

**Juhar Mohammed**

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**Land Use/Land Cover Changes, Driving Forces and Their  
Implications on Climate Variability: The Case of Kereba  
Sub-Catchment of Awash Basin, Eastern Ethiopia**

**Abstract**

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**Bibliographic information published by the German National Library:**

The German National Library lists this publication in the National Bibliography; detailed bibliographic data are available on the Internet at <http://dnb.dnb.de> .

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**Imprint:**

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ISBN:

**This book at GRIN:**

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**LAND USE/LAND COVER CHANGES, DRIVING FORCES AND THEIR  
IMPLICATIONS ON CLIMATE VARIABILITY: THE CASE OF  
KEREBA SUB-CATCHMENT OF AWASH BASIN,  
EASTERN ETHIOPIA**

**M.A THESIS**

**JUHAR MOHAMMED ABDULA**

**FEBRUARY 2021**

**HARAMAYA UNIVERSITY, HARAMAYA**

**Land Use/Land Cover Changes, Driving Forces and Their Implications on  
Climate Variability: The Case of Kereba Sub-Catchment of Awash Basin,  
Eastern Ethiopia**

**A Thesis Submitted to School of Geography and Environmental Studies,  
Postgraduate Program Directorate  
HARAMAYA UNIVERSITY**

**In Partial Fulfillment of the Requirements for the Degree of MASTER OF  
ARTS IN CLIMATE CHANGE AND DISASTER RISK MANAGEMENT**

**Juhar Mohammed Abdula**

**February 2021  
Haramaya University, Haramaya**

## **DEDICATION**

This thesis is heartily dedicated to my beloved wife Ashrefa Adem Musa, and my children Hayu and Sebaif for their moral support and encouragement during my work at Haramaya University.



## **BIOGRAPHICAL SKETCH**

The author, Juhar Mohammed Abdula, was born on 12 April 1989 in Bekalcha Biftu Village, Doba District, West Hararghe Zone, and Oromia National Regional State, Ethiopia. He attended primary education at Uta and Sodoma Elementary school, Secondary and preparatory education at Hirna secondary and preparatory school from 1996-2008.

Following the completion of my preparatory school education, he joined Haramaya University in October 2008 to pursue tertiary education and graduated with the degree of Bachelor of Science (BSc) in Rural Development and Agricultural Extension (RDAE) in July 2010. Upon graduation, he worked for two years as an agricultural development expert in the agricultural office and three years as advisor of communication office of Doba District West Hararghe Zone, Oromia National Regional State, Ethiopia.

Moreover, under the structure of the Oromo Democratic Organization Office of the west Hararghe zone, he worked for three years as advisor of the financial and development office of the zone. After this, he joined Postgraduate Studies of Haramaya University in 2018 to attend an M.A degree in the School of Geography and Environmental Studies specializing in Climate Change and Disaster risk Management.

## **ACKNOWLEDGMENTS**

It is difficult to acknowledge all people and institutions that have supported and encouraged me from the beginning of the class up to the end during this M.A study at Haramaya University, but the following ought to have a special mention.

First and foremost I am greatly indebted to Solomon Tekalign (PhD), my major advisor, for his professional support and due concerns from the start of designing the research proposal up to the thesis write-up. My genuine gratitude also goes to my co-advisor Solomon Asfaw (PhD) for his invaluable support and critical comments on the accomplishment of this thesis. Frankly speaking, without them many improvements in this research work could not have been possible. Besides, I would like to thank the member of the school of Geography and Environmental Studies at Haramaya University for their support and cooperation.

Similarly, the assistance from Mr. Sultan Mohammed was so much that without his support, the GIS-related works could not have completed on time. He devoted much of his invaluable time to help me to finalize this work. Much so, my acknowledgment goes to the Oromia National Regional State for providing the sponsorship and granting a research fund for my research work. Moreover, it would be a mistake not to mention the role of the sample farmers in this study who kindly spared their time and effort and responded tirelessly to the lengthy process of the discussion and interview.

Last but not the least, my great appreciation goes to my beloved wife Ashrefa Adem, my entire family, and all my intimate friends specifically Hilina Meka, Abdurehman Ubeybi, and Amadin Kemal. They have a special place in my mind for their endless moral support and cooperation to accomplish this course of MA study at Haramaya University.

## ACRONYMS AND ABBREVIATIONS

CSA	Central Statistics Agency
CV	Coefficient of Variation
DEM	Digital Elevation Model
EFAP	Ethiopian Forestry Action Program
EMA	Ethiopian Mapping Agency
ERDAS	Earth Resource Data Analysis System
ESRI	Environmental Systems Research Institute
ETM+	Enhanced Thematic Mapper Plus
FAO	Food and Agricultural Organization
FDRE	Federal Democratic Republic of Ethiopia
FGD	Focus Group Discussion
GCP	Ground Control Point
GPS	Global Positioning System
IDW	Inverse Distance Weighting
IPCC	Intergovernmental Panel on Climate Change
ITCZ	Intertropical Convergence Zone
KII	Key Informant Interview
LST	Land Surface Temperature
LU/LC	Land Use Land Cover
LULCC	Land-Use and Land Cover Change
MLC	Maximum Likelihood Classification
MSS	Multi-Sensor Scanner
NDVI	Normalized Difference Vegetation Index
NMSA	National Meteorological Survey Agency
OLI/TIRS	Operational Land Imagery/Thermal Infrared Sensor
PCI	Precipitation Concentration Index
RC	Rainfall Concentration
TM	Thematic Mapper
UNEP	United Nations Environmental Protection
USGS	United State Geological Survey
UTM	Universal Transverse Mercator
WGS	World Geodetic System
WMO	World Meteorological Organization

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