



Everything Jersey

## The Star-Ledger

### Warm globally, think locally

Rutgers aims to be Jersey's expert on world climate change

Monday, September 11, 2006

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The researchers had come to Big Sky Resort, nestled high in the majestic Rockies, to ponder a topic as big as the Montana sky: the fate of the Arctic ecosystem.

As the 25 scientists talked through 30 years of collected data from disparate fields, they soon sensed a menacing pattern.

Polar bears were dying off, someone reported.

Fields of sea ice, which deflect solar radiation back into space, were shrinking, allowing temperatures to rise, another said.

It wasn't long before Jennifer Francis, a noted atmospheric chemist at Rutgers University, got the picture: The 10,000-year-old Arctic ecosystem was undergoing rapid change. In turn, sea levels inevitably would rise, affecting coastal regions worldwide.

And the culprit for it all? Greenhouse gases produced by human activity.

"It scared me. Such a huge change in such a short period of time," said Francis.

It was then, at that polar science meeting three summers ago, when Francis decided New Jersey, with miles of coastline, needed to get involved.

Now, it's finally happening. A group of Rutgers researchers, led by scientists such as Francis, climate modeler Anthony Broccoli and executive dean Robert Goodman, are working to pool and coordinate climate-change information from university researchers, with a focus on the state.

"The big goal is to make Rutgers the go-to place in New Jersey for this topic," said Francis.

The group will hold a symposium, "The Climate Ahead: Global Change, Local Impacts," on Sept. 20 at Rutgers' Douglass College Center in New Brunswick. Broccoli said 160 faculty members already have accepted invitations.

"Climate change is going to be the number one environmental issue of the 21st century," Broccoli said. "Its effects are going to be widespread, especially in a coastal state like New Jersey."

The scientists would like to take one piece of the global warming puzzle and assess, with great precision, exactly how it would affect the state.

Scientists already know that sea level along the New Jersey coast has risen about one foot since 1900. If all of Greenland's ice were to melt, sea level in the region would rise about 20 feet.

Sea level rise is not as great an issue in areas where high cliffs protect land from the sea, say scientists. However, places like New Jersey, with gently sloping ascents to shore, are much more susceptible.

Most scientists believe enough data has been accrued, using measuring methods such as ice cores and seafloor sediment, to show that higher levels of carbon dioxide in the atmosphere brought about by human activities over the past 150 years has altered the climate.

The increased frequency and severity of storms, as well as the rising number of droughts, floods and wildfires, has spurred public interest in global warming, scientists said.

Goodman, the executive dean for agriculture and natural resources at Rutgers, has high hopes for a "center of excellence" at the university devoted to the study of climate change.

When he came to Rutgers in 2005, Goodman started thinking about areas of scientific inquiry that could be expanded and deepened. Talking to faculty members, he found that the university was ripe with talent in the field of climate change. Still, he said, many of its best scientists didn't even know each other.

"And they should," said Goodman, reached in Italy last week where he was attending a scientific conference.

Goodman would relish watching the effort "get some traction as a university-wide, signature initiative," he said. He would also like to see Rutgers scientists hold a statewide summit in a year inviting residents who have a stake or interest in the state's changing climate.

More than a decade after several major universities established centers devoted to climate change, it remains a hot topic for academics, according to Jonathan Overpeck, a professor of geosciences at the University of Arizona in Tucson.

"Climate change is becoming more and more well-understood. Society is getting closer to having to act and having to endure the consequence of climate change," said Overpeck, who also directs the Institute for the Study of Planet Earth at his university. "It's becoming more important than ever that universities rise to this challenge and set up centers of interest."

One of the next big leaps in climate change research, according to Overpeck, is to determine the extent of local effects. In a March edition of *Science*, Overpeck published a paper saying the Earth's climate is veering toward a "tipping point" from which it cannot recover.

In New Jersey, he said, there is still time to take action to help forestall or even eliminate the possibility of extreme rises in sea level. Rutgers can play a major role in that endeavor, he said.

Francis, the polar scientist, is determined to see the effort through.

When she wants to ponder what's at stake, she likes to go to North Beach at Gateway National Park in Sandy Hook. The beach is only a short drive in her hybrid Toyota Highlander away from her office in the James J. Howard Marine Science Laboratory.

She looks out at the sea and thinks how such a source of great beauty could, because of global warming, one day turn into a source of great fear.

"People need to understand that they need to take this issue into their own hands," she said.

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