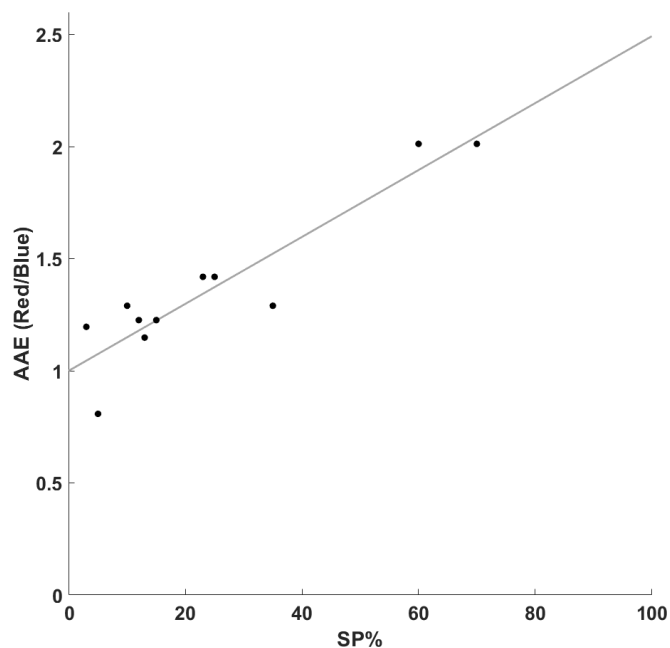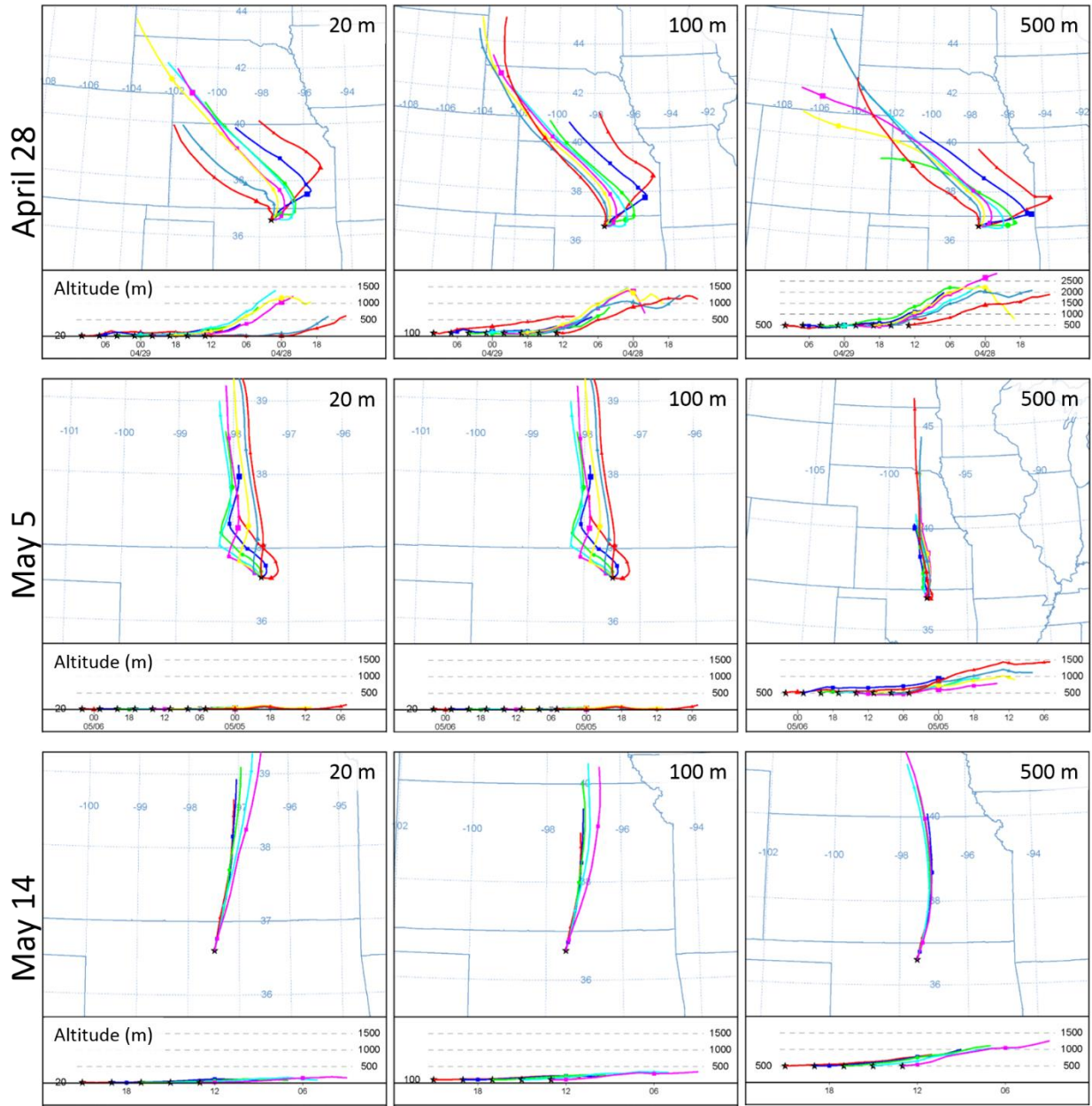**Figure S1.** Time series of a) ozone and sulfur dioxide and b) carbon monoxide and nitrous oxide. Grey vertical bars indicate periods of Brown Carbon (BrC) appearance when particle samples were analyzed. Red vertical bars represent rain events. Arrows indicate the three sampling periods investigated in the current work.

Figure S1. Linear correlation between fractions of Spherical Particles (SP) and the red/blue absorption Ångström exponent (AAE). A linear fit is shown, having an R^2 value of 85%. Extrapolated to 100% SP yields an AAE value of 2.5, consistent with typical BrC characteristics (Lack and Langridge, 2013).

Figure S3. Hybrid single particle Lagrangian integrated trajectory (HYSPLIT) back trajectories for three sample dates in 2016 at different starting altitudes. The starting location (represented by the black star) is the Lamont, OK central ARM facility at 36.60 N and 97.49 W. The April 28th and May 5th plots are 24 hour trajectories while the May 14th plots are 10 hour trajectories. Different colored trajectories within a single plot represent new trajectories every 3 hours after the initial starting time. Archived data was taken from the North American Mesoscale (NAM) sigma-pressure hybrid model.