Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts.

Supplementary Information

Oxidative potential of coarse particulate matter ($PM_{10-2.5}$) and its relation to water solubility and sources of trace elements and metals in the Los Angeles Basin

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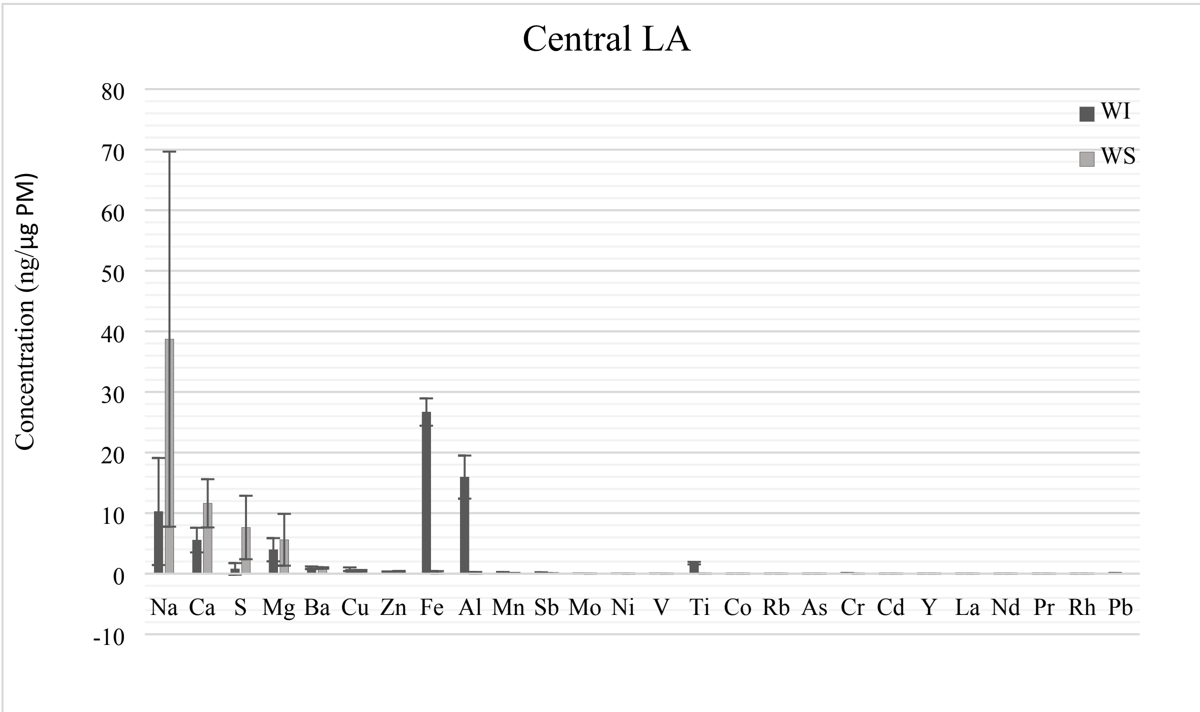
Table S1. Water solubility fraction of selected metals (± standard deviation) at Central LA and Anaheim.

Species	Central LA	Anaheim
Na	0.74 ± 0.17	0.27 ± 0.10
Ca	0.68 ± 0.14	0.25±0.03
S	0.83±0.16	0.32 ± 0.05
Mg	0.52 ± 0.18	0.20 ± 0.05
Ba	0.50 ± 0.08	0.15 ± 0.03
Cu	0.37 ± 0.16	0.13 ± 0.05
Zn	0.46 ± 0.22	0.22 ± 0.05
Fe	0.01 ± 0.01	0.003 ± 0.002
Al	0.01 ± 0.01	0.002 ± 0.002
Mn	0.29 ± 0.09	0.11 ± 0.02
Sb	0.01 ± 0.01	0.09 ± 0.03
Mo	0.19 ± 0.05	0.08 ± 0.01
Ni	0.08 ± 0.08	0.18±0.3
V	0.07 ± 0.04	0.03 ± 0.02
Ti	0.00 ± 0.00	0.00 ± 0.00
Co	0.22 ± 0.09	0.25 ± 0.03
Rb	0.09 ± 0.03	0.03 ± 0.01
As	0.20 ± 0.10	0.01 ± 0.05
Cr	0.02 ± 0.02	0.01 ± 0.005
Cd	0.49 ± 0.20	0.19 ± 0.05
Y	0.01 ± 0.01	0.01 ± 0.01
La	0.01 ± 0.004	0.004 ± 0.002
Nd	0.01 ± 0.01	0.005 ± 0.004
Pr	0.01 ± 0.01	0.004 ± 0.003
Rh	0.06 ± 0.02	0.03 ± 0.02
Pb	0	0.01 ± 0.01

Figure S1 (a-b). Geometric mean concentrations (ng/µg PM) of water-soluble and water-insoluble metals in coarse particles at a) Central LA and b) Anaheim. Error bars are standard deviation. Pb was below detection limit in water-soluble fraction.

a)



b)

