

Assessment of integrated aerosol sampling techniques in indoor, confined and outdoor environments characterized by specific emission sources

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Supporting Information

Tables

Table S1. Classification of the type of events occurred during the monitoring campaign with specific brief descriptions and labels.

Symbol	Event description	Emission source
H	Hammering	Resuspension
C	Crane movements	Resuspension
D	Drilling works	Resuspension
G	Grinding works	Material Resuspension
S	Presence of nearby smokers	Cigarette combustion
E	Van or car passing by	Internal combustion engine exhausts
V	Local forced ventilation	Aspiration
B	Building & construction works	Material Resuspension
T	Crane truck circulation	Internal combustion engine exhausts

Table S2. Results of the least square method applied to the comparison of KORA and AirVisual Pro with the sum of various ELPI + fractions: 8-11, 7-11, 6-11, 1-11. The sum of the squares of deviations for each comparison is reported from columns 3 to 5, minimum values are in bold.

Monitoring site and environmental condition	Sampling device	8-11	7-11	6-11	1-11
Indoor quiet 12/03/2018	KORA	2394	949	249	919
	AirVisual Pro	2658	1063	148	692
Indoor quiet 13/03/2018	KORA	3088	363	2539	5139
	AirVisual Pro	5034	523	1222	3164
Indoor quiet 14/03/2018	KORA	4375	624	3494	7478
	AirVisual Pro	8024	1306	1204	3644
Indoor busy 15/03/2018	KORA	3778	6024	14140	20132
	AirVisual Pro	16241	5975	2797	3021
Indoor busy 16/03/2018	KORA	5493	1562	2538	8515
	AirVisual Pro	7015	1905	1695	6797
Indoor quiet 19/03/2018	KORA	1834	717	312	641
	AirVisual Pro	1685	553	145	482
Indoor busy 20/03/2018	KORA	8378	19488	30023	13134
	AirVisual Pro	5027	13481	22118	9899
Indoor busy 21/03/2018	KORA	1244	4436	14556	25117
	AirVisual Pro	7443	1066	4228	10292
Indoor busy 22/03/2018	KORA	1170	7128	19846	28550
	AirVisual Pro	10682	1281	3536	7174
Indoor quiet 23/03/2018	KORA	893	1964	8010	11528
	AirVisual Pro	5635	498	1731	3412
Outdoor 26/03/2018	KORA	3697	55289	112485	128956
	AirVisual Pro	3917	11914	137498	44518
Garage 27/03/2018	KORA	3916	38151	79523	96293
	AirVisual Pro	35016	11757	25624	33731

Table S3. Correlation matrices of PN concentrations associated to ELPI + Stages from 1 to 14. High correlation is highlighted for coefficients larger than 0.7, reported in bold.

Indoor quiet 12/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.841	0.626	0.121	0.080	0.109	-0.108	0.004	0.245	0.068	0.083	0.124	-0.045	-0.114
Stage2	0.841	1.000	0.903	0.509	0.463	0.446	0.074	0.228	0.162	-0.100	-0.049	0.121	0.022	-0.051
Stage3	0.626	0.903	1.000	0.801	0.762	0.717	0.277	0.441	0.059	-0.234	-0.142	0.098	0.083	-0.006
Stage4	0.121	0.509	0.801	1.000	0.995	0.904	0.473	0.611	-0.149	-0.404	-0.287	-0.002	0.132	0.062
Stage5	0.080	0.463	0.762	0.995	1.000	0.923	0.513	0.637	-0.161	-0.408	-0.289	-0.014	0.131	0.070
Stage6	0.109	0.446	0.717	0.904	0.923	1.000	0.781	0.839	0.038	-0.187	-0.091	0.108	0.187	0.116
Stage7	-0.108	0.074	0.277	0.473	0.513	0.781	1.000	0.905	0.268	0.188	0.231	0.267	0.271	0.210
Stage8	0.004	0.228	0.441	0.611	0.637	0.839	0.905	1.000	0.423	0.272	0.322	0.421	0.405	0.302
Stage9	0.245	0.162	0.059	-0.149	-0.161	0.038	0.268	0.423	1.000	0.821	0.781	0.705	0.471	0.357
