

Sebastian Engelke, Swiss Federal Institute of Technology in Lausanne, Switzerland

EXTREMES ON RIVER NETWORKS

Abstract: Max-stable processes are suitable models for extreme events that exhibit spatial dependencies. The dependence measure is usually a function of Euclidean distance between two locations. In this talk, we model extreme river discharges on a river network in the upper Danube catchment, where flooding regularly causes huge damage. Dependence is more complex in this case as it goes along the river flow. For non-extreme data a Gaussian moving average model on stream networks was proposed by Ver Hoef and Peterson (2010). Inspired by their work, we introduce a max-stable process on the river network that allows flexible modeling of flood events and that enables risk assessment even at locations without a gauging station. Recent methods from extreme value statistics are used to fit this process to a big data set from the Danube area.