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ACPD

5, S5315–S5316, 2005

Interactive Comment

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

## V. Aaltonen et al.

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1) The unit of scattering coefficient can be considered as the amount of scattering cross section in a certain volume. A convenient way to express this is to use the unit  $Mm^{-1}$ .

2) We agree that this sentence may be somewhat confusing. We removed the last part of it from the abstract (", indicating clean air with few scattering ..."). The same was done on page 11714 (lines 6-7).

3) The referee is right, we added "e.g." .

4) The referee is right, it might be a little confusing. The size channels for the LPC was just given as a specification for the instrument, the upper channel can not be used



because of the cut of the inlet system. Text was changed to the form: "The upper channel could not be used in the analysis because of the cut off in the transport line."

5) This is essentially the same comment as the first comment by referee 1 (See the first answer to referee 1).

6) In a way it is already said in the text, "The ratio between the backscattering and scattering coefficients was very high at small scattering coefficients. These cases were characterized by very low accumulation mode particle number concentrations, as well as particle size distributions strongly dominated by ultrafine particles." This observation agrees with the fact that as particles get smaller (<100 nm), their backscattering fraction increases substantially (e.g. Seinfeld and Pandis, 1998). However, in order to bring this point up more clearly, we added the following sentence at the end of first paragraph in section 3.2: "This observation agrees with the fact that as particles get substantially (e.g. Seinfeld and Pandis, 1998)."

7) There was an error in the caption of Figure 5. This was corrected. Figures 5b and c remind each other but are not similar. The text was modified in the following way on page 11711 (lines 18-20): "The connection between  $\sigma_{sp}$  and Aitken mode reminds that between  $\sigma_{sp}$  and nucleation mode, even though the envelope type pattern is less clear (Fig. 5c). No clear connection between  $\sigma_{sp}$  and total particle number concentration could be seen (Fig. 5d)."

8) The referee is right, this was corrected.

9) The last paragraph of section 4 was totally rewritten in accordance with the suggestion by the reviewer.

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

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