

Supplement of

“Impact of agricultural interventions on ammonia emissions and on PM_{2.5} concentrations in the UK: a local and regional modelling study”

By

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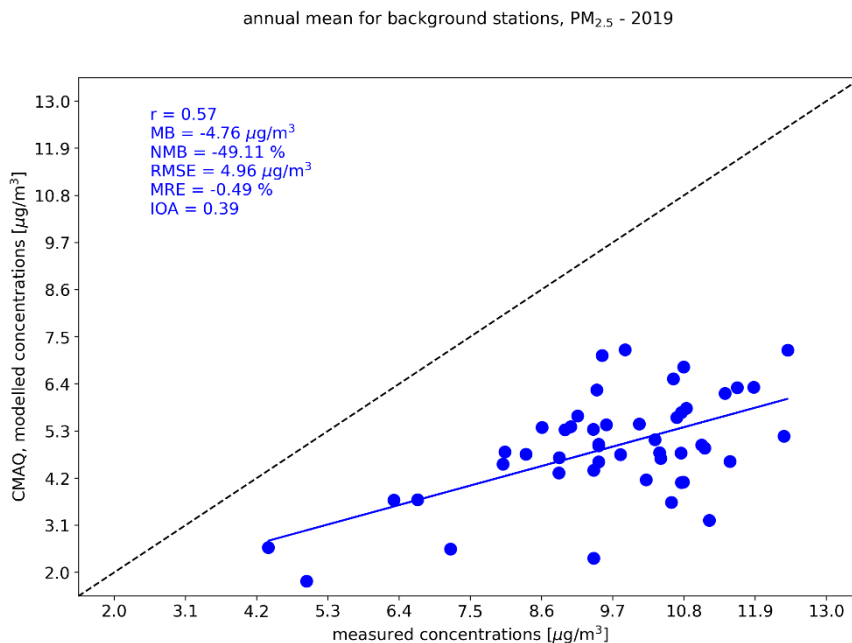


Figure S1. Comparison between annual measured concentrations with the modelled values in 2019 using the simulation with UK NH₃ emissions increased by 50%. Only the background stations with a data capture higher than 75% are used. Insert values are the Pearson correlation coefficient (R), the mean bias (MB), the normalized mean bias (NMB), the mean relative error (MRE), the root-mean-square error (RMSE), and the index of agreement (IOA). The blue line represents the linear fit and dashed black line is the 1:1 slope.

