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Supplementary Information

Source Apportionment of Fine Organic and Inorganic Atmospheric Aerosol in an Urban Background Area in Greece

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Text S1

Uncertainty Estimation of $PM_{2.5}$ Source Apportionment

The results of the uncertainty estimation tools of the EPA PMF 5.0 are presented in Table S1. The base value is the average source contribution estimated by the model, BS is the bootstrap tool estimation, DISP is the displacement tool estimation and BS-DISP is the bootstrap-displacement tool estimation. All these tools provide estimates of how far the solution can be from the base value.

EPA PMF 5.0 includes advanced tools for the evaluation of the uncertainty of the solution with the bootstrap (BS), displacement (DISP) and the bootstrap-displacement (BS-DISP) methods. BS involves the random selection of a number of samples to be replaced from a dataset to create a new dataset, and then the solution for each of the new datasets is calculated. BS provides an estimation of the effects that random errors (or a low number of points) in the dataset have on the solution. DISP obtains uncertainty estimates for individual variables by repeatedly fitting the model such that each variable in turn is displaced from its original value until the object function Q increases by a maximum allowed change. DISP explores the uncertainty in a PMF solution by assessing the largest range of source profile values without an appreciable increase in the Q-value. BS-DISP is a combination of the two previous methods.

Table S1. Results of EPA PMF 5.0 uncertainty tools for source contributions to $PM_{2.5}$ mass concentration ($\mu g\ m^{-3}$).

	Base Value	BS 5th	BS Median	BS 95th	DISP Min	DISP Average	DISP Max	BS-DISP 5th	BS-DISP Average	BS-DISP 95th
Nonexhaust	1.4	1.2	1.3	1.4	1.1	1.5	1.6	1.3	1.5	1.7
Biomass burning	1.9	1.8	1.9	2.0	1.6	1.7	1.8	1.4	2.0	2.6
Exhaust	1.6	1.2	1.5	1.8	1.1	1.8	2.0	1.6	1.8	2.0
Sea salt	0.6	0.1	0.8	0.9	0.4	0.6	0.7	0.1	0.8	1.0
Secondary	4.2	3.8	4.1	4.5	3.4	4.7	5.2	3.2	4.7	5.4
Mineral dust	1.3	0.7	1.5	1.8	1.0	1.2	1.4	0.6	1.7	2.0