

## Appendix G Graphs and Tables of Mobile vs Height Data

This Appendix details the results of the orthogonal regression analyses between pollutant concentrations at 0.80 m (LOW) and 1.68 m (HIGH). The results for the following pollutants are provided:

- Nitrogen dioxide (NO<sub>2</sub>)
- Nitric oxide (NO)
- Sulphur dioxide (SO<sub>2</sub>)
- Particulate matter with a mean aerodynamic diameter of 0.5 µm (PM<sub>0.5</sub>);
- Particulate matter with a mean aerodynamic diameter of 1.0 µm (PM<sub>1.0</sub>);
- Particulate matter with a mean aerodynamic diameter of 5.0 µm (PM<sub>5.0</sub>);
- Particulate matter with a mean aerodynamic diameter of 10 µm (PM<sub>10</sub>);
- Total particulate matter (TPM)
- Black carbon (BC)
- Ultrafine particles between 10 nm and 300 nm in diameter (UFP)
- Benzene (C<sub>6</sub>H<sub>6</sub>)

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

- Number of measurement pairs ( $n_{bs}$ ).
- Mean absolute error (MAE) -  $\mu\text{g m}^{-3}$  for all pollutants excluding UFP (N Particles  $\text{cm}^{-3}$ ).
- Coefficient of Determination ( $r^2$ ).
- Slope (d).
- Uncertainty in slope ( $u_d$ ).
- Intercept (c) -  $\mu\text{g m}^{-3}$  for all pollutants excluding UFP (N Particles  $\text{cm}^{-3}$ ).
- Uncertainty in intercept ( $u_c$ ) -  $\mu\text{g m}^{-3}$  for all pollutants excluding UFP (N Particles  $\text{cm}^{-3}$ ).
- No of data pairs rejected as a result of the Grubbs' outlier test.

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

## G1.1 Automatic Samplers – 1-Minute Averages

Figure G1 NO<sub>2</sub> vs Height Regression ( $\mu\text{g m}^{-3}$ )

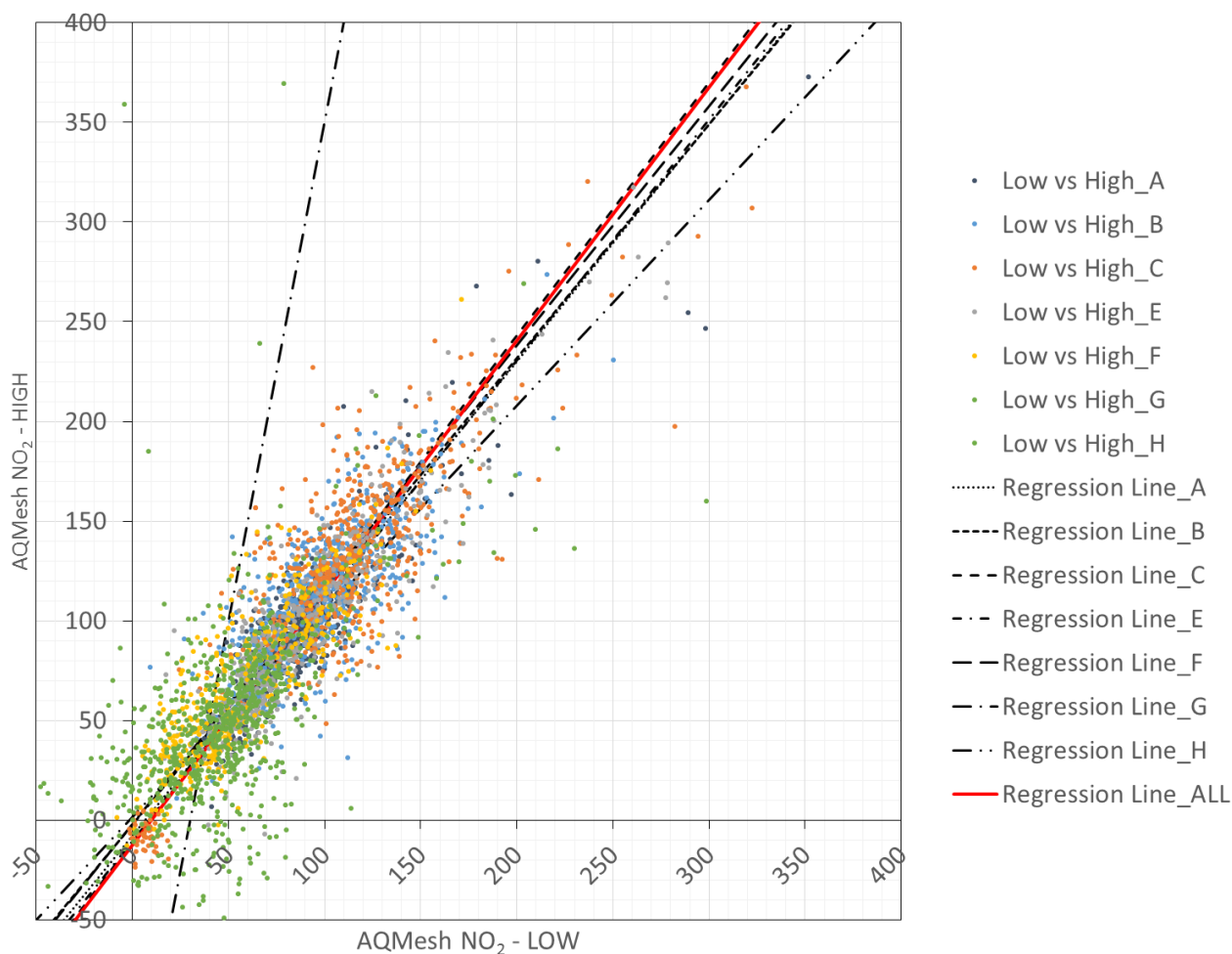


Table G1 NO<sub>2</sub> vs Height Regression Results

AQ Mesh NO <sub>2</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			<i>n</i> <sub>bs</sub>	MAE	<i>r</i> <sup>2</sup>	Slope ( <i>d</i> ) ± <i>u</i> <sub><i>d</i></sub>	Intercept ( <i>c</i> ) ± <i>u</i> <sub><i>c</i></sub>
Colocations Exercises	A	14/03/2014	577	12.62	0.776	1.190 ± 0.023	-8.003 ± 2.116
	B	10/04/2014	653	18.73	0.565	1.171 ± 0.029	-2.491 ± 3.027
	C	21/05/2014	618	21.10	0.754	1.271 ± 0.025	-11.106 ± 2.870
	E	08/07/2014	627	15.35	0.826	1.207 ± 0.020	-10.747 ± 1.994
	F	13/07/2014	400	17.56	0.699	1.201 ± 0.032	-2.046 ± 2.141
	G	09/08/2014	391	100.72	0.068	5.009 ± 0.089	-151.345 ± 3.947
	H	15/08/2014	460	17.72	0.616	1.032 ± 0.030	1.350 ± 2.069
All Exercises	All Data		3727	20.12	0.730	1.266 ± 0.010	-12.586 ± 0.958

Figure G2 NO<sub>2</sub> vs Height Regression – Grubbs (µg m<sup>-3</sup>)

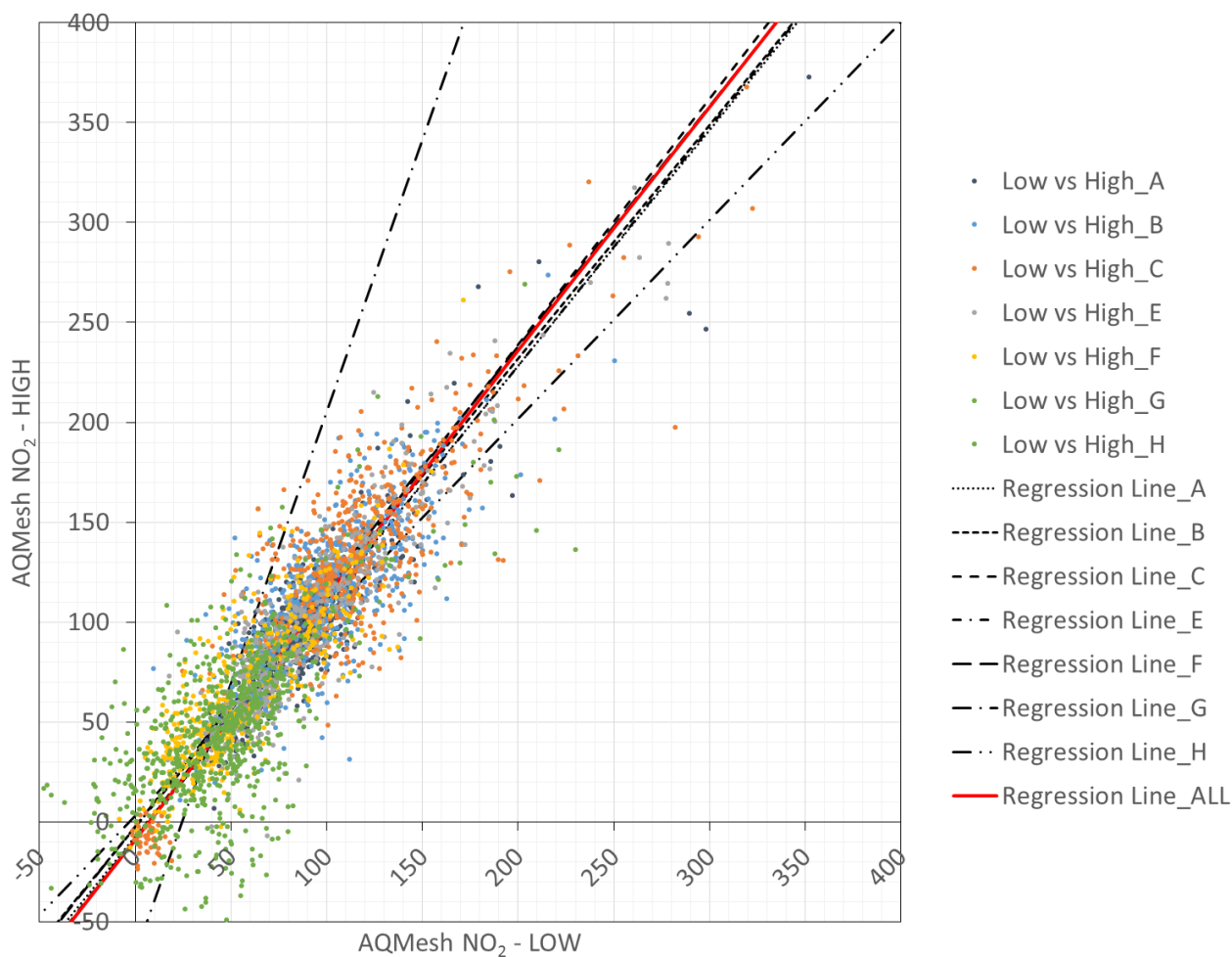


Table G2 NO<sub>2</sub> vs Height Regression Results - Grubbs

AQ Mesh NO <sub>2</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			<i>n<sub>bs</sub></i>	MAE	<i>r</i> <sup>2</sup>	Slope ( <i>d</i> ) ± <i>u<sub>d</sub></i>	Intercept ( <i>c</i> ) ± <i>u<sub>c</sub></i>
Colocations Exercises	A	14/03/2014	576	12.43	0.783	1.177 ± 0.022	-7.028 ± 2.062
	B	10/04/2014	653	18.73	0.565	1.171 ± 0.029	-2.491 ± 3.027
	C	21/05/2014	614	20.31	0.767	1.232 ± 0.023	-7.694 ± 2.726
	E	08/07/2014	626	15.12	0.815	1.188 ± 0.020	-9.073 ± 2.010
	F	13/07/2014	400	17.56	0.699	1.201 ± 0.032	-2.046 ± 2.141
	G	09/08/2014	377	53.24	0.142	2.719 ± 0.074	-66.388 ± 3.241
	H	15/08/2014	458	16.49	0.694	0.993 ± 0.026	3.258 ± 1.761
All Exercises	All Data		3705	19.01	0.764	1.224 ± 0.010	-9.155 ± 0.873

The number of data pairs rejected = 22 (0.1%).

Figure G3 NO vs Height Regression ( $\mu\text{g m}^{-3}$ )

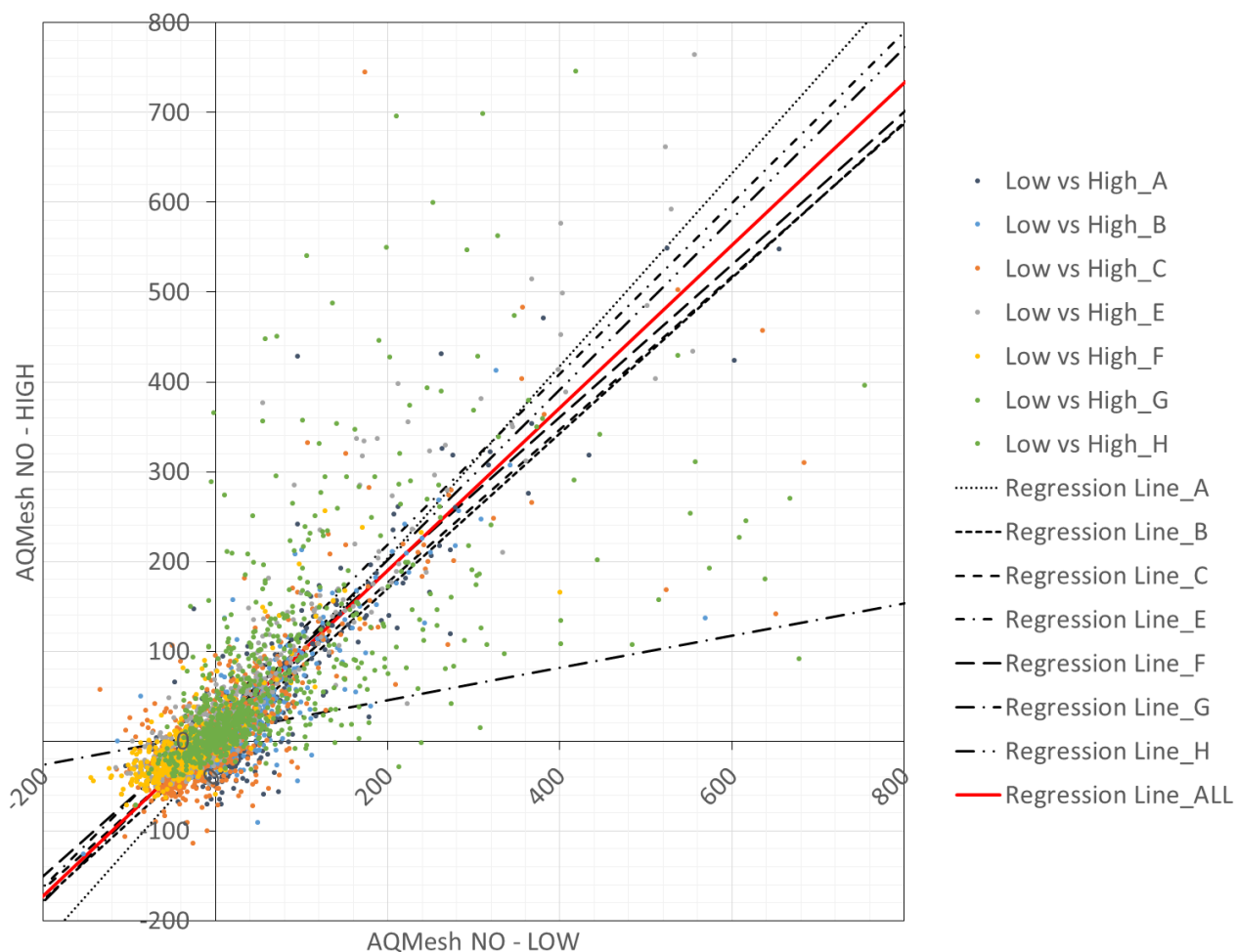


Table G3 NO vs Height Regression Results

AQ Mesh NO	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope ( $d$ ) $\pm u_d$	Intercept ( $c$ ) $\pm u_c$
Colocations Exercises	A	14/03/2014	577	26.26	0.787	1.072 $\pm$ 0.020	-10.956 $\pm$ 1.808
	B	10/04/2014	653	18.48	0.696	0.866 $\pm$ 0.019	-3.624 $\pm$ 1.214
	C	21/05/2014	618	34.37	0.617	0.852 $\pm$ 0.022	5.524 $\pm$ 2.905
	E	08/07/2014	627	26.22	0.818	0.951 $\pm$ 0.016	27.857 $\pm$ 1.889
	F	13/07/2014	400	19.85	0.638	0.851 $\pm$ 0.027	20.041 $\pm$ 1.602
	G	09/08/2014	391	20.19	0.052	0.180 $\pm$ 0.028	9.588 $\pm$ 2.101
	H	15/08/2014	460	70.56	0.304	0.950 $\pm$ 0.038	11.220 $\pm$ 6.286
All Exercises	All Data		3727	33.28	0.598	0.905 $\pm$ 0.010	9.480 $\pm$ 1.029

Figure G4 NO vs Height Regression – Grubbs ( $\mu\text{g m}^{-3}$ )

