



The potential predictability and improved estimates of extreme winds over western Europe using seasonal ensemble prediction systems

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Accurate assessment of the return level and return period of extreme wind speeds is of fundamental importance for many safety, engineering and financial applications. The accuracy of extreme wind properties is limited by the length and quality of observation based datasets. We investigate integrations from dynamical seasonal ensemble prediction models (s2d), firstly to investigate whether there is potential predictability of extreme winds and secondly to help improve estimates of the return period of extreme winds and the corresponding losses.

Previous investigations of the predictability of the NAO using s2d models show that the large scale climate variability over Europe is of rather limited predictability. The frequency and intensity of winter extreme wind events is related to the NAO. The potential and actual predictability of extreme winds in s2d data will be assessed and compared to the large scale predictability.

Based on the skill assesment, it can be assumed that the ensemble members are independent of each other to some extent. Each forecast ensemble member is used as a separate realisation of the extreme wind climate of western Europe. Using various s2d datasets we had between 300 and 800 pseudo winter seasons on which to apply statistics to characterise extreme winds. Within these huge data sets, wind events are objectively selected. An intercomparison of results based on s2d data and reanalyses based data show that there is improved accuracy of return periods of extreme winds using s2d data.

In a second step, the found wind storms are used as input for a reinsurance wind damage loss model. For the coupling to the loss model, the wind values are calibrated to remove systematic biases of the model. Several methods of calibration are evaluated and compared against each other. Preliminary estimates of losses based on these hypothetical events will be given and compared with the values derived from observed events.

The study gives an estimate, to what extent the European winter wind storm risk might be biased or uncertain due to the limitation of only 50 years of actual recorded events.