THE QUEST TO QUENCH:

Understanding the Atmosphere's Growing Demand for Water

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When working with clay, it is essential to have your workspace configured. You will need your wire cutter, potter's rib, ceramic loop, sponge, and, of course, a bucket of water. As you work the clay, one thing becomes very clear: moisture is necessary. Without the proper amount of water, the clay will become stiff and may even crack or shrink. Clay demands moisture, soaking up every last drop from both your sponge and bucket.

In many ways, our atmosphere behaves similarly. It, too, is thirsty for water. This phenomenon is called Atmospheric Evaporative Demand or AED. It is a measure of how much water the atmosphere demands from the earth's surface — including our soils, rivers, and plants.

What makes AED particularly challenging is that its intensity is rising.

A recent study published in Nature found that as the atmosphere's demand for water increases, droughts globally are seeing an uptick in magnitude, frequency, duration, and size (Gebrechorkos et al., 2025). Over the past 40 years, this growing thirst has made droughts around the world 40% more severe (Tasoff, 2025).

This is unfolding in real time. It is changing how we live, use our resources, grow our food, and prepare

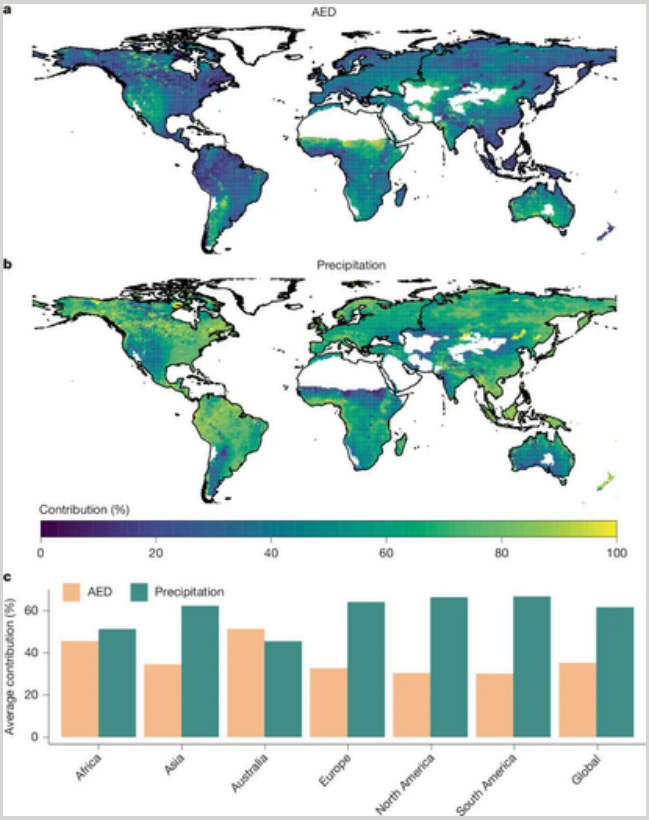

Figure 1. Contributions of Atmospheric Evaporative Demand (AED) and precipitation to 6-month drought and moisture changes (HRSPEI) from 1981–2022, with (a) AED, (b) precipitation, and (c) regional and global average contributions to SPEI changes.

for a resilient future.

So, what is behind this growing atmospheric thirst?

Drumroll, please: our warming planet.

Here is how it works. As global temperatures climb due to climate change, the atmosphere heats up and gains the ability to hold significantly more moisture. This warmer, moisture-hungry air behaves a lot like clay: pulling and absorbing water to ensure its needs are being met. But unlike our pottery workspace, we are unable to easily replenish our source of water.

The more moisture that is drawn from our land, the drier the soil and vegetation become. This not only has serious implications for global food and water security, but recent research is also revealing links between higher AED and the increased frequency and intensity of wildfires (Tasoff, 2025). These fires are fueled by the increasingly dry crops, vegetation, and soils. We are witnessing a dangerous feedback loop: warmer temperatures raise AED, increased AED dries the land, and dry land, in turn, fuels more wildfires and droughts (Gebrechorkos et al., 2025).

As the atmosphere demands more water, the consequences also become both personal and expensive.

Chances are, you will feel the impact most directly on your grocery bill. Producers and farmers are facing declining crop yields as their soils dry out and plants come under increasing stress. This leads directly to higher food prices, affecting everything from fresh vegetables to staple items like bread. These rising costs place added pressure not only on individuals but also on communities.

These pressures do not exist in isolation. They disrupt local and global

Shopper examines fresh produce at Union Square Farmers Market in New York City.

economies and increase the risk of political conflict, especially in vulnerable regions (Tasoff, 2025).

However, there are solutions. We can invest in early warning systems, drought risk management, and anticipatory action — tools that help communities respond proactively rather than reactively to droughts and water shortages (Tasoff, 2025).

One example is the use of micro-irrigation by farmers: a low- flow and pressure system that delivers water directly to a plant's root (Tasoff, 2025). This method significantly reduces water loss from evaporation, runoff, and overwatering.

Another valuable tool is the use of water-retentive soil treatments (Tasoff, 2025). By incorporating organic matter such as compost, manure, or moss into the soil, farmers can improve its structure and enhance its ability to retain moisture. These treatments are especially effective in counteracting the drying effects of increased AED.
Both practices play a critical role in adapting to a thirstier atmosphere — helping to conserve water, protect crops, and sustain food production.

This knowledge is essential as we explore how farmers, cities, ecosystems, and communities can adjust to a world where the atmosphere's demand for water is continually increasing. Together, by understanding and responding to our atmosphere's growing thirst, we can help ensure our collective "bucket of water" stays full for future generations to come.

References

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