

The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy Supporting Data - Climate

Carbon Emissions

[Global Carbon Dioxide Emissions from Fossil Fuel Burning, 1751-2013](#)

GRAPH: Global Carbon Dioxide Emissions from Fossil Fuel Burning, 1751-2013

GRAPH: Global Carbon Dioxide Emissions from Fossil Fuel Burning, 1950-2013

[Global Carbon Dioxide Emissions from Fossil Fuel Burning by Fuel Type, 1900-2013](#)

GRAPH: Global Carbon Dioxide Emissions from Fossil Fuel Burning by Fuel Type, 1900-2013

[Carbon Dioxide Emissions from Fossil Fuel Burning in Top Ten Countries, 2013](#)

GRAPH: Carbon Dioxide Emissions from Fossil Fuel Burning in Top Ten Countries, 2013

[Carbon Dioxide Emissions from Fossil Fuel Burning in Top Ten Countries, 1950-2013](#)

GRAPH: Carbon Dioxide Emissions from Fossil Fuel Burning in Top Five Countries, 1950-2013

GRAPH: Carbon Dioxide Emissions from Fossil Fuel Burning in the United States and China, 1950-2013

[Carbon Dioxide Emissions from Fossil Fuel Burning in Industrial Countries and the Rest of the World, 1751-2013](#)

GRAPH: Carbon Dioxide Emissions from Fossil Fuel Burning in Industrial Countries and the Rest of the World, 1751-2013

[Carbon Dioxide Emissions Per Person from Fossil Fuel Burning in Top Ten Countries and the World, 2013](#)

GRAPH: Carbon Dioxide Emissions Per Person from Fossil Fuel Burning in Top Ten Countries, 2013

[Global Carbon Dioxide Emissions from Fossil Fuel Burning by Sector, 2012](#)

GRAPH: Global Carbon Dioxide Emissions from Fossil Fuel Burning by Sector, 2012

[Carbon Emissions by Country, 2013 and Five-Year Change](#)

Temperature (Celsius)

[Average Global Temperature, 1880-2014 \(Celsius\)](#)

GRAPH: Average Global Temperature, 1880-2014

[Average Global Temperature by Decade, 1880-2014 \(Celsius\)](#)

[Ten Hottest Years on Record, 1880-2014 \(Celsius\)](#)

[Atmospheric Carbon Dioxide Concentration, 1000-2014](#)

GRAPH: Atmospheric Carbon Dioxide Concentration, 1000-2014

GRAPH: Average Global Temperature and Atmospheric Carbon Dioxide Concentration, 1880-2014 (Celsius)

Temperature (Fahrenheit)

[Average Global Temperature, 1880-2014 \(Fahrenheit\)](#)

GRAPH: Average Global Temperature, 1880-2014

[Average Global Temperature by Decade, 1880-2014 \(Fahrenheit\)](#)

[Ten Hottest Years on Record, 1880-2014 \(Fahrenheit\)](#)

[Atmospheric Carbon Dioxide Concentration, 1000-2014](#)

GRAPH: Atmospheric Carbon Dioxide Concentration, 1000-2014

GRAPH: Average Global Temperature and Atmospheric Carbon Dioxide Concentration, 1880-2014 (Fahrenheit)

A full listing of data for the entire book is on-line at:

http://www.earth-policy.org/books/tgt/tgt_data

This is part of a supporting dataset for **The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy**, by Lester R. Brown, with Janet Larsen, J. Matthew Roney, and Emily E. Adams (New York: W.W. Norton & Company, 2015).

For more information, see Earth Policy Institute on-line at www.earth-policy.org.

Global Carbon Dioxide Emissions from Fossil Fuel Burning, 1751-2013

Year	Carbon Dioxide Million Tons of Carbon
1751	3
1752	3
1753	3
1754	3
1755	3
1756	3
1757	3
1758	3
1759	3
1760	3
1761	3
1762	3
1763	3
1764	3
1765	3
1766	3
1767	3
1768	3
1769	3
1770	3
1771	4
1772	4
1773	4
1774	4
1775	4
1776	4
1777	4
1778	4
1779	4
1780	4
1781	5
1782	5
1783	5
1784	5
1785	5
1786	5
1787	5
1788	5
1789	5
1790	5
1791	6
1792	6
1793	6
1794	6
1795	6
1796	6
1797	7
1798	7
1799	7
1800	8
1801	8
1802	10
1803	9
1804	9
1805	9
1806	10
1807	10
1808	10
1809	10
1810	10
1811	11
1812	11
1813	11
1814	11
1815	12

1816	13
1817	14
1818	14
1819	14
1820	14
1821	14
1822	15
1823	16
1824	16
1825	17
1826	17
1827	18
1828	18
1829	18
1830	24
1831	23
1832	23
1833	24
1834	24
1835	25
1836	29
1837	29
1838	30
1839	31
1840	33
1841	34
1842	36
1843	37
1844	39
1845	43
1846	43
1847	46
1848	47
1849	50
1850	54
1851	54
1852	57
1853	59
1854	69
1855	71
1856	76
1857	77
1858	78
1859	83
1860	91
1861	95
1862	97
1863	104
1864	112
1865	119
1866	122
1867	130
1868	135
1869	142
1870	147
1871	156
1872	173
1873	184
1874	174
1875	188
1876	191
1877	194
1878	196
1879	210
1880	236
1881	243
1882	256
1883	272
1884	275
1885	277

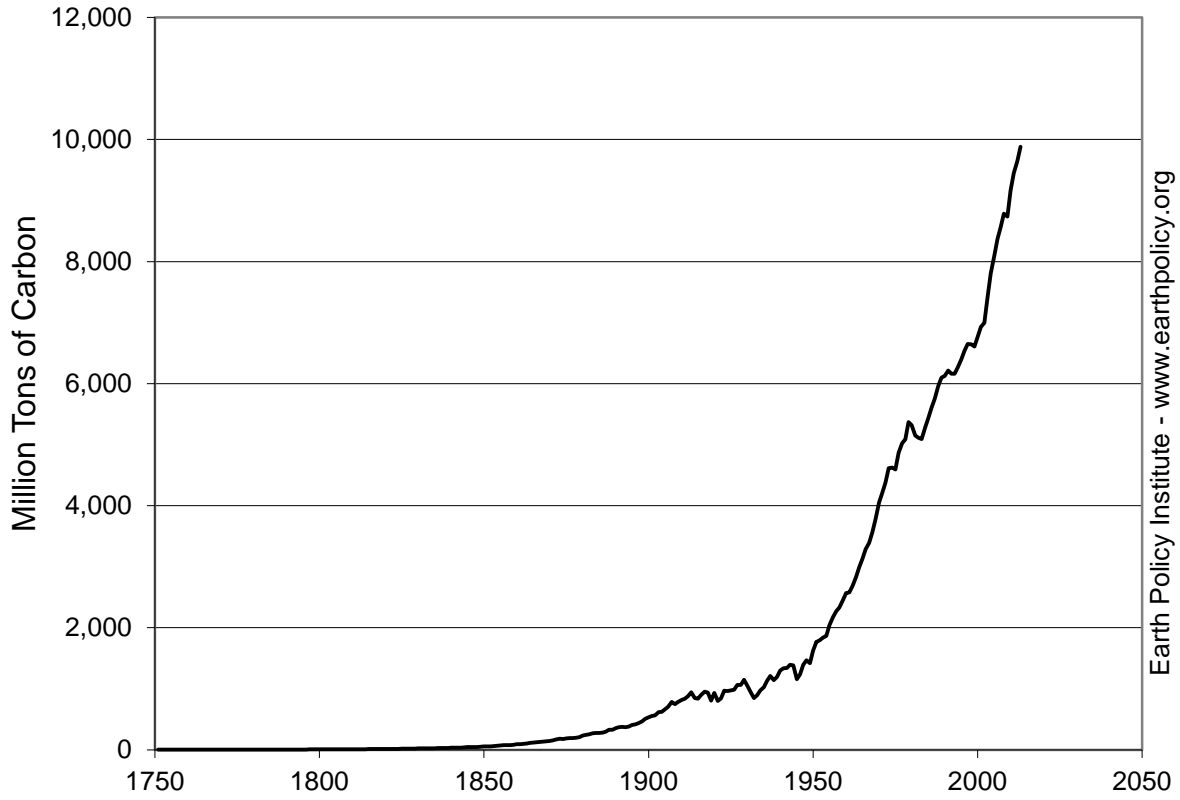
1886	281
1887	295
1888	327
1889	327
1890	356
1891	372
1892	374
1893	370
1894	383
1895	406
1896	419
1897	440
1898	465
1899	507
1900	534
1901	552
1902	566
1903	617
1904	624
1905	663
1906	707
1907	784
1908	750
1909	785
1910	819
1911	836
1912	879
1913	943
1914	850
1915	838
1916	901
1917	955
1918	936
1919	806
1920	932
1921	803
1922	845
1923	970
1924	963
1925	975
1926	983
1927	1,062
1928	1,065
1929	1,145
1930	1,053
1931	940
1932	847
1933	893
1934	973
1935	1,027
1936	1,130
1937	1,209
1938	1,142
1939	1,192
1940	1,299
1941	1,334
1942	1,342
1943	1,391
1944	1,383
1945	1,160
1946	1,238
1947	1,392
1948	1,469
1949	1,419
1950	1,630
1951	1,767
1952	1,795
1953	1,841
1954	1,865
1955	2,042

1956	2,177
1957	2,270
1958	2,330
1959	2,454
1960	2,569
1961	2,580
1962	2,686
1963	2,833
1964	2,995
1965	3,130
1966	3,288
1967	3,393
1968	3,566
1969	3,780
1970	4,053
1971	4,208
1972	4,376
1973	4,614
1974	4,623
1975	4,596
1976	4,864
1977	5,026
1978	5,087
1979	5,369
1980	5,315
1981	5,152
1982	5,113
1983	5,094
1984	5,280
1985	5,439
1986	5,607
1987	5,752
1988	5,965
1989	6,097
1990	6,127
1991	6,217
1992	6,164
1993	6,162
1994	6,266
1995	6,398
1996	6,542
1997	6,651
1998	6,643
1999	6,610
2000	6,765
2001	6,927
2002	6,996
2003	7,416
2004	7,807
2005	8,093
2006	8,370
2007	8,566
2008	8,783
2009	8,740
2010	9,167
2011	9,453
2012	9,647
2013	9,882

Notes: Data include cement production and gas flaring emissions. Emissions figures are in million tons of carbon; for tons of CO₂, multiply by 44/12.

Source: Compiled by Earth Policy Institute with 1751 to 2010 from T. A. Boden, G. Marland, and R. J. Andres, "Global, Regional, and National CO₂ Emissions," *Trends: A Compendium of Data on Global Change* (Oak Ridge, TN: Carbon Dioxide Information Analysis Center, 2014); 2011-2013 emissions calculated by Earth Policy Institute from energy consumption in BP, *Statistical Review of World Energy June 2014* (London: 2014), and cement production in U.S. Geological Survey (USGS), *Mineral Commodity Summaries 2015* (Reston, VA: 2015), p. 39; USGS, *Mineral Commodity Summaries 2013* (Reston, VA: 2013), p. 39; USGS, *Mineral Commodity Summaries 2012* (Reston, VA: 2012), p. 39.

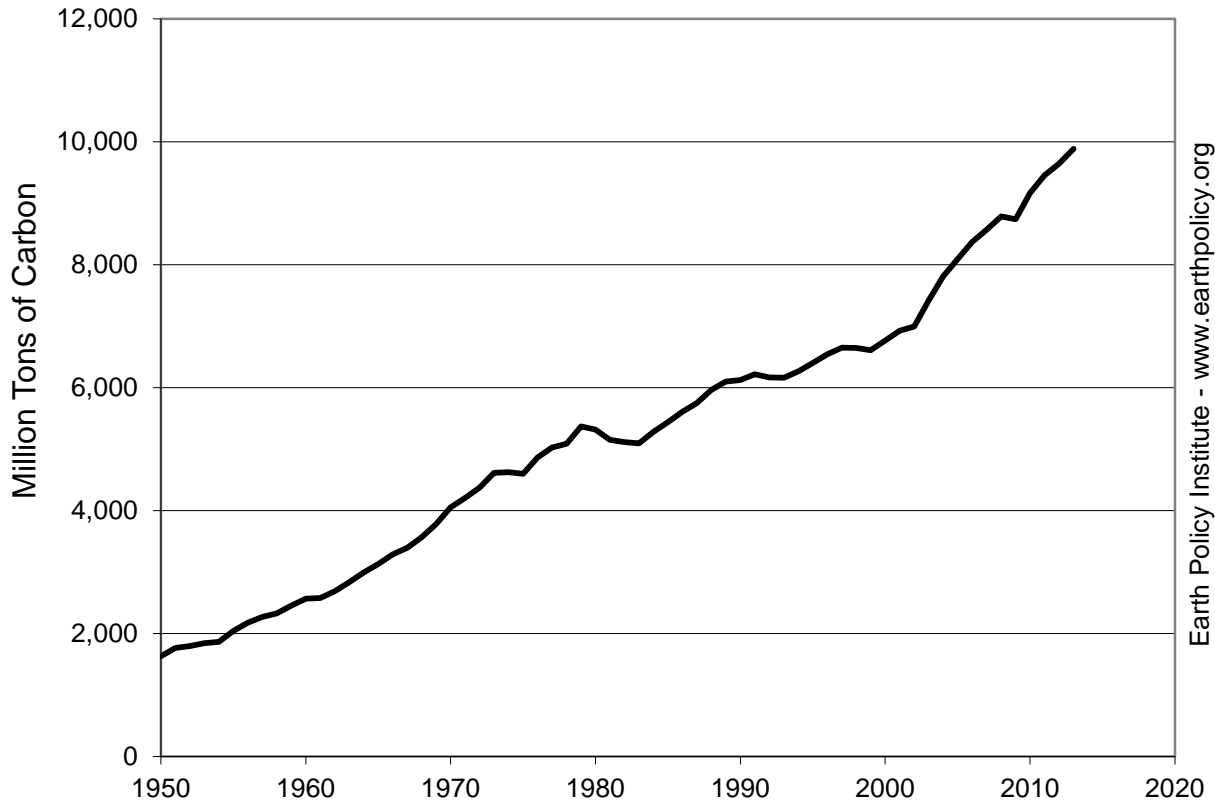
Global Carbon Dioxide Emissions from Fossil Fuel Burning, 1751-2013



