



The imaginary refractive index and black carbon levels of particulate matter collected in “El Arenosillo” (Spain)

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During the 2004 summer a field campaign has been carried out at El Arenosillo Atmospheric Sounding Station, ESat, in South Spain. This field campaign has been developed to obtain experimental data for local aerosols, its absorbent characteristics and its effects on the radiative forcing. For this purpose different instruments were simultaneously installed in the station facilities. In this paper we present a general overview of the instruments with special emphasis on the measurement protocols for the atmospheric aerosol absorption properties.

The observed concentration of absorbent aerosol mass varies in the range 30.8 - 770.1 ng/m³ and the average value is 293,2 ng/m³. These values, obtained from the absorption coefficients, were compared with the ones obtained with a LECO system. Furthermore, we had studied the correlation of the black carbon concentration, measured at soil level, with the black carbon concentration in the atmospheric column, obtained from the data of a solar Cimel photometer. The ratio between absorbent aerosol and particulate matter with aerodynamic size bellow 10 μm was analyzed in full detail.

A comparison study between the imaginary refractive index of the particulate matter with aerodynamic size bellow 1 μm and the refractive index retrieved from the AERONET inversion algorithm was carried out.