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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Comparison of total ozone and erythemal UV data from OMI with ground-based measurements at Rome station" *by* I. Ialongo et al.

Anonymous Referee #1

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The study deals with the validation of satellite (OMI) retrieved ozone and UV irradiance. OMI values are compared to ground based measurements of ozone performed with a Brewer spectrometer and erythemal ultraviolet irradiance measured with a Brewer and a YES UVB-1 radiometer. The innovative aspect of this work is that OMI retrieved UV has not been compared with ground based measurements from Rome until now. The findings confirm the results that have been found in other studies showing a good accuracy of the ozone retrieval and an overestimation of ground UV by the OMI algorithm. There could however be more interesting aspects if some more analysis was added: I miss a more thorough analysis of the results. Among other things the discrepancy between ground measurements and OMI data should be more analysed and explained.

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Interactive Discussion
Discussion Paper

I miss a more thorough analysis regarding the effects of the aerosols on the ground UV determination accuracy of the OMI algorithm. I suggest that the manuscript should be accepted only if some of the following aspects were included: a) I strongly suggest to extend the analysis and to include a more thorough analysis of the causes of the discrepancy between OMI UV and ground measured UV by looking at the aerosol effect. According to my knowledge, (P Sellitto et al 2006) the Brewer instrument of Rome also measures optical depth. I would strongly suggest to compare the OMI UV to ground based measured UV as a function of aerosol optical depth and at the same time as a function of solar zenith angle, if sufficient data are available. I would however not suggest to use only the OMI determined aerosol index since it seems not suited for this purpose. According to my source of information, it does not show a sufficient accuracy. But this could also be tested in this additional analysis. b) OMI UV should also be compared to ground UV during cloudy conditions. c) An explanation regarding the different dependence of OMI/Brewer and OMI/Yes ratios on solar zenith angle should be provided. d) Some statements and eventually statistical analysis concerning the determination uncertainties due to the difference between the OMI overpass time and solar noon should be made. The best way would be to additionally determine and compare OMI ground UV for the overpass time. If this is not possible optical depth measurements could be used to analyse the magnitude of changes in atmospheric transmittance during the time period between solar noon and OMI overpass. Alternatively, changes in cloudiness during this time period could be analysed.

Other minor remarks:

Language should be checked through the whole document as a part of the editorial work.

P. 2382: Abstract. First sentence too long. Make two out of one sentence.

P 2382: Abstract: alghorithms => algorithms

P.2383: ground-based measures => ground based measurements

ACPD

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Interactive Comment

P. 2383: exaustively => exhaustively

P. 2384: Mention that the study of Tanskanen et al was for daily doses. Is it Tanskanen et al.(2007) or Tanskanen et al.(2008)? Please check.

P.2384 (section 2.1) EDR measures => EDR measurements (Please replace this throughout the whole document)

P.2385: participated into => participated in

P. 2387: lead an => lead to an

P. 2387: Mention when is approximately the overpass time of OMI.

P. 2389: Otherwise => in contrast to the Brewer....

P. 2389: Sentence: Tanking into account all sky with respect to clear sky days... is difficult to understand.

P. 2390: Please change style of conclusions: make full sentences. e.g. OZONE- The daily... => The comparison of OMI retrieved ozone showed that..

Other remark: EDRs@noon looks like an email address. I would suggest to find a new acronym without @

References:

P Sellitto et al 2006 J. Opt. A: Pure Appl. Opt. 8 849-855 doi:10.1088/1464-4258/8/10/005,

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 2381, 2008.