

# Supplementary Materials: Characteristics of PM<sub>10</sub> Chemical Source Profiles for Geological Dust from the South-West Region of China. *Atmosphere*, 2016, 7, 146.

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**Table S1.** Statistical measures for similarities and difference among geological source profiles from southwest China.

Composite Level	Profile and Abbreviation		Correlation Coefficient ( <i>r</i> )	<i>T</i> -Statistic <sup>b</sup> ; <i>p</i> Value	Distribution <sup>a</sup> (%)			
	Profile No.1	Profile No.2			<1σ	1σ–2σ	2σ–3σ	>3σ
<i>Level I—Variations due to upper and deep sampling within agricultural field</i>								
<i>Agricultural upper soil vs. Agricultural deep soil</i>								
	ASPOT1	ASPOT2	0.95	0.78	65.0	25.0	5.0	5.0
	ASCRO1	ASCRO2	0.93	0.71	77.5	17.5	2.5	2.5
	ASWAL1	ASWAL2	0.95	0.59	87.5	2.5	7.5	2.5
	ASGRA1	ASGRA2	0.96	0.23	60.0	27.5	7.5	5.0
	ASORA1	ASORA2	0.92	0.80	77.5	15.0	5.0	2.5
<i>Natural upper soil vs. Natural deep soil</i>								
<i>Wetland soil vs. wetland soil</i>								
	NSW1	NSW2	0.95	0.95	92.5	0.0	5.0	2.5
	NSM1	NSM2	0.99	0.96	85.0	7.5	10.0	2.5
	<i>Level I summary</i>				77.9	13.6	6.1	3.2
<i>Level II—Variations within source subtypes</i>								
<i>Urban paved road vs. urban paved road</i>								
<i>Main street vs. main street</i>								
	PVRDM1	PVRDM2	0.91	0.49	85.0	7.5	2.5	5.0
		PVRDM3	0.88	0.55	85.0	10.0	0.0	5.0
		PVRDM4	0.93	0.81	85.0	7.5	2.5	5.0
		PVRDM5	0.95	0.52	62.5	17.5	12.5	7.5
	PVRDM2	PVRDM3	0.89	0.95	60.0	20.0	12.5	7.5
		PVRDM4	0.87	0.64	67.5	17.5	10.0	5.0
		PVRDM5	0.83	0.96	57.5	20.0	15.0	7.5
	PVRDM3	PVRDM4	0.82	0.70	75.0	12.5	5.0	7.5
		PVRDM5	0.89	0.99	72.5	12.5	7.5	7.5
	PVRDM4	PVRDM5	0.95	0.68	60.0	27.5	7.5	5.0
<i>Highway vs. highway</i>								
	PVRDH1	PVRDH2	0.58	0.30	82.5	7.5	2.5	7.5
		PVRDH3	0.88	0.20	82.5	7.5	2.5	7.5

Table S1. Cont.

