

TITLE

The role of environmental and climate factors on migration in Ghana, 1985-2014

ABSTRACT (200 words)

A common perception exists that West-African migration is predominately driven by environmental stress, conflict, and economic factors. However, it remains difficult to directly tie large-scale migration with slow-onset climatic processes. To bridge this gap, our research focuses on the temporal and spatial changes of migration and contextual factors in Ghana. Net-migration estimates, temperature, precipitation, conflict, and artisanal (small scale company) gold-mining datasets were harmonized at high-resolution, to model environmental migration drivers, from 1985 to 2014, by 5-year interval. We adopt a three-step approach. First, we apply the geographic weighted regression to explore how factors interact as part of the spatial system; second, we adopt the multiscale geographic weighted regression to investigate the local incidence of each variable. Finally, we validate results using the machine learning approach (geographically weighted random forest). We argue the complementarity of the three methods to explain variability of net migration at local level, by assessing the goodness-of-fitting measures of each model. Results reveal the important role played by environmental and contextual factors (such as the maximum temperature, artisanal-gold-mining, and mean length of consecutive wet and dry days) in the interplays with migration. Nevertheless, their significance as drivers of migration varies across Ghanaian territories and over time.

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