

Study: Wildfires produced up to half of pollution in US West

January 12 2021, by Matthew Brown



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Wildfire smoke accounted for up to half of all health-damaging small particle air pollution in the western U.S. in recent years as warming temperatures fueled more destructive blazes, according to a study released Monday.

Even as [pollution](#) emissions declined from other sources including

vehicle exhaust and power plants, the amount from fires increased sharply, said researchers at Stanford University and the University of California, San Diego.

The findings underscore the growing public health threat posed by [climate change](#) as it contributes to catastrophic wildfires such as those that charred huge areas of California and the Pacific Northwest in 2020. Nationwide, wildfires were the source of up to 25% of small particle pollution in some years, the researchers said.

"From a climate perspective, wildfires should be the first things on our minds for many of us in the U.S.," said Marshall Burke, an associate professor of earth system science at Stanford and lead author of the study.

"Most people do not see sea-level rise. Most people do not ever see hurricanes. Many, many people will see [wildfire](#) smoke from climate change," Burke added. The study was published in the *Proceedings of the National Academy of Sciences*.

The researchers used satellite images of smoke plumes and government air quality data wildfires churn out plumes of smoke thick with microscopic pollution particles that can drift hundreds or even thousands of miles. Driving the explosion in fires in recent years were [warmer temperatures](#), drought and decades of aggressive fire fighting tactics that allowed forest fuels to accumulate.

Air pollution experts say that residents of the West Coast and Northern Rockies in particular should expect major smoke events from wildfires to become more frequent.

There's little doubt air quality regulations helped decrease other sources of pollution even as wildfire smoke increased, said Loretta Mickley, an

atmospheric chemist at Harvard University. But it's difficult to separate how much of the increase in smoke pollution is driven by climate change versus the forest fuel buildup, she added.

Mickley and researchers from Colorado State University also cautioned that fires can vary significantly from year to year because of weather changes, making it hard to identify trends over relatively short periods such as the decade examined in the new study.

An AP analysis of data from government monitoring stations found that at least 38 million people in California, Oregon, Washington, Idaho and Montana were exposed to unhealthy levels of wildfire smoke for at least five days in 2020. Major cities in Oregon suffered the highest pollution levels they had ever recorded.

Smoke particles from those wildfires were blamed for [health problems](#) ranging from difficulty breathing to a projected spike in premature deaths, according to health authorities and researchers.

Fires across the West emitted more than a million tons of particulate pollution in 2012, 2015 and 2017, and almost as much in 2018.

Scientists studying long-term health problems have found correlations between smoke exposure and decreased lung function, weakened immune systems and higher rates of flu.

The new study matches up with previous research documenting the increasing proportion of pollution that comes from wildfire smoke, said Dan Jaffe, a wildfire pollution expert at the University of Washington. Jaffe added that it also raises significant questions about how to better manage forests and the role that prescribed burns might play.

"We have been making tremendous progress on improving pollution in

this country, but at the same time we have this other part of the puzzle that has not been under control," Jaffe said. "We're now at the point where we have to think about how to manage the planet a whole lot more carefully than we've done."

More information: The changing risk and burden of wildfire in the United States, *Proceedings of the National Academy of Sciences* (2021). DOI: [10.1073/pnas.2011048118](https://doi.org/10.1073/pnas.2011048118) , www.pnas.org/content/118/2/e2011048118/

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Citation: Study: Wildfires produced up to half of pollution in US West (2021, January 12) retrieved 20 April 2024 from <https://phys.org/news/2021-01-wildfires-pollution-west.html>

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