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Linking weather, remotely sensed household food production to child under nutrition at the household level - An exploratory study from a subsistence farming village in Burkina Faso

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Worldwide chronic malnutrition counts an estimated 159 million children, meaning that approximately 23.8% of all children under five worldwide are stunted. The proportion of stunted children decreased worldwide between 1990 (39.6%) and 2014 (23.8%), but the African continent only reduced stunting by a quarter (24.0%). Furthermore, the absolute number of stunted children in Africa increased in the same time period, from 47 million, to 58 million. Under-nutrition is known to be caused by a complex web of environmental, agricultural, and socio-economic factors; furthermore climate change has been imputed as a major new risk factor for childhood under-nutrition. However, the scientific evidence base is weak. In this exploratory study, we combined well-tested survey and anthropometric methods, with innovative ones such as participatory mapping of fields, and remote sensing applied to quantify crop yields at the plot level. This was linked to the nutritional status of children from the respective households. Furthermore, weather data were obtained via a research meteorological field station. The results of the study are the following: High-resolution Remote Sensing and RapidEye data can assist studies on malnutrition in Burkina Faso at the micro-field level. The strong inter-annual variation of malnutrition is suggestive of climate as cause in the absence of other explanatory factors. We tentatively identified two drought-adaptation strategies farmers used: intercropping and genetically modified crops. We also corroborated that malnutrition was not recognized as an illness requiring medical treatment in poor farming communities. And lastly, we suggest that studies replicating this multi-sectoral toolbox be up-scaled to larger samples and longer time series. Such up-scaled studies have the potential to generate crucial climate- malnutrition functions.

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