



Supplement of

Influence of photochemical loss of volatile organic compounds on understanding ozone formation mechanism

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1 Supporting information











Figure S4. The relationship between the concentration of ethylbenzene and xylene.





Figure S5. Comparison of PICs calculated for xylene/ethylbenzene and i-Butene/Propene









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50 **Figure S7.** The potential source contribution function (PSCF) maps for the ratio of xylene to 51 ethylbenzene (a and b), ethylbenzene (c and d), and xylene (e and f) arriving in the observation 52 site. The figures of a, c and e are the results of 05:00 and 06:00, and the figures of b, d and f 53 are the results during the daytime (07:00-19:00).

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Figure S8. The mean diurnal curves of the concentration of xylene and ethylbenzene, their
 ratio, the OH exposure concentration (molecule cm⁻³) and solar zenith angle.



respectively; R, T, P and M are the ideal gas constant, temperature, pressure and the molar
molecule mass of isoprene).





Figure S11. The relationship between observed and simulated O₃.







Figure S13. The wind direction at the observation site on 4th Aug (a, backward and forward
meaning upwind and downwind, respectively) and the diurnal variation of ozone concentration
at observation site (OS) and one downwind site (national monitoring station (NMS)).







Figure S14. The percentages of different ozone production and loss rate (observed VOCs in a
and c, and PIC-VOCs in b and d). The upper and lower panels present the percentages of
different ozone production and loss rate, respectively.





Figure S15. The mean diurnal curves of xylene, ethylbenzene and isoprene.



Figure S16. The potential source contribution function (PSCF) maps for the isoprene arriving
in the observation site. The figures of a and b are the results of 05:00 and 06:00, and the daytime
(07:00-19:00), respectively.

Isoprene is mainly from biogenic emissions but not co-located with the aromatic emission 123 sources in summer, which is evidenced by the diurnal variations of isoprene, xylene and 124 ethylbenzene (Figure S15) although the regional model emissions for isoprene are unavailable 125 at the present time. The results of PSCF analysis showed that the spatial pattern of isoprene is 126 127 even during our observations in Figure S16, which indirectly indicated that it could be considered as the balance on production and loss of isoprene along the transport, and the 128 concentration of isoprene remain constant in the trajectory from the aromatic source region to 129 the site. 130

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 Table S1. Measured parameters for the observation-based model.

Parameters	Measurement Technique	Time Resolution
J _{NO2}	J _{NO2} radiometer, Metcon	20 s
O ₃ , NO <i>x</i> , SO ₂ , CO	42i, 43i, 48i, and 49i, Thermal Scientific	60 s
HONO	LOPAP, ICCAS	60 s
Meteorological parameters	AWS310, Vaisala	60 s
NMHCs	GC-FID, RCEES	1 h
Halohydrocarbon	SPIMS., Hexin Instrument Co., Ltd	1 h
OVOC	HPLC, GL Sciences	2 h