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Supplement of

A comparison study between CMAQ-simulated and OMI-retrieved NO₂ columns over East Asia for evaluation of NO_x emission fluxes of INTEX-B, CAPSS, and REAS inventories

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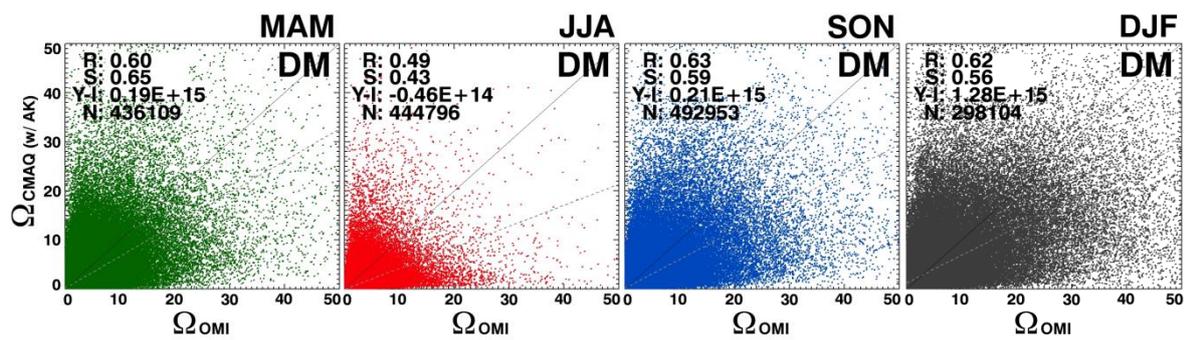


Figure S1. Scatter plots between daily $\Omega_{\text{CMAQ,AK}}$ and daily Ω_{OMI} over the DM regions for four seasonal episodes.

