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Supplement of

Contributions of mobile, stationary and biogenic sources to air pollution in the Amazon rainforest: a numerical study with the WRF-Chem model

Sameh A. Abou Rafee et al.

Correspondence to: Sameh A. Abou Rafee (samehabou@gmail.com) and Jorge A. Martins (jmartins@utfpr.edu.br)

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Table S1. Total emissions (tons per year) for PM, SO_2, NO_x, CO and VOCs for the mobile and stationary sources.

Name	Lat	Long	Fuel type	Power Generation (MW)	Emissions (tons per year)				
					PM	SO_2	NO_x	CO	VOCs
Anamã	-3.62	-61.45	Natural Gas	1.30	0.34	0.03	8.19	3.19	0.57
Anori	-3.74	-61.66	Natural Gas	2.74	0.72	0.07	17.29	6.73	1.20
Codajás	-3.84	-62.06	Natural Gas	3.66	0.96	0.09	23.06	8.97	1.60
Jaraqui	-3.12	-59.97	Natural Gas	156.65	41.17	3.84	988.00	384.22	68.61
Manauara	-3.05	-60.02	Natural Gas	85.38	22.44	2.09	538.51	209.42	37.40
Gás Caapiranga	-3.32	-61.21	Natural Gas	2.20	0.58	0.05	13.88	5.40	0.96
Gás Anori	-4.26	-61.84	Natural Gas	3.30	0.87	0.08	20.81	8.09	1.45
Gás Anamã	-3.58	-61.46	Natural Gas	3.30	0.87	0.08	20.81	8.09	1.45
Aparecida Parte I	-3.13	-60.03	Fuel Oil	240.74	379.60	10839.66	2361.95	358.51	105.44
Cristiano Rocha	-2.89	-60.03	Fuel Oil	85.38	134.63	3844.35	837.68	127.15	37.40
Mauá	-3.12	-59.93	Fuel Oil	552.56	871.28	24879.97	5421.32	822.88	242.02
Ponta Negra	-3.10	-60.02	Fuel Oil	85.38	134.63	3844.35	837.68	127.15	37.40
Reman	-3.15	-59.95	Fuel Oil	6.40	10.09	288.17	62.79	9.53	2.80
Tambaqui	-3.11	-59.94	Fuel Oil	93.05	146.71	4189.53	912.89	138.56	40.75
Aeroporto Internacional Eduardo Gomes	-3.03	-60.05	Diesel	1.01	2.56	28.26	84.77	2.32	1.77
Anamã	-3.58	-61.41	Diesel	1.57	3.98	43.90	131.69	3.60	2.74
Anori	-3.75	-61.66	Diesel	4.33	11.00	121.38	364.14	9.96	7.59
Aparecida Parte II	-3.13	-60.03	Diesel	8.40	21.34	235.47	706.41	19.32	14.72
Aparecida Parte III	-3.13	-60.03	Diesel	2.40	6.10	67.28	201.83	5.52	4.20
Arara	-3.42	-61.37	Diesel	0.32	0.82	9.08	27.25	0.75	0.57
Arixi	-3.58	-61.41	Diesel	0.09	0.22	2.38	7.15	0.20	0.15
Autazes	-3.58	-59.13	Diesel	6.04	15.35	169.37	508.11	13.90	10.59
Axinim	-4.05	-59.37	Diesel	0.46	1.16	12.75	38.26	1.05	0.80
Axinim	-4.58	-61.88	Diesel	0.10	0.25	2.80	8.41	0.23	0.18
Beruri	-3.90	-61.38	Diesel	3.10	7.87	86.79	260.36	7.12	5.42
Boa Vista do Ramos	-2.97	-57.59	Diesel	2.06	5.24	57.80	173.41	4.74	3.61
Borba	-4.39	-59.60	Diesel	6.39	16.23	179.12	537.37	14.70	11.20
Caapiranga	-3.33	-61.21	Diesel	1.79	4.54	50.07	150.20	4.11	3.13
Campinas	-3.31	-61.11	Diesel	0.28	0.71	7.85	23.55	0.64	0.49
Carauari	-1.82	-61.12	Diesel	5.46	13.86	152.94	458.83	12.55	9.56
Careiro da Várzea	-3.20	-59.77	Diesel	2.50	6.35	70.08	210.24	5.75	4.38

