

# Investigations on Particulate Matter PM10 in Graz<sup>1</sup>

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The stringent load of particulate matter PM10 has caused remarkable attention in recent time and is a very present and explosive topic in media and politics. In the region of Graz the threshold value ( $= 50\mu\text{g}/\text{m}^3$ ) of the average daily concentration PM10 is exceeded on more than 100 days of the year. This situation appears mainly within the six months October till March. So we investigated the influence of meteorological as well as anthropogenic factors based on data from the three winter seasons 2002/03, 2003/04 and 2004/05.

Exploratory data analysis shows that some wind and/or precipitation lead to lower values of PM10, but at days with temperature inversion (lower temperature on the ground than 200-600 m above the ground) one has to expect rather high values of PM10. This meteorological phenomenon can be observed at 50% of the days in the winter season and may be one explanation for extraordinary high PM10 values. However, the anthropogenic impact cannot be neglected, too. We will illustrate some szenarios which point out the influence of traffic and combustion processes.

Apparently, PM10 reacts very sensitive on external influences. Nevertheless we are able to present a prediction model for the average concentration of PM10 on the next day, using the 24h average of PM10 till 12 am of the current day, the type of the next day (working day, Saturday, Sunday/Holyday), the forecast of average wind speed, air temperature on the ground and 350 m above the ground and precipitation (0 or 1). We will also report on experiences with a test run carried out from December 16, 2004 until April 15, 2005.

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