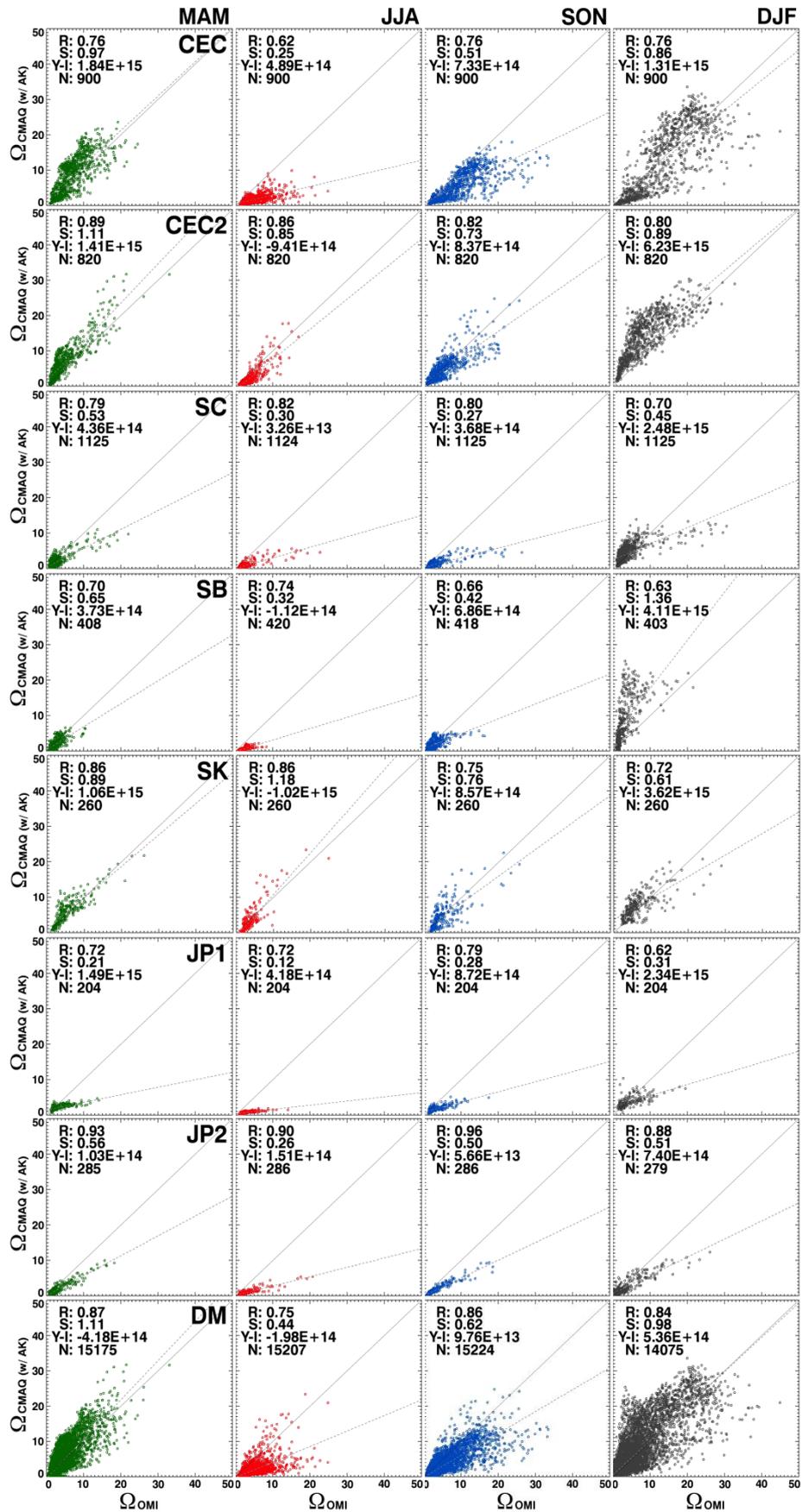


Figure S2. As in Fig. 6, except for the monthly variations of NO_x emissions from Han et al. (2009).

