Supporting Information for

Estimation of possible primary biological particle emissions and rupture events at the Southern Great Plains ARM site

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Contents of this file

Figures S1 to S6
Captions for Figures S1 to S6

This supporting file contains the supplementary figures which are referred to in the manuscript.
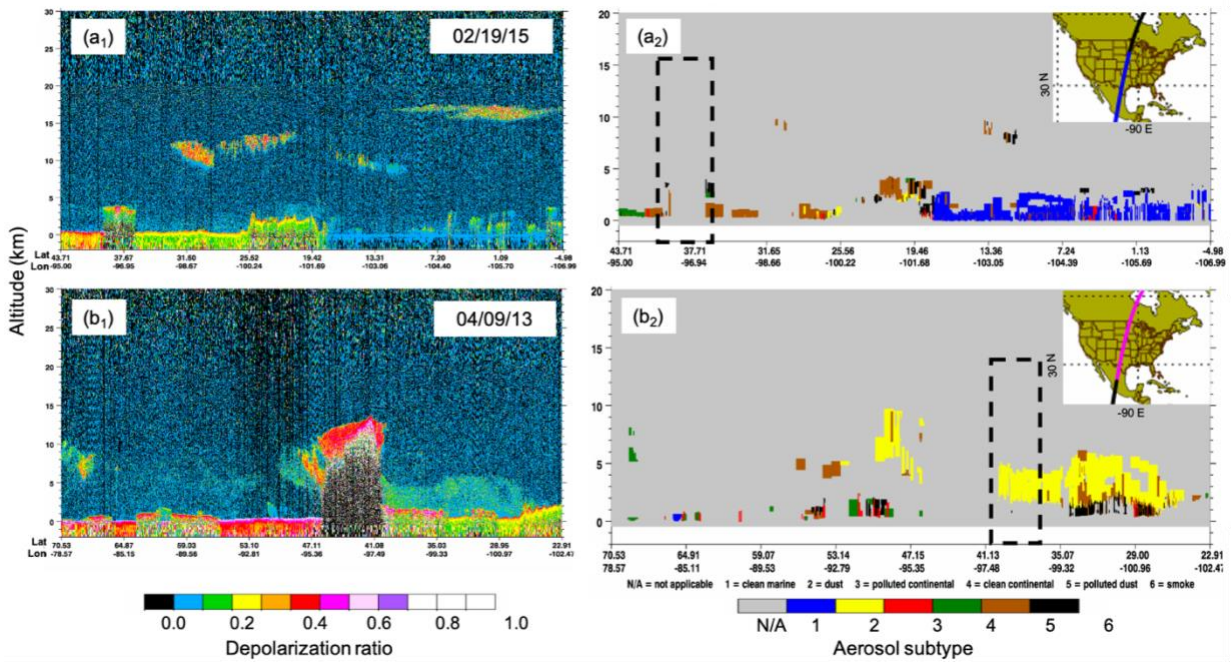
Supplementary figures S1 to S6