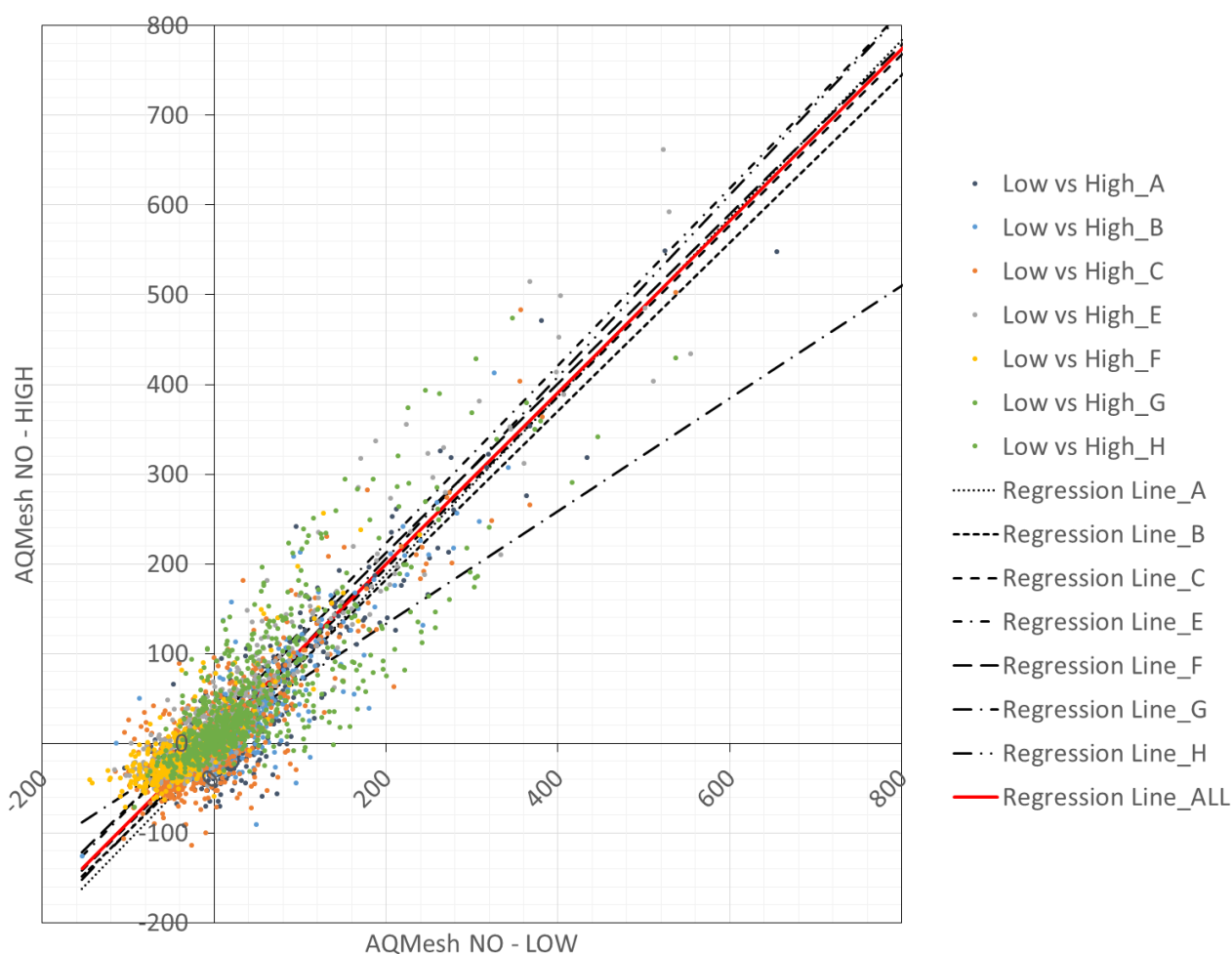


Table G4 NO vs Height Regression Results - Grubbs

AQ Mesh NO	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope ( $d$ ) $\pm u_d$	Intercept ( $c$ ) $\pm u_c$
Colocations Exercises	A	14/03/2014	570	22.63	0.830	0.992 $\pm$ 0.017	-9.590 $\pm$ 1.381
	B	10/04/2014	652	18.50	0.743	0.937 $\pm$ 0.019	-4.398 $\pm$ 1.116
	C	21/05/2014	605	28.28	0.826	0.954 $\pm$ 0.016	4.531 $\pm$ 1.555
	E	08/07/2014	614	22.35	0.896	0.988 $\pm$ 0.013	26.142 $\pm$ 1.248
	F	13/07/2014	399	20.40	0.651	0.944 $\pm$ 0.028	23.714 $\pm$ 1.616
	G	09/08/2014	384	17.40	0.218	0.627 $\pm$ 0.036	8.154 $\pm$ 1.309
	H	15/08/2014	404	42.77	0.610	1.012 $\pm$ 0.031	4.045 $\pm$ 3.728
All Exercises	All Data		3629	27.15	0.781	0.959 $\pm$ 0.007	7.534 $\pm$ 0.619

The number of data pairs rejected = 98 (2.6%).

Figure G5 SO<sub>2</sub> vs Height Regression ( $\mu\text{g m}^{-3}$ )

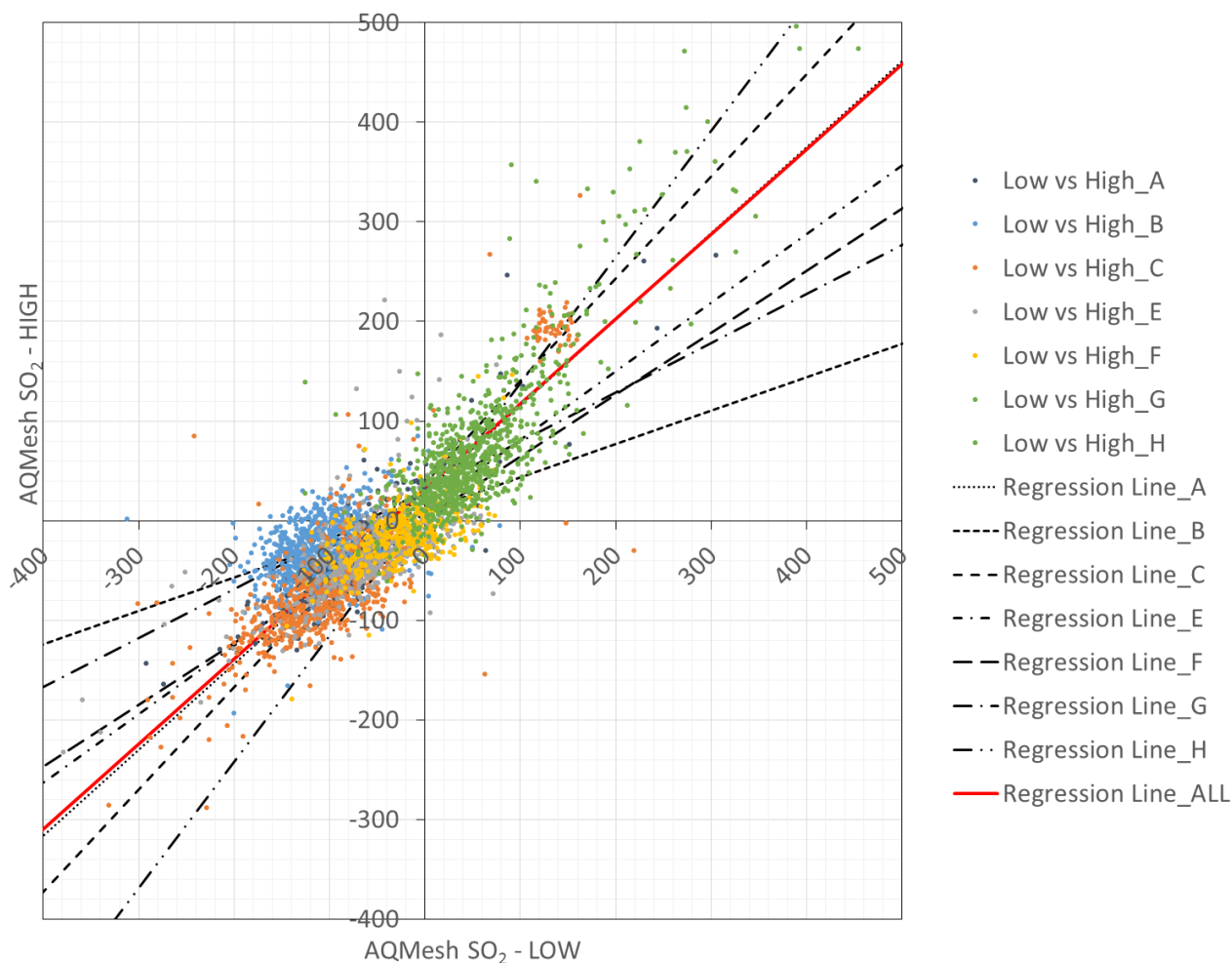


Table G5 SO<sub>2</sub> vs Height Regression Results

AQ Mesh SO <sub>2</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope ( $d$ ) $\pm u_d$	Intercept ( $c$ ) $\pm u_c$
Colocations Exercises	A	14/03/2014	577	17.60	0.764	0.863 $\pm$ 0.018	29.391 $\pm$ 1.668
	B	10/04/2014	653	22.13	0.161	0.336 $\pm$ 0.022	10.015 $\pm$ 2.695
	C	21/05/2014	618	31.78	0.762	1.025 $\pm$ 0.020	37.900 $\pm$ 2.501
	E	08/07/2014	627	24.68	0.431	0.688 $\pm$ 0.024	12.376 $\pm$ 2.197
	F	13/07/2014	400	19.23	0.367	0.622 $\pm$ 0.030	2.066 $\pm$ 1.437
	G	09/08/2014	391	25.02	0.163	0.493 $\pm$ 0.034	30.338 $\pm$ 2.448
	H	15/08/2014	460	32.55	0.816	1.266 $\pm$ 0.025	11.394 $\pm$ 2.560
All Exercises	All Data		3727	31.91	0.694	0.853 $\pm$ 0.008	31.495 $\pm$ 0.803

Figure G6 SO<sub>2</sub> vs Height Regression – Grubbs (µg m<sup>-3</sup>)

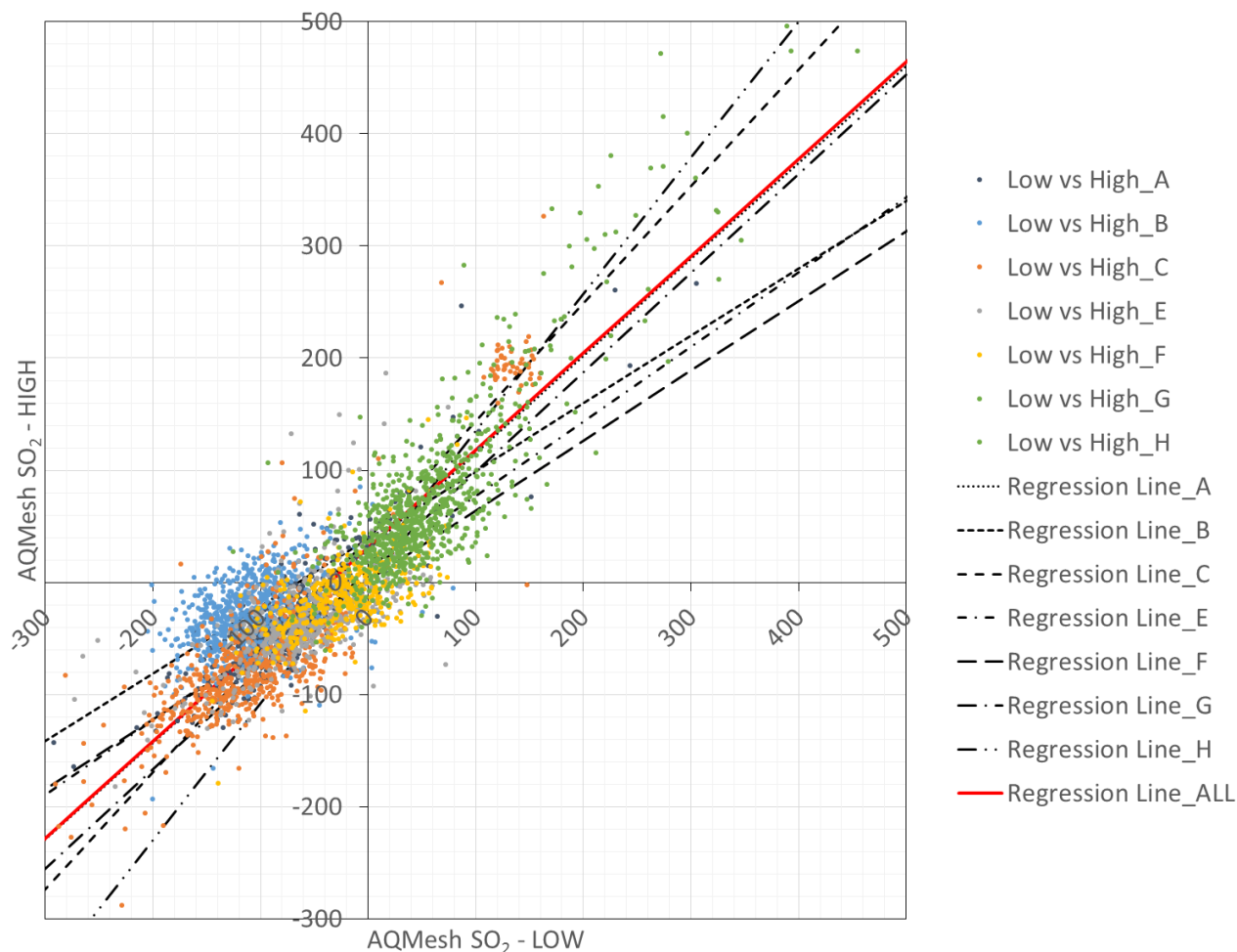


Table G6 SO<sub>2</sub> vs Height Regression Results - Grubbs

AQ Mesh SO <sub>2</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			n <sub>bs</sub>	MAE	r <sup>2</sup>	Slope (d) ± u <sub>d</sub>	Intercept (c) ± u <sub>c</sub>
Colocations Exercises	A	14/03/2014	577	17.60	0.764	0.863 ± 0.018	29.391 ± 1.668
	B	10/04/2014	650	23.10	0.165	0.602 ± 0.029	39.207 ± 3.414
	C	21/05/2014	614	30.51	0.809	1.045 ± 0.018	39.771 ± 2.274
	E	08/07/2014	626	23.86	0.448	0.666 ± 0.023	10.400 ± 2.107
	F	13/07/2014	400	19.23	0.367	0.622 ± 0.030	2.066 ± 1.437
	G	09/08/2014	388	25.21	0.361	0.885 ± 0.038	10.234 ± 2.343
	H	15/08/2014	457	31.26	0.808	1.218 ± 0.024	13.631 ± 2.444
All Exercises	All Data		3713	31.08	0.734	0.866 ± 0.007	31.274 ± 0.735

The number of data pairs rejected = 14 (0.4%).

Figure G7 CO vs Height Regression ( $\mu\text{g m}^{-3}$ )

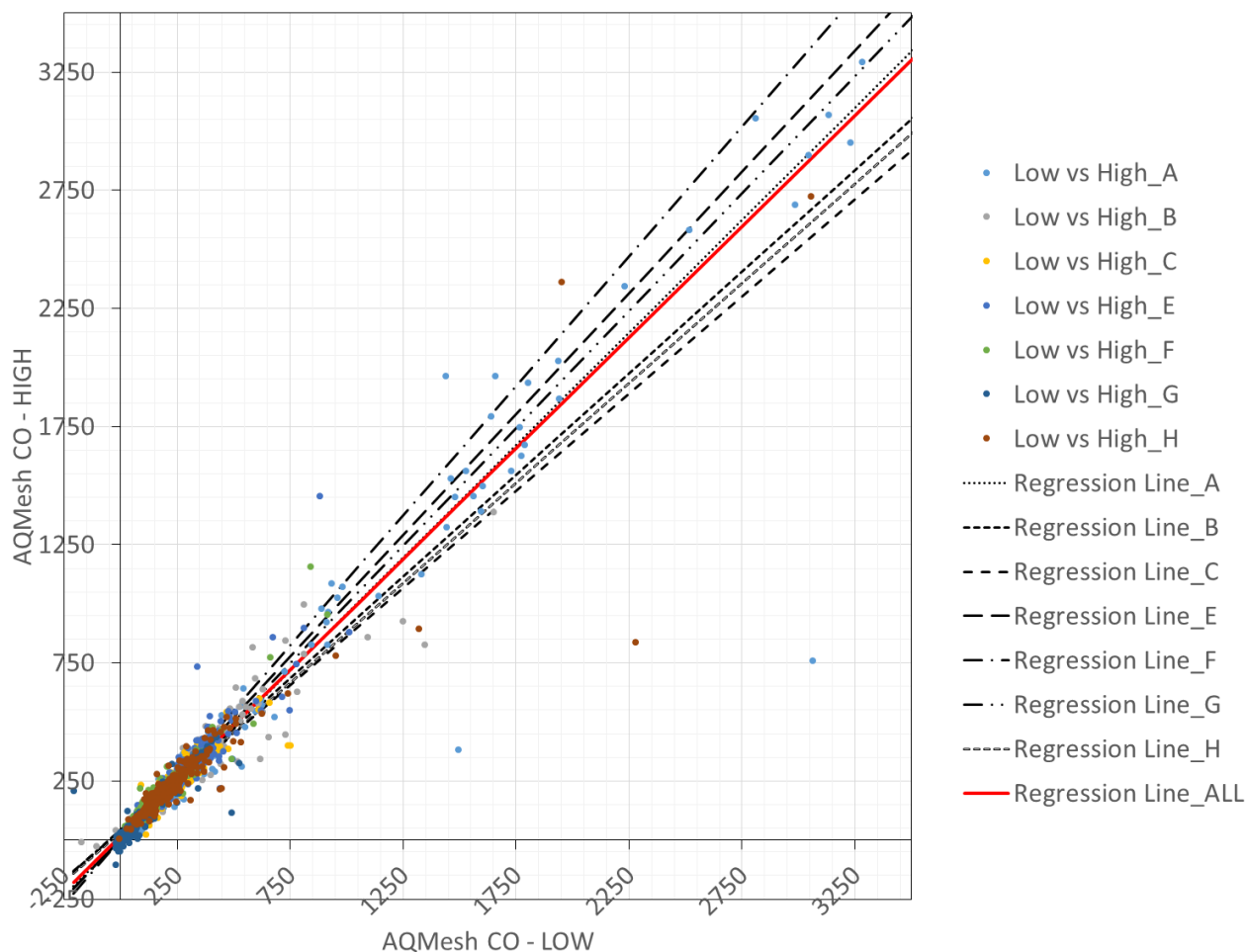


Table G7 CO vs Height Regression Results

AQ Mesh CO	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope (d) $\pm u_d$	Intercept (c) $\pm u_c$
Colocations Exercises	A	14/03/2014	577	26.77	0.933	0.953 $\pm$ 0.010	3.447 $\pm$ 5.333
	B	10/04/2014	653	18.42	0.892	0.860 $\pm$ 0.011	42.443 $\pm$ 3.238
	C	21/05/2014	619	16.68	0.820	0.822 $\pm$ 0.014	38.799 $\pm$ 3.443
	E	08/07/2014	626	19.70	0.855	1.027 $\pm$ 0.016	6.761 $\pm$ 3.964
	F	13/07/2014	400	15.61	0.913	1.097 $\pm$ 0.016	2.502 $\pm$ 2.760
	G	09/08/2014	391	16.05	0.899	0.994 $\pm$ 0.016	2.505 $\pm$ 2.497
	H	15/08/2014	460	24.80	0.879	0.844 $\pm$ 0.014	33.569 $\pm$ 4.361
All Exercises	All Data		3726	21.31	0.916	0.938 $\pm$ 0.004	16.955 $\pm$ 1.373



Figure G8 CO vs Height Regression – Grubbs ( $\mu\text{g m}^{-3}$ )

