



[print story](#)
[back](#)

Climate change taking root
Research finds trees adapting as world gets warmer, moister

By [KENNETH AARON](#), Staff writer

Click byline for more stories by writer.

First published: Monday, January 9, 2006

ALBANY -- Warmer, wetter weather in Russia over the past 40 years has already changed the way forests there look -- and the implications for future warming aren't good, a University at Albany researcher says.

Andrei Lapenis, an associate professor of climatology in the school's Geography and Planning Department, was the lead author in a study that discovered Russian trees are getting greener while their trunks are getting skinnier. Advertisement

The upshot of the research likely means that forests aren't as good at absorbing carbon as conventional wisdom had it, Lapenis said. The article, "Acclimation of Russian Forests to Recent Changes in Climate," appeared in the December issue of *Global Change Biology*.

"That means global warming will come sooner than we might have thought," said Lapenis, who said he was surprised to discover that the trees adapted their shape as quickly as they did.

Lapenis' work typically involves soil analysis. He got started on this line of research when he discovered dozens of century-old Russian soil samples that had been missing for decades.

As he made his way across Russia to take new soil samples for comparison with the archived ones, he noticed that accounts written in logs didn't match what he was seeing. In some areas, tree trunks described to be 30 to 40 centimeters around were just 15 to 20 centimeters.

But the canopy of leaves and needles, according to satellite images and other data, was getting larger -- implying more, bigger trees.

The inconsistency bothered Lapenis.

It turns out growing trees are adapting to warmer, wetter weather by allocating carbon they absorb from the atmosphere into greenery, rather than woody parts such as roots, branches and trunks. In moister climates, the leaves and needles lose less water to the atmosphere, so the trees don't need to beef up on big mechanical systems -- the wood -- that can deliver moisture. But wood holds more carbon than leaves. Ultimately, the adaptation means that trees will absorb less carbon from the atmosphere over time.

Paul Epstein, associate director of the Center for Health and the Global Environment at Harvard Medical School, hadn't seen Lapenis' study but wasn't surprised by the findings.

"The interactions of carbon and changing temperatures and precipitation and water availability are so much more complicated than if one projected, 'OK, more carbon is good for plants,' " Epstein said.

William Schlesinger, a Duke University global climate expert, said the findings were interesting. "We noted that trees growing in desert regions of Nevada had thicker trunks relative to the foliage they maintained than trees of the same species growing in wetter conditions in the Sierra Nevada," he said. "I could easily see this showing up in a period of decades."

The amount of carbon put into the atmosphere has increased greatly as nations have industrialized.

Lapenis said that putting together accurate climate forecasts -- the type that stretch out for decades, not just the kind that appear on The Weather Channel -- requires scientists to understand where carbon put into the atmosphere goes.

But they're unclear where much of it ends up, Lapenis said. If trees aren't absorbing the carbon, it could be in the soil, or the oceans.

Despite the rapid change of the shape of trees in the forests, Lapenis cautioned against thinking that cutting the amount of carbon dioxide produced would have an equally quick effect.

"The atmospheric carbon dioxide is very hard to change," Lapenis said. "Once the carbon is there, it would take thousands and thousands of years to remove it."

That sounds depressing.

"It is science," he said. "Science can be depressing. The fact is, the carbon cycle works very slow."

The article is available at http://www.albany.edu/news/pdf_files/GCB_1069.PDF.

Kenneth Aaron can be reached at 454-5515 or by e-mail at aaronk@timesunion.com.

All Times Union materials copyright 1996-2006, Capital Newspapers Division of The Hearst Corporation
N.Y.

[CONTACT US](#) | [HOW TO ADVERTISE](#) | [YOUR PRIVACY RIGHTS](#) | [FULL COPYRIGHT](#) | [CLAE
ENRICHMENT](#)