Estimation of PM10 from exhaust and non-exhaust emission in traffic area, Klang Valley, Peninsular Malaysia using air quality dispersion modelling

ABSTRACT

This paper reviews methods to estimate the concentration of PM10 from vehicular emission sources (exhaust and non-exhaust) by using AERMOD dispersion model in the Klang Valley region. The ground level concentration was obtained by processing various meteorological parameters, terrain features and source emission inventory data (emission rate) for 2014 were used in simulations within 50 km x 50 km model domain over 24 hours averaging periods. The results showed the maximum concentrations of PM10 were revealed in central, southeast and southwest of the model domain. The evaluation of performance of the model was done by comparing observed and simulated PM10 concentrations using statistical tools such as correlation coefficient, Normalized Mean Square Error, Factor of two and index of agreement. Therefore, the AERMOD model evaluation results revealed an acceptable model for conducting dispersion modeling from vehicular sources (exhaust and non-exhaust) in the Klang Valley with good model skill for the estimation of PM10 concentrations in Shah Alam station. This study considers the first for evaluation PM10 using AERMOD dispersion model in the Klang Valley region in Peninsular Malaysia.