Supporting Information: African Smoke Acts as Cloud Condensation Nuclei in the Wintertime Tropical North Atlantic Boundary Layer over Barbados

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I. Fire Map

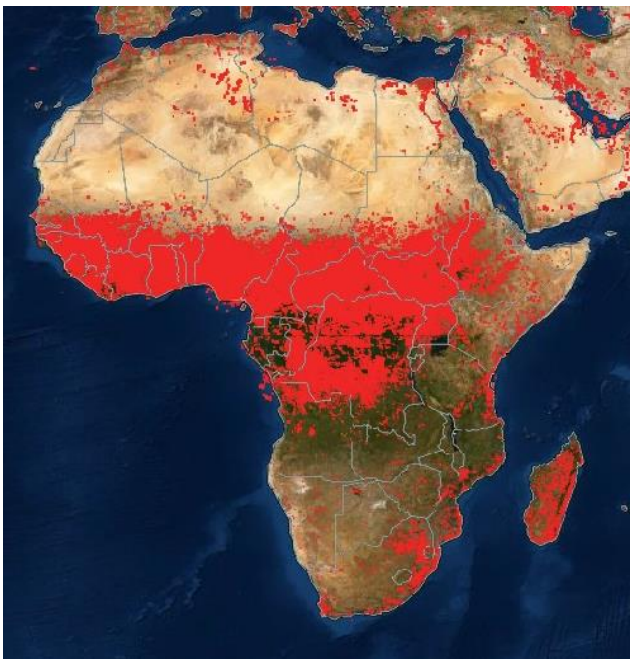

Figure S1 – Active fires (red shading) present between January 29th through February 20th of 2020 plotted using NASA's Fire Information for Resource Management System (FIRMS) model. Red shading is produced using NOAA's Visible Infrared Imaging Radiometer Suite (VIIRS NOAA-20), which shows active fire detections and thermal anomalies.

II. CO Column Density Measurements during EUREC^{4}A/ATOMIC

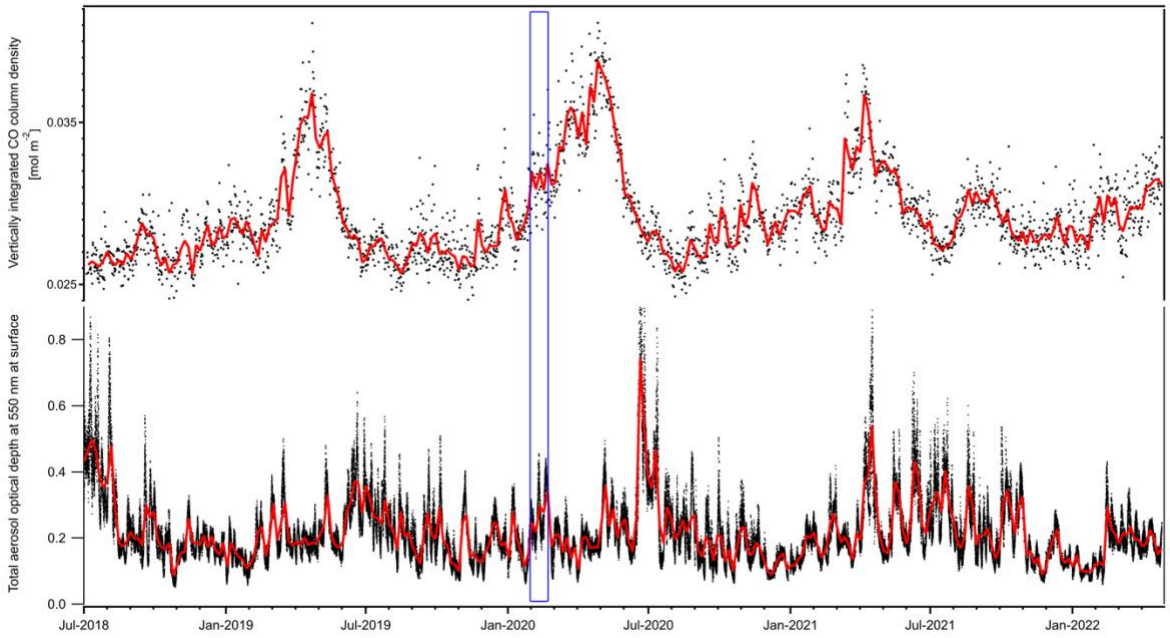

Figure S2 – Carbon monoxide (CO) column density measurements and total aerosol optical depth collected from July 2018 through January 2022 at BACO. Region outlined in blue box indicates time period for EUREC^{4}A/ATOMIC campaigns.

