Appendix A. Supplementary data

Diagnosing O_3 formation and O_3-NO_X-VOC sensitivity in a heavily polluted megacity of central China: A multi-method systematic evaluation over the warm seasons from 2019 to 2021

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Figure list

Table list:

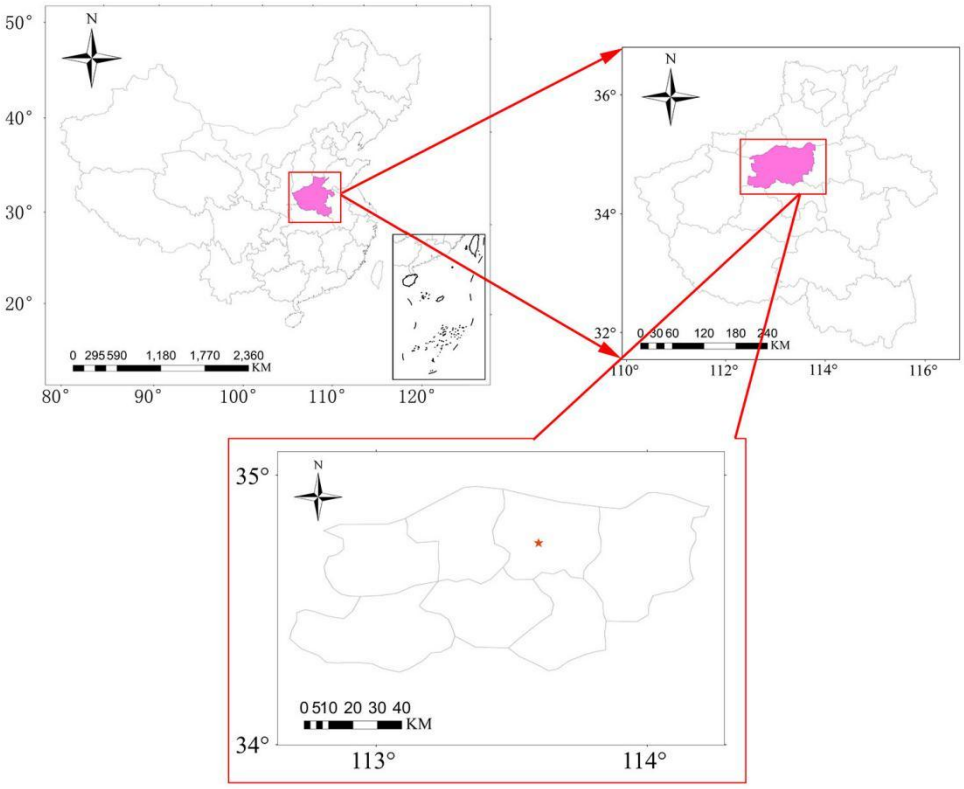


Fig. S1 Locations of the sampling stations in Zhengzhou.

