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Ozone pollution during heat wave periods over last 15 years in Central Europe

J. Struzewska (1), J.W. Kaminski (2), and M. Jefimow (1)

(1) Warsaw University of Technology, Department of Environmental Engineering, Warsaw, Poland (joanna.struzewska@is.pw.edu.pl), (2) Centre for Research in Earth and Space Science, York University, Toronto, Canada

Periods characterized with the high ozone concentrations are usually associated with very high air temperature and antycyclonic conditions or meridional circulation. A 15-year (1997 – 2011) maximum daily temperature records from GSOD NOAA archive was analyzed for 20 stations in Central Europe. For each year the number of days with the maximum temperature exceeding 25^{o}C and 30^{o}C was calculated. For years with a positive anomaly of the number of the hot days the data were analyzed to identify exact dates and the duration of such events. This allows classification of the high temperature period as "heat waves" (periods with maximum temperature exceeding 30^{o}C lasting at least 3 consecutive days) and hot weather periods (periods with maximum temperature exceeding 25^{o}C and high daily average temperature). These two types of high temperature are usually associated with different air masses inflow – subtropical from the south or transformed polar from westerly directions. This indicates also the differences in contribution of transboundary transport of ozone and its precursors.

For selected high temperature episodes the ozone pollution was assessed based on AirBase (1997-2009) and national database (2010-2011). The analysis covered the 8-hour running average and daily maximum concentration of ozone near the surface. Also, the contribution to the $SOMO_35$ index during selected episodes will be calculated as a diagnostic for adverse health effects.

Since the two analyzed types of hot weather periods have different origin in terms of synoptic scale situation, an attempt will be made to answer whether there are differences in the intensity of ozone episodes during selected hot weather periods. The outcome from the study will be useful for the interpretation of modelling results for air quality in future climate.