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Discussions

Interactive comment on "Measurement report: Comparison of wintertime individual particles at ground level and above the mixed layer in urban Beijing" *by* Wenhua Wang et al.

Anonymous Referee #1

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This manuscript by Wang et al. shows the comparison of individual particles between the ground level and above mixing layer height (MLH) during wintertime in Beijing. This should be an interesting topic, however, after I read this paper, I did not get the significance of this study. In this study, the authors describe various particles in Beijing air. These particles are not surprising for me because they reported very details in cited papers. The authors shows the changes in number fractions and mixing state of individual particle types between non-haze and haze days at the ground level and between the ground level and above MLH. The paper was published as measurement report. As the low requirement for the paper innovation and quarlity, I might think that the paper can be published after one major revision.

(1) The fraction of mineral dust seems too high for me, what caused the high number fraction? The data is not right for normal haze event except the dust event. The fine secondary aerosols or primary particles should be dominant number in any case during clean and haze events. Obviously, the fundamental analysis might be not correct for individual particles. I supposed that the authors missed many fine particles in the TEM analysis.

(2) The lower magnification images should be provided to show differences. The authors didn't make notes in these two Figures. What are these aerosol particles? Could you add two low magnification images to show mineral particles?

(3) I noticed that the sampling time mainly at nighttime, when the MHL is the lowest. the authors missed samples at the daytime? Obviously, the potential readers are interested in the changes of particle types caused by the MLH change. Did the authors collected the samples in daytime? Then you can compare what differences when the MLH changed.

(4) If the authors can determine the particles above the MLH from the long-range transport or local surface emissions? More meteorological or models (e.g., HYSPLIT MODEL) should be added to indicate the particle transport.

(5) L236, the R value seem same between 0.54 and 0.59 including the errors. This value could be same. Also, I might think that the authors should add more transportation data here.

(6) Section 4, the implication should base on your own data. Seemly, some discussion or implication don't have any data support. The previous study should be not supporting all your discussion. Again, the authors should add more data to give more support for this part.

The paper has bad English writing. The authors should carefully revise it.

L138, Mass concentration of air pollutants.

L182 Comparison of haze and non-haze individual particle at ground level

L183-184, as could not connect one sentence

L188, OPs should change to OM (organic matter).

In this paper, there are many grammar mistakes. I didn't list all the english problem. The present and past states often mixed in one sentence.