



Spectral UV irradiance and aerosol optical depth measurements at Thessaloniki, Greece

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The Brewer spectrophotometer #086 has been monitoring UV direct solar spectral irradiance at the city of Thessaloniki, Greece since 1997. The spectrophotometer's standard method of retrieving the aerosol optical depth is the implementation of direct sun measurements at the spectral range of 290-365 nm. With the aim of the Beer law the optical depth of the aerosols on cloudless days for the period 1997-2005 has been retrieved.

The Brewer spectrophotometer also monitors the UV global spectral irradiance for the same period. This study investigates the effect of the aerosol load of the area on the UV-B and UV-A irradiance reaching the ground.

The maximum optical depth values in summertime cause an annual pattern for the incident UV-A direct irradiance at a constant solar zenith angle. This pattern's magnitude becomes smaller in the case of global irradiance due to the difference in the aerosol absorption from summer to winter demonstrated through the single scattering albedo and the aerosol absorption retrievals.