

Analysis and Prediction of Fine Particulate Matter in the Air Environment for 2007-2020 in Bangkok Thailand

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Abstract : Daily monitoring PM₁₀ and PM_{2.5} data from 2007 to 2017 were analyzed to provide baseline data for prediction of the air pollution in Bangkok in the period of 2018 -2020. Two statistical models, Autoregressive Integrated Moving Average model (ARIMA) were used to evaluate the trends of pollutions. The prediction concentrations were tested by root means square error (RMSE) and index of agreement (IOA). This evaluation of the traffic PM_{2.5} and PM₁₀ were studied in association with the regulatory control and emission standard changes. The emission factors of particulate matter from diesel vehicles were decreased when applied higher number of euro standard. The trends of ambient air pollutions were expected to decrease. However, the Bangkok smog episode in February 2018 with temperature inversion caused high concentration of PM_{2.5} in the air environment of Bangkok. The impact of traffic pollutants was depended upon the emission sources, temperature variations, and metrological conditions.

Keywords : fine particulate matter, ARIMA, RMSE, Bangkok

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