Supplementary materials to

One year monitoring of volatile organic compounds (VOCs) from an oil-gas station in northwest China

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Table S1. Contributions of top ten species to ozone formation potential based on the Propy-Equiv and MIR scales.

Propy-Equiv (ppbC)			MIR (ppbv)		
Compounds	Mean	SD	Compounds	Mean	SD
1-Pentene	16.7	25.1	*o*-Xylene	40.4	60.7
1-Hexene	7.16	14.5	*n*-Heptane	30.2	56.1
Cyclopentane	5.10	9.47	Cyclopentane	19.4	26.4
n-Heptane	4.67	35.0	*n*-Pentane	18.5	27.5
n-Pentane	4.24	5.96	1-Hexene	18.2	25.5
Styrene	4.12	26.7	*n*-Nonane	15.5	83.8
i-Pentane	3.94	5.85	Styrene	13.7	19.3
cis-2-butene	3.76	11.0	2,2-Dimethylbutane	11.8	31.7
n-Butane	3.66	4.98	Benzene	10.4	21.1
trans-2-butene	3.66	8.13	1-Pentene	10.0	14.7

Table S2. Pearson coefficients between VOCs, source contributions, and meteorological parameters.

	F1	F2	F3	F4	F5	T	Re	P	WS	BLH	VOCs	SO_2	NO_2	CO	O_3	$PM_{2.5}$	PM_{10}
F1	1																
F2	0.49**	1															
F3	0.29**	0.67**	1														
F4	0.47**	0.15**	0.04	1													
F5	0.50**	0.80**	0.65**	0.14*	1												
T	0.05	-0.31**	-0.57**	0.11**	-0.38**	1											
Re	-0.01	0.30**	0.53**	-0.17**	0.37**	-0.86**	1										
P	-0.05	0.25**	0.46**	0.18**	0.32**	-0.92**	0.76**	1									
WS	-0.12*	-0.39**	-0.44**	0.03	-0.37**	0.51**	-0.51**	-0.48**	1								
BLH	-0.08	-0.42**	-0.55**	0.04	-0.40**	0.81**	-0.68**	-0.76**	0.64**	1							
VOCs	0.48**	0.74**	0.58**	0.07	0.72**	-0.26**	0.20**	0.17**	-0.39**	-0.45**	1						
SO_2	0.15**	0.15**	0.12*	-0.04	0.15**	0.09	-0.16**	-0.14**	-0.06	-0.003	0.15*	1					
NO_2	0.33**	0.45**	0.49**	0.12*	0.37**	-0.36**	0.34**	0.39**	-0.45**	-0.54**	0.46**	0.10	1				
CO	0.21**	0.44**	0.59**	0.041	0.35**	-0.48**	0.48**	0.44**	-0.44**	-0.50**	0.34**	0.11*	0.61**	1			
O_3	-0.17**	-0.27**	-0.33**	-0.02	-0.28**	0.63**	-0.58**	-0.66**	0.29**	0.55**	-0.18**	0.24**	-0.60**	-0.48**	1		
$PM_{2.5}$	0.13*	0.43**	0.77**	0.04	0.44**	-0.59**	0.54**	0.47**	-0.48**	-0.54**	0.39**	0.22**	0.50**	0.60**	-0.28**	1	
PM_{10}	0.23**	0.43**	0.71**	0.09	0.42**	-0.36**	0.30**	0.24**	-0.36**	-0.43**	0.49**	0.28**	0.48**	0.53**	-0.19**	0.86**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

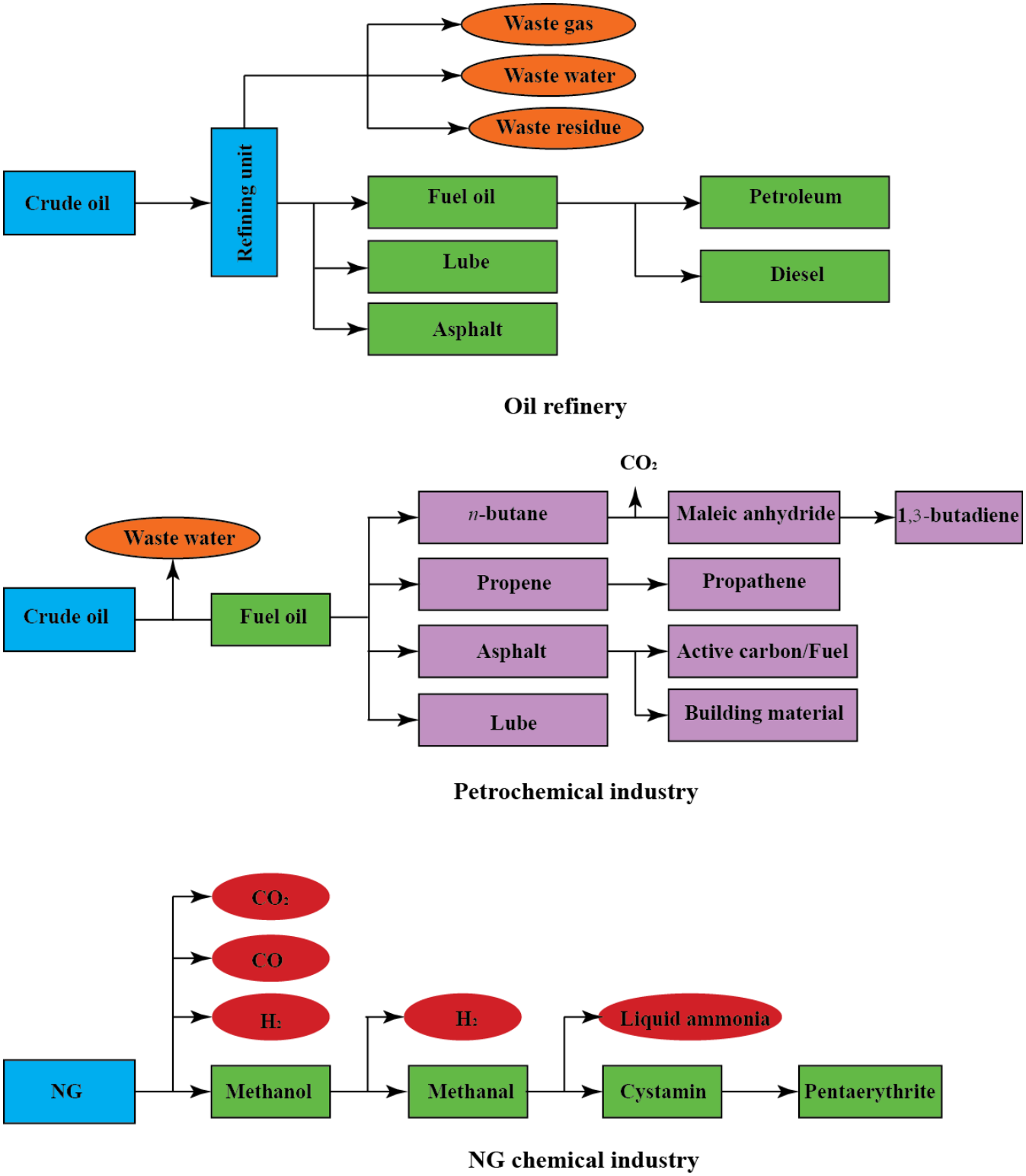

Figure S1. Flow charts of the main petrochemical industrial processes in study area.

