



Supplement of

Development and evaluation of correction models for a low-cost fine particulate matter monitor

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Results from Excluded Models

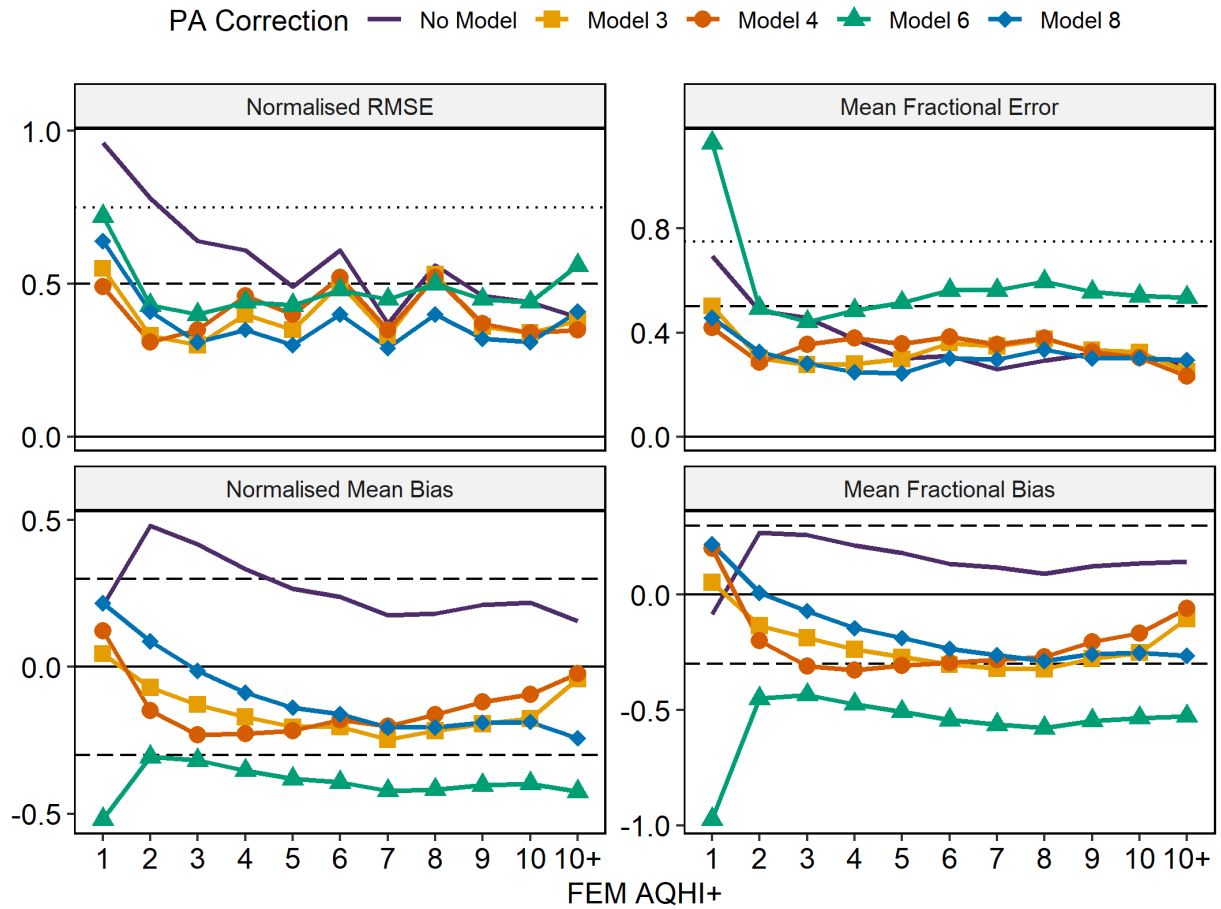


Figure S1. Comparison statistics across Federal Equivalent Method (FEM) AQHI+ levels for the excluded correction models. Goal and acceptable levels are displayed where possible for RMSE (0.75 & 0.5), MFE (0.75 & 0.5), NMB (± 0.3 & ± 0.6) and MFB (± 0.3 & ± 0.6).

