

Interactive comment on “Using different assumptions of aerosol mixing state and chemical composition to predict CCN concentrations based on field measurement in Beijing” by Jingye Ren et al.

Anonymous Referee #1

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I am having a significant difficulty to comprehend the definitions of the mixing states in section 3.2. Some of the described mixing state assumptions make no sense. For instance, it is not clear how an external mixture with size-resolved chemical composition could be possible (assumption 4) because in an "external mixture" different chemical components belong to different particles, independently of their size. The composition of particles cannot change with size if there is only one chemical in each type of particles. Perhaps this is not what the authors meant, leaving the reader to guess. There are a number of other places in the manuscript, where the terminology is poorly de-

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finied. For instance, when talking about volume fractions, do the authors refer to the composition of a single particle or the volume fraction of particles in a size bin? How are assumptions 2 and 4 different? The audience and reviewers should not second-guess what the authors tried to say. The definitions of mixing state assumptions need to be supported with mathematical equations and schematic drawings.

While this might be an interesting and important study, currently I see no point trying to decipher the results until the methodology is clearly presented. I suggest that the manuscript is returned back, encouraging the authors to revise and resubmit.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-806>, 2017.

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