**Supplement of**

**Characterization of atmospheric trace gases and particle matters in Hangzhou, China**

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Figure captions

Fig. S1. Seasonal wind rose at NRCS site.

Fig. S2 Wind profiles of top 10% and bottom 10% CO (a), SO₂(b), NOₓ(c), NOᵧ(d), O₃(e), and PM₂.₅(f) concentrations during spring (a), summer (b), autumn (c), and winter (d). The blue and red solid circles represent the bottom 10% and top 10% pollutants concentrations, respectively.

Fig. S3a. Seasonal weighted potential source contribution function (WPSCF) maps of CO in Hangzhou. The sampling site is marked in pentacle and the WPSCF values are displayed in color.

Fig. S3b. The zoomed view of Fig. S3a.

Fig. S3c. Seasonal and spatial distributions of CO emissions (kg km⁻² mon⁻¹) at the surface layer in China. The sampling site is marked in pentacle.

Fig. S4a. Same as Fig. S3a but for NOₓ.

Fig. S4b. The zoomed view of Fig. S4a.

Fig. S4c. Same as Fig. S3c but for NOₓ.

Fig. S5a. Same as Fig. S3a but for SO₂.

Fig. S5b. The zoomed view of Fig. S5a.

Fig. S5c. Same as Fig. S3c but for SO₂.

Fig. S6. Weighted Potential source contribution function (WPSCF) of PM₂.₅ during 2-9 Dec, 2013 at NRCS. The NRCS station was marked by pentagram and the WPSCF values are displayed in color.

Fig. S7. The Geopotential Height Field (GH) (indicated by color bars) and Wind Field
(WF) (black vectors) for 925 hPa at 20:00 LT during 13-15 December from left to right (a, b, c)
Fig. S1. Seasonal wind rose at NRCS site.

Fig. S2. Wind profiles of top 10% and bottom 10% CO (a), SO$_2$ (b), NO$_x$ (c), NO$_y$ (d), O$_3$ (e), and PM$_{2.5}$ (f) concentrations during spring (a), summer (b), autumn (c), and winter (d). The blue and red solid circles represent the bottom 10% and top 10% pollutants concentrations, respectively.
Fig. S3a. Seasonal weighted potential source contribution function (WPSCF) maps of CO in Hangzhou. The sampling site is marked in pentacle and the WPSCF values are displayed in color.

Fig. S3b. The zoomed view of Fig. S2a
Fig. S3c. Seasonal and spatial distributions of CO emissions (kg km$^2$ mon$^{-1}$) at the surface layer in China. The sampling site is marked in pentacle.
Fig. S4a. Same as Fig. S3a but for NO$_x$

Fig. S4b. The zoomed view of Fig. S4a
Fig. S4c. Same as Fig. S3c but for NO\textsubscript{x}
Fig. S5a. Same as Fig. S3a but for SO$_2$.

Fig. S5b. The zoomed view of Fig. S5a.
Fig. S5c. Same as Fig. S3c but for SO$_2$
Fig. S6. Weighted Potential source contribution function (WPSCF) of PM$_{2.5}$ during 2-9 Dec, 2013 in NRCS. The NRCS station was marked by pentagram and the WPSCF values are displayed in color.

Fig. S7. The Geopotential Height Field (GH) (indicated by color bars) and Wind Field (WF) (black vectors) for 925 hPa at 20:00 LT during 13-15 December from left to right (a, b, and c)