



THE JAMES A. BAKER III INSTITUTE FOR PUBLIC POLICY  
RICE UNIVERSITY

HOT TOPIC:  
NAVIGATING THE FACT AND FICTION  
OF CLIMATE CHANGE

BY

NEAL LANE, PHD  
SENIOR FELLOW IN SCIENCE AND TECHNOLOGY POLICY  
JAMES A. BAKER III INSTITUTE FOR PUBLIC POLICY  
RICE UNIVERSITY

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## Hot Topic: Navigating the Fact and Fiction of Climate Change

Is the Earth warming? Is our climate changing? In the past few years, climate change has attracted a lot of attention from politicians, the media and the general public. Al Gore's book and movie "An Inconvenient Truth" lay out the science and possible impacts of climate change for the general reader, while authors such as Michael Crichton, in his book "State of Fear," suggest that scientists are just trying to scare the public. Critics of climate change seem to fall into two camps: those who have heard about a scientific result that seems to counter what they understand to be the scientific consensus, and those who are paid to "do their job," that is, try to convince the public that there is nothing to worry about. They challenge with the question "If we can't predict today's weather, how can we predict the climate in 50 years?"

What is really going on? The science of climate change is enormously complicated. The predictions in the 2007 report of the UN Intergovernmental Panel on Climate Change (IPCC), are based on experimental observations and geological records as well as sophisticated computer models of the science of the surface (ocean, atmosphere, land and ice) of our planet.

The good news is that thousands of scientists have been working in this field for decades and, remarkably, have reached a consensus, which is reflected in the UN report. As the report details, over the past century the average temperature of the Earth's lower atmosphere (where we live) has increased by over 1 degree Fahrenheit (even more in the Northern latitudes), most of which occurred during the last 30 years due to the buildup, in the upper atmosphere, of carbon dioxide (CO<sub>2</sub>), a product of burning fossil fuels. The models predict that the planet will continue to heat up by several degrees F in the next 50 to 100 years if CO<sub>2</sub> and other greenhouse gas emissions continue at their present rate. Higher temperatures translate into more heat energy, which will drive weather across the globe. We can expect an increase in the frequency of exceptionally hot days, severe droughts and floods and severe storms. Glaciers will continue to recede and ice sheets in the Arctic and Antarctic will become thinner and, in some areas, completely disappear. The sea level will rise, by as much as a foot or more, overtaking areas of land near the coasts and barrier islands.

Could the climate models all be wrong? Have there not been times in history when the "best" scientific thinking was overturned by a new discovery? Yes, quantum mechanics is a good example of scientific thinking being changed. But this is unlikely to happen with climate science. Unlike quantum mechanics, climate science is not based on a single scientific theory, but rather on mountains of historical data and well-established basic laws of physics, chemistry and biology.

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Might scientists be overextending their research to gain better funding? That's not likely, either. Falsifying data or overselling research would constitute fraud; and fraud in science is very rare, not because scientists are different from other people but because scientists are unforgiving of fraud. You may recall the recent exposure of a few South Korean scientists who falsified some of their research on stem cells. Their careers in science are over. They will not be able to recover, and any future research they might do will always be suspect. This may seem harsh. Many scientists make mistakes and all "findings" or "discoveries" do not stand the test of time. But fraud is not a mistake – it violates trust. In science, trust and independent verification are the coins of the realm. Once a scientist is no longer trusted, he or she is through. This is no different for climate science than it is for biomedical research or any other area of science. Moreover, scientific fraud is usually quickly discovered, since no scientist will accept a finding or discovery unless it can be verified by other reputable scientists.

But, don't take my word for all this. If you want to know more about climate change science, and the policy and politics involved, read a few articles and books written by reputable scientists and science journalists. Encourage them to speak at your clubs, churches or schools. Invite critics and politicians to speak, as well, and ask them probing questions. Discuss the matter with friends, family and co-workers and find out why they believe the things they believe. Then make up your own mind.

To this end, on July 18, 2007, a colleague and excellent science writer, Chris Mooney, will be presenting his new book, "Storm World: Hurricanes, Politics, and the Battle over Global Warming," in Houston, Texas.<sup>1</sup> Please plan to attend, listen, ask questions, express your opinions, and learn a little more about global warming, climate change, and what kind of world our grandchildren will be living in.

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<sup>1</sup> Chris Mooney will be at the Barnes & Noble bookstore at 12850 Memorial Drive on July 18, 2007 at 7pm. Directions can be found at <http://www.harcourtbooks.com/StormWorld/tour.asp>. Information on his book and review can be found at amazon.com.