

# **New theory suggests climate change began 10,000 years ago**

## **Scientist proposes to Elon community that high levels of greenhouse gases deviate from the natural cycle**

by Kaitlin Ugolik, March 19, 2008

Adding to the controversy around climate change, one paleoclimatologist has hypothesized that humans caused the rise in greenhouse gases long before scientists originally thought.

William Ruddiman, professor emeritus at the University of Virginia, the last speaker in this year's Voices of Discovery science series, posed his argument to the Elon community Monday night in McCrary.

He presented the widely accepted idea that levels of carbon dioxide and methane have risen in the last few thousand years, contributing to global warming. He added his idea that this unnatural uptick began 5,000 years ago when the natural cycle of oscillating carbon and methane levels was disrupted, mostly by deforestation.

At about this time, he said, Mesopotamia and then China and Southeast Asia developed agriculture. The practice of growing crops and clearing trees on a large scale quickly spread through Europe causing carbon dioxide to rise instead of fall as it naturally should have Ruddiman said.

He said that this is where he gets the most skepticism. People wonder what humans were doing that long ago to affect carbon dioxide levels.

"This rise in (greenhouse gases) is not natural," he said. "Humans got involved in the climate system and kept the climate warmer than it otherwise would have been. Farmers stopped a glaciation."

The more widely held idea is that the Industrial Revolution caused the changes in greenhouse gas levels around 1800, and then the use of fossil fuels did so again in the 1900s.

Ruddiman noted that the change in monsoon circulation in Southeast Asia in the last 10,000 years also had an effect on methane gas levels and climate change.

The levels naturally rose, but did not correct themselves after monsoon season as they had in previous 10,000-year periods. Water gathered in valleys, which turned into bogs and released more methane gas than had previously been released.

"The methane trend was doing something it'd never done before and humans doing stuff they'd never done before," he said. "It fits."

Scientists have taken carbon dioxide and methane samples from beneath the ice in Antarctica and Greenland dating back thousands of years, and according to Ruddiman none have been able to find a time when levels did what they have done here.

"Natural explanations for the greenhouse gases in the last 10,000 years are falsified," he said. "That's deceptively simple and I have trouble getting some of my critics to see what a critical argument it is."

Ruddiman received another major criticism for his hypothesis that human action is directly to blame for the rise in greenhouse gases. After further research, he has formulated a new argument: gases directly caused by humans kept the air warmer 5,000 years ago when it should have cooled. This, in turn, kept the oceans warmer and the oceans then produced more carbon dioxide than it would have otherwise.

Ruddiman still cited direct human involvement as a main culprit in the rise in methane and carbon dioxide. He offered disease as a reason for the occasional dips in the gases within the past 10,000 years. These dips, he said, happened in times of great pandemics when people died off, leaving their farms to be taken over by vegetation, which lessened the level of carbon dioxide.

“I wouldn’t be going around giving all these talks if I wasn’t dead certain it’s correct,” he said.

Ruddiman received his bachelor in geology from Williams College and his Ph.D. in marine biology from Columbia. He has written several books, including "Plows, Plagues, and Petroleum: How Humans Took Control of Climate.”