

Limiting global warming could avoid millions of dengue fever cases

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Limiting global warming to 1.5°C could avoid around 3.3 million cases of dengue fever per year in Latin America and the Caribbean alone—according to new research from the University of East Anglia (UEA).

A new report published today in the *Proceedings of the National Academy of Sciences (PNAS)* reveals that limiting [warming](#) to the goal of

the UN Paris Agreement would also stop [dengue](#) spreading to areas where incidence is currently low.

A [global warming](#) trajectory of 3.7°C could lead to an increase of up to 7.5 million additional cases per year by the middle of this century.

Dengue fever is a tropical disease caused by a virus that is spread by mosquitoes, with symptoms including fever, headache, muscle and joint pain. It is endemic to over 100 countries, and infects around 390 million people worldwide each year, with an estimated 54 million cases in Latin America and the Caribbean.

Because the mosquitoes that carry and transmit the virus thrive in warm and humid conditions, it is more commonly found in areas with these weather conditions. There is no specific treatment or vaccine for dengue and in rare cases it can be lethal.

Lead researcher Dr. Felipe Colón-González, from UEA's School of Environmental Sciences and the Tyndall Centre for Climate Change Research, said: "There is growing concern about the potential impacts of climate change on [human health](#). While it is recognised that limiting warming to 1.5°C would have benefits for human health, the magnitude of these benefits remains mostly unquantified.

"This is the first study to show that reductions in warming from 2°C to 1.5°C could have important health benefits."

The Paris Climate Agreement aims to hold global-mean temperature well below 2°C and to pursue efforts to limit it to 1.5°C above preindustrial levels.

The team studied clinical and laboratory confirmed dengue reports in Latin America and used computer models to predict the impacts of

warming under different climate scenarios.

They found that limiting global warming to 2°C could reduce dengue cases by up to 2.8 million cases per year by the end of the century compared to a scenario in which the global temperature rises by 3.7°C.

Limiting warming further to 1.5°C produces an additional drop in cases of up to half a million per year.

Southern Mexico, the Caribbean, northern Ecuador, Colombia, Venezuela and coastal Brazil will be most affected by increases in dengue cases.

Brazil would benefit the most from limiting warming to 1.5°C with up to half a million cases avoided per year by the 2050s and 1.4 million avoided cases per year by 2100.

The team also found that limiting global warming would also limit the expansion of the disease towards areas where incidence is currently low such as Paraguay and northern Argentina.

Co-author Dr. Iain Lake, also from UEA, added: "Understanding and quantifying the impacts of warming on human health is crucial for public health preparedness and response.

"Warming has already reached 1°C above pre-industrial levels, and the current trajectory, if countries meet their international pledges to reduce CO₂, is around 3°C—so clearly a lot more needs to be done to reduce CO₂ and quickly if we are to avoid these impacts."

The research was led by the University of East Anglia, UK, in collaboration with colleagues at Universidade do Estado de Mato Grosso, Brazil.

'Limiting global-mean temperature increase to 1.5-2°C could reduce the incidence and spatial spread of [dengue fever](#) in Latin America' is published in the *Proceedings of the National Academy of Sciences* (PNAS) on Monday, May 28, 2018.

More information: Felipe J. Colón-González et al., "Limiting global-mean temperature increase to 1.5–2 °C could reduce the incidence and spatial spread of dengue fever in Latin America," *PNAS* (2018).

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