The Analysis of PM_1, $PM_{2.5}$, PM_{10}, CO and O_3 during 2019 Haze Episode in Klang Valley, Malaysia

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Abstract

Southeast Asia is rapidly developing and the rate of emission and anthropogenic disasters are also increasing. In air quality terms, pollutant emissions and exposed populations are both increasing. The emergence of new low-cost and smaller sensor technologies in the environmental sciences has led to a huge increase in both available data and a potential for collecting new data. Air Quality monitoring in the Greater Klang Valley requires higher resolutions and numerical models. Current monitoring uses sparse static pollution sites due to cost, size, and logistical requirements. To understand pollutants' distributions in urban areas, studies are needed to establish the necessary scales and adapt to new sensor technologies. High-resolution multi capability sensing is needed to optimize information content from high-density network data. This paper investigated particulate matter (PM_1, $PM_{2.5}$, and PM_{10}) levels, carbon monoxide (CO) levels, and surface level ozone (O_3) during the 2019 haze event that affected Malaysia, Singapore, Indonesia, and Brunei Darussalam in August and September 2019. The research centred on the Klang Valley in Malaysia, where nine Atmospheric Monitoring sensors (AS510) were mounted during this period. During the event, four major locations (city centre, suburban residential area, and suburban universities (north and southwest) show varying levels of trace gases and particulate matter readings. The current data allows us to see the migration of pollutants, particularly PM, during the haze event in relation to wind direction. The increase in PM coincided with the increase in peatland fires in Sumatra and Kalimantan. However, the greenhouse gas concentrations fluctuate less before and during the haze, indicating that the gases are primarily produced locally.

Early Career Scientist

NO, I am not an early career scientist.