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ASSESSING THE IMPACTS OF EXTREME FLOODS ON AGRICULTURE IN VIETNAM: QUANG NAM CASE STUDY

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Vũ Ngọc Châu

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Abstract

Vietnam is situated within the tropical monsoon and typhoon zone of South-East Asia and is susceptible to extreme flood events. Since the most productive agricultural land is concentrated along the low-lying river systems, losses to agriculture resulting from extreme flooding can be significant. More than 70% of the country's population live in rural areas, many in flood prone zones, and depend upon subsistence agriculture. However, to date, there have only been a limited number of studies addressing the impact of extreme flood events on agriculture in Vietnam.

Using the Quang Nam province of central Vietnam as a case study, geographic information systems and digital elevation modeling are used to create geo-spatial inundation maps of flooded agricultural land. The mapped areas are populated with agricultural land use data and the direct costs of agricultural flood damage are calculated. Additionally, the institutional and legislative framework of Vietnam is assessed to determine whether there may be ways of streamlining systems and institutions to improve responses to extreme flooding events.

This study shows that 1:10, 1:20 and 1:100-year flood events result in inundation levels of 27%, 31% and 33% of arable land respectively. The direct crop damage incurred in the inundated regions, expressed as a percentage of total value, are 12%, 56% and 62% respectively. The study also offers recommendations to improve flood management strategies.

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This research journey was a challenging experience for me. I received my education from a passive learning system where students are told to do what their teachers require. However, in New Zealand, I was required to identify problems and I was responsible for solving problems under the guidance of my supervisors. At beginning, it was broad and I was so nervous. I read not only the literature on my research area, but also consulting the media for any pieces of information they broadcasted. I desired to contribute to natural disaster management in some way and to obtain skills that will enable me to assist with the issues facing my country both today and in the future.

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Abbreviations

ADB	Asian Development Bank
B/C	Benefit-cost ratio
CBA	Cost-Benefit Analysis
CCFSC	Central Committee for Flood and Storm Control
CCFSCSR	Commune Committee for Flood and Storm Control and Search and Rescue
CRED	Centre for Research on the Epidemiology of Disasters
DARD	Provincial Department of Agriculture and Rural Development
DCFSCSR	District Committee for Flood and Storm Control and Search and Rescue
DEM	Digital Elevation Model
DMC	Disaster Management Centre
DMFSC	Dyke Management and Flood and Storm Control Department
DOF	Provincial Department of Finance
DONRE	Department of Natural Resources and Environment
DPI	Provincial Department of Planning and Investment
EVN	Vietnam Electricity
GDP	Gross Domestic Product
GIS	Geographic Information System
GSO	General Statistical Office
IDW	Inverse Distance Weighting
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
LNDPM	Law on Natural Disaster Prevention and Mitigation
MARD	Ministry of Agriculture and Rural Development

MOD	Ministry of Defence
MOF	Ministry of Finance
MONRE	Ministry of Natural Resources and Environment
MPI	Ministry of Planning and Investment
NCSR	National Committee for Search and Rescue
OOG	Office of Government
PC	People's Committee
PCFSCSR	Provincial Committee for Flood and Storm Control and Search and Rescue
pers.comm	Personal communication
UNDP	United Nations Development Programme
VND	Vietnam Dong (Vietnamese currency)

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