

Climate change will make some tropical regions wetter – then dry them out

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Credit: Kozumel

Some parts of South America are projected to get wetter this century due to climate change, but then dry out again after 2100 as patterns of rainfall shift southwards – according to research involving the University of East Anglia

The findings show that climate change could affect certain regions in profoundly different ways as time progresses.

The research, led by the University of Reading, found that certain regions in South America will get considerably wetter as the 21st century

progresses, as the effect of global warming pushes a tropical zone of heavy rain south, towards the equator. This is expected to give northwestern South America, including parts of Venezuela and Columbia, 20-50 per cent more summer rain on average than it currently gets.

But the zone of heavy rain is likely to continue moving south, leaving behind a drier zone after about 100 years. Indeed some model projections suggest that certain regions might get less rain than now. Average temperatures, on the other hand, are expected to get hotter, with serious implications for people in the region, as well as plant and animal life.

This 'wetter, then drier' pattern is likely to present a considerable challenge to planners, farmers, and ecosystems, which may have to deal with a climate shifting in two different directions over time.

Dr Hawkins, from the National Centre for Atmospheric Science (NCAS) at the University of Reading's Department of Meteorology, was lead author of the research, published today in the journal *Nature Climate Change*. He said: "This band of heavier rain will move in a similar way to a weather front – but instead of taking a few hours to pass over, it will take about 100 years."

Co-author Dr Manoj Joshi, from UEA's School of Environmental Sciences, said: "A commonly stated consequence of climate change is that most wet areas will get wetter, while most dry areas will get drier. But as scientists learn more about climate change at regional levels, and over longer timescales, we are finding that the picture is more complicated: the more the world warms, the more the potential there is for surprising changes, with serious consequences for both people and the fragile natural ecosystems that exist in this region."

Dr Hawkins added: "Our findings relate to one region, but the underlying message is likely to be relevant elsewhere in the world. The climate is changing but some regions should not just expect one-way traffic - the climate could be moving from one big change to another as time passes.

"Governments are faced with serious long-term decisions about how to adapt to climate change. For example, should they invest in more flood protection if the climate is going to get wetter? Or do they need to invest in bigger reservoirs, desalination plants or water conservation measures if it is going to get drier? Such projects can cost billions, and governments want to know their money is being invested wisely in the long-term."

Prof David Frame from Victoria University of Wellington, one of the study's co-authors, added: "Generally, economic models of [climate change](#) assume quite simple and constant relationships between rainfall and temperature. This research demonstrates the limits of these assumptions."

'Wetter then drier in some tropical areas' is published in *Nature Climate Change* on July 30.

More information: "Wetter then drier in some tropical areas." Ed Hawkins, Manoj Joshi, Dave Frame. *Nature Climate Change* 4, 646–647 (2014) [DOI: 10.1038/nclimate2299](https://doi.org/10.1038/nclimate2299). Published online 30 July 2014

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