

Appendix II: SRES Tables

Appendix II gives, in tabulated form, the values for emissions, abundances and burdens, and, radiative forcing of major greenhouse gases and aerosols based on the SRES¹ scenarios (Nakicenovic *et. al.*, 2000). The Appendix also present global projections of changes in surface air temperature and sea level using these SRES emission scenarios.

The emission values are only anthropogenic emissions and are the ones published in Appendix VII of the SRES Report (Nakicenovic *et. al.*, 2000). Apart from the CO₂ emissions, for which deforestation and land use values are given in the SRES Report, the SRES scenarios for the rest of the gases define only the changes in anthropogenic emissions and not the concurrent changes in natural emissions due either to direct human activities such as land-use change or to the indirect impacts of climate change. Emissions for black carbon (BC) aerosols and organic matter carbonaceous (OC) aerosols, species not covered in the SRES Report, are calculated by scaling to the SRES anthropogenic CO emissions.

The abundances and burdens for each of the species are calculated with the latest climate chemistry and climate carbon models (see Chapters 3, 4 and 5 for details).

The radiative forcings due to well-mixed greenhouse gases are computed using each of the simplified expressions given in Chapter 6, Table 6.2. The radiative forcings associated with future tropospheric O₃ increase are calculated on the basis of the O₃ changes presented in Chapter 4 for the various SRES scenarios. The mean forcing per DU estimated from the various models, and given in Chapter 6, Table 6.3 (i.e., 0.042 Wm⁻²/DU), is used to derive these future forcings. For each aerosol species, the ratio of the column burdens for the particular scenario to that of the year 2000 is multiplied by the “best estimate” of the present day radiative forcing (see Chapter 6 for more details). The radiative forcings for all the species have been calculated since pre-industrial time.

The global mean surface air temperature and sea level projections, based on the SRES scenarios, have been calculated using Simple Climate models which have been “tuned” to get similar responses to the AOGCMs in the global mean (see Chapters 9 and 11 for details).

The results presented are global mean values, every ten years from 2000 to 2100, for a range of scenarios. These scenarios are the final approved Illustrative Marker Scenarios (A1B, A1T, A1FI, A2, B1, and B2); the preliminary marker scenarios (A1p, A2p, B1p, B2p, approved by the IPCC Bureau in June 1998) and, for comparison and for some species, results based on a previous scenario used by IPCC (IS92a) have also been added. For some gases, the values tabulated in the IPCC Second Assessment Report (IPCC, 1996; hereafter SAR), for that IS92a scenario using the previous generation of chemistry and climate models, are also given.

The contents of Appendix II are structured as follows:

II.1: Emissions

- II.1.1: CO₂ emissions (Gt C/yr)
- II.1.2: CH₄ emissions (Tg CH₄/yr)
- II.1.3: N₂O emissions (Tg N/yr)
- II.1.4: PFCs, SF₆ and HFCs emissions(kt/yr)
- II.1.5: NO_x emissions (Tg N/yr)
- II.1.6: CO emissions (Tg CO/yr)
- II.1.7: VOC emissions (Tg/yr)
- II.1.8: SO₂ emissions (Tg S/yr)
- II.1.9: BC emissions (Tg/yr)
- II.1.10: OC emissions (Tg/yr)

II.2: Abundances and Burdens

- II.2.1: CO₂ abundances (ppm)
- II.2.2: CH₄ abundance (ppb)

¹ IPCC Special Report on Emission Scenarios (Nakicenovic *et. al.*, 2000), hereafter SRES.

- 1 II.2.3: N₂O abundance (ppb)
2 II.2.4: PFCs, SF₆ and HFCs abundances (ppt)
3 II.2.5: Tropospheric O₃ burden (global mean column in DU)
4 II.2.6: Tropospheric OH (as a factor relative to year 2000)
5 II.2.7: SO₄ aerosols burden (Tg S)
6 II.2.8: BC aerosol burden (Tg)
7 II.2.9: OC aerosol burden (Tg)
8 II.2.10: CFCs and HFCs abundances from WMO98 Scenario A1 (baseline) following the Montreal (1997)
9 Amendments (ppt)

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11 II.3: Radiative Forcing (Wm⁻²)

- 12 II.3.1: CO₂ radiative forcing (Wm⁻²)
13 II.3.2: CH₄ radiative forcing (Wm⁻²)
14 II.3.3: N₂O radiative forcing (Wm⁻²)
15 II.3.4: PFCs, SF₆ and HFCs radiative forcing (Wm⁻²)
16 II.3.5: Tropospheric O₃ radiative forcing (Wm⁻²)
17 II.3.6: SO₄ aerosols (direct effect) radiative forcing (Wm⁻²)
18 II.3.7: BC aerosols radiative forcing (Wm⁻²)
19 II.3.8: OC aerosols radiative forcing (Wm⁻²)
20 II.3.9: CFCs and HFCs following the Montreal (1997) Amendments – radiative forcing (Wm⁻²)
21 II.3.10: Total radiative forcing (Wm⁻²)

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23 II.4: Surface Air Temperature Change (°C)

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25 II.5: Sea Level Change (mm)

- 26 II.5.1: Total sea level change (mm)
27 II.5.2: Sea level change due to thermal expansion (mm)
28 II.5.3: Sea level change due to glaciers and ice caps (mm)
29 II.5.4: Sea level change due to Greenland (mm)
30 II.5.5: Sea level change due to Antarctica (mm)

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35 *[Note: Values for some of the Tables will be added later]*

II.1: Emissions

II.1.1: CO₂ emissions (Gt C/yr)

CO₂ emissions from fossil fuel and industrial processes (Gt C/yr)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	6.90	6.90	6.90	6.90	6.90	6.90	6.8	6.8	6.8	6.8	7.1
2010	9.68	8.33	8.65	8.46	8.50	7.99	9.7	8.4	7.7	7.9	8.68
2020	12.12	10.00	11.19	11.01	10.00	9.02	12.2	10.9	8.3	8.9	10.26
2030	14.01	12.26	14.61	13.53	11.20	10.15	14.2	13.3	8.4	10.0	11.62
2040	14.95	12.60	18.66	15.01	12.20	10.93	15.2	14.7	9.1	10.8	12.66
2050	16.01	12.29	23.10	16.49	11.70	11.23	16.2	16.4	9.8	11.1	13.7
2060	15.70	11.41	25.14	18.49	10.20	11.74	15.9	18.2	10.4	11.6	14.68
2070	15.43	9.91	27.12	20.49	8.60	11.87	15.6	20.2	10.1	11.8	15.66
2080	14.83	8.05	29.04	22.97	7.30	12.46	15.0	22.7	8.7	12.4	17.0
2090	13.94	6.27	29.64	25.94	6.10	13.20	14.1	25.6	7.5	13.1	18.7
2100	13.10	4.31	30.32	28.91	5.20	13.82	13.2	28.8	6.5	13.7	20.4

CO₂ emissions from deforestation and land use (Gt C/yr)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	1.07	1.07	1.07	1.07	1.07	1.07	1.6	1.6	1.6	1.6	1.3
2010	1.20	1.04	1.08	1.12	0.78	0.80	1.5	1.6	0.8	1.8	1.22
2020	0.52	0.26	1.55	1.25	0.63	0.03	1.6	1.7	1.3	1.6	1.14
2030	0.47	0.12	1.57	1.19	-0.09	-0.25	0.7	1.5	0.7	0.3	1.04
2040	0.40	0.05	1.31	1.06	-0.48	-0.24	0.3	1.3	0.6	0.0	0.92
2050	0.37	-0.02	0.80	0.93	-0.41	-0.23	-0.2	1.2	0.5	-0.3	0.8
2060	0.30	-0.03	0.55	0.67	-0.46	-0.24	-0.3	0.7	0.7	-0.2	0.54
2070	0.30	-0.03	0.16	0.40	-0.42	-0.25	-0.3	0.4	0.8	-0.2	0.28
2080	0.35	-0.03	-0.36	0.25	-0.60	-0.31	-0.4	0.3	1.0	-0.2	0.12
2090	0.36	-0.01	-1.22	0.21	-0.78	-0.41	-0.5	0.2	1.2	-0.2	0.06
2100	0.39	0.00	-2.08	0.18	-0.97	-0.50	-0.6	0.2	1.4	-0.2	-0.1

CO₂ emissions - total (Gt C/yr)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	7.97	7.97	7.97	7.97	7.97	7.97	8.4	8.4	8.4	8.4	8.4
2010	10.88	9.38	9.73	9.58	9.28	8.78	11.2	10.0	8.5	9.7	9.9
2020	12.64	10.26	12.73	12.25	10.63	9.05	13.8	12.6	9.6	10.5	11.4
2030	14.48	12.38	16.19	14.72	11.11	9.90	14.9	14.8	9.1	10.3	12.66
2040	15.35	12.65	19.97	16.07	11.72	10.69	15.5	16.0	9.7	10.8	13.58
2050	16.38	12.26	23.90	17.43	11.29	11.01	16.0	17.6	10.3	10.8	14.5
2060	16.00	11.38	25.69	19.16	9.74	11.49	15.6	18.9	11.1	11.4	15.22
2070	15.73	9.87	27.28	20.89	8.18	11.62	15.3	20.6	10.9	11.6	15.94
2080	15.18	8.02	28.68	23.22	6.70	12.15	14.6	23.0	9.7	12.2	17.12
2090	14.30	6.26	28.42	26.15	5.32	12.79	13.6	25.8	8.7	12.9	18.76
2100	13.49	4.32	28.24	29.09	4.23	13.32	12.6	29.0	7.9	13.5	20.3

II.1.2: CH₄ emissions (Tg CH₄/yr)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	323	323	323	323	323	323	347	347	347	347	390
2010	373	362	359	370	349	349	417	394	367	389	433
2020	421	415	416	424	377	384	484	448	396	448	477
2030	466	483	489	486	385	426	547	506	403	501	529

1	2040	458	495	567	542	381	466	531	560	423	528	580
2	2050	452	500	630	598	359	504	514	621	444	538	630
3	2060	410	459	655	654	342	522	464	674	445	544	654
4	2070	373	404	677	711	324	544	413	732	446	542	678
5	2080	341	359	695	770	293	566	370	790	447	529	704
6	2090	314	317	715	829	266	579	336	848	413	508	733
7	2100	289	274	735	889	236	597	301	913	379	508	762

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910 **II.1.3: N₂O emissions (Tg N/yr)**

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12	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
13	2000	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.9	6.9	6.9	5.5
14	2010	7.0	6.1	8.0	8.1	7.5	6.2	7.3	7.9	7.4	7.1	6.2
15	2020	7.2	6.1	9.3	9.6	8.1	6.1	7.7	9.4	8.1	7.1	7.1
16	2030	7.3	6.2	10.9	10.7	8.2	6.1	7.5	10.5	8.3	6.7	7.7
17	2040	7.4	6.2	12.8	11.3	8.3	6.2	7.1	11.1	8.6	6.4	8.0
18	2050	7.4	6.1	14.5	12.0	8.3	6.3	6.8	11.8	8.9	6.0	8.3
19	2060	7.3	6.0	15.0	12.9	7.7	6.4	6.3	12.7	8.8	5.8	8.3
20	2070	7.2	5.7	15.4	13.9	7.4	6.6	5.9	13.7	8.7	5.5	8.4
21	2080	7.1	5.6	15.7	14.8	7.0	6.7	5.5	14.6	8.6	5.4	8.5
22	2090	7.1	5.5	16.1	15.7	6.4	6.8	5.2	15.5	8.3	5.2	8.6
23	2100	7.0	5.4	16.6	16.5	5.7	6.9	4.9	16.4	8.0	5.1	8.7

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2526 **II.1.4: Perfluorocarbon (PFCs), sulphur hexafluoride (SF₆) and hydrofluorocarbons (HFCs) emissions (kt/yr)**

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28 **CF₄ emissions (kt/yr)**

29	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
30	2000	12.6	12.6	12.6	12.6	12.6	12.6	26.7	26.7	26.7	26.7
31	2010	15.3	15.3	15.3	20.3	14.5	21.0	28.4	28.9	27.0	29.9
32	2020	21.1	21.1	21.1	25.2	15.7	27.1	41.0	35.2	29.6	37.7
33	2030	30.1	30.1	30.1	31.4	16.6	34.6	59.4	43.0	31.4	47.4
34	2040	38.2	38.2	38.2	37.9	18.5	43.6	71.7	50.9	33.1	58.9
35	2050	43.8	43.8	43.8	45.6	20.9	52.7	77.3	60.0	35.5	70.5
36	2060	48.1	48.1	48.1	56.0	23.1	59.2	76.7	72.6	36.1	78.5
37	2070	52.1	52.1	52.1	63.6	22.5	63.1	64.2	84.7	29.6	85.1
38	2080	56.1	56.1	56.1	73.2	21.3	64.2	40.6	97.9	19.7	86.6
39	2090	58.9	58.9	58.9	82.8	22.5	62.9	46.8	110.9	20.8	84.7
40	2100	57.0	57.0	57.0	88.2	22.2	59.9	53.0	117.9	20.5	80.6

