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Aerosol source apportionment modelling using a coupled regional–urban scale system

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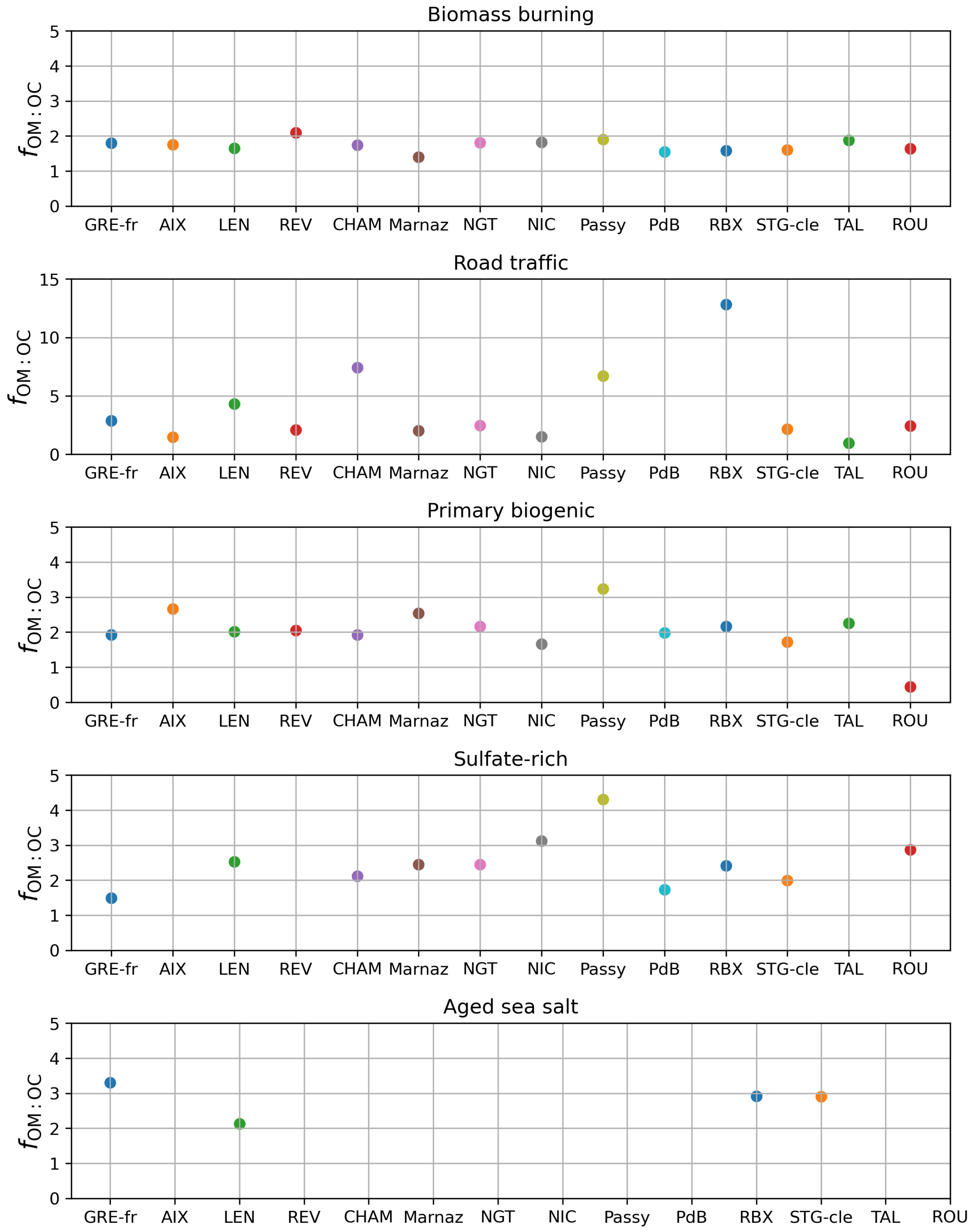

Figure S1. Derived OM to OC ratios ($f_{\mathrm{OM:OC}}$) at each of the 13 Weber *et al.* (2019) sites for the biomass burning, road traffic, primary biogenic, sulfate-rich and aged sea salt PMF factors. Note the difference in y-axis scaling for the second panel from the top. Also note that not all PMF factors are included in the analysis at each of the stations.

Table S1. Long names, abbreviations, and latitude longitude (degrees) coordinates for all stations discussed in the main text.

Station name	Abbreviation	Typology	Latitude	Longitude
Barcelonne PR	BCN	Urban background	41.38736	2.11544
Basel, St. Johann	Basel	Urban background	47.56591	7.58207
Bern, Bollwerk	Bern	Traffic	46.95099	7.44087
Magadino, Cadenazzo	Mag	Rural	46.16038	8.93394
Payerne, MétéoSuisse	Paye	Rural	46.81306	6.94447
Zurich, Kaserne	Zurich	Urban background	47.37759	8.53041
Aix-en-provence	AIX	Urban background	43.5302	5.4413
Grenoble	GRE-fr	Urban background	45.1618	5.7356
Chamonix	CHAM	Urban valley	45.9225	6.8699
Lens	LEN	Urban background	50.4368	2.8267
Revin	REV	Rural	49.91667	4.64139
Marnaz	Marnaz	Urban valley	46.0577	6.5334
Nogent	NGT	Urban background	49.2763	2.4821
Nice	NIC	Urban traffic	43.702	7.2862
Passy	Passy	Urban valley	45.9235	6.7136
Port-de-Bouc	PdB	Industrial	43.4019	4.9819
Roubaix	RBX	Traffic	50.7065	3.1806
Rouen	ROU	Urban background	49.42817	1.05808
Strasbourg	STG-cle	Traffic	48.5903	7.7450
Talence	TAL	Urban background	44.80056	-0.58806
Frauenfeld	fra	Urban background	47.55608	8.89426
Gallen	gal	Traffic	47.42894	9.38653
Vaduz	vad	Traffic	47.12373	9.52361
Vittore	vi	Rural	46.23859	9.10505
Lille	Lille	Urban	50.611048	3.140368
Paris	Paris	Urban	48.708888	2.1426666
London	London	Urban	51.521046	-0.2134921
Marseille	Mar	Urban	43.30530556	5.394694444
Hohenpeissenberg	HPB	Rural	47.80138889	11.00972222
Puy de Dôme	Puy	Rural	45.77222222	2.965833333

Table S2. Chemical composition of the lumped species discussed in the context of the Weber *et al.* (2019) PMF analysis. OC* is defined as the total OC content minus OC contributions from the individually measured organic molecules MSA, polyols, levoglucosan, and manosan, to avoid double-counting (Weber et al., 2019).

