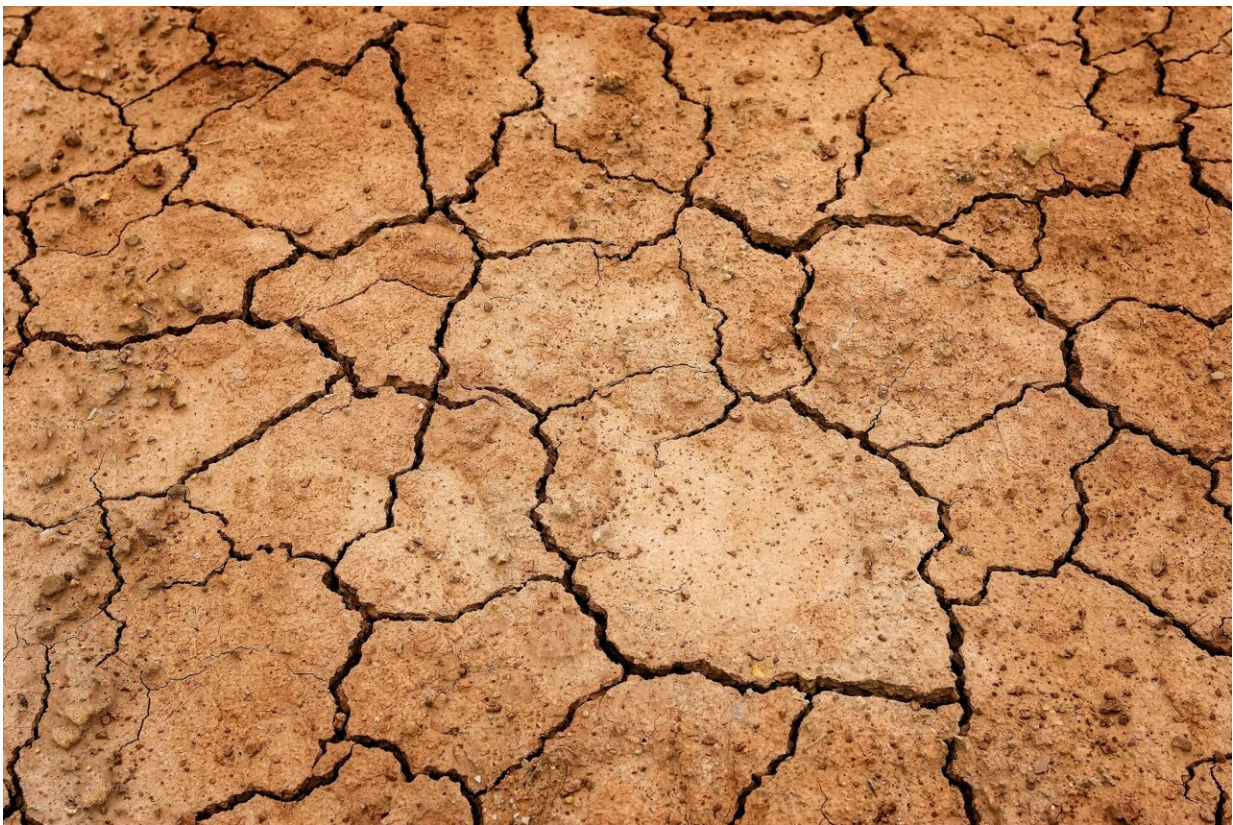


Drought in the Amazon: Understanding the causes and the need for an immediate action plan to save the biome

October 18 2023, by Lucas Ferrante



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The drought plaguing the Amazon is a worrying portrait of the climate challenges facing the world. The combination of [the El Niño](#)

[phenomenon](#) and anthropogenic climate change has played a significant role in accentuating this extreme weather event. The Amazon region, known for its lush rainforest and flowing rivers, is facing a critical situation due to a lack of rainfall and rising temperatures.

This phenomenon, never recorded at this intensity, has affected biodiversity and human life in eight Amazonian states. [The drought](#) has already killed more than 140 dolphins, including pink dolphins and tucuxis, also known as gray dolphins. The mortality of fish and other [aquatic animals](#) is also high.

The low volume of the rivers affects the human supply, causing a lack of drinking water and food in all the small villages, even those located on the banks of the big rivers. Of the 62 municipalities in the state of Amazonas, 42 are in a [state of emergency](#), 18 are in a state of alert and only two are in a normal situation.