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4243 **C₂F₆ emissions (kt/yr)**

44	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
45	2000	1.3	1.3	1.3	1.3	1.3	1.3	2.7	2.7	2.7	2.7
46	2010	1.5	1.5	1.5	2.0	1.5	2.1	2.8	2.9	2.7	3.0
47	2020	2.1	2.1	2.1	2.5	1.6	2.7	4.1	3.5	3.0	3.8
48	2030	3.0	3.0	3.0	3.1	1.7	3.5	5.9	4.3	3.1	4.7
49	2040	3.8	3.8	3.8	3.8	1.8	4.4	7.2	5.1	3.3	5.9
50	2050	4.4	4.4	4.4	4.6	2.1	5.3	7.7	6.0	3.6	7.1
51	2060	4.8	4.8	4.8	5.6	2.3	5.9	7.7	7.3	3.6	7.9
52	2070	5.2	5.2	5.2	6.4	2.2	6.3	6.4	8.5	3.0	8.5
53	2080	5.6	5.6	5.6	7.3	2.1	6.4	4.1	9.8	2.0	8.7
54	2090	5.9	5.9	5.9	8.3	2.2	6.3	4.7	11.1	2.1	8.5
55	2100	5.7	5.7	5.7	8.8	2.2	6.0	5.3	11.8	2.1	8.1

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2	C₄F₁₀ emissions (kt/yr)										
3	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>
4	2000	0.0	0.0	0.0	0.0	0.0	0.0	7.5	7.5	7.5	7.5
5	2010	0.0	0.0	0.0	0.0	0.0	0.0	9.5	9.1	9.0	9.3
6	2020	0.0	0.0	0.0	0.0	0.0	0.0	13.8	11.3	11.1	12.0
7	2030	0.0	0.0	0.0	0.0	0.0	0.0	19.8	13.2	13.1	14.8
8	2040	0.0	0.0	0.0	0.0	0.0	0.0	27.2	15.5	15.8	18.0
9	2050	0.0	0.0	0.0	0.0	0.0	0.0	32.0	18.3	19.8	21.7
10	2060	0.0	0.0	0.0	0.0	0.0	0.0	34.8	22.2	19.9	25.7
11	2070	0.0	0.0	0.0	0.0	0.0	0.0	36.9	26.1	19.7	28.5
12	2080	0.0	0.0	0.0	0.0	0.0	0.0	38.6	31.2	19.4	30.4
13	2090	0.0	0.0	0.0	0.0	0.0	0.0	39.9	37.3	18.9	32.1
14	2100	0.0	0.0	0.0	0.0	0.0	0.0	40.7	43.2	18.0	33.6
15											
16	SF₆ emissions (kt/yr)										
17	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>
18	2000	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
19	2010	6.7	6.7	6.7	7.6	5.6	7.4	7.2	8.0	6.4	7.7
20	2020	7.3	7.3	7.3	9.7	5.7	8.4	7.9	10.2	6.5	9.9
21	2030	10.2	10.2	10.2	11.6	7.2	9.2	10.7	12.0	8.0	12.5
22	2040	15.2	15.2	15.2	13.7	8.9	11.7	15.8	14.0	9.7	15.8
23	2050	18.3	18.3	18.3	16.0	10.4	12.1	18.8	16.8	11.2	18.6
24	2060	19.5	19.5	19.5	18.8	10.9	12.2	20.0	18.7	11.6	20.4
25	2070	17.3	17.3	17.3	19.8	9.5	11.4	17.8	19.7	10.2	22.0
26	2080	13.5	13.5	13.5	20.7	7.1	9.6	12.0	20.6	6.8	22.8
27	2090	13.0	13.0	13.0	23.4	6.5	10.0	13.5	23.3	7.2	23.9
28	2100	14.5	14.5	14.5	25.2	6.5	10.6	15.0	25.1	7.2	24.4
29											
30	HFC-23 emissions (kt/yr)										
31	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>
32	2000	13	13	13	13	13	13	13	13	13	13
33	2010	15	15	15	15	15	15	15	15	15	15
34	2020	5	5	5	5	5	5	5	5	5	5
35	2030	2	2	2	2	2	2	2	2	2	2
36	2040	2	2	2	2	2	2	2	2	2	2
37	2050	1	1	1	1	1	1	0	0	0	0
38	2060	1	1	1	1	1	1	0	0	0	0
39	2070	1	1	1	1	1	1	0	0	0	0
40	2080	1	1	1	1	1	1	0	0	0	0
41	2090	1	1	1	1	1	1	0	0	0	0
42	2100	1	1	1	1	1	1	0	0	0	0
43											
44	HFC-32 emissions (kt/yr)										
45	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>
46	2000	0	0	0	0	0	0	2	2	2	2
47	2010	4	4	4	4	3	3	3	3	3	3
48	2020	8	8	8	6	6	6	8	6	6	7
49	2030	14	14	14	9	8	9	14	9	8	10
50	2040	19	19	19	11	10	11	19	10	10	12
51	2050	24	24	24	14	14	14	24	13	14	16
52	2060	28	28	28	17	14	17	26	16	14	19
53	2070	29	29	29	20	14	20	27	19	14	21
54	2080	30	30	30	24	14	22	28	23	14	23
55	2090	30	30	30	29	14	24	28	28	13	24

1	2100	30	30	30	33	13	26	28	33	13	25	
2												
3	HFC-125 emissions (kt/yr)											
4	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
5	2000	0	0	0	0	0	0	7	7	7	7	0
6	2010	12	12	12	11	11	11	11	10	10	10	1
7	2020	27	27	27	21	21	22	26	19	20	22	9
8	2030	45	45	45	29	29	30	44	27	28	32	46
9	2040	62	62	62	35	36	38	62	33	35	40	111
10	2050	80	80	80	46	48	49	78	43	47	52	175
11	2060	94	94	94	56	48	58	84	53	48	62	185
12	2070	98	98	98	66	48	67	88	62	47	70	194
13	2080	100	100	100	79	48	76	91	74	46	75	199
14	2090	101	101	101	94	46	83	92	89	45	79	199
15	2100	101	101	101	106	44	89	93	104	43	83	199
16												
17	HFC-134a emissions (kt/yr)											
18	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
19	2000	80	80	80	80	80	80	147	147	147	147	148
20	2010	176	176	176	166	163	166	220	204	206	216	290
21	2020	326	326	326	252	249	262	427	315	319	359	396
22	2030	515	515	515	330	326	352	693	412	422	496	557
23	2040	725	725	725	405	414	443	997	508	545	638	738
24	2050	931	931	931	506	547	561	1215	635	734	816	918
25	2060	1076	1076	1076	633	550	679	1264	800	732	991	969
26	2070	1078	1078	1078	758	544	799	1272	962	718	1133	1020
27	2080	1061	1061	1061	915	533	910	1247	1169	698	1202	1047
28	2090	1029	1029	1029	1107	513	1002	1204	1422	667	1261	1051
29	2100	980	980	980	1260	486	1079	1142	1671	627	1317	1055
30												
31	HFC-143a emissions (kt/yr)											
32	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	
33	2000	0	0	0	0	0	0	6	6	6	6	
34	2010	9	9	9	9	8	8	8	8	8	8	
35	2020	21	21	21	16	15	16	20	15	15	17	
36	2030	34	34	34	22	21	22	34	21	21	24	
37	2040	47	47	47	27	26	27	48	26	26	30	
38	2050	61	61	61	35	35	35	60	33	35	39	
39	2060	70	70	70	43	35	42	64	41	35	47	
40	2070	74	74	74	51	35	49	67	48	35	53	
41	2080	75	75	75	61	35	55	69	58	35	57	
42	2090	76	76	76	73	34	60	70	70	33	60	
43	2100	76	76	76	82	32	65	70	81	32	63	
44												
45	HFC-152a emissions (kt/yr)											
46	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
47	2000	0	0	0	0	0	0	0	0	0	0	0
48	2010	0	0	0	0	0	0	0	0	0	0	0
49	2020	0	0	0	0	0	0	0	0	0	0	18
50	2030	0	0	0	0	0	0	0	0	0	0	114
51	2040	0	0	0	0	0	0	0	0	0	0	281
52	2050	0	0	0	0	0	0	0	0	0	0	448
53	2060	0	0	0	0	0	0	0	0	0	0	495
54	2070	0	0	0	0	0	0	0	0	0	0	542
55	2080	0	0	0	0	0	0	0	0	0	0	567

1	2090	0	0	0	0	0	0	0	0	0	0	568
2	2100	0	0	0	0	0	0	0	0	0	0	570

3

4 **HFC-227ea emissions (kt/yr)**

5	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
6	2000	0	0	0	0	0	0	8	8	8	8
7	2010	13	13	13	12	13	14	12	11	11	12
8	2020	22	22	22	17	18	20	21	16	17	18
9	2030	34	34	34	21	24	26	33	19	22	25
10	2040	48	48	48	26	30	33	48	24	28	32
11	2050	62	62	62	32	39	41	57	29	38	41
12	2060	72	72	72	40	40	50	60	37	37	49
13	2070	71	71	71	48	39	59	60	44	37	57
14	2080	68	68	68	58	38	67	59	53	36	60
15	2090	65	65	65	70	36	74	56	64	34	63
16	2100	61	61	61	80	34	80	53	76	32	66

17

18 **HFC-245ca emissions (kt/yr)**

19	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
20	2000	0	0	0	0	0	0	38	38	38	38
21	2010	62	62	62	59	60	61	56	52	53	55
22	2020	100	100	100	79	80	85	98	73	75	84
23	2030	158	158	158	98	102	112	159	92	97	114
24	2040	222	222	222	121	131	144	229	113	128	149
25	2050	292	292	292	149	173	178	281	140	173	188
26	2060	350	350	350	190	173	216	298	179	172	229
27	2070	343	343	343	228	170	255	299	216	168	266
28	2080	330	330	330	276	166	290	287	262	163	280
29	2090	312	312	312	334	159	323	271	319	155	291
30	2100	288	288	288	388	150	353	251	376	145	302

31

32 **HFC43-10mee emissions (kt/yr)**

33	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
34	2000	0	0	0	0	0	0	5	5	5	5
35	2010	7	7	7	7	6	6	6	6	6	6
36	2020	9	9	9	8	7	7	8	7	7	7
37	2030	12	12	12	8	8	8	10	7	7	8
38	2040	15	15	15	9	9	10	13	8	9	9
39	2050	18	18	18	11	11	11	15	9	10	11
40	2060	22	22	22	12	11	12	17	11	10	12
41	2070	24	24	24	14	11	14	20	12	10	13
42	2080	27	27	27	16	11	15	22	14	10	14
43	2090	29	29	29	19	11	17	24	17	10	15
44	2100	30	30	30	22	10	18	26	19	10	15

45

46 Note: Table II.1.4 contains supplementary data to the SRES Report (Nakicenovic *et. al.*, 2000): The data contained in
 47 the SRES Report was insufficient to break down the individual contributions to HFCs, PFCs and SF6, these emissions
 48 were supplied by Lead Authors of the SRES Report and are also available at the CIESIN (Center for International
 49 Earth Science Information Network) Website (<http://sres.ciesin.org>).

