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Slower population growth in hot and dry conditions

Climate change is projected to affect migration patterns, mortality, and fertility in the most vulnerable places in the global tropics. An analysis of population growth and exposure to climate extremes in twenty-nine tropical countries shows that heat and drought lead to altered population distributions but not to depopulation.



Africa, People of Uganda.
Credit: Pixabay

Two fifth of the global population lives in countries of the global tropics¹. The region is particularly vulnerable to climate change, and heat and drought are already reducing agricultural production. Hot and dry spells are probably affecting mortality and fertility, too. These adverse climate conditions will only intensify under future climate change.

Clark Gray from the University of North Carolina at Chapel Hill and Maia Call from the National Socio-Environmental Synthesis Center in the United States examined how decadal temperature and precipitation anomalies influence population growth rates in tropical countries². They used a dataset from IPUMS Terra of the Minnesota Population Center³, a primary source of spatially and temporally harmonized data from around the globe that include population censuses, gridded environmental data sources, and other global social and environmental data. The authors extracted area-level census data and climate data, and they identified 29 tropical or partly tropical countries with three or more rounds of census data available, totaling 117 census rounds between 1970 and 2013.

The unique combination of socio-demographic data in consecutive census rounds with data on exposure to climate extremes in the period between these census rounds shows that a decade of exposure to substantially below-normal precipitation and above-normal temperatures lowers district-level population growth in

the tropical countries of Africa, Asia, and Latin America. The influence of climate anomalies is substantial but does not lead to the depopulation of vulnerable places. Heat and drought most affect regions with denser, more educated populations and higher baseline precipitation rates, where people may have the means to migrate rather than being trapped.

Hot and dry conditions occurred together in <7% of districts analyzed in the study and did not lead to local shrinking populations. Gray and Call find no evidence to support narratives of depopulation and massive outmigration from the vulnerable tropics that are sometimes presented by the popular media.

Martina Grecequet✉

✉email: martina.grecequet@nature.com

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