

WMO Workshop on Climate Monitoring  
including the implementation of Climate  
Watch Systems in RA-1 focus on Eastern and  
Southern Africa

Pretoria, South Africa

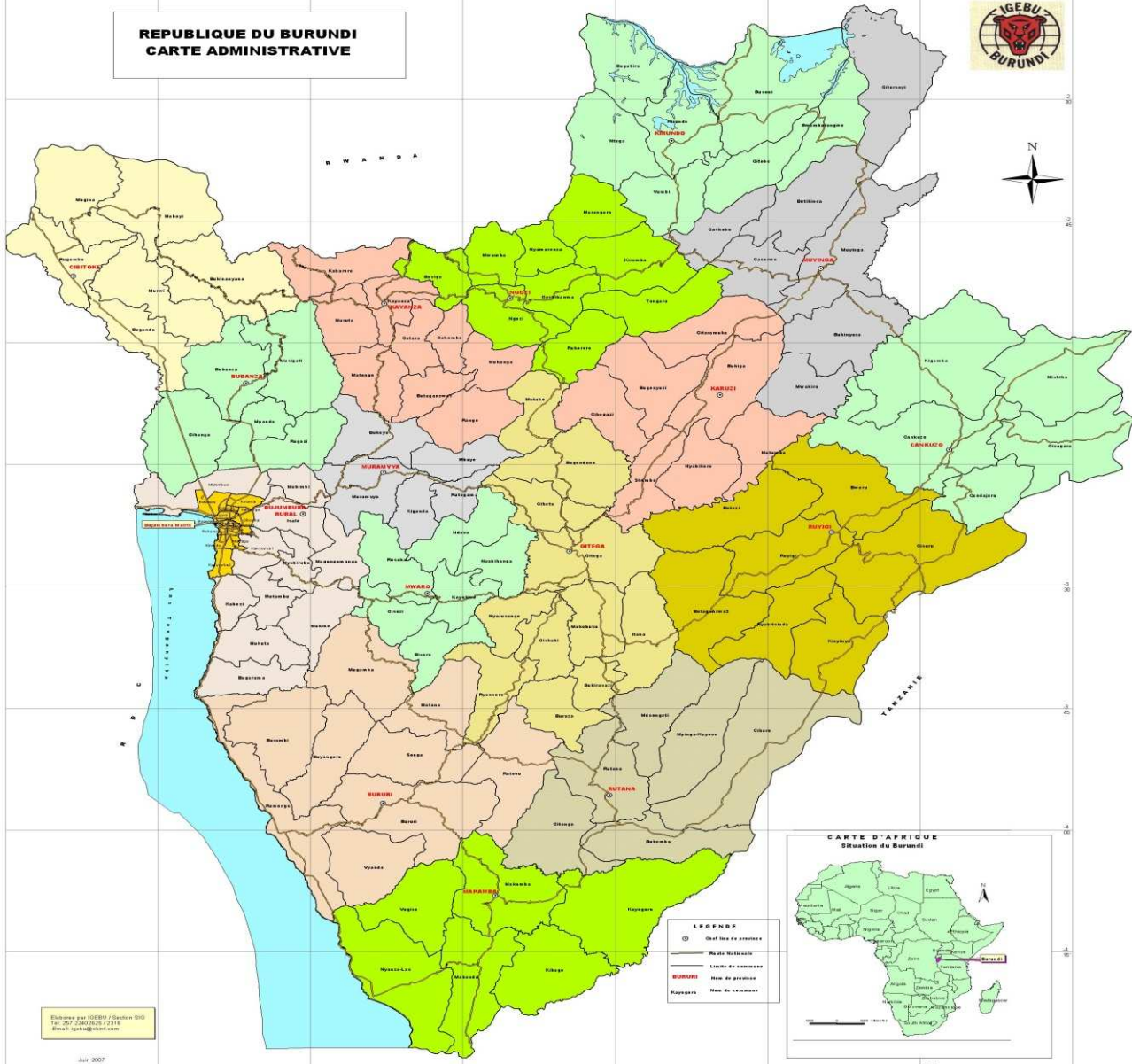
By

Aaron NTIRANYIBAGIRA  
BURUNDI MET SERVICES

# Background

- Burundi has an area of 27,830 square km. It is located south of the Equator between latitudes 2.3°S-4.5°S and longitudes 29°E-31°E.
- The country's economy is essentially dependant on rain-fed agriculture
- About 90% of the population live in rural areas and are engaged in agricultural activities
- Burundi experiences two rainy seasons The first lasts from mid-September to December. The second starts from Mid-February to MAY. The two seasons are separated by January, which is generally a small dry season.