Figure S1. Vertical structure of (1) depolarization ratio and (2) aerosols subtype observed by the satellite CALIPSO lidar (a) 02/19/15 (08:36 UTC) and (b) 04/09/13 (08:35 UTC). The black dotted line (right panel) indicates the location of CALIPSO that is closest to the SGP site.
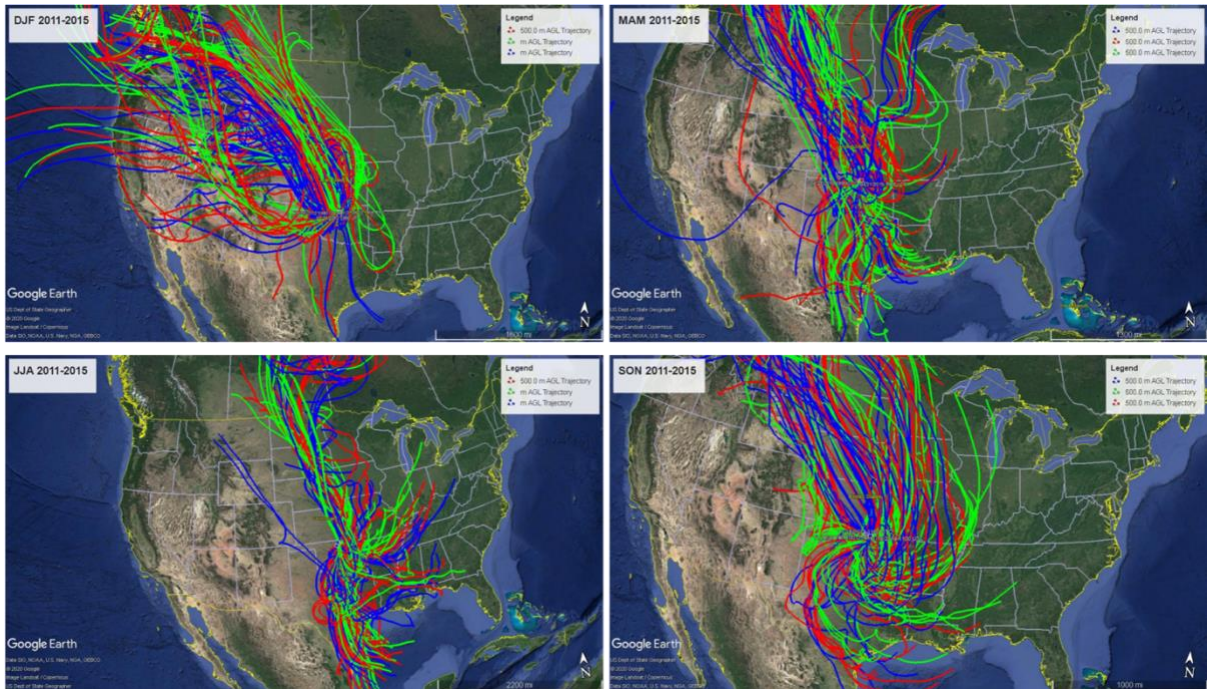
Figure S2. Seasonal backward trajectories ending at the SGP ARM site during 2011-2015.
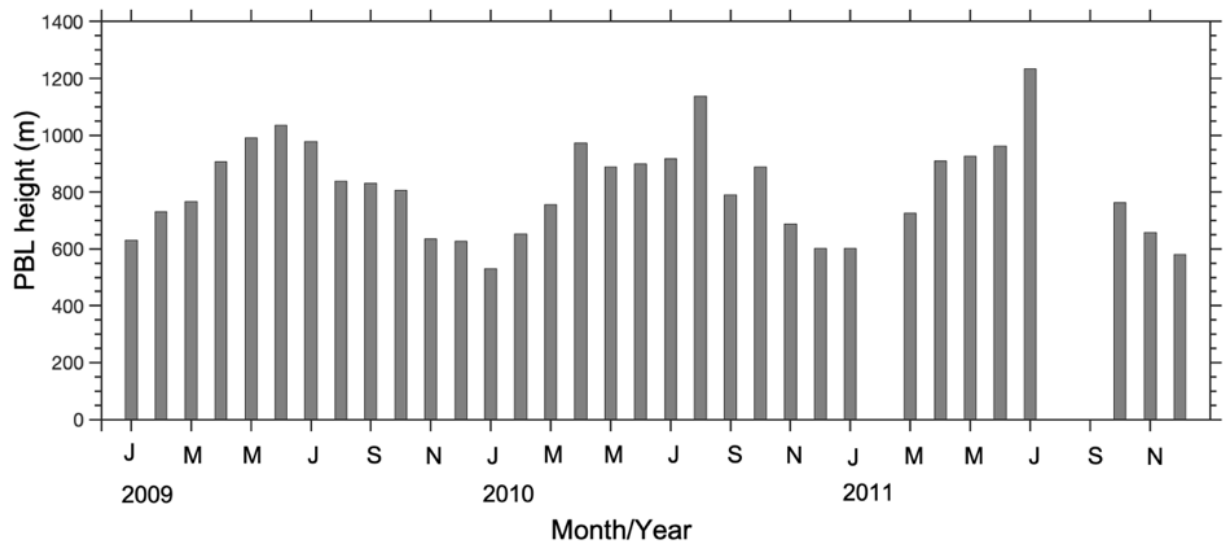

