



Supplement of

MIX: a mosaic Asian anthropogenic emission inventory for the MICS-Asia and the HTAP projects

M. Li et al.

Correspondence to: Q. Zhang (qiangzhang@tsinghua.edu.cn)

The copyright of individual parts of the supplement might differ from the CC-BY 3.0 licence.

Table S1. Monthly emissions by sector in Asia in 2010 (Units: Tg/month for CO₂ and Gg/month for other species).

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	Pow	1721.4	1488.5	1724.2	1651.8	1652.5	1564.6	1590.6	1610.4	1520.6	1583.3	1635.2	1744.2
	Ind	1936.6	1742.4	2111.6	2030.0	2091.9	2224.2	2183.5	2098.6	2166.7	2164.4	2283.7	2395.3
	Resi	812.6	600.2	520.9	308.9	295.2	287.6	295.6	296.3	288.9	316.8	460.2	650.6
	Tran	107.3	100.4	107.8	105.3	107.5	104.9	107.3	107.4	105.4	107.6	105.5	107.8
	Total	4578.0	3931.4	4464.5	4096.0	4147.1	4181.3	4177.0	4112.6	4081.6	4172.1	4484.6	4897.8
NO _x	Pow	1332.8	1131.9	1321.1	1277.2	1267.4	1232.9	1289.8	1323.2	1217.1	1224.4	1280.9	1360.9
	Ind	1044.0	909.0	1140.6	1120.9	1162.7	1249.5	1215.3	1166.2	1209.1	1207.5	1298.2	1341.6
	Resi	415.8	342.8	319.4	249.3	246.1	238.2	246.5	247.7	240.3	257.1	302.3	372.1
	Tran	1655.9	1557.8	1647.7	1595.7	1613.5	1578.3	1603.7	1603.4	1580.1	1621.3	1605.2	1652.8
	Total	4448.5	3941.4	4428.8	4243.1	4289.8	4298.9	4355.4	4340.5	4246.7	4310.3	4486.6	4727.4
CO	Pow	520.4	459.1	531.6	506.0	506.1	484.1	493.9	496.6	454.6	499.2	489.6	530.6
	Ind	8029.4	7341.6	8638.6	8639.4	8890.7	8918.1	8697.8	8630.0	8524.1	8656.9	8772.3	8955.9
	Resi	20799.6	16213.2	14385.6	10235.7	10105.5	9768.1	10090.0	10089.4	9775.6	10568.4	13287.1	17563.2
	Tran	7042.1	6482.1	6739.9	6149.8	5965.7	5633.1	5720.3	5759.9	5810.9	6242.9	6529.9	6963.4
	Total	36391.5	30496.1	30295.6	25531.0	25467.9	24803.4	25002.0	24976.1	24565.1	25967.4	29079.0	34013.1
NMVOC	Pow	47.1	40.6	47.5	45.7	45.6	44.1	45.6	46.2	42.4	44.9	45.0	48.3
	Ind	1898.9	1699.4	2055.4	2043.3	2121.5	2224.9	2199.1	2134.5	2189.1	2180.1	2221.2	2299.3
	Resi	2506.5	2085.2	2017.1	1694.8	1713.1	1659.0	1711.4	1711.3	1659.7	1748.1	1920.0	2280.6
	Tran	1610.7	1469.5	1585.3	1518.3	1545.6	1495.2	1537.9	1540.3	1504.3	1561.7	1542.5	1606.1
	Total	6063.3	5294.7	5705.3	5302.1	5425.8	5423.3	5494.1	5432.3	5395.6	5534.7	5728.7	6234.3
NH ₃	Pow	2.3	2.1	2.4	2.3	2.4	2.3	2.3	2.3	2.2	2.4	2.2	2.4
	Ind	53.0	49.9	53.0	52.0	53.0	52.0	52.9	52.9	51.9	53.0	52.0	53.0
	Resi	405.9	367.8	401.8	390.5	404.7	396.7	410.4	409.4	395.4	404.1	391.9	405.7
	Tran	10.7	10.3	10.7	10.5	10.6	10.5	10.6	10.6	10.5	10.6	10.5	10.6
	Agri	1727.8	1608.3	1765.9	1927.7	2089.0	2188.3	2187.1	2283.8	1960.7	1837.9	1855.8	1816.9

