SUPPLEMENTARY MATERIALS

Supp. 1: Parameters and conditions of analysis using EDXRF

Secondary Target	Voltage (kV)	Current (μA)	Atmosphere	Elements
Ti	25	4800	Vaccum	Na, Mg, Al, K, Ca
Ge	40	800	Air	Ti, V, Cr, Mn, Fe, Ni, Cu, Zn
Mo	40	1000	Air	As, Pb, Br

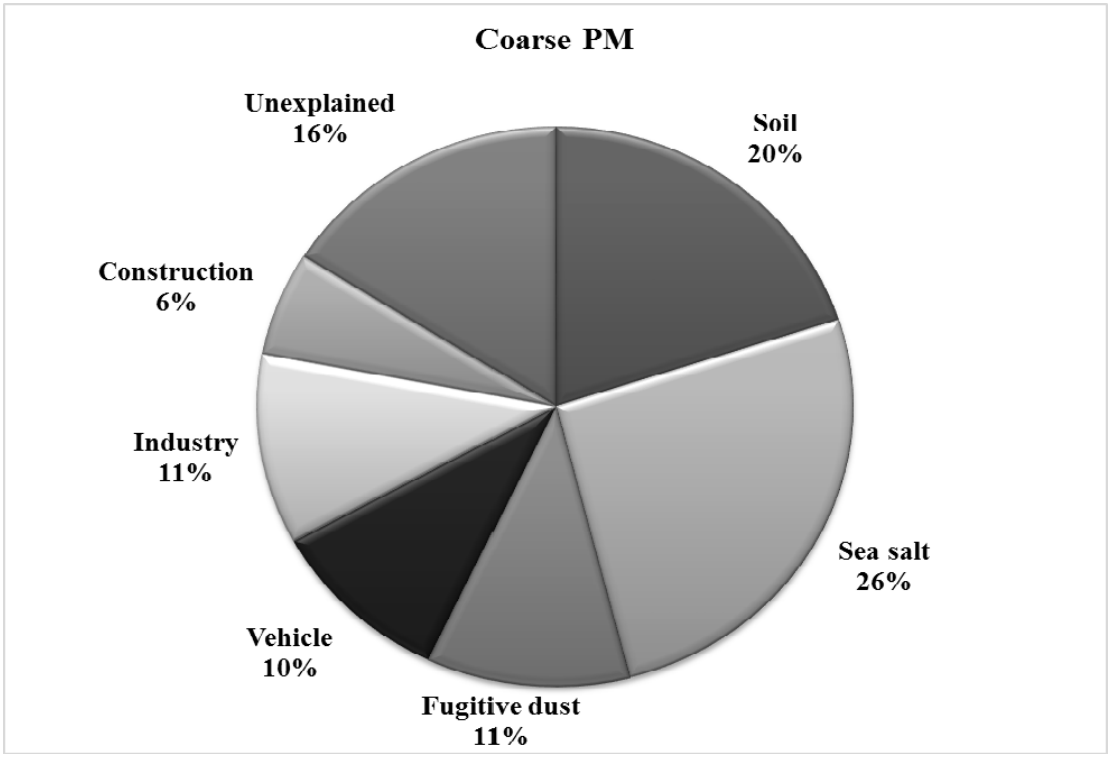
Supp. 2: Concentration of elements in coarse and fine particulate matter during 2008-2010

