Online Supplement to:

Spatial and temporal variability of ultrafine particles, NO_2, $PM_{2.5}$, $PM_{2.5}$ absorbance, PM_{10} and PM_{coarse} in Swiss study areas

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ONLINE SUPPLEMENT A: Distribution of sites in relation to traffic sources

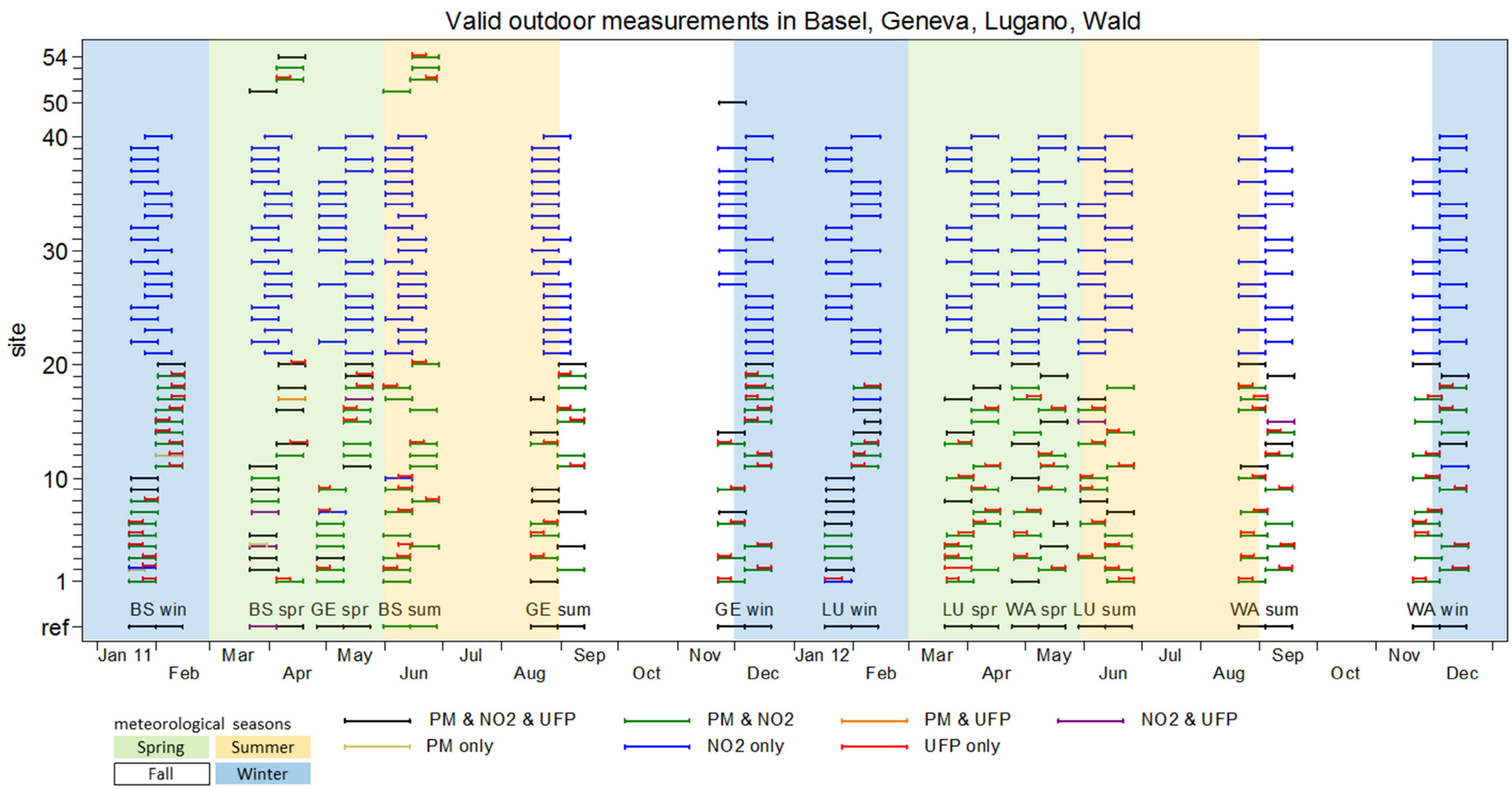
Table A.1: Overview of the distribution of sites in relation to traffic sources, by study area

