

## *Supporting information*

### **Enhanced contribution of photooxidation to dicarboxylic acids in urban aerosols during the COVID-19 lockdown in Jinan, East China**

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To analyze air masses from different origins reaching the sampling site, 48 h backward trajectory was performed using a Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT4) model. To determine the potential source regions of total dicarboxylic acids (diacids) and related compounds, the potential source contribution function (PSCF) was used and detailed information was described in our previous study (Li et al., 2022).

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#### **References**

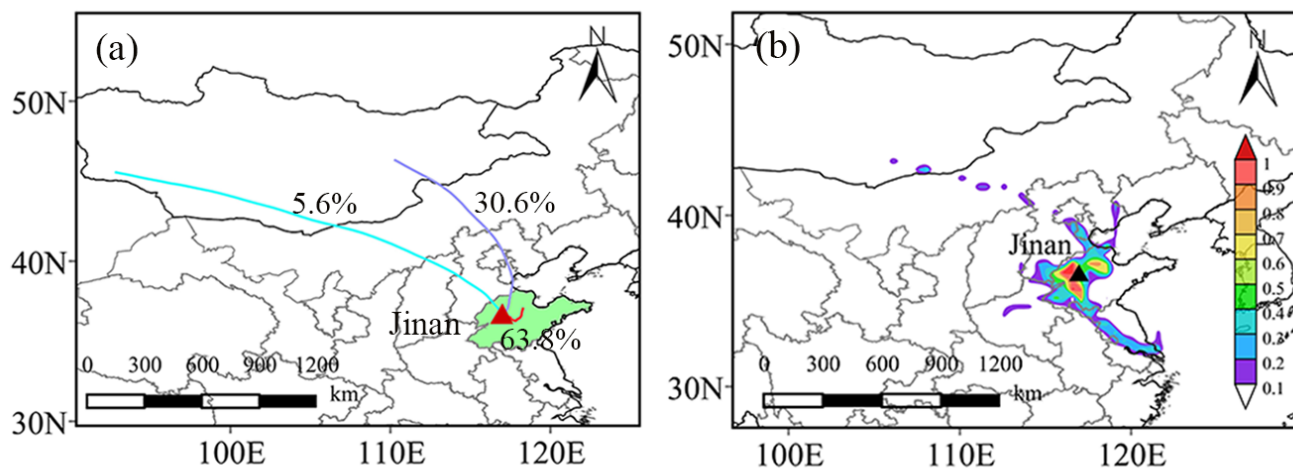
Li, Z., Zhou, R., Wang, Y., Wang, G., Chen, M., Li, Y., Wang, Y., Yi, Y., Hou, Z., Guo, Q., and Meng, J.: Characteristics and sources of amine-containing particles in the urban atmosphere of Liaocheng, a seriously polluted city in North China during the COVID-19 outbreak, *Environ. Pollut.*, 289, 117887, <https://doi.org/10.1016/j.envpol.2021.117887>, 2021.

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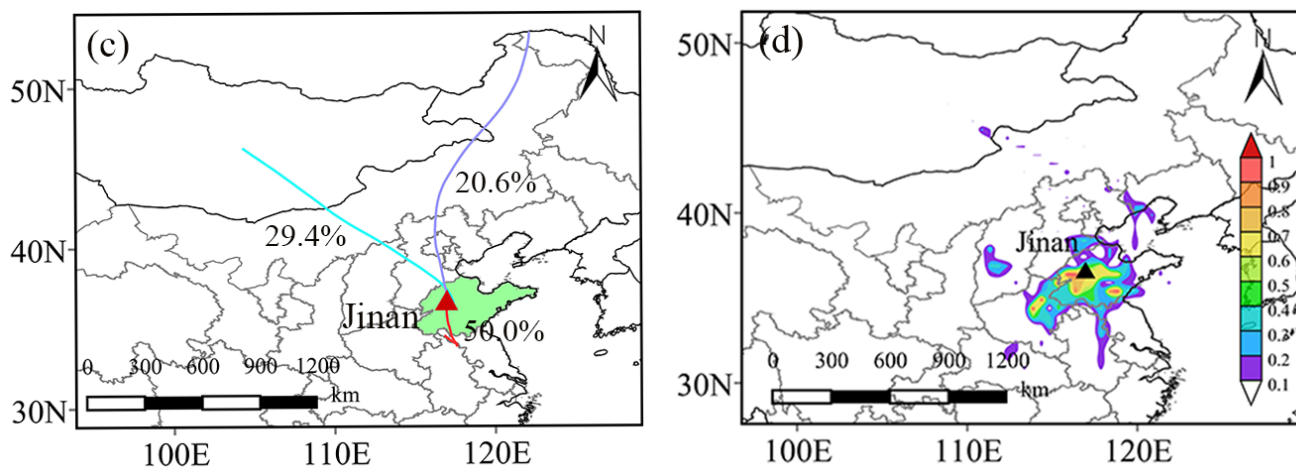
**Table S1 Correlation coefficients ( $R^2$ ,  $P < 0.01$ ) of levoglucosan and  $K^+$  with EC, OC, WSOC,  $C_2$ ,  $C_9$ , diacids, and total detected organic components (TDOCs).**

	EC	OC	WSOC	$K^+$	$C_2$	$C_9$	Diacids	TDOCs
<b>Before the LCD</b>								
Levoglucosan	0.62	0.66	0.45	0.77	0.61	0.74	0.62	0.73
$K^+$	0.57	0.56	0.55	1.00	0.68	0.64	0.59	0.65
<b>During the LCD</b>								
Levoglucosan	0.15	0.09	0.05	0.86	0.02	0.06	0.02	0.03
$K^+$	0.10	0.08	0.02	1.00	0.03	0.02	0.11	0.13

