Evaluation of WRF/Chem model (v3.9.1.1) real-time air quality forecasts over the Eastern Mediterranean: Suppement

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Table S1. Pearson's correlation coefficient (R), mean bias (MB), normalized mean bias (NMB), and root mean squared error (RMSE) of hourly values of nitrogen dioxide (NO_2), ozone (O_3), and fine particulate matter ($PM2.5$) averaged over the background, residential, traffic, and industrial stations during winter and summer for the third day of forecast.

		Winter								Summer							
		WRF/Chem				CAMS				WRF/Chem				CAMS			
		R	MB	NMB	RMSE	R	MB	NMB	RMSE	R	MB	NMB	RMSE	R	MB	NMB	RMSE
NO2 (ppbV)	Background	0.12	0.67	0.39	2.19	0.15	-0.90	-0.53	1.34	0.03	-0.42	-0.45	0.85	-0.17	-0.55	-0.59	0.91
	Residential	0.55	-1.05	-0.06	11.11	0.41	-14.11	-0.82	17.63	0.41	-3.25	-0.44	4.98	0.03	-6.20	-0.83	7.36
	Traffic	0.35	-4.89	-0.32	12.15	0.26	-12.89	-0.86	16.43	0.16	-3.78	-0.38	8.36	0.10	-6.49	-0.78	8.80
	Industrial	0.13	4.08	0.74	11.95	0.15	-3.72	-0.67	5.60	0.19	7.03	0.96	15.51	0.20	-5.13	-0.69	7.47
O3 (ppbV)	Background	0.15	2.56	0.06	10.16	0.11	-2.85	-0.07	7.74	0.26	2.58	0.05	9.32	0.23	-10.72	-0.20	13.93
	Residential	0.50	9.81	0.48	16.46	0.47	14.95	0.73	18.69	0.40	6.52	0.14	12.31	0.49	-1.29	-0.03	10.08
	Traffic	0.35	12.65	0.61	18.01	0.32	15.49	0.75	19.26	0.30	10.77	0.29	15.72	0.46	5.72	0.16	11.57
	Industrial	0.06	5.57	0.18	14.53	0.27	8.60	0.28	12.16	0.22	6.32	0.19	17.05	0.58	10.14	0.30	14.16
PM2.5 ($\mu g/m^3$)	Background	0.27	3.88	0.54	10.09	0.19	1.22	0.17	6.08	0.00	-1.83	-0.16	7.40	0.16	-1.56	-0.14	6.12
	Traffic	0.19	-4.93	-0.28	15.14	0.22	-8.45	-0.48	15.28	-0.01	-5.31	-0.31	9.27	0.30	-5.42	-0.33	8.03
	Industrial	0.28	1.85	0.17	9.60	0.21	-1.66	-0.16	7.02	0.00	-2.83	-0.19	8.30	0.25	-2.85	-0.19	6.49

Table S2. Pearson's correlation coefficient (R), mean bias (MB), normalized mean bias (NMB), and root mean squared error (RMSE) of hourly values of nitrogen dioxide (NO_2), ozone (O_3), and fine particulate matter ($PM2.5$) at all stations during winter and summer for the first day of forecast.