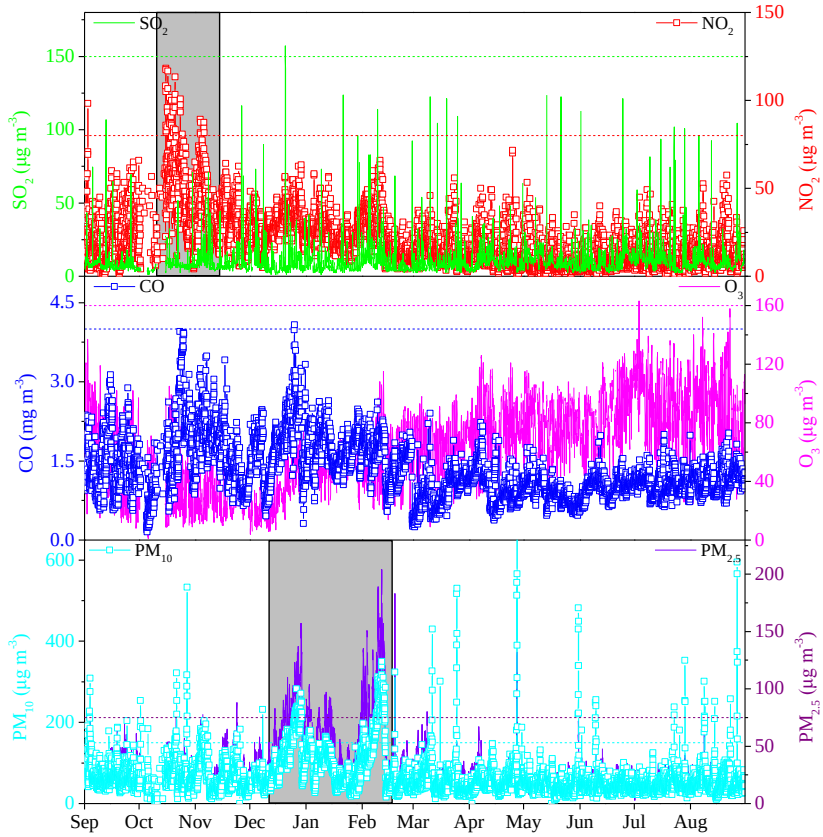

Figure S2. The hourly air pollutants concentrations during the whole sampling period from September 2014 to August 2015. The horizon dash lines represent the Ambient Air Quality Standard Ⅱ (GB/3095-2012).

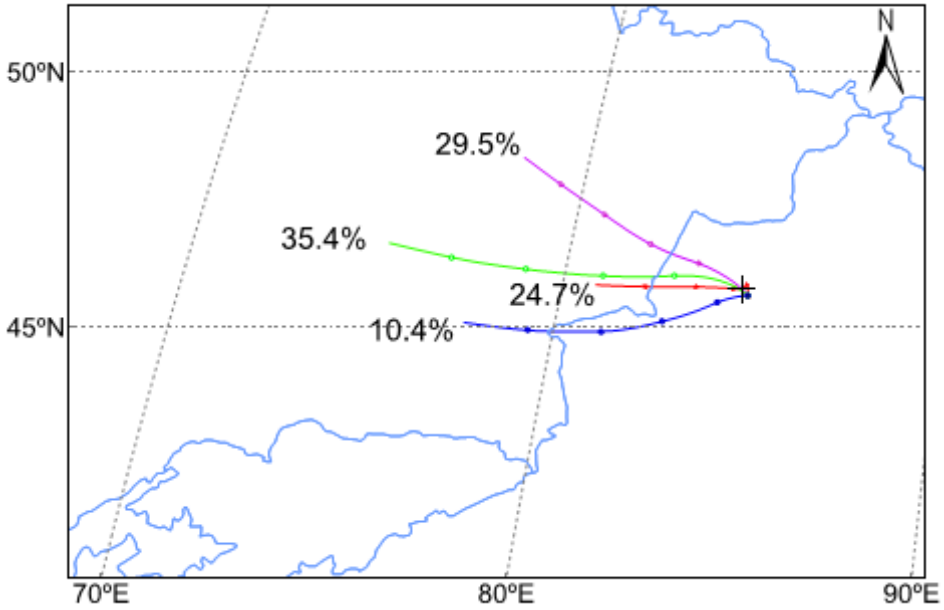

Figure S3. Average trajectories obtained after clustering analysis and the percentage of clusters (%) from different directions during the sampling period from September 2014 to August 2015.

