

Interactive comment on “MICS-Asia III: Multi-model comparison and evaluation of aerosol over East Asia” by Lei Chen et al.

Anonymous Referee #2

Received and published: 14 April 2019

Chemical transport models play important roles in advancing understanding of aerosol pollution and aerosol climate effects. This manuscript evaluates multiple model applications in Asia using observations from multiple platforms. The manuscript needs major revisions before publication.

There are two major issues:
1 Improvements in language are needed. I would suggest that the authors ask native speakers for help.

2 The authors fail to gain insights out of the evaluation and model inter-comparisons. As the result, the abstract and summary parts are a little weak. More efforts are needed to understand the details of model inputs, reactions, and etc.

Specific comments: 1 Page 4 line 23: to present and summary the: summary should

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be summarize; please improve the language carefully through the entire manuscript.

2 Page 7 line 3: weird expression “incredible” here

3 Page 11 line 7: “incorrect treatments of the NH₃ emission inputs”: this statement is not supported by any evidence in the manuscript. How about plotting NH₃ emissions from these two models? From Fig. 15, predicted sulfate from M7 and M8 look consistent with others. If NH₃ emissions are not treated well, it should affect sulfate significantly. My sense is that nitrate from M7 and M8 are problematic. Please figure out the real reason.

4 Many statements in the manuscript were presented without showing any evidence. Another example is in page 10 line 27: I doubt M7 and M9 include heterogeneous uptake of SO₂ on aerosols. Please make sure the descriptions of model cover the inclusion of important chemical reactions, which will help understand the reasons for differences.

5 What can we learn from the evaluation and comparison? The authors need to add more discussions on this.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-1346>, 2019.

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