

Climate changes for peace prize winners

The award of the 2007 Nobel Peace Prize delighted scientists and the public but underscored the US government's lack of action to reduce global warming.

Rajendra Pachauri, an Indian economist and chair of the Intergovernmental Panel on Climate Change, first got an inkling that something special was about to happen when a large group of journalists turned up outside his office but wouldn't tell him why they were there.

A few minutes later, the Nobel Prize committee announced that the IPCC and former US vice president Al Gore would share this year's peace prize "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change." A delighted Pachauri paid tribute to the scientific community that won the award: "The experts and scientists are the backbone of the IPCC, and they provide the knowledge, which has contributed to our success." In an interview with *PHYSICS TODAY*, he expanded on what the award means to the IPCC and to him: "I hope we can use it for informing the public on the major findings of the fourth assessment report [which came out in 2007], and also for encouraging researchers to work in the area of climate change in general. We really have a very short window of time to reduce emissions of greenhouse gases and therefore the risk of significant climate change."

A scientific prize

The IPCC was set up in 1988 by the World Meteorological Organization and the United Nations Environment Programme to assess climate change. More than 2500 researchers from some 130 nations contribute toward writing the IPCC reports. "This must be the most maligned institution on Earth, in that it's a very conservative scientific panel which chooses only the science which is rock solid," says George Monbiot, an environmental policy analyst at Oxford Brookes University in the UK. "Yet it's often portrayed as an insane radical organization trying to overthrow civilization as we know it."

Jerry Mahlman of the National Center for Atmospheric Research in Boulder, Colorado, helped set up the IPCC and says that the organization has had

"conspicuous success in internationalizing the scientific commitment that is needed for getting to the bottom of the human-caused global climate warming." (An interview with Mahlman on the science of climate change is available on the *PHYSICS TODAY* website.) In its most recent report, issued this past February, the IPCC put the likelihood that human activity has been a key contributor to global warming in recent decades at 90%, up from its 2001 estimate of 66%.

"Correct [long-term] climate forecasts will be an important factor for preserv-



ing the peace in the future," says Peter Lemke, an IPCC scientist at the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany. "That is why it is gratifying to hear that climate scientists have been awarded the peace prize. It shows how important this research is for world politics."

"What may be missed by the public in the announcement of this award," says Spencer Weart of the American Institute of Physics and author of *The Discovery of Global Warming* (Harvard University Press, 2003), is that "the IPCC reports are formed through consensus, not just by scientists but also by the representatives of nearly every government in the world. All these groups, including countries such as China, have agreed that there are economical steps that can be taken to avoid the risk of extreme climate events by 2100."

Gore's campaign

While the IPCC is recognized as having provided the science to document and support climate change and the roles of human activity, Gore has raised public

awareness about the issue. "He has pursued the climate issue doggedly for 30 years," says Michael Oppenheimer, director of the science, technology, and environmental policy program at Princeton University and a longtime IPCC participant.

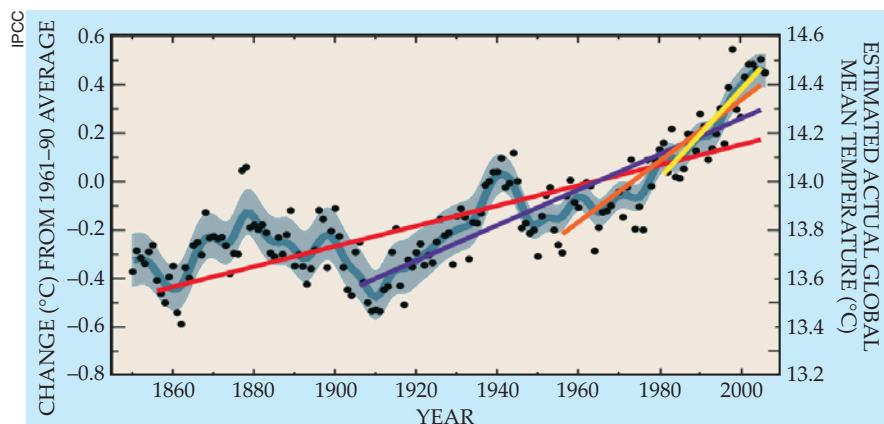
During his tenure in Congress from 1979 to 1993, Gore frequently held hearings and gave talks on environmental issues. As vice president, he was the most senior US politician to attend the Kyoto Protocol discussions and is credited with breaking the stalemate that nearly caused negotiations to fail, though the treaty was never ratified by the US government due to a lack of support in Congress.

