

Climate crisis driving extreme drought in the Amazon River Basin

Mark Wilson
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South America's Amazon River Basin is currently undergoing a severe drought, with water levels in the river lower than they have been in the past 120 years.

An international team of scientists has found that the drought has been massively exacerbated by climate change. This has worldwide implications. As their report states: "The river basin contains the largest rainforest in the world, making it a global hotspot of biodiversity and a key part of the global hydrological and carbon cycle."

The basin spans eight South American countries, including Brazil, Peru, Colombia, Venezuela, Ecuador and Bolivia, as well as the territory of French Guiana. Some 30 million people live in the basin and depend upon it for agriculture and freshwater. With high levels of poverty in the region, they are especially susceptible to serious impacts on their access to food, water, power and livelihoods.

The new study was published by the World Weather Attribution (WWA), which specialises in analysing the causality between climate change and extreme weather events. Although climate change has been linked as a factor in increasing the likelihood and severity of such extreme events, additional research is required to link any specific extreme weather event to climate change. The WWA conducts research for this purpose.

The recent report is titled "Climate change, not El Niño, main driver of exceptional drought in highly vulnerable Amazon River Basin." It shows that climate change has drastically increased the severity of the current drought.

The US Drought Monitor classifies droughts from level 0 to level 4. The report demonstrates that without the effects of climate change the drought would likely have been a level 2 (severe). Instead, the extraordinary levels of dryness, which are almost entirely due to increased global temperatures, have exacerbated this drought to a level 4 (exceptional). This level of severity corresponds to a 1 in 50-year event. The analysis indicates that the drought "would have been extremely rare in a cooler climate."

The report's authors stress that climate change was the primary cause behind the exceptional severity of this

drought, rather than El Niño. El Niño refers to the warm phase of the El Niño-Southern Oscillation cycle and has been associated with droughts in the Amazon basin before. Although El Niño and global warming had the same effect on reducing the amount of precipitation in the region, it was the increase of global temperatures caused by fossil fuel emissions that are almost entirely responsible for the dry conditions that led to this disaster, directly affecting millions of people.

In order to determine the extent to which climate change influenced this drought, the researchers used the methodology associated with the relatively new field of attribution science. This involves collecting decades of observational data on precipitation in the region and constructing models that accurately simulate the historical data. Then the scientists can alter the models to create a baseline for an Earth that had not experienced global warming. The statistical comparison between the two scenarios is used to determine how much more likely an extreme weather event is to occur due to climate change. This methodology has been well tested and peer reviewed. Attribution studies such as this are among the most rapidly expanding branches of climate science.

This exceptionally severe drought in the Amazon basin will have dire consequences on human health, the report notes. Droughts reduce agricultural productivity, significantly driving up food prices and causing deaths from malnutrition. In particular, children who experience malnutrition are more susceptible to infectious diseases.

Transportation has also been impacted, as the low water levels have reduced the amount of goods that can be transported into Brazil via the river by 60 percent. Access to food and medical supplies for people in the basin has been drastically affected.

Countries around the basin heavily rely on the river for energy production via hydropower. Brazil and Colombia rely on hydropower for around 80 percent of their electricity. Dams in Brazil and Venezuela are unable to operate in severe droughts such as this one.

An especially perverse outcome of this crisis is that as hydropower becomes less reliable during climate change driven-droughts, countries such as Peru are turning to fossil fuel sources for their energy needs, further contributing to the climate crisis that caused the problem in the first place.

The impacts of the drought have been worsened due to various practises that have decreased the moisture retention capacity of the land, such as deforestation, fires, and cattle ranching. The far-right Brazilian government of Jair Bolsonaro from 2019–2022 oversaw record levels of Amazon deforestation, due to the dismantling of environmental protection measures. The primary driver of this deforestation was to make room for cattle ranches. Scientists have stated there is clear evidence that this deforestation has been linked to increased forest fires in the Amazon.

The Amazon basin is far from the only region in the world to face threats from climate-induced weather disasters. The WWA has linked a number of other extreme weather events directly to the effects of climate change.

One such event was the 2021 western North American heat wave, which claimed the lives of at least 900 people, and possibly up to 1,400 people. The WWA noted that the event would have been “virtually impossible” without global warming, and went on to warn that “an event like this—currently estimated to occur only once every 1,000 years, would occur roughly every 5 to 10 years in that future world with 2°C of global warming.”

These catastrophes will only be the beginning unless rapid action is taken to mitigate future climate change. Currently the Earth has warmed a little over 1 degree Celsius since pre-industrial times, but more frequent and severe disasters will be observed the more this figure increases.

In the Amazon basin alone, the analysis produced by the WWA estimates that droughts similar in intensity to the one being currently observed will become 3–4 times more frequent than now if global warming reaches 2 degrees Celsius above pre-industrial levels.

Similar impacts will be felt across the rest of the world. The latest Intergovernmental Panel on Climate Change (IPCC) report published in 2022 estimated that between 800 million and 3 billion people around the world are projected to experience water scarcity at 2 degrees of warming.

Droughts, however, are far from the only danger facing humanity in a 2-degree warmed world. Threats from climate change include heat waves, wildfires, floodings, rising sea levels, crop failures, and increased risk of conflict over scarce resources, among others.

A research paper published in 2023 stated that if the world is warmed by 2 or more degrees by the end of the 21st century, it will likely result in roughly 1 billion human

deaths. The authors of that study compared these deaths with involuntary or negligent manslaughter and noted that the impacts would largely be felt by the poorest people in the world due to the actions of a wealthy minority.

These stark warnings published by scientists have gone unheeded by the ruling classes. The 2022 IPCC report stated that limiting global warming to less than 2 degrees Celsius involves “rapid and deep and, in most cases, immediate greenhouse gas emissions reductions in all sectors this decade.” Despite this, a 2022 analysis conducted by Concordia University scientists from Canada found that global climate policies in place would not even limit warming to less than 3 degrees.

Given the presence of thousands of fossil fuel lobbyists at the recent COP28 conference, the link between big fossil fuel companies and governments that are supposedly devoted to mitigate change is as exposed as ever. Oil, coal and gas industries continue to collectively funnel billions of dollars to political parties around the world, which in turn approve fossil fuel projects that continue to pump carbon dioxide into the atmosphere.

Current greenhouse gas emissions are putting Earth on track for a 3-degree Celsius warming, twice as much as the current benchmark regarded as a “point of no return.” Yet, the summit resolution, calling for “transitioning away from fossil fuels” to achieve net zero greenhouse gas emissions by 2050, actually allows every capitalist government to continue to produce and use fossil fuels in whatever manner they please.

The planetary dimension of the disaster in the Amazon basin, divided as it is among 10 states or territories, is another warning sign. It shows the impossibility of combining a scientific approach to resolving global warming with the ongoing existence of capitalism, which means the dominance of the world economy by the drive for private profits and the division of the world into rival nation-states.



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