Source: EPI from BP; CDIAC; USGS

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Global Carbon Dioxide Emissions from Fossil Fuel Burning, 1950-2013



Source: EPI from BP; CDIAC; USGS

Earth Policy Institute - www.earthpolicy.org

Global Carbon Dioxide Emissions from Fossil Fuel Burning by Fuel Type, 1900-2013

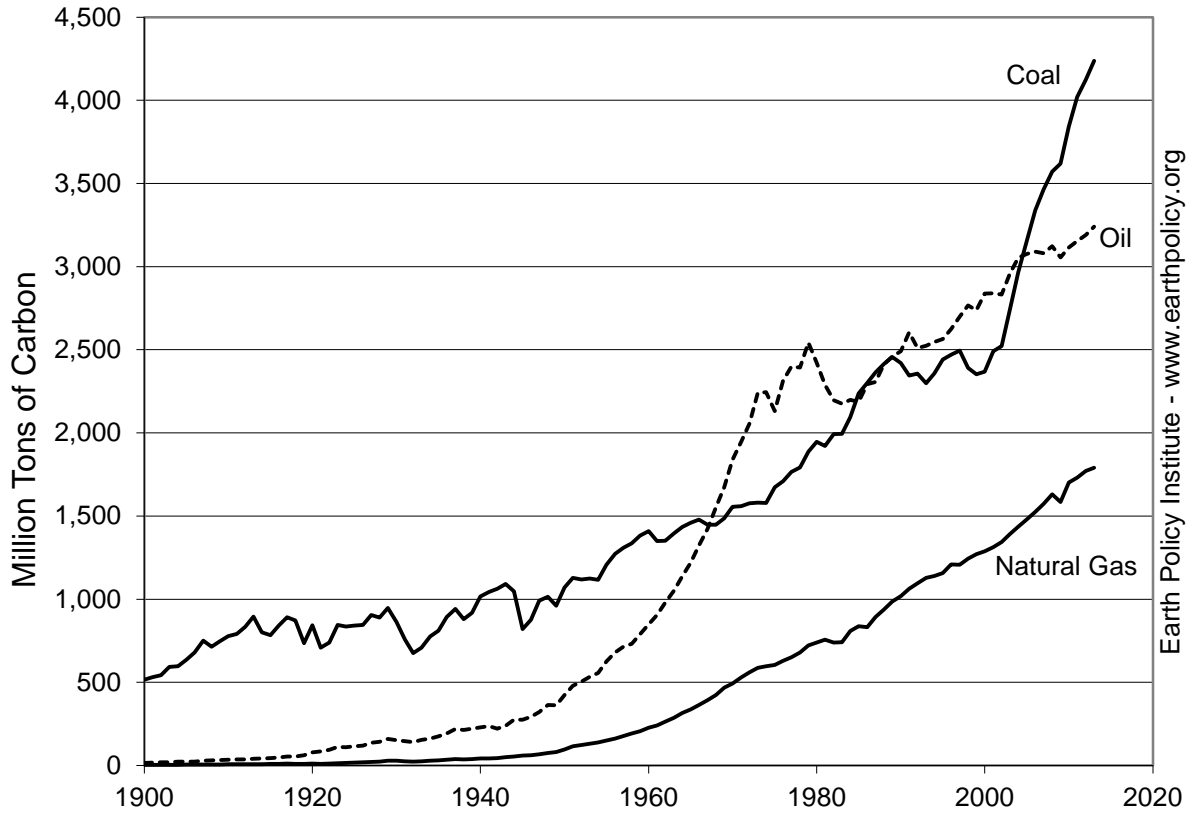
Year	Coal	Oil	Natural Gas	Total
	Million Tons of Carbon			
1900	515	16	3	534
1901	531	18	4	553
1902	543	19	4	566
1903	593	20	4	617
1904	597	23	4	624
1905	636	23	5	664
1906	680	23	5	708
1907	750	28	5	783
1908	714	30	5	749
1909	747	32	6	785
1910	778	34	7	819
1911	792	36	7	835
1912	834	37	8	879
1913	895	41	8	944
1914	800	42	8	850
1915	784	45	9	838
1916	842	48	10	900
1917	891	54	11	956
1918	873	53	10	936
1919	735	61	10	806
1920	843	78	11	932
1921	709	84	10	803
1922	740	94	11	845
1923	845	111	14	970
1924	836	110	16	962
1925	842	116	17	975
1926	846	119	19	984
1927	905	136	21	1,062
1928	890	143	23	1,056
1929	947	160	28	1,135
1930	862	152	28	1,042
1931	759	147	25	931
1932	675	141	24	840
1933	708	154	25	887
1934	775	162	28	965
1935	811	176	30	1,017
1936	893	192	34	1,119
1937	941	219	38	1,198
1938	880	214	37	1,131
1939	918	222	38	1,178
1940	1,017	229	42	1,288
1941	1,043	236	42	1,321
1942	1,063	222	45	1,330
1943	1,092	239	50	1,381
1944	1,047	275	54	1,376
1945	820	275	59	1,154
1946	875	292	61	1,228
1947	992	322	67	1,381
1948	1,015	364	76	1,455
1949	960	362	81	1,403
1950	1,070	423	97	1,590
1951	1,129	479	115	1,723
1952	1,119	504	124	1,747
1953	1,125	533	131	1,789
1954	1,116	557	138	1,811
1955	1,208	625	150	1,983
1956	1,273	679	161	2,113
1957	1,309	714	178	2,201
1958	1,336	731	192	2,259
1959	1,382	789	206	2,377
1960	1,410	849	227	2,486

Year	Coal	Oil	Natural Gas	Total
Million Tons of Carbon				
1961	1,349	904	240	2,493
1962	1,351	980	263	2,594
1963	1,396	1,052	286	2,734
1964	1,435	1,137	316	2,888
1965	1,460	1,219	337	3,016
1966	1,478	1,323	364	3,165
1967	1,448	1,423	392	3,263
1968	1,448	1,551	424	3,423
1969	1,486	1,673	467	3,626
1970	1,556	1,839	493	3,888
1971	1,559	1,947	530	4,036
1972	1,576	2,057	560	4,193
1973	1,581	2,241	588	4,410
1974	1,579	2,245	597	4,421
1975	1,673	2,132	604	4,409
1976	1,710	2,314	630	4,654
1977	1,765	2,398	650	4,813
1978	1,793	2,392	680	4,865
1979	1,887	2,544	721	5,152
1980	1,947	2,422	740	5,109
1981	1,921	2,289	756	4,966
1982	1,992	2,196	740	4,928
1983	1,995	2,176	741	4,912
1984	2,094	2,199	808	5,101
1985	2,237	2,186	837	5,260
1986	2,300	2,293	831	5,424
1987	2,364	2,306	894	5,564
1988	2,414	2,412	937	5,763
1989	2,457	2,459	985	5,901
1990	2,419	2,492	1,019	5,930
1991	2,345	2,605	1,063	6,013
1992	2,357	2,510	1,095	5,962
1993	2,298	2,523	1,129	5,950
1994	2,358	2,546	1,139	6,043
1995	2,442	2,565	1,157	6,164
1996	2,469	2,624	1,209	6,302
1997	2,495	2,700	1,208	6,403
1998	2,391	2,766	1,243	6,400
1999	2,352	2,737	1,270	6,359
2000	2,367	2,838	1,288	6,493
2001	2,492	2,840	1,312	6,644
2002	2,521	2,831	1,344	6,696
2003	2,743	2,959	1,391	7,093
2004	2,967	3,053	1,437	7,457
2005	3,157	3,076	1,480	7,713
2006	3,339	3,089	1,525	7,953
2007	3,464	3,081	1,572	8,117
2008	3,571	3,122	1,631	8,324
2009	3,620	3,056	1,585	8,261
2010	3,842	3,114	1,702	8,658
2011	4,021	3,154	1,730	8,905
2012	4,124	3,190	1,772	9,085
2013	4,238	3,239	1,791	9,268

Notes: Emissions figures are in million tons of carbon; for tons of CO₂, multiply by 44/12.

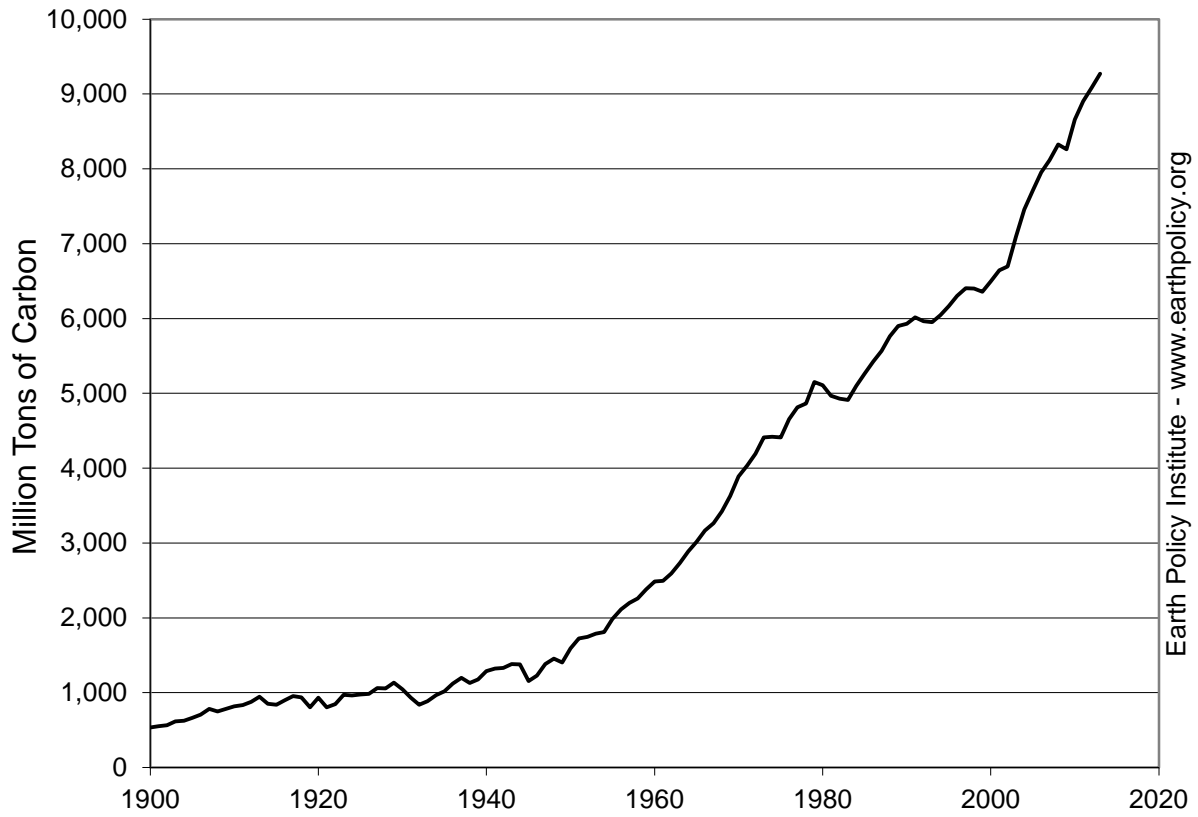
Source: Compiled by Earth Policy Institute with 1900 to 2010 from T. A. Boden, G. Marland, and R. J. Andres, "Global, Regional, and National CO₂ Emissions," *Trends: A Compendium of Data on Global Change* (Oak Ridge, TN: Carbon Dioxide Information Analysis Center, 2014); 2011-2013 emissions calculated by Earth Policy Institute from energy consumption in BP, *Statistical Review of World Energy June 2014* (London: 2014).

Global Carbon Dioxide Emissions from Fossil Fuel Burning by Fuel Type, 1900-2013



Source: EPI from BP; CDIAC

Global Carbon Dioxide Emissions from Fossil Fuel Burning, 1900-2013



Source: EPI from BP; CDIAC

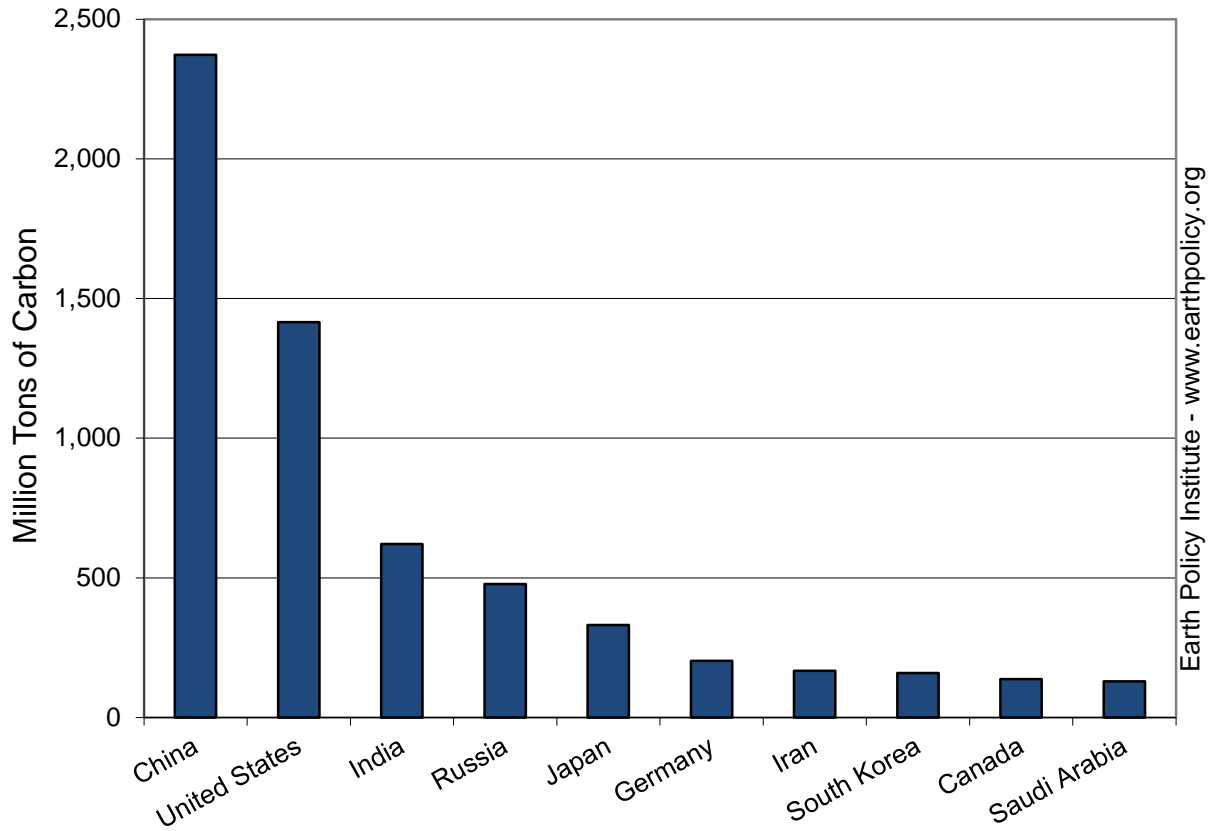
Carbon Dioxide Emissions from Fossil Fuel Burning in Top Ten Countries, 2013

Country	Emissions Million Tons of Carbon	Share of Global Total Percent
China	2,372	25.6
United States	1,415	15.3
India	621	6.7
Russia	477	5.1
Japan	331	3.6
Germany	202	2.2
Iran	167	1.8
South Korea	159	1.7
Canada	137	1.5
Saudi Arabia	129	1.4
All Other Countries	3,256	35.1
Global Total	9,268	100.0

Note: Data exclude cement production and gas flaring emissions. Emissions figures are in million tons of carbon; for tons of CO₂, multiply by 44/12.