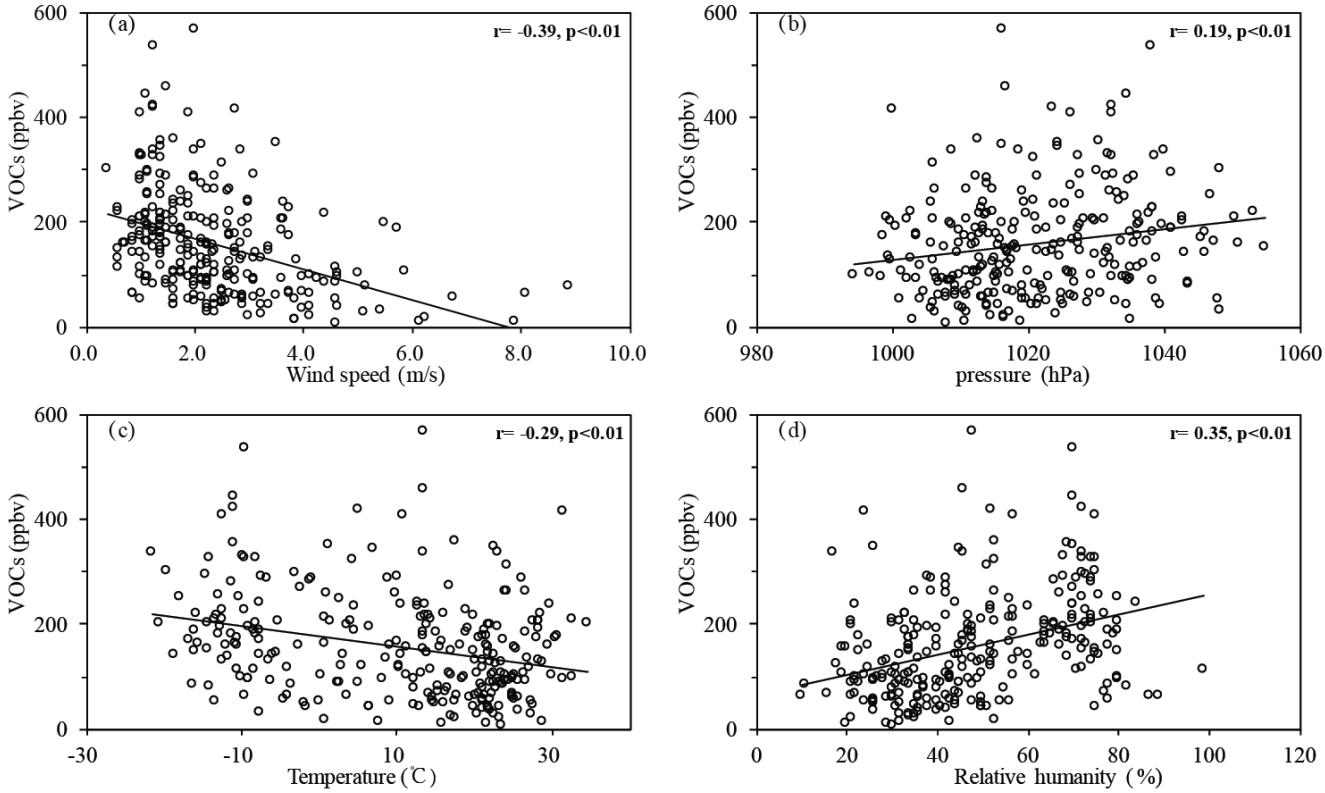

Figure S4. Scatter plots between daily VOC concentrations and metrological parameters including wind speed (a), pressure (b), temperature (c), and relative humidity (d)

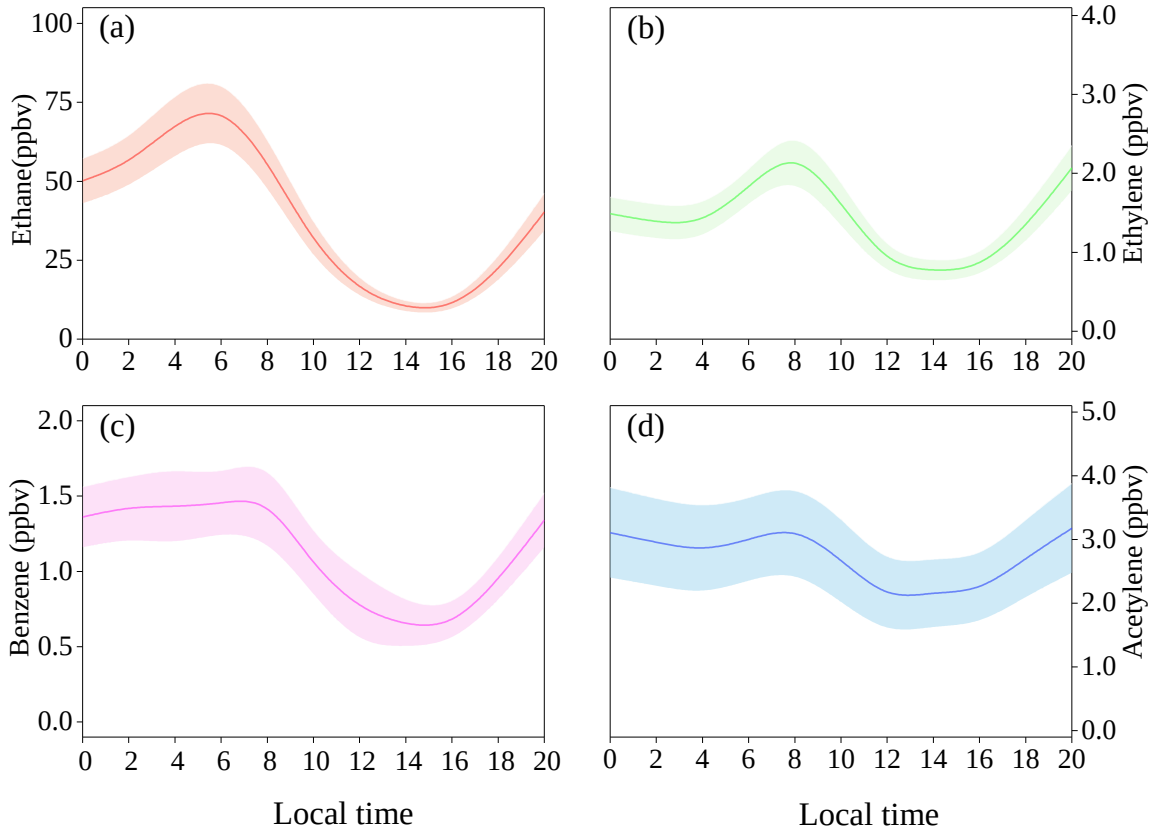

Figure S5. Diurnal variations of ethane (a), ethylene (b), benzene (c), and acetylene (d). Solid line represents the average value and filled area indicates the 95th confidence intervals of the mean.