Lumped species	Included measured species
OC	OC*, 0.12×MSA, 0.40×Polyols, 0.44×Levoglucosan, 0.44×Mannosan
EC	EC
Rest	Sb, Mn, Al, Co, Li, Ce, Tl, Cs, Fe, Cu, Na^+, K^+, Mg^{2+}, Cl^-, Cr, Sn, V, La, Rb, Ba, Mo, Ti, Se, As, Ni, Ca^{2+}, Cd, Mn, Pb, Sr, Zn
$NO3^-$	$NO3^-$
SO_4^{2-}	SO_4^{2-}
NH_4^+	NH_4^+

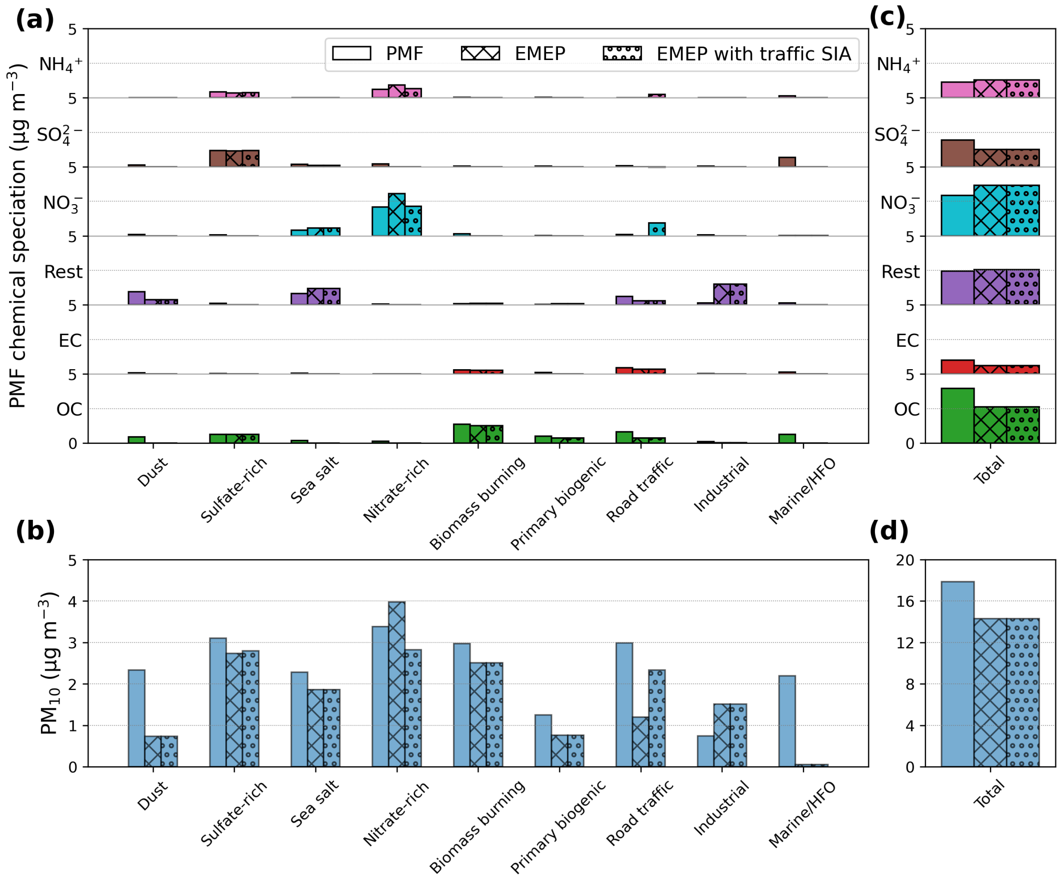

Figure S2. As Fig. 3 of the main text, but now comparing EMEP results to diagnostic EMEP calculations where SIA from on-road and off-road traffic is added to the 'road traffic' PMF factor calculations.

Table S3. Model matching for the Weber et al. (2021) PMF factors. 'All modelled PPM' from any given source refers to its EC, OA, and Rest-PPM components. A discussion of the PMF factors as derived from measurement data is given in the main text.

Modelled PMF factor	Assigned model outputs
Biomass burning	All modelled PPM from GNFR C and forest fires
Road traffic	All modelled vehicular exhaust, tyre wear and brake wear PPM. All modelled anthropogenic SOA. All modelled GNFR I (offroad) PPM.
Primary biogenic aerosol	All modelled PBAPs. All modelled GNFR L (non-livestock agricultural activity).
Dust	All modelled natural (wind blown) dust. All modelled road traffic road abrasion.
Sea salt	All modelled sea salt. All modelled coarse-mode NO_3^-.
Nitrate-rich	All fine-mode NO_3^- minus the contribution from the modelled Industrial PMF factor. All modelled NH_4^+ as split between this and the sulfate-rich factor.
Sulfate-rich	All SO_4^{2-} minus the contribution from the modelled Industrial PMF factor. All modelled NH_4^+ as split between this and the nitrate-rich factor. Background OA. All biogenic SOA.
Marine/HFO	All modelled PPM and SIA (NH_4^+, SO_4^{2-}, NO_3^-) from GNFR G (shipping), where the SIA contributions are tracked using the LFs.
Industrial	All modelled PPM from GNFR B (industry).

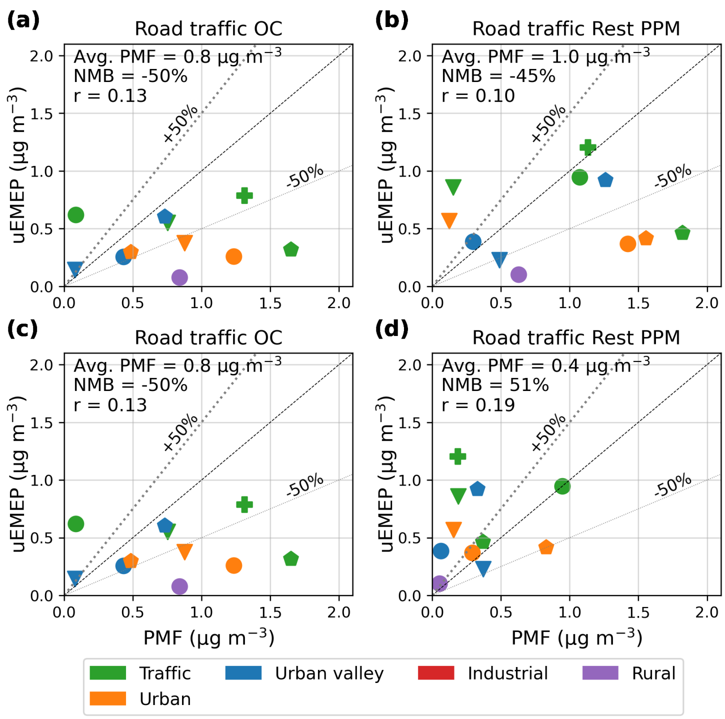

Figure S3. Comparison between PMF derived and modelled road traffic OC and Rest-PPM concentrations at the Weber et al. (2019) sites. Compared to Fig. 4 of the main text, panels (a) and (b) assume an alternative $f_{OA:OC}$ limit ratio of 1.4 while panels (c) and (d) assume an alternative ratio of 2.9.

