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Seasonal variation of air pollution in Warsaw agglomeration

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Long term research shows many substances in the atmosphere are in concentration dangerous for human health and welfare and even for human life. They also are injurious for animals and crops and may lead to climate changes on the Earth. These substances are specified in Directives 96/62WE i 1999/30/WE, 2008/50/WE. Troposphere ozone and particulate matter PM10 are the most dangerous among of mentioned ones.
The work presents time and spatial variation of troposphere ozone, nitrogen dioxide and particulate matter PM10 concentrations. Analysis was carried out on the base of hourly values of mentioned gaseous pollutants (O_3 and NO_2) concentrations and daily values of PM10. Data used in the analysis comes from atmospheric monitoring stations situated in various parts of Warsaw and concerns the period 2009-2011. The influence on meteorological elements on concentration of analyzed pollutants was stated by the use of correlation and multiple regression analysis for months and seasonal periods.
In general conclusion quality of air in Warsaw agglomeration is not satisfactory. Although the decrease in trend of concentration level of pollutants, particularly sulfur dioxide, carbon monoxide, oxides of nitrogen and particulate matter PM10 is positive the excesses over permissible level concentration still occur in case of troposphere ozone, nitrogen dioxide and particulate matter PM10.
On the base results of statistical analysis strong correlation between troposphere ozone, nitrogen dioxide and particulate matter PM10 concentration and meteorological elements is stated. In case of ozone and nitrogen dioxide the relationships with air temperature, relative humidity and solar radiation are the most significant. In case of particulate matter PM10 the relationships with maximum air temperature, wind velocity and precipitation are the most significant.