

# Appendix II

## SRES Tables

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## Introduction

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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 SRES<sup>1</sup> scenarios (Nakićenović *et al.*, 2000). The Appendix also presents 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. Apart from the CO<sub>2</sub> 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 direct anthropogenic emissions and do not specify the current magnitude of the natural emissions nor 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 O<sub>3</sub> increase are calculated on the basis of the O<sub>3</sub> 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<sup>-2</sup>/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.

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<sup>1</sup> IPCC Special Report on Emission Scenarios (Nakićenović *et al.*, 2000), hereafter SRES.

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### Main Chemical Symbols used in this Appendix:

CO <sub>2</sub>	carbon dioxide	O <sub>3</sub>	ozone
CH <sub>4</sub>	methane	OH	hydroxyl
CFC	chlorofluorocarbon	PFC	perfluorocarbon
CO	carbon monoxide	SO <sub>2</sub>	sulphur dioxide
HFC	hydrofluorocarbon	SO <sub>4</sub> <sup>2-</sup>	sulphate ion
N <sub>2</sub> O	nitrous oxide	SF <sub>6</sub>	sulphur hexafluoride
NO <sub>x</sub>	the sum of NO (nitric oxide) and NO <sub>2</sub> (nitrogen dioxide)	VOC	volatile organic compound

## II.1: Anthropogenic Emissions

### II.1.1: CO<sub>2</sub> emissions (PgC/yr)

#### CO<sub>2</sub> emissions from fossil fuel and industrial processes (PgC/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

#### CO<sub>2</sub> emissions from deforestation and land use (PgC/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

#### CO<sub>2</sub> emissions – total (PgC/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: CH<sub>4</sub> emissions (Tg(CH<sub>4</sub>)/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
2040	458	495	567	542	381	466	531	560	423	528	580
2050	452	500	630	598	359	504	514	621	444	538	630
2060	410	459	655	654	342	522	464	674	445	544	654
2070	373	404	677	711	324	544	413	732	446	542	678
2080	341	359	695	770	293	566	370	790	447	529	704
2090	314	317	715	829	266	579	336	848	413	508	733
2100	289	274	735	889	236	597	301	913	379	508	762

**II.1.3: N<sub>2</sub>O emissions (TgN/yr)**

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

**II.1.4: PFCs, SF<sub>6</sub> and HFCs emissions (Gg/yr)****CF<sub>4</sub> emissions (Gg/yr)**

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

**C<sub>2</sub>F<sub>6</sub> emissions (Gg/yr)**

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

**SF<sub>6</sub> emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
2010	6.7	6.7	6.7	7.6	5.6	7.4	7.2	8.0	6.4	7.7
2020	7.3	7.3	7.3	9.7	5.7	8.4	7.9	10.2	6.5	9.9
2030	10.2	10.2	10.2	11.6	7.2	9.2	10.7	12.0	8.0	12.5
2040	15.2	15.2	15.2	13.7	8.9	11.7	15.8	14.0	9.7	15.8
2050	18.3	18.3	18.3	16.0	10.4	12.1	18.8	16.8	11.2	18.6
2060	19.5	19.5	19.5	18.8	10.9	12.2	20.0	18.7	11.6	20.4
2070	17.3	17.3	17.3	19.8	9.5	11.4	17.8	19.7	10.2	22.0
2080	13.5	13.5	13.5	20.7	7.1	9.6	12.0	20.6	6.8	22.8
2090	13.0	13.0	13.0	23.4	6.5	10.0	13.5	23.3	7.2	23.9
2100	14.5	14.5	14.5	25.2	6.5	10.6	15.0	25.1	7.2	24.4

**HFC-23 emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	13	13	13	13	13	13	13	13	13	13
2010	15	15	15	15	15	15	15	15	15	15
2020	5	5	5	5	5	5	5	5	5	5
2030	2	2	2	2	2	2	2	2	2	2
2040	2	2	2	2	2	2	2	2	2	2
2050	1	1	1	1	1	1	0	0	0	0
2060	1	1	1	1	1	1	0	0	0	0
2070	1	1	1	1	1	1	0	0	0	0
2080	1	1	1	1	1	1	0	0	0	0
2090	1	1	1	1	1	1	0	0	0	0
2100	1	1	1	1	1	1	0	0	0	0

**HFC-32 emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0	0	0	0	0	0	2	2	2	2
2010	4	4	4	4	3	3	3	3	3	3
2020	8	8	8	6	6	6	8	6	6	7
2030	14	14	14	9	8	9	14	9	8	10
2040	19	19	19	11	10	11	19	10	10	12
2050	24	24	24	14	14	14	24	13	14	16
2060	28	28	28	17	14	17	26	16	14	19
2070	29	29	29	20	14	20	27	19	14	21
2080	30	30	30	24	14	22	28	23	14	23
2090	30	30	30	29	14	24	28	28	13	24
2100	30	30	30	33	13	26	28	33	13	25

**HFC-125 emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	0	0	0	0	0	0	7	7	7	7	0
2010	12	12	12	11	11	11	11	10	10	10	1
2020	27	27	27	21	21	22	26	19	20	22	9
2030	45	45	45	29	29	30	44	27	28	32	46
2040	62	62	62	35	36	38	62	33	35	40	111
2050	80	80	80	46	48	49	78	43	47	52	175
2060	94	94	94	56	48	58	84	53	48	62	185
2070	98	98	98	66	48	67	88	62	47	70	194
2080	100	100	100	79	48	76	91	74	46	75	199
2090	101	101	101	94	46	83	92	89	45	79	199
2100	101	101	101	106	44	89	93	104	43	83	199

