Environ Health Perspect

DOI: 10.1289/EHP1545

Supplemental Material

Associations between Ambient Fine Particulate Oxidative Potential and Cardiorespiratory Emergency Department Visits

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Study Data.

Supplemental Material

Data for this study were collected for 196 days over eight sampling periods at the Jefferson Street (JST) study site in Atlanta, GA, from June 2012 – April 2013. In addition to this fixed site, an additional mobile sampling instrument was deployed at a different location for each sampling period in order to explore spatial heterogeneity in OP^{DTT}.(V. Verma et al. 2014) These sites were:

- Roadside (RS), located about 2km from JST, within a few meters of a major interstate highway.
- Georgia Tech (GT), located about 500m from the same interstate highway, roughly between JST and RS
- Yorkville (YRK), located in a rural area about 70km west of downtown Atlanta

During two sampling periods, the mobile instrument was colocated with the fixed instrument at JST to assess measurement differences between instruments. Summary data for the fixed and mobile instruments are shown in the table below.

Table S1: Summary of measurement of the oxidative potential of water-soluble PM2.5 as measured by the DTT assay (OP^{DTT}), measured in nmol/min/m^3, by sampling period, June 2012 – April 2013. Pearson correlation coefficients reported between fixed and mobile sites for each sampling period

Sampling period	Sampling dates	Fixed site		Mobile site		Days in common	Correlation
		Location	Mean OP^{DTT}	Location	Mean OP^{DTT}		
1	6/8 - 7/15	JST	0.29	YRK	0.27	31	0.69
2	7/24 - 8/31	JST	0.29	GT	0.24	37	0.78
3	9/6 - 10/4	JST	0.34	RS	0.32	26	0.52
4	11/16 - 11/30	JST	0.46	JST	0.45	13	0.87
5	12/6 - 1/4	JST	0.44	YRK	0.28	21	0.68
6	1/27 - 2/27	JST	0.33	RS	0.36	29	0.84
7	3/5 - 3/27	JST	0.32	GT	0.25	22	0.56
8	3/30 - 4/12	JST	0.14	JST	0.17	14	0.67

Figure S1: Distribution of the oxidative potential of water-soluble $PM_{2.5}$ as measured by the DTT assay (OP^{DTT}), by day of week (excluding holidays), June 2012 – April 2013, Atlanta, GA. Boxes encompass 25th through 75th percentiles, middle horizontal line represents the median, red dot represents the mean, whiskers extend to the most extreme point within 1.5 interquartile ranges of the box, dots indicate outliers.