Source: Calculated by Earth Policy Institute from T. A. Boden, G. Marland, and R. J. Andres, "Global, Regional, and National CO₂ Emissions," *Trends: A Compendium of Data on Global Change* (Oak Ridge, TN: Carbon Dioxide Information Analysis Center, 2014); BP, *Statistical Review of World Energy June 2014* (London: 2014).

Carbon Dioxide Emissions from Fossil Fuel Burning in Top Ten Countries, 2013



Source: EPI from CDIAC, BP

Carbon Dioxide Emissions from Fossil Fuel Burning in Top Ten Countries, 1950-2013

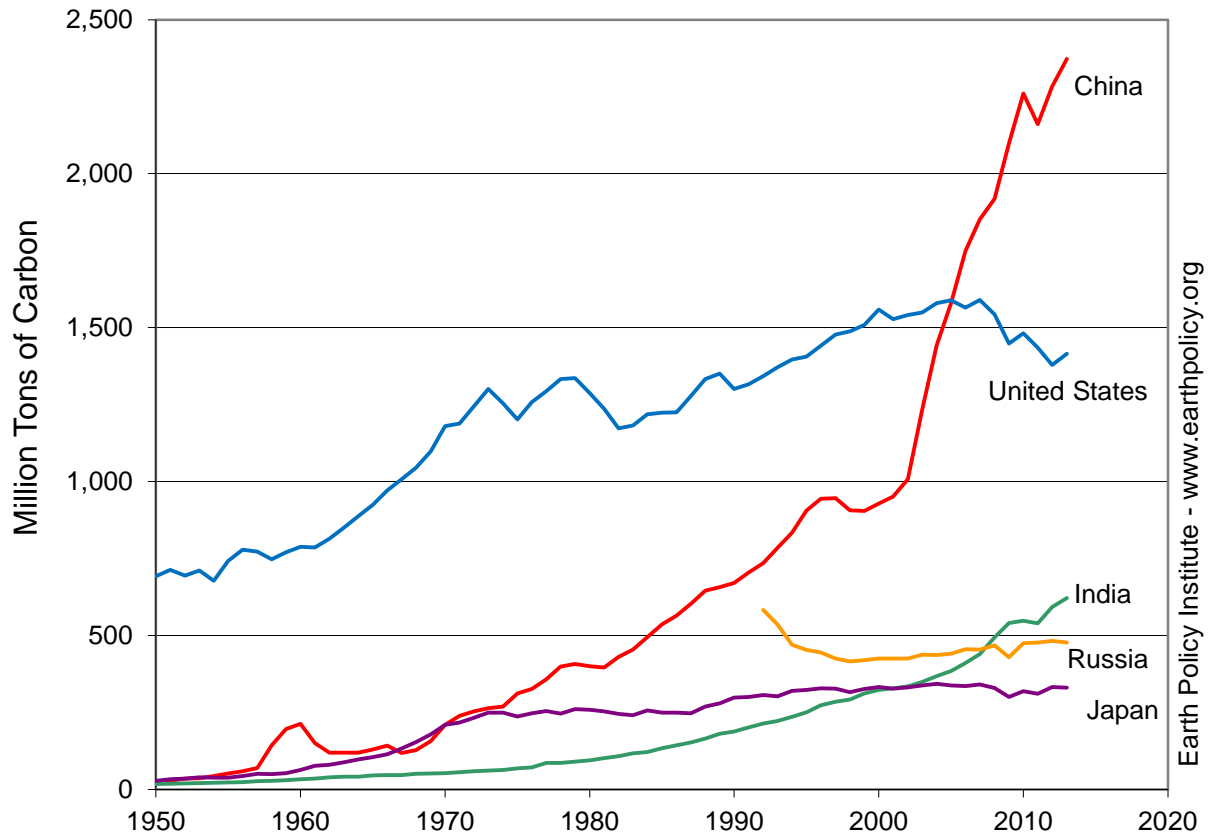
Year	China	United States	India	Russia	Japan	Germany	Iran	South Korea	Canada	Saudi Arabia
Million Tons of Carbon										
1950	21	692	18	n.a.	28	95	n.a.	1	42	1
1951	28	713	19	n.a.	34	109	2	1	44	0
1952	35	695	20	n.a.	36	115	1	1	44	0
1953	37	711	20	n.a.	40	113	1	1	44	0
1954	44	678	21	n.a.	39	120	0	1	44	0
1955	52	743	23	n.a.	39	133	4	2	46	1
1956	59	779	24	n.a.	44	143	6	2	52	0
1957	70	772	27	n.a.	51	144	6	2	50	1
1958	143	748	28	n.a.	49	136	7	2	50	1
1959	197	771	30	n.a.	53	136	7	3	50	1
1960	213	788	33	n.a.	63	148	10	3	53	1
1961	151	786	36	n.a.	77	150	10	4	53	1
1962	120	815	39	n.a.	80	160	10	5	57	2
1963	119	851	42	n.a.	89	174	11	6	58	2
1964	119	888	41	n.a.	98	178	13	6	65	2
1965	130	925	45	n.a.	106	177	15	7	69	1
1966	143	971	47	n.a.	114	175	17	8	71	2
1967	118	1,008	47	n.a.	134	173	19	10	77	7
1968	128	1,045	51	n.a.	153	185	22	10	83	8
1969	157	1,098	52	n.a.	178	199	23	12	84	10
1970	210	1,181	53	n.a.	210	204	25	15	93	12
1971	239	1,188	56	n.a.	217	205	28	16	96	16
1972	254	1,245	59	n.a.	233	207	29	16	104	19
1973	264	1,301	61	n.a.	250	218	35	20	104	26
1974	269	1,254	63	n.a.	250	212	39	21	106	27
1975	312	1,202	69	n.a.	237	195	38	22	108	23
1976	326	1,258	72	n.a.	248	217	43	25	109	28
1977	357	1,293	86	n.a.	255	205	45	29	109	32
1978	399	1,333	87	n.a.	246	211	44	31	111	31
1979	408	1,336	91	n.a.	261	221	45	36	117	38
1980	400	1,287	95	n.a.	258	215	33	37	117	46
1981	396	1,236	102	n.a.	254	200	31	38	113	48
1982	431	1,173	109	n.a.	245	191	38	39	109	43
1983	455	1,182	118	n.a.	241	191	41	41	108	44
1984	495	1,219	122	n.a.	256	194	41	45	111	42
1985	536	1,223	134	n.a.	250	192	44	49	110	47
1986	564	1,225	143	n.a.	250	192	41	50	106	56
1987	603	1,277	153	n.a.	247	189	44	53	112	52
1988	646	1,333	165	n.a.	270	190	48	61	118	55
1989	657	1,350	181	n.a.	280	186	52	64	120	56
1990	671	1,300	188	n.a.	299	192	58	67	123	59
1991	705	1,316	201	n.a.	300	254	62	71	122	73
1992	735	1,342	214	584	306	243	62	78	128	78
1993	785	1,372	222	536	302	239	65	88	130	86
1994	834	1,397	236	470	320	236	72	94	124	84
1995	905	1,406	251	453	323	236	75	102	125	64
1996	944	1,442	273	445	329	243	75	110	128	71
1997	946	1,478	285	425	328	235	74	117	132	59
1998	907	1,488	292	416	316	233	84	99	141	57
1999	905	1,509	312	420	327	224	104	109	141	62
2000	929	1,558	324	425	333	226	102	122	146	81
2001	951	1,528	328	425	328	233	109	123	143	81
2002	1,007	1,541	335	425	332	226	110	127	142	89
2003	1,234	1,549	350	438	337	227	114	127	151	89
2004	1,442	1,579	368	437	344	225	122	132	151	108
2005	1,579	1,589	385	441	338	220	128	126	154	108
2006	1,749	1,565	410	455	336	221	139	128	150	118
2007	1,852	1,590	439	455	341	214	147	135	153	107
2008	1,919	1,543	494	468	329	214	156	139	149	114
2009	2,098	1,449	541	429	300	200	157	139	140	118
2010	2,260	1,482	548	475	319	203	156	155	136	127
2011	2,161	1,435	539	477	311	192	164	156	139	118
2012	2,283	1,379	592	482	333	198	164	157	137	126
2013	2,372	1,415	621	477	331	202	167	159	137	129

Notes: Data exclude emissions from cement production and gas flaring. Data for Russia is only available from after the break-up of the Soviet Union.

Emissions figures are in million tons of carbon. For tons of CO₂, multiply by 44/12.

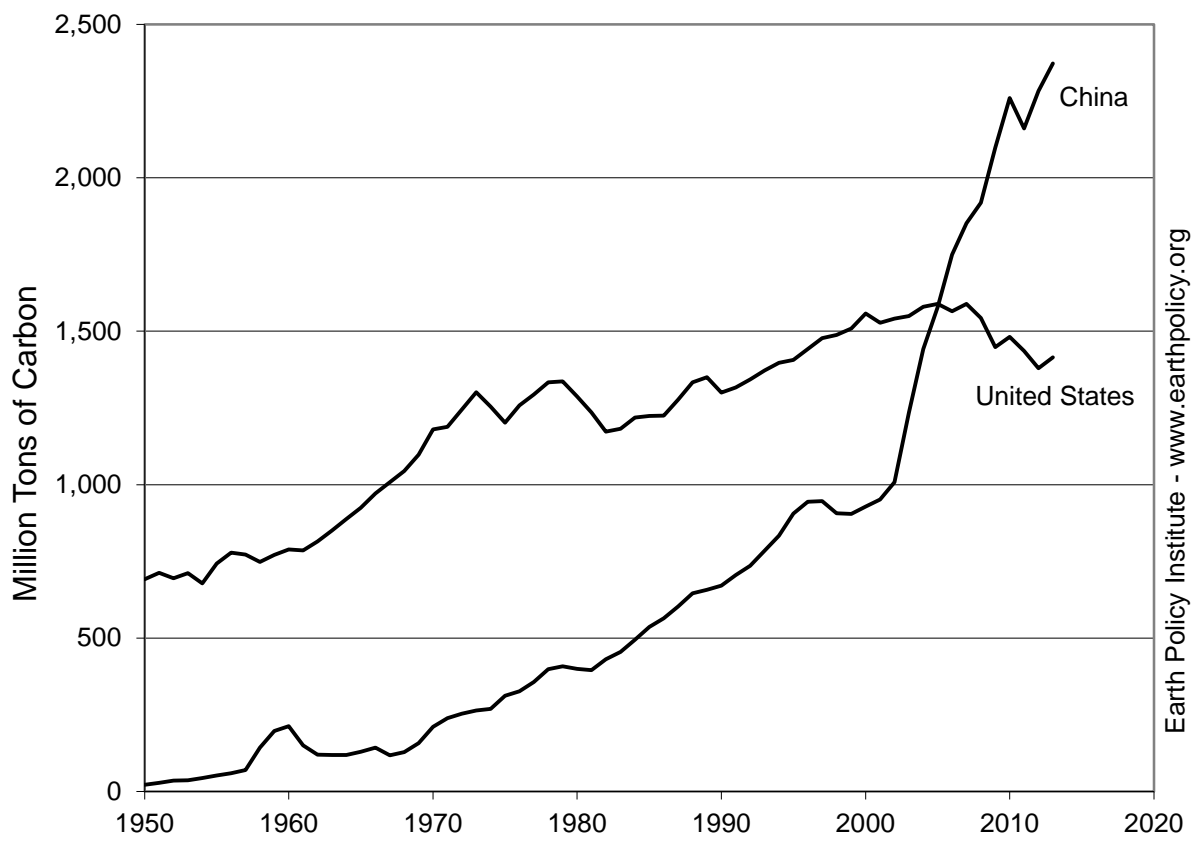
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Carbon Dioxide Emissions from Fossil Fuel Burning in Top Five Countries, 1950-2013



Source: EPI from CDIAC, BP

Carbon Dioxide Emissions from Fossil Fuel Burning in the United States and China, 1950-2013



Source: CDIAC, BP

Earth Policy Institute - www.earthpolicy.org

Carbon Dioxide Emissions from Fossil Fuel Burning in Industrial Countries and the Rest of the World, 1751-2013

