# Department of Applied and Computational Mathematics and Statistics Colloquium

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## *A spatial Markov model for climate extremes*


Spatial climate data are often presented as summaries of areal regions such as grid cells, either because they are the output of numerical climate models or to facilitate comparison with numerical climate model output. Extreme value analysis can benefit greatly from spatial methods that borrow information across nearby sites. For Gaussian outcomes, a host of methods that respect the areal nature of the data are available, including conditional and simultaneous autoregressive models. However, to our knowledge, there is no such method in the spatial extreme value analysis literature. In this paper we propose a new method for areal extremes that accounts for spatial dependence using latent clustering of neighboring regions. We show that the proposed model has desirable asymptotic dependence properties and leads to relatively simple computation. Applying the proposed method to North American climate data reveals several local and continental-scale changes in the distribution of precipitation and temperature extremes over time.

**Friday, April 21, 2017**
**4:15 PM – 5:15 PM**
**127 Hayes-Healy Center**

**Colloquium Tea 3:45 PM to 4:15 PM Hurley Hall Globe Area**