

MINI-WORKSHOP ANNOUNCEMENT
Department of Statistics

Inverse Modeling of Ammonia Emissions for the Eastern United States

by

Hae Kyung Im

Department of Statistics, University of Chicago

THURSDAY, November 20, 2003, 3:00 pm in Eckhart 110
5734 S. University Avenue

ABSTRACT

There is a considerable uncertainty in the magnitude and variability of ammonia (NH₃) emissions. These values are estimated by using the inventory of different sources (domestic animals, fertilizer usage, engines and vehicles, etc.) and factors for each type of source that are published in the literature. One of the unreasonable assumptions made is that the emissions are constant over the year. Gilliland et al. used an inverse modeling method in order to find seasonal variations in the emissions. Their method required knowing the error structure a priori. By showing the equivalence of their method with least squares method we find simple ways to estimate the errors simultaneously. Also we model the difference process between observations and model output as a t distributed process with matern covariance function. We estimated the parameters by maximum likelihood. We ran a Gibbs sampler to find standard error estimates.