

Appendix F Graphs and Tables of Intra-Sampler Co-location Data

This Appendix details the results of the intra-sampler orthogonal regression analyses for the following pollutants:

- Nitrogen dioxide (NO₂)
- Nitric oxide (NO)
- Sulphur dioxide (SO₂)
- Particulate matter with a mean aerodynamic diameter of 0.5 µm (PM_{0.5});
- Particulate matter with a mean aerodynamic diameter of 1.0 µm (PM_{1.0});
- Particulate matter with a mean aerodynamic diameter of 5.0 µm (PM_{5.0});
- Particulate matter with a mean aerodynamic diameter of 10 µm (PM₁₀);
- Total particulate matter (TPM)
- Black carbon (BC)
- Ultrafine particles between 10 nm and 300 nm in diameter (UFP)
- Carbon monoxide (CO)

Regression plots together with the following results and units are reported for data without and with outliers removed:

- Number of measurement pairs (n_{bs}).
- Between-sampler uncertainty (u_{bs}) - µg m⁻³ for all pollutants excluding UFP (N Particles cm⁻³).
- Coefficient of Determination (r^2).
- Slope (b).
- Uncertainty in slope (u_b).
- Intercept (a) - µg m⁻³ for all pollutants excluding UFP (N Particles cm⁻³).
- Uncertainty in intercept (u_a) - µg m⁻³ for all pollutants excluding UFP (N Particles cm⁻³).
- No of data pairs rejected as a result of the Grubbs' outlier test.

Both results using data from each individual colocation exercise and using all data are provided.

Figure F1 NO₂ Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

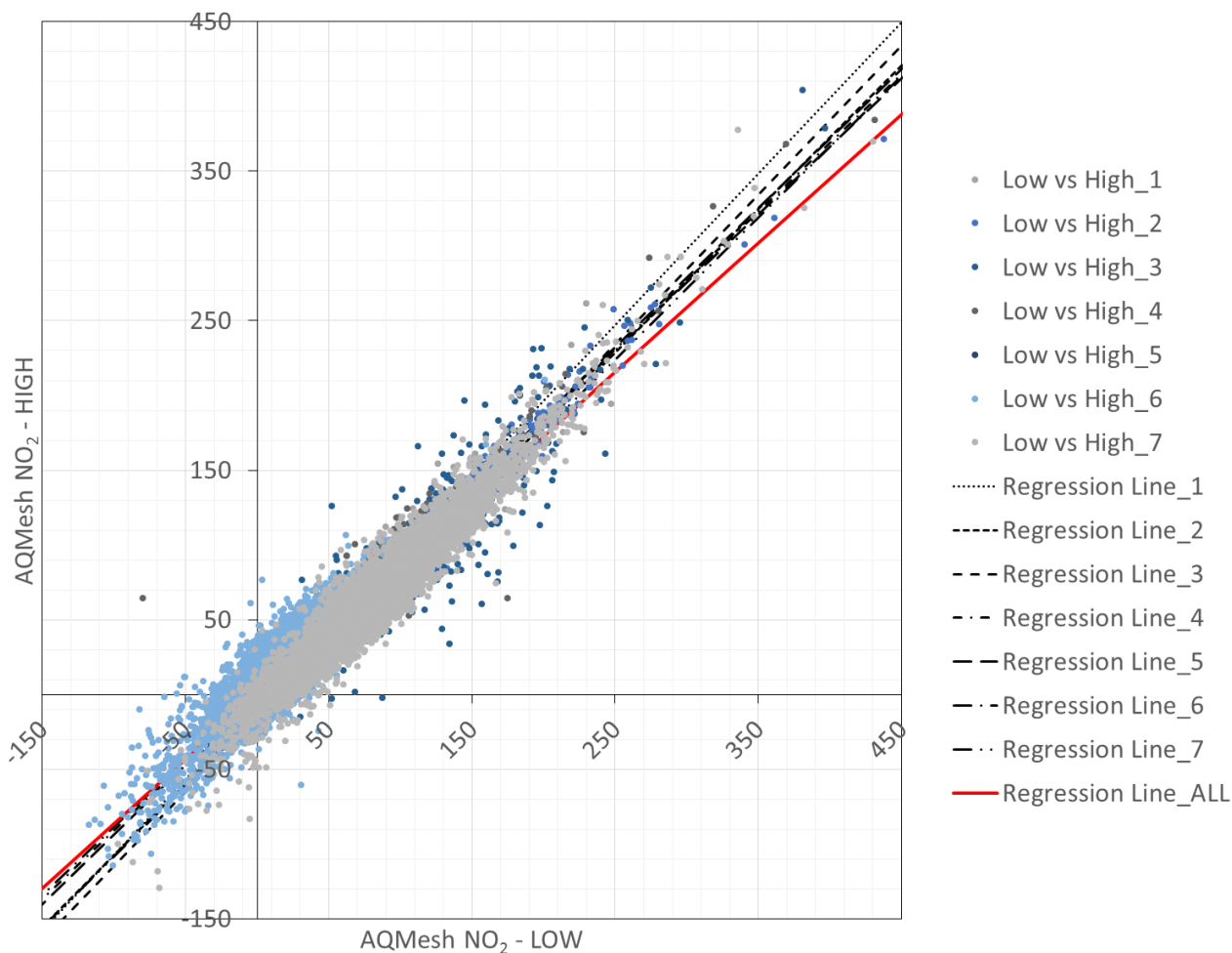


Table F1 NO₂ Intra-Sampler Regression Results

AQ Mesh NO ₂	Data Set	Date	1 minute		Orthogonal Regression				
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b		Intercept (a) \pm u_a	
Colocations Exercises	1	14/02/2014	248	9.77	0.843	1.011 \pm 0.026		-5.818 \pm 2.508	
	2	25/04/2014	528	13.84	0.947	0.959 \pm 0.010		-11.282 \pm 1.451	
	3	17/07/2014	547	18.66	0.843	0.997 \pm 0.017		-14.814 \pm 1.887	
	4	13/08/2014	517	11.39	0.903	0.919 \pm 0.013		1.143 \pm 1.332	
	5	19/08/2014	478	7.25	0.737	0.930 \pm 0.022		-0.364 \pm 0.666	
	6	27/08/2014	10211	8.94	0.778	0.909 \pm 0.004		2.810 \pm 0.149	
	7	03/09/2014	7120	15.30	0.919	0.948 \pm 0.003		-13.139 \pm 0.300	
All Exercises	All Data		19649	12.13	0.909	0.862 \pm 0.002		0.128 \pm 0.135	

Figure F2 NO₂ Intra-Sampler Regression – Grubbs (µg m⁻³)

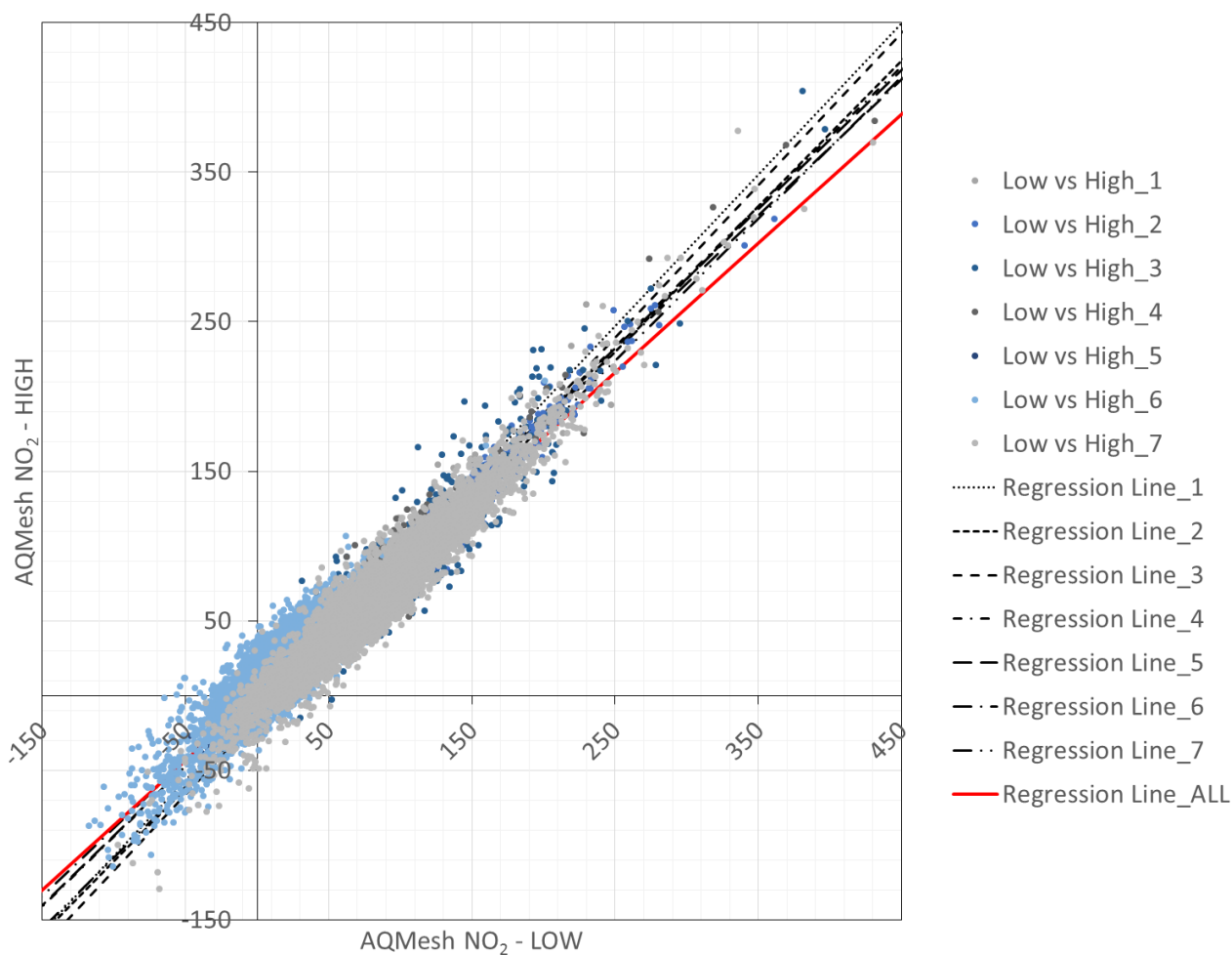


Table F2 NO₂ Intra-Sampler Regression Results - Grubbs

AQ Mesh NO ₂	Data Set	Date	1 minute		Orthogonal Regression				
			<i>n</i> _{bs}	<i>u</i> _{bs}	<i>r</i> ²	Slope (<i>b</i>) ± <i>u</i> _{<i>b</i>}		Intercept (<i>a</i>) ± <i>u</i> _{<i>a</i>}	
Colocations Exercises	1	14/02/2014	248	9.77	0.843	1.011 ± 0.026		-5.818 ± 2.508	
	2	25/04/2014	527	13.70	0.944	0.972 ± 0.01		-13.147 ± 1.502	
	3	17/07/2014	530	15.96	0.886	1.017 ± 0.015		-14.983 ± 1.633	
	4	13/08/2014	515	9.91	0.929	0.935 ± 0.011		-0.464 ± 1.152	
	5	19/08/2014	478	7.25	0.737	0.930 ± 0.022		-0.364 ± 0.666	
	6	27/08/2014	10206	8.86	0.781	0.909 ± 0.004		2.81 ± 0.148	
	7	03/09/2014	7116	15.25	0.920	0.948 ± 0.003		-13.141 ± 0.299	
All Exercises	All Data		19620	11.92	0.912	0.864 ± 0.002		0.079 ± 0.133	

The number of data pairs rejected = 29 (0.1%).

Figure F3 NO Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

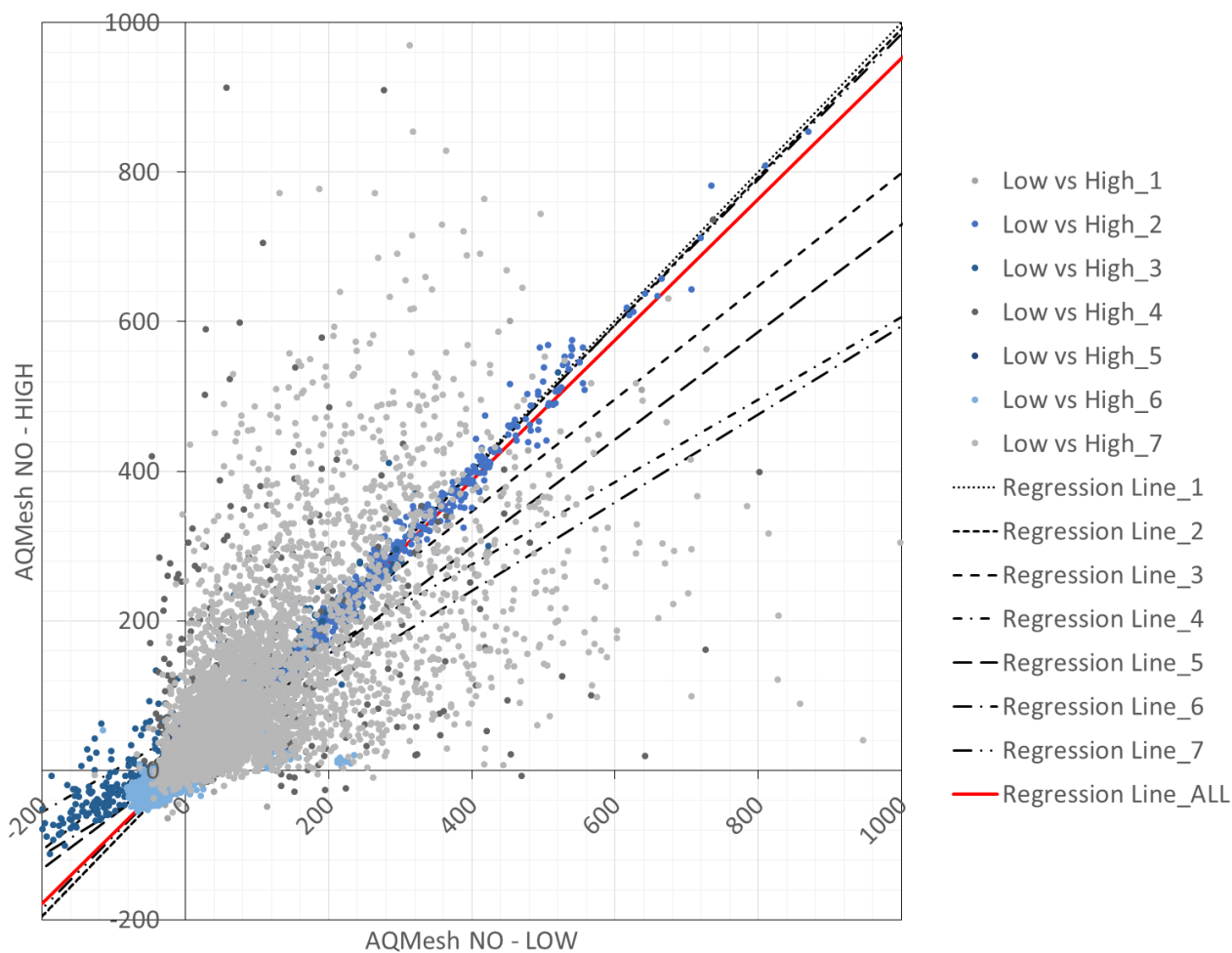


Table F3 NO Intra-Sampler Regression Results

AQ Mesh NO	Dataset	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b	Intercept (a) \pm u_a
Colocations Exercises	1	14/02/2014	248	29.29	0.880	0.997 \pm 0.022	3.744 \pm 3.046
	2	25/04/2014	528	12.41	0.987	0.989 \pm 0.005	2.578 \pm 1.461
	3	17/07/2014	547	49.68	0.836	0.755 \pm 0.013	44.065 \pm 1.516
	4	13/08/2014	517	136.48	0.080	0.552 \pm 0.035	54.363 \pm 6.877
	5	19/08/2014	478	15.12	0.184	0.718 \pm 0.036	11.801 \pm 0.644
	6	27/08/2014	10211	12.53	0.496	0.59 \pm 0.005	4.206 \pm 0.116
	7	03/09/2014	7120	61.27	0.483	0.975 \pm 0.008	10.134 \pm 1.12
All Exercises	All Data		19649	44.96	0.626	0.942 \pm 0.004	11.411 \pm 0.432

