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This data shows just how much faster California wildfires are getting — and why that's so dangerous

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California wildfires are getting faster. A study published Thursday, led by University of Colorado, UC Merced and UCLA scientists, finds a nearly fourfold increase in wildfire growth rates in California over the past two decades.
Fires are moving quicker in California versus other regions in the West, the scientists found. Between 2001 and 2020, wildfire growth rates increased by 249% across the Western U.S. — defined as a group of 11 Western states — but 398% in California alone. Mountainous regions of Southern California were found to have the largest increase in daily wildfire growth rates in the two decade span.

Crystal Kolden, an associate professor of fire science at UC Merced, and an author of the new study, said the fastest fires identified in the study were in grassland-dominated ecosystems, which are abundant throughout California.
"This is the California foothills," Kolden said. "The Coast Range, the foothills of the Sierra Nevada, all through the Central Valley. This is the region where you really have fires being carried by that grass understory."

Sixteen of the 20 fastest-growing fires across the continental U.S. between 2001 and 2020 burned in primarily grassland ecosystems, researchers found.

Prior research has found California wildfires are getting larger, but Kolden and collaborators conclude that speed dictates the severity of fire destruction.

"Fast fires" — defined in the study as wildfires that burn more than 4,003 acres per day — account for nearly 90% of all structures damaged or destroyed by wildfires, the authors report. Kolden noted numerous large California fires in August 2020 were considered fast fires, including the LNU Complex, CZU Complex, SCU Complex and the North Complex.

“Several of these fires occurred in lower elevation, grassland-dominated areas, and they blew up very quickly,” Kolden said. “All of them had substantial structure losses. Both LNU and North (complexes) also had fatalities.”

Although scientists don’t yet know if California weather is becoming windier, statewide fall temperatures have increased on average by about 3.1 degrees since 1896, according to the Environmental Protection Agency.

“That dry period of summer and fall is extending later and later in the year with climate change,” Kolden said. “You have

greater opportunity for downslope winds to overlap on those dry grasses and produce those explosive growth rates."

Those downslope winds, referred to as Diablo and Santa Ana winds in California, push dry, land-based air toward the coast and are synonymous with fall fire weather. Fire risk tends to be further amplified following heat waves and during drought conditions.

Kolden pointed to several other devastating fast-moving wildfires that were driven by downslope winds, including California's 2018 Camp Fire, Colorado's 2021 Marshall Fire and Hawaii's 2023 Lahaina Fire. All of these fires occurred amid strong winds and at least some level of unusually dry or drought conditions.

These quick-moving fires are also fueled by a buildup of flammable vegetation, Kolden said, due to a century of fire suppression.

"That set the stage for rapid growth rates and intense burning, and climate change comes along and lights the fuse essentially," Kolden said.

Many homeowners insurance companies have pulled out of California for fear of being overwhelmed by claims following damaging wildfires. Several wildfire-prone cities across the state have banned or are considering banning vegetation within five feet of homes to reduce fire risk.

"The trend in fire growth rates is just further evidence of how critical it is for anyone living in fire-prone regions to undertake

the type of work that we know will protect homes and communities," Kolden said.

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