Castanho	-3.82	-60.37	Diesel	6.00	15.24	168.19	504.58	13.80	10.51
Caviana	-3.76	-61.16	Diesel	0.43	1.09	12.05	36.16	0.99	0.75
Cidade Nova	-3.04	-60.03	Diesel	15.60	39.63	437.30	1311.90	35.88	27.33
CINDACTA IV	-3.02	-60.05	Diesel	2.50	6.35	70.08	210.24	5.75	4.38
Codajás	-3.84	-62.06	Diesel	5.20	13.21	145.77	437.30	11.96	9.11
DTCEA-MN	-3.03	-60.05	Diesel	1.00	2.54	28.03	84.10	2.30	1.75
DTCEA-MN II	-3.09	-60.06	Diesel	0.40	1.02	11.21	33.64	0.92	0.70
DTCEA-SI	-3.04	-60.05	Diesel	0.41	1.04	11.44	34.31	0.94	0.71
Electron (TG)	-3.13	-59.93	Diesel	120.00	304.85	3363.84	10091.52	276.00	210.24
Flores	-3.08	-60.02	Diesel	99.55	252.90	2790.59	8371.76	228.97	174.41
Hermasa	-3.13	-58.48	Diesel	7.59	19.28	212.76	638.29	17.46	13.30
Itacoatiara	-3.13	-58.45	Diesel	21.09	53.58	591.25	1773.75	48.51	36.95
Itapeaçu	-2.95	-58.06	Diesel	0.79	2.00	22.12	66.35	1.81	1.38
Itapiranga	-2.75	-58.02	Diesel	3.07	7.81	86.14	258.43	7.07	5.38
Itapuru	-4.47	-61.89	Diesel	0.09	0.23	2.52	7.57	0.21	0.16
Itautinga	-3.09	-59.99	Diesel	6.56	16.67	183.89	551.67	15.09	11.49
Jacaré	-3.60	-60.82	Diesel	0.43	1.10	12.17	36.50	1.00	0.76
Lindóia	-3.14	-58.42	Diesel	0.32	0.81	8.97	26.91	0.74	0.56
Manacapuru	-3.30	-60.62	Diesel	23.69	60.19	664.13	1992.40	54.49	41.51
Manaquiri	-3.43	-60.46	Diesel	3.08	7.82	86.34	259.02	7.08	5.40
Mauá Parte II Bloco Distrito	-3.02	-60.05	Diesel	40.00	101.62	1121.28	3363.84	92.00	70.08
Mauá Parte III Bloco Iranduba	-3.12	-60.26	Diesel	50.00	127.02	1401.60	4204.80	115.00	87.60
Maués	-3.40	-57.72	Diesel	11.67	29.65	327.13	981.40	26.84	20.45
Murituba	-3.86	-62.48	Diesel	0.26	0.66	7.29	21.86	0.60	0.46
Nova Olinda do Norte	-3.89	-59.09	Diesel	4.91	12.47	137.64	412.91	11.29	8.60
Novo Airão	-2.62	-60.94	Diesel	4.08	10.37	114.43	343.28	9.39	7.15
Novo Céu	-3.39	-59.27	Diesel	0.85	2.16	23.83	71.48	1.96	1.49
Novo Remanso	-3.22	-59.02	Diesel	2.30	5.84	64.47	193.42	5.29	4.03
Rio Preto da Eva	-2.70	-59.70	Diesel	3.20	8.13	89.70	269.11	7.36	5.61
Santana do Uatumã	-2.55	-57.88	Diesel	0.08	0.20	2.24	6.73	0.18	0.14
São José	-3.12	-60.03	Diesel	34.80	88.41	975.51	2926.54	80.04	60.97
São Sebastião do Uatumã	-2.57	-57.87	Diesel	2.18	5.55	61.22	183.67	5.02	3.83
SIAT-MN	-3.03	-60.04	Diesel	0.26	0.67	7.40	22.20	0.61	0.46
Silves	-2.83	-58.33	Diesel	2.62	6.66	73.50	220.50	6.03	4.59
Terra Nova	-3.10	-59.73	Diesel	0.05	0.13	1.40	4.20	0.12	0.09
Tuiué	-3.69	-61.06	Diesel	0.57	1.44	15.92	47.77	1.31	1.00
Urucará	-2.53	-57.76	Diesel	3.75	9.53	105.12	315.36	8.63	6.57

