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APPLICATION OF CALINE 4 MODEL TO PREDICT $PM_{2.5}$ CONCENTRATION AT CENTRAL SILK BOARD TRAFFIC INTERSECTION OF BANGALORE CITY

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Abstract

Rapid growth of the vehicular population has resulted in the deterioration of environmental quality and human health in metropolitan cities. Concentrations of air pollutants at major traffic intersections are exceeding the National Ambient Air Quality Standards (NAAQS) in Bangalore. The people are exposed to higher pollution levels and facing severe respiratory diseases. Hence, an attempt was made using CALINE 4 model to estimate particulate matter (PM2.5) concentrations at traffic intersection namely, Central Silk Board, Bangalore. Traffic analysis was conducted between 6:00AM to 10:00PM. Peak flows of traffic were recorded between 8.00AM to 12.00 Noon and 4.00PM to 8.00PM. Estimated PM2.5 concentrations using CALINE 4 was ranged from 121.3µg/m3 to 403.7µg/m3 . Maximum concentrations were observed on Monday's and Friday's. The estimated concentrations of PM2.5 were compared with measured concentrations of KSPCB, Bangalore. Based on the comparative test (t-test) results the performance of CALINE 4 model for prediction of PM2.5 concentration is valid and can be accepted. The values of NMSE, FB, and GMB were well within the prescribed limits. Hence, CALINE 4 model is a useful tool to predict the pollutant concentrations at traffic intersections.

Author Keywords

CALINE 4, Particulate Matter, Vehicular Population, Performance Evaluation.

Index Keywords

Vehicular population, Economic development, Silk Board

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