Coles, Stuart G.; **Tawn, Jonathan A.**
Modelling extremes of the areal rainfall process. (English) Zbl 0863.60041
J. R. Stat. Soc., Ser. B 58, No. 2, 329-347 (1996).

Summary: Risk assessment for many hydrological structures requires an estimate of the extremal behaviour of the rainfall regime within a specified catchment region. In most cases it is the spatially aggregated rainfall which is the key process, though in practice only pointwise rainfall measurements from a network of sites over the region are available. We address the problem of making inferences about the extremal properties of the aggregated process from the pointwise data. Working within the usual extreme value paradigm, a model is derived in which the resulting distribution is determined by the marginal tail behaviour and spatial dependence at extreme levels of the process. Data collected from a region in the south-west of England are used to illustrate the procedure.

MSC:

60G35 Signal detection and filtering (aspects of stochastic processes)
60G70 Extreme value theory; extremal stochastic processes

Keywords:

extreme value theory; generalized extreme value distribution; generalized Pareto distribution; max-stable processes; point processes; rainfall; spatial modelling