

**School of Mathematics and Applied Statistics**  
**2013 Colloquium Series**  
University of Wollongong

**Title:** Predicting a Spatial Quantile and its Exceedance Region in the Presence of Uncertainty

**Speaker:** Noel Cressie (University of Wollongong)

**Time and Date:** Friday 2 August 2013, 3:30pm

**Location:** 6-210

**Abstract:** In the analysis of spatial data, it is common to predict a spatial exceedance and its associated exceedance region. This is a scientifically important problem since unusual events tend to strongly impact the environment. We use classes of loss function based on image metrics (e.g., Baddeley's loss function) to predict the spatial-exceedance region. We then propose a joint loss to predict a spatial quantile and its exceedance region. The optimal predictor is obtained by minimizing the posterior expected loss given the process parameters, which we achieve by simulated annealing. Various predictors are compared through simulation. The methodology is applied to a spatial dataset of temperature change over the Americas. This research is joint with Peter Craigmile and Jian Zhang.