

Climate change could drive rise in debilitating disease

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A disease prevalent in developing countries could be spread by the changes in rainfall patterns according to a new study.

Buruli ulcer affects thousands of people every year, mainly in developing countries, and in the worst cases can cause fatality or permanent disability. The devastating bacterial infection starts with an area of swelling that becomes ulcerated, causing painful open wounds and necrosis of the skin. It is unknown how the water-borne disease is transmitted.

The study, published in *Emerging Microbes and Infections*, found a strong link between Buruli ulcer outbreaks in French Guiana, in South America, and changes in complex [rainfall patterns](#), including extreme rainfall events driven by the El Niño Southern Oscillation (ENSO). ENSO refers to warm and cool ocean-atmosphere events that take place off the coast of Western South America – with the study showing that this atmospheric anomaly can affect the spread of disease in this area.

Researchers from Bournemouth University found that outbreaks of Buruli ulcer can be triggered by changes in climate, with rainfall playing a large part in the spread of the disease.

Bournemouth University's Aaron Morris was lead investigator on the research project as a part of his PhD. Aaron said, "Understanding how infection levels respond to climatic factors is hugely important, particularly with poorly understood, emergent diseases such as Buruli

ulcer. These links help us shed light on their ecology and enable us to more accurately predict outbreaks. They are also vital in understanding how [climate change](#) will affect the dynamics and emergence of pathogens in the future."

The research has focussed on the link between biodiversity and the spread of diseases in humans, with field research conducted in French Guiana focussing on Buruli ulcer. Biodiversity is an unpredictable and under-researched driving force in the prevalence and transmission of diseases, and this study shows the link between changing ecosystems and the occurrence of disease.

Bournemouth University experts Demetra Andreou, Rodolphe Gozlan and Hossein Hassani were also instrumental in researching Buruli ulcer.

As a result of the research, it may be possible to predict and prevent future outbreaks of the debilitating infection by predicting future weather patterns in countries that are susceptible to the disease and to fluctuating patterns of [rainfall](#). The research also paves the way for future research into the impact of biodiversity and climate change on the spread of diseases.

More information: *Emerging Microbes and Infections* (2014) 3, e56; [DOI: 10.1038/emi.2014.56](https://doi.org/10.1038/emi.2014.56) , 2014 SSCC. 2222-1751/14

Provided by Bournemouth University

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