Electronic Supplementary Material (ESI) for Environmental Science: Atmospheres.

Supplementary Information

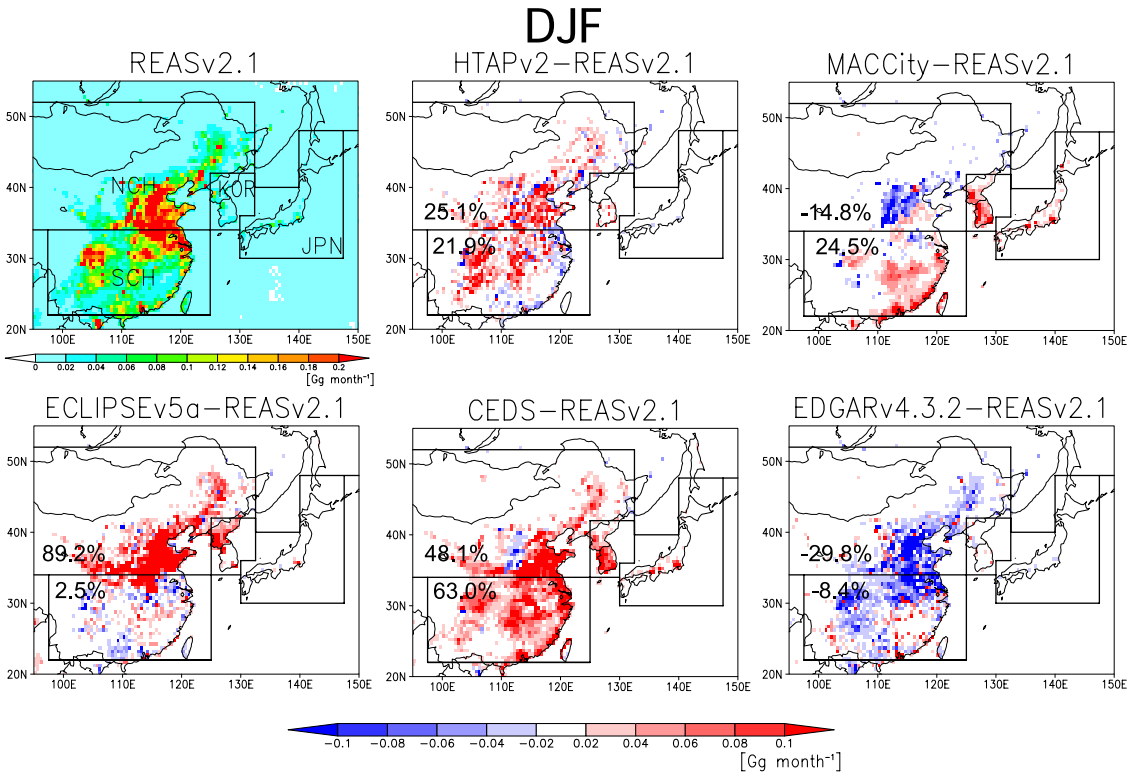

Fig. S1 Anthropogenic BC emissions in winter (December–February) estimated by REASv2.1 for 2008 and absolute differences with HTAPv2, MACCity, ECLIPSEv5a, CEDS, and EDGARv4.3.2 for 2010. Values shown in NCH and SCH are relative differences between REASv2.1 and the other five inventories.