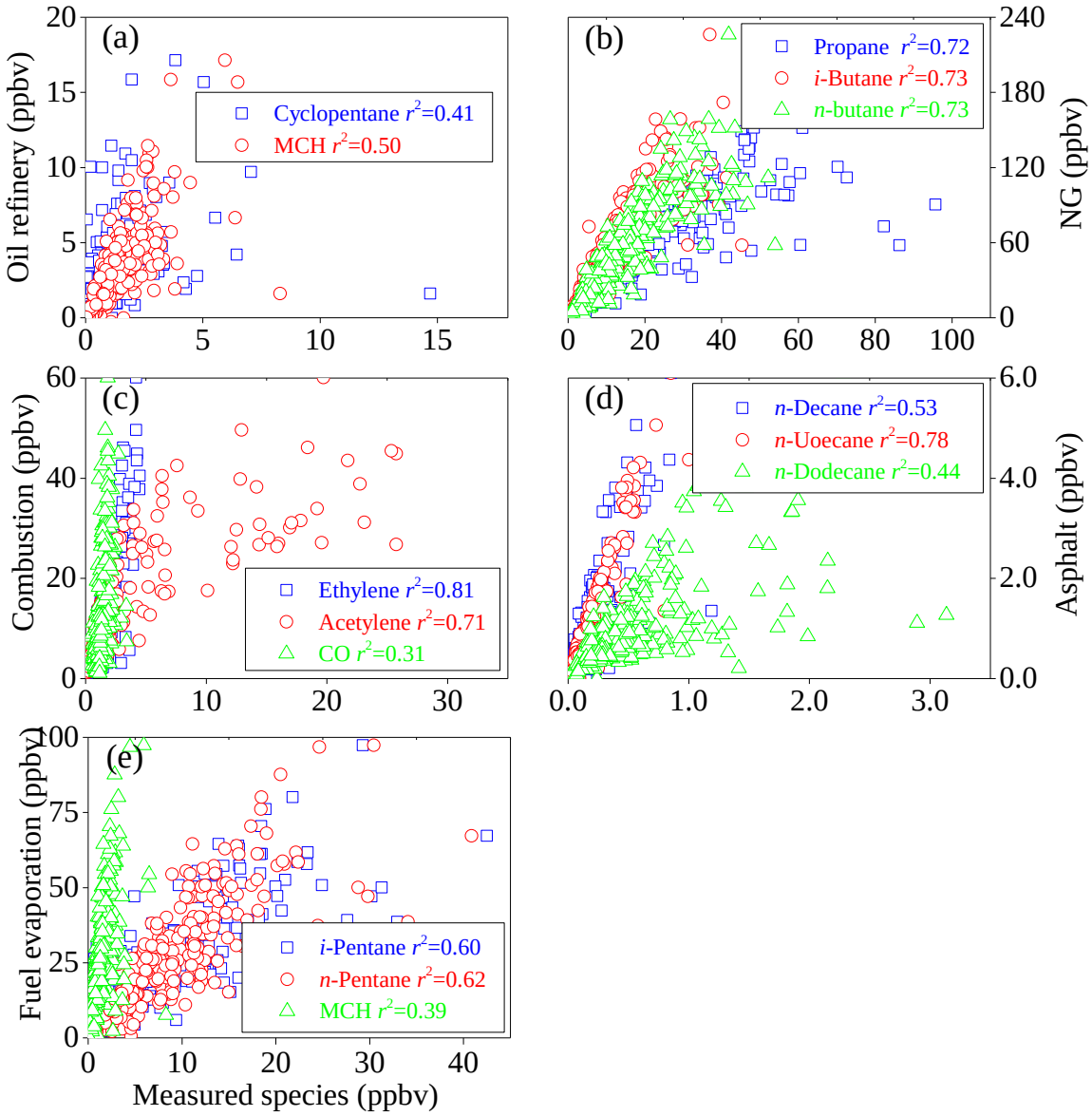

Figure S6. Scatter plots between five identified VOC source contributions and and their high loading species in their corresponding source profiles. Oil refinery (a), NG (b), combustion (c), asphalt (d), and fuel evaporation (e).

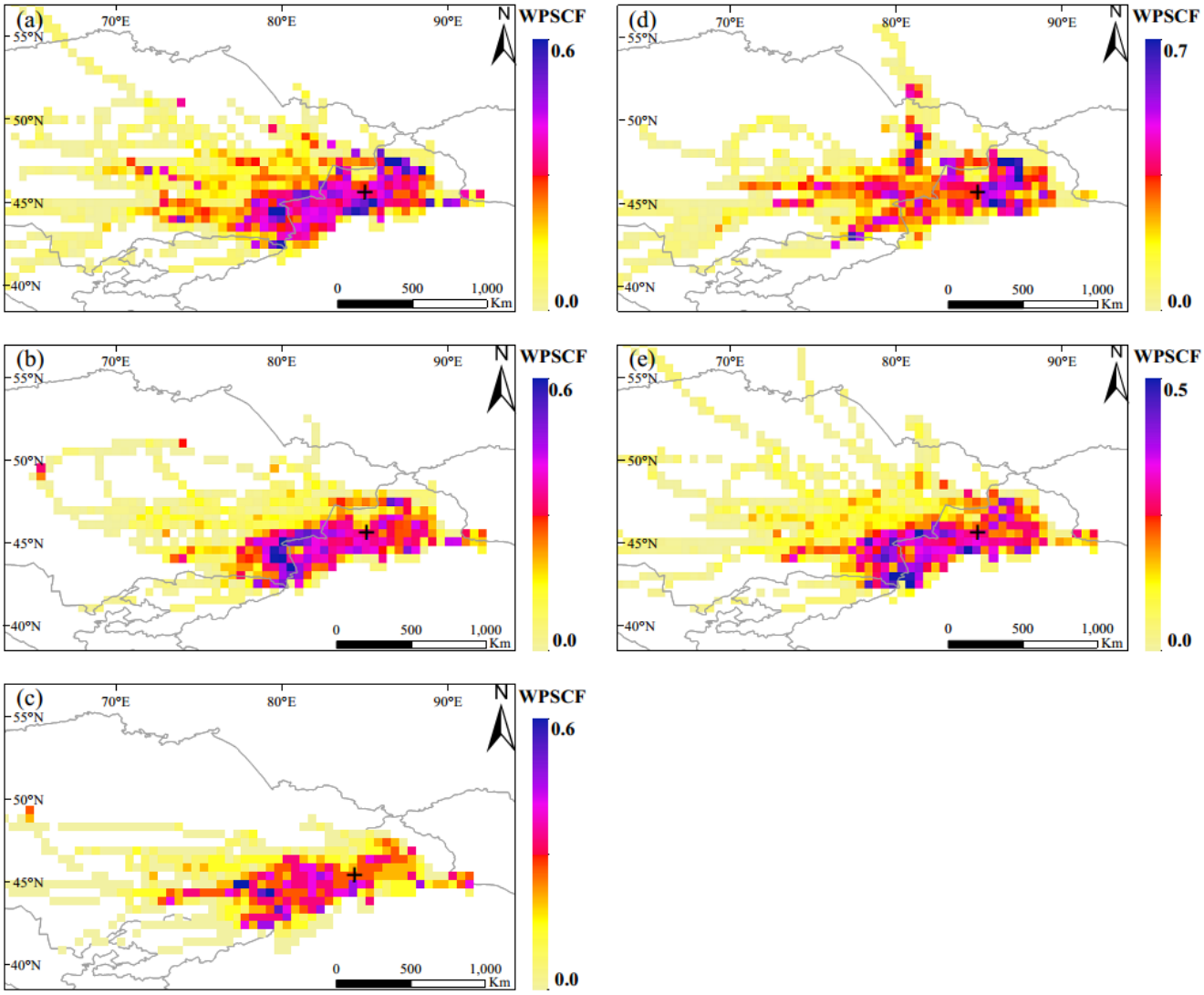

Figure S7. The WPSCF maps for five identified sources derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in autumn. The black cross represents the sampling site.

