

Effects of evaporative emissions control measurements on ozone concentrations in Brazil

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1. Numerical simulation of temperature

A representative air quality simulation implies a good representation of meteorological variables. The air temperature was simulated and compared in several air quality stations in the Metropolitan Area of São Paulo (MASP). We found good agreement between our simulation and observations as shown in Figure S1, with a correlation which reached up to a value of 0.95, as shown in Table S1.

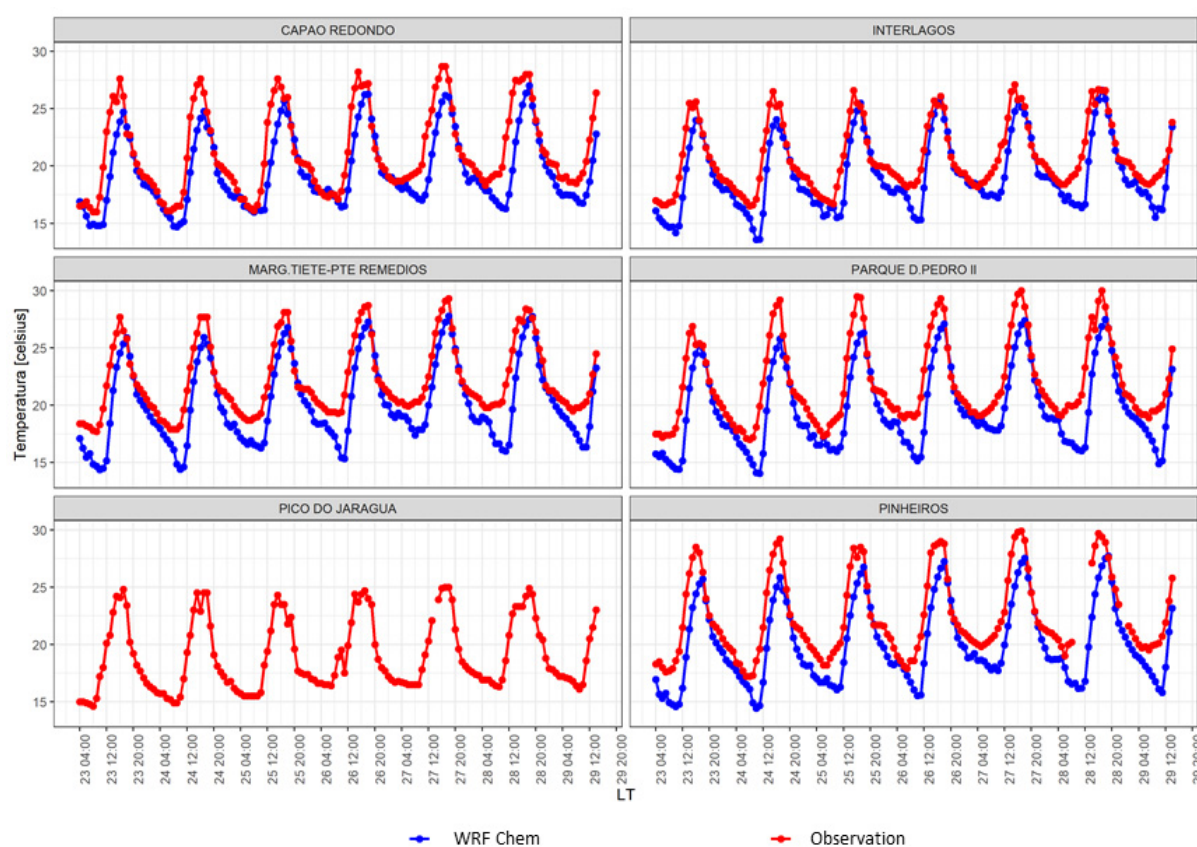


Figure S1. Temperature at 2 m observed in red and simulated in blue.

2. Wind speed

The simulated wind shows in general good alignment as shown in Figure S2. In some cases, the simulated wind is higher than the observed, favoring pollutant dispersion.

Simulating wind speed is a challenge inherent to mesoscale phenomena. The fact is that the three-dimensional configuration of cities, with buildings, streets, and other elements, is not explicitly represented in a grid-spacing of 3×3 km. Despite this, we could obtain a correlation of wind speed of 0.72 as at Osasco Station.

