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Impacts of an unknown daytime HONO source on the mixing ratio and budget of HONO, and hydroxyl, hydroperoxyl, and organic peroxy radicals, in the coastal regions of China

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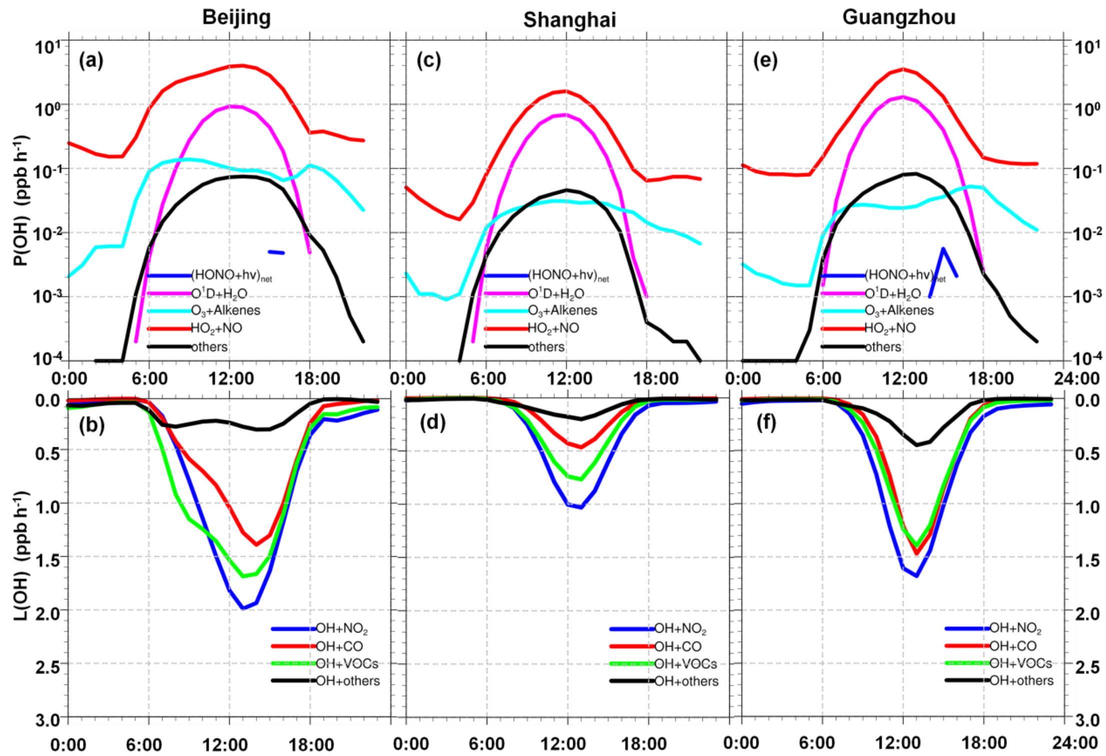

Fig. S1. Averaged production [P(OH)] and loss [L(OH)] rates of OH for case R in (a, b) Beijing, (c, d) Shanghai, and (e, f) Guangzhou in August 2007. $(HONO+hv)_{net}$ means the net OH production rate from HONO photolysis (subtracting OH + NO = HONO).

