## **Supplementary Information**

## Atmospheric oxidation capacity in Chinese megacities during photochemical polluted season: radical budget and secondary pollutants formation

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Figure S1 The time series of measured parameters (j(O<sup>1</sup>D), Temperature, NO, NO<sub>2</sub>, O<sub>3</sub>, O<sub>x</sub>, CO, AHC, isoprene) and modelled OH, HO<sub>2</sub>, and RO<sub>2</sub> concentrations and OH reactivity in Beijing.



Figure S2 The time series of measured parameters (j(O<sup>1</sup>D), Temperature, NO, NO<sub>2</sub>, O<sub>3</sub>, O<sub>x</sub>, CO, AHC, isoprene) and modelled OH, HO<sub>2</sub>, and RO<sub>2</sub> concentrations and OH reactivity in Shanghai.



Figure S3 The time series of measured parameters (j(O<sup>1</sup>D), Temperature, NO, NO<sub>2</sub>, O<sub>3</sub>, O<sub>x</sub>, CO, AHC, isoprene) and modelled OH, HO<sub>2</sub>, and RO<sub>2</sub> concentrations and OH reactivity in Guangzhou.



Figure S4 The time series of measured parameters (j(O<sup>1</sup>D), Temperature, NO, NO<sub>2</sub>, O<sub>3</sub>, O<sub>x</sub>, CO, AHC, isoprene) and modelled OH, HO<sub>2</sub>, and RO<sub>2</sub> concentrations and OH reactivity in Chongqing.



Figure S5 RIR from sensitivity tests