

Supporting information

Measurement report: Spatiotemporal and policy-related variations of PM_{2.5} compositions and sources during 2015-2019 at multisite of a Chinese megacity

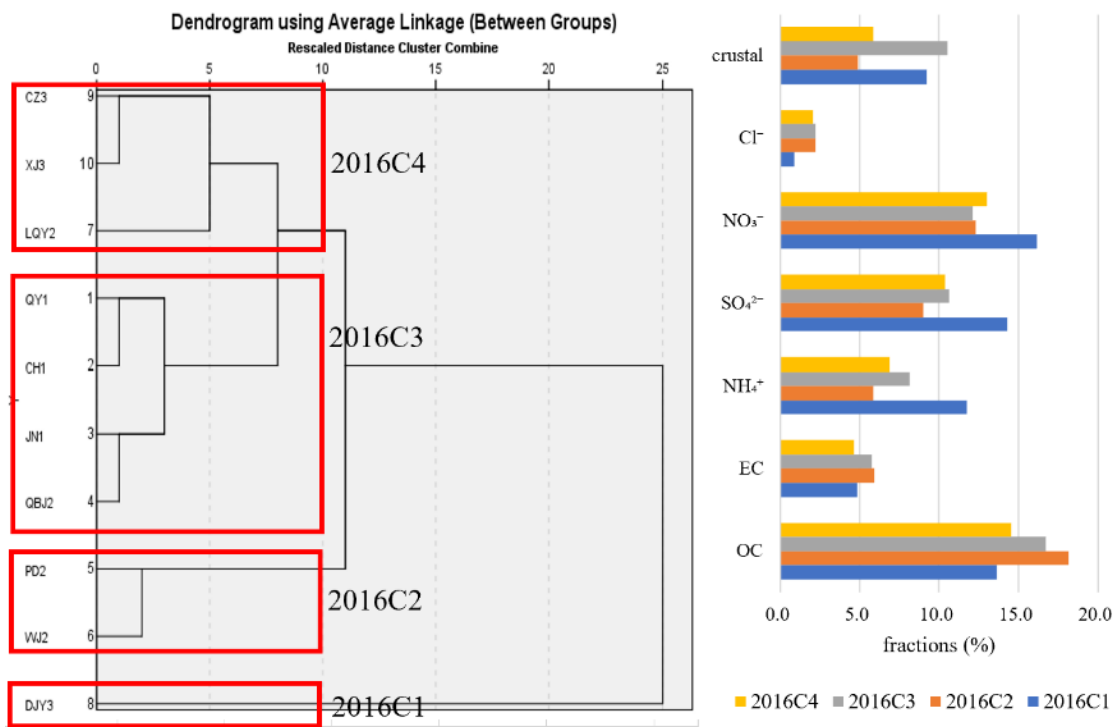
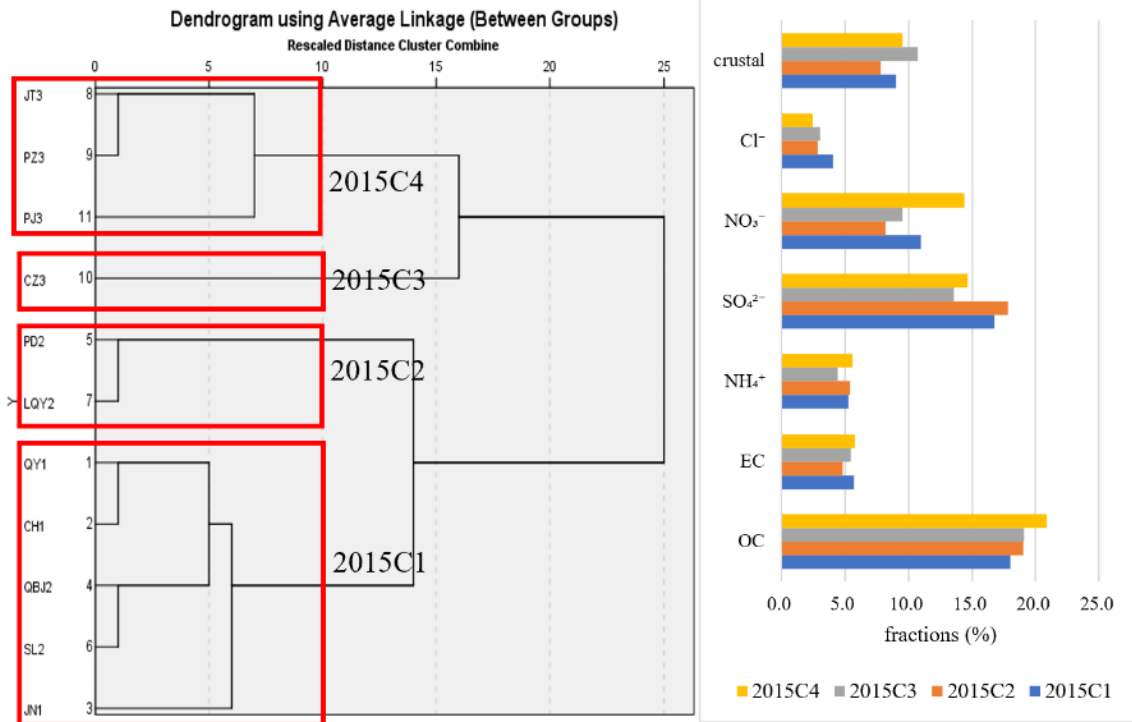
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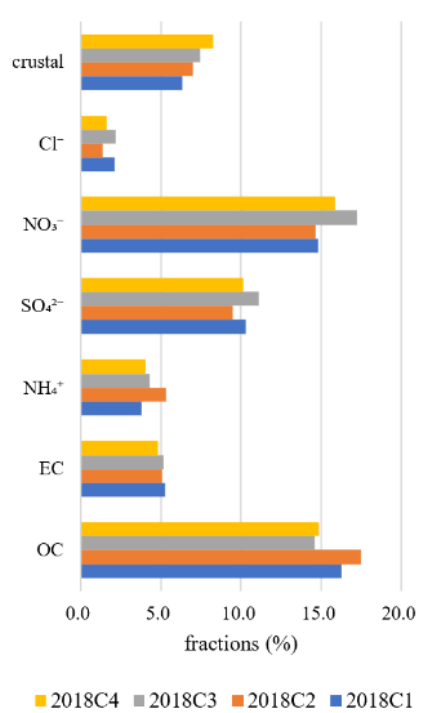
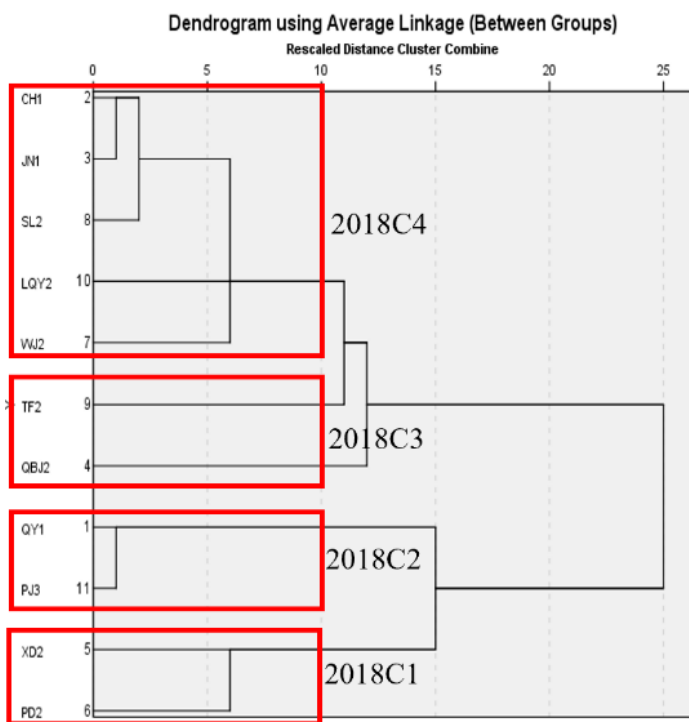
