Supplementary material

Table S1. Road dust sampling sites, mass loadings and specifications

Reference (city)	Location	Type of site	Distance from braking zone [m]	Intensity [veh day^{-1}]	Lanes	Sampling date	Hours after last rain	Dust load (mg m^{-2})	SD (mg m^{-2})
1 (Cordoba)	Tres Culturas	Urban roundabout	0	18459	2	8-5-2012	26	7.0	2.6
2 (Cordoba)	Piconeros	Urban	70	19393	4	8-5-2012	28	2.4	0.1
3 (Cordoba)	Carlos III	City entrance - old pavement	85	28313	4	8-5-2012	30	20.1	10.0
4 (Cordoba)	Libia	Urban - demolition works	400	23000	2	8-5-2012	32	8.5	0.7
5 (Seville)	Carlos V	Urban	100	1000	2	10-5-2012	109	1.9	1.0
6 (Seville)	Alfredo Kraus	Periphery	120	18000	4	10-5-2012	111	3.3	1.0
7 (Seville)	Rep. Argentina	Urban	30	16425	4	11-5-2012	133	11.2	2.2
8 (Seville)	Santa Fe	Urban	85	6150	4	11-5-2012	135	7.5	3.1
9 (Algeciras Bay)	Monitoring site	Periphery	NA	500	2	13-5-2012	46	3.0	0.6
10 (Algeciras Bay)	CA 2322	Industrial - old pavement	NA	500	1	13-5-2012	48	20.6	7.8
11(Algeciras Bay)	Acerinox	Industrial	50	1000	2	13-5-2012	50	21.6	1.9
12(Algeciras Bay)	CA-34	Freeway	90	41058	2	14-5-2012	70	1.9	0.7
13 (Malaga)	Obispo Herrera	Urban - construction	100	10800	2	14-5-2012	216	17.6	4.9
14 (Malaga)	Carlos de Haya	Urban	135	26500	2	15-5-2012	242	5.9	0.6
15 (Malaga)	Doctor Escassi	Urban	90	NA	4	15-5-2012	244	4.3	0.7
16 (Malaga)	Ing. Garnica	Urban - harbour	150	NA	4	15-5-2012	246	6.1	1.2
17 (Granada)	Francisco Ayala	Periphery	NA	10000	2	16-5-2012	264	5.9	2.6
18 (Granada)	Davalos A	Urban – next to unpaved parking	200	15000	2	17-5-2012	278	21.8	8.8
19 (Granada)	Davalos B	Urban	215	15000	2	17-5-2012	280	13.1	2.3
20 (Granada)	Joaquina Eguaras	Urban	130	1000	2	17-5-2012	282	18.1	2.5

Table S2. Parameters used as criteria for PM source apportionment: percentage of data above detection limit and *Signal to Noise* ratio. In red values below 50% and 2, respectively.