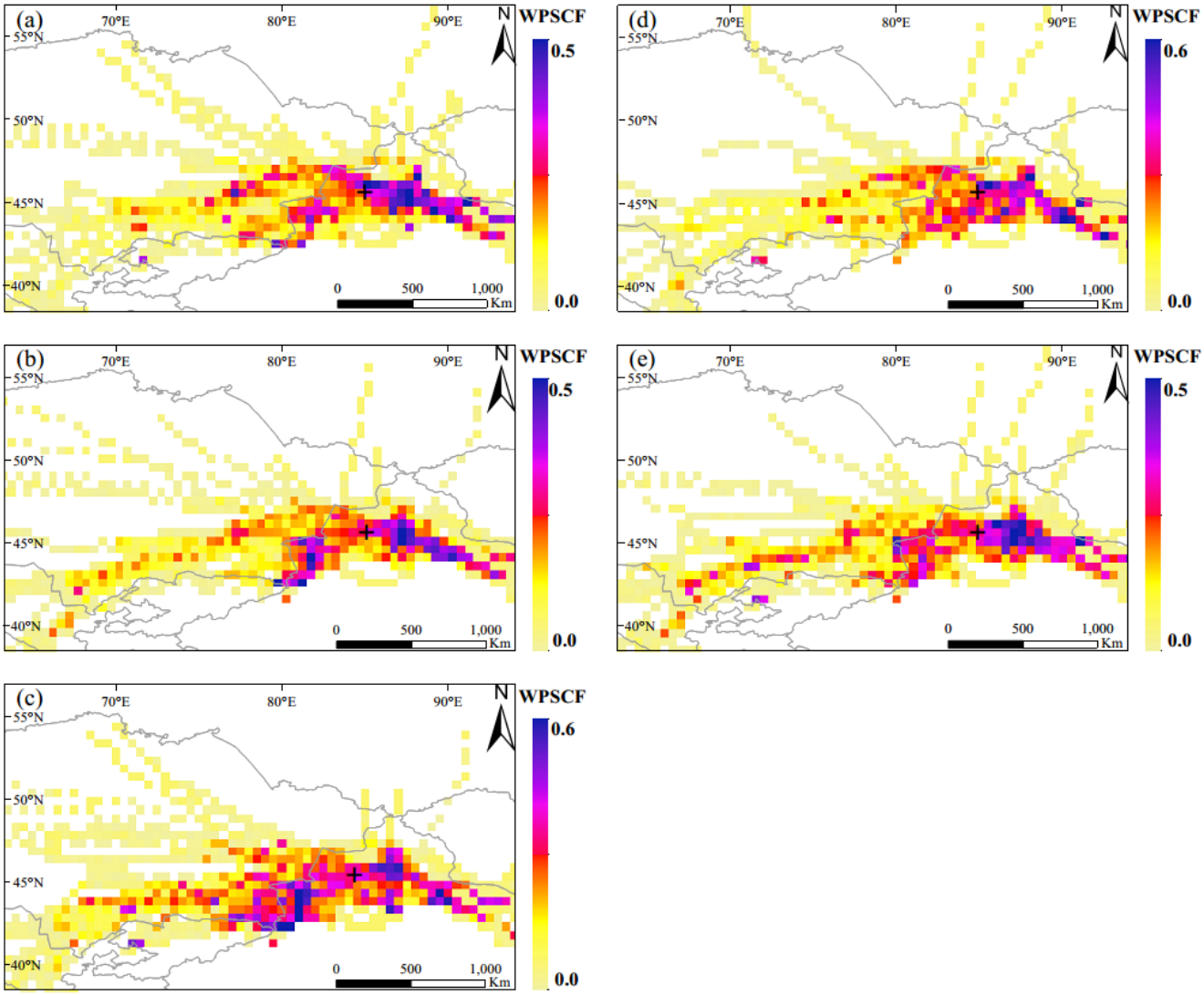

Figure S8. The WPSCF maps for five identified sources derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in winter. The black cross represents the sampling site.

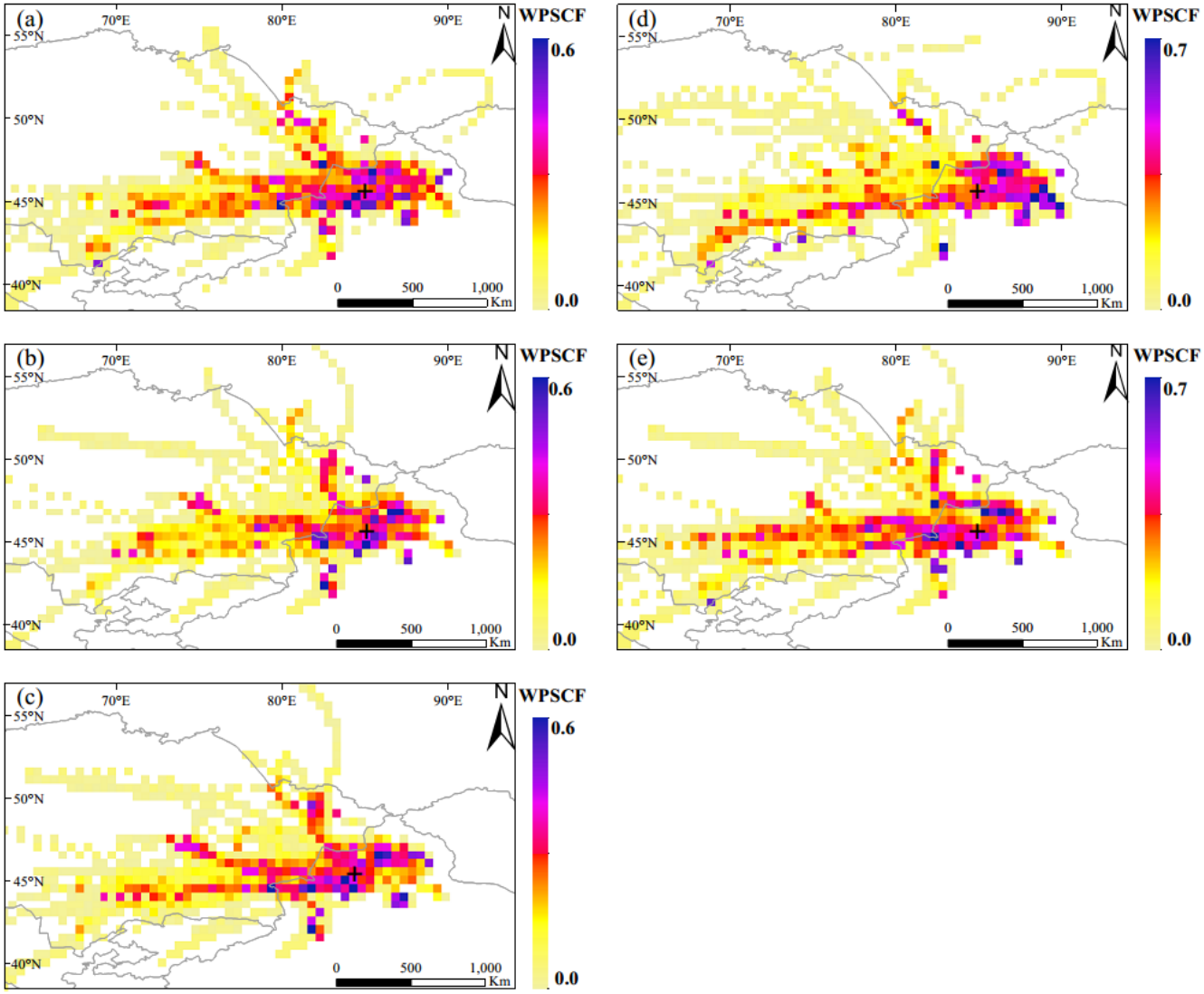

Figure S9. The WPSCF maps for five identified sources derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in spring. The black cross represents the sampling site.

