



Measurement of Aerosols and Trace Gases in the Free Troposphere at the Pico Mountain Observatory in the Azores

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The Pico Mountain Observatory is an atmospheric monitoring station established by the late Dr. Richard Honrath and colleagues in 2001. The station is located on an inactive volcano in the Azores in the North Atlantic ($38^{\circ}28'15''$ N; $28^{\circ}24'14''$ W, 2225 m.a.s.l.). The site is unique in that the location allows sampling of long range transported air mass within the free troposphere with limited impact from local or marine sources. Measurements of ozone, carbon monoxide, non-methane hydrocarbons, nitrogen oxides, peroxy-acetyl nitrate, and black carbon have been made at the site for different periods since 2001. More recently, the site capabilities have expanded and studies have focused on the transport and evolution of tropospheric aerosols from North American outflow. Starting in 2010, new aerosol instruments have been installed at the site, including: an optical particle sizer, a three-wavelength nephelometer to measure aerosol scattering and backscattering, four high-volume samplers to study the aerosol chemical composition, and a low-flow aerosol sample to study aerosol morphology, aging and mixing through electron microscopy.

Here, we present an overview of the gas and aerosol data from the station for the period 2008-2012. The primary objective of the measurements at Pico are to enhance our knowledge of anthropogenic and biomass burning emissions from North America and their relative impact on atmospheric composition and radiative forcing in the free troposphere of the North Atlantic.