**REPUBLIQUE DU BURUNDI  
CARTE ADMINISTRATIVE**



- LEGENDE**
- ⊙ Chef-lieu de province
  - Mur de l'Etat
  - Limite de commune
  - Burundi
  - Limite de province
  - Paysage
  - Mur de commune



Edition par IGEBU / Janvier 2005  
Tel: 257 2340262 / 2316  
Email: igebu@igebu.com

Juin 2007

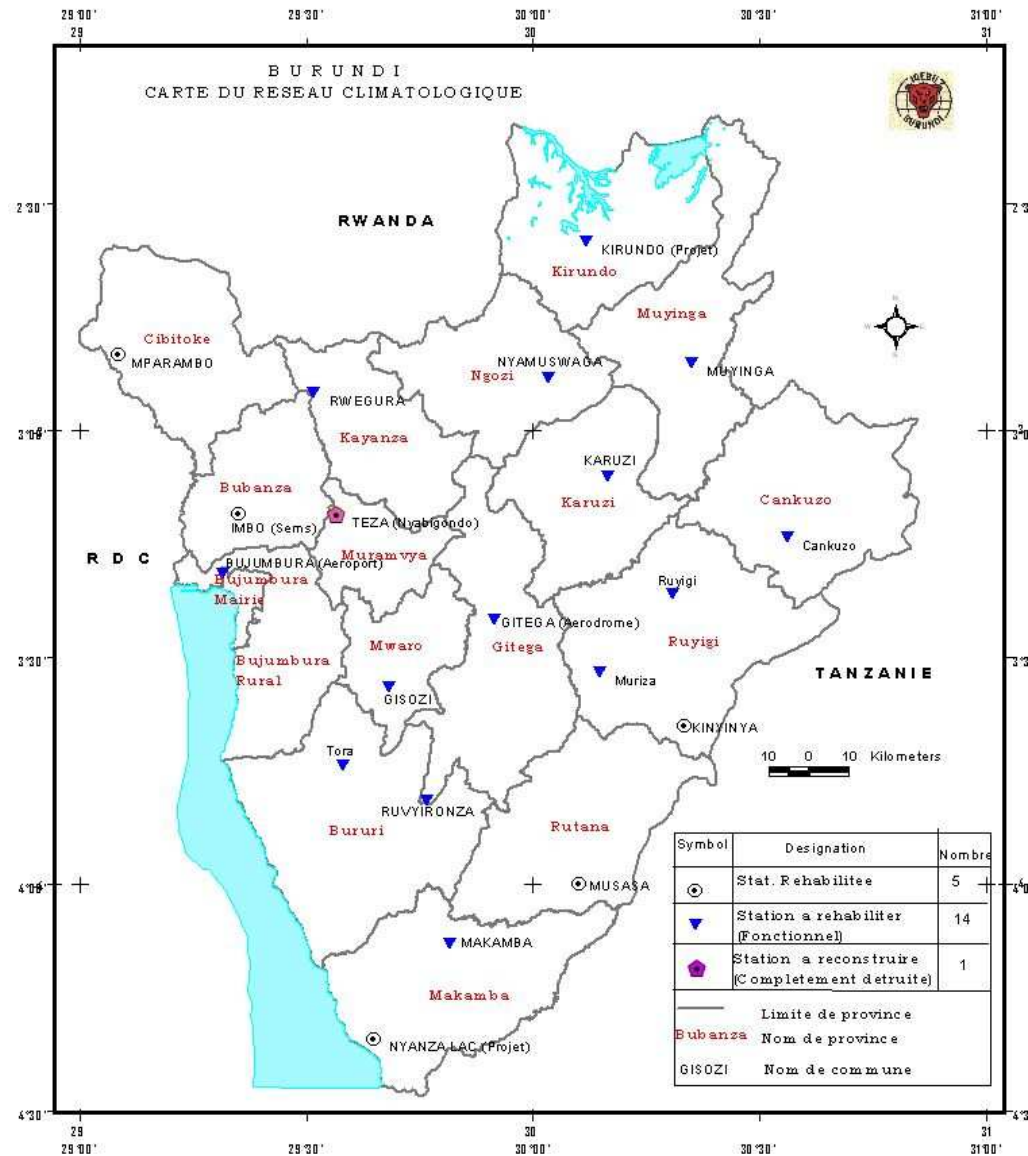
Echelle: 1/200 000



# INTRODUCTION

- Climate variability and climate extremes impact hardly in our countries
- Changes in precipitation amounts in terms of magnitudes and intensity is frequent
- Climate and weather related extremes such as drought, floods and hail storm are devastating mostly for vulnerable population in the country
- Burundi Meteorological services issues dekadal and monthly bulletin as climate monitoring tools

# Burundi meteorological network



**le reseau compte 169 stations:**  
 - 20 principales (Voir cart  
 - 24 thermopluviometriques (Toutes detruites)  
 - 125 pluviometrique ( 2 fonctionnelles)

# Type de stations météorologiques

- Main stations (Synoptic and climatological) (17)
- Temperature and raingauge stations (24)
- Raingauge stations ( 125 )

# Data collection

- The 17 stations are sending data daily to the headquarters
- The remaining stations are sending data thru Post office after one month
- Data then are quality controlled then sent to computer section for data entry
- They process the data to produce decadal and monthly summary or bulletin
- The data are archived in computer section