**HFC-134a emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	80	80	80	80	80	80	147	147	147	147	148
2010	176	176	176	166	163	166	220	204	206	216	290
2020	326	326	326	252	249	262	427	315	319	359	396
2030	515	515	515	330	326	352	693	412	422	496	557
2040	725	725	725	405	414	443	997	508	545	638	738
2050	931	931	931	506	547	561	1215	635	734	816	918
2060	1076	1076	1076	633	550	679	1264	800	732	991	969
2070	1078	1078	1078	758	544	799	1272	962	718	1133	1020
2080	1061	1061	1061	915	533	910	1247	1169	698	1202	1047
2090	1029	1029	1029	1107	513	1002	1204	1422	667	1261	1051
2100	980	980	980	1260	486	1079	1142	1671	627	1317	1055

**HFC-143a emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0	0	0	0	0	0	6	6	6	6
2010	9	9	9	9	8	8	8	8	8	8
2020	21	21	21	16	15	16	20	15	15	17
2030	34	34	34	22	21	22	34	21	21	24
2040	47	47	47	27	26	27	48	26	26	30
2050	61	61	61	35	35	35	60	33	35	39
2060	70	70	70	43	35	42	64	41	35	47
2070	74	74	74	51	35	49	67	48	35	53
2080	75	75	75	61	35	55	69	58	35	57
2090	76	76	76	73	34	60	70	70	33	60
2100	76	76	76	82	32	65	70	81	32	63

**HFC-152a emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	18
2030	0	0	0	0	0	0	0	0	0	0	114
2040	0	0	0	0	0	0	0	0	0	0	281
2050	0	0	0	0	0	0	0	0	0	0	448
2060	0	0	0	0	0	0	0	0	0	0	495
2070	0	0	0	0	0	0	0	0	0	0	542
2080	0	0	0	0	0	0	0	0	0	0	567
2090	0	0	0	0	0	0	0	0	0	0	568
2100	0	0	0	0	0	0	0	0	0	0	570

**HFC-227ea emissions (Gg/yr)**

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

**HFC–245ca emissions (Gg/yr)**

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

**HFC43–10mee emissions (Gg/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0	0	0	0	0	0	5	5	5	5
2010	7	7	7	7	6	6	6	6	6	6
2020	9	9	9	8	7	7	8	7	7	7
2030	12	12	12	8	8	8	10	7	7	8
2040	15	15	15	9	9	10	13	8	9	9
2050	18	18	18	11	11	11	15	9	10	11
2060	22	22	22	12	11	12	17	11	10	12
2070	24	24	24	14	11	14	20	12	10	13
2080	27	27	27	16	11	15	22	14	10	14
2090	29	29	29	19	11	17	24	17	10	15
2100	30	30	30	22	10	18	26	19	10	15

Note: Table II.1.4 contains supplementary data to the SRES Report (Nakićenović *et al.*, 2000): The data contained in the SRES Report was insufficient to break down the individual contributions to HFCs, PFCs and SF<sub>6</sub>, these emissions were supplied by Lead Authors of the SRES Report and are also available at the CIESIN (Center for International Earth Science Information Network) Website (<http://sres.ciesin.org>). The sample scenario IS92a is only included for HFC–125, HFC–134a, and HFC–152a. All PFCs, SF<sub>6</sub> and HFCs emissions are the same for family A1 (A1B, A1T and A1FI).

**II.1.5: NO<sub>x</sub> emissions (TgN/yr)**

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

Note: NO<sub>x</sub> is the sum of NO and NO<sub>2</sub>

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

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

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

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

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

**II.1.8: SO<sub>2</sub> emissions (TgS/yr)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	79.0
2010	87.1	64.7	80.8	74.7	73.9	65.9	87.4	74.7	59.8	68.2	95.0
2020	100.2	59.9	86.9	99.5	74.6	61.3	100.8	99.5	56.2	65.0	111.0
2030	91.0	59.6	96.1	112.5	78.2	60.3	91.4	111.9	53.5	59.9	125.8
2040	68.9	45.9	94.0	109.0	78.5	59.0	77.9	108.1	53.3	58.8	139.4
2050	64.1	40.2	80.5	105.4	68.9	55.7	64.3	105.4	51.4	57.2	153.0
2060	46.9	34.4	56.3	89.6	55.8	53.8	51.2	86.3	51.2	53.7	151.8
2070	35.7	30.1	42.6	73.7	44.3	50.9	44.9	71.7	49.2	51.9	150.6
2080	30.7	25.2	39.4	64.7	36.1	50.0	30.7	64.2	42.2	49.1	149.4
2090	29.1	23.3	39.8	62.5	29.8	49.0	29.1	61.9	33.9	48.0	148.2
2100	27.6	20.2	40.1	60.3	24.9	47.9	27.4	60.3	28.6	47.3	147.0

Note: The SRES emissions for SO<sub>2</sub> are used with a linear offset in all scenarios to 69.0 TgS/yr in year 2000.



**II.1.9: BC aerosol emissions (Tg/yr)**

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

Note: Emissions for BC are scaled to SRES anthropogenic CO emissions offset to year 2000.