Figure F4 NO Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

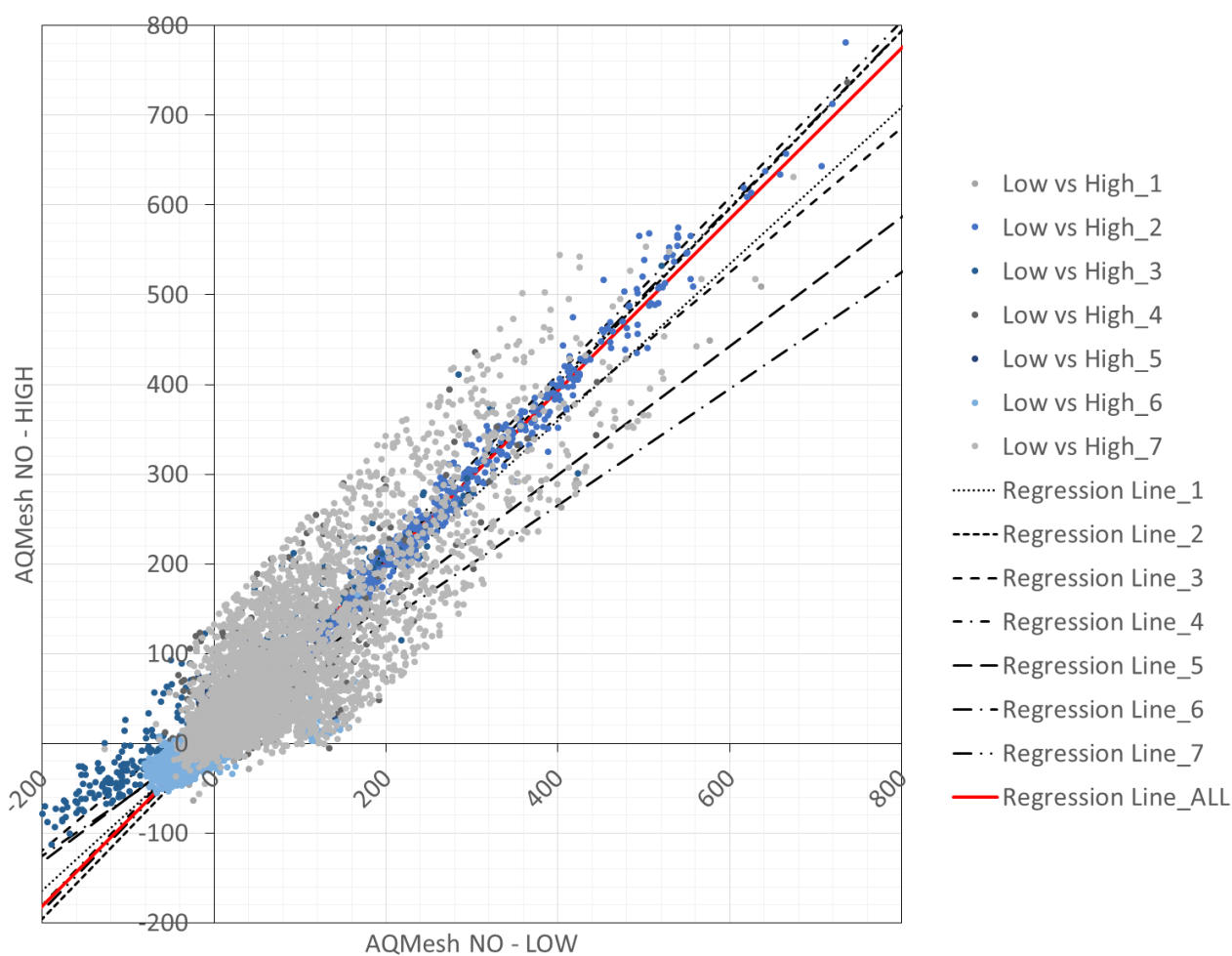


Table F4 NO Intra-Sampler Regression Results - Grubbs

AQ Mesh NO	Dataset	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$	Intercept (a) $\pm u_a$
Colocations Exercises	1	14/02/2014	244	24.11	0.899	0.873 \pm 0.018	10.488 \pm 2.245
	2	25/04/2014	528	12.41	0.987	0.989 \pm 0.005	2.578 \pm 1.461
	3	17/07/2014	516	42.68	0.864	0.805 \pm 0.013	41.447 \pm 1.366
	4	13/08/2014	407	39.94	0.675	0.984 \pm 0.028	16.956 \pm 2.914
	5	19/08/2014	478	15.12	0.184	0.718 \pm 0.036	11.801 \pm 0.644
	6	27/08/2014	10200	11.60	0.546	0.65 \pm 0.005	4.956 \pm 0.112
	7	03/09/2014	6527	32.81	0.728	0.981 \pm 0.006	9.544 \pm 0.65
All Exercises	All Data		18900	23.37	0.851	0.957 \pm 0.003	10.549 \pm 0.228

The number of data pairs rejected = 749 (3.8%).

Figure F5 SO₂ Intra-Sampler Regression (µg m⁻³)

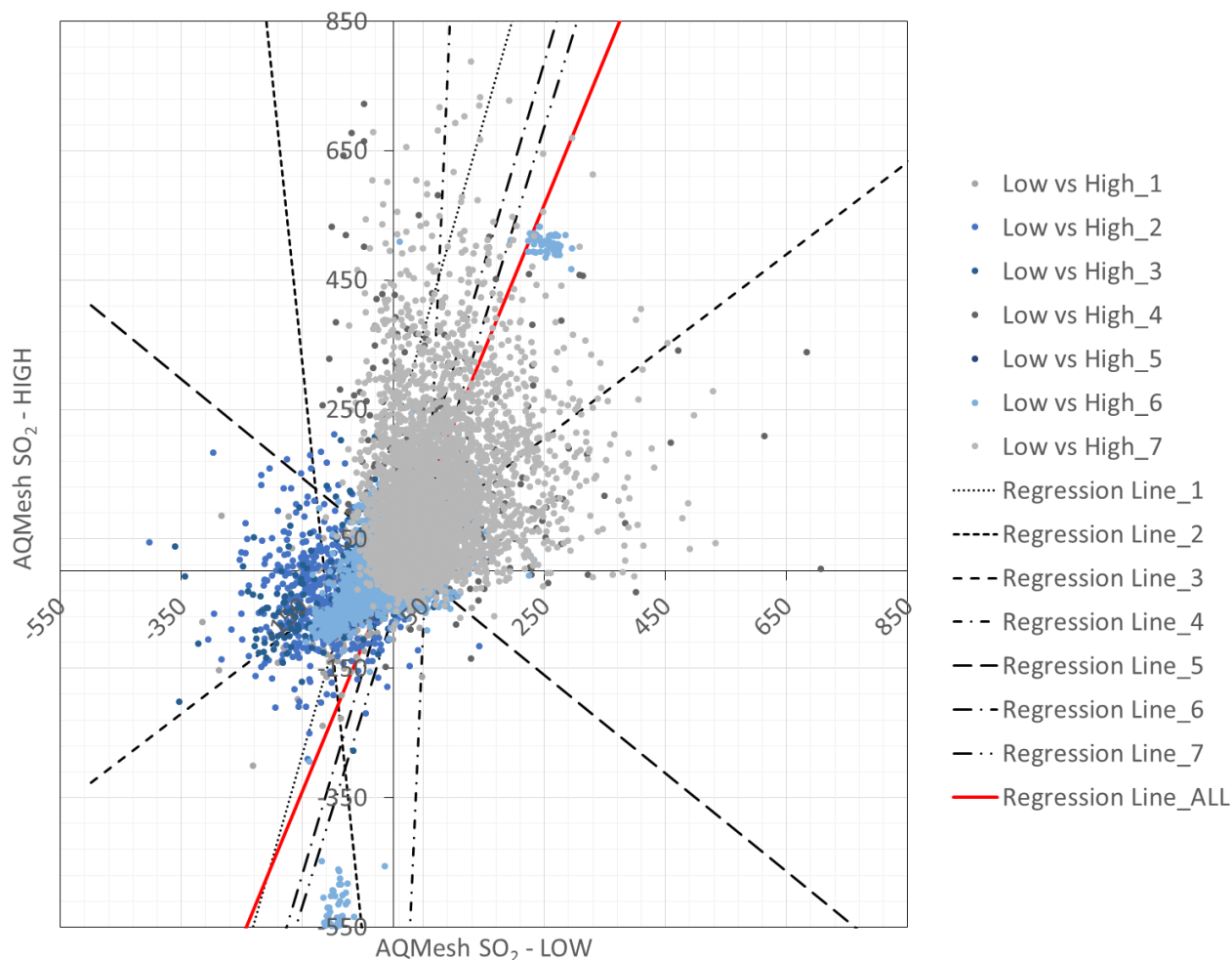


Table F5 SO₂ Intra-Sampler Regression Results

AQ Mesh SO ₂	Dataset	Date	1 minute		Orthogonal Regression			
			<i>n_{bs}</i>	<i>u_{bs}</i>	<i>r</i> ²	Slope (<i>b</i>) ± <i>u_b</i>	Intercept (<i>a</i>) ± <i>u_a</i>	
Colocations Exercises	1	14/02/2014	248	52.42	0.025	3.275 ± 0.080	206.865 ± 7.546	
	2	25/04/2014	528	86.83	0.000	-8.895 ± 0.047	-1009.390 ± 6.057	
	3	17/07/2014	547	53.67	0.211	0.711 ± 0.032	28.444 ± 2.757	
	4	13/08/2014	517	134.33	0.001	21.263 ± 0.065	-1148.074 ± 7.863	
	5	19/08/2014	478	27.11	0.018	-0.762 ± 0.044	30.420 ± 1.324	
	6	27/08/2014	10211	52.82	0.320	3.142 ± 0.017	1.310 ± 0.732	
	7	03/09/2014	7120	73.10	0.111	3.014 ± 0.017	-66.132 ± 1.393	
All Exercises	All Data		19649	64.78	0.243	2.271 ± 0.010	1.153 ± 0.645	

Figure F6 SO₂ Intra-Sampler Regression – Grubbs (µg m⁻³)

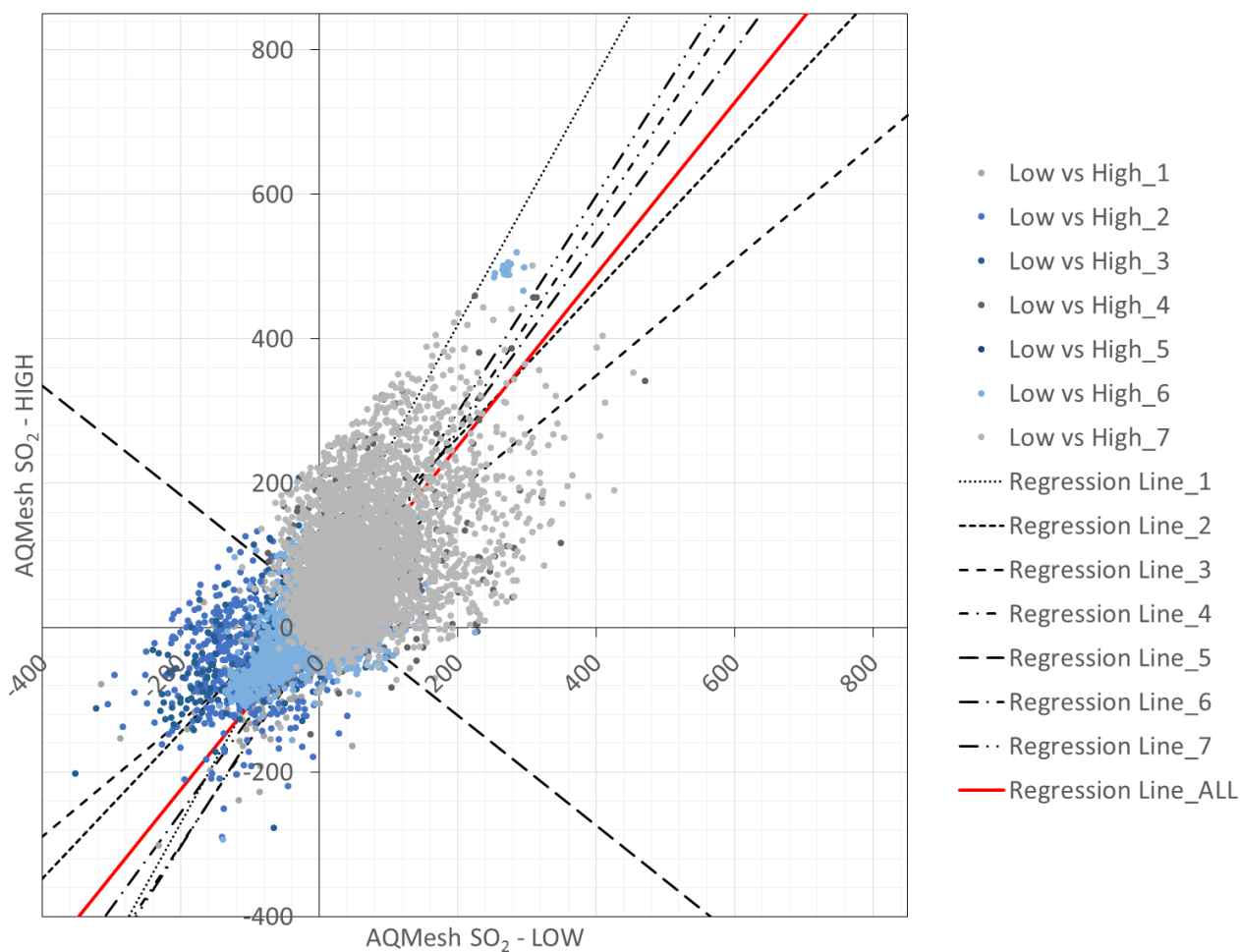


Table F6 SO₂ Intra-Sampler Regression Results - Grubbs

AQ Mesh SO ₂	Dataset	Date	1 minute		Orthogonal Regression		
			<i>n</i> _{bs}	<i>u</i> _{bs}	<i>r</i> ²	Slope (<i>b</i>) ± <i>u</i> _{<i>b</i>}	Intercept (<i>a</i>) ± <i>u</i> _{<i>a</i>}
Colocations Exercises	1	14/02/2014	245	45.01	0.053	1.723 ± 0.071	75.285 ± 6.616
	2	25/04/2014	498	71.98	0.020	1.018 ± 0.045	60.061 ± 5.471
	3	17/07/2014	539	47.85	0.299	0.799 ± 0.032	30.338 ± 2.579
	4	13/08/2014	461	63.74	0.175	1.445 ± 0.050	-11.154 ± 4.666
	5	19/08/2014	478	27.11	0.018	-0.762 ± 0.044	30.420 ± 1.324
	6	27/08/2014	10121	27.16	0.210	1.318 ± 0.01	8.888 ± 0.335
	7	03/09/2014	6802	51.27	0.217	1.502 ± 0.013	-1.656 ± 0.999
All Exercises	All Data		19144	40.81	0.355	1.188 ± 0.006	13.708 ± 0.386

The number of data pairs rejected = 505 (2.6%).