Table S1. PurpleAir (PA) normalised mean bias (NMB), normalised root mean square error (NRMSE), mean fractional error (MFE) and mean fractional bias (MFB) at low/moderate/high/very high Federal Equivalent Method (FEM) AQHI+ levels for each excluded PA correction model. A crude score is calculated by averaging each statistics integer rank (from 1 to 5) for the models within that AQHI+ group. The top performing models are highlighted.

FEM AQHI+	Model	NMB	NRMSE	MFE	MFB	Score
Low [1-3]	No Model	0.33	0.96	0.65	-0.01	3.5
	Model 3	-0.01	0.48	0.46	0.01	2.3
	Model 4	-0.01	0.46	0.39	0.12	1.5
	Model 6	-0.42	0.63	1.00	-0.87	4.8
	Model 8	0.15	0.55	0.43	0.17	3.0
Moderate [4-6]	No Model	0.30	0.59	0.35	0.20	3.5
	Model 3	-0.19	0.42	0.30	-0.25	2.3
	Model 4	-0.22	0.46	0.37	-0.32	3.6
	Model 6	-0.37	0.46	0.50	-0.49	4.6
	Model 8	-0.12	0.35	0.25	-0.17	1.0
High [7-9]	No Model	0.19	0.47	0.28	0.11	2.1
	Model 3	-0.22	0.41	0.35	-0.31	3.4
	Model 4	-0.17	0.41	0.36	-0.26	2.4
	Model 6	-0.42	0.47	0.57	-0.56	4.9
	Model 8	-0.20	0.34	0.31	-0.27	2.3
Very High [10+]	No Model	0.16	0.39	0.28	0.14	2.9
	Model 3	-0.05	0.39	0.26	-0.12	2.1
	Model 4	-0.03	0.35	0.24	-0.07	1.0
	Model 6	-0.42	0.56	0.54	-0.53	5.0
	Model 8	-0.24	0.42	0.30	-0.26	4.0

