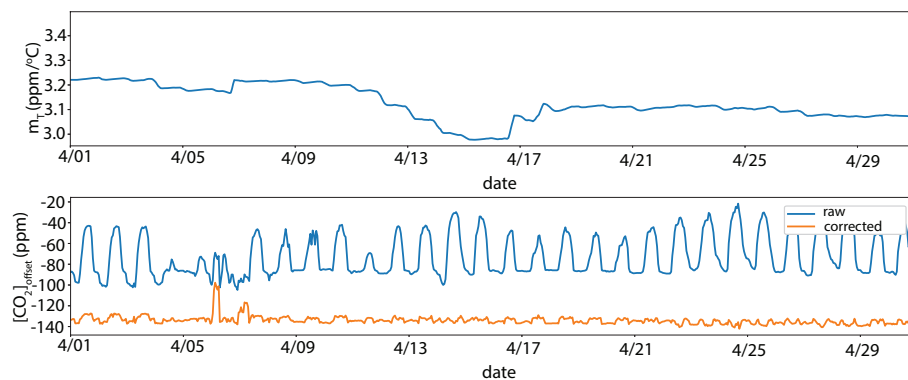
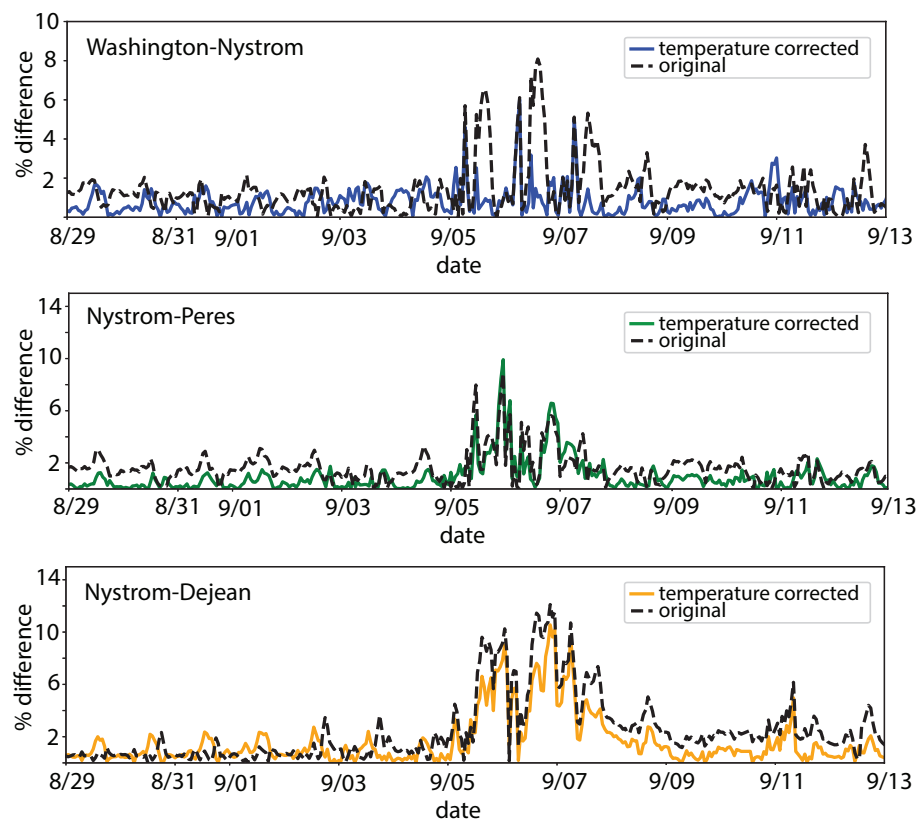