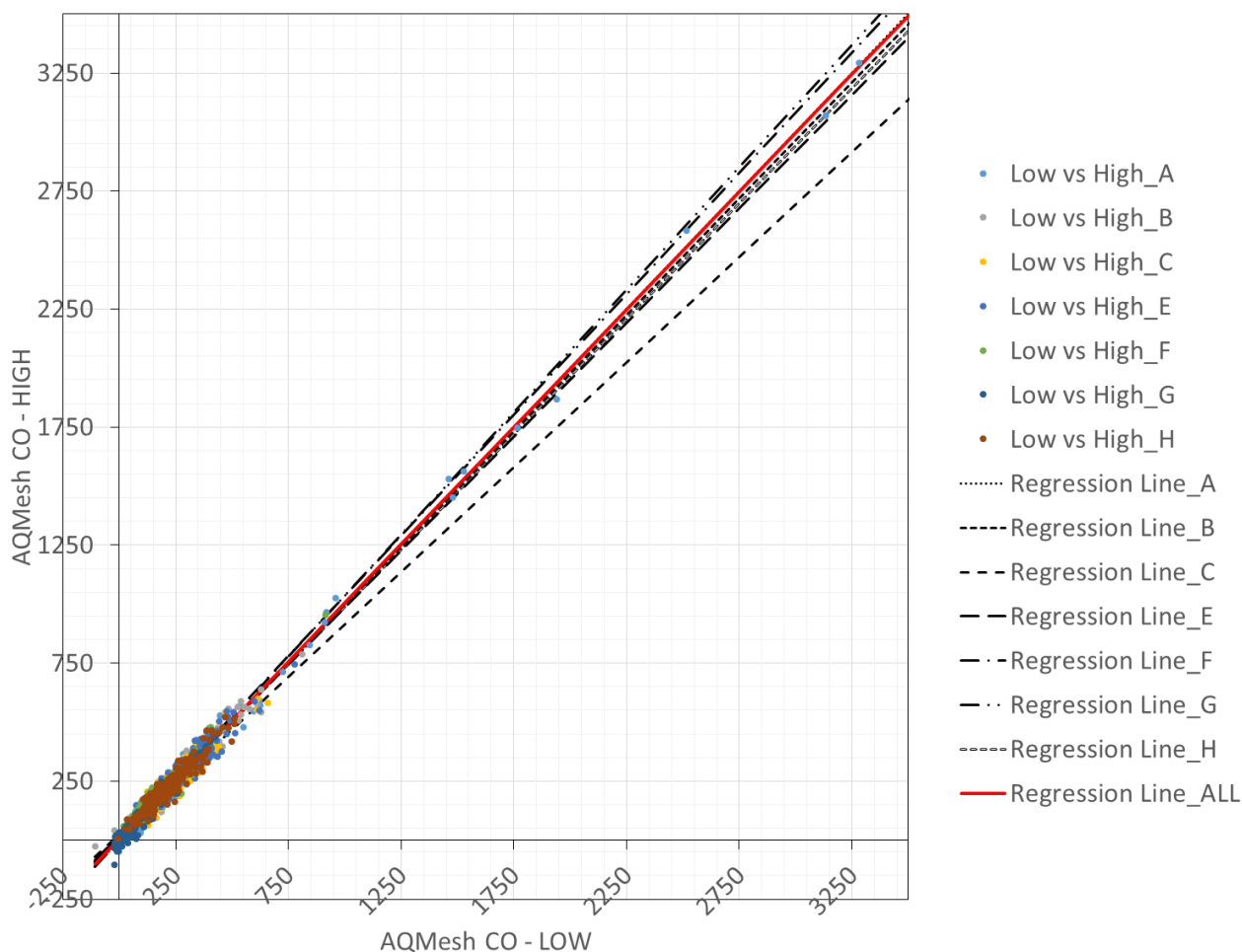


Table G8 CO vs Height Regression Results - Grubbs

AQ Mesh CO	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope (d) $\pm u_d$	Intercept (c) $\pm u_c$
Colocations Exercises	A	14/03/2014	541	12.74	0.995	1.001 $\pm$ 0.003	-1.493 $\pm$ 1.018
	B	10/04/2014	633	12.41	0.946	0.984 $\pm$ 0.009	12.679 $\pm$ 2.360
	C	21/05/2014	613	15.93	0.874	0.890 $\pm$ 0.013	24.302 $\pm$ 3.057
	E	08/07/2014	608	13.84	0.944	0.966 $\pm$ 0.009	19.983 $\pm$ 2.186
	F	13/07/2014	392	12.68	0.931	1.023 $\pm$ 0.014	12.473 $\pm$ 2.167
	G	09/08/2014	384	12.56	0.975	1.037 $\pm$ 0.008	-1.501 $\pm$ 1.271
	H	15/08/2014	439	15.44	0.942	0.976 $\pm$ 0.011	12.644 $\pm$ 2.283
All Exercises	All Data		3610	15.01	0.976	0.997 $\pm$ 0.003	6.971 $\pm$ 0.613

The number of data pairs rejected = 116 (3.1%).

Figure G9 PM<sub>0.5</sub> vs Height Regression ( $\mu\text{g m}^{-3}$ )

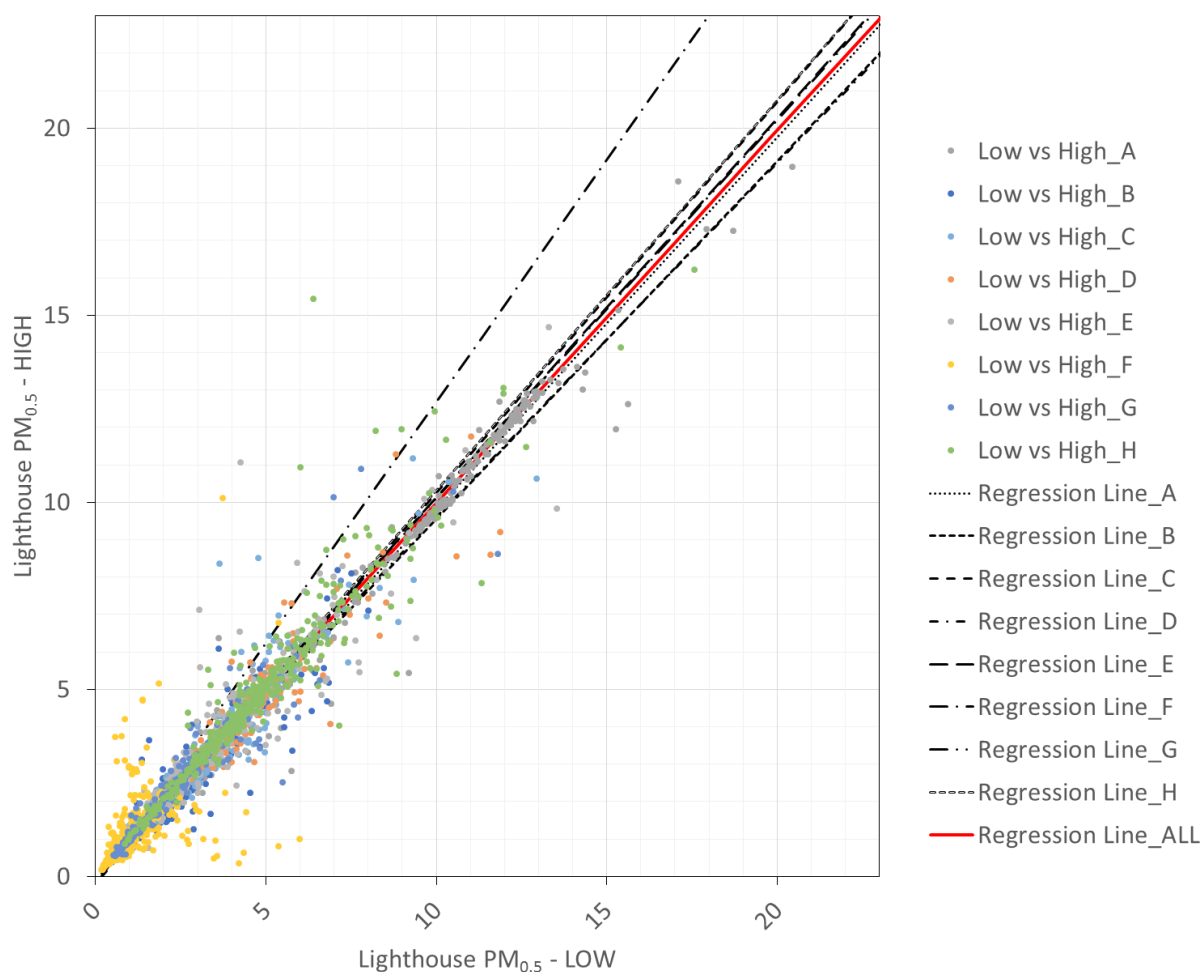


Table G9 PM<sub>0.5</sub> vs Height Regression Results

Lighthouse PM <sub>0.5</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			n <sub>bs</sub>	MAE	r <sup>2</sup>	Slope (d) ± u <sub>d</sub>	Intercept (c) ± u <sub>c</sub>
Colocations Exercises	A	14/03/2014	577	0.17	0.991	0.992 ± 0.004	-0.095 ± 0.026
	B	10/04/2014	654	0.16	0.914	0.956 ± 0.011	-0.001 ± 0.023
	C	21/05/2014	619	0.22	0.925	1.045 ± 0.011	-0.194 ± 0.038
	D	23/06/2014	569	0.17	0.906	0.945 ± 0.012	0.159 ± 0.046
	E	08/07/2014	629	0.22	0.913	1.012 ± 0.012	0.014 ± 0.036
	F	13/07/2014	400	0.47	0.249	1.291 ± 0.049	-0.217 ± 0.062
	G	09/08/2014	390	0.16	0.913	1.010 ± 0.015	0.011 ± 0.035
	H	15/08/2014	462	0.33	0.888	1.041 ± 0.016	-0.082 ± 0.082
All Exercises	All Data		4300	0.23	0.955	0.997 ± 0.003	-0.009 ± 0.013

Figure G10 PM<sub>0.5</sub> vs Height Regression – Grubbs (µg m<sup>-3</sup>)

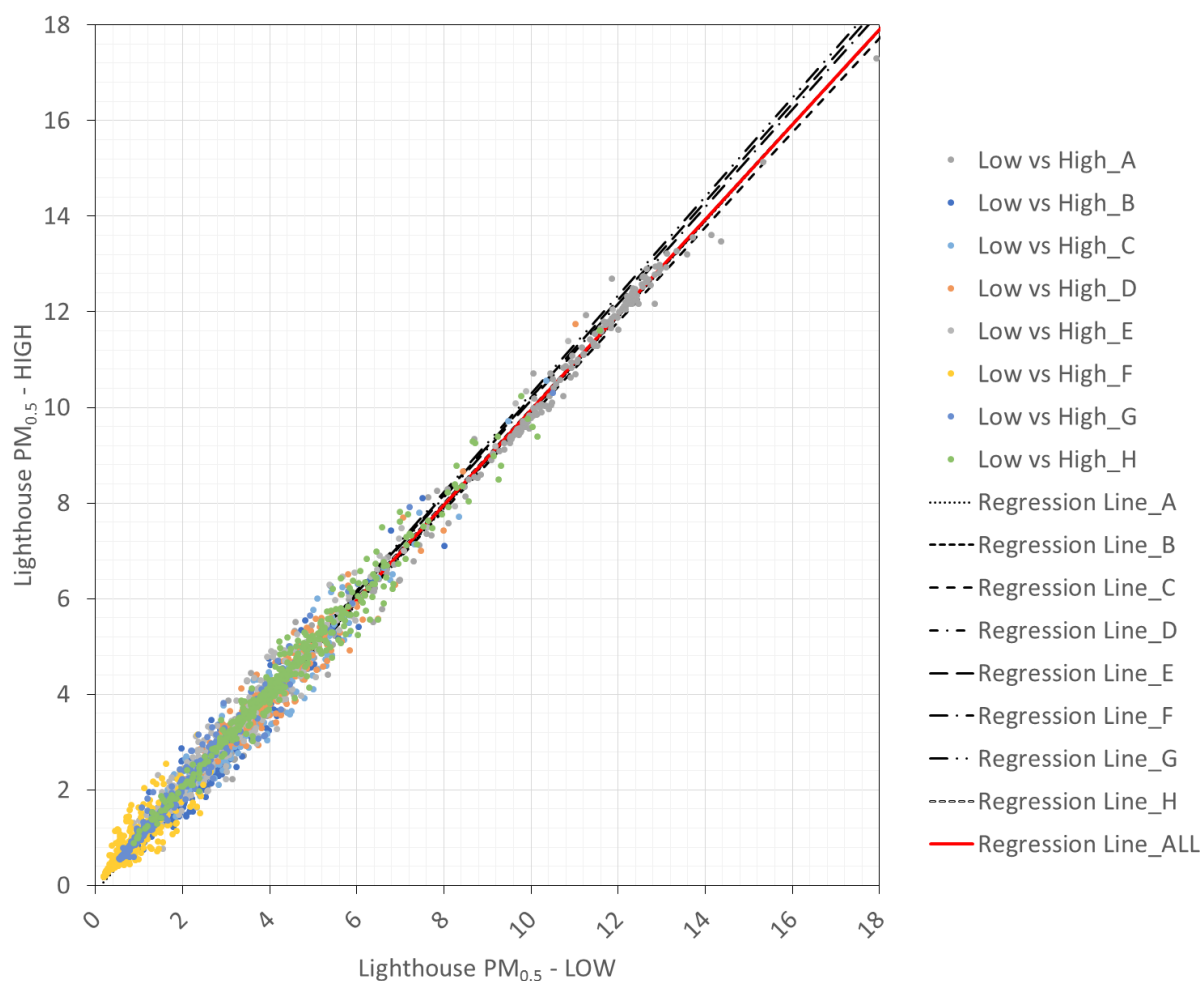


Table G10 PM<sub>0.5</sub> vs Height Regression Results - Grubbs

Lighthouse PM <sub>0.5</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			n <sub>bs</sub>	MAE	r <sup>2</sup>	Slope (d) ± u <sub>d</sub>	Intercept (c) ± u <sub>c</sub>
Colocations Exercises	A	14/03/2014	564	0.13	0.997	1.000 ± 0.002	-0.109 ± 0.014
	B	10/04/2014	632	0.12	0.964	0.997 ± 0.008	-0.052 ± 0.014
	C	21/05/2014	597	0.14	0.966	0.986 ± 0.007	-0.042 ± 0.023
	D	23/06/2014	552	0.13	0.957	0.993 ± 0.009	0.005 ± 0.031
	E	08/07/2014	599	0.14	0.978	1.022 ± 0.006	-0.008 ± 0.017
	F	13/07/2014	355	0.16	0.752	1.012 ± 0.027	0.027 ± 0.025
	G	09/08/2014	378	0.10	0.976	1.030 ± 0.008	-0.009 ± 0.017
	H	15/08/2014	424	0.17	0.978	0.989 ± 0.007	0.090 ± 0.033
All Exercises	All Data		4101	0.14	0.991	0.995 ± 0.002	-0.005 ± 0.006

The number of data pairs rejected = 199 (4.6%).

Figure G11 PM<sub>1.0</sub> vs Height Regression ( $\mu\text{g m}^{-3}$ )

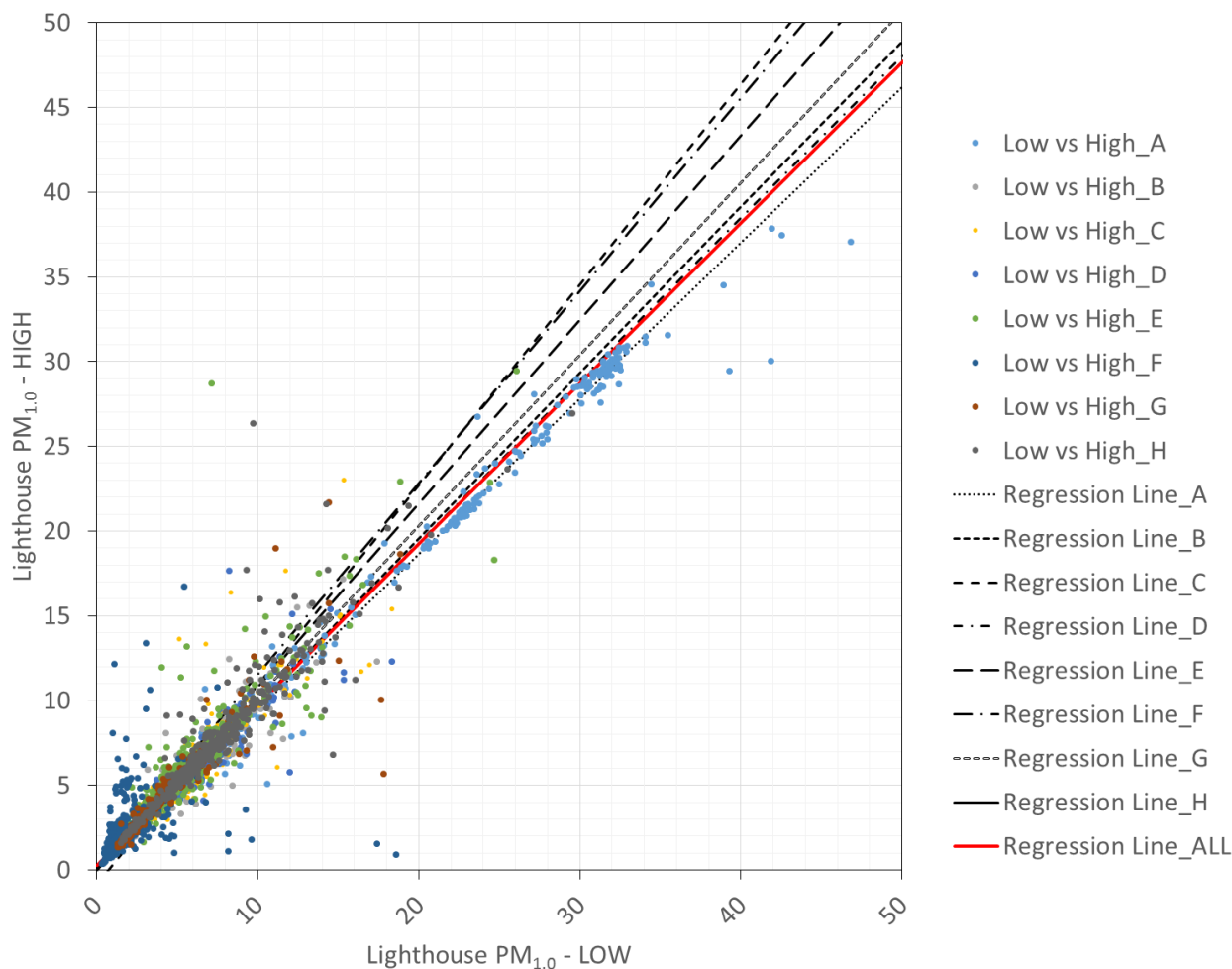


Table G11 PM<sub>1.0</sub> vs Height Regression Results

Lighthouse PM <sub>1.0</sub>	Dataset	Date	1 minute		Orthogonal Regression			
			n <sub>bs</sub>	MAE	r <sup>2</sup>	Slope (d) ± u <sub>d</sub>	Intercept (c) ± u <sub>c</sub>	
Colocations Exercises	A	14/03/2014	577	0.39	0.992	0.918 ± 0.003	0.282 ± 0.055	
	B	10/04/2014	654	0.28	0.915	0.977 ± 0.011	0.037 ± 0.052	
	C	21/05/2014	619	0.51	0.932	1.181 ± 0.012	-0.872 ± 0.068	
	D	23/06/2014	569	0.32	0.838	0.957 ± 0.016	0.187 ± 0.087	
	E	08/07/2014	629	0.56	0.846	1.084 ± 0.017	-0.055 ± 0.093	
	F	13/07/2014	400	0.97	0.116	1.134 ± 0.049	0.189 ± 0.124	
	G	09/08/2014	390	0.34	0.833	1.012 ± 0.021	0.076 ± 0.092	
	H	15/08/2014	462	0.61	0.853	1.055 ± 0.019	-0.160 ± 0.149	
All Exercises	All Data		4300	0.50	0.948	0.947 ± 0.003	0.294 ± 0.026	