# Loss of maize production due to drought in the northern part of Burundi in Kirundo

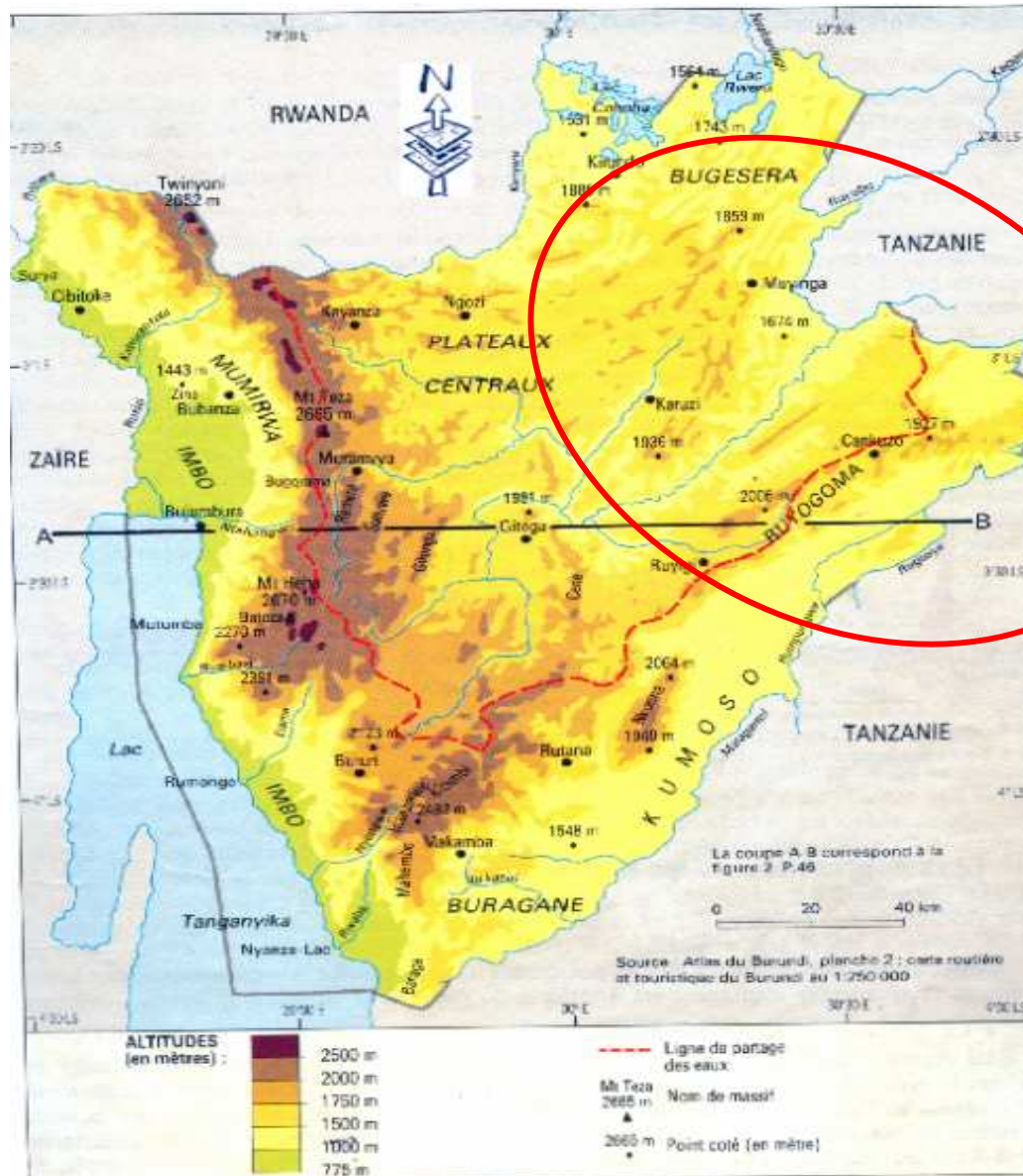




# Flooding area in the Valley of MUBARAZI in central province of Muramvya



In Burundi, This region is facing recurrent rainfall deficit and some aource of water disappeared during 2002\_2004 drought



Bugesera region is vulnerable

# Adaptation measures



Erosion control and conservation measure by CBO "Tugwanyinkukura" in Buhiga, Karuzi province



Erosion control in Kayanza province

# Current situation

- IGEBU through Hydro meteorological Department is producing decadal and monthly bulletins
- It has recently acquired a cluster through East African community to run the WRF regional model
- It uses also EPSgram from ECMWF products on Burundi to produce 48 hours forecast
- We use also CPC/NCEP products and SWFDP products to issue warning
- We also participate in Precof and COF forum for seasonal forecast consensus at ICPAC

# Climate Watch status

- Climate watch deliver an alert or advisory on climate negative impacts on society
- For instance in Burundi, based on climate observations, climate monitoring products done by SWFDP advisories and long range forecast of ECMWF and NOAA/CPC products we issue an advisory