**II.1.10: OC aerosol emissions (Tg/yr)**

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

Note: Emissions for OC are scaled to SRES anthropogenic CO emissions offset to year 2000.

**II.2: Abundances and burdens****II.2.1: CO<sub>2</sub> abundances (ppm)**

ISAM model (reference) – CO <sub>2</sub> abundances (ppm)												IS92a/
Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	SAR
1970	325	325	325	325	325	325	325	325	325	325	325	326
1980	337	337	337	337	337	337	337	337	337	337	337	338
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) – CO<sub>2</sub> 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) – CO<sub>2</sub> 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 CO<sub>2</sub>” parametrization was chosen with climate sensitivity 1.5°C and maximal CO<sub>2</sub> uptake by oceans and land. A “high CO<sub>2</sub>” parametrization was defined with climate sensitivity 4.5°C and minimal CO<sub>2</sub> uptake by oceans and land. See Chapter 3, Box 3.7, and Jain *et al.* (1994) for more details on the ISAM model.

The IS92a column values are calculated using the ISAM parametrization noted above with IS92a emissions starting in the year 2000; whereas the IS92a/SAR column refers to values as reported in the SAR using IS92a emissions starting in 1990, using the SAR parametrization of ISAM.

**Bern-CC model (reference) – CO<sub>2</sub> abundances (ppm)**

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

**Bern-CC model (low) – CO<sub>2</sub> abundances (ppm)**

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

**Bern-CC model (high) – CO<sub>2</sub> abundances (ppm)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	367	367	367	367	367	367	367	367	367	367	367
2010	395	393	393	393	392	392	397	395	392	394	395
2020	436	427	433	431	426	422	441	434	424	430	431
2030	483	467	484	477	463	454	491	482	455	465	471
2040	538	514	552	533	503	491	548	538	488	504	517
2050	599	562	638	597	544	531	609	602	524	544	568
2060	666	610	743	670	584	575	675	675	566	588	624
2070	732	653	859	753	617	620	738	757	608	632	684
2080	797	689	985	848	645	668	802	851	648	680	750
2090	860	717	1118	957	666	718	863	959	682	730	822
2100	918	735	1248	1080	681	769	918	1082	713	782	902

Note: A “reference” case was defined with an average ocean uptake for the 1980s of 2.0 PgC/yr. A “low CO<sub>2</sub>” parameterisation was obtained by combining a “fast ocean” (ocean uptake of 2.54 PgC/yr for the 1980s) and no response of heterotrophic respiration to temperature. A “high CO<sub>2</sub>” parameterisation was obtained by combining a “slow ocean” (ocean uptake of 1.46 PgC/yr for the 1980s) and capping CO<sub>2</sub> fertilisation. Climate sensitivity was set to 2.5°C for a doubling of CO<sub>2</sub>. See Chapter 3, Box 3.7 for more details on the Bern-CC model.

The IS92a/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 BERN-CC model as described in Chapter 3.

The Bern-CC model was initialised for observed atmospheric CO<sub>2</sub> which was prescribed for the period 1765 to 1999. The CO<sub>2</sub> data were smoothed by a spline. Scenario calculations started at the beginning of the year 2000. This explains the difference in the values given for the years upto 2000. Values shown are for the beginning of each year. Annual-mean values are generally higher (up to 7ppm) depending on the scenario and the year.

**II.2.2: CH<sub>4</sub> abundances (ppb)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	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 IS92a/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: N<sub>2</sub>O abundances (ppb)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	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 IS92a/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: PFCs, SF<sub>6</sub> and HFCs abundances (ppt)****CF<sub>4</sub> abundances (ppt)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
1990	70	70	70	70	70	70	70	70	70	70
2000	82	82	82	82	82	82	82	82	82	82
2010	91	91	91	92	91	93	100	100	100	100
2020	103	103	103	107	101	108	122	121	118	122
2030	119	119	119	125	111	128	154	146	138	150
2040	141	141	141	148	122	153	197	176	159	184
2050	168	168	168	175	135	184	245	212	181	226
2060	198	198	198	208	150	221	296	255	204	274
2070	230	230	230	246	164	261	342	306	226	327
2080	265	265	265	291	179	302	377	365	242	383
2090	303	303	303	341	193	344	405	433	256	439
2100	341	341	341	397	208	384	437	508	269	493

**C<sub>2</sub>F<sub>6</sub> abundances (ppt)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
1990	2	2	2	2	2	2	2	2	2	2
2000	3	3	3	3	3	3	3	3	3	3
2010	4	4	4	4	4	4	4	4	4	4
2020	5	5	5	5	4	5	6	6	6	6
2030	6	6	6	6	5	6	8	7	7	8
2040	7	7	7	7	6	8	11	9	8	10
2050	9	9	9	9	7	10	14	12	10	12
2060	11	11	11	11	8	12	17	14	11	16
2070	13	13	13	14	8	15	20	18	12	19
2080	15	15	15	17	9	17	22	21	13	22
2090	17	17	17	20	10	20	24	26	14	26
2100	20	20	20	23	11	22	26	30	15	30

