

## ***Interactive comment on “Retrieval of absolute SO<sub>2</sub> column amounts from scattered-light spectra – Implications for the evaluation of data from automated DOAS Networks” by Peter Lübcke et al.***

**Anonymous Referee #1**

Received and published: 10 May 2016

The manuscript addresses a relevant source of uncertainty in the determination of SO<sub>2</sub> fluxes by scanning DOAS instruments that might occur at many monitored volcanoes during certain wind conditions and depending on the geometrical parameters of the scanning instruments. When no plume free region is within the instrument's range, the use of a Fraunhofer reference spectrum from the same scan produces erroneous results with respect to the absolute column densities and the authors propose the use of a modelled reference from a high resolution solar spectrum. The DOAS retrieval error, which normally increases by the straight forward use of a modelled Fraunhofer reference spectrum instead of a measured one, is greatly reduced by the principal component analysis that the authors apply. The manuscript is well written and clearly

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structured and should, in my opinion, be accepted as is.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-24, 2016.

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