Urucurituba (Tabocal)	-3.13	-58.16	Diesel	2.37	6.02	66.44	199.31	5.45	4.15
Vila Augusto Monte Negro	-3.13	-58.15	Diesel	0.45	1.14	12.61	37.84	1.04	0.79
Vila Sacambu	-3.28	-60.93	Diesel	0.36	0.92	10.15	30.44	0.83	0.63
Vila Urucurituba	-3.55	-58.93	Diesel	0.28	0.71	7.85	23.55	0.64	0.49
VOR-Tarumã	-3.04	-60.02	Diesel	0.04	0.10	1.12	3.36	0.09	0.07
Total					3089.2	62726.3	56566.7	3435	1506.2

Name	**Lat**	**Long**	**Average production (million liters per day)**	**Emissions (tons per year)**				
				PM	**SO_2**	**NO_x**	**CO**	**VOCs**
Issac Sabbá refinery (REMAN).	-3.15	-59.95	40.8	452.09	8891.01	4219.46	1356.26	512.4

Vehicle type	**Emissions (tons per year)**				
	PM	**SO_2**	**NO_x**	**CO**	**VOCs**
Light-duty	662.89	110.28	1615.80	51259.30	18301.22
Heavy-duty	1100.35	1525.49	24532.84	12378.96	6201.98