	Algeciras Bay		**Cordoba**		**Granada**		**Seville**		**Malaga rural**		**Malaga traffic**	
	%ADL	**S/N**	**%ADL**	**S/N**	**%ADL**	**S/N**	**%ADL**	**S/N**	**%ADL**	**S/N**	**%ADL**	**S/N**
TC	84	4.0	100	4.0	100	4.0	99	4.0	88	4.0	98	4.0
Al2O3	90	7.7	87	8.4	91	8.4	91	8.2	70	7.8	96	8.3
Ca	100	8.7	94	8.7	100	8.7	98	8.7	85	8.5	99	8.7
K	97	8.3	97	8.7	100	8.7	97	8.6	84	8.3	95	8.6
Na	98	8.5	72	7.6	78	7.2	86	7.8	60	6.9	91	8.1
Mg	99	8.5	91	8.4	99	8.7	95	8.5	80	8.1	99	8.6
Fe	100	8.6	98	8.7	100	8.7	99	8.7	77	8.5	100	8.7
PO43-	90	8.3	87	8.7	94	8.5	85	8.5	15	7.6	89	8.3
SO4	100	7.9	97	7.9	99	7.9	100	7.9	83	7.9	100	7.9
NO3-	99	7.9	96	7.8	98	7.9	99	7.8	77	7.6	97	7.9
Cl	78	7.5	33	4.5	35	5.1	46	5.8	19	3.7	55	6.1
NH4	96	7.9	91	7.9	95	7.9	90	7.9	77	7.7	93	7.9
Li	92	8.2	80	8.3	82	8.3	86	8.2	54	8.1	83	8.2
Ti	87	8.2	80	8.4	75	8.2	76	8.3	69	8.0	80	8.4
V	99	8.4	99	8.2	99	8.4	96	8.3	95	8.3	99	8.4
Cr	69	7.9	40	2.7	68	4.3	47	3.7	17	3.5	58	3.9
Mn	86	8.2	80	8.1	76	8.0	78	8.1	67	7.0	79	8.1
Co	96	8.4	88	8.4	95	8.1	89	8.4	53	6.3	91	7.8
Ni	91	8.1	58	4.9	91	7.2	66	5.5	23	2.9	79	6.7
Cu	92	7.4	96	8.3	99	8.2	96	7.8	11	1.3	96	7.9
Zn	38	5.1	63	7.6	29	3.7	38	6.2	38	2.3	26	2.6
Ga	64	8.1	75	8.1	82	8.2	72	8.2	83	8.0	74	8.2
Ge	1	3.4	0	0.6	0	0.5	0	0.5	0	0.6	0	0.6
As	93	7.8	92	7.7	87	8.1	96	8.2	60	5.4	95	7.6
Se	92	8.3	71	8.4	73	7.5	86	8.4	58	6.5	78	8.4
Rb	94	8.2	96	8.3	92	8.4	93	8.3	78	8.2	95	8.3
Sr	95	7.8	80	7.7	93	8.2	91	8.4	76	7.4	91	7.8
Y	1	1.5	4	1.0	3	1.0	2	0.9	2	0.7	1	0.9
Zr	0	0.7	0	0.6	0	0.6	0	0.7	0	0.5	0	0.7
Nb	7	6.6	19	2.7	17	2.5	5	1.9	4	1.2	9	2.3
Mo	2	1.1	0	0.6	0	0.7	0	0.6	0	0.6	0	0.8
Cd	43	6.1	77	7.7	30	3.1	50	4.7	2	1.0	24	2.7
Sn	7	1.2	21	1.5	65	4.0	50	7.8	0	0.6	42	3.0
Sb	93	7.9	97	8.3	99	8.4	96	8.4	72	4.4	99	8.4
Cs	67	8.4	74	8.2	74	8.3	64	8.3	45	6.1	68	8.2
Ba	54	7.2	73	7.4	81	7.9	65	8.4	79	7.9	73	7.5
La	37	7.4	42	3.4	38	3.1	31	3.6	8	1.9	26	2.7
Ce	17	3.3	46	4.0	45	3.6	34	3.8	9	2.3	31	3.2
Hf	17	1.2	16	0.7	22	0.7	16	2.4	20	0.9	18	0.6
Ta	0	0.7	0	0.7	0	0.7	0	0.6	0	0.6	0	0.7
W	2	0.8	2	1.0	2	1.5	1	4.3	0	0.6	2	1.2
Tl	9	8.0	28	3.5	47	5.2	22	3.4	0	0.6	30	6.3
Pb	96	8.3	99	8.2	99	8.0	96	8.3	80	6.8	98	7.7
Bi	24	4.0	30	2.6	57	4.2	43	6.0	0	0.5	32	2.7
Th	3	1.0	27	2.5	13	1.9	8	1.6	2	1.2	8	1.7

U	1	0.7	2	0.7	4	0.9	1	2.2	4	0.9	2	0.7

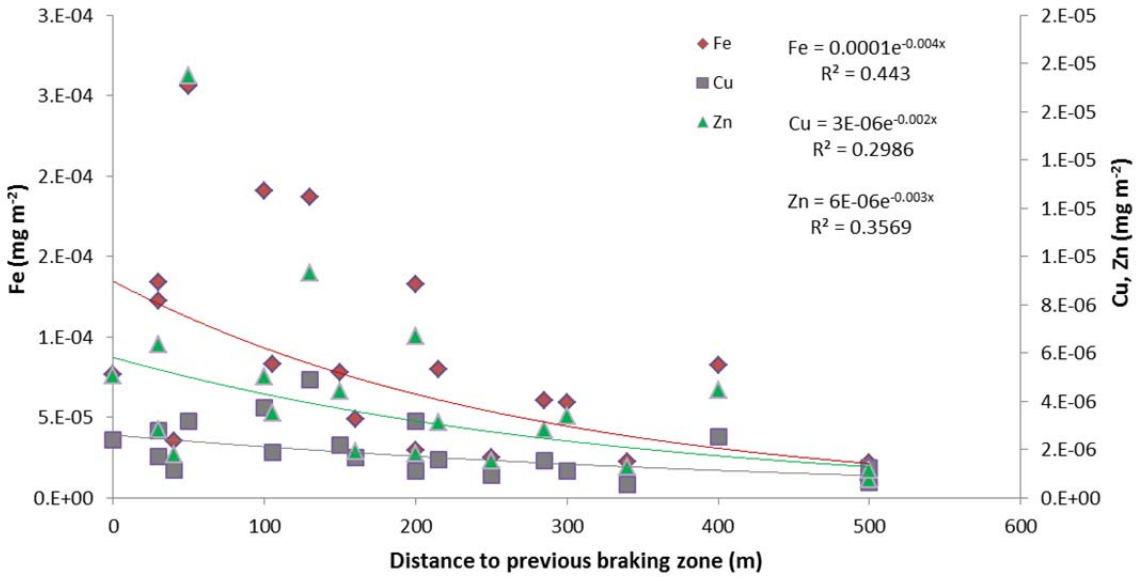

Fig S1. Loadings of Fe, Cu and Zn as a function of the distance from sampling point to braking zone.

