



Supplement of

Observationally-constrained carbonaceous aerosol source estimates for the Pearl River Delta area of China

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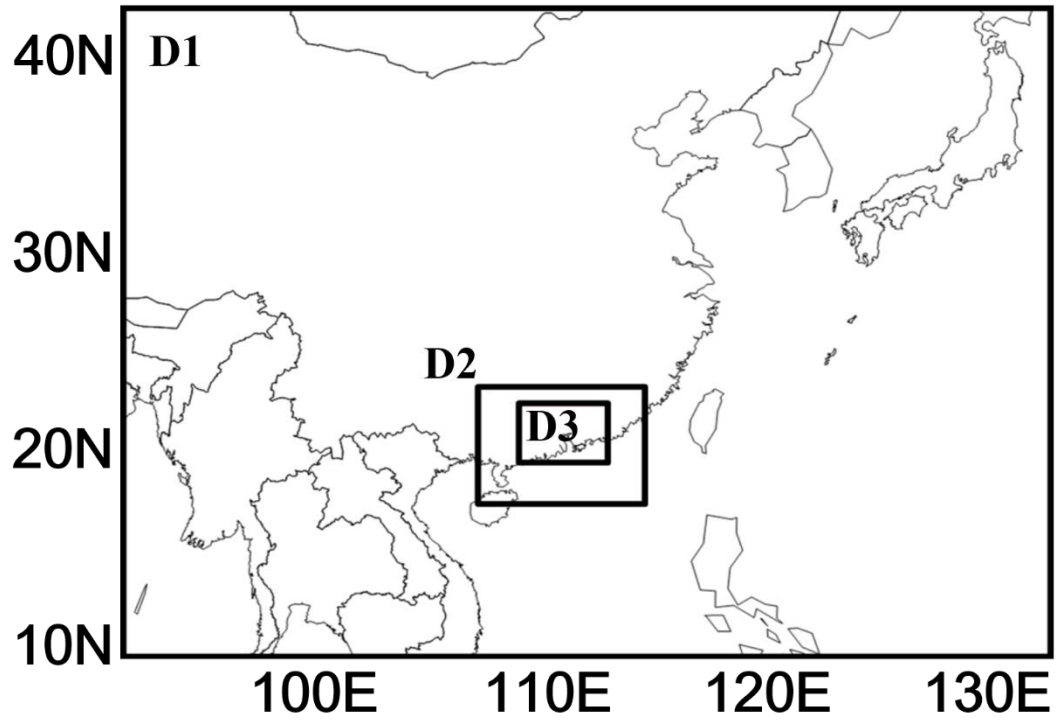
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1 **Section S1. Carbonaceous aerosol sampling and analysis techniques**

2 Cao et al. (2003, 2004), K. F. Ho (unpublished data, 2012) and J. Tao (unpublished
3 data, 2012) used mini-volume samplers (Airmetrics, USA) to collect PM_{2.5} and PM₁₀
4 samples at SU, HP, BU, LH, XZ, ZQ, SCI, LG, and HT. Ho et al. (2003) and Hu et al.
5 (2008) used high-volume samplers (TISCH, USA) to collect PM_{2.5} and PM₁₀ samples
6 at KT, YL, UST, TW, TC, and HT. Gnauk et al. (2008) used the Micro-Orifice Uniform
7 Deposit Impactor (MOUDI, model No. 110, MSP, USA) to sample particles (10 stages
8 with nominal lower cut sizes of 10, 5.6, 3.2, 1.8, 1.0, 0.56, 0.32, 0.18, 0.1, and 0.056
9 μm) at XK. Hagler et al. (2006) collected PM_{2.5} samples using the Andersen RAAS
10 (Reference Ambient Air Sampler, Thermo Inc., USA) at LW, CW, PKU, TC, and TM.
11 Hagler et al. (2006) used the Caltech Gray Box samplers (California Institute of
12 Technology, USA) to collect PM_{2.5} at ZS and CH. Hu et al. (2012) used an in situ semi-
13 continuous OC/EC analyzer (Sunset Laboratory Inc., USA) to collect PM_{2.5} and PM₁
14 samples at BG. Huang et al. (2011) and He et al. (2011) used the high-resolution time-
15 of-flight aerosol mass spectrometer (HR-ToF-AMS, Aerodyne Research Inc., USA) to
16 measure OM in PM₁, as well as an aethalometer (AE-31, Magee, USA) to measure BC
17 (we treated as EC) at KP and PKU.

18 Cao et al. (2003, 2004), K. F. Ho (unpublished data, 2012) and J. Tao (unpublished
19 data, 2012) analyzed EC and OC following the IMPROVE (Interagency Monitoring of
20 Protected Visual Environments) or IMPROVE_A thermal/optical reflectance (TOR)
21 protocol (Chow et al., 1993, 2004, 2007) using the DRI model 2001 Carbon Analyzer
22 (Atmoslytic, Inc., USA). Hagler et al. (2006), Hu et al. (2008), and Hu et al. (2012)
23 followed NIOSH thermal/optical transmission (TOT) protocol (Birch and Cary, 1996;
24 Birch, 1998) using the Sunset Laboratory carbon analyzer (Sunset Laboratory Inc.,
25 USA). Gnauk et al. (2008) followed a two-step thermographic method using a C-mat
26 5500 carbon analyzer (Ströhlein, Germany). Ho et al. (2003) followed the thermal
27 manganese dioxide oxidation (TMO) method with a modified Dohrmann DC-52 carbon
28 analyzer (AtmAA Inc., USA) (Fung, 1990).

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2 **Figure S1.** The three nested domains used in our CMAQ simulation.

3

1 **Reference**

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3 occupational exposures to particulate diesel exhaust. *Aerosol Sci. Tech.*, 25 (3),
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