

## ***Interactive comment on “Simultaneous measurements of particle number size distributions at ground level and 260 m on a meteorological tower in urban Beijing, China” by Wei Du et al.***

### **Anonymous Referee #1**

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This manuscript reported the first simultaneous observation of particle size distribution at two different height (260m and ground level) in the megacity of Beijing during periods with or without emission control. The aerosol chemical composition was also reported and connected to particle growth. This work did provide useful information to understand the particle nucleation and growth in the PBL. The manuscript is overall well written and fits the scope of ACP. I recommend it can be published on ACP after some minor revision.

1) New particle formation and growth events are generally abbreviated as NPF, not

C1

NPE.

2) ACSM can only measure the chemical composition of particles larger than several tens of nanometer. The authors need to be very careful to use ACSM measurement to explain the initial growth of newly formed particles.

3) Line 167, what is COA?

4) The reduction of PM<sub>2.5</sub> would in general promote the new particle formation and growth due to the decreasing of condensation sink. In this MS, e.g. 187-189 and 250-252, the author attributed lower growth rates to lower PM loading. This is an unreasonable explanation.

5) Line 266-267: Similar as last comment, higher CS should suppress the particle growth.

6) Line 286-287: it's better to compare the GR event to event, but not the average value.

7) Figure 2 and Figure 3: the color bars are missing.

8) It would be good to change Figure 4 to a table.

9) Figure 5: the data with higher time resolution, e.g. 10 min is recommended for figure a, b and c.

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