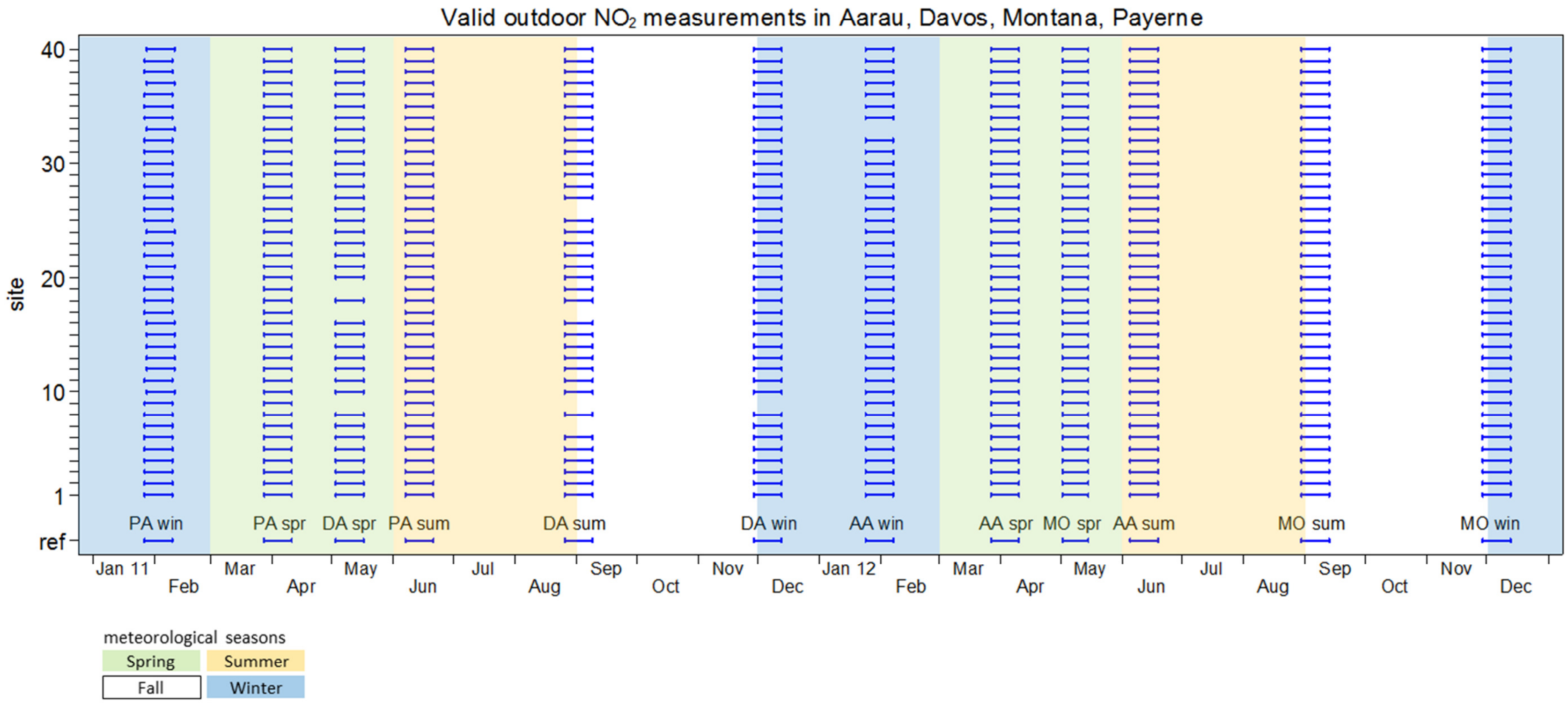
Traffic intensity within 100 m (#vehicles/24h * m) [a]									
Study area	N	Mean	Min	P10	P25	Median	P75	P90	Max
Aarau	40	1526898	16150	45118	285792	1089713	2585197	3762847	4457540
Basel	40	1451740	0	66554	288491	1159998	2154110	3504501	5092020
Davos	38	395112	0	24407	102368	226134	527485	1039352	1722403
Geneva	38	2499700	0	40425	272032	2052675	3270488	6249643	16677445
Lugano	37	1421585	0	156373	315404	1275077	2010812	2588271	7143705
Montana	40	733515	18376	65771	251298	480599	1118220	1893298	2206622
Payerne	40	424824	0	28592	80479	316539	714329	892447	1629353
Wald	39	662769	11672	37542	76680	497961	964446	1599949	3521665
All areas	312	1134386	0	40425	151843	591102	1573076	2846840	16677445
Distance to major road (m) [b]									
Study area		Mean	Min	P10	P25	Median	P75	P90	Max
Aarau	40	210	0.50	2.8	7.0	104	353	586	1083
Basel	40	141	0.36	8.5	29	87	183	335	795
Davos	38	2052	4.7	608.3	976	1907	2941	3952	6116
Geneva	38	111	1.5	6.5	11	53	114	212	1167
Lugano	37	94	2.3	8.1	15	69	142	272	298
Montana	40	468	1.3	4.9	66	313	785	1276	1514
Payerne	40	791	29	126	190	700	1094	1852	2222
Wald	39	663	4.7	10	225	478	897	1749	2591
All areas	312	564	0.50	2.8	7.0	202	764	1571	6116

[a] Total traffic load of roads within 100m from the site (calculated as the sum of (traffic intensity * length of each segment within 100m from the site))

[b] Where major road is defined as a road with ≥5000 vehicles/24h

ONLINE SUPPLEMENT B: Sampling schedule





Sampling periods of the sampling campaigns for SAPALDIA 3 air monitoring campaigns in the different study areas

ONLINE SUPPLEMENT C: Quality assessment / quality control

1.1 Blanks and detection limits

Study area	Average blank (n)			Detection limit [a]			Number of samples below the detection Limit (total number of valid samples)[b]				
	NO_2 (µg/m³)	PM (µg/m³)	PM abs (10^{-5} m^{-1})	NO_2 (µg/m³)	PM (µg/m³)	PM abs (10^{-5} m^{-1})	NO_2	$PM_{2.5}$	$PM_{2.5}$ abs	PM_{10}	PM_{coarse}
Aarau	-0.1 (14)	-	-	0.3	-	-	0 (119)	-	-	-	-
Basel	-0.3 (12)	- [b]	- [b]	0.6	- [b]	- [b]	0 (114)	0 (54) [b]	0 (54) [b]	0 (53) [b]	3 (53) [b]
Davos	-0.3 (13)	-	-	0.6	-	-	0 (111)	-	-	-	-
Geneva	1.8 (15) [c]	-0.2 (11)	0.002 (11)	22.9	1.2	0.016	39 (112)	0 (50)	0 (50)	0 (50)	0 (50)
Lugano	-0.2 (24)	0.0 (12)	-0.004 (4)	0.5	0.4	0.017	0 (111)	0 (47)	0 (47)	0 (48)	0 (47)
Montana	-0.1 (12)	-	-	0.3	-	-	0 (120)	-	-	-	-
Payerne	-0.3 (11)	-	-	0.4	-	-	0 (120)	-	-	-	-
Wald	-0.1 (21)	0.0 (12)	0.001 (12)	0.8	0.5	0.012	0 (117)	0 (54)	0 (54)	0 (52)	0 (51)
Overall	0.1 (122) [d]	0.0 (35)	0.001 (27)	8.1	0.8	0.015	46 (924)	0 (205)	0 (205)	0 (203)	3 (201)

Table C.1: Average blank concentrations, detection limits and number of samples below the detection limit for all areas separately and combined.

[a] Determined as 3*the standard deviation of the blanks; [b] No blanks were taken for Basel, so we used the overall blank to calculate the number of samples below the detection limit; [c] If we excluded one outlier (29.5 µg/m³), the average field blank was -0.2 µg/m³ (n=14), detection limit 0.4 µg/m³ and 0 (out of 112) samples under the detection limit; [d] If we excluded the same outlier in Geneva, the average field blank was -0.2 µg/m³(n=121), detection limit 0.6 µg/m³ and 0 (out of 924) samples under the detection limit.

