ASSESSMENT OF CLIMATE CHANGE IMPACT ON WATER RESOURCES IN THE CONGO RIVER BASIN

By

Jean MANTEKE KABAY

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Irrigation and Hydraulics Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Assessment of Climate Change Impact on Water Resources in the Congo River Basin

Key Words:
Congo River Basin; Climate Change; Bias Correction; CORDEX Africa models; Mike Hydro NAM Model;

Summary:

The Congo River Basin is an important global freshwater resource. The hydrological Regime of the region is vulnerable to climatic variations, especially precipitation and temperature. In our study, we modelled the impact of climate change in water resources in the Congo River Basin. The MIKE Zero (MIKEHYDRO) using Rainfall-Runoff MIKE 11 NAM model was used for calibration and validation and for the future projection of changes in the hydrological regime of the Congo River Basin based on Representative Concentration Pathways Scenarios (RCP 4.5 and RCP 8.5) from the Coordinated Regional Downscaling Experimented (CORDEX AFRICA) regional Climate Model (RCMs) outputs. It was concluded that the climate changes affect the discharge of Congo river significantly during dry and wet season. The average increase in the runoff discharge from tributaries of Congo River ranges from 21% (intermediate future) to 117% (near future), also the average decrease of runoff discharge from tributaries in Congo river ranges from 17% to about 60% at the intermediate future zone.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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