50 The sample scenario IS92a is only included for HFC-125, HFC-134a, and HFC-152a.

51 All PFCs, SF6 and HFCs emissions are the same for family A1 (A1B, A1T and A1FI).

52

53

54 **II.1.5: NO_x emissions (Tg N/yr)**

55

1	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2	2000	32.0	32.0	32.0	32.0	32.0	32.0	32.5	32.5	32.5	32.5	37.0
3	2010	39.3	38.8	39.7	39.2	36.1	36.7	41.0	39.6	34.8	37.6	43.4
4	2020	46.1	46.4	50.4	50.3	39.9	42.7	48.9	50.7	39.3	43.4	49.8
5	2030	50.2	55.9	62.8	60.7	42.0	48.9	52.5	60.8	40.7	48.4	55.2
6	2040	48.9	59.7	77.1	65.9	42.6	53.4	50.9	65.8	44.8	52.8	59.6
7	2050	47.9	61.0	94.9	71.1	38.8	54.5	49.3	71.5	48.9	53.7	64.0
8	2060	46.0	59.6	102.1	75.5	34.3	56.1	47.2	75.6	48.9	55.4	67.8
9	2070	44.2	51.7	108.5	79.8	29.6	56.3	45.1	80.1	48.9	55.6	71.6
10	2080	42.7	42.8	115.4	87.5	25.7	59.2	43.3	87.3	48.9	58.5	75.4
11	2090	41.4	34.8	111.5	98.3	22.2	60.9	41.8	97.9	41.2	60.1	79.2
12	2100	40.2	28.1	109.6	109.2	18.7	61.2	40.3	109.7	33.6	60.4	83.0

13

14 Note: NO_x is the sum of NO and NO₂

15

16

17 **II.1.6: CO emissions (Tg CO/yr)**

18

19	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
20	2000	877	877	877	877	877	877	1036	1036	1036	1036	1048
21	2010	1002	1003	1020	977	789	935	1273	1136	849	1138	1096
22	2020	1032	1147	1204	1075	751	1022	1531	1234	985	1211	1145
23	2030	1109	1362	1436	1259	603	1111	1641	1413	864	1175	1207
24	2040	1160	1555	1726	1344	531	1220	1815	1494	903	1268	1282
25	2050	1214	1770	2159	1428	471	1319	1990	1586	942	1351	1358
26	2060	1245	1944	2270	1545	459	1423	2174	1696	984	1466	1431
27	2070	1276	2078	2483	1662	456	1570	2359	1816	1026	1625	1504
28	2080	1357	2164	2776	1842	426	1742	2455	1985	1068	1803	1576
29	2090	1499	2156	2685	2084	399	1886	2463	2218	1009	1948	1649
30	2100	1663	2077	2570	2326	363	2002	2471	2484	950	2067	1722

31

32

33 **II.1.7: VOC emissions (Tg/yr)**

34

35	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
36	2000	141	141	141	141	141	141	151	151	151	151	126
37	2010	178	164	166	155	141	159	178	164	143	172	142
38	2020	222	190	192	179	140	180	207	188	151	192	158
39	2030	266	212	214	202	131	199	229	210	144	202	173
40	2040	272	229	256	214	123	214	255	221	147	215	188
41	2050	279	241	322	225	116	217	285	235	150	217	202
42	2060	284	242	361	238	111	214	324	246	155	214	218
43	2070	289	229	405	251	103	202	301	260	160	202	234
44	2080	269	199	449	275	99	192	263	282	165	192	251
45	2090	228	167	435	309	96	178	223	315	159	178	267
46	2100	193	128	420	342	87	170	174	352	154	170	283

47

48 Note: Volatile Organic Compounds (VOC) include non-methane hydrocarbons (NMHC) and oxygenated NMHC
49 (e.g., alcohols, aldehydes and organic acids).

50

51

52 **II.1.8: SO₂ emissions (Tg S/yr)**

53

54	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
55	2000	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	79.0
56	2010	87.1	64.7	80.8	74.7	73.9	65.9	87.4	74.7	59.8	68.2	95.0

1	2020	100.2	59.9	86.9	99.5	74.6	61.3	100.8	99.5	56.2	65.0	111.0
2	2030	91.0	59.6	96.1	112.5	78.2	60.3	91.4	111.9	53.5	59.9	125.8
3	2040	68.9	45.9	94.0	109.0	78.5	59.0	77.9	108.1	53.3	58.8	139.4
4	2050	64.1	40.2	80.5	105.4	68.9	55.7	64.3	105.4	51.4	57.2	153.0
5	2060	46.9	34.4	56.3	89.6	55.8	53.8	51.2	86.3	51.2	53.7	151.8
6	2070	35.7	30.1	42.6	73.7	44.3	50.9	44.9	71.7	49.2	51.9	150.6
7	2080	30.7	25.2	39.4	64.7	36.1	50.0	30.7	64.2	42.2	49.1	149.4
8	2090	29.1	23.3	39.8	62.5	29.8	49.0	29.1	61.9	33.9	48.0	148.2
9	2100	27.6	20.2	40.1	60.3	24.9	47.9	27.4	60.3	28.6	47.3	147.0

10

11 Note: The SRES emissions for SO₂ are used with a linear offset in all scenarios to 69.0 Tg S/yr in year 2000.

12

13

14 **II.1.9: Black Carbon (BC) aerosols emissions (Tg/yr)**

15

16	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
17	2000	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
18	2010	13.9	13.9	14.1	13.6	11.3	13.1	15.2	13.6	10.2	13.6	13.0
19	2020	14.3	15.6	16.3	14.8	10.9	14.1	18.3	14.8	11.8	14.5	13.6
20	2030	15.2	18.2	19.1	17.0	9.1	15.2	19.6	16.9	10.3	14.1	14.3
21	2040	15.8	20.5	22.6	18.0	8.3	16.5	21.7	17.9	10.8	15.2	15.2
22	2050	16.4	23.1	27.7	19.0	7.5	17.7	23.8	19.0	11.3	16.2	16.1
23	2060	16.8	25.2	29.1	20.4	7.4	18.9	26.0	20.3	11.8	17.5	17.0
24	2070	17.2	26.8	31.6	21.8	7.4	20.7	28.2	21.7	12.3	19.4	17.9
25	2080	18.1	27.8	35.1	24.0	7.0	22.8	29.4	23.8	12.8	21.6	18.7
26	2090	19.8	27.7	34.0	26.8	6.7	24.5	29.5	26.5	12.1	23.3	19.6
27	2100	21.8	26.8	32.7	29.7	6.2	25.9	29.6	29.7	11.4	24.7	20.5

28

29 Note: Emissions for BC are scaled to SRES anthropogenic CO emissions offset to 1036 Tg CO/yr in 2000.

30

31

32 **II.1.10: Organic matter Carbonaceous (OC) aerosols emissions (Tg/yr)**

33

34	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
35	2000	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4
36	2010	91.2	91.3	92.6	89.3	74.5	86.0	100.0	89.3	66.7	89.4	85.2
37	2020	93.6	102.6	107.1	97.0	71.5	92.8	120.3	97.0	77.4	95.2	89.0
38	2030	99.6	119.5	125.3	111.4	59.9	99.8	128.9	111.0	67.9	92.3	93.9
39	2040	103.6	134.7	148.1	118.1	54.2	108.3	142.6	117.4	71.0	99.6	99.8
40	2050	107.9	151.6	182.1	124.7	49.5	116.1	156.4	124.6	74.0	106.2	105.8
41	2060	110.3	165.2	190.9	133.9	48.6	124.3	170.8	133.3	77.3	115.2	111.5
42	2070	112.8	175.8	207.6	143.1	48.3	135.9	185.4	142.7	80.6	127.7	117.2
43	2080	119.1	182.5	230.6	157.2	46.0	149.4	192.9	156.0	83.9	141.7	122.9
44	2090	130.3	181.9	223.5	176.2	43.8	160.7	193.5	174.3	79.3	153.1	128.6
45	2100	143.2	175.7	214.4	195.2	41.0	169.8	194.2	195.2	74.6	162.4	134.4

46

47 Note: Emissions for OC are scaled to SRES anthropogenic CO emissions offset to 1036 Tg CO/yr in 2000.

48

II.2: Abundances and burdens

II.2.1 CO₂ abundances (ppm)

ISAM model (reference) – CO₂ abundances (ppm)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
1970												
1980												
1990	353	353	353	353	353	353	353	353	353	353	353	354
2000	369	369	369	369	369	369	369	369	369	369	369	372
2010	391	389	389	390	388	388	393	391	388	390	390	393
2020	420	412	417	417	412	408	425	419	409	414	415	418
2030	454	440	455	451	437	429	461	453	429	438	444	446
2040	491	471	504	490	463	453	499	492	450	462	475	476
2050	532	501	567	532	488	478	538	535	472	486	508	509
2060	572	528	638	580	509	504	577	583	497	512	543	544
2070	611	550	716	635	525	531	615	637	522	539	582	580
2080	649	567	799	698	537	559	652	699	544	567	623	620
2090	685	577	885	771	545	589	685	771	563	597	670	664
2100	717	582	970	856	549	621	715	856	578	630	723	715

ISAM model (low) – CO₂ abundances (ppm)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	368	368	368	368	368	368	368	368	368	368	368
2010	383	381	381	382	380	380	385	383	380	382	382
2020	405	398	403	402	398	394	409	404	395	400	401
2030	432	419	433	429	416	410	438	431	410	417	423
2040	461	443	473	460	436	427	467	461	425	435	446
2050	493	466	525	493	455	446	498	495	442	454	472
2060	524	486	584	532	470	466	528	534	460	473	499
2070	554	501	647	576	480	486	557	577	479	492	529
2080	582	511	715	626	486	507	583	627	495	513	561
2090	607	516	783	686	490	530	607	686	507	536	598
2100	630	516	851	755	490	554	627	755	517	561	640

ISAM model (high) – CO₂ abundances (ppm)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	369	369	369	369	369	369	369	369	369	369	369
2010	397	394	394	395	394	393	398	396	393	396	396
2020	431	422	427	427	422	417	435	429	418	424	426
2030	470	455	471	466	452	443	477	469	444	453	460
2040	513	491	527	511	483	472	521	514	469	482	498
2050	560	527	597	561	514	502	568	564	496	512	539
2060	609	560	678	617	541	534	615	620	527	543	583
2070	656	590	767	681	563	567	661	682	558	577	631
2080	703	613	863	754	581	602	706	755	586	612	682
2090	748	631	962	838	594	640	749	838	611	650	739
2100	790	642	1062	936	603	680	789	936	634	691	804

Note: A “reference” case was defined with climate sensitivity 2.5°C, ocean uptake corresponding to the mean of the ocean model results in Chapter 3, Figure 3.10, and terrestrial uptake corresponding to the mean of the responses of mid-range models, LPJ, IBIS and SDGM (Chapter 3, Figure 3.10). A “low CO₂” parameterisation was chosen with

1 climate sensitivity 1.5°C and maximal CO₂ uptake by oceans and land. A “high CO₂” parameterisation was defined
 2 with climate sensitivity 4.5°C and minimal CO₂ uptake by oceans and land. See Chapter 3, Box 3.7, and Jain *et al.*
 3 (1994) for more details on the ISAM model.

4
5

6 **Bern-CC model (reference) – CO₂ abundances (ppm)**

7 Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
8 1970	325	325	325	325	325	325	325	325	325	325	325	325
9 1980	337	337	337	337	337	337	337	337	337	337	337	337
10 1990	352	352	352	352	352	352	352	352	352	352	352	353
11												
12 2000	367	367	367	367	367	367	367	367	367	367	367	370
13 2010	388	386	386	386	386	385	390	388	385	387	387	391
14 2020	418	410	415	414	410	406	421	416	407	412	413	416
15 2030	447	435	449	444	432	425	454	447	425	433	439	444
16 2040	483	466	495	481	457	448	490	484	445	457	468	475
17 2050	522	496	555	522	482	473	529	525	467	481	499	507
18 2060	563	523	625	568	503	499	569	571	492	506	533	541
19 2070	601	545	702	620	518	524	606	622	515	532	568	577
20 2080	639	563	786	682	530	552	642	683	537	559	607	616
21 2090	674	572	872	754	538	581	674	754	555	588	653	660
22 2100	703	575	958	836	540	611	702	836	569	618	703	709

23

24 **Bern-CC model (low) – CO₂ abundances (ppm)**

25 Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
26 2000	367	367	367	367	367	367	367	367	367	367	367
27 2010	383	381	381	381	381	380	384	383	380	382	383
28 2020	407	400	405	404	400	396	411	406	397	402	403
29 2030	432	419	432	428	417	410	437	431	410	417	424
30 2040	460	442	472	459	436	427	466	461	425	434	448
31 2050	491	464	521	492	455	445	496	495	440	452	473
32 2060	522	483	577	529	470	464	524	531	458	470	500
33 2070	548	496	636	569	479	482	550	569	475	487	527
34 2080	575	505	700	617	485	502	575	616	490	507	559
35 2090	598	508	763	671	487	522	596	670	501	528	593
36 2100	617	506	824	735	486	544	613	734	509	550	632

37

38 **Bern-CC model (high) – CO₂ abundances (ppm)**

39 Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
40 2000	367	367	367	367	367	367	367	367	367	367	367
41 2010	395	393	393	393	392	392	397	395	392	394	395
42 2020	436	427	433	431	426	422	441	434	424	430	431
43 2030	483	467	484	477	463	454	491	482	455	465	471
44 2040	538	514	552	533	503	491	548	538	488	504	517
45 2050	599	562	638	597	544	531	609	602	524	544	568
46 2060	666	610	743	670	584	575	675	675	566	588	624
47 2070	732	653	859	753	617	620	739	757	608	632	684
48 2080	797	689	985	848	645	668	802	851	648	680	750
49 2090	860	717	1118	957	666	718	863	959	682	730	822
50 2100	918	735	1248	1080	681	769	918	1082	713	782	902

51
 52 Note: A “reference” case was defined with an average ocean uptake for the 1980s of 2.0 PgC/yr. A “low CO₂”
 53 parameterisation was obtained by combining a “fast ocean” (ocean uptake of 2.54 PgC/yr for the 1980s) and no
 54 response of heterotrophic respiration to temperature. A “high CO₂” parameterisation was obtained by combining a
 55 “slow ocean” (ocean uptake of 1.46 PgC/yr for the 1980s) and capping CO₂ fertilisation. Climate sensitivity was set
 56 to 2.5°C for a doubling of CO₂. See Chapter 3, Box 3.7, and Joos *et al.* (2000) for more details on the Bern-CC model.