Year	Global	Industrial Countries	Rest of World
Million Tons of Carbon			
1751	3	3	0
1752	3	3	0
1753	3	3	0
1754	3	3	0
1755	3	3	0
1756	3	3	0
1757	3	3	0
1758	3	3	0
1759	3	3	0
1760	3	3	0
1761	3	3	0
1762	3	3	0
1763	3	3	0
1764	3	3	0
1765	3	3	0
1766	3	3	0
1767	3	3	0
1768	3	3	0
1769	3	3	0
1770	3	3	0
1771	4	4	0
1772	4	4	0
1773	4	4	0
1774	4	4	0
1775	4	4	0
1776	4	4	0
1777	4	4	0
1778	4	4	0
1779	4	4	0
1780	4	4	0
1781	5	5	0
1782	5	5	0
1783	5	5	0
1784	5	5	0
1785	5	5	0
1786	5	5	0
1787	5	5	0
1788	5	5	0
1789	5	5	0
1790	5	5	0
1791	6	6	0
1792	6	6	0
1793	6	6	0
1794	6	6	0
1795	6	6	0
1796	6	6	0
1797	7	7	0
1798	7	7	0
1799	7	7	0
1800	8	8	0
1801	8	8	0
1802	10	10	0
1803	9	9	0
1804	9	9	0
1805	9	9	0
1806	10	10	0
1807	10	10	0
1808	10	10	0
1809	10	10	0
1810	10	10	0
1811	11	11	0
1812	11	11	0
1813	11	11	0
1814	11	11	0
1815	12	12	0

Year	Global	Industrial Countries	Rest of World
Million Tons of Carbon			
1816	13	13	0
1817	14	13	1
1818	14	14	0
1819	14	14	0
1820	14	14	0
1821	14	14	0
1822	15	15	0
1823	16	15	1
1824	16	16	0
1825	17	17	0
1826	17	17	0
1827	18	18	0
1828	18	18	0
1829	18	18	0
1830	24	24	0
1831	23	23	0
1832	23	23	0
1833	24	24	0
1834	24	24	0
1835	25	25	0
1836	29	29	0
1837	29	29	0
1838	30	29	1
1839	31	30	1
1840	33	32	1
1841	34	33	1
1842	36	35	1
1843	37	36	1
1844	39	39	0
1845	43	42	1
1846	43	43	0
1847	46	47	-1
1848	47	47	0
1849	50	50	0
1850	54	54	0
1851	54	54	0
1852	57	57	0
1853	59	59	0
1854	69	70	-1
1855	71	71	0
1856	76	76	0
1857	77	76	1
1858	78	77	1
1859	83	82	1
1860	91	90	1
1861	95	95	0
1862	96	96	0
1863	103	102	1
1864	112	110	2
1865	119	117	2
1866	122	120	2
1867	130	129	1
1868	134	132	2
1869	142	141	1
1870	147	144	3
1871	157	153	4
1872	174	169	5
1873	184	179	5
1874	174	167	7
1875	188	181	7
1876	191	182	9
1877	194	186	8
1878	196	186	10
1879	210	200	10
1880	236	226	10
1881	243	234	9
1882	256	247	9
1883	272	263	9
1884	275	265	10
1885	278	267	11

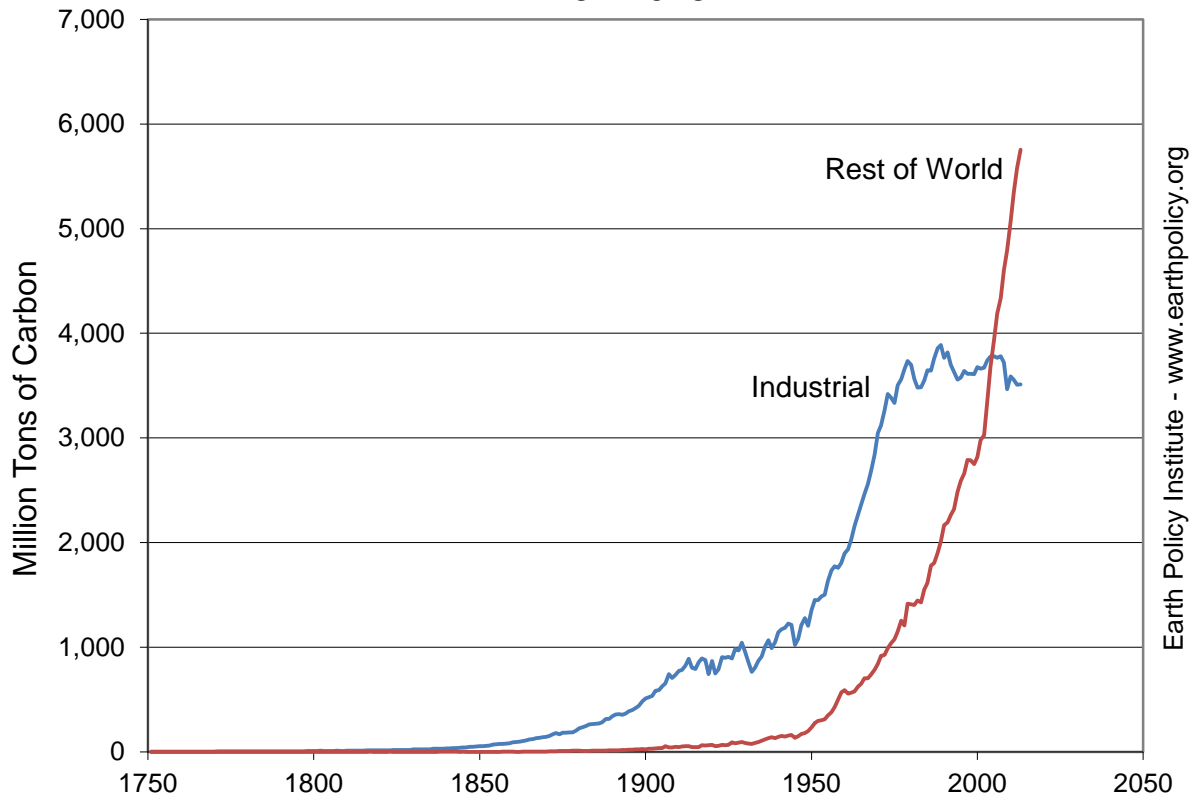
Year	Industrial		
	Global	Countries	Rest of World
Million Tons of Carbon			
1886	282	271	11
1887	295	284	11
1888	327	314	13
1889	327	313	14
1890	356	341	15
1891	371	357	14
1892	374	359	15
1893	370	354	16
1894	383	366	17
1895	406	387	19
1896	419	399	20
1897	440	418	22
1898	464	440	24
1899	508	482	26
1900	534	509	25
1901	553	523	30
1902	566	536	30
1903	617	585	32
1904	624	589	35
1905	664	627	37
1906	708	653	55
1907	783	741	42
1908	749	707	42
1909	785	737	48
1910	819	774	45
1911	835	783	52
1912	879	824	55
1913	944	890	54
1914	850	804	46
1915	838	792	46
1916	900	855	45
1917	956	892	64
1918	936	877	59
1919	806	742	64
1920	932	867	65
1921	803	748	55
1922	845	788	57
1923	970	903	67
1924	962	899	63
1925	975	908	67
1926	984	892	92
1927	1,062	981	81
1928	1,056	968	88
1929	1,135	1,042	93
1930	1,042	958	84
1931	931	854	77
1932	840	764	76
1933	887	803	84
1934	965	871	94
1935	1,017	910	107
1936	1,119	1,002	117
1937	1,198	1,066	132
1938	1,131	990	141
1939	1,178	1,048	130
1940	1,288	1,144	144
1941	1,321	1,170	151
1942	1,330	1,185	145
1943	1,381	1,227	154
1944	1,376	1,215	161
1945	1,154	1,020	134
1946	1,228	1,078	150
1947	1,381	1,211	171
1948	1,455	1,277	178
1949	1,403	1,206	197
1950	1,590	1,357	233
1951	1,723	1,449	274
1952	1,747	1,451	296
1953	1,789	1,486	303
1954	1,811	1,501	310
1955	1,983	1,634	349

Year	Global	Industrial	Rest of World
		Countries	
Million Tons of Carbon			
1956	2,113	1,735	378
1957	2,201	1,774	427
1958	2,259	1,759	500
1959	2,377	1,808	569
1960	2,486	1,896	590
1961	2,493	1,937	556
1962	2,594	2,030	564
1963	2,734	2,157	577
1964	2,888	2,265	623
1965	3,016	2,364	652
1966	3,165	2,462	703
1967	3,263	2,559	704
1968	3,423	2,685	738
1969	3,626	2,842	784
1970	3,888	3,047	841
1971	4,036	3,119	917
1972	4,193	3,265	928
1973	4,410	3,419	991
1974	4,421	3,385	1,036
1975	4,409	3,334	1,075
1976	4,654	3,503	1,151
1977	4,813	3,560	1,253
1978	4,865	3,656	1,209
1979	5,152	3,736	1,416
1980	5,109	3,699	1,410
1981	4,966	3,562	1,404
1982	4,928	3,482	1,446
1983	4,912	3,484	1,428
1984	5,101	3,550	1,551
1985	5,260	3,646	1,614
1986	5,424	3,644	1,780
1987	5,564	3,760	1,804
1988	5,763	3,859	1,904
1989	5,901	3,888	2,013
1990	5,930	3,766	2,164
1991	6,013	3,819	2,194
1992	5,962	3,697	2,265
1993	5,950	3,630	2,320
1994	6,043	3,558	2,485
1995	6,164	3,575	2,589
1996	6,302	3,640	2,662
1997	6,403	3,613	2,790
1998	6,400	3,614	2,786
1999	6,359	3,610	2,749
2000	6,493	3,676	2,817
2001	6,644	3,663	2,981
2002	6,696	3,670	3,026
2003	7,093	3,742	3,351
2004	7,457	3,777	3,680
2005	7,713	3,780	3,933
2006	7,953	3,765	4,188
2007	8,117	3,781	4,336
2008	8,324	3,720	4,604
2009	8,261	3,466	4,795
2010	8,658	3,589	5,069
2011	8,905	3,555	5,350
2012	9,085	3,508	5,577
2013	9,268	3,513	5,756

Notes: Data exclude cement production and gas flaring emissions. Emissions figures are in million tons of carbon; for tons of CO₂, multiply by 44/12. Industrialized countries include Australia, Canada, Europe, Japan, New Zealand, and the United States.

Source: Compiled by Earth Policy Institute with 1751 to 2010 from T. A. Boden, G. Marland, and R. J. Andres, "Global, Regional, and National CO₂ Emissions," *Trends: A Compendium of Data on Global Change* (Oak Ridge, TN: Carbon Dioxide Information Analysis Center, 2014); 2011-2013 emissions calculated by Earth Policy Institute from energy consumption in BP, *Statistical Review of World Energy June 2014* (London: 2014).

Carbon Dioxide Emissions from Fossil Fuel Burning in Industrial Countries and the Rest of the World, 1751-2013



Source: EPI from BP; CDIAC

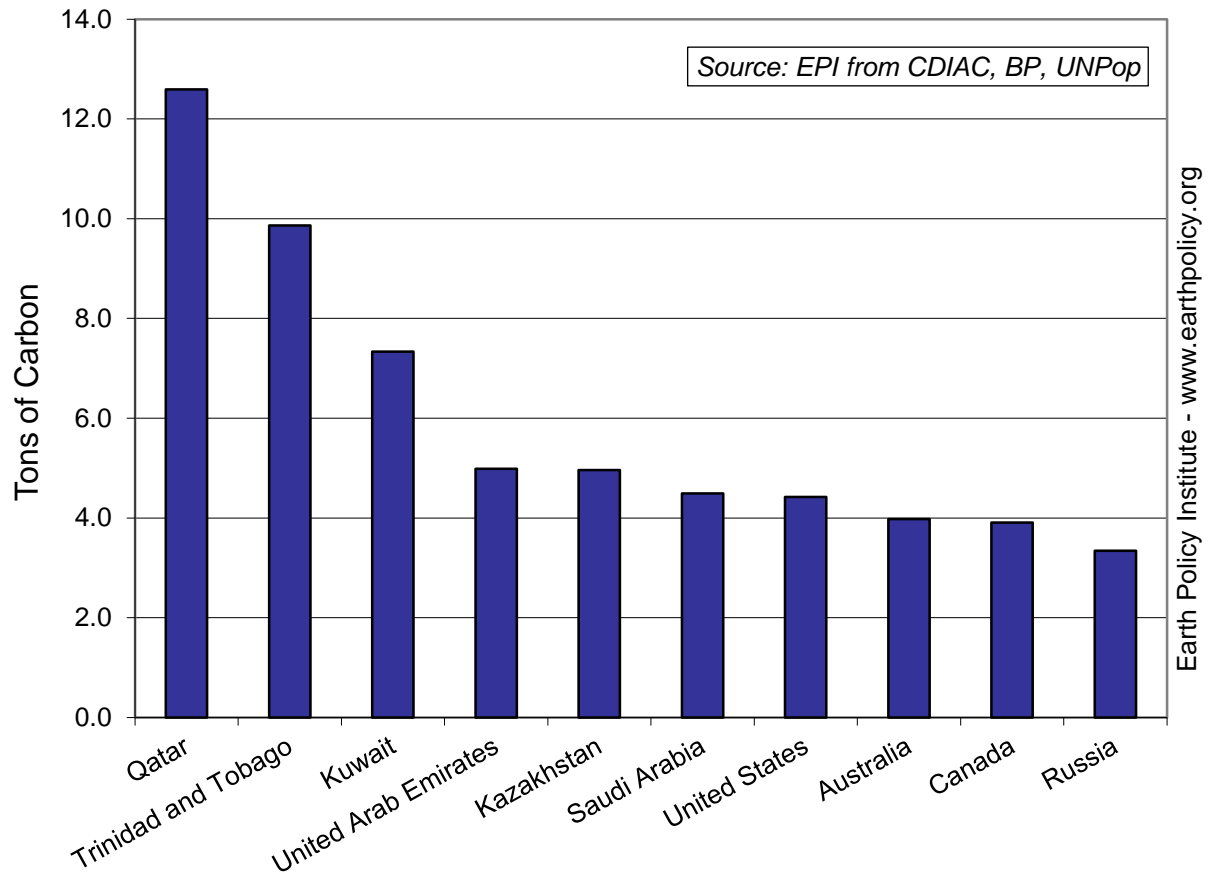
Carbon Dioxide Emissions Per Person from Fossil Fuel Burning in Top Ten Countries and the World, 2013

<u>Country</u>	<u>Emissions Per Person</u> Tons of Carbon
Qatar	12.6
Trinidad and Tobago	9.9
Kuwait	7.3
United Arab Emirates	5.0
Kazakhstan	5.0
Saudi Arabia	4.5
United States	4.4
Australia	4.0
Canada	3.9
Russia	3.3
World Average	2.1

Notes: Data exclude cement production and gas flaring emissions. Emissions figures are in tons of carbon; for tons of CO₂, multiply by 44/12.