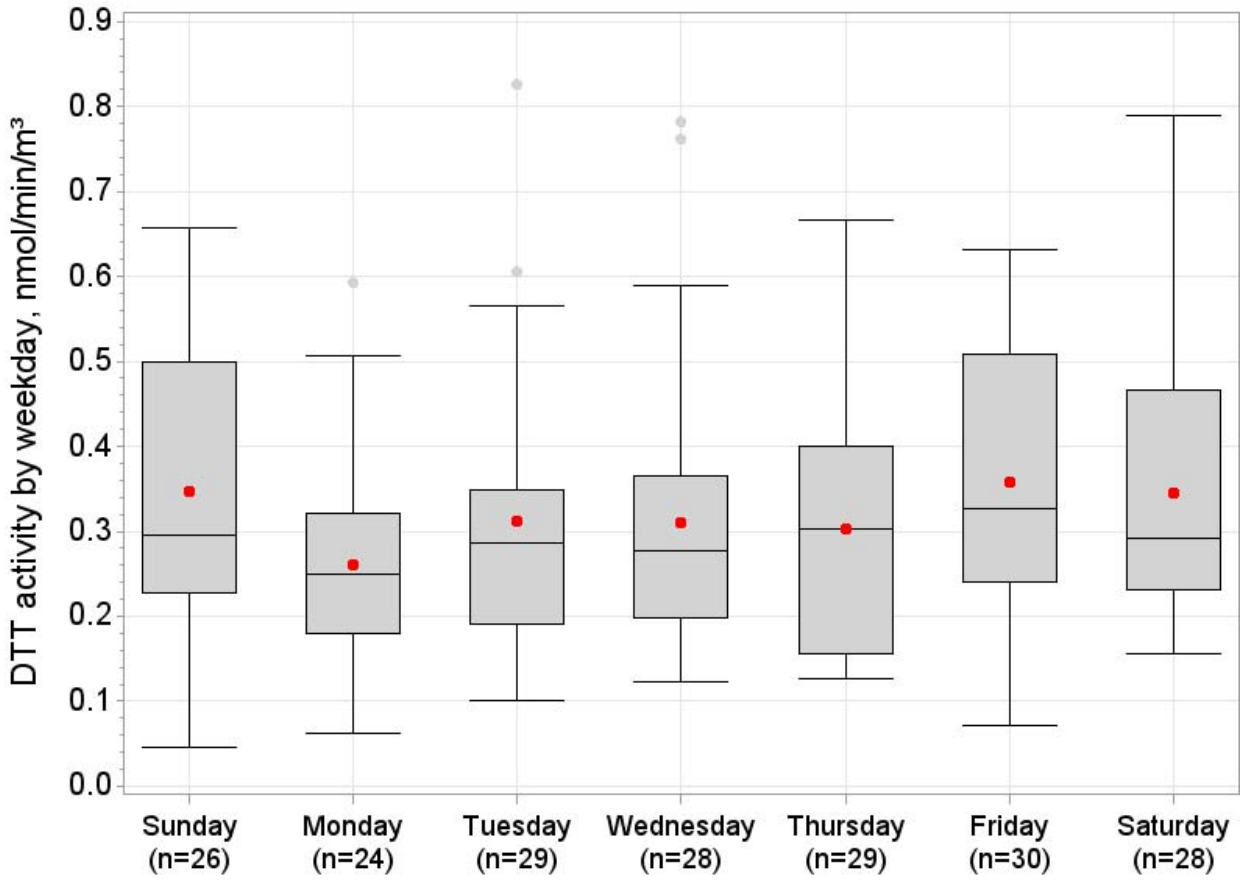

Table S2: Descriptive data for OP^{DTT} and other air quality variables measured during the same time frame, June 2012 – April 2013.

Variable	N	Unit	Mean	Median	Range	IQR
OP^{DTT}	196	nmol/min/m^3	0.32	0.29	0.05 - 0.83	0.20 - 0.41
CO	196	ppb	0.43	0.35	0.14 - 1.32	0.26 - 0.54
O_3	196	ppm	44.82	42.99	13.07 - 99.64	31.71 - 57.87
NO_2	196	ppm	28.29	28.35	5.69 - 59.90	20.47 - 35.80
SO_2	196	ppm	2.31	1.35	1.00 - 14.10	1.00 - 3.00
$PM_{2.5}$	196	µg/m^3	9.14	8.70	1.50 - 25.20	6.60 - 11.55
NO_3	194	µg/m^3	0.55	0.32	0.02 - 2.37	0.19 - 0.73
SO_4	196	µg/m^3	1.89	1.78	0.44 - 5.27	1.29 - 2.35
NH_4	193	µg/m^3	0.72	0.68	0.18 - 2.15	0.48 - 0.89
EC	191	µg/m^3	0.65	0.58	0.14 - 1.83	0.44 - 0.78
OC	190	µg/m^3	2.54	2.36	0.60 - 6.90	1.64 - 3.17
Mn	158	ng/m^3	1.49	1.21	0.00 - 8.10	0.83 - 1.73
Fe	157	ng/m^3	15.28	12.74	0.00 - 47.10	7.15 - 20.42
Cu	152	ng/m^3	10.40	7.91	0.00 - 42.48	3.41 - 16.66