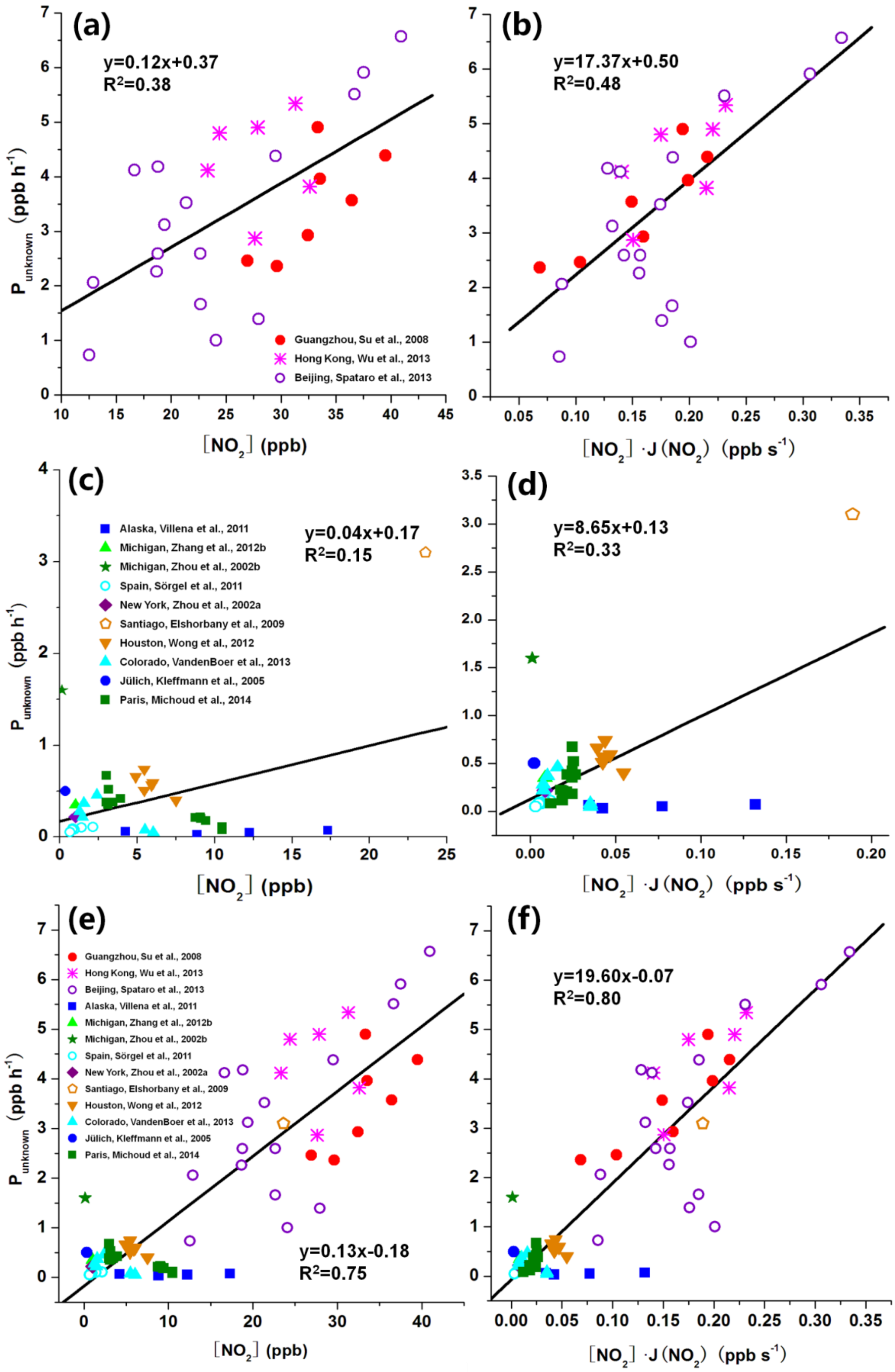

Fig. S1. Correlations of the unknown daytime HONO source ($P_{unknown}$) (ppb h^{-1}) with NO_2 mixing ratios (ppb) and [NO_2] J(NO_2) (ppb s^{-1}) in (a), (b) the coastal regions of China, (c), (d) the other countries, and (e), (f) the globe, respectively, based on the field experiment data shown in Fig. 1 in the revised version.