Figure G12 PM<sub>1.0</sub> vs Height Regression – Grubbs (µg m<sup>-3</sup>)

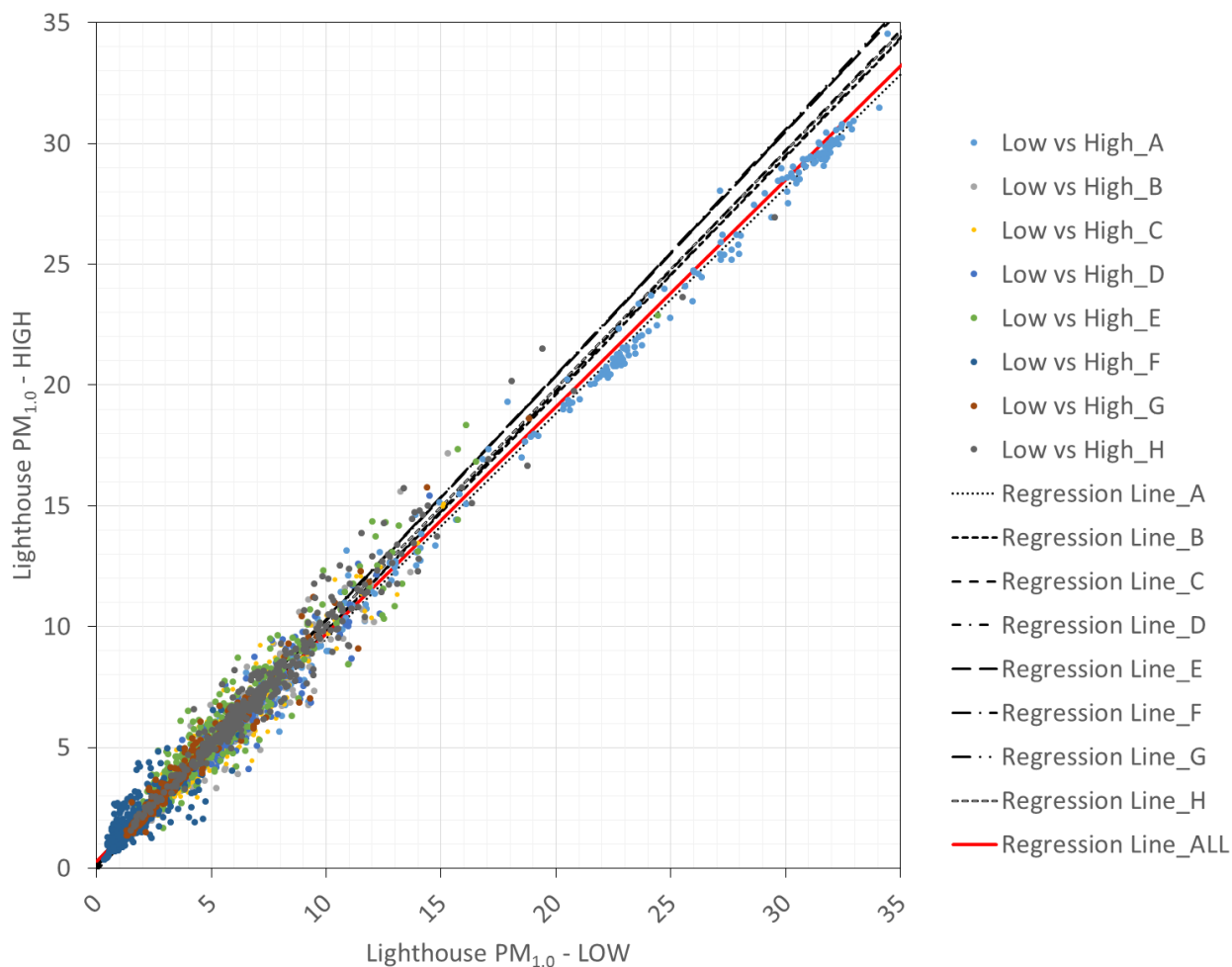


Table G12 PM<sub>1.0</sub> vs Height Regression Results - Grubbs

Lighthouse PM <sub>1.0</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			n <sub>bs</sub>	MAE	r <sup>2</sup>	Slope (d) ± u <sub>d</sub>	Intercept (c) ± u <sub>c</sub>
Colocations Exercises	A	14/03/2014	550	0.29	0.997	0.934 ± 0.002	0.165 ± 0.030
	B	10/04/2014	645	0.23	0.950	0.980 ± 0.009	0.017 ± 0.039
	C	21/05/2014	608	0.25	0.954	0.993 ± 0.009	-0.098 ± 0.041
	D	23/06/2014	563	0.27	0.919	0.980 ± 0.012	0.078 ± 0.061
	E	08/07/2014	610	0.39	0.948	1.009 ± 0.009	0.204 ± 0.048
	F	13/07/2014	360	0.46	0.648	1.008 ± 0.032	0.281 ± 0.060
	G	09/08/2014	382	0.22	0.964	1.017 ± 0.010	0.075 ± 0.040
	H	15/08/2014	444	0.38	0.965	0.981 ± 0.009	0.262 ± 0.068
All Exercises	All Data		4162	0.34	0.987	0.941 ± 0.002	0.291 ± 0.012

The number of data pairs rejected = 138 (3.2%).

Figure G13 PM<sub>2.5</sub> vs Height Regression ( $\mu\text{g m}^{-3}$ )

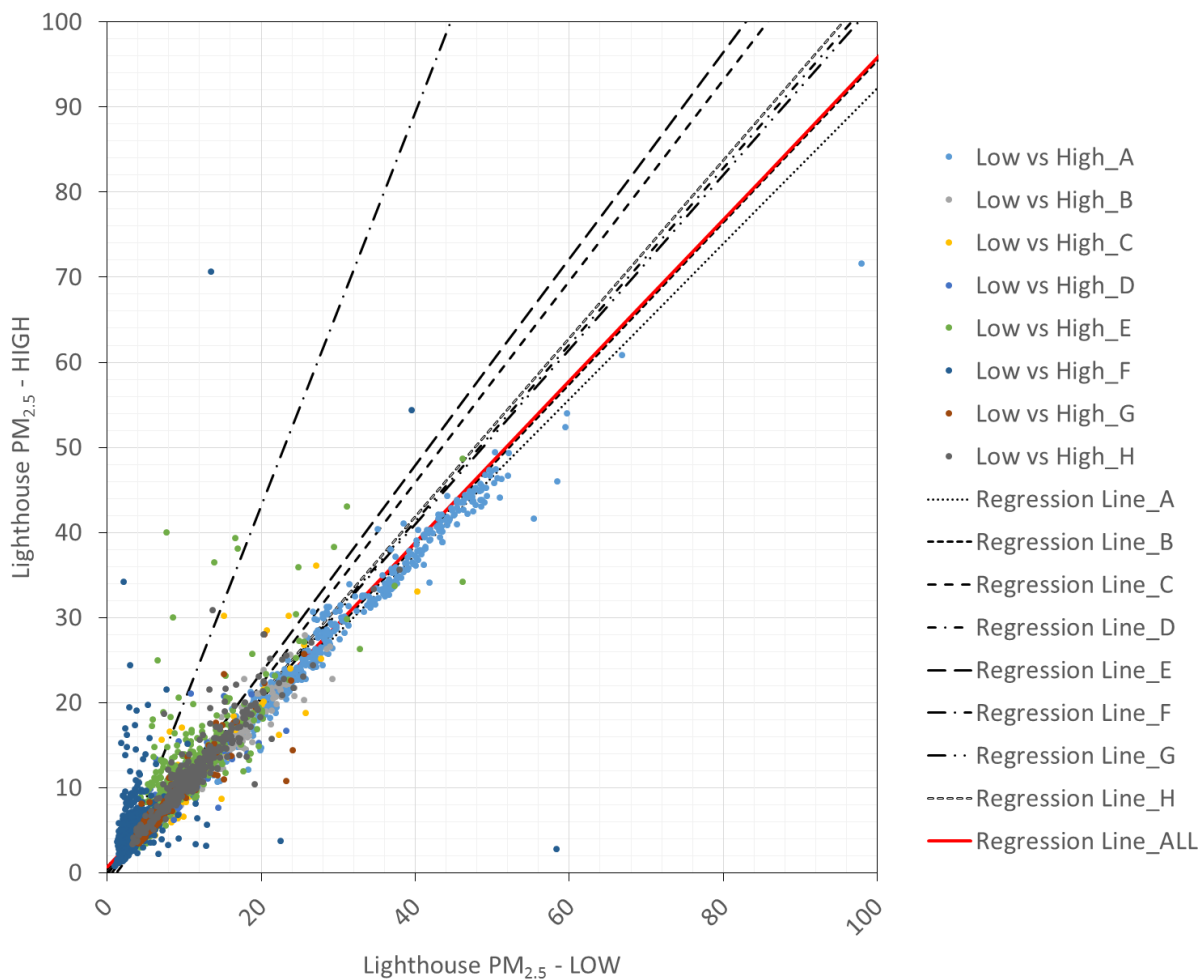


Table G13 PM<sub>2.5</sub> vs Height Regression Results

Lighthouse PM <sub>2.5</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			<i>n</i> <sub>bs</sub>	MAE	<i>r</i> <sup>2</sup>	Slope ( <i>d</i> ) ± <i>u</i> <sub><i>d</i></sub>	Intercept ( <i>c</i> ) ± <i>u</i> <sub><i>c</i></sub>
Colocations Exercises	A	14/03/2014	577	1.02	0.981	0.915 ± 0.005	0.797 ± 0.152
	B	10/04/2014	654	0.54	0.946	0.951 ± 0.009	0.375 ± 0.111
	C	21/05/2014	619	0.75	0.949	1.182 ± 0.011	-1.445 ± 0.097
	D	23/06/2014	569	0.69	0.796	1.036 ± 0.020	-0.105 ± 0.154
	E	08/07/2014	629	1.68	0.723	1.215 ± 0.025	-0.723 ± 0.257
	F	13/07/2014	400	3.42	0.136	2.309 ± 0.065	-2.985 ± 0.349
	G	09/08/2014	390	0.55	0.855	1.026 ± 0.020	-0.063 ± 0.160
	H	15/08/2014	462	0.92	0.862	1.048 ± 0.018	-0.066 ± 0.212
All Exercises	All Data		4300	1.11	0.915	0.951 ± 0.004	0.716 ± 0.059

Figure G14 PM<sub>2.5</sub> vs Height Regression – Grubbs (µg m<sup>-3</sup>)

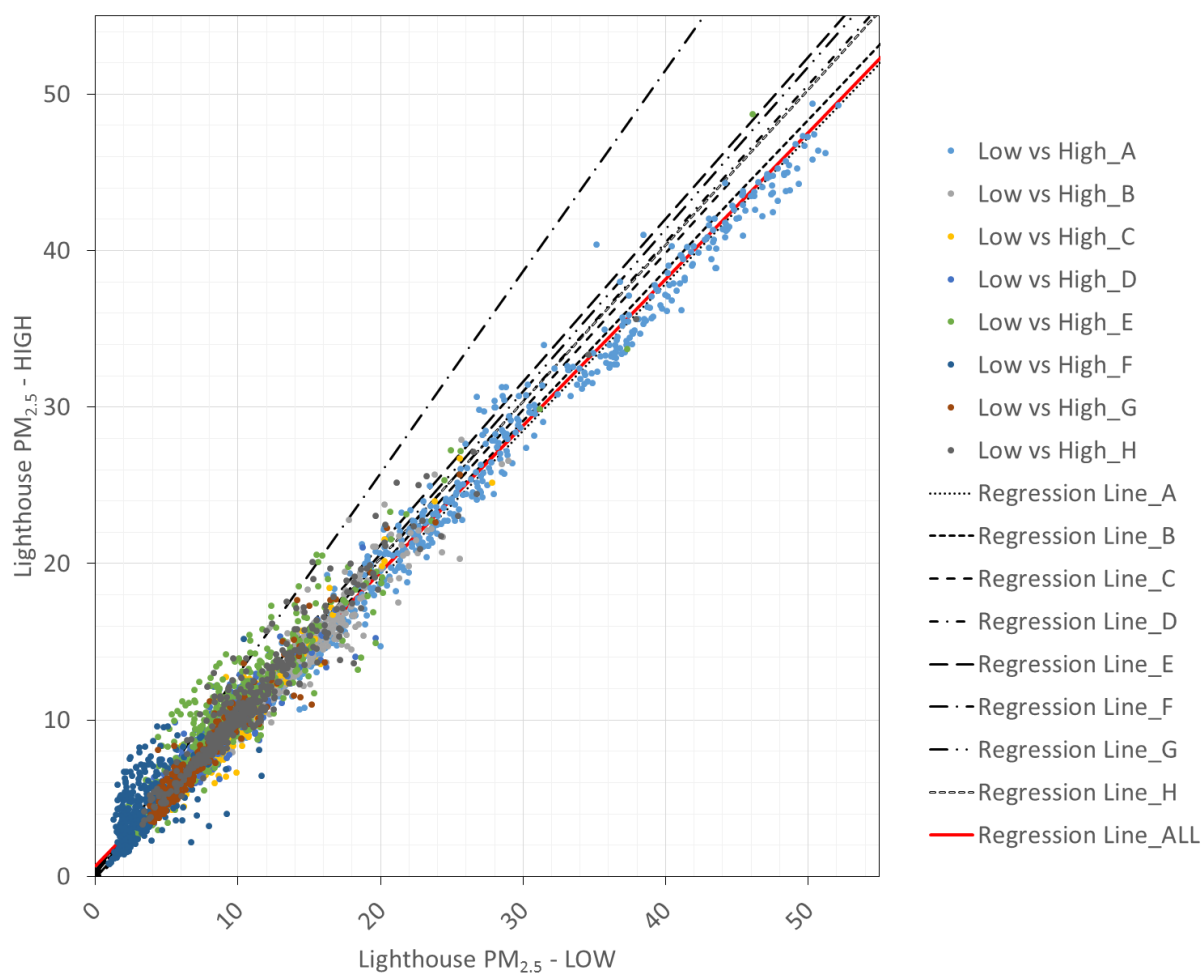


Table G14 PM<sub>2.5</sub> vs Height Regression Results - Grubbs

Lighthouse PM <sub>2.5</sub>	Dataset	Date	1 minute		Orthogonal Regression				
			n <sub>bs</sub>	MAE	r <sup>2</sup>	Slope (d) ± u <sub>d</sub>		Intercept (c) ± u <sub>c</sub>	
Colocations Exercises	A	14/03/2014	564	0.90	0.988	0.940 ± 0.004		0.283 ± 0.122	
	B	10/04/2014	652	0.52	0.953	0.963 ± 0.008		0.231 ± 0.105	
	C	21/05/2014	607	0.39	0.957	1.002 ± 0.008		-0.246 ± 0.063	
	D	23/06/2014	563	0.62	0.859	1.011 ± 0.016		0.057 ± 0.124	
	E	08/07/2014	594	1.04	0.901	1.040 ± 0.013		0.415 ± 0.133	
	F	13/07/2014	355	1.32	0.415	1.286 ± 0.048		0.072 ± 0.175	
	G	09/08/2014	386	0.46	0.937	1.037 ± 0.013		-0.122 ± 0.104	
	H	15/08/2014	453	0.75	0.932	0.999 ± 0.012		0.370 ± 0.142	
All Exercises	All Data		4174	0.80	0.978	0.937 ± 0.002		0.703 ± 0.029	

The number of data pairs rejected = 126 (2.9%).