Figure S3. Monthly averaged PBL height at SGP ARM site for 2009 to 2011. Data is obtained from the ARM user facility data archive (www.arm.gov).
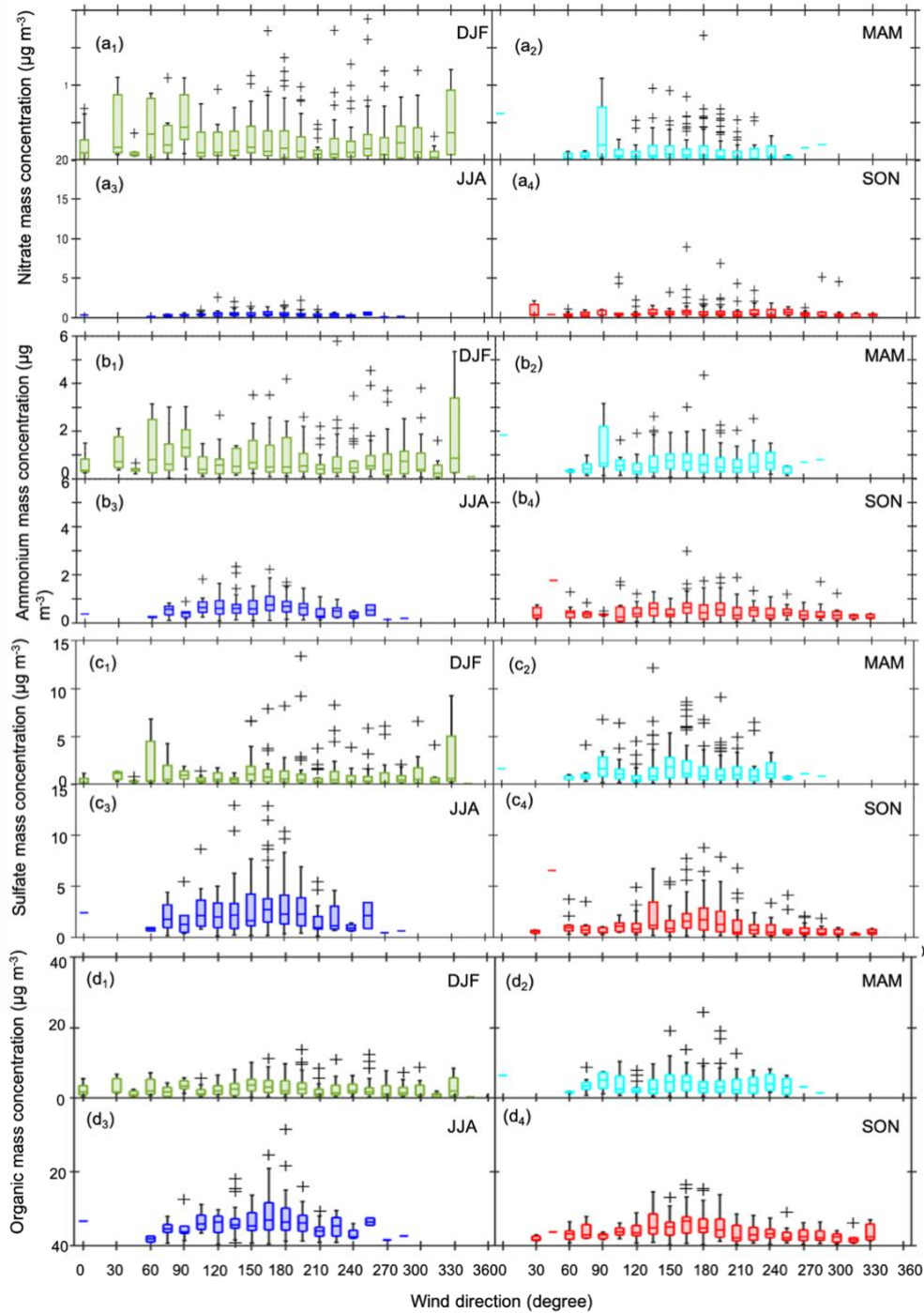
Figure S4. Seasonal box plot of daily aerosol concentration at SGP ARM site using ACSM from 2011 to 2015 with respect to wind direction for the aerosol composition (a) nitrate, (b) ammonium, (c) sulfate and (d) total organics. Here 1 through 4 represents four seasons‐ winter (DJF months), spring (MAM months), summer (JJA months), and fall (SON months).