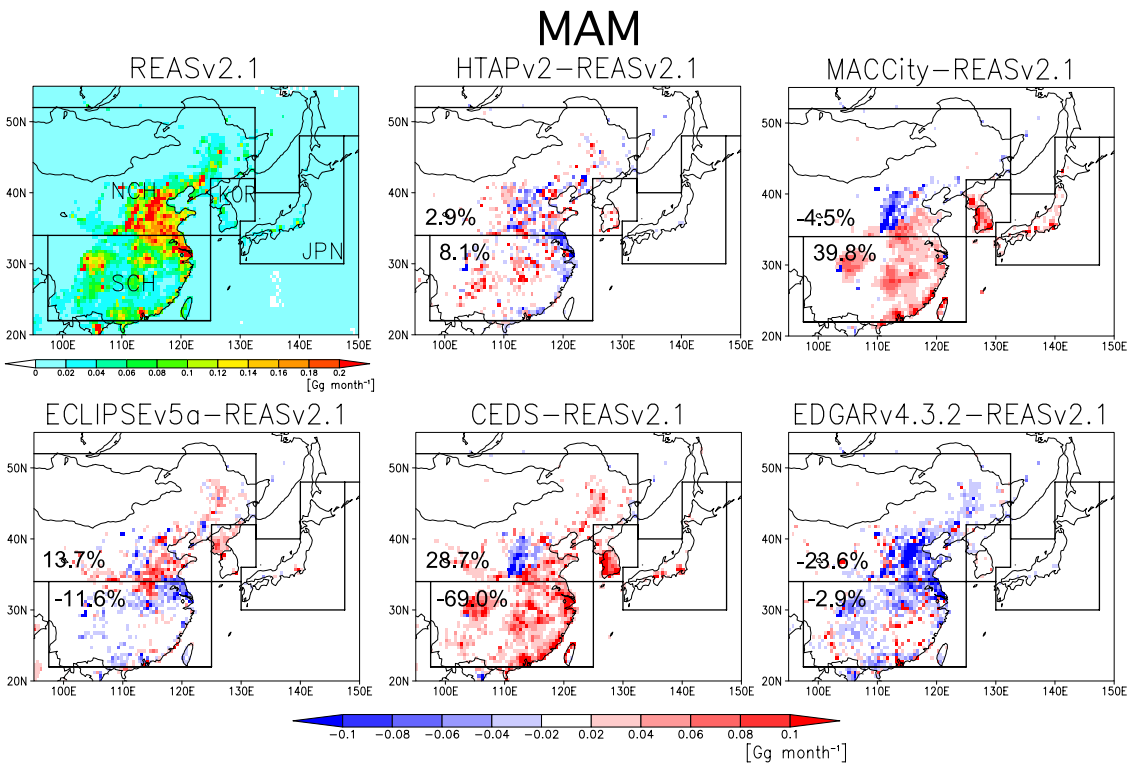

Fig. S2 Same as Fig. S1 but for spring (March–May).