Figure G15 PM<sub>5.0</sub> vs Height Regression ( $\mu\text{g m}^{-3}$ )

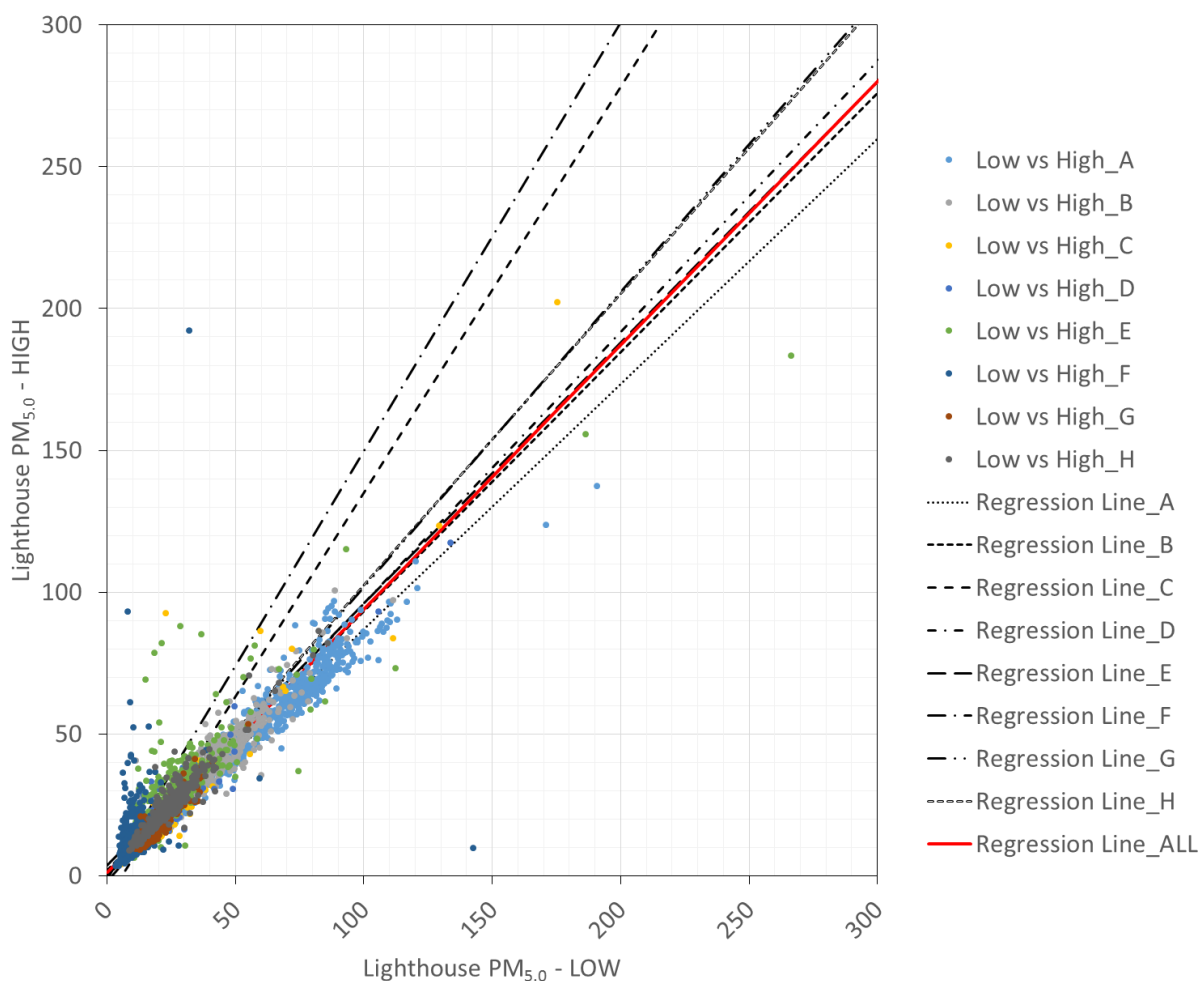
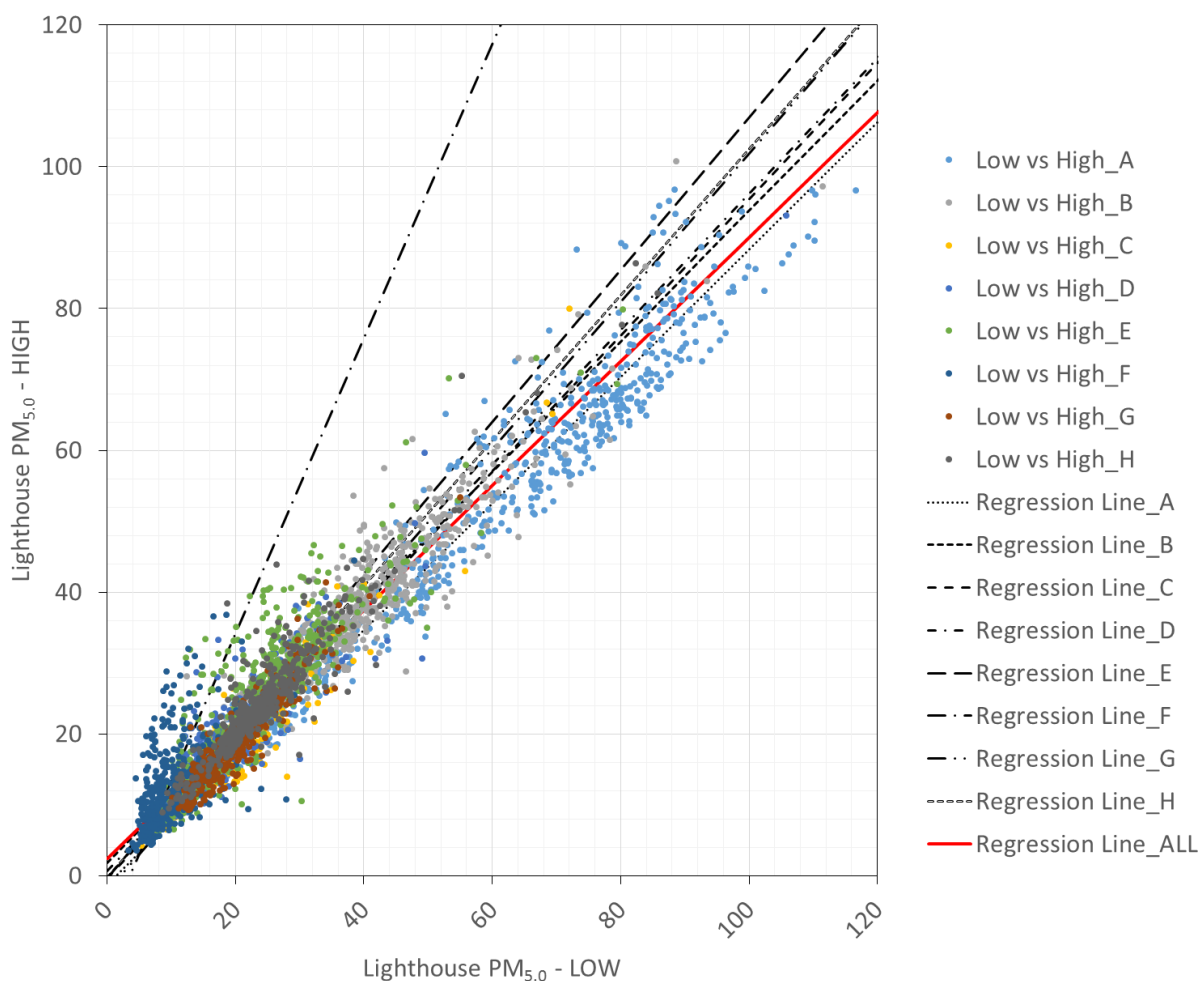


Table G15 PM<sub>5.0</sub> vs Height Regression Results

Lighthouse PM <sub>5.0</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			<i>n</i> <sub>bs</sub>	MAE	<i>r</i> <sup>2</sup>	Slope ( <i>d</i> ) ± <i>u</i> <sub><i>d</i></sub>	Intercept ( <i>c</i> ) ± <i>u</i> <sub><i>c</i></sub>
Colocations Exercises	A	14/03/2014	577	3.96	0.930	0.865 ± 0.010	0.371 ± 0.649
	B	10/04/2014	654	2.88	0.879	0.914 ± 0.013	2.040 ± 0.496
	C	21/05/2014	619	3.52	0.779	1.434 ± 0.026	-8.440 ± 0.563
	D	23/06/2014	569	2.22	0.853	0.956 ± 0.015	0.629 ± 0.314
	E	08/07/2014	629	4.49	0.738	0.921 ± 0.019	3.824 ± 0.576
	F	13/07/2014	400	6.13	0.701	1.511 ± 0.039	-1.250 ± 0.835
	G	09/08/2014	390	1.57	0.867	1.040 ± 0.019	-2.166 ± 0.410
	H	15/08/2014	462	1.92	0.886	1.027 ± 0.016	-0.256 ± 0.415
All Exercises	All Data		4300	3.48	0.861	0.930 ± 0.005	1.193 ± 0.189



**Figure G16 PM<sub>5.0</sub> vs Height Regression – Grubbs ( $\mu\text{g m}^{-3}$ )**



**Table G16 PM<sub>5.0</sub> vs Height Regression Results - Grubbs**

Lighthouse PM <sub>5.0</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			<i>n<sub>bs</sub></i>	MAE	<i>r</i> <sup>2</sup>	Slope ( <i>d</i> ) ± <i>u<sub>d</sub></i>	Intercept ( <i>c</i> ) ± <i>u<sub>c</sub></i>
Colocations Exercises	A	14/03/2014	564	3.82	0.936	0.895 ± 0.010	-1.219 ± 0.636
	B	10/04/2014	652	2.82	0.891	0.920 ± 0.012	1.807 ± 0.473
	C	21/05/2014	614	1.40	0.931	0.958 ± 0.010	-0.361 ± 0.196
	D	23/06/2014	569	2.22	0.853	0.956 ± 0.015	0.629 ± 0.314
	E	08/07/2014	609	3.32	0.818	1.073 ± 0.018	-0.312 ± 0.482
	F	13/07/2014	384	4.87	0.320	2.077 ± 0.065	-7.328 ± 0.678
	G	09/08/2014	390	1.57	0.867	1.040 ± 0.019	-2.166 ± 0.410
	H	15/08/2014	462	1.92	0.886	1.027 ± 0.016	-0.256 ± 0.415
All Exercises	All Data		4244	2.89	0.942	0.876 ± 0.003	2.452 ± 0.110

**The number of data pairs rejected = 56 (1.3%).**

Figure G17 PM<sub>10</sub> vs Height Regression ( $\mu\text{g m}^{-3}$ )

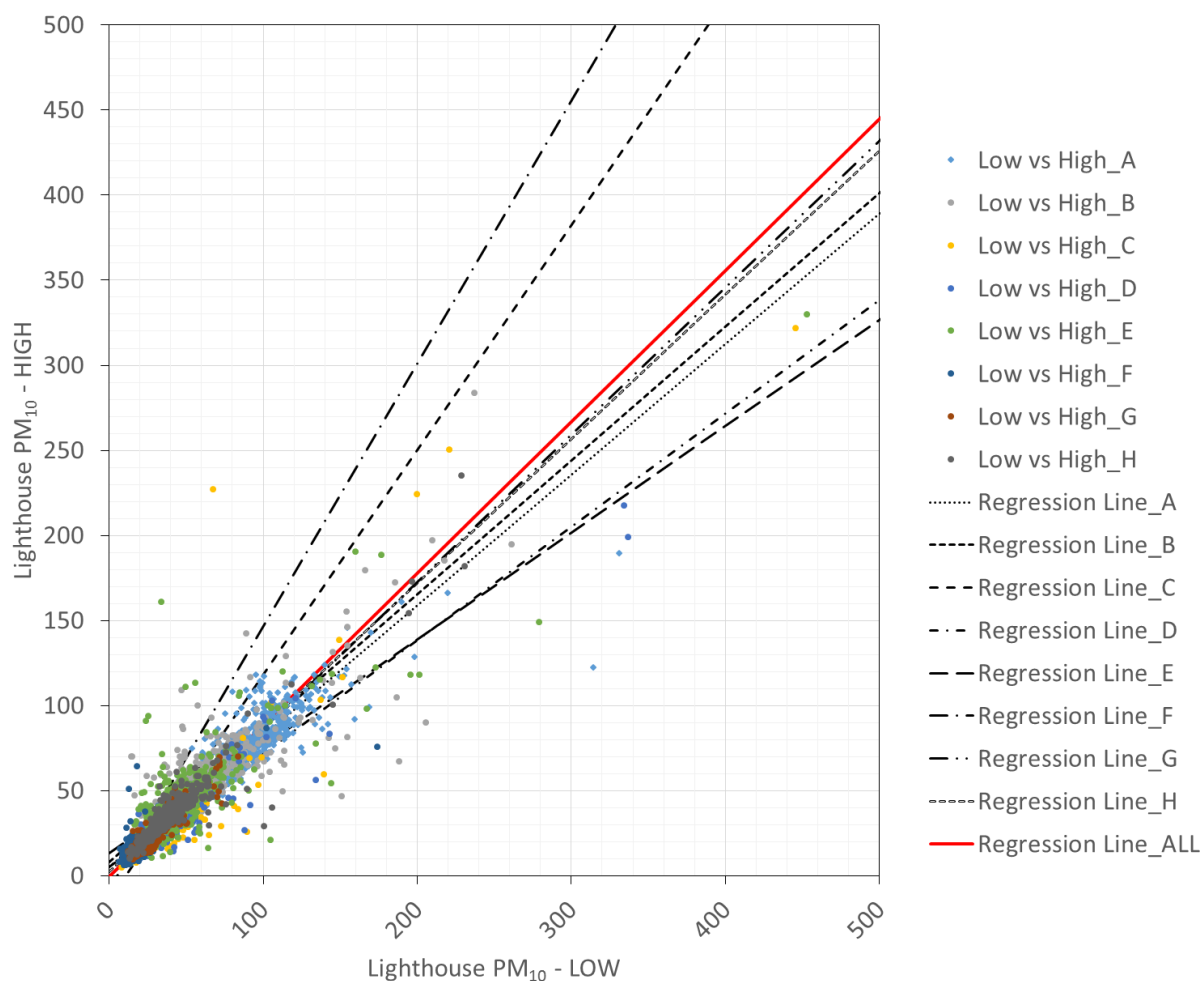


Table G17 PM<sub>10</sub> vs Height Regression Results

Lighthouse PM <sub>10</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope (d) $\pm u_d$	Intercept (c) $\pm u_c$
Colocations Exercises	A	14/03/2014	577	7.79	0.802	0.767 $\pm$ 0.015	5.418 $\pm$ 1.337
	B	10/04/2014	654	7.75	0.725	0.787 $\pm$ 0.017	8.039 $\pm$ 1.098
	C	21/05/2014	619	7.99	0.791	1.322 $\pm$ 0.024	-14.108 $\pm$ 1.025
	D	23/06/2014	569	4.38	0.849	0.666 $\pm$ 0.011	5.156 $\pm$ 0.470
	E	08/07/2014	629	8.35	0.760	0.628 $\pm$ 0.013	13.141 $\pm$ 0.811
	F	13/07/2014	399	9.31	0.129	1.548 $\pm$ 0.055	-8.161 $\pm$ 1.223
	G	09/08/2014	390	2.92	0.826	0.865 $\pm$ 0.019	-0.414 $\pm$ 0.593
	H	15/08/2014	462	3.75	0.872	0.847 $\pm$ 0.014	2.432 $\pm$ 0.651
All Exercises	All Data		4299	6.61	0.811	0.890 $\pm$ 0.006	-0.364 $\pm$ 0.349

Figure G18 PM<sub>10</sub> vs Height Regression – Grubbs (µg m<sup>-3</sup>)

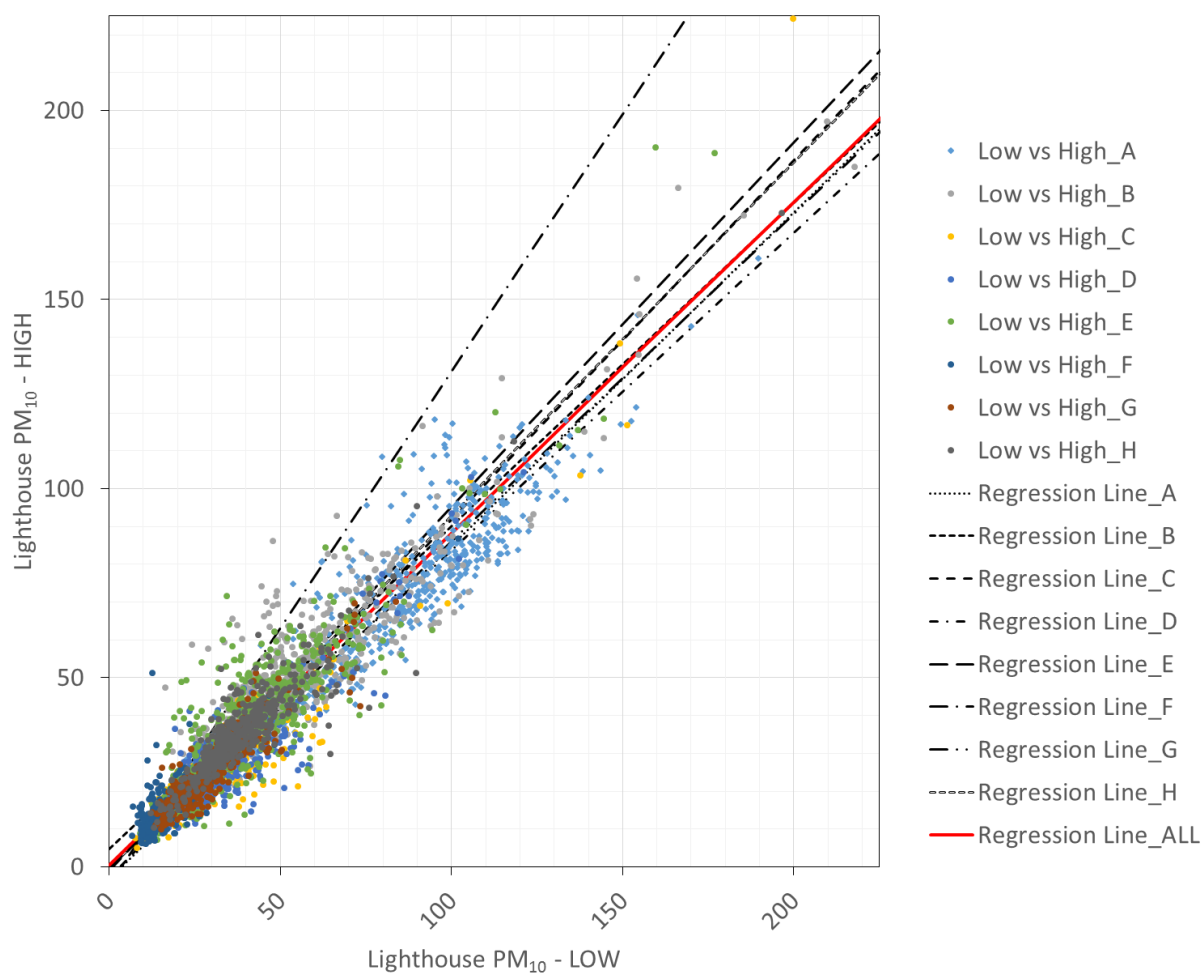


Table G18 PM<sub>10</sub> vs Height Regression Results - Grubbs

Lighthouse PM <sub>10</sub>	Dataset	Date	1 minute		Orthogonal Regression		
			n <sub>bs</sub>	MAE	r <sup>2</sup>	Slope (d) ± u <sub>d</sub>	Intercept (c) ± u <sub>c</sub>
Colocations Exercises	A	14/03/2014	564	7.14	0.859	0.882 ± 0.014	-3.315 ± 1.239
	B	10/04/2014	631	6.46	0.828	0.854 ± 0.014	4.675 ± 0.876
	C	21/05/2014	609	3.55	0.894	0.949 ± 0.013	-3.124 ± 0.417
	D	23/06/2014	563	4.19	0.788	0.840 ± 0.017	-0.259 ± 0.595
	E	08/07/2014	612	6.32	0.796	0.963 ± 0.018	-1.034 ± 0.828
	F	13/07/2014	392	6.78	0.307	1.360 ± 0.050	-4.928 ± 0.942
	G	09/08/2014	390	2.92	0.826	0.865 ± 0.019	-0.414 ± 0.593
	H	15/08/2014	457	3.51	0.889	0.935 ± 0.015	-0.619 ± 0.625
All Exercises	All Data		4218	5.36	0.897	0.876 ± 0.004	0.583 ± 0.221

The number of data pairs rejected = 81 (1.9%).