1.2 Duplicates and intercomparability

NO_2, $PM_{2.5}$, $PM_{2.5}$ absorbance, PM_{10} and PM_{coarse}

The coefficient of variation was determined as shown below, following Eeftens et al (2012).(Eeftens et al., 2012) Where *n* is the number of duplicates and *i* is the sampling round (1 to *n*). S_i is the concentration of sample *i* and D_i is the concentration of corresponding duplicate *i*.

$$CV = \frac{\sqrt{\frac{\sum_{i=1}^{n}(S_i - D_i)^2}{2*n}}}{\frac{\sum_{i=1}^{n}(S_i + D_i)}{2*n}} * 100\%$$

	NO_2		PM mass		PM absorbance	
Area	CV	n	CV	n	CV	n
Aarau	7.3%	13	-	-	-	-
Basel	4.1%	19	-	-	-	-
Davos	2.6%	15	-	-	-	-
Geneva	3.8%	21	27.6%	2	4.3%	2
Lugano	3.5%	29	18.2%	1	10.3%	1
Montana	4.6%	12	-	-	-	-
Payerne	2.4%	15	-	-	-	-
Wald	5.4%	30	-	-	-	-
Overall	4.4%	154	28.6%	3	5.1%	3

Table C.2: Coeffients of Variance (CV) and number of duplicates for NO_2, PM mass and PM absorbance, for all areas separately and combined. Because of limited sample numbers, $PM_{2.5}$ and PM_{10} duplicate data were analysed together, rather than separately.

PNC and LDSA

All 14 MiniDisc devices were run simultaneously in the lab while a candle was burning, and blown out. It can be clearly seen that the particle number increases while the average particle size drops when the candle is blown out. Differences between the devices were small, and correlations were high.

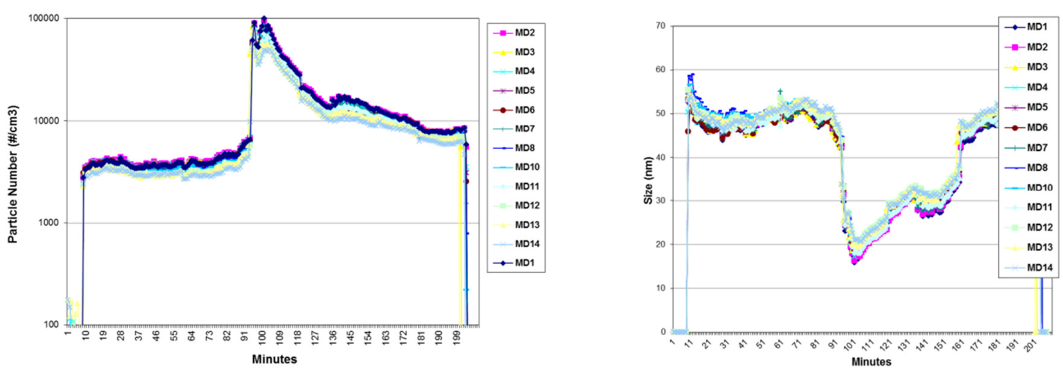


Figure C.1: Example of a time series plots (PNC and particle size) of the 14 miniDiscs running in parallel in the lab, to assess intercomparability.

1.3 Co-located measurements

Table C.3.: Agreement between SAP3 measurements and measurements by routine monitors with which they were co-located.

Area	Station	Pollutant	N	Method used by routine monitoring station	Duration of measurements	R^2	Mean station	Mean SAPALDIA 3	Difference(station-SAPALDIA 3)
Aarau	Aarau Suhr	NO_2 (µg/m³)	3	Thermo 42i / Chemiluminescence	2-week integrated samples	0.88	32.2	31.2	0.9
Basel	Basel StJohann	NO_2 (µg/m³)	6	Horiba APNA 370 CE / Chemiluminescence	2-week integrated samples	0.97	24.0	24.4	-0.4
		PM_{10} (µg/m³)	6	2011: TEOM 1400 FDMS / Oscillating micro balance 2012: Digitel DHA-80 / Gravimetric	2-week integrated samples	1.00	23.3	18.1	5.2
		PNC_spring (cm^{-3})	592 [b]	TSI 3022 / Condensation Particle Counter	1-hour averages	0.78	12450	14695	-2245
		PNC_spring (cm^{-3})	24 [c]	TSI 3022 / Condensation Particle Counter	24-h averages	0.93	12434	15008	-2574
	Basel Binningen NABEL [a]	NO_2 (µg/m³)	3	Horiba APNA 370 CE / Chemiluminescence	2-week integrated samples	1.00	31.1	28.7	2.4
Davos	Davos Promenade	NO_2 (µg/m³)	3	Horiba APNA 360E / Chemiluminescence	2-week integrated samples	1.00	18.1	18.4	-0.3
Geneva	Geneva StClotilde	NO_2 (µg/m³)	6	Horiba APNA 370 / Chemiluminescence	2-week integrated samples	0.96	37.6	33.1	4.6
		PM_{10} (µg/m³)	6	Digitel / Gravimetric high volume sampler	2-week integrated samples	0.98	20.3	22.4	-2.1
	Geneva Wilson	NO_2 (µg/m³)	2	Ecotech EC 9841 / Chemiluminescence	2-week integrated samples	1.00	40.1	39.3	0.8
		PM_{10} (µg/m³)	2	TEOM FDMS / Gravimetric micro balance	2-week integrated samples	1.00	28.5	25.0	3.5
Lugano	Lugano University NABEL	NO_2 (µg/m³)	6	Horiba APNA 360 / Chemiluminescence	2-week integrated samples	0.98	35.5	28.7	6.8
		$PM_{2.5}$ (µg/m³)	6	Thermo Scientific MAAP 5012, PM2.5, EUSAAR-2	2-week integrated samples	0.99	21.4	20.1	1.3
		PM_{10} (µg/m³)	6	TEOM 8500 FDMS micro balance	2-week integrated samples	0.99	25.2	27.7	-2.5
		PNC spring (cm^{-3})	666 [b]	TSI 3775 / Condenstation Particle Counter + aerosol dilutor	1-hour averages	0.70	14090	12081	2009
		PNC spring (cm^{-3})	27 [c]	TSI 3775 / Condenstation Particle Counter + aerosol dilutor	24-h averages	0.88	13873	11886	1987
		PNC summer (cm^{-3})	655 [b]	TSI 3775 / Condenstation Particle Counter + aerosol dilutor	1-hour averages	0.83	10613	8551	2062
		PNC summer (cm^{-3})	26 [c]	TSI 3775 / Condenstation Particle Counter + aerosol dilutor	24-h averages	0.87	10600	8605	1995
		PNC winter (cm^{-3})	672 [b]	TSI 3775 / Condenstation Particle Counter + aerosol dilutor	1-hour averages	0.70	30033	28411	1622
		PNC winter (cm^{-3})	27 [c]	TSI 3775 / Condenstation Particle Counter + aerosol dilutor	24-h averages	0.94	29832	28200	1632
		PNC all year	3 [d]	TSI 3775 / Condenstation Particle Counter + aerosol dilutor	24 to 27-day averages	1.00	18245	16348	1897
	Lugano Pregassona	NO_2 (µg/m³)	3	Horiba APNA 370 / Chemiluminescence	2-week integrated samples	1.00	35.2	25.9	3.8
		PM_{10} (µg/m³)	3	Thermo FH 62 I-R / Beta-ray absorption	2-week integrated samples	1.00	35.3	31.6	-3.1
Montana	Crans-Montana	NO_2 (µg/m³)	3	Ecotech EC-9841 / Chemiluminescence	2-week integrated samples	0.88	12.5	10.1	2.4
Pyerne	Payerne NABEL	NO_2 (µg/m³)	3	Thermo 42i TL / Chemiluminescence	2-week integrated samples	1.00	17.3	12.1	5.2
Wald	Wald Höhenklinik	NO_2 (µg/m³)	6	Thermo 42i / Chemiluminescence	2-week integrated samples	0.98	7.5	6.3	1.1
		PM_{10} (µg/m³)	6	Thermo Teom1400 / FDMS / TEOM	2-week integrated samples	0.90	8.9	8.9	0.0

