



Variability of PM10 & PM2.5 concentrations in selected Polish agglomerations: the role of meteorological conditions, 2005-2015

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The aim of the study was to analyze the variability of concentrations of PM10 and PM2.5 and the relationships between aforementioned particulate matter and selected meteorological variables for selected agglomerations in Poland (ie. Gdańsk, Poznań, Kraków and Łódź) in the period 2005-2015. Those are located in diverse environment starting from highlands (Kraków) through lowlands (Łódź), and lake districts (Poznań) and ending at the coast of the Baltic Sea (Gdańsk). Data originate from dedicated pollution measurement networks and comprise pollution concentrations as well as the meteorological conditions. Additionally, the data from Polish Meteorological and Hydrological Service stations located in the vicinity of the agglomerations have been used. Hourly dataset were used in this study and in most of the cases the available material was of acceptable quality. Diurnal and seasonal variability of PM10 and PM2.5 concentration was analysed. Special attention was paid to the recorded extremes and the frequency of threshold exceedances stated by the law. A detailed analysis allowed to identify the meteorological variables which determine the particulate matters concentration in each of the agglomerations. For that purpose statistical models were applied.