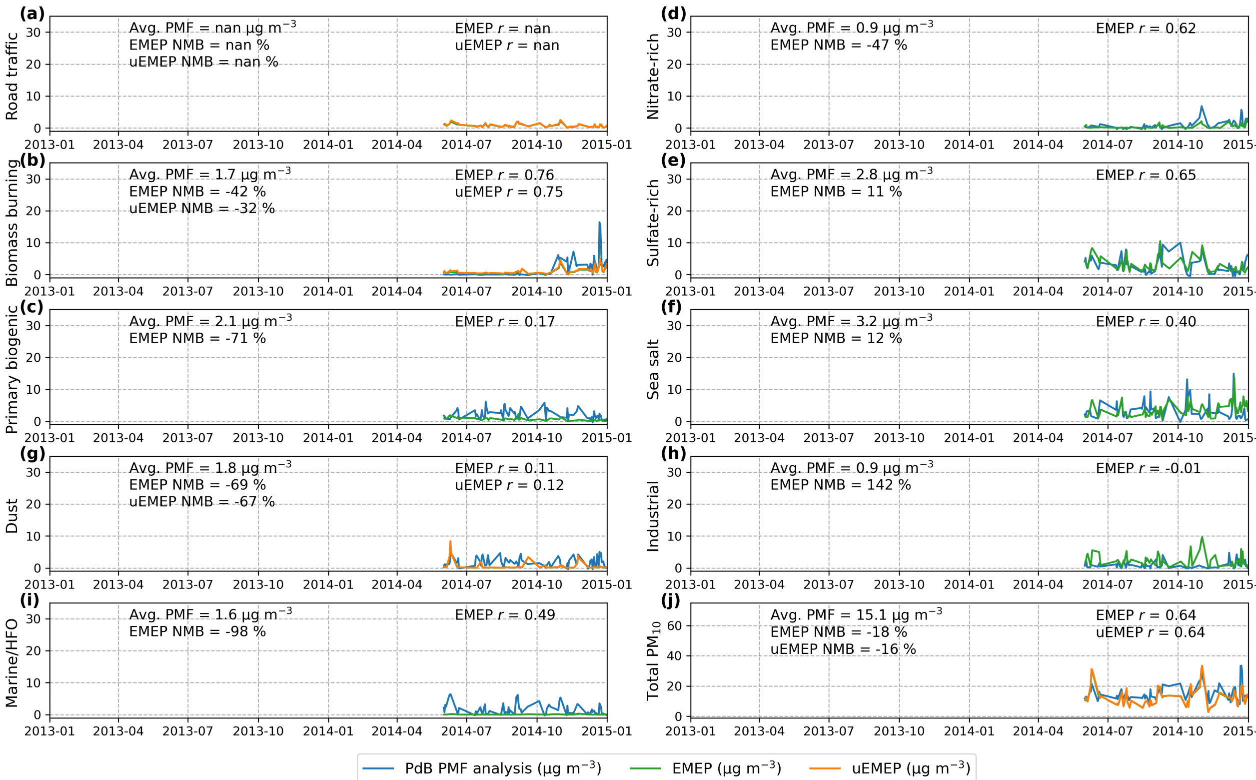

Figure S4. PMF derived and modelled surface concentrations at the PdB site. uEMEP results are shown only for those factors affected by downscaling. Note the difference in y-axis scaling in panel (h).

Table S4: Weber et al. (2019) station average PMF factor concentrations and EMEP and uEMEP model scores. Based on the stations and data availability shown in Fig. 1 of the main text. Note that here the TAL and Passy stations are included.

Station	PMF factor	Avg. PMF (µg m^{-3})	EMEP NMB	uEMEP NMB	EMEP r	uEMEP r
GRE-fr	Total PM_{10}	17.8	-16 %	14 %	0.63	0.60
	Road traffic	3.2	-43 %	-3 %	0.65	0.62
	Biomass burning	4.0	5 %	98 %	0.79	0.63
	Dust	2.8	-59 %	-43 %	0.20	0.21
	Sulfate-rich	3.0	-9 %		0.56	
	Nitrate-rich	2.4	27 %		0.61	
	Sea salt	0.7	-2 %		0.37	
	Primary biogenic	1.8	-44 %		0.62	
AIX	Total PM_{10}	17.1	-28 %	-12 %	0.68	0.74
	Road traffic	2.2	-38 %	0 %	0.29	0.47
	Biomass burning	3.6	-39 %	6 %	0.84	0.79
	Dust	1.8	-40 %	-24 %	0.18	0.21
	Sulfate-rich	0.8	286 %		0.29	
	Nitrate-rich	1.5	-17 %		0.69	
	Sea salt	1.4	16 %		0.54	
	Primary biogenic	1.7	-36 %		0.23	
	Industrial	0.5	3 %		0.43	
	Marine/HFO	3.6	-99 %		0.44	
LEN	Total PM_{10}	18.8	-10 %	-4 %	0.81	0.81
	Road traffic	2.9	-60 %	-49 %	0.60	0.61
	Biomass burning	2.3	5 %	34 %	0.76	0.76
	Sulfate-rich	4.0	-28 %		0.66	
	Nitrate-rich	5.8	3 %		0.79	
	Sea salt	3.1	-10 %		0.67	
	Primary biogenic	0.6	-13 %		0.39	
REV	Total PM_{10}	12.9	-2 %	-3 %	0.73	0.73
	Road traffic	1.9	-70 %	-70 %	0.76	0.76
	Biomass burning	1.5	7 %	-5 %	0.74	0.71
	Dust	1.8	-84 %	-84 %	0.57	0.57
	Sulfate-rich	2.1	29 %		0.59	
	Nitrate-rich	3.5	26 %		0.70	