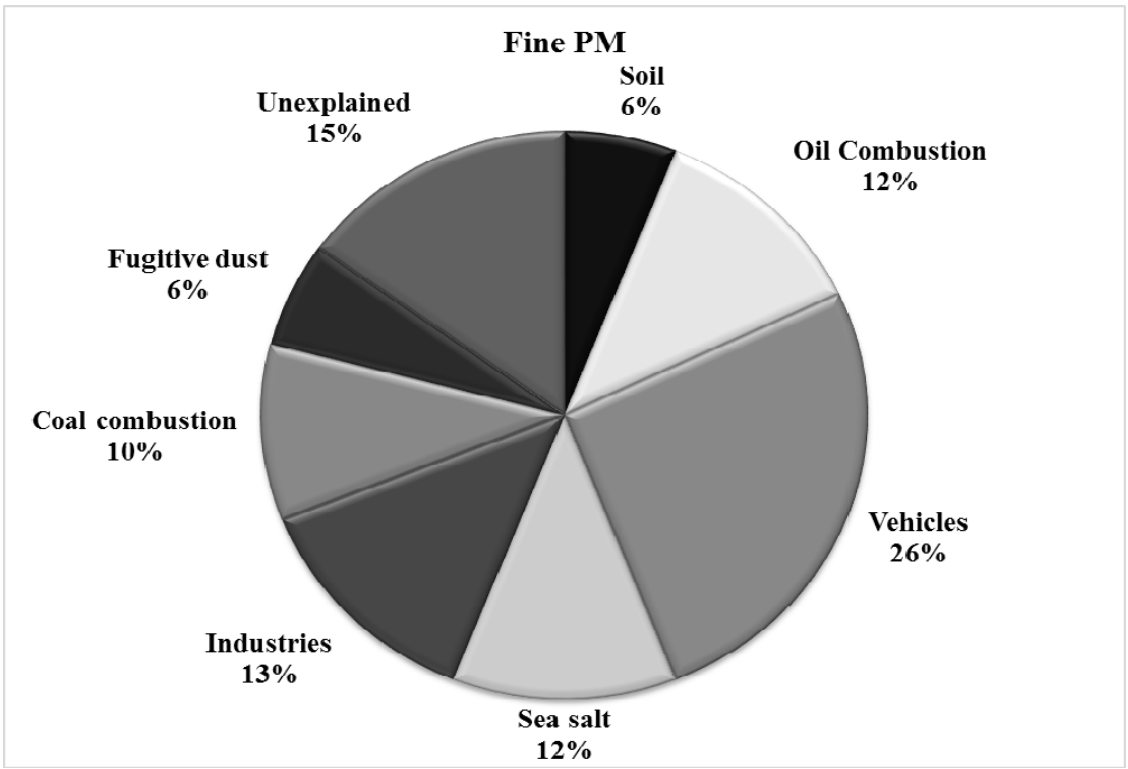
Element	Coarse (ng/m^3)		Fine (ng/m^3)	
	Average	S.D.	Average	S.D.
Na	1393.97	965.07	487.97	320.21
Mg	992.25	749.58	223.78	211.05
Al	2504.18	2078.85	433.59	405.20
Si	6229.58	4801.95	871.9	683.49
P	336.73	240.40	92.62	82.06
S	1504.72	1091.66	1615.39	1212.36
Cl	2343.72	1791.72	269.52	203.17
K	672.44	506.62	231.11	151.07
Ca	3601.88	2549.19	315.50	248.72
Sc	8.54	9.59	2.46	2.13
Ti	268.84	224.79	23.81	19.73
V	7.84	5.17	13.14	10.98
Cr	43.17	22.07	7.68	5.70
Mn	64.49	55.81	10.46	9.60
Fe	2917.39	2357.99	316.41	220.93
Co	11.8	9.84	3.18	2.07
Ni	6.54	5.8	6.69	5.25
Cu	30.72	23.48	6.67	4.88
Zn	137.81	215.39	61.06	45.93
As	8.54	6.59	13.66	9.44
Se	4.74	2.33	10.39	8.38
Br	21.74	16.28	13.29	9.49
Sb	29.44	21.13	25.05	21.99
Pb	85.39	78.83	36.89	32.97
BC[a]	-	-	7.13	3.45
PM[a]	89.92	25.21	42.25	16.11

[a] *concentrations are in μg/m^3*

Supp. 3: Results of Multiple regression analysis

Source	Variable	β	Std. Err. Of β	p value
Coarse PM , n = 275, $r^2 = 0.84$				
	Intercept	2.7	0.27	0.000
Soil	Si	3.2	0.71	0.001
Sea Salt	Na	11.1	0.54	0.003
Fugitive dust	Zn	31.6	5.52	0.006
Coal combustion	As	145	2.26	0.002
Industry	V	215	21.23	0.007
Construction work	Ca	6.9	47.11	0.009
Fine PM , n = 275, $r^2 = 0.82$				
	Intercept	3.6	0.312	0.000
Soil	Si	15.3	2.61	0.002
Oil combustion	V	59.2	4.82	0.004
Vehicles	S	3.3	3.78	0.001
Sea salt	Na	19.7	0.56	0.003
Industry	Cr	96	10.62	0.005
Coal combustion	As	46.2	1.35	0.002
Fugitive dust	Zn	13.2	15.43	0.003





