



## **Interpolation methodologies for downscaling station observations of surface gusts to high resolution grids.**

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Downscaling of surface atmospheric observations on high resolution grids is of significant importance to understanding the impact of climate hazards on insured property. The European continent, in particular, suffers from relatively frequent synoptic storms of extreme wind gusts, which cause considerable damage.

We investigate the feasibility and accuracy of three interpolation techniques: 1) A baseline methodology of a simple kernel interpolation, 2) the Barnes algorithm as the next level in a hierarchy of interpolation schemes, and 3) the method of kriging (simple, ordinary and universal). The connection of kriging with Bayesian methods is also explored.

The comparison of the considered methodologies is applied to a series of historical extreme wind storms over Europe. Statistical out-of-sample techniques are used to fit the parameters of the examined interpolation models and hence assess their suitability.