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## Science



The rainforest is on fire in the Jamanxim Environmental Protection Area near the city of Novo Progresso, Brazil. VICTOR MORIYAMA/GREENPEACE

### **There's no doubt that Brazil's fires are linked to deforestation, scientists say**

By [Herton Escobar](#) Aug. 26, 2019 , 4:45 AM

**SÃO PAULO, BRAZIL**—“Dry weather, wind, and heat”—those were the factors that Brazilian Minister of the Environment Ricardo Salles blamed for the rising number of forest fires in the Amazon [in a recent tweet](#). But scientists in Brazil and elsewhere say there is clear evidence that the spike, which has triggered concerns and anger around the world, is related to a recent rise in deforestation that many say is partly the result of prodevelopment policies of the government of Brazilian President Jair Bolsonaro.

The blazes are surging in a pattern typical of forest clearing, along the edges of the agricultural frontier, says Paulo Artaxo, an atmospheric physicist at the University of São Paulo here. Historical data show the two phenomena are closely linked: Chainsaws lead the way, followed by flames, and then cattle or other forms of development. “There is no doubt that this rise in fire activity is associated with a sharp rise in deforestation,” Artaxo says.

By Saturday, Brazil's National Institute for Space Research (INPE) had counted more than 41,000 fire spots in the Brazilian Amazon so far this year, compared with 22,000 in the same period last year. The [Global Fire Emissions Database project](#), which includes scientists from NASA's Goddard Space Flight Center in Greenbelt, Maryland; the University of California, Irvine; and Vrije University in Amsterdam, sees the same trend, although its numbers are slightly higher. (The main data source for both agencies is the Moderate Resolution Imaging Spectroradiometer, an instrument aboard NASA's Terra and Aqua satellites that detects the location and intensity of fires through a thermal signature. But each agency has its own algorithms to analyze the images and classify the spots.)

This year's number is the highest since 2010, when the Amazon experienced a severe drought, triggered by El Niño and a warming of the North Atlantic. This time, climatic anomalies can't explain the uptick, scientists say. On the contrary: The dry season this year has been very mild. “If we had another drought year now, the situation would be much worse,” says Paulo Moutinho, an ecologist at the Amazon Environmental Research Institute (IPAM), a nongovernmental organization based in Belém, Brazil.

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Instead, the evidence points to deforestation. The 10 municipalities with the highest rate of fire activity—some of which are the size of a small European country—are also the ones with the largest areas of deforestation recorded this year, according to IPAM.

### **It's a perfect storm of fire and deforestation raging through the forest.**

*Paulo Moutinho, Amazon Environmental Research Institute*

After a patch of forest is chopped down and valuable timber removed, developers set fires to clear the field of excessive vegetation. It can take months for the fallen logs to become dry enough to be burned but sooner or later, every patch of forest has to be set ablaze before it can be converted into pastures or farmland.

Not all fires are related to illegal forest clearing, however; flames are also used routinely to clear overgrown pastures, crop residues, and roadside vegetation. But this results in less intense fires. Many of the spots recently detected by the satellites are active for several days, burning with intense heat and producing smoke pillars that are tall and thick—all indicators that huge amounts of biomass are burning. "It's a perfect storm of fire and deforestation raging through the forest," Moutinho says.

Recent data have clearly shown that deforestation in Brazil is on the rise. From January through the end of July, 6800 square kilometers were cleared, according to INPE, 50% more than in the same period last year. But Bolsonaro [called the data "a lie"](#) and had INPE's director, physicist Ricardo Galvão, [fired in early August](#).

Most analysts in Brazil and abroad blame the acceleration on Bolsonaro's aggressive rhetoric and lax forest policies. "None of this is an accident," Artaxo says. "What we are seeing is the result of a series of actions and inactions by the Brazilian government." Brazil now has "clearly the worst anti-environment political climate in my lifetime," Carlos Peres, a Brazilian ecologist at the University of East Anglia in Norwich, U.K., said in a 23 August statement.

The effects are both local and global. Deforestation is the main source of greenhouse gas emissions from Brazil. The smoke from the burning biomass is laced with massive amounts of soot, aerosols, and carbon dioxide that can interfere with weather patterns across the region and contribute to global warming. Studies show the Amazon functions like a giant air conditioner and humidifier for South America, producing and recycling much of the water vapor that flows into the lower parts of the continent.

Bolsonaro's initial response to the crisis was to put the blame on nongovernmental organizations, suggesting—without proof—that they were setting the forest on fire to smear his government. The situation quickly escalated into an international crisis; [Norway and Germany suspended their contributions to the Amazon Fund](#), which supports conservation and sustainable development projects in the region, and French President Emmanuel Macron accused Bolsonaro of lying about his commitment to protect the forest and combat climate change. Yesterday, Macron reportedly said that G-7 leaders, who are currently meeting in France, [are ready to help Brazil to fight the fires](#).



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Facing heavy criticism within Brazil, Bolsonaro summoned an emergency cabinet meeting on 22 August. The next day, he authorized the deployment of troops to help combat the fires and made a 5-minute public address on national TV to profess his “deep love and respect for the Amazon” and promise that his administration would “act strongly” against the blazes.

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