**SF<sub>6</sub> abundances (ppt)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
1990	3	3	3	3	3	3	3	3	3	3
2000	5	5	5	5	5	5	5	5	5	5
2010	7	7	7	7	7	7	7	7	7	7
2020	10	10	10	11	9	10	10	11	10	11
2030	13	13	13	15	12	14	14	15	12	15
2040	18	18	18	20	15	18	19	20	16	21
2050	25	25	25	26	19	23	26	26	20	27
2060	32	32	32	32	23	27	33	33	24	35
2070	39	39	39	40	27	32	41	41	29	43
2080	45	45	45	48	30	36	46	48	32	52
2090	50	50	50	56	33	40	51	57	35	61
2100	56	56	56	65	35	44	57	66	37	70

**HFC-23 abundances (ppt)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
1990	8	8	8	8	8	8	8	8	8	8
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	33	34
2070	35	35	34	34	34	34	33	32	32	33
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
1990	0	0	0	0	0	0	0	0	0	0
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	5
2040	10	10	10	6	5	6	11	5	5	7
2050	14	14	13	7	7	8	15	7	7	9
2060	17	17	16	9	8	10	18	9	8	11
2070	19	19	18	11	8	12	20	11	8	13
2080	19	21	19	14	8	14	21	13	8	14
2090	20	22	20	17	8	15	21	16	8	15
2100	19	22	20	20	8	17	20	20	8	16



**HFC–227ea abundance (ppt)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
1990	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0
2010	2	2	2	2	2	2	3	3	3	3
2020	6	6	6	5	6	6	7	6	6	7
2030	13	13	13	10	10	11	13	9	10	11
2040	22	22	22	14	15	17	22	13	15	17
2050	33	33	32	19	21	24	33	18	20	23
2060	45	45	44	25	27	31	43	23	26	31
2070	56	56	55	32	31	40	52	29	30	39
2080	63	65	62	40	34	49	60	36	33	47
2090	68	71	68	49	35	59	64	45	34	54
2100	70	74	71	60	36	68	67	55	35	60

**HFC–245ca abundance (ppt)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
1990	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0
2010	8	8	8	8	8	8	11	10	10	10
2020	20	20	20	17	17	18	20	16	16	18
2030	34	34	33	23	23	26	35	21	22	26
2040	52	51	50	29	29	34	55	27	28	35
2050	72	72	69	36	38	44	76	34	38	46
2060	92	93	88	46	43	55	92	43	44	58
2070	102	105	99	58	44	67	101	55	44	70
2080	101	108	101	72	43	80	101	68	44	79
2090	97	107	99	88	42	92	96	84	43	84
2100	90	101	94	105	40	103	88	101	41	88

**HFC–43–10mee abundance (ppt)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
1990	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0
2010	1	1	1	1	1	1	1	1	1	1
2020	2	2	2	2	1	1	2	2	2	2
2030	3	3	3	2	2	2	3	2	2	2
2040	4	4	4	3	2	3	4	2	2	3
2050	5	5	5	3	3	3	5	3	3	3
2060	7	7	6	4	3	4	6	3	3	4
2070	8	8	8	4	4	5	7	4	3	4
2080	9	9	9	5	4	5	8	4	4	5
2090	10	11	10	6	4	6	9	5	4	5
2100	11	12	11	7	4	7	10	6	4	6

Note: Even though all PFCs, SF6 and HFCs emissions are the same for family A1 (A1B, A1T and A1FI), the OH changes due to CH<sub>4</sub>, NO<sub>x</sub>, CO and VOC (affecting only HFCs burdens). Hence the burden for HFCs can diverge for each of these scenarios within family A1. See Chapter 4 for details.

**II.2.5: Tropospheric O<sub>3</sub> burden (global mean column in DU)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	IS92a/ SAR
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
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
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
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
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
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
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
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
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
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
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
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

Note: IS92a/SAR column refers to IS92a emissions as reported in the SAR which estimated this O<sub>3</sub> change only as an indirect feedback effect from CH<sub>4</sub> increases; whereas IS92a column uses the latest models (see Chapter 4) which include also changes in emissions of NO<sub>x</sub>, CO and VOC. A mean tropospheric O<sub>3</sub> content of 34 DU in 1990 is adopted; and 1 ppb of tropospheric O<sub>3</sub> = 0.65 DU.

These projected increases in tropospheric O<sub>3</sub> are likely to be 25% too large, see note to Table 4.11 of Chapter 4 describing corrections made after government review.

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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2010	0.99	0.99	0.99	1.00	1.01	0.99	0.98	1.00	1.02	0.99	1.00
2020	0.97	0.98	0.99	1.00	1.02	0.99	0.94	1.00	1.01	0.97	0.99
2030	0.94	0.96	0.98	0.99	1.04	0.98	0.90	0.99	1.02	0.96	0.98
2040	0.91	0.93	0.96	0.98	1.06	0.96	0.85	0.98	1.03	0.95	0.96
2050	0.90	0.89	0.94	0.96	1.06	0.93	0.81	0.96	1.04	0.93	0.95
2060	0.89	0.87	0.92	0.94	1.05	0.91	0.78	0.94	1.03	0.92	0.93
2070	0.89	0.84	0.90	0.92	1.04	0.89	0.77	0.92	1.01	0.90	0.92
2080	0.89	0.81	0.88	0.90	1.04	0.87	0.77	0.90	1.01	0.89	0.91
2090	0.90	0.81	0.86	0.89	1.04	0.86	0.80	0.89	0.98	0.89	0.90
2100	0.90	0.82	0.86	0.88	1.05	0.84	0.82	0.88	0.97	0.89	0.89

