

## ***Interactive comment on “Identification and classification of the formation of intermediate ions measured in boreal forest” by A. Hirsikko et al.***

### **Anonymous Referee #1**

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Identification and classification of the formation of intermediate ions measured in boreal forests

By Hirsikko, Bergman, Laakso, Dal Maso, Riipinen, Hörrak, Kulmala

The primary objective of this paper is to identify and classify atmospheric particle formation events observed at the Hyytiälä boreal forest site using data obtained using an air ion mobility spectrometer. The classification scheme that is employed is based on the scheme that was previously used by Dal Maso et al. (2005) for particle formation events based on DMPS measurements. In addition, the paper summarizes information regarding the effect of rain and snow on ion production. The analysis involved three

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years of data April 2003-March 2006).

I feel that this is an interesting summary of observations that merits publication. The classification schemes primarily involve visual observation of contour plots, and involve personal judgements that might be interpreted differently by different groups or be influenced by the color scheme used on the plots. I am not certain that a more quantitative approach is possible, but the classification scheme would be more satisfying if it were quantified. Nevertheless, I feel that this is an interesting summary of observations that merits publication.

The paper contains no quantitative analyses that enable conclusions regarding the importance of positive or negative ion induced nucleation, the number of particles formed by each process during the year, etc. I assume that papers on such topics will be forthcoming.

Editorial comments:

¶The abstract, mntroduction, and measurement and methods section mention the range of sizes or mobilities measured by the BSMA in four places. Please limit this redundancy. Also, the approach that was used to establish the relationship between mobility and size should be explained.

¶What is a “plain type-differential mobility analyzer” (p. 9191)?

¶p. 9192: “boarder” should be replaced with “border.”

¶p. 9193: what is meant by “(later shortly events)”?

¶p. 9200: “During the three years, there were in total 43 negatively charged particle events more than positive ones.” This should be rewritten to make more clear the significance: (i.e., 43=269-226).

¶Table 1, Class 1b: “The growth of particles was clearly seen. However, we are typically able to utilize these events when analyzing the event characteristics.” If the events

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are clear, then it would seem obvious that they could be utilized.

⌋Figures 1, 2, 3: Vertical axis labels are too small to read.

⌋Tables 2, 3, 4: Data are given by calendar year. However the three-year data set extends from April through March each year. Wouldn't the summary statistics be more meaningful if they were presented for the three April through March years? This would eliminate, for example, the unrepresentative results for 2006 shown in Table 4.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 9187, 2006.

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