# Supplementary Information

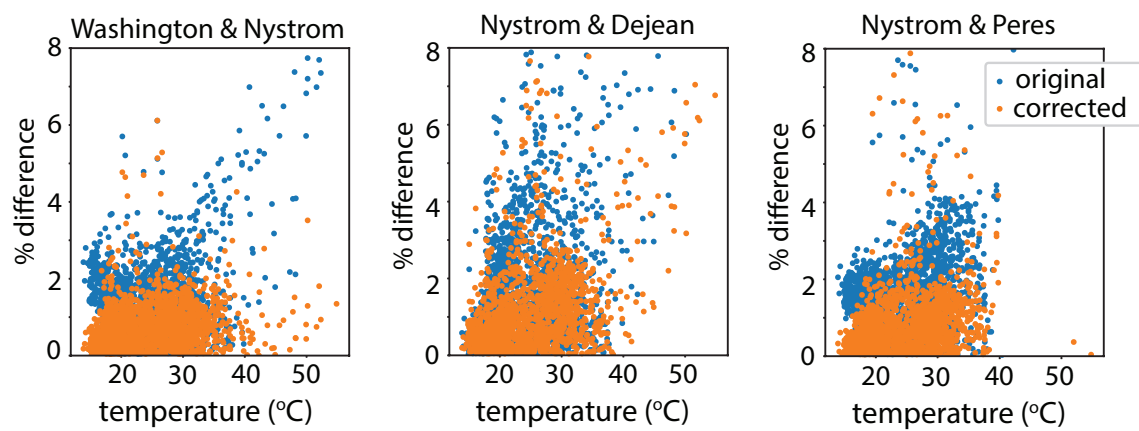
515



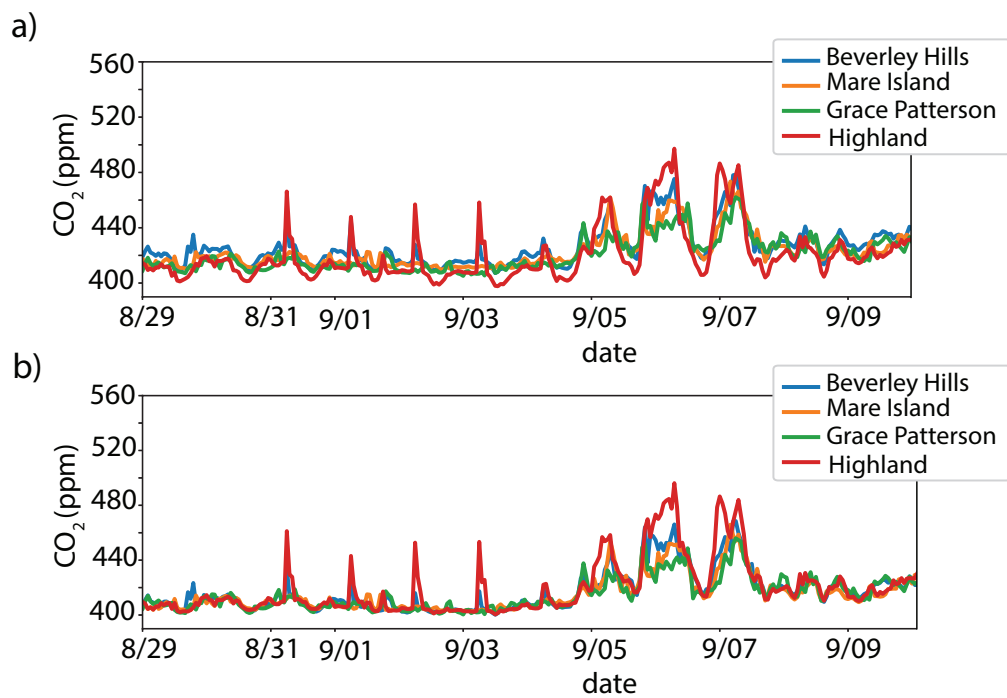
**Figure S1.** (top) Slope of  $\Delta[\text{CO}_2]_{10\%}^T$  vs temperature ( $m_T$ ) determined for EBMUD during April 2020. (bottom) Offset ( $[\text{CO}_2]_{\text{offset}}$ ) determined with the original calibration method (blue) and using the temperature dependence correction method (orange).



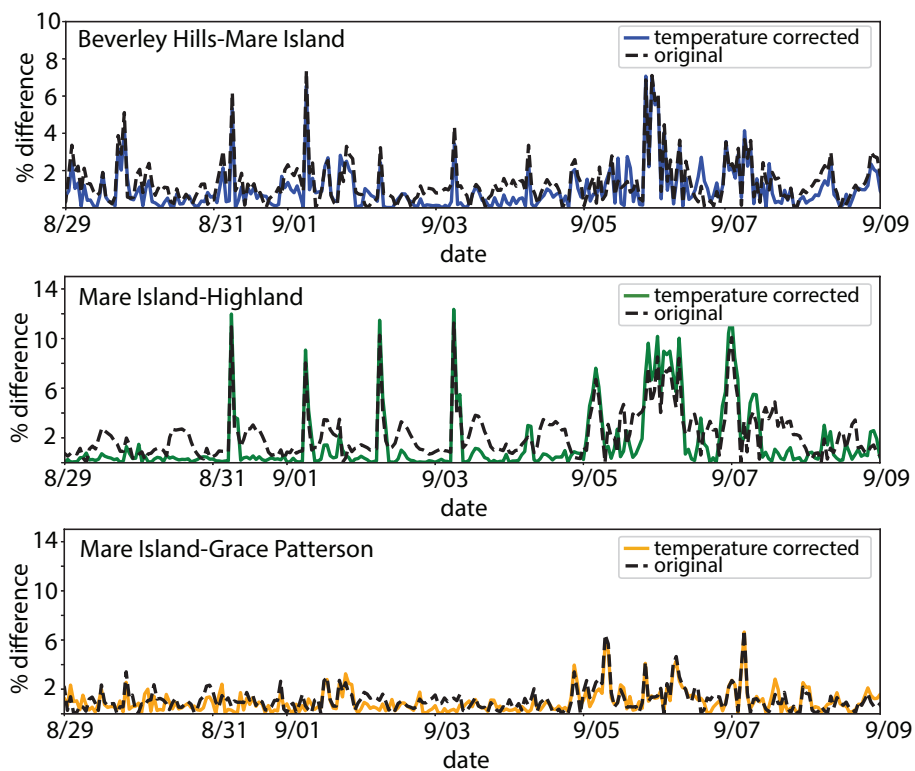
**Figure S2.** Percent difference between CO<sub>2</sub> mixing ratios during and before 2020 September wildfires at four adjacent sites in Richmond without (a) and with (b) temperature correction.