II.2.2: CH₄ abundances (ppb)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
1970	1420	1420	1420	1420	1420	1420	1420	1420	1420	1420	1420	1420
1980	1570	1570	1570	1570	1570	1570	1570	1570	1570	1570	1570	1570
1990	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
2000	1760	1760	1760	1760	1760	1760	1760	1760	1760	1760	1760	1810
2010	1871	1856	1851	1861	1827	1839	1899	1861	1816	1862	1855	1964
2020	2026	1998	1986	1997	1891	1936	2126	1997	1878	2020	1979	2145
2030	2202	2194	2175	2163	1927	2058	2392	2159	1931	2201	2129	2343
2040	2337	2377	2413	2357	1919	2201	2598	2344	1963	2358	2306	2561
2050	2400	2503	2668	2562	1881	2363	2709	2549	2009	2473	2497	2793
2060	2386	2552	2875	2779	1836	2510	2736	2768	2049	2552	2663	3003
2070	2301	2507	3030	3011	1797	2639	2669	2998	2077	2606	2791	3175
2080	2191	2420	3175	3252	1741	2765	2533	3238	2100	2625	2905	3328
2090	2078	2310	3307	3493	1663	2872	2367	3475	2091	2597	3019	3474
2100	1974	2169	3413	3731	1574	2973	2187	3717	2039	2569	3136	3616

Note: The SAR column refers to values as reported in the SAR using IS92a emissions; whereas the IS92a column is calculated using IS92a emissions but with year 2000 starting values and the new feedbacks on the lifetime. See Chapter 4 for details.

II.2.3: N₂O abundances (ppb)

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
1970	295	295	295	295	295	295	295	295	295	295	295	295
1980	301	301	301	301	301	301	301	301	301	301	301	301
1990	308	308	308	308	308	308	308	308	308	308	308	308
2000	316	316	316	316	316	316	316	316	316	316	316	319
2010	324	323	325	325	324	323	324	325	324	324	324	328
2020	331	328	335	335	333	328	332	335	333	331	333	339
2030	338	333	347	347	341	333	340	347	341	338	343	350
2040	344	338	361	360	349	338	346	360	350	343	353	361
2050	350	342	378	373	357	342	351	373	358	347	363	371
2060	356	345	396	387	363	346	355	386	366	350	372	382
2070	360	348	413	401	368	350	358	400	373	352	381	391
2080	365	350	429	416	371	354	360	415	380	354	389	400
2090	368	352	445	432	374	358	361	430	385	355	396	409
2100	372	354	460	447	375	362	361	446	389	356	403	417

Note: The SAR column refers to values as reported in the SAR using IS92a emissions; whereas the IS92a column is calculated using IS92a emissions but with year 2000 starting values and the new feedbacks on the lifetime. See Chapter 4 for details.

II.2.4: Perfluorocarbon (PFCs), sulphur hexafluoride (SF₆) and hydrofluorocarbons (HFCs) abundances (ppt)

CF₄ abundances (ppt)

1	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2	2000	82	82	82	82	82	82	82	82	82	82
3	2010	91	91	91	92	91	93	100	100	100	100
4	2020	103	103	103	107	101	108	122	121	118	122
5	2030	119	119	119	125	111	128	154	146	138	150
6	2040	141	141	141	148	122	153	197	176	159	184
7	2050	168	168	168	175	135	184	245	212	181	226
8	2060	198	198	198	208	150	221	296	255	204	274
9	2070	230	230	230	246	164	261	342	306	226	327
10	2080	265	265	265	291	179	302	377	365	242	383
11	2090	303	303	303	341	193	344	405	433	256	439
12	2100	341	341	341	397	208	384	437	508	269	493

13

14 **C₂F₆ abundances (ppt)**

15	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
16	2000	3	3	3	3	3	3	3	3	3	3
17	2010	4	4	4	4	4	4	4	4	4	4
18	2020	5	5	5	5	4	5	6	6	6	6
19	2030	6	6	6	6	5	6	8	7	7	8
20	2040	7	7	7	7	6	8	11	9	8	10
21	2050	9	9	9	9	7	10	14	12	10	12
22	2060	11	11	11	11	8	12	17	14	11	16
23	2070	13	13	13	14	8	15	20	18	12	19
24	2080	15	15	15	17	9	17	22	21	13	22
25	2090	17	17	17	20	10	20	24	26	14	26
26	2100	20	20	20	23	11	22	26	30	15	30

27

28 **C₄F₁₀ abundances (ppt)**

29	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
30	2000	0	0	0	0	0	0	0	0	0	0
31	2010	0	0	0	0	0	0	2	2	2	2
32	2020	0	0	0	0	0	0	5	4	4	5
33	2030	0	0	0	0	0	0	9	7	7	8
34	2040	0	0	0	0	0	0	14	11	11	12
35	2050	0	0	0	0	0	0	21	15	15	16
36	2060	0	0	0	0	0	0	29	20	20	22
37	2070	0	0	0	0	0	0	38	25	24	28
38	2080	0	0	0	0	0	0	47	32	29	35
39	2090	0	0	0	0	0	0	56	40	34	43
40	2100	0	0	0	0	0	0	66	50	38	51

41

42 **SF₆ abundances (ppt)**

43	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
44	2000	5	5	5	5	5	5	5	5	5	5
45	2010	7	7	7	7	7	7	7	7	7	7
46	2020	10	10	10	11	9	10	10	11	10	11
47	2030	13	13	13	15	12	14	14	15	12	15
48	2040	18	18	18	20	15	18	19	20	16	21
49	2050	25	25	25	26	19	23	26	26	20	27
50	2060	32	32	32	32	23	27	33	33	24	35
51	2070	39	39	39	40	27	32	41	41	29	43
52	2080	45	45	45	48	30	36	46	48	32	52
53	2090	50	50	50	56	33	40	51	57	35	61
54	2100	56	56	56	65	35	44	57	66	37	70

55

HFC-23 abundances (ppt)												
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p		
2000	15	15	15	15	15	15	15	15	15	15		
2010	26	26	26	26	26	26	26	26	26	26		
2020	33	33	33	33	33	33	33	33	33	33		
2030	35	35	35	35	35	35	35	35	35	35		
2040	35	35	35	35	35	35	36	35	35	35		
2050	35	35	35	35	35	35	35	35	35	35		
2060	35	35	35	35	34	35	34	34	34	33		
2070	35	35	34	34	34	34	33	32	32	32		
2080	34	34	34	34	33	34	32	31	31	31		
2090	34	34	34	34	33	34	31	30	30	30		
2100	34	34	34	33	32	34	30	29	29	29		
HFC-32 abundance (ppt)												
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p		
2000	0	0	0	0	0	0	0	0	0	0		
2010	1	1	1	1	1	1	1	1	1	1		
2020	3	3	3	3	3	3	3	3	3	3		
2030	7	7	6	4	4	4	7	4	4	4		
2040	10	10	10	6	5	6	11	5	5	5		
2050	14	14	13	7	7	8	15	7	7	7		
2060	17	17	16	9	8	10	18	9	8	8		
2070	19	19	18	11	8	12	20	11	8	8		
2080	19	21	19	14	8	14	21	13	8	8		
2090	20	22	20	17	8	15	21	16	8	8		
2100	19	22	20	20	8	17	20	20	8	8		
HFC-125 abundance (ppt)												
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	
2000	0	0	0	0	0	0	0	0	0	0	0	0
2010	2	2	2	2	2	2	4	3	3	3	3	0
2020	9	9	9	8	8	8	10	8	8	9	9	2
2030	21	21	21	16	16	16	22	15	16	17	17	12
2040	37	37	37	24	24	26	38	23	24	27	27	40
2050	57	56	55	34	33	36	57	32	33	38	38	87
2060	77	78	76	45	43	48	78	43	42	51	51	137
2070	97	98	95	58	49	61	96	54	49	65	65	177
2080	112	115	111	72	54	75	111	68	54	77	77	210
2090	124	129	124	89	57	88	123	83	57	89	89	236
2100	133	140	134	107	58	102	132	101	58	99	99	255
HFC-134a abundance (ppt)												
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	
2000	12	12	12	12	12	12	12	12	12	12	12	12
2010	58	58	58	55	55	56	80	76	76	79	79	94
2020	130	130	129	111	108	113	172	141	142	155	155	183
2030	236	235	233	170	165	179	319	214	215	250	250	281
2040	375	373	366	231	223	250	522	290	294	356	356	401
2050	537	535	521	299	293	330	754	375	393	477	477	537
2060	698	701	675	382	352	424	954	480	476	615	615	657
2070	814	832	791	480	380	526	1092	606	515	756	756	743
2080	871	912	859	594	391	633	1167	753	530	878	878	807
2090	887	952	893	729	390	737	1185	930	531	968	968	850
2100	875	956	899	877	379	835	1157	1132	522	1041	1041	878

1												
2	HFC-143a abundance (ppt)											
3	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>	
4	2000	0	0	0	0	0	0	0	0	0	0	
5	2010	3	3	3	3	2	2	4	4	4	4	
6	2020	11	11	11	10	9	9	12	11	11	11	
7	2030	26	26	26	20	18	19	27	20	20	22	
8	2040	47	47	47	32	29	31	48	31	31	35	
9	2050	73	73	72	45	43	45	75	44	44	51	
10	2060	103	103	101	62	57	62	104	60	58	69	
11	2070	132	133	130	81	68	81	131	78	69	89	
12	2080	158	161	157	103	77	101	156	98	79	110	
13	2090	181	185	180	129	85	121	179	123	86	129	
14	2100	200	207	201	157	90	142	197	151	92	147	
15												
16	HFC-152a abundance (ppt)											
17	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>	<u>IS92a</u>
18	2000	0	0	0	0	0	0	0	0	0	0	0
19	2010	0	0	0	0	0	0	0	0	0	0	0
20	2020	0	0	0	0	0	0	0	0	0	0	2
21	2030	0	0	0	0	0	0	0	0	0	0	12
22	2040	0	0	0	0	0	0	0	0	0	0	33
23	2050	0	0	0	0	0	0	0	0	0	0	56
24	2060	0	0	0	0	0	0	0	0	0	0	67
25	2070	0	0	0	0	0	0	0	0	0	0	74
26	2080	0	0	0	0	0	0	0	0	0	0	79
27	2090	0	0	0	0	0	0	0	0	0	0	81
28	2100	0	0	0	0	0	0	0	0	0	0	82
29												
30	HFC-227ea abundance (ppt)											
31	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>	
32	2000	0	0	0	0	0	0	0	0	0	0	
33	2010	2	2	2	2	2	2	3	3	3	3	
34	2020	6	6	6	5	6	6	7	6	6	7	
35	2030	13	13	13	10	10	11	13	9	10	11	
36	2040	22	22	22	14	15	17	22	13	15	17	
37	2050	33	33	32	19	21	24	33	18	20	23	
38	2060	45	45	44	25	27	31	43	23	26	31	
39	2070	56	56	55	32	31	40	52	29	30	39	
40	2080	63	65	62	40	34	49	60	36	33	47	
41	2090	68	71	68	49	35	59	64	45	34	54	
42	2100	70	74	71	60	36	68	67	55	35	60	
43												
44	HFC-245ca abundance (ppt)											
45	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>	
46	2000	0	0	0	0	0	0	0	0	0	0	
47	2010	8	8	8	8	8	8	11	10	10	10	
48	2020	20	20	20	17	17	18	20	16	16	18	
49	2030	34	34	33	23	23	26	35	21	22	26	
50	2040	52	51	50	29	29	34	55	27	28	35	
51	2050	72	72	69	36	38	44	76	34	38	46	
52	2060	92	93	88	46	43	55	92	43	44	58	
53	2070	102	105	99	58	44	67	101	55	44	70	
54	2080	101	108	101	72	43	80	101	68	44	79	
55	2090	97	107	99	88	42	92	96	84	43	84	

1	2100	90	101	94	105	40	103	88	101	41	88
2											
3	HFC-43-10mee abundance (ppt)										
4	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>
5	2000	0	0	0	0	0	0	0	0	0	0
6	2010	1	1	1	1	1	1	1	1	1	1
7	2020	2	2	2	2	1	1	2	2	2	2
8	2030	3	3	3	2	2	2	3	2	2	2
9	2040	4	4	4	3	2	3	4	2	2	3
10	2050	5	5	5	3	3	3	5	3	3	3
11	2060	7	7	6	4	3	4	6	3	3	4
12	2070	8	8	8	4	4	5	7	4	3	4
13	2080	9	9	9	5	4	5	8	4	4	5
14	2090	10	11	10	6	4	6	9	5	4	5
15	2100	11	12	11	7	4	7	10	6	4	6

16
17 Note: Even though all PFCs, SF6 and HFCs emissions are the same for family A1 (A1B, A1T and A1FI), the OH
18 changes due to CH₄, NO_x, CO and VOC (affecting only HFCs burdens). Hence the burden for HFCs can diverge for
19 each of these scenarios within family A1. See Chapter 4 for details.