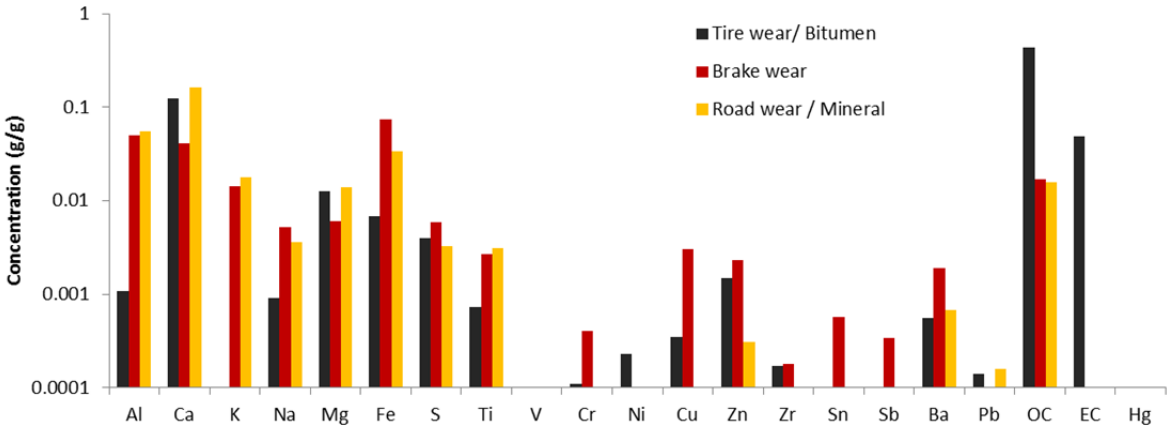

Fig S2. Chemical profiles of road dust sources obtained by PMF analysis

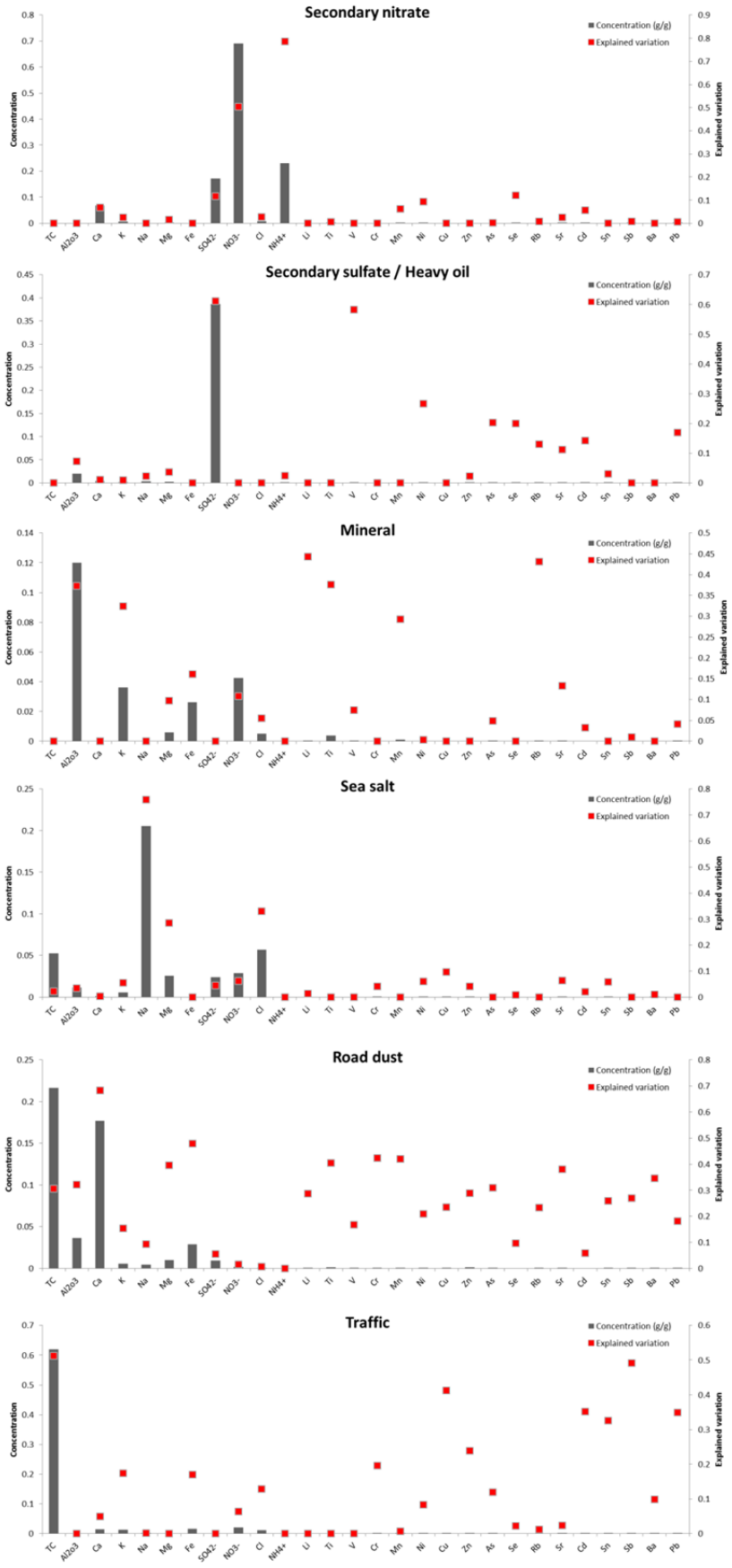

Fig S3a PMF factor profiles in Seville area

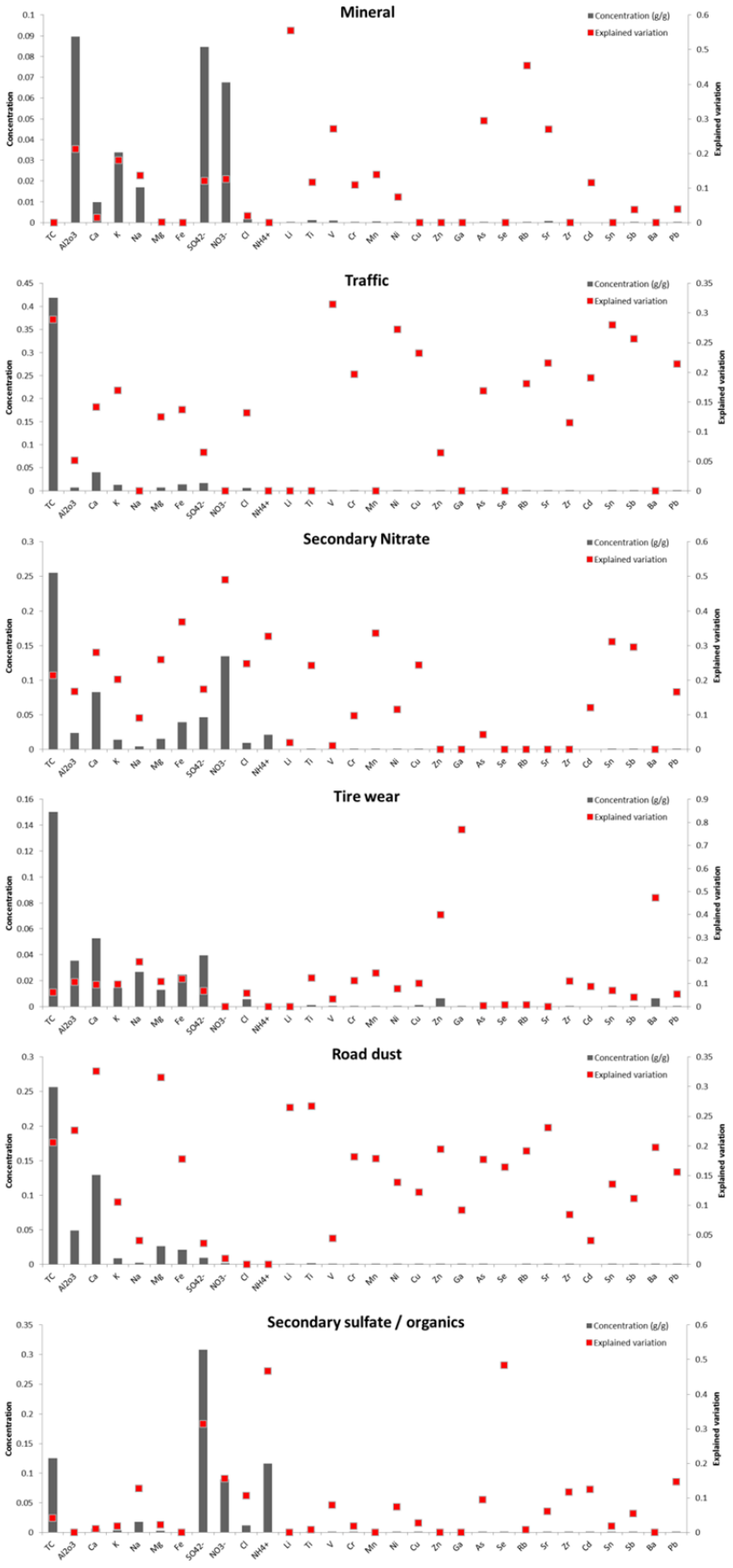

