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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Changes in background aerosol composition in Finland during polluted and clean periods studied by TEM/EDX individual particle analysis" *by* J. V. Niemi et al.

Anonymous Referee #2

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This paper reports on results of single particle aerosol measurements at the rural background site in Finland during polluted and clean periods with different origins of particles. Authors present detailed, relevant data on the single-particle speciation of field-collected aerosol together with appropriate discussion on possible apportionment of aerosols and on their transport patterns during the observation period. Such data are of crucial importance for atmospheric and environmental science. The manuscript is well written, adequately illustrated, and contains a very appropriate reference list. I recommend its publication in ACP after the authors have addressed the technical and editorial suggestions made by the reviewers.

Specific comments: I fully agree with the suggestions of both reviewers regarding classification of particles presented in the manuscript. Indeed, as suggested by the reviewer 3, this would make more sense to combine groups 3 to 6 and split group 10 into two subgroups. Another issue was also raised by the previous reviewer (1), regarding distinguishing specifically ammonium sulfate particles. This is common inaccuracy in many TEM/EDX and SEM/EDX works authors call ammonium sulfate particles those particles that, in principle, are not necessarily (NH4)2SO4 but could be mixture of (NH4)HSO4, (NH4)2SO4, and (NH4)3H(SO4)2. EDX analysis does not provide unambiguous quantitative characterization of these mixtures. Therefore, some generic name like "NH4/SO4 salts" would be more appropriate for these particles. Finally, findings of the mixed soot/sulfate particles presented in this paper are very consistent with those reported recently by Johnson et al (Atmos. Chem. Phys., 5, 3033-3043, 2005) in their study of aerosols collected in Mexico city. Comparison with that study might be an excellent point for additional discussion.

General comment: Very nice, scrupulous work!

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 6753, 2006.