[a] SAPALDIA3 measurements were not exactly collocated with the Basel Binningen NABEL station, but a NO_2-only site was very close to it; [b] PNC comparisons shown for hourly average values; [c] PNC comparisons shown as daily values, where only days with >80% hours of valid data are considered; [d] PNC comparisons shown for seasonal averages, with three 26 or 27-day averages.

Figure C.2.: PNC comparison of hourly average values between CPC and MiniDisc

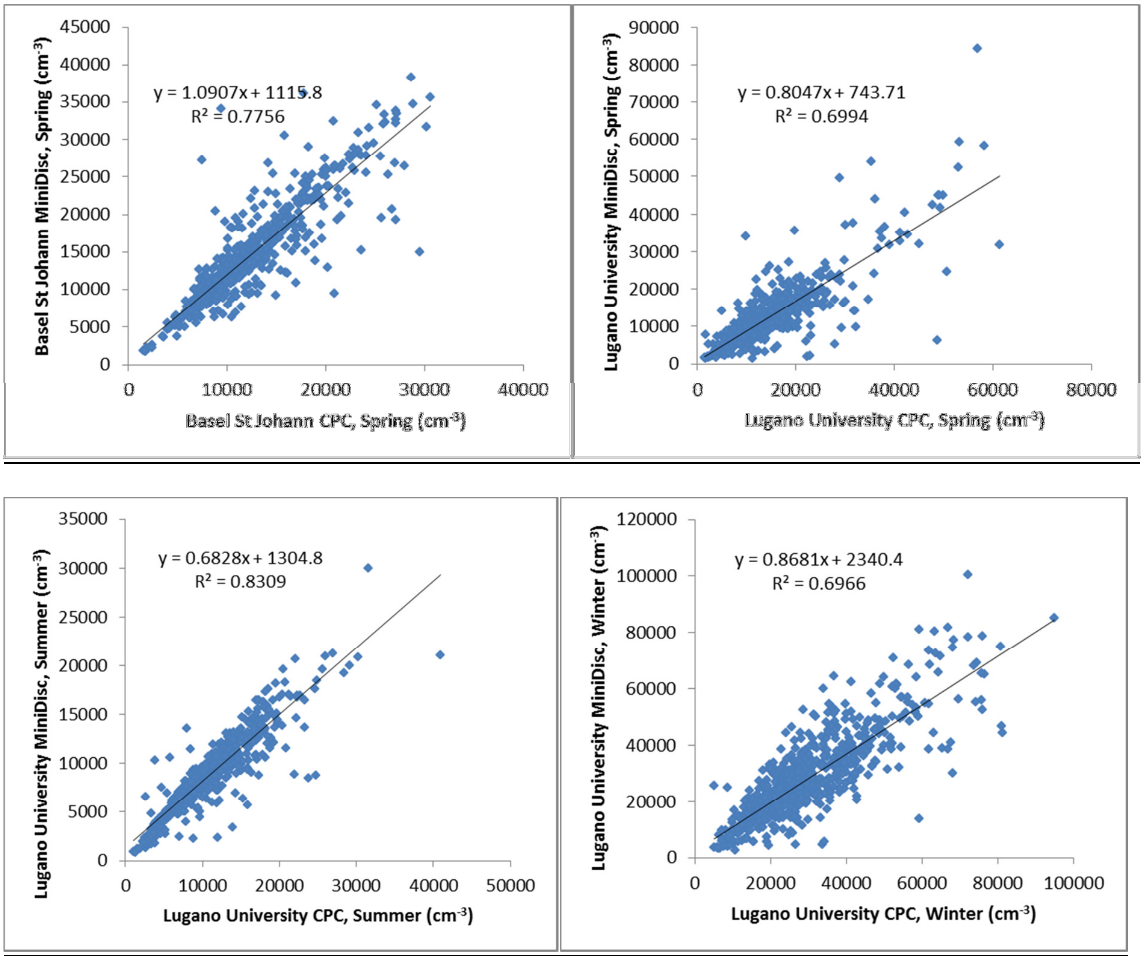


Figure C.3.: PNC comparison of daily average values between CPC and MiniDisc

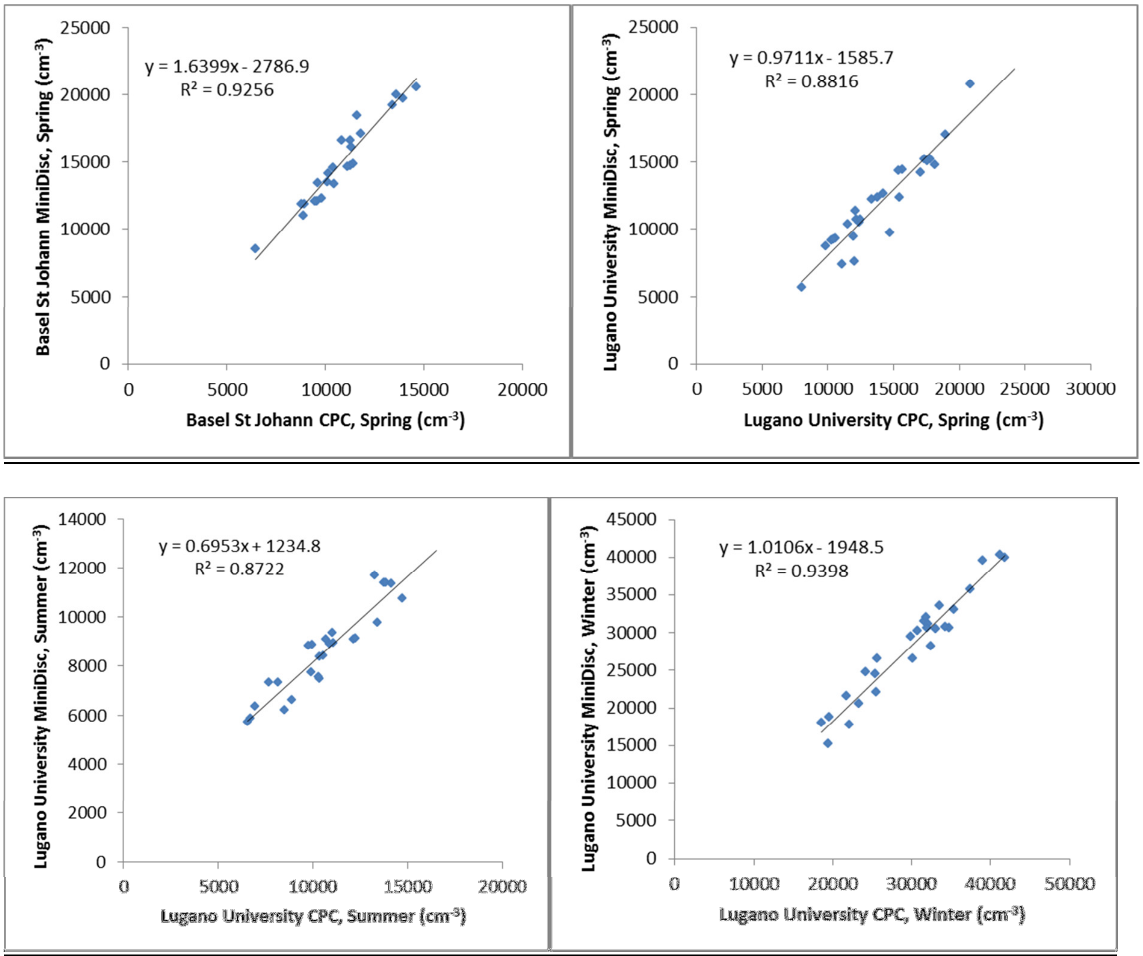
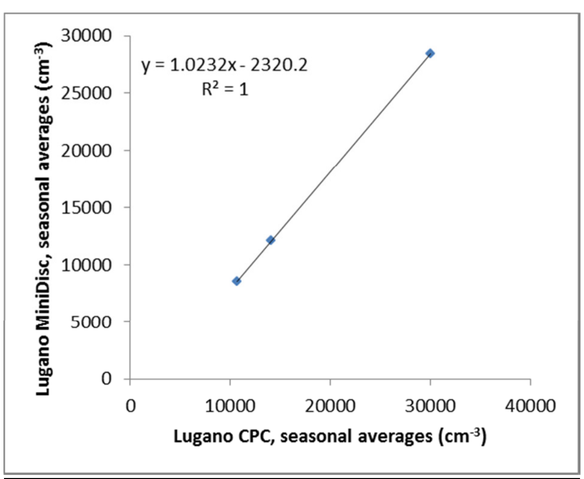


Figure C.4.: PNC comparison of seasonal average values between CPC and MiniDisc



ONLINE SUPPLEMENT D: Long-term and seasonal adjustment

In Aarau, Davos, Montana and Payerne, daily routine monitoring data on NO_2 were gathered from the continuous monitors located in the study areas. For Basel, Geneva, Lugano and Wald, NO_2, $PM_{2.5}$ and PM_{10} were gathered. However, not all routine stations measured $PM_{2.5}$ and none measured $PM_{2.5}$ absorbance or PM_{coarse}. Therefore, we examined the correlations between the unadjusted pollutant concentrations measured at the 74 sites of the SAPALDIA 3 campaign overall and in each study area separately (Table D.1). Overall, both $PM_{2.5}$ and PM_{coarse} were best predicted by PM_{10}. $PM_{2.5}$ absorbance was best predicted by NO_2.

