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Thomas Swetnam (left) and Christopher Baisan reconstruct forest fire history at the UA Laboratory of Tree-Ring Research (PHOTO: John Florence)

Plan Fires Timed to La Nina or El Nino, UA Scientist Urges

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The prescription was more burns. But the timing wasn't exactly what the doctors ordered.

In the end, forest managers who adopted prescribed burns as a way to prevent crown-level fires inadvertently ignited explosive wildfires in New Mexico and Arizona.

Fire history expert Thomas Swetnam, director of the University of Arizona Laboratory of Tree-Ring Research, hopes this summer's experience will encourage forest managers to consider the climate prognosis before using such volatile preventive medicine in the future.

Along with the 47,000 acres burned around Los Alamos, N.M., this summer, wildfires had consumed about 6.5 million acres of western U.S. forests as of early September, with some still in flames.

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Swetnam is quick to admit that he was among those recommending prescribed burns to reduce the quantity of small understory trees and dead wood that fuel wildfires. After studying fire

scars in tree cross-sections, he joined the many voices urging a higher fire frequency to nudge some modern-day forests closer to their natural state - one of large trees and grasses but little ground cover or small trees.

On the other hand, he was also among the climatologists, meteorologists and regional fire managers who back in February warned of high fire hazards this summer in the Southwest and Florida. A conclusion of their meeting in Tucson: climatically, it would not be a good year for prescribed burns.



Prescribed fire burning in a giant sequoia grove, Sequoia National Park (PHOTO: Tony Caprio)

"The fire season we're seeing this year is in large part related to a climatic event: a large-scale La Nina," Swetnam explained at a university seminar last week. "We should do more prescribed burning in the Southwest and Southeast during El Nino years, and then build up fire-fighting forces during La Nina years so we can better fight these big conflagrations. Somehow this message hasn't quite gotten down to all management levels."

That might change, as it seems the message recently reached the country's highest echelon. A Sept. 8 "Report to the President in Response to Wildfires of 2000," which cites recent congressional testimony Swetnam gave along with two University of Idaho fire experts, notes the connection between La Nina years and severe drought in much of the United States.

Swetnam's message that fire planning strategies need to be based on climate conditions is recorded in congressional testimony. .

Swetnam's research on fire scars confirmed a link between big fire years and La Nina years in the West - especially when they follow on the heels of El Nino years. El Nino years, such as 1997-98, tend to mean wet winters in the Southwest and Southeast, which allow vegetation to thrive and expand.

When La Nina arrives with its typical desiccating effects, the El Nino brush dries up and turns into tinder. The summer of 2000 represented the second year in a row of La Nina circulation patterns, so it was no real surprise that a match or a bolt of lightning could set forests ablaze for miles around.

Similar regionally dry conditions had forests burning throughout the Southwest in other years, such as 1748 and 1851, as indicated by trees with fire scars. Once a tree has been wounded by fire, it is more susceptible to future burns.

"We can tell to the year and even to the approximate season

when these fires occurred," Swetnam said. "In both the tree-ring record and during the 20th century we're seeing synchronized forest fires at regional to continental scales. The years 1988 and 2000 are the two most recent examples."



Prescribed fire burns ponderosa pine in San Juan National Forest (PHOTO: Jack Dieterich)

However, explosive fires such as this summer's blaze at Los Alamos are rare in most forests. "In many cases, they're blowing off the canopy. These kinds of high-intensity fires are abnormal in ponderosa pine forests," Swetnam said.

Understory vegetation and small trees have been increasing in the nation's dry pine forests since around the turn of the century. Swetnam places much of the blame on grazing animals, noting the ground fires that clear undergrowth but do little damage to large trees require continuous grass cover.

Fire suppression practices of the past century also have increased fuel loads. Small ground fires were natural and relatively frequent events in many forests before the advent of Smokey Bear policies. For instance, Swetnam and other researchers harvested sequoia stumps and found that 2,000-year-old trees contained an average of 65 fire scars per tree.

"It is one of the great paradoxes of fire suppression that the more effective we are at fire suppression, the more fuels accumulate and the more intense the next fire will be," Swetnam and his colleagues stated in their congressional testimony that was cited in the report to President Clinton. "Fires will inevitably occur when we have ignitions in hot, dry, windy conditions."

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