شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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HANAA ALY

ASSESSING ATMOSPHERIC AND HYDROLOGICAL CONDITIONS IN THE EASTERN NILE BASIN THROUGH A COUPLED ATMOSPHERIC HYDROLOGICAL MODEL APPROACH

By

Mohamed Sherif Abo Elfotoh Abd Elwares

A Thesis Submitted to
the Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY
In
IRRIGATION AND HYDRAULICS ENGINEERING

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

Prof. Ahmad Wagdy Abd Eldayem
.....

Professor of Hydrology
Irrigation and Hydraulics Department
Faculty of Engineering,
CairoUniversity

Prof. Johannes Lelieveld
.....

Professor of Atmospheric Physics
Director of Max Plank Institute for
chemistry, Mainz, Germany

Ass. Prof. Mohammed Elsayed Abou El Haggag
.....

Associate Professor
Irrigation and Hydraulics Department
Faculty of Engineering,
Cairo University

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Approved by the Examining Committee:

Prof. Dr. **Ahmad Wagdy Abd Eldayem**, Thesis Main Advisor
Professor of Hydrology
Faculty of Engineering – Cairo University

Prof. Dr. **Khaled Hussein Hamed,** Internal Examiner
Professor of Hydraulics
Faculty of Engineering – Cairo University

Prof. Dr. **Karima Mahmoud Attia,** External Examiner
Professor
Water Resources Research Institute – National Water Research Center

---

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

Engineer's Name: Mohamed Sherif Abo Elfotoh Abd Elwares
Date of Birth: 11/8/1990
Nationality: Egyptian
E-mail: moh_sherif20@yahoo.com
Phone: 01144079007
Address: 144,1st zone, 7th Neighborhood,
6 October City, Giza, Egypt.

Registration Date: 3/10/2017
Awarding Date: …/…/2021
Degree: Doctor of Philosophy
Department: Irrigation and Hydraulics Engineering

Supervisors:

Prof. Ahmad Wagdy Abd Eldayem
Prof. Johannes Lelieveld (Max Plank Institute for chemistry, Mainz, Germany)
Ass. Prof. Mohammed Abou El Haggag

Examiners:

Prof. Ahmad Wagdy Abd Eldayem (Thesis main advisor)
Prof. Khaled Hussein Hamed (Internal examiner)
Porf. Karima Mahmoud Attia (External examiner) (National water Research Center)

Title of Thesis:

Assessing Atmospheric and Hydrological Conditions in the Eastern Nile Basin through a Coupled Atmospheric Hydrological Model Approach

Key Words:
WRF; WRF-Hydro; Eastern Nile Bain; Atmospheric and Terrestrial Water Balance; gridded global precipitation and temperature datasets

Summary:

Assessing the atmospheric and hydrological conditions in addition to water balance calculations in any area can pave the way to understand both atmospheric and hydrological systems and the interactions between them, in order to predict the effect of future climate change on the water resources within any region.

Global gridded available datasets for some meteorological variables as temperature and precipitation represent very useful alternatives to ground observations. In this study we assess the performance of different gridded datasets for precipitation and temperature over the Eastern Nile Basin region, to be used later in validating atmospheric models and for driving or validating hydrological models of this area.

Atmospheric and terrestrial water balance take place during the second part of the study using the outputs from WRF model. During the last part coupling between WRF and WRF-Hydro take place to simulate the eastern Nile Basin river flow, and a recommended configuration was found.

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.

Name: Mohamed Sherif Aboelfotoh Abdelwares Date: 28/2/2021

Signature:

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