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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Comparison of UV irradiances from Aura/Ozone Monitoring Instrument (OMI) with Brewer measurements at El Arenosillo (Spain) – Part 2: Analysis of site aerosol influence" *by* V. E. Cachorro et al.

Anonymous Referee #1

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The manuscript deals with an interesting topic of research: the correction of OMI UV products for the absorbing aerosol effect. This part of the OMI validation is of big scientific interest, since the OMI UV algorithm does not include the aerosol absorption at the present state and therefore usually overestimates ground UV. The present paper starts with a deep analysis of the local aerosol properties; then continues with the application of the aerosol correction to the OMI bias (according to a methodology described in some previous papers). I recommend the acceptance of the manuscript on ACP with some corrections:

P16388 L18 your sentence is not completely true: TOMS UV algorithm has an Aerosol Index-based correction for the absorbing aerosols which is not included in the current version of OMI UV algorithm. Please check it.

P16389 L1 Change the sentence as follows: "However, a positive OMI bias up to 50% was found for polluted sites,..."

P16389 L5 A recent paper by Ialongo et al. includes the absorbing aerosol correction also for erythemal dose rates. Please check it and mention this paper in the introduction. Ialongo, I., Buchard, V., Brogniez, C., Casale, G. R., and Siani, A. M.: Aerosol Single Scattering Albedo retrieval in the UV range: an application to OMI satellite validation, Atmos. Chem. Phys., 10, 331-340, doi:10.5194/acp-10-331-2010, 2010.

P16391 L14 "we use both indistictly": please use only one between AOD and AOT (AAOD and AAOT too) for clarity, and change them accordingly in the text.

P16393 L19-20 Did you checked the SZA dependence of this correction approach?(see again Ialongo et al., 2010 as they showed a SZA dependence of the correction factor). You can use the slant AAOD defined as AAODS=AAOD*cos(SZA).

P16394 L4 change the sentence with "...UV products, the analysis was restricted to lambda(use greek symbol)=324 nm, ..."

P16394 L17 You should mention these limitations. Do you maybe refer to the large SSA uncertainty or to the reliability of the methods, in general? Please would you cite some papers about that topic?

P16398 L2-3 "Note that...": this sentence is not clear at this point in the manuscript, please mention it later in text to better clarify this comment.

P16401 L15 Replace "at level 1.5" with "(level 1.5)": do it in the whole manuscript. Would you please also better clarify the difference between level 1.5 and 2 aeronet data in the text?

ACPD

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P16403 L11-13 You showed very low correlation coefficients between OMI/Brewer ration and AAOD, even lower than those related to extinction AOD. If the bias is explained mainly by the effect of absorbing aerosol, the correlation coefficient should be at list slightly higher for AAOD than for AOD. Could you comment on that? Could you also mention in the conclusions which are in your opinion the major reasons of the OMI overestimation?(there is a positive bias left also after the absorbing aerosol correction). (It seems that the AAOD is not the proper optical parameter to estimate this aerosol effect in El-Arenosillo site)

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 16385, 2010.