Figure G19 TPM vs Height Regression ( $\mu\text{g m}^{-3}$ )

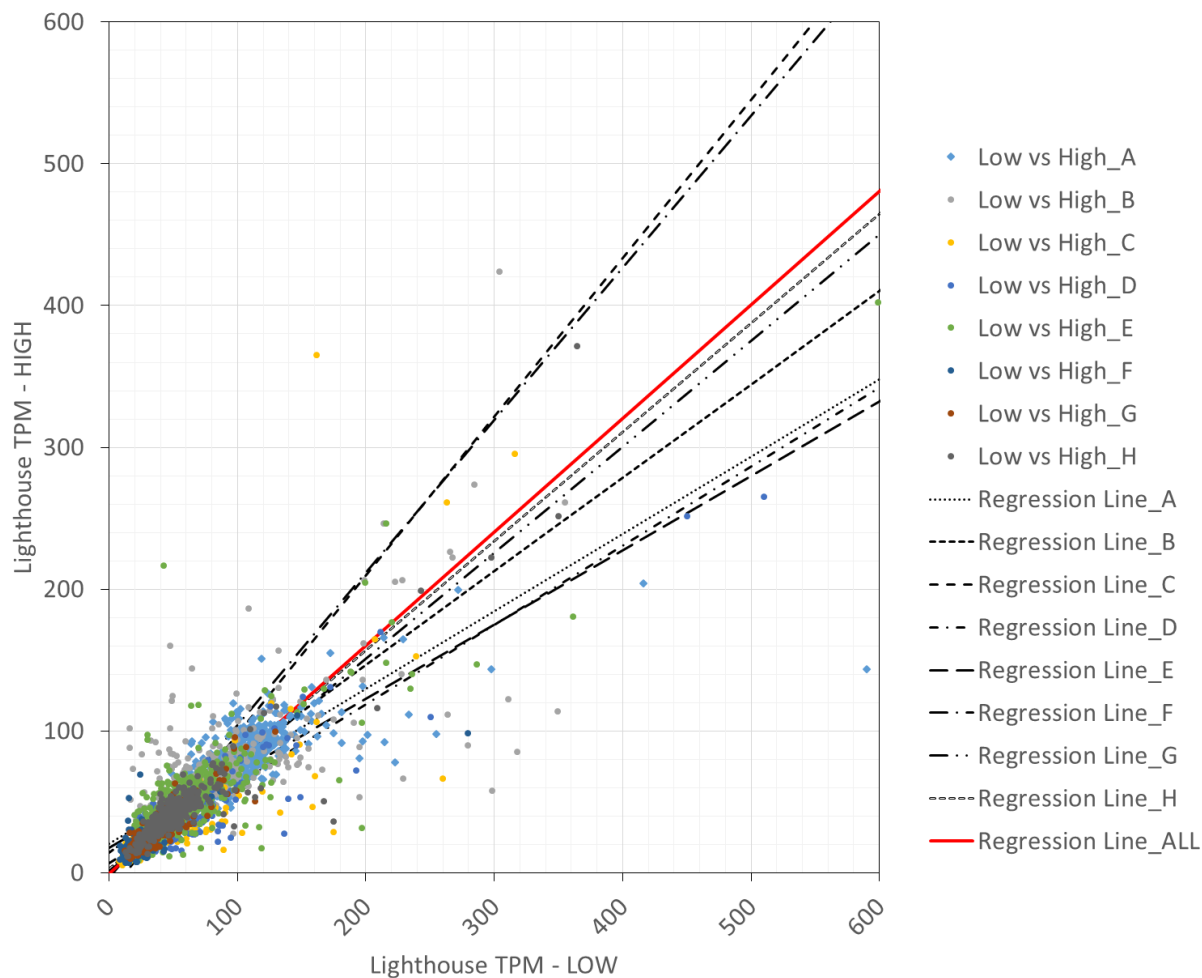


Table G19 TPM vs Height Regression Results

Lighthouse TPM	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope (d) $\pm u_d$	Intercept (c) $\pm u_c$
Colocations Exercises	A	14/03/2014	577	11.22	0.621	0.546 $\pm$ 0.016	20.701 $\pm$ 1.662
	B	10/04/2014	654	12.11	0.547	0.660 $\pm$ 0.019	14.330 $\pm$ 1.612
	C	21/05/2014	619	11.04	0.779	1.119 $\pm$ 0.021	-14.513 $\pm$ 1.364
	D	23/06/2014	569	5.99	0.819	0.559 $\pm$ 0.010	6.737 $\pm$ 0.616
	E	08/07/2014	629	10.75	0.721	0.525 $\pm$ 0.012	17.538 $\pm$ 1.012
	F	13/07/2014	400	9.64	0.919	1.075 $\pm$ 0.015	-3.380 $\pm$ 1.075
	G	09/08/2014	390	3.82	0.797	0.749 $\pm$ 0.018	1.006 $\pm$ 0.695
	H	15/08/2014	462	5.55	0.835	0.769 $\pm$ 0.015	2.951 $\pm$ 0.884
All Exercises	All Data		4300	9.24	0.742	0.801 $\pm$ 0.006	-0.091 $\pm$ 0.480

Figure G20 TPM vs Height Regression – Grubbs ( $\mu\text{g m}^{-3}$ )

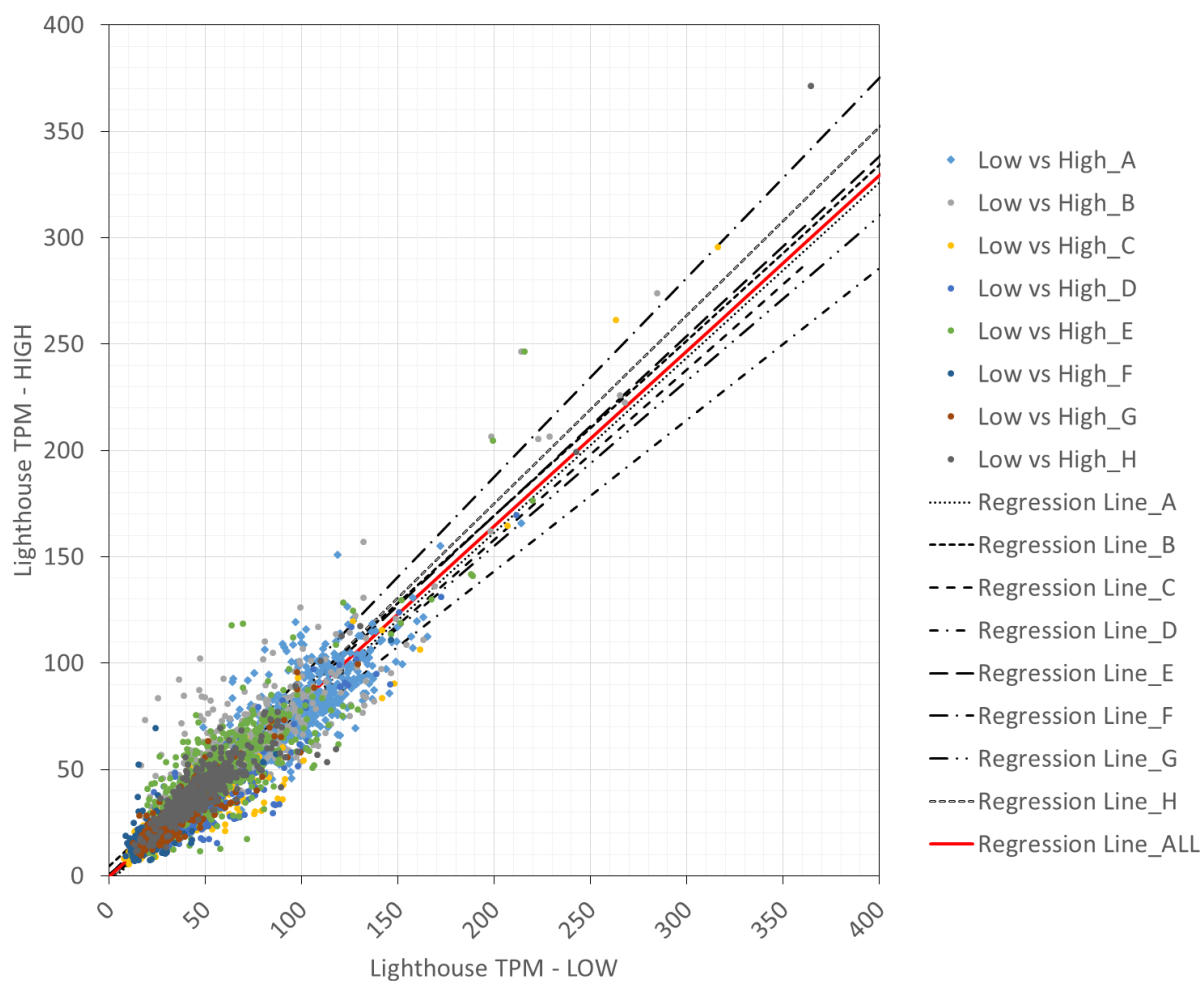


Table G20 TPM vs Height Regression Results - Grubbs

Lighthouse TPM	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope (d) $\pm u_d$	Intercept (c) $\pm u_c$
Colocations Exercises	A	14/03/2014	557	8.89	0.775	0.822 $\pm$ 0.017	-3.213 $\pm$ 1.621
	B	10/04/2014	620	9.47	0.762	0.823 $\pm$ 0.017	4.693 $\pm$ 1.198
	C	21/05/2014	607	4.94	0.856	0.800 $\pm$ 0.013	-1.870 $\pm$ 0.539
	D	23/06/2014	560	5.69	0.775	0.712 $\pm$ 0.015	0.639 $\pm$ 0.722
	E	08/07/2014	611	8.51	0.751	0.844 $\pm$ 0.017	0.475 $\pm$ 1.065
	F	13/07/2014	395	7.47	0.316	0.937 $\pm$ 0.040	-0.082 $\pm$ 1.027
	G	09/08/2014	389	3.76	0.813	0.775 $\pm$ 0.017	0.182 $\pm$ 0.680
	H	15/08/2014	456	5.26	0.873	0.884 $\pm$ 0.015	-1.879 $\pm$ 0.799
All Exercises	All Data		4195	7.31	0.843	0.824 $\pm$ 0.005	-0.292 $\pm$ 0.308

The number of data pairs rejected = 105 (2.4%).

Figure G21 BC vs Height Regression ( $\mu\text{g m}^{-3}$ )

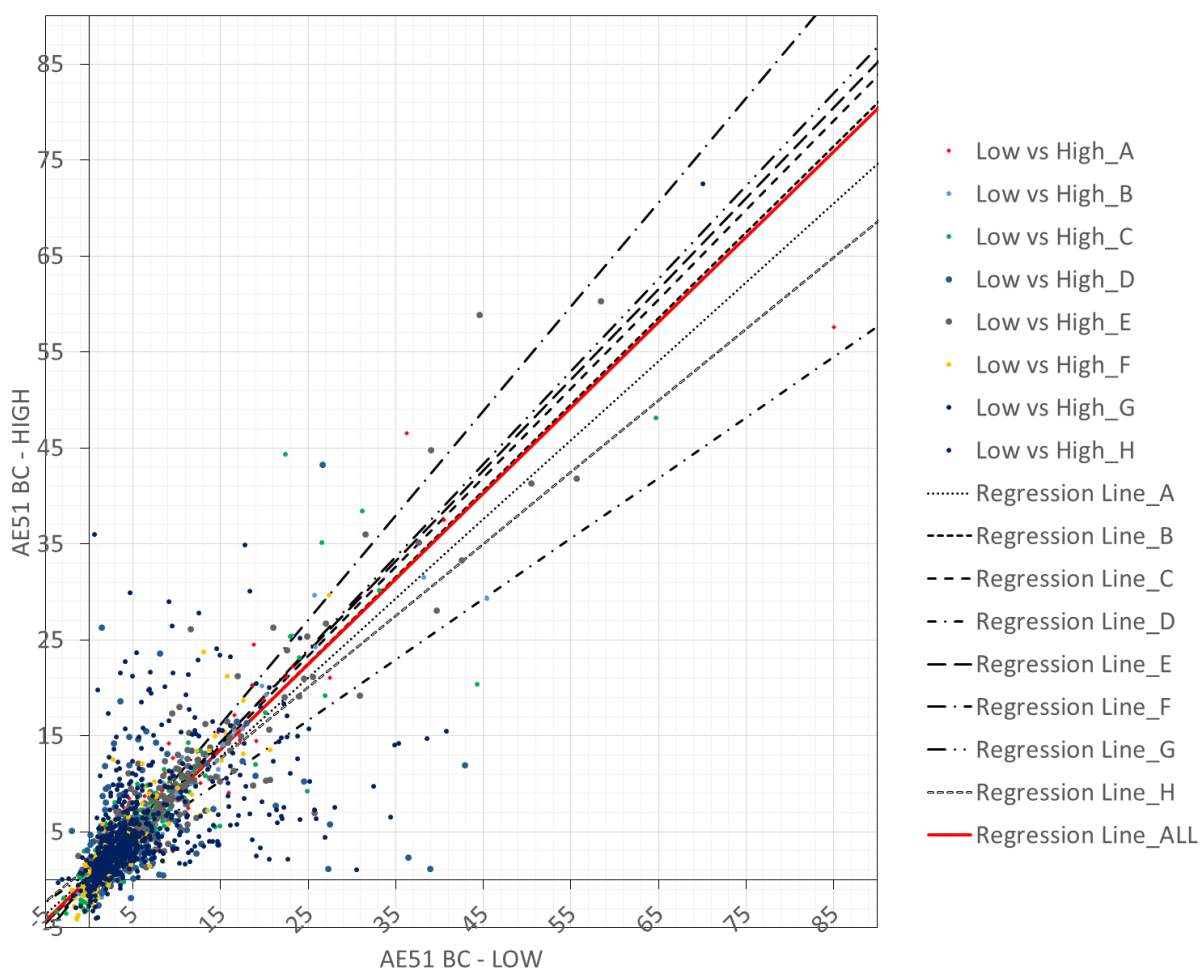


Table G21 BC vs Height Regression Results

AE51 BC	Dataset	Date	1 minute		Orthogonal Regression			
			$n_{bs}$	MAE	$r^2$	Slope ( $d$ ) $\pm u_d$	Intercept ( $c$ ) $\pm u_c$	
Colocations Exercises	A	14/03/2014	575	0.57	0.938	0.822 $\pm$ 0.009	0.511 $\pm$ 0.061	
	B	10/04/2014	654	0.54	0.919	0.898 $\pm$ 0.010	0.081 $\pm$ 0.049	
	C	21/05/2014	617	1.04	0.804	0.929 $\pm$ 0.017	0.050 $\pm$ 0.097	
	D	23/06/2014	568	1.55	0.204	0.631 $\pm$ 0.030	0.821 $\pm$ 0.157	
	E	08/07/2014	639	1.07	0.885	0.945 $\pm$ 0.013	0.130 $\pm$ 0.102	
	F	13/07/2014	426	1.00	0.784	1.088 $\pm$ 0.024	-0.184 $\pm$ 0.093	
	G	09/08/2014	391	1.13	0.800	0.966 $\pm$ 0.022	-0.212 $\pm$ 0.118	
	H	15/08/2014	460	3.83	0.153	0.746 $\pm$ 0.038	1.398 $\pm$ 0.367	
All Exercises	All Data		4330	1.31	0.667	0.890 $\pm$ 0.008	0.204 $\pm$ 0.052	

Figure G22 BC vs Height Regression – Grubbs ( $\mu\text{g m}^{-3}$ )

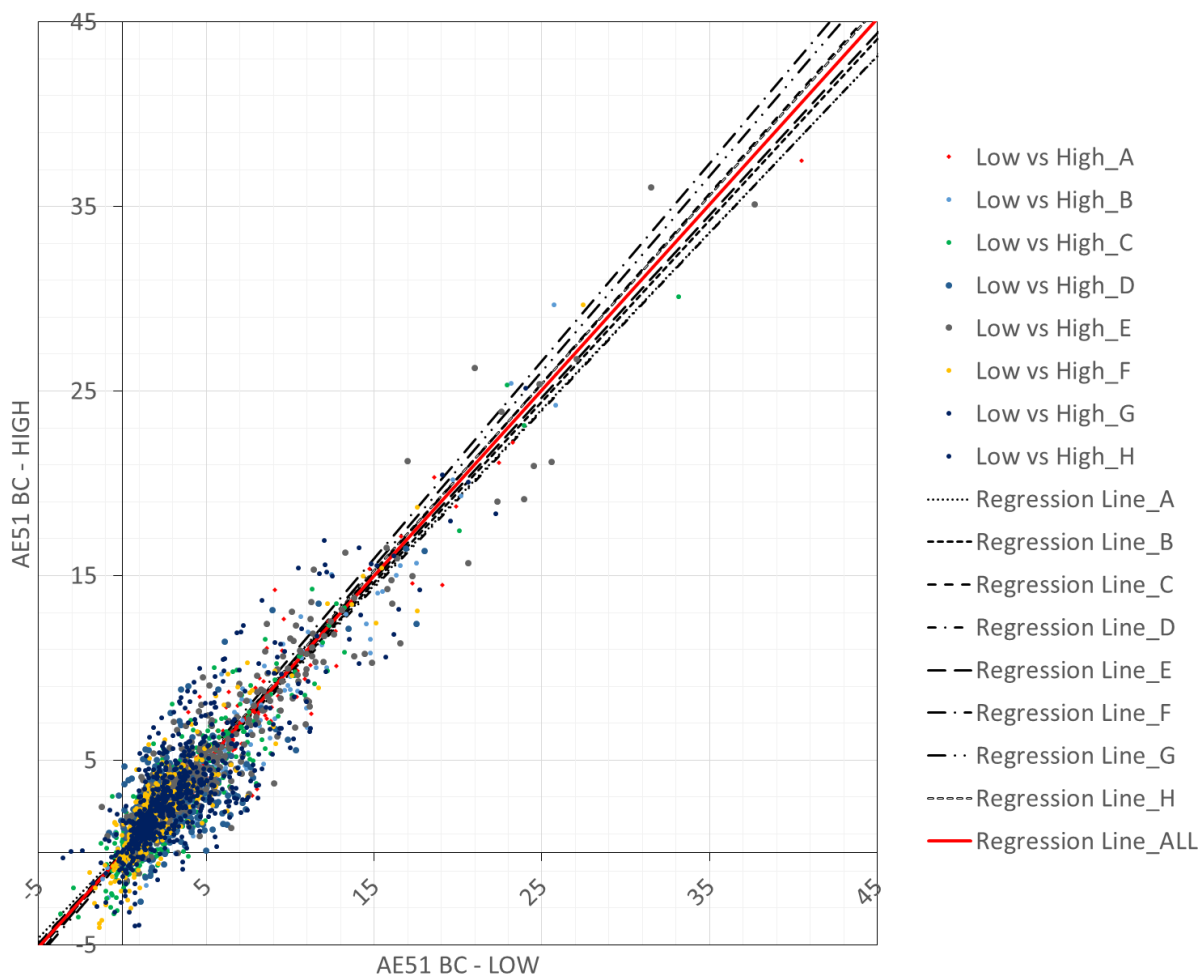
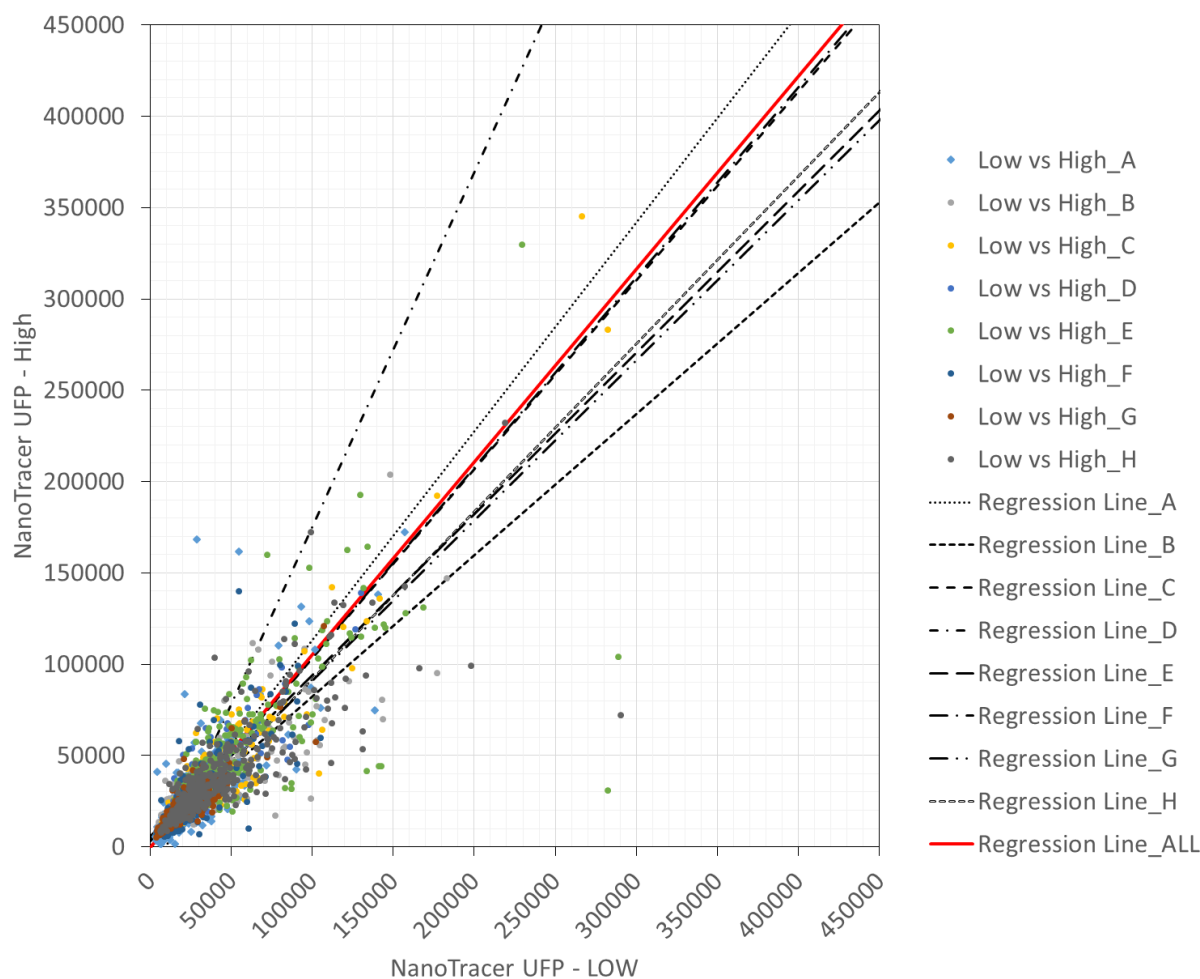


