

# Rise in wildfires may significantly degrade air quality, health in the future

January 29 2014

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As the American West, parched by prolonged drought, braces for a season of potentially record-breaking wildfires, new research suggests these events not only pose an immediate threat to people's safety and their homes, but also could take a toll on human health, agriculture and ecosystems. The study, appearing in ACS' journal *Environmental Science & Technology*, could help societies map out a plan to mitigate these effects in wildfire-prone regions.

Matthew D. Hurteau and colleagues point out that wildfires naturally occur in many areas around the globe. In response, human societies have harnessed the power of fire to better control wild blazes and minimize damage. But [climate change](#) also can impact the number and severity of wildfires. Understanding how these factors influence each other is crucial so that people can better prepare for the future and perhaps lessen the effects of the blazes. Previous studies have estimated the effect of climate change and population growth on wildfire patterns and the risk of damage to buildings and homes in California. Hurteau's team wanted to expand on those findings and investigate six possible future climate scenarios.

Using several different models, they estimated that by 2100, emissions from wildfires in California will grow by 19 to 101 percent. They found that climate, not population growth or development, will likely be the driving force behind these increases. However, a rise in wildfires still will mean significant societal challenges, such as higher pollution levels, which can affect human health and aggravate respiratory conditions.

Poor air quality also can lower crop yield, and forest health could suffer.

**More information:** Projected effects of climate and development on California wildfire emissions through 2100, *Environ. Sci. Technol.*, Just Accepted Manuscript, [DOI: 10.1021/es4050133](https://doi.org/10.1021/es4050133)

## Abstract

Changing climatic conditions are influencing large wildfire frequency, a globally widespread disturbance that affects both human and natural systems. Understanding how climate change, population growth, and development patterns will affect the area burned by and emissions from wildfires - and how populations will in turn be exposed to emissions - is critical for climate change adaptation and mitigation planning. We quantified the effects of a range of population growth and development patterns in California on emission projections from large wildfires under six future climate scenarios. Here we show that end-of-century wildfire emissions are projected to increase by 19-101% (median increase 56%) above the baseline period (1961-1990) in California for a medium-high temperature scenario, with the largest emissions increases concentrated in Northern California. In contrast to other measures of wildfire impacts previously studied (e.g., structural loss), projected population growth and development patterns are unlikely to substantially influence the amount of projected statewide wildfire emissions. However, increases in wildfire emissions due to climate change may have detrimental impacts on air quality and—combined with a growing population—may result in increased population exposure to unhealthy air pollutants.

Provided by American Chemical Society

Citation: Rise in wildfires may significantly degrade air quality, health in the future (2014, January 29) retrieved 4 May 2024 from <https://phys.org/news/2014-01-wildfires-significantly->

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