Source: Calculated by Earth Policy Institute from T. A. Boden, G. Marland, and R. J. Andres, "Global, Regional, and National CO₂ Emissions," *Trends: A Compendium of Data on Global Change* (Oak Ridge, TN: Carbon Dioxide Information Analysis Center, 2014); BP, *Statistical Review of World Energy June 2014* (London: 2014); U.N. Population Division, *World Population Prospects: The 2012 Revision*, electronic database, at esa.un.org/unpd/wpp/index.htm, updated 13 June 2013.

Carbon Dioxide Emissions Per Person from Fossil Fuel Burning in Top Ten Countries, 2013



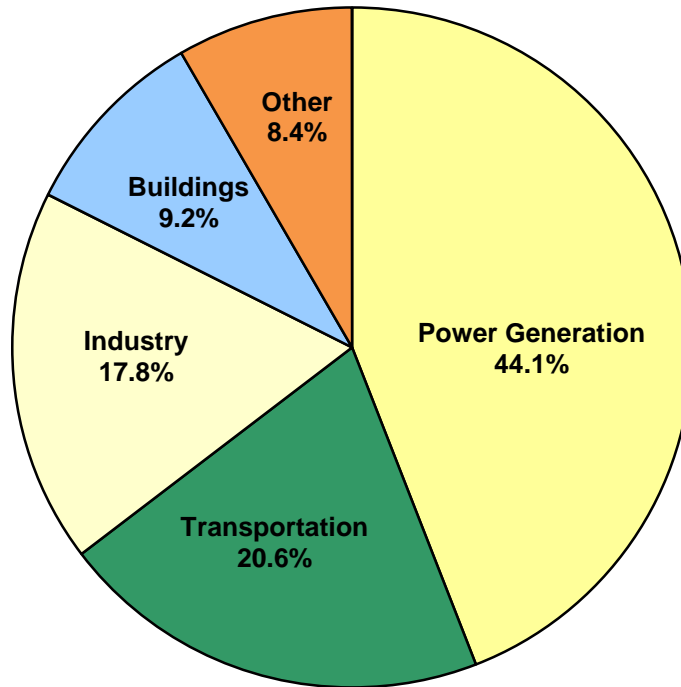
Global Carbon Dioxide Emissions from Fossil Fuel Burning by Sector, 2012

Sector	Share of Total Percent
Power Generation	44.1
Transportation	20.6
Industry	17.8
Buildings	9.2
Other	8.4
Total	100

Notes: "Power generation" includes emissions from electricity used in all other sectors; "Buildings" includes residential and commercial; "Other" includes emissions from transformation losses and energy extraction, as well as agricultural emissions.

Source: Compiled by Earth Policy Institute from International Energy Agency, *World Energy Outlook 2014* (Paris: 2014), pp. 606 and 608.

Global Carbon Dioxide Emissions from Fossil Fuel Burning by Sector, 2012



Earth Policy Institute - www.earthpolicy.org

Source: EPI from IEA

Carbon Emissions by Country, 2013 and Five-Year Change

Rank	Country	2013 Carbon Emissions		Five-Year Change	
		Million Tons of Carbon	Million Tons of Carbon	Million Tons of Carbon	Percent
1	China	2,372	643.97	37	
2	United States	1,415	-113.02	-7	
3	India	621	153.15	33	
4	Russia	477	23.56	5	
5	Japan	331	10.29	3	
6	Germany	202	-6.00	-3	
7	Iran	167	26.65	19	
8	South Korea	159	27.16	21	
9	Canada	137	-8.34	-6	
10	Saudi Arabia	129	19.75	18	
11	South Africa	127	1.92	2	
12	United Kingdom	124	-15.82	-11	
13	Indonesia	124	17.90	17	
14	Mexico	123	6.66	6	
15	Brazil	114	16.08	16	
16	France	95	-3.71	-4	
17	Italy	94	-21.81	-19	
18	Australia	93	-11.41	-11	
19	Poland	82	-1.80	-2	
20	Kazakhstan	81	19.45	31	
21	Ukraine	81	-4.70	-5	
22	Turkey	79	8.10	11	
23	Thailand	78	10.86	16	
24	Taiwan	70	1.75	3	
25	Spain	65	-19.07	-23	
26	Egypt	57	9.08	19	
27	Malaysia	53	1.27	2	
28	Venezuela	51	6.56	15	
29	Argentina	49	-1.57	-3	
30	United Arab Emirates	47	6.74	17	
31	Netherlands	44	-2.97	-6	
32	Pakistan	40	0.58	1	
33	Viet Nam	37	8.02	27	
34	Algeria	33	6.68	25	
35	Uzbekistan	28	-4.27	-13	
36	Qatar	27	11.17	69	
37	Czech Republic	27	-3.96	-13	
38	Iraq	*	26	26.11	-5
39	Belgium	26	-1.84	-7	
40	Kuwait	25	3.36	16	
41	Chile	24	5.63	30	
42	Philippines	22	3.05	16	
43	Colombia	21	4.88	29	
44	Greece	20	-4.74	-19	
45	Romania	19	-5.05	-21	
46	North Korea	*	19	18.66	-15
47	Israel	18	-0.20	-1	
48	Belarus	18	1.14	7	
49	Austria	16	-1.50	-8	
50	Bangladesh	16	4.14	35	
51	Syria	16	15.82	24	
52	Turkmenistan	15	-0.27	-2	
53	Oman	14	14.35	104	
54	Libya	13	13.45	9	
55	Finland	13	-1.78	-12	
56	Norway	13	0.30	2	
57	Trinidad and Tobago	13	1.76	15	
58	Nigeria	*	13	12.76	-21
59	Portugal	12	-2.00	-14	
60	Serbia	†	12	12.14	-15
61	Morocco	12	11.90	8	
62	Azerbaijan	12	3.21	38	
63	Switzerland	11	0.99	9	
64	Peru	11	2.53	29	
65	Bulgaria	11	-2.15	-16	
66	Hungary	11	-3.47	-24	
67	Denmark	11	-1.62	-13	
68	Singapore	10	5.04	94	
69	Sweden	10	-2.63	-20	
70	Hong Kong	10	-0.04	0	
71	Ireland	10	-1.29	-11	

Notes: List only includes countries that emitted 10 million tons of carbon or more in latest year. Emissions figures are in million tons of carbon; for tons of CO₂, multiply by 44/12.

* indicates 2013 data unavailable; most recent year (2010) was used instead. † indicates that change over the 3-year period 2007 to 2010 was used because of data availability. Boldface indicates country's emissions grew over latest 5-year period.

Source: Compiled by Earth Policy Institute from T. A. Boden, G. Marland, and R. J. Andres, "Global, Regional, and National CO₂ Emissions," *Trends: A Compendium of Data on Global Change* (Oak Ridge, TN: Carbon Dioxide Information Analysis Center, 2014); BP, *Statistical Review of World Energy June 2014* (London: 2014).

Average Global Temperature, 1880-2014

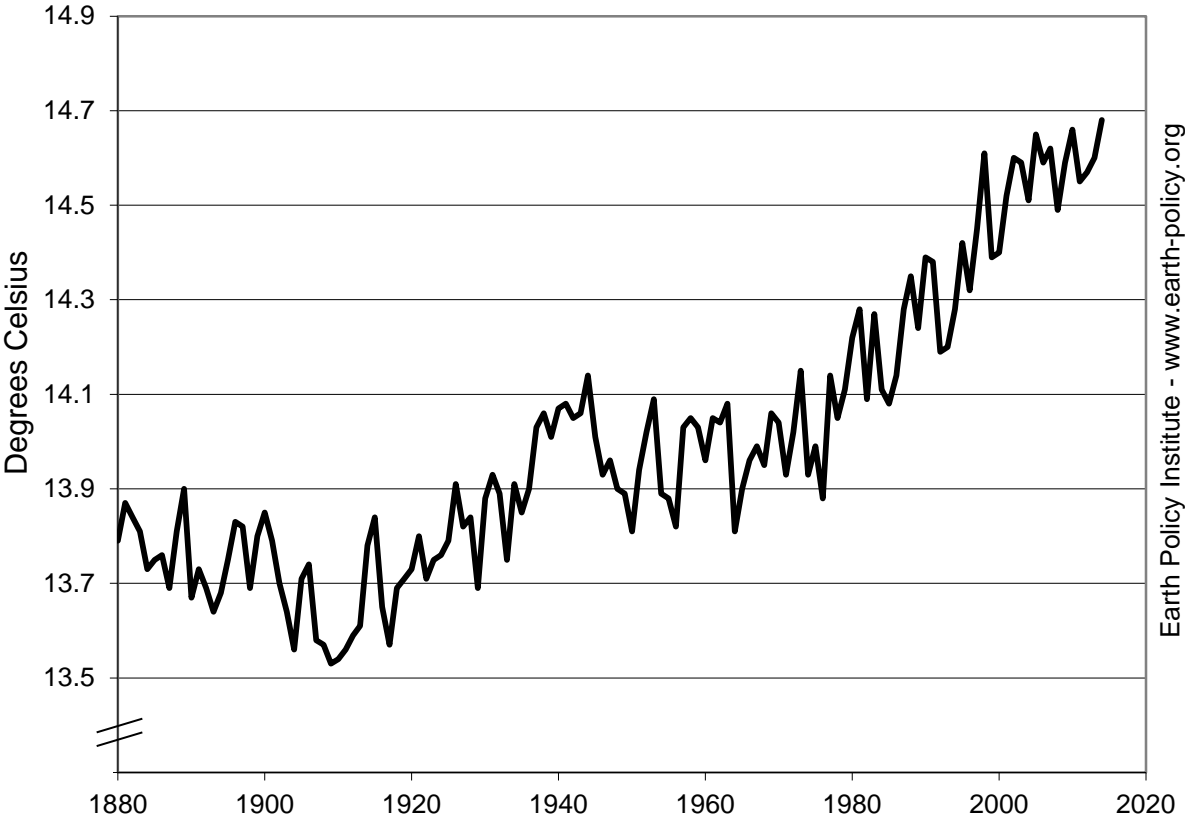
Year	Temperature
	Degrees Celsius
1880	13.79
1881	13.87
1882	13.84
1883	13.81
1884	13.73
1885	13.75
1886	13.76
1887	13.69
1888	13.81
1889	13.90
1890	13.67
1891	13.73
1892	13.69
1893	13.64
1894	13.68
1895	13.75
1896	13.83
1897	13.82
1898	13.69
1899	13.80
1900	13.85
1901	13.79
1902	13.70
1903	13.64
1904	13.56
1905	13.71
1906	13.74
1907	13.58
1908	13.57
1909	13.53
1910	13.54
1911	13.56
1912	13.59
1913	13.61
1914	13.78
1915	13.84
1916	13.65
1917	13.57
1918	13.69
1919	13.71
1920	13.73
1921	13.80
1922	13.71
1923	13.75
1924	13.76
1925	13.79
1926	13.91

1927	13.82
1928	13.84
1929	13.69
1930	13.88
1931	13.93
1932	13.89
1933	13.75
1934	13.91
1935	13.85
1936	13.90
1937	14.03
1938	14.06
1939	14.01
1940	14.07
1941	14.08
1942	14.05
1943	14.06
1944	14.14
1945	14.01
1946	13.93
1947	13.96
1948	13.90
1949	13.89
1950	13.81
1951	13.94
1952	14.02
1953	14.09
1954	13.89
1955	13.88
1956	13.82
1957	14.03
1958	14.05
1959	14.03
1960	13.96
1961	14.05
1962	14.04
1963	14.08
1964	13.81
1965	13.90
1966	13.96
1967	13.99
1968	13.95
1969	14.06
1970	14.04
1971	13.93
1972	14.02
1973	14.15
1974	13.93
1975	13.99
1976	13.88
1977	14.14
1978	14.05

1979	14.11
1980	14.22
1981	14.28
1982	14.09
1983	14.27
1984	14.11
1985	14.08
1986	14.14
1987	14.28
1988	14.35
1989	14.24
1990	14.39
1991	14.38
1992	14.19
1993	14.20
1994	14.28
1995	14.42
1996	14.32
1997	14.45
1998	14.61
1999	14.39
2000	14.40
2001	14.52
2002	14.60
2003	14.59
2004	14.51
2005	14.65
2006	14.59
2007	14.62
2008	14.49
2009	14.59
2010	14.66
2011	14.55
2012	14.57
2013	14.60
2014	14.68

Source: Compiled by Earth Policy Institute from National Aeronautics and Space Administration, Goddard Institute for Space Studies, "Global Land-Ocean Temperature Index in 0.01 Degrees Celsius," at data.giss.nasa.gov/gistemp/tabledata_v3/GLB.Ts+dSST.txt, updated 16 January 2015.

