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Particulate matter measuring and determination in USM campus

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The massive forest fire in Indonesia in June 2004 had affected the whole Asian region by transporting the large quantity of smoke plume with Malaysia bearing the burnt due to being nearer, wind direction and weather condition. In this study, a set of digital camera imageries was used to measure and determinate the particulate matters of the size less than 10 micron (PM10) in the campus of University Sains Malaysia (USM). Digital camera imageries were captured during high air pollution period due to massive forest fire in 2004 that affected the Penang Island. We captured the digital images by using the digital camera at near and far distances from the targets to ensure normalize of the digital camera imageries to the reference time. A new algorithm was developed based on the aerosol characteristic to correlate the signal observation from digital camera and the PM10 concentration. The proposed algorithm produced a high correlation coefficient (R) and low root-mean-square error (RMS) values. This study indicated that a conventional digital camera can provide remotely sensed data for air pollution determination.

Keywords: PM10; algorithm

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