Table G22 BC vs Height Regression Results - Grubbs

AE51 BC	Dataset	Date	1 minute		Orthogonal Regression			
			$n_{bs}$	MAE	$r^2$	Slope (d) $\pm u_d$	Intercept (c) $\pm u_c$	
Colocations Exercises	A	14/03/2014	568	0.39	0.947	0.955 $\pm$ 0.009	0.143 $\pm$ 0.041	
	B	10/04/2014	651	0.54	0.927	0.982 $\pm$ 0.010	-0.132 $\pm$ 0.044	
	C	21/05/2014	607	0.89	0.851	1.024 $\pm$ 0.016	-0.163 $\pm$ 0.066	
	D	23/06/2014	531	1.06	0.508	0.961 $\pm$ 0.030	-0.059 $\pm$ 0.094	
	E	08/07/2014	619	0.83	0.929	0.986 $\pm$ 0.011	0.018 $\pm$ 0.068	
	F	13/07/2014	417	0.86	0.839	1.071 $\pm$ 0.021	-0.135 $\pm$ 0.071	
	G	09/08/2014	385	0.99	0.901	1.057 $\pm$ 0.017	-0.352 $\pm$ 0.082	
	H	15/08/2014	343	1.77	0.638	1.018 $\pm$ 0.033	-0.017 $\pm$ 0.197	
All Exercises	All Data		4121	0.87	0.868	1.007 $\pm$ 0.006	-0.101 $\pm$ 0.026	

The number of data pairs rejected = 209 (4.8%).

**Figure G23 UFP vs Height Regression ( $N$  Particles  $cm^{-3}$ )**

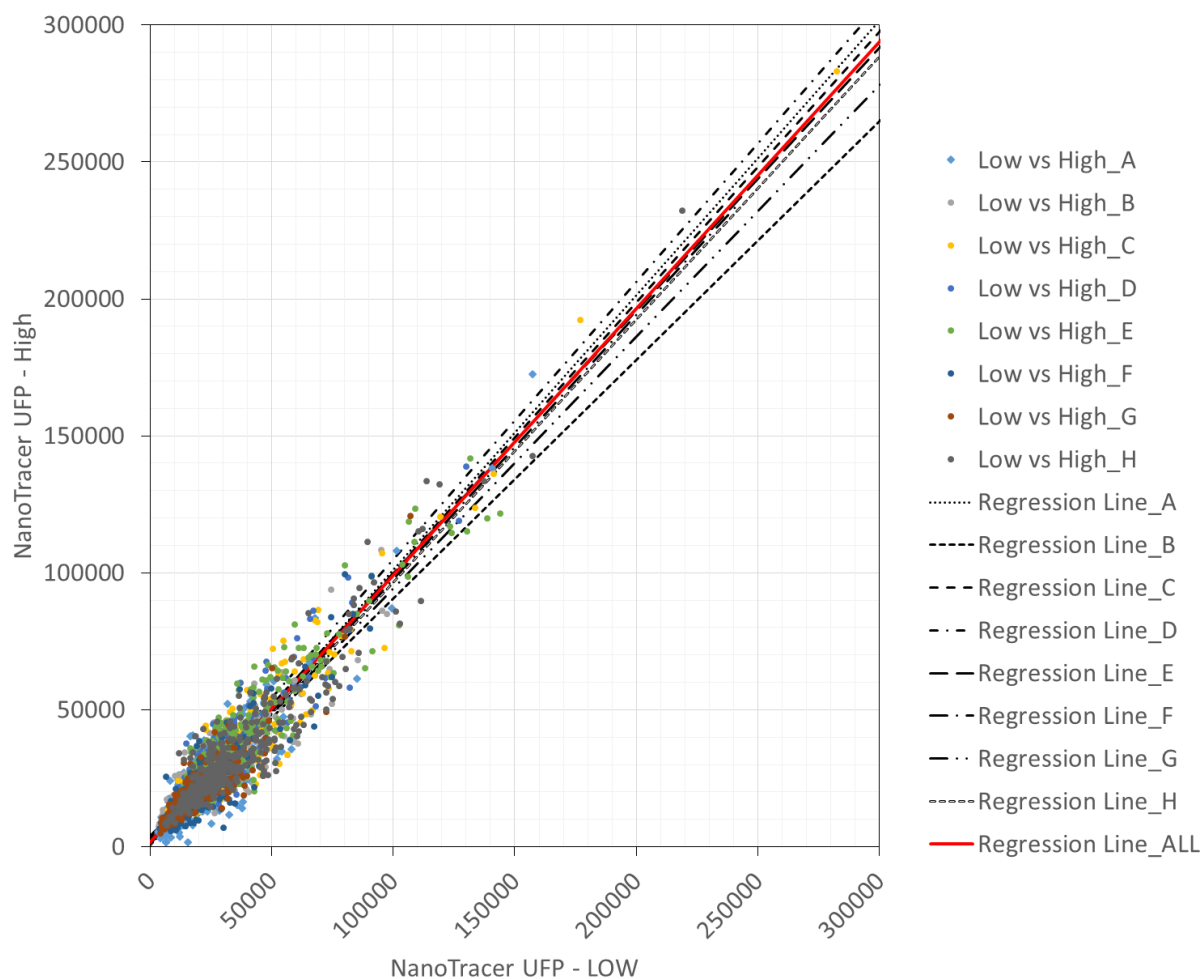


**Table G23 UFP vs Height Regression Results**

NanoTracer UFP	Dataset	Date	1 minute		Orthogonal Regression			
			$n_{bs}$	MAE	$r^2$	Slope (d) $\pm u_d$	Intercept (c) $\pm u_c$	
Colocations Exercises	A	14/03/2014	578	5941	0.660	1.144 $\pm$ 0.027	-1390 $\pm$ 696	
	B	10/04/2014	654	4678	0.734	0.773 $\pm$ 0.016	4969 $\pm$ 515	
	C	21/05/2014	616	4786	0.889	1.035 $\pm$ 0.014	-244 $\pm$ 480	
	D	23/06/2014	568	11778	0.682	1.942 $\pm$ 0.041	-19065 $\pm$ 1344	
	E	08/07/2014	623	7045	0.619	0.883 $\pm$ 0.022	5606 $\pm$ 996	
	F	13/07/2014	425	4987	0.673	1.040 $\pm$ 0.029	-288 $\pm$ 718	
	G	09/08/2014	389	3052	0.789	0.878 $\pm$ 0.021	2972 $\pm$ 433	
	H	15/08/2014	459	8984	0.687	0.917 $\pm$ 0.024	203 $\pm$ 1265	
All Exercises	All Data		4312	6370	0.679	1.057 $\pm$ 0.009	-561 $\pm$ 316	



**Figure G24 UFP vs Height Regression – Grubbs ( $N$  Particles  $cm^{-3}$ )**



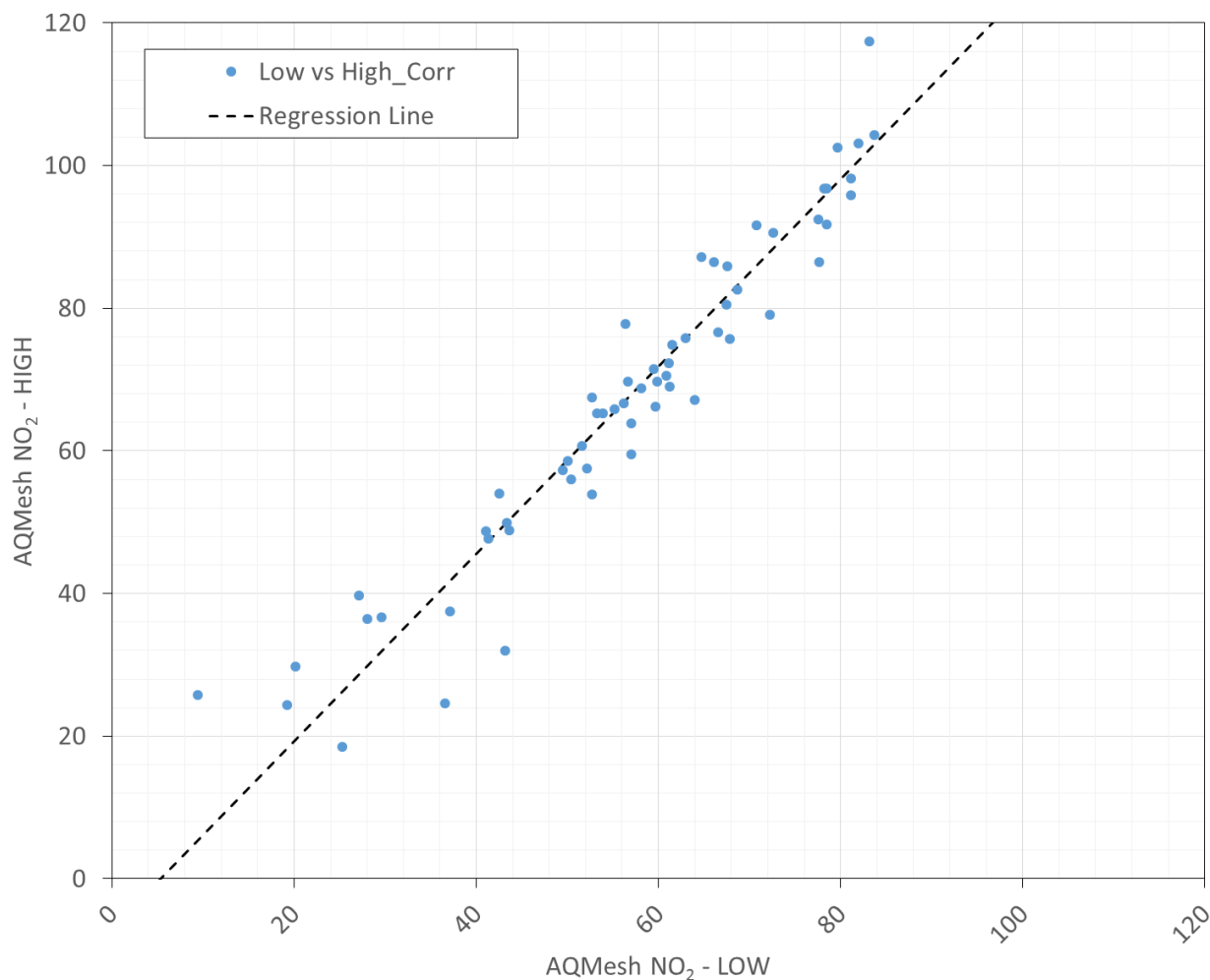
**Table G24 UFP vs Height Regression Results - Grubbs**

NanoTracer UFP	Dataset	Date	1 minute		Orthogonal Regression		
			$n_{bs}$	MAE	$r^2$	Slope ( $d$ ) $\pm u_d$	Intercept ( $c$ ) $\pm u_c$
Colocations Exercises	A	14/03/2014	560	4179	0.833	1.002 $\pm$ 0.017	793 $\pm$ 399
	B	10/04/2014	623	3494	0.814	0.872 $\pm$ 0.015	3405 $\pm$ 374
	C	21/05/2014	603	3839	0.919	0.988 $\pm$ 0.011	1153 $\pm$ 358
	D	23/06/2014	553	3652	0.860	1.012 $\pm$ 0.016	3711 $\pm$ 444
	E	08/07/2014	582	4184	0.893	0.960 $\pm$ 0.013	3773 $\pm$ 454
	F	13/07/2014	412	3639	0.818	0.966 $\pm$ 0.020	1021 $\pm$ 460
	G	09/08/2014	387	2969	0.815	0.919 $\pm$ 0.020	2300 $\pm$ 411
	H	15/08/2014	417	5473	0.885	0.959 $\pm$ 0.016	568 $\pm$ 653
All Exercises	All Data		4137	4129	0.877	0.973 $\pm$ 0.005	1923 $\pm$ 153

**The number of data pairs rejected = 176 (4.1%).**

## G1.2 Hourly Averages (NO<sub>2</sub>, NO, PM<sub>2.5</sub>, PM<sub>10</sub>)

**Figure G25 NO<sub>2</sub> vs Height Regression – Hourly Average Data ( $\mu\text{g m}^{-3}$ )**

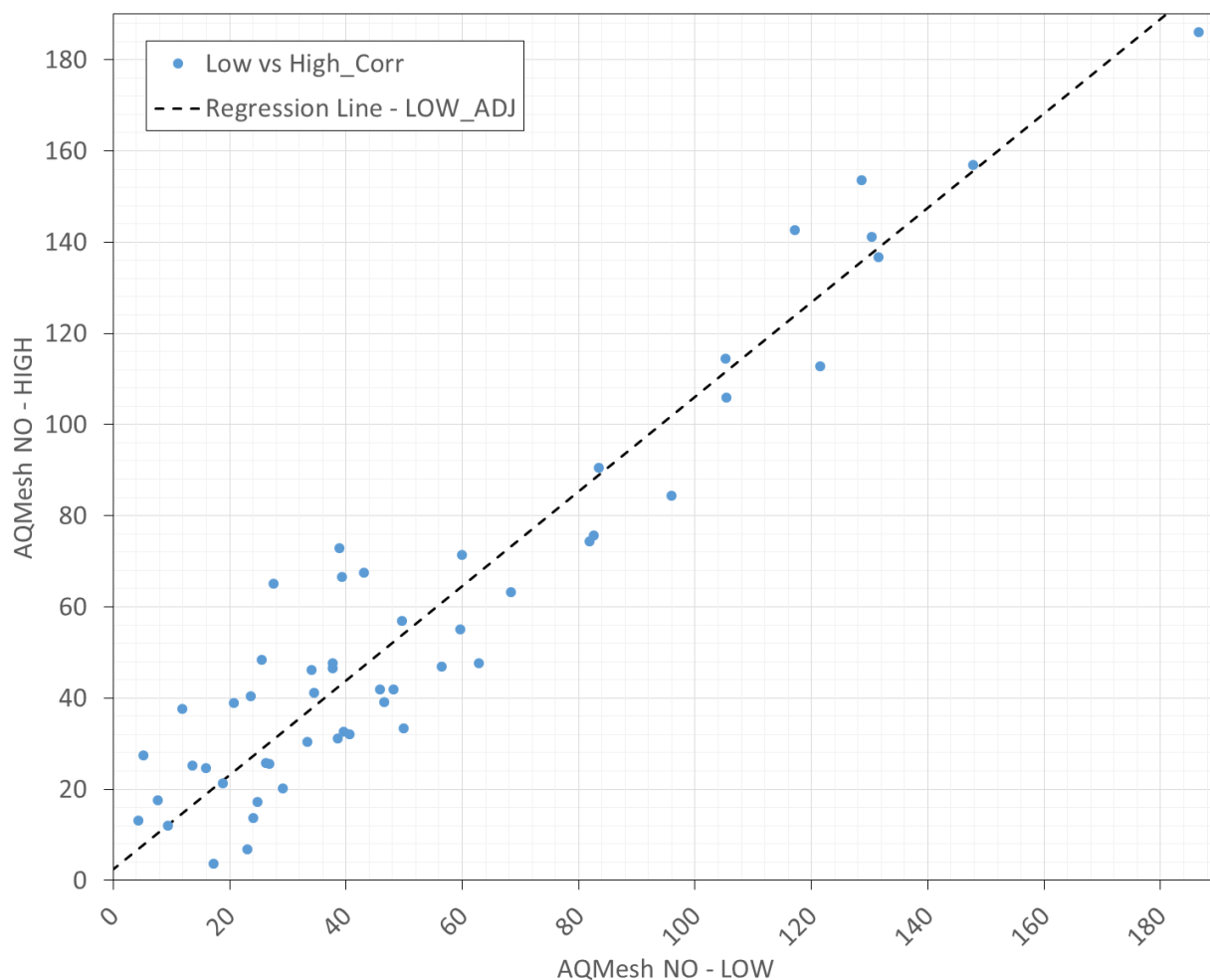


AQMesh NO <sub>2</sub>	1 hour		Orthogonal Regression			No of Data Pairs Rejected
	<i>n<sub>bs</sub></i>	MAE	<i>r</i> <sup>2</sup>	Slope ( <i>b</i> ) ± <i>u<sub>b</sub></i>	Intercept ( <i>a</i> ) ± <i>u<sub>a</sub></i>	
Mobile Exercises	61	4.72	0.918	<b>1.314 ± 0.049</b>	<b>-6.978 ± 2.884</b>	0