Stage10	0.068	-0.100	-0.234	-0.404	-0.408	-0.187	0.188	0.272	0.821	1.000	0.803	0.667	0.437	0.358
Stage11	0.083	-0.049	-0.142	-0.287	-0.289	-0.091	0.231	0.322	0.781	0.803	1.000	0.654	0.508	0.415
Stage12	0.124	0.121	0.098	-0.002	-0.014	0.108	0.267	0.421	0.705	0.667	0.654	1.000	0.601	0.519
Stage13	-0.045	0.022	0.083	0.132	0.131	0.187	0.271	0.405	0.471	0.437	0.508	0.601	1.000	0.616
Stage14	-0.114	-0.051	-0.006	0.062	0.070	0.116	0.210	0.302	0.357	0.358	0.415	0.519	0.616	1.000
Indoor quiet 13/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.390	0.298	0.442	0.580	0.823	0.734	0.688	0.577	0.167	-0.035	-0.005	0.021	-0.008
Stage2	0.390	1.000	0.916	0.913	0.844	0.416	0.060	0.020	0.064	0.104	-0.086	0.040	-0.022	0.002
Stage3	0.298	0.916	1.000	0.948	0.870	0.394	0.021	-0.021	0.034	0.100	-0.073	0.035	-0.037	-0.001
Stage4	0.442	0.913	0.948	1.000	0.966	0.554	0.146	0.088	0.114	0.129	-0.084	0.047	-0.017	0.014
Stage5	0.580	0.844	0.870	0.966	1.000	0.728	0.335	0.261	0.251	0.169	-0.064	0.052	-0.003	0.022
Stage6	0.823	0.416	0.394	0.554	0.728	1.000	0.847	0.769	0.662	0.246	0.025	0.035	0.026	0.032
Stage7	0.734	0.060	0.021	0.146	0.335	0.847	1.000	0.985	0.881	0.284	0.112	0.027	0.050	0.038
Stage8	0.688	0.020	-0.021	0.088	0.261	0.769	0.985	1.000	0.919	0.307	0.137	0.040	0.068	0.049
Stage9	0.577	0.064	0.034	0.114	0.251	0.662	0.881	0.919	1.000	0.533	0.359	0.242	0.248	0.182
Stage10	0.167	0.104	0.100	0.129	0.169	0.246	0.284	0.307	0.533	1.000	0.685	0.668	0.623	0.496
Stage11	-0.035	-0.086	-0.073	-0.084	-0.064	0.025	0.112	0.137	0.359	0.685	1.000	0.726	0.733	0.603
Stage12	-0.005	0.040	0.035	0.047	0.052	0.035	0.027	0.040	0.242	0.668	0.726	1.000	0.788	0.696
Stage13	0.021	-0.022	-0.037	-0.017	-0.003	0.026	0.050	0.068	0.248	0.623	0.733	0.788	1.000	0.729
Stage14	-0.008	0.002	-0.001	0.014	0.022	0.032	0.038	0.049	0.182	0.496	0.603	0.696	0.729	1.000
Indoor quiet 14/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.932	0.828	0.830	0.873	0.440	-0.373	-0.372	-0.409	-0.284	-0.260	-0.232	-0.257	-0.143
Stage2	0.932	1.000	0.966	0.960	0.950	0.363	-0.461	-0.419	-0.405	-0.289	-0.285	-0.240	-0.247	-0.116
Stage3	0.828	0.966	1.000	0.995	0.948	0.325	-0.456	-0.407	-0.369	-0.273	-0.285	-0.238	-0.229	-0.091
Stage4	0.830	0.960	0.995	1.000	0.968	0.370	-0.449	-0.423	-0.392	-0.283	-0.297	-0.241	-0.232	-0.089
Stage5	0.873	0.950	0.948	0.968	1.000	0.553	-0.332	-0.352	-0.350	-0.228	-0.256	-0.193	-0.212	-0.091
Stage6	0.440	0.363	0.325	0.370	0.553	1.000	0.538	0.402	0.313	0.304	0.206	0.203	0.071	-0.016
Stage7	-0.373	-0.461	-0.456	-0.449	-0.332	0.538	1.000	0.953	0.884	0.690	0.592	0.484	0.342	0.087
Stage8	-0.372	-0.419	-0.407	-0.423	-0.352	0.402	0.953	1.000	0.964	0.734	0.629	0.503	0.371	0.096
Stage9	-0.409	-0.405	-0.369	-0.392	-0.350	0.313	0.884	0.964	1.000	0.813	0.708	0.602	0.489	0.186
Stage10	-0.284	-0.289	-0.273	-0.283	-0.228	0.304	0.690	0.734	0.813	1.000	0.820	0.794	0.692	0.380
Stage11	-0.260	-0.285	-0.285	-0.297	-0.256	0.206	0.592	0.629	0.708	0.820	1.000	0.766	0.686	0.370
Stage12	-0.232	-0.240	-0.238	-0.241	-0.193	0.203	0.484	0.503	0.602	0.794	0.766	1.000	0.718	0.442
Stage13	-0.257	-0.247	-0.229	-0.232	-0.212	0.071	0.342	0.371	0.489	0.692	0.686	0.718	1.000	0.512
Stage14	-0.143	-0.116	-0.091	-0.089	-0.091	-0.016	0.087	0.096	0.186	0.380	0.370	0.442	0.512	1.000

