

Aerosol and Precipitation Composition at a Coastal New England Site (Acadia National Park): Implications for Air Quality and Aerosol Composition During Cold Air Outbreaks

Supplemental Information

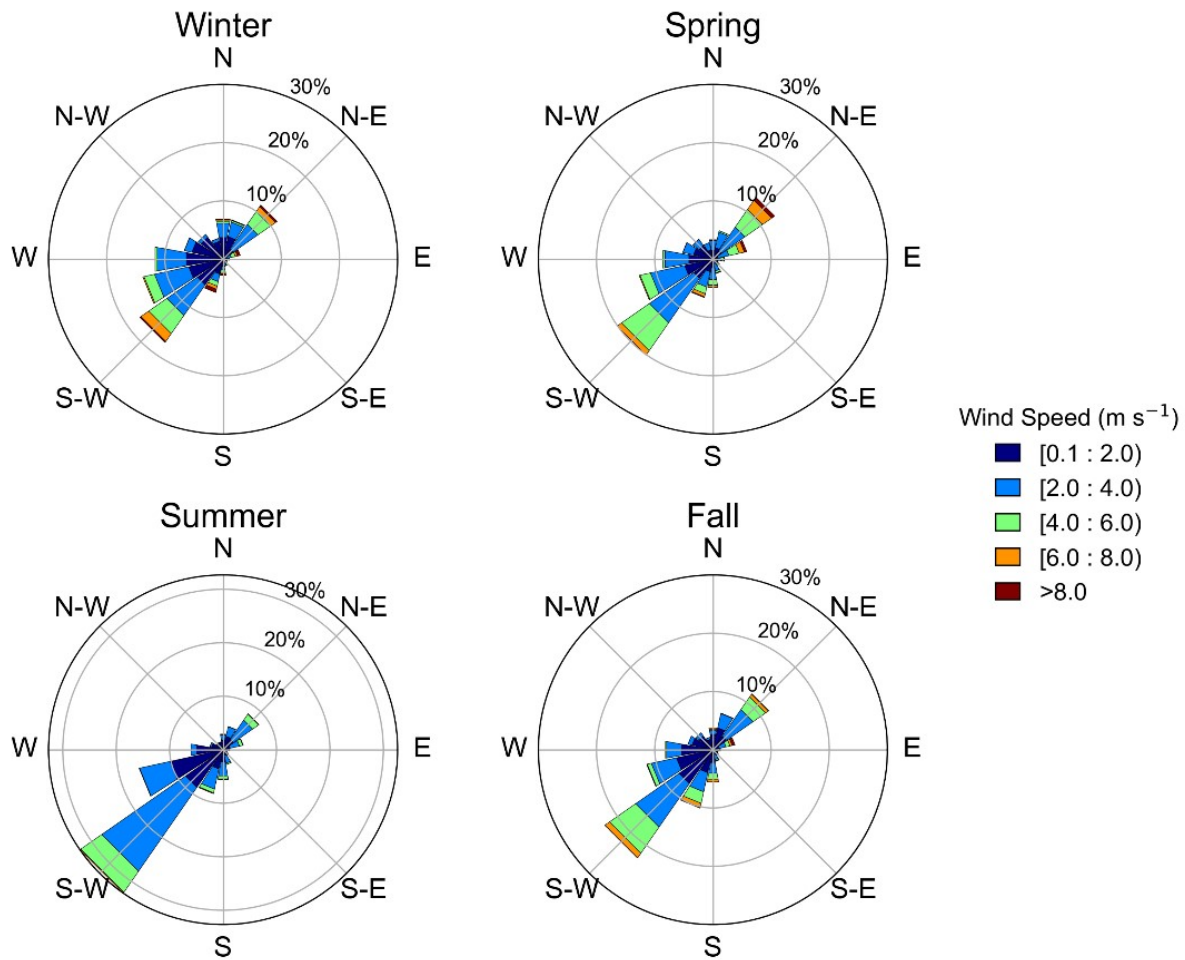


Figure S1. Seasonal wind rose plots for Acadia National Park using National Park Service wind data between January 2017 and December 2021 to complement the same time duration examined in the CWT analysis summarized in Fig. 5. Winter = Dec-Feb, Spring = Mar-May, Summer = Jun-Aug, Fall = Sep-Nov.