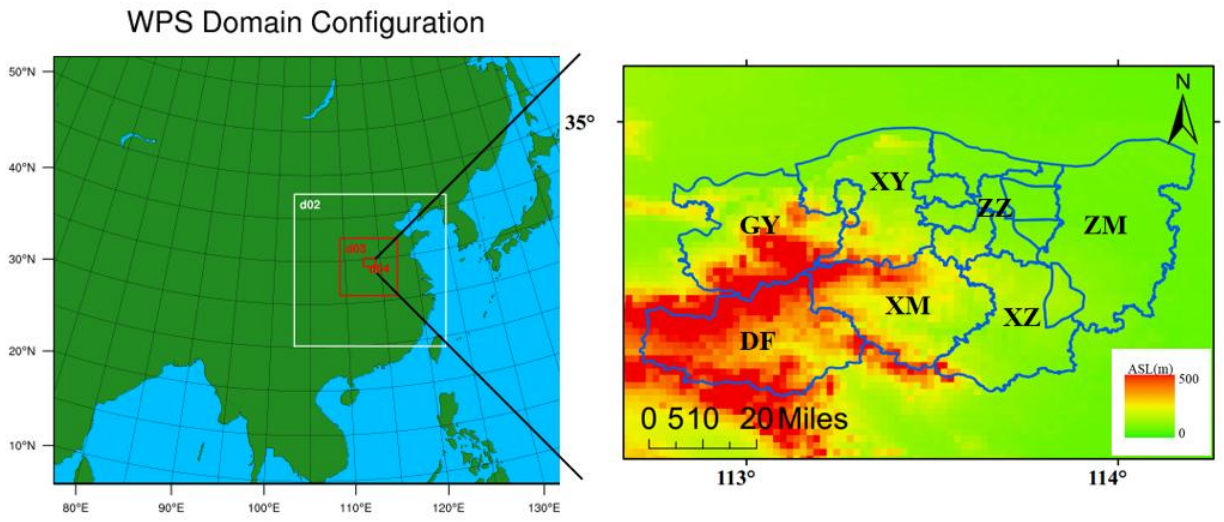
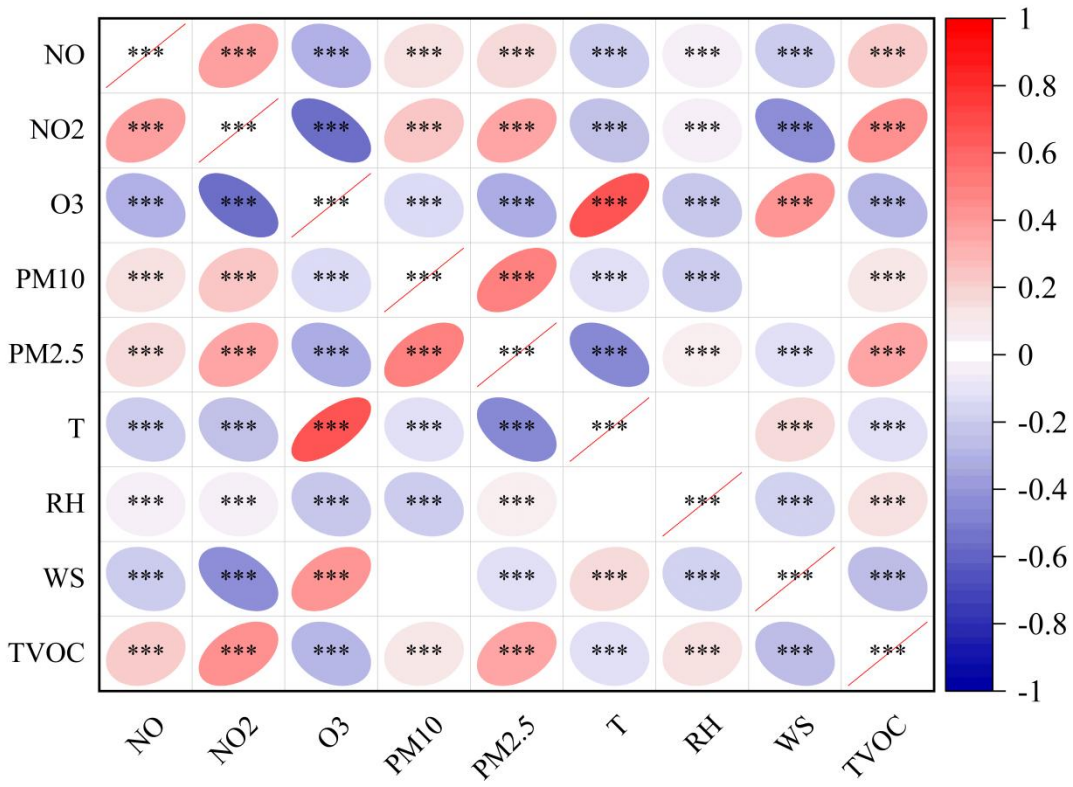


Fig. S2 Four-level nested domains used in the WRF/CMAQ simulations. d01, d02, d03 and d04 have horizontal resolutions of 36, 12, 4 and 1 km, respectively. ZZ: Zhengzhou main city; ZM: Zhongmu; XZ: Xinzheng; XM: Xinmi; DF: Dengfeng; GY: Gongyi; XY: Xingyang.



* p<=0.05 ** p<=0.01 *** p<=0.001

Fig.S3 Pearson correlation coefficients between pollutants and meteorological factors during the observation period.

