Bayesian Inference for Extreme Value Modelling

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Abstract

Scarcity of data is an implicit feature of any extreme value analysis. Consequently, much research in extreme value theory, both probabilistic and statistical, has focused on the development and exploitation of characterizations that enable maximal use of data — point process and multivariate representations, for example. A complementary consideration is the inferential procedure adopted. The basis of this talk is to examine the arguments in support of Bayesian procedures for extreme value analyses. In principle these are quite compelling: complex model structures can be formulated easily to facilitate the transfer of information from different data sources, and genuine expert or physical knowledge can also be incorporated into the analysis. In practice there are fundamental difficulties, both in model specification and computation. Within the talk, a review of attempts at incorporating Bayesian ideas into extreme value analyses will be given, together with some examples of how modern sampling-based methods can be implemented to overcome some of the difficulties in such an approach.