

Interactive comment on “Secondary new particle formation in Northern Finland Pallas site between the years 2000 and 2010” by E. Asmi et al.

Anonymous Referee #2

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The manuscript documents and describes a decade-long time series of aerosol number-size distribution measurements at a well established monitoring site in Finland. The results have been analyzed in a consistent manner over that time period and discussed in the context of larger atmospheric chemistry and cloud physics. It is well written, the data are presented clearly and the results are of importance to atmospheric chemistry and the broader community of atmospheric and climate science.

General :

It should be mentioned that the analysis assumes a constant air mass-wide process of NPF and growth and that advection is of secondary importance. I.e., not a Lagrangian study.

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Given some of the weak relationships observed in sections 3 and 4, could factor analysis be of value to future analysis of this data set?

Section 1... scale between the first and second power of ...

2.1 The inlet has an upper size cut of ...

2.2 ... non-NPF...

2.2 ...rates (nm hr⁻¹)

2.2 The weighting procedure is not clear here and as referred to later in section 3.2

3.1 ... a pronounced seasonal cycle ...

3.1 ... to the seasonal cycle of NPF and undefined days.

3.1 “A partial explanation for the undiscovered seasonal trend could be related to the used relatively large lowest detection limit of the particle diameter.” Rearrange to: A partial explanation for the undiscovered seasonal trend could be related to the relatively large lower detection limit of the particle diameter that was used.

3.1 ... observed formation rates ...

3.1 ... of the start of the event with ...

3.1 ... The points being made about the time of day of the start of the events is evident in figure 3 but not very clear in the scatter plot. A histogram of events vs. time of day for the dominant eight months might show the result better than the scatter plot in figure 3.

3.2.4 Do you mean with increasing gas emissions or with increasing aerosol concentration resulting from emissions and time over land?

3.4 For lack of ...

3.4 Give the average value of water vapor supersaturation for this assumption and the

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standard deviation as found by Komppula.

Fig 9 Define the box and whisker parameters.

Fig 12 Define the box and whisker parameters. Are they the same as in fig. 9? Plotting format is different.

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