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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Temporal trends of anthropogenic SO_2 emitted by non-ferrous metal smelters in Peru and Russia estimated from Satellite observations" *by* M. F. Khokhar et al.

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Dear Muhammad,

I found your study about the anthropogenic SO2 sources quite interesting. I have a few comments/questions to your work:

You calculated the SO2 AMFs for a wavelength of 315 nm. Could you provide some evidence why this wavelength is representative for the SO2 spectral fitting window you chose ? The AMF is highly variable in this spectral window. We used a single wavelength around 320 nm in our own SO2 study (which is of 2005 by the way, not 2004; Thomas et al., JAC), which was justified by a closed-loop test (up to SZA $<$ 65 deg, fit

window 315.8-327 nm).

The impact of the aerosol profile on calculated AMFs may probably deserve further attention, especially over bright surfaces. Maybe you can add such discussion which might help you to explain observed differences between reported and calculated SO2 emissions of the SO2 sources.

Would it be possible to underpin the surface albedo of 80% assumed for Norilsk in your study by "true" data, maybe taken from the GOME-based spectral surface reflectivity database (see Koelemeijer et al., JGR, D108, 2003)? Of course, this will not give you an actual number but the climatological values there may help you to justify your choice. The value you use seems to be quite high.

You provide some SO2 trends/linear fits over several regions and strong emitters. It would be advantageous if you can say something about the statistical significance of these trends, since the scattering (i.e. the standard deviation) of data seems to be quite high.

Best regards

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 17393, 2008.

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Interactive Comment