

# Scientists conclude global warming is “unequivocal”

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The Intergovernmental Panel on Climate Change (IPCC) released the “Summary for Policy Makers” from its fourth assessment report on science of global warming and climate change February 2. The new report concludes that global warming is “unequivocal” and strengthens the previous assessment that most warming in the last 50 years is due to human activity.

The IPCC report predicts a greater frequency of heat waves, more intense tropical cyclones (typhoons and hurricanes), the possible disappearance of summer Arctic sea ice, increasing acidification of the ocean, and changing patterns of precipitation that will cause an increasing number of draughts for some portions of the world. Depending on the scenario, global temperatures will rise between 1.8 and 4 degrees Celsius and sea levels will rise between 18 and 59 centimeters before the next century.

Established in 1988 by World Meteorological Organization and United Nation Environmental Programme, the IPCC assesses scientific, technical and socioeconomic information relevant to the understanding of climate change. The IPCC’s report—the most comprehensive of its kind—is an assessment of the current scientific research on climate change and global warming. It draws upon the work of 2,500 scientists from 130 countries and represents a broad consensus within the scientific community. All scientific findings considered by the IPCC and thus forming the basis of the report are peer-reviewed results published in scientific journals.

The report notes that “scientific progress since the TAR [Third Assessment Report] is based upon large amounts of new and more comprehensive data, more sophisticated analyses of data, improvements in understanding of processes and their simulation in models, and more extensive exploration of uncertainty

ranges.”

On the question of whether humans are the cause of recent warming, the new report is nearly conclusive. Improvements in computer simulations have led the IPCC to conclude that the warming of the past 50 years is “very likely” due to human activity. This means the authors are more than 90 percent certain that recent global warming is caused by the burning of fossil fuels, changes in land use, and agriculture. The previous report concluded that anthropogenic warming was only “likely,” meaning it was more than 66 percent certain.

The burning of fossil fuels has been the primary source of increases in carbon dioxide—the most significant contributor to global warming. Atmospheric concentrations of carbon dioxide rose to 379 parts per million (ppm) in 2005. This level “by far exceeds the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores,” according to the report, and represents a great increase over the “pre-industrial value of 280 ppm.” Concentrations of other greenhouse gasses have also risen over the last century, with methane rising to 1774 parts per billion (ppb) and nitrous oxide rising to 319 ppb in 2005. This is compared with pre-industrial levels of 715 ppb and 270 ppb respectively.

The report states, “Warming of the climate system is unequivocal,” citing “observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level.” Notably, “11 of the last 12 years (1995-2006) rank among the 12 warmest years in the instrumental record of global surface temperature.”

The report correlates “an increase of intense tropical cyclone activity in the North Atlantic since about 1970” with “increases of tropical sea surface temperatures.” It also links “increased temperatures and decreased

precipitation” with “more intense and longer droughts over wider areas since the 1970s.”

The human impact of climate change will be detailed in another IPCC report to be released later this year. The summary released February 2 deals only with “The Physical Science Basis” portion of the IPCC assessment. From drafts obtained by the *Age*, an Australian newspaper, between 1.1 billion and 3.2 billion people will suffer water scarcity as a result of climate change. Also, between 200 million and 600 million could suffer from food shortages and 7 million could be affected by costal flooding. The poor will be most affected by climate change.

Although the summary is directed at policymakers, there is little sign of a change in course among major contributors of greenhouse gas emissions, such as the United States, Australia, China, and India. In a press conference held in response to the IPCC report, US Energy Secretary Samuel Bodman accepted the findings but rejected any kind of mandatory caps of greenhouse gas emissions. Instead he suggested emission reductions should be tied to economic growth, and should be achieved through “voluntary, market-based products.”

Bodman made the correct point that a self-imposed cap on emissions in United States will lead to shifts in production where there are no caps. In this statement, he expresses the logic of capitalism, which seeks the most profitable means of production with little regard for the long-term environmental consequences. Despite the Bush-appointed official’s boasts of investment in climate research and energy technologies, greenhouse gas emissions have continued to increase under the Bush administration.

Overall, the party affiliation of the resident of the White House (Democrat or Republican) has not impacted trends in greenhouse gas emissions. According to statistics contained in the Environmental Protection Agency’s 2006 report “Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004,” average yearly greenhouse gas emissions increased by 1.6 percent a year under the Clinton-Gore. These trends have largely continued under George W. Bush. As the EPA’s report notes, the driving factors in the increase in emissions in the United States over the period 1990-2004 are a growing domestic economy and increased emissions from transportation activities and

electricity generation. Although the EPA produces an inventory of greenhouse gas emissions, as is required by the United Nations Framework Convention on Climate Change, there is no federal regulation to limit greenhouse gas emissions.

The IPCC has issued three previous reports, in 1990, 1995 and 2001. Governmental responses so far to the IPCC’s continued warnings have been largely symbolic. The only existing international agreement to reduce emissions, the Kyoto protocol, is ineffective and flawed in its conception. The formation of a new international agreement that works to significantly reduce global greenhouse gas emissions faces insurmountable challenges within the framework of the nation-state system, which pits country against country and subordinates the protection of the environment to the interests of private profit.



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