

Supplementary Materials

Table S1 presents aerosol average elemental concentrations for the sampling period, including averages for fine particulate matter (PM_{2.5}), black carbon (BC), and trace elements. The concentrations are in $\mu\text{g}/\text{m}^3$. Uncertainty is the standard deviation (SD), and N is the number of samples where the element was measured above the detection limit.

Table S1. Average fine particulate matter (PM_{2.5}), black carbon (BC) and trace element concentrations during the sampling period.

	N	Mean ($\mu\text{g}/\text{m}^3$)	SD
PM _{2.5}	155	17.963	12.518
BC	404	1.816	1.540
Na	121	0.563	0.648
Mg	4	0.030	0.030
Al	129	0.140	0.159
Si	134	0.303	0.344
P	125	0.073	0.237
S	134	1.399	0.929
Cl	128	0.281	0.446
K	134	0.437	0.379
Ca	134	0.118	0.073
Ti	131	0.006	0.007
V	19	0.001	0.003
Cr	37	0.018	0.042
Mn	133	0.005	0.012
Fe	134	0.144	0.132
Ni	17	0.002	0.004
Cu	88	0.016	0.017
Zn	133	0.135	0.283
Se	104	0.014	0.015
Br	101	0.005	0.007
Pb	118	0.014	0.016

Supplementary Material Figures

1. Figure S1 presents PMF analysis result, showing the proportional species concentrations by source
2. Figure S2 shows the average monthly volume distribution for the entire sampling period.
3. Figure S3 shows the spectral dependence recorded in all months
4. Figure S4 presents the concentrations of chemical elements possibly related to soil resuspension and biomass burning for the case study
5. Figure S5 shows the 120-h backward trajectories originated in the central part of Brazil that reached São Paulo at different altitudes above ground level and fire spots in the country.

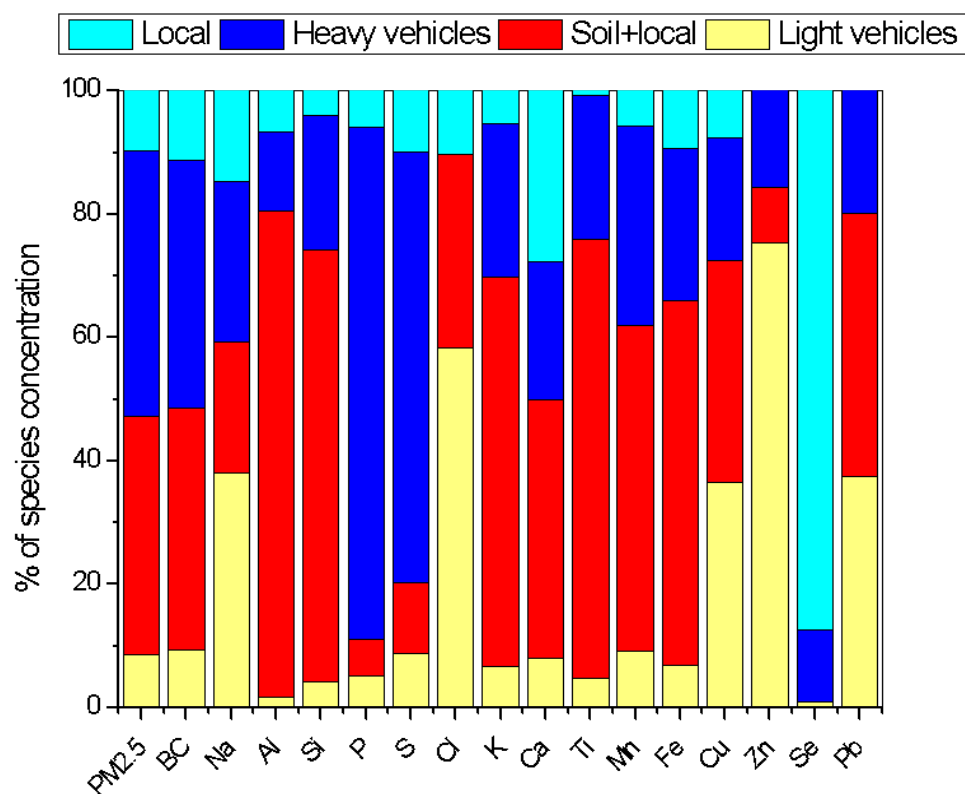


Figure S1. Positive matrix factorization analysis result, showing the proportional species concentrations by source (factor profiles).

