

# U.S. policy still fails to combat global warming

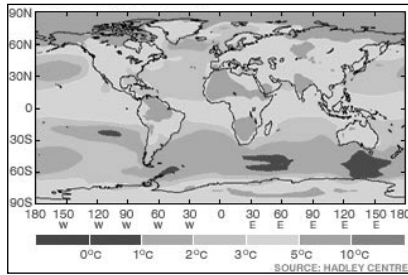
BY KATHY HOOGEBOOM  
Sci-Tech Editor

What will it take to convince the officials in the United States to take part in real action to counter global warming?

Last week Friday, the Intergovernmental Panel on Climate Change (IPCC) released a report describing evidence of global climate change and human responsibility, and predictions from climate modeling. It was put together by hundreds of scientists and government officials and approved by 113 nations, including the United States, according to The Associated Press.

The report represented what top climate scientists could agree on. Though there could be disagreement about the extent of climate change effects beyond those described in the report, this was the baseline on which they could agree.

Since scientists went to some length to keep from overstep-



**Predicted change in average surface air temperature: 1960-1990 to 2070-2100.**

ping their current understanding, many criticized the report for being too conservative.

For example, because the mechanisms and effects of a melting Greenland are not yet well understood, the contribution of that ice to a sea-level rise was left out of the report's estimates. However, there are arguments that Greenland's contribution could be more significant than most of what is included in the estimates.

Yet on the same day as the release of the IPCC report, The Guardian reported an offer from the American Enterprise Institute (AEI),

an ExxonMobil-funded think tank. Any scientist or economist to publish an article undermining the IPCC report would receive \$10,000.

The AEI made this offer through letters sent to scientists in Britain, the United States and elsewhere, according to The Guardian. They attack the IPCC, saying it is "resistant to reasonable criticism and dissent and prone to summary conclusions that are poorly supported by the analytical work."

David Viner of the Climatic Research Unit at the University of East Anglia called this move "a desperate attempt by an organization [that] wants to distort science for [its] own political aims."

"The IPCC process is probably the most thorough and open review undertaken in any discipline. This undermines the confidence of the public in the scientific community and the ability of governments to take on sound scientific advice,"

Viner said, according to The Guardian.

On Saturday, Feb. 3, France called for a new environmental body to work to slow global warming, according to AP. Theoretically this body would have the power to punish violators.

Forty-five nations agreed to the call. The United States was not among them. Neither were the rising polluters, China and India. Could it be that short-term economic and political concerns are preventing much-needed action to combat the "most likely" devastating effects of global climate change?

French President Jacques Chirac commented in frustration that "some large, rich countries still must be convinced," as they are "refusing to accept the consequences of their acts."

"The so-called and long-overstated 'debate' about global warming is now over," said Tim Wirth, president of the United Nations Foundation, according to AP.

AP reports that the world's

scientists and international leaders have said that the science is at this point so well-documented that action must be the next step.

Yet we still witness the U.S. government rejecting the imposition of cuts to greenhouse gases. "Lowering greenhouse gas emissions" is still twisted by politic-speak to actually mean "slowing the rate at which greenhouse gas emissions are growing."

What is needed to prod us toward official, meaningful efforts to combat climate change, "carbon-cutting measures with teeth?"

At least there is encouragement. On the international stage, climate scientists are receiving more serious consideration than ever before.

And Fox News reports that 82 percent of Americans believe in global warming (91 percent of Democrats, 84 percent of independents, 72 percent of Republicans). Gee, how encouraging.

The world is finally listening. Will we?

## Prevent 'post-antibiotic apocalypse'

*Finding ways to halt communication lines in a bacteria army*

Associated Press

Do germs communicate? Many scientists think so and are betting the chatter may hold the key to developing the next generation of drugs to fight killer superbugs.

The conventional wisdom has long been that the carpet-bombing approach is the best way to fight infection. But as evidence of bacterial bonding has mounted in the past decade, researchers are now focusing on antibiotics that will break down the lines of communication.

In the last 20 years, the number of scientists working in this field has jumped from a few solitary researchers to thousands. In Britain, the strategy is one of the top research priorities of a newly formed center dedicated to stopping superbugs.

"Bacteria are a bit like an army going into battle," said Dr. Paul Williams, professor of molecular biology at the center at Nottingham University. "Only when they've got strength in numbers do they tell their troops to start firing."

The thinking is that if bacterial communication can be interrupted, the microbes might be incapacitated before doing any damage. And by not killing off the bacteria, they won't have the Darwinian opportunity to evolve into resistant strains.

Scientists are still years away from producing a commercially available drug. But if the strategy proves successful, it could open the way for new weapons against superbugs such as the deadly MRSA superbug

— whose infection rate has jumped dramatically in the last two decades.