	Total	2199.6	2038.5	2233.7	2383.0	2559.6	2649.7	2663.3	2759.0	2420.7	2308.0	2312.3	2288.6
PM ₁₀	Pow	364.1	321.5	373.0	354.7	353.5	338.2	343.8	345.2	316.3	350.1	342.6	372.2
	Ind	1155.8	1030.2	1253.5	1252.1	1295.6	1323.7	1297.2	1277.0	1288.7	1304.6	1340.0	1381.6
	Resi	1379.3	1100.8	976.5	725.0	716.1	698.3	715.6	715.6	698.5	742.7	909.0	1173.5
	Tran	158.5	146.0	154.6	148.3	148.8	144.3	147.1	147.5	145.7	151.2	150.8	157.7
	Total	3057.8	2598.4	2757.6	2480.1	2513.9	2504.6	2503.7	2485.2	2449.2	2548.6	2742.3	3085.0
PM _{2.5}	Pow	173.8	150.8	177.1	168.5	167.2	160.3	163.9	165.6	150.6	164.5	163.7	178.1
	Ind	716.3	640.4	777.2	777.0	803.6	818.8	800.6	789.5	796.4	806.3	828.7	854.0
	Resi	1253.3	1001.3	888.2	663.7	656.4	640.0	656.0	656.0	640.2	680.1	827.4	1067.3
	Tran	152.1	140.1	148.2	142.3	142.7	138.4	141.0	141.4	139.7	145.0	144.7	151.4
	Total	2295.5	1932.5	1990.7	1751.5	1769.9	1757.4	1761.4	1752.4	1726.9	1795.8	1964.5	2250.8
BC	Pow	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Ind	67.7	62.7	73.7	72.0	74.4	77.3	75.2	73.3	75.2	74.8	77.0	81.1
	Resi	268.0	214.7	190.1	142.7	140.7	138.0	140.7	140.7	138.1	145.4	176.7	226.7
	Tran	50.8	48.9	49.9	47.9	46.8	45.6	45.8	46.1	46.4	48.1	49.1	50.6
	Total	387.2	326.8	314.4	263.2	262.6	261.6	262.3	260.7	260.3	268.8	303.5	359.1
OC	Pow	1.1	1.0	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.1	1.0	1.1
	Ind	94.5	87.2	100.2	98.2	101.3	101.8	100.7	99.5	99.9	100.6	101.7	106.0
	Resi	850.7	692.5	617.1	480.2	475.4	466.0	475.2	475.2	466.1	489.6	578.8	731.2
	Tran	28.7	27.1	28.0	26.6	26.0	25.0	25.2	25.4	25.5	26.8	27.5	28.6
	Total	975.0	807.8	746.4	605.9	603.8	593.9	602.2	601.1	592.6	618.0	709.0	866.8
CO ₂	Pow	514.5	436.9	513.9	494.4	493.6	476.7	496.3	506.8	463.5	480.4	490.0	525.8
	Ind	505.7	445.0	559.6	558.5	580.0	618.5	603.4	579.5	600.1	600.7	628.2	645.5
	Resi	381.6	305.3	275.6	203.5	199.8	192.7	199.1	199.5	193.7	209.2	255.6	328.0
	Tran	130.4	124.2	130.7	127.1	128.5	127.0	129.0	129.1	127.0	129.1	127.3	130.2
	Total	1532.2	1311.4	1479.7	1383.5	1401.8	1414.9	1427.7	1415.0	1384.2	1419.4	1501.2	1629.6

Table S2. Monthly emissions by Asian region in 2010 (Units: Tg/month for CO₂ and Gg/month for other species).

Asia	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	4578	3931	4464	4096	4147	4181	4177	4113	4082	4172	4485	4898
NO _x	4449	3941	4429	4243	4290	4299	4355	4340	4247	4310	4487	4727
CO	36392	30496	30296	25531	25468	24803	25002	24976	24565	25967	29079	34013
NMVOC	6063	5295	5705	5302	5426	5423	5494	5432	5396	5535	5729	6234
NH ₃	2200	2039	2234	2383	2560	2650	2663	2759	2421	2308	2312	2289
PM ₁₀	3058	2598	2758	2480	2514	2505	2504	2485	2449	2549	2742	3085
PM _{2.5}	2295	1933	1991	1752	1770	1757	1761	1752	1727	1796	1965	2251
BC	387	327	314	263	263	262	262	261	260	269	303	359
OC	975	808	746	606	604	594	602	601	593	618	709	867
CO ₂	1532	1311	1480	1384	1402	1415	1428	1415	1384	1419	1501	1630
China	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	2638	2144	2504	2225	2235	2336	2300	2244	2242	2262	2603	2931
NO _x	2460	2118	2458	2347	2360	2422	2432	2419	2367	2368	2578	2741
CO	21428	17124	15857	11970	11796	11768	11630	11572	11390	12039	15157	19143
NMVOC	2292	1911	2013	1751	1780	1895	1852	1791	1857	1867	2141	2468
NH ₃	610	606	646	836	941	1055	1005	1106	840	701	763	694
PM ₁₀	1794	1424	1465	1214	1224	1257	1235	1219	1222	1257	1505	1798
PM _{2.5}	1416	1114	1094	869	870	886	874	865	863	895	1099	1355
BC	232	181	164	119	117	119	118	116	117	122	156	204
OC	543	404	330	201	194	192	194	193	189	207	300	437
CO ₂	913	744	862	790	799	830	829	820	808	810	911	1008
India	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	799	753	822	769	781	747	742	736	740	774	775	822
NO _x	817	752	808	788	807	787	805	805	786	806	789	815
CO	5872	5240	5727	5527	5688	5507	5656	5652	5475	5702	5535	5843
NMVOC	1465	1306	1433	1382	1426	1380	1425	1423	1377	1428	1388	1458
NH ₃	840	758	838	811	838	811	838	838	811	838	811	840
PM ₁₀	613	573	616	593	600	581	584	580	560	602	577	614
PM _{2.5}	451	421	448	433	439	427	432	430	418	441	426	450
BC	87	86	86	84	84	84	84	84	84	84	85	87
OC	217	213	211	209	209	209	209	209	209	209	210	215
CO ₂	197	180	200	191	195	186	187	186	177	195	184	197
Other East Asia	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	120	114	120	119	119	119	122	121	120	123	119	121
NO _x	292	277	293	271	265	260	262	259	261	272	274	289
CO	1005	910	970	853	827	768	771	764	768	842	885	976
NMVOC	185	178	188	184	181	179	186	185	185	185	187	192
NH ₃	50	43	52	56	77	100	116	109	91	70	59	53
PM ₁₀	52	49	53	50	50	50	51	51	50	52	51	52
PM _{2.5}	28	27	29	27	27	26	27	27	27	28	28	28
BC	5	5	5	5	5	5	5	5	5	5	5	5
OC	3	3	3	3	3	3	3	3	3	3	3	3
CO ₂	148	141	147	143	142	142	146	144	143	147	144	149
Southeast Asia	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

