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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatiotemporal variations of ambient PM_{10} source contributions in Beijing in 2004 using positive matrix factorization" *by* S. Xie et al.

Anonymous Referee #1

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General Comments:

This paper discusses composition of aerosol samples collected at various sites in Beijing during select time periods over the course of a year. Concentrations of individual organic and inorganic species were further analyzed by Positive Matrix Factorization to determine likely aerosol emission sources. Of particular interest are seasonal variations, including coal combustion and biomass burning. This paper is well-written with comprehensive analysis, but may be strengthened by further discussion specific to urban characteristics. I recommend minor revisions prior to publication.

Specific Comments:

The authors chose to focus on PM10 in this study; identification of multiple dust-related sources is consistent with this coarse mode size range. However, considering the abundance of anthropogenic emission sources in major urban centers such as Beijing, it is important to consider fine particles when assessing overall aerosol characteristics. Are data available for smaller size fractions? Is it possible from current data to draw a link between PM10 and PM2.5? Although this was not the focus of this study, a distinction when determining the overall importance of dust aerosols vs. anthropogenic sources, for example vehicle emissions (conclusion section).

Questions:

- What is the reason for ”missing values”? (p. 575)

- What were typical detection limit values? For the trace metals?

- Were possible artifacts in measuring organic carbon on quartz filters considered? (see, for example, Kirchstetter and Novakov, Atmos. Environ., 35, 1663-1671, 2001)

- What daily variation was observed in concentrations of organic and inorganic species?

- Was an ion balance done? How consistent was this throughout the study?

- Do the various sampling locations of this study allow insight into atmospheric processing times and conditions?

- The ”unknown” category (i.e., Figure 2) should be specifically addressed or explained since this can comprise up to 20% of the total mass.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 569, 2008.

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Interactive Comment