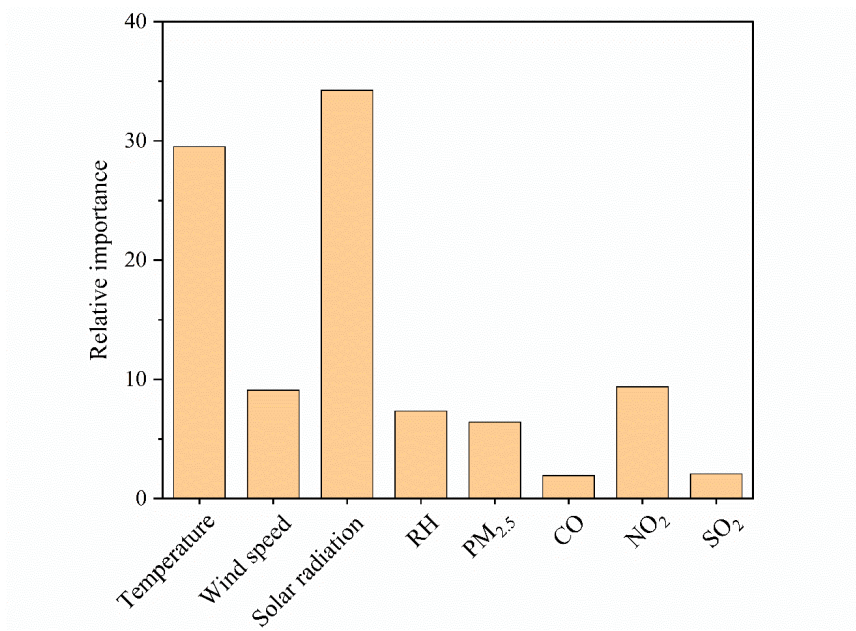
## Before the LCD



## During the LCD

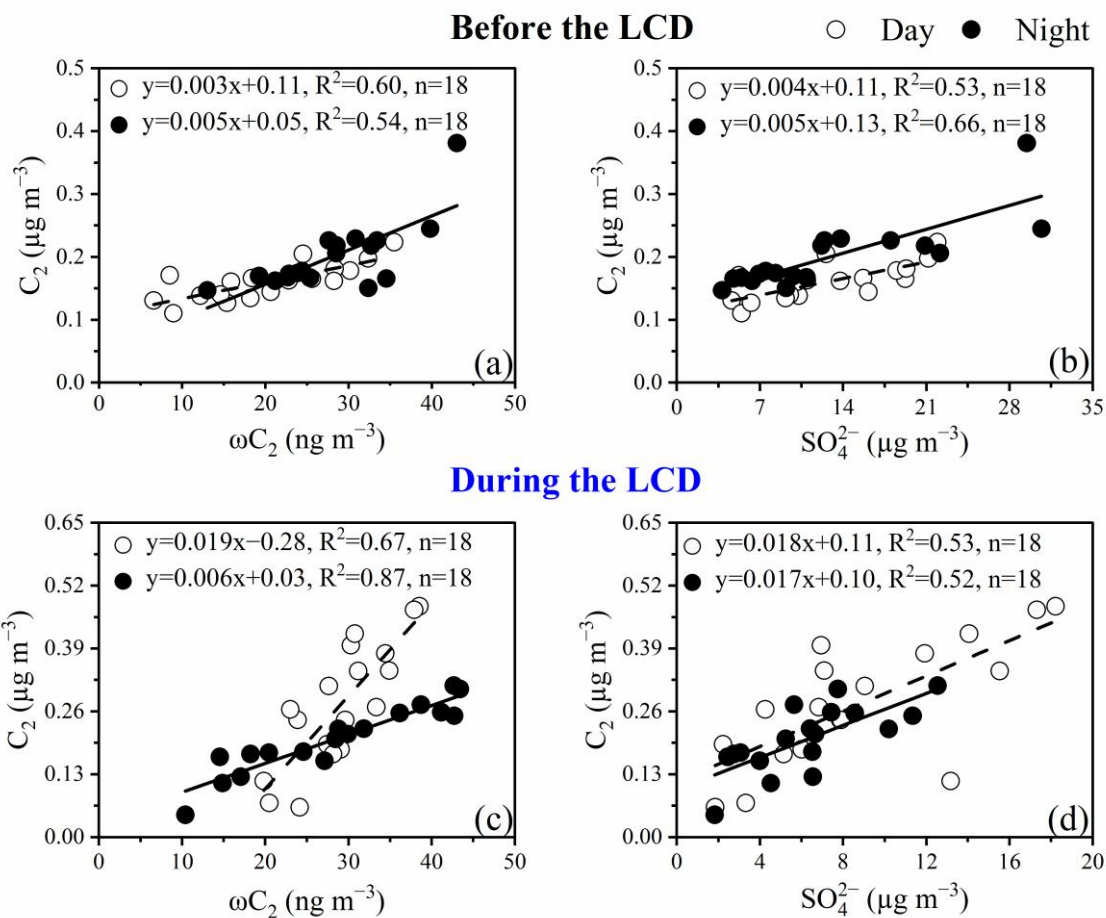


25 **Figure S1.** 48-h backward trajectories of air masses arriving at Jinan (a) before the LCD and (b) during the LCD. Potential source contribution function (PSCF) analysis of total detected organic compounds (TDOCs) in PM<sub>2.5</sub> (c) before the LCD and (d) during the LCD.



**Figure S2. Relative importance of meteorological parameters and anthropogenic emissions for the variation of O<sub>3</sub> during the LCD identified by random forest and multiple linear regression analysis.**

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**Figure S3. Relationships of  $C_2$  with  $\omega C_2$  and  $SO_4^{2-}$  (a) and (b) before the LCD, (c) and (d) during the LCD.**