Average Global Temperature, 1880-2014



Source: NASA GISS

Earth Policy Institute - www.earth-policy.org

Average Global Temperature by Decade, 1880-2014

Decade	Average Temperature Degrees Celsius	Change from Previous Decade Degrees Celsius
1880-1889	13.80	
1890-1899	13.73	-0.07
1900-1909	13.67	-0.06
1910-1919	13.65	-0.01
1920-1929	13.78	0.13
1930-1939	13.92	0.14
1940-1949	14.01	0.09
1950-1959	13.96	-0.05
1960-1969	13.98	0.02
1970-1979	14.02	0.04
1980-1989	14.21	0.18
1990-1999	14.36	0.16
2000-2009	14.56	0.19
2010-2014 (5 years)	14.61	

Source: Compiled by Earth Policy Institute from National Aeronautics and Space Administration, Goddard Institute for Space Studies, "Global Land-Ocean Temperature Index in 0.01 Degrees Celsius," at data.giss.nasa.gov/gistemp/tabledata_v3/GLB.Ts+dSST.txt, updated 16 January 2015.

Ten Hottest Years on Record, 1880-2014

Year	Average Global Temperature Degrees Celsius
2014	14.68
2010	14.66
2005	14.65
2007	14.62
1998	14.61
2002	14.60
2013	14.60
2003	14.59
2006	14.59
2009	14.59

Source: Compiled by Earth Policy Institute from National Aeronautics and Space Administration, Goddard Institute for Space Studies, "Global Land-Ocean Temperature Index in 0.01 Degrees Celsius," at data.giss.nasa.gov/gistemp/tabledata_v3/GLB.Ts+dSST.txt, updated 16 January 2015.

Atmospheric Carbon Dioxide Concentration, 1000-2014

Year	Concentration
Parts Per Million by Volume	
1000	277.00
1001	277.01
1002	277.02
1003	277.03
1004	277.04
1005	277.05
1006	277.06
1007	277.07
1008	277.08
1009	277.09
1010	277.10
1011	277.11
1012	277.12
1013	277.13
1014	277.14
1015	277.15
1016	277.16
1017	277.17
1018	277.18
1019	277.19
1020	277.20
1021	277.21
1022	277.22
1023	277.23
1024	277.24
1025	277.25
1026	277.26
1027	277.27
1028	277.28
1029	277.29
1030	277.30
1031	277.31
1032	277.32
1033	277.33
1034	277.34
1035	277.35
1036	277.36
1037	277.37
1038	277.38
1039	277.39
1040	277.40
1041	277.41
1042	277.42
1043	277.43
1044	277.44
1045	277.45
1046	277.46

1047	277.47
1048	277.48
1049	277.49
1050	277.50
1051	277.53
1052	277.56
1053	277.59
1054	277.62
1055	277.65
1056	277.68
1057	277.71
1058	277.74
1059	277.77
1060	277.80
1061	277.83
1062	277.86
1063	277.89
1064	277.92
1065	277.95
1066	277.98
1067	278.01
1068	278.04
1069	278.07
1070	278.10
1071	278.13
1072	278.16
1073	278.19
1074	278.22
1075	278.25
1076	278.28
1077	278.31
1078	278.34
1079	278.37
1080	278.40
1081	278.43
1082	278.46
1083	278.49
1084	278.52
1085	278.55
1086	278.58
1087	278.61
1088	278.64
1089	278.67
1090	278.70
1091	278.73
1092	278.76
1093	278.79
1094	278.82
1095	278.85
1096	278.88
1097	278.91
1098	278.94

1099	278.97
1100	279.00
1101	278.98
1102	278.96
1103	278.94
1104	278.92
1105	278.90
1106	278.88
1107	278.86
1108	278.84
1109	278.82
1110	278.80
1111	278.78
1112	278.76
1113	278.74
1114	278.72
1115	278.70
1116	278.68
1117	278.66
1118	278.64
1119	278.62
1120	278.60
1121	278.58
1122	278.56
1123	278.54
1124	278.52
1125	278.50
1126	278.48
1127	278.46
1128	278.44
1129	278.42
1130	278.40
1131	278.38
1132	278.36
1133	278.34
1134	278.32
1135	278.30
1136	278.28
1137	278.26
1138	278.24
1139	278.22
1140	278.20
1141	278.18
1142	278.16
1143	278.14
1144	278.12
1145	278.10
1146	278.08
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1801	281.34
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1804	281.83
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1809	282.65
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1811	282.98
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1818	283.74
1819	283.71
1820	283.68
1821	283.65
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1824	283.56
1825	283.53
1826	283.50

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1832	283.31
1833	283.28
1834	283.25
1835	283.22
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1842	286.33
1843	287.40
1844	287.25
1845	287.10
1846	286.95
1847	286.80
1848	287.00
1849	287.20
1850	287.40
1851	287.60
1852	287.80
1853	288.00
1854	288.20
1855	288.27
1856	288.35
1857	288.42
1858	288.49
1859	288.57
1860	288.64
1861	288.71
1862	288.79
1863	288.86
1864	288.93
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1866	289.08
1867	289.15
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1870	289.34
1871	289.38
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1875	289.70
1876	289.90
1877	290.10
1878	290.30

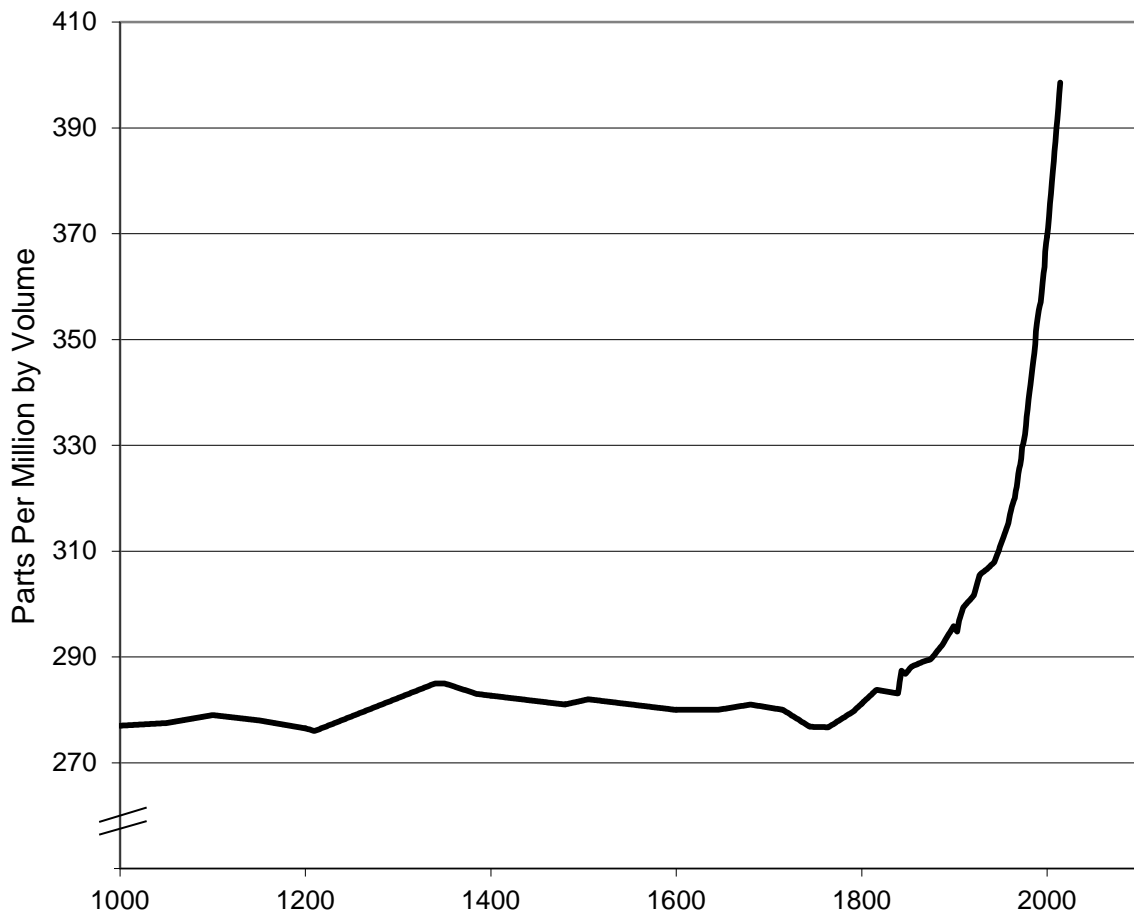
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1890	293.18
1891	293.47
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1895	294.63
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1900	295.55
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1902	295.05
1903	294.80
1904	295.85
1905	296.90
1906	297.48
1907	298.05
1908	298.63
1909	299.20
1910	299.42
1911	299.63
1912	299.85
1913	300.07
1914	300.28
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1917	300.87
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1919	301.23
1920	301.42
1921	301.60
1922	302.25
1923	302.90
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1927	305.50
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1929	305.78
1930	305.91

1931	306.05
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1943	307.90
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1953	312.70
1954	313.22
1955	313.73
1956	314.25
1957	314.77
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1959	315.97
1960	316.91
1961	317.64
1962	318.45
1963	318.99
1964	319.62
1965	320.04
1966	321.38
1967	322.16
1968	323.04
1969	324.62
1970	325.68
1971	326.32
1972	327.45
1973	329.68
1974	330.18
1975	331.08
1976	332.05
1977	333.78
1978	335.41
1979	336.78
1980	338.68
1981	340.10
1982	341.44

1983	343.03
1984	344.58
1985	346.04
1986	347.39
1987	349.16
1988	351.56
1989	353.07
1990	354.35
1991	355.57
1992	356.38
1993	357.07
1994	358.82
1995	360.80
1996	362.59
1997	363.71
1998	366.65
1999	368.33
2000	369.52
2001	371.13
2002	373.22
2003	375.77
2004	377.49
2005	379.80
2006	381.90
2007	383.76
2008	385.59
2009	387.37
2010	389.85
2011	391.63
2012	393.82
2013	396.48
2014	398.55

Source: Compiled by Earth Policy Institute, with long term historical data from Worldwatch Institute, based on Thomas A. Boden et al., *Trends '93: A Compendium of Data on Global Change* (Oak Ridge, TN: Oak Ridge National Laboratory, September 1994), and J.T. Houghton et al., eds., *Climate Change 1995: The Science of Climate Change, Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change* (New York: Cambridge University Press, 1996); 1959 to 2012 from National Oceanic and Atmospheric Administration Earth System Research Laboratory, "Mauna Loa CO₂ Annual Mean Data," at www.esrl.noaa.gov/gmd/ccgg/trends/co2_data_mlo.html, updated 5 February 2015.

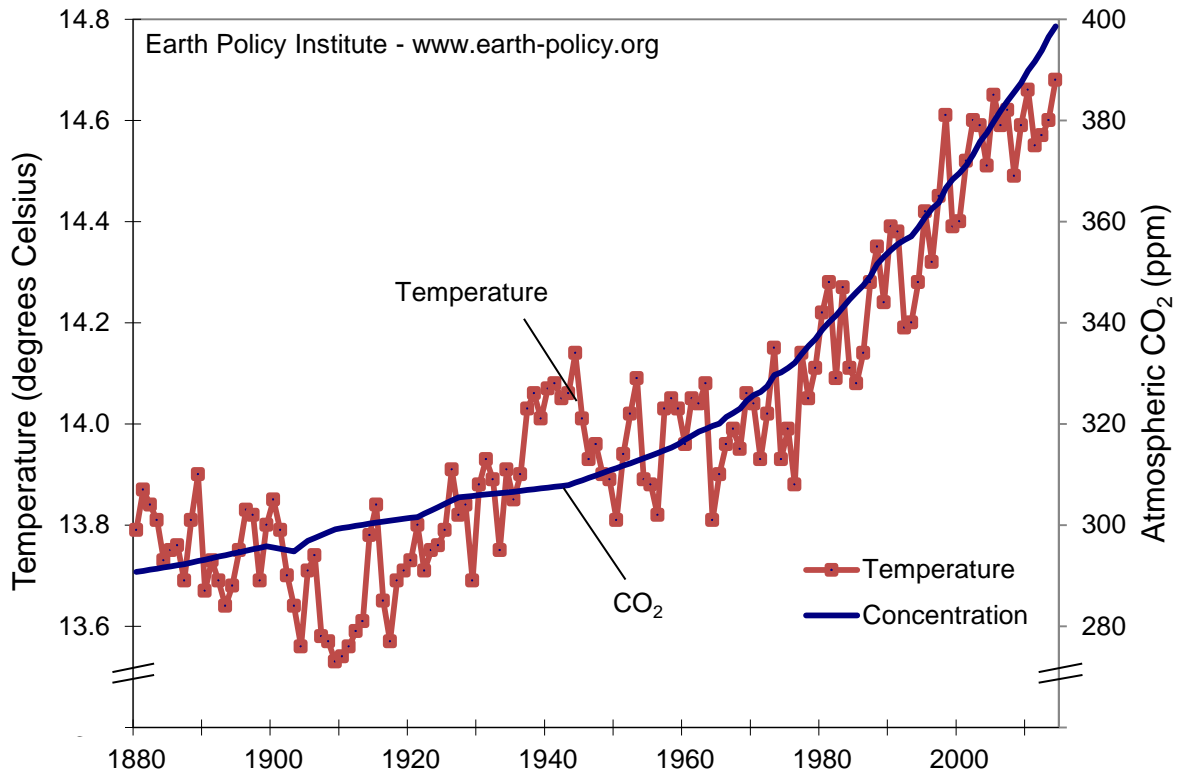
Atmospheric Carbon Dioxide Concentration, 1000-2014



Source: NOAA ESRL; Worldwatch

Earth Policy Institute - www.earth-policy.org

Average Global Temperature and Atmospheric Carbon Dioxide Concentration, 1880-2014



