Supplement of

Radical chemistry in the Pearl River Delta: observations and modeling of OH and HO₂ radicals in Shenzhen 2018

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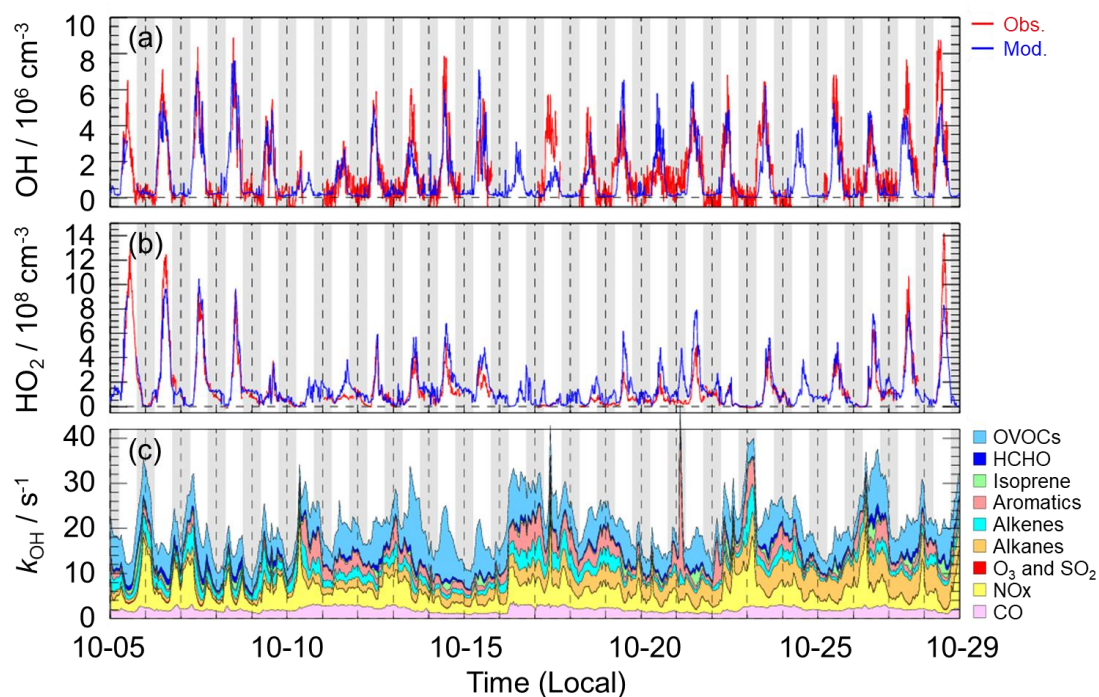Correspondence to: Keding Lu (k.lu@pku.edu.cn), Yuanhang Zhang (yhzhang@pku.edu.cn)

Table S1: Information on the instruments at Shenzhen in autumn 2018.

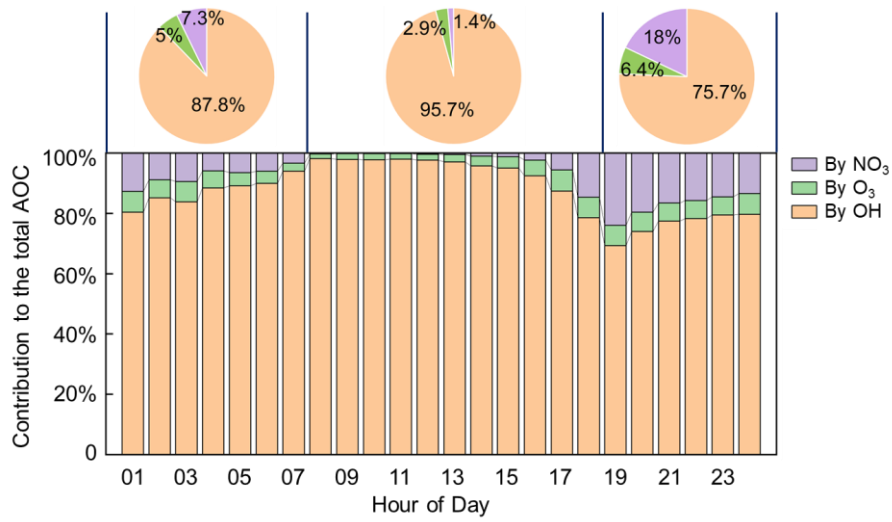| Parameters	Measurement technique	Time resolution	Detection limit[a]	Accuracy
OH	LIF[b]	30 s	5.0×10^5 cm^{-3}	±11%
HO$_2$	LIF[b,c]	30 s	1.0×10^7 cm^{-3}	±15%
Photolysis frequencies	Spectroradiometer	10 s	[d]	±5%
O$_3$	UV photometry	60 s	500 ppt	±5%
NO	Chemiluminescence	60 s	50 ppt	±10%
NO$_2$	Chemiluminescence[e]	60 s	50 ppt	±10%
HONO	LOPAP[f]	60 s	12 ppt	±20%
CO	IR absorption	60 s	50 ppt	±5%
SO$_2$	Pulsed UV fluorescence	60 s	100 ppt	±10%
HCHO	Hantzsch fluorimetry	60 s	25 ppt	±5%
VOCs[g]	GC-MS/FID[h]	1 h	(20-300) ppt	±15%

18 Note that:

19 [a] Signal-to-noise ratio = 1. [b] Laser-Induced Fluorescence. [c] Chemical conversion via NO reaction before detection. [d]

20 Process-specific, 5 orders of magnitude lower than the maximum at noon. [e] Photolytic conversion to NO before detection,

21 home-built converter. [f] Long-path absorption photometry. [g] C$_2$-C$_{12}$ VOCs. [h] Gas Chromatography with Mass Spectrometry /

22 with Flame Ionization Detection.

23

24 **Figure S1: Timeseries of the observed and modeled OH (a) and HO$_2$ (b) concentrations, and the modeled k_{OH} (c) in**

25 **this study. The grey areas denote nighttime.**

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Fig S2: The Histogram denotes the fractional composition of the total AOC. The left, middle and right pie charts denote the mean contribution of OH, O_3, and NO_3 to the total AOC during the second half of night (00:00-08:00), daytime (08:00-18:00), and the first half of night (18:00-24:00), respectively.