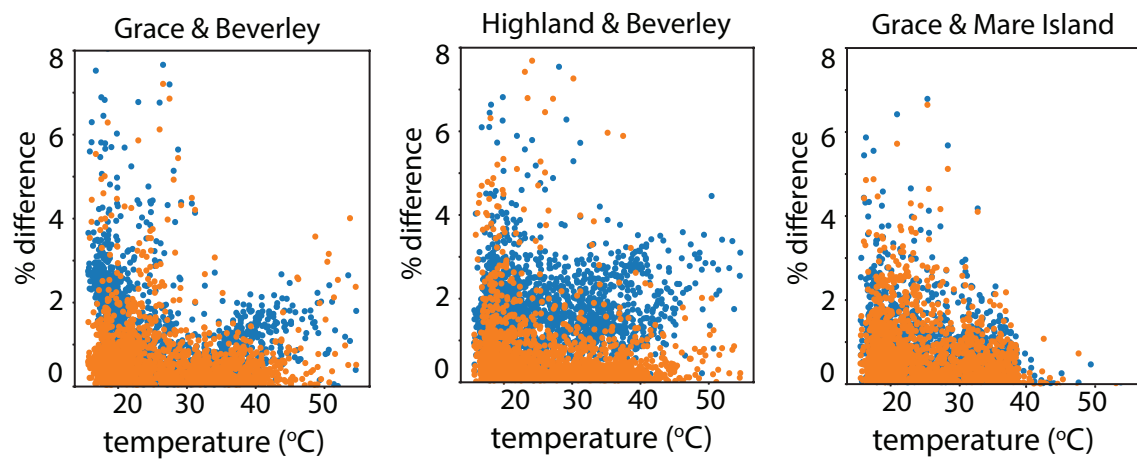
**Figure S3.** Percent differences between adjacent sites in Richmond as a function of temperature with (orange) and without( blue) temperature correction.



