Response to the editors and reviewers:

Comments:

What I am saying is that the whole paper should be more focused (abstract, figures, conclusions) in the overpass data. It would be useful to highlight that there is a X% overall overestimation of OMI compared with ground for overpass spectra and a table or figure to show this overestimation (for example as a median of the ratio OMI vs ground) plus the standard deviations etc. So this is the main finding. Then for the noon measurements someone can say that what we expect is more scatter due to the OMI assumptions that have been discussed above.

So summarizing, to focus more on the overpass results and description and less on the local noon ones (that can be also presented). Temporal and spatial analysis and trends are also important as presented .

Replies

The statistics for evaluating OMI data at its overpassing time is presented in the abstract and several figures in the manuscript. While this is important, it is only one aspect of the finding of this paper. Another aspect of this paper, which in our view is more interesting, is the study of noontime surface UV data based on surface observation data, and how the OMI noontime estimate can have errors due to temporal sampling bias. OMI has been around for more than a decade, and noontime UV estimate is routinely generated as a scientific parameter for the use in the community. Therefore, it is important to assess how good it is and the extent to which the temporal sampling issue can lead to biases. To take the reviewer's point, we now have also added in the appendix on the statistics at each station for the comparison between OMI and surface data at satellite overpassing time. There are good sciences that OMI has to miss due to its limited once-per-day sampling. The paper is now in good balance of using surface observation data and satellite UV data; the title is also changed to add surface observations as suggested in the previous review. Thanks.

Minor

Line 172

there is also this new reference to have a look

Zempila, M.M., et al ., Validation of OMI erythemal doses with multi-sensor ground-based measurements in Thessaloniki, Greece, Atmospheric Environment, doi: 10.1016/j.atmosenv.2018.04.012, 2018

and line 172.

This one for the spatial and temporal issues:

S. Kazadzis, A. Bais, D. Balis, N. Kouremeti, M. Zempila, A. Arola, E. Giannakaki, A. Kazantzidis, V. Amiridis, Spatial and

temporal UV irradiance and aerosol variability within the area of an OMI satellite pixel, Atm. Chem. and Phys., 9, 7273-7298, 2009

Replies. Done. These two references are added and discussed in places around L172.