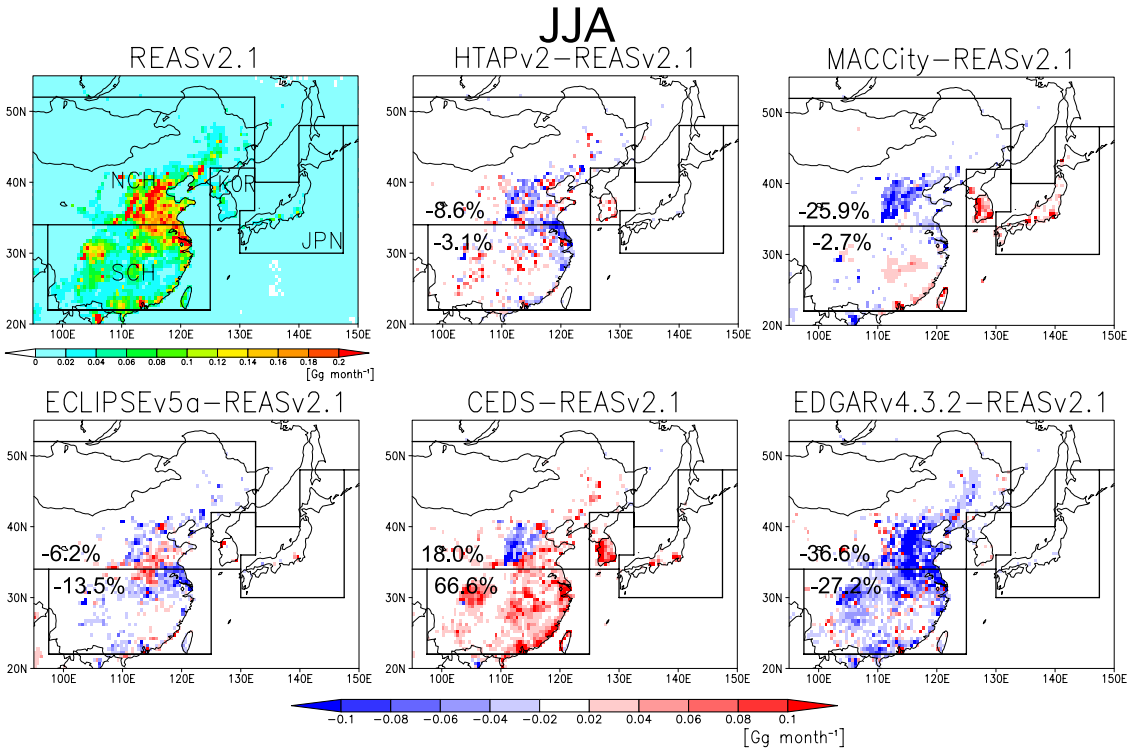

Fig. S3 Same as Fig. S1 but for summer (June–August).

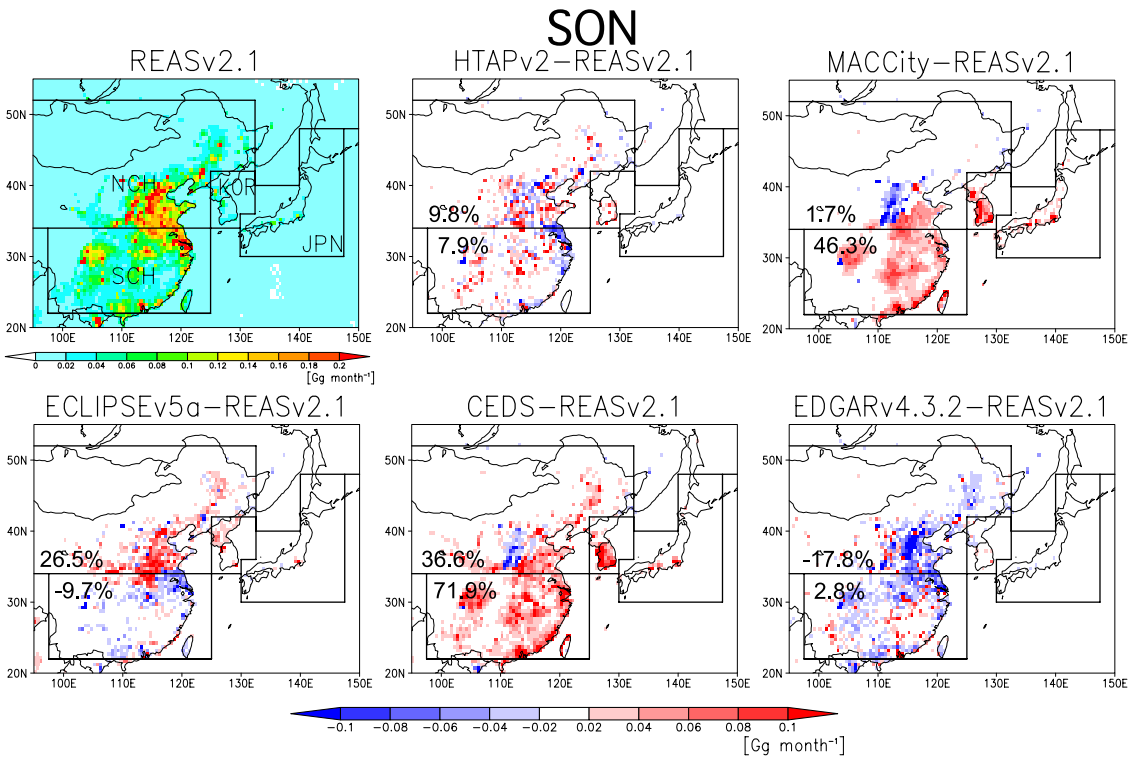

Fig. S4 Same as Fig. S1 but for autumn (September–November).