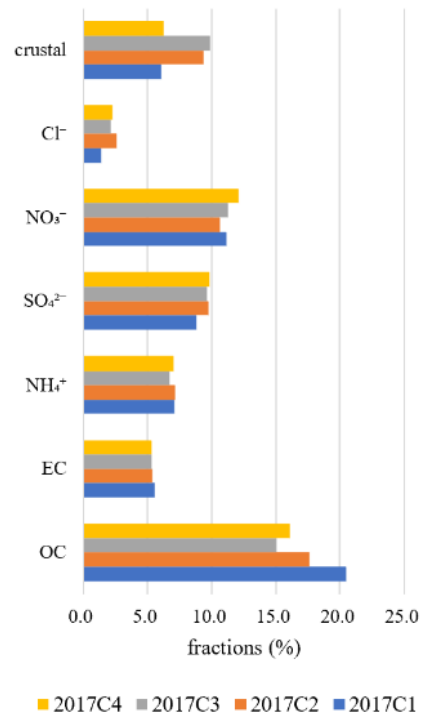
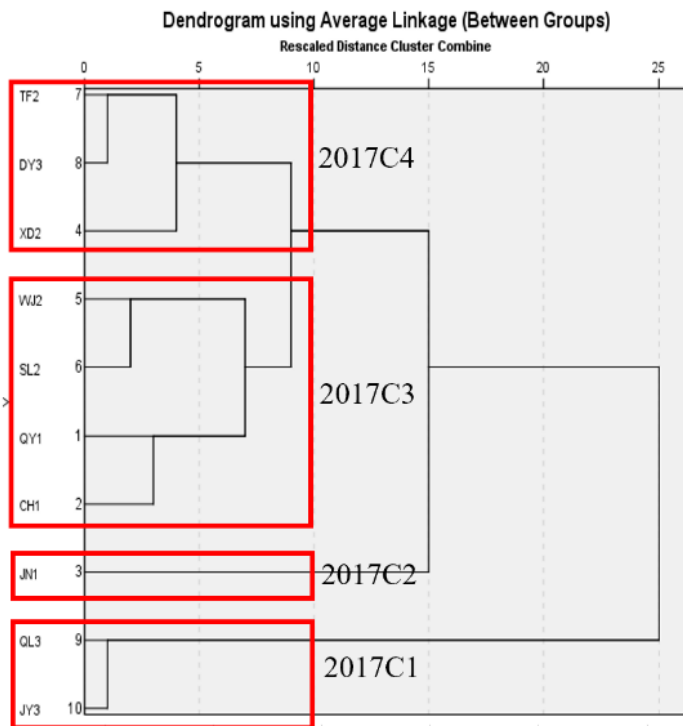
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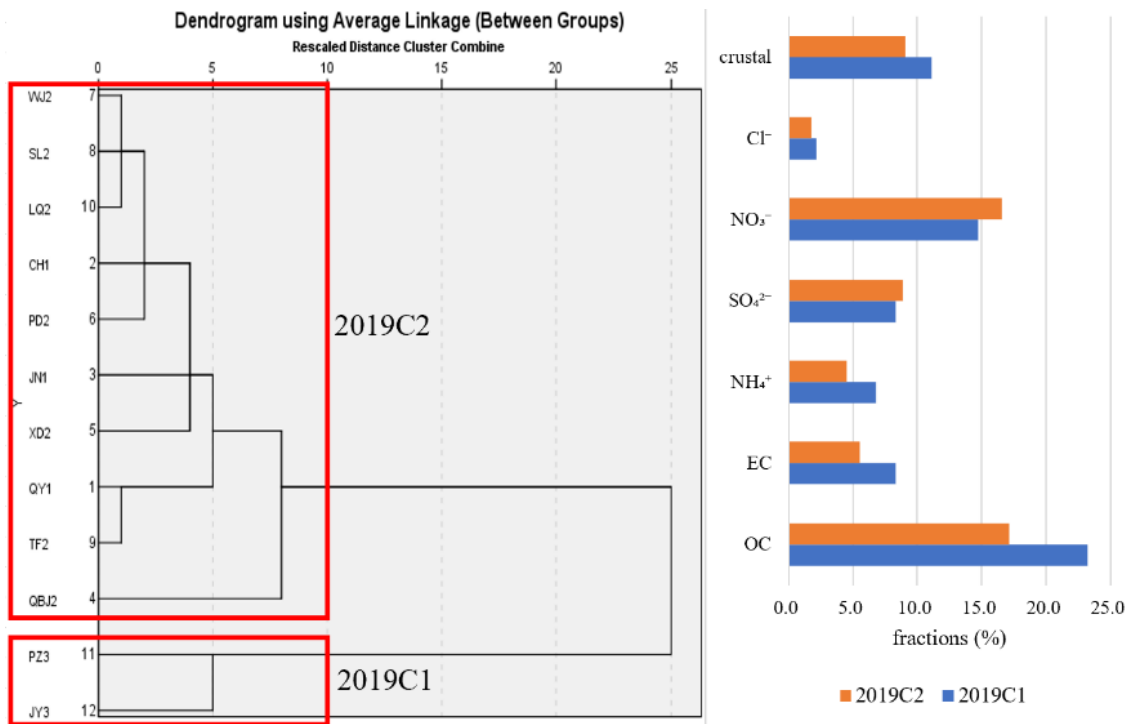


