Major fires an increasing risk as the air gets thirstier, research shows
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The researchers used satellite records of fire activity and a global climate dataset to find the maximum daily VPD for every fire detection—over 30 million records in the last 20 years, including almost one million in Australia.

They then measured the strength of the relationship between VPD and fire activity for different forest types in each continent on earth.

The researchers showed for the first time that in many forests around the world, from temperate eucalypt forests to boreal coniferous forests and tropical rainforests, there is a strong link between fire activity and how thirsty the air is at a daily timescale.

The results show that forest fire is much more likely above a certain threshold in VPD. This threshold was found to differ predictably between forest types, being lower in boreal (predominantly northern European and American coniferous forests) and temperate forests, and higher in Mediterranean, subtropical and tropical forests.

Research lead, Dr. Hamish Clarke from the University of Melbourne FLARE Wildlife Research group, said that all around the world we’re likely to see more of the conditions under which forests dry out and become flammable.

"Some of the biggest areas of concern are the Amazon rainforest and other tropical forests, as well as northern hemisphere temperate and boreal forests," Dr. Clarke said.

Increasing forest fire activity could have major implications for carbon storage and human health via wildfire smoke impacts.

"Without strong climate action, there will be many more days each year—at least 30—when Earth's forests cross over into this critical flammability zone. This means we're likely to see more major
fires, with all the risks that come with them," Dr. Clarke said.

"It is currently estimated that over 330,000 annual deaths globally are attributable to smoke inhalation, a number that could increase notably by the turn of the century, particularly in the most populated areas of east Asia."

Researchers said the presence of reliable links between atmospheric dryness and forest fire risk means that we should be able to develop better fire predictions, at both seasonal and near-term scales.

"This could have significant benefits for those currently trying to fight, manage or coexist with fire," Dr. Clarke said.

**More information:** Hamish Clarke et al, Forest fire threatens global carbon sinks and population centres under rising atmospheric water demand, *Nature Communications* (2022). [DOI: 10.1038/s41467-022-34966-3](https://doi.org/10.1038/s41467-022-34966-3)

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