TOWARD A BAYESIAN APPROACH FOR QUANTIFYING REGIONAL UNCERTAINTY IN PRECIPITATION EXTREMES USING GLOBAL CLIMATE MODELS

Evan Kodra, Northeastern University, 865-363-6907, evan.kodra@gmail.com

1. Evan Kodra, Northeastern University
2. Snigdhansu Chatterjee, University of Minnesota
3. Auroop R Ganguly, Northeastern University

Global climate models (GCMs) are complex state-of-the-art tools used to explore various plausible trajectories of the earth's climate. While GCMs are thought to be quite reliable in projecting some variables, such as temperature, at global to continental scales, regional prediction and precipitation have been identified as two major gaps in climate modeling science. Bayesian models have been developed to combine the predictions from multiple GCMs into probability density functions for regional mean temperature. Here, we begin to formulate a statistical model founded on some of the same principles but for precipitation extremes. This statistical model will assign weights to GCM predictions based on the past predictive skill of the GCMs as well as degree of consensus in the future. The goal of this model is to make the skill evaluations process-based, and thus meaningful for long-lead prediction under potential non-stationarity. Such a statistical model will provide probability densities for changes in future precipitation extremes and thus may provide valuable information for various decision makers, including but not limited to infrastructure and flood hazard adaptation planners.