

Supplementary Material

Table S1. Preindustrial (1860) and present (2000) anthropogenic (ANTH) and biomass burning (BB) of NO_x, CO, BC, OC and SO₂ used in this study

	NO _x		CO		BC		OC		SO ₂	
	Tg N year ⁻¹		Tg year ⁻¹		Tg C year ⁻¹		Tg C year ⁻¹		Tg year ⁻¹	
	ANTH	BB	ANTH	BB	ANTH	BB	ANTH	BB	ANTH	BB
1860	0.7	4.8	67.3	322.6	1.3	2.0	5.3	18.0	3.0	2.4
2000	26.5	5.5	608.3	459.1	5.0	2.6	12.6	23.3	92.8	3.8

Table S2. Preindustrial (1860) and present (2000) surface emissions of NO_x, CO, BC, OC and SO₂ used in Anenberg et al. (2010) (denoted as A study) and in this study

	NO _x		CO		BC		OC		SO ₂	
	Tg N year ⁻¹		Tg year ⁻¹		Tg C year ⁻¹		Tg C year ⁻¹		Tg year ⁻¹	
	A study*	This study	A study*	This study	A study*	This study	A study*	This study	A study*	This study
1860	5.5	9.3	306	569	0.9	3.3	9.3	23.2	5.8	5.6
2000	40.5	41.0	1195	1247.7	10.9	7.7	51.5	33.6	147	107.6

* Data from Horowitz (Horowitz, 2006)

Table S3. Premature mortalities in 2000 associated with industrial air pollution driven by individual factors. Values are calculated as in Eq (1), using ACS health impact functions, concentration changes in annual PM_{2.5} and H-O₃ resulting from changes in emissions of short-lived species (EMIS), climate (CLIM) and CH₄ concentrations (TCH4), WHO baseline mortality rate and population in the year 2000. The 95% confidence intervals are shown in brackets.

Change in Premature mortalities (1000s deaths)	PM _{2.5} mortality (Chronic, all-cause)			O ₃ mortality (Chronic, respiratory)		
	EMIS	CLIM	TCH4	EMIS	CLIM	TCH4
World	1481 (1008,193)	86 (58,114)	-3 (-2, -4)	328 (113,	7 (2, 12)	50 (17, 82)

	5)			522)		
North America	33 (23,44)	-0.3 (-0.4, -0.2)	1.9 (1.3, 2.5)	23 (8, 36)	0.4 (0.1, 0.7)	3.7 (1.2, 6.1)
South America	16 (11,21)	1.1 (0.7,1.4)	-0.4 (-0.5, -0.2)	3.6 (1.2, 5.8)	-0.1 (-0.2, -0.0)	1.2 (0.4, 2.1)
Europe	91 (61,119)	14 (9,18)	-0.13 (-0.17, -0.09)	26 (9, 42)	1.0 (0.3, 1.6)	6 (2, 10)
Africa	110 (74,144)	9 (6, 12)	-8 (-5, -10)	14 (5, 23)	0.3 (0.1, 0.5)	4.7 (1.5, 7.7)
South Asia	427 (291,557)	32 (21, 42)	-11 (-7, -14)	59 (20, 94)	1.2 (0.4, 7.0)	9 (3, 15)
Southeast Asia	117 (80,153)	1.1 (0.7, 1.5)	0.13 (0.09, 0.17)	24 (8, 38)	0.2 (0.1, 0.3)	3 (1, 5)
East Asia	614 (420,800)	27 (18,35)	11 (7, 14)	165 (57,161)	4.3 (1.4, 7.0)	19 (6, 31)
Middle East	39 (18,51)	2.7 (1.8, 3.5)	1.1 (0.7, 1.4)	6 (2, 10)	0.03 (0.01, 0.05)	1.6 (0.5, 2.6)
Rest of Asia	19.7 (13,26)	-0.07 (-0.12, -0.06)	2 (1.4, 2.7)	4.5 (2.2, 7.3)	0.06 (0.02, 0.1)	1.3 (0.4, 2.1)
Australia	0.7 (0.5, 0.9)	0.1 (0.07, 0.13)	0.0 (0.0, 0.0)	0.2 (0.1, 0.4)	-0.01	0.1 (0.05, 0.15)

Figure S1. Changes in annual mean stratiform (large-scale) precipitation (unit: mm/day) driven by climate change (derived as “2000” – “1860CL2000emis” simulations). Dotted area indicate changes significant at the 90% confidence level assessed by student t test.

