Revealing soil and tree leaves deposited particulate matter PTE relationship and potential sources in urban environment

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SUPPLEMENTARY MATERIALS

- **SM Figure S1** Tree leaves particulate matter (PM) loads distribution and wind roses for the cities of Yerevan and Gyumri.

- **SM Figure S2** Spatial distribution in Yerevan of the content of potentially toxic element (PTE) in tree leaves.

- **SM Figure S3** Spatial distribution in Yerevan of the content of potentially toxic element (PTE) in soil.

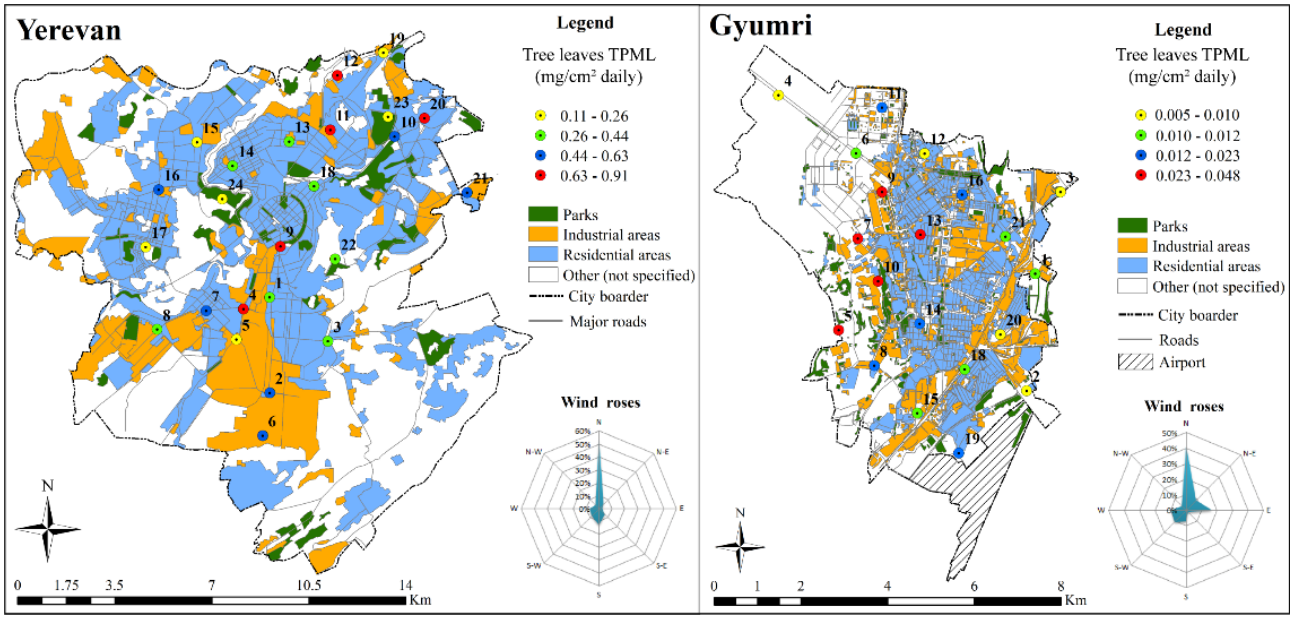
- **SM Figure S4** Spatial distribution in Gyumri of the content of potentially toxic element (PTE) in tree leaves.

- **SM Figure S5** Spatial distribution in Gyumri of the content of potentially toxic element (PTE) in soil.