Table D.1: Correlations between NO_2, $PM_{2.5}$, $PM_{2.5}$ absorbance, PM_{10} and PM_{coarse} in Basel, Geneva, Lugano and Wald study areas.

Overall

	NO_2	$PM_{2.5}$	$PM_{2.5}$ abs	PM_{10}	PM_{coarse}
NO_2	-	0.47	0.78	0.54	0.30
$PM_{2.5}$		-	0.71	0.94	0.21
$PM_{2.5}$ abs			-	0.73	0.27
PM_{10}				-	0.43
PM_{coarse}					-

Basel

	NO_2	$PM_{2.5}$	$PM_{2.5}$ abs	PM_{10}	PM_{coarse}
NO_2	-	0.64	0.78	0.64	0.05
$PM_{2.5}$		-	0.88	0.95	0.05
$PM_{2.5}$ abs			-	0.85	0.05
PM_{10}				-	0.19
PM_{coarse}					-

Geneva

	NO_2	$PM_{2.5}$	$PM_{2.5}$ abs	PM_{10}	PM_{coarse}
NO_2	-	0.27	0.48	0.28	0.05
$PM_{2.5}$		-	0.77	0.84	0.03
$PM_{2.5}$ abs			-	0.66	0.03
PM_{10}				-	0.30
PM_{coarse}					-

Lugano

	NO_2	$PM_{2.5}$	$PM_{2.5}$ abs	PM_{10}	PM_{coarse}
NO_2	-	0.50	0.80	0.53	0.30
$PM_{2.5}$		-	0.82	0.97	0.33
$PM_{2.5}$ abs			-	0.81	0.32
PM_{10}				-	0.50
PM_{coarse}					-

Wald

	NO_2	$PM_{2.5}$	$PM_{2.5}$ abs	PM_{10}	PM_{coarse}
NO_2	-	0.40	0.84	0.22	0.02
$PM_{2.5}$		-	0.68	0.71	0.00
$PM_{2.5}$ abs			-	0.47	0.00
PM_{10}				-	0.25
PM_{coarse}					-

If $PM_{2.5}$ and/or PM_{coarse} were not available, daily values were estimated from PM_{10} using an estimation function determined by linear regression, which was fitted separately for each study area. $PM_{2.5}$ absorbance was estimated from NO_2. Despite local deviations from the overall correlation, we used PM_{10} to estimate $PM_{2.5}$ and PM_{coarse}, and NO_2 to estimate $PM_{2.5}$ absorbance to be consistent across all areas (Table D.2).

