Secondary Organic Aerosol Formation in a CO-Producing Coal-Fired Power Plant, a non CO-Producing one and an Urban Plume


CO-Producing Power Plant (Martin Lake, TX)

Figure 1: The city of Houston

On September 27, 2006 the NOAA WP-3D flew over the city of Houston. The transects in Figure 10 are highlighted by CO concentrations to illustrate the Houston urban plume. However, on the western edge of this plume power plant plumes from Parish and Wharton power plants are present.

Figure 16 shows the WSOC and CO peaks corresponding to the chosen transects for the Houston plume. The transects have been color coded for ease of recognition.

Figure 17 demonstrates the correlation and slopes of WSOC and CO for the transects over the Houston plume. The values used are a combination of peaks and backgrounds for each transect as shown in Figure 16. The slope increases slightly as the plume ages, the same trend is observed in the correlation coefficients for WSOC and CO.

Martin Lake and Houston Plumes in Perspective

The WSOC production in Martin Lake and Houston plumes is similar to that of other plumes that have been previously studied.

Figure 6: Close-up of Figure 18

WSOC was initially formed at ~1.2 ugC/m³ per ppm emitted CO per hour (Data is collected under clear sky conditions)