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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measurements of optical properties of atmospheric aerosols in Northern Finland" *by* V. Aaltonen et al.

Anonymous Referee #2

Received and published: 9 January 2006

General comments:

The paper is written is a clear and good structured way and presents an interesting long term data analysis about the correlation between scattering and particle number concentrations. This subject is important to understand the implications from aerosol on the climate issue and until now to less understand. The authors demonstrate on a 3 year data base the influence of different particle size ranges to the scattering probability and include a comprehensive trajectory analysis to clear up which origin, lifetime and hopefully in future work also chemical composition this particles feature. I would recommend publishing this manuscript in ACP after some minor revision.

Specific comments:

Page 11707, line 23: I would change the phrase weather measurements by meteorological measurements

Page 11707, line 28: What the author mean by visits at the station? Does this means all times someone visits the station you have to exclude data measured during this time?

Page 11708, line 20: I would encourage the author to include at this point some more explanation about the different scattering probabilities for each wavelength through particles in different size range. The authors started to give some explanation on page 11711, line 8 but this should be in section 2.3 and more exclusive.

Page 11710, line 16: The Angstrom exponent showed in figure 3c has in the year 2003 the highest maximum in October (if I could get it right) which is concerning to my knowledge not anymore late summer in Pallas. Is there some special reason why this year clearly differs from the other two years?

Page 11711, line 8: You use (7 - 25 nm) her but on page 11707, line 16 you used 10 nm at the lower cutoff from the CPC. To keep it correct the authors should change the values for this size bin to 10 - 25 nm.

Page 11714, line 24: Could the authors please explain the sentence 'even though most accumulation mode particles were too small to effectively scatter at the measured wavelengths. So if the accumulation particles are already too small to scatter effectively what's about the Aitken and nucleation mode particles?

Fig 3: Please also or only mention the colors in the text of the figure because the triangles, circles and squares are very hard to identify.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 11703, 2005.