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Forecasting the weather
- ensemble techniques
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Influence of storm duration on insured losses associated with European winter storms over Germany with a TKE based Probabilistic Approach

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In Central Europe, mid-latitude winter storms are one of the most frequent and costly natural hazards. Such wind storms affect large areas and may cause huge socio-economic impacts. Previous studies revealed that losses at a certain location can be primarily attributed to the local wind gust maximum during the passage of the storm. In this study, we analyse if additional skill in loss estimation can be obtained by considering the storm duration as an additional parameter. Focussing on 158 historical storms for Germany, this hypothesis is tested with much larger sample compared with previous works. These storms evaluated based on simulations with the (COSMO-CLM RCM and observational data from DWD-Stations. The RCM includes three different Wind Gust Estimation (WGE) methods, one of which (TKE WGE) enables a probabilistic view of wind. The consideration of the probabilistic approach allows for an estimation of uncertainties of gusts at observational sites. To estimate the role of storm duration, different duration thresholds are tested. The distributions of wind gusts and storm duration are used to estimate losses, rather than combining the selected meteorological parameters deterministically.