

## Appendix A: Supplementary Figures

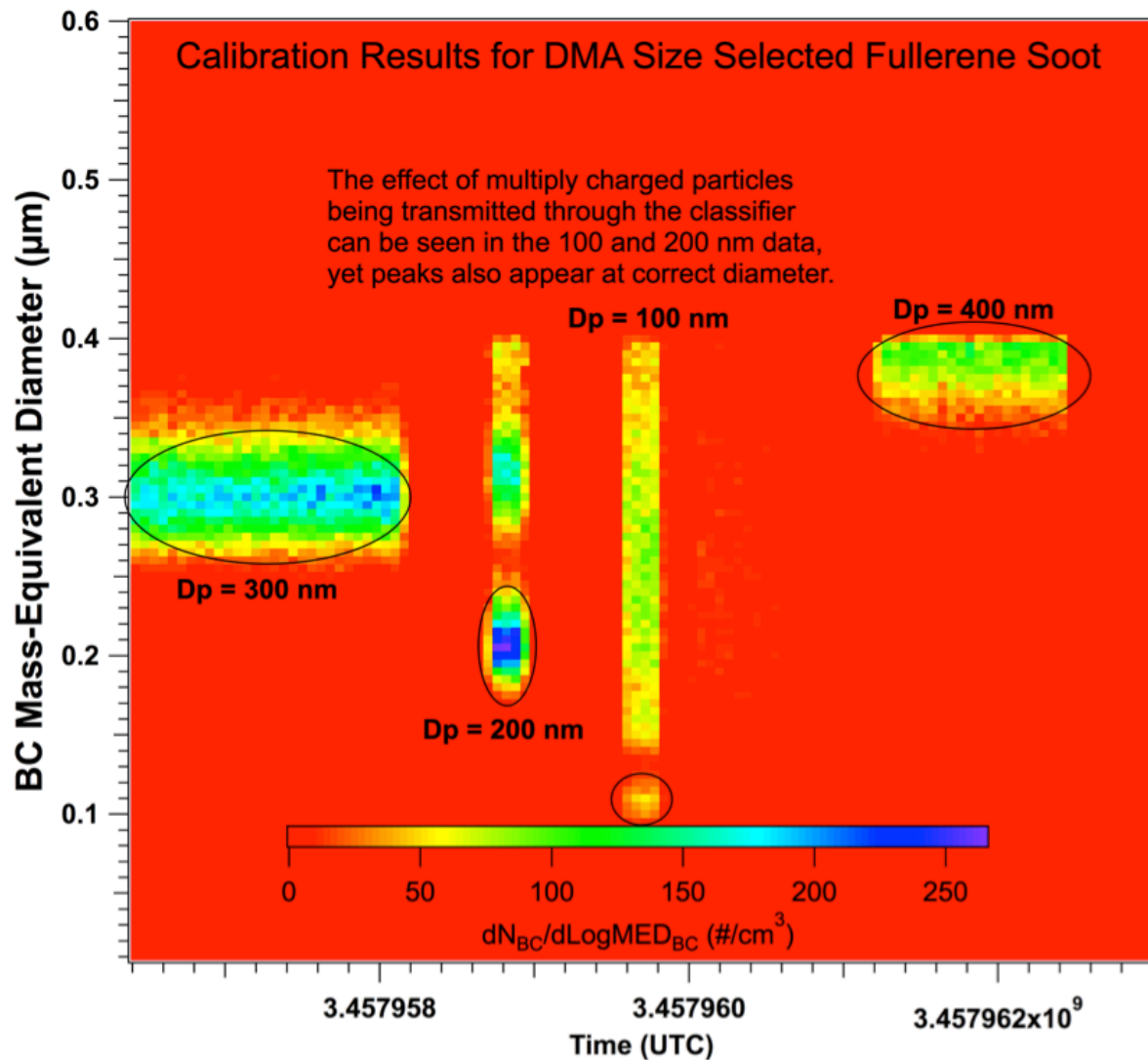


Figure S-1. Laboratory calibration of SP2 after the field campaign. Fullerene soot was atomized from an aqueous suspension and size selected to  $D_p = 100, 200, 300$  or  $400 \text{ nm}$  with an electrostatic classifier. After calibration, the SP2 produced BC mass equivalent diameters identical to those expected and this calibration was applied to the Houston data. The effects of multiply charged particles being transmitted through the classifier are seen for the  $D_p = 100 \text{ nm}$  and  $D_p = 200 \text{ nm}$  cases, yet a peak in the distribution is still clearly visible at the desired diameter.

