Supplementary materials *of*

Oxidative capacity and radical chemistry in the polluted atmosphere of Hong Kong and Pearl River Delta region: analysis of a severe photochemical smog episode

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Table S1. Summary of field measurements at Tung Chung in summer 2011

Species	Instrument or techniques	Time resolution
O_3	*TEI 49i*	1 min
CO	*API 300EU*	1 min
SO_2	*TEI 43i*	1 min
NO & NO_2	*TEI 42i + blue light converter*	1 min
NO & NOy	*TEI 42cy + MoO converter*	1 min
HONO	*LOPAP*	1 min
$ClNO_2$	*CIMS*	6 sec
PANs	*CIMS*	6 sec
H_2O_2 & organic peroxides	*Aerolaser AL-2021*	1 min
C_1-C_{10} hydrocarbons	*Canister + GC/FID/ECD/MS*	24-hour
C_2-C_{10} hydrocarbons	*Syntech Spectras, model GC955 Series 600/800 POCP*	30 min
C_1-C_8 carbonyls	*DNPH-coated sorbent cartridge sampling + HPLC*	24-hour in general; 3-hour on episode
$PM_{2.5}$ & PM_{10} mass	*SHARP*	1 min
SO_4^{2-}, NO_3^-, NH_4^+, Cl^-, Na^+, Ca^{2+}, K^+ in $PM_{2.5}$	*MARGA*	1 hour
OC & EC in $PM_{2.5}$	*Sunset OCEC analyzer*	1 hour
BC in $PM_{2.5}$	*Magee*	5 min
Aerosol scattering coefficient	*Ecotech Nephelometer*	1 min
Particle number concentration (5 nm-10 μm)	*MSP/WPS Model 1000XP*	8 min
J_{NO2}	*Metcon Filter Radiometer*	5 sec
Temperature & RH	*Young RH/T probe*	5 sec
Wind speed and direction	*Gill WindSonic*	5 sec
Solar Radiation	*LI-200 Pyranometer Sensor*	5 sec