20
21

22 II.2.5: Tropospheric O₃ burden (global mean column in DU)

24	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>	<u>IS92a</u>	<u>SAR</u>
25	1970												
26	1980	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
27	1990	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
28													
29	2000	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.3
30	2010	35.8	35.6	35.8	35.7	34.8	35.2	36.2	35.6	34.3	35.4	35.5	34.8
31	2020	37.8	37.7	38.4	38.2	35.6	36.7	38.8	38.2	35.4	37.1	37.1	35.3
32	2030	39.3	40.3	41.5	40.8	35.9	38.4	40.5	40.7	35.7	38.5	38.7	35.8
33	2040	39.7	41.9	45.1	42.6	35.8	39.8	41.3	42.4	36.5	39.9	40.1	36.5
34	2050	39.8	42.9	49.6	44.2	35.0	40.7	41.6	44.1	37.5	40.6	41.6	37.1
35	2060	39.6	43.1	51.9	45.7	34.0	41.5	41.8	45.6	37.7	41.2	42.9	37.7
36	2070	39.1	41.9	53.8	47.2	33.1	42.1	41.4	47.1	37.9	41.6	44.0	38.2
37	2080	38.5	40.2	55.9	49.3	32.1	43.0	40.8	49.1	38.1	42.3	45.1	38.7
38	2090	38.0	38.4	55.6	52.0	31.2	43.7	39.9	51.8	36.8	42.6	46.1	39.1
39	2100	37.5	36.5	55.2	54.8	30.1	44.2	38.9	54.7	35.2	42.8	47.2	39.5

40
41 Note: SAR column refers to IS92a emissions as reported in the SAR which estimated this O₃ change only as an
42 indirect feedback effect from CH₄ increases; whereas IS92a column uses TAR models that include also changes in
43 emissions of NO_x, CO and VOC. A mean tropospheric O₃ content of 34 DU in 1990 is adopted; and 1 ppb of = 0.65
44 DU.

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46

47 II.2.6: Tropospheric OH (as a factor relative to year 2000)

49	<u>Year</u>	<u>A1B</u>	<u>A1T</u>	<u>A1FI</u>	<u>A2</u>	<u>B1</u>	<u>B2</u>	<u>A1p</u>	<u>A2p</u>	<u>B1p</u>	<u>B2p</u>	<u>IS92a</u>
50	2000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
51	2010	0.99	0.99	0.99	1.00	1.01	0.99	0.98	1.00	1.02	0.99	1.00
52	2020	0.97	0.98	0.99	1.00	1.02	0.99	0.94	1.00	1.01	0.97	0.99
53	2030	0.94	0.96	0.98	0.99	1.04	0.98	0.90	0.99	1.02	0.96	0.98
54	2040	0.91	0.93	0.96	0.98	1.06	0.96	0.85	0.98	1.03	0.95	0.96

1	2050	0.90	0.89	0.94	0.96	1.06	0.93	0.81	0.96	1.04	0.93	0.95
2	2060	0.89	0.87	0.92	0.94	1.05	0.91	0.78	0.94	1.03	0.92	0.93
3	2070	0.89	0.84	0.90	0.92	1.04	0.89	0.77	0.92	1.01	0.90	0.92
4	2080	0.89	0.81	0.88	0.90	1.04	0.87	0.77	0.90	1.01	0.89	0.91
5	2090	0.90	0.81	0.86	0.89	1.04	0.86	0.80	0.89	0.98	0.89	0.90
6	2100	0.90	0.82	0.86	0.88	1.05	0.84	0.82	0.88	0.97	0.89	0.89

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8

9 II.2.7: SO₄ aerosols burden (Tg S)

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11	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
12	2000	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
13	2010	0.66	0.49	0.61	0.56	0.56	0.50	0.66	0.56	0.45	0.51	0.64
14	2020	0.76	0.45	0.65	0.75	0.56	0.46	0.76	0.75	0.42	0.49	0.76
15	2030	0.69	0.45	0.72	0.85	0.59	0.45	0.69	0.84	0.40	0.45	0.87
16	2040	0.52	0.35	0.71	0.82	0.59	0.44	0.59	0.81	0.40	0.44	0.98
17	2050	0.48	0.30	0.61	0.79	0.52	0.42	0.48	0.79	0.39	0.43	1.08
18	2060	0.35	0.26	0.42	0.68	0.42	0.41	0.39	0.65	0.39	0.40	1.07
19	2070	0.27	0.23	0.32	0.56	0.33	0.38	0.34	0.54	0.37	0.39	1.06
20	2080	0.23	0.19	0.30	0.49	0.27	0.38	0.23	0.48	0.32	0.37	1.05
21	2090	0.22	0.18	0.30	0.47	0.22	0.37	0.22	0.47	0.26	0.36	1.04
22	2100	0.21	0.15	0.30	0.45	0.19	0.36	0.21	0.45	0.22	0.36	1.03

23

24 Note: Global burden is scaled to emissions: 0.52 Tg burden for 69.0 Tg S/yr emissions.

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26

27 II.2.8: Black Carbon (BC) aerosols burden (Tg)

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29	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
30	2000	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
31	2010	0.29	0.29	0.30	0.29	0.24	0.27	0.32	0.29	0.21	0.29	0.27
32	2020	0.30	0.33	0.34	0.31	0.23	0.30	0.38	0.31	0.25	0.30	0.28
33	2030	0.32	0.38	0.40	0.36	0.19	0.32	0.41	0.35	0.22	0.29	0.30
34	2040	0.33	0.43	0.47	0.38	0.17	0.35	0.46	0.37	0.23	0.32	0.32
35	2050	0.34	0.48	0.58	0.40	0.16	0.37	0.50	0.40	0.24	0.34	0.34
36	2060	0.35	0.53	0.61	0.43	0.16	0.40	0.55	0.43	0.25	0.37	0.36
37	2070	0.36	0.56	0.66	0.46	0.15	0.43	0.59	0.46	0.26	0.41	0.37
38	2080	0.38	0.58	0.74	0.50	0.15	0.48	0.62	0.50	0.27	0.45	0.39
39	2090	0.42	0.58	0.71	0.56	0.14	0.51	0.62	0.56	0.25	0.49	0.41
40	2100	0.46	0.56	0.68	0.62	0.13	0.54	0.62	0.62	0.24	0.52	0.43

41

41 Note: Global burden is scaled to emissions: 0.26 Tg burden for 12.4 Tg/yr emissions.

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43

44 II.2.9: Organic matter Carbonaceous (OC) burden (Tg)

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46	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
47	2000	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
48	2010	1.70	1.70	1.73	1.67	1.39	1.61	1.87	1.67	1.25	1.67	1.59
49	2020	1.75	1.92	2.00	1.81	1.34	1.73	2.25	1.81	1.45	1.78	1.66
50	2030	1.86	2.23	2.34	2.08	1.12	1.86	2.41	2.07	1.27	1.72	1.75
51	2040	1.94	2.51	2.77	2.21	1.01	2.02	2.66	2.19	1.32	1.86	1.86
52	2050	2.01	2.83	3.40	2.33	0.92	2.17	2.92	2.33	1.38	1.98	1.97
53	2060	2.06	3.09	3.56	2.50	0.91	2.32	3.19	2.49	1.44	2.15	2.08
54	2070	2.11	3.28	3.88	2.67	0.90	2.54	3.46	2.66	1.51	2.38	2.19

1	2080	2.22	3.41	4.31	2.94	0.86	2.79	3.60	2.91	1.57	2.65	2.29
2	2090	2.43	3.40	4.17	3.29	0.82	3.00	3.61	3.25	1.48	2.86	2.40
3	2100	2.67	3.28	4.00	3.65	0.77	3.17	3.63	3.64	1.39	3.03	2.51
4	Note: Global burden is scaled to emissions: 1.52 Tg burden for 81.4 Tg/yr emissions											

1 **II.2.10: Chloro- (CFCs) and Fluoro-Carbon (HFCs) greenhouse gas abundances from WMO98 Scenario A1(baseline) following the**
 2 **Montreal (1997) Amendments (ppt)**

3	Year	CFC-11	CFC-12	CFC-113	CFC-114	CFC-115	CCl ₄	CH ₂ Cl ₂	HCFC-22	HCFC-141b	HCFC-142b	HCFC-123	CF ₂ BrCl	CF ₂ Br	BESC1
4	1930	0	0	0	0	0	3	0	0	0	0	0	0	0	0.91
5	1935	0	0	0	0	0	6	0	0	0	0	0	0	0	0.91
6	1940	0	0	0	0	0	11	0	0	0	0	0	0	0	0.93
7	1945	0	1	0	0	0	20	0	0	0	0	0	0	0	0.95
8	1950	0	6	0	1	0	29	0	0	0	0	0	0	0	0.99
9	1955	3	14	0	2	0	34	0	0	0	0	0	0	0	1.03
10	1960	9	28	1	3	0	38	0	0	0	0	0	0	0	1.06
11	1965	22	55	2	5	0	46	1	0	0	0	0	0	0	1.12
12	1970	50	109	4	6	0	56	13	13	0	0	0	0	0	1.25
13	1975	106	199	9	8	1	77	36	25	0	0	0	0	0	1.54
14	1980	164	290	18	10	1	92	75	41	0	0	1	0	0	1.99
15	1985	207	373	34	12	3	100	102	64	0	0	2	1	0	2.44
16	1990	258	467	67	15	5	102	125	90	0	1	0	3	2	2.87
17	1995	271	520	86	16	7	100	110	112	3	7	0	4	2	3.30
18	2000	267	535	85	16	9	92	44	145	13	15	0	4	3	3.28
19	2005	258	535	84	16	9	84	16	212	20	26	2	4	3	3.14
20	2010	246	527	81	16	9	75	6	257	22	33	2	4	3	3.03
21	2015	231	508	77	16	9	67	2	264	20	35	3	4	3	2.92
22	2020	214	486	72	15	9	59	1	229	16	32	3	3	3	2.74
23	2025	197	463	68	15	9	52	0	179	12	28	2	3	3	2.58
24	2030	180	441	64	15	9	47	0	137	9	23	2	2	3	2.42
25	2035	164	420	61	14	9	41	0	108	7	20	2	2	3	2.28
26	2040	149	400	57	14	9	37	0	88	6	17	2	1	3	2.16
27	2045	136	380	54	14	9	33	0	67	4	14	1	1	3	2.04
28	2050	123	362	51	14	9	29	0	46	2	11	1	1	3	1.94
29	2055	111	345	48	14	9	26	0	30	1	8	1	1	3	1.85
30	2060	101	328	45	13	9	23	0	20	1	6	1	0	2	1.76
31	2065	91	313	43	13	9	20	0	13	0	5	0	0	2	1.69
32	2070	83	298	40	13	9	18	0	9	0	4	0	0	2	1.62

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1	2075	75	284	38	13	8	16	0	6	0	3	0	0	0	2	1.56
2	2080	68	270	36	12	8	14	0	4	0	2	0	0	0	2	1.51
3	2085	61	257	34	12	8	13	0	2	0	2	0	0	0	2	1.46
4	2090	56	245	32	12	8	11	0	2	0	1	0	0	0	2	1.41
5	2095	50	233	30	12	8	10	0	1	0	1	0	0	0	2	1.37
6	2100	45	222	28	12	8	9	0	1	0	1	0	0	0	1	1.33
7																
8		CFC-11	CFC-12	CFC-113	CFC-114	CFC-115	CCl ₄	CH ₃ CCl ₃	HCFC-22	HCFC-141b	HCFC-142b	HCFC-123	CF ₂ Br	CF ₂ Br	EESCI	
9	Wm ² /ppb	.25	.32	.30	.31	.26	.10	.06	.22	.14	.20	.20	.30	.32	-.15	
10																

Notes: Only significant greenhouse halocarbons shown (ppt).

