

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

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The results of our paper (Aquila et al. 2013) are misrepresented at page 10 line 5 ("This result is in contradiction to Poberaj et al. (2011) and Aquila et al. (2013), who attributed the absence of ozone depletion in the southern hemisphere to interannual dynamic variability.") Aquila et al. (2013) showed that the absence of ozone depletion in the southern hemisphere was caused by the stronger Brewer-Dobson circulation due to the volcanic heating. From our abstract: "The authors' simulations show that the heating due to the volcanic aerosol enhanced both the tropical upwelling and Southern Hemisphere extratropical downwelling. This enhanced extratropical downwelling, combined with the time of the eruption relative to the phase of the Brewer–Dobson circulation, increased Southern Hemisphere ozone via advection, counteracting the

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ozone depletion due to heterogeneous chemistry on the Pinatubo aerosol." It is also clearly shown in Fig. 7 of our paper.

If I have understood correctly this manuscript, I also think that the sentence "For the first time, the effects of volcanic heating and heterogeneous chemistry on the chemical composition, caused by the volcanic aerosol, are separated", which is contained in the abstract of Killan et al., is incorrect, as other studies have done that before (among which our Aquila et al., 2013).

Reference Aquila, V., Oman, L. D., Stolarski, R., Douglass, A. R. and Newman, P. A.: The Response of Ozone and Nitrogen Dioxide to the Eruption of Mt. Pinatubo at Southern and Northern Midlatitudes, *J. Atmos. Sci.*, 70(3), 894–900, doi:10.1175/JAS-D-12-0143.1, 2013.

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