

Widespread wildfire as a proxy for resource strain

March 5 2021, by Kate Wheeling



Massive wildfires like the 2013 Rim Fire, pictured here, in Stanislaus National Forest in California have become more frequent and intense in the western United States in recent years, increasingly challenging fire suppression resources. Credit: [U.S. Forest Service](#)

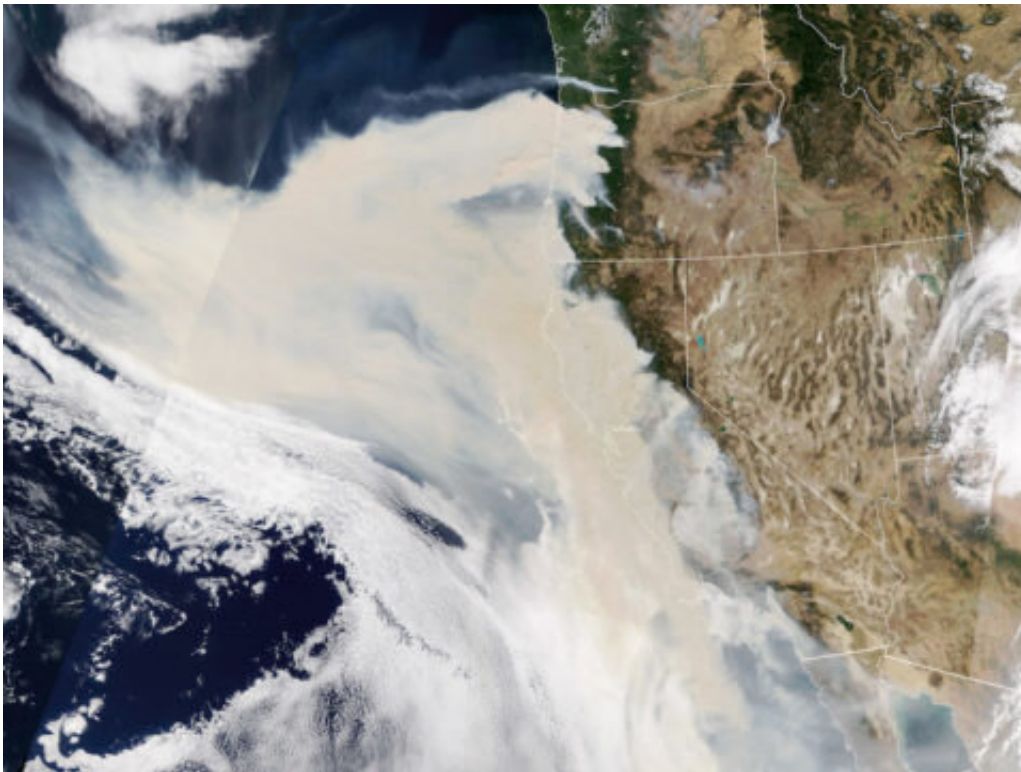
Fire is a natural part of ecosystems in the western United States, but the summer fire season has grown both longer and more intense in recent years. As the size of the area burned across the region has risen year after year, so too has the expense of fire management. Indeed, federal wildfire suppression costs more than tripled between the 1980s and today, from roughly \$245 million per year to \$1.6 billion.

With the region becoming hotter and drier, the risk of synchronous [fire](#) danger overwhelming management resources will continue to grow, according to new research. Abatzoglou et al. looked at decades of data from across forested areas in the western United States, where most of the country's suppression costs are concentrated, to reveal the relationship between the geographical distribution of fire danger conditions and fire suppression resource levels. The team combined data from the National Interagency Coordination Center, which rates national preparedness based on fire suppression resource availability, and fire weather conditions based on the Canadian Forest Fire Danger Rating System's Fire Weather Index (FWI). The authors defined synchronous fire danger as days when at least 40% of forested areas in the western United States experienced moderate FWI extremes.

The team found a [significant relationship](#) between days with widespread fire danger and days with management resources committed across the region, showing that synchronous fire danger could be used as a proxy for fire suppression resource availability. The authors then used [climate models](#) to project synchronous fire danger into the future under both moderate and high greenhouse gas emissions scenarios. There was a 25-day increase in the number of days with synchronous fire danger since 1980, and the authors show that that number could double by 2080.

The study is one of the first to use coincident fires as a proxy for resource strain. This could be a useful tool for fire managers in the future, the researchers say, as understanding how resource availability

interacts with fire conditions to exacerbate or alleviate fire danger is becoming increasingly important with climate change.



Smoke from widespread fire activity across the western United States is seen in this satellite imagery from 9 September 2020. Credit: [NASA Earth Observatory image by Lauren Dauphin using MODIS data from NASA EOSDIS/LANCE and GIBS/Worldview and data from DSCOVR EPIC](#)

More information: John T. Abatzoglou et al. Increasing Synchronous Fire Danger in Forests of the Western United States, *Geophysical Research Letters* (2020). [DOI: 10.1029/2020GL091377](https://doi.org/10.1029/2020GL091377)

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