Researchers refer to the bacterial communication system as "quorum sensing." Just like in a company boardroom, a quorum is needed before any major action can be taken.

Bacteria communicate with each other by sending out a chemical signal that is in turn picked up by special receptors. Williams and his colleagues are developing enzymes to destroy the signal molecules.

Experts are also trying to break into other bacterial social activities. For instance, bacteria congregating to form a "biofilm" achieve a type of super-resistance.

"If we can break them up, we can kill them," said Dr. Pete Greenberg, a microbiology professor at the University of Washington. Greenberg is working on methods to disable a bacteria that frequently attacks people with cystic fibrosis.

New strategies to fight bugs that don't end up boosting their immunity would be a big boost. Pharmaceutical companies have been reluctant to invest in traditional antibiotics because many germs can develop resistance within months. The last new classes of antibiotics appeared in the 1990s.

"With only one or two antibiotics that are effective against a major pathogen, we are potentially living on borrowed time," warned Dr. Richard James, director of Britain's newly established Centre for Healthcare Associated

Infections at Nottingham University.

"Unless we do something to change the situation, we are facing a post-antibiotic apocalypse."

James, who is not involved in quorum sensing research, believes that it is one of the most promising avenues to developing new antibiotics.

"Perhaps the answer to the problem of increasing bacterial resistance is for us to be even more clever than the bacteria," he said. "We could do this if we have antibiotics that disable the bacteria, which may then allow the host's immune system to kick in."

Still, there are no guarantees that antibiotics based on quorum sensing will work. For instance, it's uncertain if knocking out communication lines in later stages of an infection would have any impact.

"There are no experiments to show that in a raging infection, a quorum sensing inhibitor could calm it down," said Greenberg. "It might already be too late by the time patients turn up with an infection."

But with no new antibiotics on the horizon, scientists say new strategies must be attempted.

"Drugs that inhibit quorum sensing are in the unproven category, but there is still a possibility they could work," said Dr. Anthony Coates, a professor of medical microbiology at St. George's Hospital Medical School in London.

"Quorum sensing might produce very effective antibiotics, but they might only work on specific species of bacteria," he said, adding that further tests on existing compounds are needed.

"The cupboard is running bare, and without any new antibiotics, we have to keep trying."



PHOTO AND EXPLANATION BY KATHY HOOGEBOOM

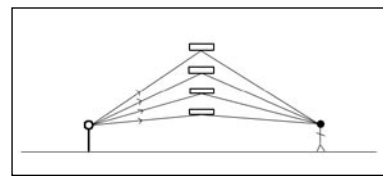
## Cold night lights

Striking pillars of light shone in the cold night sky over Calvin on Monday, Feb. 5. It wasn't a UFO attack — those are generally not expected; it wasn't the Aurora Borealis (or Northern Lights) — the pillars clearly go up from the ground and the pattern is too regular and well defined.

These were a result of a certain type of ice crystal that forms at cold temperatures (between -4 and 14 degrees Fahrenheit, -10 and -20 degrees Celsius). These crystals are very thin relative to their width with a hexagonal pattern.

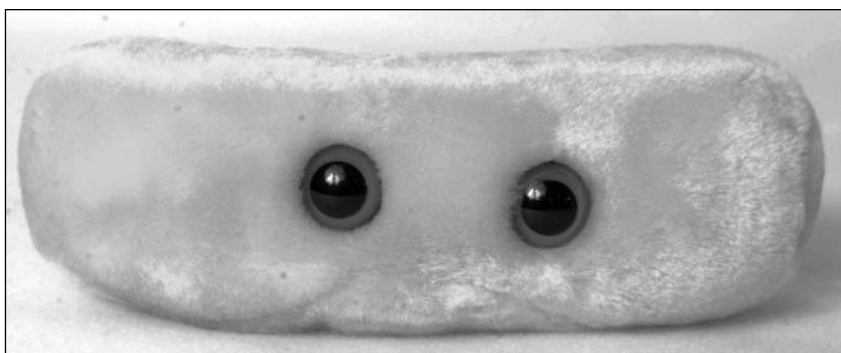
When they are relatively large, they tend to float downward, with their large sides parallel to the ground. In this orientation the crystals can act like small mirrors.

With many crystals essentially "stacked up" in this orientation, light beams from streetlights can reflect off progressively higher crystals in a column. The light reflected back to an observer forms the light pillars like those we could see at Calvin on Monday night.



GRAPHIC BY KATHY HOOGEBOOM

As light rays reflect off the plate ice crystals in cold air, to an observer it appears as though the light comes from a pillar through the center of this diagram.



A stuffed tuberculosis-causing bacterium can be sickeningly adorable, but the living ones become ever more dangerous as they learn to survive our antibiotic attacks.

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