Fig S3b PMF factor profiles in Granada

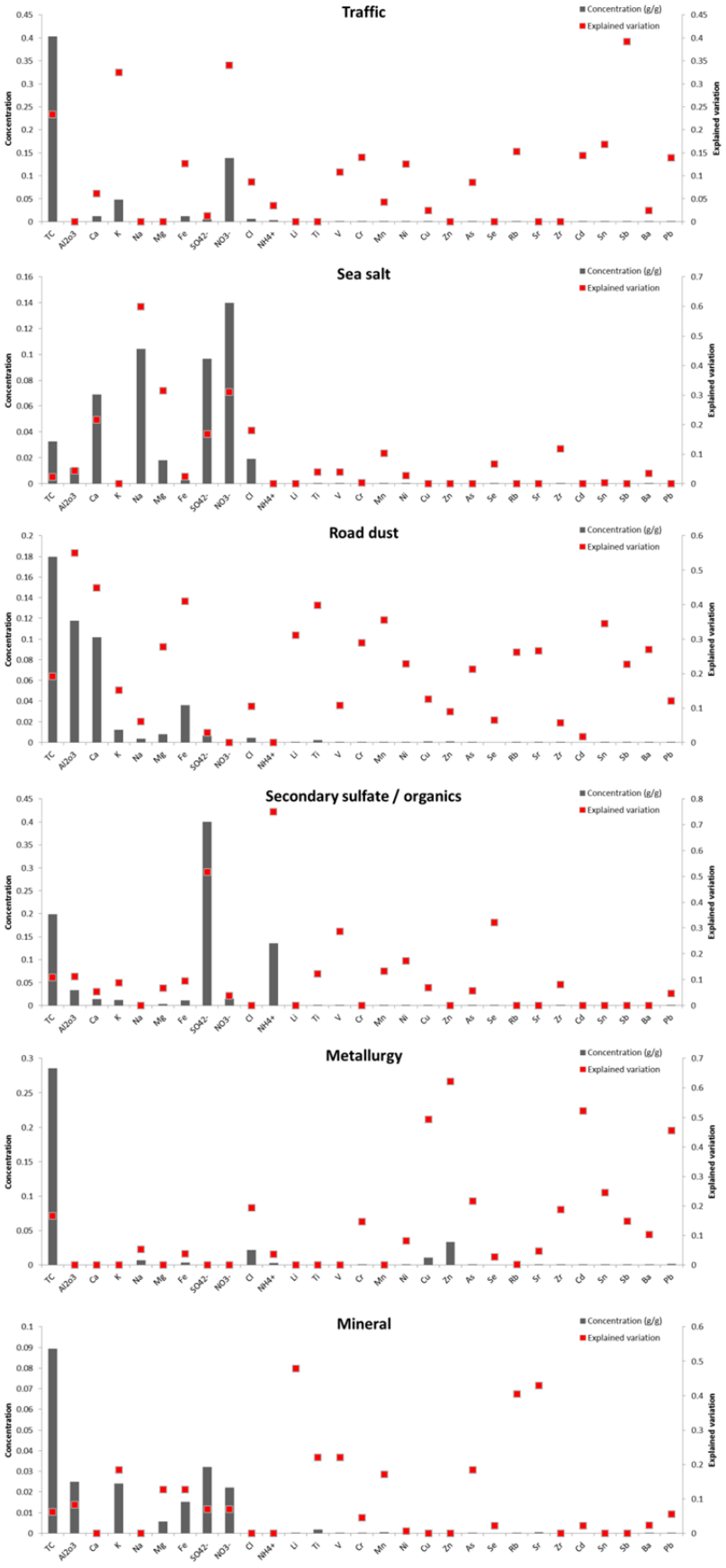

Fig S3c PMF factor profiles in Cordoba

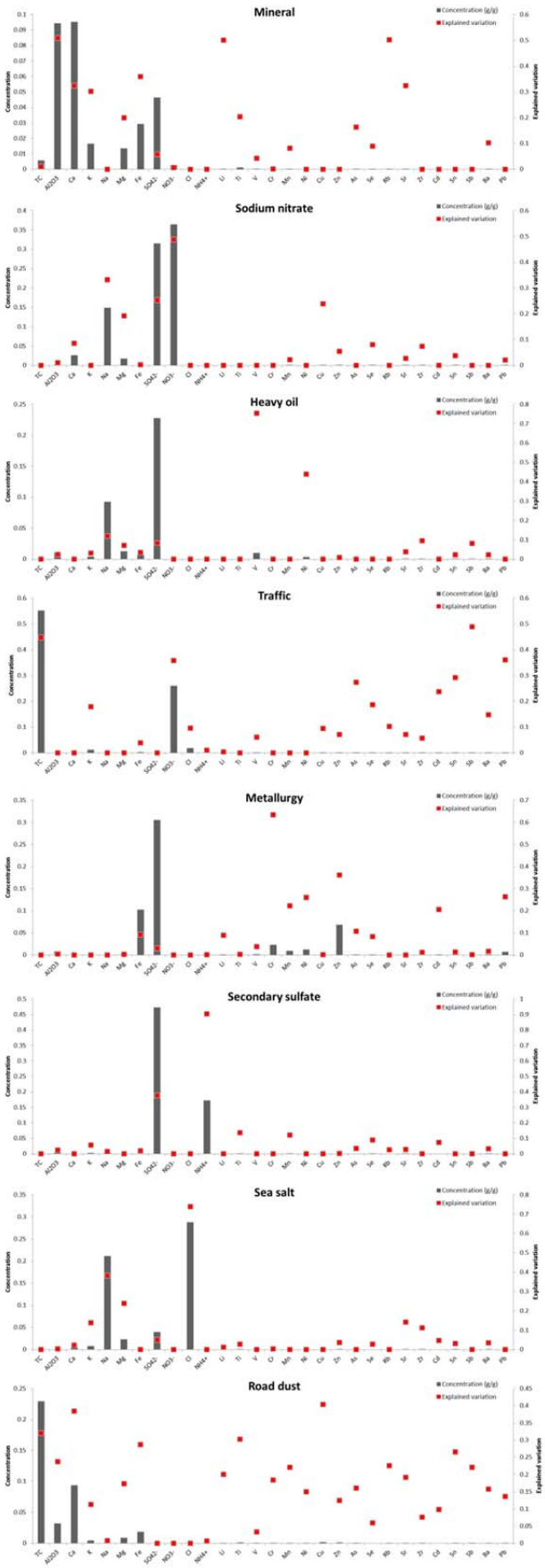

Fig S3d PMF factor profiles in Algeciras Bay area

