Session: C12 Poster: M53B

Airborne observations of black carbon during CalNex 2010

Anne Perring[†]; Ryan Spackman; Joshua Schwarz; Laurel Watts; RuShan Gao; Roisin Commane; Bruce Daube; John Holloway; Eric Kort; Justin Langridge; Jeff Peischl; Ilana Pollack; Tom Ryerson; Greg Santoni; Steve Wofsy; Bin Xiang; David Fahey
[†] NOAA/CIRES, USA
Leading author: anne.perring@noaa.gov

Black carbon (BC) aerosol, resulting from incomplete combustion processes, is a globally important aerosol absorber and a significant component of positive anthropogenic radiative forcing. Measurements of refractory BC mass concentration were made in California during May and June of 2010 using a Single Particle Soot Photometer (SP2) aboard the NOAA WP-3 aircraft. Extensive observations were made in both the LA Basin and the Central Valley at altitudes ranging from 500-6000ft, and provide a unique opportunity to investigate the spatial distribution and impacts of BC in California. A strong correlation is observed between BC and CO, with the slope of the correlation on the low end of those seen in other urban areas. In addition, the mass size distributions of BC are centered at substantially smaller diameters than reported in most previous SP2 studies. The extent to which BC is internally mixed with non-refractory material (the BC coating state) is analyzed. The implications of these observations for emissions inventories, aerosol radiative forcing and the BC lifetime in CA are explored.