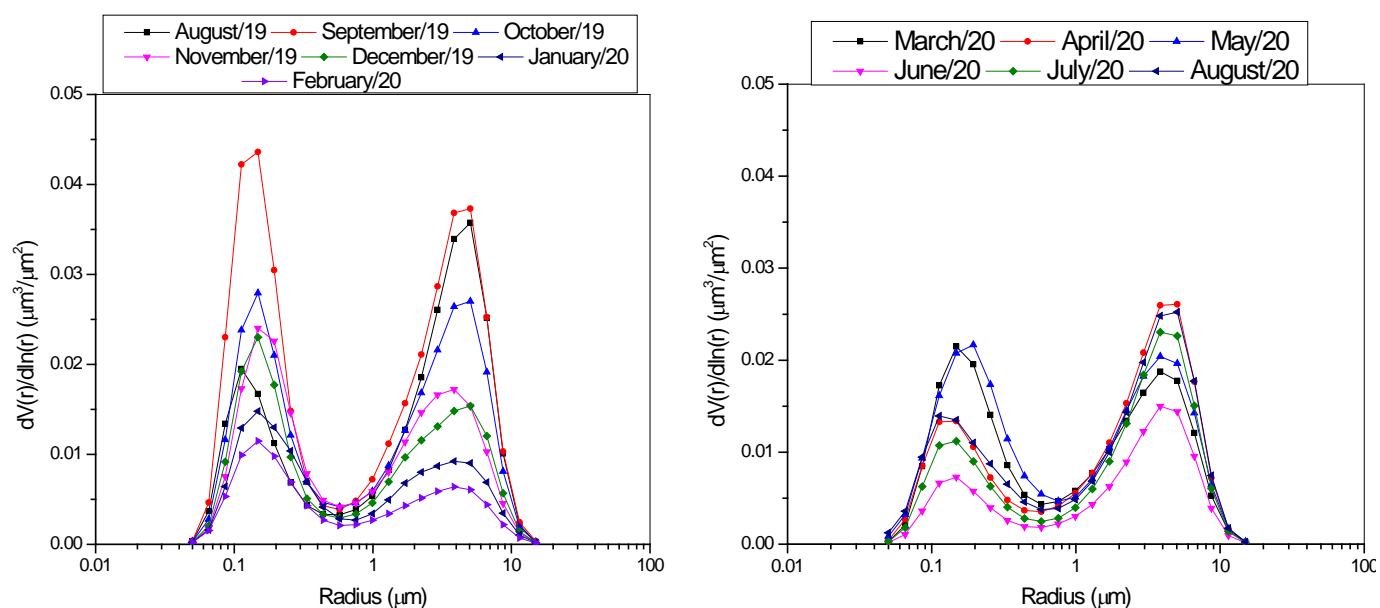


Figure S2. Aerosol volume size distributions as a function of particle radius for different periods by AERONET sun photometer.

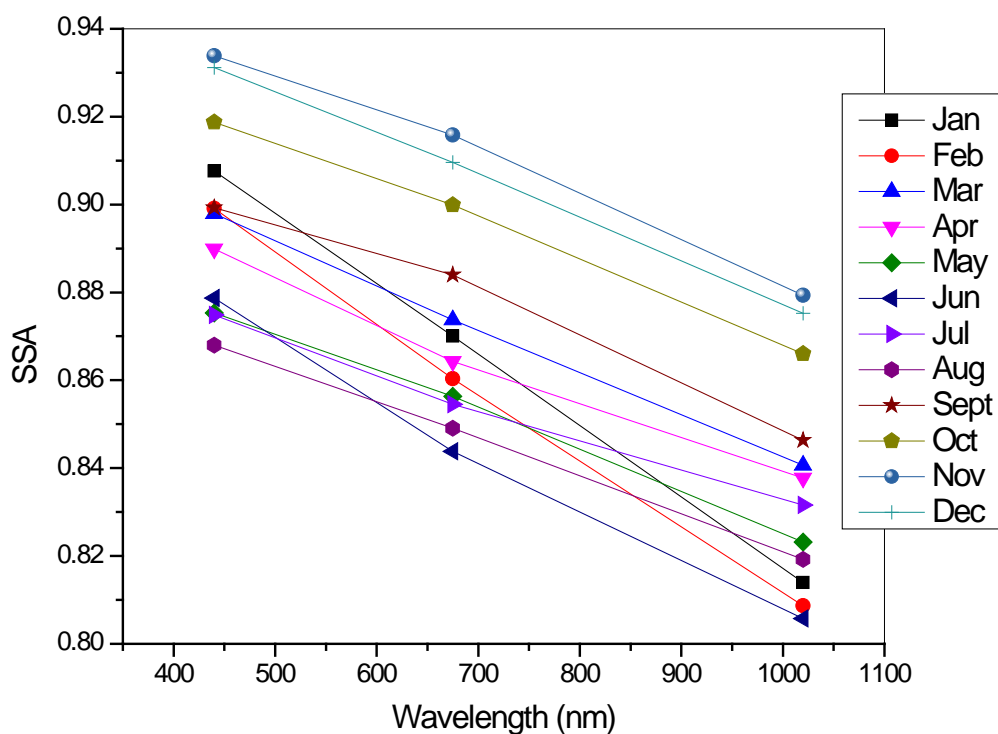


Figure S3. Monthly spectral dependence of SSA in the sampling period.

