts
Vol. 14, EGU2012-10158, 2012
EGU General Assembly 2012


# Development of a European Windstorm Event Set using a Combined Dynamical and Statistical Downscaling Approach

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Winter storms cause very high insurance losses in Europe. In order to allow for a valuable risk assessment, both storm frequency on a large scale and storm and gust intensity on a small scale are precondition for construction of loss estimation tools. The presented common effort between research and insurance consists of a large scale identification of intense storms for both historical (reanalysis) data and present day climate simulations in order to extend the statistical basis of extreme events to a number of 10000 storms. For historical storms, dynamical downscaling is performed with the regional climate model COSMO-CLM. Since dynamical downscaling is not feasible for 10000 events, a statistical downscaling tool is derived from large scale storm tracks, historical storms in the period 1960-2010, defined from potential loss estimation based on NCEP reanalyses, re-simulated in a two-step nesting approach using COSMO-CLM 4.8 in 0.165° and 0.0625° resolution with ERA-forcing and from observations. A method of a combined probabilistic downscaling and MOS technique is proposed for the enhancement of gust speed estimations. The methodical procedure is presented along with results and a quality check for both spatial and temporal correctness, considering errors in terms of RMSE and the form of gust distributions in order to provide gust estimations which are unbiased in comparison to the observations.