

Climate Change Facts

Fact: By 2004, the atmospheric concentration of carbon dioxide, the leading greenhouse gas, increased to about 380 parts per million (ppm). This is an increase from 280 ppm prior to the Industrial Revolution. Current atmospheric carbon dioxide concentrations have not been exceeded in the past 420,000 years, and likely not in the past 20 million years. Scientists estimate that the concentration of carbon dioxide will continue rising at more than 2 ppm per year.[1]

Fact: The United States, by far the largest emitter of greenhouse, contributes about 24% of global carbon dioxide emissions.[2]

Fact: The Kyoto Protocol asks developed countries, including the United States, collectively to reduce greenhouse gas emissions by 5.2% of 1990 levels by 2012. The U.S. Department of Energy recently reported that U.S. emissions increased by 15.8% from 1990 to 2004.[3]

Fact: The global average surface temperature (over land and sea) has increased over the 20th century by 1.08°F, $\pm .36^\circ\text{F}$, with most warming occurring between 1910-1945 and 1976-2000. The global average surface temperature is projected to increase by 2.52 to 10.44°F from 1990-2100. This is much larger than the observed changes during the 20th century and is without precedent during at least the last 10,000 years (90-99% confidence).[4]

Fact: Since the early 1960s, mountain glaciers around the world have lost 4,000 cubic kilometers of water, which is more than one year's worth of discharge from the Orinoco, Congo, Yangtze, and Mississippi Rivers combined. Furthermore, in the 1990s, the rate at which glaciers melted more than doubled compared to the rates of previous decades.[5]

Fact: In 2000, the United States emitted 6,928 million tons of carbon dioxide equivalents; in that same year, Canada's emissions were 680 million tons. Per capita emissions for the United States in 2000 were 24.5 tons of carbon dioxide equivalents; for Canada per capita emissions were 22.1 tons. The global average per capita emissions in 2000 were 5.6 tons; the average per capita emissions for developed countries were 14.1 tons of carbon dioxide equivalents.[6]

Facts about Climate Change and Glacier National Park

Fact: Glacier National Park once boasted approximately 150 glaciers. Today only 27 remain and scientists estimate that these remaining glaciers will disappear by 2030.[7]

Fact: Since 1850, the area covered by glaciers in Waterton-Glacier has decreased by 73 percent.[8]

Fact: “Unlike many places where the effects of climate change are only gradually becoming apparent, Glacier National Park (Glacier NP) is experiencing major impacts from a warming climate right now.”[9]

Fact: In addition to glacial loss, Waterton-Glacier is experiencing other impacts of climate change including that “the park’s tree line is creeping higher in elevation; that the alpine tundra zone is shrinking, and that subalpine meadows are filling in with tree species.”[10]

Fact: In Glacier National Park, “many species exist at the limits of their biogeographic ranges. Some of these sensitive species will directly respond to minor climatological changes; others will respond to climate-induced habitat changes. The effects will be evident ... in range shifts detected first as local extinctions, and ultimately as invasions by new species.” [11]

Facts about Mitigating Climate Change

Fact: In 2002, carbon dioxide accounted for eighty-three percent of all U.S. greenhouse gas emissions, when all emissions are weighted on a carbon equivalent basis. Of these carbon dioxide emissions, ninety-seven percent were generated by the combustion of fossil fuels. [12]

Fact: EPA estimates that “[e]very megawatt-hour (1,000 kilowatt-hours) of electricity generated by a wind turbine offsets the equivalent of 1,100 to 2,200 pounds of carbon dioxide, depending on the type of fuel used to generate the electricity.” [13]

Fact: Each gallon of gasoline that is consumed results in the release of “approximately 24 pounds of global warming pollutants.” If the United States increased its fuel economy standard to 40 mpg over the next decade, the United States could reduce its annual GHG emissions by 106 million tons for the year 2015.[14]

References

[1] Source(s): for the 280 to 380 ppm: Intergovernmental Panel of Climate Change, Carbon Dioxide Capture and Storage (2005), page 282, available at: <http://www.ipcc.ch/activity/srccs/SRCCS.pdf>. For the 420,000 years/20 million years: Energy Information Administration, Dept. of Energy, Emissions of Greenhouse Gases in the United States 2000 (Nov. 2001), page 4, available at: <http://www.eia.doe.gov/oiaf/1605/gg01rpt/pdf/057300.pdf>

[2] Source: Energy Information Administration of the Department of Energy, Emissions of Greenhouse Gases in the United States 2004 (December 2005), page 3, available at: <ftp://ftp.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/ggrpt/057304.pdf>.

