Wind storm loss model adapted to Switzerland

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The purpose of this work is to assess loss related to wind storm events using a map of 98th percentile of daily maximum wind speeds (W98) in Switzerland. Eight storm events which occurred since 1994 are considered, including the most damaging, the Lothar storm of December 1999.

The storm loss model of Klawa and Ulbrich (2003) used in this study was originally applied to Germany. It is now tested to the canton of Vaud, in Western Switzerland. As inputs, the model requires population data as well as normalized daily maximum gust wind speeds. For the latter, two input sources are tested: first using the wind data recorded at the Swiss weather stations, and second with outputs provided by numerical simulations from a Regional Climate Model.
The daily gusts need to be normalized by W98 values. For the first method, W98 values are calculated at weather stations, while the second one considers W98 values resulting from a 50m resolution map created by combining GIS tools and Generalized Additive Models (GAMs).

Results of both methods are calibrated by Insurance data from the Insurance Company of the Canton de Vaud. Comparisons and a general discussion are provided.