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Study: Rising Suppression Costs Linked to Increased Severity of Fire Seasons

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A new USDA Forest Service study on trends in fire suppression expenditures suggests that the recent increase in firefighting costs can be attributed to more severe fire seasons caused by annual weather patterns.

"Results from this research suggest that the extreme levels of fire suppression expenditures in recent years are largely a result of weather patterns that have increased the severity of fire seasons, not increased inefficiency and waste in fire management," conclude Krista Gebert and Dave Calkin of the Economics Work Unit at the Forest Service's Rocky Mountain Research Station in Missoula, Montana. "Forest Service suppression expenditures are closely related to total area burned, and area burned is largely a function of weather."



New research from the USDA Forest Service Economics Work Unit suggests that fire suppression costs are "highly correlated" to annual weather patterns.

In recent years, congressional legislators and administration officials concerned about the increasing costs of fire suppression have criticized the Forest Service for inefficiency and waste in fire management and called for reforms in the way the agency prepares its budgets for fire suppression.

At a March 2003 hearing of the House Appropriations Interior Subcommittee to discuss the way the Forest Service covers the costs of fighting wildfires, Rep. Norman Dicks (D-WA), a ranking member on the subcommittee, called for a "complete reevaluation" of the agency's approach to funding fire suppression.

Despite such criticism, Calkin said this new study was not conducted to silence the agency's detractors. Instead, he said it was performed in response to requests from legislators seeking more detailed explanations for recent increases in fire suppression costs.

Although the authors don't discount other explanations for the increase in fire suppression expenditures, such as excessive fuel loading caused by decades of successful fire suppression and increased development in the wildlandurban interface, these factors don't explain the substantial increase in acres burned since the late 1980s.

At the request of the Forest Service's Fire and Aviation Management staff, the Economics Work Unit began to explore recent trends in fire suppression costs and how they related to area burned. The unit also collaborated with climatologists from the Mapped Atmosphere-Plant-Soil System project at the agency's Pacific Northwest Research Station to research the relationship between large fires--those of more than 300 acres--and weather patterns during the period of 1970-2000.

The researchers found that, although suppression costs have increased dramatically, the rise in firefighting costs was not caused by increasing costs per acre.

"Suppression expenditures per acre burned did not show an increasing trend," write Gebert and Calkin. "No statistical relationship was found between annual area burned and suppression expenditures per acre."

The real culprit, they say, is the increase in the number of acres burned. As their research shows, suppression costs are "highly correlated" to the number of acres that burn in a given year and that the number of acres burned is closely related to annual weather patterns.

"Simple models using three variables have revealed that the number of acres burned regionally is a function of the drought index of the current and previous year," said Calkin.

Calkin said that research also shows a significant shift in long-term weather patterns that occurred around 1988. This shift, he said, seems to have increased the severity and length of dry and wet periods compared to prior years. Moreover, he said, the shift may also have caused other substantial large-scale changes related to the increased severity of fire seasons.

According to Gebert and Calkin, although such findings suggest that decreased firefighting efficiency is not to blame for increased suppression expenditures, the study's true significance rests in the challenge it presents to policymakers who are putting pressure on the Forest Service to contain costs by cutting expenses.

"The Forest Service and other wildland firefighting agencies have been pushed to adopt cost containment measures under the assumption that if agencies cut expenses, budgets will improve," said Gebert. "The research to back up the assumption that such measures will result in any significant cost savings doesn't currently exist."

Such conclusions, said Calkin, are likely to limit lawmakers' options and force them to make some difficult decisions about fire management.

Cutting expenses could lead to significant cost savings if lawmakers develop the "political will" to let fire managers use all options available to them, he said. That includes letting more fires burn.

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