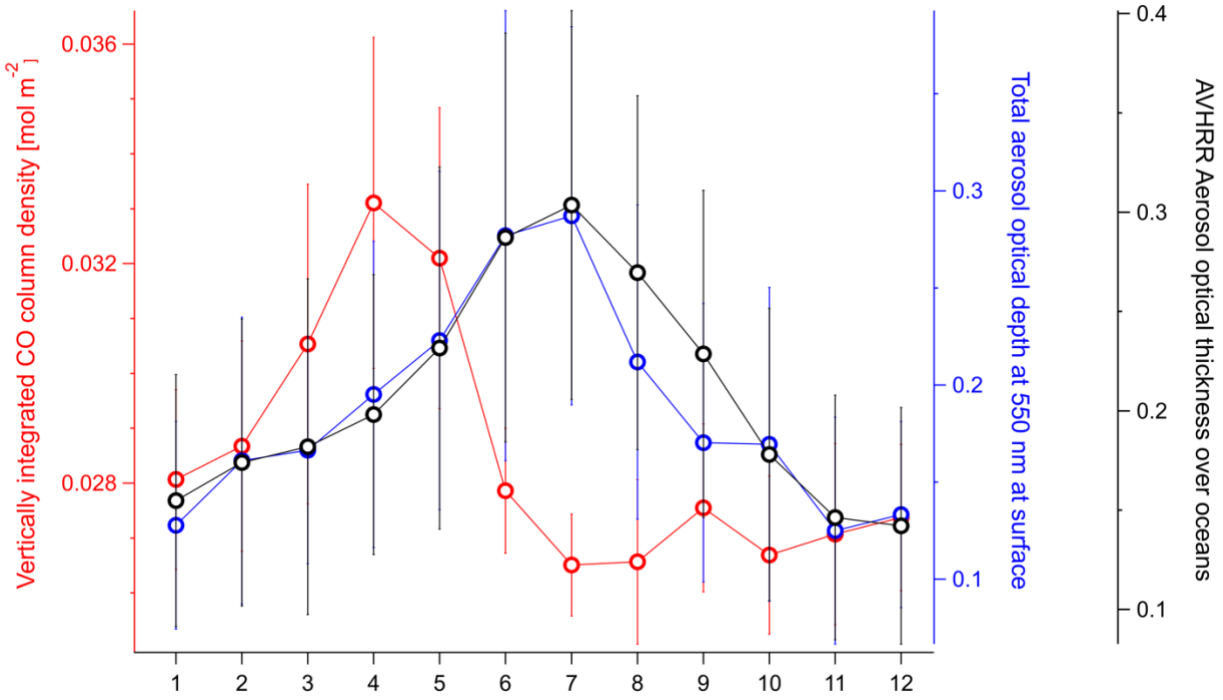

Figure S3 – Monthly averages for carbon monoxide (CO; a proxy for smoke), aerosol optical depth, and aerosol optical thickness collected at Barbados from 2018 – 2022, 2016 – 2022, and 1983 – 2022, respectively.

III. Size-Resolved Chemistry During EUREC^{4}A/ATOMIC

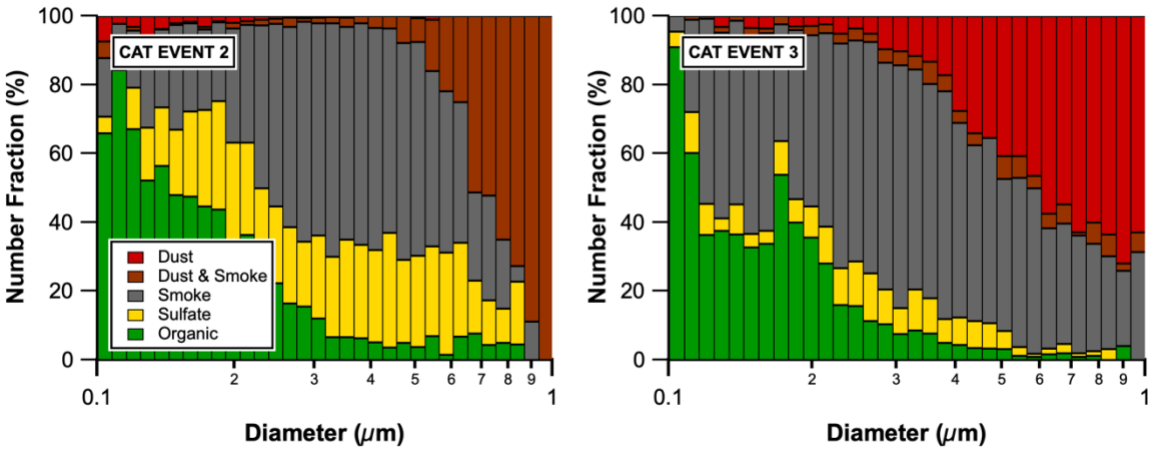

Figure S4 – Number fractions of 6 main submicron particle types plotted as a fraction of aerodynamic diameter (Da). CAT Event 2 and 3 includes size-resolved chemical data from the 2nd (2/10/2020 0:00 – 2/12/2020 6:00 GMT) and 3rd (2/15/2020 12:00 – 2/20/2020 18:00 GMT) period in which dust and wildfire smoke were observed over Barbados, respectively. Particle counts in bins for CAT Event 2 range from 9 to 476 particles, with an average bin size of 253 particles. Particle counts in bins for CAT Event 3 range from 22 to 792 particles, with an average bin size of 266 particles.