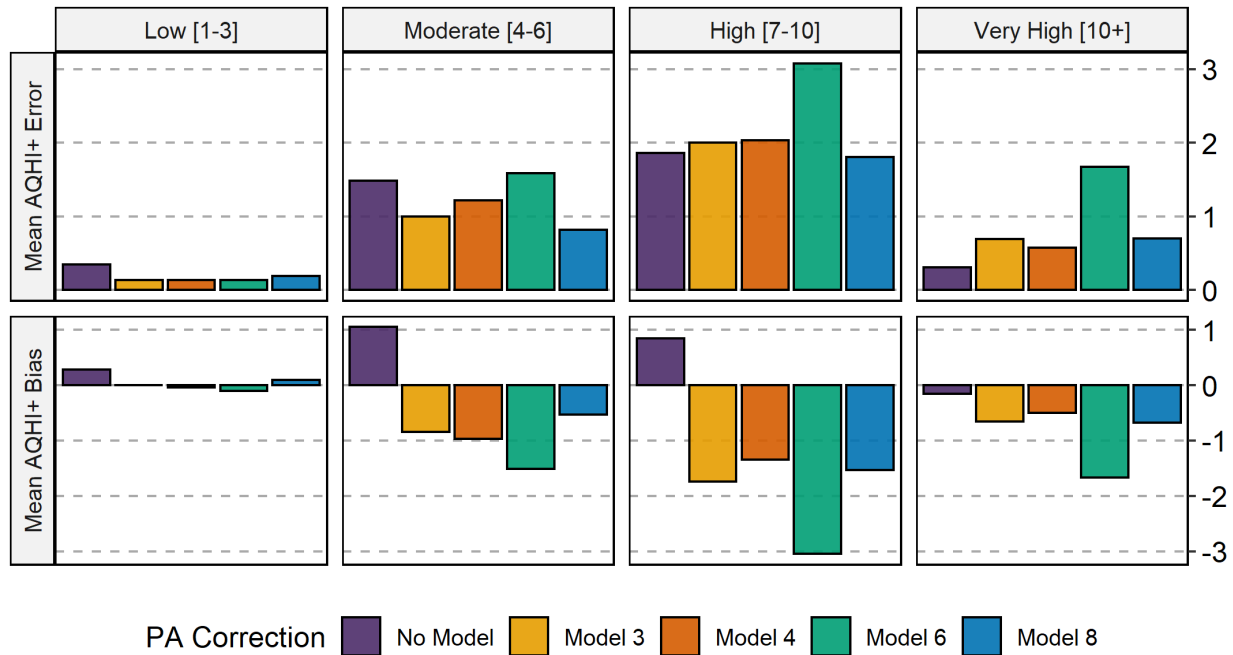


Figure S2. Mean PurpleAir (PA) AQHI+ error and bias for low/moderate/high/very high Federal Equivalent Method (FEM) AQHI+ levels for excluded correction models.

Rationale for [30%,70%] RH Truncation

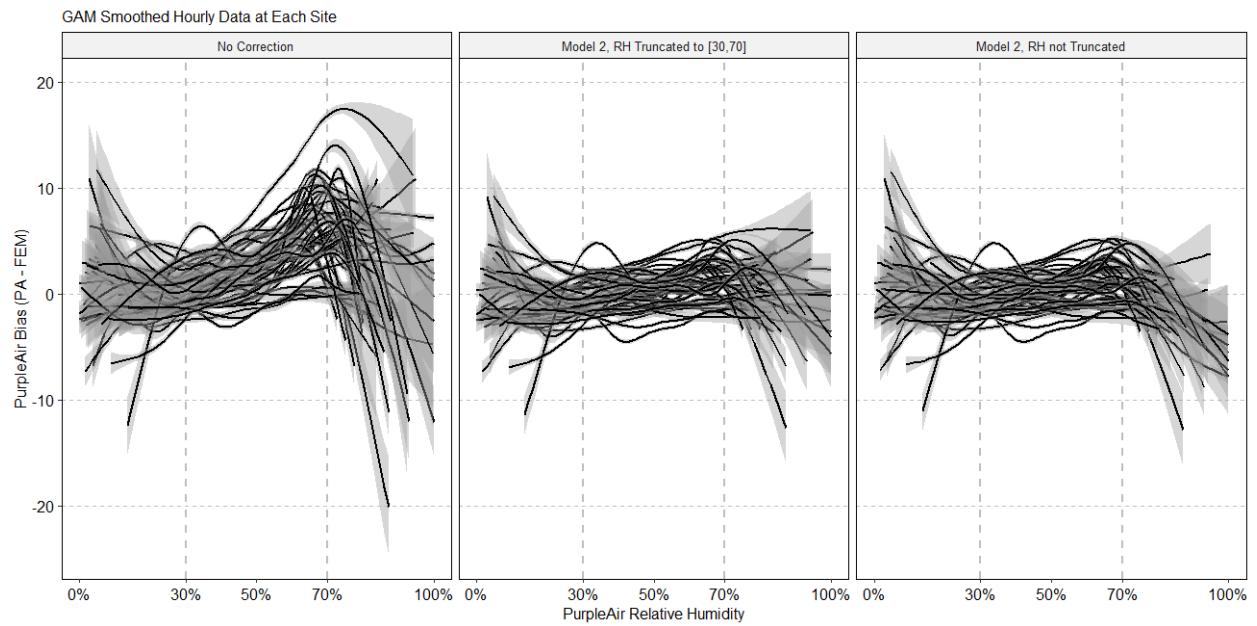


Figure S3. General additive models for each colocation site showing hourly PurpleAir – FEM bias as a function of RH for uncorrected, corrected and truncated, and corrected but not truncated PurpleAir data. Note the increase in variability within the bias outside of [30%, 70%] RH.