Figure S1. The hierarchical cluster analysis (HCA) results (based on cosine distances) of chemical species (%) at sampling sites for each year and their averaged species fractions.

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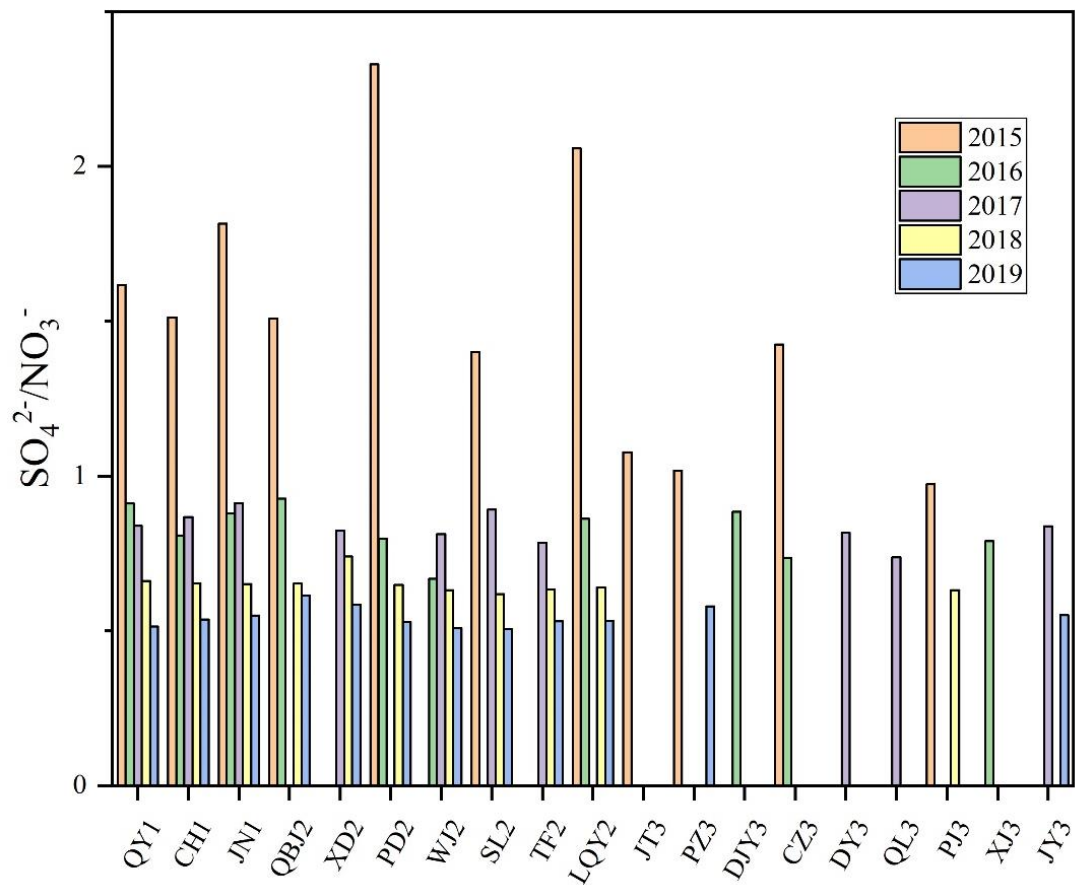


Figure S2. SO₄²⁻/NO₃⁻ mass ratio at each site in 2015-2019.