EESCI = Equivalent Effective Stratospheric Chlorine in ppb (includes Br).

Wm²/ppb for EESCI is the direct radiative forcing from stratospheric O₃ depletion, taken from WMO98 to be -0.2 Wm² from 1980 to 1995, beginning in 1970. [Source:

UNEP/WMO Scientific Assessment of Ozone Depletion: 1998 (Chapter 11), Version 5, June 3, 1998, Calculations by John Daniel and Guus Velders

Guus.Velders@rivm.nl & jdaniel@al.noaa.gov]

II.3: Radiative Forcing (Wm^{-2})

II.3.1: CO_2 radiative forcing (Wm^{-2})

ISAM model (reference) - CO_2 radiative forcing (Wm^{-2})

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
2000	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.56
2010	1.82	1.80	1.80	1.81	1.78	1.78	1.85	1.82	1.78	1.81	1.81	1.85
2020	2.21	2.10	2.17	2.17	2.10	2.05	2.27	2.19	2.07	2.13	2.14	2.18
2030	2.62	2.46	2.64	2.59	2.42	2.32	2.71	2.61	2.32	2.43	2.50	2.53
2040	3.04	2.82	3.18	3.03	2.73	2.61	3.13	3.05	2.58	2.72	2.87	2.88
2050	3.47	3.15	3.81	3.47	3.01	2.90	3.53	3.50	2.83	2.99	3.23	3.24
2060	3.86	3.43	4.44	3.93	3.24	3.18	3.91	3.96	3.11	3.27	3.58	3.59
2070	4.21	3.65	5.06	4.42	3.40	3.46	4.25	4.44	3.37	3.54	3.95	3.93
2080	4.54	3.81	5.65	4.93	3.52	3.74	4.56	4.93	3.59	3.81	4.32	4.29
2090	4.82	3.91	6.20	5.46	3.60	4.02	4.82	5.46	3.78	4.09	4.71	4.66
2100	5.07	3.95	6.69	6.02	3.64	4.30	5.05	6.02	3.92	4.38	5.11	5.05

ISAM model (low) - CO_2 radiative forcing (Wm^{-2})

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
2010	1.71	1.69	1.69	1.70	1.67	1.67	1.74	1.71	1.67	1.70	1.70
2020	2.01	1.92	1.99	1.97	1.92	1.87	2.07	2.00	1.88	1.95	1.96
2030	2.36	2.19	2.37	2.32	2.16	2.08	2.43	2.35	2.08	2.17	2.25
2040	2.71	2.49	2.84	2.69	2.41	2.30	2.78	2.71	2.27	2.40	2.53
2050	3.06	2.76	3.40	3.06	2.64	2.53	3.12	3.09	2.48	2.62	2.83
2060	3.39	2.99	3.97	3.47	2.81	2.76	3.43	3.49	2.69	2.84	3.13
2070	3.69	3.15	4.52	3.90	2.92	2.99	3.72	3.91	2.91	3.05	3.44
2080	3.95	3.26	5.05	4.34	2.99	3.21	3.96	4.35	3.09	3.28	3.76
2090	4.18	3.31	5.54	4.83	3.03	3.45	4.18	4.83	3.21	3.51	4.10
2100	4.38	3.31	5.99	5.35	3.03	3.69	4.35	5.35	3.32	3.76	4.46

ISAM model (high) - CO_2 radiative forcing (Wm^{-2})

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
2010	1.91	1.87	1.87	1.88	1.87	1.85	1.92	1.89	1.85	1.89	1.89
2020	2.35	2.23	2.30	2.30	2.23	2.17	2.40	2.32	2.18	2.26	2.28
2030	2.81	2.64	2.82	2.76	2.60	2.49	2.89	2.80	2.50	2.61	2.69
2040	3.28	3.04	3.42	3.26	2.96	2.83	3.36	3.29	2.80	2.94	3.12
2050	3.75	3.42	4.09	3.76	3.29	3.16	3.82	3.78	3.10	3.27	3.54
2060	4.20	3.75	4.77	4.27	3.56	3.49	4.25	4.29	3.42	3.58	3.96
2070	4.59	4.03	5.43	4.79	3.78	3.81	4.63	4.80	3.73	3.91	4.39
2080	4.96	4.23	6.06	5.34	3.94	4.13	4.99	5.35	3.99	4.22	4.80
2090	5.30	4.39	6.64	5.90	4.06	4.46	5.30	5.90	4.21	4.54	5.23
2100	5.59	4.48	7.17	6.49	4.14	4.79	5.58	6.49	4.41	4.87	5.68

Bern-CC model (reference) - CO_2 radiative forcing (Wm^{-2})

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
2000	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
2010	1.78	1.76	1.76	1.76	1.76	1.74	1.81	1.78	1.74	1.77	1.77	1.77
2020	2.18	2.08	2.14	2.13	2.08	2.03	2.22	2.16	2.04	2.10	2.12	2.12
2030	2.54	2.40	2.56	2.50	2.36	2.27	2.62	2.54	2.27	2.37	2.44	2.44
2040	2.96	2.76	3.09	2.93	2.66	2.55	3.03	2.97	2.52	2.66	2.79	2.79
2050	3.37	3.10	3.70	3.37	2.94	2.84	3.44	3.40	2.78	2.93	3.13	3.13
2060	3.78	3.38	4.33	3.82	3.17	3.13	3.83	3.85	3.05	3.20	3.48	3.48

1	2070	4.12	3.60	4.96	4.29	3.33	3.39	4.17	4.31	3.30	3.47	3.82
2	2080	4.45	3.78	5.56	4.80	3.45	3.67	4.48	4.81	3.52	3.74	4.18
3	2090	4.74	3.86	6.12	5.34	3.53	3.94	4.74	5.34	3.70	4.01	4.57
4	2100	4.96	3.89	6.62	5.89	3.55	4.21	4.96	5.89	3.83	4.27	4.96

Bern-CC model (low) - CO₂ radiative forcing (Wm⁻²)												
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	
8	2000	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
9	2010	1.71	1.69	1.69	1.69	1.69	1.67	1.73	1.71	1.67	1.70	1.71
10	2020	2.04	1.95	2.01	2.00	1.95	1.89	2.09	2.03	1.91	1.97	1.99
11	2030	2.36	2.19	2.36	2.31	2.17	2.08	2.42	2.35	2.08	2.17	2.26
12	2040	2.69	2.48	2.83	2.68	2.41	2.30	2.76	2.71	2.27	2.38	2.55
13	2050	3.04	2.74	3.36	3.05	2.64	2.52	3.10	3.09	2.46	2.60	2.84
14	2060	3.37	2.96	3.91	3.44	2.81	2.74	3.39	3.46	2.67	2.81	3.14
15	2070	3.63	3.10	4.43	3.83	2.91	2.94	3.65	3.83	2.87	3.00	3.42
16	2080	3.89	3.19	4.94	4.27	2.98	3.16	3.89	4.26	3.03	3.21	3.74
17	2090	4.10	3.23	5.40	4.71	3.00	3.37	4.08	4.71	3.15	3.43	4.05
18	2100	4.27	3.20	5.81	5.20	2.99	3.59	4.23	5.19	3.24	3.65	4.39

Bern-CC model (high) - CO₂ radiative forcing (Wm⁻²)												
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	
22	2000	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
23	2010	1.88	1.85	1.85	1.85	1.84	1.84	1.91	1.88	1.84	1.87	1.88
24	2020	2.41	2.30	2.37	2.35	2.28	2.23	2.47	2.38	2.26	2.33	2.35
25	2030	2.96	2.78	2.97	2.89	2.73	2.62	3.04	2.94	2.64	2.75	2.82
26	2040	3.53	3.29	3.67	3.48	3.17	3.04	3.63	3.53	3.01	3.18	3.32
27	2050	4.11	3.77	4.44	4.09	3.59	3.46	4.20	4.13	3.39	3.59	3.82
28	2060	4.67	4.20	5.26	4.71	3.97	3.89	4.75	4.75	3.80	4.01	4.33
29	2070	5.18	4.57	6.04	5.33	4.27	4.29	5.23	5.36	4.19	4.39	4.82
30	2080	5.63	4.86	6.77	5.97	4.50	4.69	5.67	5.99	4.53	4.79	5.31
31	2090	6.04	5.07	7.45	6.61	4.67	5.08	6.06	6.62	4.80	5.17	5.80
32	2100	6.39	5.20	8.03	7.26	4.79	5.44	6.39	7.27	5.04	5.53	6.30

II.3.2: CH₄ radiative forcing (Wm⁻²)													
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR	
38	2000	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.51
39	2010	0.53	0.52	0.52	0.53	0.51	0.52	0.54	0.53	0.51	0.53	0.52	0.56
40	2020	0.59	0.58	0.57	0.58	0.54	0.55	0.62	0.58	0.53	0.58	0.57	0.63
41	2030	0.65	0.64	0.64	0.63	0.55	0.60	0.71	0.63	0.55	0.64	0.62	0.69
42	2040	0.69	0.70	0.71	0.70	0.55	0.64	0.77	0.69	0.56	0.70	0.68	0.76
43	2050	0.71	0.74	0.79	0.76	0.53	0.70	0.80	0.76	0.58	0.73	0.74	0.83
44	2060	0.71	0.76	0.85	0.83	0.52	0.74	0.81	0.82	0.59	0.76	0.79	0.89
45	2070	0.68	0.74	0.90	0.89	0.50	0.78	0.79	0.89	0.60	0.77	0.83	0.94
46	2080	0.64	0.72	0.94	0.96	0.48	0.82	0.75	0.96	0.61	0.78	0.86	0.98
47	2090	0.60	0.68	0.97	1.02	0.45	0.85	0.70	1.02	0.61	0.77	0.90	1.02
48	2100	0.57	0.63	1.00	1.09	0.42	0.88	0.64	1.08	0.59	0.76	0.93	1.06

II.3.3: N₂O radiative forcing (Wm⁻²)													
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR	
54	2000	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.16
55	2010	0.18	0.17	0.18	0.18	0.18	0.17	0.18	0.18	0.18	0.18	0.18	0.19
56	2020	0.20	0.19	0.21	0.21	0.21	0.19	0.20	0.21	0.21	0.20	0.21	0.22
57	2030	0.22	0.21	0.25	0.25	0.23	0.21	0.23	0.25	0.23	0.22	0.24	0.26

1	2040	0.24	0.22	0.29	0.29	0.25	0.22	0.25	0.29	0.26	0.24	0.27	0.29
2	2050	0.26	0.23	0.34	0.33	0.28	0.23	0.26	0.33	0.28	0.25	0.30	0.32
3	2060	0.28	0.24	0.39	0.37	0.30	0.25	0.27	0.36	0.31	0.26	0.32	0.35
4	2070	0.29	0.25	0.44	0.41	0.31	0.26	0.28	0.40	0.33	0.26	0.35	0.38
5	2080	0.30	0.26	0.48	0.45	0.32	0.27	0.29	0.45	0.35	0.27	0.37	0.40
6	2090	0.31	0.26	0.53	0.49	0.33	0.28	0.29	0.49	0.36	0.27	0.39	0.43
7	2100	0.32	0.27	0.57	0.53	0.33	0.29	0.29	0.53	0.37	0.28	0.41	0.45

8
9

10 II.3.4: Perfluorocarbon (PFCs), sulphur hexafluoride (SF₆) and hydrofluorocarbons (HFCs) 11 radiative forcing (Wm⁻²)

12

13 CF₄ radiative forcing (Wm⁻²)

14 Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
15 2000	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
16 2010	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005
17 2020	0.005	0.005	0.005	0.005	0.005	0.005	0.007	0.006	0.006	0.007
18 2030	0.006	0.006	0.006	0.007	0.006	0.007	0.009	0.008	0.008	0.009
19 2040	0.008	0.008	0.008	0.009	0.007	0.009	0.013	0.011	0.010	0.012
20 2050	0.010	0.010	0.010	0.011	0.008	0.012	0.016	0.014	0.011	0.015
21 2060	0.013	0.013	0.013	0.013	0.009	0.014	0.020	0.017	0.013	0.019
22 2070	0.015	0.015	0.015	0.016	0.010	0.018	0.024	0.021	0.015	0.023
23 2080	0.018	0.018	0.018	0.020	0.011	0.021	0.027	0.026	0.016	0.027
24 2090	0.021	0.021	0.021	0.024	0.012	0.024	0.029	0.031	0.017	0.032
25 2100	0.024	0.024	0.024	0.029	0.013	0.028	0.032	0.037	0.018	0.036