Individual Testing Site Performance

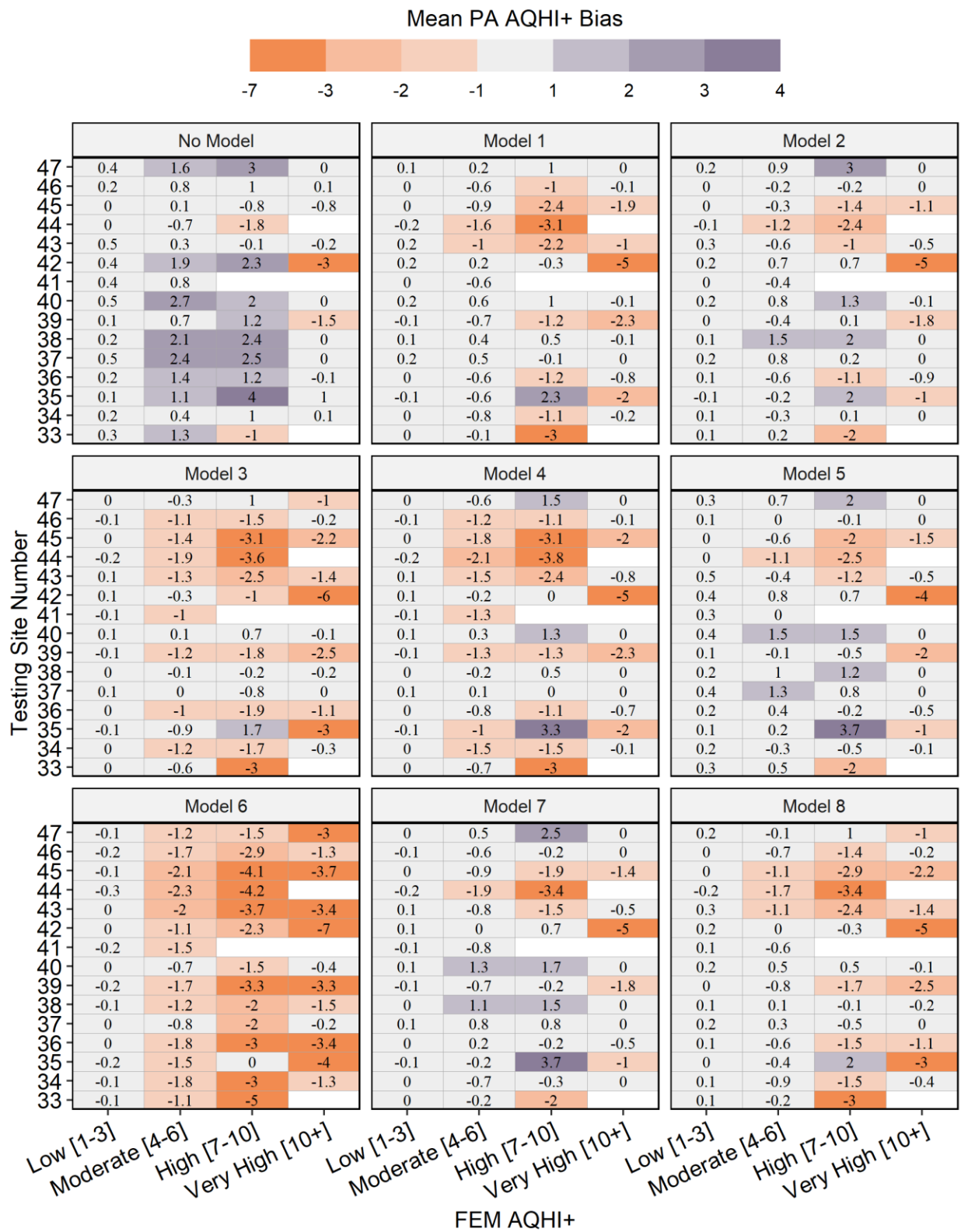


Figure S4. Mean PurpleAir AQHI+ bias for each correction model (including the raw data) at Federal Equivalent Method (FEM) AQHI+ levels at individual testing sites (See Table 1). A value at or near 0 is preferred, especially for higher AQHI+.