**II.2.7: SO<sub>4</sub><sup>2-</sup> aerosol burden (TgS)**

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

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



**II.2.8: BC aerosol burden (Tg)**

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

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

**II.2.9: OC aerosol burden (Tg)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
2010	1.70	1.70	1.73	1.67	1.39	1.61	1.87	1.67	1.25	1.67	1.59
2020	1.75	1.92	2.00	1.81	1.34	1.73	2.25	1.81	1.45	1.78	1.66
2030	1.86	2.23	2.34	2.08	1.12	1.86	2.41	2.07	1.27	1.72	1.75
2040	1.94	2.51	2.77	2.21	1.01	2.02	2.66	2.19	1.32	1.86	1.86
2050	2.01	2.83	3.40	2.33	0.92	2.17	2.92	2.33	1.38	1.98	1.97
2060	2.06	3.09	3.56	2.50	0.91	2.32	3.19	2.49	1.44	2.15	2.08
2070	2.11	3.28	3.88	2.67	0.90	2.54	3.46	2.66	1.51	2.38	2.19
2080	2.22	3.41	4.31	2.94	0.86	2.79	3.60	2.91	1.57	2.65	2.29
2090	2.43	3.40	4.17	3.29	0.82	3.00	3.61	3.25	1.48	2.86	2.40
2100	2.67	3.28	4.00	3.65	0.77	3.17	3.63	3.64	1.39	3.03	2.51

Note: Global burden is scaled to emissions: 1.52 Tg burden for 81.4 Tg/yr emissions.

**II.2.10: CFCs and HFCs abundances from WMO98 Scenario A1(baseline) following the Montreal (1997) Amendments (ppt)**

Year	CFC-11	CFC-12	CFC-113	CFC-114	CFC-115	CCl <sub>4</sub>	CH <sub>3</sub> CCl <sub>3</sub>	HCFC-22	HCFC-141b	HCFC-142b	HCFC-123	CF <sub>2</sub> BrCl	CF <sub>3</sub> Br	EESCI
1970	50	109	4	6	0	56	13	13	0	0	0	0	0	1.25
1975	106	199	9	8	1	77	36	25	0	0	0	0	0	1.54
1980	164	290	18	10	1	92	75	41	0	0	0	1	0	1.99
1985	207	373	34	12	3	100	102	64	0	0	0	2	1	2.44
1990	258	467	67	15	5	102	125	90	0	1	0	3	2	2.87
1995	271	520	86	16	7	100	110	112	3	7	0	4	2	3.30
2000	267	535	85	16	9	92	44	145	13	15	0	4	3	3.28
2010	246	527	81	16	9	75	6	257	22	33	2	4	3	3.03
2020	214	486	72	15	9	59	1	229	16	32	3	3	3	2.74
2030	180	441	64	15	9	47	0	137	9	23	2	2	3	2.42
2040	149	400	57	14	9	37	0	88	6	17	2	1	3	2.16
2050	123	362	51	14	9	29	0	46	2	11	1	1	3	1.94
2060	101	328	45	13	9	23	0	20	1	6	1	0	2	1.76
2070	83	298	40	13	9	18	0	9	0	4	0	0	2	1.62
2080	68	270	36	12	8	14	0	4	0	2	0	0	2	1.51
2090	56	245	32	12	8	11	0	2	0	1	0	0	2	1.41
2100	45	222	28	12	8	9	0	1	0	1	0	0	1	1.33

Notes: Only significant greenhouse halocarbons shown (ppt).

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

[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 ( $\text{Wm}^{-2}$ ) (relative to pre-industrial period, 1750)

The concentrations of  $\text{CO}_2$  and  $\text{CH}_4$  considered here correspond to the year 2000 and differ slightly from those considered in Chapter 6 which used the values corresponding to the year 1998 (as appropriate for the time frame when Chapter 6 began its preparation). The resulting difference in the computed present day forcings is about 3% in the case of  $\text{CO}_2$  and about 2% in the case of  $\text{CH}_4$ . For  $\text{N}_2\text{O}$ , the difference in the computed forcings is negligible. In the case of tropospheric ozone, the forcing for the year 2000 given here and that in Chapter 6 are the results of slightly different scenarios employed which leads to about a 9% difference in the forcings. For the halogen containing compounds, the absolute differences in concentrations between here and Chapter 6 lead to a difference in present day forcing of less than  $0.002 \text{ Wm}^{-2}$  for any species.