Composite Level	Profile and Abbreviation		Correlation Coefficient ( <i>r</i> )	T-Statistic <sup>b</sup> ; <i>p</i> Value	Distribution <sup>a</sup> (%)			
	Profile No.1	Profile No.2			<1σ	1σ–2σ	2σ–3σ	>3σ
<b>Level II – Variations within source subtypes</b>								
	PVRDH2	PVRDH3	0.76	0.82	72.5	17.5	2.5	7.5
	<i>Bridge vs. bridge</i>							
	PVRDB1	PVRDB2	0.82	0.63	85.0	5.0	5.0	5.0
		PVRDB3	0.82	0.63	55.0	32.5	7.5	5.0
		PVRDB4	0.84	0.59	82.5	7.5	5.0	5.0
	PVRDB2	PVRDB3	0.82	1.00	77.5	17.5	2.5	2.5
		PVRDB4	0.88	0.97	62.5	17.5	12.5	7.5
	PVRDB3	PVRDB4	0.75	0.97	62.5	25.0	7.5	5.0
	<i>Urban resuspended dust vs. urban resuspended dust</i>							
	<i>Building roof dust vs. building roof dust</i>							
	URDB1	URDB2	0.85	0.81	87.5	7.5	2.5	2.5
		URDB3	0.81	0.45	72.5	15.0	5.0	7.5
	URDB2	URDB3	0.93	0.32	70.0	17.5	7.5	5.0
	<i>Window sill dust vs. window sill dust</i>							
	URDW1	URDW2	0.86	0.63	77.5	10.0	7.5	5.0
		URDW3	0.95	0.68	57.5	35.0	0.0	7.5
	URDW2	URDW3	0.96	0.95	40.0	32.5	22.5	5.0
	<i>Level II summary</i>							
					71.1	16.3	6.7	5.9
<b>Level III – Variations between source subtypes</b>								
	<i>Paved road dust</i>							
	PVRDM	PVRDH	0.78	0.81	17.5	50.0	20.0	12.5
		PVRDB	0.87	0.7	32.5	32.5	32.5	2.5
	PVRDH	PVRDB	0.8	0.53	12.5	25.0	50.0	12.5
	<i>Agricultural soil dust</i>							
	ASPOT	ASCOR	0.89	0.44	37.5	37.5	12.5	12.5
		ASWAL	0.89	0.53	70.0	17.5	5.0	7.5
		ASGRA	0.86	0.44	57.5	27.5	7.5	7.5
		ASORA	0.89	0.62	52.5	22.5	22.5	2.5
	ASCRO	ASWAL	0.93	0.88	47.5	20.0	27.5	5.0
		ASGRA	0.91	0.98	45.0	37.5	10.0	7.5
		ASORA	0.93	0.74	30.0	42.5	17.5	10.0

Table S1. Cont.

Composite Level	Profile and Abbreviation		Correlation Coefficient (r)	T-Statistic <sup>b</sup> ; p Value	Distribution <sup>a</sup> (%)			
	Profile No.1	Profile No.2			<1σ	1σ–2σ	2σ–3σ	>3σ
<i>Level III – Variations between source subtypes</i>								
	ASWAL	ASGRA	0.94	0.87	42.5	27.5	25.0	5.0
		ASORA	0.82	0.85	55.0	25.0	15.0	5.0
	ASGRA	ASORA	0.94	0.73	32.5	35.0	22.5	10.0
	<i>Natural soil dust</i>							
	NSW	NSM	0.96	0.68	30.0	37.5	22.5	10.0
	<i>Urban resuspended dust</i>							
	URDB	URDW	0.78	0.74	37.5	40.0	15.0	7.5
	<i>Level III summary</i>				40.0	31.8	20.3	7.8
<i>Level IV – Variations between source types</i>								
	PVRD	AS	0.23	0.0016	97.5	0.0	0.0	2.5
		NS	0.54	0.0004	97.5	0.0	0.0	2.5
		URD	0.69	0.0001	97.5	0.0	0.0	2.5
	AS	NS	0.51	0.0005	77.5	15.0	2.5	5.0
		URD	0.55	0.002	50.0	27.5	15.0	7.5
	NS	URD	0.61	0.027	50.0	20.0	22.5	7.5
	<i>Level IV summary</i>				78.3	10.4	6.7	4.6

<sup>a</sup> Fraction of species that differ by less than multiples of the difference as determined from residual/uncertainty (R/U) ratios.  $R/U = (F_{i1} - F_{i2}) / (\sigma_{i1}^2 - \sigma_{i2}^2)^{0.5}$ ; <sup>b</sup> A value < 0.05 indicates that there is less than a 5% probability that the profiles were different.

Table S2. Composite geological source profiles (percentage of PM<sub>10</sub> mass) from south-west China.

