

**CLIMATOLOGY OF LIGHTNING OVER TORORO-  
UGANDA DERIVED FROM TRANS AFRICAN HYDRO  
METEOROLOGICAL OBSERVATORY(TAHMO)**

**BY**

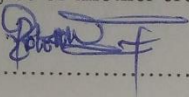
**BYOMUGABI HEEZI**

**BU/UG/2019/0057**

**A RESEARCH REPORT SUBMITTED TO THE  
DEPARTMENT OF PHYSICS IN PARTIAL FULFILMENT  
OF THE REQUIREMENT TO THE AWARD OF THE  
DEGREE OF BACHELOR OF SCIENCE AND EDUCATION**

**DECLARATION**

I Byomugabi Heezi hereby certifies that the research work contained in this dissertation is my own, and that it was carried out with Dr. Andima Geoffrey's guidance. This work has never before been submitted to a university or other higher education institution for the purpose of conferring a degree or another credential.

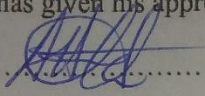
Signature.....

**BYOMUGABI HEEZI**

DATE. 24<sup>TH</sup> February, 2023.....

**APPROVAL**

The supervisor has given his approval for the submission of this research project.

Signature..........

**Dr Andima Geoffrey**

Date..........

## **DEDICATION**

This research is dedicated to my aunts Bikorwenda Rosemary and Tumusiime Robbinnah who have been there for me.

## **ACKNOWLEDGEMENT**

First and far most I would like to thank the almighty God for the good life and for the far He has brought us. It would be unfair for the current researcher to consider the completion of this study solely to her individual efforts. The completion of this study depended on the efforts of many people.

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God bless you all.

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# CHAPTER ONE: INTRODUCTION

## 1.1. BACKGROUND

Lightning is the voltage between the clouds and the Earth become so high that stray electrons in the air are accelerated to a kinetic energy large enough to knock electrons out of the atoms of the air. lightning can as well be defined as a transient, high-current electric discharge whose path length is generally measured in kilometres.it is also defined as an electrical discharge in the form of spark sourcing in a charged cloud("<Lightning\_the\_electrical\_phenomenon\_in\_n\_2(1).pdf>,").Lightning can also be defined as the natural discharge of electrical charges which takes place inside the cloud or from the cloud to the surface of the earth(Abulaban, H., Siow, & Lim, 2021).according to the meteorology office of the united kingdom, around 1.4 billion lightning strikes occur every year which is approximately 44 strikes every second.it has been found out that lightning causes human fatalities and damage to devices and properties both directly and indirectly and its considered as one of the main reasons for weather-related fatalities globally(Christian et al., 2003).

Lightning related human injuries have become an acute problem in many parts of Africa for the last few decades. Among lightning affected countries in Africa, Uganda has recorded few of the worst incidents in the world history of lightning accidents. Uganda has a lightning density of 10-15 flashes/km<sup>2</sup>/year. This value provides a gross underestimation of the level of lightning threats in Uganda. For example, Malaysia, a country which falls into 20-25 flashes/km<sup>2</sup>/year has much smaller number of lightning incidents reported per year.

According to the recent lightning strike incident assessment carried out in Uganda, it is evident that frequency and intensity of lightning accidents has been markedly increasing for the last few

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