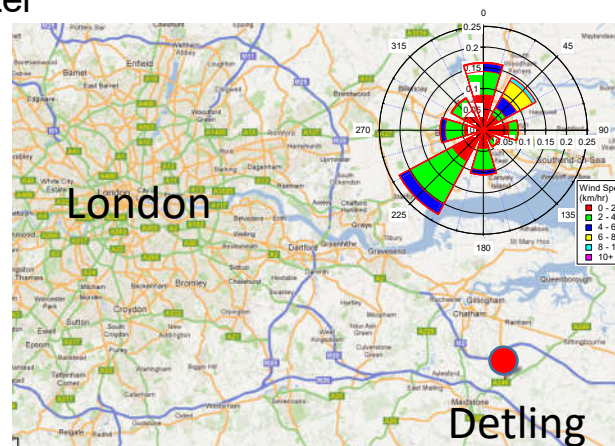# Clean Air for London (ClearfLo): Study of Aerosol Sources and Processing at a Rural Site Southeast of London, January-February, 2012

L. R. Williams[1], S. Herndon[1], J. Jayne[1], A. Freedman[1], B. Brooks[1], J. Franklin[1], P. Massoli[1], E. Fortner[1], P. Chhabra[1], M. Zahniser[1], H. Stark[1], T. Onasch[1], D. R. Worsnop[1], F. Lopez-Hilfiker[2], C. Mohr[2], J. Thornton[2], N. L. Ng[3], L. Xu[3], B. Knighton[4], M. Dubey[5], A. Aiken[5], K. Gorkowski[5], S. Liu[5], T. Martin[6], R. Coulter[6], S. Visser[7], M. Furger[7], P. Zotter[7] ,,A. Prévôt[7], C. Cappa[8], J. Allan[9], and D. Young[9]

[1]Aerodyne Research, Inc., [2]University of Washington, Seattle, [3]Georgia Institute of Technology, [4]Montana State University, [5]Los Alamos National Laboratory, [6]Argonne National Laboratory, [7]Paul Scherrer Institute , [8]UC Davis , [9]University of Manchester

- Chemical, physical and optical characteristics of aerosol particles.
- Gas-phase measurements.
- Meteorological measurements.
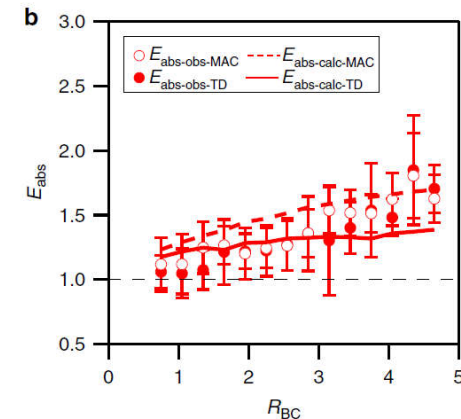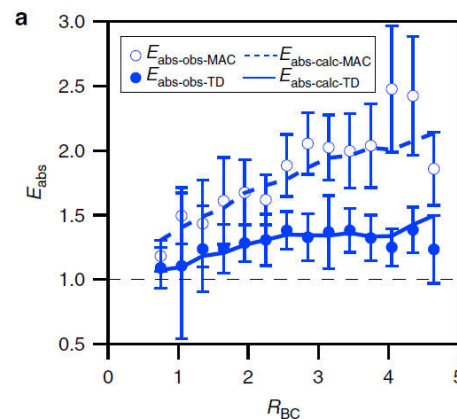- Radiation measurements.

Key Accomplishments

- First field deployment of chemical ionization instrument (MOVI-CI-TOFMS) to measure contribution of nitrated phenols to brown carbon (Mohr et al., ES&T, 2013).
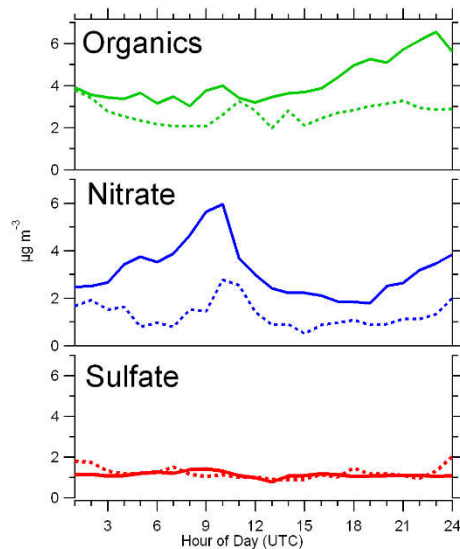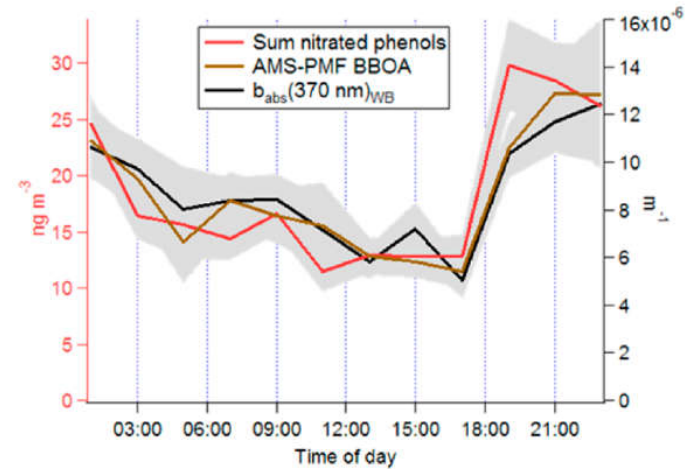
- Compared PM and gas measurements in urban London and rural Detling to show urban increment (Bohnenstengel et al., BAMS, 2014).

- Observed absorption enhancement by coatings on black carbon containing particles (Liu et al., Nature Comm., 2015).

Key Accomplishments (cont.)

- Compared HR-AMS measurements of OA in London and Detling – similar mass loadings in winter, but different sources. Most of rural OA is biomass burning related, fresh and aged (Lu et al., ACP, 2016).

- ACTM simulation of SOA formation included diesel-related IVOCs and suggested 30% contribution to annual SOA in London (Ots et al., ACP, 2016).

What Next

- SP-AMS size distributions and chemical composition of black carbon containing particles, including coatings and black carbon (Williams et al., ACP, in preparation, 2017).

- Radiation measurements (MPL, SODAR, MFRSR). Anyone?

- Modelers?