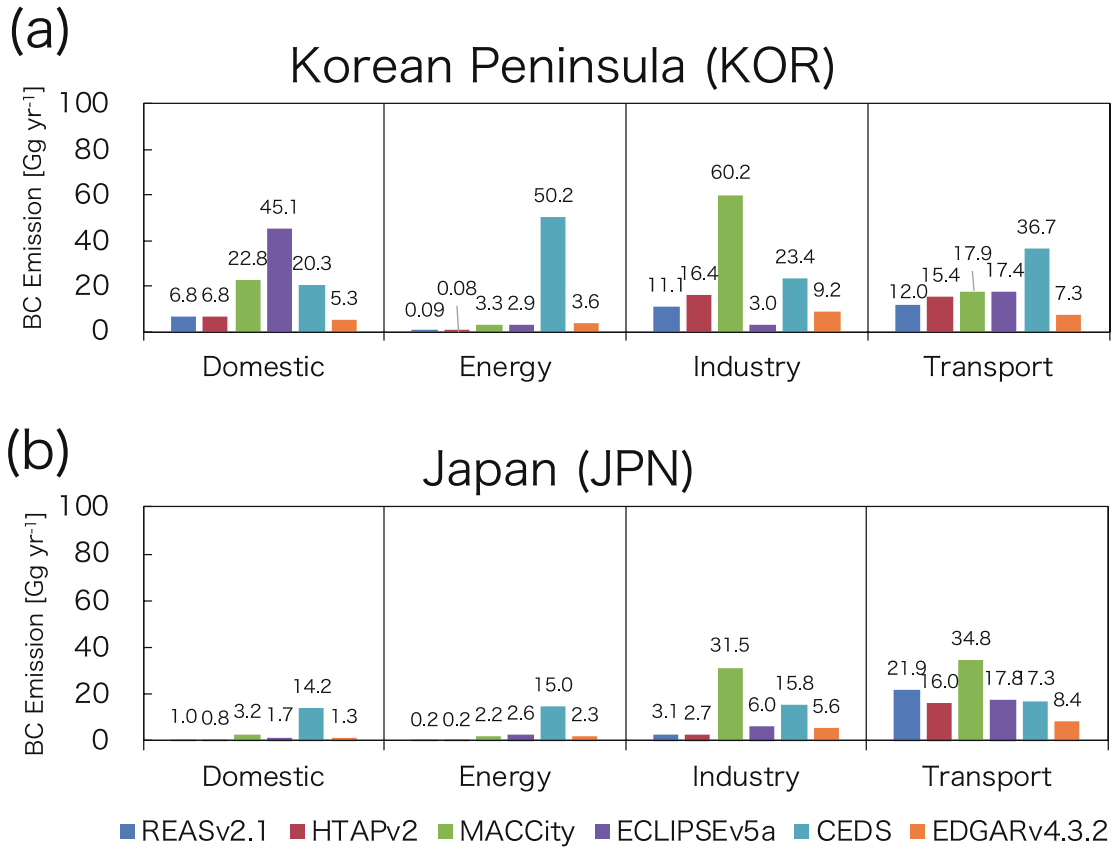

Fig. S5 BC emissions for four source sectors (domestic, energy, industry, and transport) estimated by six inventories in (a) KOR and (b) JPN.

