

acacia's nectar, the two groups of ants switched roles.

Heil and his colleagues attribute the sucrose-depleted nectar of the acacia to an enzyme called invertase, which is secreted into the nectar by the plant and breaks down sucrose into glucose and fructose. Invertase activity was 10 times greater in the nectar of the swollen-thorn acacias than in the nectar of plants that don't have ant partners.

"This study reveals that specificity can be achieved relatively simply," says Anurag Agrawal, an ecologist at Cornell University. He predicts that other organisms also home in on the sucrose-poor nectar and coexist with the ant-plant pair. "Though the relationship is specific, it is unlikely to be purely a two-species interaction," says Agrawal.

Diane Davidson, a tropical ecologist at the University of Utah in Salt Lake City, calls the

Heil study "rigorous" but wonders if the acacia's ant partners add sucrose-degrading microbes to the nectar. Other strategies could also be used by acacias, she notes. For example, some plants secrete wax that only specialized "wax runner" ants can travel on.

Nonetheless, says Thornburg, Heil and his colleagues "are actually starting to get to the mechanisms" of mutualism. How sweet.

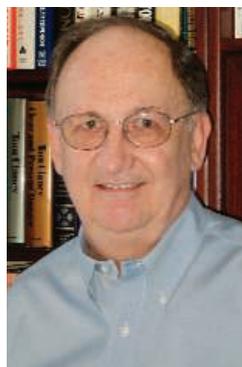
—ELIZABETH PENNISI

## CLIMATE CHANGE

# Global Warming Skeptic Argues U.S. Position in Suit

The U.S. government has enlisted an outspoken skeptic of global warming in a legal fight with environmental groups over U.S. funding for overseas energy projects. The move has angered several prominent climate researchers, how-

ever, who say the government's arguments fly in the face of scientific consensus about both the causes and possible consequences of global warming.



**"Impacts ... will include sea level rise, ... disturbances of ecosystems, ... [and] an accelerated reduction of water storage in winter snowpack."**

—Michael MacCracken, in brief for plaintiffs

ever, who say the government's arguments fly in the face of scientific consensus about both the causes and possible consequences of global warming.

On 29 April, a federal district court in San Francisco will hear a case (*Friends of the Earth v. Peter Watson*) about whether the National Environmental Policy Act (NEPA) should apply to projects supported by the Export-Import Bank and the Overseas Private Investment Corporation. The act requires the government to assess actions that could alter the environment. The plaintiffs in the case, which include several environmental groups and four western U.S. municipalities, argue that the federally supported projects—including oil drilling, pipelines, and commercial power plants—contribute to global warming, which in turn affects U.S. economic interests and its citizens. That connection is essential to establish their legal right, or standing, to bring suit.

To counter that claim, the Justice Department argues that "[t]he basic connection between human induced greenhouse gas emissions and observed climate itself has not been established." It buttresses its case with a 41-page statement from David Legates, head of the Center for Climatic Research at the

University of Delaware, Newark.

Legates begins by attacking the evidence for the 0.6°C rise in temperature in the 20th century cited by the Intergovernmental Panel on Climate Change (IPCC) in Geneva, Switzerland, in its 2001 report and by the plaintiffs. The proximity of temperature gauges to cities, he says, has artificially elevated reported temperatures. He also points to natural variability as an important factor, citing a 2004 study that suggested solar variability may have contributed up to 0.25°C of the recent warming. As for future impacts, he says surface temperatures in Greenland are falling, coral bleaching is a beneficial response to stress,

and the impact of droughts has been relatively benign in the 20th century. Legates says a Canadian climate model that plaintiffs cite to show potential changes in surface temperatures and moisture across North America is "extreme" and "overstated."

The plaintiffs counter with a 45-page brief from climate researcher Michael MacCracken, former head of the Office of the U.S. Global Change Research Program. In an interview, MacCracken called the Legates document "an attempt to go back and reargue the IPCC." Core findings of the IPCC, he says, have been repeatedly confirmed, including the 0.6°C increase in the last century. The urban heat effect has been discounted and cannot explain the warming oceans, says Thomas Wigley, a climatologist at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. Legates's arguments on solar variability are "standard skeptic crap" that has been discredited, Wigley declares.

MacCracken says Legates's assertion that Greenland is cooling is "wishful think-

ing," pointing to vast melting around the landmass documented in the recent Arctic Climate Impact Assessment. Severe droughts are on the increase, says IPCC lead author Kevin Trenberth of NCAR. As for Legates's criticism of the Canadian model, MacCracken notes that relevant government agencies have approved the 2000 U.S. National Assessment in which the model was put to use. "It's a selective use of studies and half-truths," Trenberth says about Legates's arguments.

In an interview with *Science*, Legates says he's standing his ground. He questions whether the IPCC represents a true consensus, claiming "a lot of dissenting views." He defends the studies he cites and attacks the Arctic assessment, which he says ignores natural Arctic cycles. Connecting emissions overseas to stateside impacts is simply tenuous, he maintains, adding that the plaintiffs are being selective in choosing the most dire projections.

**"Significant questions still remain as to [whether] this ... rise in air temperature can be attributed to anthropogenic increases in greenhouse gas concentrations."**

—David Legates, in brief for government



Previous legal attempts to force the government to report carbon dioxide emissions under NEPA, by linking those emissions to climate impacts, have failed. But a 2003 ruling in a suit over natural gas turbines found the failure to disclose CO<sub>2</sub> emissions "counter to NEPA." Earlier this month a federal appeals court heard arguments in a suit that would require the Environmental Protection Agency to regulate CO<sub>2</sub> emitted by motor vehicles.

—ELI KINTISCH