



Assessment of TOMS UV bias due to the absorbing aerosols

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TOMS UV algorithm is capable of taking into account the scattering aerosols via its scene reflectivity. It also accounts for absorbing aerosols in free troposphere (dust and smoke plumes) via aerosol index correction. On the other hand, the effects of aerosol absorption in the boundary layer are not properly taken into account, because they do not appear as absorbing aerosols in the TOMS Aerosol Index (AI) data (positive AI). In this study, our main objective was to combine ground measurements of aerosol UV absorption and global UV irradiance with satellite TOMS estimations of UV irradiance. The single scattering albedo values were estimated from the measured global irradiance with the aid of radiative transfer modeling. We then compared TOMS overpass irradiances against the Brewer measurements in Ispra, Italy and Thessaloniki, Greece with the emphasis in the assessment of the effect of absorbing aerosols on surface UV irradiance and TOMS UV bias.