Continents are drying at an accelerating rate, severely impacting the supply of fresh water

Philip Guelpa
27 August 2025

Water is essential to life. A newly published study in *ScienceAdvances,* "Unprecedented continental drying, shrinking freshwater availability, and increasing land contributions to sea level rise," (Hrishikesh A. Chandanpurkar et al.) describes a truly alarming trend of freshwater loss across a significant portion of the earth's populated land surface. Using data from the NASA GRACE/GRACE-FO (Gravity Recovery and Climate Experiment and GRACE Follow On), undertaken in partnership with the German Aerospace Center, the researchers identify large continental areas, excluding Greenland and Antarctica, and especially concentrated in the Northern Hemisphere, that are undergoing what they term "mega-drying."

They observe a contradictory situation. While historically wet areas are getting wetter and dry areas drier, the latter process is proceeding faster than the former. They note: "At the same time, the area experiencing drying has increased, while the area experiencing wetting has decreased." Terrestrial water storage (TWS) is being depleted at an accelerating rate. A combination of high-latitude water losses (primarily due to increasing glacial melting), droughts especially in Central America and Europe, and groundwater depletion is responsible for 68 percent of the depletion of TWS in non-glaciated continental regions. Especially concerning is the observation that, since 2002, 75 percent of the human population live in 101 countries experiencing fresh water loss.

In order to provide a sense of the size of the area being affected, the article states that "the continental areas experiencing drying are increasing by about twice the size of the State of California each year."

In an attempt to compensate for decreased rainfall, people in drought-impacted areas are increasing the rate of groundwater pumping, which is depleting the reserves of fresh water stored in underground aquifers. While this may be viewed as a short-term "solution," aquifers are a limited resource. If not replenished by infiltration from rainfall, they eventually will be depleted.

The authors identify some of the impacts of this drying: "The consequences of global groundwater depletion include reduced irrigation water supply and threats to agricultural productivity, reduced capacity for climate adaptation, drought resilience and for growth in desert cities, reduced biodiversity and damage to groundwater dependent ecosystems, decreasing access as water tables fall, and many others."

The effects of an extended drought are already being felt, for example, in the Colorado River basin in the US, where an intense, ongoing conflict is raging between urban and rural water users who are increasingly dependent on drawing water from the river due to intensifying drought, while at the same time the volume of flow in the river is decreasing.

Over the past two decades, the Colorado River basin, which encompasses portions of seven western US states, has lost approximately 10 trillion gallons of water. The authors observe that, "The continued overuse of groundwater, which, in some regions like California, is occurring at an increasing, rather than at sustainable or decreasing rates, undermines regional and global water and food security in ways that are not fully acknowledged around the world."

Another significant impact is the finding that the loss of fresh water from the continents is now making a greater contribution to sea level rise than that from glaciers and ice caps, accelerating the rate of coastal flooding, severely affecting over a billion people, approximately 15 percent of the world's population, who live in coastal areas and are therefore in danger of

being displaced.

The researchers attribute the changes they observe to human-induced climate change, which, if not reversed, will have truly disastrous consequences. In areas of drying, such as the Mediterranean region and California , wildfires are having devastating impacts. Impacts in wet areas, such as Texas and North Africa, are also severe.

The combined effects of growing extremes of flooding and drought plus rapid sea level rise will severely impact billions of people across the globe, leading mass population displacements, with all of the attendant disruptions. Food supplies will be increasingly threatened, affecting not only the lives of those people forced to migrate due to increasingly difficult living conditions but also those in receiving areas will suffer major impacts. The brutal response to climate refugees is already evident in responses by the US and European imperialist powers.

The situation is made even worse by the climate change-denying Trump administration’s directive to terminate NASA’s climate study programs—the very source of the data on which the current research is based.

The authors recommend that, “The expansion of continental drying, the increase in extreme drying, and the implications for shrinking freshwater availability and sea level rise should be of paramount concern to the general public, to resource managers, and to decision-makers around the world.” In fact, the resource managers and decision-makers are doing less than nothing to address this crisis. As the capitalist crisis deepens, the world’s ruling elite is focused on intensifying exploitation of people and resources by any means necessary, no matter the consequences.

The inability of the moribund capitalist system to effectively address climate change and all its myriad devastating consequences poses an existential crisis for humanity. Unless stopped by the working class, this will soon make the planet unlivable for humans.