Migration and Climate Change in Brazil

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Abstract

Migration out of agricultural regions is well documented in response to climate shocks and urbanization. In Brazil, the rural population has decreased 34% compared to the OECD average of 24% over the past two decades (World Bank 2024). As climate conditions harshen for farmers, experts across social science disciplines anticipate population shifts out of rural regions. As a major global exporter of agricultural products, reorganization of Brazil's agricultural industry has implications not only for rural localities, but for agricultural importers. To accompany the body of work identifying migration responses to climate shocks, this paper will aim to leverage precise mobile device derived movement data in Brazil and both remote sensed and administrative agricultural data over more than a decade to measure rural out-migration in response to both the gradual depletion of agricultural suitability and the incidence and frequency of negative climate events. Further, using highly granular 30 meter satellite imagery dating back to 2013, the project will model predictors of out-migration such as switches in agricultural inputs, crop type, and travel to agricultural markets. With these dual approaches, this project aims to lay a foundation for real-time empirical models forecasting population movements as climate change progresses. These models may inform the distribution of aid and implementation of social services over the coming climate crisis.