Source: NASA GISS; NOAA ESRL; Worldwatch

Average Global Temperature, 1880-2014

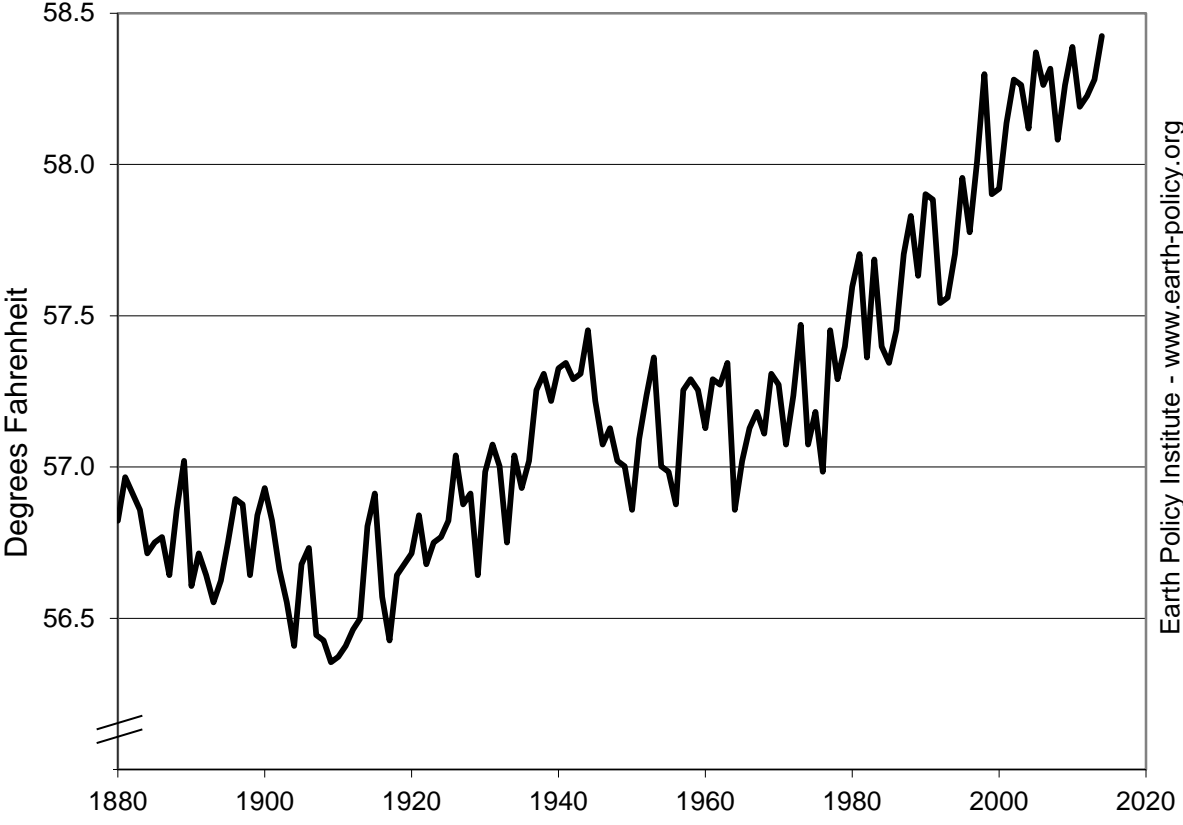
Year	Temperature
	Degrees Fahrenheit
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1881	56.97
1882	56.91
1883	56.86
1884	56.71
1885	56.75
1886	56.77
1887	56.64
1888	56.86
1889	57.02
1890	56.61
1891	56.71
1892	56.64
1893	56.55
1894	56.62
1895	56.75
1896	56.89
1897	56.88
1898	56.64
1899	56.84
1900	56.93
1901	56.82
1902	56.66
1903	56.55
1904	56.41
1905	56.68
1906	56.73
1907	56.44
1908	56.43
1909	56.35
1910	56.37
1911	56.41
1912	56.46
1913	56.50
1914	56.80
1915	56.91
1916	56.57
1917	56.43
1918	56.64
1919	56.68
1920	56.71
1921	56.84
1922	56.68
1923	56.75
1924	56.77
1925	56.82
1926	57.04

1927	56.88
1928	56.91
1929	56.64
1930	56.98
1931	57.07
1932	57.00
1933	56.75
1934	57.04
1935	56.93
1936	57.02
1937	57.25
1938	57.31
1939	57.22
1940	57.33
1941	57.34
1942	57.29
1943	57.31
1944	57.45
1945	57.22
1946	57.07
1947	57.13
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1949	57.00
1950	56.86
1951	57.09
1952	57.24
1953	57.36
1954	57.00
1955	56.98
1956	56.88
1957	57.25
1958	57.29
1959	57.25
1960	57.13
1961	57.29
1962	57.27
1963	57.34
1964	56.86
1965	57.02
1966	57.13
1967	57.18
1968	57.11
1969	57.31
1970	57.27
1971	57.07
1972	57.24
1973	57.47
1974	57.07
1975	57.18
1976	56.98
1977	57.45
1978	57.29

1979	57.40
1980	57.60
1981	57.70
1982	57.36
1983	57.69
1984	57.40
1985	57.34
1986	57.45
1987	57.70
1988	57.83
1989	57.63
1990	57.90
1991	57.88
1992	57.54
1993	57.56
1994	57.70
1995	57.96
1996	57.78
1997	58.01
1998	58.30
1999	57.90
2000	57.92
2001	58.14
2002	58.28
2003	58.26
2004	58.12
2005	58.37
2006	58.26
2007	58.32
2008	58.08
2009	58.26
2010	58.39
2011	58.19
2012	58.23
2013	58.28
2014	58.42

Source: Compiled by Earth Policy Institute from National Aeronautics and Space Administration, Goddard Institute for Space Studies, "Global Land-Ocean Temperature Index in 0.01 Degrees Celsius," at data.giss.nasa.gov/gistemp/tabledata_v3/GLB.Ts+dSST.txt, updated 16 January 2015.

Average Global Temperature, 1880-2014



Source: NASA GISS

Atmospheric Carbon Dioxide Concentration, 1000-2014

Year	Concentration
Parts Per Million by Volume	
1000	277.00
1001	277.01
1002	277.02
1003	277.03
1004	277.04
1005	277.05
1006	277.06
1007	277.07
1008	277.08
1009	277.09
1010	277.10
1011	277.11
1012	277.12
1013	277.13
1014	277.14
1015	277.15
1016	277.16
1017	277.17
1018	277.18
1019	277.19
1020	277.20
1021	277.21
1022	277.22
1023	277.23
1024	277.24
1025	277.25
1026	277.26
1027	277.27
1028	277.28
1029	277.29
1030	277.30
1031	277.31
1032	277.32
1033	277.33
1034	277.34
1035	277.35
1036	277.36
1037	277.37
1038	277.38
1039	277.39
1040	277.40
1041	277.41
1042	277.42
1043	277.43
1044	277.44
1045	277.45
1046	277.46

1047	277.47
1048	277.48
1049	277.49
1050	277.50
1051	277.53
1052	277.56
1053	277.59
1054	277.62
1055	277.65
1056	277.68
1057	277.71
1058	277.74
1059	277.77
1060	277.80
1061	277.83
1062	277.86
1063	277.89
1064	277.92
1065	277.95
1066	277.98
1067	278.01
1068	278.04
1069	278.07
1070	278.10
1071	278.13
1072	278.16
1073	278.19
1074	278.22
1075	278.25
1076	278.28
1077	278.31
1078	278.34
1079	278.37
1080	278.40
1081	278.43
1082	278.46
1083	278.49
1084	278.52
1085	278.55
1086	278.58
1087	278.61
1088	278.64
1089	278.67
1090	278.70
1091	278.73
1092	278.76
1093	278.79
1094	278.82
1095	278.85
1096	278.88
1097	278.91
1098	278.94

1099	278.97
1100	279.00
1101	278.98
1102	278.96
1103	278.94
1104	278.92
1105	278.90
1106	278.88
1107	278.86
1108	278.84
1109	278.82
1110	278.80
1111	278.78
1112	278.76
1113	278.74
1114	278.72
1115	278.70
1116	278.68
1117	278.66
1118	278.64
1119	278.62
1120	278.60
1121	278.58
1122	278.56
1123	278.54
1124	278.52
1125	278.50
1126	278.48
1127	278.46
1128	278.44
1129	278.42
1130	278.40
1131	278.38
1132	278.36
1133	278.34
1134	278.32
1135	278.30
1136	278.28
1137	278.26
1138	278.24
1139	278.22
1140	278.20
1141	278.18
1142	278.16
1143	278.14
1144	278.12
1145	278.10
1146	278.08
1147	278.06
1148	278.04
1149	278.02
1150	278.00

1151	277.97
1152	277.94
1153	277.91
1154	277.88
1155	277.85
1156	277.82
1157	277.79
1158	277.76
1159	277.73
1160	277.70
1161	277.67
1162	277.64
1163	277.61
1164	277.58
1165	277.55
1166	277.52
1167	277.49
1168	277.46
1169	277.43
1170	277.40
1171	277.37
1172	277.34
1173	277.31
1174	277.28
1175	277.25
1176	277.22
1177	277.19
1178	277.16
1179	277.13
1180	277.10
1181	277.07
1182	277.04
1183	277.01
1184	276.98
1185	276.95
1186	276.92
1187	276.89
1188	276.86
1189	276.83
1190	276.80
1191	276.77
1192	276.74
1193	276.71
1194	276.68
1195	276.65
1196	276.62
1197	276.59
1198	276.56
1199	276.53
1200	276.50
1201	276.45
1202	276.40

1203	276.35
1204	276.30
1205	276.25
1206	276.20
1207	276.15
1208	276.10
1209	276.05
1210	276.00
1211	276.07
1212	276.14
1213	276.21
1214	276.28
1215	276.35
1216	276.42
1217	276.48
1218	276.55
1219	276.62
1220	276.69
1221	276.76
1222	276.83
1223	276.90
1224	276.97
1225	277.04
1226	277.11
1227	277.18
1228	277.25
1229	277.32
1230	277.38
1231	277.45
1232	277.52
1233	277.59
1234	277.66
1235	277.73
1236	277.80
1237	277.87
1238	277.94
1239	278.01
1240	278.08
1241	278.15
1242	278.22
1243	278.28
1244	278.35
1245	278.42
1246	278.49
1247	278.56
1248	278.63
1249	278.70
1250	278.77
1251	278.84
1252	278.91
1253	278.98
1254	279.05

1255	279.12
1256	279.18
1257	279.25
1258	279.32
1259	279.39
1260	279.46
1261	279.53
1262	279.60
1263	279.67
1264	279.74
1265	279.81
1266	279.88
1267	279.95
1268	280.02
1269	280.08
1270	280.15
1271	280.22
1272	280.29
1273	280.36
1274	280.43
1275	280.50
1276	280.57
1277	280.64
1278	280.71
1279	280.78
1280	280.85
1281	280.92
1282	280.98
1283	281.05
1284	281.12
1285	281.19
1286	281.26
1287	281.33
1288	281.40
1289	281.47
1290	281.54
1291	281.61
1292	281.68
1293	281.75
1294	281.82
1295	281.88
1296	281.95
1297	282.02
1298	282.09
1299	282.16
1300	282.23
1301	282.30
1302	282.37
1303	282.44
1304	282.51
1305	282.58
1306	282.65

1307	282.72
1308	282.78
1309	282.85
1310	282.92
1311	282.99
1312	283.06
1313	283.13
1314	283.20
1315	283.27
1316	283.34
1317	283.41
1318	283.48
1319	283.55
1320	283.62
1321	283.68
1322	283.75
1323	283.82
1324	283.89
1325	283.96
1326	284.03
1327	284.10
1328	284.17
1329	284.24
1330	284.31
1331	284.38
1332	284.45
1333	284.52
1334	284.58
1335	284.65
1336	284.72
1337	284.79
1338	284.86
1339	284.93
1340	285.00
1341	285.00
1342	285.00
1343	285.00
1344	285.00
1345	285.00
1346	285.00
1347	285.00
1348	285.00
1349	285.00
1350	285.00
1351	284.94
1352	284.89
1353	284.83
1354	284.77
1355	284.71
1356	284.66
1357	284.60
1358	284.54

1359	284.49
1360	284.43
1361	284.37
1362	284.31
1363	284.26
1364	284.20
1365	284.14
1366	284.09
1367	284.03
1368	283.97
1369	283.91
1370	283.86
1371	283.80
1372	283.74
1373	283.69
1374	283.63
1375	283.57
1376	283.51
1377	283.46
1378	283.40
1379	283.34
1380	283.29
1381	283.23
1382	283.17
1383	283.11
1384	283.06
1385	283.00
1386	282.98
1387	282.96
1388	282.94
1389	282.92
1390	282.89
1391	282.87
1392	282.85
1393	282.83
1394	282.81
1395	282.79
1396	282.77
1397	282.75
1398	282.73
1399	282.71
1400	282.68
1401	282.66
1402	282.64
1403	282.62
1404	282.60
1405	282.58
1406	282.56
1407	282.54
1408	282.52
1409	282.49
1410	282.47

1411	282.45
1412	282.43
1413	282.41
1414	282.39
1415	282.37
1416	282.35
1417	282.33
1418	282.31
1419	282.28
1420	282.26
1421	282.24
1422	282.22
1423	282.20
1424	282.18
1425	282.16
1426	282.14
1427	282.12
1428	282.09
1429	282.07
1430	282.05
1431	282.03
1432	282.01
1433	281.99
1434	281.97
1435	281.95
1436	281.93
1437	281.91
1438	281.88
1439	281.86
1440	281.84
1441	281.82
1442	281.80
1443	281.78
1444	281.76
1445	281.74
1446	281.72
1447	281.69
1448	281.67
1449	281.65
1450	281.63
1451	281.61
1452	281.59
1453	281.57
1454	281.55
1455	281.53
1456	281.51
1457	281.48
1458	281.46
1459	281.44
1460	281.42
1461	281.40
1462	281.38

1463	281.36
1464	281.34
1465	281.32
1466	281.29
1467	281.27
1468	281.25
1469	281.23
1470	281.21
1471	281.19
1472	281.17
1473	281.15
1474	281.13
1475	281.11
1476	281.08
1477	281.06
1478	281.04
1479	281.02
1480	281.00
1481	281.04
1482	281.08
1483	281.12
1484	281.16
1485	281.20
1486	281.24
1487	281.28
1488	281.32
1489	281.36
1490	281.40
1491	281.44
1492	281.48
1493	281.52
1494	281.56
1495	281.60
1496	281.64
1497	281.68
1498	281.72
1499	281.76
1500	281.80
1501	281.84
1502	281.88
1503	281.92
1504	281.96
1505	282.00
1506	281.98
1507	281.96
1508	281.94
1509	281.91
1510	281.89
1511	281.87
1512	281.85
1513	281.83
1514	281.81

