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Chemical Composition of the Aerosol Fine Fraction during African Dust Events as part of the Dust ATtACk Experiment in the Caribbean Region

Pamela Vallejo (1,2), Paola Formenti (3), Karine Desboeufs (3), Mariana Quiñones (1), Servanne Chevaillier (3), Stephanie Santos (1,2), Elizabeth Andrews (4), John A. Ogren (4), and Olga L. Mayol-Bracero (1)

(1) Department of Environmental Sciences, University of Puerto Rico-Río Piedras, San Juan, Puerto Rico, (2) Department of Chemistry, University of Puerto Rico-Río Piedras, San Juan, PR, (3) Laboratoire Interuniversitaire des Systèmes Atmosphériques, Université Paris Est Créteil et Université Paris Diderot, Institut Pierre Simon Laplace, Créteil, France, (4) NOAA/ESRL Global Monitoring Division, Boulder, Colorado, USA

We present results on the assessment of aerosols' chemical composition at the atmospheric observatory of Cabezas de San Juan in Fajardo, Puerto Rico, during the summers of 2011 and 2012, where periods in the presence and absence of dust were studied under the framework of the Dust-ATtACk (Dust- Aging and Transport, from Africa to the Caribbean) experiment. Dust events were identified through observation and using air-mass back-trajectories, Saharan Air Layer images, measurements of aerosol optical thickness (AOT), in situ scattering and absorption coefficients, and chemical analyses. Results obtained for intense dust events were characterized by higher concentration of coarse particles, higher scattering and absorption coefficients (up to 100 Mm^{-1} and 5 Mm^{-1} at 550 and 530 nm, respectively), higher AOT (from 0.4 to 0.8) values, and higher concentration of elements associated with mineral dust (e.g., Si μ^3 g/m^3 compared to background concentrations of 0.15 μg/m^3, obtained from XRF analysis). Elemental composition of the fine fraction (Dp < 1.8 μm), analyzed by ICP-OES, also yielded higher average concentrations during dust events of, for example, Fe (0.045 μg m^{-3}, vs 0.016 μg m^{-3} during low or no dust). Detailed results of the submicron fraction composition for the carbonaceous aerosol (total carbon, organic carbon, black carbon), total nitrogen, the water-soluble organic carbon, water-soluble ions, and the elemental composition with their possible sources will be presented at the meeting.