	Sea salt	1.5	34 %		0.60	
	Primary biogenic	0.7	-2 %		0.54	
CHAM	Total PM_{10}	16.0	-60 %	37 %	0.27	0.51
	Road traffic	0.9	-55 %	0 %	0.30	0.35
	Biomass burning	7.3	-84 %	122 %	0.59	0.56
	Dust	1.4	-26 %	-14 %	0.31	0.31
	Sulfate-rich	2.2	-38 %		0.32	
	Nitrate-rich	1.2	26 %		0.17	
	Sea salt	1.1	-70 %		0.35	
	Primary biogenic	1.8	-85 %		0.61	
Marnaz	Total PM_{10}	14.5	-8 %	-3 %	0.59	0.53
	Road traffic	1.2	-6 %	21 %	0.63	0.55
	Biomass burning	3.8	5 %	14 %	0.81	0.74
	Dust	2.5	-64 %	-59 %	0.27	0.28
	Sulfate-rich	2.6	6 %		0.43	
	Nitrate-rich	1.3	95 %		0.63	
	Sea salt	0.6	-34 %		0.36	
	Primary biogenic	2.5	-45 %		0.48	
NGT	Total PM_{10}	21.4	-30 %	-26 %	0.73	0.74
	Road traffic	4.3	-76 %	-67 %	0.64	0.64
	Biomass burning	3.3	-39 %	-26 %	0.85	0.81
	Sulfate-rich	3.5	-27 %		0.61	
	Nitrate-rich	4.4	20 %		0.68	
	Sea salt	4.9	-51 %		0.55	
	Primary biogenic	0.9	-32 %		0.54	
NIC	Total PM_{10}	16.1	-33 %	-10 %	0.65	0.68
	Road traffic	1.7	-24 %	73 %	0.43	0.59
	Biomass burning	2.1	-35 %	33 %	0.84	0.88
	Dust	3.6	-79 %	-63 %	0.46	0.51
	Sulfate-rich	2.5	26 %		0.65	
	Nitrate-rich	0.7	-23 %		0.41	
	Sea salt	2.2	-18 %		0.37	
	Primary biogenic	1.4	6 %		-0.21	
	Marine/HFO	1.8	-97 %		0.33	
NGT	Total PM_{10}	21.4	-30 %	-26 %	0.73	0.74

	Road traffic	4.3	-76 %	-67 %	0.64	0.64
	Biomass burning	3.3	-39 %	-26 %	0.85	0.81
	Sulfate-rich	3.5	-27 %		0.61	
	Nitrate-rich	4.4	20 %		0.68	
	Sea salt	4.9	-51 %		0.55	
	Primary biogenic	0.9	-32 %		0.54	
PdB	Total PM_{10}	15.1	-18 %	-16 %	0.64	0.64
	Biomass burning	1.7	-42 %	-32 %	0.76	0.75
	Dust	1.8	-69 %	-67 %	0.11	0.12
	Sulfate-rich	3.6	-4 %		0.68	
	Nitrate-rich	0.9	-47 %		0.62	
	Sea salt	2.4	35 %		0.48	
	Primary biogenic	2.1	-71 %		0.17	
	Industrial	0.9	142 %		-0.01	
	Marine/HFO	1.6	-98 %		0.49	
RBX	Total PM_{10}	23.3	-18 %	-5 %	0.77	0.76
	Road traffic	2.4	-36 %	26 %	0.28	0.39
	Biomass burning	2.3	29 %	74 %	0.75	0.75
	Dust	4.4	-87 %	-75 %	0.55	0.63
	Sulfate-rich	2.8	8 %		0.46	
	Nitrate-rich	6.5	2 %		0.71	
	Sea salt	3.7	-24 %		0.53	
	Primary biogenic	1.1	-59 %		0.41	
STG-cle	Total PM_{10}	17.0	-7 %	23 %	0.77	0.73
	Road traffic	3.8	-50 %	4 %	0.53	0.42
	Biomass burning	2.5	51 %	150 %	0.73	0.71
	Dust	1.8	-72 %	-33 %	0.20	0.24
	Sulfate-rich	3.9	-22 %		0.61	
	Nitrate-rich	2.4	54 %		0.68	
	Sea salt	0.8	-5 %		0.65	
	Primary biogenic	1.8	-46 %		0.28	
ROU	Total PM_{10}	17.0	-10 %	-4 %	0.73	0.72
	Road traffic	5.3	-79 %	-69 %	0.57	0.58
	Biomass burning	1.0	117 %	141 %	0.64	0.58
	Dust	0.8	-50 %	-27 %	0.14	0.19

	Sulfate-rich	4.3	-37 %		0.62	
	Nitrate-rich	4.0	26 %		0.68	
	Sea salt	1.5	88 %		0.68	
	Primary biogenic	0.1	578 %		0.55	
TAL	Total PM_{10}	25.8	-43 %	-36 %	0.79	0.79
	Road traffic	1.3	13 %	42 %	0.60	0.55
	Biomass burning	6.5	-49 %	-29 %	0.68	0.67
	Dust	1.7	-72 %	-64 %	0.60	0.57
	Sulfate-rich	0.2	1097 %		0.64	
	Nitrate-rich	10.0	-57 %		0.88	
	Sea salt	2.8	-38 %		0.79	
	Primary biogenic	0.5	25 %		0.39	
	Industrial	1.8	-78 %		0.57	
	Marine/HFO	1.1	-96 %		0.65	
Passy	Total PM_{10}	28.3	-71 %	-50 %	0.45	0.58
	Road traffic	3.0	-79 %	-58 %	0.30	0.44
	Biomass burning	11.0	-79 %	-35 %	0.80	0.71
	Dust	5.4	-91 %	-86 %	0.19	0.21
	Sulfate-rich	3.6	-51 %		0.33	
	Nitrate-rich	2.0	-5 %		0.37	
	Sea salt	1.0	-68 %		0.38	
	Primary biogenic	2.2	-71 %		0.61	

Table S5. Model matching for the Daellenbach et al. (2020b, 2017) PMF factors. A discussion of the PMF factors as derived from measurement data is given in the main text.

Modelled PMF factor	Assigned model outputs
HOA	All modelled primary OA from GNFR F (road transport) vehicular exhaust, and all primary OA from offroad vehicles (GNFR I) and shipping (GNFR G).
SCOA	All modelled primary OA from GNFR F (road transport) tyre wear.
Brake wear metals	All modelled Cu and Fe from GNFR F (road transport) break wear, with modelled break wear assumed to be comprised of 70 % Cu and Fe.
BBOA	All primary OA from GNFR C (stationary combustion) and all primary OA from forest fires.
aSOA	All modelled aSOA.
bSOA	All modelled bSOA and PBAPs.