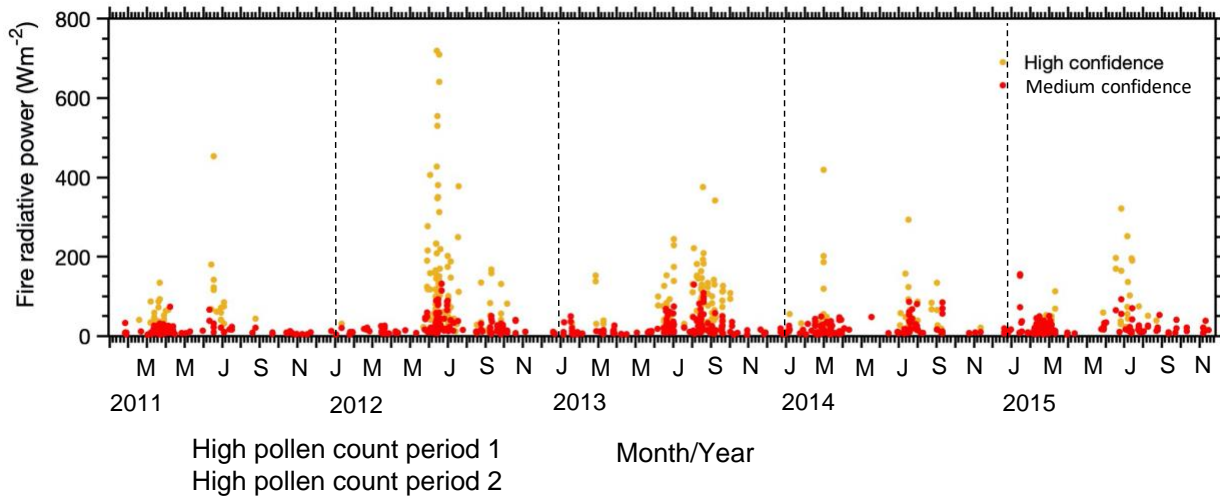
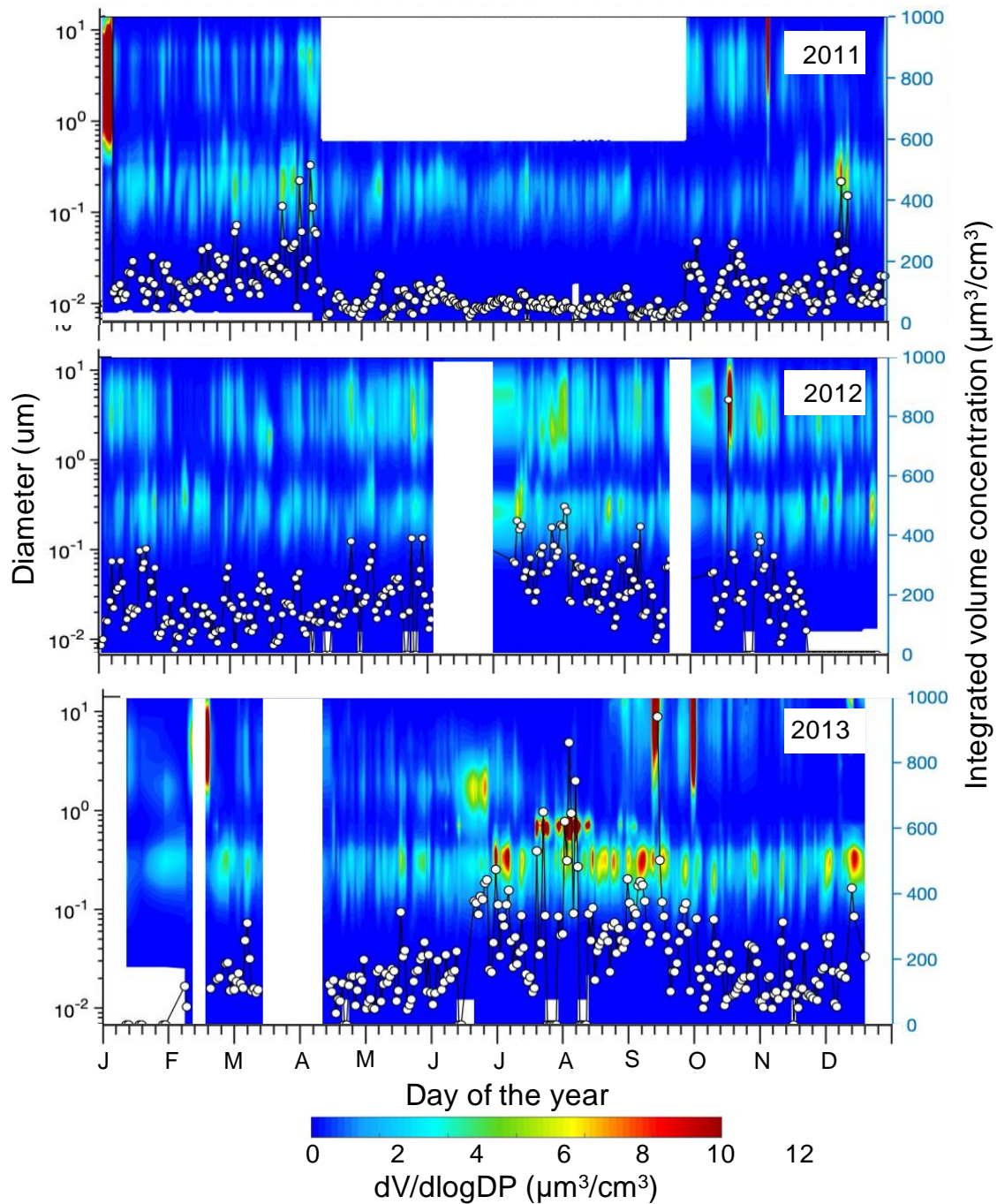**Figure S5.** MODIS derived fire radiative power data around SGP ARM site (radius of 2 degree) from 2011 to 2015.

Figure S6. Time series of the aerosol volume size distribution (dV/dlnDp, in color shading) for 2011-2013 as a function of diameter (left axis) using merged (CSA, CPC+SMPS+APS) data at SGP ARM site. White filled circles represent the total integrated volume concentrations (right axis) dataset used in this study.