Figure F7 CO Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

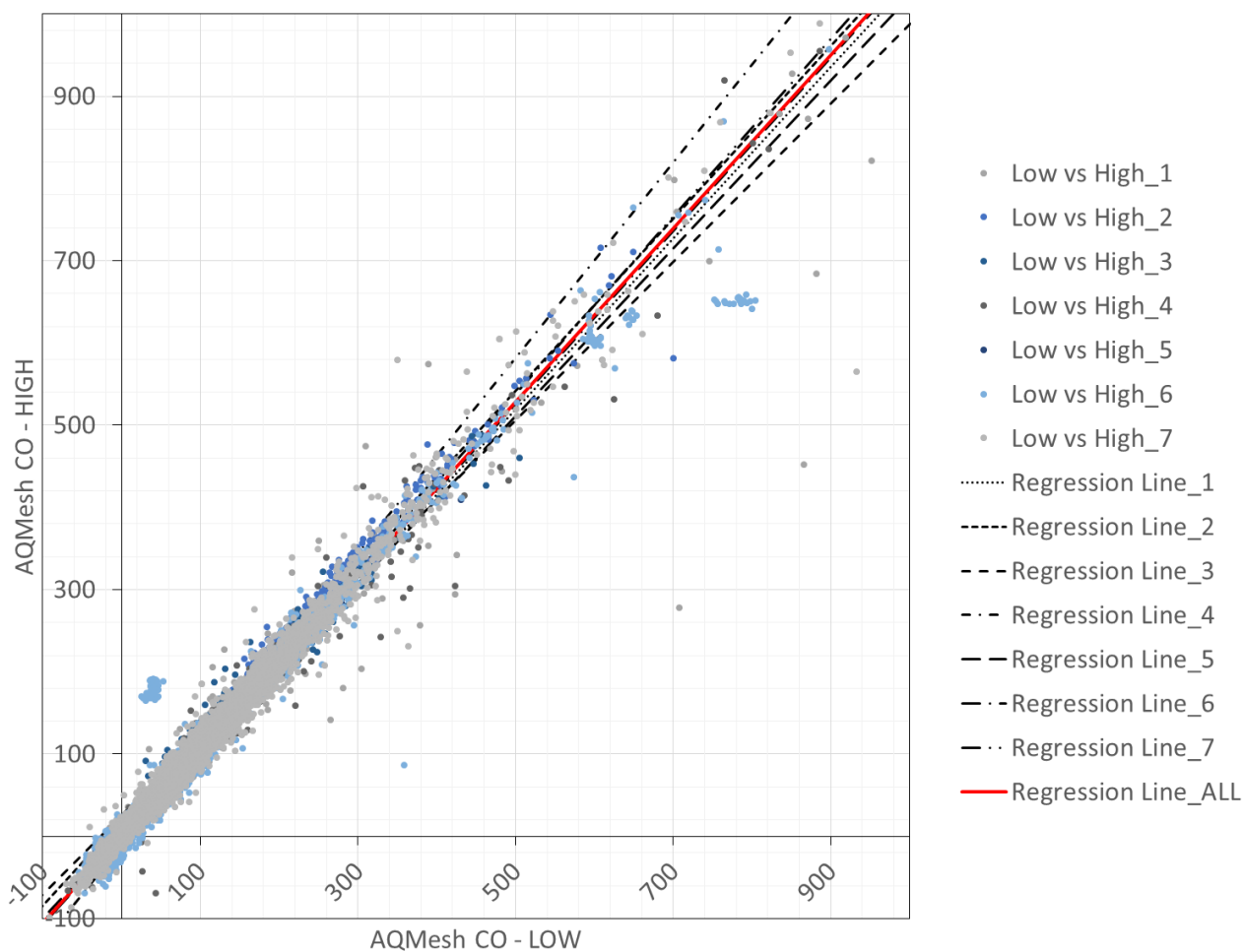


Table F7 CO Intra-Sampler Regression Results

AQ Mesh CO	Dataset	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$	Intercept (a) $\pm u_a$
Colocations Exercises	1	14/02/2014	248	100.68	0.983	1.039 \pm 0.009	0.141 \pm 10.018
	2	25/04/2014	528	24.69	0.971	1.045 \pm 0.008	19.806 \pm 2.055
	3	17/07/2014	547	16.17	0.966	0.962 \pm 0.008	25.102 \pm 1.207
	4	13/08/2014	517	48.93	0.897	1.187 \pm 0.017	-11.37 \pm 3.472
	5	19/08/2014	478	4.76	0.973	1.019 \pm 0.008	1.959 \pm 0.361
	6	27/08/2014	10211	16.97	0.989	1.055 \pm 0.001	-2.362 \pm 0.233
	7	03/09/2014	7120	12.96	0.983	1.077 \pm 0.002	-0.093 \pm 0.249
All Exercises	All Data		19649	20.63	0.985	1.056 \pm 0.001	0.291 \pm 0.213

Figure F8 CO Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

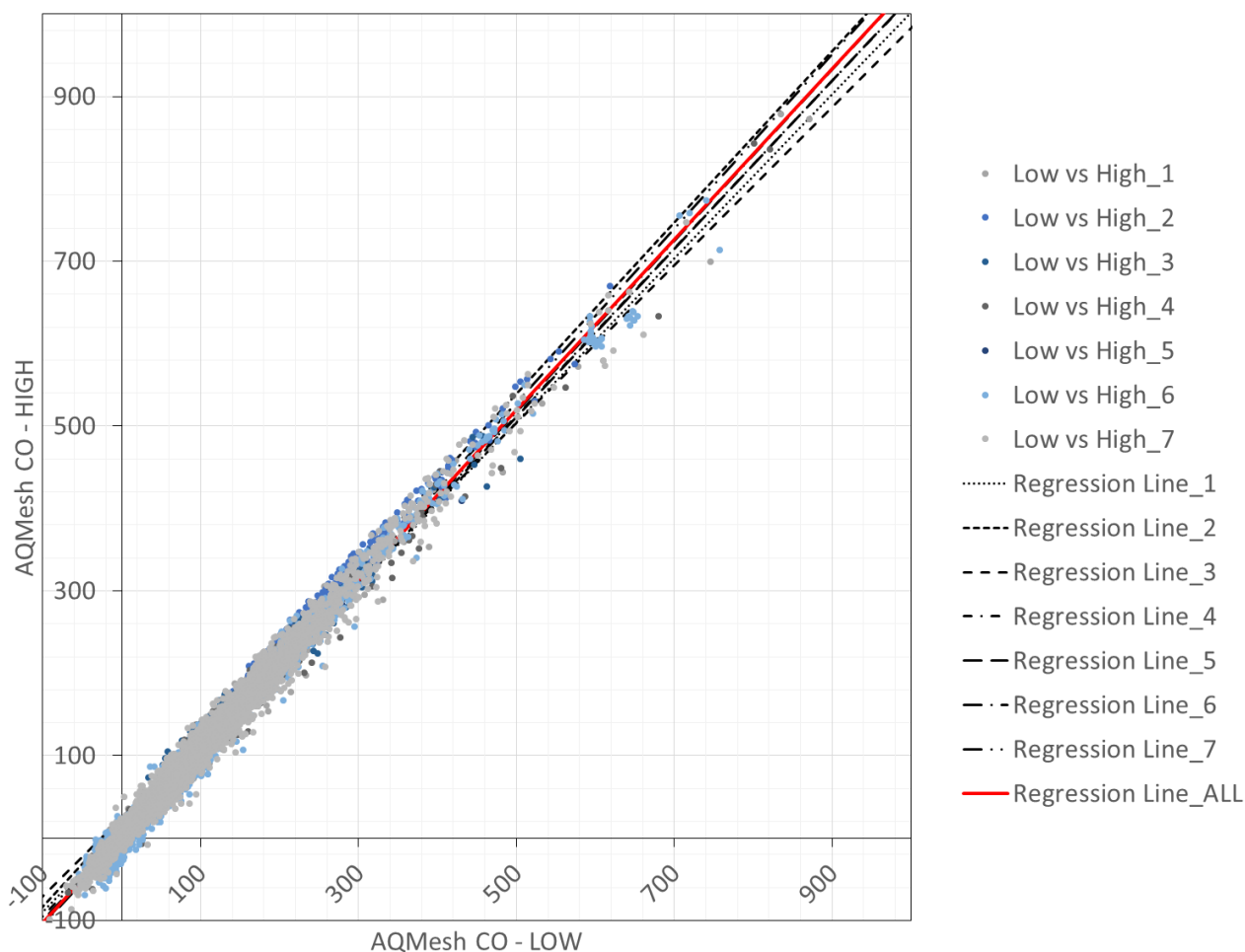


Table F8 CO Intra-Sampler Regression Results - Grubbs

AQ Mesh CO	Dataset	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$	Intercept (a) $\pm u_a$
Colocations Exercises	1	14/02/2014	193	14.43	0.999	0.992 \pm 0.002	9.208 \pm 1.464
	2	25/04/2014	498	22.77	0.978	1.038 \pm 0.007	20.316 \pm 1.785
	3	17/07/2014	539	15.36	0.973	0.958 \pm 0.007	25.115 \pm 1.078
	4	13/08/2014	492	10.34	0.990	1.014 \pm 0.005	6.104 \pm 0.719
	5	19/08/2014	478	4.76	0.973	1.019 \pm 0.008	1.959 \pm 0.361
	6	27/08/2014	10108	5.89	0.991	1.038 \pm 0.001	-1.5 \pm 0.109
	7	03/09/2014	7008	9.84	0.987	1.055 \pm 0.001	1.593 \pm 0.198
All Exercises	All Data		19316	8.87	0.991	1.036 \pm 0.001	1.564 \pm 0.104

The number of data pairs rejected = 333 (1.7%).

Figure F9 PM_{0.5} Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

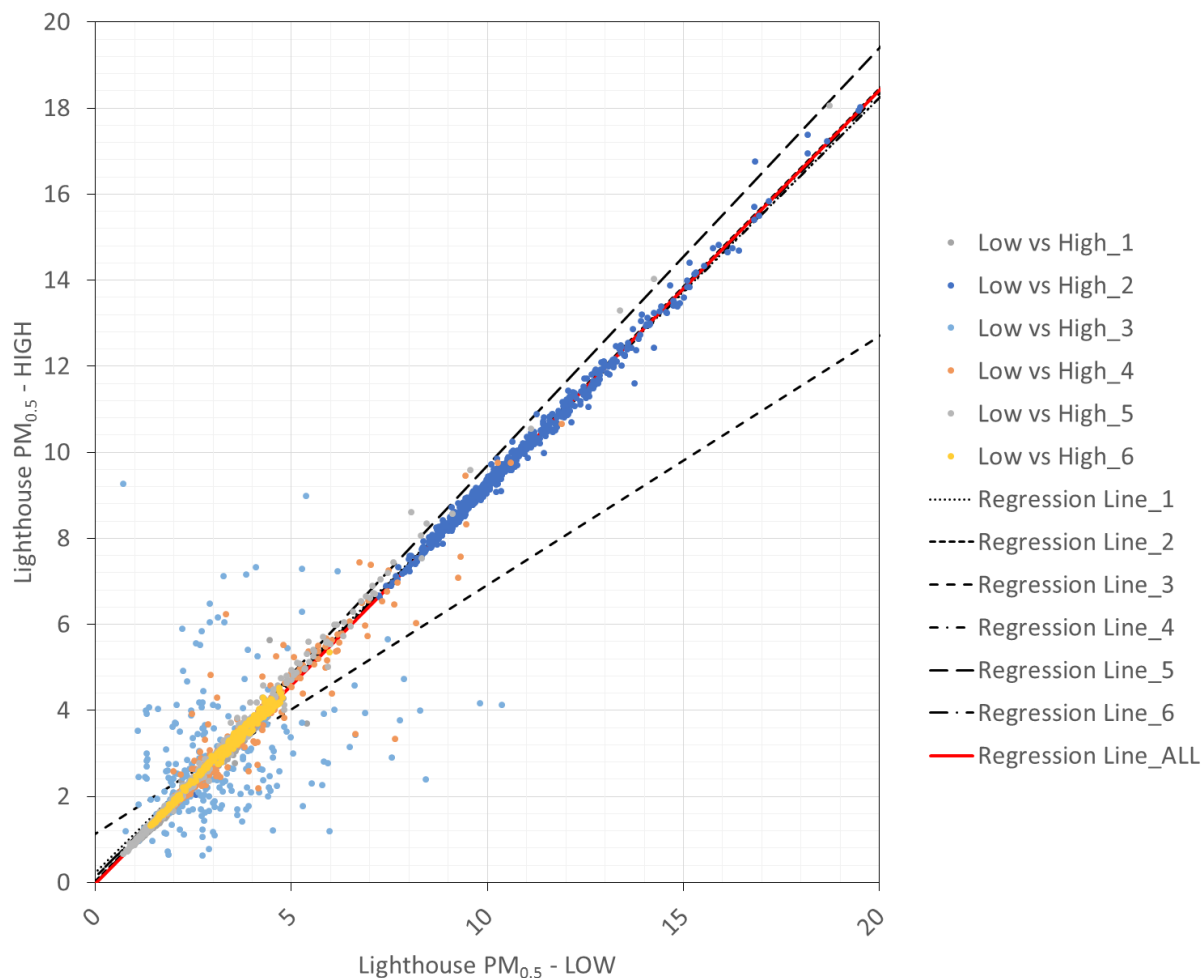


Table F9 PM_{0.5} Intra-Sampler Regression Results

Lighthouse PM _{0.5}	Data Set	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b	Intercept (a) \pm u_a
Colocations Exercises	1	15/04/2014	549	0.25	0.991	0.903 \pm 0.004	-0.046 \pm 0.011
	2	25/04/2014	533	0.62	0.993	0.921 \pm 0.003	-0.002 \pm 0.036
	3	19/06/2014	245	1.82	0.014	0.579 \pm 0.060	1.100 \pm 0.229
	4	17/07/2014	470	0.36	0.915	0.906 \pm 0.012	0.044 \pm 0.045
	5	13/08/2014	519	0.13	0.996	0.971 \pm 0.003	-0.053 \pm 0.008
	6	27/08/2014	445	0.18	0.990	0.910 \pm 0.004	0.072 \pm 0.015
All Exercises	All Data		2761	0.64	0.945	0.922 \pm 0.004	-0.006 \pm 0.024

Figure F10 PM_{0.5} Intra-Sampler Regression – Grubbs (μg m⁻³)

