their labs but were limited in how much of the Syngenta data they could publish at one time. Scientists doing commercial work were required to negotiate access to the data. Syngenta says that more than 700 researchers have accessed the data since it became available.

The most important potential user, however, is the international consortium of publicly funded labs led by Japan's National Institute of Agrobiological Sciences in Tsukuba. The consortium wanted wholesale access to the data, which the new agreement provides. Although IRGSP member laboratories initially must keep the Syngenta data confidential, they can use the information in their sequencing efforts. The consortium has a similar agreement with Monsanto, which has also completed a draft sequence of *japonica*.

Rich yield. Rice sequencing data will be more accessible under new agreement.

Consortium members say that it's too early to know how the new agreement will affect their work. Takuji Sasaki, who heads Japan's rice genome sequencing efforts, says researchers need to start working with the information before they can judge its value but that some of the consortium's mapping and sequencing gaps "might be filled by the [Syngenta] data." Ben Burr, a plant geneticist at Brookhaven National Laboratory in Upton, New York, who advises IRGSP, says that "this [agreement] is not going to have an impact on the overall schedule." But sequencer Dick McCombie of Cold Spring Harbor Laboratory in New York, a participant, predicts that the additional data will have "a positive impact" on either the speed or the accuracy of the final product.

Meanwhile, the debate continues over the propriety of allowing private companies to publish sequence data without depositing them in a public database. A committee of the U.S. National Academy of Sciences is preparing a report on these issues. This week in *Nature*, Ari Patrinos and Dan Drell of the U.S. Department of Energy's Office of Biological and Environmental Research in Germantown, Maryland, propose an approach that might encourage companies to publish more of their data. They suggest that the data remain sequestered—entrusted to a reliable gatekeeper such as the journal—for a specified time period after publication. That delay would protect a company's intellectual property rights, they argue, without excluding the public sector.

—DENNIS NORMILE

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GLOBAL WARMING

Rain Might Be Leading Carbon Sink Factor

"Where's all the carbon going?" Atmospheric scientists have been wondering about that for years. The United States spews out more than 5 billion tons of carbon dioxide emissions each year, but mainland U.S. ecosystems are absorbing an unexpectedly large amount of the gas—somewhere between 10% and 30% of the total—and the amount is steadily increasing. Scientists aren't complaining, mind you, because this absorption or sequestration offsets global warming. But they've been at a loss to explain it.

Most of the carbon is being sucked up by plants, which use it to manufacture roots, stems, leaves, and wood. Indeed, over the past several decades, researchers have recorded increased vegetation growth across the country. But why all this vegetation is growing so quickly has remained unclear. Theories abound, but the principal ones involve regrowth of forests on previously logged lands and accelerated forest growth spurred by global warming.

Now, a team is proposing another explanation: rain. A study published online by *Geophysical Research Letters* on 28 May suggests that the increased rainfall and humidity documented in the continental United States might be the single most important factor spurring increased plant growth; this, in turn, is slowing the accumulation of carbon dioxide in the atmosphere.

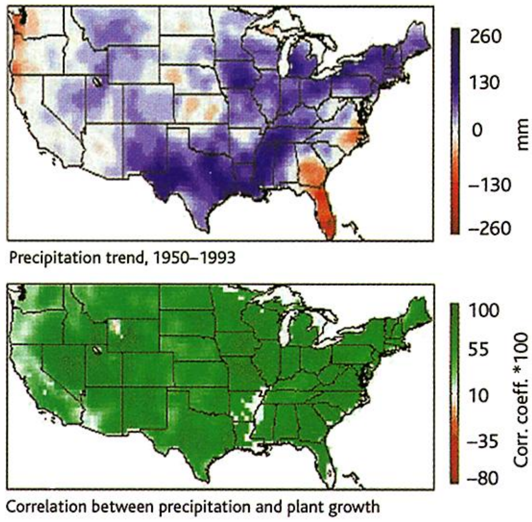
The answer might seem obvious, but carbon sink modelers had overlooked it. They have focused instead on the regrowth of forests, temperature changes, and the encroachment of woodlands on abandoned farmlands. Some have extended these studies to calculations of how many trees must be planted to offset new emissions.

Then researchers at the University of Montana's School of Forestry in Missoula began pondering the role of rainfall changes in the growth of the North American carbon sink. Working under a grant from NASA, Ramakrishna Nemani and co-workers used a computer model to simulate, region by region, the impact of this previously overlooked factor, focusing primarily on climate data from 1950 to 1993. Even after adjusting for other determinants of plant growth, including temperature changes, Nemani's team found that rainfall increases account for two-thirds of the additional growth.

Increased moisture helps plants in a number of ways, says the University of Montana's Steven Running, one of the study's coauthors. Not only does it provide more water to the plants' roots, but extra humidity also allows plants to open wider the pores that allow carbon dioxide into their leaves, allowing photosynthesis to proceed more rapidly.

All told, the researchers calculated that increased moisture in the United States during the study interval produced a 14% spurt in plant growth, with the greatest change occurring in the parts of the country that received the biggest increase in rainfall. And the increased plant growth affects not only replanted forests but vegetation of all types, including shrubs, grasses, and long-standing woodlands.

Even proponents of other theories admit, in retrospect, that the Montana researchers have a point. Boston University botanist Ranga B. Myneni, for one, recently co-authored a paper that linked increased forest growth to a different factor, temperature change (*Science*, 31 May, p. 1687). Yet he readily accepts rainfall as an important new variable that must be considered. After all, he says, whatever effect increasing temperatures per se might have on the growing season, plants can benefit only if there's water to support their growth.



Remodeled. Scientists had overlooked the link between precipitation and carbon sequestration.

In addition to encouraging other researchers to restructure their carbon sink models, the new findings might mean that proposals to counteract global warming by planting forests are overly naïve. Planting trees is well and good, Running says, but the trees' effectiveness as carbon sinks will depend on rainfall—which could suddenly reverse its trend and decrease. Perhaps rainfall will continue increasing with global warming, but if that doesn't happen, Running cautions, "we could lose a lot of carbon sink strength very quickly." —RICHARD A. LOVETT

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