Numerical prediction on the dispersion of pollutant particles

Abstract :

The increasing concern on air pollution has led people around the world to find more efficient ways to control the problem. Air dispersion modeling is proven to be one of the alternatives that provide economical ways to control the growing threat of air pollution. The objective of this research is to develop a practical numerical algorithm to predict the dispersion of pollutant particles around a specific source of emission. The source selected was a rubber wood manufacturing plant. Gaussian-plume model were used as air dispersion model due to its simplicity and generic application. Results of this study show the concentrations of the pollutant particles on ground level reached approximately 90µg/m3, compared with other software. This value surpasses the limit of 50µg/m3 stipulated by the National Ambient Air Quality Standard (NAAQS) and Recommended Malaysian Guidelines (RMG) set by Environment Department of Malaysia. The results also show high concentration of pollutant particles reading during dru seasons as compared to that of rainy seasons. In general, the developed algorithm is proven to be able to predict particles distribution around emitted source with acceptable accuracy