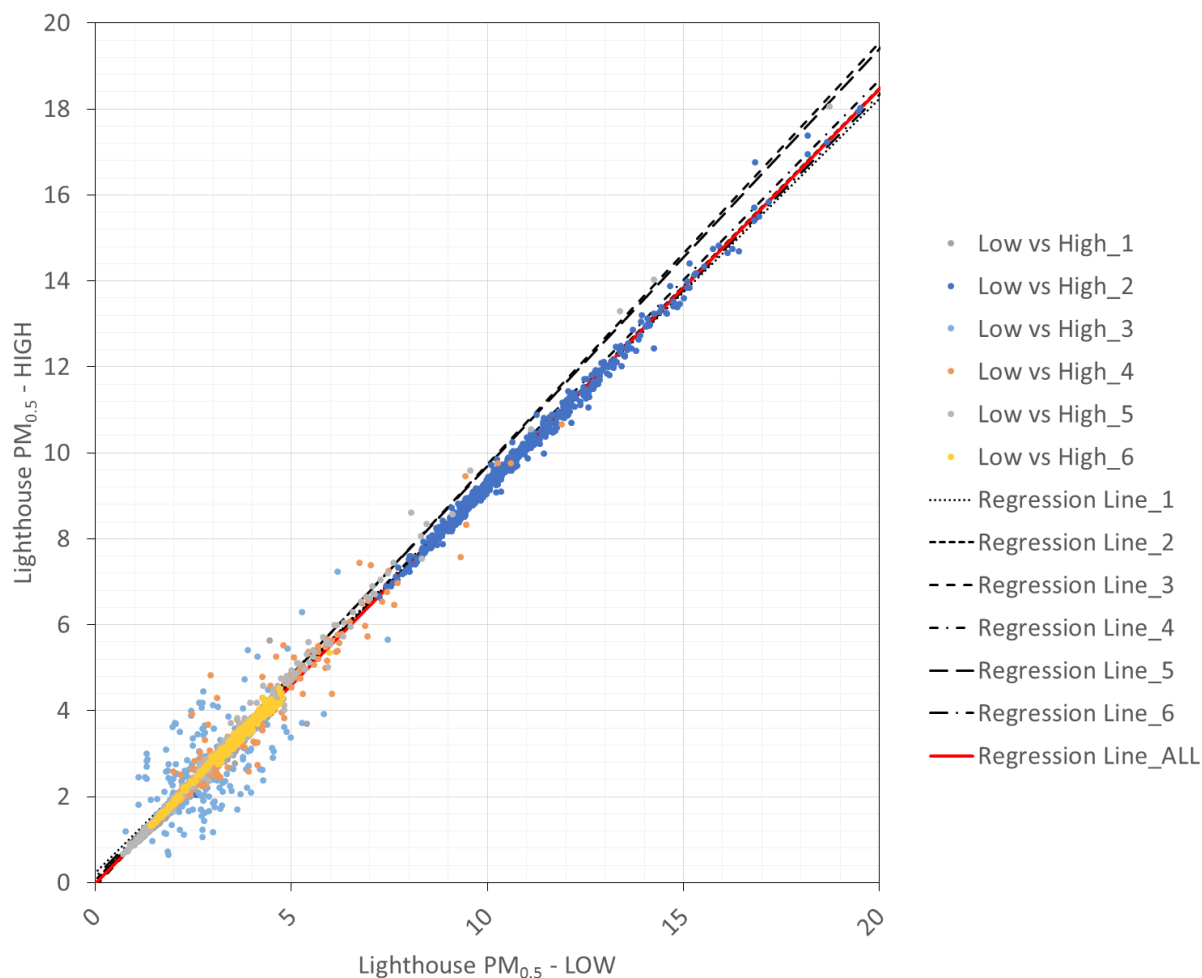


Table F10 PM_{0.5} Intra-Sampler Regression Results - Grubbs

Lighthouse PM _{0.5}	Data Set	Date	1 minute		Orthogonal Regression			
			n _{bs}	u _{bs}	r ²	Slope (b) ± u _b	Intercept (a) ± u _a	
Colocations Exercises	1	15/04/2014	549	0.25	0.991	0.903 ± 0.004	-0.046 ± 0.011	
	2	25/04/2014	532	0.62	0.994	0.923 ± 0.003	-0.012 ± 0.035	
	3	19/06/2014	187	0.66	0.373	0.982 ± 0.058	-0.124 ± 0.174	
	4	17/07/2014	464	0.27	0.958	0.932 ± 0.009	-0.026 ± 0.032	
	5	13/08/2014	519	0.13	0.996	0.971 ± 0.003	-0.053 ± 0.008	
	6	27/08/2014	445	0.18	0.990	0.910 ± 0.004	0.072 ± 0.015	
All Exercises	All Data		2696	0.37	0.992	0.924 ± 0.002	-0.006 ± 0.009	

The number of data pairs rejected = 65 (2.4%).

Figure F11 PM_{1.0} Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

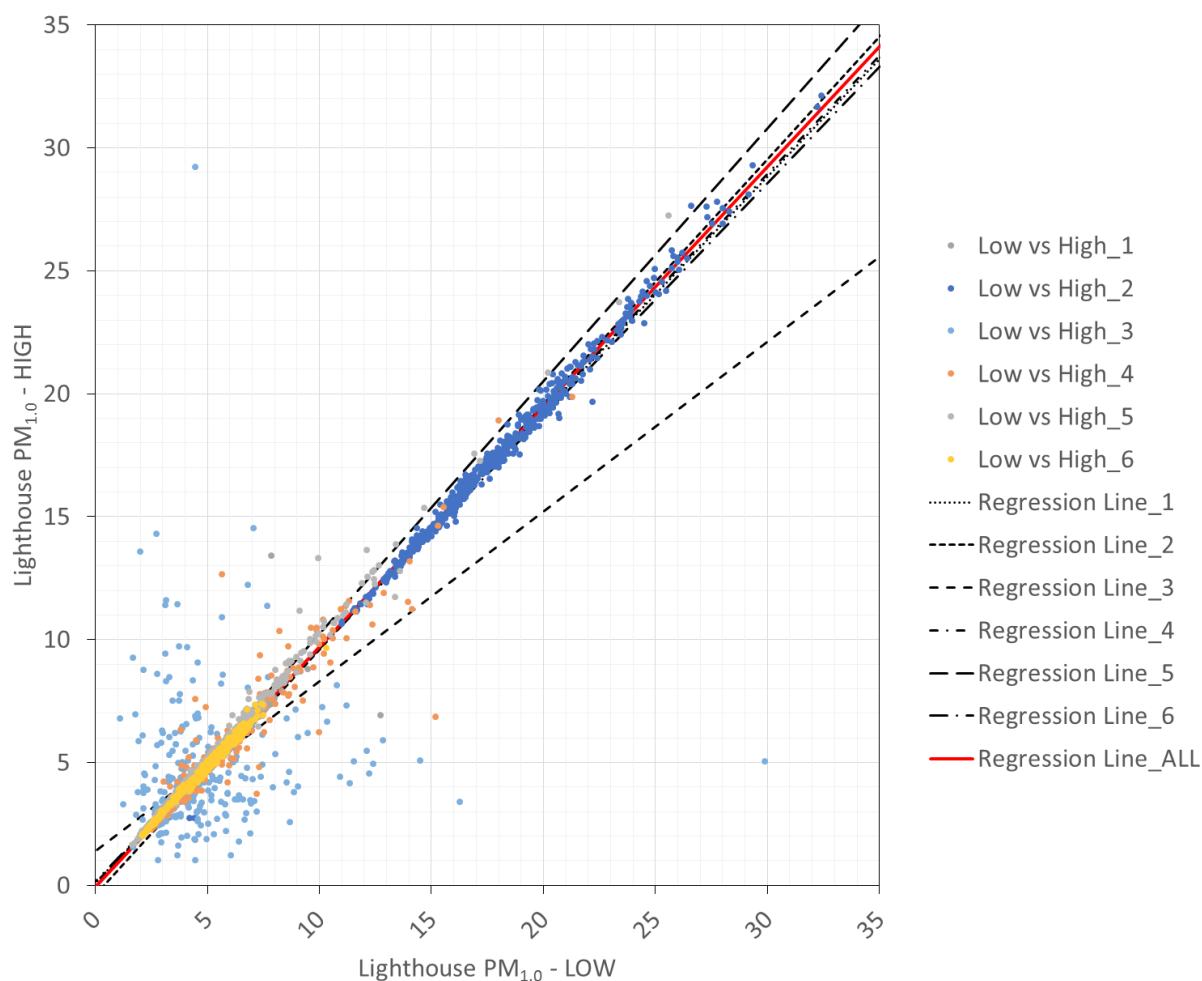


Table F11 PM_{1.0} Intra-Sampler Regression Results

Lighthouse PM _{1.0}	Data Set	Date	1 minute		Orthogonal Regression				
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b		Intercept (a) \pm u_a	
Colocations Exercises	1	15/04/2014	549	0.31	0.959	0.958 \pm 0.008		-0.028 \pm 0.045	
	2	25/04/2014	533	0.41	0.992	0.998 \pm 0.004		-0.439 \pm 0.069	
	3	19/06/2014	245	2.76	0.004	0.691 \pm 0.063		1.395 \pm 0.364	
	4	17/07/2014	470	0.53	0.906	0.962 \pm 0.014		0.034 \pm 0.077	
	5	13/08/2014	519	0.20	0.994	1.028 \pm 0.004		-0.061 \pm 0.021	
	6	27/08/2014	445	0.14	0.990	0.947 \pm 0.004		0.126 \pm 0.021	
All Exercises	All Data		2761	0.89	0.953	0.976 \pm 0.004		-0.012 \pm 0.038	

Figure F12 PM_{1.0} Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

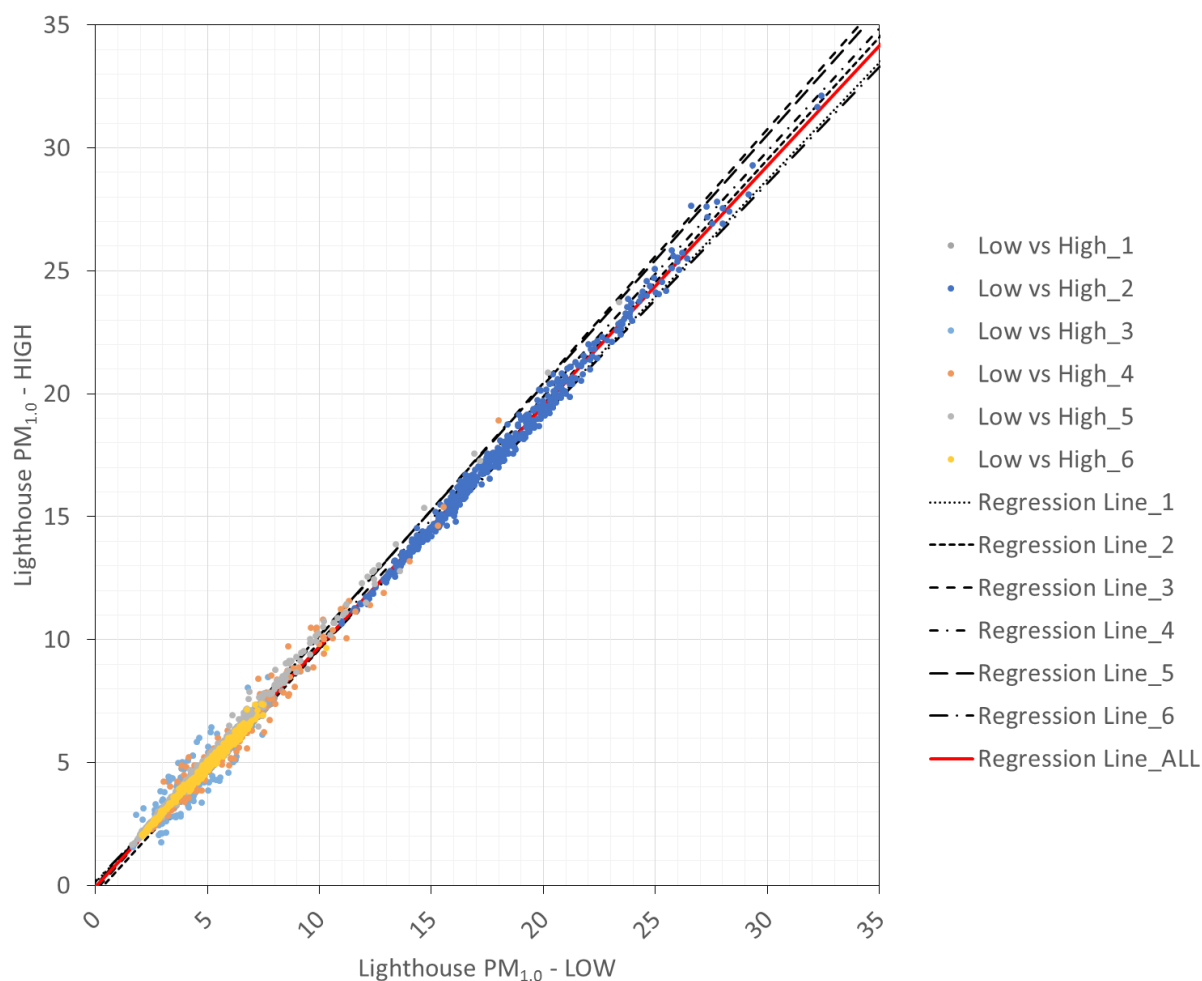


Table F12 PM_{1.0} Intra-Sampler Regression Results - Grubbs

Lighthouse PM _{1.0}	Data Set	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b	Intercept (a) \pm u_a
Colocations Exercises	1	15/04/2014	547	0.19	0.997	0.954 \pm 0.002	-0.006 \pm 0.011
	2	25/04/2014	526	0.38	0.994	0.996 \pm 0.004	-0.39 \pm 0.064
	3	19/06/2014	110	0.54	0.713	1.032 \pm 0.053	-0.233 \pm 0.235
	4	17/07/2014	452	0.24	0.979	0.999 \pm 0.007	-0.139 \pm 0.037
	5	13/08/2014	514	0.13	0.997	1.018 \pm 0.002	-0.022 \pm 0.014
	6	27/08/2014	445	0.14	0.990	0.947 \pm 0.004	0.126 \pm 0.021
All Exercises	All Data		2594	0.26	0.997	0.977 \pm 0.001	-0.013 \pm 0.009

The number of data pairs rejected = 167 (6.0%).

