

Sources and trajectories of particulate matter measured at Lampang Rajabhat University

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High levels of the fine particulate matter in the air is one of the reasons that affect the respiratory and health problems to human and animals. This research aims to study and analyze the source locations of the fine Particulate Matter (PM), particularly PM₁, PM_{2.5} and PM₁₀ measured at the Lampang Rajabhat University (LPRU) using the optical particle counter scattering technique during February 2017 to February 2018. The amount of anthropogenic and biogenic PM emissions were determined by subtracting the surface PM concentrations from the effect of meteorology using Multiple Linear Regression (MLR). Trajectory of the PM sources were then analyzed using the Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) software in both forward and backward analysis at a level of 1,000 meters AGL. The seven-day and every six hour data were classified and clustered using a statistical method to group the air flow trajectories. The results from MLR showed that all PM types were high during the dry season with three peaks of high PM levels, i.e. 1) Feb 23 –Mar 23, 2017; 2) Apr 4 –12, 2017; and 3) May 15 –24, 2017. In these periods, the results from HYSPLIT showed that the trajectories came from the northwest, southwest and west directions, respectively, where the hotspots were found from MODIS information.

Keywords : Particulate matter, Meteorological factors, Hot spot, HYSPLIT

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