**Table G25 NO<sub>2</sub> vs Height Regression Results**

– Hourly Average Data ( $\mu\text{g m}^{-3}$ )

**Figure G26 NO vs Height Regression – Hourly Average Data ( $\mu\text{g m}^{-3}$ )**

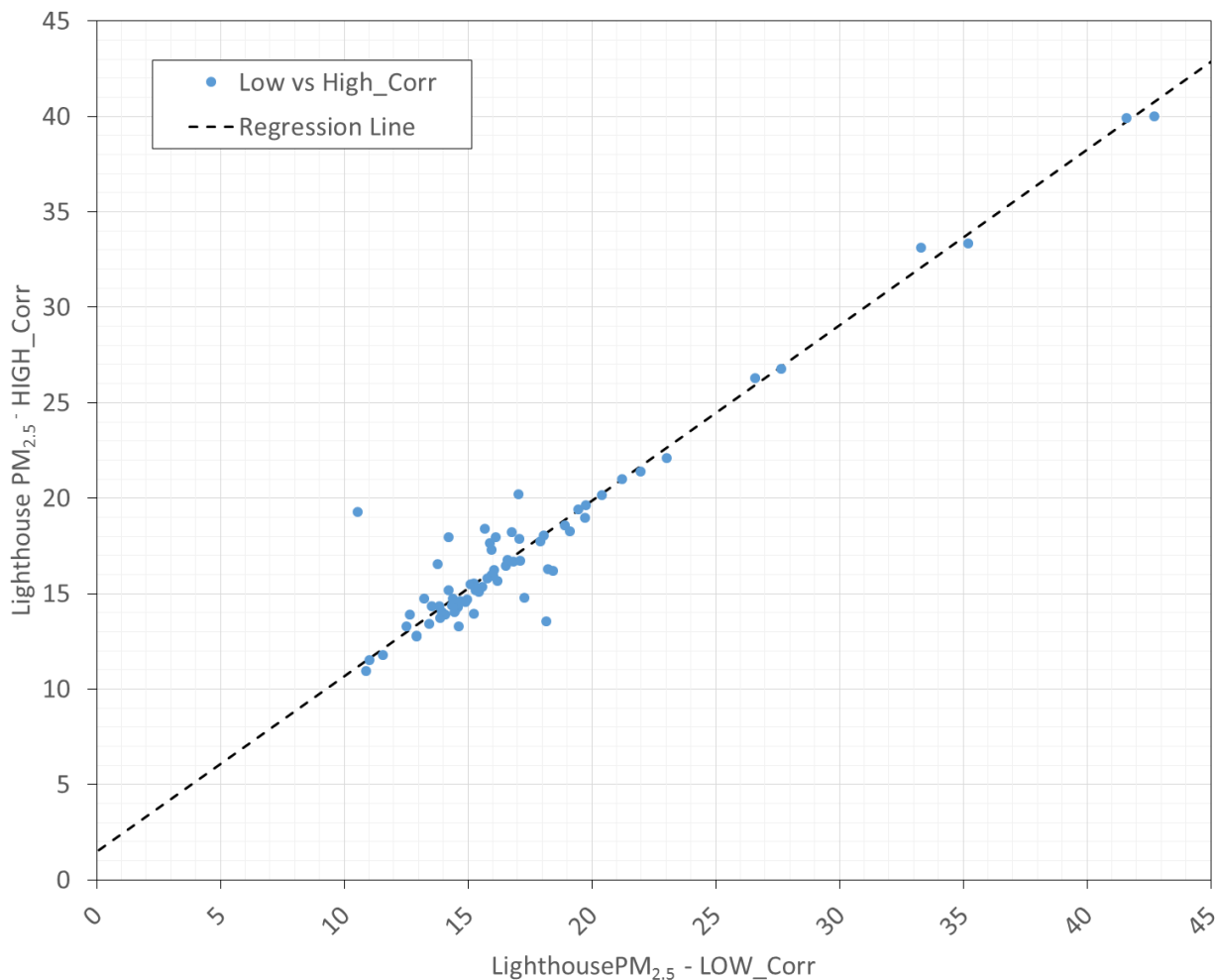


AQMesh NO	1 hour		Orthogonal Regression			No of Data Pairs Rejected
	$n_{bs}$	MAE	$r^2$	Slope (b) $\pm u_b$	Intercept (a) $\pm u_a$	
Mobile Exercises	53	11.47	0.900	1.036 $\pm$ 0.046	2.490 $\pm$ 3.098	0

**Table G26 NO vs Height Regression Results**

– Hourly Average Data ( $\mu\text{g m}^{-3}$ )

**Figure G27 PM2.5 vs Height Regression – Hourly Average Data ( $\mu\text{g m}^{-3}$ )**

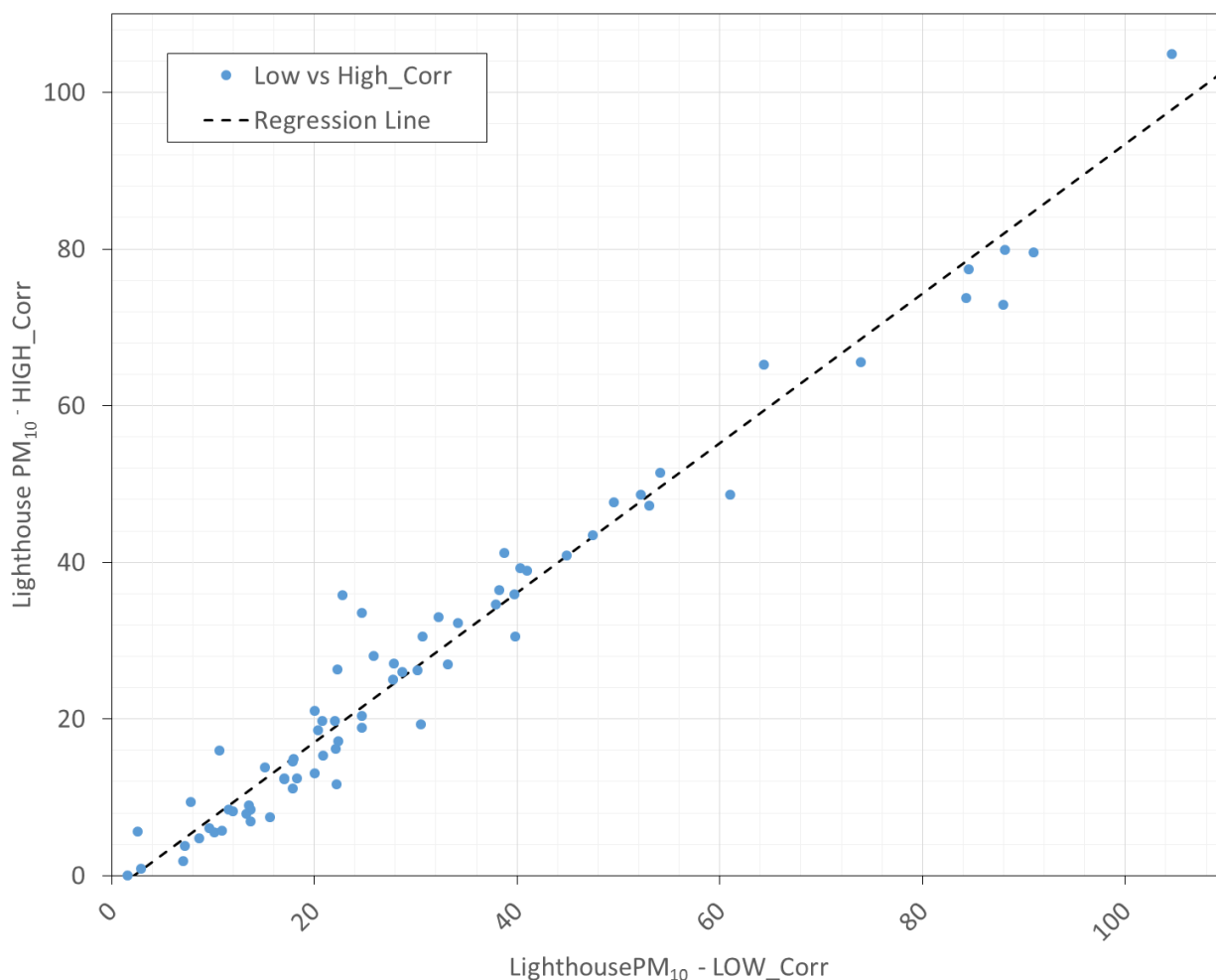


Lighthouse PM <sub>2.5</sub>	1 hour		Orthogonal Regression			No of Data Pairs Rejected
	$n_{bs}$	MAE	$r^2$	Slope (b) $\pm u_b$	Intercept (a) $\pm u_a$	
Mobile Exercises	72	0.86	0.928	<b>0.920 <math>\pm</math> 0.030</b>	<b>1.477 <math>\pm</math> 0.542</b>	0

**Table G27 PM<sub>2.5</sub> vs Height Regression Results**

– Hourly Average Data ( $\mu\text{g m}^{-3}$ )

Figure G28 PM<sub>10</sub> vs Height Regression – Hourly Average Data (µg m<sup>-3</sup>)



Lighthouse PM <sub>10</sub>	1 hour		Orthogonal Regression			No of Data Pairs Rejected
	n <sub>bs</sub>	u <sub>bs</sub>	r <sup>2</sup>	Slope (b) ± u <sub>b</sub>	Intercept (a) ± u <sub>a</sub>	
Mobile Exercises	73	3.13	0.964	<b>0.955 ± 0.021</b>	<b>-2.115 ± 0.826</b>	0

Table G28 PM<sub>10</sub> vs Height Regression Results

– Hourly Average Data (µg m<sup>-3</sup>)

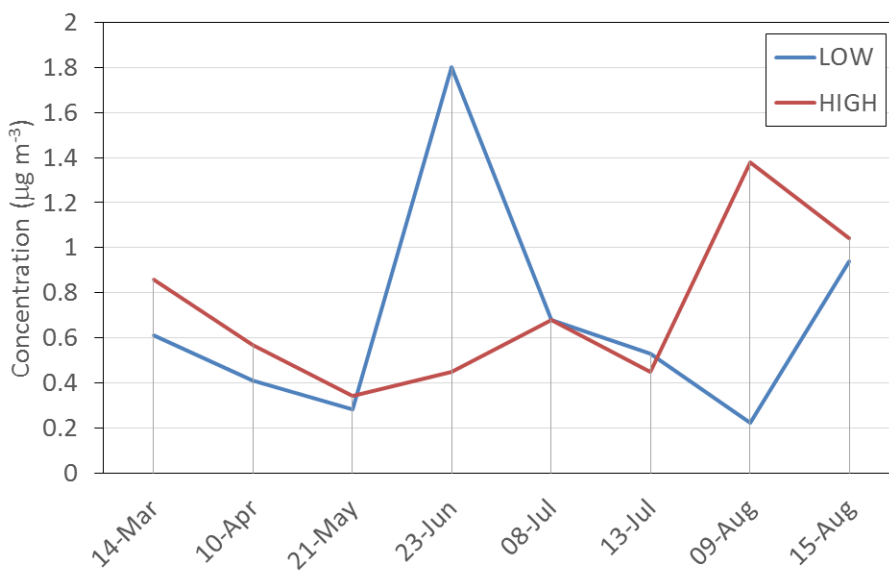
### G1.3 Non-Automatic Samplers – Benzene and PM<sub>2.5</sub>

**Table G29 Average Benzene Concentrations – Mobile Monitoring Exercises**

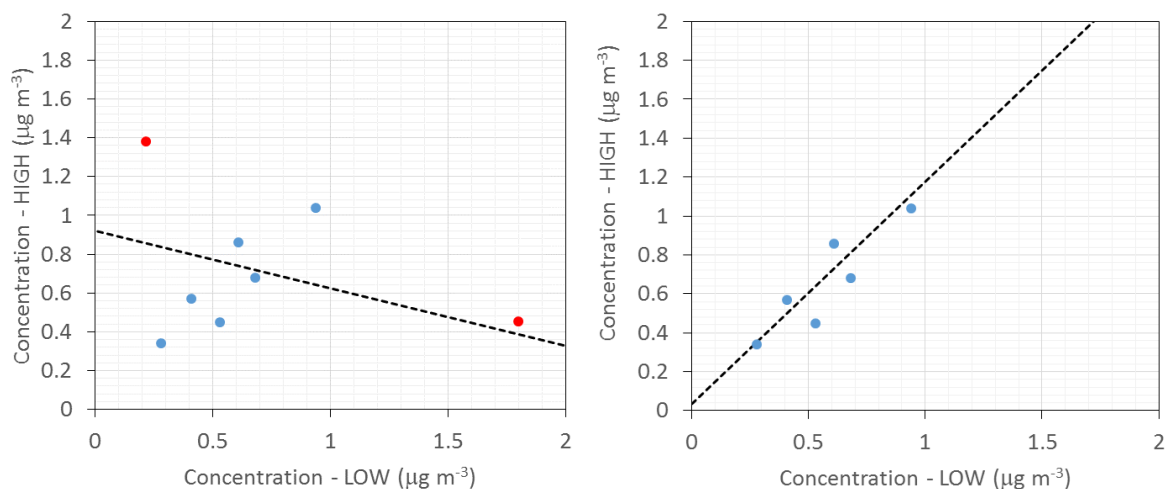
Date	Average Concentration (ng m <sup>-3</sup> )	
	LOW (0.80 m)	HIGH (1.68 m)
14-Mar	0.61	0.86
10-Apr	0.41	0.57
21-May	0.28	0.34
23-Jun	<b>1.80*</b>	<b>0.45*</b>
08-Jul	0.68	0.68
13-Jul	0.53	0.45
09-Aug	<b>0.22*</b>	<b>1.38*</b>
15-Aug	0.94	1.04

\*Identified as an outlier

**Figure G29 Average Benzene Concentration – Mobile Monitoring Exercises**



**Figure G30 Orthogonal Regression Plots with and without Outliers - Benzene vs Height**



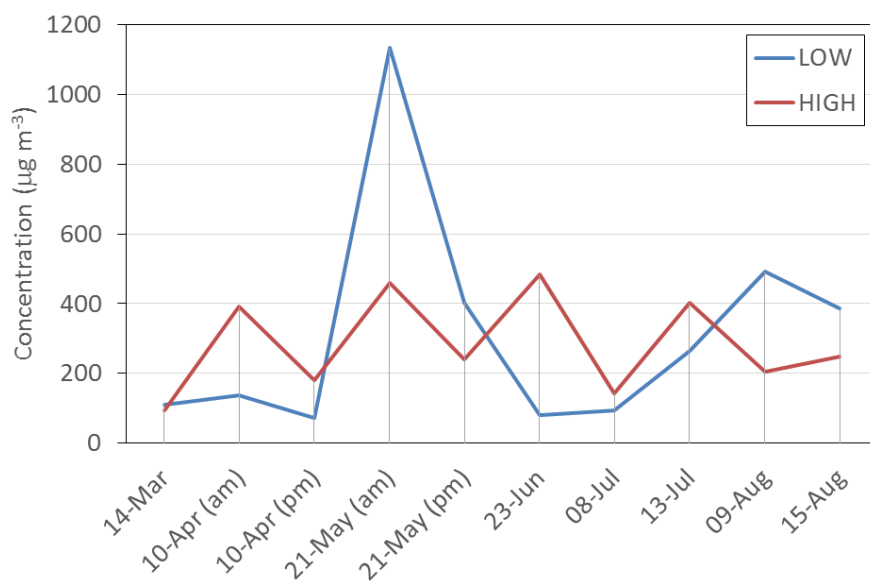
**Table G30 Orthogonal Regression Results – Benzene vs Height**

Pollutant	1 minute		Orthogonal Regression			No of Data Pairs Rejected
	$n_{bs}$	MAE	$r^2$	Slope (b) $\pm u_b$	Intercept (a) $\pm u_a$	
Benzene	6	0.10	0.954	1.144 $\pm$ 0.241	0.006 $\pm$ 0.147	2 (25%)

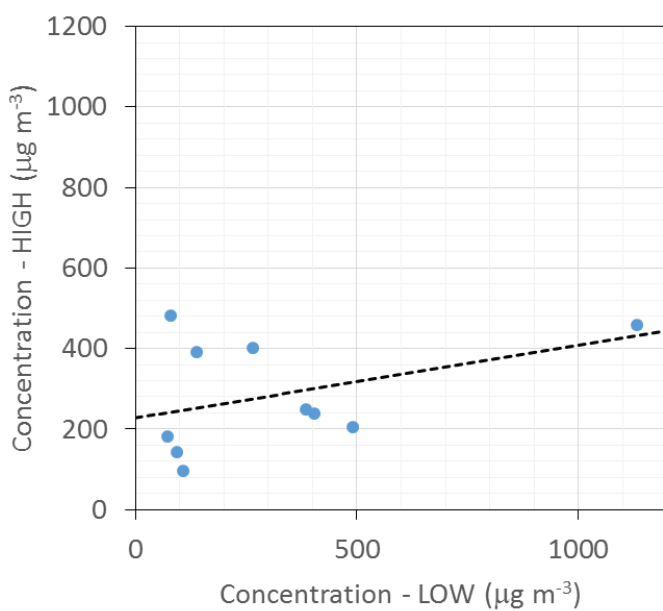
**Table G31 Average  $\text{PM}_{2.5}$ -Grav Concentrations – Mobile Monitoring Exercises**

Date	Average Concentration ( $\mu\text{g m}^{-3}$ )	
	LOW (0.80 m)	HIGH (1.68 m)
14-Mar	109	95
10-Apr (am)	138	390
10-Apr (pm)	73	181
21-May (am)	1133	458
21-May (pm)	403	239
23-Jun	80	483
08-Jul	94	143
13-Jul	264	401
09-Aug	491	204
15-Aug	385	248

**Figure G31 Average PM<sub>2.5</sub>-Grav Concentrations – Mobile Monitoring Exercises**



**Figure G32 Orthogonal Regression Plot – PM<sub>2.5</sub> Grav vs Height**



**Table G32 Orthogonal Regression Results – PM<sub>2.5</sub> vs Height**

Pollutant	1 minute		Orthogonal Regression			No of Data Pairs Rejected
	$n_{bs}$	MAE	$r^2$	Slope (d) ± $u_d$	Intercept (c) ± $u_c$	
PM <sub>2.5</sub> - Grav	10	106.54	0.130	0.180 ± 0.140	227.323 ± 61.786	0