#### II.3.1: $\text{CO}_2$ radiative forcing ( $\text{Wm}^{-2}$ )

ISAM model (reference) – $\text{CO}_2$ radiative forcing ( $\text{Wm}^{-2}$ )												
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) – $\text{CO}_2$ radiative forcing ( $\text{Wm}^{-2}$ )												
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) – $\text{CO}_2$ radiative forcing ( $\text{Wm}^{-2}$ )												
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) – $\text{CO}_2$ radiative forcing ( $\text{Wm}^{-2}$ )												
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	1.53
2010	1.78	1.76	1.76	1.76	1.76	1.74	1.81	1.78	1.74	1.77	1.77	1.82
2020	2.18	2.08	2.14	2.13	2.08	2.03	2.22	2.16	2.04	2.10	2.12	2.16
2030	2.54	2.40	2.56	2.50	2.36	2.27	2.62	2.54	2.27	2.37	2.44	2.50
2040	2.96	2.76	3.09	2.93	2.66	2.55	3.03	2.97	2.52	2.66	2.79	2.87
2050	3.37	3.10	3.70	3.37	2.94	2.84	3.44	3.40	2.78	2.93	3.13	3.21
2060	3.78	3.38	4.33	3.82	3.17	3.13	3.83	3.85	3.05	3.20	3.48	3.56
2070	4.12	3.60	4.96	4.29	3.33	3.39	4.17	4.31	3.30	3.47	3.82	3.91
2080	4.45	3.78	5.56	4.80	3.45	3.67	4.48	4.81	3.52	3.74	4.18	4.26
2090	4.74	3.86	6.12	5.34	3.53	3.94	4.74	5.34	3.70	4.01	4.57	4.63
2100	4.96	3.89	6.62	5.89	3.55	4.21	4.96	5.89	3.83	4.27	4.96	5.01

**Bern-CC model (low) – CO<sub>2</sub> radiative forcing (Wm<sup>-2</sup>)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
2010	1.71	1.69	1.69	1.69	1.69	1.67	1.73	1.71	1.67	1.70	1.71
2020	2.04	1.95	2.01	2.00	1.95	1.89	2.09	2.03	1.91	1.97	1.99
2030	2.36	2.19	2.36	2.31	2.17	2.08	2.42	2.35	2.08	2.17	2.26
2040	2.69	2.48	2.83	2.68	2.41	2.30	2.76	2.71	2.27	2.38	2.55
2050	3.04	2.74	3.36	3.05	2.64	2.52	3.10	3.09	2.46	2.60	2.84
2060	3.37	2.96	3.91	3.44	2.81	2.74	3.39	3.46	2.67	2.81	3.14
2070	3.63	3.10	4.43	3.83	2.91	2.94	3.65	3.83	2.87	3.00	3.42
2080	3.89	3.19	4.94	4.27	2.98	3.16	3.89	4.26	3.03	3.21	3.74
2090	4.10	3.23	5.40	4.71	3.00	3.37	4.08	4.71	3.15	3.43	4.05
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) – CO<sub>2</sub> radiative forcing (Wm<sup>-2</sup>)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
2010	1.88	1.85	1.85	1.85	1.84	1.84	1.91	1.88	1.84	1.87	1.88
2020	2.41	2.30	2.37	2.35	2.28	2.23	2.47	2.38	2.26	2.33	2.35
2030	2.96	2.78	2.97	2.89	2.73	2.62	3.04	2.94	2.64	2.75	2.82
2040	3.53	3.29	3.67	3.48	3.17	3.04	3.63	3.53	3.01	3.18	3.32
2050	4.11	3.77	4.44	4.09	3.59	3.46	4.20	4.13	3.39	3.59	3.82
2060	4.67	4.20	5.26	4.71	3.97	3.89	4.75	4.75	3.80	4.01	4.33
2070	5.18	4.57	6.04	5.33	4.27	4.29	5.23	5.36	4.19	4.39	4.82
2080	5.63	4.86	6.77	5.97	4.50	4.69	5.67	5.99	4.53	4.79	5.31
2090	6.04	5.07	7.45	6.61	4.67	5.08	6.06	6.62	4.80	5.17	5.80
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: CH<sub>4</sub> radiative forcing (Wm<sup>-2</sup>)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	IS92a/ SAR
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
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
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
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
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
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
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
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
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
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
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: N<sub>2</sub>O radiative forcing (Wm<sup>-2</sup>)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	IS92a/ SAR
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
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
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
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
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
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
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
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
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
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
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



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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000
2040	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.001
2050	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2060	0.002	0.002	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
2070	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
2080	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
2090	0.002	0.002	0.002	0.002	0.001	0.001	0.002	0.001	0.001	0.001
2100	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.001	0.001

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

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

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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
2010	0.009	0.009	0.009	0.008	0.008	0.008	0.012	0.011	0.011	0.012	0.014
2020	0.020	0.020	0.019	0.017	0.016	0.017	0.026	0.021	0.021	0.023	0.027
2030	0.035	0.035	0.035	0.026	0.025	0.027	0.048	0.032	0.032	0.038	0.042
2040	0.056	0.056	0.055	0.035	0.033	0.038	0.078	0.043	0.044	0.053	0.060
2050	0.081	0.080	0.078	0.045	0.044	0.050	0.113	0.056	0.059	0.072	0.081
2060	0.105	0.105	0.101	0.057	0.053	0.064	0.143	0.072	0.071	0.092	0.099
2070	0.122	0.125	0.119	0.072	0.057	0.079	0.164	0.091	0.077	0.113	0.111
2080	0.131	0.137	0.129	0.089	0.059	0.095	0.175	0.113	0.079	0.132	0.121
2090	0.133	0.143	0.134	0.109	0.059	0.111	0.178	0.140	0.080	0.145	0.128
2100	0.131	0.143	0.135	0.132	0.057	0.125	0.174	0.170	0.078	0.156	0.132