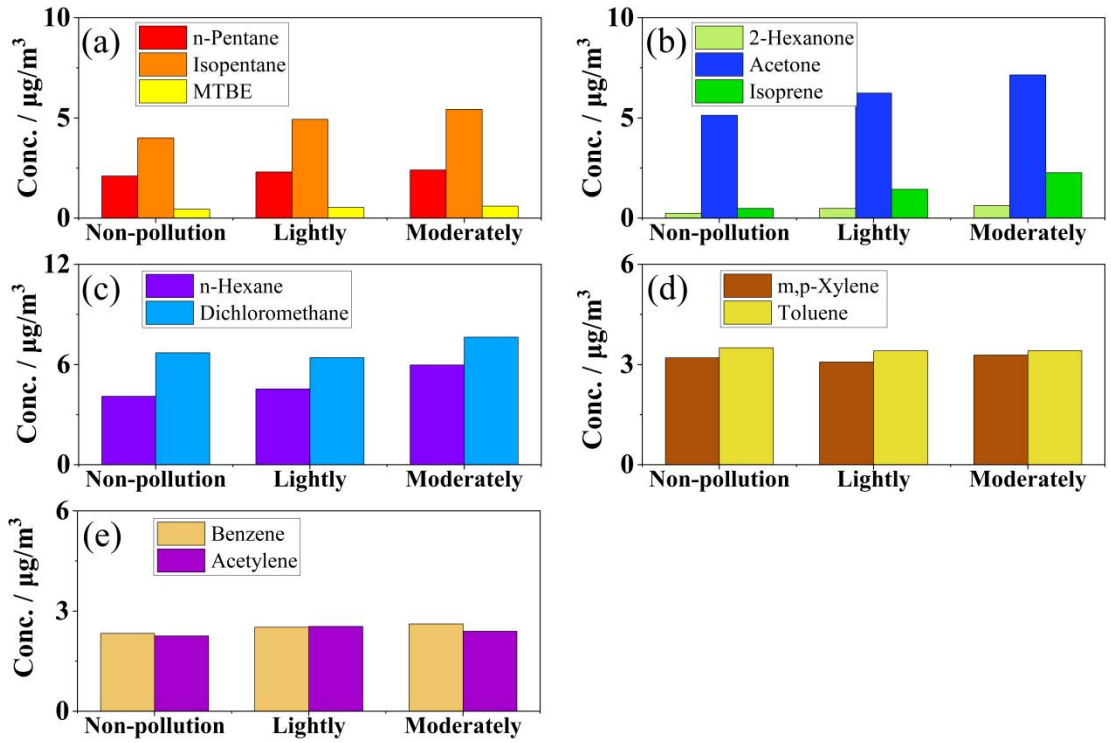


Fig. S4 Distribution of typical tracers for different pollutants.

