

Modelling Extremes with Local Spatial and Spatio-Temporal Vine Copulas

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Environmental data often contains extremes that also constitute severe risks for infrastructure and population. Heavy rainfall might cause direct flooding as well as trigger floods downstream a river. Strong winds and waves trigger risks for the population living close to the coast. But also man made risks such as a sudden release of some toxic or an accident where radioactive material is released have a spatial and spatio-temporal component. Understanding and modelling these phenomena often requires non-Gaussian dependence structures and heavily skewed marginal distribution functions.

This talk will present local spatial and spatio-temporal vine copulas that allow for the necessary flexibility to model non-symmetric and i.e. tail dependent relationships between locations and to use marginal distributions that are heavily skewed. Realistic examples will illustrate the fitment and application of these models based on several R packages.