

Department of Applied and Computational Mathematics and Statistics Colloquium

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will give a lecture entitled:

Models for Large Complex Spatial Datasets

Abstract

Modeling and inference for geographically-indexed datasets are getting increasingly frequent in current literature. This type of datasets arises in diverse applications from biology, environmental sciences and engineering. The task of statistical inference for these problems consists of finding the strength of association in measurements across adjacent regions in the maps and utilizing it to enhance the predictive performance of the model. We start our discussion with a classification of the spatially-referenced datasets based on the geographical resolution, nature of available information, existing model techniques and challenges. We specifically cover two important features that are of prime interest in current research. First, the variable of interest can exhibit complex pattern of association or clustering across different parts of the region. Second, spatial datasets are often massive – either they come from a large region or they are sampled at a high resolution. This poses a significant challenge for modeling because of the computational demand. We shall discuss approaches that can potentially increase the flexibility of these models and improve computational efficiency. The talk will be complemented with real examples from ecology, atmospheric sciences and petroleum engineering.



**Wednesday, January 29, 2014
4:30 p.m. to 5:30 p.m.
127 Hayes-Healy Center**

Colloquium Tea

4:00 p.m. to 4:30 p.m. 154 Hurley Hall