Indoor busy 15/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.895	0.854	0.717	0.332	-0.283	-0.648	-0.641	-0.269	0.281	0.221	0.125	0.099	0.133
Stage2	0.895	1.000	0.956	0.824	0.442	-0.217	-0.648	-0.581	-0.018	0.501	0.414	0.343	0.334	0.371
Stage3	0.854	0.956	1.000	0.941	0.619	-0.051	-0.540	-0.491	0.014	0.456	0.381	0.329	0.320	0.344
Stage4	0.717	0.824	0.941	1.000	0.839	0.252	-0.297	-0.273	0.104	0.327	0.251	0.235	0.236	0.249
Stage5	0.332	0.442	0.619	0.839	1.000	0.723	0.183	0.156	0.229	-0.001	-0.079	-0.027	0.003	0.015
Stage6	-0.283	-0.217	-0.051	0.252	0.723	1.000	0.782	0.714	0.384	-0.323	-0.374	-0.271	-0.227	-0.238
Stage7	-0.648	-0.648	-0.540	-0.297	0.183	0.782	1.000	0.961	0.497	-0.282	-0.286	-0.195	-0.179	-0.239
Stage8	-0.641	-0.581	-0.491	-0.273	0.156	0.714	0.961	1.000	0.693	-0.067	-0.085	0.007	0.023	-0.046
Stage9	-0.269	-0.018	0.014	0.104	0.229	0.384	0.497	0.693	1.000	0.611	0.544	0.603	0.616	0.552
Stage10	0.281	0.501	0.456	0.327	-0.001	-0.323	-0.282	-0.067	0.611	1.000	0.967	0.942	0.919	0.871
Stage11	0.221	0.414	0.381	0.251	-0.079	-0.374	-0.286	-0.085	0.544	0.967	1.000	0.971	0.947	0.893
Stage12	0.125	0.343	0.329	0.235	-0.027	-0.271	-0.195	0.007	0.603	0.942	0.971	1.000	0.971	0.919
Stage13	0.099	0.334	0.320	0.236	0.003	-0.227	-0.179	0.023	0.616	0.919	0.947	0.971	1.000	0.936
Stage14	0.133	0.371	0.344	0.249	0.015	-0.238	-0.239	-0.046	0.552	0.871	0.893	0.919	0.936	1.000
Indoor busy 16/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.973	0.947	0.934	0.931	0.886	0.744	0.563	0.582	-0.429	-0.258	-0.279	-0.224	-0.052
Stage2	0.973	1.000	0.994	0.980	0.972	0.949	0.714	0.472	0.522	-0.396	-0.233	-0.247	-0.192	-0.021
Stage3	0.947	0.994	1.000	0.992	0.982	0.968	0.680	0.418	0.483	-0.364	-0.198	-0.205	-0.152	0.010
Stage4	0.934	0.980	0.992	1.000	0.996	0.978	0.658	0.411	0.485	-0.326	-0.133	-0.133	-0.080	0.066
Stage5	0.931	0.972	0.982	0.996	1.000	0.982	0.655	0.432	0.518	-0.310	-0.102	-0.101	-0.045	0.098
Stage6	0.886	0.949	0.968	0.978	0.982	1.000	0.568	0.295	0.420	-0.263	-0.061	-0.057	-0.009	0.127
Stage7	0.744	0.714	0.680	0.658	0.655	0.568	1.000	0.815	0.681	-0.522	-0.454	-0.462	-0.374	-0.159
Stage8	0.563	0.472	0.418	0.411	0.432	0.295	0.815	1.000	0.898	-0.386	-0.389	-0.434	-0.365	-0.192
Stage9	0.582	0.522	0.483	0.485	0.518	0.420	0.681	0.898	1.000	-0.201	-0.226	-0.290	-0.226	-0.031
Stage10	-0.429	-0.396	-0.364	-0.326	-0.310	-0.263	-0.522	-0.386	-0.201	1.000	0.831	0.777	0.719	0.566
Stage11	-0.258	-0.233	-0.198	-0.133	-0.102	-0.061	-0.454	-0.389	-0.226	0.831	1.000	0.950	0.916	0.732
Stage12	-0.279	-0.247	-0.205	-0.133	-0.101	-0.057	-0.462	-0.434	-0.290	0.777	0.950	1.000	0.947	0.766
Stage13	-0.224	-0.192	-0.152	-0.080	-0.045	-0.009	-0.374	-0.365	-0.226	0.719	0.916	0.947	1.000	0.830
Stage14	-0.052	-0.021	0.010	0.066	0.098	0.127	-0.159	-0.192	-0.031	0.566	0.732	0.766	0.830	1.000
Indoor quiet 19/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1	0.88568	0.680956	0.550691	0.566833	0.578944	0.571388	0.485553	0.196027	0.094929	0.141655	0.228214	0.265148	0.240162
Stage2	0.886	1.000	0.894	0.806	0.806	0.797	0.715	0.598	0.402	0.252	0.216	0.276	0.279	0.229
Stage3	0.681	0.894	1.000	0.956	0.970	0.956	0.881	0.804	0.611	0.421	0.340	0.377	0.353	0.268
Stage4	0.551	0.806	0.956	1.000	0.990	0.976	0.882	0.756	0.544	0.287	0.157	0.180	0.158	0.104
Stage5	0.567	0.806	0.970	0.990	1.000	0.993	0.921	0.816	0.589	0.351	0.244	0.273	0.251	0.183
Stage6	0.579	0.797	0.956	0.976	0.993	1.000	0.952	0.842	0.592	0.351	0.252	0.285	0.270	0.203
Stage7	0.571	0.715	0.881	0.882	0.921	0.952	1.000	0.931	0.640	0.417	0.343	0.378	0.370	0.299
Stage8	0.486	0.598	0.804	0.756	0.816	0.842	0.931	1.000	0.760	0.606	0.548	0.568	0.548	0.453
Stage9	0.196	0.402	0.611	0.544	0.589	0.592	0.640	0.760	1.000	0.832	0.753	0.719	0.674	0.564
Stage10	0.095	0.252	0.421	0.287	0.351	0.351	0.417	0.606	0.832	1.000	0.892	0.870	0.815	0.677
Stage11	0.142	0.216	0.340	0.157	0.244	0.252	0.343	0.548	0.753	0.892	1.000	0.933	0.899	0.751
Stage12	0.228	0.276	0.377	0.180	0.273	0.285	0.378	0.568	0.719	0.870	0.933	1.000	0.914	0.777
Stage13	0.265	0.279	0.353	0.158	0.251	0.270	0.370	0.548	0.674	0.815	0.899	0.914	1.000	0.786
Stage14	0.240	0.229	0.268	0.104	0.183	0.203	0.299	0.453	0.564	0.677	0.751	0.777	0.786	1.000

