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Interactive comment on "Optimization of Sulfate Aerosol Hygroscopicity Parameter in WRF-Chem version (3.8.1)" by Ah-Hyun Kim et al.

Anonymous Referee #1

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The authors present model results of aerosol over East Asia using a new parameterization that accounts for varying sulfate particle species. The introduction provides a compelling argument as to why spatial and temporal variations in sulfate particle species should be accounted for in models. Furthermore, the analysis showing differing CCN activation fractions show the considerable contrast between the default and proposed methods. The manuscript is well structured, well written and the results are of great importance. I only have 1 question and a couple minor suggestions that I believe should be addressed before publication.

Section 2.4 - Why is KNH4HSO4 not also considered when R <2? Is there literature to support this exclusion?

Line 168 – I assume these are all boundary layer measurements. Please clarify in text.

Figure 1 – Consider adding shading to Figure 1 (similar to Figure 4) to identify measurements over land vs sea.