

Climate information, prediction on floods and droughts and in Rwanda: Challenges and Needs

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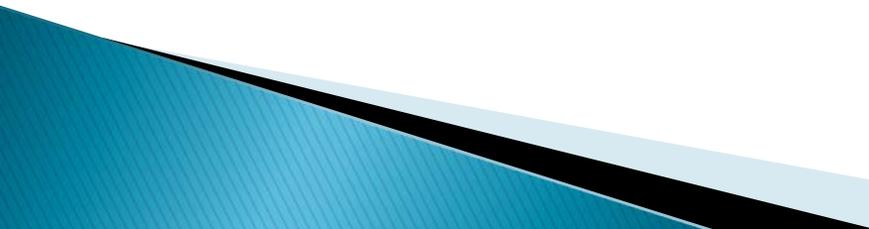
Background

- ▶ Rwanda is located in central-eastern Africa bordered by Uganda, Tanzania, Burundi and Democratic Republic of Congo.
- ▶ Rwanda has a tropical-temperate climate with a bimodal rainfall pattern with peaks in the months of April and November.
- ▶ Rainfall is abundant although it has some irregularities. Winds are generally around 1-3 m/s . With an economy heavily dependent on rain fed agriculture, climate is of particular importance.

Background(Cont'd)

- ▶ Rainfall ranges from about 900 mm in the east and southeast to 1500 mm in the north and northwest volcanic highland areas.
 - ▶ The average annual temperature ranges between 16 and 20°C, without significant variations.
 - ▶ Agriculture accounts for 40% of GDP and provides employment for 80% of the population.
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Climate Information: Climate Change and Natural Disasters in Rwanda

- ▶ SEASONAL FORECAST ARE AVAILABLE BUT The meteorological NETWORK is not excellent.
 - ▶ For rainfall variability, Analysis of rainfall trends show that rainy seasons are tending to become shorter with higher intensity.
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Rainfall variability

- ▶ This tendency has led to decreases in agricultural production (crop failures) and events such as droughts in dry areas; and floods or landslides in areas experiencing heavy rains.
 - ▶ These have resulted in soil erosion, rock falls, landslides and floods which destroy crops, houses and other infrastructure as well as loss of human and animal lives.
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Rainfall variability

- ▶ The eastern region of the country has been experiencing rainfall deficits over the last decades. Observations between 1961 and 2005 showed that the period between 1991 and 2000 has been the driest since 1961. These observations showed a marked deficit in 1992, 1993, 1996, 1999 and 2000.

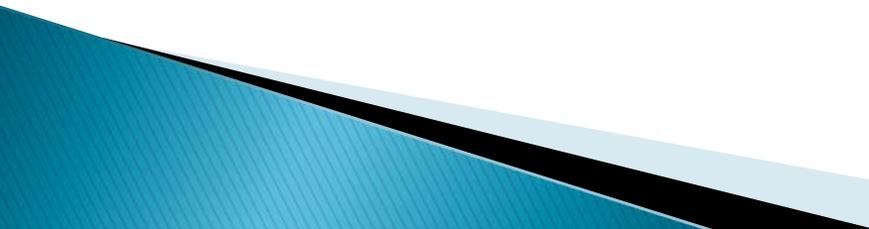
Rainfall variability

- ▶ The data shows that total annual precipitation during 2006 was higher than the average precipitation over 30 years which implies a tendency towards increased precipitation.
 - ▶ This tendency was observed from three meteorological stations (Kigali, Kamembe (southwest) and Gisenyi (northwest)).
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Variability in temperature

- ▶ Observations show an increase in the average temperature in Rwanda over last 20 years.

Floods and Drought: Monitoring and Prediction (Institutions and Processes)

- ▶ Rwanda National Disaster policy which stipulates that it shall be the responsibility of every institution to take care of the disaster related to its mandate.
 - ▶ Rwanda Natural Resources Authority is in charge of floods
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Floods monitoring

- ▶ 53 stations countrywide (41 on main rivers, 12 on lakes)
- ▶ Data are collected and sent by resident hydrological observers 3 times a day using mobile phone, data are received by centralized software for processing and storage
- ▶ Field visits for discharge measurement (ADCP)
- ▶ Some stations use data loggers

Floods Monitoring

- ▶ 16 automated stations are being installed under UNECA funds and other stakeholders
 - ▶ A study is being carried out for floods Early Warning System
 - ▶ No floods predictions models
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Drought monitoring

- ▶ Ministry of Agriculture in collaboration with Rwanda Meteorology Agency monitor drought
 - ▶ Rwanda Meteo has Rainfall weather stations; Climatological weather stations; Agrometeorological weather stations and synoptic weather stations
 - ▶ Rainfall and climatological weather stations are managed by Volunteer Observers; others are automatic
 - ▶ Doppler Weather Radar is recently installed
 - ▶ Prediction is done basing on seasonal forecast
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Data dissemination

- ▶ TV
 - ▶ Web
 - ▶ Forms
 - ▶ Phones
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Challenges and Needs

- ▶ Problem of data accuracy and prediction at local level for disaster risk reduction
- ▶ Vandalism(Low awareness on hydro-meteo issues,equipment)

Misunderstanding of prediction and forecasts

- ▶ Expanding and installing automated hydro-meteo networks and capacity building for all involved in data collection,processing and dissemination
- ▶ Involving communities exposed to floods and droughts in using hydro-meteo information
- ▶ Improving the prediction of climate variability at local level.
- ▶ Improve existing EW system operated by Ministry of Disaster management
- ▶ Providing and training on floods and drought models

Thanks