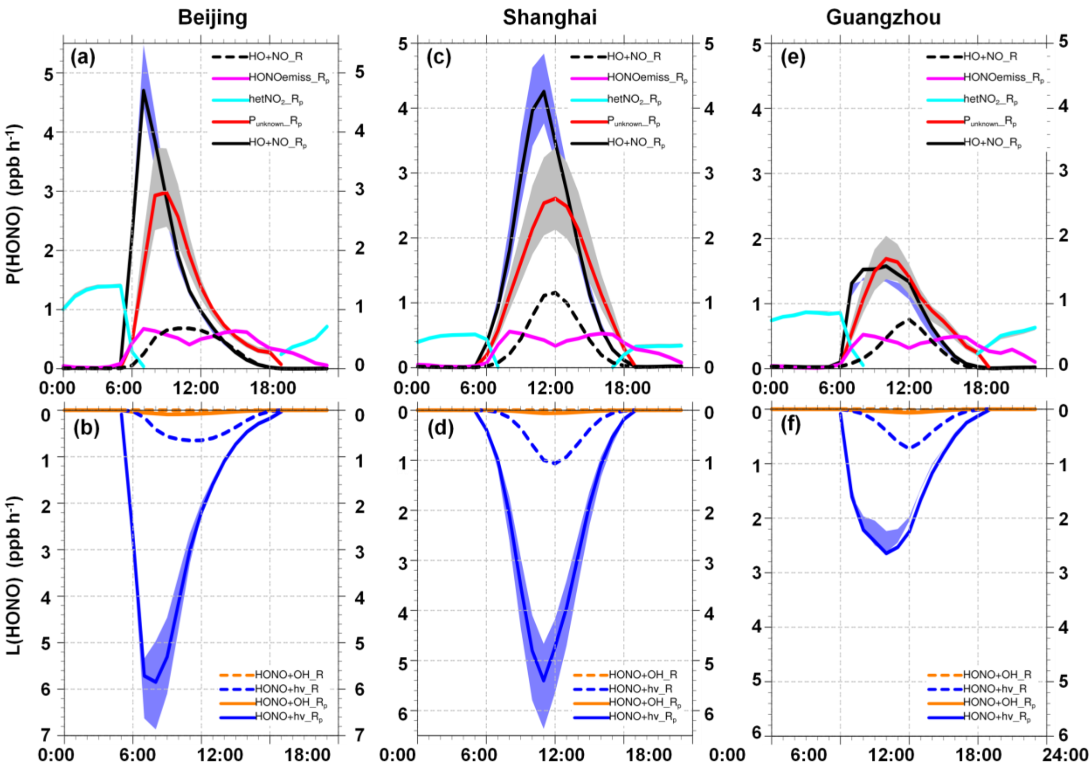

Fig. S3. Production [P(HONO)] and loss [L(HONO)] rates of HONO for cases R (dashed lines), R_p(solid lines) and sensitivity ranges (based on R_{inc} and R_{dec}) in (a), (b) Beijing, (c), (d) Shanghai, and (e), (f) Guangzhou in August 2007. Case R_{inc} includes case R_p with an increase of 25% (the maximum uncertainty range according to the previous studies above) in the slope factor (19.60); Case R_{dec} is the same as case R_p with a decrease of 25% in the slope factor (19.60).

Table S1.The calculated unknown daytime HONO source ($P_{unknown}$), NO_2 mixing ratios and photolysis frequency of NO_2 [$J(NO_2)$] from field experiments in Figure 1.

Site	Date	Time	$P_{unknown}$ (ppb h^{-1})	[NO_2] (ppb)	$J(NO_2)$ ($\times10^{-3}$ s^{-1})	Measurement techniques /Uncertainties	Reference
Xinken (22.6 °N, 113.6 °E)	2004.10.23-2004.10.30	09:30	2.36	29.65	2.31	HONO: WD/IC; NO_2: estimated from NO and NO_y (measured by the NO-O_3 chemiluminescence detector (Kondo et al., 1997))/22%; $J(NO_2)$: TUV/18%; $P_{unknown}$: 10~30%.	Su et al. (2008) Su et al. (2011)
		10:30	3.57	36.46	4.09		
		11:30	4.39	39.51	5.46		
		12:30	4.90	33.33	5.83		
		13:30	3.96	33.54	5.93		
		14:30	2.93	32.43	4.92		
		15:30	2.46	26.94	3.85		
Beijing (39.99 °N, 116.30 °E)	2007.08.17	8:00	2.59	22.66	6.29	HONO: Annular denuders; NO_2: means of commercial ECOTECH Ltd. (Australia analyzer)/ 1%; $J(NO_2)$: calculated by J(HONO);	Spataro et al. (2013)
		10:00	1.66	22.67	8.16		
		12:00	1.00	24.09	8.35		
		14:00	3.12	19.39	6.82		
	2007.08.18	8:00	1.39	27.96	6.29		
		10:00	3.52	21.37	8.16		
		12:00	4.12	16.66	8.35		
		14:00	2.06	12.90	6.82		
	2007.08.19	8:00	4.38	29.50	6.29		
		10:00	5.91	37.53	8.16		
		12:00	2.26	18.67	8.35		
		14:00	0.73	12.54	6.82		
	2007.08.20	8:00	5.51	36.69	6.29		
		10:00	6.57	40.94	8.16		

