OPTIMIZATION OF NWP MODEL FOR OPERATIONAL WEATHER PREDICTION IN UGANDA

Isaac Mugume

Makerere University, Uganda
Ph.D Progress Presentation

25^{th} *Jan*.2017

Advisers:

- Prof. Joachim Reuder, UiB
- Assoc. Prof. Charles Basalirwa, Mak
- Dr. Daniel Waiswa, Mak

Content.

- Progress on each planned activity
- Way–forward

January 2017 plans

Activity	**Status**
include comments from co-authors for the WRF paper	done
submit the WRF paper	done
finish introduction, data section for the ensemble paper	partly
WRF workshop for UNMA staff	not done
meet the DC regarding progress	meet

Challenges: model failure

Progress – Ensemble prediction

Status

- literature review
- experimentation with cosmo

Improving Rainfall Forecasting over Western Uganda using Ensemble Prediction

Isaac Mugume, Joachim Reuder, Daniel Waiswa, Michel d. S. Mesquita, Charles Basalirwa, Yazidhi Bamutaze, Revocatus Twinomuhangi, Fredrick Tumwine, Didier Ntwali, Triphonia Jacob Ngailo, Bob Alex Ogwang

January 6, 2017

Abstract

---

1 Introduction

Rainfall is a key climatic parameter that has impacts on many sectors including agriculture [1, 2], health [3], electricity generation [4] and water resources [5, 6] among others. Over western Uganda, the study region of the present study, rainfall is influenced by many factors such as the Inter–Tropical Convergence Zone, the El Niño/La Niña episodes, the Indian Ocean Dipole and extra-tropical weather systems [1, 7]. Additionally rainfall has large spatial and temporal variability which complicates its prediction [1, 8] but it can be predicted quantitatively up to 7 days [5, 9].

There are a couple of scientific ways of quantitatively predicting rainfall which include: the radar–based method which is superior at now–casts due to better spatial representation and assimilation of initial precipitation estimates but their accuracy deteriorates with time due to their inability to resolve growth and decay of precipitation for long lead times [5]; the Numerical Weather Prediction (NWP) models which have higher skill for longer lead times because they solve the dynamics and physics of the atmosphere [5] and statistical models such regression which describe the relationship between the predictant and predictor [8].

1

Planned way forward

- Complete cosmo and WRF experiments for the ensemble paper by 14th Feb. 2017
- Analyze results by 21st Feb. 2017
- Send paper by 28th Feb. 2017
- use of WRF workshop for UNMA forecasters around 20th Feb. 17
- Department seminar in Mar. 2017
- Writing draft manuscript – 1st draft by 30th Apr. 2017

The End:
Thanks for the audience