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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2010	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
2020	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
2030	0.003	0.003	0.003	0.003	0.002	0.002	0.004	0.003	0.003	0.003
2040	0.006	0.006	0.006	0.004	0.004	0.004	0.006	0.004	0.004	0.005
2050	0.009	0.009	0.009	0.006	0.006	0.006	0.010	0.006	0.006	0.007
2060	0.013	0.013	0.013	0.008	0.007	0.008	0.014	0.008	0.008	0.009
2070	0.017	0.017	0.017	0.011	0.009	0.011	0.017	0.010	0.009	0.012
2080	0.021	0.021	0.020	0.013	0.010	0.013	0.020	0.013	0.010	0.014
2090	0.024	0.024	0.023	0.017	0.011	0.016	0.023	0.016	0.011	0.017
2100	0.026	0.027	0.026	0.020	0.012	0.018	0.026	0.020	0.012	0.019

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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
2040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
2050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
2060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
2070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
2080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
2090	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
2100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007

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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2010	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2020	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
2030	0.004	0.004	0.004	0.003	0.003	0.003	0.004	0.003	0.003	0.003
2040	0.007	0.007	0.007	0.004	0.004	0.005	0.007	0.004	0.004	0.005
2050	0.010	0.010	0.010	0.006	0.006	0.007	0.010	0.005	0.006	0.007
2060	0.014	0.014	0.013	0.008	0.008	0.009	0.013	0.007	0.008	0.009
2070	0.017	0.017	0.016	0.010	0.009	0.012	0.016	0.009	0.009	0.012
2080	0.019	0.020	0.019	0.012	0.010	0.015	0.018	0.011	0.010	0.014
2090	0.020	0.021	0.020	0.015	0.010	0.018	0.019	0.014	0.010	0.016
2100	0.021	0.022	0.021	0.018	0.011	0.020	0.020	0.016	0.010	0.018

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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2010	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2020	0.005	0.005	0.005	0.004	0.004	0.004	0.005	0.004	0.004	0.004
2030	0.008	0.008	0.008	0.005	0.005	0.006	0.008	0.005	0.005	0.006
2040	0.012	0.012	0.012	0.007	0.007	0.008	0.013	0.006	0.006	0.008
2050	0.017	0.017	0.016	0.008	0.009	0.010	0.017	0.008	0.009	0.011
2060	0.021	0.021	0.020	0.011	0.010	0.013	0.021	0.010	0.010	0.013
2070	0.023	0.024	0.023	0.013	0.010	0.015	0.023	0.013	0.010	0.016
2080	0.023	0.025	0.023	0.017	0.010	0.018	0.023	0.016	0.010	0.018
2090	0.022	0.025	0.023	0.020	0.010	0.021	0.022	0.019	0.010	0.019
2100	0.021	0.023	0.022	0.024	0.009	0.024	0.020	0.023	0.009	0.020

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

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2020	0.001	0.001	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.001
2030	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2040	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
2050	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
2060	0.003	0.003	0.002	0.002	0.001	0.002	0.002	0.001	0.001	0.002
2070	0.003	0.003	0.003	0.002	0.002	0.002	0.003	0.002	0.001	0.002
2080	0.004	0.004	0.004	0.002	0.002	0.002	0.003	0.002	0.002	0.002
2090	0.004	0.004	0.004	0.002	0.002	0.002	0.004	0.002	0.002	0.002
2100	0.004	0.005	0.004	0.003	0.002	0.003	0.004	0.002	0.002	0.002

**II.3.5: Tropospheric O<sub>3</sub> radiative forcing (Wm<sup>-2</sup>)**

Year	A1B	A1T	A1FI	A2	B1	B2	A1p	A2p	B1p	B2p	IS92a	IS92a/ SAR
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
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
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
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
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
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
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
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
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
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
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

**II.3.6: SO<sub>4</sub><sup>2-</sup> aerosols (direct effect) radiative forcing (Wm<sup>-2</sup>)**

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

**II.3.7: BC aerosols radiative forcing (Wm<sup>-2</sup>)**

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

**II.3.8: OC aerosols radiative forcing (Wm<sup>-2</sup>)**

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



**II.3.9: Radiative forcing ( $Wm^{-2}$ ) from CFCs and HCFCs following the Montreal (1997) Amendments**

Year	CFC-11	CFC-12	CFC-113	CFC-114	CFC-115	CCl <sub>4</sub>	CH <sub>3</sub> CCl <sub>3</sub>	HCFC-22	HCFC-141b	HCFC-142b	HCFC-123	CF <sub>2</sub> BrCl	CF <sub>3</sub> Br	SUM
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: Radiative Forcing ( $Wm^{-2}$ ) from fossil fuel plus biomass Organic and Black Carbon as used in the Chapter 9 Simple Model SRES Projections**

Year	A1B	A1T	A1FI	A2	B1	B2	IS92a
1990	-0.0997	-0.0997	-0.0997	-0.0997	-0.0997	-0.0997	-0.0998
2000	-0.1361	-0.1361	-0.1361	-0.1361	-0.1361	-0.1361	-0.1586
2010	-0.1308	-0.1468	-0.1280	-0.1392	-0.1081	-0.1203	-0.1357
2020	-0.0524	-0.0799	-0.1714	-0.1248	-0.0926	-0.0516	-0.1103
2030	-0.0562	-0.0598	-0.1745	-0.1088	-0.0154	-0.0148	-0.0872
2040	-0.0780	-0.0644	-0.1614	-0.1064	0.0349	-0.0075	-0.0610
2050	-0.0804	-0.0603	-0.1351	-0.1029	0.0280	-0.0049	-0.0339
2060	-0.0948	-0.0615	-0.1417	-0.1002	0.0241	0.0015	-0.0190
2070	-0.1071	-0.0613	-0.1193	-0.0939	0.0147	0.0064	-0.0026
2080	-0.1161	-0.0629	-0.0644	-0.0871	0.0300	0.0180	0.0166
2090	-0.1178	-0.0619	0.0365	-0.0816	0.0421	0.0341	0.0390
2100	-0.1208	-0.0629	0.0565	-0.0762	0.0351	0.0510	0.0635

