

## Supplementary information

Table S1. Daily values for elemental concentrations in the PM<sub>10</sub> analysed in gravimetric filters in Kumamoto during 22 March-28 April 2011. Each sample bears the date when 24-hour sampling started at midday and therefore includes the first half of the following day. PM and major element concentrations are in µg/m<sup>3</sup>, trace elemental concentrations in ng/m<sup>3</sup>. Mineral=CO<sub>3</sub><sup>2-</sup>+SiO<sub>2</sub>+Al<sub>2</sub>O<sub>3</sub>+Ca+Fe+K+Mg; OM+EC= Organic matter + elemental carbon; SIC=NH<sub>4</sub><sup>+</sup>+NO<sub>3</sub><sup>-</sup>+SO<sub>4</sub><sup>2-</sup>; Marine=Na+Cl.

Date	220311	230311	240311	250311	260311	270311	280311	290311	300311	310311	010411	020411	030411	040411	050411	060411	070411	080411	090411	100411	110411	120411	130411	140411	150411	160411	170411	180411	190411	200411	210411	220411	230411	240411	250411	260411	270411	
PM <sub>10</sub>	39.65	22.94	36.39	27.50	28.25	28.46	47.69	65.73	47.55	60.07	50.00	40.35	33.85	22.94	27.97	18.75	22.99	27.72	45.07	52.34	37.78	40.36	41.60	28.03	54.86	63.99	54.73	28.95	18.60	33.66	47.58	29.90	30.95	36.34	33.80	31.43	33.30	
OM+EC	7.03	6.93	11.23	6.64	8.42	8.85	11.03	11.78	11.54	16.48	12.23	11.01	6.40	4.53	7.76	5.82	3.91	4.26	8.72	10.42	7.36	9.48	8.79	9.70	10.11	18.16	13.40	6.86	5.13	10.11	11.67	8.78	9.51	9.05	8.19	6.32	4.99	
OC	3.99	3.96	6.13	3.95	4.72	5.01	6.24	6.80	6.71	9.56	6.93	6.42	3.67	2.60	4.24	3.30	2.17	2.49	5.41	6.14	4.19	5.15	4.91	5.33	5.17	10.33	7.88	4.29	2.78	5.46	6.78	5.16	5.19	5.20	4.48	3.78	2.81	
EC	0.84	0.54	1.21	0.44	0.67	0.65	1.02	0.76	0.72	1.01	0.88	0.61	0.50	0.42	0.80	0.51	0.47	0.39	0.52	0.80	0.66	1.04	0.82	0.95	0.71	1.30	0.76	0.30	0.55	1.07	0.89	0.52	0.88	0.55	0.84	0.49	0.62	
CO <sub>3</sub> <sup>2-</sup>	2.19	0.86	1.65	1.18	0.67	0.62	1.83	1.00	1.08	1.38	0.81	0.70	0.84	0.94	0.94	0.85	1.02	1.13	2.41	2.11	1.30	1.33	1.15	1.06	1.25	1.44	1.33	1.52	0.60	1.06	1.89	0.95	0.64	0.45	0.99	1.62	1.59	
SiO <sub>2</sub>	6.78	2.44	4.97	3.81	3.00	2.38	5.52	3.73	4.13	4.89	3.15	2.47	4.02	4.66	3.97	2.62	2.99	4.25	8.33	7.24	4.72	4.94	4.10	3.17	3.60	4.43	4.15	4.92	1.40	3.37	8.46	3.35	2.20	1.38	2.77	4.60	4.69	