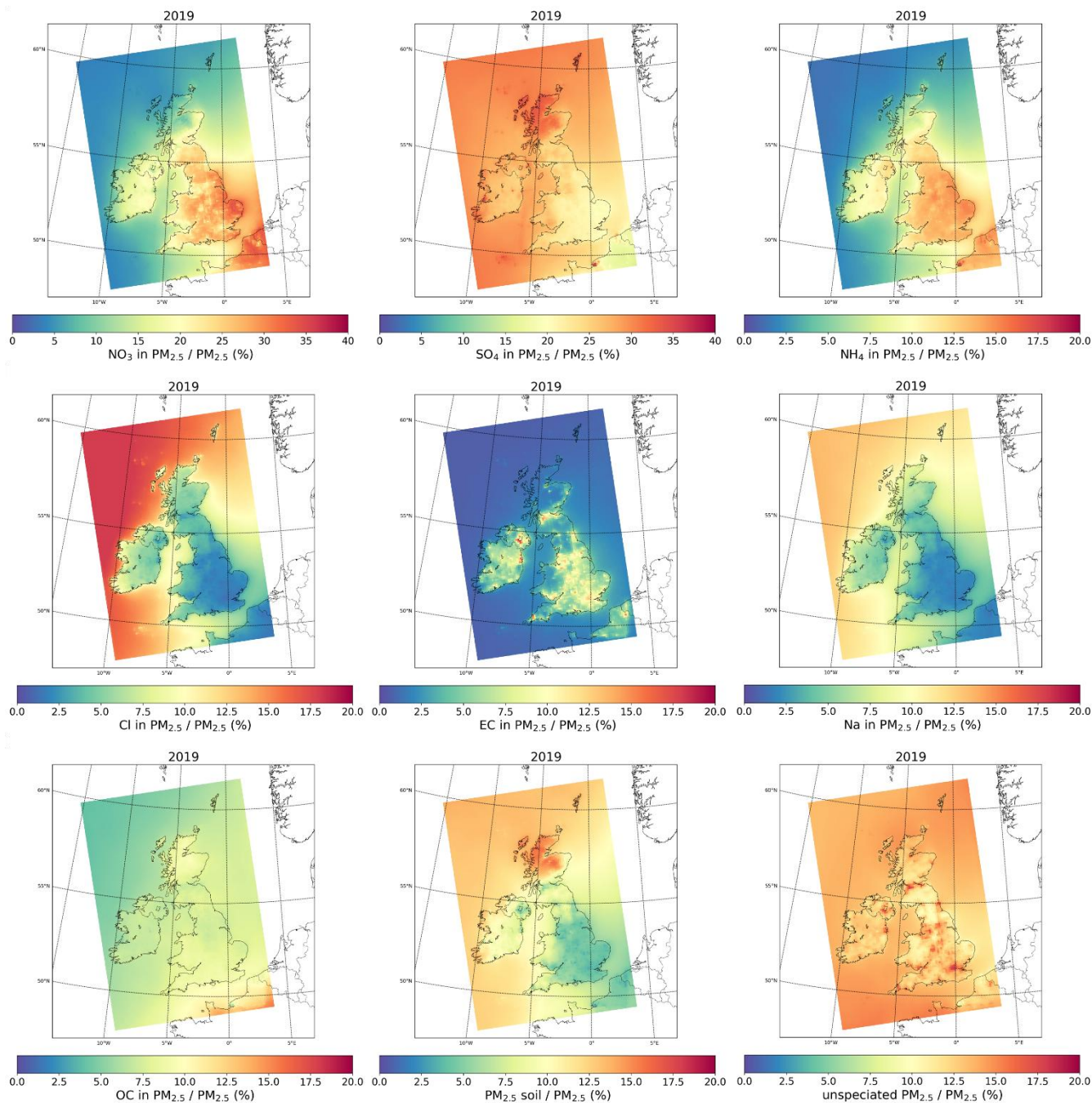


Figure S2. Composition of PM_{2.5} in percent for each component as defined and calculated by CMAQ for the 2019 simulation at 10 km × 10 km spatial resolution. This definition includes NO₃, SO₄, NH₄, Cl, EC, Na, OC soil and unspciated. Note the different colour scale for NO₃ and SO₄ compared to the other components.

Table S1. Name, coordinates, annual mean PM_{2.5} measured, and annual mean PM_{2.5} modelled concentrations in µg/m³ in 2019. The concentrations of the corresponding PM_{2.5} components in µg/m³ calculated by CMAQ are also provided.

site	Latitude (°)	Longitude (°)	PM _{2.5} Obs	PM _{2.5} CMAQ	NO ₃	NH ₄	EC	Cl	Na	OC	soil	unspeciated
Aberdeen	57.15736	-2.094278	7.19	2.45	0.32	0.23	0.28	0.09	0.1	0.19	0.18	0.41
Auchencorth Moss	55.79216	-3.2429	4.38	2.52	0.56	0.31	0.16	0.09	0.09	0.18	0.19	0.31
Barnstaple A39	51.074793	-4.041924	10.61	3.5	0.6	0.43	0.32	0.13	0.13	0.22	0.22	0.48
Belfast Centre	54.59965	-5.928833	8.61	5.09	1.16	0.66	0.53	0.09	0.1	0.4	0.22	0.79
Birmingham A4540 Roadside	52.476145	-1.874978	10.11	5.16	1.16	0.67	0.56	0.08	0.1	0.41	0.21	0.82
Birmingham Acocks Green	52.437165	-1.829999	9.16	5.28	0.9	0.63	0.68	0.15	0.13	0.41	0.22	0.83
Birmingham Ladywood	52.481346	-1.918235	10.79	4	0.96	0.5	0.26	0.12	0.13	0.36	0.23	0.53
Blackpool Marton	53.80489	-3.007175	10.76	4.09	1.01	0.54	0.29	0.11	0.11	0.33	0.22	0.53
Bristol St Paul's	51.462839	-2.584482	8.36	4.52	1.16	0.64	0.36	0.1	0.1	0.32	0.2	0.58
Camden Kerbside	51.54421	-0.175269	8	4.43	1.14	0.6	0.32	0.1	0.1	0.39	0.21	0.59
Cardiff Centre	51.48178	-3.17625	9.05	5.19	1.25	0.69	0.52	0.09	0.1	0.41	0.21	0.79
Carlisle Roadside	54.894834	-2.945307	9.41	2.22	0.29	0.23	0.17	0.11	0.11	0.17	0.19	0.31
Chatham Roadside	51.374264	0.54797	10.44	4.5	1.28	0.58	0.17	0.21	0.16	0.39	0.24	0.53
Chepstow A48	51.638094	-2.678731	6.32	3.6	0.62	0.39	0.45	0.09	0.1	0.24	0.22	0.63
Chesterfield Loundsley Green	53.244131	-1.454946	6.69	3.64	0.58	0.39	0.47	0.1	0.1	0.25	0.2	0.66
Chesterfield Roadside	53.231751	-1.456928	10.76	4.72	1.32	0.68	0.34	0.1	0.1	0.35	0.21	0.59
Chilbolton Observatory	51.149617	-1.438228	9.82	4.58	1.18	0.62	0.38	0.09	0.09	0.38	0.21	0.64
Christchurch Barrack Road	50.735454	-1.780888	12.35	4.87	1.05	0.64	0.49	0.1	0.1	0.35	0.22	0.75
Coventry Allesley	52.411628	-1.560189	11.12	4.75	1.31	0.67	0.37	0.09	0.09	0.36	0.2	0.61
Derry Rosemount	55.002818	-7.331179	11.62	6.14	1.51	0.81	0.67	0.09	0.11	0.45	0.23	0.98
Eastbourne	50.805778	0.271611	10.63	6.32	1.38	0.79	0.75	0.08	0.11	0.51	0.23	1.14
Edinburgh St Leonards	55.945589	-3.182186	10.8	6.62	1.49	0.84	0.77	0.09	0.11	0.52	0.23	1.18
Glasgow High Street	55.860936	-4.238214	9.89	6.98	1.39	0.84	0.9	0.08	0.11	0.56	0.23	1.38
Glasgow Townhead	55.865782	-4.243631	9.54	6.85	1.43	0.85	0.87	0.08	0.1	0.54	0.22	1.29
Grangemouth	56.010319	-3.704399	11.88	6.11	1.34	0.76	0.72	0.08	0.1	0.53	0.23	1.06