Table S6: Daellenbach et al. (2020b, 2017) station average PMF factor concentrations and EMEP and uEMEP model scores. The OOA* factor is constructed as the sum of the aSOA and bSOA factors.

Station	PMF factor	Avg. PMF (µg m^{-3})	EMEP NMB	uEMEP NMB	EMEP r	uEMEP r
Bern	Vehic. wear	1.4	-85 %	-42 %	0.65	0.58
	Total OA	6.1	-7 %	42 %	0.47	0.42
	HOA	0.7	-70 %	-34 %	0.07	0.15
	BBOA	1.4	74 %	240 %	0.39	0.41
	SCOA	1.4	-91 %	-68 %	0.21	0.06
	aSOA	1.3	-74 %		0.30	
	bSOA	1.2	101 %		0.76	
	OOA*	2.5	12 %		0.58	
Basel	Total OA	5.1	24 %	99 %	0.65	0.50
	HOA	0.8	-67 %	-47 %	0.43	0.42
	BBOA	1.2	173 %	449 %	0.66	0.55
	SCOA	0.6	-83 %	-56 %	0.21	0.13
	aSOA	1.1	-66 %		0.10	
	bSOA	1.3	70 %		0.89	
	OOA*	2.4	6 %		0.63	
Magadino	Vehic. wear	0.3	-62 %	-52 %	0.82	0.19
	Total OA	7.2	-49 %	-49 %	0.15	0.12
	HOA	0.5	-75 %	-74 %	0.36	0.32
	BBOA	2.9	-80 %	-80 %	0.29	0.19
	SCOA	0.6	-87 %	-84 %	0.49	0.23
	aSOA	1.6	-76 %		-0.02	
	bSOA	1.6	56 %		0.82	
	OOA*	3.2	-10 %		0.52	
Payerne	Vehic. wear	0.1	14 %	85 %	0.65	0.69
	Total OA	4.3	-11 %	-6 %	0.71	0.72
	HOA	0.5	-77 %	-73 %	0.43	0.42
	BBOA	0.9	12 %	28 %	0.58	0.59
	SCOA	0.4	-89 %	-84 %	0.18	0.15
	aSOA	1.1	-71 %		0.24	
	bSOA	1.5	62 %		0.86	
	OOA*	2.5	7 %		0.67	

Zurich	Vehic. wear	0.6	-54 %	-13 %	0.65	0.54
	Total OA	5.0	51 %	126 %	0.66	0.56
	HOA	0.7	-54 %	-41 %	0.40	0.36
	BBOA	1.1	268 %	589 %	0.57	0.50
	SCOA	0.8	-78 %	-61 %	0.57	0.47
	aSOA	1.1	-63 %		0.28	
	bSOA	1.4	84 %		0.83	
	OOA*	2.5	21 %		0.65	
Frauenland	Total OA	5.3	-19 %	5 %	0.63	0.71
	HOA	0.7	-78 %	-58 %	0.26	0.24
	BBOA	1.1	15 %	100 %	0.56	0.60
	SCOA	1.1	-93 %	-78 %	0.44	0.33
	aSOA	1.0	-65 %		0.09	
	bSOA	1.4	78 %		0.87	
	OOA*	2.4	17 %		0.59	
Gallen	Total OA	4.4	-11 %	47 %	0.69	0.58
	HOA	0.5	-72 %	-35 %	0.36	0.37
	BBOA	0.8	52 %	329 %	0.52	0.36
	SCOA	0.9	-93 %	-65 %	0.46	0.35
	aSOA	0.9	-65 %		0.16	
	bSOA	1.3	67 %		0.82	
	OOA*	2.2	13 %		0.59	
Vaduz	Total OA	5.0	-25 %	-3 %	0.44	0.45
	HOA	0.6	-86 %	-53 %	0.20	0.14
	BBOA	1.1	-38 %	27 %	0.38	0.38
	SCOA	1.0	-96 %	-77 %	0.56	0.35
	aSOA	1.0	-74 %		0.19	
	bSOA	1.3	107 %		0.70	
	OOA*	2.3	28 %		0.46	
Vittore	Total OA	10.5	-72 %	-71 %	-0.15	-0.18
	HOA	0.4	-85 %	-78 %	0.11	0.16
	BBOA	6.4	-94 %	-94 %	0.07	-0.08
	SCOA	0.7	-96 %	-90 %	-0.13	-0.05
	aSOA	1.5	-78 %		-0.04	

