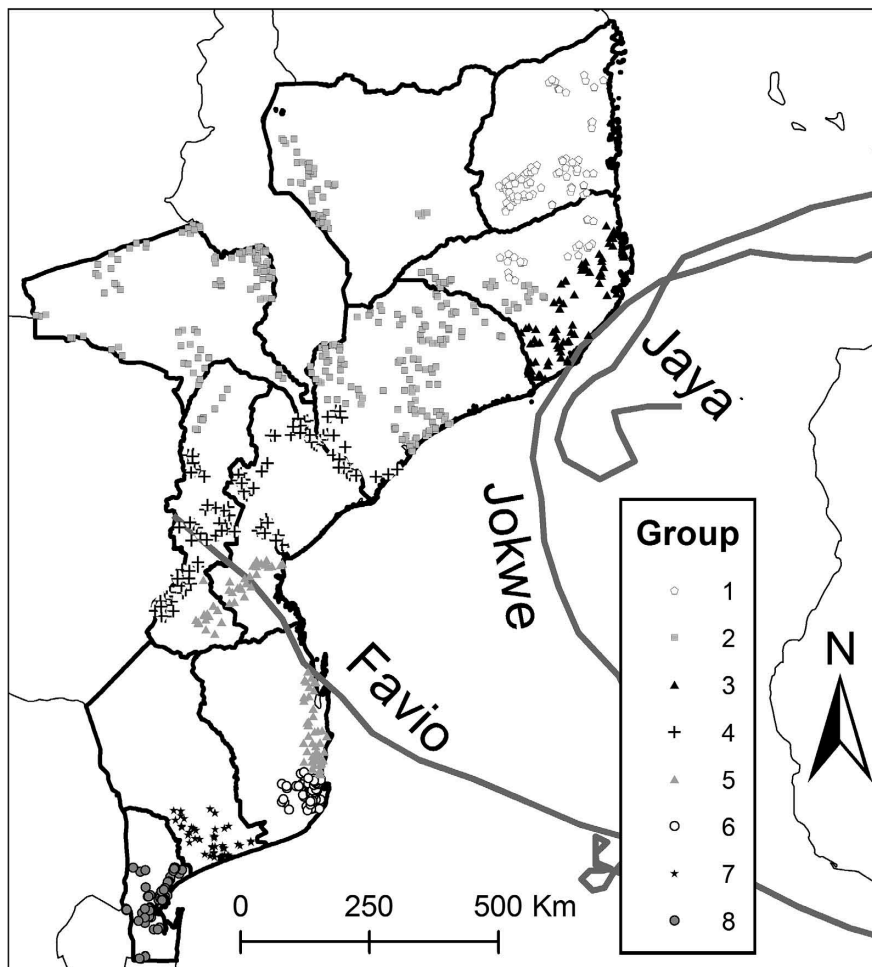


RAINFALL AND PATTERNS OF INCOME FOR FARMERS IN MOZAMBIQUE

CORENE MATYAS



Dr. Julie Silva (University of Maryland) and I continue to explore how rainfall variability and extreme rainfall events may be related to changes in income for rural subsistence farmers across Mozambique. Our collaboration has been extended to include Dr. Benedito Cunguara, a Research Associate in Agricultural, Food, and Resource Economics (Michigan State University) who currently lives and works in Maputo.

Together, we have explored relationships between rainfall patterns, agriculture, and income occurring between national surveys of socio-economic data in 2002, 2005, 2008, and 2012. In our

recent submission to *Applied Geography*, we examined how extreme weather in the context of on-going economic shocks influence regional inequality and polarization within Mozambique. We utilized rainfall estimates detected by satellites to develop a monthly rainfall climatology over 1998-2013 and determined the percentage of normal rainfall received at each village in each study month of the growing season. We sectioned Mozambique into rainfall regions based on being impacted by tropical cyclones, floods from non-tropical cyclone rainfall, rainfall deficits, and the receipt of relatively normal rainfall. We then relate these weather patterns to changes in inequality and polarization

conducting decomposition analyses of the Gini index and Duclos-Esteban-Ray (DER) polarization index. Contrary to generally accepted view that weather shocks exacerbate existing income and power disparities within societies, we find evidence that inequality and polarization can decline in the aftermath of an extreme event, and increase even where the weather is relatively good. By identifying varying effects of extreme events on inequality and polarization at subnational level, our study enables a more detailed understanding of weather-related effects on socio-economic outcomes in rural societies rapidly integrating into the global economy.

In 2014, Dr. Silva and I had a paper published in the journal *Weather, Climate, and Society*: "Relating rainfall patterns to agricultural income: Implications for rural development in Mozambique." The paper "Regional Inequality and Polarization in the Context of Concurrent Weather and Economic Shocks: The Case of Mozambique" by Silva, Matyas, and Cunguara is currently in revision. I am serving as a named collaborator on a research grant funded by the National Science Foundation: Inside the Charcoal Trade: Investigating the Dynamic Intersections between Economic Development, Urbanization, and Forest Degradation in Mozambique. The PI is Dr. Silva and the Co-PI is Fernando Sedano, a Research Assistant Professor at the University of Maryland. Our other collaborators are Dr. Zacarias Ombe, Susana Baule, and Cardoso Meque from Universidade Pedagógica; Natasha Ribeiro of Eduardo Mondlane University; Dr George Hurtt from the University of Maryland; and Michael L. Lahr of Rutgers University.

Corene Matyas is associate professor of geography.