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Interactive comment on “Sensitivity of simulated climate to latitudinal distribution of solar insolation reduction in SRM geoengineering methods” by A. Modak et al.

Anonymous Referee #2

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It is not clear what this study adds to scientific understanding. The main conclusions are not substantially different to previous work.

At first I was confused that adding sulphate aerosol at the poles should warm the planet. It was not clear that the responses given were differences to the 1xCO₂ simulation and therefore also included 2xCO₂.

There are a large number of figures that do not add anything to the conclusions, eg Fig 2, 5, 7, 8, 9, 10 and 11. Also many of the figures are too small to read.

There is a lot of repetition in the text of the main conclusions.

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Line 23 p 25392: uniform distribution does not completely mitigate temperature change.

Line 1 p 25393: not clear what you mean by 'heat the atmosphere only' and how this is different to CO₂ forcing.

Line 6 p 25393: 'Therefore the precipitation change....' does not follow on from the previous sentence and what 'fast response component' are you talking about?

Line 2 p 25394: 'The reduction in precipitation...' in what way are your results consistent with observations following Pinatubo?

Lines 3-16 p 25395: I don't understand this at all.

Section 3.2 I don't know what the point of all these figures are and what the important messages are. The significance hatching is not clear on the figures and doesn't make sense to me. Some plots show hatching over areas with smaller delta T than in other plots with no hatching. If geoengineering is working you would want the residual changes to be insignificant in as many places as possible. I can't follow your seasonal cycle discussion.

Section 4: Don't introduce more figures now that don't seem very relevant.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 25387, 2013.

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