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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Using discriminant analysis as a nucleation event classification method" *by* S. Mikkonen et al.

Anonymous Referee #2

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GENERAL COMMENTS

The paper is well structured and written. The statistical analysis are complete and the paper is clearly qualified for publishing. However, few issues are needed to discuss.

SPECIFIC COMMENTS

Materials and Methods page 8487, row 20-23 and page 8488 row 1 It remained unclear how the even classification was made. Was it a visual analysis by a person or some sort of algorithm based analysis? There was mentioned a subgroups of events, but further was only used term "event day". Does this include all subgroups or only some subgroups, if so which subgroup and why? What is clarity degree of an event?

page 8488 row 11-13 the use of daily 24h averages is commonly accepted. However,

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if one searches the reasons for events, what important information would give the data that is collected after the event?

Further, the researchers have used non-linear kernel for discriminant analysis since the data was not normally distributed. Can it still be assumed that measured variables are normally distributed during 24h day? Could you discuss on possible error or effect of this assumption on you classification result.

page 8488 row 25-29 Authors say that RH and radiation have significant negative correlations, but this correlation is not strong enough for cause multicollinearity. How this conclusion is made?

page 8489 I was happy to see that authors have used both, resubstitution and cross-validation. Good!

Results Authors have compared two- and three variable model, but there was explanation why this particular two-variable model was chosen for comparison. Is the RH+log(CS) model the best 2-variable model? How much better than other 2-variable models?

page 8492 row 14 The effect of radiation was estimated with third degree polynomial. Why?

Conclusions Authors conclude that SO2 and NO2 have significant effect on nucleation events, but there wasn't enough data to include them to analysis. How this kind of conclusions can be driven if the variables weren't good enough for studying?

TECHNICAL CORRECTIONS

which logarithm (10- or e-based) have been used for condensation sink?

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 8485, 2006.