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SPATIAL-TEMPORAL MODEL FOR AMBIENT AIR POLLUTANTS IN THE STATE OF KUWAIT

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In this paper, we consider dynamic Bayesian models for four different pollutants: nitric oxide (NO), carbon monoxide (CO), sulphur dioxide (SO_2) and non-methane hydrocarbon (NCH_4) recorded daily in six different stations in Kuwait from 1999 to 2002. The structures of the models depend on time, space and pollutants. The approach strives to incorporate the uncertainty of the covariance structure into simulated models and final inference; therefore, hierarchical Bayesian model is applied. Association between level of pollutants and different meteorological variables, such as wind speed, wind directions, temperature and humidity are considered. The models will decompose into two main components: a deterministic part to represent the observed components term and a stochastic term to represent the unobservable components. Our analysis will start with basic model and gradually increase its complexity. At each stage the efficiency of the model will be measured. The resulting models subsequently are tested by comparing the output terms and by comparing and the predictions with the real observations.

Biography

Shafiqah Alawadhi earned her BS Degree in Computer and Statistical Science from Kuwait University (KU) in 1989. She obtained her MS Degree in Statistics Science and her PhD in Bayesian Statistics from Aberdeen University in Scotland, UK in 1998. Her professional interests are general statistical analysis, Bayesian statistics especially subjective probability assessment, environmental statistics, educational statistics, Markov chains, Monte Carlo method, and multivariate statistics. She is a member of various statistical associations and societies. She has published more than 35 papers in reputed journals and has been serving in their editorial board.

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