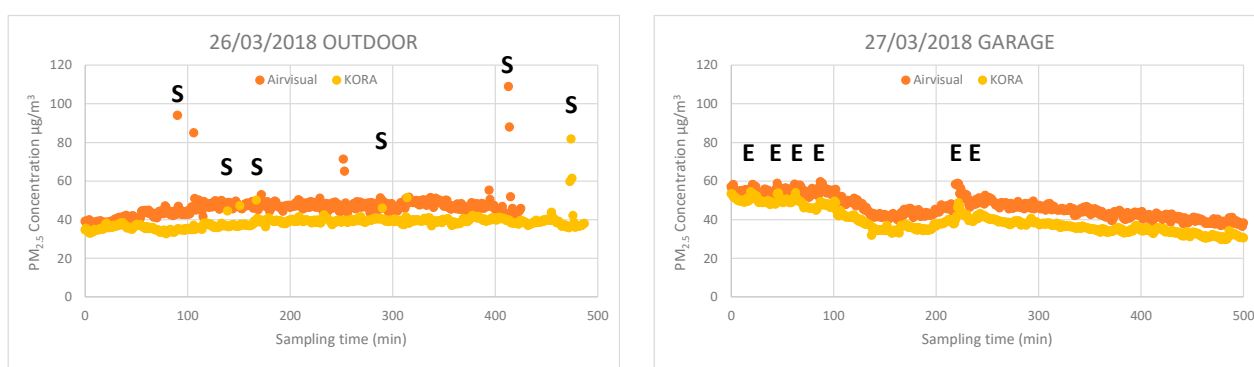
Indoor busy 20/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.965	0.829	0.619	0.514	0.354	-0.080	-0.272	0.065	-0.114	-0.075	-0.042	-0.077	-0.032
Stage2	0.965	1.000	0.788	0.536	0.420	0.280	0.011	-0.166	0.151	0.003	0.037	0.070	0.023	0.032
Stage3	0.829	0.788	1.000	0.936	0.853	0.678	-0.034	-0.307	0.224	-0.189	-0.182	-0.160	-0.164	-0.076
Stage4	0.619	0.536	0.936	1.000	0.969	0.822	-0.052	-0.343	0.221	-0.305	-0.322	-0.310	-0.288	-0.158
Stage5	0.514	0.420	0.853	0.969	1.000	0.928	0.022	-0.307	0.251	-0.385	-0.436	-0.425	-0.395	-0.239
Stage6	0.354	0.280	0.678	0.822	0.928	1.000	0.287	-0.072	0.405	-0.409	-0.517	-0.512	-0.479	-0.309
Stage7	-0.080	0.011	-0.034	-0.052	0.022	0.287	1.000	0.907	0.809	0.131	-0.026	-0.040	-0.041	-0.023
Stage8	-0.272	-0.166	-0.307	-0.343	-0.307	-0.072	0.907	1.000	0.692	0.203	0.077	0.058	0.065	0.057
Stage9	0.065	0.151	0.224	0.221	0.251	0.405	0.809	0.692	1.000	0.375	0.191	0.181	0.211	0.256
Stage10	-0.114	0.003	-0.189	-0.305	-0.385	-0.409	0.131	0.203	0.375	1.000	0.951	0.945	0.925	0.746
Stage11	-0.075	0.037	-0.182	-0.322	-0.436	-0.517	-0.026	0.077	0.191	0.951	1.000	0.982	0.948	0.737
Stage12	-0.042	0.070	-0.160	-0.310	-0.425	-0.512	-0.040	0.058	0.181	0.945	0.982	1.000	0.955	0.763
Stage13	-0.077	0.023	-0.164	-0.288	-0.395	-0.479	-0.041	0.065	0.211	0.925	0.948	0.955	1.000	0.842
Stage14	-0.032	0.032	-0.076	-0.158	-0.239	-0.309	-0.023	0.057	0.256	0.746	0.737	0.763	0.842	1.000
Indoor busy 21/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.977	0.945	0.907	0.869	0.792	0.213	0.513	0.842	0.790	0.628	0.621	0.369	0.213
Stage2	0.977	1.000	0.988	0.963	0.935	0.865	0.248	0.504	0.881	0.840	0.646	0.608	0.341	0.196
Stage3	0.945	0.988	1.000	0.993	0.976	0.917	0.270	0.492	0.897	0.865	0.645	0.584	0.311	0.178
Stage4	0.907	0.963	0.993	1.000	0.994	0.946	0.294	0.493	0.904	0.875	0.636	0.560	0.287	0.163
Stage5	0.869	0.935	0.976	0.994	1.000	0.972	0.352	0.519	0.911	0.880	0.623	0.535	0.262	0.146
Stage6	0.792	0.865	0.917	0.946	0.972	1.000	0.548	0.637	0.924	0.877	0.591	0.490	0.225	0.119
Stage7	0.213	0.248	0.270	0.294	0.352	0.548	1.000	0.850	0.558	0.454	0.262	0.214	0.113	0.053
Stage8	0.513	0.504	0.492	0.493	0.519	0.637	0.850	1.000	0.777	0.644	0.481	0.487	0.346	0.212
Stage9	0.842	0.881	0.897	0.904	0.911	0.924	0.558	0.777	1.000	0.943	0.744	0.681	0.443	0.295
Stage10	0.790	0.840	0.865	0.875	0.880	0.877	0.454	0.644	0.943	1.000	0.832	0.754	0.543	0.407
Stage11	0.628	0.646	0.645	0.636	0.623	0.591	0.262	0.481	0.744	0.832	1.000	0.863	0.762	0.617
Stage12	0.621	0.608	0.584	0.560	0.535	0.490	0.214	0.487	0.681	0.754	0.863	1.000	0.813	0.649
Stage13	0.369	0.341	0.311	0.287	0.262	0.225	0.113	0.346	0.443	0.543	0.762	0.813	1.000	0.752
Stage14	0.213	0.196	0.178	0.163	0.146	0.119	0.053	0.212	0.295	0.407	0.617	0.649	0.752	1.000
Indoor busy 22/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.965	0.912	0.892	0.874	0.857	0.764	0.777	0.917	0.805	0.408	0.038	-0.017	0.027
Stage2	0.965	1.000	0.983	0.968	0.956	0.934	0.754	0.749	0.957	0.860	0.385	-0.034	-0.095	-0.043
Stage3	0.912	0.983	1.000	0.994	0.990	0.968	0.728	0.707	0.954	0.868	0.356	-0.083	-0.150	-0.099
Stage4	0.892	0.968	0.994	1.000	0.997	0.982	0.754	0.727	0.950	0.844	0.332	-0.096	-0.162	-0.113
Stage5	0.874	0.956	0.990	0.997	1.000	0.990	0.751	0.717	0.946	0.842	0.324	-0.107	-0.173	-0.125
Stage6	0.857	0.934	0.968	0.982	0.990	1.000	0.813	0.768	0.944	0.807	0.293	-0.116	-0.176	-0.127
Stage7	0.764	0.754	0.728	0.754	0.751	0.813	1.000	0.981	0.820	0.518	0.164	-0.059	-0.073	-0.030
Stage8	0.777	0.749	0.707	0.727	0.717	0.768	0.981	1.000	0.821	0.512	0.185	-0.025	-0.035	0.008
Stage9	0.917	0.957	0.954	0.950	0.946	0.944	0.820	0.821	1.000	0.885	0.434	0.018	-0.045	0.006
Stage10	0.805	0.860	0.868	0.844	0.842	0.807	0.518	0.512	0.885	1.000	0.702	0.274	0.184	0.222
Stage11	0.408	0.385	0.356	0.332	0.324	0.293	0.164	0.185	0.434	0.702	1.000	0.854	0.794	0.790
Stage12	0.038	-0.034	-0.083	-0.096	-0.107	-0.116	-0.059	-0.025	0.018	0.274	0.854	1.000	0.976	0.951
Stage13	-0.017	-0.095	-0.150	-0.162	-0.173	-0.176	-0.073	-0.035	-0.045	0.184	0.794	0.976	1.000	0.965
Stage14	0.027	-0.043	-0.099	-0.113	-0.125	-0.127	-0.030	0.008	0.006	0.222	0.790	0.951	0.965	1.000

