

Interactive comment on “Accounting for surface reflectance anisotropy in satellite retrievals of tropospheric NO₂” by Y. Zhou et al.

Anonymous Referee #1

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Manuscript amt-2010-41 deals with the issue of surface reflectance as a key parameter in satellite trace gas retrievals in the UV/visible range and in particular for the retrieval of nitrogen dioxide vertical tropospheric columns. A new methodology which uses the MODIS bi-directional reflectance distribution function has been applied to two years of OMI NO₂ observations. The methodology is well-defined, explained and discussed with ample examples and statistical analysis. The authors have demonstrated the importance of using these detailed reflectance distributions for the calculation of the air mass factors, the basis of any DOAS analysis techniques. Overall, I recommend publication in Atmospheric Measurements and Techniques subject to one issue that I discuss in the attached supplement: the authors have not shown to my satisfaction the relative importance of using different apriori profiles compared to the use of the new reflectances in the algorithm. On this issue, I refer the authors to the annotated text

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attached and note that I would like to see these amendments before the final article is accepted.

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/3/C673/2010/amtd-3-C673-2010-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 1971, 2010.