Source Type	Paved Road Dust (PVRD)			Natural Soil (NS)			
	PVRDM	PVRDH	PVRDB	PVRD	NSW	NSM	NS
	Main Street	Highway	Bridge	Composite	Wetland	Mountain	Composite
Na	1.496 ± 0.8726	1.9994 ± 1.5951	1.0597 ± 0.3881	1.5167 ± 1.0818	1.0561 ± 0.3993	0.6377 ± 0.0232	0.8469 ± 0.3444
Mg	2.633 ± 1.0588	0.7654 ± 1.0782	0.9958 ± 0.601	1.5546 ± 1.2628	0.7591 ± 0.2065	1.2541 ± 0.434	1.0066 ± 0.4111
Al	8.1152 ± 2.8675	3.5977 ± 5.7898	8.3722 ± 1.4294	6.8043 ± 4.2051	9.7007 ± 1.7102	7.338 ± 1.7005	8.5194 ± 2.0218
Si	9.2578 ± 2.9585	10.0707 ± 6.4791	17.9374 ± 5.798	12.1786 ± 6.3059	20.6562 ± 2.2373	13.056 ± 7.7844	16.8561 ± 6.6797
K	1.2153 ± 0.279	3.9129 ± 3.1778	2.1128 ± 0.9556	2.3215 ± 2.1036	3.3069 ± 0.747	0.8953 ± 0.885	2.1011 ± 1.4955
Ca	13.2448 ± 2.4656	3.2035 ± 4.7903	7.324 ± 2.4563	8.3334 ± 5.3571	5.7294 ± 0.8357	7.2347 ± 2.1536	6.4821 ± 1.713
Ti	0.0601 ± 0.0276	0.3841 ± 0.4724	0.2265 ± 0.0662	0.211 ± 0.02877	0.3167 ± 0.0423	0.1628 ± 0.1895	0.2397 ± 0.1514

Table S2. Cont.

