

PRIMES Lecture Series

Gabriel Huerta

Department of Mathematics & Statistics, University of New Mexico

Spatio-temporal Modeling for Mexico City Ozone Levels

Thursday, November 17th

3:10 - 4:00 pm, 223 Weber
Light refreshments provided

We consider different aspects about modeling ozone concentrations that are measured over the Mexico City metropolitan area. First, we propose a statistical model based on regressing hourly readings of ozone on a meteorological variable, such as temperature. This model also includes a few harmonic components to account for the main periodicities that ozone presents during a given day and that are not explained through a single covariate. Using Bayesian computational techniques such as MCMC, we show results on temporal predictions and spatial interpolation of hourly ozone. Furthermore, we introduce an alternative approach that deals with the space-time analysis of extreme values.

In this case, the parameters of a well known extreme value distribution define the space-time structure of the model. We illustrate how our approach produces estimates of spatial and temporal quantiles of daily ozone maxima. In general, the temporal components of our models are defined through a state-space or Dynamic Linear Model representation, while spatial components are defined through kriging approaches or process convolutions. <http://www.stat.unm.edu/~ghuerta/>



PRIMES Sponsored Event
for more information please contact
Robin VanDyke 491-2938
robin.vandyke@math.colostate.edu
primes.colostate.edu