Indoor quiet 23/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.830	0.678	0.220	0.089	0.139	0.504	0.704	0.520	-0.024	-0.267	-0.439	-0.444	-0.248
Stage2	0.830	1.000	0.798	0.289	0.103	0.097	0.516	0.778	0.693	0.201	-0.060	-0.261	-0.338	-0.177
Stage3	0.678	0.798	1.000	0.775	0.636	0.608	0.833	0.885	0.703	0.118	-0.111	-0.209	-0.251	-0.104
Stage4	0.220	0.289	0.775	1.000	0.960	0.912	0.836	0.633	0.441	0.021	-0.079	-0.028	-0.018	0.036
Stage5	0.089	0.103	0.636	0.960	1.000	0.976	0.799	0.512	0.273	-0.133	-0.185	-0.086	-0.037	0.037
Stage6	0.139	0.097	0.608	0.912	0.976	1.000	0.843	0.542	0.235	-0.247	-0.316	-0.222	-0.148	-0.005
Stage7	0.504	0.516	0.833	0.836	0.799	0.843	1.000	0.890	0.605	-0.026	-0.243	-0.284	-0.259	-0.071
Stage8	0.704	0.778	0.885	0.633	0.512	0.542	0.890	1.000	0.796	0.156	-0.128	-0.262	-0.278	-0.098
Stage9	0.520	0.693	0.703	0.441	0.273	0.235	0.605	0.796	1.000	0.605	0.381	0.217	0.159	0.146
Stage10	-0.024	0.201	0.118	0.021	-0.133	-0.247	-0.026	0.156	0.605	1.000	0.858	0.761	0.654	0.373
Stage11	-0.267	-0.060	-0.111	-0.079	-0.185	-0.316	-0.243	-0.128	0.381	0.858	1.000	0.864	0.782	0.435
Stage12	-0.439	-0.261	-0.209	-0.028	-0.086	-0.222	-0.284	-0.262	0.217	0.761	0.864	1.000	0.834	0.488
Stage13	-0.444	-0.338	-0.251	-0.018	-0.037	-0.148	-0.259	-0.278	0.159	0.654	0.782	0.834	1.000	0.542
Stage14	-0.248	-0.177	-0.104	0.036	0.037	-0.005	-0.071	-0.098	0.146	0.373	0.435	0.488	0.542	1.000
Outdoor 26/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.674	0.790	0.859	0.821	0.615	0.514	0.378	0.229	0.010	0.074	0.082	0.115	0.118
Stage2	0.674	1.000	0.945	0.846	0.715	0.426	0.403	0.243	0.015	-0.120	0.046	0.037	0.059	0.043
Stage3	0.790	0.945	1.000	0.959	0.841	0.544	0.481	0.283	0.036	-0.140	0.059	0.053	0.084	0.073
Stage4	0.859	0.846	0.959	1.000	0.928	0.656	0.549	0.332	0.089	-0.097	0.072	0.072	0.107	0.105
Stage5	0.821	0.715	0.841	0.928	1.000	0.882	0.750	0.555	0.351	0.117	0.086	0.094	0.114	0.127
Stage6	0.615	0.426	0.544	0.656	0.882	1.000	0.909	0.791	0.671	0.406	0.106	0.119	0.114	0.142
Stage7	0.514	0.403	0.481	0.549	0.750	0.909	1.000	0.948	0.821	0.527	0.143	0.142	0.129	0.141
Stage8	0.378	0.243	0.283	0.332	0.555	0.791	0.948	1.000	0.947	0.667	0.162	0.157	0.132	0.145
Stage9	0.229	0.015	0.036	0.089	0.351	0.671	0.821	0.947	1.000	0.796	0.218	0.219	0.182	0.201
Stage10	0.010	-0.120	-0.140	-0.097	0.117	0.406	0.527	0.667	0.796	1.000	0.616	0.618	0.569	0.578
Stage11	0.074	0.046	0.059	0.072	0.086	0.106	0.143	0.162	0.218	0.616	1.000	0.970	0.942	0.925
Stage12	0.082	0.037	0.053	0.072	0.094	0.119	0.142	0.157	0.219	0.618	0.970	1.000	0.960	0.953
Stage13	0.115	0.059	0.084	0.107	0.114	0.114	0.129	0.132	0.182	0.569	0.942	0.960	1.000	0.968
Stage14	0.118	0.043	0.073	0.105	0.127	0.142	0.141	0.145	0.201	0.578	0.925	0.953	0.968	1.000
Garage 27/03/2018														
	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6	Stage7	Stage8	Stage9	Stage10	Stage11	Stage12	Stage13	Stage14
Stage1	1.000	0.973	0.938	0.903	0.940	0.912	0.827	0.854	0.838	0.577	0.029	0.023	0.051	0.080
Stage2	0.973	1.000	0.966	0.904	0.908	0.849	0.757	0.799	0.790	0.560	0.046	0.044	0.064	0.090
Stage3	0.938	0.966	1.000	0.974	0.943	0.852	0.729	0.760	0.748	0.535	0.065	0.070	0.090	0.113
Stage4	0.903	0.904	0.974	1.000	0.973	0.883	0.746	0.747	0.726	0.505	0.057	0.063	0.088	0.114
Stage5	0.940	0.908	0.943	0.973	1.000	0.962	0.849	0.839	0.814	0.558	0.035	0.033	0.065	0.095
Stage6	0.912	0.849	0.852	0.883	0.962	1.000	0.953	0.927	0.897	0.611	0.013	0.001	0.042	0.075
Stage7	0.827	0.757	0.729	0.746	0.849	0.953	1.000	0.975	0.949	0.659	0.008	-0.011	0.033	0.064
Stage8	0.854	0.799	0.760	0.747	0.839	0.927	0.975	1.000	0.992	0.708	0.028	0.011	0.051	0.080
Stage9	0.838	0.790	0.748	0.726	0.814	0.897	0.949	0.992	1.000	0.761	0.087	0.069	0.108	0.136
Stage10	0.577	0.560	0.535	0.505	0.558	0.611	0.659	0.708	0.761	1.000	0.672	0.657	0.679	0.683
Stage11	0.029	0.046	0.065	0.057	0.035	0.013	0.008	0.028	0.087	0.672	1.000	0.986	0.978	0.948
Stage12	0.023	0.044	0.070	0.063	0.033	0.001	-0.011	0.011	0.069	0.657	0.986	1.000	0.982	0.954
Stage13	0.051	0.064	0.090	0.088	0.065	0.042	0.033	0.051	0.108	0.679	0.978	0.982	1.000	0.973
Stage14	0.080	0.090	0.113	0.114	0.095	0.075	0.064	0.080	0.136	0.683	0.948	0.954	0.973	1.000

