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Supplement of

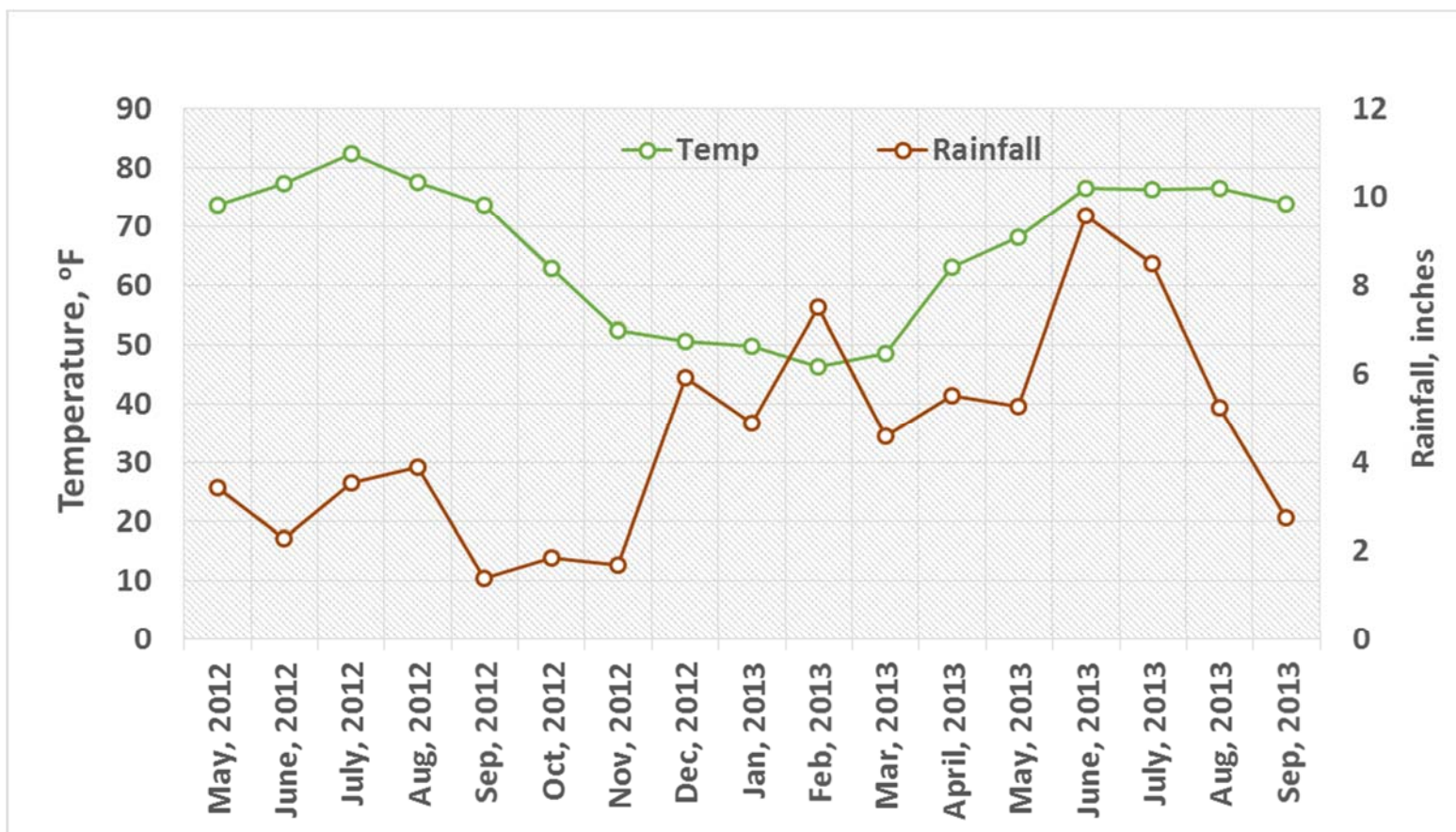
Reactive oxygen species associated with water-soluble $PM_{2.5}$ in the southeastern United States: spatiotemporal trends and source apportionment

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Supplemental Information

Figure S1: Monthly rainfall and temperature in Atlanta during 2012-2013



Source for Rainfall data: National Oceanic and Atmospheric Administration (http://www.srh.noaa.gov/ffc/?n=rainfall_scorecard)

Source for Temperature data: Georgia Department of Natural Resources (<http://www.air.dnr.state.ga.us/amp/>)

