Supaluck Hansoongnern 2010: Relationships Between Particulate Matter 10 and some Meteorological Factors in Thailand. Master of Science (Watershed and Environmental Management), Major Field: Watershed and Environmental Management, Department of Conservation. Thesis Advisor: Associate Professor Samakkee Boonyawat, Ph.D. 115 pages.

The objective of this research was to examine, in each region of Thailand, the relationships between particulate matter 10 (PM10) and some meteorological factors such as net radiation, air temperature, relative humidity, rainfall and wind speed by using PM10 data and meteorological data during 2002-2006. Comparisons were made between clear sky days and non clear sky days on the variation of PM10. Correlations between PM10 and some meteorological factors in each region were also done and, then the simple model was established to estimate PM10 in each region of Thailand.

The results found that the monthly average PM10 in the Northern region was the greatest with the average of 42.75 μg/m^3 followed by the Central, Northeast and Southern region (39.53 38.15 and 34.82 μg/m^3, respectively). February was the month with the greatest average PM10 of 58.50 μg/m^3 and the lowest value was observed in August (27.01 μg/m^3). The correlations between PM10 and meteorological data in each region were as followed : Northern (A) = 245.274-2.138RH-38.272W (R^2=0.895) ,the Central(A) = 232.712-1.499Rn-1.857RH-19.455W (R^2 =0.942) ,Northeast(A) = 169.185-4.709Ta (R^2=0.629) and Southern(A)= -2.203+0.980Ta+8.089W (R^2=0.269), where A, RH, Ta, W and Rn are PM10 (μg/m^3), relative humidity (%), air temperature ($^{\circ}$C), wind speed (km/hr) and net radiation (MJ/ m^2/day), respectively.

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