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A Gumbel State Space Model for Extreme-value Data

Extreme value theory has many applications in areas such as meteorology, finance and engineering. Recent years have seen a revival of interest in the analysis of series of extreme-value data. For this presentation, some properties of the mixtures of Gumbel and α -stable random variables will be used to construct a state-space model with Gumbel marginals. One feature of α -stable random variables is that their density cannot be expressed in closed form and their expectation does not exist. This poses some inference challenges. The methods proposed will be compared through simulation to currently used models using real data.