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# As Global Warming Issue Heats Up, UNH Scientists Continue Public Outreach

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DURHAM, N.H. -- The temperature of the Earth's lower atmosphere has increased, and so have efforts aimed at curtailing the greenhouse gas emissions that cause global climate change. Recently, lawmakers at both the state and federal level have taken initiatives to reduce the gases. This activity, including the U.S. Senate's "Climate Stewardship Act of 2003," is welcome news for scientists at the University of New Hampshire's Institute for the Study of Earth, Oceans, and Space (EOS).

For years, UNH scientists Barry Rock, Cameron Wake, George Hurtt and their colleagues have been both conducting scientific research into climate change and making forays outside the ivory tower in an effort to educate the general public about this complex, contentious and critical issue. All three routinely talk to citizen's groups, students of all ages and lawmakers.

The United States is the world leader in emissions of carbon dioxide - one of several greenhouse gases. But reductions have been resisted due largely to the economic ramifications. In March of 2001, President Bush announced that the United States would withdraw from the Kyoto Protocol, which establishes emissions reductions for carbon dioxide emitted by developed nations.

However, perhaps bolstering efforts to address the problem, an internal analysis by the Environmental Protection Agency (EPA) found the Senate plan to reduce carbon dioxide emissions could be achieved "at very little cost," according to a report in the July 30 edition of The New York Times.

Politics aside, Rock notes that not only is the problem not going to go away, it's getting worse. One of the "daunting challenges," he says, will be to significantly reduce carbon dioxide emissions well beyond

what is outlined even in the Kyoto Protocol. The reduction called for in the protocol is but "a drop in the bucket."

Asserts Rock, "We'll need a 70-80 percent reduction below 1990 levels and we'll need to do it soon, certainly by 2020." Such reductions exceed what the current Senate bill proposes.

The Climate Stewardship Act, which is an amendment to Senate energy bill S-14, "The Energy Policy Act of 2003," would set limits on the emission of greenhouse gases and let entities buy and sell emissions rights to offset the economic impact of the regulation - an approach similar to the successful acid rain reduction program. While passage is doubtful, the legislation is characterized as the first serious discussion at the federal level on the topic of climate change and global warming.

Although the scientific community has recognized that human activities are adding to concentrations of greenhouse gases in the atmosphere, much remains uncertain. Nevertheless, the UNH scientists point out that people and governments can make efforts to reduce greenhouse gases based on current scientific knowledge. "We take actions and make decisions in the face of uncertainty everyday," Hurtt says. "To argue that because there is uncertainty we should not act is illogical. The risks of inaction should be considered along with the costs of action, as they are in other aspects of society, such as insurance."

For his part, Wake says he makes sure people understand that "climate always has changed and always will change." What's different now, he says, is that humans are a major player in the climate change equation and are a "geological force" affecting the climate system on a planetary scale. Greenhouse gases are now at a level well above what they have been for the last 400,000 years.

Says Wake, "This issue is not only complex, it's changing as we study it, and we are causing changes. The question is, should we limit the amount we change the system?"

To answer this question, Wakes uses the analogy of driving down a highway in fog. "You sort of know where the road goes, you sort of have an indication of what's coming up ahead, but as the fog gets thicker, what do you do? Do you speed up, stay the same speed, or do you slow down? Unless you have a suicidal bent, you ease back on the pedal.

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