Al <sub>2</sub> O <sub>3</sub>	2.26	0.81	1.66	1.27	1.00	0.79	1.84	1.24	1.38	1.63	1.05	0.82	1.34	1.55	1.32	0.87	1.00	1.42	2.78	2.41	1.57	1.65	1.37	1.06	1.20	1.48	1.38	1.64	0.47	1.12	2.82	1.12	0.73	0.46	0.92	1.53	1.56	
Ca	0.79	0.30	0.68	0.42	0.24	0.23	0.80	0.44	0.40	0.56	0.33	0.24	0.31	0.39	0.38	0.31	0.36	0.36	0.85	0.80	0.47	0.51	0.45	0.39	0.42	0.48	0.45	0.58	0.20	0.38	0.77	0.36	0.20	0.17	0.41	0.60	0.53	
Fe	0.81	0.32	0.68	0.47	0.37	0.32	0.77	0.59	0.58	0.73	0.50	0.35	0.52	0.61	0.51	0.31	0.30	0.49	0.99	0.94	0.54	0.58	0.57	0.41	0.50	0.59	0.55	0.54	0.19	0.41	0.90	0.36	0.27	0.24	0.42	0.50	0.61	
K	0.54	0.23	0.37	0.24	0.21	0.16	0.53	0.52	0.48	0.66	0.53	0.38	0.30	0.19	0.23	0.17	0.19	0.33	0.65	0.70	0.54	0.52	0.62	0.34	0.55	0.67	0.59	0.37	0.13	0.30	0.55	0.24	0.34	0.37	0.40	0.33	0.48	
Na	0.61	0.38	0.32	0.68	0.24	0.16	0.36	0.25	0.33	0.48	0.37	0.74	0.57	0.40	0.45	0.62	1.05	0.30	0.51	0.46	0.49	0.43	0.42	0.35	0.88	1.09	1.02	0.72	0.61	0.78	0.61	0.60	0.46	0.25	0.35	1.11	0.75	
Mg	0.40	0.16	0.25	0.22	0.12	0.11	0.25	0.14	0.19	0.22	0.13	0.14	0.15	0.14	0.14	0.15	0.19	0.23	0.46	0.37	0.24	0.23	0.19	0.19	0.25	0.29	0.26	0.26	0.12	0.20	0.29	0.16	0.14	0.08	0.15	0.29	0.32	
Cl	0.80	0.17	0.47	0.99	0.62	0.60	0.36	0.79	0.39	0.39	0.26	0.54	0.50	1.22	n.a.	n.a.	n.a.	0.19	0.10	0.17	0.21	0.39	0.80	0.43	0.65	0.64	0.52	0.47	0.46	0.21	0.31	0.68	0.38	0.26	1.21	0.21		
NO <sub>3</sub> <sup>-</sup>	4.40	3.87	5.98	2.84	4.95	4.83	8.13	16.12	8.25	11.11	5.82	5.05	4.85	1.77	2.86	2.48	1.15	1.31	4.21	4.58	7.25	5.55	6.32	3.49	6.15	4.42	3.74	1.70	2.02	3.53	2.91	1.71	3.52	5.03	2.46	1.48	3.73	
SO <sub>4</sub> <sup>2-</sup>	5.10	3.15	3.73	4.00	4.50	3.77	9.21	16.56	9.20	10.91	7.84	8.78	5.58	1.90	2.89	2.80	3.26	4.06	4.57	7.03	10.28	5.15	10.92	5.56	18.00	11.21	16.99	3.90	1.97	3.30	7.25	5.99	6.06	10.46	9.52	5.86	7.04	
nss-SO <sub>4</sub> <sup>2-</sup>	5.03	3.10	3.70	3.92	4.47	3.75	9.16	16.53	9.16	10.85	7.80	8.69	5.52	1.85	2.94	2.72	3.13	4.03	4.51	6.97	10.23	5.09	10.87	5.52	17.89	11.08	16.87	3.81	1.90	3.21	7.18	5.92	6.00	10.43	9.48	5.72	6.95	
NH <sub>4</sub> <sup>+</sup>	0.58	0.54	0.65	0.46	0.68	1.08	1.54	4.31	1.59	2.46	1.36	1.10	0.76	0.31	0.32	0.31	0.33	0.86	0.75	1.13	0.98	0.64	1.15	0.57	1.72	1.79	1.68	0.27	0.20	0.37	0.72	0.62	0.70	1.54	0.87	0.36	0.78	
ng/m <sup>3</sup>																																						
