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Nine years of UV aerosol optical depth measurements at Thessaloniki, Greece

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Abstract. Spectral measurements of the aerosol optical depth (AOD) and the Ångström coefficient were conducted at Thessaloniki, Greece (40.5° N, 22.9° E) between January 1997 and December 2005 with a Brewer MKIII double-monochromator spectroradiometer. The dataset was compared with collocated measurements of a second spectroradiometer (Brewer MKII) and a CIMEL sun-photometer, showing correlations of 0.93 and 0.98, respectively. A seasonal variation of the AOD was observed at Thessaloniki, with AOD values at 340 nm of 0.52 and 0.28 for August and December respectively. Back trajectories of air masses for up to 4 days were used to assess the influence of long-range transport from various regions to the aerosol load over Thessaloniki. It is shown that part of the observed seasonality can be attributed to air masses with high AOD originating from North-Eastern and Eastern directions during summertime. The analysis of the long-term record (9 years) of AOD showed a downward tendency. A similar decreasing tendency was found in the record of the PM₁₀ aerosol measurements, which are conducted near the surface at 4 air-quality monitoring stations in the area of the city of Thessaloniki.

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