



## **Evaluation of desert dust outbreaks by sunphotometer-AERONET data in the southwestern of the Iberian Peninsula during 2000-2004**

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Evaluation and characterization of African desert dust outbreaks over the Iberian Peninsula are of major interest in Europe: apart of the necessity of the characterization of mineral aerosol properties for climate studies, it is very important to know and evaluate the contribution of desert intrusions on particle level measured in the air quality networks and deposition. No realistic evaluations are today available in South-Europe. AERONET-Cimel sunphotometer data at El Arenosillo-INTA station allow a precise detection and reliable evaluation of desert dust outbreaks reaching the Southwestern of the Iberia Peninsula by means of the spectral AOD and derived Ångström alpha coefficient. Therefore we have carried out an inventory of desert dust intrusions from 2000 to 2004 by means of a methodology based on defined threshold that characterize the desert dust aerosols in the area of study. A manual inspection and an automatic procedure permit to identify the days we define as desert dust intrusions, thus evaluating the frequency, duration and intensity of these episodes. This procedure is complemented with the analysis of air mass back trajectories and synoptic weather maps that define four scenarios for the arrival of desert dust intrusions in the Iberian Peninsula.

A total of 75 episodes were recorded from January 2000 to December 2004 with a total of 319 days. This represents an average of 15 episodes per year with an average of 63.8 days per year or 17.5 % of days per year. However, there is a high variability from one year to another, but summer season always show a considerable higher activity. A global, monthly and seasonal evaluation have been carried out together with an

assignation of each episode to one of the four weather scenario types. For the five years we have obtained an average value of the AOD of 0.318 at 440 nm with an alpha value of 0.66 for the desert episodes.

We must note that, with this type of photometric measurements, if desert dust intrusions occur on rain or large cloudiness situations (wet episodes), they are difficult to evaluate. However, the inventory we had made gives the major guarantee of realistic evaluation, up to now, over desertic episodes in the southwestern of the Iberian Peninsula.