Figure F13 PM_{2.5} Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

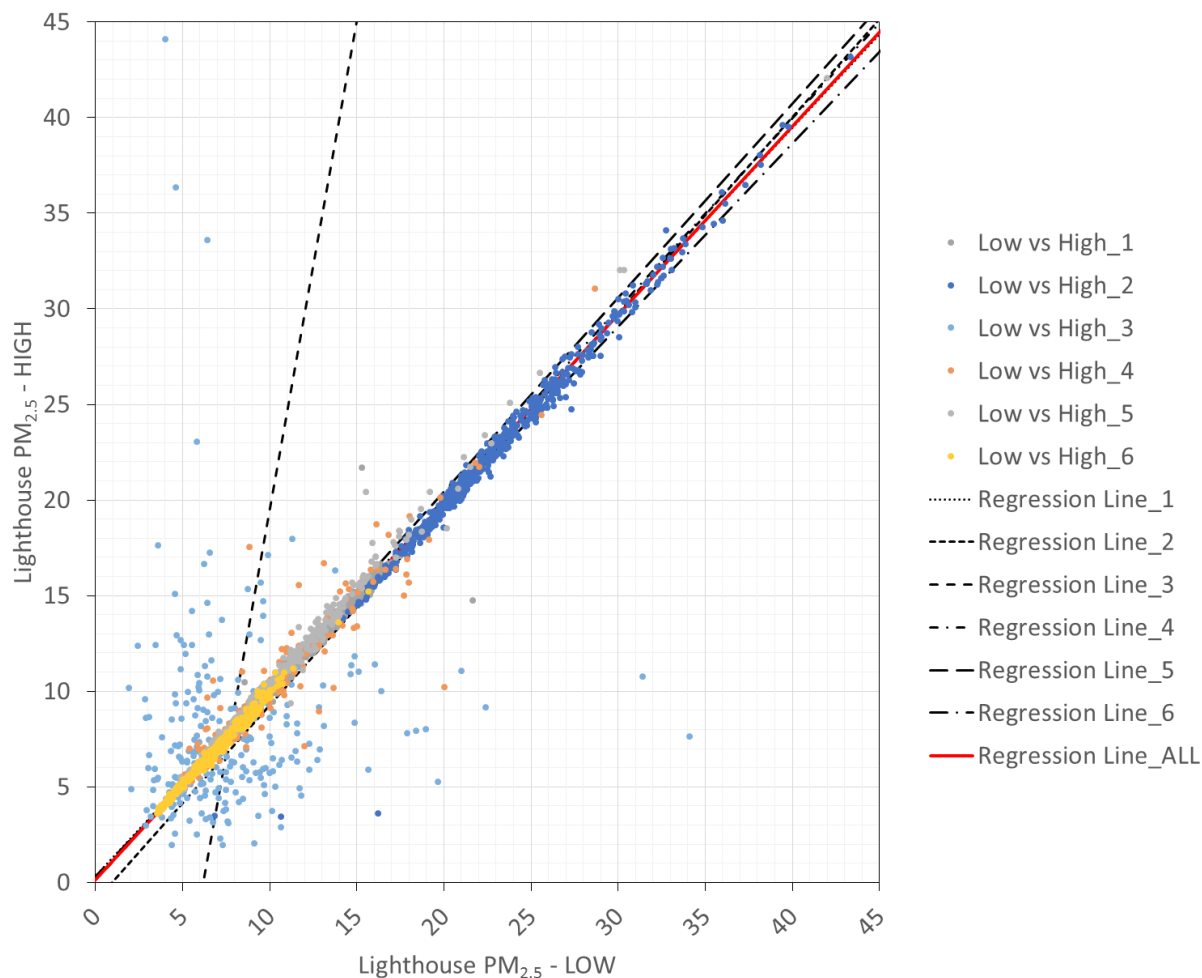


Table F13 PM_{2.5} Intra-Sampler Regression Results

Lighthouse PM _{2.5}	Data Set	Date	1 minute		Orthogonal Regression				
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b		Intercept (a) \pm u_a	
Colocations Exercises	1	15/04/2014	549	0.33	0.968	0.980 \pm 0.008		0.218 \pm 0.095	
	2	25/04/2014	533	0.59	0.978	1.025 \pm 0.007		-0.987 \pm 0.157	
	3	19/06/2014	245	4.34	0.003	5.119 \pm 0.074		-31.973 \pm 0.653	
	4	17/07/2014	470	0.65	0.913	0.997 \pm 0.014		0.100 \pm 0.125	
	5	13/08/2014	519	0.71	0.968	1.015 \pm 0.008		0.137 \pm 0.088	
	6	27/08/2014	445	0.14	0.989	0.959 \pm 0.005		0.301 \pm 0.033	
All Exercises	All Data		2761	1.39	0.920	0.985 \pm 0.005		0.181 \pm 0.073	

Figure F14 PM_{2.5} Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

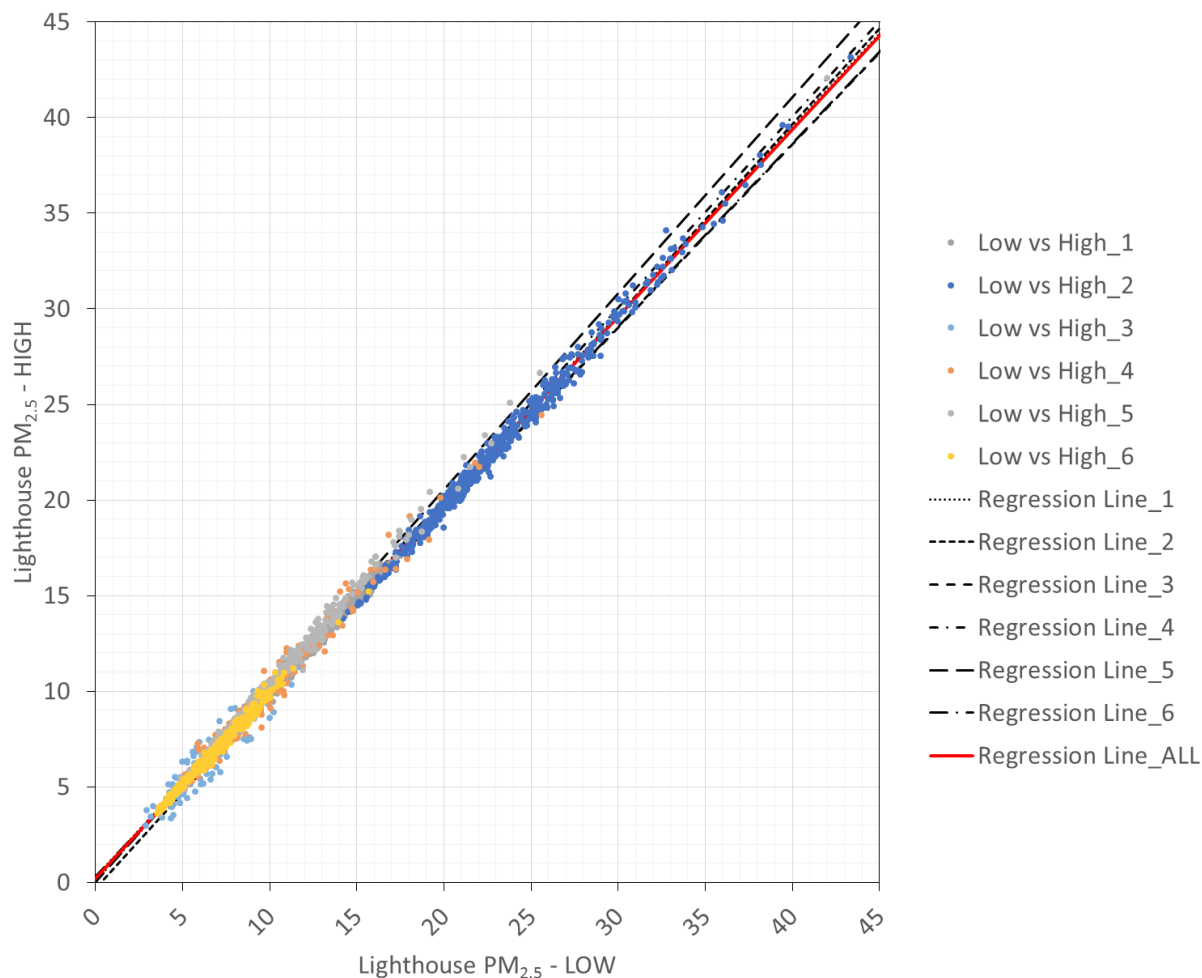


Table F14 PM_{2.5} Intra-Sampler Regression Results - Grubbs

Lighthouse PM _{2.5}	Data Set	Date	1 minute		Orthogonal Regression			
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b		Intercept (a) \pm u_a
Colocations Exercises	1	15/04/2014	546	0.17	0.992	0.981 \pm 0.004		0.198 \pm 0.047
	2	25/04/2014	527	0.37	0.993	1.000 \pm 0.004		-0.359 \pm 0.084
	3	19/06/2014	78	0.57	0.845	0.958 \pm 0.043		0.278 \pm 0.291
	4	17/07/2014	445	0.25	0.983	1.000 \pm 0.006		0.068 \pm 0.055
	5	13/08/2014	510	0.28	0.996	1.026 \pm 0.003		0.017 \pm 0.029
	6	27/08/2014	445	0.14	0.989	0.959 \pm 0.005		0.301 \pm 0.033
All Exercises	All Data		2551	0.27	0.997	0.979 \pm 0.001		0.241 \pm 0.014

The number of data pairs rejected = 210 (7.6%).

Figure F15 PM_{5.0} Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

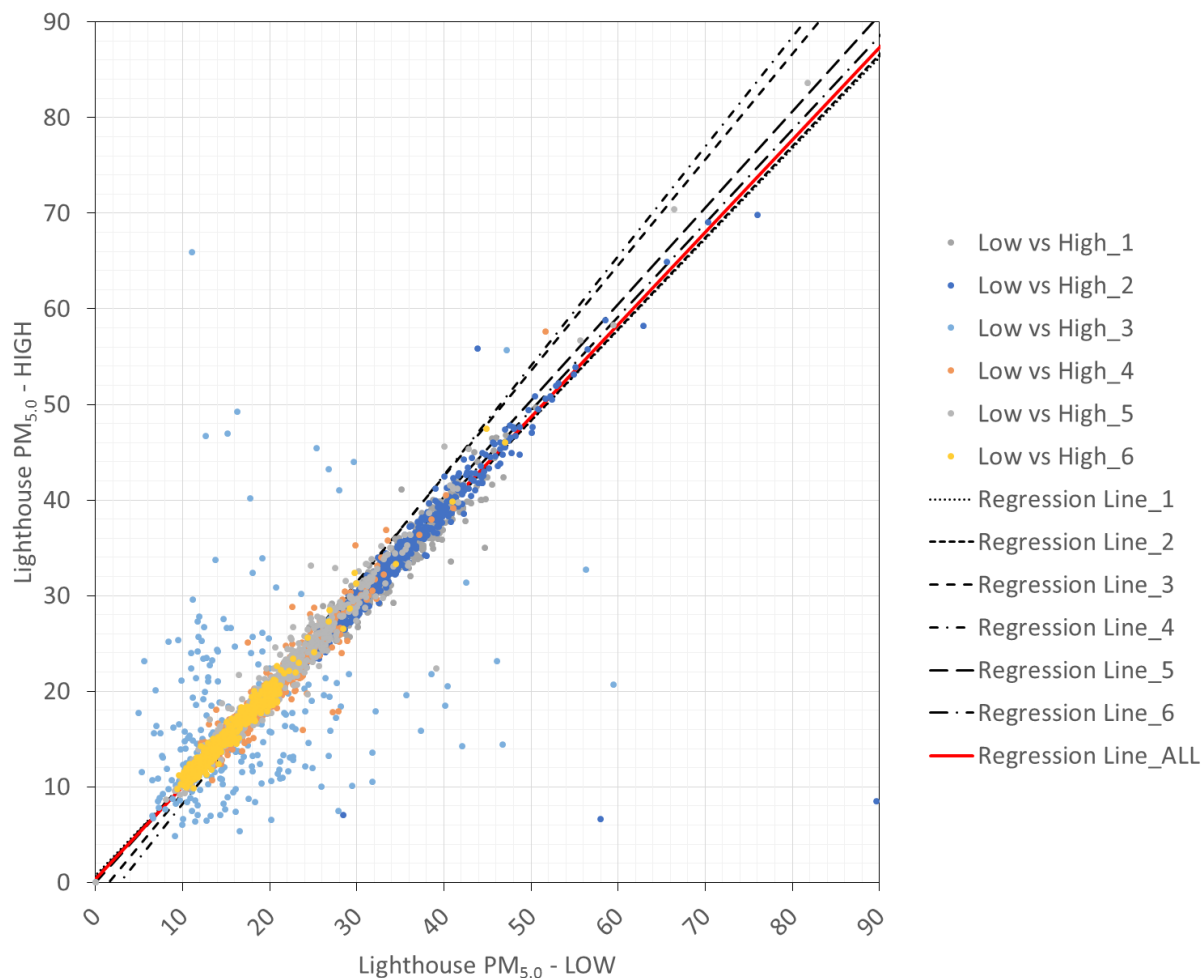


Table F15 PM_{5.0} Intra-Sampler Regression Results

Lighthouse PM _{5.0}	Data Set	Date	1 minute		Orthogonal Regression				
			<i>n</i> _{bs}	<i>u</i> _{bs}	<i>r</i> ²	Slope (<i>b</i>) ± <i>u</i> _{<i>b</i>}		Intercept (<i>a</i>) ± <i>u</i> _{<i>a</i>}	
Colocations Exercises	1	15/04/2014	549	1.17	0.949	0.951 ± 0.009		0.677 ± 0.317	
	2	25/04/2014	533	3.17	0.684	0.956 ± 0.024		0.438 ± 0.843	
	3	19/06/2014	245	7.44	0.086	1.104 ± 0.063		-1.76 ± 1.206	
	4	17/07/2014	470	1.34	0.937	1.146 ± 0.013		-3.238 ± 0.281	
	5	13/08/2014	519	1.04	0.964	1.008 ± 0.008		-0.057 ± 0.191	
	6	27/08/2014	445	0.54	0.972	0.978 ± 0.008		0.426 ± 0.124	
All Exercises	All Data		2758	2.77	0.861	0.966 ± 0.007		0.419 ± 0.186	