Source Type	Paved Road Dust (PVRD)			Natural Soil (NS)			
	PVRDM	PVRDH	PVRDB	PVRD	NSW	NSM	NS
Site	Main Street	Highway	Bridge	Composite	Wetland	Mountain	Composite
V	0.0122 ± 0.0091	0.2656 ± 0.2824	0.0115 ± 0.0056	0.0899 ± 0.028	0.0154 ± 0.0032	0.0083 ± 0.0027	0.0119 ± 0.0047
Cr	0.0018 ± 0.002	0.0245 ± 0.0053	0.0256 ± 0.0304	0.7636 ± 0.2657	0.0139 ± 0.0039	0.0059 ± 0.0064	0.0082 ± 0.0067
Mn	0.0755 ± 0.0454	0.4972 ± 0.1602	0.1313 ± 0.0253	0.2224 ± 0.0494	0.1176 ± 0.0196	0.0839 ± 0.0218	0.1007 ± 0.0263
Fe	2.386 ± 0.9288	2.1609 ± 3.3594	2.738 ± 1.2279	2.425 ± 1.9867	2.4215 ± 0.6132	2.5876 ± 0.6997	2.5046 ± 0.6155
Co	0.0011 ± 0.0005	0.0058 ± 0.0012	0.0022 ± 0.0005	0.0029 ± 0.001	0.0025 ± 0.0005	0.0013 ± 0.0006	0.0019 ± 0.0008
Ni	0.0052 ± 0.0078	0.0704 ± 0.1358	0.0059 ± 0.0037	0.0255 ± 0.0078	0.0063 ± 0.0014	0.0061 ± 0.0055	0.0062 ± 0.0037
Cu	0.007 ± 0.0087	0.0284 ± 0.0256	0.0198 ± 0.0107	0.0175 ± 0.0081	0.0163 ± 0.0106	0.0203 ± 0.0188	0.0183 ± 0.0143
Zn	0.0187 ± 0.0227	0.459 ± 0.1517	0.0624 ± 0.0113	0.1676 ± 0.0445	0.0236 ± 0.0116	0.0139 ± 0.006	0.0187 ± 0.01
Ga	0.0007 ± 0.0005	0.0024 ± 0.0028	0.0042 ± 0.0037	0.0023 ± 0.0029	0.005 ± 0.0066	0.0036 ± 0.0035	0.0043 ± 0.005
As	0.0006 ± 0.0003	0.0984 ± 0.0179	0.0022 ± 0.0013	0.0031 ± 0.0011	0.003 ± 0.0006	0.0012 ± 0.001	0.0021 ± 0.0012
Se	0.0004 ± 0.0003	0.0009 ± 0.0006	0.0007 ± 0.0002	0.0007 ± 0.0004	0.0008 ± 0.0006	0.0004 ± 0.0002	0.0006 ± 0.0005
Sr	0.0377 ± 0.0205	0.073 ± 0.117	0.0376 ± 0.0066	0.0485 ± 0.0254	0.0544 ± 0.0184	0.0446 ± 0.0139	0.0495 ± 0.016
Cd	0.0001 ± 0.0001	0.0017 ± 0.0029	0.0004 ± 0.0002	0.0006 ± 0.0017	0.0001 ± 0	–	0.0001 ± 0
Sn	0.0001 ± 0.0001	1.4903 ± 0.7612	0.0017 ± 0.0012	0.4591 ± 0.1621	0.0005 ± 0.0002	0.0005 ± 0.0005	0.0005 ± 0.0003
Sb	0.0002 ± 0.0002	0.0007 ± 0.0007	0.0012 ± 0.0007	0.0007 ± 0.0001	0.0002 ± 0	0.0002 ± 0.0001	0.0002 ± 0.0001
Ba	0.032 ± 0.0376	0.0225 ± 0.0202	0.0469 ± 0.0165	0.0337 ± 0.0282	0.0541 ± 0.0093	0.0279 ± 0.0232	0.041 ± 0.0215