- But this is still not enough due to lack of personnel and adequate skills

# Extremes rainfall events: case study

- **CASE STUDY : EXTREME Rainfall FORECAST OVER BURUNDI 01-02/04/2013**
- **We need Rainfall obs over 6 rep. Stations of the contry for 1, 2, 3, et 4/4/2013**
- **Bujumbura , Nyanza-lac, Gisozi, Musasa, Gitega, Muyinga,Kirundo**
- **RSMC-NAIROBI**
- **SWFDP GUIDANCE PRODUCTS**
- **PROBABILITY TABLES**

# Medium range forecasts

- **MEDIUM-RANGE (DAY 3 TO DAY 5)**
- **Issue Date: Sunday 31<sup>st</sup> March, 2013**
- In order to provide more information about the geographical location of the severe event , the following convention is adopted when filling in the cells: X for the whole country, N for the northern part, S for the southern part, W for the western part, C for the Central and E for the eastern part.

# Day 3: Tuesday 2<sup>nd</sup> April, 2013

COUNTRY	HEAVY RAIN				STRONG WINDS				LARGE WAVES			
	RISK				RISK				RISK			
	No	Low	Medium	High	No	Low	Medium	High	No	Low	Medium	High
BURUNDI	X				X				X			
KENYA		W&C			X					E		
RWANDA	X				X				X			
TANZANIA		N&C				Off SE Coast				E		
UGANDA	X				X				X			
ETHIOPIA	X				X				X			



