

Climate and society will determine the future of wildfire in the South

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A new study by U.S. Forest Service scientists and collaborators projects a four percent increase overall in acres burned by wildfire in the Southeast by 2060, but with substantial uncertainties and large variations by state and ecoregion, including a 34 percent increase in acres burned due to lightning-caused fires. The study, just published in the *International Journal of Wildland Fire*, is one of the first to account for land use and other societal changes in making projections of future acres burned by wildfires.

"Wildfire activity in the South is determined by two major factors - climate and society, both of which are changing," said Jeff Prestemon, Forest Service researcher who led the study in collaboration with other scientists from the Forest Service and the University of North Carolina at Chapel Hill. "In making wildfire projections, it's important to account for the role of humans, since they ignite the majority of wildfires and suppress nearly all of them. Land use change - more development and infrastructure - also limits the spread of wildfires by breaking up the fuels that fires need and allowing for faster firefighting responses."

The researchers set out to quantify how wildfire area burned could be altered in the 13 southeastern U.S. states from 2011 to 2060, incorporating climate change models as well as projections of land use, population, and personal income. Their study developed nine alternative views of climate and society that, taken together, provide a more complete picture of the possible futures of wildfire in the region than those previously available.

"The study extends earlier efforts in several ways," said Prestemon. "This is the first study we're aware of that projects future area burned in the southeastern U.S. Our estimates quantify the effects of changing climate and also changes in forests and society. In addition, we address issues of incomplete historical wildfire data that are common in wildfire activity databases in a way that has not been previously applied in wildfire projections."

Scenarios used for the study generally projected rising population numbers and densities, rising incomes, and falling forest area for the region - all of which would tend to lead to less wildfire in the region. At the same time, warming temperatures and erratic precipitation patterns forecast under climate change scenarios tend to favor more wildfire, especially that caused by lightning.

Specifically, the results project that in the Southeast, by 2056-2060, as compared to 2016-2020:

- Median annual area burned by lightning-ignited wildfire increases by 34 percent;
- Human-ignited wildfire decreases by 6 percent; and
- Total wildfire increases by 4 percent.

"Our projections indicate that overall the Southeast would not experience a large increase in annual area burned," said Prestemon. "But considerable uncertainty remains in how [wildfire](#), climate, and society will actually evolve and interact over the coming decades, and our results show ample scope for either increases or decreases. Wildland fire managers and policymakers would do well to plan for either eventuality when considering future costs and concerns such as air quality. Our simulations provide context for the range of possibilities they should consider."

More information: Access the full text of the article at
www.srs.fs.usda.gov/pubs/51075

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