

Interactive comment on “Accelerated increases in global and Asian summer monsoon precipitation from future aerosol reductions” by Laura J. Wilcox et al.

Anonymous Referee #2

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This study investigates the possible influences of different aerosol reductions in the future on the global and Asia surface temperature and rainfall. The topic is quite important, but the method they took may have some problems, at least for some conclusions. Their writing is very unclear (with many typos, which greatly affect the reading experience) and very hard to follow. At the same time, the figures are so small and so unclear (also the captions) that I try my best to understand what they showed. Besides these, I still have several major comments and I don't think this manuscript can be accepted unless all these concerns are well addressed.

Major comments: 1. Due to the lack of clean experiments, the guidance to distinguish

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the relative importance of GHG and aerosol forcing in this study is that different scenarios may be similar in one forcing change, while very different in the other forcing change. This seems plausible, but the question is whether the other forcings (e.g., land use) keep unchanged in different scenarios. I guess probably not. So the question is whether they are important or not for the main conclusion drawn here. I think the authors should seriously think about it and do some analysis on it. 2. From Fig. 5, it seems that for the global mean precipitation and hydrological sensitivity, the responses of most models are close to each other, except two models with totally opposite signs (one with large positive value and the other with large negative value). Could you do more analysis on these two models? With the same aerosol emission, how can these two models produce totally opposite results? To me, I know the aerosol forcing has large uncertainty (should affect the results in a quantitative way), but in a qualitative way, it should be the same result at least at the global mean. Hence, it quite surprises me. In Fig. 6, it seems that over Asia, the uncertainty is smaller, at least not opposite.

Specific comments: 1. Page2L35: Why is this case? It is hard to understand. It is better to provide an explanation here. 2. Page3L13: full->fully 3. Page3L14: add a period. 4. Page7L3-4: You should clearly state this in the figure caption to make sure each figure can be understood from the figure itself. 5. Page7L18: Please add “partly”. I don’t think aerosol forcing explains all the weakening of Asian summer monsoon. 6. Page7L30: remove “the” 7. Section 4.1: I don’t think it is suitable to compare the SSP2-4.5-aer simulations from two models with SSP2-4.5 simulations from all models. You should compare these two simulations from the same model.

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