

The University of Chicago

Department of Statistics

Seminar

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“Conditionally Specified Space-time Models for Multiple Pollutants”

Monday, October 6, 2003 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

We propose a class of conditionally specified models for the analysis of several pollutants over space and time. Such models are useful in situations where there is sparse spatial coverage of one pollutant and much more dense coverage on other pollutants. The dependence structure over pollutants, space, and time is completely specified through a neighborhood structure. We introduce several computational tricks which are integral for model fitting, give some simple sufficient and necessary conditions for the space-time covariance matrix to be positive definite, and implement a gibbs sampler to sample from the posterior distribution of the parameters. Model fit is assessed via the DIC and predictive ability, both over time and space, via mean squared prediction error. The models are used to analyze particular matter and ozone data collected in the LA area in 1995 over a 3 month period.

This is joint work with Zhigang Zhou at Iowa State University and Hui Zou at Stanford University.