[3] Source: Energy Information Administration of the Department of Energy, Emissions of Greenhouse Gases in the United States 2004 (December 2005), page ix, available at:

<ftp://ftp.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/ggrpt/057304.pdf>.

[4] Source: Intergovernmental Panel on Climate Change (IPCC), *Third Assessment Report (TAR): Climate Change 2001: The Scientific Basis*, §2.2.2.1 (2001) [hereinafter *The Scientific Basis*], available at http://www.grida.no/climate/ipcc_tar/wg1/052.htm#2221. Also at Chapter 9 (Executive Summary), available at http://www.grida.no/climate/ipcc_tar/wg1/339.htm

[5] Source: World Wildlife Fund, *Going, Going, Gone, Climate Change and Global Glacier Decline*, 2 (Sept. 7, 2005), available at www.panda.org/downloads/climate_change/glacierspaper.pdf.

[6] Source: Kevin Baumert, Timothy Herzog, & Jonathan Pershing, *Navigating the Numbers, Greenhouse Gas Data and International Climate Policy* (World Resources Institute 2005), pages 12 and 22, available at http://pdf.wri.org/navigating_numbers.pdf

[7] Source(s): On the 150: U.S. National Parks Service, *Glacier National Park, Resources. Geology, Glaciers*, available at <http://www.nps.gov/glac/resources/geology.htm>. On the 27: U.S. National Park Service, *Glacier National Park, Environmental Management Plan*, 5 (Aug. 2004), available at <http://www2.nature.nps.gov/air/features/docs/GlacFinalEMS200408.pdf>. On 2030: Myrna H.P. Hall & Daniel B. Fagre, *Modeled Climate-Induced Glacier Change in Glacier National Park 1850-2100*, 53 BIOSCIENCE 131, 137 (2003).

[8] Source: U.S. National Park Service, *Glacier National Park, Environmental Management Plan*, 5 (Aug. 2004), available at <http://www2.nature.nps.gov/air/features/docs/GlacFinalEMS200408.pdf>.

[9] Source: National Park Service, *Glacier National Park Environmental Management Plan*, 5 (2004), available at <http://www2.nature.nps.gov/air/features/docs/GlacFinalEMS200408.pdf>.

[10] Source: United States Department of the Interior and Parks Canada, *Periodic Report on the Application of the World Heritage Convention, Report on the State of Conservation of Waterton-Glacier International Peace Park*, § 5b (considered by the World Heritage Committee July 2005), available at <http://www.nps.gov/oia/topics/Waterton-Glacier.pdf>.

[11] Source: U.S. Geological Survey, Northern Rocky Mountain Science Center, *Crown of the Continent Ecosystem*, ¶ 7, available at <http://www.nrmssc.usgs.gov/research/ecosystem.htm>.

[12] Source: Bureau of Transportation Statistics, *Greenhouse Gas Emissions*, available at http://www.bts.gov/publications/transportation_statistics_annual_report/2004/html/chapter_02/greenhouse_gas_emissions.html (citing EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2002* (Apr. 2004)).

[13] Source: EPA, *Climate Change Technologies: Wind Energy*, available at [http://yosemite.epa.gov/oar/globalwarming.nsf/uniqueKeyLookup/SHSU5BWK54/\\$file/windenergy.pdf?OpenElement](http://yosemite.epa.gov/oar/globalwarming.nsf/uniqueKeyLookup/SHSU5BWK54/$file/windenergy.pdf?OpenElement).

[14] Source: Union of Concerned Scientists, Questions and Answers on Fuel Economy, available at [http://www.ucsusa.org/clean_vehicles/fuel_economy/questions-and-answers-onfuel- economy.html#6](http://www.ucsusa.org/clean_vehicles/fuel_economy/questions-and-answers-onfuel-economy.html#6).