Area	Monitor name and location	Main/validation reference station	NO_2 [a]	$PM_{2.5}$	$PM_{2.5}$ absorbance	PM_{10}	PM_{coarse} [b]	PNC	LSDA
Aarau	Suhr Bärenmatte	Main	Available	-	-	-	-	-	
Basel	Basel St. Johannplatz	Main	Available	Estimated from PM_{10}: $PM_{2.5}$=-3.3+0.90*PM_{10}	Estimated from NO_2: $PM_{2.5}$ abs=-0.21+0.053*NO_2	Available	Estimated from PM_{10}: PM_{coarse}=3.4+0.099*PM_{10}	Minidisc measurements available for winter and spring seasons. In addition available for spring season from routine monitor Estimated for summer season using PNC=1.17*PNC_StJoh	Minidisc measurements available for winter and spring seasons. Estimated for summer season using LDSA=0.00263*PNC_StJoh
	Binningen Wetterstation (NABEL [c])	Validation	Available in ppb Converted to µg/m^3 by conversion factor 1.91	Available	Estimated from NO_2: $PM_{2.5}$ abs=-0.21+0.053*NO_2	Available	Estimated from PM_{10}: PM_{coarse}=3.4+0.099*PM_{10}	Available for all seasons from routine monitor	-
Davos	Davos Promenade	Main	Available in ppb Converted to µg/m^3 by conversion factor 1.691	-	-	-	-	-	-
	Seehornwald (NABEL [c])	Validation	Available in ppb Converted to µg/m^3 by conversion factor 1.665	-	-	-	-	-	-
Geneva	Sainte Clotilde	Main	Available	Estimated from PM_{10}: $PM_{2.5}$=3.4+0.099*PM_{10}	Estimated from NO_2: $PM_{2.5}$ abs=0.15+0.042*NO_2	Available	Estimated from PM_{10}: PM_{coarse}=3.0+0.22*PM_{10}	Minidisc measurements available for all three seasons	Minidisc measurements available for all three seasons
	Wilson	Validation	Available	Estimated from PM_{10}: $PM_{2.5}$=3.4+0.099*PM_{10}	Estimated from NO_2: $PM_{2.5}$ abs=0.15+0.042*NO_2	Available	Estimated from PM_{10}: PM_{coarse}=3.0+0.22*PM_{10}		
Lugano	Lugano Università (NABEL [c])	Main	Available in ppb Converted to µg/m^3 by conversion factor 1.91	Available	Estimated from NO_2: $PM_{2.5}$ abs=-0.35+0.058*NO_2	Available	Estimated from PM_{10}: PM_{coarse}=3.6+0.15*PM_{10}	Minidisc measurements available for all three seasons In addition available for all seasons from routine monitor	Minidisc measurements available for all three seasons
	Pregassona	Validation	Available	Estimated from PM_{10}: $PM_{2.5}$=-3.6+0.85*PM_{10}	Estimated from NO_2: $PM_{2.5}$ abs=-0.35+0.058*NO_2	Available	Estimated from PM_{10}: PM_{coarse}=3.6+0.15*PM_{10}	-	-
Montana	Montana le Taulet	Main	Available	-	-	-	-	-	-
Payerne	Payerne (NABEL [c])	Main	Available in ppb Converted to µg/m^3 by conversion factor 1.91	-	-	-	-	-	-
Wald	Wald, Höhenklinik (ZH)	Main	Available	Estimated from PM_{10}: $PM_{2.5}$=-0.45+0.73*PM_{10}	Estimated from NO_2: $PM_{2.5}$ abs=0.050+0.042*NO_2	Available	Estimated from PM_{10}: PM_{coarse}=0.45+0.27*PM_{10}	Minidisc measurements available for summer, spring and half of winter season	Minidisc measurements available for summer, spring and half of winter season

Table D.2: Availability of routine monitoring data from 12 stations in the study areas. [a] Correction factor for ppb depends on altitude; [b] PM_{10}-$PM_{2.5}$; [c] NABEL = National Air Quality Monitoring Network