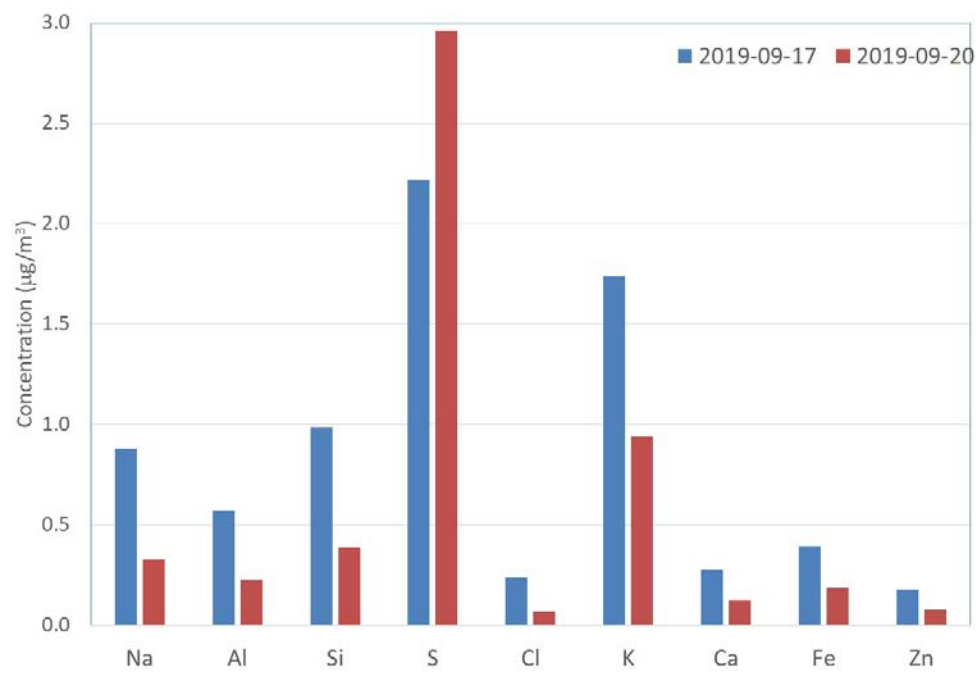
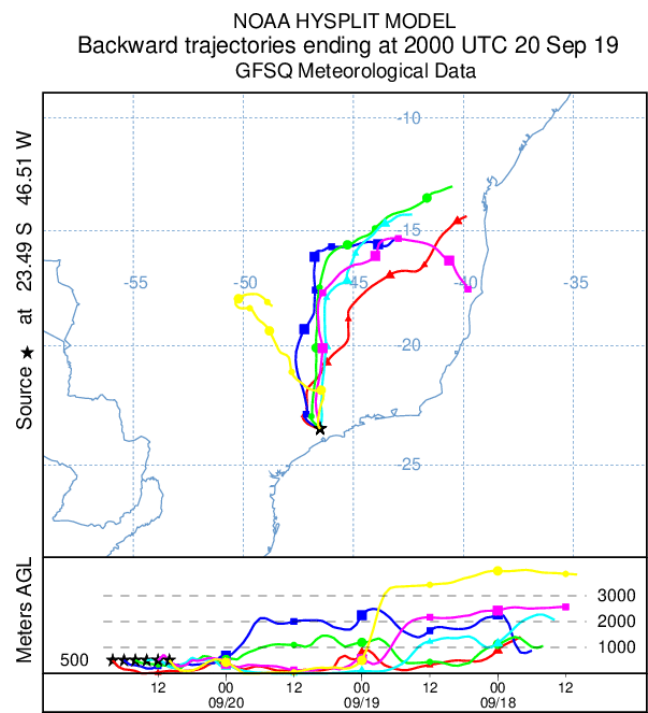
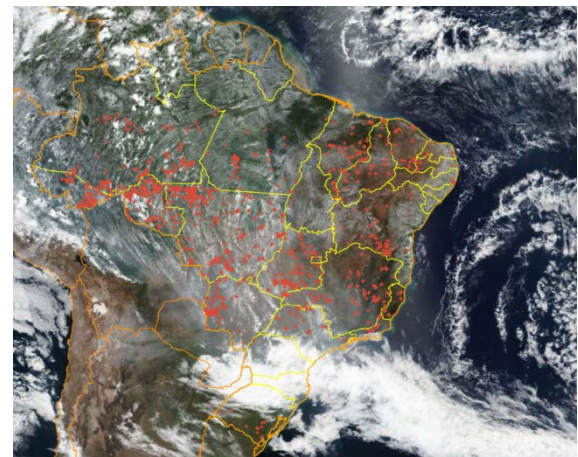


Figure S4. Mean concentrations of chemical elements on September 17 and 20.



a



2019/09/19

b

Figure S5. HYSPLIT backward trajectories ending at the Metropolitan Area of São Paulo on September 20, at 20 UTC (**a**) and satellite image showing fire spots on September 19, 2019. (**b**). Source of image: <https://queimadas.dgi.inpe.br/queimadas/bdqueimadas#mapa>.