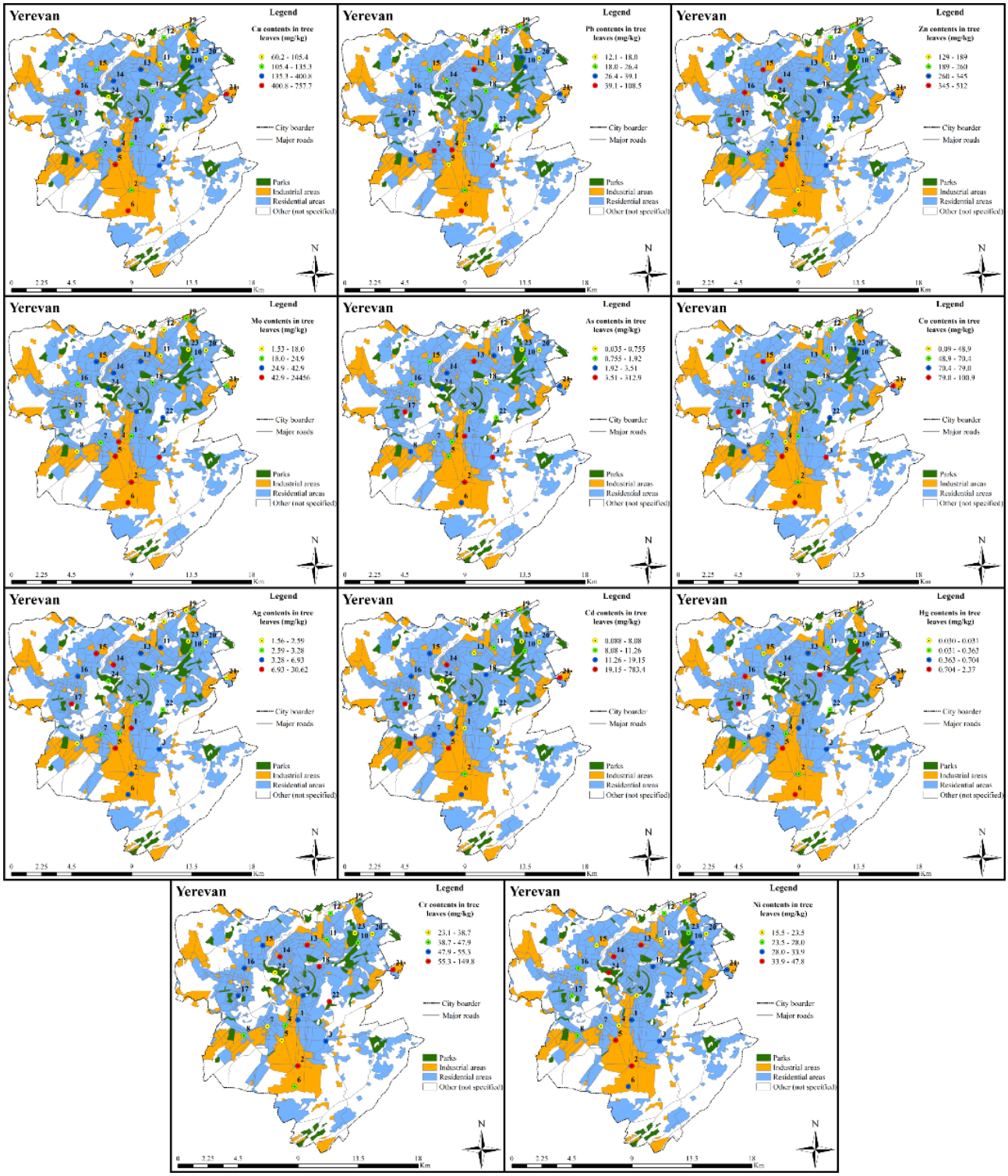
- **SM Table S1.** Spearman correlation matrix of element concentration data in Yerevan soil.

- **SM Table S2.** Spearman correlation matrix of element concentration data in Gyumri soil