Figures

MON	TUE	WED	THU	FRI	SAT	SUN
12	13	14	15	16	17	18
WAREHOUSE						
QUIET	QUIET	QUIET	BUSY	BUSY		
19	20	21	22	23	24	25
WAREHOUSE						
QUIET	BUSY	BUSY	BUSY	QUIET		
26	27	28	29	30	31	01
OUTDOOR	GARAGE					

Figure S1. Calendar of sampling days during March 2018.

Figure S2. Daily concentrations of PM_{2.5} (averaged over 1 min sampling time) of KORA and AirVisual Pro collected outdoor (left) and in the garage (right). The starting time of different events is labelled with the corresponding letter as specified in Table S1.

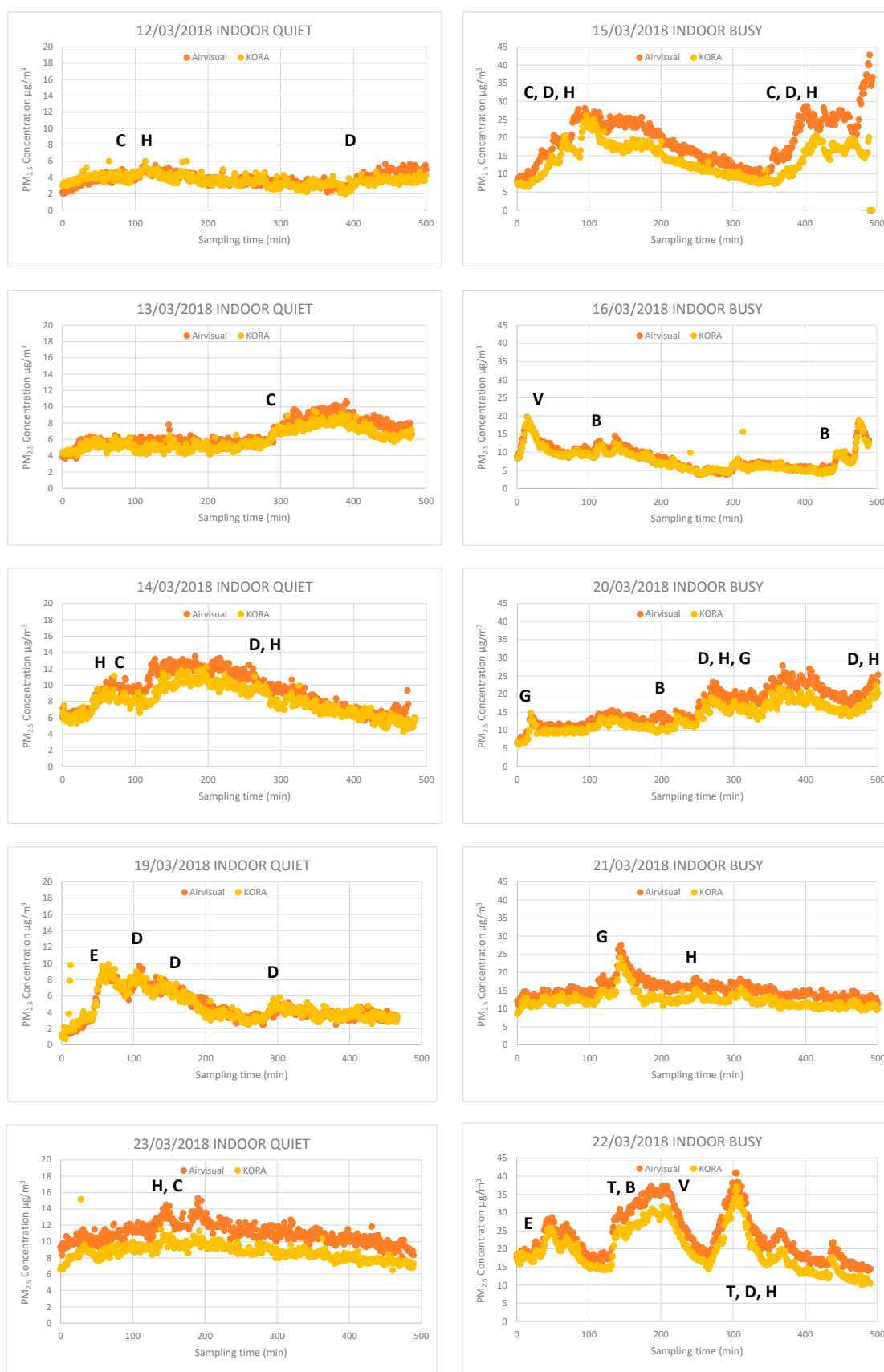


Figure S3. Daily concentrations of PM_{2.5} (averaged over 1 min sampling time) of KORA and AirVisual Pro collected in the warehouse. It should be noted the different y-axis scale up to 20 µg/m³ for “indoor quiet” and up to 45 µg/m³ for “indoor busy”. The starting time of different events is labelled with the corresponding letter as specified in Table S1.

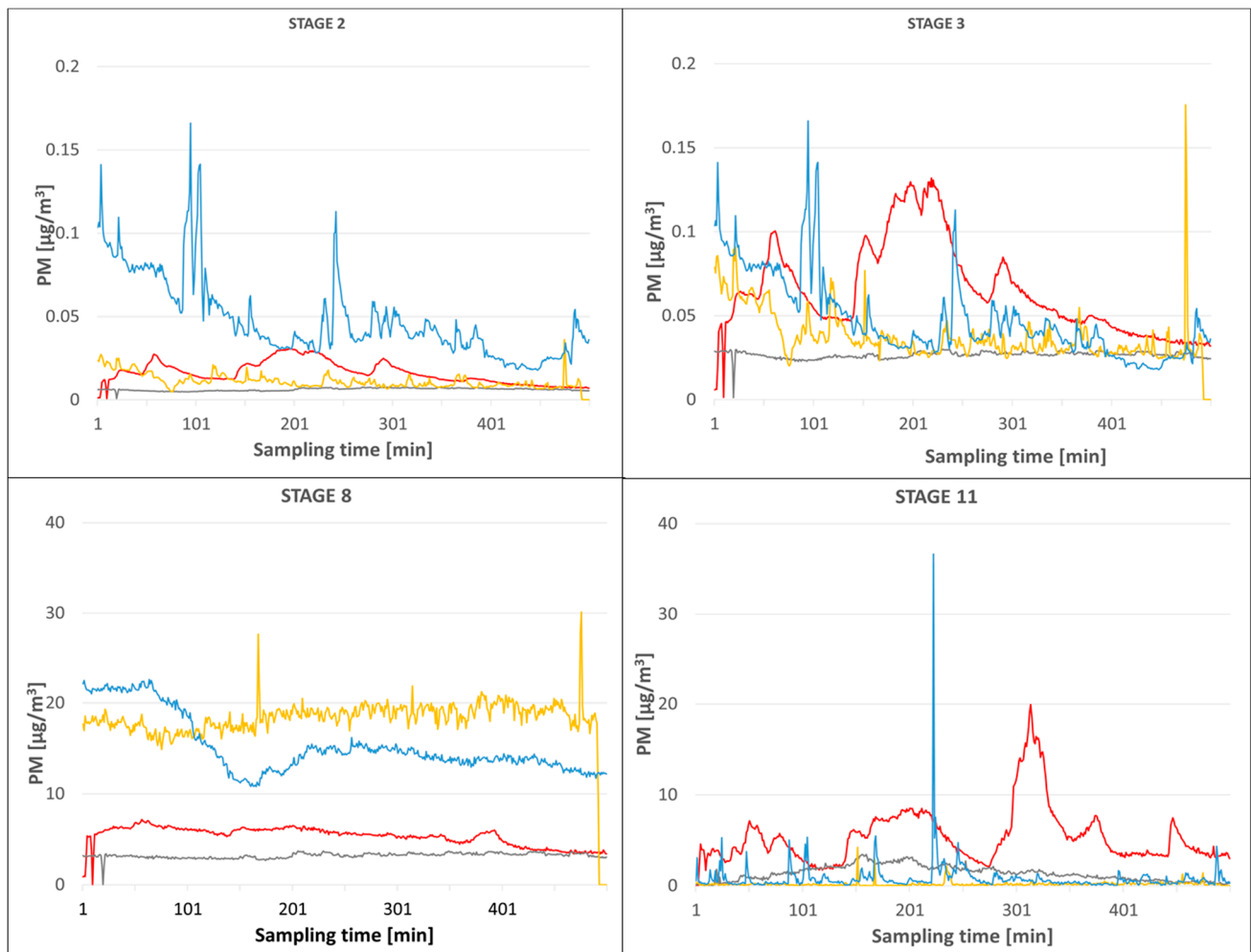


Figure S4. Daily PM_{2.5} concentrations (averaged over 1 min sampling time) of ELPI+ data from Stage 2, Stage 3, Stage 8 and Stage 11.

