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Using the ECMWF 15-day Ensemble Prediction System to Forecast Property Loss for European Windstorm Events

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We describe a methodology for probabilistic estimation of property loss from European windstorm events using the ECMWF 15-day ensemble prediction system. Surface-roughness-adjusted wind hazard derived from ensemble fields is combined with CRESTA-specific exposure and vulnerability information to produce loss estimates for each ensemble member. Ensemble metrics derived from the individual member loss estimates can then be used to predict the likelihood of an upcoming event producing losses of various magnitudes. A variety of metrics are evaluated for skill in predicting property loss from windstorm events at various lead times for the 2006-2010 period. The number of ensemble members producing estimated losses of greater than $100 million USD and $1 billion USD is shown to be skillful in estimating the likelihood of actual losses exceeding these two thresholds, respectively. The distribution of losses within the 51 ensemble members, both on an all-Europe and country-specific basis, is also shown to be indicative of the magnitude of property loss.