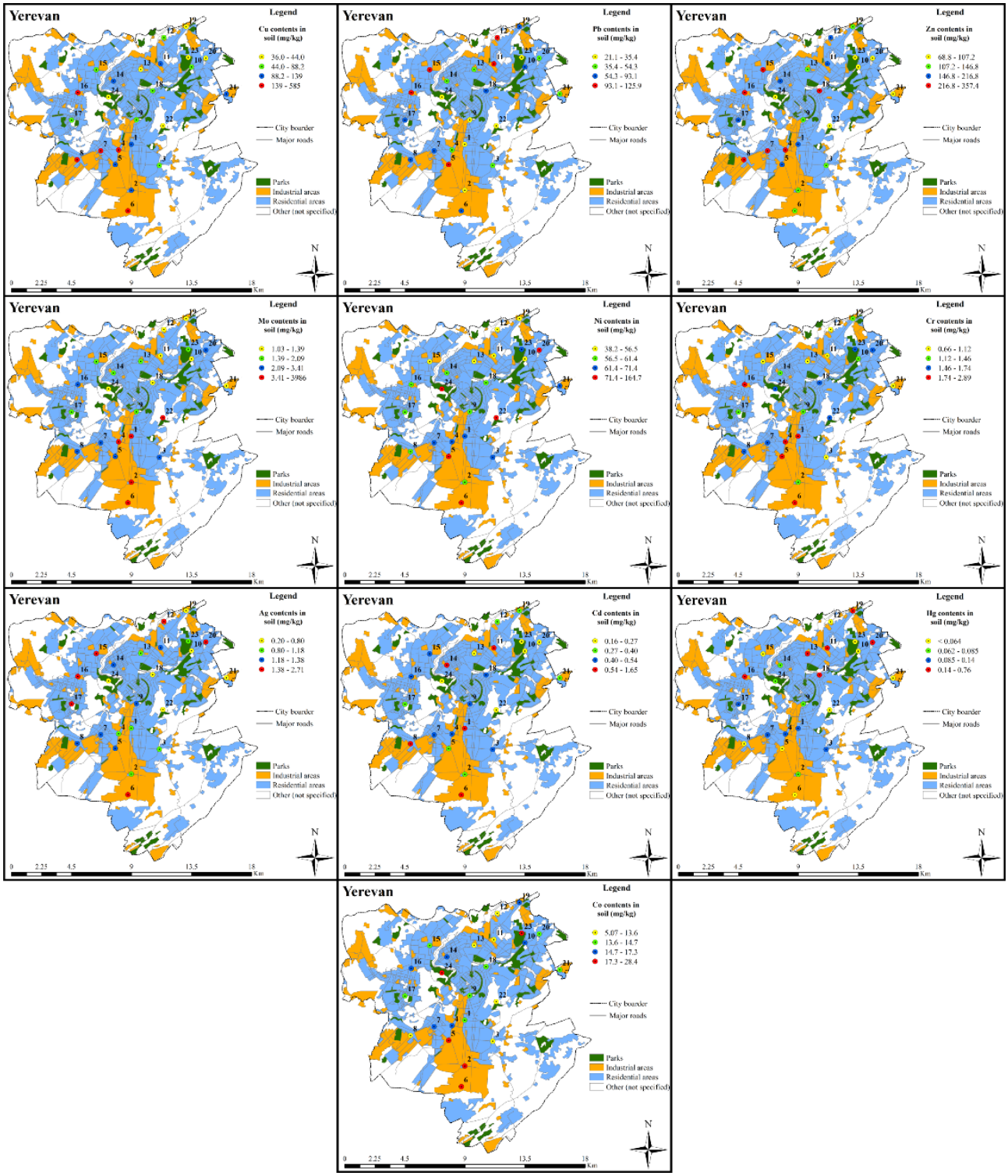
- **SM Table S3.** Factor-variable correlation coefficients for the first two principal components (PC) obtained by a principal component analysis (PCA) with the element concentration data in soil and leaves as input variables, for both Yerevan and Gyumri.