26

27 C₂F₆ radiative forcing (Wm⁻²)

28 Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
29 2000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
30 2010	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
31 2020	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002
32 2030	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.002
33 2040	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.003
34 2050	0.002	0.002	0.002	0.002	0.002	0.003	0.004	0.003	0.003	0.003
35 2060	0.003	0.003	0.003	0.003	0.002	0.003	0.004	0.004	0.003	0.004
36 2070	0.003	0.003	0.003	0.004	0.002	0.004	0.005	0.005	0.003	0.005
37 2080	0.004	0.004	0.004	0.004	0.002	0.004	0.006	0.005	0.003	0.006
38 2090	0.004	0.004	0.004	0.005	0.003	0.005	0.006	0.007	0.004	0.007
39 2100	0.005	0.005	0.005	0.006	0.003	0.006	0.007	0.008	0.004	0.008

40

41 C₄F₁₀ radiative forcing (Wm⁻²)

42 Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
43 2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
44 2010	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
45 2020	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001	0.001	0.002
46 2030	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.002	0.002	0.003
47 2040	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.004	0.004	0.004
48 2050	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.005	0.005	0.005
49 2060	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.007	0.007	0.007
50 2070	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.008	0.008	0.009
51 2080	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.011	0.010	0.012
52 2090	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.013	0.011	0.014
53 2100	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.016	0.013	0.017

54

55 SF₆ radiative forcing (Wm⁻²)

56 Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
57 2000	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003

1	2010	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
2	2020	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.006	0.005	0.006
3	2030	0.007	0.007	0.007	0.008	0.006	0.007	0.007	0.008	0.006	0.008
4	2040	0.009	0.009	0.009	0.010	0.008	0.009	0.010	0.010	0.008	0.011
5	2050	0.013	0.013	0.013	0.014	0.010	0.012	0.014	0.014	0.010	0.014
6	2060	0.017	0.017	0.017	0.017	0.012	0.014	0.017	0.017	0.012	0.018
7	2070	0.020	0.020	0.020	0.021	0.014	0.017	0.021	0.021	0.015	0.022
8	2080	0.023	0.023	0.023	0.025	0.016	0.019	0.024	0.025	0.017	0.027
9	2090	0.026	0.026	0.026	0.029	0.017	0.021	0.027	0.030	0.018	0.032
10	2100	0.029	0.029	0.029	0.034	0.018	0.023	0.030	0.034	0.019	0.036

11

HFC-23 radiative forcing (Wm^{-2})

13	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
14	2000	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
15	2010	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
16	2020	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
17	2030	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
18	2040	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
19	2050	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
20	2060	0.006	0.006	0.006	0.006	0.005	0.006	0.005	0.005	0.005	0.005
21	2070	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
22	2080	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
23	2090	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
24	2100	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

25

HFC-32 radiative forcing (Wm^{-2})

27	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
28	2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
29	2010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	2020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
31	2030	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000
32	2040	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.001
33	2050	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
34	2060	0.002	0.002	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
35	2070	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
36	2080	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
37	2090	0.002	0.002	0.002	0.002	0.001	0.001	0.002	0.001	0.001	0.001
38	2100	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.001	0.001

39

HFC-125 radiative forcing (Wm^{-2})

41	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
42	2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
43	2010	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.000
44	2020	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.000
45	2030	0.005	0.005	0.005	0.004	0.004	0.004	0.005	0.003	0.004	0.004	0.003
46	2040	0.009	0.009	0.009	0.006	0.006	0.006	0.009	0.005	0.006	0.006	0.009
47	2050	0.013	0.013	0.013	0.008	0.008	0.008	0.013	0.007	0.008	0.009	0.020
48	2060	0.018	0.018	0.017	0.010	0.010	0.011	0.018	0.010	0.010	0.012	0.032
49	2070	0.022	0.023	0.022	0.013	0.011	0.014	0.022	0.012	0.011	0.015	0.041
50	2080	0.026	0.026	0.026	0.017	0.012	0.017	0.026	0.016	0.012	0.018	0.048
51	2090	0.029	0.030	0.029	0.020	0.013	0.020	0.028	0.019	0.013	0.020	0.054
52	2100	0.031	0.032	0.031	0.025	0.013	0.023	0.030	0.023	0.013	0.023	0.059

53

HFC-134a radiative forcing (Wm^{-2})

55	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
56	2000	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
57	2010	0.009	0.009	0.009	0.008	0.008	0.008	0.012	0.011	0.011	0.012	0.014
58	2020	0.020	0.020	0.019	0.017	0.016	0.017	0.026	0.021	0.021	0.023	0.027

1	2030	0.035	0.035	0.035	0.026	0.025	0.027	0.048	0.032	0.032	0.038	0.042
2	2040	0.056	0.056	0.055	0.035	0.033	0.038	0.078	0.043	0.044	0.053	0.060
3	2050	0.081	0.080	0.078	0.045	0.044	0.050	0.113	0.056	0.059	0.072	0.081
4	2060	0.105	0.105	0.101	0.057	0.053	0.064	0.143	0.072	0.071	0.092	0.099
5	2070	0.122	0.125	0.119	0.072	0.057	0.079	0.164	0.091	0.077	0.113	0.111
6	2080	0.131	0.137	0.129	0.089	0.059	0.095	0.175	0.113	0.079	0.132	0.121
7	2090	0.133	0.143	0.134	0.109	0.059	0.111	0.178	0.140	0.080	0.145	0.128
8	2100	0.131	0.143	0.135	0.132	0.057	0.125	0.174	0.170	0.078	0.156	0.132

9
10 **HFC-143a radiative forcing (Wm^{-2})**

11	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
12	2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13	2010	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
14	2020	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
15	2030	0.003	0.003	0.003	0.003	0.002	0.002	0.004	0.003	0.003	0.003
16	2040	0.006	0.006	0.006	0.004	0.004	0.004	0.006	0.004	0.004	0.005
17	2050	0.009	0.009	0.009	0.006	0.006	0.006	0.010	0.006	0.006	0.007
18	2060	0.013	0.013	0.013	0.008	0.007	0.008	0.014	0.008	0.008	0.009
19	2070	0.017	0.017	0.017	0.011	0.009	0.011	0.017	0.010	0.009	0.012
20	2080	0.021	0.021	0.020	0.013	0.010	0.013	0.020	0.013	0.010	0.014
21	2090	0.024	0.024	0.023	0.017	0.011	0.016	0.023	0.016	0.011	0.017
22	2100	0.026	0.027	0.026	0.020	0.012	0.018	0.026	0.020	0.012	0.019

23
24 **HFC-152a radiative forcing (Wm^{-2})**

25	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
26	2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	2010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28	2020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
29	2030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	2040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
31	2050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
32	2060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
33	2070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
34	2080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
35	2090	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
36	2100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007

37
38 **HFC-227ea radiative forcing (Wm^{-2})**

39	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
40	2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
41	2010	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
42	2020	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
43	2030	0.004	0.004	0.004	0.003	0.003	0.003	0.004	0.003	0.003	0.003
44	2040	0.007	0.007	0.007	0.004	0.004	0.005	0.007	0.004	0.004	0.005
45	2050	0.010	0.010	0.010	0.006	0.006	0.007	0.010	0.005	0.006	0.007
46	2060	0.014	0.014	0.013	0.008	0.008	0.009	0.013	0.007	0.008	0.009
47	2070	0.017	0.017	0.016	0.010	0.009	0.012	0.016	0.009	0.009	0.012
48	2080	0.019	0.020	0.019	0.012	0.010	0.015	0.018	0.011	0.010	0.014
49	2090	0.020	0.021	0.020	0.015	0.010	0.018	0.019	0.014	0.010	0.016
50	2100	0.021	0.022	0.021	0.018	0.011	0.020	0.020	0.016	0.010	0.018

51
52 **HFC-245ca radiative forcing (Wm^{-2})**

53	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
54	2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
55	2010	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.002
56	2020	0.005	0.005	0.005	0.004	0.004	0.004	0.005	0.004	0.004	0.004
57	2030	0.008	0.008	0.008	0.005	0.005	0.006	0.008	0.005	0.005	0.006
58	2040	0.012	0.012	0.012	0.007	0.007	0.008	0.013	0.006	0.006	0.008

1	2050	0.017	0.017	0.016	0.008	0.009	0.010	0.017	0.008	0.009	0.011
2	2060	0.021	0.021	0.020	0.011	0.010	0.013	0.021	0.010	0.010	0.013
3	2070	0.023	0.024	0.023	0.013	0.010	0.015	0.023	0.013	0.010	0.016
4	2080	0.023	0.025	0.023	0.017	0.010	0.018	0.023	0.016	0.010	0.018
5	2090	0.022	0.025	0.023	0.020	0.010	0.021	0.022	0.019	0.010	0.019
6	2100	0.021	0.023	0.022	0.024	0.009	0.024	0.020	0.023	0.009	0.020

7

8 **HFC-43-10mee radiative forcing (Wm^{-2})**

9	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
10	2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11	2010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12	2020	0.001	0.001	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.001
13	2030	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
14	2040	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
15	2050	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
16	2060	0.003	0.003	0.002	0.002	0.001	0.002	0.002	0.001	0.001	0.002
17	2070	0.003	0.003	0.003	0.002	0.002	0.002	0.003	0.002	0.001	0.002
18	2080	0.004	0.004	0.004	0.002	0.002	0.002	0.003	0.002	0.002	0.002
19	2090	0.004	0.004	0.004	0.002	0.002	0.002	0.004	0.002	0.002	0.002
20	2100	0.004	0.005	0.004	0.003	0.002	0.003	0.004	0.002	0.002	0.002

21

22

23 **II.3.5: Tropospheric O₃ radiative forcing (Wm^{-2})**

24

25	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
26	2000	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.39
27	2010	0.45	0.45	0.45	0.45	0.41	0.43	0.47	0.45	0.39	0.44	0.44	0.41
28	2020	0.54	0.53	0.56	0.55	0.45	0.49	0.58	0.55	0.44	0.51	0.51	0.43
29	2030	0.60	0.64	0.69	0.66	0.46	0.56	0.65	0.66	0.45	0.57	0.58	0.45
30	2040	0.62	0.71	0.84	0.74	0.45	0.62	0.68	0.73	0.48	0.63	0.63	0.48
31	2050	0.62	0.75	1.03	0.81	0.42	0.66	0.70	0.80	0.52	0.66	0.70	0.51
32	2060	0.61	0.76	1.13	0.87	0.38	0.69	0.71	0.87	0.53	0.68	0.75	0.53
33	2070	0.59	0.71	1.21	0.93	0.34	0.72	0.69	0.93	0.54	0.70	0.80	0.55
34	2080	0.57	0.64	1.30	1.02	0.30	0.76	0.66	1.01	0.55	0.73	0.84	0.58
35	2090	0.55	0.56	1.29	1.13	0.26	0.79	0.63	1.13	0.50	0.74	0.89	0.59
36	2100	0.52	0.48	1.27	1.25	0.21	0.81	0.58	1.25	0.43	0.75	0.93	0.61

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39 **II.3.6: SO₄ aerosols (direct effect) radiative forcing (Wm^{-2})**

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41	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
42	2000	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40
43	2010	-0.51	-0.38	-0.47	-0.43	-0.43	-0.38	-0.51	-0.43	-0.35	-0.39	-0.49
44	2020	-0.58	-0.35	-0.50	-0.58	-0.43	-0.35	-0.58	-0.58	-0.32	-0.38	-0.58
45	2030	-0.53	-0.35	-0.55	-0.65	-0.45	-0.35	-0.53	-0.65	-0.31	-0.35	-0.67
46	2040	-0.40	-0.27	-0.55	-0.63	-0.45	-0.34	-0.45	-0.62	-0.31	-0.34	-0.75
47	2050	-0.37	-0.23	-0.47	-0.61	-0.40	-0.32	-0.37	-0.61	-0.30	-0.33	-0.83
48	2060	-0.27	-0.20	-0.32	-0.52	-0.32	-0.32	-0.30	-0.50	-0.30	-0.31	-0.82
49	2070	-0.21	-0.18	-0.25	-0.43	-0.25	-0.29	-0.26	-0.42	-0.28	-0.30	-0.82
50	2080	-0.18	-0.15	-0.23	-0.38	-0.21	-0.29	-0.18	-0.37	-0.25	-0.28	-0.81
51	2090	-0.17	-0.14	-0.23	-0.36	-0.17	-0.28	-0.17	-0.36	-0.20	-0.28	-0.80
52	2100	-0.16	-0.12	-0.23	-0.35	-0.15	-0.28	-0.16	-0.35	-0.17	-0.28	-0.79