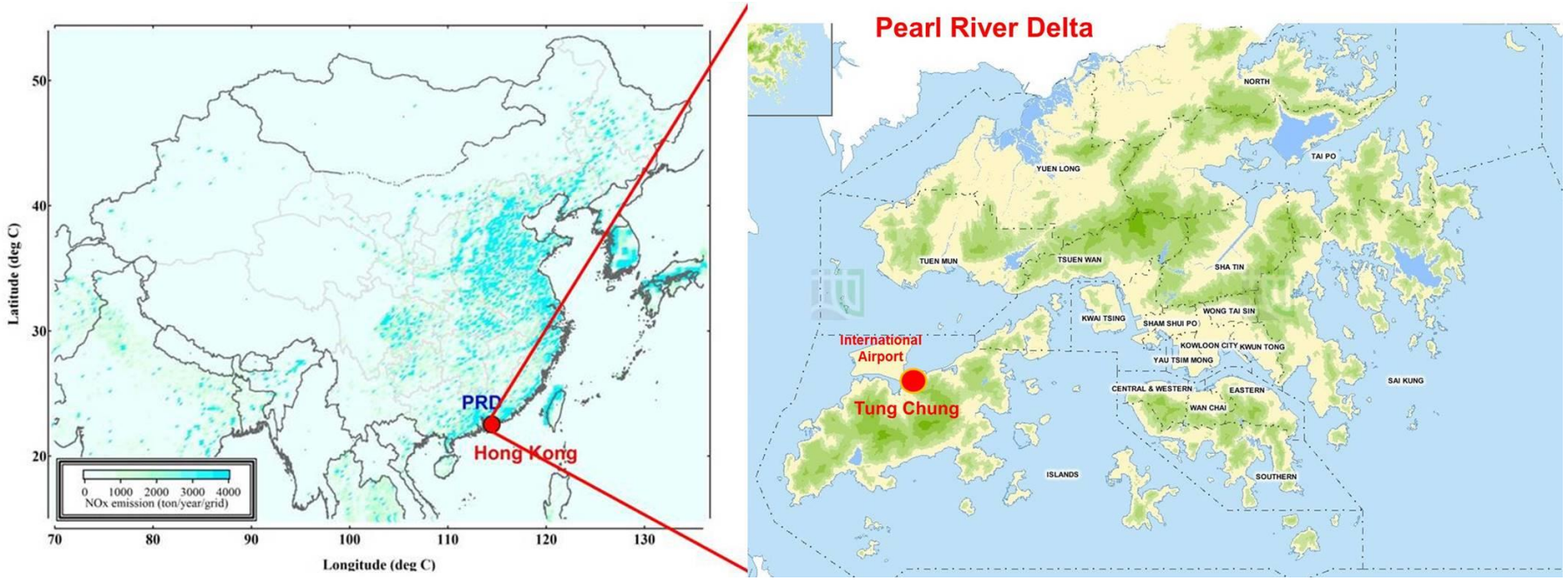

Figure S1. Map showing the locations of Hong Kong, the Pearl River Delta region and the study site at Tung Chung (TC).

