

Interactive comment on “Spatial and temporal UV irradiance and aerosol variability within the area of an OMI satellite pixel” by S. Kazadzis et al.

Anonymous Referee #2

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This paper is well written and very clear, but incomplete, on the scientific subject under discussion. As mentioned in an earlier comment, it would be very instructive if the authors could include some of the particulars from the satellite retrieval (ozone, cloud amount, and aerosol estimate) that caused the overestimate along with the same values observed from the ground. The paper is good on presentation of the difference between ground-based and satellite measurements (as has been done many times before), but very weak on the analysis of the differences. Is it caused by ozone differences, aerosol differences (likely), cloud radiance transmission estimates (likely), or some combination of both. Without an examination of the underlying physics, this paper is weak. The authors should make an attempt to obtain the data that went into the satellite estimate of UV on the ground and compare these quantities with those measured in Thessaloniki. Without the extra analysis, this is just another observation

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that satellites overestimate UV in polluted areas. The fact that multiple measurements were made inside an OMI footprint is only marginally interesting without a more complete discussion of the underlying physics.

The ground-based instruments obtained the aerosol extinction optical depth, but not the UV single scattering albedo (absorption). Since the measured UV irradiance differences were largest at smaller wavelengths, were the differences caused by an ozone error or by increased aerosol absorption at shorter UV wavelengths? The authors should at least discuss the possibilities underlying the differences. Would a small change in the ozone amount assumed by the satellite retrieval remove most of the wavelength dependence of the difference between the satellite irradiance estimates and the ground-based measurements?

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