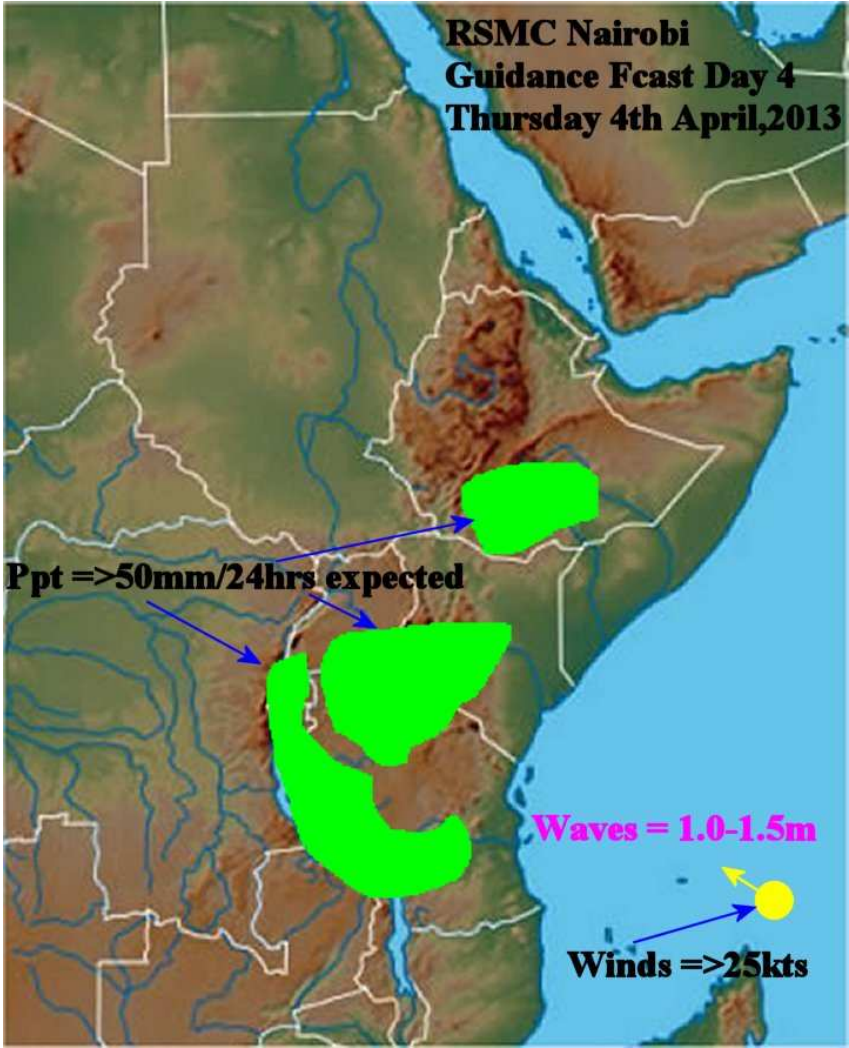
# Day 4: Wednesday 3<sup>rd</sup> April, 2013

COUNTRY	HEAVY RAIN				STRONG WINDS				LARGE WAVES			
	RISK				RISK				RISK			
	No	Low	Medium	High	No	Low	Medium	High	No	Low	Medium	High
BURUNDI		X			X				X			
KENYA		W&C			X					E		
RWANDA		X			X				X			
TANZANIA		N&C				Off SE Coast				E		
UGANDA		S			X				X			
ETHIOPIA		S			X				X			

# Day 5: Thursday 4<sup>th</sup> April, 2013

COUNTRY	HEAVY RAIN				STRONG WINDS				LARGE WAVES			
	RISK				RISK				RISK			
	No	Low	Medium	High	No	Low	Medium	High	No	Low	Medium	High
BURUNDI		X			X				X			
KENYA		SW			X					E		
RWANDA		X			X				X			
TANZANIA		N & C				Off SE Coast				E		
UGANDA		S			X				X			
ETHIOPIA		S			X				X			

# RSMC NAIROBI



# User activities in support of early warning systems

- The head of climatological section is participating in food security meeting as part of the data input in of the season.
- After every COF's , we invite potential user's such as media, agriculture, water resource, energy, health and disaster to release the forecast and interact on how are they going to use the forecast

# Limitations

- Some of the observers are incompetent and due to lack budget to do the inspection as field trip. The data becomes less reliable
- No school of meteorology in the country hence lack of qualified personnel
- Lack of sufficient meteorologists (human resources is not enough) hence,
- Capacity to monitor and interpret extreme events and climate analysis
- Cost of running models (equipments and human capabilities)

# Conclusion

- Address the observing gaps
- Improve on better quality data through quality control
- Use better quality regional analyses to generate and disseminate climate information
- Tailor product to user specific (Agri & food security, water, health and Disaster risk management)
- Improve in human resources both in quantity and quality

Thank you for your attention and  
comments