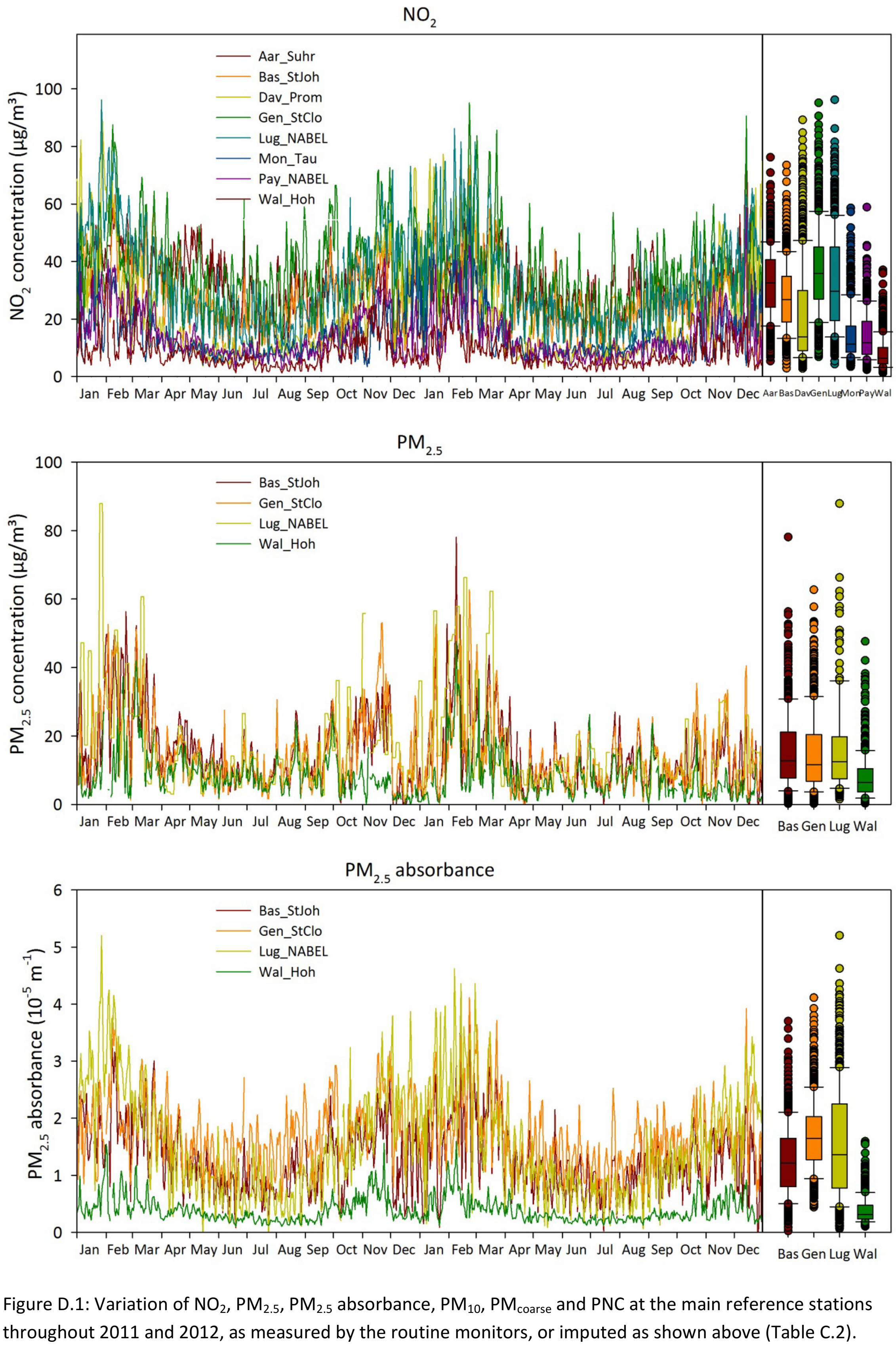


Figure D.1: Variation of NO_2, $PM_{2.5}$, $PM_{2.5}$ absorbance, PM_{10}, PM_{coarse} and PNC at the main reference stations throughout 2011 and 2012, as measured by the routine monitors, or imputed as shown above (Table C.2).

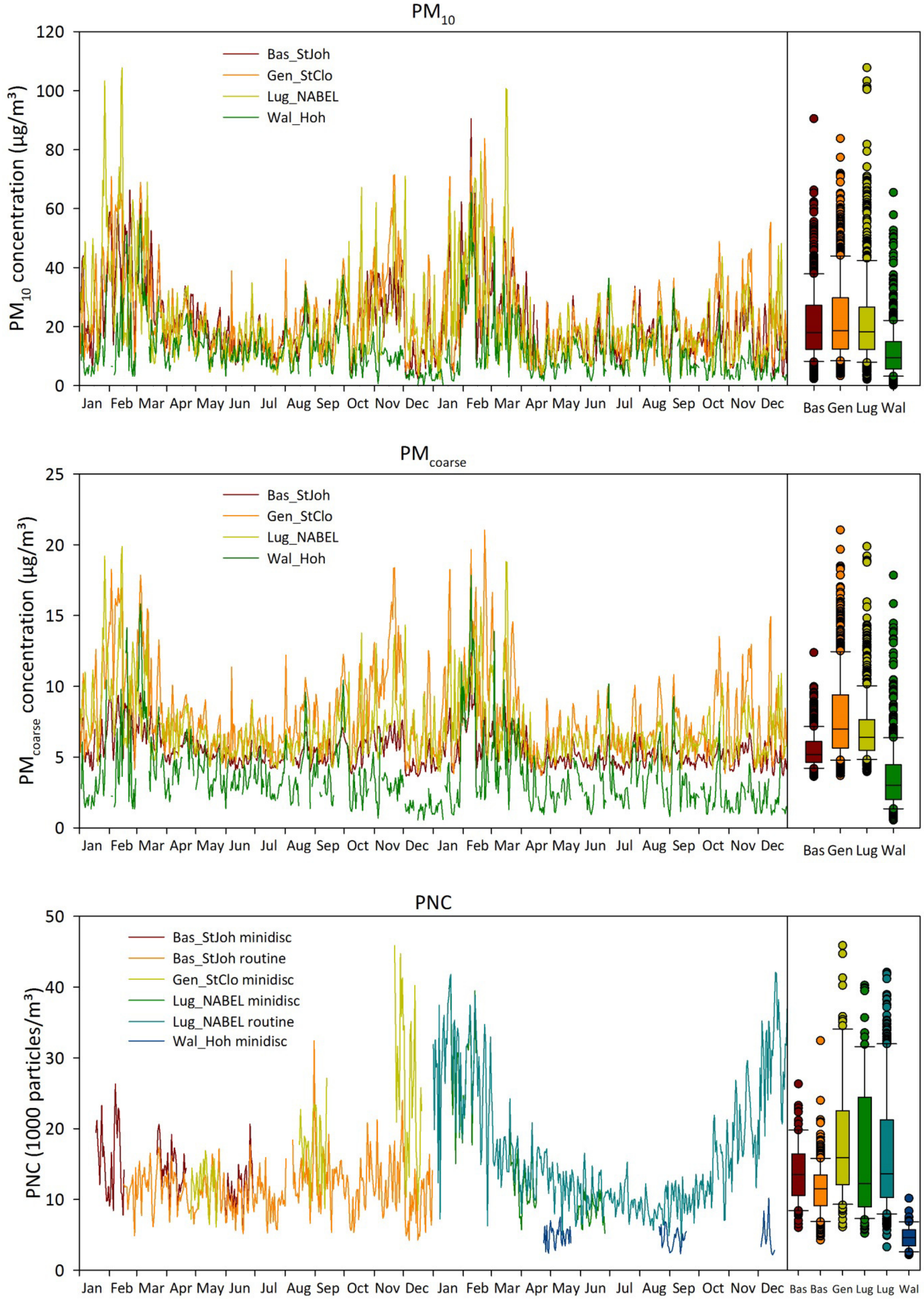


Figure D.1 (continued): Variation of NO_2, $PM_{2.5}$, $PM_{2.5}$ absorbance, PM_{10}, PM_{coarse} and PNC at the main reference stations throughout 2011 and 2012, as measured by the routine monitors, or imputed as shown above (Table C.2).