Greenock A8 Roadside	55.944079	-4.734421	12.4	6.98	1.48	0.86	0.9	0.09	0.11	0.53	0.23	1.32
Hull Freetown	53.74878	-0.341222	4.97	1.7	0.27	0.14	0.05	0.12	0.12	0.13	0.19	0.21
Inverness	57.481308	-4.241451	11.44	5.76	1.08	0.74	0.7	0.1	0.11	0.42	0.22	0.98
Leamington Spa	52.28881	-1.533119	10.22	4.02	0.95	0.53	0.34	0.1	0.1	0.31	0.21	0.56
Leeds Centre	53.80378	-1.546472	8.87	4.16	0.79	0.51	0.47	0.09	0.1	0.32	0.2	0.67
Leeds Headingley Kerbside	53.819972	-1.576361	9.48	4.95	0.98	0.63	0.5	0.11	0.11	0.42	0.22	0.75
Leicester University	52.619904	-1.127182	11.51	4.43	1.27	0.63	0.3	0.09	0.09	0.36	0.2	0.54
Liverpool Speke	53.34633	-2.844333	10.35	5.03	1.62	0.76	0.3	0.11	0.1	0.38	0.21	0.57
London Bexley	51.46603	0.184806	10.83	5.58	1.29	0.75	0.61	0.09	0.1	0.41	0.21	0.87
London Bloomsbury	51.52229	-0.125889	8.88	4.54	1.18	0.61	0.37	0.09	0.09	0.4	0.21	0.61
London Eltham	51.45258	0.070766	11.19	3.09	0.56	0.32	0.18	0.16	0.15	0.27	0.23	0.45
London Harlington	51.48879	-0.441614	8.96	5.24	1.15	0.66	0.47	0.12	0.13	0.45	0.23	0.79
London Honor Oak Park	51.449674	-0.037418	9.4	4.94	1.01	0.64	0.54	0.11	0.11	0.36	0.21	0.75
London N. Kensington	51.52105	-0.213492	10.76	5.55	1.35	0.72	0.54	0.09	0.11	0.49	0.23	0.83
London Teddington Bushy Park	51.425286	-0.345606	9.45	5.84	1.06	0.73	0.75	0.1	0.11	0.43	0.22	1.02
London Westminster	51.49467	-0.131931	10.42	4.54	1.03	0.61	0.42	0.09	0.1	0.33	0.22	0.65
Lough Navar	54.43951	-7.900328	9.6	5.32	1.13	0.67	0.56	0.1	0.11	0.46	0.21	0.84
Manchester Piccadilly	53.48152	-2.237881	10.69	5.44	1.36	0.72	0.5	0.08	0.11	0.48	0.23	0.79
Middlesbrough	54.569297	-1.220874	9.48	4.32	1.18	0.63	0.3	0.1	0.09	0.32	0.2	0.53
Narberth	51.782616	-4.69237	9.41	4.22	0.82	0.5	0.46	0.1	0.11	0.31	0.22	0.68
Newport	51.601203	-2.977281	9.48	4.51	1.01	0.61	0.39	0.11	0.11	0.34	0.21	0.62
Northampton Spring Park	52.272257	-0.916605	8.03	4.51	0.87	0.59	0.39	0.11	0.12	0.34	0.23	0.65
Norwich Lakenfields	52.614823	1.302686	11.07	4.83	1.22	0.67	0.43	0.1	0.1	0.36	0.21	0.67
All mean	-	-	9.69	4.74	1.06	0.61	0.46	0.10	0.11	0.37	0.22	0.72