Earth Syst. Dynam. Discuss.,
https://doi.org/10.5194/esd-2019-21-RC1, 2019

Earth System Dynamics
Discussions

Interactive comment on "Climate System Response to Stratospheric Sulfate Aerosols: Sensitivity to Altitude of Aerosol Layer" *by* Krishnamohan Krishna-Pillai Sukumara-Pillai et al.

Anonymous Referee #1

Received and published: 1 June 2019

I reviewed an earlier version of this manuscript that was submitted to another journal. I think this version is far improved over the previous one. Many of the results are perhaps not all that surprising, especially given that other studies (which the authors cite) have looked at the different effects of injection altitude. However, I have not necessarily seen all of these results in one place, which makes this paper interesting. The addition of Section 3.5 is very interesting, and I learned quite a bit. I am recommending just a few minor revisions.

General comments:

As the authors say, they don't include any dynamics or transport. However, radiative

forcing and climate response to stratospheric aerosols definitely depend on dynamics. I would appreciate the authors adding some description as to how this compromise might have affected their results.

Specific comments:

In the last paragraph on Page 5 (going into Page 6), some context for these results is needed. Do these numbers make sense, and why? (I think they make sense, but I'd like for you to say so.)

Page 8, line 13: Can you phrase this in a different way? 1xCO2 is your baseline, so it doesn't cause any cooling.

Figure 4: I'm not sure hatching is necessary. All of the regions are statistically significant, so just say that.

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