Flood Impacts on Human Health in Rural Vietnam and Thailand

Tu Thi Ngoc Le
University of Göttingen
tle1@gwgd.de

Sebastian Vollmer
University of Göttingen

Background

The frequency and severity of flooding in Southeast Asia have increased over the past several decades. Flooding is a prominent issue that is currently affecting many regions in Southeast Asia, in particular, Thailand, Vietnam, Cambodia, Laos, the Philippines, and areas surrounding the Mekong River. Harmful impacts of floods include direct mortality and morbidity infectious diseases and indirect displacement and widespread damage to crops, infrastructure, and property.

Methods

This research uses a rich data set collected within the framework of the project \"Vulnerability in Southeast Asia\", sponsored by the German Research Foundation. In order to obtain flood indicators, we collect the daily satellite MODIS Flood Water images (MFW) provided by NASA, product version 4.9. We reconstruct the flooded areas using Geographical Information Systems (GIS) and using Google Earth to draw neighborhoods of villages. Then we treat satellite images as a daily measure of flood water coverage in our villages, afterward match them with a panel of rural households (2008-2010) in 6 provinces in Thailand and Vietnam to analyze how floods impact on the human population, in terms of health, household income and expenditure, agriculture production, and demographic changing. In this manuscript, we focus on the impacts of floods on Human Health. We also explore the impacts of flood on household total expenditure, health expenditure, and food expenditure to link with the results from health analysis

Furthermore, whether a household suffers a health shock is likely to be related to both its shock prevention strategies toward such a shock ex-ante, for instance, insurance mechanism, as well as its ability to cope with the shock ex-post such as household assets or social network for help. In order to classify this argument, we put coping strategies into analysis.

Preliminary Results

The results suggest that people face an increased probability of diseases if they are living in more affected villages. Households with less access to coping mechanisms seem more affected. Flood also cause financial burden for households with some increased expenditures including health

expenditure

Discussions

This study contributes to the existing literature in two main ways. First, we construct an external data on local flood maps obtained from satellite observations to measure flood, which has an advantage of highly precise and objective geographical satellite data. Second, we analyze the effects of the flood on health outcomes by analyzing different aspects of impacts on the household level, which gives us a more general view of flood impacts, as well as helps us explain the findings more precisely. In comparing with previous studies particularly those based on health impacts, this study is one of very first study using satellite data for measuring floods. Most studies focus on big flood events but they did not really measure floods The difference in this study is that Health data is collected in general concept, not referred directly to flood impacts. This may help to avoid the subjective exaggerating the impacts, but also could lead to inaccuracies from lack of recall due to time elapsed, lack of understanding of the symptoms and responses of other household members, and the impact of intervening events Even though we use 3-days composite product MFW which is considered as the best limits cloud-shadow issues, we still have a missing problem with flood data. And MFW only indicate where water has been detected, but cannot measure the depth of water These limitations could lead to underestimating the impact of floods on diseases and somewhat different with expectation, however, clearly that people living in more flooded areas are more likely to get some kind of diseases than people in less affected areas. Household spend more for health care if they living in more frequent flooding villages