

Interactive comment on “Opportunistic validation of sulfur dioxide in the Sarychev Peak volcanic eruption cloud” by S. A. Carn and T. M. Lopez

Anonymous Referee #1

Received and published: 14 July 2011

The paper "Opportunistic validation of sulfur dioxide in the Sarychev Peak volcanic eruption cloud" constitutes the first published validation of SO₂ retrievals from a space borne instrument with ground based measurements, and is as such important. The paper only compares 5 measurements, and is obviously insufficient to validate the OMI product. It discusses to some extent the challenges in coping with spatial and temporal differences, and this is the other interesting aspect of this paper. I think the paper is suitable for publication in AMT, but could be improved following the comments below.

Specific comments:

* Abstract: the 5-6% is misleading, and I suggest formulating this in a more qualitative
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way; perhaps mentioning the many challenges involved in such a comparison.

* Fig 1. This is a really nice figure, but hard to read. It would be good to make this figure also available as kmz (with the 3 different images included) in supplementary material, so readers can have a better look at it with Google Earth.

* I like the way spatial averaging is dealt with, the idea of extrapolating is very nice. Is it original or has this been done before?

* The paper makes mention of the wind speed and the issue of different timing. Would it be possible to shift the OMI measurements, to match the timing of the ground based measurement? It would make more sense than making an average of the northbound and southbound traverses. In any case, I think this should be discussed in more detail.

* Related to this, it seems comparison/interpretation would be much easier using stationary ground based measurement. Do you agree? I would be interested to read a recommendation (stationary vs mobile) in the concluding section, for the benefit of future validation campaigns.

* page 3866, line 14 mentions "unweighted" for the first time, without explaining why or how. I suggest removing the word "unweighted" in this place, as it confusing. Alternatively, it could be kept, but then you should explain what is meant.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 3861, 2011.