

## ***Interactive comment on “Nucleation events in the continental boundary layer: Influence of physical and meteorological parameters” by “M. Boy and M. Kulmala”***

**T. Koop**

koop@atmos.umnw.ethz.ch

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The paper by Boy and Kulmala represents a very interesting data set of aerosol nucleation in the boundary layer. I have two specific comments regarding the “nucleation parameter” which the authors define in order to correlate environmental conditions with observed nucleation events.

(1) The nucleation parameter was normalized to the maximum value for the year 1999. I think this normalization is not very useful. It inhibits a direct comparison of values between different years since the maximum values for other years are likely to change considerably (extreme values tend to vary much more than average values). Furthermore, it does not allow a comparison of the nucleation parameter between dif-

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ferent places. There seems to be no obvious physical reason why nucleation events should depend on the maximum value of the respective year (the authors give “easier viewing” as the reason for the normalization). This paper will most likely become a reference paper for future studies of the same type, also at other places. Hence, I suggest to use the absolute (unnormalized) values as they are calculated in the numerator of equation 1 allowing direct comparisons between different studies.

**(2)** I was wondering about the inverse correlation of nucleation on H<sub>2</sub>O concentration. One reason might be that with increasing H<sub>2</sub>O concentration the pre-existing aerosols get larger and, thus, represent a larger sink for condensable vapors. Here, the total aerosol surface area is the important parameter as has already been pointed out by referee 1. Using some reasonable growth factors, it might be possible to estimate the surface area from the aerosol and H<sub>2</sub>O measurements. Note, that the H<sub>2</sub>O dependence of aerosol surface/size scales with relative humidity rather than the absolute H<sub>2</sub>O concentration. Maybe, this helps improving the correlation with pre-existing surface area since, as far as I understand, only the dry diameters have been used up to now.

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