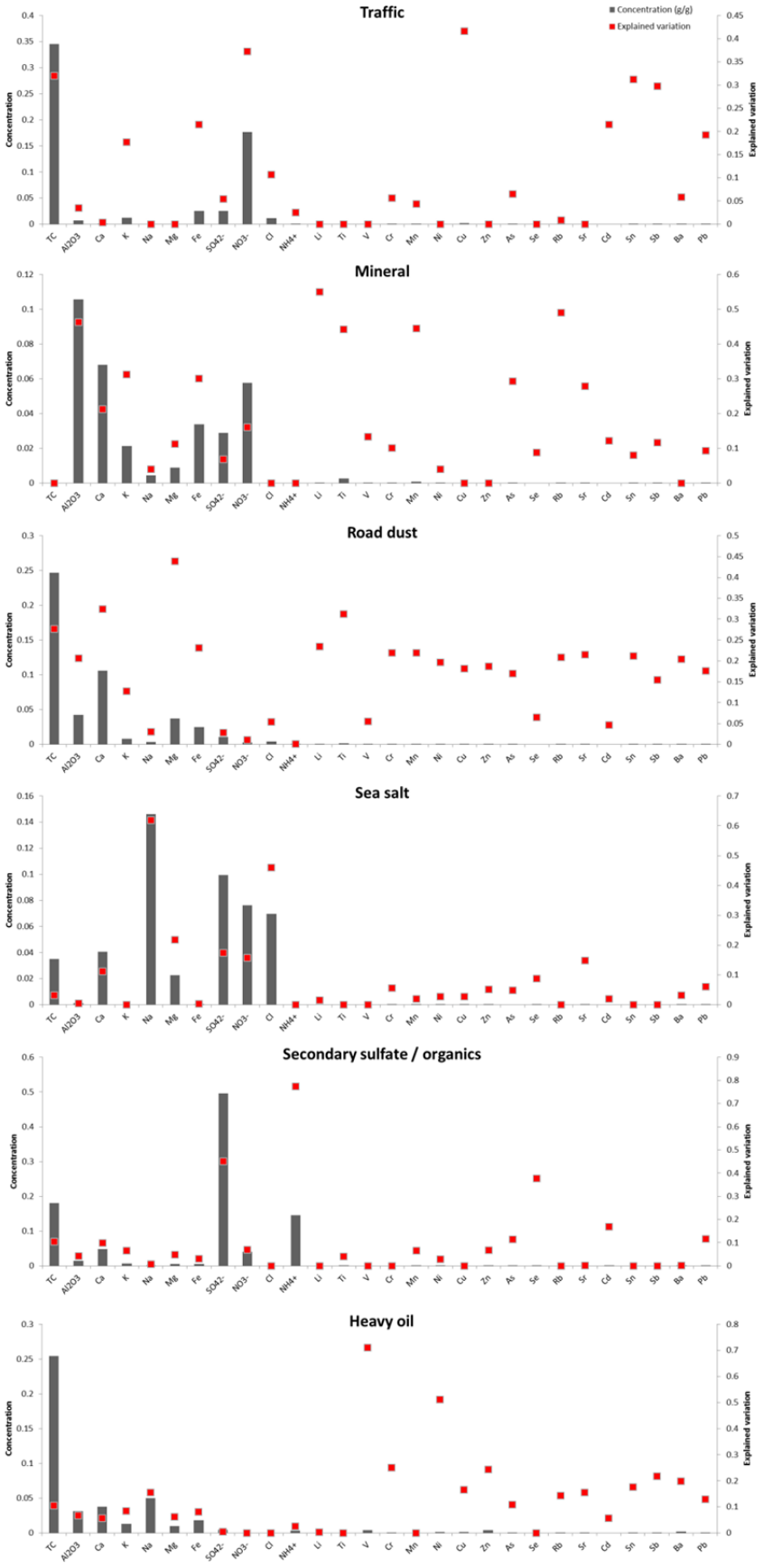

Fig S3e PMF factor profiles in Malaga area

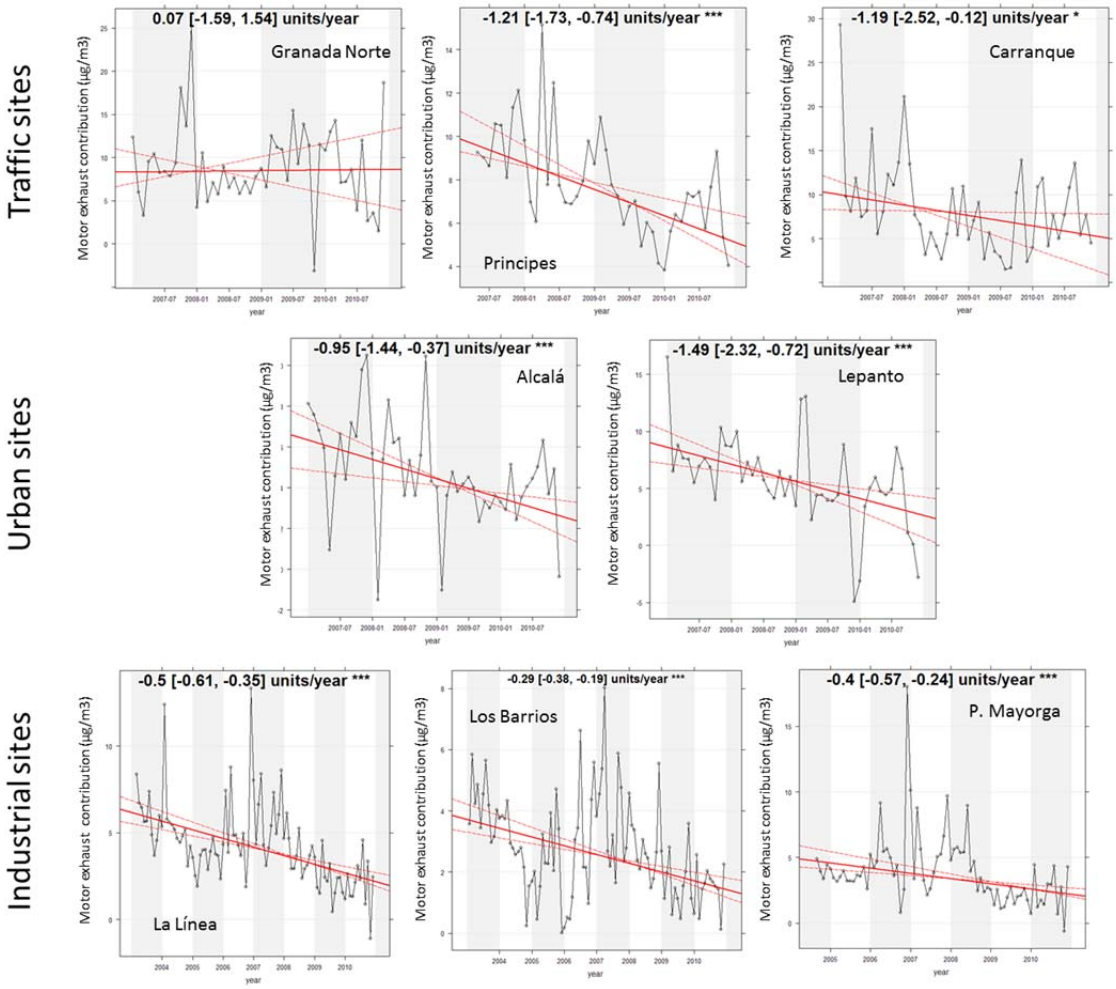

Fig. S4. Temporal trends for motor exhaust contribution in PM10 at traffic (Granada, Seville and Malaga), urban background (Seville and Cordoba) and industrial sites (Algeciras Bay). The plots show the deseasonalised monthly mean concentrations. The solid red line shows the trend estimate and the dashed red lines show the 95% confidence intervals for the trend. The overall trend and the 95% confidence intervals in the slope (between brackets) are shown at the top as units (µgm−3) per year. The *, ** and *** show that the trend are significant to the 0.05, 0.01 and 0.001 levels, respectively.