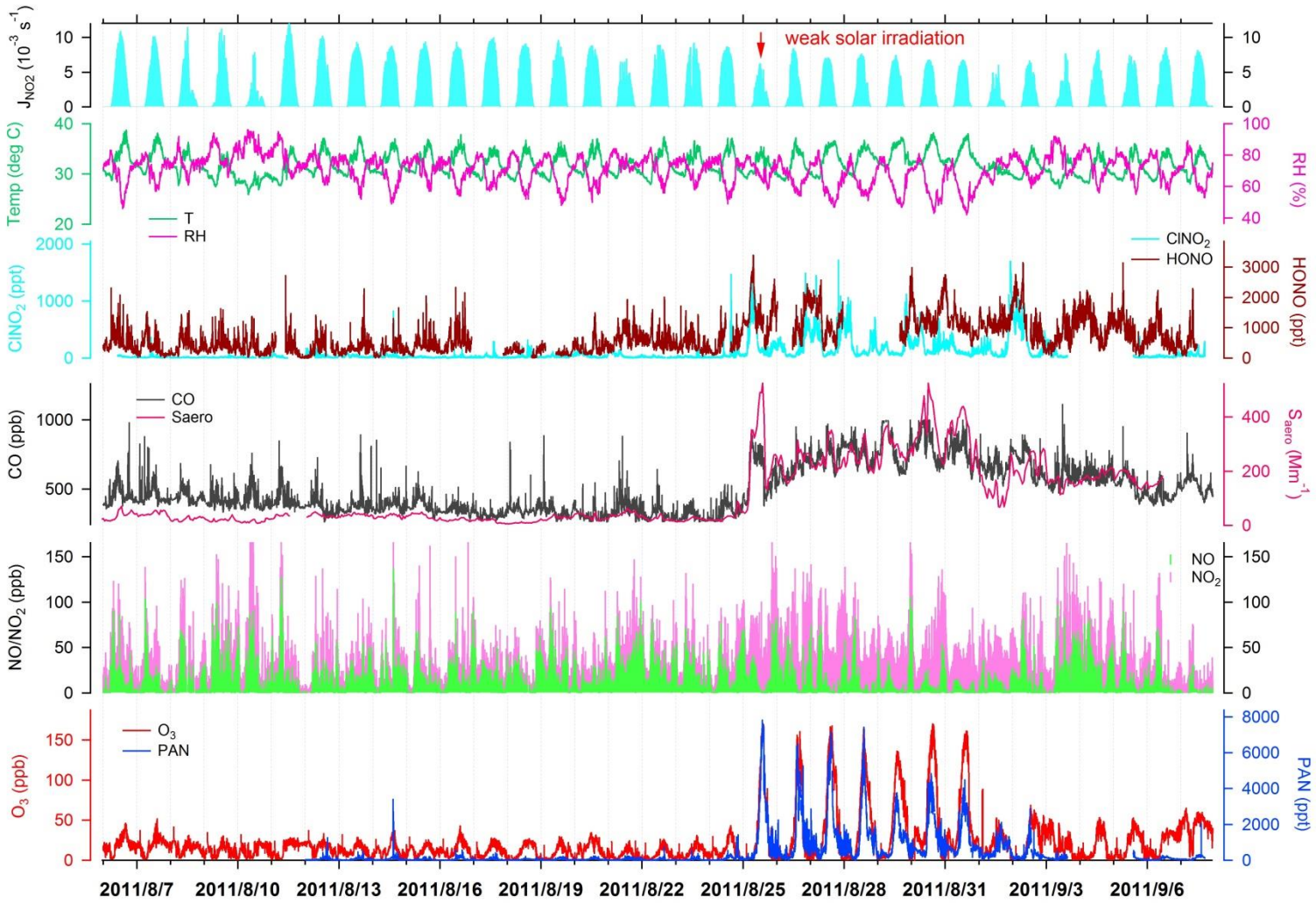

Figure S2. Time series of air pollutants and meteorological parameters observed at Tung Chung during the intensive campaign from 6 August to 7 September 2011. S_{aero} stands for the aerosol scattering coefficient of $PM_{2.5}$.

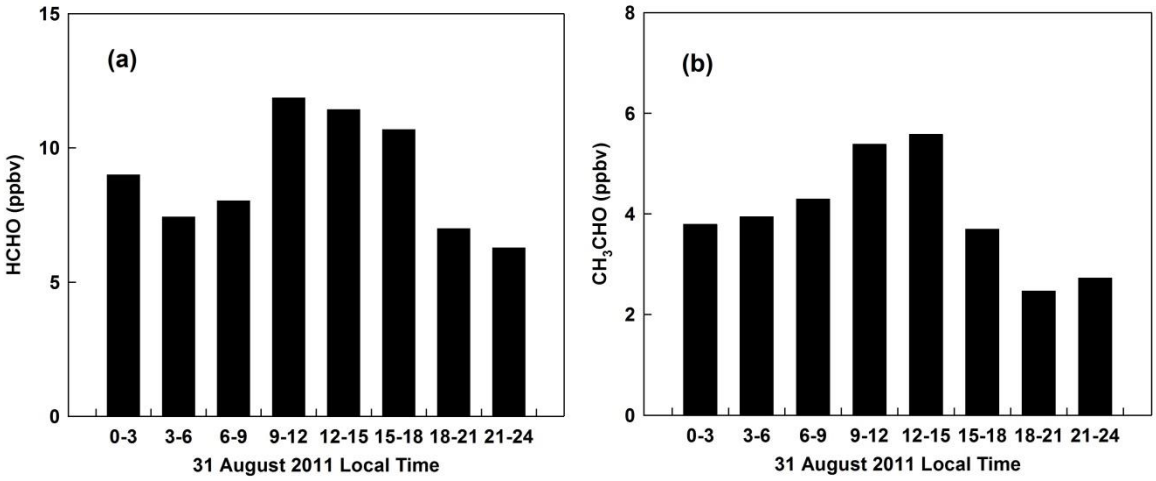

Figure S3. Diurnal variations of (a) formaldehyde and (b) acetaldehyde measured at Tung Chung on 31 August 2011.

