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Comment on [angeo-2021-50](#)

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Community comment on "Estimating the impact of the 1991 Pinatubo eruption on mesospheric temperature by analyzing HALOE (UARS) temperature data" by Sandra Wallis et al., Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2021-50-CC1>, 2022

This study concerns the quantification of the mesospheric impact of the Pinatubo eruption using the HALOE instrument on board UARS platform.

While these series miss the beginning of the event, it is interesting to perform such analyses because Pinatubo is one of the biggest eruptions observed in the last decades that has perturbed the whole atmosphere.

This analysis confirms previous analyses that have indicated a warming of the mesosphere following the eruption and deserve to be published. However, I think the amplitude estimates provide in this study needs to be carefully discussed while this study do not provide any uncertainties.

The conclusion that there is a discrepancy with previous studies seems then to be too strong. The conclusion should be more positive while warming was confirmed.

The volcanic eruptions are complex to quantify while solar cycles match the occurrence of volcanic eruptions mainly when series are short (see for example Kerzenmacher et al., 2006).

Temperature deviations associated with Pinatubo eruptions are calculated with zonal average while other estimates are local observations. Also some estimates are performed by season and some other including all season. If a dynamical effect is expected, Pinatubo signature should be different.

Also data quality needs to be discussed either the absolute values (see Remsberg et al., 2002) and the number of data while solar occultations provide a smaller sampling than more traditional observation like nadir observations while the vertical resolution is better.

Another global estimate with a different dataset can be used for comparison and can be found in Hampson et al. (2006).

Kerzenmacher et al., Methodological uncertainties in multi-regression analyses of middle-atmospheric data series, 2006, *J. Environ. Monit.*, 8, 682-690, DOI:10.1039/b603750j.

Hampson et al., The dynamical influence of the Pinatubo eruption in the subtropical stratosphere, *J. Atmos. Solar Terr. Phys.*, 68, 1600-1608, 2006, [dx.doi.org/10.1016/j.jastp.2006.05.009](https://doi.org/10.1016/j.jastp.2006.05.009).

Remsberg et al., An assessment of the quality of HALOE temperature profiles in the mesosphere with Rayleigh backscatter lidar and inflatable falling sphere measurements, *J. Geophys. Res.*, 107(D19), 10.129/2001jd001521, 2002.