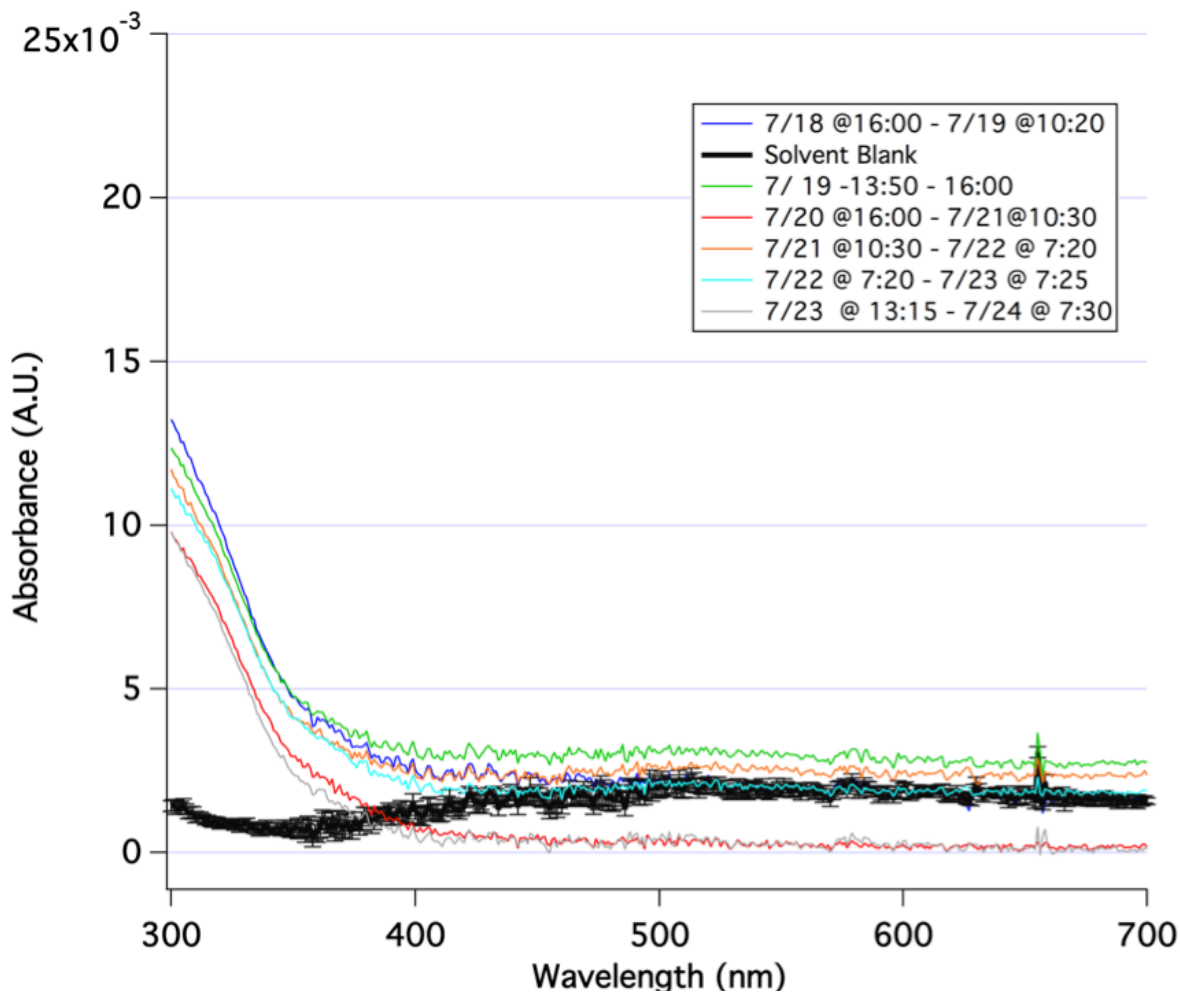


Figure S - 2. Evaluation of possible “brown carbon” interference. UV-VIS Spectra of filter extracts collected from Houston, TX and a spectroscopic blank (black). Particles deposited onto a filter were extracted into 1.5 mL of 20% methanol : 80% water (v/v). Extracts were filtered through a 0.2 micron syringe filter prior to analysis. For reference, 4 mAU corresponds to a 1% change in transmittance. The particle samples exhibited increased absorbance in the 300 – 400 nm spectral window, but the lack of significant visible absorption suggests brown carbon did not play a significant role in absorbing light for the samples considered. Times indicated are local.

