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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Sulfur dioxide (SO₂) from MIPAS in the upper troposphere and lower stratosphere 2002–2012" *by* M. Höpfner et al.

Anonymous Referee #1

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This paper by Höpfner et al. presents SO2 retrieval data from MIPAS with the following characteristics:

- UTLS only (10-20 km)

- retrieval on a single observation basis

- 2002-2012 time period

- reasonable agreement between the two MIPAS operation modes (after debiasing)

- no large discrepancies with ACE-FTS data (after debiasing)

After presentation of the retrieval algorithm, the data is analyzed for major volcanic eruptions which occurred in the reported time period; and a short analysis is presented of the global background variability.

There is very little to fault the manuscript. The science is solid, results are presented in a clear and balanced way and the manuscript is well written. In addition, derived volcanic data is very useful reference data; especially with respect to the atmospheric lifetime of SO2 which is not often reported in the literature. The background analysis as well reveals interesting and unknown patterns, where future research can be build upon.

The only change I would request prior to publication is that the authors explain in (some) detail the calculation of total masses/columns. Since the daily spatial coverage is very sparse, it is not clear how reliable daily masses are calculated for large volcanic plumes.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 5801, 2015.