Li	0.92	0.31	0.69	0.48	0.37	0.29	0.97	0.92	0.59	0.76	0.58	0.46	0.53	0.40	0.42	0.26	0.25	0.55	1.15	1.13	0.70	0.63	0.74	0.47	0.70	0.76	0.72	0.56	0.15	0.38	0.83	0.31	0.31	0.30	0.48	0.53	0.68	
Be	0.06	0.04	0.03	0.03	0.02	0.01	0.04	0.03	0.03	0.05	0.04	0.04	0.04	0.04	0.04	0.02	0.03	0.04	0.06	0.07	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.05
Sc	0.84	n.a.	0.82	1.07	1.56	<d.l.	0.03	0.38	1.56	0.81	1.41	0.76	1.50	2.69	1.37	0.78	0.28	2.42	2.61	4.12	0.82	0.65	1.21	<d.l.	0.10	1.00	0.73	0.76	0.42	0.60	1.02	<d.l.	<d.l.	1.79	0.04	1.19	2.00	4.27
Ti	5808	28.18	55.06	46.40	32.96	26.58	60.66	43.66	47.15	58.24	36.83	40.43	45.62	50.45	45.89	32.06	33.11	43.59	87.21	71.30	51.20	51.61	43.38	37.67	41.64	49.82	44.50	54.13	17.98	40.24	91.01	34.36	26.30	17.87	34.48	50.74	42.47	
V	4.72	3.16	3.44	2.26	2.61	2.43	3.71	3.52	4.71	4.66	4.49	5.17	3.45	2.55	3.07	2.02	1.91	3.44	4.37	5.14	4.02	2.79	4.19	2.72	8.57	4.65	5.19	2.86	1.34	1.67	3.65	3.37	3.10	2.83	2.42	3.57	4.96	
Cr	2.82	1.84	4.02	2.46	2.92	2.69	4.80	4.90	4.24	0.73	0.06	<d.l.	<d.l.	<d.l.	0.11	1.13	0.64	1.49	2.71	3.06	3.82	3.81	2.28	1.52	5.63	2.28	1.93	1.09	0.42	1.18	1.90	0.50	0.72	1.11	1.07	1.27	1.98	
Mn	29.19	14.38	30.58	16.84	13.85	12.84	35.45	32.31	30.23	34.44	27.63	22.02	21.50	19.23	21.97	9.91	9.32	20.97	30.85	36.86	21.54	21.91	25.58	15.90	27.50	25.90	23.57	18.07	8.13	16.25	29.51	11.24	12.50	12.85	17.99	16.28	24.63	
Co	0.36	0.20	0.34	0.25	0.21	0.17	0.38	0.31	0.29	0.34	0.24	0.19	0.25	0.25	0.26	0.14	0.13	0.23	0.42	0.42	0.26	0.24	0.25	0.17	0.28	0.27	0.25	0.23	0.08	0.17	0.25	0.15	0.12	0.11	0.17	0.23	0.26	
Ni	2.68	2.05	4.33	3.00	3.68	3.46	4.58	4.46	4.90	4.66	4.58	4.36	3.79	3.12	4.18	1.33	0.96	1.85	2.19	2.78	2.23	2.49	3.11	2.17	4.39	2.99	3.12	1.94	1.18	1.72	1.63	1.24	1.56	1.47	1.41	1.76	2.55	
Cu	5.68	4.60	7.64	3.51	6.09	5.81	8.93	9.69	7.20	11.12	9.57	5.54	4.40	4.24	6.83	3.26	2.38	3.42	5.68	9.84	4.94	5.41	7.70	5.76	10.69	7.29	6.46	2.38	3.26	4.76	7.71	5.45	3.12	5.82	6.39	3.61	5.43	
Zn	67.15	73.18	88.72	34.16	37.47	53.68	120.21	143.00	151.49	144.31	110.24	66.24	49.83	34.60	42.51	19.66	22.03	30.03	58.59	112.05	60.55	64.36	132.02	81.97	130.90	97.85	87.91	24.81	23.14	50.69	56.53	57.71	42.98	70.14	91.32	28.08	86.51	
Ga	0.63	0.31	0.52	0.32	0.33	0.27	0.84	1.24	0.77	0.60	0.44	0.43	0.29	0.27	0.16	0.15	0.40	0.63	0.75	0.49	0.41	0.63	0.35	0.68	0.67	0.64	0.35	0.09	0.23	0.54	0.24	0.29	0.38	0.42	0.31	0.58		