

One billion people will live in insufferable heat within 50 years – study

theguardian.com/environment/2020/may/05/one-billion-people-will-live-in-insufferable-heat-within-50-years-study

Jonathan Watts

May 5,
2020



The human cost of the climate crisis will hit harder, wider and sooner than previously believed, according to a study that shows a billion people will either be displaced or forced to endure insufferable heat for every additional 1C rise in the global temperature.

In a worst-case scenario of accelerating emissions, areas currently home to a third of the world's population will be as hot as the hottest parts of the Sahara within 50 years, the paper warns. Even in the most optimistic outlook, 1.2 billion people will fall outside the comfortable "climate niche" in which humans have thrived for at least 6,000 years.

The authors of the study said they were "floored" and "blown away" by the findings because they had not expected our species to be so vulnerable.

"The numbers are flabbergasting. I literally did a double take when I first saw them," Tim Lenton, of Exeter University, said. "I've previously studied climate tipping points, which are usually considered apocalyptic. But this hit home harder. This puts the threat in very human terms."

Instead of looking at climate change as a problem of physics or economics, the paper, published in the Proceedings of the National Academy of Sciences, examines how it affects the human habitat.

The vast majority of humanity has always lived in regions where the average annual temperatures are around 6C (43F) to 28C (82F), which is ideal for human health and food production. But this sweet spot is shifting and shrinking as a result of manmade global heating, which drops more people into what the authors describe as "near unliveable" extremes.

Humanity is particularly sensitive because we are concentrated on land – which is warming faster than the oceans – and because most future population growth will be in already hot regions of Africa and Asia. As a result of these demographic factors, the average human will experience a temperature increase of 7.5C when global temperatures reach 3C, which is forecast towards the end of this century.

At that level, about 30% of the world's population would live in extreme heat – defined as an average temperature of 29C (84F). These conditions are extremely rare outside the most scorched parts of the Sahara, but with global heating of 3C they are projected to envelop 1.2 billion people in India, 485 million in Nigeria and more than 100 million in each of Pakistan, Indonesia and Sudan.

This would add enormously to migration pressures and pose challenges to food production systems.

"I think it is fair to say that average temperatures over 29C are unliveable. You'd have to move or adapt. But there are limits to adaptation. If you have enough money and energy, you can use air conditioning and fly in food and then you might be OK. But that is not the case for most people," said one of the lead authors of the study, Prof Marten Scheffer of Wageningen University.

An ecologist by training, Scheffer said the study started as a thought-experiment. He had previously studied the climate distribution of rainforests and savanna and wondered what the result would be if he applied the same methodology to humans. "We know that most creatures' habitats are limited by temperature. For example, penguins are only found in cold water and corals only in warm water. But we did not expect humans to be so sensitive. We think of ourselves as very adaptable because we use clothes, heating and air conditioning. But, in fact, the vast majority of people live – and have always lived – inside a climate niche that is now moving as never before."

We were blown away by the magnitude," he said. "There will be more change in the next 50 years than in the past 6,000 years."

The authors said their findings should spur policymakers to accelerate emission cuts and work together to cope with migration because each degree of warming that can be avoided will save a billion people from falling out of humanity's climate niche.

"Clearly we will need a global approach to safeguard our children against the potentially enormous social tensions the projected change could invoke," another of the authors, Xu Chi of Nanjing University, said.

We've got an announcement ...

... on our progress as an organisation. In service of the escalating climate emergency, we have made an important decision – to renounce fossil fuel advertising, becoming the first major global news organisation to institute an outright ban on taking money from

companies that extract fossil fuels.

In October we outlined our pledge: that the Guardian will give global heating, wildlife extinction and pollution the urgent attention and prominence they demand. This resonated with so many readers around the world. We promise to update you on the steps we take to hold ourselves accountable at this defining point in our lifetimes. With climate misinformation rife, and never more dangerous than now, the Guardian's accurate, authoritative reporting is vital – and we will not stay quiet.

We chose a different approach: to keep Guardian journalism open for all. We don't have a paywall because we believe everyone deserves access to factual information, regardless of where they live or what they can afford to pay.

Our editorial independence means we are free to investigate and challenge inaction by those in power. We will inform our readers about threats to the environment based on scientific facts, not driven by commercial or political interests. And we have made several important changes to our style guide to ensure the language we use accurately reflects the environmental emergency.

The Guardian believes that the problems we face on the climate crisis are systemic and that fundamental societal change is needed. We will keep reporting on the efforts of individuals and communities around the world who are fearlessly taking a stand for future generations and the preservation of human life on earth. We want their stories to inspire hope.