



Magnetic and optical properties of aerosol particles collected on filters in the northeastern subtropical Atlantic (Canary Islands)

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Besides considering the elemental composition of African dusts currently deposited in the Canary Islands and in order to investigate their transport processes it appears interesting to use alternative characterisation techniques that may be more sensitive to some elements as, for example, iron, given the relevance of this element in the seawater biogeochemistry. With this aim, experiments of low temperature AC magnetic susceptibility, field dependent magnetisation and VIS-IR diffuse reflectance spectroscopy have been carried out on dust samples collected from different events at the Taliarte station (Gran Canaria island) within the period from February 2004 to September 2005. These experimental techniques have been chosen as the iron content, and its chemical speciation, are key contributors to both the magnetic and optical properties of the dusts. The experimental results indicate that the samples contain: i) a paramagnetic fraction presumably corresponding to silicate-embedded ionic iron and ii) a particulate fraction likely corresponding to iron oxides or oxyhydroxides (haematite, goethite and ferrihydrite) showing magnetic relaxation over a wide temperature range. The magnetic behaviour is qualitatively very similar for all the samples under study. The colour changes (hue and chroma parameters), derived from diffuse reflectance, may result from the different dust loads in the filters, in agreement with a quantitative analysis of the magnetic data. The astonishing simple magnetism observed, if compared with the usual one for soil samples of aeolian origin, may open the way for future magnetism-based systematic studies of these aerosols.