

Interactive comment on “Impact of the eruption of Mt. Pinatubo on the chemical composition of the stratosphere” by Markus Kilian et al.

Anonymous Referee #1

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Review of Kilian et al. acp-2020-147

This is a simple, carefully done study. I like how clearly you have defined your three experiments, and the aims are clear. The scientific conclusions follow well from your experiments and analysis. I am recommending minor revisions.

General Comments

The introduction does a good job of explaining the context of your study and exactly what the knowledge gaps are. However, what was missing is why those knowledge gaps are important to address. More specifically, why is it important to separate the chemical effect of heterogeneous chemistry from the heating effect of the volcanic heating? I think a sentence or two would be useful here.

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Since you're using prescribed surface area density, it might be useful to talk about which processes/feedbacks you're missing that might affect your results.

It would be useful to talk about how the nudging may have affected your results. For example, on Page 7 you talk about transport of SWV, increases in vertical motion, and polar stratospheric clouds. Are these things affected by the nudging? Are others?

There are quite a few typos. I've pointed out some but not others. I'd recommend the authors spend some time proofreading.

Specific Comments

Page 2, line 12: Poleward misspelled

Page 5, lines 2-5: These read like throwaway comments. What are the sociopolitical impacts?

Page 5, line 5: Assess misspelled

Page 10, line 1: Is this really exactly linear? I think you need to demonstrate this more clearly.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-147>, 2020.

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