Statistical Models for Exceedances under Covariate Information

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Abstract. In this talk we discuss the modeling of multivariate exceedances by means of multivariate generalized Pareto distributions (GPDs). The modeling of distribution functions which deviate from GPDs, with extreme value distributions (EVDs) is also on the agenda. In that context, tail dependencies, the Pickands dependence function and a spectral decomposition calculus is of importance. Current research concerning testing tail dependence, limiting distributions under residual tail dependence, discriminant analysis in truncated Gaussian and GPD models, and piecing-together-methods are shortly indicated.

In the second part of the talk, we give an outline of the concept of covariate information in conjunction with the GPD modeling. Covariate information is included in such a manner so that an accurate estimation of conditional statistical parameters is facilitated. The results and the required simulations are exemplified within a case study concerning wind speeds and temperatures at Aachen, Germany.