Seminar Series: Spatial Statistics

Date: Tuesday, November 1, 2016
Time: 1:30 pm – 2:30 pm
Location: BRNG 1260

Speaker: Raphael Huser
Affiliation/Organization: Applied Mathematics & Computational Science, King Abdullah University of Science & Technology

BRIDGING ASYMPTOTIC INDEPENDENCE AND DEPENDENCE IN SPATIAL EXTREMES USING GAUSSIAN SCALE MIXTURES

Abstract: Gaussian scale mixtures are constructed as Gaussian processes with a random variance. They have non-Gaussian marginals and can exhibit asymptotic dependence unlike Gaussian processes, which are always asymptotically independent except for perfect dependence. Motivated by the analysis of spatial extremes, we propose a flexible but parsimonious Gaussian scale mixture copula model, which smoothly interpolates from asymptotic dependence to independence. We show how this new model can be fitted to high threshold exceedances using a censored likelihood approach, and we demonstrate that it provides valuable information about tail characteristics. The methodology will then be illustrated with an application to wind speed data in the Pacific Northwest, US, showing that it adequately captures the data's extremal properties. This is joint work with Thomas Opitz and Emeric Thibaud.