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Active and Passive Optical Remote Sensing techniques for continuous probing of background SE Regional Aerosol vertical Structure BEN MADISON, Appalachian State University, KEVIN HOLWAY, Duke University, IAN KRINTZ, JAMES SHERMAN[1], Appalachian State University — A micro-pulsed lidar (MPL) and a CIMEL scanning sun/sky radiometer are employed by researchers at the Appalachian Atmospheric Interdisciplinary Research facility (AppalAIR) for long-term monitoring of column-averaged and vertically-distributed aerosol properties relevant to regional climate change and air quality. The measurements complement the comprehensive suite of lower tropospheric aerosol optical, microphysical, and chemical properties measured as part of the NOAA-ERSL aerosol monitoring network. Radiometer-measured aerosol optical depth (AOD), made as part of NASA AERONET, is used to calibrate the MPL, which is capable of measuring key aerosol properties over full diurnal cycles and under most meteorological conditions. MPL-derived aerosol properties measured near continuously from May 2012-October 2013 will be presented to illustrate seasonal and diurnal variability in aerosol loading and vertical aerosol structure. Lidar-derived AOD is highly-correlated with CIMEL-measured AOD for all seasons, with summer aerosol loading exceeding that in winter by a factor of 5-7. MPL-derived planetary boundary layer heights will also be presented, including comparisons with those derived from 75 radiosonde launches made as part of a summer 2013 field campaign.

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