Increase in US wildfires has led to increase in co-occurrence of two kinds of air pollution

January 6 2022, by Bob Yirka

Satellite image of wildfire smoke from numerous large fires burning across California spreading across the western U.S. on August 21, 2020, which contributed to 46 million people being simultaneously exposed to high concentrations of multiple harmful air pollutants. Our research shows that wildfires and changing weather patterns are making such widespread harmful air quality episodes larger and more frequent, posing major health risks to the western U.S. population. Credit: Image was generated by Dmitri Kalashnikov using the NASA Fire Information for Resource Management System online data explorer (firms.modaps.eosdis.nasa.gov). Satellite image and wildfire locations are from NASA’s MODIS Terra satellite.
A team of researchers affiliated with a host of institutions in the U.S. has found that an increase in wildfires in western parts of the United States has led to increases in two kinds of air pollutants in areas both near to the fires and far away. In their paper published in the journal *Science Advances*, the group describes their study of fine particulate matter and ozone levels over large parts of the western United States over a 19-year period.

Huge wildfires burning large swaths of forest in the western United States have been making the news for several years. More recently, they have been highlighted for their increasing intensity and frequency, which many have suggested is due to global warming. In this new effort, the researchers noted that forest fires are known to emit large amounts of tiny particulate matter, which has been shown to be a health risk. They also noted that forest fires also produce ozone precursor compounds that often lead to heightened ground-level ozone levels. Ozone is also a health concern. The researchers discovered that few studies have been conducted into the compounding impacts on people of heightened levels of particulate matter or ozone—but those that exist have found that it can have a disproportionate impact on human health. So they sought to determine how often people experience both forms of pollution resulting from large western forest fires.

The work involved dividing most of the western U.S. into 111-kilometer squares and then studying air quality samples for each of them over the period 2001 to 2020. They were able to see that the number of days people in places near to fires and far away from them experienced heightened levels of both particulate matter and ozone levels, which increased as the number of fires increased. They also saw that for some years, air quality was particularly bad due to large numbers of fires. They also noted that over the past two decades, the number of people adversely impacted by the two wildfire pollutants has increased—one day in particular stood out: August 21, 2020, when approximately 46
million people were exposed to heightened levels of both types of pollutants.


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