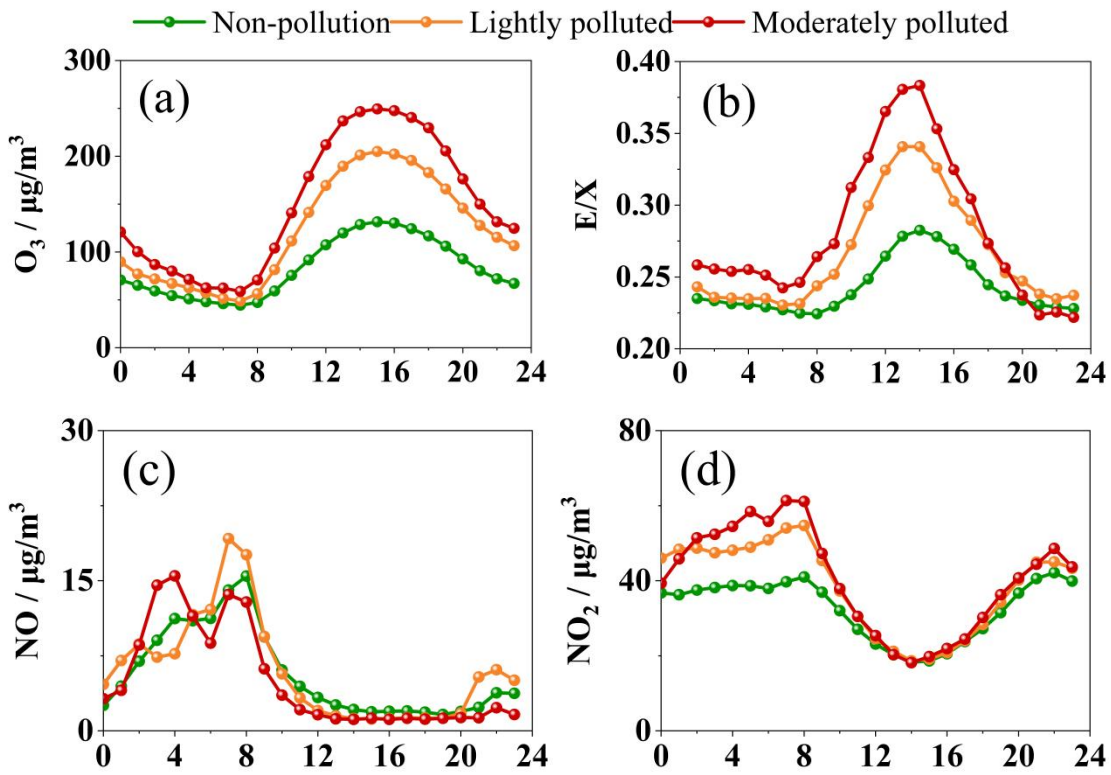


Fig. S5 Diurnal variation distribution of pollutants during different pollution periods.

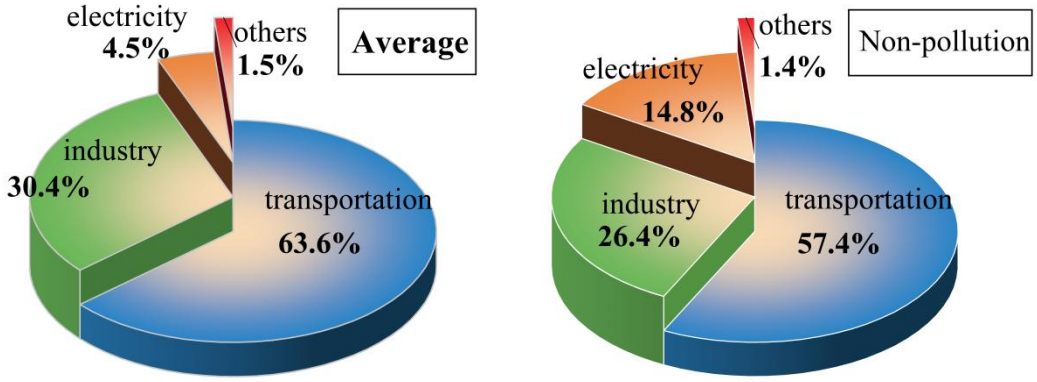


Fig. S6 The contribution of different sources to O_3 formation.

