

Why Does California Have So Many Wildfires?



By **Kendra Pierre-Louis**

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A pregnant woman went into labor while being evacuated. Videos showed dozens of harrowing drives through fiery landscapes. Pleas appeared on social media seeking the whereabouts of loved ones. Survivors of a mass shooting were forced to flee approaching flames.

This has been California since the Camp Fire broke out early Thursday morning, burning 80 acres per minute and devastating the northern town of Paradise. Later in the day, the Woolsey Fire broke out to the south in Ventura and Los Angeles Counties, prompting the evacuation of all of Malibu.

What is it about California that makes wildfires so catastrophic? There are four key ingredients.

The (changing) climate

The first is California's climate.

“Fire, in some ways, is a very simple thing,” said Park Williams, a bioclimatologist at Columbia University’s Lamont-Doherty Earth Observatory. “As long as stuff is dry enough and there’s a spark, then that stuff will burn.”

California, like much of the West, gets most of its moisture in the fall and winter. Its vegetation then spends much of the summer slowly drying out because of a lack of rainfall and warmer temperatures. That vegetation then serves as kindling for fires.

But while California’s climate has always been fire prone, the link between climate change and bigger fires is inextricable. “Behind the scenes of all of this, you’ve got temperatures that are about two to three degrees Fahrenheit warmer now than they would’ve been without global warming,” Dr. Williams said. That dries out vegetation even more, making it more likely to burn.

California’s fire record dates back to 1932; of the 10 largest fires since then, nine have occurred since 2000, five since 2010 and two this year alone, including the Mendocino Complex Fire, the largest in state history.

“In pretty much every single way, a perfect recipe for fire is just kind of written in California,” Dr. Williams said. “Nature creates the perfect conditions for fire, as long as people are there to start the fires. But then climate change, in a few different ways, seems to also load the dice toward more fire in the future.”

People

Even if the conditions are right for a wildfire, you still need something or someone to ignite it. Sometimes the trigger is nature, like a lightning strike, but more often than not humans are responsible.

“Many of these large fires that you’re seeing in Southern California and impacting the areas where people are living are human-caused,” said Nina S. Oakley, an assistant research professor of atmospheric science at the Desert Research Institute.

Deadly fires in and around Sonoma County last year were started by downed power lines. This year’s Carr Fire, the state’s sixth-largest on record, started when a truck blew out its tire and its rim scraped the pavement, sending out sparks.

“California has a lot of people and a really long dry season,” Dr. Williams said. “People are always creating possible sparks, and as the dry season wears on and stuff is drying out more and more, the chance that a spark comes off a person at the wrong time just goes up. And that’s putting aside arson.”

There’s another way people have contributed to wildfires: in their choices of where to live. People are increasingly moving into areas near forests, known as the urban-wildland interface, that are inclined to burn.

“In Nevada, we have many, many large fires, but typically they’re burning open spaces,” Dr. Oakley said. “They’re not burning through neighborhoods.”



Patients were evacuated from the Feather River Hospital in Paradise, Calif. Justin Sullivan/Getty Images

Fire suppression

It’s counterintuitive, but the United States’ history of suppressing wildfires has actually made present-day wildfires worse.

“For the last century we fought fire, and we did pretty well at it across all of the Western United States,” Dr. Williams said. “And every time we fought a fire successfully, that means that

a bunch of stuff that would have burned didn't burn. And so over the last hundred years we've had an accumulation of plants in a lot of areas.

“And so in a lot of California now when fires start, those fires are burning through places that have a lot more plants to burn than they would have if we had been allowing fires to burn for the last hundred years.”

In recent years, the United States Forest Service has been trying to rectify the previous practice through the use of prescribed or “controlled” burns.

The Santa Ana winds

Each fall, strong gusts known as the Santa Ana winds bring dry air from the Great Basin area of the West into Southern California, said Fengpeng Sun, an assistant professor in the department of geosciences at the University of Missouri-Kansas City.

Dr. Sun is a co-author of a 2015 study that suggests that California has two distinct fire seasons. One, which runs from June through September and is driven by a combination of warmer and drier weather, is the Western fire season that most people think of. Those wildfires tend to be more inland, in higher-elevation forests.

But Dr. Sun and his co-authors also identified a second fire season that runs from October through April and is driven by the Santa Ana winds. Those fires tend to spread three times

faster and burn closer to urban areas, and they were responsible for 80 percent of the economic losses over two decades beginning in 1990.

It's not just that the Santa Ana winds dry out vegetation; they also move embers around, spreading fires.

If the fall rains, which usually begin in October, fail to arrive on time, as they did this year, the winds can make already dry conditions even drier. During an average October, Northern California can get more than two inches of rain, according to Derek Arndt, chief of the monitoring branch at the National Centers for Environmental Information, part of the National Oceanic and Atmospheric Administration. This year, in some places, less than half that amount fell.

“None of these are like, record-breaking, historically dry for October,” Dr. Arndt said. “But they’re all on the dry side of history.”

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