CO2 COALITION
SCIENCE & POLICY BRIEF

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Reducing the Devastation of California Wildfires

By Jim Steele

On August 24, 2020, The Wall Street Journal printed an article by Ian Lovett "California Wildfires Grow as Responders Brace for More Blazes."[1] Mr. Lovett states that California has dealt with a series of devastating fire seasons in recent years, which scientists say is in large part due to climate change, as hotter temperatures dry out vegetation, making it more likely to burn.

Jim Steele, Director emeritus of San Francisco State's Sierra Nevada Field Campus, responds with a more accurate assessment for the trend in California wildfires and what Californians must do to reduce the damage caused by wildfires.

How do we focus our resources to minimize the devastation caused by California's wildfires? First, we can reduce ignitions. California's deadliest fire, the Camp Fire and California's 2nd largest fire, the Thomas Fire were ignited by faulty powerlines during high wind events. California's sprawling power grid has rapidly expanded since 1970 to accommodate the influx of 20 million people. Accordingly, powerline-ignited fires increased area burnt by five times relative to the previous 20 years.[2]

About the Author

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California's largest fire (Mendocino Complex), its 3rd largest (Cedar Fire), 5th largest (Rim Fire), and 7th largest (Carr Fire[3]), were all ignited by accidents or carelessness. Uncontrollably, more people cause more accidents, suggesting California's wisest course of action requires creating more defensible space.

In contrast, the August 2020 fires, which will likely rank in the top 10 of burned area of California, were all naturally started by an onslaught of dry lighting. This prompted Governor Gavin Newsome to blindly blame climate change, implying we need to focus resources on minimizing CO_2 concentrations

to improve fire safety. But the science doesn't support Newsome's narrative.

Some researchers blame global warming, regardless of increased ignitions. They argue warmer temperatures dry out the vegetation more quickly, so more of California burns. Indeed, warmer drier weather creates a higher fire danger. But fire experts only found that correlation within forests. They found no such correlation along California's central coast where the August 2020 lightning fires have been raging. The experts stated, as California's summer drought proceeds, "grasslands and coastal chaparral are usually already hot, so they are not as sensitive to the extra heat from global warming."[4] And it was grasslands and chaparral the lightning ignited.

More resources must be focused on managing invasive grasses, or California will continue to experience larger fast-moving fires, regardless of climate change. Grasslands and chaparral provide an abundance of insensitive "fine fuels" that dry out within a day. Grasses grow quickly and unless managed provide more fuel for hotter fires. Fine fuels act as kindling that can ignite larger logs in cooler habitat. Invasive grasses increased ground fuels in desert regions, promoting more frequent fires that were once uncommon because the deserts' lacked enough fuel. Along California's coast invasive grasses have likewise usurped areas of shrublands. Furthermore, grasses provide a corridor for grassland fires to spread into chaparral and forests. The greater the abundance of grasses the faster and further fires spread.

Finally does dry lightning increase with climate change? Dry lightning usually occurs when the lower 1000 feet of the atmosphere is warm and dry and is overlain by unstable air at mid-elevation between 1000 and 5000 feet. The greatest occurrence of dry lightning happens in New Mexico and Arizona. Moisture pumped northward from the Gulf of California and Mexico causes mid-elevation air to become unstable and turbulent, generating lightning and precipitation. However, while the lightning reaches the ground the precipitation doesn't, evaporating in the dry desert air. In the Sierra Nevada, dry lightning causes 69% of the lightning fires, peaking in August. But lightning is uncommon along California's coast because the ocean provides a cool marine layer that inhibits convective turbulence.

However, in August 2020 a high-pressure system centered over the Southwest pushed the marine layer offshore. Simultaneously the high-pressure system carried air northward along the California coast, while entraining a seasonally unusual layer of moisture from a decaying tropical storm and setting the stage for dry lightning. Such coastal events are so uncommon and erratic, weather models have great difficulty simulating and predicting them. Thus, it's impossible to attribute coastal dry lightning to climate change and resources would be best spent on fuel management.

Science & Policy Briefs

This series summarizes issues that are addressed in more detail in our White Papers and *Climate Issues in Depth* publications. They are available at www.co2coalition.org.

[1] https://www.wsj.com/articles/california-wildfires-grow-as-responders-brace-for-more-blazes-11598288905
[2] https://lpfw.org/wp-content/uploads/2018/12/2018_Keeley-and-Syphard_Historical-patterns-of-wildfire-ignition-sources-in-California.pdf
[3] https://en.wikipedia.org/wiki/Carr_Fire
[4] https://earthobservatory.nasa.gov/images/145534/rising-global-temperatures-influence-californias-fire-season