**II.3.11: Total Radiative Forcing ( $Wm^{-2}$ ) from GHG plus direct and indirect aerosol effects as used in the Chapter 9 Simple Model SRES Projections**

Year	A1B	A1T	A1FI	A2	B1	B2	IS92a
1990	1.03	1.03	1.03	1.03	1.03	1.03	1.03
2000	1.33	1.33	1.33	1.33	1.33	1.33	1.31
2010	1.65	1.85	1.69	1.74	1.73	1.82	1.63
2020	2.16	2.48	2.17	2.04	2.15	2.36	2.00
2030	2.84	3.07	2.78	2.56	2.56	2.81	2.40
2040	3.61	3.76	3.67	3.22	2.93	3.26	2.82
2050	4.16	4.31	4.83	3.89	3.30	3.70	3.25
2060	4.79	4.73	5.99	4.71	3.65	4.11	3.76
2070	5.28	4.97	7.02	5.56	3.92	4.52	4.24
2080	5.62	5.11	7.89	6.40	4.09	4.92	4.74
2090	5.86	5.12	8.59	7.22	4.18	5.32	5.26
2100	6.05	5.07	9.14	8.07	4.19	5.71	5.79

## II.4: Model Average Surface Air Temperature Change (°C)

Year	A1B	A1T	A1FI	A2	B1	B2	IS92a
1750 to 1990	0.33	0.33	0.33	0.33	0.33	0.33	0.34
1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.16	0.16	0.16	0.16	0.16	0.16	0.15
2010	0.30	0.40	0.32	0.35	0.34	0.39	0.27
2020	0.52	0.71	0.55	0.50	0.55	0.66	0.43
2030	0.85	1.03	0.85	0.73	0.77	0.93	0.61
2040	1.26	1.41	1.27	1.06	0.98	1.18	0.80
2050	1.59	1.75	1.86	1.42	1.21	1.44	1.00
2060	1.97	2.04	2.50	1.85	1.44	1.69	1.26
2070	2.30	2.25	3.10	2.33	1.63	1.94	1.52
2080	2.56	2.41	3.64	2.81	1.79	2.20	1.79
2090	2.77	2.49	4.09	3.29	1.91	2.44	2.08
2100	2.95	2.54	4.49	3.79	1.98	2.69	2.38

Note: See Chapter 9 for details.

## II.5: Sea Level Change (mm)

Note: Values are for the middle of the year..

### 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: The sum of the components listed in Appendix II.5.2 to II.5.5 does not equal the values shown above owing to the addition of other terms. See Chapter 11, Section 11.5.1 for details.

#### Models minimum – Total sea level change (mm)

Year	A1B	A1T	A1FI	A2	B1	B2
1990	0	0	0	0	0	0
2000	6	6	6	6	6	6
2010	13	13	13	13	13	13
2020	22	22	24	21	22	23
2030	34	33	36	31	32	34
2040	48	47	49	44	42	45
2050	63	66	64	58	52	56
2060	78	89	77	75	63	68
2070	93	113	89	93	72	79
2080	107	137	99	113	80	91
2090	119	160	106	133	87	103
2100	129	182	111	155	92	114

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	29	29	29	29	29	29
2010	63	63	65	64	64	65
2020	103	104	110	104	105	109
2030	153	153	164	149	151	159
2040	214	214	228	204	203	216
2050	284	291	299	269	259	277
2060	360	386	375	343	319	344
2070	442	494	453	430	381	414
2080	527	612	529	526	444	488
2090	611	735	602	631	507	566
2100	694	859	671	743	567	646

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

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

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

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

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

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

Year	A1B	A1T	A1FI	A2	B1	B2
1990	0	0	0	0	0	0
2000	0	0	0	0	0	0
2010	1	1	1	1	1	1
2020	2	2	2	2	2	2
2030	4	4	4	4	4	4
2040	5	6	5	5	5	6
2050	8	8	8	7	7	8
2060	10	11	11	10	9	10
2070	13	14	15	13	12	13
2080	17	17	19	16	14	16
2090	20	21	24	20	17	19
2100	24	24	29	25	20	22

**II.5.5: Sea level change due to Antarctica (mm)**

Year	A1B	A1T	A1FI	A2	B1	B2
1990	0	0	0	0	0	0
2000	-2	-2	-2	-2	-2	-2
2010	-5	-5	-5	-5	-5	-5
2020	-8	-9	-8	-8	-8	-9
2030	-12	-14	-13	-12	-13	-13
2040	-18	-20	-18	-17	-17	-19
2050	-25	-27	-25	-23	-23	-25
2060	-33	-35	-35	-31	-30	-32
2070	-42	-45	-46	-40	-37	-41
2080	-52	-54	-59	-50	-44	-49
2090	-63	-64	-74	-62	-53	-59
2100	-74	-75	-90	-76	-61	-70

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