Impact of vegetation variability on human security

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Outline[1]

The impacts of climate change on society will be experienced both through changes in mean conditions over long time periods and through increases in extreme events. In drylands, changes in climate, along with anthropogenic pressures, impact vegetation productivity and related ecosystem services on which human security relies. However, uncertainties remain on how changes in ecosystem productivity influence human security. Most studies analyzing the relationship between human security and climate are at the country level, ignoring fine-grained spatial heterogeneity in local climatic and socio-economic conditions. Here, we used detailed spatio-temporal information extracted from wide-swath satellite data (MODIS) to examine the impact of ecosystem changes on malnutrition and armed conflict in the Horn of Africa. The analysis was performed at a subnational and village scales. It estimated the influence of ecosystem productivity and variability, land degradation, economic activity and accessibility on the occurrence of conflict and malnutrition. Results suggested that, in the Horn of Africa, increased levels of malnutrition were related to armed conflicts. At the regional level, ecosystem variability was associated with malnutrition. This relationship was not statistically significant at the village level. At both levels of analysis, our results indicated that armed conflicts were more likely in regions with more vegetation. They also showed the importance, in low-income countries, of local economic activity and accessibility to reduce the likelihood of famines malnutrition and insecurity.

[1]see: Pedram Rowhani, Olivier Degomme, Debarati Guha-Sapir and Eric F. Lambin (submitted). Climate variability, malnutrition and conflict in the Horn of Africa. *Annals of the Association of American Geographers.*

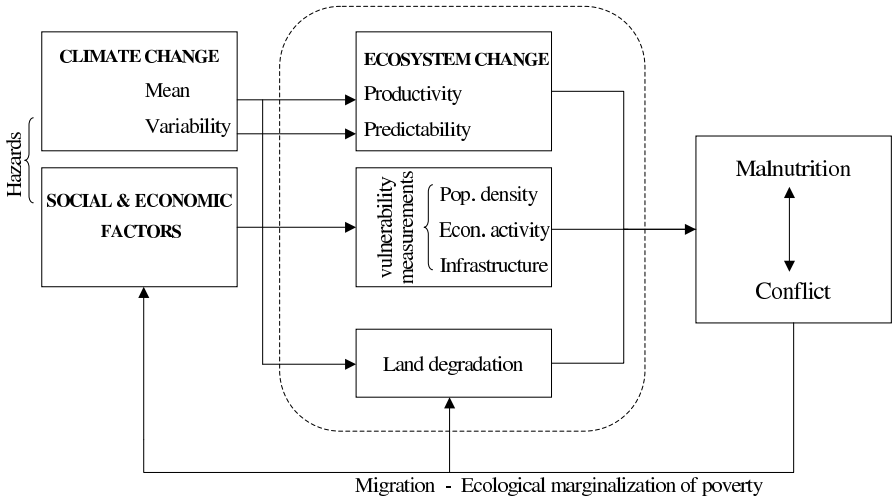

Figure 1: Factors likely to influence human security in the Horn of Africa.