



Environmental Health Perspectives is pleased to present this abstract on behalf of the International Society for Environmental Epidemiology (ISEE). This abstract was presented at an [ISEE annual meeting](#) and has not been peer reviewed.

Epidemiological assessment of the relationships between climate, crop production and food security in Malawi



Rebecca Parrish, Tim Colbourn, and Ariana Zeka

Abstract

Background and aim: Malawi's agricultural economy relies on the yearly rains to support crop growth and national food availability. Climate change threatens food security, and risks undermining development initiatives for agriculture and population health. The study aim was to identify and quantify key relationships between climate, crop production and food security indicators, and identify areas for future data collection and research. Methods: Based on a conceptual model of the relationships between climate change, crop yields, food security and other contextual determinants (socioeconomic, demographic variables) we informed a set of multiple linear and logistic regression models for a number of system compartments. Models examined intra- and inter-district variability and quantified the impacts of various predictors upon metrics of crop yields, and food security across 32 districts in Malawi. Crop yields were examined using total mass produced, whilst food security was explored using proxies for both food availability and utility: self-reported hunger, number of meals consumed and childhood anthropometric measurements. Results: Climate-related variables of maximum monthly rainfall, soil moisture and Palmer Drought Severity Index (PDSI) showed only a modest impact upon crop production and almost no association with indicators of food security, in any district. Relationships with both crop production and food security were strongest for sociodemographic predictors including gender and migration status of the household head, household wealth and farm size. Being female or being a migrant demonstrated a strong

negative relationship with both crop production and food insecurity. Conclusions: The impacts of climate upon Malawian smallholder farmers are complex. Quantifying the relationships are also dependent upon the metric of choice used to describe food security. Data paucity is a key limitation and better data is required to improve understanding and granularity of the impacts of climate change. Key words: climate change, crop yields, Malawi, regression modelling, food security, child anthropometrics

In keeping with our ongoing commitment to authors and readers, EHP is proud to be a Diamond Open Access publication.

The Diamond model is a relatively new addition to the spectrum of open access options. However, EHP has been a proponent of its principles since 2004, when we first began providing our content free of charge.

Under the Diamond Open Access model, all content published on the EHP website may be accessed and downloaded for free, with no restrictions. In addition, authors pay no fees for submission, processing, or color figures.

But these are just a few of the ways that authors benefit from Diamond Open Access publishing. Publishing in an OA journal can provide heightened visibility and exposure for authors. It offers enhanced sharing capabilities. And it provides ready access to important findings from anywhere in the world.



[Contact Us](#) | [Email Alert](#)



[Privacy Policy](#) | [HHS Vulnerability Disclosure Policy](#) | Environmental Health Perspectives, 111 TW Alexander Drive, Durham, NC 27713