

Multiple linear regression (mlr) models for long term concentration forecasting during different monsoon seasons

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Abstrak

Particulate matter is the most prevailing pollutant in Peninsula Malaysia having the highest API value compared to the other criteria pollutants. Long-term exposure to small particles less than 10 micrometres may lead to a marked reduction in life expectancy due to increase cardio-pulmonary and lung cancer mortality. Effective forecasting models at the local level predict the concentrations of particulate matter is crucial as the information generated allows the authority and people within a community to take precautionary measures to avoid exposure to unhealthy levels of air quality and implement strategic measures that improve air quality status. The aim of this study is to establish MLR models for different monsoon seasons with meteorological factors as predictors. Daily observations of PM10 concentrations in Kuala Terengganu, Malaysia from January 2005 to December 2011 were selected for predicting PM10 concentration level. The MLR models for NEM, Inter Monsoon 1, SWM and Inter Monsoon 2 disclose R² of 0.68, 0.58, 0.57, and 0.63, respectively. Wind speed, relative humidity and rainfall exhibit negative relationship whilst temperature and atmospheric pressure are directly correlated with PM10 concentrations. In conclusion, the developed MLR models are appropriate for forecasting PM10 concentrations at local level for each monsoon.