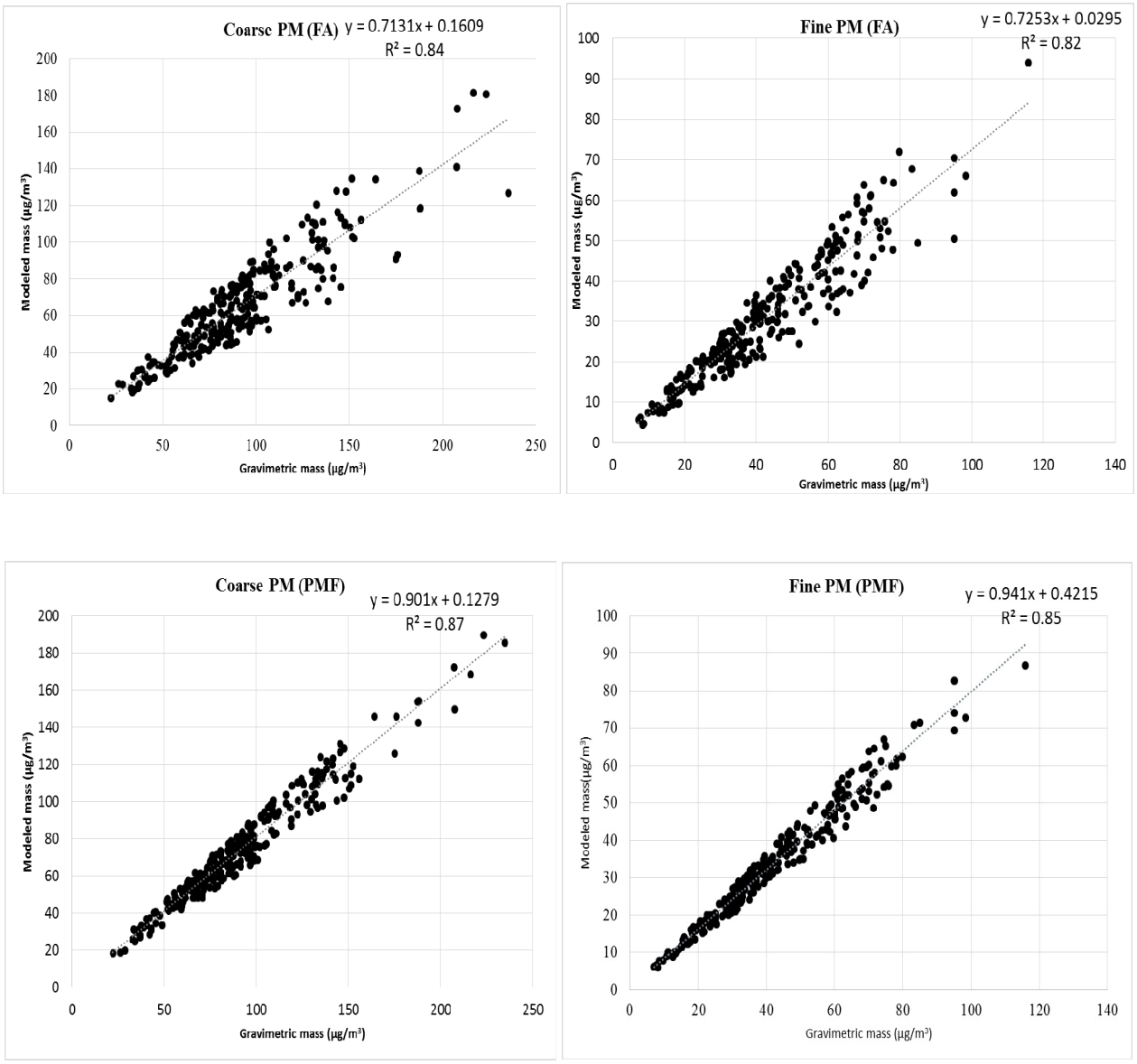
Supp. 4: Source apportionment of coarse and fine PM in the study area

Supp. 5: Comparison of the results derived by the two receptor model techniques (FA-MLR and PMF)

Parameter		FA-MLR		PMF	
		Coarse	Fine	Coarse	Fine
Model performance	r^2 of measured and modeled PM concentration	0.84	0.82	0.87	0.85
Source identification	Number of sources	6	7	6	7
	Identified sources	(i) Soil (ii) Seasalt (iii) Fugitive dust (iv) Vehicular emission (v) Industry (vi) Construction	(i) Soil (ii) Oil combustion (iii) Vehicular emission (iv) Sea salt (v) Industry (vi) Coal combustion (vii) Fugitive dust	(i) Soil (ii) Seasalt (iii) Fugitive dust (iv) Vehicular emission (v) Industry (vi) Construction	(i) Soil (ii) Oil combustion (iii) Vehicular emission (iv) Sea salt (v) Industry (vi) Coal combustion (vii) Fugitive dust