Be	0.0004 ± 0.0003	0.0264 ± 0.0544	0.0003 ± 0.0001	0.0084 ± 0.0313	0.0003 ± 0.0001	0.0002 ± 0.0001	0.0002 ± 0.0001
Tl	–	0.1304 ± 0.0584	0.0001 ± 0	0.0402 ± 0.0015	0.0001 ± 0	0.0001 ± 0.0001	0.0001 ± 0.0001
Pb	0.0076 ± 0.0136	0.3868 ± 0.1295	0.0165 ± 0.0054	0.127 ± 0.0425	0.0062 ± 0.0015	0.0039 ± 0.0024	0.0051 ± 0.0022
F <sup>-</sup>	0.0054 ± 0.0022	0.0096 ± 0.0055	0.0045 ± 0.0018	0.0064 ± 0.004	0.0054 ± 0.0007	0.0042 ± 0.0015	0.0048 ± 0.0013
Cl <sup>-</sup>	0.0905 ± 0.0576	0.1869 ± 0.1575	0.2572 ± 0.1314	0.1715 ± 0.1343	0.1162 ± 0.0254	0.1019 ± 0.0295	0.1091 ± 0.0266
NO <sub>2</sub> <sup>-</sup>	0.0327 ± 0.0208	0.1464 ± 0.108	0.1436 ± 0.173	0.1018 ± 0.1221	0.0659 ± 0.0338	0.0813 ± 0.0529	0.0736 ± 0.0419
SO <sub>4</sub> <sup>2-</sup>	0.0416 ± 0.0184	0.7783 ± 0.6267	0.9944 ± 0.5861	0.5614 ± 0.324	1.4032 ± 0.735	0.2662 ± 0.2251	0.8347 ± 0.7891
NO <sub>3</sub> <sup>-</sup>	0.0023 ± 0.0025	0.0736 ± 0.0898	0.1999 ± 0.2455	0.085 ± 0.0162	0.1112 ± 0.021	0.0399 ± 0.0457	0.0756 ± 0.0503
Na <sup>+</sup>	0.0732 ± 0.0271	0.0985 ± 0.072	0.1476 ± 0.0598	0.1039 ± 0.0609	0.2226 ± 0.1521	0.0432 ± 0.0255	0.1329 ± 0.1392
NH <sub>4</sub> <sup>+</sup>	0.0045 ± 0.0044	0.029 ± 0.0192	0.0294 ± 0.0291	0.0197 ± 0.0123	0.0666 ± 0.011	0.0425 ± 0.0469	0.0545 ± 0.0341
K <sup>+</sup>	0.1336 ± 0.0352	0.1056 ± 0.0746	0.1547 ± 0.0776	0.1315 ± 0.0638	0.0628 ± 0.0065	0.1372 ± 0.1594	0.1 ± 0.1118
Mg <sup>2+</sup>	0.0586 ± 0.0193	0.0915 ± 0.0727	0.1388 ± 0.0455	0.0934 ± 0.0578	0.0704 ± 0.0188	0.0515 ± 0.0087	0.061 ± 0.0169
Ca <sup>2+</sup>	1.6647 ± 0.7674	2.6668 ± 2.0464	3.7555 ± 1.5384	2.6164 ± 1.681	3.1856 ± 0.6841	2.607 ± 1.7867	2.8963 ± 1.2901
OC	7.0984 ± 1.4193	4.6598 ± 3.1662	6.8657 ± 1.556	6.2764 ± 2.3298	3.2503 ± 0.4591	3.7179 ± 0.7538	3.4841 ± 0.6296
EC	0.1932 ± 0.1741	0.7057 ± 0.9885	0.5854 ± 0.3218	0.4716 ± 0.6052	0.004 ± 0.0007	0.066 ± 0.0122	0.065 ± 0.0087
TC	7.2916 ± 1.3282	5.3679 ± 3.7504	7.4511 ± 1.8103	6.7488 ± 2.5252	3.2506 ± 0.4593	3.7237 ± 0.7621	3.4872 ± 0.635