Figure F16 PM_{5.0} Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

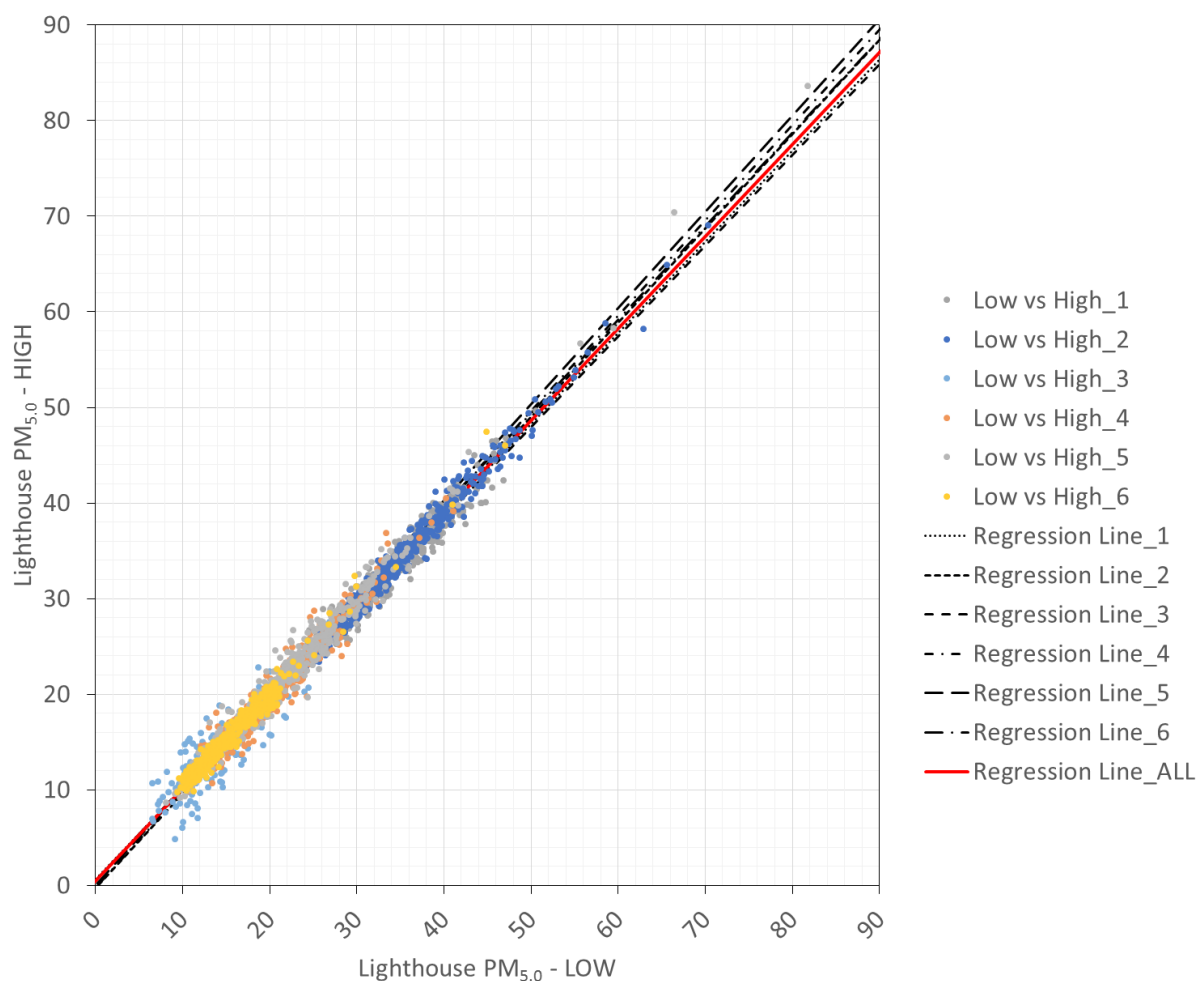


Table F16 PM_{5.0} Intra-Sampler Regression Results - Grubbs

Lighthouse PM _{5.0}	Data Set	Date	1 minute		Orthogonal Regression			
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$		Intercept (a) $\pm u_a$
Colocations Exercises	1	15/04/2014	545	1.10	0.958	0.953 \pm 0.008		0.626 \pm 0.288
	2	25/04/2014	528	0.89	0.981	0.986 \pm 0.006		-0.325 \pm 0.211
	3	19/06/2014	114	1.83	0.688	0.949 \pm 0.051		0.466 \pm 0.73
	4	17/07/2014	462	0.82	0.944	0.997 \pm 0.011		-0.272 \pm 0.225
	5	13/08/2014	512	0.81	0.977	1.006 \pm 0.007		-0.033 \pm 0.154
	6	27/08/2014	445	0.54	0.972	0.978 \pm 0.008		0.426 \pm 0.124
All Exercises	All Data		2606	0.93	0.985	0.963 \pm 0.002		0.527 \pm 0.062

The number of data pairs rejected = 152 (5.5%).

Figure F17 PM₁₀ Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

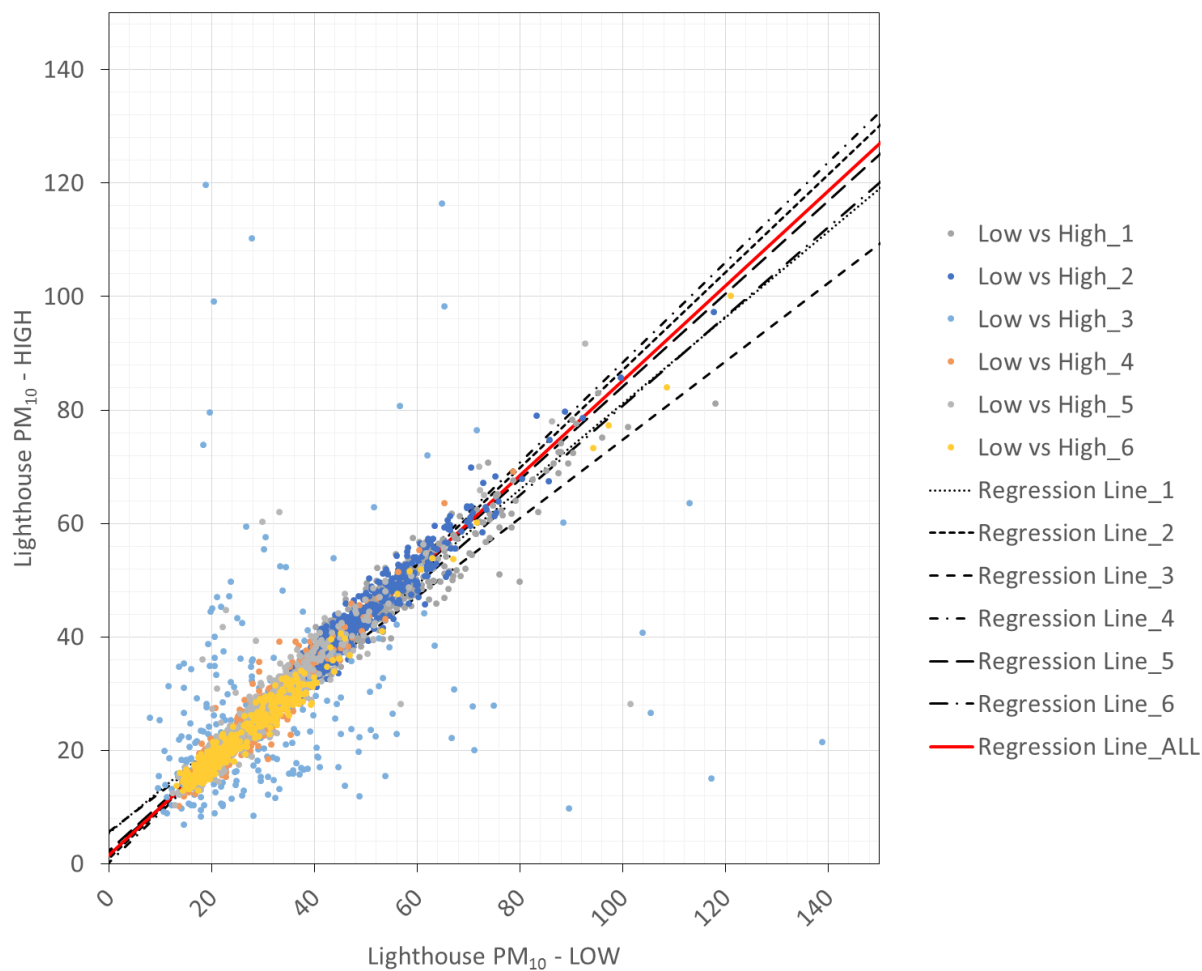


Table F17 PM₁₀ Intra-Sampler Regression Results

AQ Mesh PM ₁₀	Data Set	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b	Intercept (a) \pm u_a
Colocations Exercises	1	15/04/2014	549	6.03	0.935	0.757 \pm 0.008	5.453 \pm 0.448
	2	25/04/2014	529	4.48	0.944	0.861 \pm 0.009	1.068 \pm 0.442
	3	19/06/2014	244	16.53	0.098	0.690 \pm 0.054	5.681 \pm 2.048
	4	17/07/2014	470	3.39	0.987	0.882 \pm 0.005	0.212 \pm 0.169
	5	13/08/2014	517	4.60	0.845	0.818 \pm 0.014	2.396 \pm 0.495
	6	27/08/2014	445	3.18	0.971	0.786 \pm 0.006	2.204 \pm 0.182
All Exercises	All Data		2754	6.55	0.820	0.836 \pm 0.007	1.548 \pm 0.288

Figure F18 PM₁₀ Intra-Sampler Regression – Grubbs (µg m⁻³)

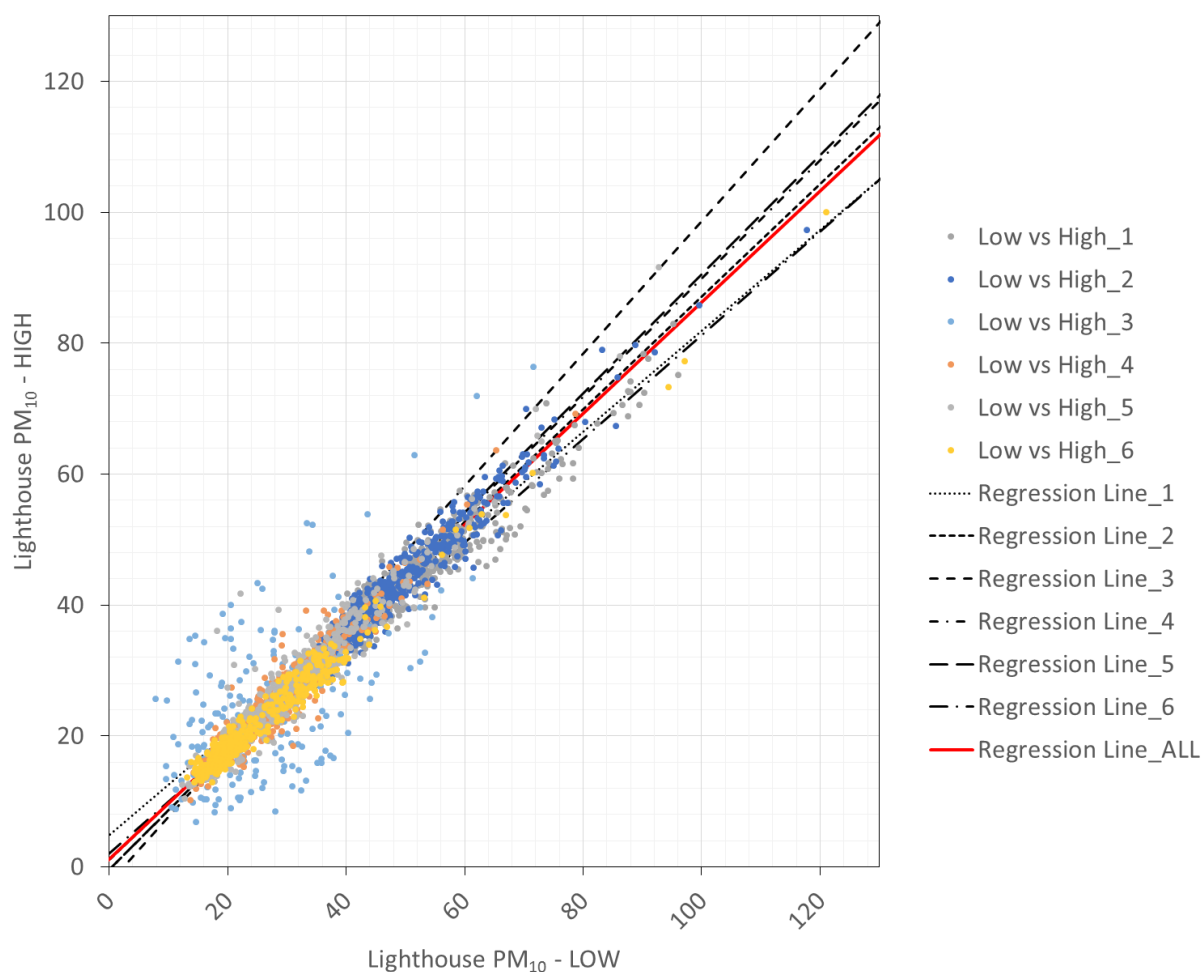


Table F18 PM₁₀ Intra-Sampler Regression Results - Grubbs

Lighthouse PM ₁₀	Data Set	Date	1 minute		Orthogonal Regression		
			<i>n</i> _{bs}	<i>U</i> _{bs}	<i>r</i> ²	Slope (<i>b</i>) ± <i>u</i> _{<i>b</i>}	Intercept (<i>a</i>) ± <i>u</i> _{<i>a</i>}
Colocations Exercises	1	15/04/2014	543	5.60	0.919	0.771 ± 0.010	4.853 ± 0.502
	2	25/04/2014	529	4.48	0.944	0.861 ± 0.009	1.068 ± 0.442
	3	19/06/2014	196	7.50	0.328	1.011 ± 0.059	-2.487 ± 1.671
	4	17/07/2014	469	2.81	0.904	0.903 ± 0.013	-0.384 ± 0.377
	5	13/08/2014	511	3.15	0.913	0.909 ± 0.012	-0.422 ± 0.388
	6	27/08/2014	444	3.08	0.968	0.792 ± 0.007	2.071 ± 0.190
All Exercises	All Data		2692	4.38	0.927	0.851 ± 0.004	1.101 ± 0.177

The number of data pairs rejected = 62 (2.3%).

Figure F19 TPM Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

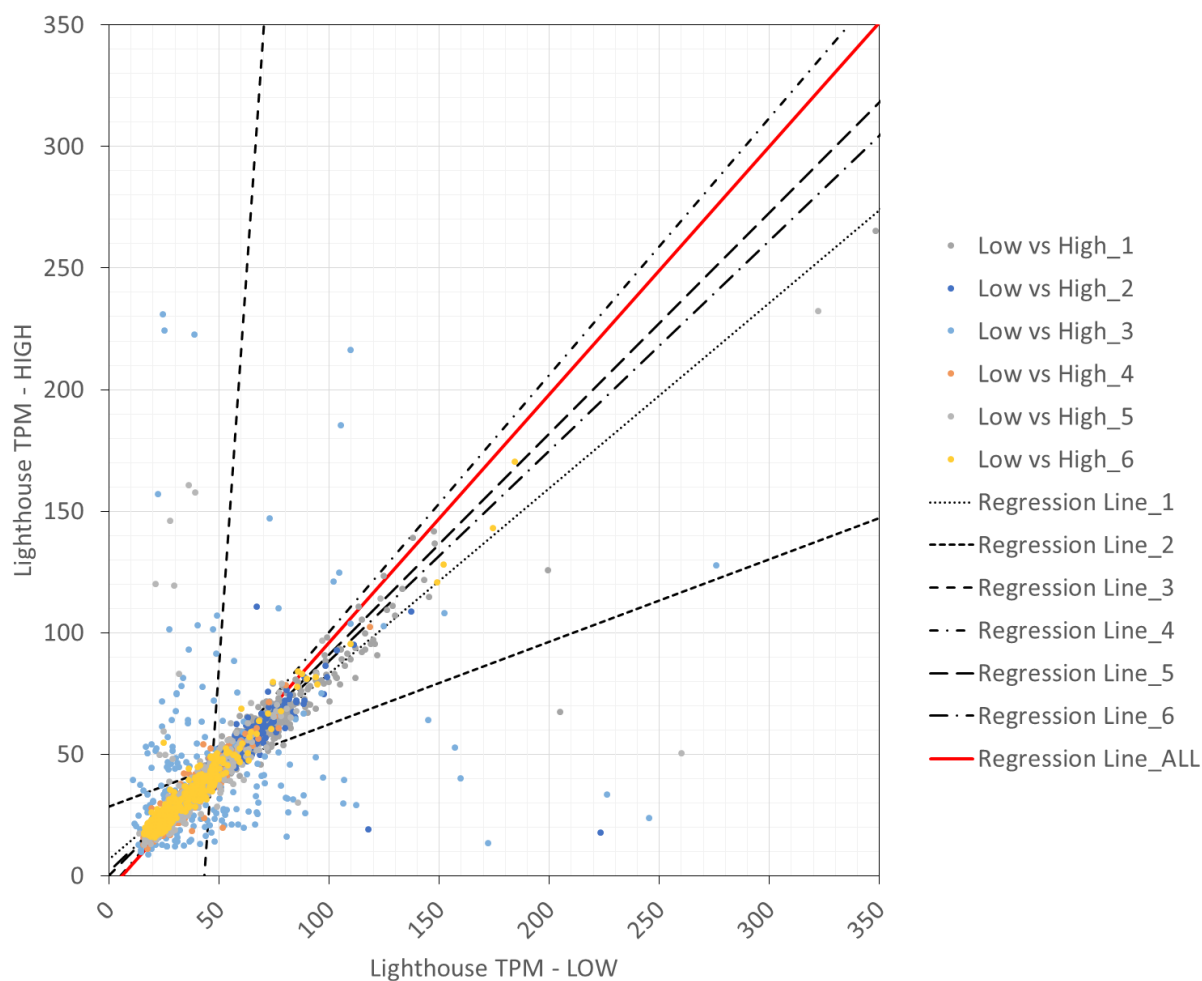


Table F19 TPM Intra-Sampler Regression Results

Lighthouse TPM	Dataset	Date	1 minute		Orthogonal Regression				
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$		Intercept (a) $\pm u_a$	
Colocations Exercises	1	27/08/2014	549	8.90	0.887	0.763 \pm 0.011		6.781 \pm 0.78	
	2	25/04/2014	529	13.79	0.211	0.339 \pm 0.022		28.576 \pm 1.271	
	3	25/04/2014	244	49.75	0.009	12.926 \pm 0.113		-560.251 \pm 6.698	
	4	19/06/2014	470	4.37	0.994	1.058 \pm 0.004		-5.347 \pm 0.24	
	5	17/07/2014	517	14.39	0.871	0.908 \pm 0.014		0.216 \pm 1.006	
	6	13/08/2014	445	3.85	0.951	0.866 \pm 0.009		1.712 \pm 0.355	
All Exercises	All Data		2761	17.76	0.656	1.019 \pm 0.011		-5.776 \pm 0.698	