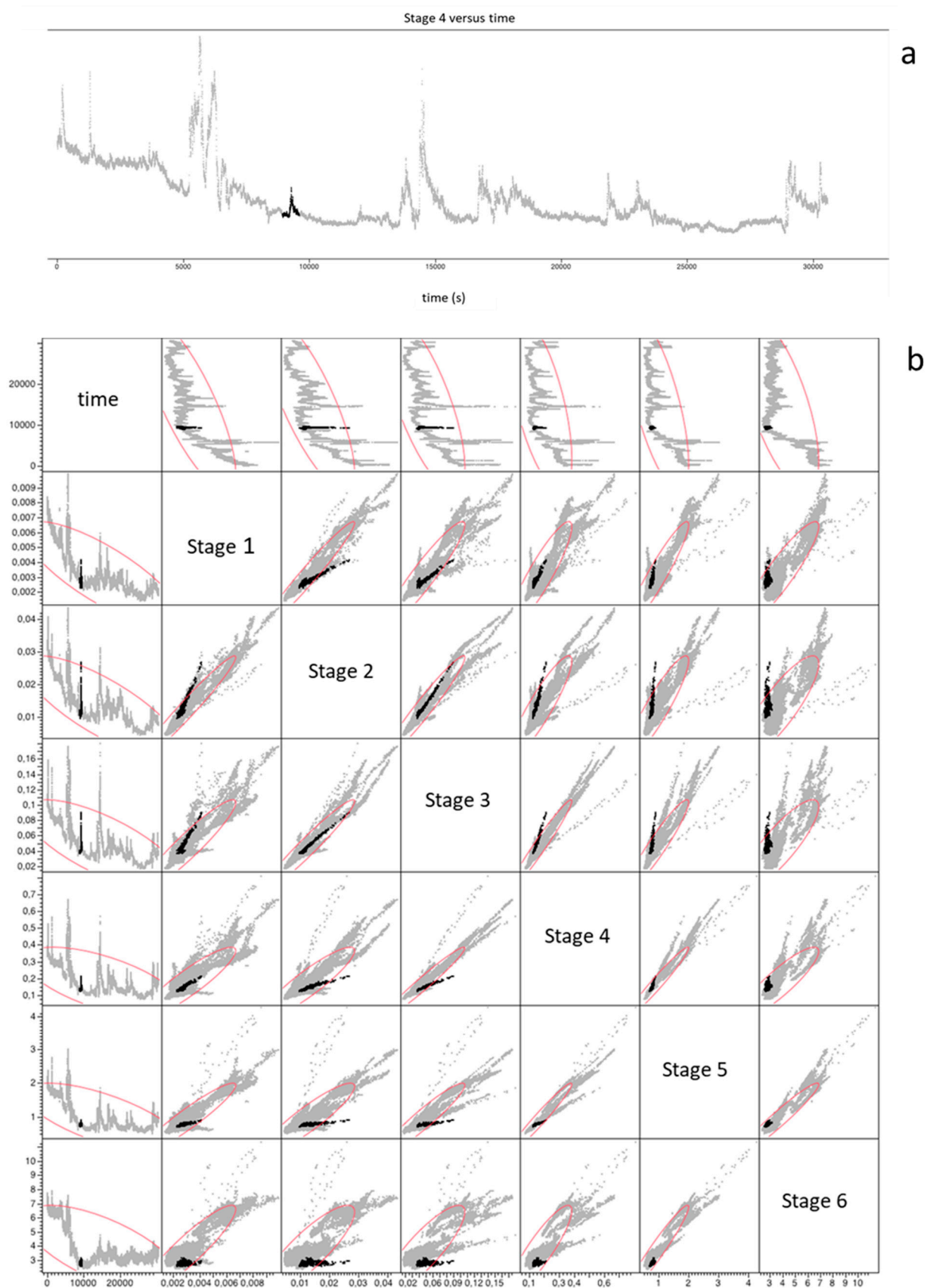
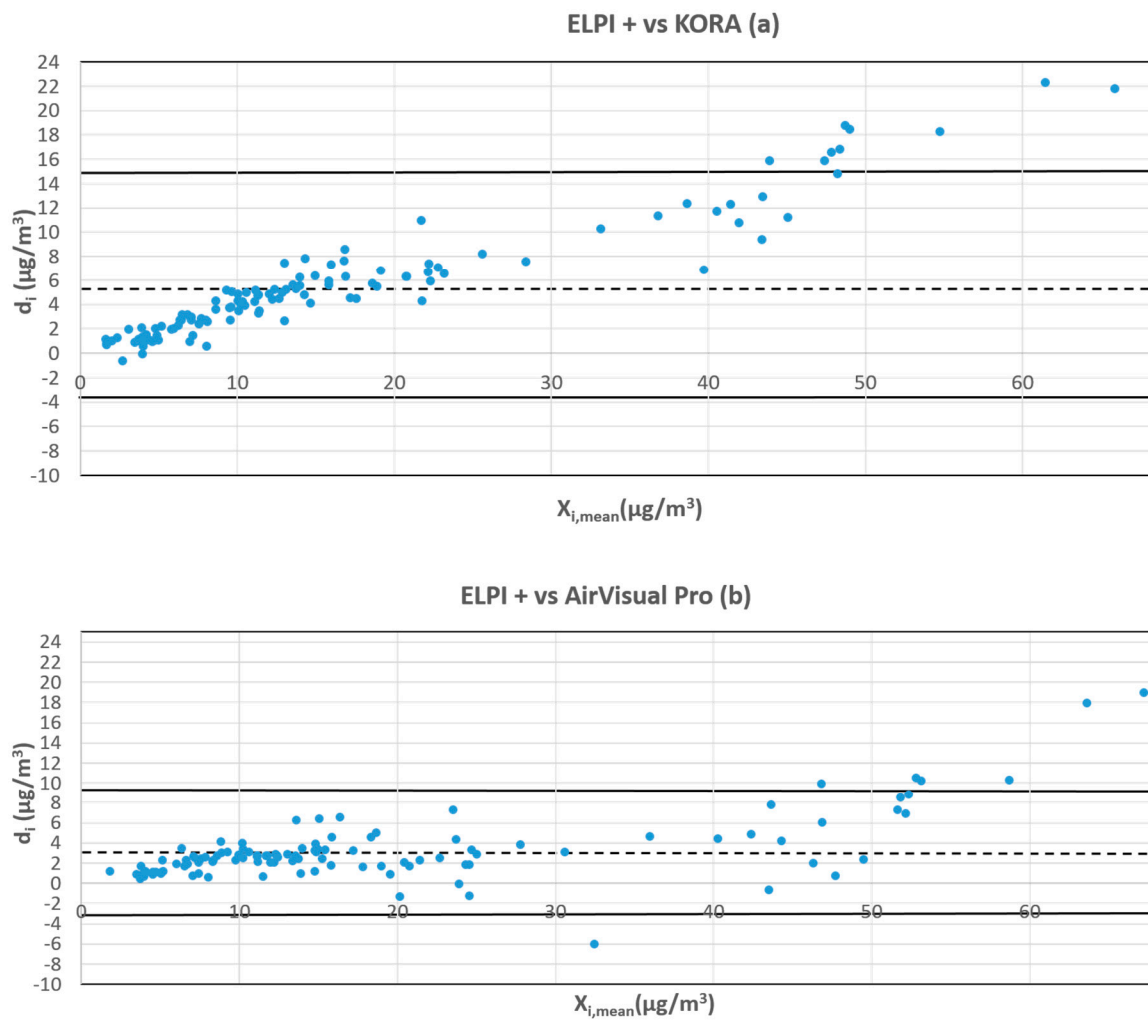


Figure S5. Daily concentrations pattern measured by ELPI + Stage 4 (grey) and the corresponding linear correlation plots with Stages from 1 to 6. Data highlighted in black refer to the event of truck entering the warehouse.