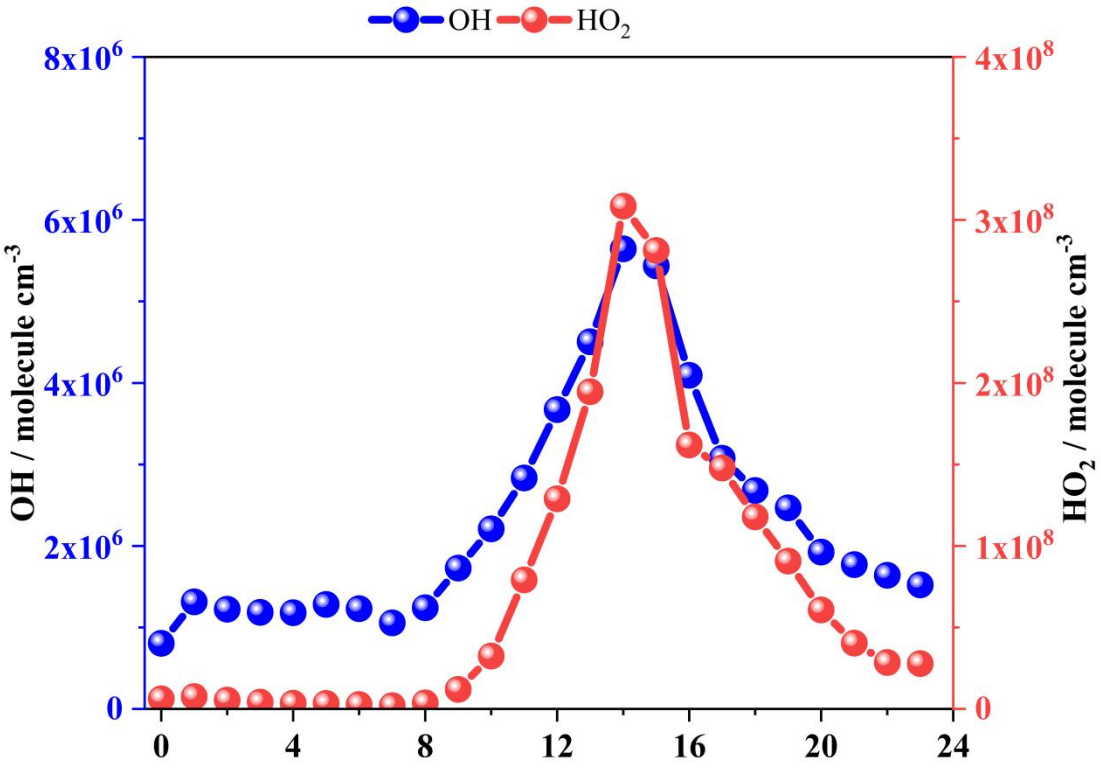


Fig. S7 Diurnal variation distribution of HOx radicals during the observation period.

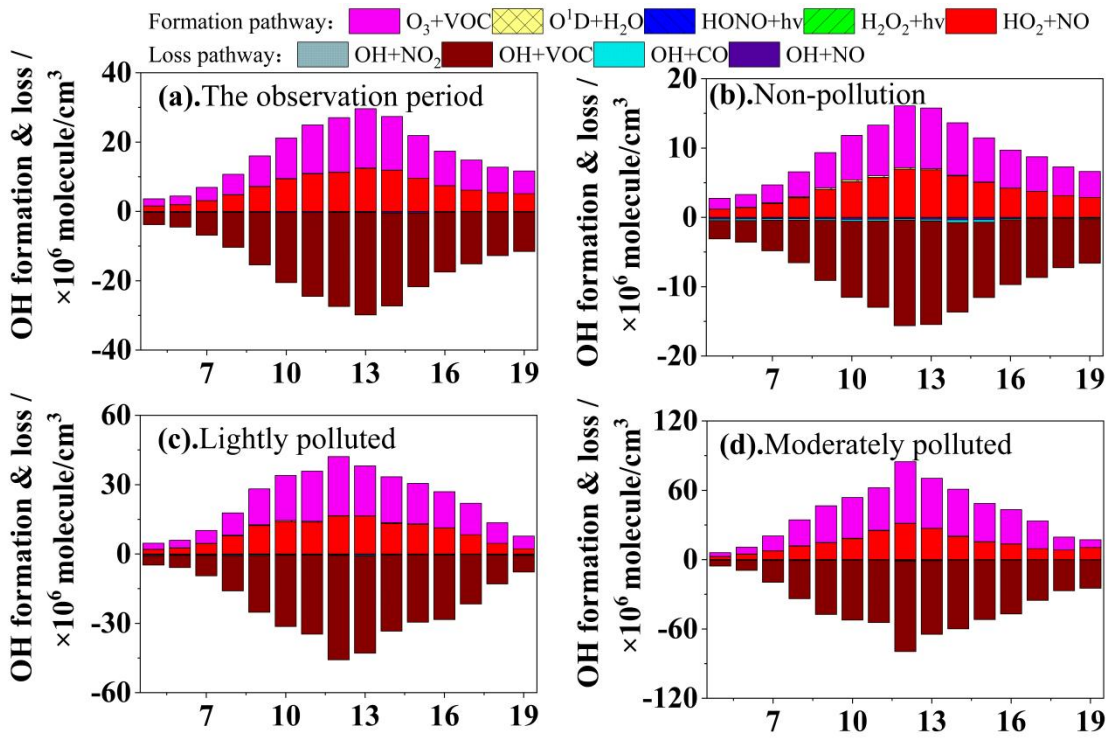


Fig. S8 Simulated average formation and loss rates of OH radicals at different pollution levels.

Table S1 Parameter table for O_3 simulation calibration in Henan Province

	$PM_{2.5}$	O_3
Normalized Mean Bias	0.30	-0.21
Normalized Mean Error	0.48	0.25
Mean Fractional Bias	0.21	-0.26
Mean Fractional Error	0.38	0.30
Correlation Coefficient	0.43	0.74

Table S2 Sensitivity distribution of O_3 pollution at different levels.

	VOCs/NOx	VOCs/NOx>10
Non-pollution	5.9 ± 7.3	8%
Lightly	7.0 ± 6.6	15%
Moderately	7.3 ± 6.7	18%