Table S2. Cont.

Source Type	Urban Resuspended Dust (URD)				Agricultural Soil (AS)				
	URDB	URDW	URD	ASPOT	ASCOR	ASWAL	ASGRA	ASORA	AS
Site	Building Roof	Window Sill	Composite	Potato	Corn	Walnut	Grape	Orange	Composite
Na	0.7435 ± 0.4039	0.7889 ± 0.1335	0.7616 ± 0.3117	0.0742 ± 0.0178	0.4625 ± 0.257	0.6182 ± 0.1545	0.8659 ± 0.2593	1.2611 ± 1.1004	0.6564 ± 0.6179
Mg	0.9943 ± 0.4765	1.7844 ± 0.4356	1.3103 ± 0.5966	0.4199 ± 0.1106	1.0004 ± 0.4661	0.7283 ± 0.2498	0.8648 ± 0.475	2.6691 ± 2.1351	1.1365 ± 1.2077
Al	6.5225 ± 1.9737	6.3726 ± 0.5643	6.4626 ± 1.5088	13.7301 ± 3.8207	10.7331 ± 1.9551	10.3594 ± 2.4433	10.3703 ± 4.7666	9.5981 ± 1.4414	10.9582 ± 3.1516
Si	10.5817 ± 6.2	14.8235 ± 1.3038	12.2784 ± 5.1692	9.6468 ± 5.0819	18.1483 ± 10.0831	17.2745 ± 4.5152	20.2891 ± 3.5643	14.0964 ± 9.4381	15.891 ± 7.3386
K	1.2573 ± 1.4386	2.6058 ± 0.5177	1.7967 ± 1.313	0.5668 ± 0.2046	1.5834 ± 1.2001	1.8259 ± 1.4513	0.7997 ± 0.5329	1.46 ± 1.5418	1.2472 ± 1.1092
Ca	6.8524 ± 3.4908	5.5008 ± 0.761	6.3118 ± 2.7295	1.9072 ± 2.2883	4.2499 ± 0.5551	4.6001 ± 1.8938	5.3269 ± 3.4289	8.2579 ± 4.0394	4.8684 ± 3.2061
Ti	0.1992 ± 0.1895	0.3334 ± 0.0446	0.2529 ± 0.1594	0.1054 ± 0.0318	0.2971 ± 0.1086	0.2667 ± 0.1295	0.2486 ± 0.1605	0.4841 ± 0.1561	0.2804 ± 0.1676
V	0.0034 ± 0.0019	0.0116 ± 0.0028	0.0066 ± 0.0048	0.0116 ± 0.004	0.0139 ± 0.0057	0.022 ± 0.0099	0.0142 ± 0.0117	0.0173 ± 0.0146	0.0158 ± 0.0096
Cr	0.0068 ± 0.0146	0.0188 ± 0.0039	0.0116 ± 0.0127	0.0121 ± 0.0066	0.0133 ± 0.0063	0.0325 ± 0.0249	0.0152 ± 0.0159	0.0141 ± 0.0076	0.0174 ± 0.0149
Mn	0.1116 ± 0.0616	0.0999 ± 0.017	0.1069 ± 0.0473	0.1402 ± 0.0511	0.1752 ± 0.0934	0.1622 ± 0.117	0.1347 ± 0.0815	0.1566 ± 0.1194	0.1538 ± 0.0865
Fe	3.0207 ± 2.1379	3.0003 ± 0.7171	3.0125 ± 1.6465	3.8104 ± 1.9693	4.9193 ± 2.1035	4.5272 ± 3.1033	4.2413 ± 2.6317	3.9583 ± 0.776	4.2913 ± 2.0464
Co	0.0032 ± 0.0037	0.0021 ± 0.0003	0.0028 ± 0.0029	0.002 ± 0.0005	0.0025 ± 0.0006	0.0025 ± 0.0011	0.002 ± 0.0008	0.0026 ± 0.0019	0.0023 ± 0.001
Ni	0.0008 ± 0.0015	0.0081 ± 0.003	0.0037 ± 0.0023	0.0066 ± 0.0017	0.0175 ± 0.0144	0.0245 ± 0.0274	0.0121 ± 0.0173	0.0035 ± 0.0038	0.0128 ± 0.0162
Cu	0.0126 ± 0.0102	0.0234 ± 0.0093	0.0169 ± 0.0108	0.0081 ± 0.0056	0.0132 ± 0.0118	0.012 ± 0.0033	0.0205 ± 0.0126	0.0137 ± 0.0088	0.0135 ± 0.0091
Zn	0.0073 ± 0.0041	0.0526 ± 0.0168	0.0254 ± 0.0255	0.0243 ± 0.0285	0.0162 ± 0.0092	0.0071 ± 0.0083	0.0102 ± 0.0079	0.0236 ± 0.015	0.0163 ± 0.0158
Ga	0.0009 ± 0.0008	0.0001 ± 0.0001	0.0006 ± 0.0007	0.0044 ± 0.0024	0.0083 ± 0.0044	0.0077 ± 0.0037	0.0034 ± 0.0027	0.0024 ± 0.0017	0.0052 ± 0.0036
