

# Debate on global warming: scientific basis - lab report example

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## **Debate on Global Warming: Scientific Basis**

The paper "Debate on Global Warming: Scientific Basis" is an outstanding example of an essay on environmental studies. Global warming refers to the increase in the temperature of the earth's surface and troposphere. The term global warming is used interchangeably with "climate change," referring to the other climatic changes aside from or due to increased global temperatures. The change in temperature is attributed directly due to an increase in the emission of greenhouse gases, the largest concentration of which is carbon dioxide. The increased emission arises from human activities in the transport and energy sector (US Environmental Protection Agency). Other human activities like clearing of land, deforestation, and desertification that abet temperature rise due to a reduction in carbon dioxide sinks. Many scientists and environmental agencies have been actively informing the public and publishing scientific articles about global warming and its adverse effects. They have strongly recommended governments and individual citizens to be actively involved in the mitigation and preparation for the effects of global warming. On the other hand, a group of people has also been actively rebutting the claims that global warming is here. This is called the "global warming debate." What then is scientific evidence on which the claims "for" and "against" global warming are based? THE CASE FOR GLOBAL WARMING

The increase in the earth's surface temperature is blamed on human activities. From 1908 to 2008, the temperature of the earth's surface has increased within the range of 1.2-1.4° C; the warmest years since 1850 occurred after 1998 (US Environmental Protection Agency). Greenhouse

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gases are naturally found in the earth's atmosphere but their levels have significantly increased by 25% since massive industrialization which began more than 100 years ago (Energy Information Agency). Burning of fossil fuels by the energy and transportation sector accounted for 75% of greenhouse gas emissions, notably carbon dioxide. More intensive agriculture to feed the increased population has increased methane and nitrous oxides concentration further. As a nation's economy flourishes, so do its need for energy (US Environmental Protection Agency). Land surface temperatures are increasing faster than sea surface temperatures, while average temperatures are increasing faster with time (Intergovernmental Panel on Climate Change). Data show that the warmest years in the last century are: 1998, 2003, 2004, 2005, 2006, 2000, 2001, 1990, 1997, 1995 and 1999. Temperature increase by 3 - 5°F increases the risk of extinction of one-third of plant and animal species (Intergovernmental Panel on Climate Change). The rate in the global sea-level rise was ten times higher than the last 3000 years. This sea-level rise is proportional to the temperature increase (Rahmstorf, 2006).

Changes in climatic conditions due to global warming are well-documented and are projected to increase. These include precipitation (Wentz, Ricciardulli, and Mears), further sea level rise (Meehl, Washington, and Collins), and thawing of ice sheets in Greenland and the Antarctic (Alley, Clark, and Huybrechts). The widespread retreat and melting of glaciers (as shown in the CBS video) are attributed to global warming. In just forty-two years (1961-2003), the Antarctic and Greenland ice sheets have rapidly melted.

The impacts of climate change are now being felt (summarized in Nurse). In the arctic and sub-arctic regions, imaging technologies show that glacial lakes have increased in number and size. Warming of water bodies increase the runoff and earlier discharge of snow-fed rivers and changed the water quality. Seasons have also shifted; notably, spring events are earlier (i. e. bird migration). In agriculture and forestry, crop yields are affected due to higher night temperatures (Peng, Huang, and Sheehy). Pests' infestation is also expected to rise with increased temperatures reinforcing the need for more detailed monitoring (Logan, Regniere, and Powell). Further evidence that global warming is here is loss of wetlands, increasing coastal floods, shifts in sea organism populations, range and migration (Nurse).

#### THE CASE AGAINST GLOBAL WARMING

It was difficult to find scientific literature to support the claims against global warming. Most of the literature obtained were in newspapers, in internet forums ([http://www. globalwarminghoax. com/news. php](http://www.globalwarminghoax.com/news.php)) and in policy papers. Most of the articles debunked claims of global warming by using the literature published by the pro-global warming scientists, although as Nurse (2007) pointed out, their claims revolve around the issue of the cause of global warming. As summarized by the American Policy Roundtable (2007) there are 8 major arguments against global warming. The arguments are based on the examination of the data presented by the “ pro” global warming group. Many scientists believe that human activities threaten to change the global climate. Data from 23 years of satellite readings of global temperature show no trend of global warming in the lower troposphere.

Furthermore, models that were used to predict global warming were too crude. Accordingly, predictions should be based on historical data. The anti-global warming group also pointed out that global warming, if it should occur, will benefit the world's human population, and efforts to reduce greenhouse gas emissions will be expensive and will not have any effect on climate change. Once governments implement policies to reduce emissions, millions of jobs will be lost, and millions of dollars more will be spent on expensive greenhouse gas emission reductions initiative. And the last proposal of the non-believers in climate change is to do nothing and to invest only in reducing emissions only when there is an economic benefit.