Supplement of

High resolution vertical distribution and sources of HONO and NO$_2$ in the nocturnal boundary layer in urban Beijing, China

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Table S1 Date and time and meteorological conditions for each vertical profile measured in this study.

Date	Weather condition	Height (m)	Starting time Ascent	Ending time, Ascent	Starting time, Descent	Ending time, Descent
12-07-2016	Haze (E1)	240	22:42:00	23:07:00	23:25:09	23:49:39
12-09-2016	Clean (C2)	240	17:13:12	17:38:14	17:47:35	18:12:06
12-09-2016	Clean (C2)	240	22:42:04	23:06:59	23:15:48	23:40:13
12-10-2016	Clean (C2)	240	17:15:09	17:40:05	17:49:24	18:13:51
12-10-2016	Clean (C2)	240	22:36:29	23:01:21	23:01:21	23:25:43
12-11-2016	Haze (E3)	240	18:16:21	18:41:14	18:50:17	19:14:41
12-11-2016	Haze (E3)	240	22:35:29	23:00:19	23:04:19	23:28:54
12-12-2016	Haze (E3)	240	00:00:39	00:25:54	00:45:05	01:09:34
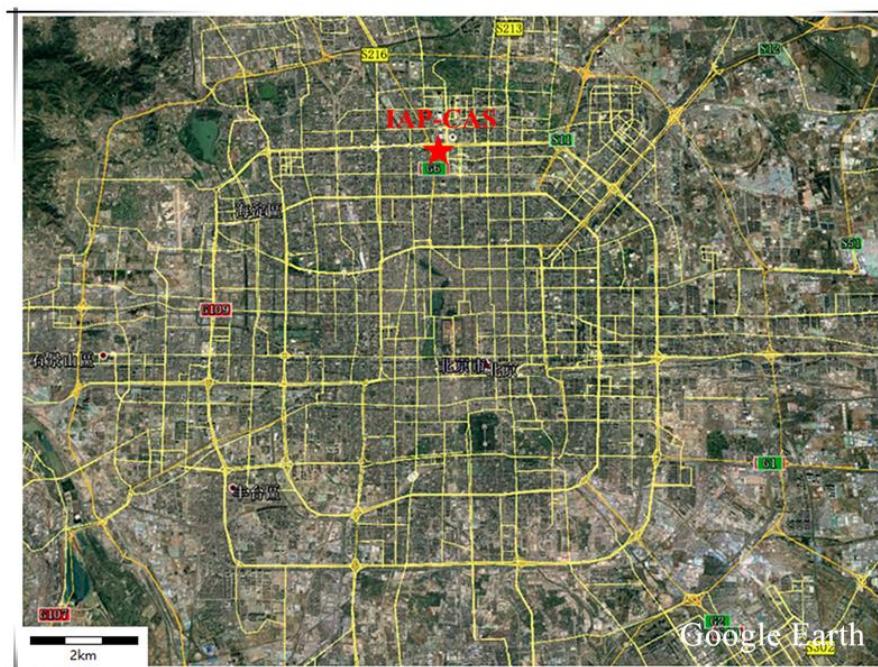
Figure S1. Map of the measurement site (Tower Branch of the Institute of Atmospheric Physics (IAP), Chinese Academy of Sciences (CAS)) showing the location of the Beijing 325- m meteorological tower (BMT). The map is adapted from © Google Earth 2019.
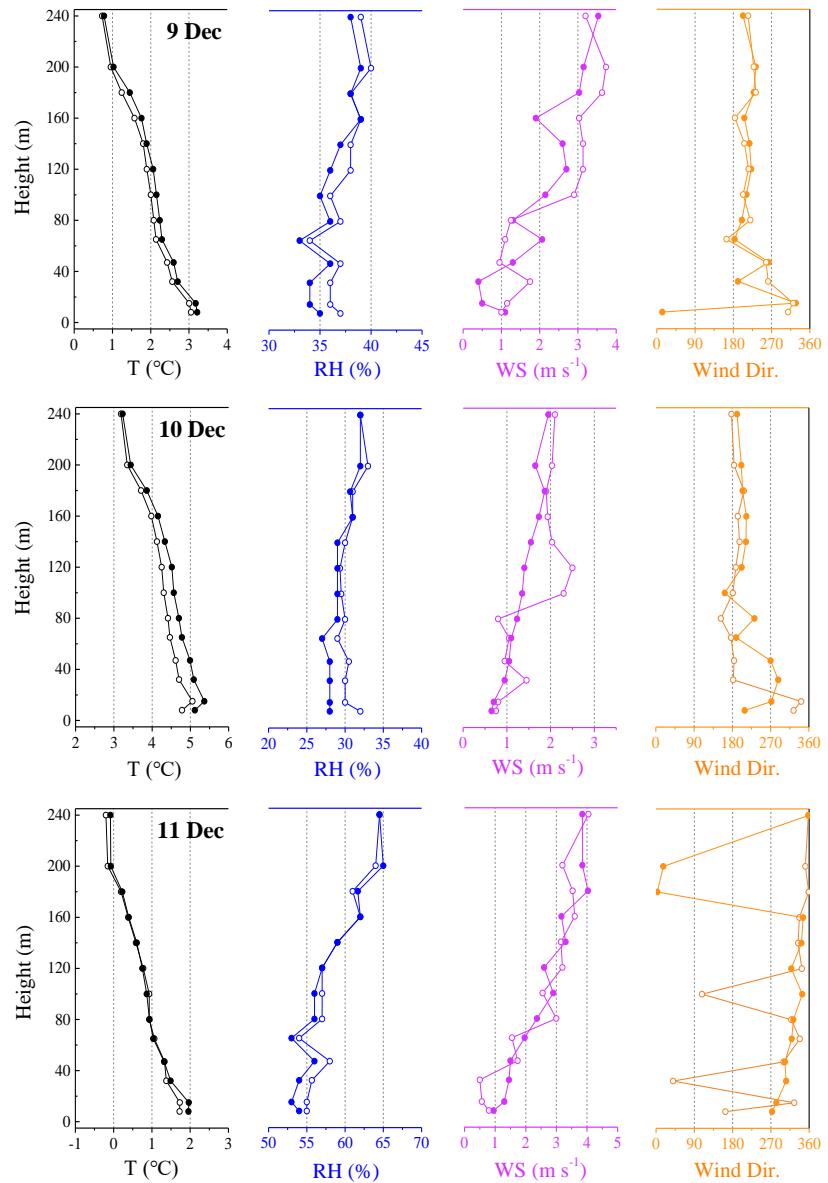
Figure S2. Vertical profiles of temperature (T), relative humidity (RH), wind speed (WS) and wind direction (WD) after sunset on 9, 10 and 11 December. The solid circle represents the ascent profiles while others are descent profiles.
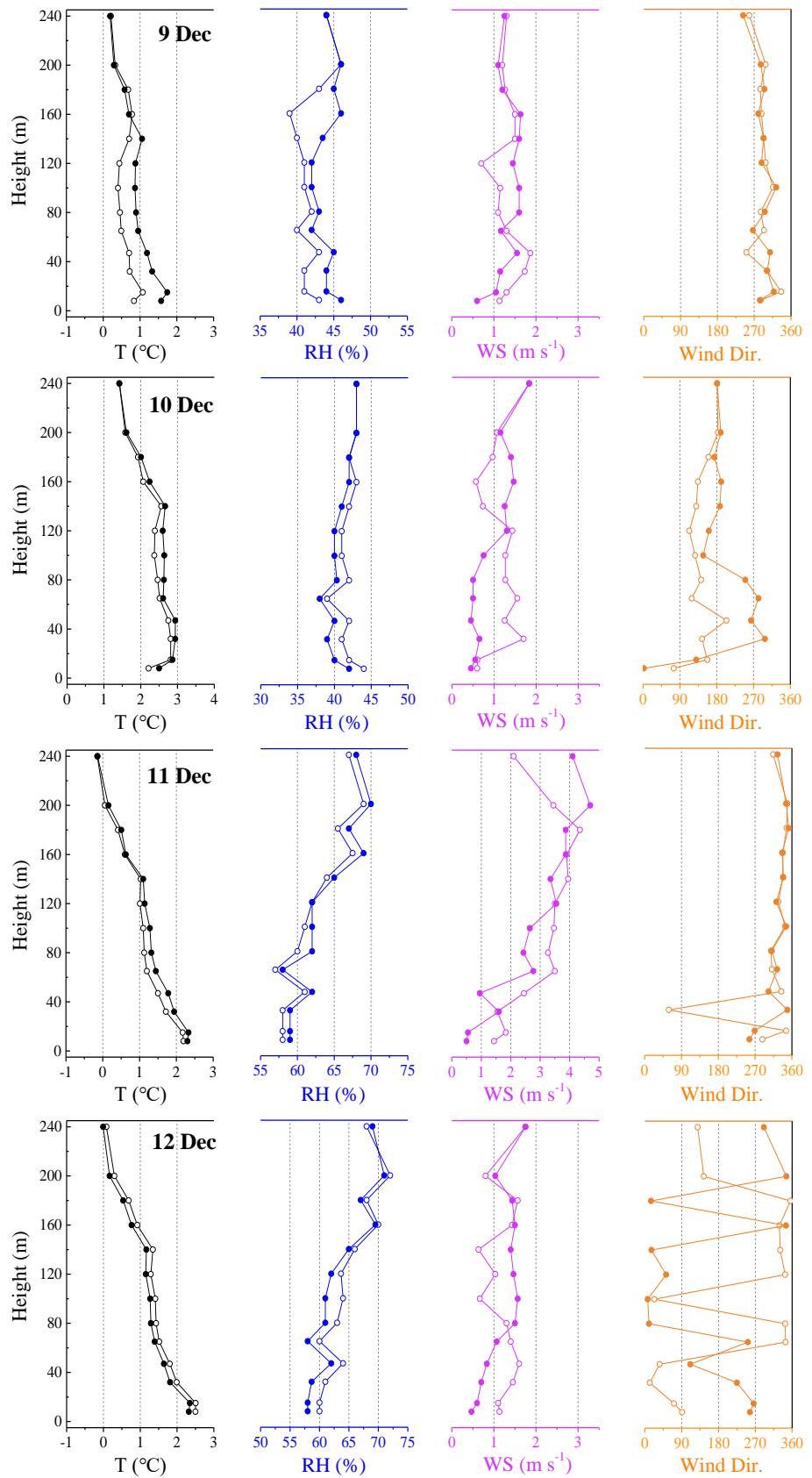
Figure S3. Vertical profiles of temperature (T), relative humidity (RH), wind speed (WS) and wind direction (WD) on the nighttime of 9, 10 and 11 December and midnight of 12 December. The solid circle represents the ascent profiles while others are descent profiles.
