UNIVERSITÄT SALZBURG
Fachbereich Mathematik
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Mathematisches Kolloquium

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15.15 Uhr
Seminarraum II

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Spatially adaptive probabilistic weather forecasting for temperature

Abstract
Numerical Weather Prediction (NWP) is a method of using physical models to derive weather predictions of future weather conditions. Statistical postprocessing methods that construct predictive distributions from ensembles of NWP outputs are used to correct the NWP forecasts for biases and imperfect representation of the forecast uncertainty. Many of the established postprocessing methods focus on a single weather quantity at a given location, but do not take into account spatial dependencies of the forecast errors at different locations. Model parameters are not estimated in a spatially adaptive manner and forecast errors can only be computed at observation locations, not on the whole model grid.
We extend an existing method by assuming a spatial Gaussian field (GF) on each of the bias-correction parameters in the postprocessing model. To obtain samples from the spatially joint predictive distribution of the temperature field, we additionally employ a Gaussian copula model to introduce spatial correlation in the predictive samples. A recently developed method, based on the fact that GFs with Matérn covariance function are solutions to a certain stochastic partial differential equation (SPDE), provides computational benefit by employing a Gaussian Markov random field (GMRF) approximation of the GF.

Die Organisatoren: Clemens Fuchs, Peter Hellekalek, Reinhard Wolf
http://fuchsc.sbg.ac.at/smc.html