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Transport Related Air Pollution Modeling Using Artificial Neural Network

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Abstract : Air quality models form one of the most important components of an urban air quality management plan. Various statistical modeling techniques (regression, multiple regression and time series analysis) have been used to predict air pollution concentrations in the urban environment. These models calculate pollution concentrations due to observed traffic, meteorological and pollution data after an appropriate relationship has been obtained empirically between these parameters. Artificial neural network (ANN) is increasingly used as an alternative tool for modeling the pollutants from vehicular traffic particularly in urban areas. In the present paper, an attempt has been made to model traffic air pollution, specifically CO concentration using neural networks. In case of CO concentration, two scenarios were considered. First, with only classified traffic volume input and the second with both classified traffic volume and meteorological variables. The results showed that CO concentration can be predicted with good accuracy using artificial neural network (ANN).

Keywords : air quality management, artificial neural network, meteorological variables, statistical modeling
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