bSOA	1.5	43 %	0.84
OOA*	3.0	-17 %	0.41

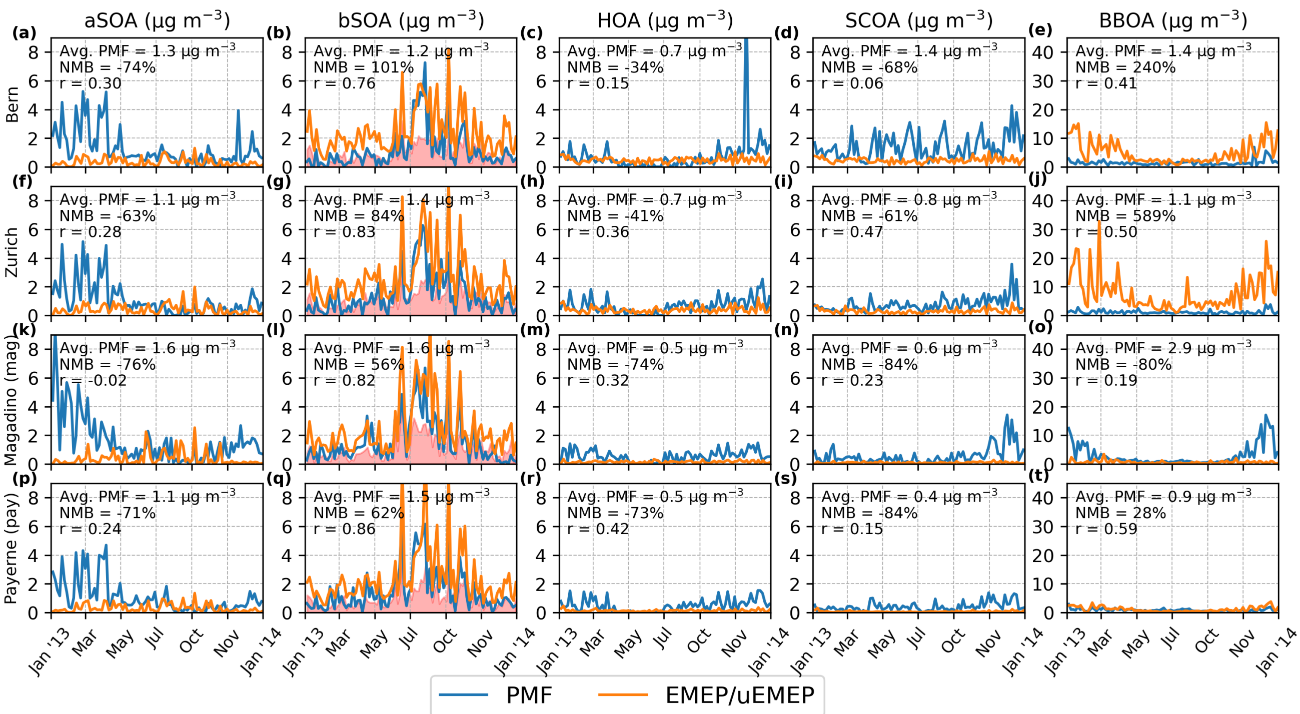

Figure S5. Comparison of PMF derived OA fractions from Daellenbach et al. (2017) and the corresponding EMEP/uEMEP modelling results. Note the difference in y-axis scaling for the right-most panels. Shading in the panels showing bSOA results indicate the modelled contribution of PBAPs to this factor.

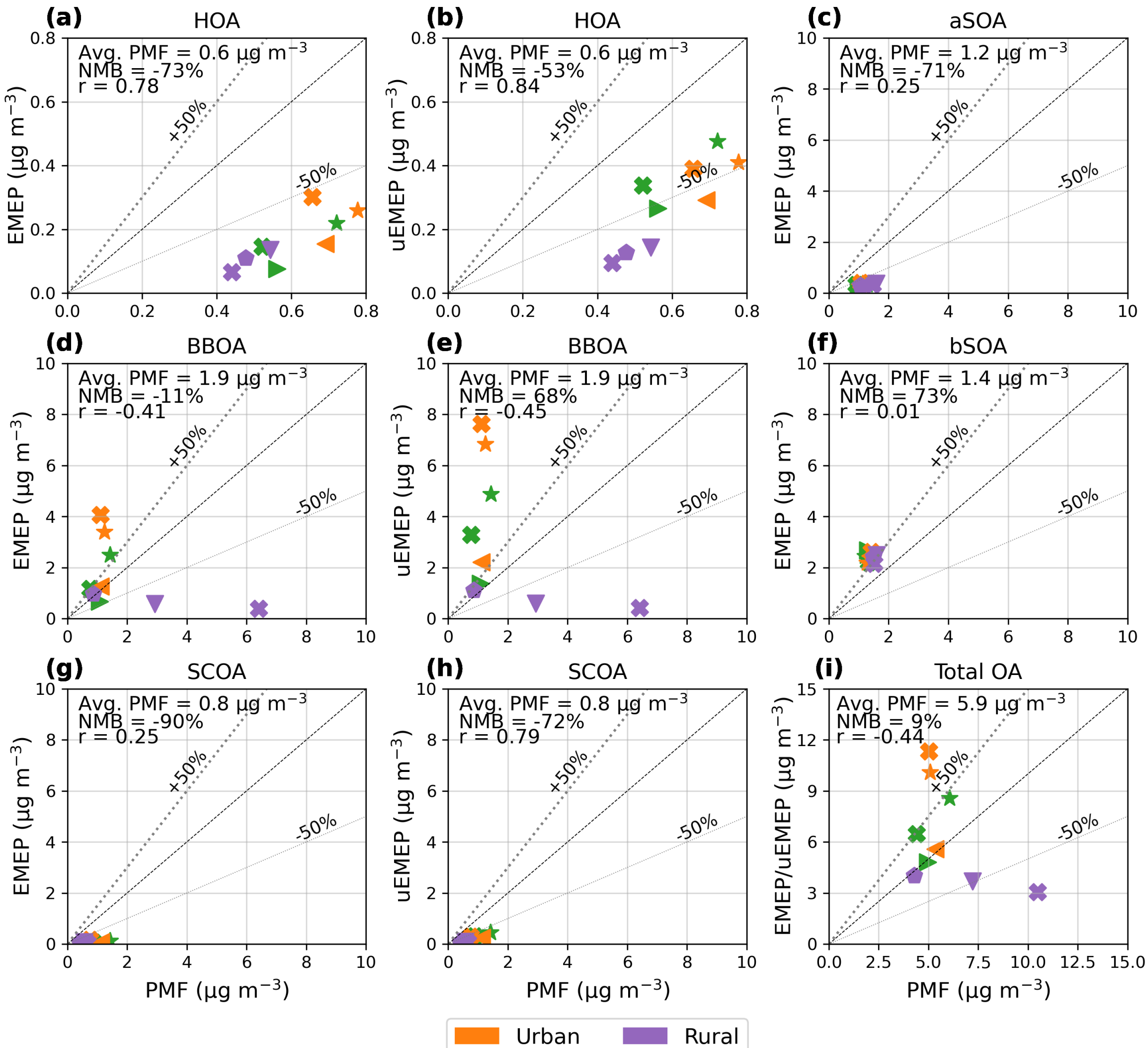

Figure S6. Average observed and simulated OA PMF factor concentrations at the Daellenbach et al. (2017) sites. Markers correspond to those shown in Fig. 1 of the main text. Note the differences in axis scaling for panel (i).

Table S7. Model matching for the Chen et al. (2022) PMF factors. A discussion of the PMF factors as derived from measurement data is given in the main text.

Modelled PMF factor	Assigned model outputs
HOA	All modelled fine-mode primary OA from GNFR F (road transport) vehicular exhaust, and all fine-mode primary OA from offroad vehicles (GNFR I) and shipping (GNFR G).
BBOA	All fine-mode primary OA from GNFR C (stationary combustion) and all fine-mode primary OA from forest fires.
OOA	All modelled aSOA and bSOA.