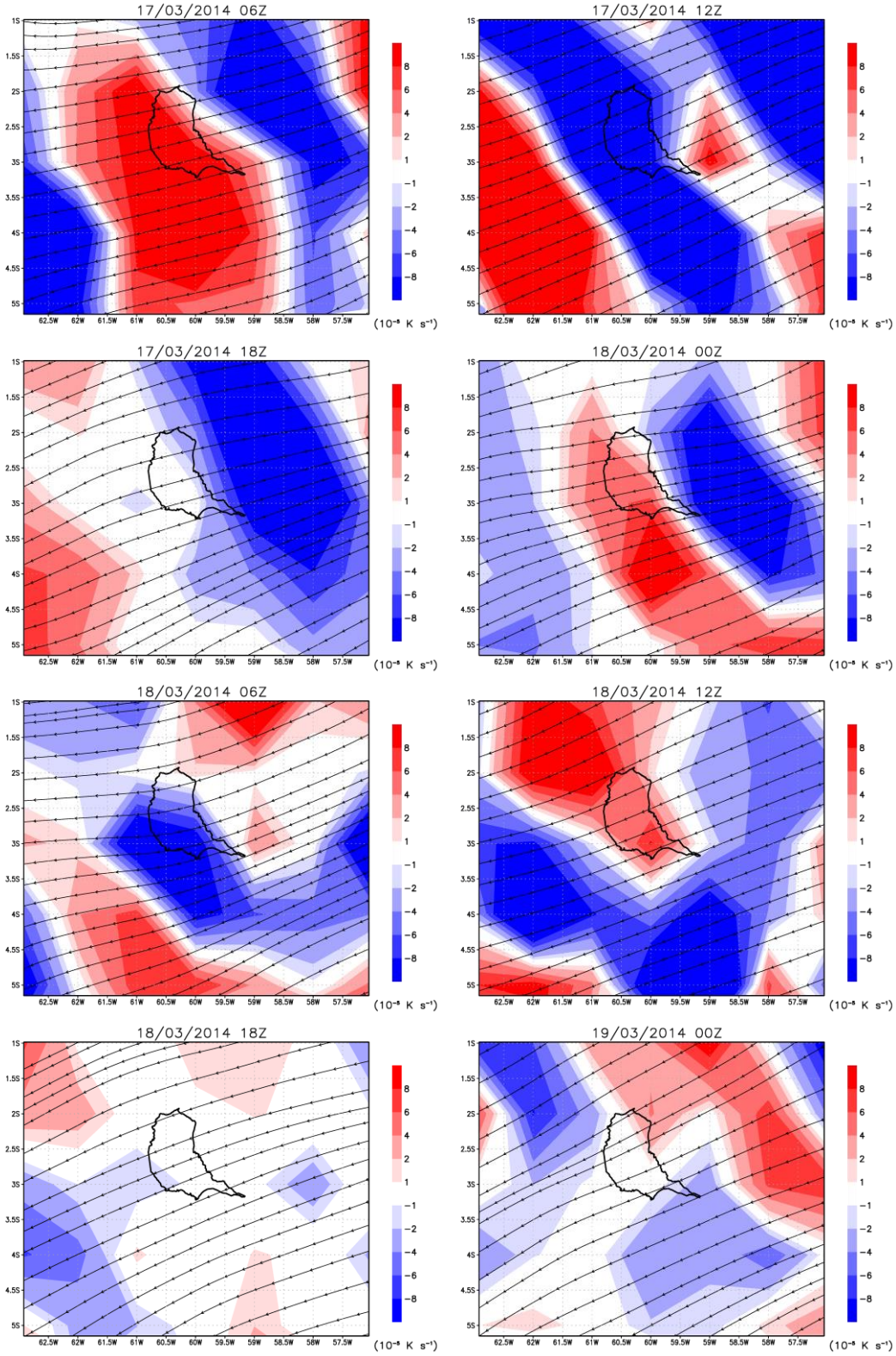

Figure S1. Spatial fields of streamlines and advection of equivalent potential temperature in 925 hPa. The black contour line shows the delimitation of the city of Manaus.

Figure S2. Map of fire outbreaks in Brazil and inside the studied grid during the simulation period.

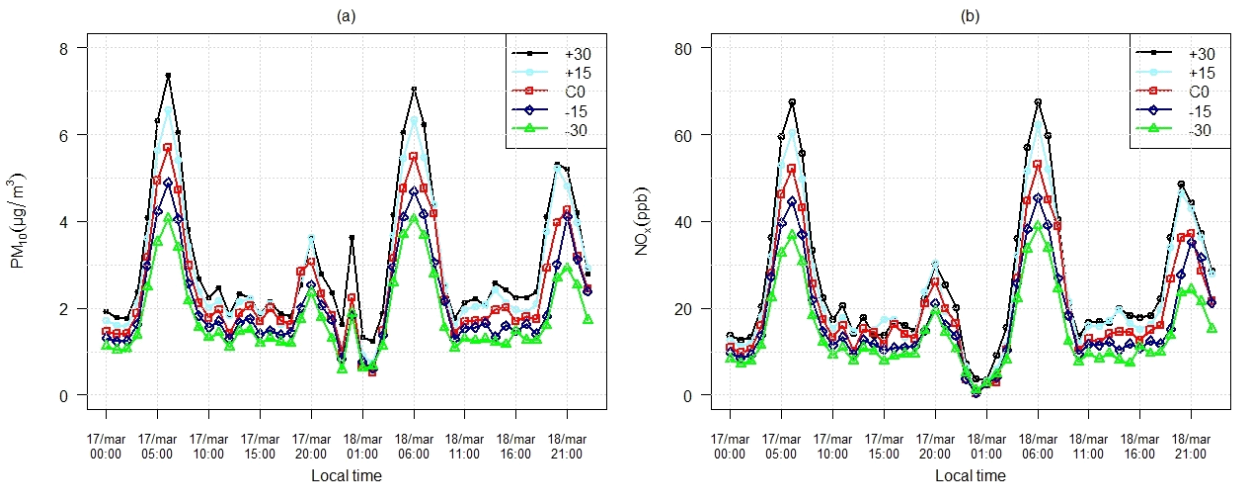

Figure S3. Temporal evolution of concentration (a) PM_{10} and (b) NO_x, for simulated of variations in emission of ± 15% and ± 30%.