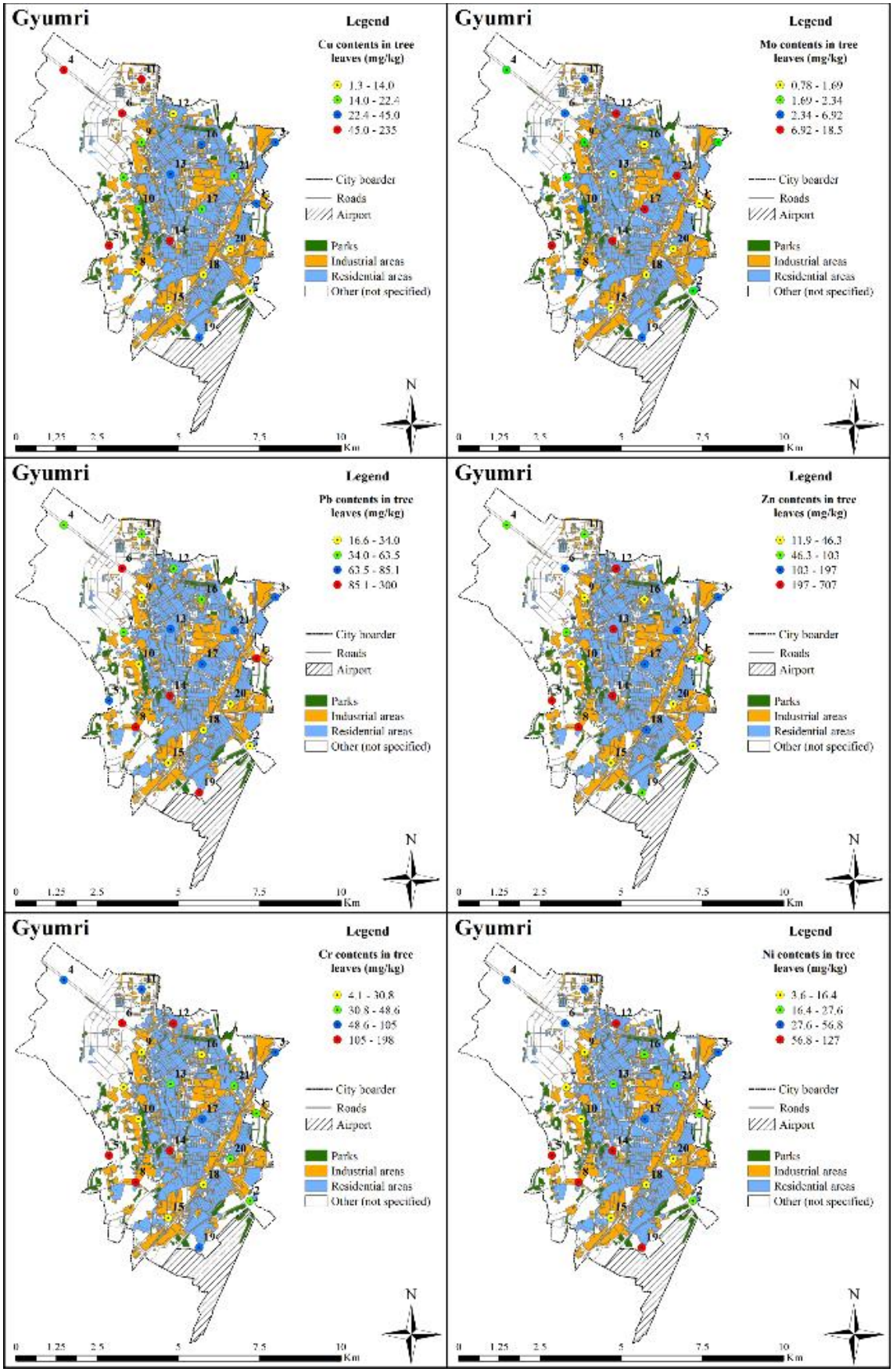
SM Figure S1. Tree leaves particulate matter (PM) loads distribution and wind roses for the cities of Yerevan and Gyumri.