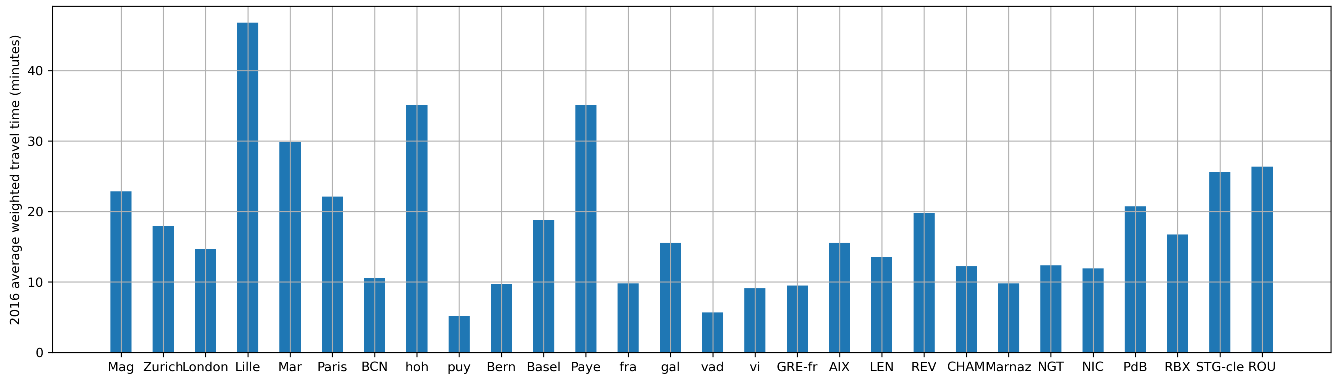

Figure S7. Average weighted travel times of the downscaled uEMEP PM_{10} at the sites discussed in the main text.

Table S8. Chen *et al.* (2022) station average PMF factor concentrations and EMEP and uEMEP model scores based on daily averaged data.

Station	PMF factor	Avg. obs (µg m^{-3})	EMEP NMB	uEMEP NMB	EMEP r	uEMEP r
Magadino	HOA	0.5	-79 %	-77 %	0.54	0.48
	BBOA	0.8	-40 %	-38 %	0.51	0.44
	OOA	4.3	-59 %	-59 %	0.73	0.73
	Total OA	5.7	-58 %	-57 %	0.70	0.69
Zurich	HOA	0.2	52 %	84 %	0.41	0.44
	BBOA	0.5	959 %	1697 %	0.26	0.27
	OOA	1.0	84 %	84 %	0.82	0.82
	Total OA	1.7	325 %	536 %	0.42	0.38
London	HOA	0.5	-44 %	-41 %	0.75	0.73
	BBOA	1.2	-43 %	-44 %	0.68	0.68
	OOA	2.2	-58 %	-58 %	0.46	0.46
	Total OA	3.8	-52 %	-51 %	0.77	0.77
Lille	HOA	0.6	-61 %	-50 %	0.68	0.66
	BBOA	0.7	279 %	298 %	0.78	0.80
	OOA	3.5	-66 %	-66 %	0.60	0.60
	Total OA	4.8	-15 %	-11 %	0.86	0.86
Marseille	HOA	0.4	-76 %	-70 %	0.48	0.50
	BBOA	1.2	53 %	133 %	0.78	0.79
	OOA	3.1	-43 %	-43 %	0.37	0.37
	Total OA	4.7	-23 %	-3 %	0.70	0.76
Paris	HOA	0.5	-55 %	-54 %	0.67	0.67
	BBOA	0.7	165 %	157 %	0.78	0.79
	OOA	3.1	-61 %	-61 %	0.58	0.58
	Total OA	4.3	-22 %	-24 %	0.88	0.88
Barcelona	HOA	0.4	-21 %	-60 %	0.46	0.39
	BBOA	0.7	455 %	417 %	0.63	0.58
	OOA	2.9	-11 %	-11 %	0.81	0.81
	Total OA	4.0	65 %	54 %	0.67	0.67
Hohenpeissenberg	HOA	0.1	-47 %	-43 %	0.26	0.25
	BBOA	0.1	586 %	651 %	0.16	0.16
	OOA	2.8	-30 %	-30 %	0.69	0.69
	Total OA	3.0	-11 %	-9 %	0.75	0.74
Puy de Dome	HOA	0.5	-91 %	-92 %	0.45	0.44
	OOA	3.9	-60 %	-60 %	0.62	0.62
	Total OA	4.5	-47 %	-48 %	0.59	0.59

Table S9. Chen *et al.* (2022) station average PMF factor concentrations and EMEP and uEMEP model scores based on hourly averaged data.

Station	PMF factor	Avg. obs (µg m^{-3})	EMEP NMB	uEMEP NMB	uEMEP r	EMEP r
Magadino	HOA	0.5	-79%	-77%	0.29	0.18
	BBOA	0.8	-40%	-37%	0.40	0.28
	OOA	4.3	-59%	-59%	0.61	0.61
	Total OA	5.6	-58%	-57%	0.58	0.56
Zurich	HOA	0.2	53%	86%	0.24	0.27
	BBOA	0.5	986%	1736%	0.24	0.27
	OOA	1.0	84%	84%	0.64	0.64
	Total OA	1.7	333%	547%	0.33	0.29
London	HOA	0.5	-44%	-40%	0.48	0.45
	BBOA	1.1	-43%	-44%	0.63	0.62
	OOA	2.1	-58%	-58%	0.44	0.44
	Total OA	3.7	-51%	-51%	0.71	0.70
Lille	HOA	0.6	-61%	-50%	0.42	0.36
	BBOA	0.7	276%	295%	0.67	0.59
	OOA	3.5	-66%	-66%	0.53	0.53
	Total OA	4.8	-15%	-11%	0.74	0.67
Marseille	HOA	0.4	-75%	-69%	0.34	0.36
	BBOA	1.1	55%	133%	0.64	0.56
	OOA	3.1	-43%	-43%	0.36	0.36
	Total OA	4.6	-22%	-3%	0.62	0.59
Paris	HOA	0.4	-55%	-54%	0.50	0.50
	BBOA	0.7	163%	155%	0.67	0.68
	OOA	3.1	-61%	-61%	0.53	0.53
	Total OA	4.2	-23%	-24%	0.74	0.75
Barcelona	HOA	0.4	-18%	-60%	0.41	0.28
	BBOA	0.6	458%	419%	0.44	0.36
	OOA	2.9	-11%	-11%	0.70	0.70
	Total OA	4.0	65%	54%	0.46	0.42
Hohenpeissenberg	HOA	0.1	-47%	-43%	0.18	0.17
	BBOA	0.1	587%	652%	0.14	0.14
	OOA	2.8	-30%	-30%	0.60	0.60
	Total OA	3.0	-11%	-9%	0.63	0.63
Puy de Dome	HOA	0.6	-91%	-92%	0.30	0.30
	OOA	4.4	-61%	-61%	0.54	0.54
	Total OA	4.9	-49%	-50%	0.48	0.49