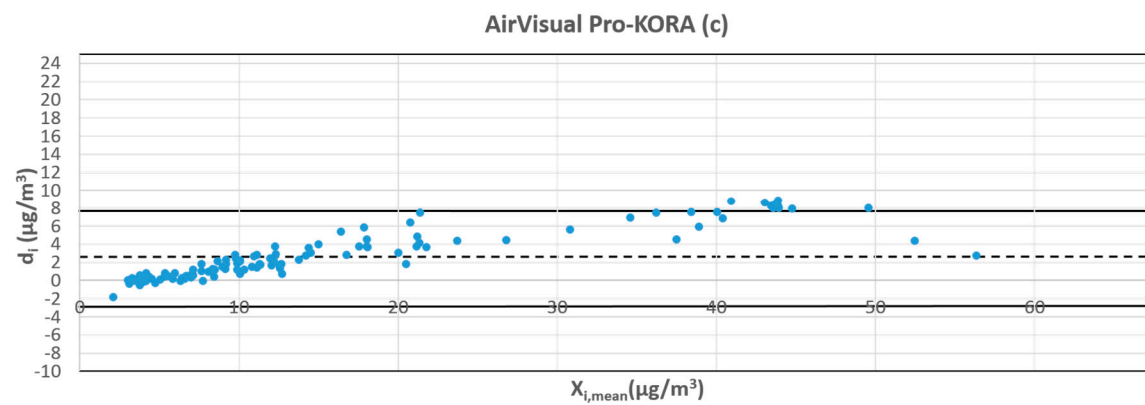


Figure S6. Altman Plots representing the difference of PM_{2.5} hourly concentrations between ELPI + and KORA(a), ELPI + and AirVisual Pro (b) and AirVisual Pro and KORA (c) measurements. On the y-axis the difference for each measure i of PM_{2.5} (d_i : ELPI + -KORA; ELPI + -AirVisual Pro; AirVisual Pro-KORA) between the 2 monitoring devices is plotted. On the x-axis the average value $X_{i,\text{mean}}$ between the two monitoring devices considered is represented. The dashed line represents the $d_{i,\text{mean}}$ while the two solid lines underline the 95% confidence interval ($d_{i,\text{mean}} \pm 1.96 \text{ SD}$).

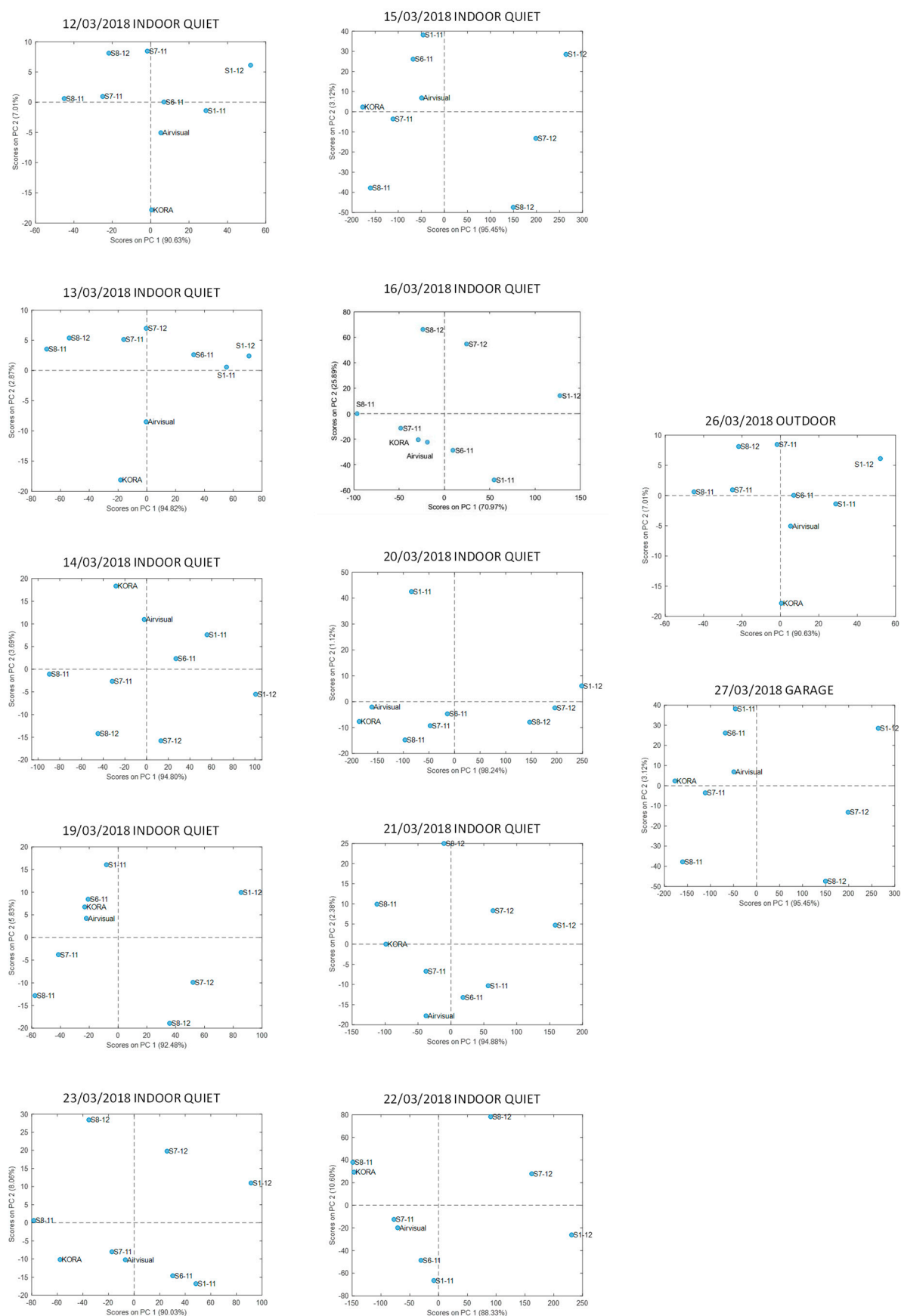


Figure S7. Score plots of the first two components (PC1 vs PC2) of the PCA, for each daily dataset

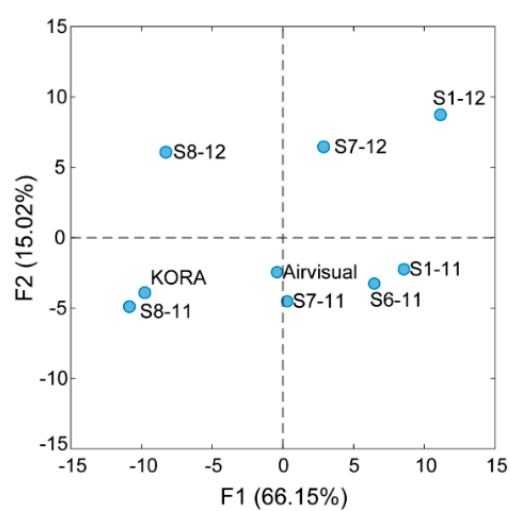


Figure S8. Score plot of the first two factors (F1 vs F2), for the first mode (instruments mode), of the PARAFAC statistical model.