After his bid for the presidency failed in 2000, Gore updated his global warming presentation and started speaking to packed crowds at university campuses. The lecture eventually turned into the 2006 movie *An Inconvenient Truth*, which won an Academy Award for best documentary. "Unlike almost any other politician," says Oppenheimer, "he educated himself in depth on a key public issue, calibrated his public statements closely to the science of the issue, and then found an unusual and unusually effective way to reach the public. There is no doubt in my mind that he merits the prize." The movie has been seen by millions of people and is credited with reviving interest in combating climate change. Even so, some scientists are miffed: "It is perhaps a little deflating that one man and his PowerPoint show has as much influence as the decades of dedicated work by so many scientists," says Piers Forster of the University of Leeds School of Earth and Environment.

Gore said at a press conference in October, "This award is even more meaningful because I have the honor of sharing it with the IPCC. The climate crisis is not a political issue, it is a moral and spiritual challenge to all of humanity."

Too hot to handle?

But Oppenheimer is unconvinced that politics can be so readily disentangled from the climate-change issue. "Without the IPCC reports, I doubt the UN



The IPCC's fourth assessment report contains details of the global mean observed temperatures (black dots) along with simple fits to the data based on the last 25 (yellow), 50 (orange), 100 (purple) and 150 years (red). The left axis shows anomalies relative to the 1961 to 1990 average and the right axis shows the estimated actual temperature.

Framework Convention on Climate Change or the Kyoto Protocol would have been developed," he says. "I also doubt that the current political movement on the issue that appears to be developing in response to observed changes in the climate and related public concern would have gotten organized quite so rapidly."

"The Nobel committee's recognition affirms that policymakers need to listen to the best available science and act upon it to avoid dangerous climate change," says Union of Concerned Scientists policy director Peter Frumhoff. That's not happening yet, though. Asked in a White House press conference if the Nobel Prize will pressure the administration to adopt a more proactive approach toward combating climate change, White House spokesman Tony Fratto replied, "No."

"The award certainly hasn't discour-

aged the climate-change deniers, who seem to have stepped up their attacks," says Monbiot. "It does, however, help to reinforce the case that the protection of the environment is critical to peace and human welfare and should no longer be seen as a fringe issue by policymakers and the public."

Oppenheimer agrees. "The public learns about complex issues through leaders, not organizations; but leaders learn about the problem from organizations like IPCC," he says. "The award will add further momentum to the accelerating engagement of politicians and the public toward solving the problem. But most important, it is a reward to those scientists who feel an interest or obligation to become involved in the public arena, and that acknowledgment is a very healthy development, for science and for the well-being of the world."

Paul Guinnessy

Cold plasmas enter the biomedical arena

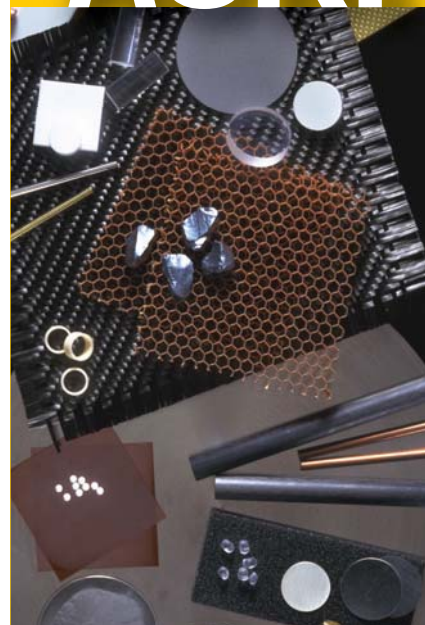
With a host of prototype devices headed for the biomedical market, cold plasmas could become the hot new trend in cutting-edge health care.

Plasmas are the most common substance in the visible universe, and our ability to create them has led to their routine use in a wide range of industrial applications. In recent years, the ability to create room-temperature cold plasmas at atmospheric pressures has driven strong interest in developing them for biomedical applications. A handful of prototype cold-plasma devices are now being tested for clinical use.

Arc welding machines use searing-hot plasmas to cut and weld metals, and

plasmas play a key role in nuclear fusion. But cold plasmas also have their applications. They are used in flat-screen plasma TVs, in the processing of plastics, and for the application of coatings in materials processing. Because they generate free electrons that react easily with other atoms, plasmas can be used to etch metals, to fabricate electronic circuits in the semiconductor industry, and to burn off organic contaminants via chemical reactions during wafer manufacturing.

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