Boulder Fluid and Thermal Sciences Seminar Series

Tuesday, June 28, 2016
3:30pm-4:30pm (refreshments at 3:15pm)
Bechtel Collaboratory in the Discovery Learning Center (DLC)
University of Colorado, Boulder

Some Problems in Spatial Modeling: Simulation and Multivariate Random Fields

William Kleiber, *University of Colorado, Boulder*

Simulation of random fields is a fundamental requirement for most spatial analyses. For small spatial networks, simulations can be produced using direct manipulations of the covariance matrix. Larger high resolution simulations are most easily available for stationary processes, where algorithms such as circulant embedding can be used to simulate a process at millions of locations. We review some classic approaches for simulation of stationary random fields, and discuss how some of these can be extended to the nonstationary setting. The second half of the talk will cover some basic ideas for stochastic modeling of multivariate fields, and will discuss the connections between cross-covariance and spectral coherence.

Biography: William Kleiber is an Assistant Professor in the Department of Applied Mathematics at the University of Colorado at Boulder. He received his PhD in Statistics from the University of Washington, and spent two years as a post-graduate scientist at the National Center for Atmospheric Research. His research largely focuses on spatial statistics with applications in statistical climatology, calibration and emulation of geophysical models and stochastic weather generators.