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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Observations of turbulence-induced new particle formation in the residual layer" *by* B. Wehner et al.

Anonymous Referee #2

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General:

Very few manuscripts have investigated the vertical location of atmospheric new-particle formation above a surface. This paper presents such a study and is therefore very welcome. The paper is well written with no apparent errors or scientific flaws. I have a few minor comments that the authors should consider before acceptance for publication.

Comments:

Airborne aerosol measurements are known to be challenging. Has the performance of these measurements in the ACTOS platform tested earlier and how? Please provide some information in this regard.

NAIS appears to be a very new instrument. How reliable is it? Has its performance been tested? How many instruments like that there are in operation and are they comparable to each other?

The authors showed that in their measurements, nucleation occurred in distinctive layer above a ground and when this air was mixed down, also increases in ground-level particle concentrations were observed. As a result, the authors made a strong point that great care should be taken when interpreting nucleation events observed at the ground level. It is very rare that ground-level measurements are accompanied by sufficiently accurate remote sensing other methods to reveal whether ground measurements have affected by mixing from above. Do the authors have any recommendation on how to distinguish between nucleation taking place close to ground and that taking place above the ground using solely ground measurements? For example, does it help to have an instrument of particle detection limit below a few nm? Please add some advice here.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 327, 2010.