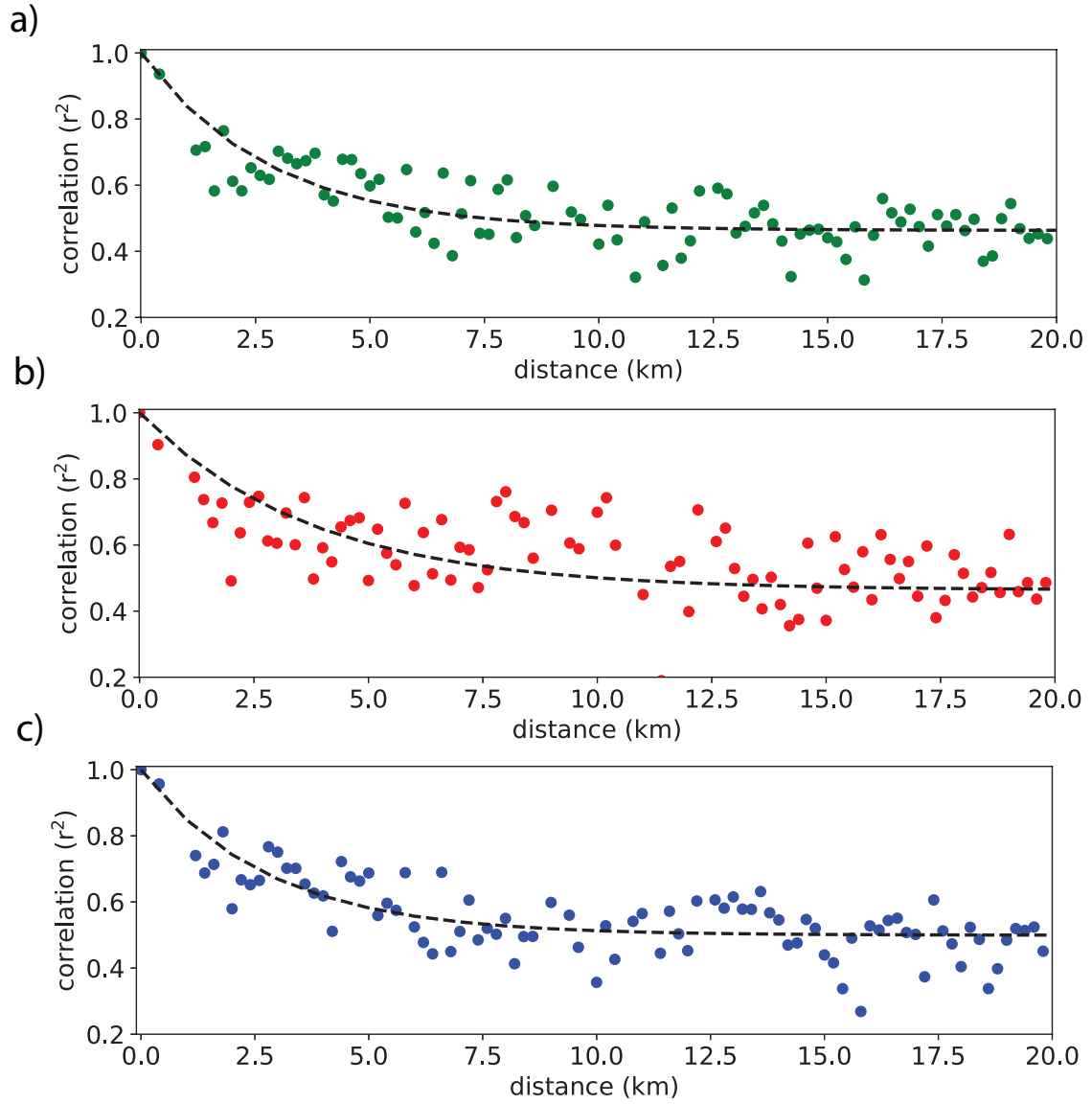
**Figure S4.** CO<sub>2</sub> mixing ratios during and before 2020 September wildfires at four adjacent sites in Vallejo without (a) and with (b) temperature correction.



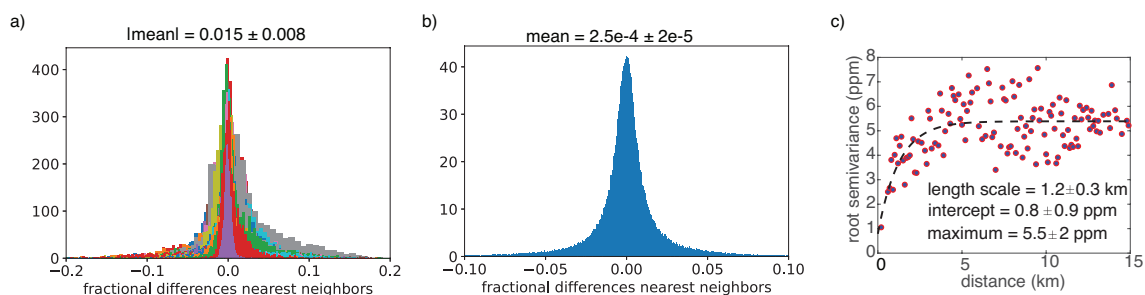
**Figure S5.** Percent difference between CO<sub>2</sub> mixing ratios during and before 2020 September wildfires at four adjacent sites in Vallejo without (a) and with (b) temperature correction.



**Figure S6.** Percent differences between adjacent sites in Vallejo as a function of temperature with (orange) and without( blue) temperature correction.



**Figure S7.** Correlations ( $r^2$ ) during summer 2020 for every possible pairing of Bay Area sites binned at every 0.2 km distance interval for a) all times, b) day (LT 11:00–18:00) and c) night (LT 21:00–04:00). Solid lines show exponential decay of the correlations.  $e$ -folding lengthscales are a) 2.8 km, b) 3.7 km, and c) 2.8 km.



**Figure S8.** a) Histogram of the fractional differences between nearest neighbors sites in the Bay Area Network with the temperature correction applied using the network median as a reference. Different colors represent different pairs of neighboring sites. The mean and error indicated is the average and 95% confidence interval of the absolute values of each neighboring pair's mean fractional difference. b) Histogram of the fractional differences between all aggregated nearest neighbors sites with the temperature correction applied. The mean indicated and error indicated is the mean and 95% confidence interval of the distribution. c) Variogram of BEACO<sub>2</sub>N sites for data with temperature correction applied using the network median as a reference. Data above 1 km separation are averaged by 0.5 km bins.