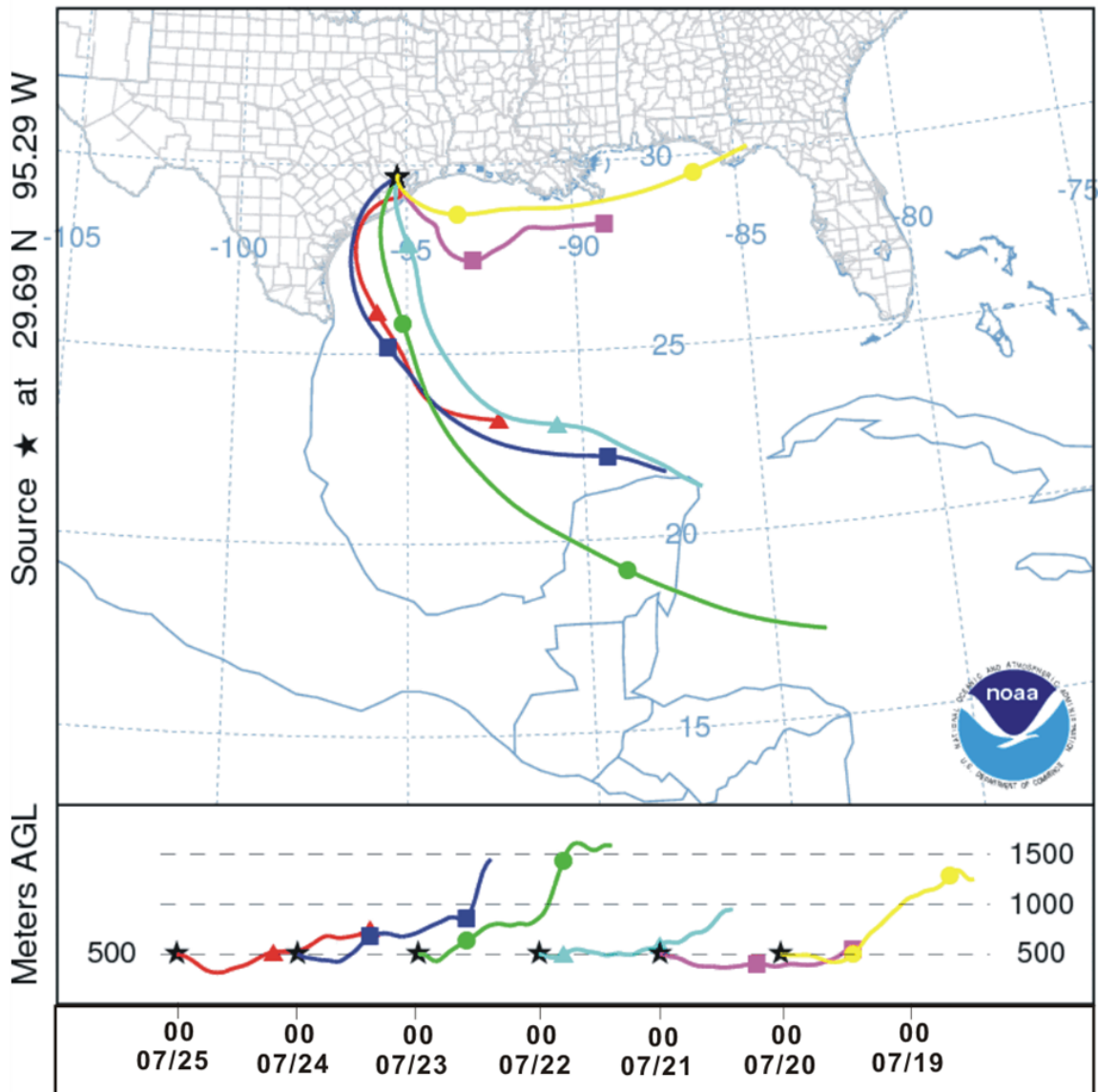


Figure S – 3. NOAA HYSPLIT Back Trajectory Analysis during the sampling period. The authors gratefully acknowledge the NOAA Air Resources Laboratory (ARL) for the provision of the HYSPLIT transport and dispersion model and/or READY website (<http://www.ready.noaa.gov>) used in this publication.

