Ensemble post-processing
for spatial wind gusts

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Extremes in weather and climate do not occur 'out-of-the-blue'. Their probability of occurrence is determined by the state of the dynamical system, which in turn is to some degree predictable. However, particularly on the atmospheric mesoscale, uncertainties are large and predictions are probabilistic in nature. Thus mesoscale weather ensemble prediction systems (EPS) issue a sample of possible future states of the atmosphere thereby accounting for several sources of uncertainty.

We will present and discuss ensemble post-processing for spatial extremes. Statistical representation of spatial extremes naturally resorts to spatial max-stable processes. The multivariate analysis of extremes involves two tasks: first, estimating the marginals and second, characterizing the dependence structure of the spatial process. We present a Bayesian approach to estimate the spatial marginals conditional on the EPS forecasts, and discuss the Brown-Resnick process as a spatial model for observations.

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