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55 **II.3.7: BC aerosols radiative forcing (Wm^{-2})**

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57	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
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1	2000	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
2	2010	0.45	0.45	0.46	0.45	0.37	0.42	0.49	0.45	0.32	0.45	0.42
3	2020	0.46	0.51	0.52	0.48	0.35	0.46	0.58	0.48	0.38	0.46	0.43
4	2030	0.49	0.58	0.62	0.55	0.29	0.49	0.63	0.54	0.34	0.45	0.46
5	2040	0.51	0.66	0.72	0.58	0.26	0.54	0.71	0.57	0.35	0.49	0.49
6	2050	0.52	0.74	0.89	0.62	0.25	0.57	0.77	0.62	0.37	0.52	0.52
7	2060	0.54	0.82	0.94	0.66	0.25	0.62	0.85	0.66	0.38	0.57	0.55
8	2070	0.55	0.86	1.02	0.71	0.23	0.66	0.91	0.71	0.40	0.63	0.57
9	2080	0.58	0.89	1.14	0.77	0.23	0.74	0.95	0.77	0.42	0.69	0.60
10	2090	0.65	0.89	1.09	0.86	0.22	0.78	0.95	0.86	0.38	0.75	0.63
11	2100	0.71	0.86	1.05	0.95	0.20	0.83	0.95	0.95	0.37	0.80	0.66

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1314 **II.3.8: OC aerosols radiative forcing (Wm^{-2})**

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16	Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
17	2000	-0.50	-0.50	-0.50	-0.50	-0.50	-0.50	-0.50	-0.50	-0.50	-0.50	-0.50
18	2010	-0.56	-0.56	-0.57	-0.55	-0.46	-0.53	-0.62	-0.55	-0.41	-0.55	-0.52
19	2020	-0.58	-0.63	-0.66	-0.60	-0.44	-0.57	-0.74	-0.60	-0.48	-0.59	-0.55
20	2030	-0.61	-0.73	-0.77	-0.68	-0.37	-0.61	-0.79	-0.68	-0.42	-0.57	-0.58
21	2040	-0.64	-0.83	-0.91	-0.73	-0.33	-0.66	-0.88	-0.72	-0.43	-0.61	-0.61
22	2050	-0.66	-0.93	-1.12	-0.77	-0.30	-0.71	-0.96	-0.77	-0.45	-0.65	-0.65
23	2060	-0.68	-1.02	-1.17	-0.82	-0.30	-0.76	-1.05	-0.82	-0.47	-0.71	-0.68
24	2070	-0.69	-1.08	-1.28	-0.88	-0.30	-0.84	-1.14	-0.88	-0.50	-0.78	-0.72
25	2080	-0.73	-1.12	-1.42	-0.97	-0.28	-0.92	-1.18	-0.96	-0.52	-0.87	-0.75
26	2090	-0.80	-1.12	-1.37	-1.08	-0.27	-0.99	-1.19	-1.07	-0.49	-0.94	-0.79
27	2100	-0.88	-1.08	-1.32	-1.20	-0.25	-1.04	-1.19	-1.20	-0.46	-1.00	-0.83

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II.3.9: CFCs and HFCs following the Montreal (1997) Amendments – radiative forcing (Wm^{-2})

Year	CFC-11	CFC-12	CFC-113	CFC-114	CFC-115	CCl ₄	CH ₂ Cl ₂	HCFC-22	HCFC-141b	HCFC-142b	HCFC-123	CF ₂ BrCl	CF ₃ Br	SUM
1990	0.0645	0.1494	0.0201	0.0047	0.0009	0.0133	0.0075	0.0180	0.0000	0.0002	0.0000	0.0009	0.0006	0.2801
2000	0.0668	0.1712	0.0255	0.0050	0.0016	0.0120	0.0026	0.0290	0.0018	0.0030	0.0000	0.0012	0.0010	0.3206
2010	0.0615	0.1686	0.0243	0.0050	0.0016	0.0098	0.0004	0.0514	0.0031	0.0066	0.0004	0.0012	0.0010	0.3348
2020	0.0535	0.1555	0.0216	0.0047	0.0016	0.0077	0.0001	0.0458	0.0022	0.0064	0.0006	0.0009	0.0010	0.3015
2030	0.0450	0.1411	0.0192	0.0047	0.0016	0.0061	0.0000	0.0274	0.0013	0.0046	0.0004	0.0006	0.0010	0.2529
2040	0.0373	0.1280	0.0171	0.0043	0.0016	0.0048	0.0000	0.0176	0.0008	0.0034	0.0004	0.0003	0.0010	0.2166
2050	0.0308	0.1158	0.0153	0.0043	0.0016	0.0038	0.0000	0.0092	0.0003	0.0022	0.0002	0.0003	0.0010	0.1848
2060	0.0253	0.1050	0.0135	0.0040	0.0016	0.0030	0.0000	0.0040	0.0001	0.0012	0.0002	0.0000	0.0006	0.1585
2070	0.0208	0.0954	0.0120	0.0040	0.0016	0.0023	0.0000	0.0018	0.0000	0.0008	0.0000	0.0000	0.0006	0.1393
2080	0.0170	0.0864	0.0108	0.0037	0.0014	0.0018	0.0000	0.0008	0.0000	0.0004	0.0000	0.0000	0.0006	0.1230
2090	0.0140	0.0784	0.0096	0.0037	0.0014	0.0014	0.0000	0.0004	0.0000	0.0002	0.0000	0.0000	0.0006	0.1098
2100	0.0113	0.0710	0.0084	0.0037	0.0014	0.0012	0.0000	0.0002	0.0000	0.0002	0.0000	0.0000	0.0003	0.0977

II.3.10: Total Radiative Forcing (Wm^{-2})

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
1990-1765	1.03	1.03	1.03	1.03	1.03	1.03					1.03
1990	0.00	0.00	0.00	0.00	0.00	0.00					0.00
2000	0.30	0.30	0.30	0.30	0.30	0.30					0.27
2010	0.62	0.82	0.66	0.71	0.69	0.79					0.57
2020	1.13	1.45	1.13	1.01	1.12	1.33					0.91
2030	1.81	2.03	1.75	1.53	1.52	1.78					1.28
2040	2.57	2.73	2.64	2.19	1.90	2.22					1.66
2050	3.13	3.27	3.80	2.86	2.27	2.66					2.05
2060	3.76	3.69	4.96	3.67	2.62	3.08					2.52
2070	4.24	3.94	5.98	4.53	2.88	3.49					2.97
2080	4.58	4.08	6.86	5.37	3.06	3.89					3.44
2090	4.82	4.09	7.56	6.19	3.15	4.29					3.94
2100	5.02	4.03	8.11	7.04	3.15	4.68					4.47

Note: See Chapter 9 for details.

1 II.4: Surface air Temperature Change (°C)

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a					
5	1990-1765	0.33	0.33	0.33	0.33	0.33	0.33					0.34				
6	1990	0.00	0.00	0.00	0.00	0.00	0.00					0.00				
7	2000	0.16	0.16	0.16	0.16	0.16	0.16					0.15				
8	2010	0.30	0.40	0.32	0.35	0.34	0.39					0.27				
9	2020	0.52	0.71	0.55	0.50	0.55	0.66					0.43				
10	2030	0.85	1.03	0.85	0.73	0.77	0.93					0.61				
11	2040	1.26	1.41	1.27	1.06	0.98	1.18					0.80				
12	2050	1.59	1.75	1.86	1.42	1.21	1.44					1.00				
13	2060	1.97	2.04	2.50	1.85	1.44	1.69					1.26				
14	2070	2.30	2.25	3.10	2.33	1.63	1.95					1.52				
15	2080	2.56	2.41	3.64	2.81	1.79	2.20					1.79				
16	2090	2.77	2.49	4.09	3.30	1.91	2.44					2.08				
17	2100	2.95	2.54	4.49	3.79	1.98	2.69					2.38				

19 Note: See Chapter 9 for details.

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II.5: Sea Level Change (mm)

II.5.1: Total sea level change (mm)

Models average – Total sea level change (mm)

Year	A1B	A1T	A1FI	A2	B1	B2
1990	0	0	0	0	0	0
2000	17	17	17	17	17	17
2010	37	39	37	38	38	38
2020	61	66	61	61	62	64
2030	91	97	90	88	89	94
2040	127	134	126	120	118	126
2050	167	175	172	157	150	160
2060	210	217	228	201	183	197
2070	256	258	290	250	216	235
2080	301	298	356	304	249	275
2090	345	334	424	362	281	316
2100	387	367	491	424	310	358

Note: Data for the six coloured lines in Chapter 11, Figure 11.12.

Models minimum – Total sea level change (mm)

Year	A1B	A1T	A1FI	A2	B1	B2
1990	0	0	0	0	0	0
2000	8	8	8	8	8	8
2010	17	18	18	18	18	18
2020	30	32	30	29	30	31
2030	45	48	44	43	43	46
2040	64	67	63	59	57	61
2050	84	86	88	78	72	77
2060	105	106	117	100	87	95
2070	127	124	149	125	102	112
2080	147	141	182	152	116	130
2090	166	155	215	181	128	148
2100	184	167	247	211	138	166

Note: The final values of these timeseries correspond to the lower limit of the coloured bars on the right-hand side of Chapter 11, Figure 11.12.

Model maximum – Total sea level change (mm)

Year	A1B	A1T	A1FI	A2	B1	B2
1990	0	0	0	0	0	0
2000	27	27	27	27	27	27
2010	57	60	58	59	58	59
2020	94	101	95	95	96	99
2030	140	150	140	136	138	146
2040	196	208	196	186	185	197
2050	259	273	266	245	236	252
2060	328	342	353	313	290	312
2070	403	411	452	392	346	376
2080	479	480	559	479	402	443
2090	555	545	671	575	458	512
2100	630	606	785	678	512	584

1 Note: The final values of these timeseries correspond to the upper limit of the coloured bars on the right-hand side of
2 Chapter 11, Figure 11.12.

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5 **II.5.2: Sea level change due to thermal expansion (mm)**

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7 Year	A1B	A1T	A1FI	A2	B1	B2
8 1990	0	0	0	0	0	0
9 2000	10	10	10	10	10	10
10 2010	23	24	23	23	23	24
11 2020	39	43	39	39	39	42
12 2030	60	66	60	57	58	62
13 2040	87	93	86	81	79	85
14 2050	117	123	122	109	101	110
15 2060	150	155	166	142	125	137
16 2070	185	186	217	180	149	165
17 2080	220	216	272	224	173	196
18 2090	255	243	329	272	195	227
19 2100	288	267	388	325	216	260

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22 **II.5.3: Sea level change due to glaciers and ice caps (mm)**

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24 Year	A1B	A1T	A1FI	A2	B1	B2
25 1990	0	0	0	0	0	0
26 2000	4	4	4	4	4	4
27 2010	9	10	9	10	10	10
28 2020	16	17	16	16	16	16
29 2030	23	25	23	23	23	24
30 2040	32	35	32	31	31	34
31 2050	43	46	44	41	41	44
32 2060	55	58	57	52	50	54
33 2070	67	71	72	65	61	66
34 2080	80	83	89	79	71	77
35 2090	93	95	105	93	82	89
36 2100	106	106	120	108	92	101

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39 **II.5.4: Sea level change due to Greenland (mm)**

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41 Year	A1B	A1T	A1FI	A2	B1	B2
42 1990	0	0	0	0	0	0
43 2000	0	0	0	0	0	0
44 2010	1	1	1	1	1	1
45 2020	2	2	2	2	2	2
46 2030	4	4	4	4	4	4
47 2040	5	6	5	5	5	6
48 2050	8	8	8	7	7	8
49 2060	10	11	11	10	9	10
50 2070	13	14	15	13	12	13
51 2080	17	17	19	16	14	16
52 2090	20	21	24	20	17	19
53 2100	24	24	29	25	20	22

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1 **II.5.5: Sea level change due to Antarctica (mm)**
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4	Year	A1B	A1T	A1FI	A2	B1	B2
5	1990	0	0	0	0	0	0
6	2000	-2	-2	-2	-2	-2	-2
7	2010	-5	-5	-5	-5	-5	-5
8	2020	-8	-9	-8	-8	-8	-9
9	2030	-12	-14	-13	-12	-13	-13
10	2040	-18	-20	-18	-17	-17	-19
11	2050	-25	-27	-25	-23	-23	-25
12	2060	-33	-35	-35	-31	-30	-32
13	2070	-42	-45	-46	-40	-37	-41
14	2080	-52	-54	-59	-50	-44	-49
15	2090	-63	-64	-74	-62	-53	-59
16	2100	-74	-75	-90	-76	-61	-70
17							