



Visualization of Spatial Distribution and Analysis of Roadside Emission in Non-Restricted Area in Hong Kong International Airport

Phillip Yan Kit Louie (1) and Alexis Kai Hon Lau (1,2,3)

(1) Division of Environment and Sustainability, The Hong Kong University of Science and Technology, Hong Kong, Hong Kong, (2) Department of Civil and Environmental Engineering, the Hong Kong University of Science and Technology, Hong Kong, (3) Institute for the Environment, the Hong Kong University of Science and Technology, Hong Kong

Air pollution from the Hong Kong International Airport (HKIA) has always been an important part of the airport's environmental impact assessment. One of the most easily ignored sources of these pollutants are the transportation linking the airport to the other parts of the city. For the HKIA, ground transportation, which is an indispensable part of the transportation solution, has yet been in need of more assessment. The first part of such assessment is the traffic characteristics of ground side vehicles and the associated emissions thereof. The second part is to display the spatial distribution of pollutants in a visualized way. For part 1, multiple sources of traffic characteristics were integrated together to obtain 1. Traffic volume of vehicles at different parts of the HKIA; 2. Vehicle type composition of the concerned vehicles; 3. Traffic pattern of different vehicles at different times of a day. This information is then processed for the look up of the appropriate emission factors of different pollutants, which are produced by the Hong Kong Environmental Protection Department and stored in the EMFAC- HK system. After calculating the pollution emitted, the spatial distribution is drawn through GIS system for easier understanding. Preliminary results reflect the nature of airport's allocation of different facilities, showing that the passenger vehicles are more concentrated at the eastern part of the airport whereas the goods and heavy duty vehicles are towards the western side. This also shapes the pollution distribution of NO_x , $\text{PM}_{2.5/10}$, and pollutants that are heavily emitted by goods transporting vehicles. Such assessments assist the estimation of vehicle traffic characteristics and its environmental impact on the overall air pollution problem on the HKIA.

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