

A GIS-based emission inventory at 1 KM -1KM spatial resolution for particular matter (PM10) in Klang Valley, Malaysia

ABSTRACT

Traffic has greatly contributed to the socio-economic development as well as its inherent environmental impacts. This study estimated the emission of PM10 from the exhaust and nonexhaust, particularly from the use different type of vehicles in Klang valley region. The total PM10 emission from the region was calculated based on US-EPA and the EEA methodologies. Arc GIS is one of the most suitable methods to estimate the total PM10 emission and split between different vehicle types as it is determined by the kilometer covered for each vehicle category. The inventory is further used for traffic account, activity data and a domain size of 50 km×50 km, with cell resolution of 1km × 1km to spatially disaggregate these emissions. The results show that nearly 54% of the PM10 emitted in the region emitted from cars. The results also revealed that nearly 61% of the PM emissions emitted from exhaust. Exhaust and Non-exhaust PM10 emissions are higher in the central part of the Klang Valley, an area with higher volume of vehicles.

Keyword: PM10 emission; Exhaust emission; Nonexhaust emission; Emission Inventory; Traffic