		12:00	2.59	18.78	8.35		
		14:00	4.18	18.79	6.82		
Tung Chung (22.30 °N, 113.93 °E)	2011.08.25- 2011.08.31	10:00	2.87	27.62	5.45	HONO: LOPAP; NO_2: TEI; $J(NO_2)$: Optical actinometer.	Wu et al. (2013)
		11:00	3.82	32.62	6.59		
		12:00	5.34	31.31	7.41		
		13:00	4.90	27.86	7.92		
		14:00	4.80	24.40	7.17		
		15:00	4.12	23.33	6.02		
Alaska (71.32 °N, 156.65 °W)	2009.03.13- 2009.04.14	10:30	0.03	-	4.73	HONO: LOPAP; NO_2: estimated from NO and NO_y (measured by the NO-O_3 chemiluminescence detector; $J(NO_2)$: estimated as a function of solar zenith angle using the TUV radiative transfer model.	Villena et al. (2011)
		11:00	0.03	-	6.03		
		11:30	0.06	4.23	8.16		
		12:00	0.09	-	8.81		
		12:30	0.05	-	9.46		
		13:00	0.08	-	8.69		
		13:30	0.07	17.31	7.63		
		14:00	0.05	12.24	6.33		
		14:30	0.03	8.85	4.79		
Michigan (45.50 °N, 84.70 °W)	2008.07.17- 2008.08.07	noon	0.35	1.00	8.48	HONO: LOPAP; NO_2: Custom-built analyzer using the chemiluminescence technique; $J(NO_2)$: estimated as a function of UV measured by the TUV radiative transfer model/10%.	Zhang et al. (2012)
Michigan (45.50 °N, 84.70 °W)	2000.07.27	noon	1.60	0.13	8.48	HONO: Two-channel measurement system (Zhou et al., 1999); NO_2: TEI Model.	Zhou et al. (2002a)

Spain (37.10 °N, 6.74 °W)	2008.07.17-2008.08.07 (cloud-free)	10:00	0.11	2.15	5.39	HONO: LOPAP/12%; NO_2: Droplet Measurement Technologies (Hosaynali-Beygi et al., 2011) /8%; $J(NO_2)$: Filter radiometers/5%; $P_{unknown}$: 18%.	Sörgel et al. (2011)
		11:00	0.10	1.38	6.26		
		12:00	0.08	0.95	6.76		
		13:00	0.09	0.84	6.68		
		14:00	0.08	0.79	6.03		
		15:00	0.05	0.66	4.62		
New York (42.09 °N, 77.21 °W)	1998.06.26-1998.07.14	noon	0.22	1.00	8.48	HONO: Two-channel measurement system (Zhou et al., 1999); NO_2: TEI Model.	Zhou et al. (2002b)
Santiago (33.45 °S, 70.67 °W)	2005.03.08-2005.03.20	noon	1.70	10.00	8.00	HONO: LOPAP; NO_2: DOAS-OPSIS optical system; $J(NO_2)$: Filter radiometers.	Elshorbany et al. (2009)
Houston (29.76 °N, 95.37 °W)	2009.04.21	10:00	0.40	7.50	7.29	HONO: LP-DOAS/5%; NO_2: LP-DOAS /3%; $J(NO_2)$: SAFS; $P_{unknown}$: 10~20%.	Wong et al. (2012)
		11:00	0.59	6.02	7.77		
		12:00	0.74	5.45	8.03		
		13:00	0.66	4.89	8.03		
		14:00	0.51	5.45	7.76		
		15:00	0.57	5.91	7.18		
Colorado (40.05 °N, 105.00 °W)	2011.02.19-2011.02.25	10:00	0.05	6.04	5.84	HONO: NI-PT-CIMS; NO_2: a cavity ring-down spectrometer (Wagner et al., 2011)/5%; $J(NO_2)$: Filter radiometers.	VandenBoer et al. (2013)
		11:00	0.08	5.49	6.39		
		12:00	0.46	2.39	6.64		
		13:00	0.37	1.55	6.39		
		14:00	0.28	1.27	6.02		
		15:00	0.22	1.47	5.22		
Jülich	2003.07.29	noon	0.50	0.35	6.63	HONO: LOPAP;	Kleffmann et al. (2005)

(50.92 °N, 6.36 °E)						NO_2: Chemiluminescence analyzer equipped with a photolytic converter for NO_2 to NO conversion; $J(NO_2)$: derived from actinic flux spectra measured by a scanning spectroradiometer.	
Paris (40.72 °N, 2.21 °E)	2009.07.09-2009.07.27	10:00	0.42	3.91	6.31	HONO: Wet chemical derivatization (SA/NED), HPLC detection (NitroMAC)/12%; NO_2: Luminol chemiluminescence/5%; $J(NO_2)$: filter radiometer/ 20–25%.	Michoud et al. (2014)
		11:00	0.38	3.42	7.76		
		12:00	0.52	3.14	8.08		
		13:00	0.67	3.00	8.24		
		14;00	0.38	3.00	7.29		
		15:00	0.35	3.11	7.88		
	2010.01.15-2010.02.15	10:00	0.08	10.49	1.16		
		11:00	0.11	10.49	1.80		
		12:00	0.18	9.44	2.60		
		13:00	0.21	8.76	2.20		
		14;00	0.20	9.12	2.34		
		15:00	0.22	9.07	1.99		