		Winter								Summer							
		WRF/Chem				CAMS				WRF/Chem				CAMS			
		R	MB	NMB	RMSE	R	MB	NMB	RMSE	R	MB	NMB	RMSE	R	MB	NMB	RMSE
NO2 (ppbV)	AYMBGR	0.12	0.62	0.36	2.18	0.39	-0.89	-0.52	1.25	0.03	-0.42	-0.45	0.85	-0.15	-0.57	-0.61	0.91
	LARTRA	0.40	-3.61	-0.22	11.83	0.46	-14.03	-0.86	17.25	0.14	-2.06	-0.23	8.44	0.22	-6.66	-0.75	8.57
	LIMTRA	0.44	-10.80	-0.58	15.31	0.43	-15.18	-0.82	18.95	0.28	-7.90	-0.63	11.55	0.58	-8.44	-0.68	11.21
	MARIND	0.10	4.61	0.87	12.70	0.30	-3.64	-0.69	5.32	0.11	6.92	0.87	14.92	0.06	-6.06	-0.76	7.78
	NICRES	0.55	-1.13	-0.07	11.11	0.59	-14.01	-0.81	17.27	0.41	-3.25	-0.44	4.98	0.16	-6.26	-0.84	7.36
	NICTRA	0.42	-3.84	-0.20	12.86	0.46	-16.35	-0.84	19.05	0.35	-6.01	-0.62	8.44	0.02	-8.50	-0.88	10.60
	PAFTRA	0.41	-2.45	-0.24	9.26	0.54	-8.59	-0.86	12.62	0.12	-0.20	-0.05	5.57	0.38	-2.84	-0.73	5.72
	PARTRA	0.13	-3.65	-0.33	11.31	0.40	-9.99	-0.91	13.24	-0.07	-2.78	-0.39	7.79	-0.05	-6.28	-0.88	7.45
	ZYGIND	0.18	3.83	0.66	11.50	0.34	-3.73	-0.65	5.59	0.27	7.00	1.04	15.93	0.36	-4.36	-0.65	7.27
O3 (ppbV)	AYMBGR	0.16	2.66	0.07	10.18	0.44	-3.09	-0.08	6.57	0.26	2.67	0.05	9.34	0.62	-10.23	-0.19	12.15
	LARTRA	0.41	10.39	0.46	16.26	0.54	14.98	0.67	17.87	0.36	8.37	0.22	14.81	0.67	6.28	0.17	10.77
	LIMTRA	0.35	19.73	1.03	23.20	0.47	19.43	1.02	22.10	0.36	17.18	0.54	22.11	0.73	11.30	0.35	15.47
	MARIND	0.01	5.58	0.18	14.29	0.48	8.12	0.26	10.55	0.15	5.95	0.18	15.52	0.60	10.26	0.30	13.18
	NICRES	0.49	9.91	0.48	16.55	0.65	14.41	0.70	17.37	0.40	6.58	0.15	12.33	0.67	-0.93	-0.02	8.24
	NICTRA	0.47	14.77	0.94	19.97	0.61	19.21	1.23	21.52	0.37	10.56	0.25	15.41	0.63	3.01	0.07	9.65
	PAFTRA	0.29	8.86	0.28	14.63	0.51	8.70	0.28	12.60	0.10	7.38	0.17	11.58	0.53	3.29	0.07	7.37
	PARTRA	0.22	9.85	0.35	16.34	0.52	12.90	0.46	16.14	0.30	10.88	0.29	15.13	0.62	7.06	0.19	9.99
	ZYGIND	0.07	5.54	0.18	14.97	0.52	8.17	0.27	11.36	0.27	6.97	0.21	18.73	0.73	10.64	0.32	14.37
PM2.5 ($\mu g/m^3$)	AYMBGR	0.27	3.87	0.54	10.15	0.48	0.76	0.11	4.47	-0.01	-1.85	-0.16	7.45	0.42	-1.79	-0.16	7.45
	LARTRA	0.17	-3.82	-0.25	12.82	0.35	-6.89	-0.45	11.87	0.06	-6.96	-0.38	10.33	0.57	-6.35	-0.35	8.07
	NICTRA	0.22	-7.91	-0.40	18.80	0.33	-11.03	-0.56	19.23	-0.15	-3.15	-0.21	8.61	0.58	-4.68	-0.32	6.80
	PARTRA	0.18	-3.30	-0.19	13.96	0.28	-8.35	-0.48	13.96	-0.03	-6.22	-0.37	9.60	0.61	-5.60	-0.33	7.28
	ZYGIND	0.29	1.82	0.17	9.69	0.48	-1.76	-0.17	5.66	-0.02	-2.96	-0.20	8.46	0.58	-3.08	-0.20	5.57

