THE UNIVERSITY OF GEORGIA
DEPARTMENT OF STATISTICS

Colloquium Series

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Thursday, August 29, 2019

3:30pm in room 202, Caldwell Building

Estimating precipitation extremes using the Log-Histospline

One of the commonly used approaches to estimating extremes is the peaks-over-threshold (POT) method. The POT method models exceedances over a threshold that is sufficiently high so that the exceedance has approximately a generalized Pareto distribution (GPD). This method requires the selection of a threshold that might affect the estimates. Here we propose an alternative method, the Log-Histospline (LHSpline), to explore modeling the tail behavior and the remainder of the density in one step using the full range of the data. LHSpline applies a smoothing spline model to a finely binned histogram of the log transformed data to estimate its log density. By construction, a LHSpline estimation is constrained to have polynomial tail behavior, a feature commonly observed in daily rainfall observations. We illustrate the LHSpline method by analyzing the precipitation data collected in Houston, Texas.