WD/IC: Wet Denuder sampling/Ion Chromatograph analysis system; TUV: Ultraviolet-Visible Model; TEI: Thermo Environmental Instruments; LOPAP: Long path absorption photometer; LP-DOAS: Long path Differential Optical Absorption Spectroscopy instrument; SAFS: scanning actinic flux spectroradiometer; NI-PT-CIMS: Negative-Ion Proton-Transfer Mass Spectrometer; SA/NED: an aqueous sulphanilamide/ N-(1-naphthyl)-ethylenediamine solution; NitroMAC: an instrument developed at the laboratory (Afif et al., 2014); HPLC: High Performance Liquid Chromatography.

Note that: Since $J(NO_2)$ data of Wu et al. (2013), Zhang et al. (2012), Zhou et al. (2002b), VandenBoer et al. (2013), Kleffmann et al. (2005) were not measured, they were calculated from the J(HONO) measurement data ($J(NO_2)$ = 5.3J(HONO)) (Kraus and Hofzumahaus, 1998); $J(NO_2)$ data of Zhou et al. (2002ab) were derived from the campaign of Zhang et al. (2012) (The experiments were conducted in summer and the studied sites were close to each other). J(NO2) data of Spataro et al. (2013) were also calculated from the J(HONO) at noon ($J(NO_2)$ = 5.3J(HONO)), then we computed the hourly $J(NO_2)$ (8:00~14:00 LST) through multiplying by the cosine of solar zenith angle. The NO_2 mixing ratios of Zhang et al. (2012) and Zhou et al. (2002b) were not shown and derived from NO_x mixing ratios. Similarly, NO_2 mixing ratios of Kleffmann et al. (2005) were inferred from NO mixing ratios.

Table S2. Daytime (06:00–18:00 LST) average HO_2 budgets in Beijing/Shanghai/Guangzhou in August 2007.

Reaction	Case R		Case R_{wop}		Case R_p	
	Rate ($ppb\ h^{-1}$)	Contribution (%)	Rate ($ppb\ h^{-1}$)	Contribution (%)	Rate ($ppb\ h^{-1}$)	Contribution (%)
HO_2 production						
OH+CO	**0.785/0.203/0.576**	**33.42/28.27/38.26**	**0.932/0.227/0.637**	**34.63/29.12/38.73**	**2.573/0.506/1.001**	**41.34/32.93/40.82**
CH_3O_2+NO	**0.543/0.161/0.328**	**23.12/22.53/21.75**	**0.580/0.170/0.346**	**21.56/21.79/21.04**	**1.165/0.258/0.522**	**18.72/16.80/21.29**
HCHO+hv	**0.243/0.086/0.112**	**10.34/11.97/7.42**	**0.262/0.090/0.116**	**9.74//11.47/7.06**	**0.400/0.102/0.125**	**6.43/6.65/5.11**
OH+HCHO	0.150/0.050/0.146	6.40/7.00/9.71	0.166/0.053/0.156	6.17/6.75/9.46	0.544/0.096/0.242	8.73/6.26/9.86
OH+OLET/OLEI	0.192/0.054/0.059	8.17/7.47/3.92	0.264/0.065/0.077	9.83/8.31/4.67	0.537/0.206/0.095	8.63/13.44/3.88
OH+H_2	0.038/0.021/0.050	1.62/2.91/3.29	0.040/0.022/0.052	1.49/2.76/3.17	0.095/0.027/0.075	1.53/1.74/3.06
OH+SO_2	0.054/0.030/0.035	2.30/4.20/2.33	0.064/0.034/0.041	2.37/4.34/2.48	0.172/0.116/0.072	2.77/7.53/2.95
OH+O_3	0.028/0.006/0.035	1.18/0.88/2.31	0.029/0.006/0.036	1.08/0.82/2.20	0.072/0.005/0.046	1.15/0.30/1.88
OH+XYL	0.052/0.022/0.023	2.21/3.10/1.50	0.066/0.026/0.029	2.46/3.34/1.75	0.141/0.078/0.045	2.27/5.11/1.84
OH+H_2O_2	0.015/0.008/0.027	0.63/1.14/1.77	0.016/0.008/0.029	0.59/1.08/1.78	0.040/0.010/0.043	0.65/0.66/1.74
OH+TOL	0.027/0.007/0.011	1.16/0.94/0.76	0.034/0.008/0.014	1.27/1.02/0.86	0.086/0.025/0.024	1.38/1.60/0.97
ALD2/MGLY /ANOE+hv	0.046/0.012/0.012	1.95/1.69/0.80	0.051/0.013/0.013	1.91/1.66/0.82	0.074//0.014/0.013	1.19/0.93/0.51
OH+ETH/OPEN	0.007/0.002/0.004	0.28/0.31/0.29	0.008/0.002/0.005	0.30/0.32/0.30	0.036/0.009/0.011	0.30/0.56/0.44
O_3+OLET/OLEI	0.036/0.009/0.009	1.55/1.21/0.59	0.035/0.009/0.009	1.28/1.11/0.52	0.030/0.008/0.009	0.48/0.50/0.38
RO_2+NO	0.017/0.004/0.007	0.69/0.62/0.44	0.017/0.005/0.007	0.64/0.62/0.42	0.024/0.005/0.009	0.38/0.34/0.37
others+hv	0.020/0.007/0.007	0.86/0.94/0.47	0.025/0.008/0.008	0.92/0.96/0.50	0.046/0.010/0.008	0.74/0.63/0.33
NO+ETHP	0.013/0.003/0.005	0.54/0.44/0.31	0.013/0.003/0.005	0.47/0.42/0.30	0.019/0.004/0.007	0.30/0.26/0.28
NO+ISOPP	0.030/0.005/0.003	1.26/0.70/0.20	0.031/0.005/0.004	1.15/0.66/0.24	0.038/0.007/0.004	0.61/0.43/0.17
OH+CH_3OH	0.002/0.001/0.002	0.09/0.09/0.11	0.002/0.001/0.002	0.09/0.09/0.11	0.007/0.002/0.003	0.11/0.11/0.12