Table S1: Complete regression matrix sorted by each site and season

JST-GT_Summer, 2012												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.81	0.67	0.68	0.73	0.81	0.69	0.49	0.20	0.72	0.78	0.71	0.62
WSOC		0.75	0.58	0.66	0.85	0.66	0.52	0.20	0.55	0.62	0.56	0.50
BrnC			0.44	0.51	0.80	0.70	0.59	0.00	0.37	0.56	0.45	0.37
SO₄⁻²				0.96	0.55	0.51	0.30	0.19	0.50	0.71	0.53	0.37
NH₄⁺					0.66	0.53	0.30	0.07	0.55	0.69	0.50	0.32
OC						0.68	0.64	0.11	0.57	0.66	0.41	0.42
EC							0.41	0.39	0.59	0.75	0.58	0.60
K								-0.04	0.33	0.47	0.28	0.37
Ca									0.01	0.12	0.18	0.18
Mn										0.72	0.61	0.65
Fe											0.67	0.65
Cu												0.63
YRK_Summer, 2012												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.79	0.53	0.58	0.59	0.76	0.56	0.51	0.68	0.63	0.48	0.09	0.48
WSOC		0.83	0.76	0.82	0.96	0.84	0.70	0.68	0.56	0.69	-0.11	0.49
BrnC			0.72	0.75	0.79	0.82	0.66	0.36	0.32	0.64	-0.12	0.57
SO₄⁻²				0.95	0.73	0.68	0.32	0.46	0.36	0.58	-0.03	0.46
NH₄⁺					0.80	0.76	0.38	0.47	0.35	0.65	0.03	0.48
OC						0.85	0.72	0.81	0.68	0.75	0.02	0.57
EC							0.65	0.49	0.40	0.67	0.12	0.43
K								-0.07	-0.03	-0.09	-0.08	0.09
Ca									0.94	0.45	-0.19	0.48

Mn										0.38	-0.13	0.41
Fe											-0.07	0.49
Cu												0.11
JST_Fall, 2012												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.72	0.81	0.49	0.52	0.83	0.90	0.61	-0.08	0.37	0.74	0.20	0.82
WSOC		0.92	0.27	0.34	0.78	0.75	0.75	-0.21	-0.16	0.29	-0.08	0.21
BrnC			0.22	0.29	0.78	0.85	0.63	-0.31	0.01	0.47	0.07	0.37
SO₄⁻²				0.95	0.56	0.34	0.57	0.20	0.14	0.67	0.26	0.47
NH₄⁺					0.62	0.34	0.64	0.05	0.16	0.60	0.25	0.47
OC						0.73	0.87	0.03	0.14	0.62	0.25	0.60
EC							0.42	-0.11	0.21	0.90	0.28	0.75
K								0.21	0.31	0.53	0.22	0.44
Ca									-0.13	0.12	-0.24	0.05
Mn										0.54	0.33	0.73
Fe											0.75	0.78
Cu												0.63
RS_Fall, 2012												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.71	0.59	0.62	0.66	0.77	0.55	0.52	0.12	0.28	0.44	0.61	0.68
WSOC		0.82	0.56	0.56	0.76	0.32	0.31	-0.18	0.14	0.25	0.41	0.33
BrnC			0.23	0.20	0.74	0.38	0.61	0.05	0.46	0.30	0.50	0.37
SO₄⁻²				0.94	0.48	0.21	0.14	-0.04	-0.05	0.44	0.09	0.37
NH₄⁺					0.45	0.35	0.04	-0.24	-0.23	0.40	0.22	0.38
OC						0.34	0.66	0.06	0.49	0.37	0.36	0.48
EC							0.15	-0.01	0.07	0.28	0.61	0.47
K								0.35	0.76	0.35	0.30	0.46
Ca									0.58	0.38	0.06	0.46

Mn										0.18	0.00	0.43
Fe											0.38	0.64
Cu												0.38
JST-GT_Winter, 2012-13												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.69	0.78	0.15	0.13	0.85	0.82	0.78	-0.13	0.46	0.65	0.63	0.63
WSOC		0.73	-0.01	0.03	0.83	0.71	0.79	0.00	0.49	0.52	0.55	0.61
BrnC			0.02	0.05	0.81	0.79	0.77	-0.20	0.45	0.62	0.65	0.59
SO₄⁻²				0.88	0.01	0.03	-0.01	-0.06	0.10	0.15	0.09	0.21
NH₄⁺					0.02	0.09	0.02	0.00	0.07	0.24	0.15	0.27
OC						0.90	0.89	0.01	0.54	0.66	0.64	0.68
EC							0.79	-0.06	0.55	0.78	0.74	0.69
K								-0.06	0.46	0.61	0.58	0.65
Ca									0.31	-0.03	-0.29	-0.02
Mn										0.59	0.35	0.52
Fe											0.72	0.67
Cu												0.60
YRK_winter, 2012												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.84	0.88	0.34	0.45	0.82	0.80	0.75	0.31	0.68	0.04	0.43	0.72
WSOC		0.79	0.10	0.22	0.93	0.79	0.90	0.40	0.79	-0.02	-0.08	0.73
BrnC			0.18	0.31	0.82	0.85	0.77	0.23	0.68	-0.13	0.20	0.79
SO₄⁻²				0.96	-0.05	0.04	-0.11	-0.18	-0.10	0.01	0.66	-0.08
NH₄⁺					0.09	0.21	0.00	-0.19	-0.01	0.21	0.62	0.01
OC						0.91	0.89	0.27	0.78	0.00	-0.12	0.69
EC							0.71	-0.04	0.65	0.15	-0.02	0.62
K								0.71	0.85	-0.22	-0.20	0.86
Ca									0.78	-0.31	0.24	0.75