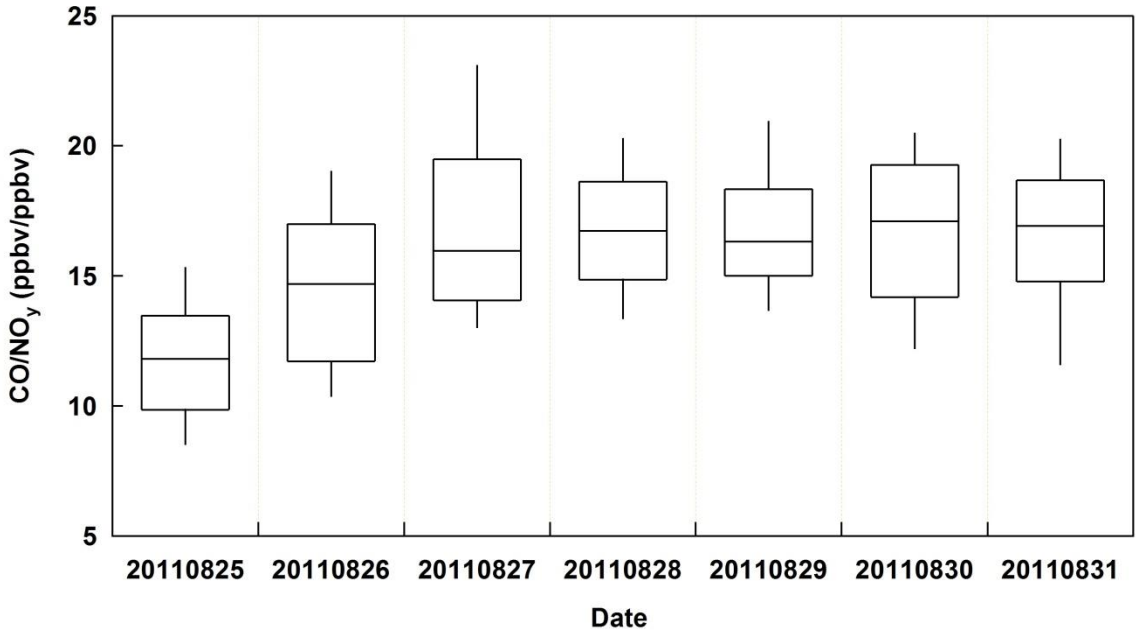

Figure S4. Distributions of the daytime (08:00–18:00 local time) CO/NO_y ratios measured at Tung Chung from 25–31 August 2011. The whisker plot provides the 90^{th}, 75^{th}, 50^{th}, 25^{th} and 10^{th} percentiles of the measurement data.

