Predictability of Winter Storm Damages

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Classical meteorological warnings often suffer from the fact, that the user relevance is not directly apparent, especially if users have limited experience with respect to the implications of severe weather. Impact based warnings might help improve the perception of weather warnings, offering information closer to a users decision and thus narrowing the gap between meteorological forecasts and users information needs. However, when addressing the forecast of weather related impacts, uncertainties beyond meteorological forecast uncertainties -which are particularly large for local severe weather conditions- arise within the step of impact modeling.

Based on a probabilistic approach to model winter storm impacts, linking historical loss records on county scale (provided by the German insurance association) to near surface wind data from operational analyses, the ECMWF Ensemble Prediction System is utilized to investigate on the ability to forecast storm impacts on a regional scale.

Verification results are presented in dependence of forecast lead time, showing considerable forecast skill within the first forecast days. Furthermore the influence of individual uncertainty sources (meteorological and impact modelling uncertainty) on the resulting skill is analyzed, allowing an assessment and comparison of the individual contributions to overall forecast uncertainties.