

## Active and passive remote sensing: analysis of an extreme event over Southern Iberian Peninsula

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In this work we present an analysis of the extreme Saharan dust event detected from 3 to 7 September 2007 over Granada, Southern Iberian Peninsula. The event has been monitored by the Atmospheric Physics Group of the University of Granada. Special emphasis is paid to the singularity of this event over our region, which was monitored with both active and passive remote sensing instrumentation.

This especial Saharan dust event is characterized for its extreme intensity over Southern Iberian Peninsula. The intensity of the event was visualized on the aerosol optical depth series obtained by the sun-photometer Cimel CE 318-4 operated at Granada in the framework of AERONET network using level 2 data. Figure 1 shows the temporal series of the instantaneous values of aerosol optical depth at 500 nm and the Angström exponent (i.e., the spectral dependency of aerosol optical depth) calculated in the range 440-870 nm. This Saharan dust event affected also other Iberian Peninsula stations included in AERONET (El Arenosillo and Évora stations).

To obtain additional information about this event, several tools were explored. Extreme values of different aerosol optical properties were recorded on 6 September. For this day, back-trajectories analysis indicates air masses coming from North Africa fundamentally. In addition, NAAPS and DREAM models forecast the presence of a mineral dust plume over Southern Iberian Peninsula.

Lidar profiles were obtained during daytime using the Klett-Fernald-Sasano algorithm in combination with sun-photometer data (Guerrero-Rascado et al., 2008). The profiles show the aerosol vertical distribution evolution during the Saharan dust event and are in agreement with the results obtained by passive remote sensing. During the most intense stage, 6 September (Figure 2), the maximum aerosol backscatter values are around a factor of 8 respects to the others maximum showed in this Saharan dust event. The temporal evolutions of the aerosol optical properties are in coincidence for passive and active remote sensing.

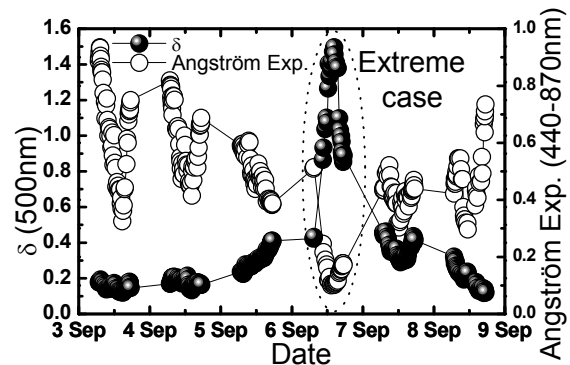


Figure 1. Aerosol optical depth and Angström exponent series during the analyzed period.

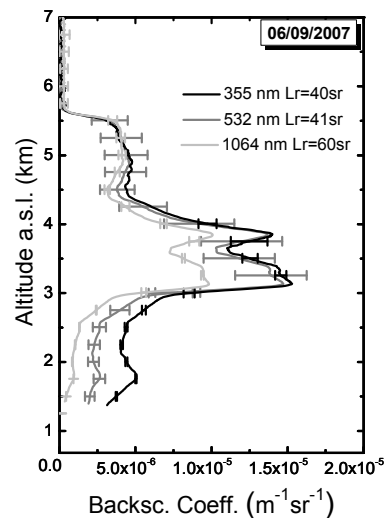


Figure 2. Aerosol backscatter coefficient profiles on 6 September 2007 at noon.

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