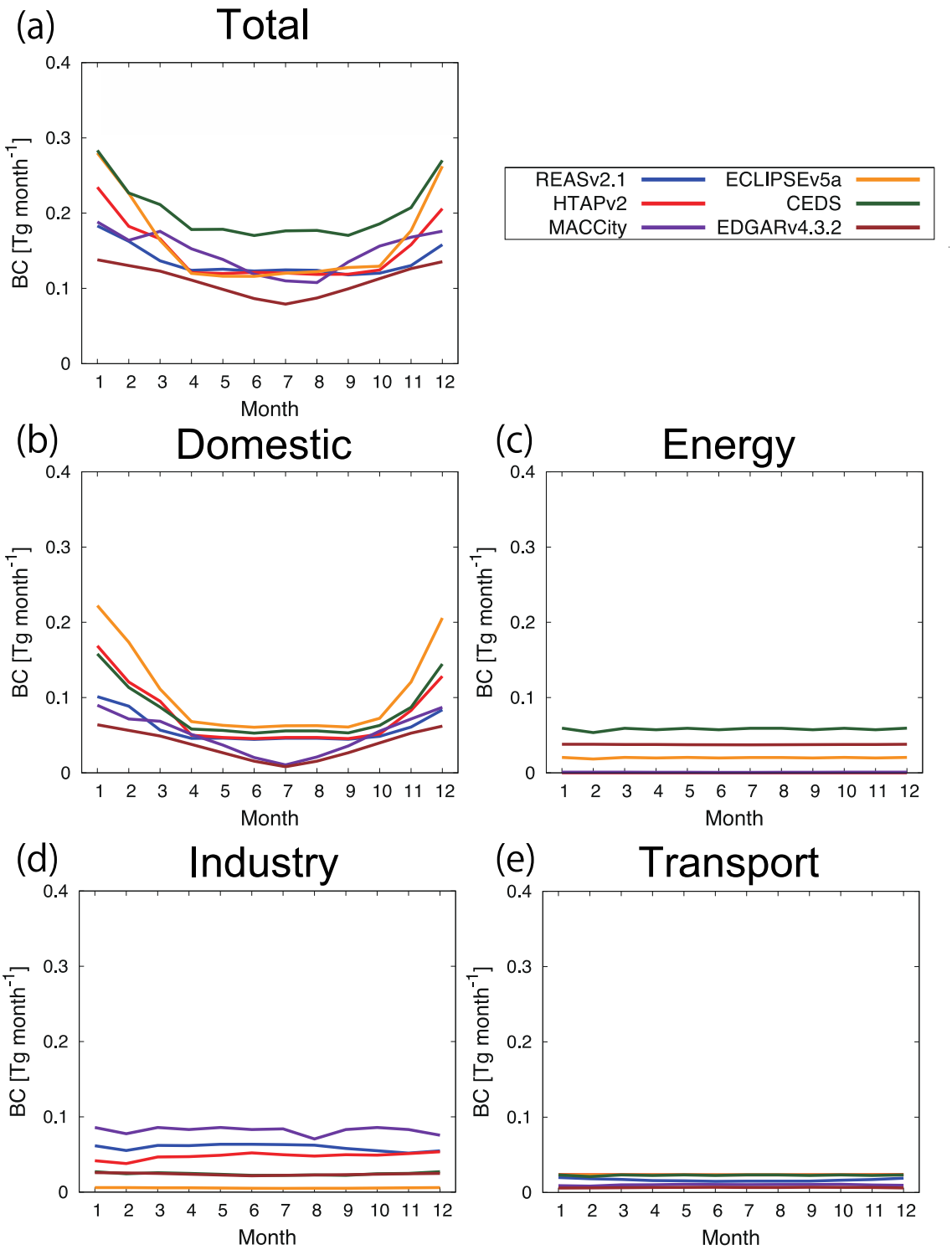

Fig. S6 (a) Monthly variations of total BC emissions from China. Monthly emissions of (b) domestic, (c) energy, (d) industry, and (e) transport sector from China.