Figure F20 TPM Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

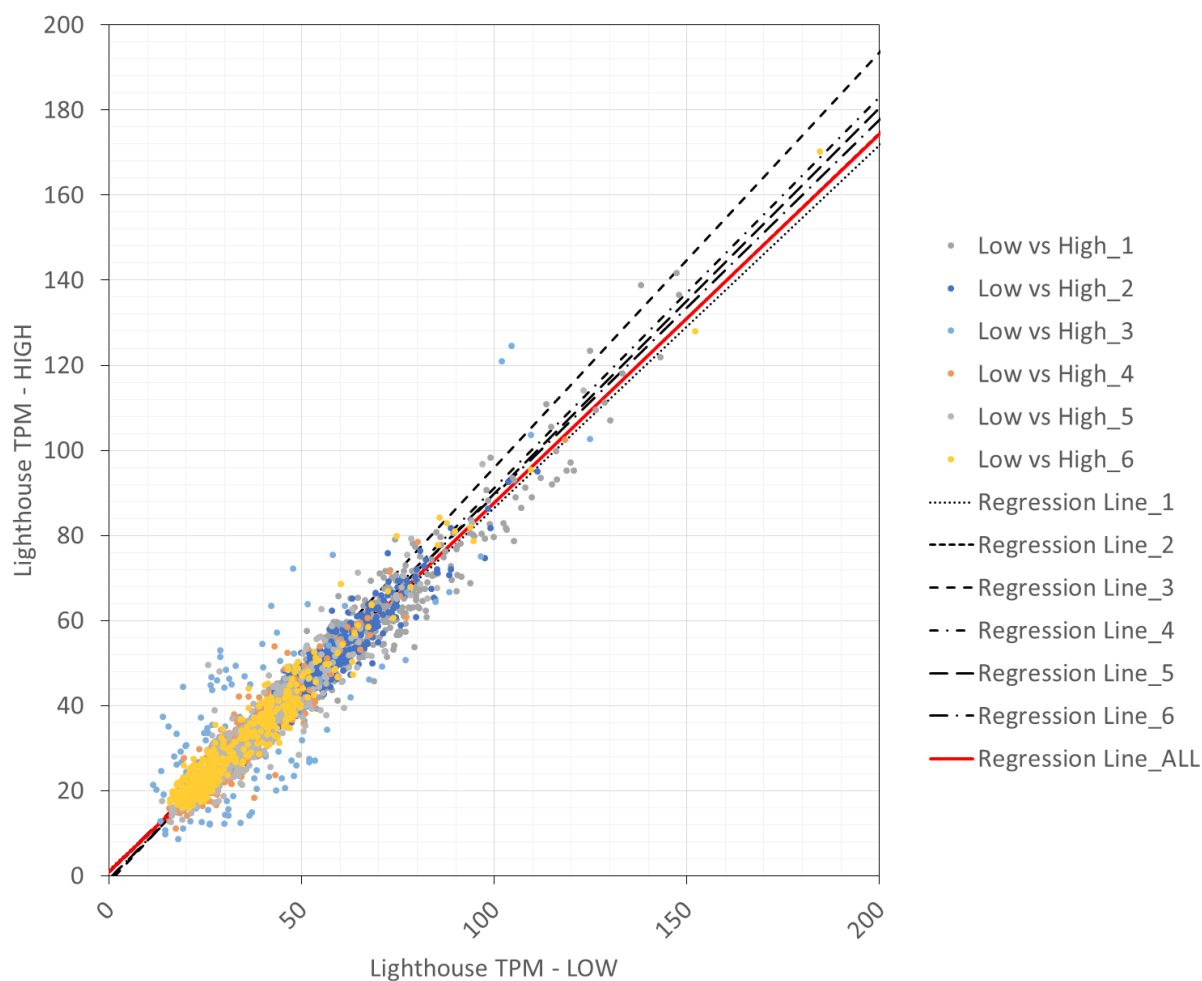


Table F20 TPM Intra-Sampler Regression Results - Grubbs

Lighthouse TPM	Data Set	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b	Intercept (a) \pm u_a
Colocations Exercises	1	27/08/2014	542	6.93	0.923	0.851 \pm 0.010	1.426 \pm 0.686
	2	25/04/2014	524	5.09	0.915	0.869 \pm 0.011	0.766 \pm 0.608
	3	25/04/2014	167	9.13	0.612	0.975 \pm 0.048	-1.472 \pm 1.976
	4	19/06/2014	468	3.61	0.882	0.919 \pm 0.015	-0.662 \pm 0.516
	5	17/07/2014	504	4.34	0.884	0.906 \pm 0.014	-0.594 \pm 0.552
	6	13/08/2014	442	3.45	0.952	0.883 \pm 0.009	1.101 \pm 0.347
All Exercises	All Data		2647	5.30	0.922	0.867 \pm 0.005	1.042 \pm 0.23

The number of data pairs rejected = 114 (4.1%).

Figure F21 BC Intra-Sampler Regression ($\mu\text{g m}^{-3}$)

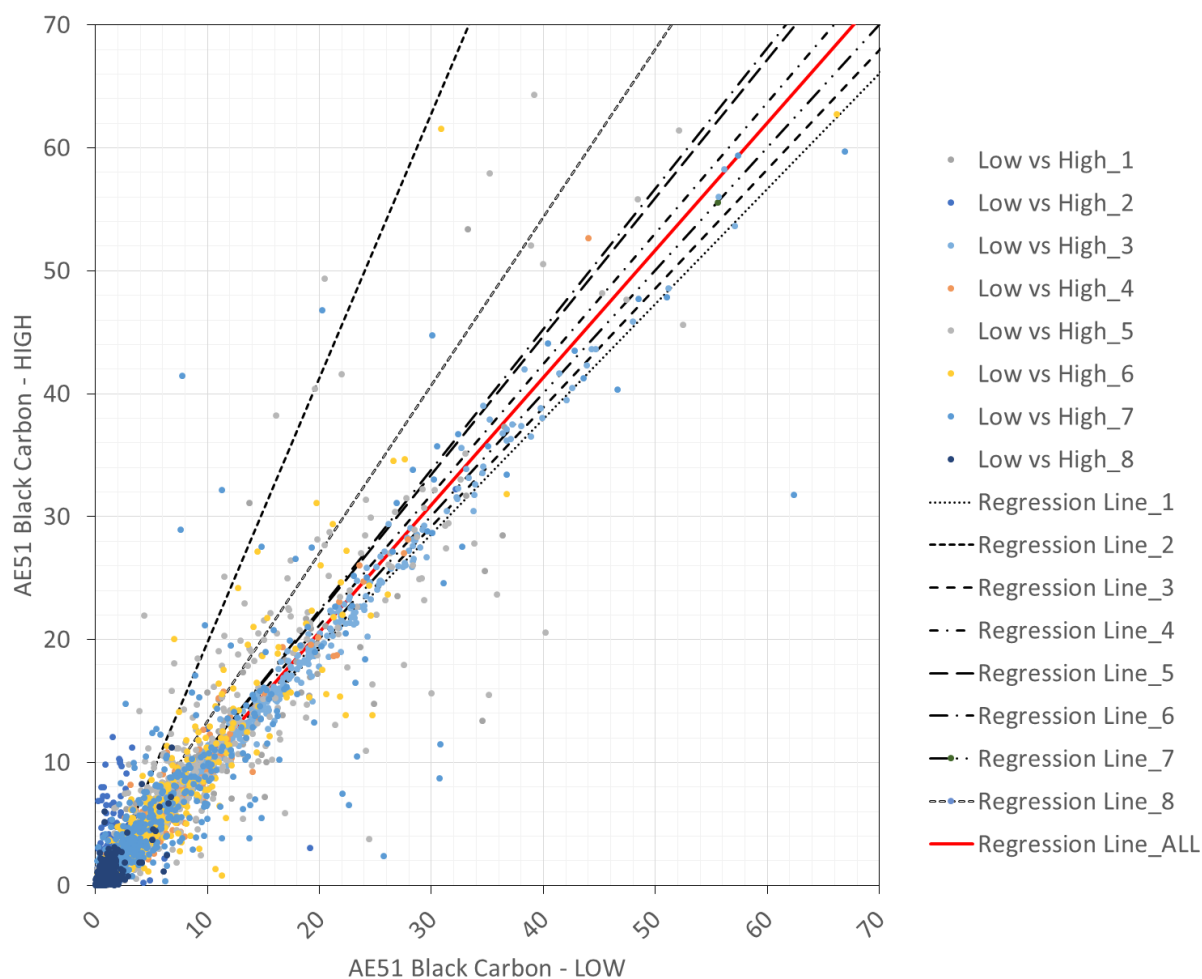


Table F21 BC Intra-Sampler Regression Results

AE51 BC	Data Set	Date	1 minute		Orthogonal Regression			
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b		Intercept (a) \pm u_a
Colocations Exercises	1	14/02/2014	251	2.02	0.866	0.937 \pm 0.022		0.464 \pm 0.216
	2	15/04/2014	551	1.83	0.277	2.154 \pm 0.056		-1.886 \pm 0.143
	3	25/04/2014	529	0.75	0.991	0.969 \pm 0.004		0.117 \pm 0.069
	4	26/06/2014	539	0.72	0.945	1.064 \pm 0.011		-0.108 \pm 0.058
	5	19/06/2014	593	2.95	0.865	1.125 \pm 0.017		-0.361 \pm 0.220
	6	17/07/2014	548	1.77	0.861	1.144 \pm 0.018		-0.510 \pm 0.138
	7	13/08/2014	518	2.96	0.790	0.999 \pm 0.020		0.070 \pm 0.228
	8	27/08/2014	445	0.83	0.424	1.367 \pm 0.044		-0.365 \pm 0.065
All Exercises	All Data		3973	1.95	0.895	1.036 \pm 0.005		-0.103 \pm 0.054

Figure F22 BC Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

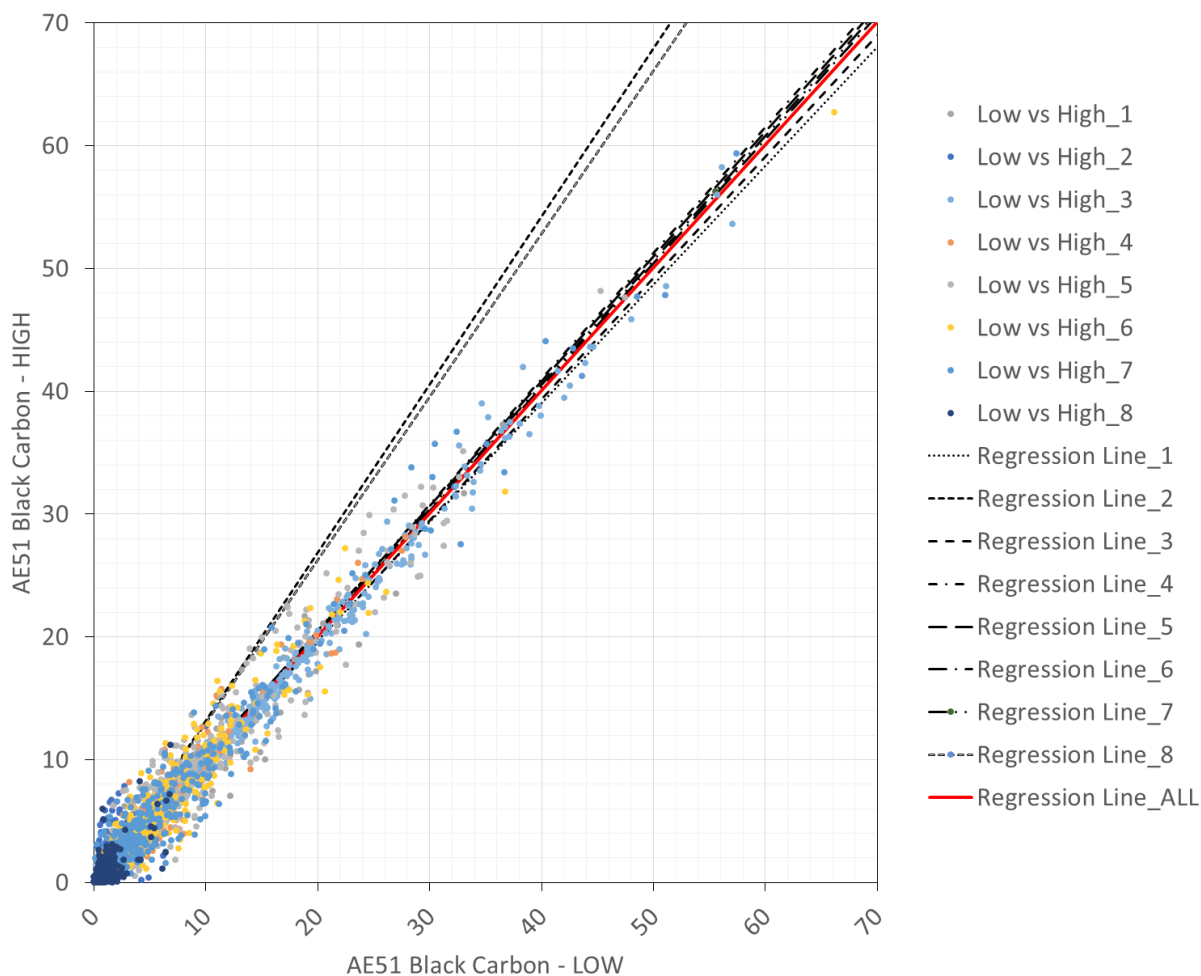


Table F22 BC Intra-Sampler Regression Results - Grubbs

AE51 BC	Data Set	Date	1 minute		Orthogonal Regression				
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$		Intercept (a) $\pm u_a$	
Colocations Exercises	1	14/02/2014	242	0.90	0.946	0.967 \pm 0.015		0.356 \pm 0.110	
	2	15/04/2014	510	1.02	0.621	1.369 \pm 0.035		-0.55 \pm 0.086	
	3	25/04/2014	528	0.64	0.992	0.988 \pm 0.004		-0.131 \pm 0.066	
	4	26/06/2014	538	0.67	0.936	1.025 \pm 0.011		0.017 \pm 0.057	
	5	19/06/2014	536	1.26	0.955	1.017 \pm 0.009		0.176 \pm 0.101	
	6	17/07/2014	527	0.96	0.936	1.009 \pm 0.011		0.003 \pm 0.077	
	7	13/08/2014	474	1.16	0.954	1.013 \pm 0.01		-0.004 \pm 0.097	
	8	27/08/2014	443	0.76	0.487	1.329 \pm 0.042		-0.339 \pm 0.06	
All Exercises	All Data		3798	0.95	0.966	1.000 \pm 0.003		0.037 \pm 0.027	

The number of data pairs rejected = 175 (4.4%).