Supp. 6: Average concentrations of inorganic ions, elemental and organic carbon

Ions	Coarse (µg/m^3) (n = 50)		Fine (µg/m^3) (n = 50)	
	Average	**S.D.**	**Average**	**S.D.**
Anions				
F	N.D.	N.D.	N.D.	N.D.
Cl	1.81	0.62	0.98	0.28
NO_2	1.14	0.53	0.89	0.16
NO_3	6.69	0.88	5.73	0.75
PO_4^3	N.D.	N.D.	N.D.	N.D.
SO_4^2	11.06	0.93	7.89	0.85
Cations				
Na^+	0.89	0.28	0.52	0.09
NH_4^+	5.13	1.24	4.76	1.58
K^+	0.34	0.16	0.19	0.09
Mg^{2+}	0.76	0.21	0.17	0.08
Ca^{2+}	2.72	0.79	0.31	0.13
Carbon Speciation				
EC	1.45	0.82	7.09	3.11
OC	9.38	3.21	8.56	2.89

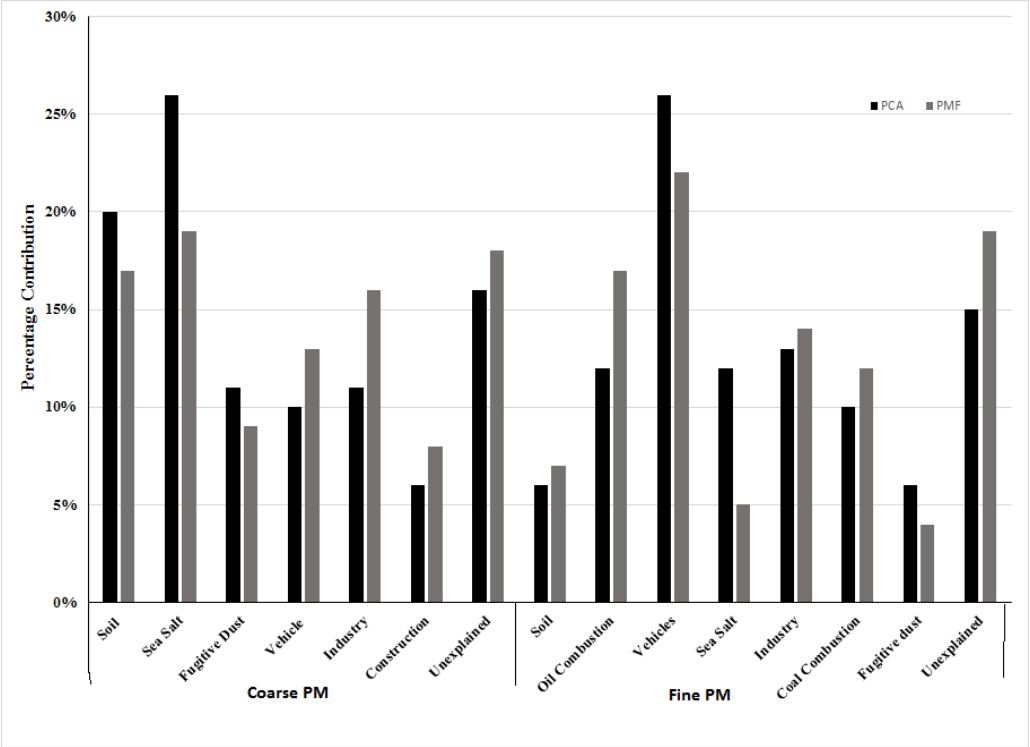


Supp. 7: Regression plots of modelled and measured values of $PM_{10-2.5}$ and $PM_{2.5}$

Supp. 8: Average Absolute Error of FA and PMF

No. of Sources	FA, AAE%		PMF, AAE%	
	Coarse	Fine	Coarse	Fine
3	23	26	20	25
4	20	22	17	18
5	18	19	16	15
6	14	12	13	14
7	NVS[a]	15	11	10
8	NVS[a]	16	14	13

[a] *NVS – No valid solution*



Supp. 9: Comparison of source contributions by FA and PMF