

Interactive comment on “CAM6 simulation of mean and extreme precipitation over Asia: Sensitivity to upgraded physical parameterizations and higher horizontal resolution” by Lei Lin et al.

Anonymous Referee #1

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This paper documents the precipitation over Asia for CAM5 and two resolution configurations of a quasi-CAM6 version. The authors find that many aspects of the simulated precipitation features (both mean state and variability) are improved with CAM6, though persistent biases remain. Further, higher resolution CAM6 can further improve on the low resolution CAM6 results.

Overall, I found this to be a fairly well written paper that was concise and contained lots of interesting results. My main critique of this paper is not so much with what the authors show but with what the authors DIDN'T show. I recommend publication after

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the authors have considered addressing my two major points of critique and improve the clarity of the paper by addressing the two minor points.

Major Points

1) The authors present CAM5-1 degree, while presenting CAM6-1 degree and CAM6-0.25 degree. Why not show results from CAM5-0.25 degree? I feel neglecting the inclusion of this configuration leaves a hole in the story the authors are trying to tell. It would be very interesting to see how two very different versions of CAM respond to increases in resolution and whether the improvements seen in CAM6 high resolution are, in fact, unique to CAM6. 2) Page 6, line 2, the authors state “while the poor performance of CAM6, especially over Maritime continent will be dealt with in a separate paper”. Why? This would be the appropriate paper to discuss this topic and the sudden neglect/omission of this topic gave the paper a rather disjointed feel since I felt like a crucial piece of the story was missing.

Minor Points

1) The authors need to be more explicit about what they mean when they refer to regions such as “Sichuan” or “southern China”. I know figure 2c has boxes denoting regions, yet these boxes are not labeled anywhere in the figure or caption. Further, these regions are referred to in Figure 1 and it required efforts of my own to try to identify what the authors were referring to in reference to “Sichuan” etc. Explicitly defining these regions EARLY in the paper will go a long way towards improving the clarity of the paper. 2) Table one should include any difference in the time step between the 1 degree and 0.25 degree model. In addition, was the deep convective time scale adjusted in the 0.25 degree simulation versus the 1 degree simulation?

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