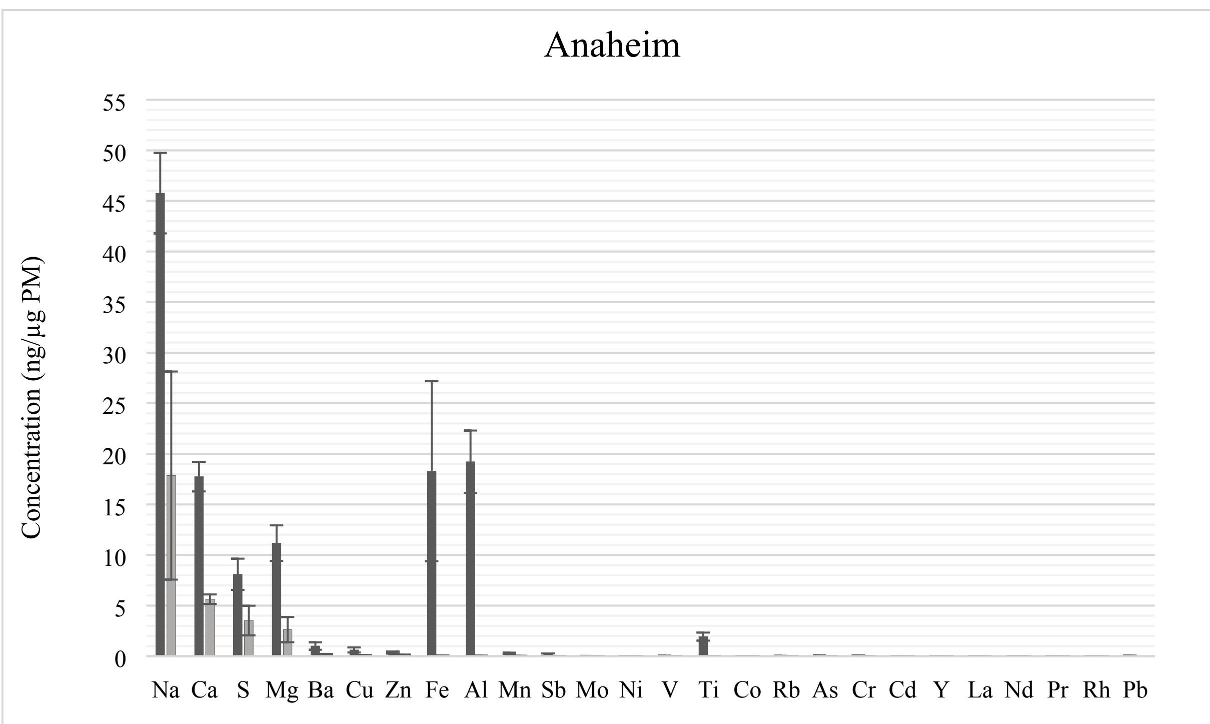


Figure S2. Box plots of mass-based ROS activity comparison between Cheung et al. (2012) study and current study at Central. Dotted lines represent arithmetic means. The black dots correspond to the 5th and 95th percentiles

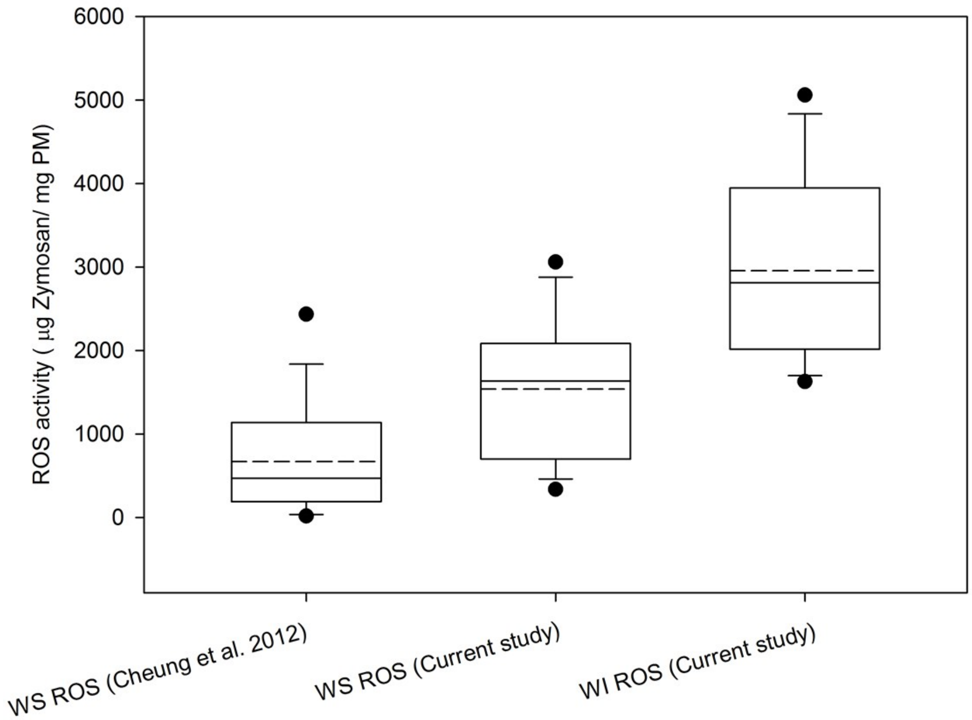


Figure S3. Box plots of sum of selected metals contribution to vehicular abrasion, road dust and other trace elements from Cheung et al., (2012) study and current study at Central LA. Dotted lines represent arithmetic means. The black dots correspond to the 5th and 95th percentiles.