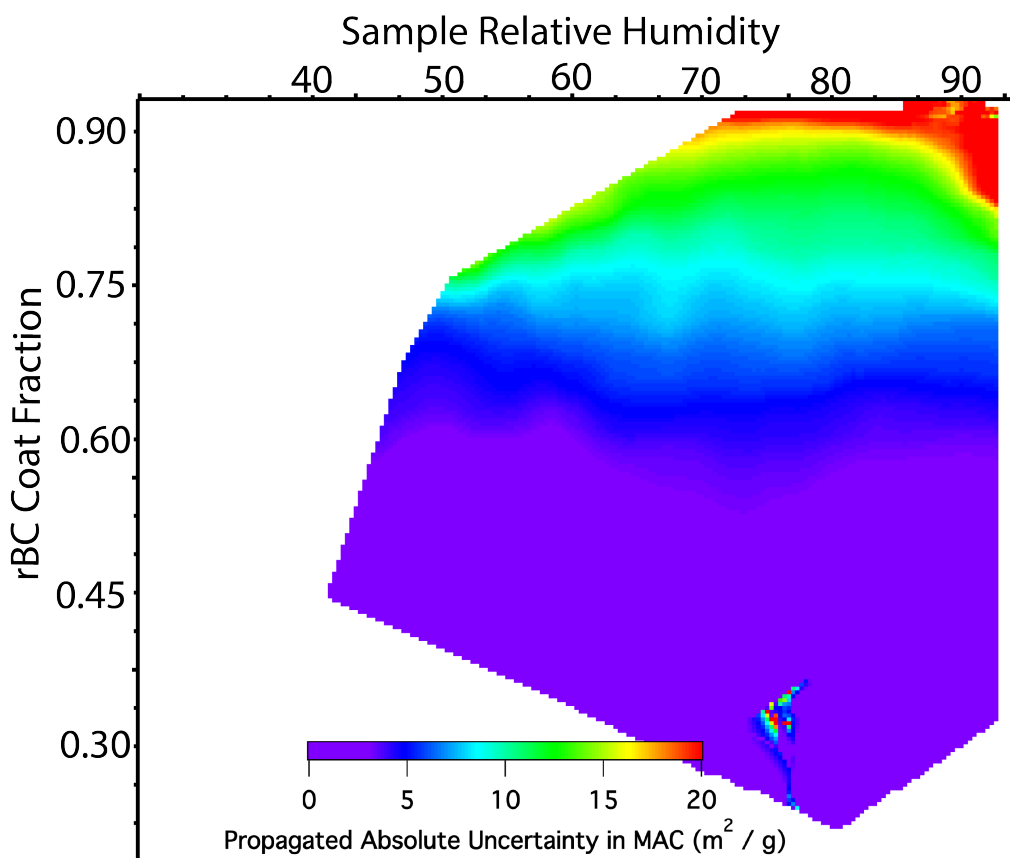


Figure S-4. Uncertainty analysis that accompanies figure 7 of this work. Figure S-4 presents propagated absolute uncertainty in MAC vs. coat fraction and RH. Because higher BC coat fractions were often observed when rBC mass concentration and  $b_{\text{abs}}$  were very low, the propagated absolute uncertainty in MAC is not constant. Highest absolute uncertainty was present at high rBC coat fractions, where largest MAC enhancement was also observed. For this analysis, an absolute uncertainty of  $b_{\text{abs}} = 2 \text{ Mm}^{-1}$  and  $[\text{BC mass}] = 50 \text{ ng} / \text{m}^3$  were used. Uncertainty was propagated through the computation of MAC using the sum of squares of relative uncertainty approach.