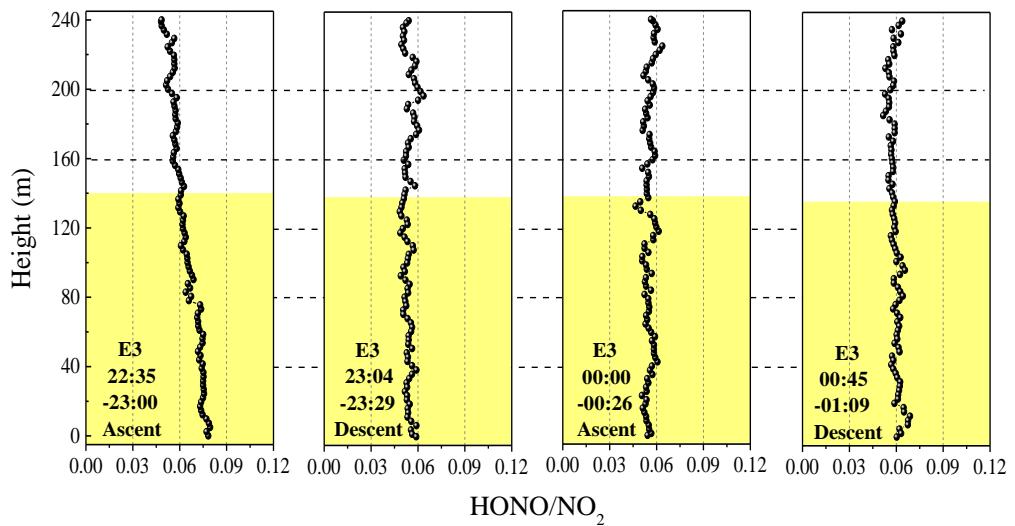
Figure S4. Evolution of HONO/NO$_2$ vertical profiles from 22:35 to 01:09 CST on 11-12 December. The time on each plot corresponds to the measurement time of the vertical profile during the ascent or descent process. The height of the nocturnal boundary layer (NBL) is denoted by the shaded yellow region.
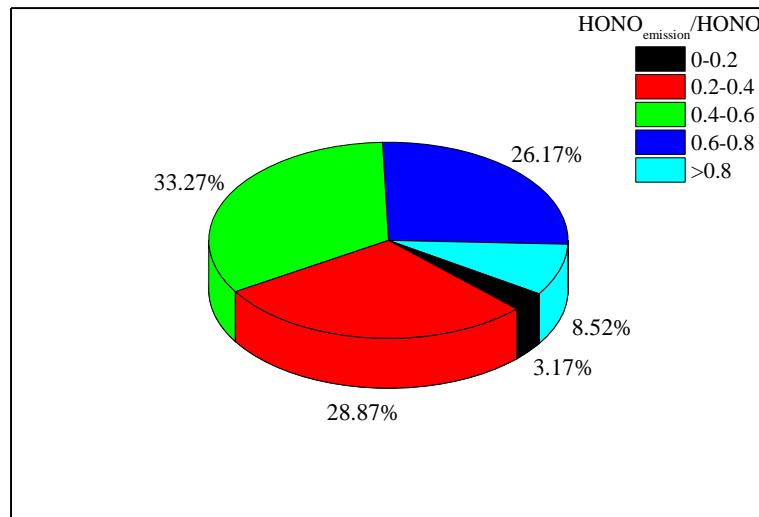
Figure S5. Frequency distribution of HONO$_{emission}$/HONO ratios at night.