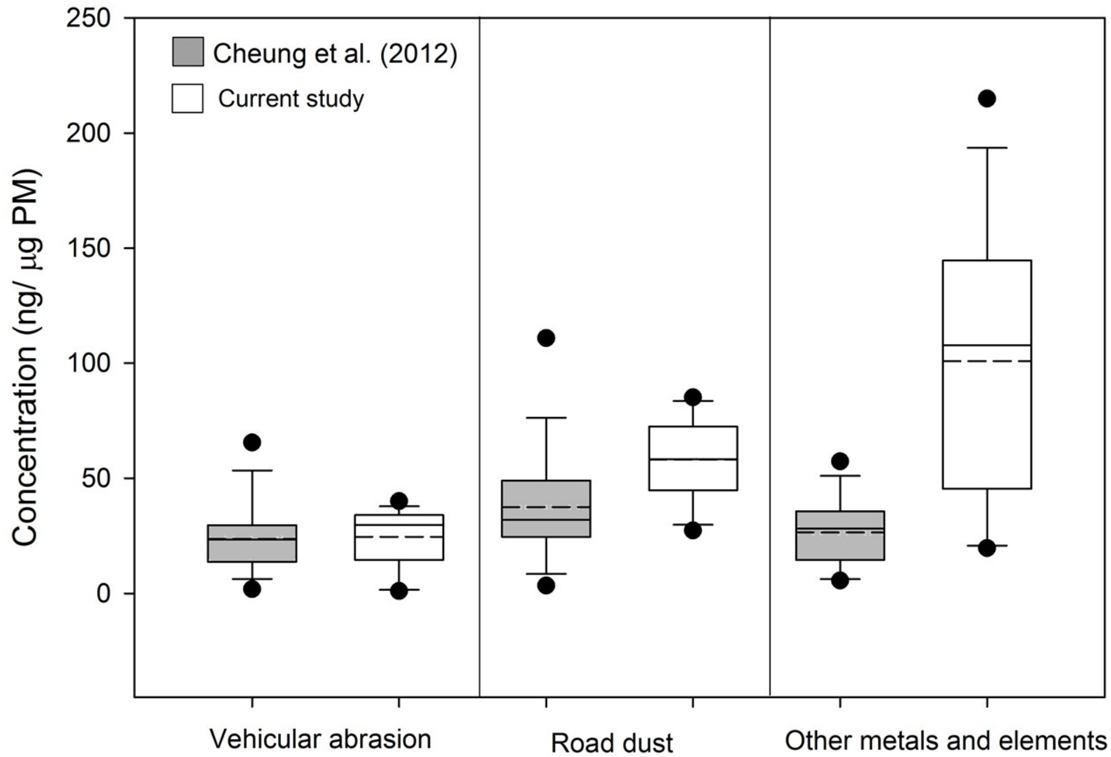
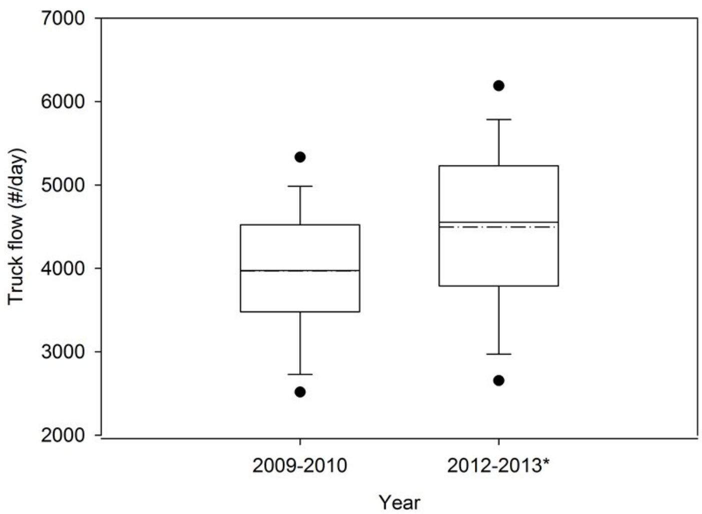


Figure S4 (a-b). Box plots of daily-averaged a) traffic flow (vehicles/day) and b) speed (mph) by year cluster in Central LA. Dotted lines represent arithmetic means. The black dots correspond to the 5th and 95th percentiles. Traffic data retrieved from the nearest vehicle detection station to the sampling site in Central LA on I-110 (southbound). * $P < 0.001$, statistical significant difference compared with 2009-2010 dataset, by Mann-Whitney rank sum test.

a)



b)