1515	281.79
1516	281.77
1517	281.74
1518	281.72
1519	281.70
1520	281.68
1521	281.66
1522	281.64
1523	281.62
1524	281.60
1525	281.57
1526	281.55
1527	281.53
1528	281.51
1529	281.49
1530	281.47
1531	281.45
1532	281.43
1533	281.40
1534	281.38
1535	281.36
1536	281.34
1537	281.32
1538	281.30
1539	281.28
1540	281.26
1541	281.23
1542	281.21
1543	281.19
1544	281.17
1545	281.15
1546	281.13
1547	281.11
1548	281.09
1549	281.06
1550	281.04
1551	281.02
1552	281.00
1553	280.98
1554	280.96
1555	280.94
1556	280.91
1557	280.89
1558	280.87
1559	280.85
1560	280.83
1561	280.81
1562	280.79
1563	280.77
1564	280.74
1565	280.72
1566	280.70

1567	280.68
1568	280.66
1569	280.64
1570	280.62
1571	280.60
1572	280.57
1573	280.55
1574	280.53
1575	280.51
1576	280.49
1577	280.47
1578	280.45
1579	280.43
1580	280.40
1581	280.38
1582	280.36
1583	280.34
1584	280.32
1585	280.30
1586	280.28
1587	280.26
1588	280.23
1589	280.21
1590	280.19
1591	280.17
1592	280.15
1593	280.13
1594	280.11
1595	280.09
1596	280.06
1597	280.04
1598	280.02
1599	280.00
1600	280.00
1601	280.00
1602	280.00
1603	280.00
1604	280.00
1605	280.00
1606	280.00
1607	280.00
1608	280.00
1609	280.00
1610	280.00
1611	280.00
1612	280.00
1613	280.00
1614	280.00
1615	280.00
1616	280.00
1617	280.00
1618	280.00

1619	280.00
1620	280.00
1621	280.00
1622	280.00
1623	280.00
1624	280.00
1625	280.00
1626	280.00
1627	280.00
1628	280.00
1629	280.00
1630	280.00
1631	280.00
1632	280.00
1633	280.00
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1636	280.00
1637	280.00
1638	280.00
1639	280.00
1640	280.00
1641	280.00
1642	280.00
1643	280.00
1644	280.00
1645	280.00
1646	280.03
1647	280.06
1648	280.09
1649	280.11
1650	280.14
1651	280.17
1652	280.20
1653	280.23
1654	280.26
1655	280.29
1656	280.31
1657	280.34
1658	280.37
1659	280.40
1660	280.43
1661	280.46
1662	280.49
1663	280.51
1664	280.54
1665	280.57
1666	280.60
1667	280.63
1668	280.66
1669	280.69
1670	280.71

1671	280.74
1672	280.77
1673	280.80
1674	280.83
1675	280.86
1676	280.89
1677	280.91
1678	280.94
1679	280.97
1680	281.00
1681	280.97
1682	280.94
1683	280.91
1684	280.89
1685	280.86
1686	280.83
1687	280.80
1688	280.77
1689	280.74
1690	280.71
1691	280.69
1692	280.66
1693	280.63
1694	280.60
1695	280.57
1696	280.54
1697	280.51
1698	280.49
1699	280.46
1700	280.43
1701	280.40
1702	280.37
1703	280.34
1704	280.31
1705	280.29
1706	280.26
1707	280.23
1708	280.20
1709	280.17
1710	280.14
1711	280.11
1712	280.09
1713	280.06
1714	280.03
1715	280.00
1716	279.89
1717	279.78
1718	279.67
1719	279.56
1720	279.45
1721	279.34
1722	279.23

1723	279.12
1724	279.01
1725	278.90
1726	278.79
1727	278.68
1728	278.57
1729	278.46
1730	278.34
1731	278.23
1732	278.12
1733	278.01
1734	277.90
1735	277.79
1736	277.68
1737	277.57
1738	277.46
1739	277.35
1740	277.24
1741	277.13
1742	277.02
1743	276.91
1744	276.80
1745	276.80
1746	276.79
1747	276.79
1748	276.78
1749	276.78
1750	276.77
1751	276.77
1752	276.76
1753	276.76
1754	276.75
1755	276.75
1756	276.74
1757	276.74
1758	276.73
1759	276.73
1760	276.72
1761	276.72
1762	276.71
1763	276.71
1764	276.70
1765	276.81
1766	276.92
1767	277.03
1768	277.14
1769	277.26
1770	277.37
1771	277.48
1772	277.59
1773	277.70
1774	277.81

1775	277.92
1776	278.03
1777	278.14
1778	278.26
1779	278.37
1780	278.48
1781	278.59
1782	278.70
1783	278.81
1784	278.92
1785	279.03
1786	279.14
1787	279.26
1788	279.37
1789	279.48
1790	279.59
1791	279.70
1792	279.86
1793	280.03
1794	280.19
1795	280.36
1796	280.52
1797	280.68
1798	280.85
1799	281.01
1800	281.18
1801	281.34
1802	281.50
1803	281.67
1804	281.83
1805	282.00
1806	282.16
1807	282.32
1808	282.49
1809	282.65
1810	282.82
1811	282.98
1812	283.14
1813	283.31
1814	283.47
1815	283.64
1816	283.80
1817	283.77
1818	283.74
1819	283.71
1820	283.68
1821	283.65
1822	283.62
1823	283.59
1824	283.56
1825	283.53
1826	283.50

1827	283.47
1828	283.43
1829	283.40
1830	283.37
1831	283.34
1832	283.31
1833	283.28
1834	283.25
1835	283.22
1836	283.19
1837	283.16
1838	283.13
1839	283.10
1840	284.18
1841	285.25
1842	286.33
1843	287.40
1844	287.25
1845	287.10
1846	286.95
1847	286.80
1848	287.00
1849	287.20
1850	287.40
1851	287.60
1852	287.80
1853	288.00
1854	288.20
1855	288.27
1856	288.35
1857	288.42
1858	288.49
1859	288.57
1860	288.64
1861	288.71
1862	288.79
1863	288.86
1864	288.93
1865	289.01
1866	289.08
1867	289.15
1868	289.23
1869	289.30
1870	289.34
1871	289.38
1872	289.42
1873	289.46
1874	289.50
1875	289.70
1876	289.90
1877	290.10
1878	290.30

1879	290.52
1880	290.74
1881	290.97
1882	291.19
1883	291.41
1884	291.63
1885	291.86
1886	292.08
1887	292.30
1888	292.59
1889	292.88
1890	293.18
1891	293.47
1892	293.76
1893	294.05
1894	294.34
1895	294.63
1896	294.93
1897	295.22
1898	295.51
1899	295.80
1900	295.55
1901	295.30
1902	295.05
1903	294.80
1904	295.85
1905	296.90
1906	297.48
1907	298.05
1908	298.63
1909	299.20
1910	299.42
1911	299.63
1912	299.85
1913	300.07
1914	300.28
1915	300.50
1916	300.68
1917	300.87
1918	301.05
1919	301.23
1920	301.42
1921	301.60
1922	302.25
1923	302.90
1924	303.55
1925	304.20
1926	304.85
1927	305.50
1928	305.64
1929	305.78
1930	305.91

1931	306.05
1932	306.19
1933	306.33
1934	306.46
1935	306.60
1936	306.76
1937	306.93
1938	307.09
1939	307.25
1940	307.41
1941	307.58
1942	307.74
1943	307.90
1944	308.38
1945	308.86
1946	309.34
1947	309.82
1948	310.30
1949	310.78
1950	311.26
1951	311.74
1952	312.22
1953	312.70
1954	313.22
1955	313.73
1956	314.25
1957	314.77
1958	315.28
1959	315.97
1960	316.91
1961	317.64
1962	318.45
1963	318.99
1964	319.62
1965	320.04
1966	321.38
1967	322.16
1968	323.04
1969	324.62
1970	325.68
1971	326.32
1972	327.45
1973	329.68
1974	330.18
1975	331.08
1976	332.05
1977	333.78
1978	335.41
1979	336.78
1980	338.68
1981	340.10
1982	341.44

1983	343.03
1984	344.58
1985	346.04
1986	347.39
1987	349.16
1988	351.56
1989	353.07
1990	354.35
1991	355.57
1992	356.38
1993	357.07
1994	358.82
1995	360.80
1996	362.59
1997	363.71
1998	366.65
1999	368.33
2000	369.52
2001	371.13
2002	373.22
2003	375.77
2004	377.49
2005	379.80
2006	381.90
2007	383.76
2008	385.59
2009	387.37
2010	389.85
2011	391.63
2012	393.82
2013	396.48
2014	398.55

Source: Compiled by Earth Policy Institute, with long term historical data from Worldwatch Institute, based on Thomas A. Boden et al., *Trends '93: A Compendium of Data on Global Change* (Oak Ridge, TN: Oak Ridge National Laboratory, September 1994), and J.T. Houghton et al., eds., *Climate Change 1995: The Science of Climate Change, Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change* (New York: Cambridge University Press, 1996); 1959 to 2012 from National Oceanic and Atmospheric Administration Earth System Research Laboratory, "Mauna Loa CO₂ Annual Mean Data," at www.esrl.noaa.gov/gmd/ccgg/trends/co2_data_mlo.html, updated 5 February 2015.

Average Global Temperature by Decade, 1880-2014

Decade	Average Temperature Degrees Fahrenheit	Change from Previous Decade Degrees Fahrenheit
1880-1889	56.83	
1890-1899	56.71	-0.12
1900-1909	56.60	-0.11
1910-1919	56.58	-0.02
1920-1929	56.80	0.23
1930-1939	57.06	0.25
1940-1949	57.22	0.16
1950-1959	57.12	-0.10
1960-1969	57.16	0.04
1970-1979	57.24	0.08
1980-1989	57.57	0.33
1990-1999	57.85	0.28
2000-2009	58.20	0.35
2010-2014 (5 years)	58.30	

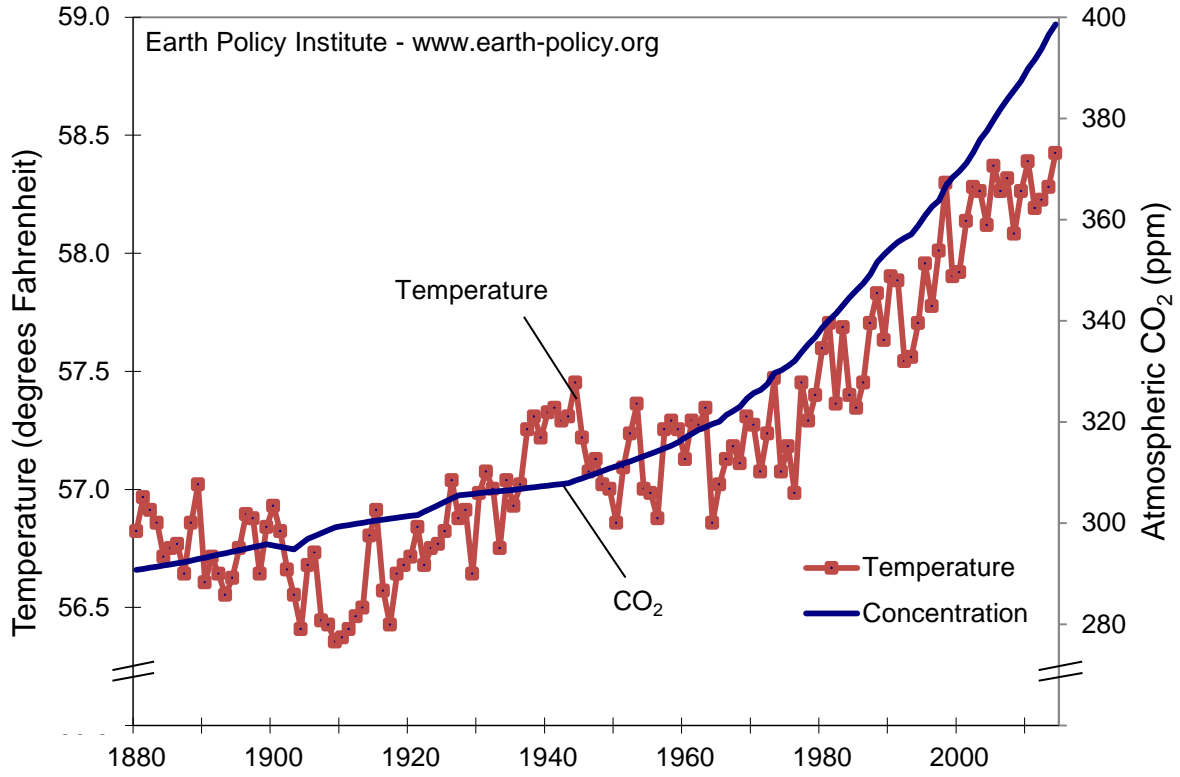
Source: Compiled by Earth Policy Institute from National Aeronautics and Space Administration, Goddard Institute for Space Studies, "Global Land-Ocean Temperature Index in 0.01 Degrees Celsius," at data.giss.nasa.gov/gistemp/tabledata_v3/GLB.Ts+dSST.txt, updated 16 January 2015.

Ten Hottest Years on Record, 1880-2014

<u>Year</u>	<u>Average Global Temperature</u> <u>Degrees Fahrenheit</u>
2014	58.42
2010	58.39
2005	58.37
2007	58.32
1998	58.30
2002	58.28
2013	58.28
2003	58.26
2006	58.26
2009	58.26

Source: Compiled by Earth Policy Institute from National Aeronautics and Space Administration, Goddard Institute for Space Studies, "Global Land-Ocean Temperature Index in 0.01 Degrees Celsius," at data.giss.nasa.gov/gistemp/taledata_v3/GLB.Ts+dSST.txt, updated 16 January 2015.

Average Global Temperature and Atmospheric Carbon Dioxide Concentration, 1880-2014



Source: NASA GISS; NOAA ESRL; Worldwatch