As	0.0015 ± 0.0015	0.0025 ± 0.0007	0.0019 ± 0.0013	0.0036 ± 0.0018	0.0015 ± 0.0006	0.002 ± 0.001	0.0018 ± 0.0008	0.0023 ± 0.0008	0.0022 ± 0.0012
Se	0.0004 ± 0.0001	0.0004 ± 0	0.0004 ± 0.0001	0.0002 ± 0.0001	0.0009 ± 0.0006	0.0009 ± 0.0005	0.0012 ± 0.0008	0.0008 ± 0.0006	0.0008 ± 0.0006
Sr	0.0317 ± 0.0233	0.0336 ± 0.0059	0.0324 ± 0.0177	0.0042 ± 0.0029	0.0224 ± 0.014	0.0239 ± 0.0104	0.0251 ± 0.0221	0.0449 ± 0.0337	0.0241 ± 0.0219
Cd	0.0004 ± 0.0005	0.0007 ± 0.0002	0.0005 ± 0.0004	0.0002 ± 0.0002	–	0.0002 ± 0.0002	–	0.0001 ± 0	0.0001 ± 0.0001
Sn	0.0001 ± 0.0001	0.0016 ± 0.0005	0.0007 ± 0.0008	0.001 ± 0.0013	0.0004 ± 0.0004	0.0005 ± 0.0003	0.0004 ± 0.0003	0.0006 ± 0.0005	0.0006 ± 0.0006
Sb	0.0005 ± 0.0006	0.0008 ± 0.0002	0.0006 ± 0.0005	0.0006 ± 0.0008	0.0002 ± 0.0001	0.0004 ± 0.0002	0.0004 ± 0.0004	0.0003 ± 0.0001	0.0004 ± 0.0004
Ba	0.025 ± 0.0337	0.0536 ± 0.0153	0.0365 ± 0.0304	0.0087 ± 0.0055	0.0026 ± 0.0407	0.0389 ± 0.0242	0.0509 ± 0.0391	0.0468 ± 0.029	0.0296 ± 0.034
Be	0.0006 ± 0.0009	0.0003 ± 0.0001	0.0005 ± 0.0007	0.0002 ± 0.0001	0.0004 ± 0.0002	0.0005 ± 0.0003	0.0004 ± 0.0003	0.0006 ± 0.0005	0.0004 ± 0.0003
Tl	0.0001 ± 0.0001	0.0001 ± 0	0.0001 ± 0.0001	0.0004 ± 0.0007	0.0001 ± 0	0.0001 ± 0	0.0001 ± 0	0.0001 ± 0.0001	0.0001 ± 0.0003
Pb	0.0214 ± 0.0228	0.0239 ± 0.0041	0.0224 ± 0.0172	0.0068 ± 0.0062	0.0039 ± 0.001	0.0087 ± 0.0076	0.0074 ± 0.0065	0.006 ± 0.0033	0.0065 ± 0.0051
F <sup>-</sup>	0.0244 ± 0.0222	0.0442 ± 0.0252	0.0323 ± 0.0243	0.0051 ± 0.0026	0.011 ± 0.0096	0.0063 ± 0.0041	0.0155 ± 0.0251	0.0069 ± 0.0067	0.0089 ± 0.0012
Cl <sup>-</sup>	0.2363 ± 0.2884	0.5711 ± 0.1081	0.3702 ± 0.2829	0.1110 ± 0.1340	0.4788 ± 0.6661	0.1866 ± 0.1174	0.1821 ± 0.1642	0.1966 ± 0.1528	0.231 ± 0.1165
NO <sub>2</sub> <sup>-</sup>	0.0499 ± 0.0271	0.2303 ± 0.137	0.122 ± 0.1239	0.0832 ± 0.1376	0.0654 ± 0.0533	0.0446 ± 0.023	0.2102 ± 0.2884	0.1306 ± 0.0882	0.1068 ± 0.1468
SO <sub>4</sub> <sup>2-</sup>	0.8879 ± 0.8163	1.4121 ± 0.2851	1.0976 ± 0.686	0.2918 ± 0.3462	0.8545 ± 0.8847	0.2695 ± 0.1087	0.8767 ± 1.0266	0.2872 ± 0.2365	0.5159 ± 0.6368
NO <sub>3</sub> <sup>-</sup>	0.0016 ± 0.0011	0.4526 ± 0.196	0.182 ± 0.2589	0.1109 ± 0.1572	0.0573 ± 0.0626	0.0501 ± 0.0606	0.1802 ± 0.2804	0.1355 ± 0.155	0.1068 ± 0.1001
Na <sup>+</sup>	0.1897 ± 0.1156	0.1831 ± 0.0338	0.1871 ± 0.0884	0.0587 ± 0.0428	0.048 ± 0.0402	0.0627 ± 0.0374	0.7302 ± 0.8977	0.0508 ± 0.0248	0.1901 ± 0.0453
NH <sub>4</sub> <sup>+</sup>	0.015 ± 0.0146	0.0326 ± 0.0186	0.022 ± 0.0178	0.0248 ± 0.0227	0.971 ± 1.8312	0.0329 ± 0.0292	0.0674 ± 0.0756	0.0577 ± 0.0484	0.2308 ± 0.2184