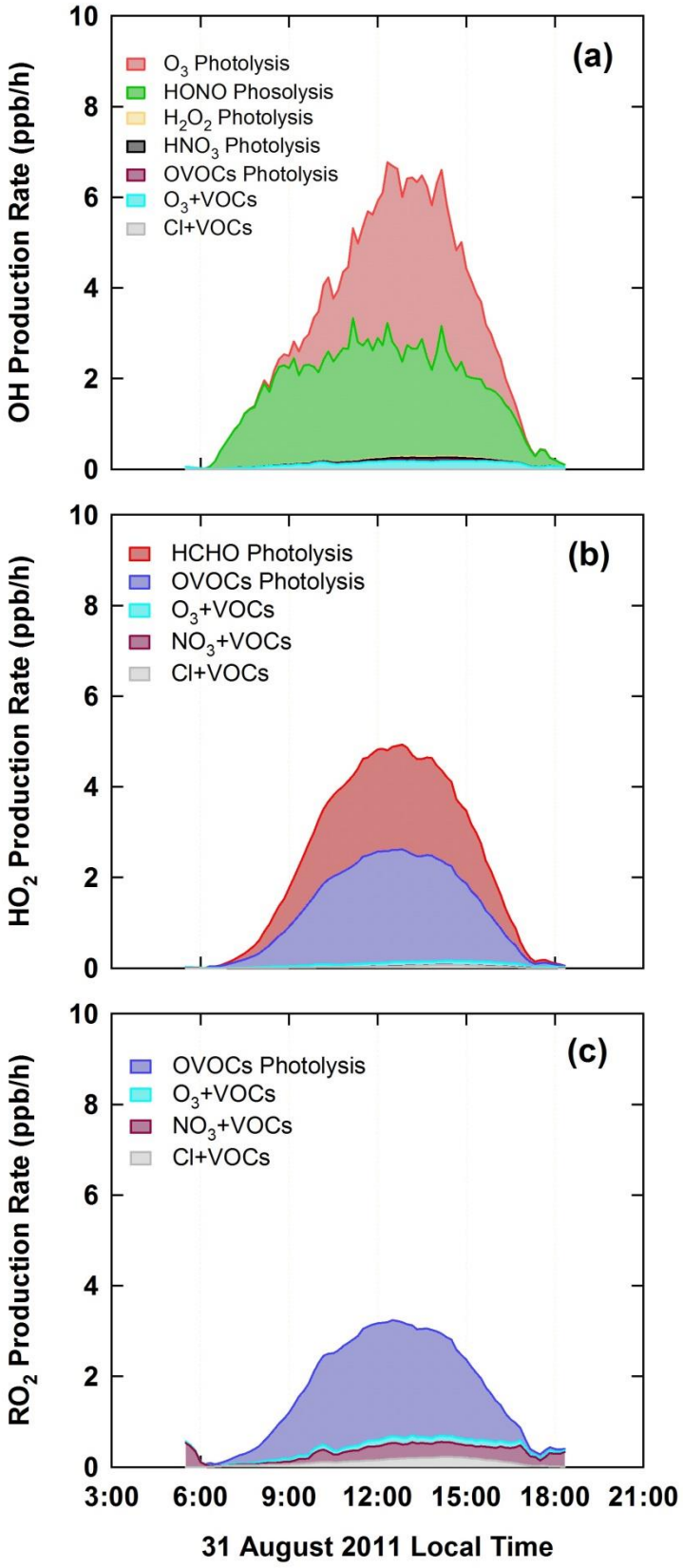

Figure S5. Primary daytime sources of (a) OH, (b) HO_2 and (c) RO_2 radicals at Tung Chung on 31 August 2011.

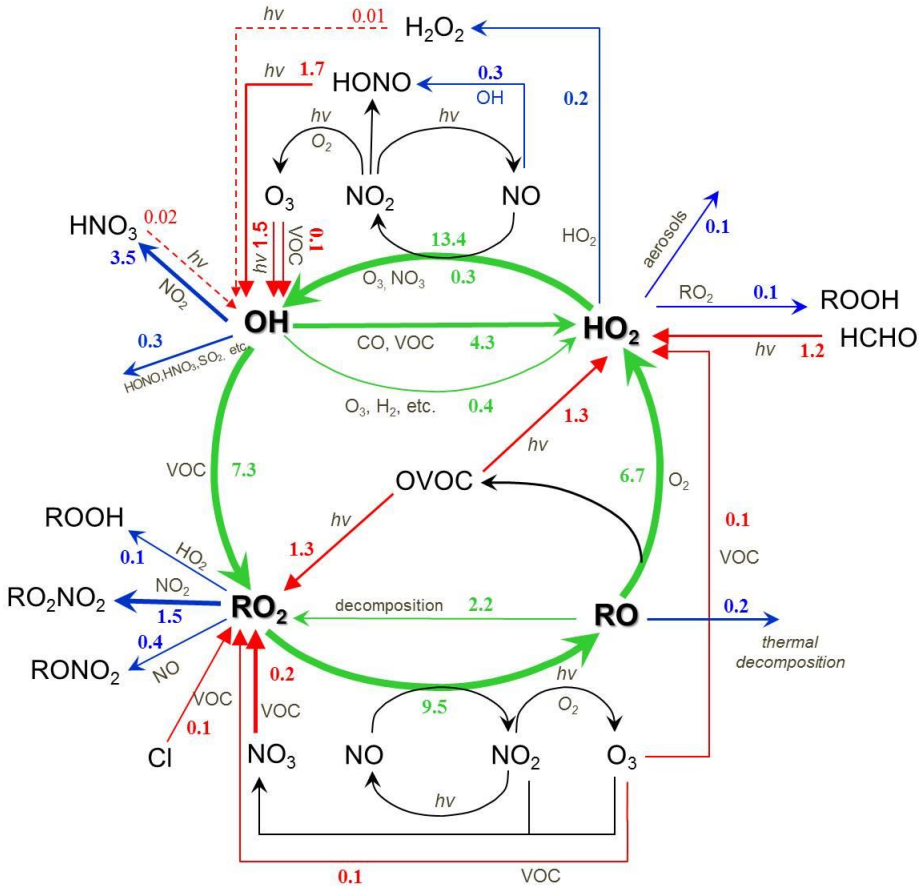

Figure S6. Daytime average RO_X budget at Tung Chung on 31 August 2011. The units are ppb/h. The red, blue and green lines indicate the production, destruction and recycling pathways of radicals, respectively.