

Interactive comment on “Analysis of atmospheric neutral and charged molecular clusters in boreal forest using pulse-height CPC” by K. Lehtipalo et al.

Anonymous Referee #1

Received and published: 9 January 2009

The discussion paper by K. Lehtipalo et al. reports measurements of neutral and charged molecular clusters in boreal forest in Hyytiälä/Finland applying pulse-height CPC. The main outcome is that neutral clusters exist continuously in Hyytiälä conditions together with the finding that ion-ion recombination contributes only marginally to the total neutral cluster concentration. In general, I consider this manuscript suitable for publication in Atmospheric Chemistry and Physics. However, I have some comments and corrections which should be considered by the authors before acceptance.

In the abstract (and also in the results section) the authors mention the median concentrations determined from the campaigns conducted in spring 2007 and in May 2008

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thereby giving these numbers some emphasis. However, the explanation for this variability provided in the main text is rather unsatisfactory to me. If the changed settings (homogeneous nucleation level) of the PH-CPC during the May 2008 run really (at least partly) explain this difference as mentioned in the text I hesitate to accept the results from the first half of this campaign. I could imagine that the median concentration of the second half of the 2008 run is quite close to the one from 2007. If there are other reasons for such a difference in median concentration what are these? Can it be related to meteorological conditions? Anyhow, I feel that the absolute numbers measured are highly uncertain or have large error bars and I suggest to remove the median concentrations from the abstract.

In the conclusion section I somehow miss a closing remark going beyond the applicability limits of PH-CPC. Did PH-CPC technique prove itself for this kind of measurements? Based on the experience obtained, what is needed to improve future field measurements of neutral clusters?

Some technical corrections:

I suggest to unify the letters/words used for "circa" (last paragraphs of sections 2.1 and 2.2, first paragraph of section 3.2

Section 3.1: ... Fig. 5, further affirms, ... Section 3.2: ... highest cluster concentrations were not measured ... Section 3.2: ... was found to be very similar to the nocturnal ... Section 4: ... of PH-CPC measurements depends on ... Section 4: ..., but the concentrations of 3-5 nm particles...

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 20661, 2008.

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