Effect of Meteorology on the Atmospheric Concentrations of Traffic-Related Pollutants in Erzurum, Turkey[#]

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Abstract The studies of the relationship between air pollutants and meteorological factors can provide important information about air pollution. According to proposed statistical model in this study, daily traffic-related pollutant concentrations are not only influenced by daily meteorological parameters but also by the pollutant concentration of previous day. In this study, the relationship between daily CO (carbon monoxide), NOx (nitrogen oxides), O_3 (ozone) concentration with the pollutant concentration of previous day and meteorological factors (wind speed, temperature, relative humidity) in 1995-1997 winter seasons was statistically analyzed using the stepwise multiple linear regression analysis. The statistical models of CO, NO_x and O_3 including meteorological parameters with previous day's pollutant concentration gave R^2 of 0.48, 0.28 and 0.75, respectively. The model was good for O_3, but for NO_x was weak. According to first equation the level of CO decreases with increasing temperature, but CO increases with increasing relative humidity and CO concentration of previous days. According to second equation the level of NO_x decreases with increasing wind velocity and temperature, but NO_x increases with increasing NO_x concentration of previous days. O_3 concentration increased with increasing wind speed, temperature, relative humidity and O_3 concentration of previous days.

Key Words*: air pollution, meteorological parameters, pollutant concentration of previous day, regression analysis.*

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