

# Science Times

## OBSERVATORY

*Henry Fountain*

### **Promising but With Problems**

As the world produces more of the greenhouse gas carbon dioxide, scientists are looking for ways to get rid of it. The idea is to create a "sink," a means of storing the gas that will sequester it from the atmosphere permanently.

While there are many proposals of how to do this (including underground or ocean storage), perhaps the most promising sink is a natural one, a tree.

The idea is simple: plant large expanses of fast-growing trees, which will take in carbon dioxide and, through photosynthesis, convert it into the tissues that make trunks, branches, leaves and roots.

But trees also use a lot of water and nutrients.

So while they may help solve one problem, they can create others, according to a study in the current issue of the journal *Science*.

The research, by Robert B. Jackson of Duke University and colleagues, combined field data from existing tree plantations around the world and computer modeling to gauge the effect of plantations on stream flows and soil.

The study also looked at whether plantations would have enough of an effect on climate to offset any water-related problems, by producing more rainfall, for example.

The researchers found that by cutting runoff, plantations reduced stream flows within several years of planting, and that the reductions gen-

erally increased with time.

Plantations that were 10 to 20 years old, for example, cut flows annually by more than half. In about 13 percent of cases, streams dried up completely for a year or more. Salinity and acidification of soils increased, as well.

Trees also pump a lot of water vapor into the atmosphere. Modeling the effects of large-scale tree planting on climate revealed, however, that in most areas this would not result in more rain. In some cases, the researchers found, widespread tree plantations could actually result in less rainfall, making the stream-flow problem even worse.