

# Assessment on the Atmospheric Impacts of Surrounding Fire Emissions: An Analysis on Malaysian Haze Episodes by Utilizing the Remote Sensing Satellite Information and Ground-Based Measurements

\*Nur Atiqah Aainaa Abd<sup>1</sup>, Machimura Takashi<sup>1</sup>

1. Division of Sustainable Energy and Environmental Engineering, Graduate School of Engineering, Osaka University

The recurrence of forest fires in Southeast Asia and associated biomass burning, has contributed significantly to the problem of intense haze and the long-range movement of pollutants in the Malaysian region. Air pollutants, specifically particulate matter in the atmosphere, have received extensive attention, mainly because of their adverse effect on people's health. However, the haze episodes coincided temporally with the occurrence of hotspots detected at the surrounding area such as in Sumatra and Kalimantan, Indonesia. In this study, the spatial and temporal variability of the PM10 concentration over Malaysia were analyzed by utilizing the satellite remote sensing information, air quality dataset and meteorological condition associated with this episodes. This study objective is to provide an assessment on the effects of surrounding forest fire events on the Malaysian haze. In this study, severe haze episodes during 2000 until 2013 were reviewed. The nature of the haze episodes, their possible causes and their major features were discussed in this paper. In order to analyze and detect the occurrence of active fires in surrounding region, MODIS Active Fire Data was retrieved from NASA/LANCE -FIRMS while the air quality data across Malaysia was assessed based on PM10 concentration which provided by Malaysian Department of Environment (MDOE). The meteorological database including temperature, rainfall, and wind speed were gathered from NOAA's National Climatic Data Center (NCDC). The results of this study indicates most of the intense haze episode in Malaysia were caused by the transboundary pollution from Sumatra and Kalimantan area which brought substantial amounts of particulate matter into the Malaysian atmosphere.

Keywords: Malaysia , Haze, PM10, Forest fire