



Seminários CGE/UE

Saharan Mineral Dust Experiment (SAMUM 2006): First Results

Dr. Detlef Müller

Institute for Tropospheric Research, Leipzig, Germany

Hora: 17H 30m
Data: 13 de Outubro de 2006
Local: Anf. 1, - Colégio Luís António Verney
Promove: Centro de Geofísica de Évora

Resumo

The Saharan Mineral Dust Experiment is a six-year initiative of several German institutes with the goal of characterizing optical, physical, chemical, and radiative properties of Saharan dust at the source region and in the outflow regime. The collected data set may serve as ground truth data to validate satellite aerosol retrieval schemes and atmospheric transport models, and to support the CALIPSO (Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation) mission. We present first results of the first intensive field phase of SAMUM which was carried out in May/June 2006 in the south of Morocco. The field sites were at Ouarzazate (30.93° N, 6.9° W) and Zagora (30.15° N, 5.37° W).

Collocated observations with three ground-based Raman lidars provide information on particle volume extinction coefficients and particle extinction-to-backscatter (lidar) ratios at 355 and 532 nm wavelength. A high-spectral-resolution lidar aboard one research aircraft sounded the dust plumes between the western coastline of Morocco and the two field sites. The four lidar systems

provide depolarization ratios of dust at four measurement wavelengths between 355 and 1064 nm. Another aircraft carried out radiation measurements at the field sites. Complementary observations were made with several sun photometers, including one instrument of the Aerosol Robotic Network, and satellites. Airborne and ground-based in-situ measurements provide data on physical and chemical properties of dust.

Dust plumes were observed on 25 out of the 28 measurement days. The plumes reached top heights of 4-6 km above sea level, equivalent to 3-5 km above ground. Optical depth at 500 nm wavelength was as high as 0.9. In most of the cases daily column-mean Ångström exponents were between 0-0.4 in the wavelength range from 380-1640 nm. In the first half of the SAMUM field phase a long-range transport event carried dust from Northwest Africa to West and Central Europe, and Italy and Greece. The plume was observed by Raman lidar stations of the European Aerosol Research Lidar Network.

This work is supported by the Deutsche Forschungsgemeinschaft DFG.