/ANOL/CRES						
HNO_4+hv	0.004/0.001/0.002	0.19/0.09/0.14	0.004/0.001/0.002	0.17/0.09/0.13	0.007/0.001/0.003	0.11/0.06/0.11
CH3OOH/ET HOOH+hv	0.002/0.012/0.002	0.09/0.39/0.13	0.002/0.003/0.002	0.08/0.37/0.12	0.002/0.003/0.002	0.12/0.18/0.06
O_3+ETH	0.003/<0.001/0.001	0.12/0.06/0.03	0.003/<0.001/0.001	0.10/0.05/0.03	0.003/<0.001/0.001	0.04/0.02/0.02
O_3+ISOP	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
O_3+others	0.001/<0.001/<0.001	0.03/0.02/0.02	0.001/<0.001/<0.001	0.03/0.02/0.02	0.001/<0.001/<0.001	0.02/0.01/0.01
NO_3+HCHO	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
NO_3+others	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/0.001/<0.001	<0.01/<0.01/<0.01
HNO_4dec	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
Total	2.349/0.716/1.506	100/100/100	2.691/0.780/1.644	100/100/100	6.223/1.536/2.451	100/100/100
HO_2 loss						
HO_2+NO	**2.778/0.732/1.748**	**99.34/99.61/98.29**	**2.829/0.793/1.608**	**99.38/99.63/98.37**	**7.101/1.402/2.552**	**99.15/99.55/98.04**
HO_2+O_3	0.009/0.001/0.014	0.30/0.08/0.70	0.008/0.001/0.011	0.28/0.08/0.67	0.026/0.001/0.019	0.36/0.08/0.74
HO_2+NO_2	0.007/0.002/0.009	0.28/0.29/0.60	0.007/0.002/0.010	0.25/0.27/0.58	0.023/0.005/0.019	0.32/0.33/0.72
HO_2+OH	0.001/<0.001/0.004	0.06/0.02/0.30	0.002/<0.001/0.005	0.06/0.02/0.28	0.008/<0.001/0.010	0.11/0.03/0.37
HO_2+HO_2	<0.001/<0.001/<0.001	<0.01/<0.01/0.02	<0.001/<0.001/<0.001	<0.01/<0.01/0.01	<0.001/<0.001/0.001	<0.01/<0.01/0.03
$HO_2+CH_3O_2$	<0.001/<0.001/<0.001	0.01/<0.01/0.03	<0.001/<0.001/0.001	<0.01/<0.01/0.03	0.001/<0.001/0.001	0.01/<0.01/0.04
$HO_2+C_2O_3$	<0.001/<0.001/<0.001	<0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.01
HO_2+RO_2	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001<0.001/<0.001	<0.01/<0.01/<0.01
HO_2+XO_2	<0.001/<0.001/<0.001	0.02/<0.01/0.04	<0.001/<0.001/0.001	0.01/<0.01/0.04	0.002/<0.001/0.001	0.03/<0.01/0.05
HO_2+otherRO_2	<0.001/<0.001/<0.001	<0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.01
HO_2+NO_3	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
Total	2.798/0.737/1.775	100/100/100	2.846/0.795/1.635	100/100/100	7.161/1.408/2.604	100/100/100

ETHP: ethylperoxy; ISOPP: lumped peroxyradical of isoprene.