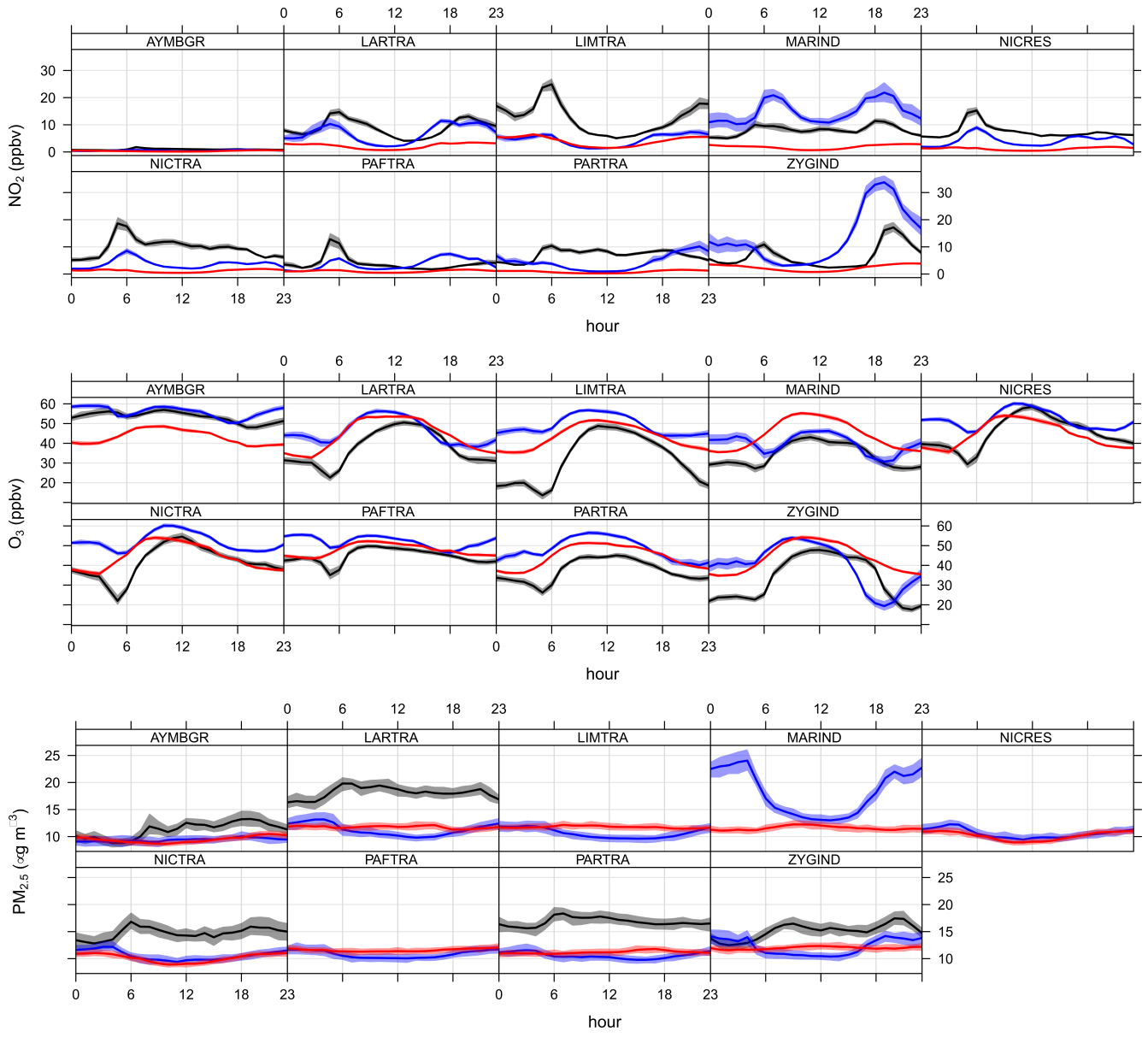

Figure S1. Diurnal variation of NO_2 (1st row), O_3 (2nd row), and $PM2.5$ (3rd row) in observations (grey lines), the WRF/Chem (blue lines) and the CAMS (red lines) forecasts during summer.