SO ₂	377	340	377	366	376	366	379	379	366	378	366	378
NO _x	434	392	435	421	434	421	436	435	421	435	421	435
CO	4340	3908	4320	4173	4309	4177	4322	4326	4184	4327	4195	4344
NMVOC	1417	1278	1411	1364	1410	1366	1413	1413	1368	1414	1370	1417
NH ₃	390	352	390	378	390	377	390	390	377	390	377	390
PM ₁₀	257	229	258	253	259	252	260	260	250	260	250	263
PM _{2.5}	192	172	193	189	194	188	194	194	186	194	187	196
BC	32	29	32	31	32	31	32	32	31	32	31	32
OC	123	111	123	119	123	119	123	123	119	123	119	124
CO ₂	129	116	130	126	129	126	130	130	125	130	126	130
Other South Asia	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	146	131	144	140	144	140	144	144	140	144	140	146
NO _x	152	134	144	139	143	138	143	143	139	144	141	152
CO	1544	1313	1348	1285	1320	1275	1316	1317	1279	1330	1330	1535
NMVOC	361	312	327	313	323	312	322	322	312	324	321	359
NH ₃	294	264	291	282	291	282	291	291	282	291	282	294
PM ₁₀	120	103	108	103	106	103	106	106	103	107	106	119
PM _{2.5}	102	87	90	86	89	86	89	89	86	89	89	101
BC	19	16	17	16	16	16	16	16	16	16	16	19
OC	67	57	58	55	57	55	57	57	55	57	57	67
CO ₂	38	33	35	34	35	34	35	35	34	35	34	38
Central Asia	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	141	128	141	135	139	134	139	139	134	140	136	141
NO _x	86	78	83	79	80	77	80	80	78	81	81	86
CO	593	542	512	404	365	320	326	328	357	424	478	578
NMVOC	106	96	102	94	95	90	93	93	92	98	98	105
NH ₃	11	10	11	11	11	11	11	11	11	11	11	11
PM ₁₀	82	74	82	79	82	79	81	81	79	82	80	81
PM _{2.5}	39	35	39	38	39	37	38	38	38	39	39	39
BC	2	2	2	2	2	1	1	1	2	2	2	2
OC	4	4	4	4	4	4	4	4	4	4	4	4
CO ₂	35	32	33	31	32	31	32	32	31	32	33	35
Russia Asia	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO ₂	354	320	355	343	353	341	352	352	342	354	344	355
NO _x	209	189	209	199	201	192	197	198	194	205	202	209
CO	1545	1408	1549	1337	1190	1011	1006	1044	1137	1326	1491	1562
NMVOC	231	209	230	215	215	202	206	208	206	221	222	231
NH ₃	9	8	9	9	9	9	9	9	9	9	9	9
PM ₁₀	176	162	181	175	179	169	174	175	173	179	178	181
PM _{2.5}	100	92	103	99	101	94	96	98	97	101	102	103
BC	9	8	9	8	7	6	6	6	6	7	8	9
OC	15	14	16	15	14	13	13	13	14	15	15	16
CO ₂	71	65	72	69	70	67	69	69	67	71	70	72

Figure S1. Comparison of MIX and REAS2 estimates for China in 2008 by species and by sector.