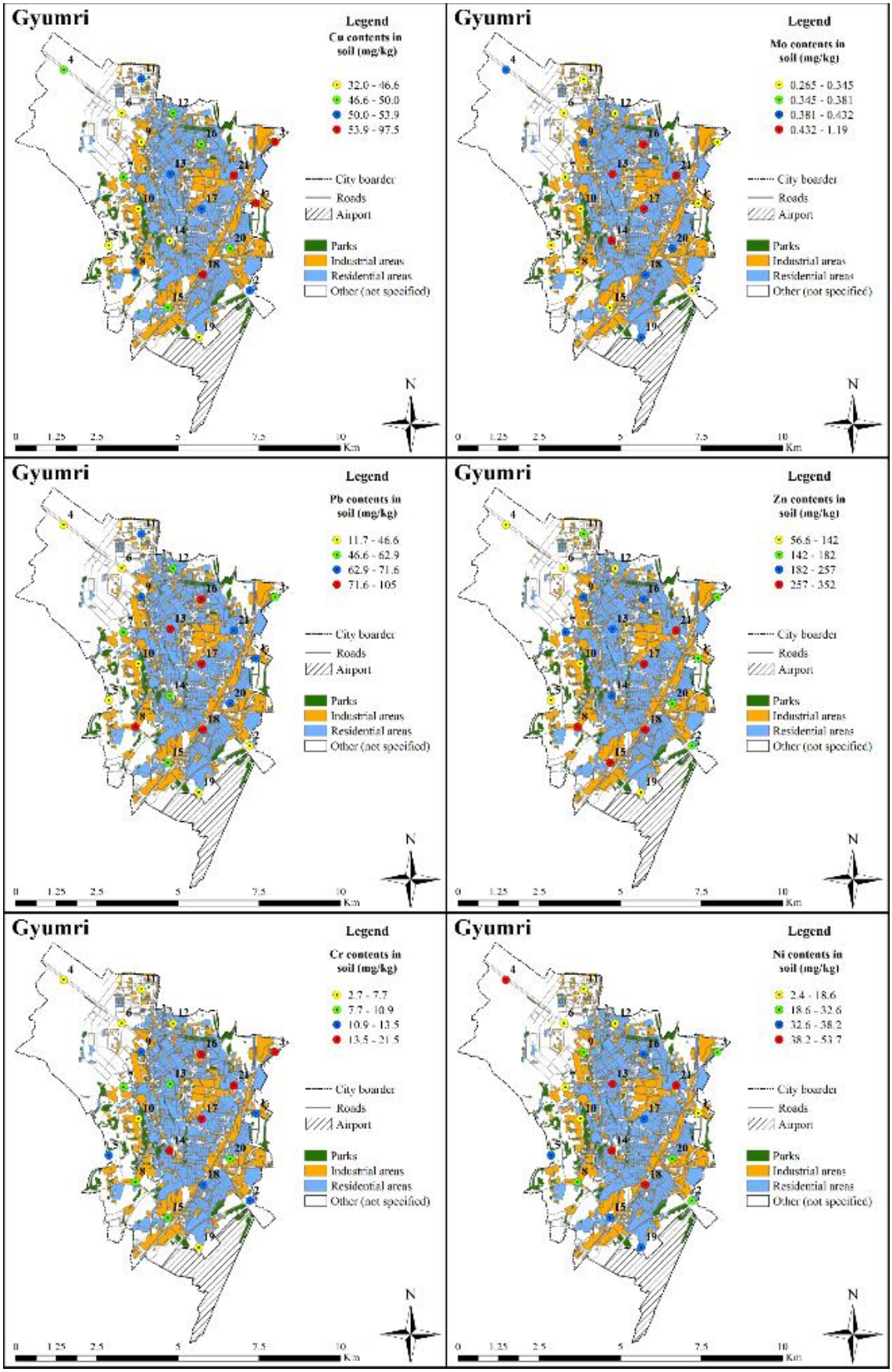
SM Figure S2. Spatial distribution in Yerevan of the content of potentially toxic element (PTE) in tree leaves.



SM Figure S3. Spatial distribution in Yerevan of the content of potentially toxic element (PTE) in soil.



SM Figure S4. Spatial distribution in Gyumri of the content of potentially toxic element (PTE) in tree leaves.



SM Figure S5. Spatial distribution in Gyumri of the content of potentially toxic element (PTE) in soil.

SM Table S1. Spearman correlation matrix of element concentration data in Yerevan soil.

Parameters	Ni_L	Co_L	As_L	Ag_L	Hg_L	Cr_L	Pb_L	Mo_L	Cd_L	Zn_L	Cu_L	Ni_S	Co_S	Ag_S	Cr_S	Pb_S	Mo_S	Cd_S	Zn_S	Cu_S
TDL_L																				
Ni_L	1.000																			
Co_L	.330	1.000																		
As_L	**.585****	.290	1.000																	
Ag_L	.363	.185	**.574****	1.000																
Hg_L	.396	-.050	.268	.311	1.000															
Cr_L	**.448***	-.026	**.437***	.261	.196	1.000														
Pb_L	.003	.188	.320	-.048	.127	-.048	1.000													
Mo_L	.376	.193	.292	**.511***	.082	.293	.090	1.000												
Cd_L	-.022	.159	.011	.203	.287	.281	.042	.019	1.000											
Zn_L	.128	.115	.226	**.596****	**.482***	.290	.102	.206	**.659****	1.000										
Cu_L	.170	.061	.274	.326	**.554****	.219	.254	.311	**.593****	**.694****	1.000									
Ni_S	.149	.303	.028	-.013	.066	-.217	-.041	.187	-.041	-.106	.000	1.000								
Co_S	.190	.205	-.044	.194	.052	-.283	.035	.305	.077	-.042	.123	.351	1.000							
Ag_S	-.339	.016	-.079	.205	-.192	-.143	-.047	-.184	.234	.328	.171	-.056	-.226	1.000						
Cr_S	-.021	-.215	-.168	-.026	.074	-.229	-.128	-.010	.063	.005	.064	**.689****	.402	-.124	1.000					
Pb_S	-.254	.010	-.217	.026	.182	-.165	.150	-.172	.408	**.423***	.254	**-.466***	-.271	**.454***	-.373	1.000				
Mo_S	-.073	-.059	.133	.189	-.200	.187	-.002	.273	-.015	.022	.034	.397	-.063	.276	**.469***	-.284	1.000			
Cd_S	-.200	-.147	.193	.313	-.004	.173	.024	-.020	**.441***	**.477***	.344	-.164	-.152	.319	.099	.294	.270	1.000		
Zn_S	-.255	-.263	-.044	.178	.049	.058	.223	-.081	**.535****	**.599****	.361	-.297	-.158	.374	.129	**.608****	.208	**.771****	1.000	
Cu_S	-.132	-.051	.176	.221	.207	.060	.209	.114	**.531****	**.419***	**.578****	.073	.080	.319	.217	.392	.347	**.756****	**.665****	1.000
Hg_S	-.116	**-.609****	-.009	.163	.051	-.050	-.015	-.048	-.208	.085	-.236	-.304	-.155	-.057	-.062	.022	.097	.054	.211	-.104