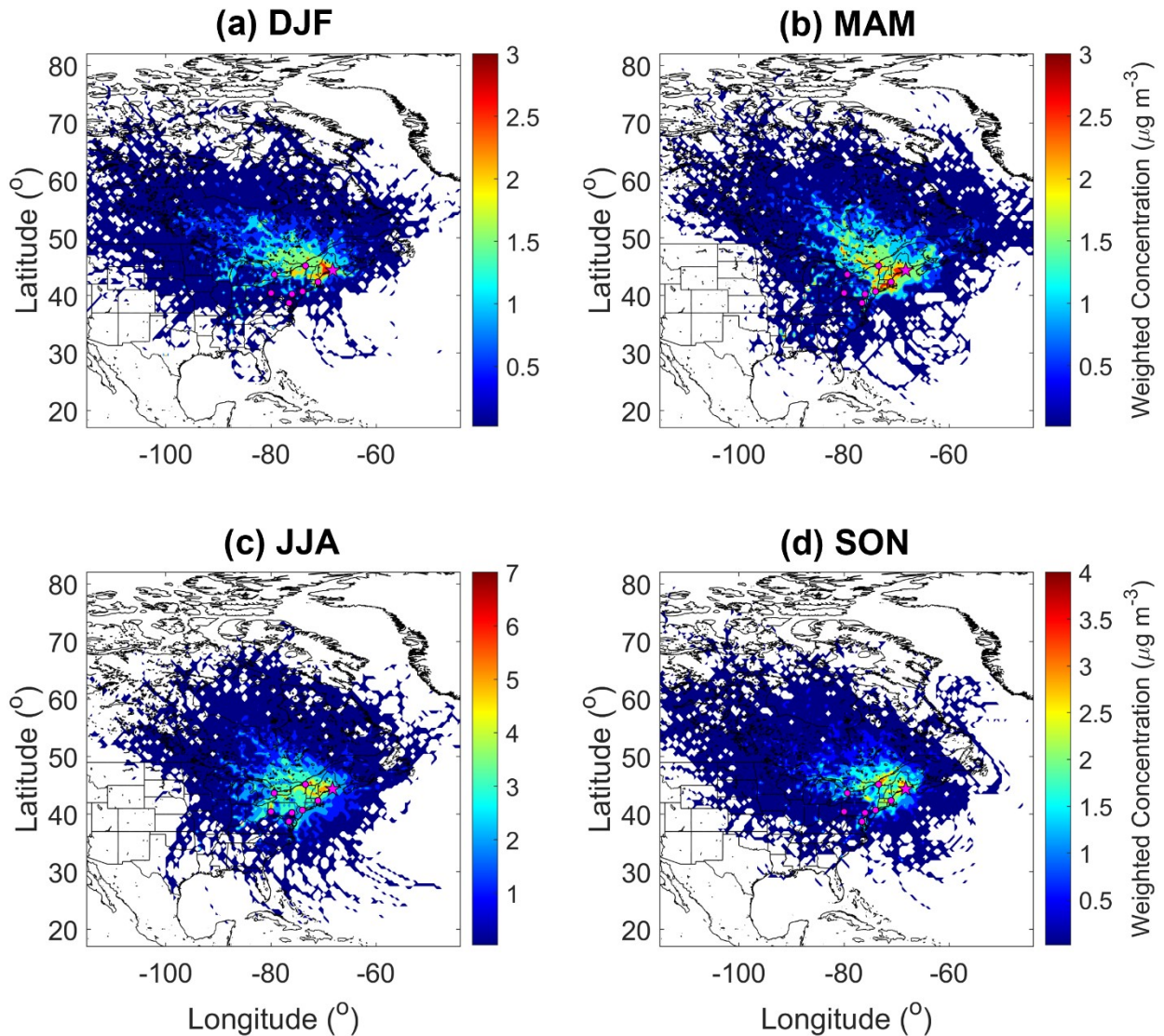


Figure S2. Seasonal concentrated weighted trajectory profiles for $PM_{2.5}$ based on four-day back trajectories with ending altitude of 500 m AGL at Acadia National Park (pink star) between January 2017 and December 2021 for (a) DJF (winter), (b) MAM (spring), (c) JJA (summer), (d) SON (fall). Higher values (yellow-red) indicate that elevated $PM_{2.5}$ at Acadia NP was relatively more influenced by air traveling over those particular grid cells. The other markers represent major cities that are labeled in Figure 5a.

