

## Formation of Organic Aerosol in the Outflow from Urban Areas in the Southeastern United States

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The NOAA Southeast Nexus of Air Quality and Climate Change (SENEX) study was focused on the interactions between biogenic and anthropogenic emissions in the Southeastern United States to form oxidants and aerosol, and how these affect air quality and climate change in the region. For SENEX, the NOAA WP-3D research aircraft was deployed out of the Smyrna/Rutherford County regional airport in Smyrna, Tennessee during June and July of 2013. The aircraft carried an extensive suite of instruments to characterize the gas- and aerosol-phase composition of the atmosphere, as well as the climate-relevant properties of the aerosol. The SENEX study was performed in close collaboration with several other studies in the framework of the Southeast Atmosphere Study (SAS).

The focus of this presentation will be on the formation of organic aerosol in the outflow from several urban areas during the SENEX study. Results from Atlanta (GA) and Birmingham (AL), two urban areas with high biogenic emissions, will be compared with results from St. Louis (MO) and Indianapolis (IN) where biogenic emissions are lower. During these flights, organic aerosol, as measured by aerosol mass spectrometry, showed correlation with anthropogenic compounds such as carbon monoxide and co-emitted volatile organic compounds (VOCs). These findings suggest that either the formation of organic aerosol from biogenic VOCs is more efficient in urban plumes, or a significant fraction of organic aerosol is formed from anthropogenic precursors. Analysis of the results will be aimed at quantifying the relative importance of these two processes. The results will also be compared with those from previous studies that noted a possible connection between anthropogenic and biogenic emissions to form organic aerosol [1].

[1] Weber *et al* (2007) *J. Geophys. Res.-Atmos.* **112** D13302, doi:10.1029/2007JD008408.