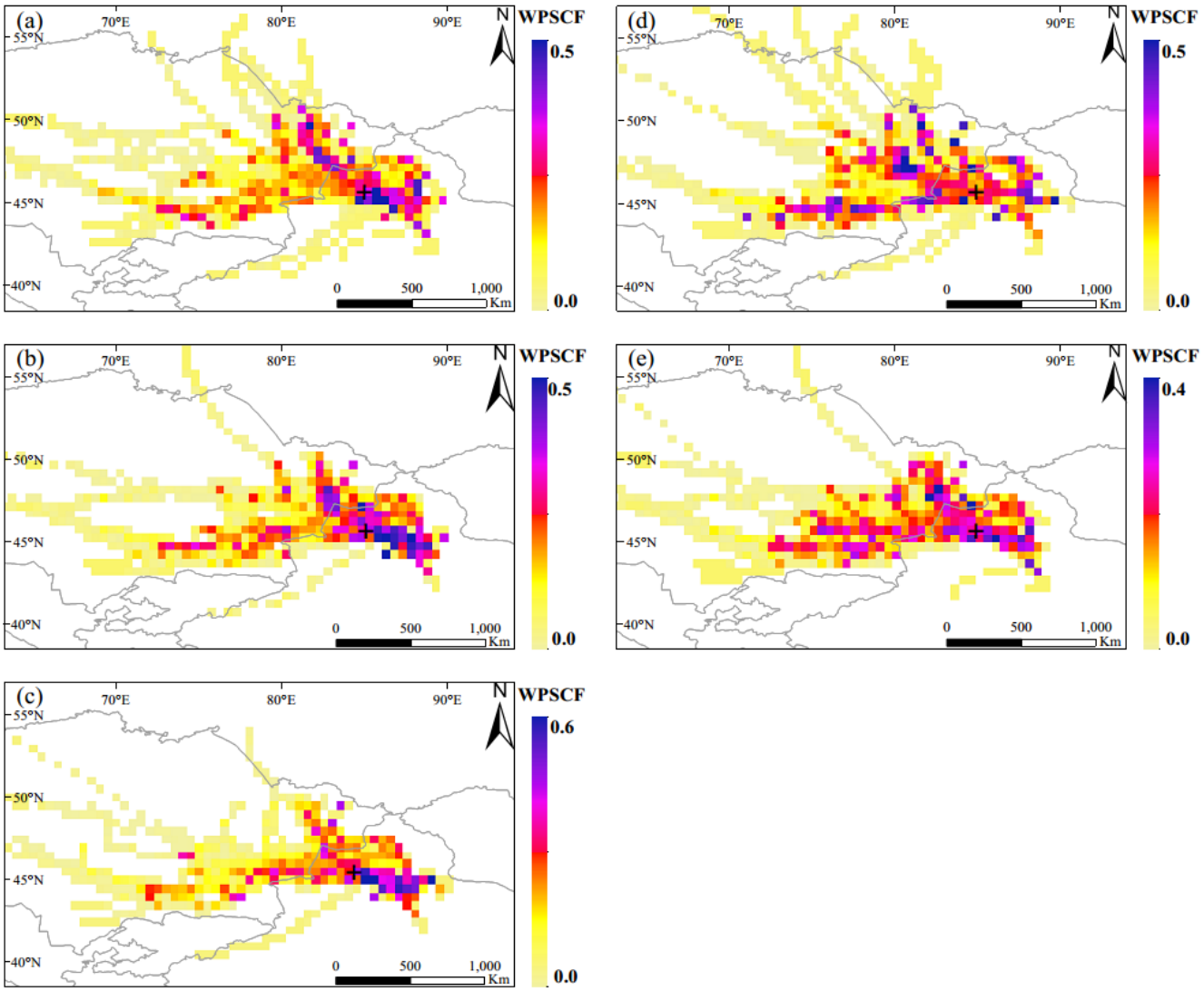

Figure S10. The WPSCF maps for five identified sources derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in summer. The black cross represents the sampling site.