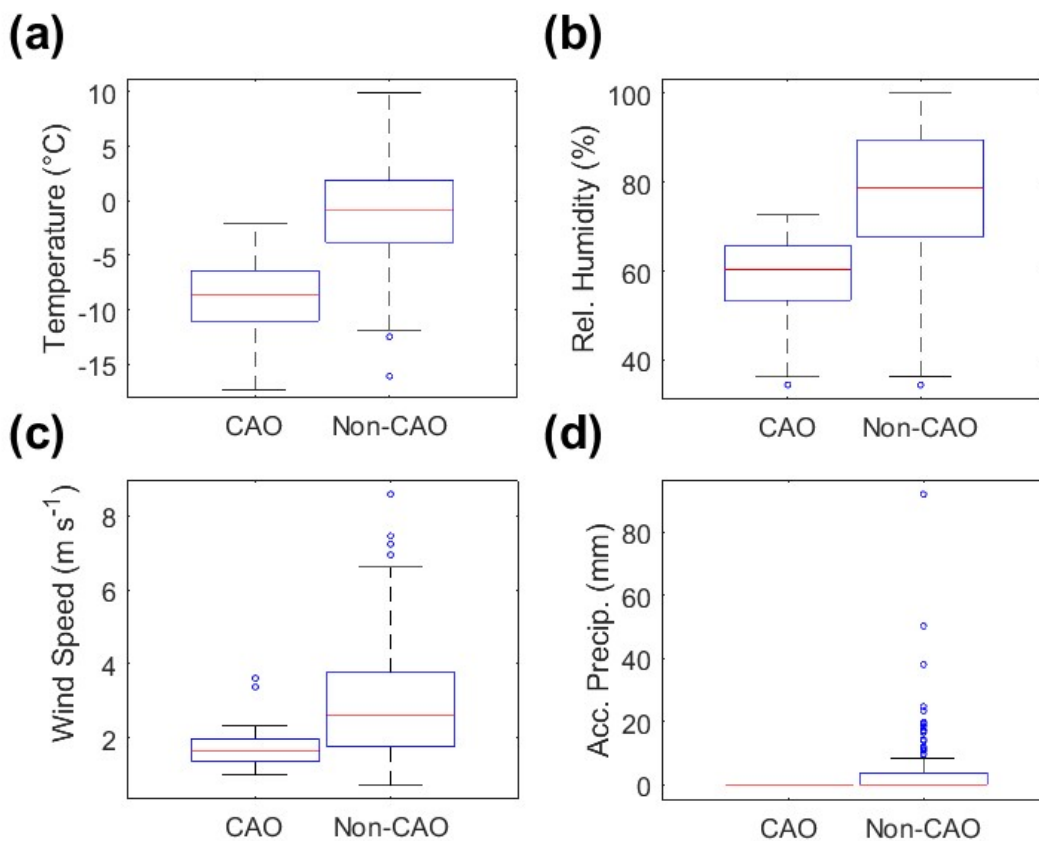


Figure S3. (a) Temperature, (b) relative humidity, (c) wind speed, and (d) accumulated precipitation for CAO (left) and non-CAO (right) days with available IMPROVE data in December-March from 2016-2021. Center horizontal lines in box plots represent median values, the top and bottom lines of boxes represent the 75th and 25th percentile, respectively, the edges of the whiskers (horizontal lines) represent the maximum and minimum values ($Q1 - 1.5 * \text{interquartile range}$), and the points outside of the interquartile range represent outliers.