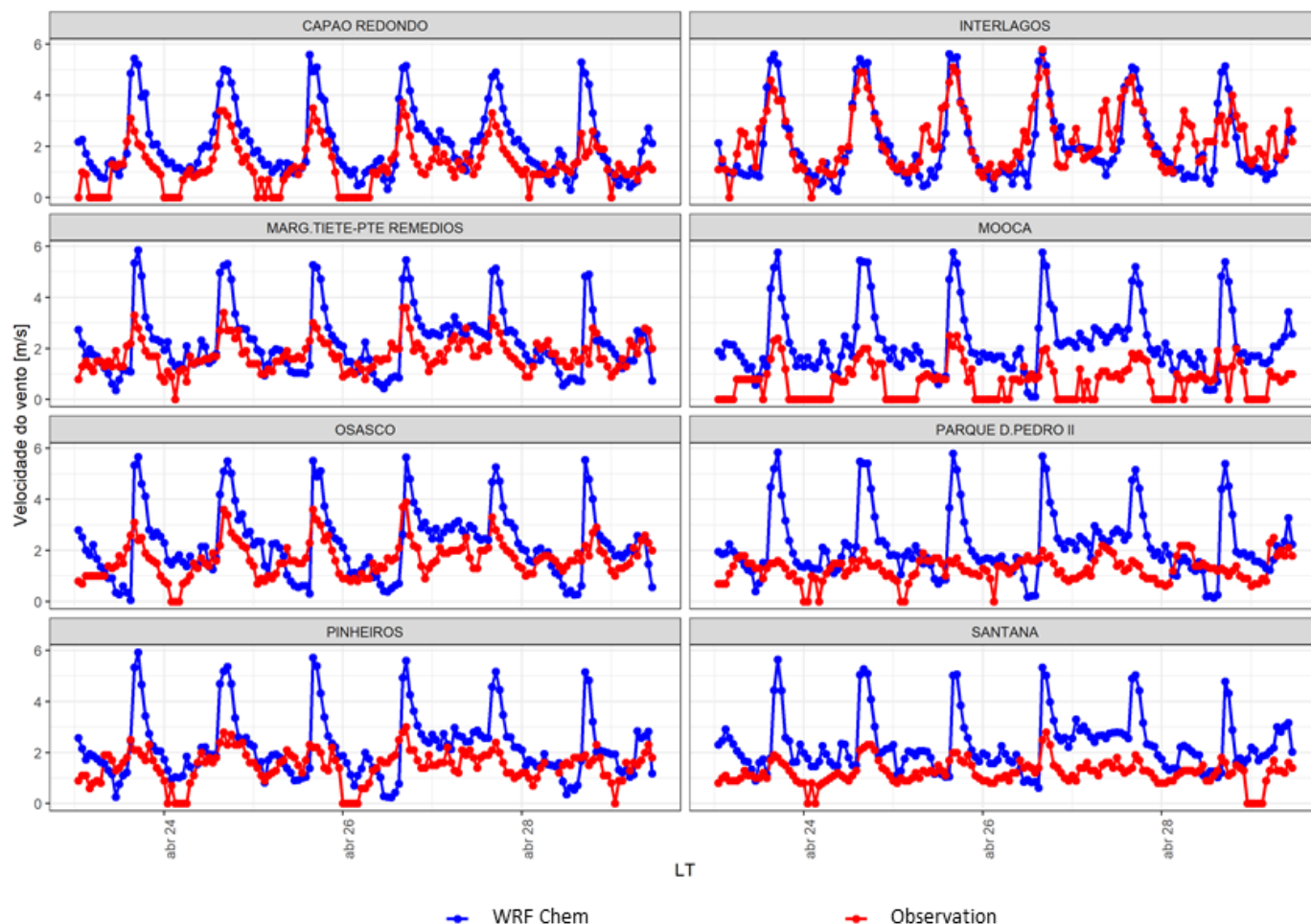


Figure S2. Wind speed at 2 m observed in red and simulated in blue.

3. Performance

Table S1. Indices of correlations, mean bias (MB), standard deviation (SD), and root mean square deviation (RMSE).

Parameter	Station	Correlation	MB	SD	RMSE
Temperature	PINHEIROS	0.95	2.77	1.17	3.01
	PARQUE D. PEDRO II	0.94	2.59	1.3	2.89
	INTERLAGOS	0.83	0.42	1.98	2.02
	CAPAO REDONDO	0.86	1.4	1.93	2.38
	MARG.TIETE-PTE REMEDIOS	0.94	2.11	1.23	2.44
Wind Speed	SANTANA	0.67	-1.01	1.12	1.51
	OSASCO	0.72	-0.53	1.12	1.24
	MOOCA	0.51	-1.67	1.1	2
	PINHEIROS	0.55	-0.87	1.11	1.41
	PARQUE D. PEDRO II	0.08	-1.17	1.41	1.83
	INTERLAGOS	0.63	0.01	1.09	1.09

	CAPAO REDONDO	0.68	-1.04	0.94	1.4
	MARG.TIETE-PTE REMEDIOS	0.66	-0.66	0.86	1.08
CO	CERQUEIRA CESAR	0.52	0.18	0.19	0.26
	PINHEIROS	0.35	0.07	0.25	0.26
	PARQUE D. PEDRO II	0.43	0.1	0.14	0.17
	MARG.TIETE-PTE REMEDIOS	0.41	0.24	0.22	0.33
	CID.UNIVERSITARIA-USP- IPEN	0.73	14.06	24.89	28.53
NO _x	NOSSA SENHORA DO Ó	0.72	5.26	23.84	24.36
	SANTANA	0.77	12.92	20.09	23.88
	IBIRAPUERA	0.82	33.57	26.97	43.01
	MOOCA	0.76	33.06	23.19	40.35
	PINHEIROS	0.83	16.32	21.67	27.08
	PARQUE D. PEDRO II	0.76	26.69	22.38	34.8
	PARELHEIROS	0.75	42.44	25.85	49.66
	ITAQUERA	0.81	23.27	16.58	28.54
	SANTO AMARO	0.83	17.89	22.47	28.71
	INTERLAGOS	0.78	36.5	27.42	45.61
	ITAIM PAULISTA	0.75	20.96	15.56	26.1
	CID.UNIVERSITARIA-USP- IPEN	0.76	15.74	23.64	28.53
O ₃	NOSSA SENHORA DO Ó	0.75	7.94	21.43	22.8
	SANTANA	0.79	14.37	19.45	24.17
	IBIRAPUERA	0.83	33.99	27.13	43.44
	MOOCA	0.76	33.07	23.21	40.36
	PINHEIROS	0.83	16.4	21.73	27.18
	PARQUE D. PEDRO II	0.76	27.03	22.6	35.2
	PARELHEIROS	0.75	43.28	26.38	50.65
	ITAQUERA	0.81	23.79	16.76	29.08
	SANTO AMARO	0.83	19.88	22.66	30.13
	INTERLAGOS	0.78	36.92	27.94	46.26
	ITAIM PAULISTA	0.75	22	14.37	26.27