Geophysical Research Abstracts
Vol. 14, EGU2012-4761-1, 2012
EGU General Assembly 2012

Magnetic properties of atmospheric PMx in a small settlement during heating and non-heating season

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Magnetic properties of environmental samples can serve as fast and relatively cheap proxy method to investigate occurrence of iron oxides. These methods are very sensitive in detecting strongly magnetic compounds such as magnetite and maghemite and can reveal concentration and assess grain-size distribution of these minerals. This information can be significant in estimating e.g. the source of pollutants, monitoring pollution load, or investigating seasonal and climatic effects. We studied magnetic properties of PM1, PM2.5 and PM10, collected over 32-48 hours in a small settlement in south Bohemia during heating and non-heating season. The site is rather remote, with negligible traffic and industrial contributions to air pollution. Thus, the suggested seasonal effect should be dominantly due to local (domestic) heating, burning wood or coal. In our contribution we show typical differences in PMx concentration, which is much higher in the winter (heating) sample, accompanied by SEM analyses and magnetic data oriented on concentration and grain-size distribution of magnetite/maghemite particles. While concentration of Fe-oxides does not vary that much, significant seasonal differences were observed in composition and grain-size distribution, reflecting different sources of the dust particles.