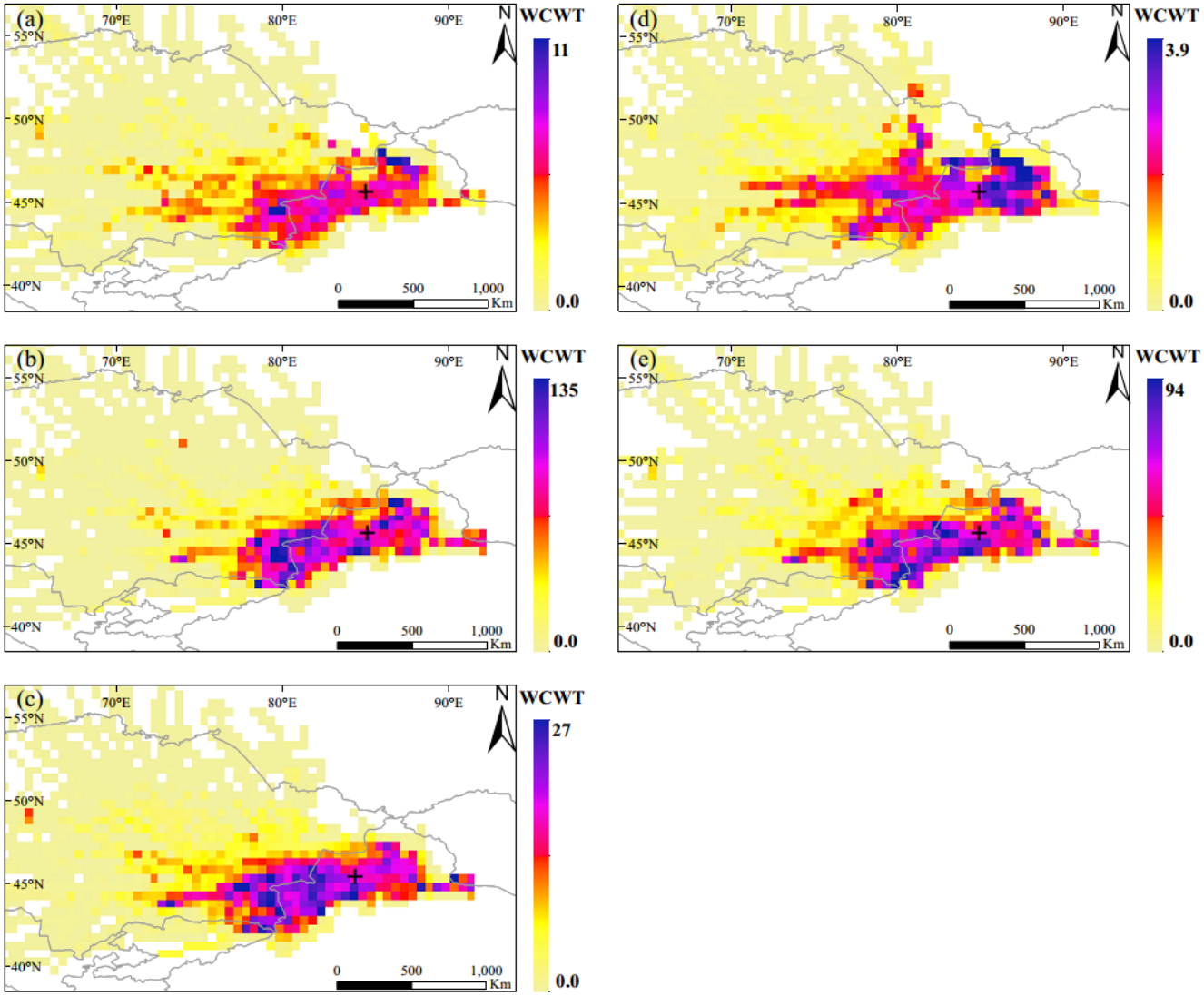

Figure S11. The WCWT maps for five identified sources derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in autumn. The black cross represents the sampling site.

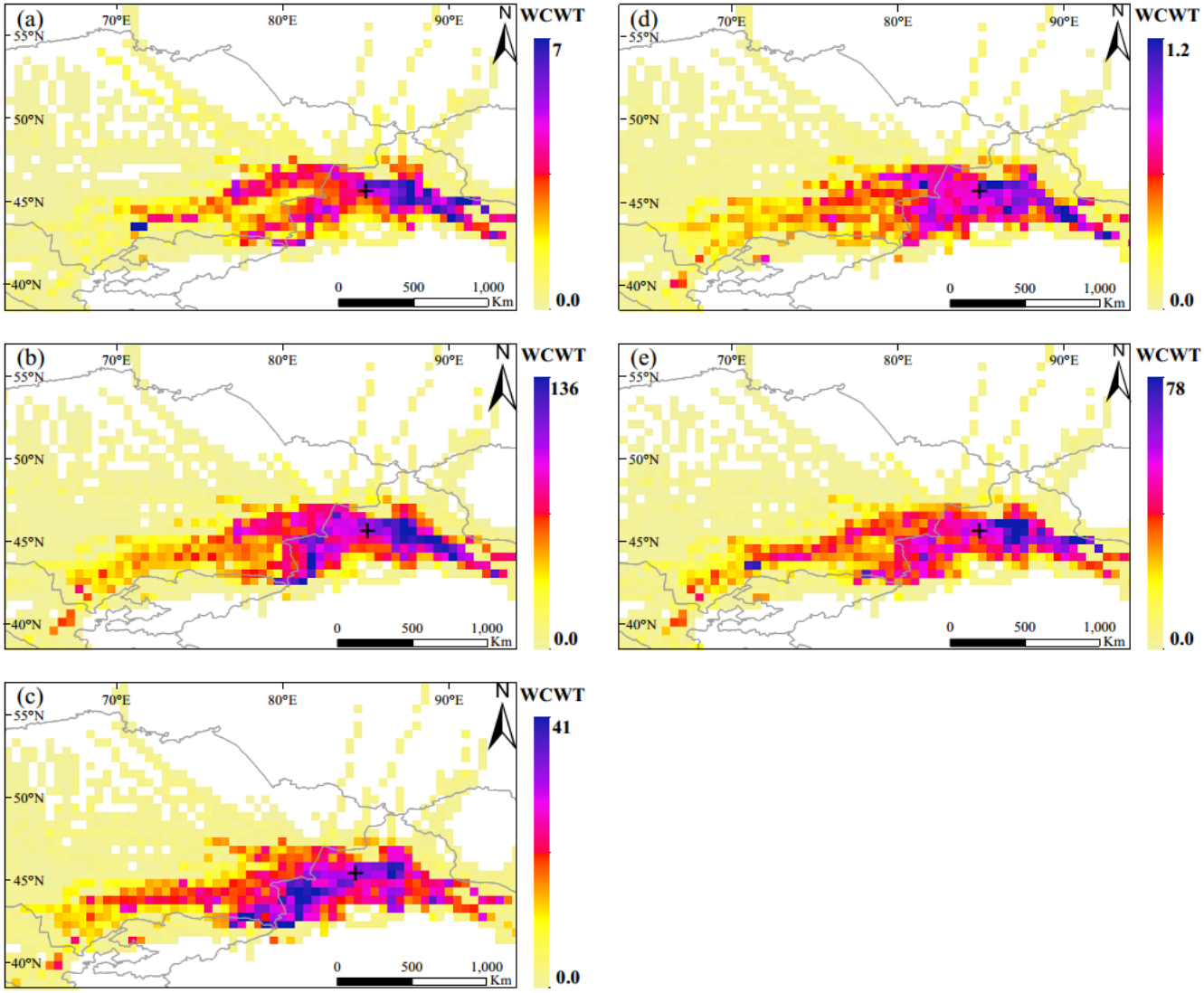

Figure S12. The WCWT maps for five identified source derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in winter. The black cross represents the sampling site.

