Trends in the extreme value index

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Abstract

We consider extreme value analysis for independent but non-identically
distributed observations. In particular, the observations do not share the same extreme value index (tail index) The tail index is assumed to change in a continuous way over time/space. We provide a nonparametric local estimate for the functional extreme value index. Besides estimating the extreme
value index locally, we also provide an estimator for the accumulated trend up to a certain time and its joint asymptotic behavior. The asymptotic theory for the global estimator can be used for testing a pre-specified parametric trend in the extreme value indices. In particular, it can be applied to test whether the extreme value index remains at a constant level across all observations.