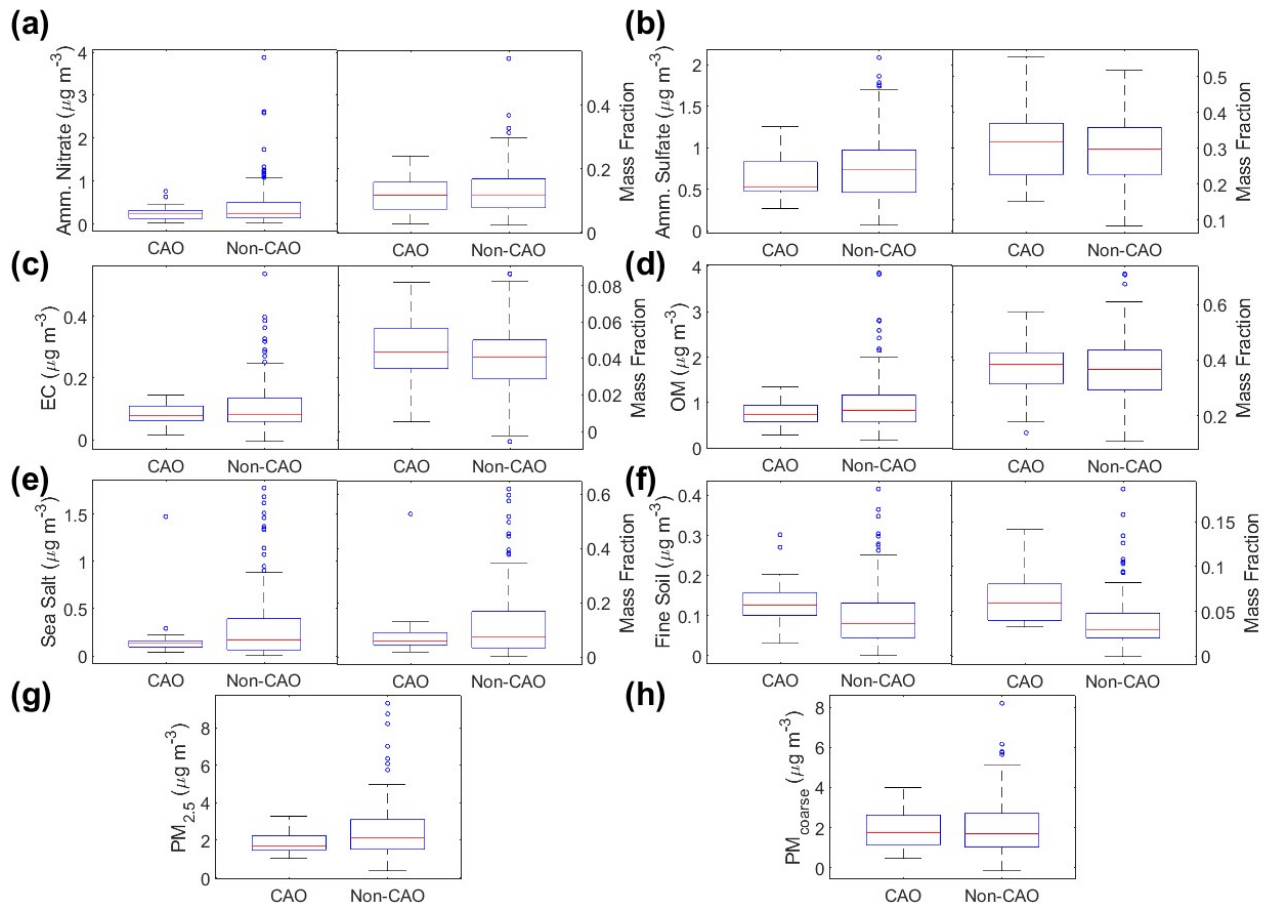


Figure S4. Concentrations and mass fractions of (a-f) RCFM components of $PM_{2.5}$, along with (g) $PM_{2.5}$ and (h) coarse mass ($PM_{10}-PM_{2.5}$) for CAO and non-CAO days in December-March from 2016-2021. There were 26 and 153 CAO and non-CAO days, respectively, in the analysis with available IMPROVE data.