Table S2. Cont.

Urban Resuspended Dust (URD)				Agricultural Soil (AS)					
Source Type	URDB	URDW	URD	ASPOT	ASCOR	ASWAL	ASGRA	ASORA	AS
Site	Building Roof	Window Sill	Composite	Potato	Corn	Walnut	Grape	Orange	Composite
K <sup>+</sup>	0.2145 ± 0.1786	0.1435 ± 0.0162	0.1861 ± 0.1384	0.0735 ± 0.0566	1.4248 ± 2.6578	0.0937 ± 0.0588	0.6734 ± 1.185	0.0781 ± 0.0506	0.4687 ± 0.1278
Mg <sup>2+</sup>	0.0939 ± 0.0404	0.1104 ± 0.0099	0.1005 ± 0.0318	0.0662 ± 0.0811	0.0581 ± 0.0301	0.0629 ± 0.0168	0.1248 ± 0.046	0.0909 ± 0.0529	0.0806 ± 0.0515
Ca <sup>2+</sup>	2.308 ± 1.8643	3.8997 ± 0.5688	2.9447 ± 1.6476	0.1626 ± 0.0525	2.1385 ± 0.9844	2.0721 ± 0.7479	3.6377 ± 2.9834	2.8209 ± 1.9693	2.1664 ± 1.9112
OC	5.5453 ± 2.1344	5.683 ± 0.1997	5.6004 ± 1.5966	1.669 ± 0.5078	4.5277 ± 1.8213	4.3989 ± 0.6299	4.0072 ± 1.7183	4.608 ± 2.5267	3.8422 ± 1.8409
EC	0.3637 ± 0.3643	0.4577 ± 0.1044	0.4013 ± 0.2823	0.0096 ± 0.0126	0.0469 ± 0.0938	0.1219 ± 0.081	0.0499 ± 0.0848	0.3979 ± 0.7823	0.1753 ± 0.3481
TC	5.909 ± 2.4091	6.1407 ± 0.2918	6.0017 ± 1.8075	1.672 ± 0.5138	4.5746 ± 1.836	4.5208 ± 0.6127	3.5572 ± 0.9741	5.006 ± 2.8864	3.8661 ± 1.8978

Table S3. Environmental background values for elements in surface soil from south-western regions of China.

Element	Na	Mg	Al	Si	K	Ca	Ti	V	Cr	Mn	Fe	Co			
Background value (mg/kg)	900	7100	57,600	257,500	15,600	8010	6200	138.8	95.9	794	41,700	19.2			
Element	Cu	Zn	Ga	As	Se	Sr	Cd	Sn	Sb	Ba	Be	Hg	Tl	Pb	Ni
Background value (mg/kg)	32	99.5	22	20	0.373	53	0.659	2.9	2.24	97.3	2.29	0.11	0.712	35.2	39.1

Table S4. Elemental ratios in geological sources from different urban, loess and desert regions.

Site	Source Types	Reference	Si/Al	K/Al	Ca/Al	Ti/Al	Mn/Al	Fe/Al	Zn/Al	As/Al	Pb/Al
Southwest China	Urban paved road dust	This study	1.79	0.34	1.22	0.03	0.03	0.36	0.0246	0.0005	0.0187
Southwest China	Urban resuspended dust	This study	1.90	0.28	0.98	0.04	0.02	0.47	0.0039	0.0003	0.0035
Southwest China	Agricultural soil	This study	1.45	0.11	0.44	0.03	0.01	0.39	0.0015	0.0002	0.0006
Southwest China	Natural soil	This study	1.98	0.25	0.76	0.03	0.01	0.29	0.0022	0.0002	0.0006
Northeast China	Road and construction dust	Shen et al. [1]	2.73	0.41	2.65	0.09	0.03	0.95	0.0144	—	0.0041
North China Plain	Road and construction dust		2.62	0.47	3.07	0.10	0.03	1.14	0.0230	—	0.0062
Norwest China	Road and construction dust		1.94	0.73	3.73	0.12	0.04	1.35	0.0213	—	0.0086
Taklimakan	Desert soil	Zhang et al. [2]*	3.19	0.38	0.47	0.06	0.01	0.76	0.0040	0.0004	0.0022
Xinjiang Gobi	Desert soil		2.85	0.43	0.92	0.09	0.02	0.98	0.0023	0.0003	0.0003
Loess Plateau	Loess soil	Cao et al. [3]*	2.90	0.47	2.50	0.08	0.02	1.05	0.0032	0.0011	0.0017
HongKong	Ambient samples	Cheng et al. [4]*	1.80	2.37	0.73	0.08	0.10	1.90	1.00	0.05	0.20

\*Data were obtained from the reference, the ratios were calculated from the reference data

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