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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Thermodynamic and dynamic responses of the hydrological cycle to solar dimming" *by* Jane E. Smyth et al.

Anonymous Referee #2

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I recommend this paper be rejected. It presents little new information. It repeats results from previous papers. And it ignores the seasonal cycle in precipitation and evaporation which includes a lot of physics and monsoon responses, as analyzed by Tilmes et al. (2013). The conclusions are either obvious or not sufficiently diagnosed to add to understanding.

There are many comments in the attached annotated manuscript that need to be addressed. In addition:

I am confused. The text says there were 13 models and you excluded one, but do not say which model and why. Then Figs. 2 and 3 used 11 models, but excluded one. Again, what was the criterion for excluding the model? Table 1 only lists 12 models.

Fig. 1 is not a new result. It is the same as Fig. 2 (top right) of Kravitz et al. (2013a),

and this needs to be acknowledged.

Figs. 2 and 3 are not new. They are the same as Fig. 5 of Kravitz et al. (2013a), and this needs to be acknowledged.

I don't understand which results are plotted in Fig. 4A. Is it G1? piControl? The difference? The caption just says "as simulated in the models." If it is the difference, why does it differ from the results shown in Fig. 1 of Kravitz et al. (2103a), and again not acknowledged?

Graphics are poor quality. For Figs. 1-3, 5: - The color shading has way too many shades, so it is impossible to determine the value by looking at a color on the map. Use fewer values and include labeled contour lines. - The stippling is much too dense. It is impossible to see the shading underneath it. - The x-axis label is wrong. The scaling is wrong and the longitude labels are in the wrong place. The right end should be 0°. - The entire figure is blurry and too low resolution. - The criterion for shading varies from 62.5% to 64% to 66% agreement. Why? Why not use the 75% criterion of Kravitz et al. (2013a), which covers less of the data? - Try using GrADS. It makes beautiful maps, and automatically gives you labeling, contours, and shading.

For Fig. 6, the color shading has way too many shades, so it is impossible to determine the value by looking at a color on the map. Use fewer values and include labeled contour lines.

Use "piControl" rather than "Preindustrial," as it is the standard CMIP5 terminology.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/acp-2016-886/acp-2016-886-RC2-supplement.pdf

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