The El Niño phenomenon has a direct influence on the Amazon [drought](#). It manifests itself in the abnormal warming of the surface waters of the Pacific Ocean, affecting the rainfall regime in various parts of the world. In the case of the Amazon region, the drought is exacerbated by a decrease in humidity and a lack of rainfall, damaging the vegetation, fauna and [local communities](#) that depend on natural resources.

However, [anthropogenic climate change](#) is making the situation even worse. Rampant [deforestation](#), driven by agricultural expansion and logging activity, reduces the Amazon rainforest's ability to regulate the climate and retain moisture. In addition, the destruction of vast areas of vegetation contributes to rising temperatures, creating a cycle of even more accentuated droughts.

Deforestation and mining, major factors

Deforestation has been particularly devastating in the region of [Highway BR-319](#), in the south of Amazonas state, driven by [land grabbing](#) which has provided cheap land to cattle ranchers from other states. In turn, this deforestation has increased the number of fires that feed back into the climate crisis. When they occur near riverbanks, deforestation also intensifies the [phenomenon known as fallen land](#), which has drastically affected the draft of rivers and is already significantly jeopardizing navigation and logistics, mainly affecting villages in the interior of the Amazon, which are already suffering from shortages.

Another factor that has played a significant role in affecting navigation is mining activity. Disorganized mineral extraction has created banks of land that are harmful to navigation and which, in the critical scenario of drought, have caused many vessels to run aground.

The impact of hydroelectric dams

Hydroelectric dams also play a role in contributing to the drought scenario, [especially on the Madeira River](#). This is mainly due to the decomposition of organic matter in reservoirs created by dams, which releases methane, a potent greenhouse gas, into the atmosphere. In addition, deforestation associated with the construction of dams, as well as soil degradation and erosion resulting from the alteration of aquatic and [terrestrial ecosystems](#), can increase emissions of carbon dioxide (CO₂) and other pollutants, contributing to the impact of hydroelectric dams on climate change.

[The Madeira River, now at its lowest level in almost 60 years](#), has been drastically affected and transformed by the Jirau and Santo Antônio [hydroelectric dams](#). This was due to the drastic alteration of the river's natural flow caused by the damming of water for power generation. When water is dammed, a reservoir is formed that retains part of the water that would normally flow along the river. This diversion of the

flow directly affects the region's aquatic and terrestrial ecosystems, since the basin's hydrological cycle is interrupted. The reduction in the volume of water in the Madeira River, for example, can lead to prolonged periods of drought, affecting not only aquatic fauna and riparian habitats, but also local communities that depend on the river for their livelihoods.

In addition, the construction and operation of hydroelectric dams in the Amazon often involves the clearing of significant areas of forest for the construction of dams and associated infrastructure. Deforestation contributes to a reduction in evapotranspiration, which is a crucial process for water balance in the region. With fewer trees to release water into the atmosphere, the Amazon becomes more susceptible to drought. The combination of these factors results in a significant impact on the region, making hydroelectric dams one of the causes of drought in the Amazon, particularly on the Madeira River, with worrying environmental and social consequences.

What can still be done

In order to combat the extreme drought in the Amazon and its devastating effects, it is essential to adopt strict measures to curb deforestation and illegal mining in the region, and for the [federal government](#) to review major undertakings such as hydroelectric dams and roads, such as the BR-319 motorway.

Many politicians have argued that the road, if paved, could reduce the state's isolation, especially during droughts. However, this is a fallacious argument, because connecting the most isolated municipalities would require hundreds of kilometers of side roads, which would further increase deforestation and aggravate the climate crisis.

In addition, the BR-319 motorway has become a spearhead that cuts

through one of the most conserved blocks of forest, linking the central Amazon, which is still preserved, to the "arc of Amazonian deforestation", a region that concentrates most of the climate anomalies in the entire biome.

Ecosystem on the edge

In a [recent study](#) published in the journal *Conservation Biology*, it was shown that deforestation in the Amazon is already impacting ecosystem services that are essential for Brazil, such as the Amazon's flying rivers. This [scientific data](#) shows that we are already at the threshold of deforestation and environmental degradation tolerated by the Amazon, and more forceful action needs to be taken now.

Part of this responsibility lies now in the hands of President Lula, in reviewing major developments in the Amazon, such as [hydroelectric dams](#) and highways like the BR-319. In addition, it is essential to institute a zero deforestation policy that should begin this year, and not in 2030, when it will be too late. Furthermore, it is crucial that the international community and local governments work together to reduce greenhouse gas emissions and tackle climate change effectively. Only with coordinated and decisive action will we be able to mitigate the impacts of drought in the Amazon and protect this unique ecosystem that plays a vital role in regulating the global climate.

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