Table S3. Daytime (06:00–18:00 LST) average RO_2 budgets in Beijing/Shanghai/Guangzhou in August 2007.

Reaction	Case R		Case R_{wop}		Case R_p	
	Rate (ppb h^{-1})	Contribution (%)	Rate (ppb h^{-1})	Contribution (%)	Rate (ppb h^{-1})	Contribution (%)
RO_2 production						
OH+OLET/OLEI	**0.192/0.054/0.060**	**22.45/21.07/14.88**	**0.264/0.065/0.077**	**25.81/22.92/17.10**	**0.537/0.110/0.114**	**25.62/22.20/16.73**
OH+ETH	**0.157/0.030/0.041**	**18.36/11.91/10.24**	**0.197/0.036/0.049**	**19.26/12.61/11.00**	**0.484/0.068/0.080**	**21.98/13.73/11.78**
OH+CH_4	**0.103/0.057/0.135**	**12.09/22.44/33.97**	**0.109/0.059/0.142**	**10.65/20.81/31.55**	**0.260/0.115/0.223**	**11.46/23.33/32.73**
OH+AONE	**0.092/0.018/0.045**	**10.76/7.09/11.24**	**0.109/0.020/0.049**	**10.65/6.99/10.87**	**0.323/0.047/0.081**	**13.65/9.55/11.95**
OH+XYL	0.052/0.022/0.023	6.06/8.74/5.69	0.066/0.026/0.029	6.45/9.21/6.42	0.141/0.046/0.044	**6.63/9.32/6.52**
AONE/ETH+hv(C_2O_3)	0.037/0.011/0.011	4.37/4.24/2.71	0.042/0.012/0.012	4.07/4.10/2.67	0.062/0.013/0.012	2.83/2.68/1.74
O_3+OLET/OLEI(C_2O_3)	0.031/0.007/0.008	3.63/2.90/1.89	0.029/0.007/0.007	2.87/2.61/1.62	0.025/0.007/0.008	1.33/1.32/1.15
others+hv(C_2O_3)	0.020/0.007/0.007	2.29/2.58/1.67	0.024/0.007/0.008	2.35/2.59/1.75	0.045/0.010/0.008	1.98/1.92/1.11
O_3+OLET/OLEI(otherR O_2)	0.018/0.004/0.004	2.05/1.66/1.07	0.017/0.004/0.004	1.63/1.49/0.91	0.014/0.004/0.004	0.75/0.76/0.65
OH+TOL	0.027/0.007/0.011	3.20/2.66/2.89	0.034/0.008/0.014	3.32/2.80/3.13	0.086/0.015/0.023	3.88/3.13/3.45
OH+ISOP	0.019/0.004/0.002	2.21/1.64//0.49	0.020/0.004/0.003	1.96/1.54/0.60	0.017/0.007/0.003	0.91/1.35/0.46
O_3+OLET/OLEI(XO_2)	0.015/0.003/0.004	1.70/1.36/0.89	0.014/0.003/0.003	1.35/1.22/0.76	0.012/0.003/0.004	0.62/0.62/0.54
AONE/ETH+hv(CH_3O_2)	0.014/0.003/0.004	1.68/1.10/0.92	0.016/0.003/0.004	1.54/1.00/0.83	0.019/0.002/0.003	0.87/0.49/0.49
O_3+OLET/OLEI(CH_3O_2)	0.016/0.004/0.004	1.91/1.52/0.99	0.015/0.004/0.004	1.51/1.37/0.86	0.013/0.003/0.004	0.70/0.70/0.61
OH+PEROXID	0.010/0.011/0.014	1.18/4.37/3.40	0.011/0.004/0.014	1.08/4.13/3.23	0.022/0.020/0.022	1.02/4.04/3.28
OH+C_2H_6	0.005/0.002/0.004	0.57/0.87/1.03	0.007/0.003/0.005	0.68/0.93/1.03	0.015/0.005/0.007	0.70/1.03/0.97
NO_3+OLET/OLEI (otherRO_2)	0.005/0.001/0.002	0.53/0.41/0.56	0.005/0.001/0.002	0.45/0.39/0.51	0.005/0.001/0.003	0.24/0.19/0.41
O_3+OLET/OLEI (ETHP)	0.008/0.002/0.002	0.97/0.77/0.51	0.008/0.002/0.002	0.77/0.70/0.43	0.007/0.002/0.002	0.35/0.35/0.31

