

Detection of aerosol type using satellite remote sensing

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The effects of aerosols on the Earth's climate have been studied extensively by using observations and model studies. As the effects of aerosol on the climate are different from one type to the other, aerosol type detection from satellite remote sensing is very important. There have been several methods to classify aerosol from satellite remote sensing (e.g. Higurashi and Nakajima, 2003; Jeong and Li, 2005 etc.). This study shows temporal and spatial distribution of four major aerosol types (dust, carbonaceous, seasalt and sulfate) retrieved by MODIS-OMI algorithm and 4-channel algorithm from Moderate Resolution Imaging Spectroradiometer (MODIS) and Ozone Monitoring Instrument (OMI) data over the South-East Asia region. Retrieved results show that there exist complex types of aerosol over the South-East Asia. In general, two different aerosol classification algorithm make reasonably consistent results for most of the aerosol types. Dust type aerosol usually occurred mixed with carbonaceous type aerosol. It implies that the dust type aerosol is loaded and transported with polluted air mass. The evidence of long distance transport of polluted air mass in the continent is also captured, that is, over the remote ocean area. Validation of the results with ground-based chemistry measurements or chemical transfer model (CTM) and separate estimation of the different aerosol optical depths are desirable.