

# **A comparison between biomass burning aerosols modelled with CATT-B-RAMS and measured by AERONET network in the Iberian Peninsula**

A. M. Ramos (1), S. Freitas (2), K. Longo (2), F. C. Conde (1), J. Corte-Real (1), A. M. Silva (1), A. L. Fazenda (2,3), F. S. Recuero (2), D. S. Moreira (2)

(1) Geophysics Centre of Évora (CGE), University of Évora. Rua Romão Ramalho, 59. 7000-671. Évora, Portugal. E-mail: andrear@uevora.pt; (2) Center for Weather Prediction and Climate Studies - CPTEC/INPE. Rodovia Presidente Dutra, km 39. 12630-000. Cachoeira Paulista. São Paulo, Brazil. E-mail: sfreitas@cptec.inpe.br; (3) Dept. of Informatics, Taubaté University. Av. Mal. Deodoro, 605. 12080-050. Taubaté, São Paulo, Brazil.

Summer 2003 was one of the most severe fire seasons experienced during the last decades in Southern Europe. August started, with extreme conditions in terms of high temperatures and unstable atmosphere that favours fire spread. This work aims at validating the CATT-B-RAMS model which can generate aerosol concentrations values produced by forest fires occurred in the Iberian Peninsula during the period 7-12 August 2003. The validation of the generated aerosol concentrations values was made by comparison with AERONET (Aerosol Robotic Network) aerosol optical thickness (AOT) measurements at two different wavelengths, which is a quantity that is related to the aerosol load in the atmospheric column. For the area under study, the available data is located at two sites, one at Évora city (37.105°N; 6.73347°W), Portugal and the other one at El Arenosillo city (37.105°N; 6.73347°W), Spain. The initial and lateral boundary conditions necessary to drive CATT-B-RAMS were provided by the values (two per day) of the National Center for Environmental Prediction Global Spectral Model analysis and the emission sources of biomass burning aerosols were obtained from the MODIS/TERRA fire product combined with local observations made available for Europe. The results show a good agreement between modelled aerosol concentrations and the aerosol optical thickness at 440nm and 870nm measured at Évora, although the agreement is better at the smaller wavelength. This can be explained since at smaller wavelengths the aerosol optical thickness is larger and more sensitive to smaller particles, which is normally the case of burning-originated aerosols. For El Arenosillo the situation is quite different since a mixture of different aerosol types are present: together with biomass burning aerosols, generated at the south of France and Spain an intrusion of desert dust aerosols appears on the 8th August followed by a decrease on the 11th August. The modelled aerosol concentration is relatively low; due to the fact the fire sources were located far away from El Arenosillo with distinct meteorological conditions, whereas at Évora site the fire sources were located close to the site. One can conclude that the CATT-B-RAMS model could simulate aerosol con-

centration values, reasonably well, in comparison with the aerosol optical thickness at two wavelengths measured at the same sites where modelled values were generated.