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

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

SM Table S2. Spearman correlation matrix of element concentration data in Gyumri soil.

Parameters	Mo_L	Pb_L	Ni_L	Cr_L	Cu_L	Zn_L	Mo_S	Pb_S	Ni_S	Cr_S	Cu_S
TDL_L											
Mo_L	1.000										
Pb_L	**.526***	1.000									
Ni_L	**.762****	**.847****	1.000								
Cr_L	**.808****	**.801****	**.961****	1.000							
Cu_L	.192	**.494***	.401	.330	1.000						
Zn_L	**.605****	**.714****	**.794****	**.820****	.290	1.000					
Mo_S	-.112	.073	-.057	-.062	.227	.060	1.000				
Pb_S	-.395	-.108	-.274	-.310	-.263	-.016	**.482***	1.000			
Ni_S	-.070	-.008	.049	.036	.077	.281	**.585****	.296	1.000		
Cr_S	-.003	.137	-.016	-.027	.075	.141	**.459***	**.479***	**.462***	1.000	
Cu_S	-.276	.010	-.207	-.138	-.288	.015	.181	**.542***	.154	**.466***	1.000
Zn_S	-.271	-.153	-.268	-.260	-.292	.055	**.449***	**.786****	**.438***	**.541***	**.563****

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

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

SM Table S3. Factor-variable correlation coefficients for the first two principal components (PC) obtained by a principal component analysis (PCA) with the element concentration data in soil and leaves as input variables, for both Yerevan and Gyumri.

Variables	PC1	PC2
Yerevan		
Ni_levaes	0,323	0,458
Co_ levaes	0,305	0,232
Ag_ levaes	-0,264	0,574
Hg_ levaes	-0,313	0,484
Cr_ levaes	0,405	0,357
Pb_ levaes	-0,095	0,017
Mo_ levaes	0,245	0,459
Cd_ levaes	-0,144	0,381
Zn_ levaes	-0,692	0,449
Cu_ levaes	-0,508	0,433
Ni_soils	0,118	0,600
Co_ soils	0,219	0,451
Ag_ soils	-0,428	-0,145
Hg_ soils	0,182	-0,455
Cr_ soils	-0,191	0,444
Pb_ soils	-0,693	-0,309
Mo_ soils	0,226	0,382
Cd_ soils	-0,515	0,005
Zn_ soils	-0,836	-0,078
Cu_ soils	-0,723	0,019
Gyumri		
Ni_leaves	0,969	0,188
Cr_leaves	0,953	0,165
Pb_leaves	0,781	0,008
Mo_leaves	0,662	0,071
Zn_leaves	0,939	-0,093
Cu_leaves	0,722	0,124
Ni_soil	0,286	-0,589
Cr_soil	0,275	-0,779
Pb_soil	-0,019	-0,680
Mo_soil	0,053	-0,754
Zn_soil	0,086	-0,785
Cu_soil	-0,099	-0,829