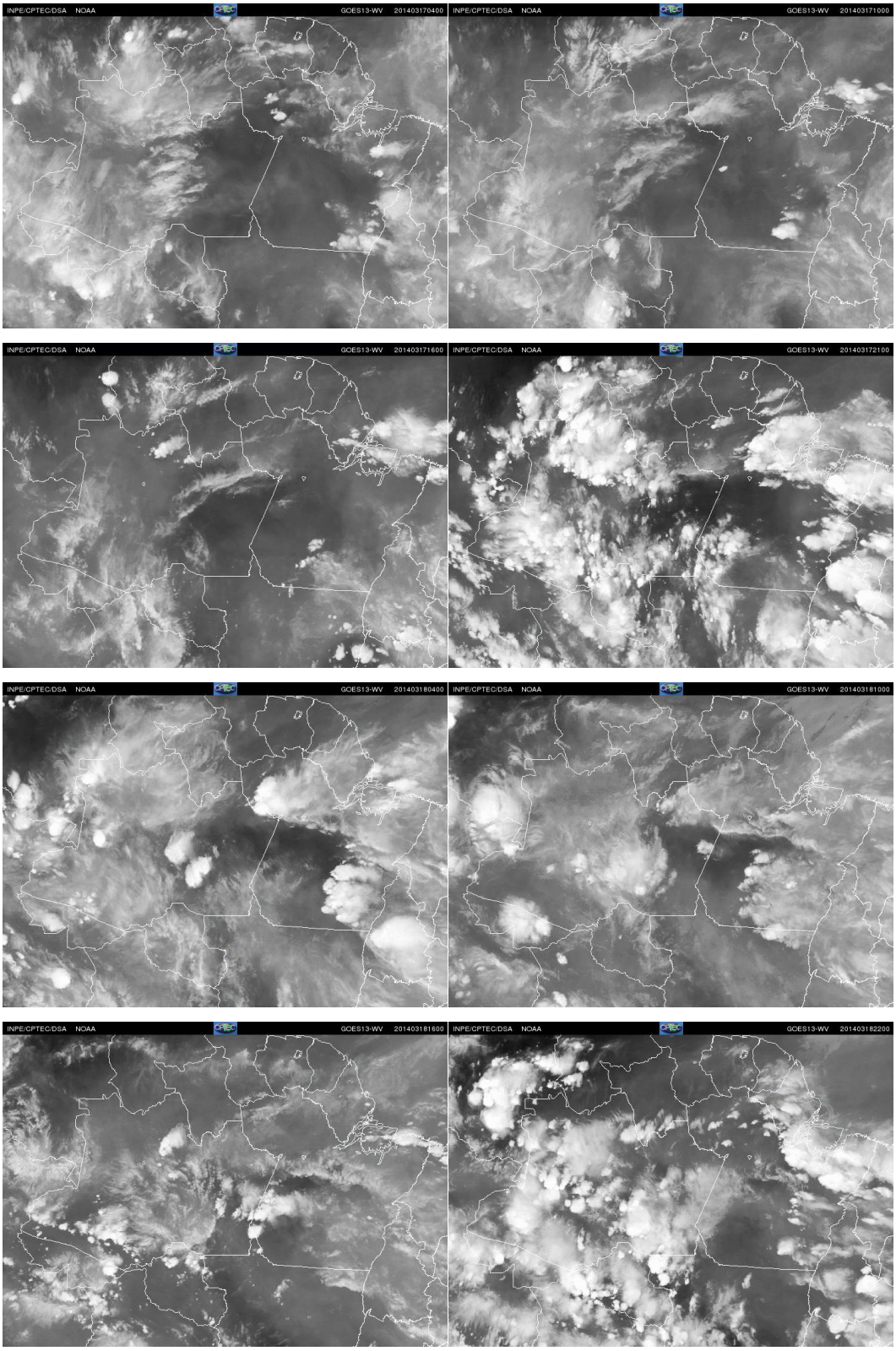

Figure S4. GOES -13 water vapor images every 6 hours starting on March 17 at 04Z.