$OH+C_2H_6$	0.002/0.001/0.002	0.29/0.27/0.48	0.003/0.001/0.002	0.29/0.27/0.48	0.008/0.002/0.004	0.35/0.33/0.54
$OH+CH_3OH$/ANOL/CRES	0.002/0.001/0.001	0.20/0.20/0.23	0.002/0.001/0.001	0.20/0.20/0.23	0.007/0.001/0.002	0.31/0.30/0.30
O_3+others(C_2O_3)	0.001/<0.001/<0.001	0.07/0.05/0.05	0.001/<0.001/<0.001	0.06/0.04/0.04	0.001/<0.001/<0.001	0.04/0.03/0.04
others+hv(XO_2)	<0.001/<0.001/<0.001	0.05/0.04/0.05	<0.001/<0.001/<0.001	0.04/0.03/0.04	<0.001/<0.001/<0.001	0.02/0.01/0.03
H_2O_2+hv(XO_2)	<0.001/<0.001/<0.001	0.02/0.01/0.01	<0.001/<0.001/<0.001	0.02/0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.01
O_3+ISOP(C_2O_3)	<0.001/<0.001/<0.001	0.02/0.01/<0.01	<0.001/<0.001/<0.001	0.01/0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
others+hv(CH_3O_2)	<0.001/<0.001/<0.001	0.03/0.01/<0.01	<0.001/<0.001/<0.001	0.02/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
O_3+others(CH_3O_2)	<0.001/<0.001/<0.001	0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
H_2O_2+hv (ETHP)	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
others+hv (ETHP)	<0.001/<0.001/<0.001	0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.01
NO_3+AONE/ETH(C_2O_3)	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
NO_3+others(C_2O_3)	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
O_3+others(XO_2)	<0.001/<0.001/<0.001	0.01/<0.01/<0.01	<0.001/<0.001/<0.001	0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
O_3+ISOP(XO_2)	<0.001/<0.001/<0.001	0.02/0.01/<0.01	<0.001/<0.001/<0.001	0.01/0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
OH+others	0.028/0.005/0.016	3.22/2.06/4.13	0.030/0.006/0.018	2.93/1.98/3.91	0.077/0.014/0.029	3.34/2.61/4.20
Total	0.854/0.254/0.397	100/100/100	0.852/0.283/0.449	100/100/100	2.183/0.494/0.680	100/100/100
			RO_2 loss			
CH_3O_2+NO	**0.543/0.161/0.328**	**94.56/95.28/96.07**	**0.580/0.170/0.346**	**94.68/95.24/96.06**	**1.165/0.258/0.522**	**95.76/96.27/96.30**
RO_2+NO	0.016/0.004/0.007	2.81/2.64/1.93	0.017/0.005/0.007	2.80/2.69/1.93	0.024/0.005/0.009	**1.96/1.94/1.68**
NO+ETHP	0.013/0.003/0.005	2.19/1.86/1.36	0.013/0.003/0.005	2.07/1.84/1.36	0.019/0.004/0.007	**1.54/1.48/1.25**
otherRO2 term	0.002/<0.001/0.001	0.32/0.22/0.27	0.002/<0.001/0.001	0.32/0.22/0.28	0.005/0.001/0.002	0.43/0.29/0.28
CH_3O_2 term	<0.001/<0.001/0.001	0.04/<0.01/0.15	<0.001/<0.001/0.001	0.04/<0.01/0.15	0.001/<0.001/0.001	0.08/<0.01/0.20
HO_2+RO_2	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01	<0.001/<0.001/<0.001	0.01/<0.01/0.01
XO_2 term	<0.001/<0.001/<0.001	0.07/<0.01/0.02	<0.001/<0.001/0.001	0.07/<0.01/0.19	0.002/<0.001/0.001	0.18/0.02/0.26
C_2O_3 term	<0.001/<0.001/<0.001	0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/0.02	0.001/<0.001/<0.001	0.05/0.01/0.03

ETHP term	<0.001/<0.001/0.001	<0.01/<0.01/0.19	<0.001/<0.001/<0.001	<0.01/<0.01/0.01	<0.001/<0.001/<0.001	<0.01/<0.01/<0.01
Total	0.574/0.169/0.341	100/100/100	0.613/0.179/0.360	100/100/100	1.216/0.268/0.542	100/100/100

Species in braces for reactions mean main products.

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