Table D.3: Correlation and difference between adjusted long-term averages and crude average concentrations

Area	Pollutant	Number of sites considered (n) [a]	Crude average concentrations vs. long-term adjusted concentrations (based on main refsite)		Crude average concentrations vs. long-term adjusted concentrations (based on validation refsite)		Long-term adjusted concentrations based on main refsite vs. based on validation refsite	
			Correlation R^2 (p)	Mean difference long-term adjusted average – crude average	Correlation R^2 (p)	Mean difference long-term adjusted average – crude average	Correlation R^2 (p)	Mean difference based on main refsite – validation refsite
Aarau	NO_2	40	0.99 (<0.0001)	0.4 µg/m^3	-	-	-	-
Basel	NO_2	40	0.94 (<0.0001)	-1.2 µg/m^3	0.89 (<0.0001)	1.0 µg/m^3	0.99 (<0.0001)	-2.2 µg/m^3
	$PM_{2.5}$	20	0.61 (<0.0001)	-2.3 µg/m^3	0.16 (0.0841)	-1.5 µg/m^3	0.27 (0.0187)	-0.8 µg/m^3
	$PM_{2.5}$ abs	20	0.70 (<0.0001)	-0.12 $10^{-5}m^{-1}$	0.35 (0.0062)	-0.02 $10^{-5}m^{-1}$	0.82 (<0.0001)	-0.10 $10^{-5}m^{-1}$
	PM_{10}	20	0.47 (0.0008)	-2.2 µg/m^3	0.23 (0.0322)	-1.2 µg/m^3	0.76 (<0.0001)	-0.9 µg/m^3
	PM_{coarse}	20	0.94 (<0.0001)	-0.2 µg/m^3	0.94 (<0.0001)	-0.1 µg/m^3	1.00 (<0.0001)	-0.1 µg/m^3
Davos [f]	NO_2	39 [b]	0.96 (<0.0001)	4.8 µg/m^3	1.00 (<0.0001)	-1.3 µg/m^3	0.98 (<0.0001)	6.1 µg/m^3
Geneva	NO_2	38 [c]	0.97 (<0.0001)	-0.6 µg/m^3	0.98 (<0.0001)	0.2 µg/m^3	1.00 (<0.0001)	-0.8 µg/m^3
	$PM_{2.5}$	18 [c]	0.01 (0.6801)	2.3 µg/m^3	0.34 (0.0109)	2.3 µg/m^3	0.48 (0.0015)	0.0 µg/m^3
	$PM_{2.5}$ abs	18 [c]	0.9 (<0.0001)	0.05 $10^{-5}m^{-1}$	0.92 (<0.0001)	-0.01 $10^{-5}m^{-1}$	0.99 (<0.0001)	-0.03 $10^{-5}m^{-1}$
	PM_{10}	18 [c]	0.06 (0.3084)	2.8 µg/m^3	0.42 (0.0034)	3.1 µg/m^3	0.76 (<0.0001)	-0.3 µg/m^3
	PM_{coarse}	18 [c]	0.71 (<0.0001)	0.6 µg/m^3	0.83 (<0.0001)	0.8 µg/m^3	0.97 (<0.0001)	-0.1 µg/m^3
Lugano	NO_2	37 [d]	0.98 (<0.0001)	0.0 µg/m^3	0.99 (<0.0001)	-2.0 µg/m^3	1.00 (<0.0001)	2.1 µg/m^3
	$PM_{2.5}$	17 [d]	0.14 (0.1385)	-1.1 µg/m^3	0.09 (0.2386)	-2.0 µg/m^3	0.49 (0.0018)	0.9 µg/m^3
	$PM_{2.5}$ abs	17 [d]	0.52 (0.0011)	0.00 $10^{-5}m^{-1}$	0.46 (0.0027)	-0.09 $10^{-5}m^{-1}$	0.97 (<0.0001)	0.09 $10^{-5}m^{-1}$
	PM_{10}	17 [d]	0.36 (0.0106)	-2.3 µg/m^3	0.41 (0.0057)	-3.3 µg/m^3	0.94 (<0.0001)	0.9 µg/m^3
	PM_{coarse}	17 [d]	0.94 (<0.0001)	-0.3 µg/m^3	0.95 (<0.0001)	-0.4 µg/m^3	1.00 (<0.0001)	0.1 µg/m^3
Montana	NO_2	40	1.00 (<0.0001)	2.3 µg/m^3	-	-	-	-
Payerne	NO_2	40	0.99 (<0.0001)	-1.3 µg/m^3	-	-	-	-
Wald	NO_2	39 [e]	0.98 (<0.0001)	1.5 µg/m^3	-	-	-	-
	$PM_{2.5}$	19 [e]	0.76 (<0.0001)	4.1 µg/m^3	-	-	-	-
	$PM_{2.5}$ abs	19 [e]	0.91 (<0.0001)	0.03 $10^{-5}m^{-1}$	-	-	-	-
	PM_{10}	19 [e]	0.66 (<0.0001)	5.0 µg/m^3	-	-	-	-
	PM_{coarse}	19 [e]	0.89 (<0.0001)	1.0 µg/m^3	-	-	-	-

[a] Reference site is not considered here; [b] Only 39 sites measured; [c] Excluded site 10 as no valid measurement available and site 8 as only 1 measurement available; [d] Excluded sites 19 and 20 as no valid measurements available and site 12 as only 1 measurement available; [e] Excluded site 8 as no valid measurements available; [f] The validation station for Davos was located at a higher altitude, several 100s of meters above the town, making it less representative for in-town variation.

ONLINE SUPPLEMENT E: Percentage of diesel vehicles in Switzerland

Table E.1: Average percentage of diesel vehicles (percentage of the total) by study area (canton) for the years 2011 and 2012.

	Percentage
Aarau, Aargau	32%
Basel-Stadt & Basel Landschaft	34%
Davos	50%
Geneva	26%
Lugano	33%
Montana	37%
Payerne	37%
Wald	33%

Source: Bundesamt für Statistik (Swiss Federal Office for Statistics)