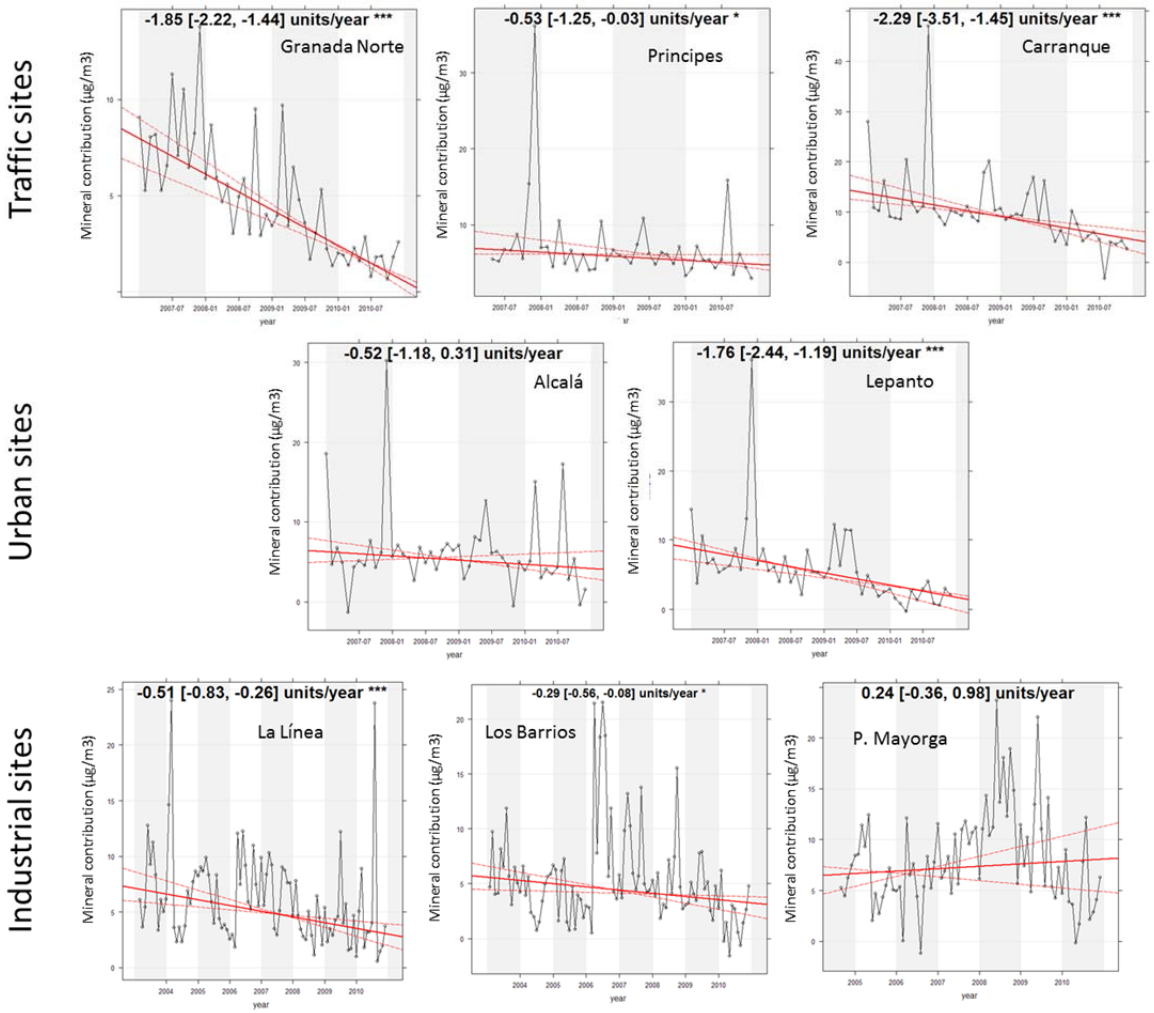

Fig. S5. Temporal trends for mineral contribution in PM10 at traffic (Granada, Seville and Malaga), urban background (Seville and Cordoba) and industrial sites (Algeciras Bay). The plots show the deseasonalised monthly mean concentrations. The solid red line shows the trend estimate and the dashed red lines show the 95% confidence intervals for the trend. The overall trend and the 95% confidence intervals in the slope (between brackets) are shown at the top as units (µgm−3) per year. The *, ** and *** show that the trend are significant to the 0.05, 0.01 and 0.001 levels, respectively.