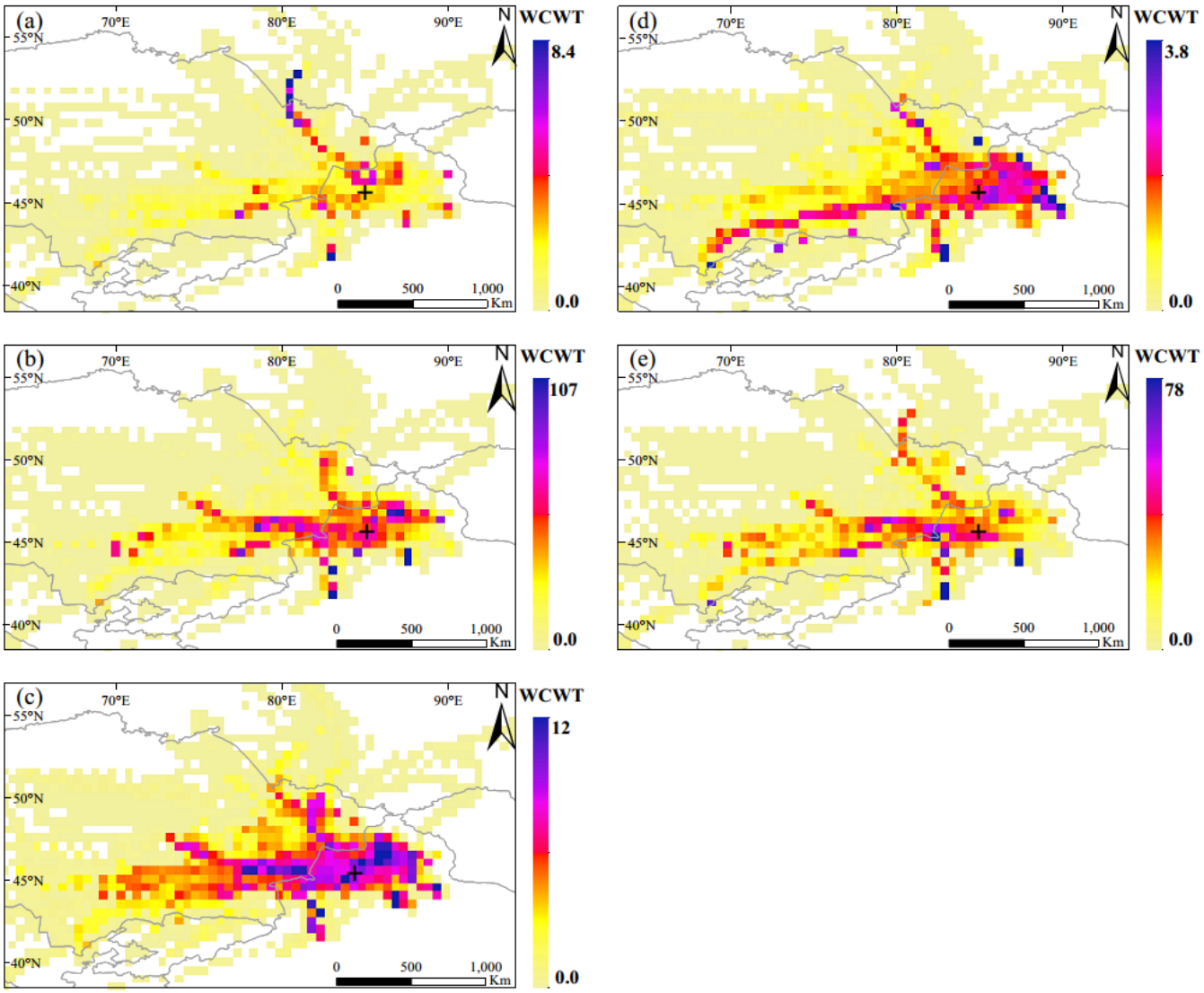

Figure S13. The WCWT maps for five identified source derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in spring. The black cross represents the sampling site.

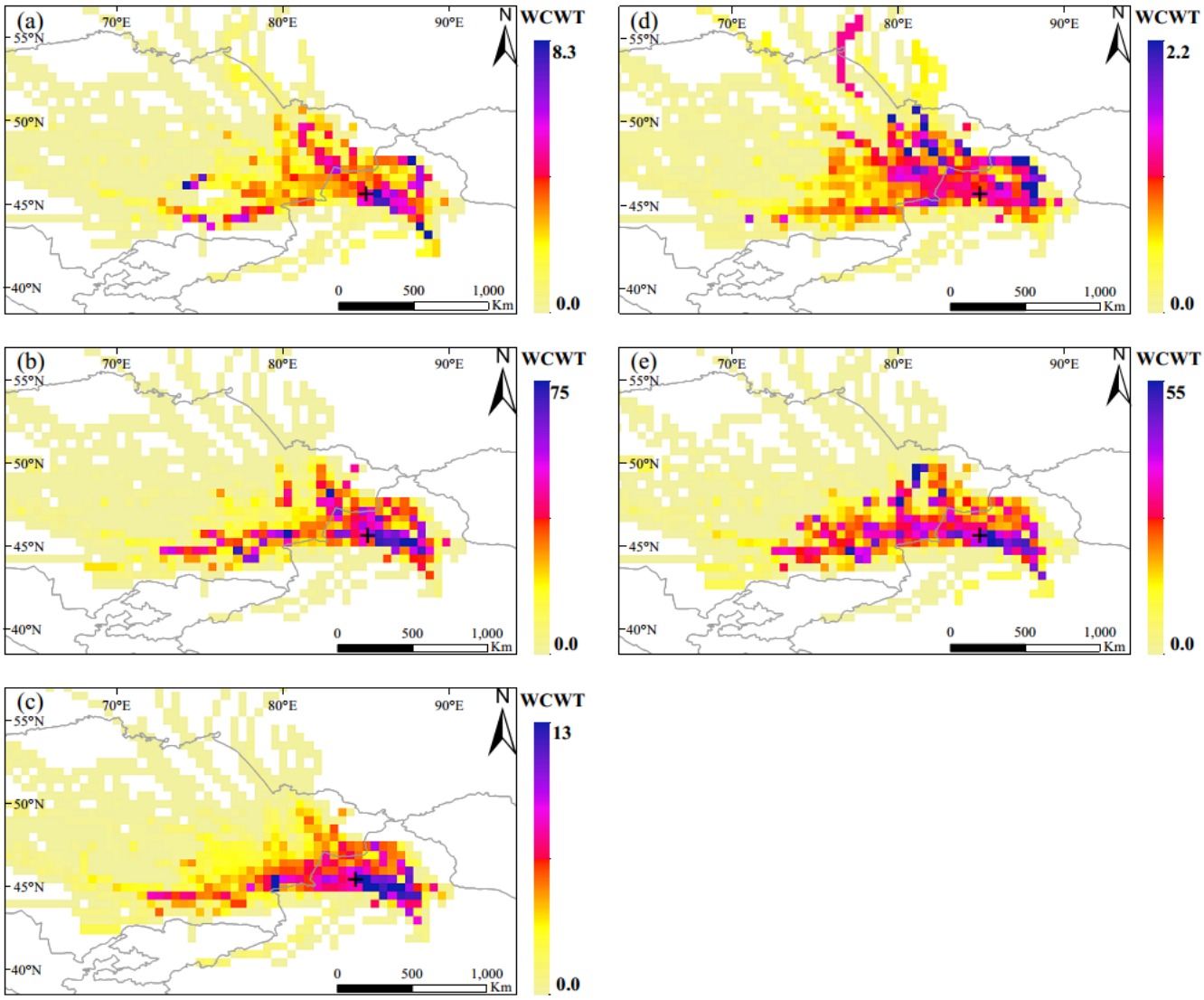

Figure S14. The WCWT maps for five identified sources derived from PMF analysis: oil refinery (a), NG (b), combustion source (c), asphalt (d), and fuel evaporation (e) in summer. The black cross represents the sampling site.