Geophysical Research Abstracts, Vol. 7, 02168, 2005
SRef-ID: 1607-7962/gra/EGU05-A-02168
© European Geosciences Union 2005

Identification of black carbon and dust aerosol events at the Azores PICO-NARE station during the ICARTT experiment

P. Fialho (1), F. Barata (1), R.E. Honrath (2) and A.D.A. Hansen (3)

(1) Grupo de Química e Física da Atmosfera, Universidade dos Açores, PT9701-851 Terra Chã, Portugal, (2) Department of Civil & Environmental Engineering, Michigan Technological University, Houghton, MI 49931, USA, (3) Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA

During the International Consortium for Atmospheric Research on Transport and Transformation (ICARTT) experiment (July - August 2004), aerosol samples were taken and their optical properties analyzed using a seven-wavelength Aethalometer, in order to establish the absorption due to black carbon and iron oxides (Fe2O3, FeO). Black carbon (BC) is a tracer of anthropogenic air masses containing combustion emissions and iron oxides are tracers of natural emissions of iron-rich soil dust. Measurements were taken at PICO-NARE site on Pico mountain summit (2225 m ASL) in the Azores Islands. This site is in the pathway of air masses that travel from the surrounding continents (Africa, Europe and North America) that carry with them, among other species, aerosols resulting from anthropogenic and/or natural emissions. In particular, transport from Africa may bring soil dust particles, rich in iron oxides, which are involved in the biogeochemical cycling of iron, an essential micronutrient to marine phytoplankton (Arimoto, Balsam, & Schloesslin, 2002). During this period we observed at least four significant events of BC enhancement associated with pollution transport from North America some of which were related with Alaskan and Canadian forest fires, and also another significant event associated with dust transport. Black carbon and carbon monoxide were correlated during the North American events and the respective ratios determined.

Arimoto,R., Balsam,W., & Schloesslin,C. (2002). Visible spectroscopy of aerosol particles collected on filters: iron-oxide minerals. Atmospheric Environment, 36, 89-96.