Mn										0.12	-0.18	0.89
Fe											-0.13	-0.03
Cu												-0.01
RS_Winter, 2013												
R	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.78	0.86	0.47	0.52	0.86	0.75	0.69	0.31	0.49	0.57	0.35	0.60
WSOC		0.82	0.66	0.61	0.76	0.68	0.85	0.46	0.70	0.70	0.52	0.71
BrnC			0.42	0.46	0.80	0.63	0.73	0.51	0.65	0.46	0.19	0.67
SO₄⁻²				0.69	0.47	0.42	0.23	-0.20	0.12	0.37	0.30	0.09
NH₄⁺					0.43	0.37	0.33	0.00	0.11	0.49	0.22	0.20
OC						0.87	0.84	0.58	0.76	0.69	0.58	0.48
EC							0.73	0.36	0.54	0.63	0.70	0.53
K								0.59	0.76	0.73	0.59	0.53
Ca									0.80	0.21	0.12	0.15
Mn										0.56	0.37	0.54
Fe											0.60	0.48
Cu												0.42
CTR_Summer, 2013												
R	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.78	0.88	0.71	0.78	0.77	0.72	0.66	0.23	0.36	0.41	-0.12	0.62
WSOC		0.82	0.67	0.75	0.94	0.89	0.86	0.12	0.25	0.33	0.00	0.51
BrnC			0.62	0.65	0.81	0.74	0.77	0.23	0.31	0.52	-0.07	0.61
SO₄⁻²				0.95	0.65	0.63	0.55	0.33	0.45	0.56	-0.17	0.31
NH₄⁺					0.76	0.71	0.58	0.18	0.28	0.45	-0.04	0.48
OC						0.95	0.86	0.16	0.21	0.33	0.10	0.58
EC							0.83	0.15	0.26	0.29	0.10	0.65
K								0.25	0.32	0.32	0.12	0.26
Ca									0.72	0.05	-0.23	-0.14

Mn										0.39	-0.33	-0.05
Fe											-0.10	0.29
Cu												0.39
BHM_Summer, 2013												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.67	0.74	0.66	0.66	0.85	0.68	0.41	0.55	0.75	0.66	0.23	0.66
WSOC		0.67	0.54	0.44	0.81	0.63	0.19	0.58	0.37	0.71	0.12	0.25
BrnC			0.63	0.56	0.85	0.74	0.24	0.76	0.39	0.51	0.07	0.38
SO₄⁻²				0.95	0.68	0.56	0.13	0.32	0.29	0.65	-0.04	0.27
NH₄⁺					0.68	0.51	0.14	0.17	0.25	0.70	-0.12	0.30
OC						0.81	0.36	0.67	0.54	0.67	0.04	0.49
EC							0.18	0.67	0.27	0.61	0.05	0.22
K								0.11	0.29	0.25	0.24	0.14
Ca									0.49	0.35	0.36	0.33
Mn										0.20	0.33	0.83
Fe											-0.06	0.31
Cu												0.13
GT_Fall, 2013												
<i>R</i>	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.47	0.75	0.39	0.37	0.79	0.78	0.65	0.29	0.58	0.66	0.46	0.46
WSOC		0.62	0.81	0.78	0.43	0.40	0.32	0.05	0.14	0.52	0.14	0.04
BrnC			0.38	0.32	0.81	0.77	0.72	0.29	0.65	0.72	0.43	0.51
SO₄⁻²				0.98	0.41	0.35	0.31	-0.06	0.15	0.60	0.14	0.01
NH₄⁺					0.39	0.32	0.27	-0.12	0.09	0.56	0.06	0.05
OC						0.90	0.90	0.42	0.77	0.94	0.67	0.67
EC							0.78	0.39	0.65	0.88	0.71	0.68
K								0.45	0.81	0.79	0.61	0.61
Ca									0.68	0.41	0.38	0.17

Mn										0.83	0.57	0.65
Fe											0.67	0.64
Cu												0.48
RS_Fall, 2013												
R	WSOC	BrnC	SO₄⁻²	NH₄⁺	OC	EC	K	Ca	Mn	Fe	Cu	Zn
DTT	0.21	0.48	0.60	0.47	0.58	0.53	0.74	0.79	0.84	0.53	-0.09	0.74
WSOC		-0.02	0.26	0.23	0.28	0.12	0.23	0.42	0.37	-0.03	-0.24	0.33
BrnC			0.19	0.15	0.62	0.45	0.51	0.39	0.48	0.57	0.13	0.55
SO₄⁻²				0.96	0.40	0.35	0.40	0.65	0.70	0.55	-0.02	0.65
NH₄⁺					0.35	0.39	0.31	0.54	0.61	0.52	-0.04	0.62
OC						0.67	0.85	0.54	0.78	0.81	0.06	0.80
EC							0.40	0.24	0.42	0.64	-0.03	0.55
K								0.66	0.84	0.63	0.10	0.88
Ca									0.91	0.46	-0.05	0.69
Mn										0.66	0.22	0.90
Fe											-0.01	0.62
Cu												0.22