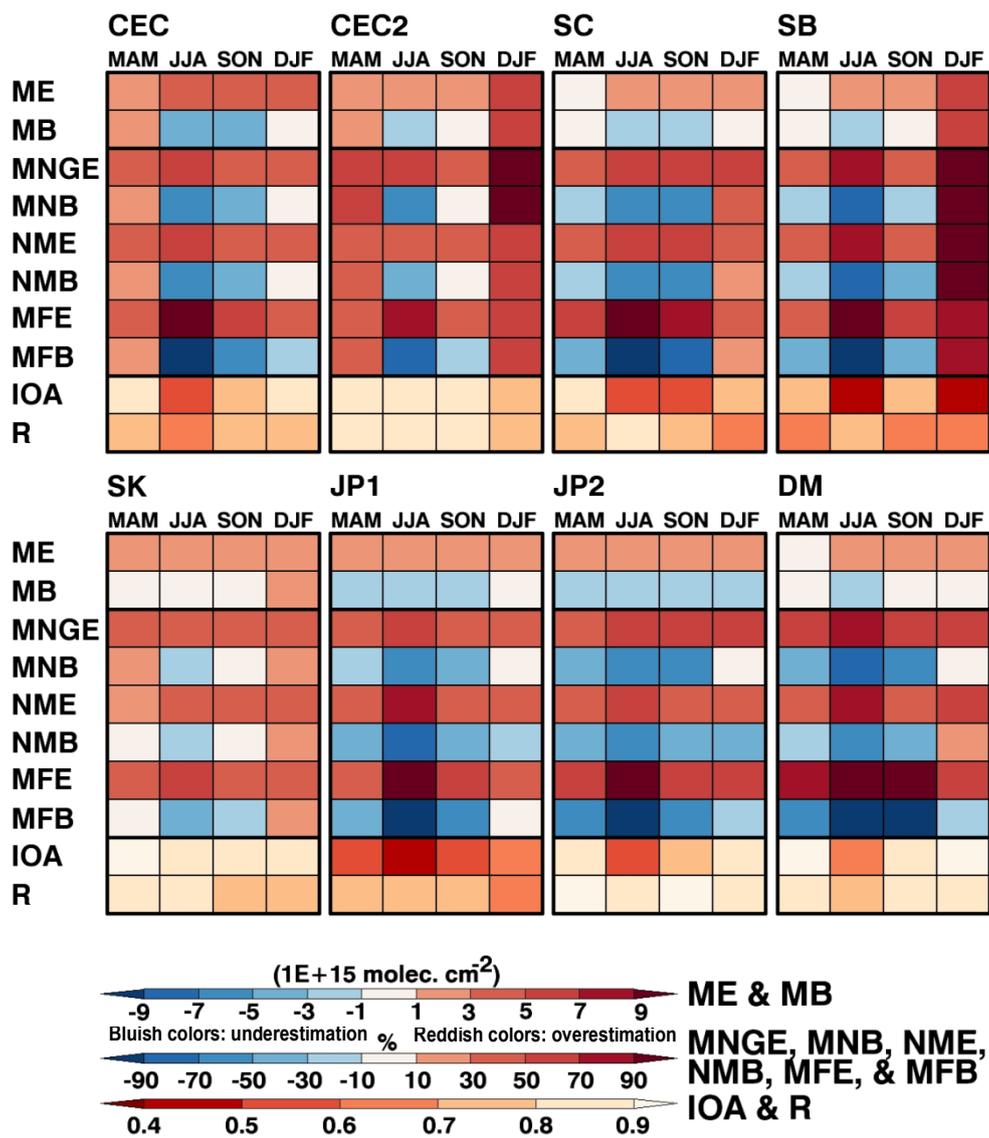


Figure S3. As in Fig. 7, except for the monthly variations of NO_x emissions from Han et al. (2009).

Table S1. As Table 2, except for applying the seasonal variations of NO_x emission fluxes from Han et al. (2009) to the CMAQ model simulations.

Region	Season	n ⁽¹⁾	Ω _{CMAQ} (w/o AKs) ⁽²⁾	Ω _{CMAQ,AK} (w/ AKs) ⁽²⁾	Ω _{OMI} ⁽²⁾	NME (w/o AKs)	NME (w/ AKs)
CEC	Spring	900	15.28 (7.98) ⁽³⁾	8.54 (5.20) ⁽³⁾	6.89 (4.07) ⁽³⁾	143.17	43.31
	Summer	900	4.44 (2.76)	1.79 (1.21)	5.29 (3.02)	35.70	66.29
	Fall	900	10.41 (6.15)	5.62 (4.00)	9.49 (5.89)	37.26	41.58
	Winter	900	20.22 (11.19)	13.44 (9.08)	14.18 (8.05)	63.21	33.44
CEC2	Spring	820	13.85 (7.47)	6.35 (4.95)	4.45 (3.98)	211.06	49.74
	Summer	820	4.28 (4.52)	1.64 (2.12)	3.02 (2.15)	52.54	49.80
	Fall	820	9.44 (6.05)	4.49 (3.57)	4.97 (3.97)	91.89	30.49
	Winter	820	24.38 (7.59)	13.75 (6.41)	8.49 (5.79)	187.02	64.48
SC	Spring	1125	5.27 (3.79)	1.60 (1.38)	2.20 (2.03)	143.60	42.03
	Summer	1124	1.94 (1.88)	0.56 (0.63)	1.77 (1.73)	40.26	68.33
	Fall	1125	2.84 (2.17)	0.97 (0.78)	2.20 (2.31)	46.96	56.34
	Winter	1125	11.01 (4.71)	3.95 (2.21)	3.24 (3.39)	241.40	48.83
SB	Spring	408	5.65 (3.75)	2.04 (1.44)	2.56 (1.55)	129.04	36.98
	Summer	420	1.71 (1.20)	0.58 (0.43)	2.14 (0.99)	32.91	73.01
	Fall	418	4.91 (3.45)	1.83 (1.38)	2.71 (2.15)	96.49	45.96
	Winter	403	18.47 (12.17)	8.78 (6.54)	3.43 (3.01)	438.87	160.21
SK	Spring	260	10.16 (6.06)	5.70 (3.85)	5.24 (3.74)	94.08	28.25
	Summer	260	7.45 (7.90)	3.02 (3.57)	3.41 (2.58)	126.90	43.06
	Fall	260	8.71 (6.59)	4.51 (3.69)	4.81 (3.62)	91.61	39.04
	Winter	260	13.51 (5.77)	7.70 (3.52)	6.68 (4.14)	105.18	36.27
JP1	Spring	204	5.01 (1.47)	2.25 (0.73)	3.58 (2.48)	53.34	42.50
	Summer	204	2.46 (1.06)	0.76 (0.33)	2.91 (1.98)	34.93	73.80
	Fall	204	4.58 (1.93)	1.89 (0.91)	3.57 (2.50)	41.01	48.68
	Winter	204	8.15 (3.04)	3.75 (1.56)	4.48 (3.07)	85.57	36.53
JP2	Spring	285	4.11 (3.32)	1.84 (1.78)	3.09 (2.96)	40.45	42.56
	Summer	286	2.40 (2.10)	0.85 (0.82)	2.64 (2.77)	30.22	68.04
	Fall	286	3.94 (3.34)	1.62 (1.66)	3.12 (3.17)	31.45	48.14
	Winter	279	6.20 (4.58)	2.74 (2.44)	3.92 (4.20)	63.79	41.80
Entire domain	Spring	15175	3.88 (5.70)	1.77 (3.10)	1.97 (2.43)	119.82	49.39
	Summer	15207	1.38 (2.41)	0.50 (1.00)	1.59 (1.72)	49.35	70.20
	Fall	15224	2.69 (4.12)	1.18 (2.19)	2.06 (3.05)	55.88	48.79
	Winter	14075	7.28 (8.89)	3.62 (5.54)	3.20 (4.79)	135.63	50.42

