SUPPLEMENTARY MATERIAL

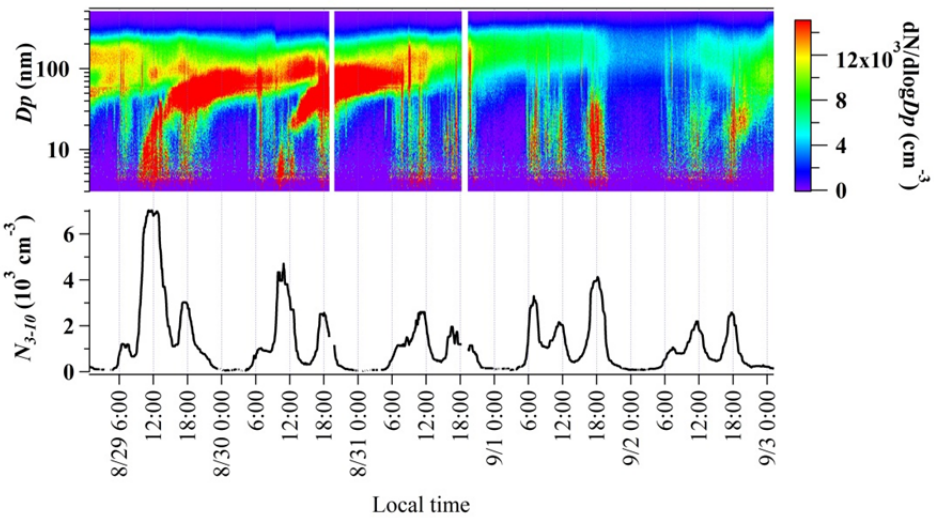

Figure S1. An example of number concentration of 3-10 nm particles ($N_{3\text{-}10}$) on both NPF (August 29-30) and non-NPF days (August 31-September 2).

WRF-CHEM model setup

The WRF-Chem model (version 3.6.1) in this study used two nested domains. Domain 1 and 2 covered eastern China and the region under emission control in the 2016 G20 summit, respectively. The grid points for Domain 1 are 85×95 with a horizontal resolution of 12km. The grid points for domain 2 are 118×142 with a horizontal resolution of 4 km. In the vertical dimension, we set 30 layers from the ground level to the 50 hPa pressure level, with 12 layers below 2 km. Meteorological data are taken from National Environmental Prediction Center (NCEP) reanalysis data with $1^{o}\times1^{o}$ resolution and 6 hour time resolution. Gas phase and aerosol schemes in our simulation are CBM-Z and MOSAIC, respectively. Size bins 1-5 involving 39 nm to 1.25 μm diameter were integrated to roughly represent PM_1 concentration. The MOZART-4 global chemical

transport model [*Emmons et al., 2010*] is used for initial and boundary chemical conditions. Other physical and chemical parameterization schemes used in the simulation followed *Guo et al.* [2016]. Biogenic emissions were calculated online using the Model of Emissions of Gases and Aerosols from Nature (MEGAN) [*Guenther et al., 2006*]. Anthropogenic emissions were from the Multi-resolution Emissions Inventory for China version 1.0 (MEIC; http://www.meicmodel.org).

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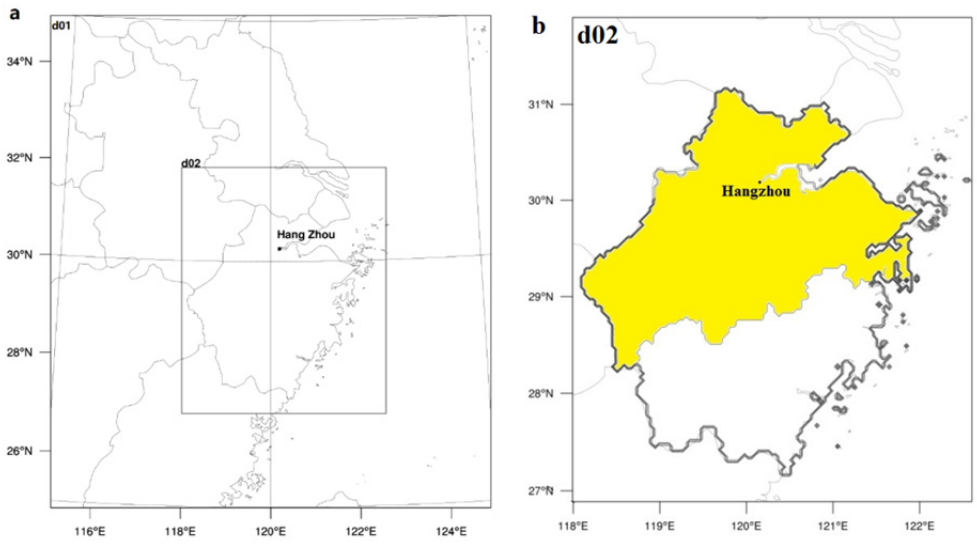

Figure S2. a. WRF-Chem configuration for the two nested domains. b. The region under emission control enforcement (yellow area) and the location of Hangzhou in domain 2.