

## **Application of remote sensing instruments in air quality monitoring in Malaysia**

### **ABSTRACT**

The use of remote sensing in detecting aerosol or air pollution is not widely applied in Malaysia. The large area of coverage provided by remote sensing satellite may well be the solution to the lack of spatial coverage by the local ground air quality monitoring stations. This article discusses the application of remote sensing instruments in air quality monitoring of Malaysia. The remote sensing data is validated using ground truths either from local ground air monitoring stations or the Aerosol Robotic Network (AERONET). The correlation between remote sensing is relatively good with R from 0.5 to 0.9 depending on the satellite used. The correlation is much improved using the mixed effects algorithm applied on MODIS Aerosol Optical Depth (AOD) data. Accuracy of predicted air quality data by remote sensing is generally tested using the Root Mean Squared Error (RMSE) against the ground truths data. Besides the Geographic Information System (GIS) tools are used in manipulating the data from both remote sensing and ground stations so as to produce meaningful results such as spatio-temporal pattern mapping of air pollution. Overall the results showed that the application of remote sensing instruments in air quality monitoring in Malaysia is very useful and can be improved further.

**Keyword:** Aerosol optical depth; Air quality; GIS; Malaysia; Remote Sensing