Figure F23 UFP Intra-Sampler Regression (N Particles cm⁻³)

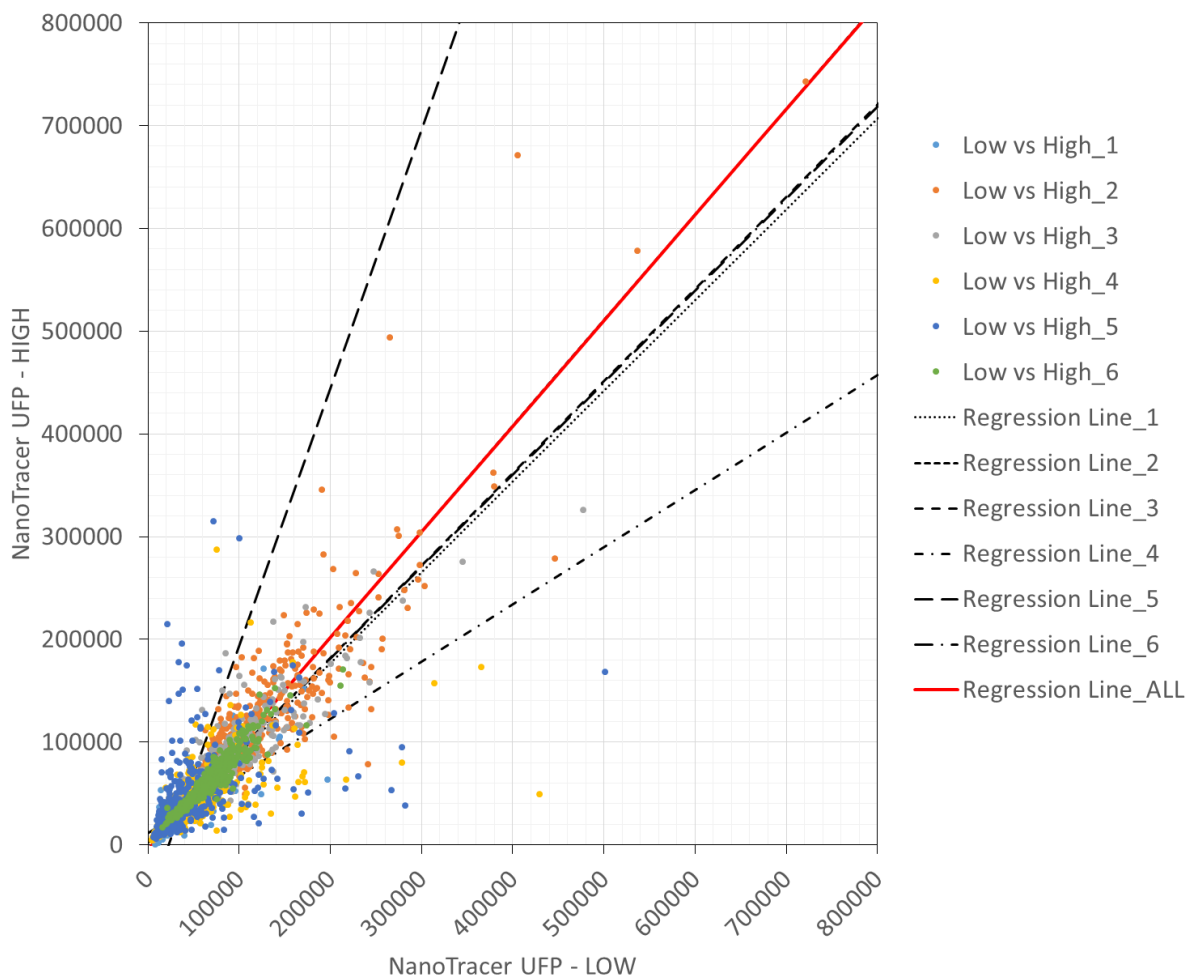
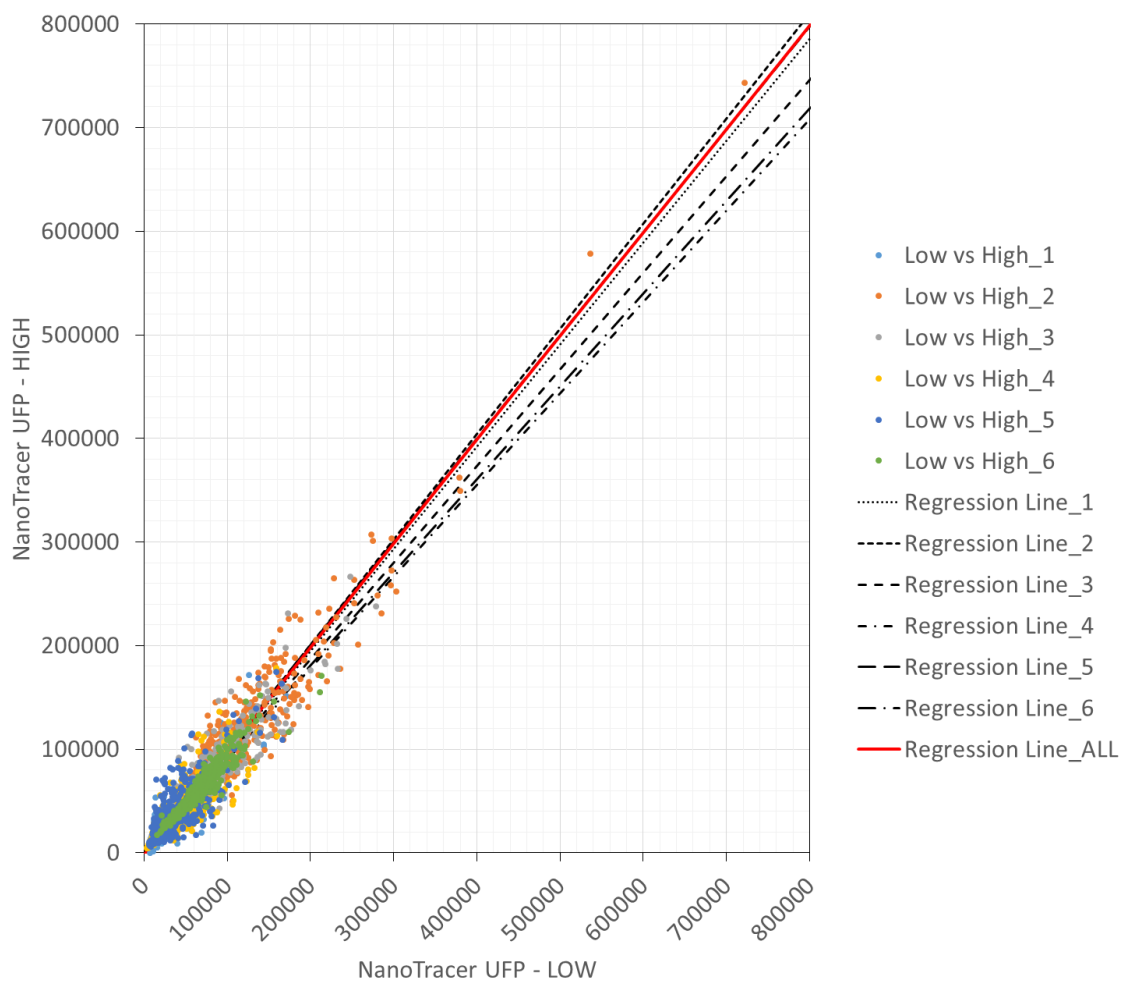


Table F23 UFP Intra-Sampler Regression Results

NanoTracer UFP	Data Set	Date	1 minute		Orthogonal Regression				
			n_{bs}	u_{bs}	r^2	Slope (b) \pm u_b		Intercept (a) \pm u_a	
Colocations Exercises	1	14/02/2014	248	11396	0.698	0.883 \pm 0.032		686 \pm 1395	
	2	25/04/2014	528	22142	0.950	1.029 \pm 0.01		-3883 \pm 1777	
	3	19/06/2014	591	12717	0.861	0.897 \pm 0.014		3005 \pm 1077	
	4	17/07/2014	547	22179	0.434	0.558 \pm 0.022		10997 \pm 1214	
	5	13/08/2014	517	44201	0.118	2.513 \pm 0.059		-57353 \pm 3473	
	6	19/08/2014	478	6788	0.894	0.895 \pm 0.013		2411 \pm 997	
All Exercises	All Data		2909	24087	0.804	1.030 \pm 0.008		-4343 \pm 810	

Figure F24 UFP Intra-Sampler Regression – Grubbs (N Particles cm^{-3})



NanoTracer UFP	Data Set	Date	1 minute		Orthogonal Regression		
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$	Intercept (a) $\pm u_a$
Colocations Exercises	1	14/02/2014	246	9131	0.774	0.985 \pm 0.030	-1948 \pm 1255
	2	25/04/2014	506	14443	0.978	1.016 \pm 0.007	-2442 \pm 1164
	3	19/06/2014	581	10036	0.889	0.932 \pm 0.013	757 \pm 936
	4	17/07/2014	524	9616	0.706	0.884 \pm 0.021	1381 \pm 871
	5	13/08/2014	477	11356	0.661	0.996 \pm 0.027	1591 \pm 1118
	6	19/08/2014	478	6788	0.894	0.895 \pm 0.013	2411 \pm 997
All Exercises	All Data		2812	10610	0.956	1.001 \pm 0.004	-2133 \pm 363

Table F24 UFP Intra-Sampler Regression Results - Grubbs

The number of data pairs rejected = 97 (3.3%).

Figure F25 CO₂ Intra-Sampler Regression – Grubbs ($\mu\text{g m}^{-3}$)

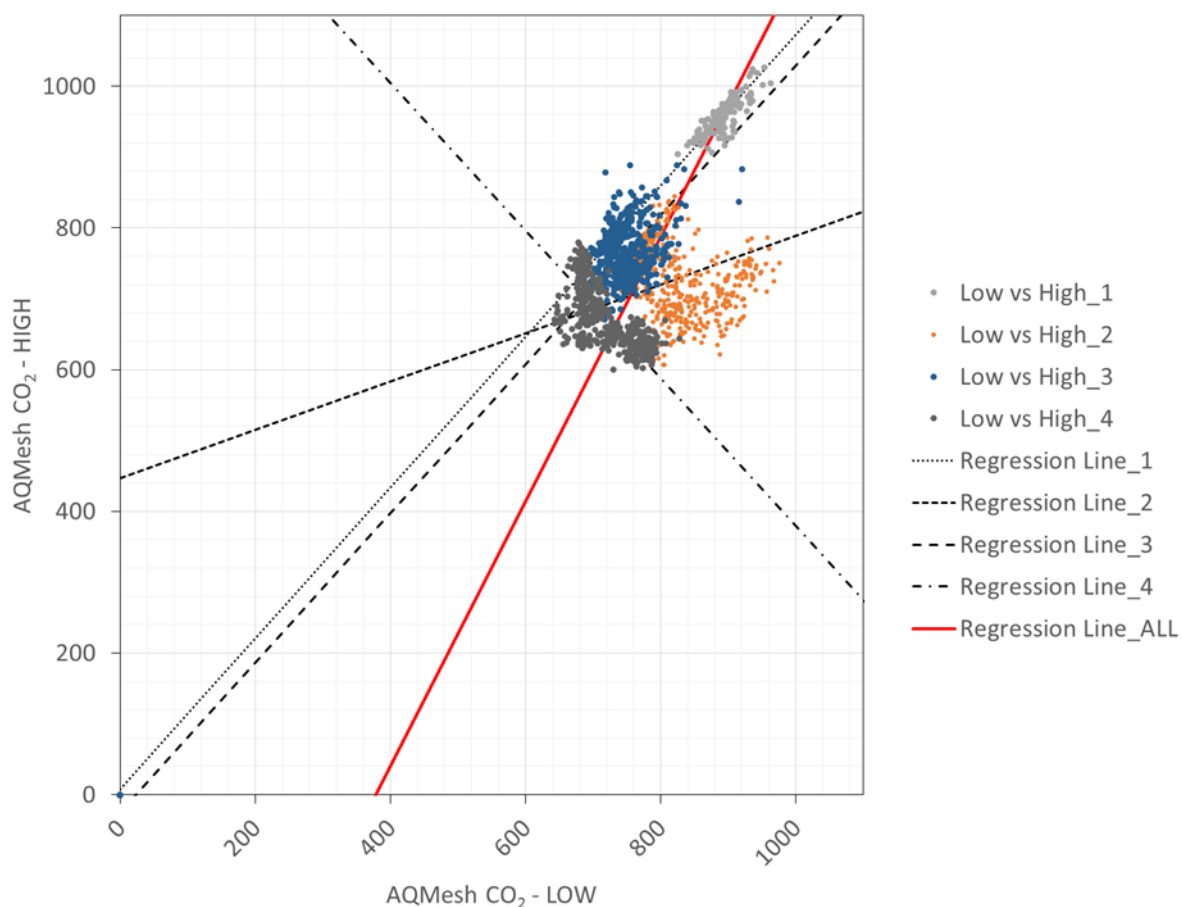


Table F25 CO Intra-Sampler Regression Results

COZIR CO ₂	Dataset	Date	1 minute		Orthogonal Regression				
			n_{bs}	u_{bs}	r^2	Slope (b) $\pm u_b$		Intercept (a) $\pm u_a$	
Colocations Exercises	1	25/04/2014	467	2191.86	0.964	1.065	± 0.009	7.727	± 8.211
	2	17/07/2014	508	7657.61	0.015	0.342	± 0.038	446.619	± 31.072
	3	13/08/2014	458	954.11	0.839	1.054	± 0.02	-24.294	± 14.662
	4	27/08/2014	439	4133.93	0.438	-1.042	± 0.037	1421.669	± 26.658
All Exercises	All Data		1872	3788.70	0.517	1.455	± 0.021	-378.439	± 16.832

No outliers identified.