

Properties of Aerosol in the North Atlantic Free Troposphere at the Pico Mountain Observatory, Azores

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Category: Aerosol Properties

The Pico Mountain Observatory is located at an altitude of 2225 meters above sea level in the summit caldera of the Pico volcano in the Azores, Portugal (38.47°N, 28.40°W). The scientific value of the station stems from the fact that this is the only permanent free-tropospheric monitoring station in the central North Atlantic, with negligible influence from local sources and that frequently samples air from the North American continent. Thus, it is an ideal site for studying long-range transported pollution. The station started operating in 2001 with a focus on gaseous species (e.g., ozone, carbon monoxide, nitrogen oxides, and non-methane hydrocarbons) and aerosol particles that absorb light (black carbon [BC] and aerosol dust). The absorbing aerosol mass concentrations, in units of equivalent black carbon mass concentrations, have been monitored using a seven-wavelength aethalometer (Magee scientific model AE31). Ancillary measurements at the station include meteorological parameters such as temperature, relative humidity, pressure, wind direction, and speed. Due to the harsh environmental conditions at the site, most measurements have been performed during the summer seasons. In the summer of 2012, new aerosol instrumentation and samplers were installed at the station. The new equipment includes a three-wavelength nephelometer (Ecotech model Aurora 3000) that measure aerosol scattering and backscattering fraction, a set of four high-volume samplers for the collection and chemical analysis of aerosol, a sequential sampler to collect aerosols on membranes and grids, and an optical particle counter. Membranes and grids are analysed offline with scanning and transmission electron microscopy to study morphological properties and elemental composition of the aged aerosols.



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In this poster we will discuss some of the analysis of the decadal BC mass concentration data, as well as some analysis of the new aerosol data with a focus on aerosol optical properties and morphology. Analysis of these properties is important for a better understanding of aerosol's life cycle and ageing during their transport over the Atlantic, with implications on aerosol radiative properties and climate science.

<http://instaar.colorado.edu/pico/> (<http://instaar.colorado.edu/pico/>)

This poster will be displayed at ASR Science Team Meeting.

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