



Modelling Straight-Line Wind Impact in Europe

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Modelling the climatological impact of straight-line winds on property and vehicles is challenging due to the limited amount of available observational data.

In this study, a set of historical derecho events are simulated using a 3 domain 2-way nested version of the WRF model centred over Europe. The inner domain is run with a grid length of 3.33km and without a shallow cumulus scheme, leading to a convection-permitting simulation. The spatial distribution of potentially damaging surface gusts is analysed for each derecho, leading to a statistical model of a derecho windfield.

The spatial extent of the simulated derechos are compared with estimates made using reports in the European Severe Weather Database (ESWD). Simulated gust intensities are validated against surface station measurements and parameterized gust estimates such as Nakamura et al (1996) and Geerts (2001).