⁽¹⁾ The number of data; ⁽²⁾ Unit, $\times 10^{15}$ molecules cm^{-2} ; ⁽³⁾ Standard deviations of the distributions of tropospheric NO₂ columns

Table S2. Average tropospheric NO₂ columns, standard deviations and the ratios of the $\Omega_{\text{CMAQ,AK}}$ to the Ω_{OMI} , when the INTEX-B and REAS NO_x emissions were applied into China for January.

Region	Inventory for China	n ⁽¹⁾	$\Omega_{\text{CMAQ,AK}}$ ⁽²⁾	Ω_{OMI} ⁽²⁾	R = $\Omega_{\text{CMAQ,AK}}/\Omega_{\text{OMI}}$
CEC	INTEX-B	896	12.32 (9.35) ⁽³⁾	14.32 (9.00)	0.86
	REAS		8.31 (6.42)		0.58
CEC2	INTEX-B	820	11.43 (6.82)	8.05 (6.34)	1.42
	REAS		5.91 (4.36)		0.73
SC	INTEX-B	1125	2.80 (1.83)	2.98 (3.09)	0.94
	REAS		1.92 (1.51)		0.64
SB	INTEX-B	386	5.43 (4.63)	3.34 (2.55)	1.63
	REAS		2.26 (1.69)		0.68
SK	INTEX-B	260	7.29 (3.79)	6.70 (4.64)	1.09
	REAS		7.24 (4.47)		1.08
JP1	INTEX-B	202	3.80 (1.86)	4.35 (2.58)	0.87
	REAS		4.83 (2.92)		1.11
JP2	INTEX-B	192	2.81 (2.67)	4.68 (4.60)	0.60
	REAS		2.78 (2.49)		0.59
Entire domain	INTEX-B	12901	3.22 (5.38)	3.23 (5.14)	1.00
	REAS		2.24 (3.56)		0.69

⁽¹⁾ Number of data; ⁽²⁾ Unit, $\times 10^{15}$ molecules cm^{-2} ; ⁽³⁾ Standard deviations of the distributions of tropospheric NO₂ columns