Table S1. Description of sampling sites and related layers in Chengdu.

sampling site	abbreviation	layer	description
Environment Protection Building	QY1	layer 1	inside the first circle road; high population density;
Chengdu University of Technology	CH1		the higher education cultural district; between the second and third circle road with high traffic;
botanical garden	JN1		adjacent to residential areas and highway;
Qingbaijiang	QBJ2	layer 2	high concentration of iron and chemical industry enterprises;
Xindu	XD2		the furniture and logistics industry district;
Pidu	PD2		prominent in coal-fired boilers and biomass boilers;
Wenjiang	WJ2		close to the residential areas; has food processing industry;
Shuangliu	SL2		has intensive urban construction activities; the airport located in; has wood and glass factories;
Tianfu	TF2		high and new tech development zone;
Longquanyi	LQY2		famous in automobile manufacturing industry;
Jintang	JT3	layer 3	no obvious emission sources surrounded;
Pengzhou	PZ3		location of petrochemical industry;
Dujiangyan	DJY3		air quality is good;
Chongzhou	CZ3		There are many small coal-fired boilers;
Dayi	DY3		air quality is good;
Qionglai	QL3		has well developed wine industry;
Pujiang	PJ3		few industries nearby;
Xinjin	XJ3		traditional chemical industry district with small-scale chemical plants;
Jiayang	JY3		in rapid development; traditional agriculture area;

Table S2. The sampling periods of PM2.5 samples collected at 19 sites in 2015-2019 in Chengdu.

Site	2015	2016	2017	2018	2019
QY1	January 10 to 26	January 11 to 31	January 3 to 16	January 15 to 28	January 8 to 23
CH1	January 10 to 25	January 13 to 30	January 3 to 16	January 15 to 28	January 9 to 23
JN1	January 10 to 25	January 13 to 29	January 4 to 17	January 15 to 28	January 8 to 22
QBJ2	January 9 to 25	January 14 to 28		January 15 to 28	January 8 to 22
XD2			January 4 to 17	January 16 to 29	January 8 to 21
PD2	January 9 to 26	January 13 to 30		January 15 to 28	January 8 to 22
WJ2		January 14 to 30	January 8 to 21	January 15 to 29	January 8 to 22

SL2	January 9 to 25		February 16 to 28	January 15 to 28	January 8 to 23
TF2			January 3 to 16	January 16 to 29	January 8 to 22
LQY2	January 9 to 26	January 25 to 31		January 15 to 28	January 8 to 22
JT3	January 8 to 25				
PZ3	January 15 to 26				January 9 to 23
DJY3		January 13 to 27			
CZ3	January 11 to 23	January 13 to 31			
DY3			January 3 to 17		
QL3			January 3 to 15		
PJ3	January 10 to 25			January 16 to 30	
XJ3		January 13 to 27			
JY3			January 5 to 19		January 9 to 22

Table S3. PM2.5 concentrations ($\mu\text{g m}^{-3}$) at each site from 2015 to 2019.

	Site	2015	2016	2017	2018	2019
	QY1	184	100	133	101	93
Layer 1	CH1	173	115	137	109	94
	JN1	193	103	142	112	96
	QBJ2	183	107		132	113
	XD2			150	118	105
	PD2	180	113		124	104
Layer 2	WJ2		143	134	143	96
	SL2	194		122	123	97
	TF2			150	115	90
	LQY2	155	120		110	80
	JT3	154				
	PZ3	162				98
Layer 3	DJY3		74			
	CZ3	172	137			

DY3		134	
QL3		132	
PJ3	162		114
XJ3		121	
JY3		104	77

Table S4. The meteorological data during sampling period in 2015-2019 in Chengdu.

	Temperature (°C)	Relative humidity (%)	Wind speed (m/s)
2015	7.8	83	1.1
2016	5	76	1.5
2017	7.4	81	1.2
2018	6.1	78	1.6
2019	5.9	77	1.3

Table S5. CV (Coefficient of Variation) of five source contribution at studied area in 2015-2019.

CV	traffic emission	coal combustion and biomass burning	industrial emission	secondary particles	resuspended dust
2015	0.27	0.36	0.44	0.27	0.16
2016	0.39	0.48	0.44	0.49	0.40
2017	0.35	0.46	0.47	0.35	0.40
2018	0.12	0.52	0.22	0.15	0.15
2019	0.08	0.43	0.25	0.17	0.19