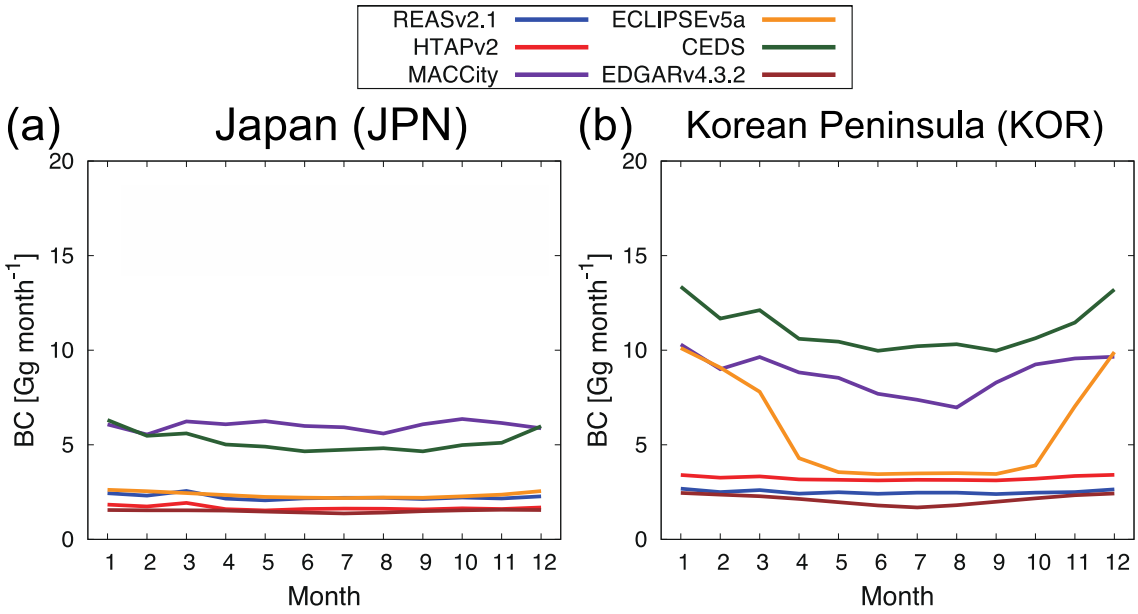

Fig. S7 Monthly variations of total BC emissions from (a) Japan and (b) the Korean Peninsula.

Table S1 Seasonal BC emissions from each region in East Asia estimated by REASv2.1 for 2008, HTAPv2, MACCity, ECLIPSEv5a, CEDS, and EDGARv4.3.2 for 2010 (Gg season^{-1}).

		REASv2.1	HTAPv2	MACCity	ECLIPSEv5a	CEDS	EDGARv4.3.2
NCH	Winter	209.5	215.6	200.0	238.3	269.6	160.1
	Spring	196.1	179.3	145.2	184.0	231.3	124.3
	Summer	198.2	217.6	201.6	250.8	270.8	162.9
	Autumn	273.5	342.0	233.0	517.3	404.9	192.1
SCH	Winter	176.6	190.9	246.9	156.0	298.5	171.5
	Spring	175.5	180.9	180.3	151.7	292.3	127.7
	Summer	170.2	183.6	249.0	153.7	292.6	174.9
	Autumn	230.2	280.7	286.7	236.0	375.3	210.9
KOR	Winter	7.5	9.6	27.0	15.6	33.2	6.4
	Spring	7.4	9.4	22.0	10.4	30.5	5.3
	Summer	7.3	9.7	27.1	14.4	32.1	6.5
	Autumn	7.8	10.1	29.0	29.1	38.2	7.2
JPN	Winter	6.8	5.0	18.6	7.0	15.5	4.5
	Spring	6.6	4.8	17.5	6.6	14.2	4.2
	Summer	6.5	4.8	18.6	6.8	14.7	4.6
	Autumn	7.0	5.3	17.5	7.7	17.8	4.6

Winter: December to February; spring: March to May; summer: June to August; autumn: September to November, NCH: North China; SCH: South China; KOR: Korean Peninsula; JPN: Japan.

Table S2 Average BC concentrations at Fukue Island of observations and model simulations for the case of R_{NCH}>R_{SCH} after the data selection (R_{CHN}>80% and TE_{CHN}>80%) and ratios of the average values of model to observation.

	REASv2.1	HTAPv2	MACCity	ECLIPSE v5a	CEDS	EDGARv 4.3.2
Hourly data numbers	1873	1838	1264	2214	1173	1209
Observation (μg m^{-3})	1.073	1.097	1.069	1.047	1.101	1.060
Model (μg m^{-3})	1.407	1.594	1.479	1.895	2.195	1.108
Model/Obs ratio	1.31	1.45	1.38	1.81	1.99	1.04

Table S3 Average BC concentrations at Fukue Island of observations and model simulations for the case of R_{SCH}>R_{NCH} after the data selection (R_{CHN}>80% and TE_{CHN}>80%) and ratios of the average values of model to observation.

	REASv2.1	HTAPv2	MACCity	ECLIPSE v5a	CEDS	EDGARv 4.3.2
Hourly data numbers	574	383	716	362	760	1169
Observation (μg m^{-3})	0.889	0.894	0.864	0.669	0.828	0.958
Model(μg m^{-3})	1.352	1.363	1.440	1.058	2.066	1.412
Model/Obs ratio	1.52	1.53	1.67	1.58	2.50	1.47