

Source apportionment of particulate matter conducted during a pollution episode in winter 2017 in Graz, Austria

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In January and February 2017 above average concentrations of particulate matter (PM10, PM2.5) were determined in Austria due to the prevailing meteorological conditions. This pollution episode led to a marked influence of urban air quality in several cities in Austria, being most pronounced in Graz. In Graz the daily limit value of PM10 ($50 \mu\text{g}/\text{m}^3$, daily average) was exceeded on 20 days already in January, with maximum concentrations well above $100 \mu\text{g}/\text{m}^3$. Measurements conducted during previous years gave secondary inorganics, wood smoke and traffic related particulate matter as the most dominant sources of particulate matter mass during winter time. To identify the dominant sources of particulate matter during the winter 2017 pollution episode and to compare the situation to the results of previous years chemical analysis of selected filters available from the ambient air quality network in Graz was performed. Chemical analyses of the quartz fiber filters comprised inorganic anions and cations, carbon parameters (organic carbon, elemental carbon), metals, selected carbohydrates as well as other organic tracers (e.g. benzo(a)pyrene). Source apportionment was performed via a macro-tracer method optimized for the situation in Styria, as well as with a statistical approach.