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The Caldor Fire burns at the Sierra-at-Tahoe ski resort in Eldorado National Forest. [Noah Berger/AP Photo]

Climate change is making wildfires more frequent, larger, and increasingly intense. It is also changing where they occur. A [new study](#) shows that wildfires in the western United States have been spreading to higher elevations due to warmer and drier conditions. Between 1984 and 2017, wildfires in the West were found to be moving to higher elevations at a rate of 25 feet per year.

Fires are burning higher on mountainsides because areas that used to be too wet are now drier due to warmer temperatures and earlier snowmelt. The study also showed that drier air—which makes vegetation dry out and burn more easily—is moving upward at a rate of about 29 feet each

year. This makes an additional 31,500 square miles (20,000,000 acres) of the mountainous West more vulnerable to fires.



The [map](#) (left) shows where fires have moved upslope since 1984. Shades of yellow, orange, and red show the intensity of the elevation gain by mountain range. Some of the highest changes are here in the Sierra Nevada.

There are important impacts of high-elevation fires. Fires change how snow accumulates and melts, altering the meltwater availability downstream and in reservoirs. That impacts over 60 million people in the western U.S. who rely on these water sources. Fire debris, ash, and chemical retardants can also pollute the water. Much of the [plant life at high altitudes is not fire-adapted](#) and may grow back differently. Streams near high-elevation fires can also become much warmer, threatening native animals and plants that depend on cooler water and air.

Assessing the impacts of the 2021 fires on Lake Tahoe commenced within days of the fires

starting. TERC, as part of the [Tahoe Science Advisory Council](#), is working with research partners to assess the water quality as well as the biological and chemical changes to the lake from the current smoke and ash fallout. In the coming weeks, plans for monitoring winter runoff from the burned sections of the basin will be finalized, along with the plans for assessing the impacts to the forest, meadows, and the ecosystem they support. As a result of this rapid mobilization, from the ashes of a disaster, new information on the impacts of wildfire will emerge.

Our sincerest thanks go to the agencies and organizations who responded so quickly to guarantee of funding necessary for this intensive scientific effort.

And a huge thank you to the entire firefighting and first responder communities whose skill, bravery and extraordinary efforts prevented the impacts of the fires from becoming an even greater tragedy.

Questions? Email tercinfo@ucdavis.edu

