



## Warming debate shifts to 'tipping point'

### Some scientists worry it's too late to reverse climate change

By Juliet Eilperin

[The Washington Post](#)

Updated: 11:31 p.m. ET Jan. 28, 2006

Now that most scientists agree human activity is causing Earth to warm, the central debate has shifted to whether climate change is progressing so rapidly that, within decades, humans may be helpless to slow or reverse the trend.

This "tipping point" scenario has begun to consume many prominent researchers in the United States and abroad, because the answer could determine how drastically countries need to reduce their greenhouse gas emissions in the coming years. While scientists remain uncertain when such a point might occur, many say it is urgent that policymakers cut global carbon dioxide emissions in half over the next 50 years or risk the triggering of changes that would be irreversible.

There are three specific events that these scientists describe as especially worrisome and potentially imminent, although the time frames are a matter of dispute: widespread coral bleaching that could damage the world's fisheries within three decades; dramatic sea level rise by the end of the century that would take tens of thousands of years to reverse; and, within 200 years, a shutdown of the ocean current that moderates temperatures in northern Europe.

#### 'We've got to do something'

The debate has been intensifying because Earth is warming much faster than some researchers had predicted. James E. Hansen, who directs NASA's Goddard Institute of Space Studies, last week confirmed that 2005 was the warmest year on record, surpassing 1998. Earth's average temperature has risen nearly 1 degree Fahrenheit over the past 30 years, he noted, and another increase of about 4 degrees over the next century would "imply changes that constitute practically a different planet."

"It's not something you can adapt to," Hansen said in an interview. "We can't let it go on another 10 years like this. We've got to do something."

Princeton University geosciences and international affairs professor Michael Oppenheimer, who also advises the advocacy group Environmental Defense, said one of the greatest dangers lies in the disintegration of the Greenland or West Antarctic ice sheets, which together hold about 20 percent of the fresh water on the planet. If either of the two sheets disintegrates, sea level could rise nearly 20 feet in the course of a couple of centuries, swamping the southern third of Florida and Manhattan up to the middle of Greenwich Village.

While both the Greenland and the Antarctic ice sheets as a whole are gaining some mass in their cold interiors because of increasing snowfall, they are losing ice along their peripheries. That indicates that scientists may have underestimated the rate of disintegration they face in the future, Oppenheimer said. Greenland's current net ice loss is equivalent to an annual 0.008 inch sea level rise.

The effects of the collapse of either ice sheet would be "huge," Oppenheimer said. "Once you lost one of these ice sheets, there's really no putting it back for thousands of years, if ever."

**Small shift may key big changes**

The report concludes that a temperature rise of just 1.8 degrees Fahrenheit "is likely to lead to extensive coral bleaching," destroying critical fish nurseries in the Caribbean and Southeast Asia. Too-warm sea temperatures stress corals, causing them to expel symbiotic micro-algae that live in their tissues and provide them with food, and thus making the reefs appear bleached. Bleaching that lasts longer than a week can kill corals. This fall there was widespread bleaching from Texas to Trinidad that killed broad swaths of corals, in part because ocean temperatures were 2 degrees Fahrenheit above average monthly maximums.

Many scientists are also worried about a possible collapse of the Atlantic thermohaline circulation, a current that brings warm surface water to northern Europe and returns cold, deep-ocean water south. Hans Joachim Schellnhuber, who directs Germany's Potsdam Institute for Climate Impact Research, has run multiple computer models to determine when climate change could disrupt this "conveyor belt," which, according to one study, is already slower than it was 30 years ago. According to these simulations, there is a 50 percent chance the current will collapse within 200 years.

Some scientists, including President Bush's chief science adviser, John H. Marburger III, emphasize there is still much uncertainty about when abrupt global warming might occur.

"There's no agreement on what it is that constitutes a dangerous climate change," said Marburger, adding that the U.S. government spends \$2 billion a year on researching this and other climate change questions. "We know things like this are possible, but we don't have enough information to quantify the level of risk."

**Scientists under scrutiny**

This tipping point debate has stirred controversy within the administration; Hansen said senior political appointees are trying to block him from sharing his views publicly.

When Hansen posted data on the Internet in the fall suggesting that 2005 could be the warmest year on record, NASA officials ordered Hansen to withdraw the information because he had not had it screened by the administration in advance, according to a Goddard scientist who did not want to be identified. More recently, NASA officials tried to discourage a reporter from interviewing Hansen for this article and later insisted he could speak on the record only if an agency spokeswoman listened in on the conversation.

"They're trying to control what's getting out to the public," Hansen said, adding that many of his colleagues are afraid to talk about the issue. "They're not willing to say much, because they've been pressured and they're afraid they'll get into trouble."

But Mary L. Cleave, deputy associate administrator for NASA's Office of Earth Science, said the agency insists on monitoring interviews with scientists to ensure they are not misquoted.

"People could see it as a constraint," Cleave said. "As a manager, I might see it as protection."

**'We will adapt to it'**

John R. Christy, director of the Earth Science System Center at the University of Alabama in Huntsville, said it is possible increased warming will be offset by other factors, such as increased cloudiness that would reflect more sunlight. "Whatever happens, we will adapt to it," Christy said.

Scientists who read the history of Earth's climate in ancient sediments, ice cores and fossils find clear signs that it has shifted abruptly in the past on a scale that could prove disastrous for modern society. Peter B. deMenocal, an associate professor at the Lamont-Doherty Earth Observatory of Columbia University, said that about 8,200 years ago, a very sudden cooling shut down the Atlantic

ocean conveyor belt. As a result, the land temperature in Greenland dropped more than 9 degrees Fahrenheit within a decade or two.

"It's not this abstract notion that happens over millions of years," deMenocal said. "The magnitude of what we're talking about greatly, greatly exceeds anything we've withstood in human history."

These kinds of concerns have spurred some governments to make major cuts in the carbon dioxide emissions linked to global warming. Britain has slashed its emissions by 14 percent, compared with 1990 levels and aims to reduce them by 60 percent by 2050. Some European countries, however, are lagging well behind their targets under the international Kyoto climate treaty.

### **Speeding toward an iceberg?**

David Warrilow, who heads science policy on climate change for Britain's Department of Environment, Food and Rural Affairs, said that while the science remains unsettled, his government has decided to take a precautionary approach. He compared consuming massive amounts of fossil fuels to the strategy of the Titanic's crew, who were unable to avoid an iceberg because they were speeding across the Atlantic in hopes of breaking a record.

"We know there are icebergs out there, but at the moment we're accelerating toward the tipping point," Warrilow said in an interview. "This is silly. We should be doing the opposite, slowing down whilst we build up our knowledge base."

The Bush administration espouses a different approach. Marburger said that while everyone agrees carbon dioxide emissions should decline, the United States prefers to promote cleaner technology rather than impose mandatory greenhouse gas limits. "The U.S. is the world leader in doing something on climate change because of its actions on changing technology," he said.

Stanford University climatologist Stephen H. Schneider, who is helping oversee a major international assessment of how climate change could expose humans and the environment to new vulnerabilities, said countries respond differently to the global warming issue in part because they are affected differently by it. The small island nation of Kiribati is made up of 33 small atolls, none of which is more than 6.5 feet above the South Pacific, and it is only a matter of time before the entire country is submerged by the rising sea.

"For Kiribati, the tipping point has already occurred," Schneider said. "As far as they're concerned, it's tipped, but they have no economic clout in the world."

© 2006 *The Washington Post Company*

© 2006 MSNBC.com

URL: <http://www.msnbc.msn.com/id/11079935/page/2/>