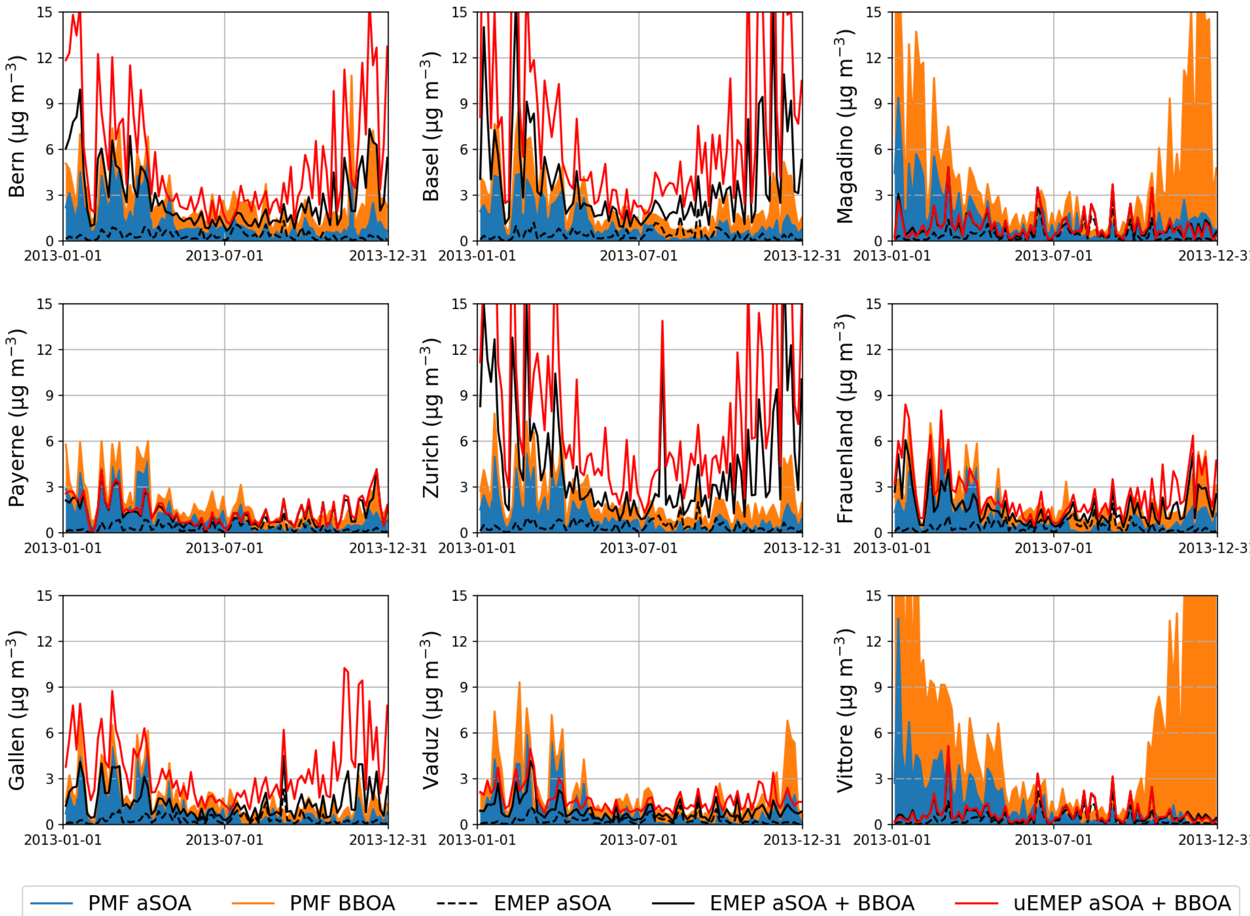

Figure S8. Comparison of PMF derived aSOA and BBOA contributions and the EMEP and uEMEP modelled contributions at the Daellenbach et al. (2017) sites. The PMF contributions are show as cumulative shaded areas.

Table S10. Statistics based on daily mean data from all PMF datasets, comparing the model configurations where a volatile CPOA ratio of 0.5 is assumed (indicated by EMEP* and uEMEP*). The OOA* factor is constructed as the sum of the aSOA and bSOA factors.

Dataset	PMF factor	Stations	Avg. PMF (µg m^{-3})	EMEP* NMB	uEMEP* NMB	EMEP* r	uEMEP* r	EMEP* r_t	uEMEP* r_t
Weber	Total PM_{10}	12	17.5	-19 %	-6 %	0.62	0.74	0.67	0.68
	Road traffic	11	2.9	-57 %	-30 %	0.37	0.23	0.52	0.54
	Biomass burning	12	2.9	-13 %	29 %	0.04	0.87	0.76	0.74
	Dust	10	2.3	-69 %	-56 %	0.14	0.42	0.30	0.33
	Sulfate-rich	12	3.1	-10 %	-10 %	0.13	0.13	0.54	0.54
	Nitrate-rich	12	3.3	17 %	17 %	0.96	0.96	0.61	0.61
	Sea salt	12	2.0	-11 %	-11 %	0.70	0.70	0.51	0.51
	Primary biogenic	12	1.3	-40 %	-40 %	0.43	0.43	0.38	0.38
	Industrial	2	0.7	104 %	104 %	1.00	1.00	0.21	0.21
	Marine/HFO	3	2.2	-98 %	-98 %	0.35	0.07	0.42	0.49
Daellenbach	Total OA	9	5.9	-21 %	-3 %	-0.40	-0.44	0.47	0.45
	HOA	9	0.6	-73 %	-53 %	0.78	0.84	0.29	0.29
	BBOA	9	1.9	-55 %	-15 %	-0.41	-0.45	0.44	0.39
	SCOA	9	0.8	-90 %	-72 %	0.25	0.79	0.33	0.22
	aSOA	9	1.2	-1 %	-1 %	-0.22	-0.22	0.44	0.44
	bSOA	9	1.4	73 %	73 %	0.01	0.01	0.82	0.82
	OOA*	9	2.6	39 %	39 %	-0.33	-0.33	0.57	0.57
	Vehic. wear	4	0.5	-68 %	-31 %	0.61	0.96	0.69	0.50
Chen	Total OA	8	4.2	-25 %	-24 %	-0.03	0.02	0.74	0.75
	HOA	8	0.4	-58 %	-59 %	0.28	0.43	0.54	0.52
	BBOA	7	0.8	-2 %	5 %	-0.01	0.13	0.60	0.60
	OOA	8	3.0	-26 %	-26 %	-0.01	-0.01	0.73	0.73