

Ensemble Generation for Large Incomplete Spatial Data Sets

Craig Johns (University of Colorado, Denver)
johns@math.cudenver.edu

Abstract

Geostatistical data sets are frequently incomplete and irregularly spatially distributed. However, many geophysical numerical models, such as those used to predict climate change, require data that are spatially and temporally regular and complete. Computationally efficient methods of interpolation frequently over-smooth the field. Thus, interpolated fields used as inputs for these numerical models lack the variability of the climatological process that they were designed to receive as inputs. Geoscience researchers are recognizing the need to force numerical models with ensembles of inputs, rather than a simple mean field. Recently, an approximate Bayesian framework was used to infill incomplete precipitation records. These methods were shown to be computationally reasonable for large data sets. We show how to use the method to generate ensembles of random observations which are consistent with observed data.