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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Source apportionment of $PM_{2.5}$ in Seoul, Korea" *by* J.-B. Heo et al.

Anonymous Referee #2

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Comments on Heo et al “Source apportionment of PM2.5 in Seoul, Korea”

The purpose of this paper is to characterize the fine particle sources measured at an urban site in Seoul, Korea with PMF. While this is a well written manuscript, there are issues that should be addressed to clarify the relevance of this work to the utilities in current air pollution community.

The main weakness is that there is little new here in terms of the methods. All of the methods have been used before. This manuscript does not provide any new techniques that would help the source identification of atmospheric pollutants. Because of the location of the sampling sites, I still recommend publishing the paper.

Comments:

1. Detailed PM2.5 speciation data description needed to be included, such as time series plot, it will be interesting to see the comparison of PM2.5 species composition contribution pie chart versus figure S1, PMF source contribution pie chart. 2. In the PMF results description, the ratios between key species, such as NO3/NH4 ratio in nitrate factor, the SO4/NH4 ratio in Sulfate factor, and by comparing that to the source profiles that are well established, the author can demonstrate the quality of their calculation. 3. Can the author provide the correlation among the gasoline vehicle, diesel vehicle, and Road Salt and 2 Stroke engine? The correlation among them seems very low from Fig. 4, which is surprising. It is probably beyond the factor analysis’s capability to resolve such highly correlated source. What are the authors’ thoughts on this? 4. Usually a number of source categories in the emission inventory are reflected in one source resolved from PMF. For example, there are EC and trace metals in the secondary sulfate sources. Can the author make an estimate the pure source contribution of one single source (For example, the pure sulfate and ammonium contribution from the resolved secondary sources)? 5. If the regulators need to make an effective control strategy for PM based on these results, they need the confidence of the resolved sources. Can the author provide the rank of confidence the resolved sources, not only based on the modeled output uncertainties, but based on the source composition and the variation of the source contributions?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 20427, 2008.

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Interactive Comment