REPUBLIC OF RWANDA

MINISTRY OF ENVIRONMENT

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Climatological Bulletin of October 2019

1. INTRODUCTION

This bulletin has three main components which are: (i) the review of climate conditions observed over Rwanda in October 2019, (ii) the prediction of the rainfall in November 2019 and (iii) the highlights on the socio-economic impact associated with the both observed and predicted climate conditions.

2. HIGHLIGHTS

- Rainfall performance in October: the accumulation of rainfall observed was above the LTM (Long-Term-Mean) in all regions of the country, leaving Rubavu with below normal rainfall.
- Rainfall during the November: it is expected to receive rainfall in all districts of the country and the amount ranging between 50 mm and 200mm.
- The impact associated with both observed and predicted climate conditions: the soil moisture is increasing and will continue to increase, which improve the pasture and crop conditions leading to good prospects for crop and livestock performance. Farmers are adivised to clean drainage system in order to avoid clogging water ways which lead to flooding.

3. CLIMATE PATTERNS

This section provides the climatological summary for the rainfall and temperature in terms of amount for October 2019 rainfall performance as compared to the Long Term Mean over Rwanda.

3.1 Rainfall amounts in October 2019

During the month of October, rainfall amount recorded over Rwanda was ranging between 89.4.mm and 282.4mm. The Northern province, Southern province and cerntral regions have received much rainfall compared to other provinces, Gicumbi, Busogo and Musanze, weather stations of Northern Province recorded 282.4mm, 264.2and 224.5mm respectively. Nyamagabe and Byimana weather station of the Southern Province have received 228.8mm and 204.4mm respectively. The central region where the Kigali city is located, the rainfall received was ranging between 197.5mm(Over Kigali-Aero) and 231.5mm(over Gitega).

The Eastern Province received the rainfall ranging between 138.7mm(over Kawangire) and 175.7mm(over Ngoma). Rusizi, Bugarama and Rubavu station of the Western Province received 209.8mm, 157.5and 89.4mm respectively.

3.2 Rainfall performance as compared to the Long Term Mean

The the performance of the rainfall in the month of Octoberr 2019 shows that the cumulative rainfall over Rwanda was above to the LTM (Long-Term Mean) in most part of the country, except rubavu station where the observed rainfall was below the long term mean.

The Table and histogram below indicate the rainfall performance as compared to the (Long Term Mean).

Stations	Oct_2019	Oct_- LTM
Kigali	197.5	97.4
Rusizi	209.8	162.2
Rubavu	89.4	135.3
Nyamagabe	228.8	141.3
Ngoma	175.7	96.5
Gicumbi	282.4	127.8
Busogo	264.2	166.6
Bugarama	157.5	119.2
Musanze	224.5	167.2
Gitega	231.5	112.1
Rubengera	194.9	133.1
Byimana	204.4	95
Kawangire	138.7	109.9
Nyagatare	154.4	117.5

Table1: *Cumulative rainfall recorded as compared to the LTM*

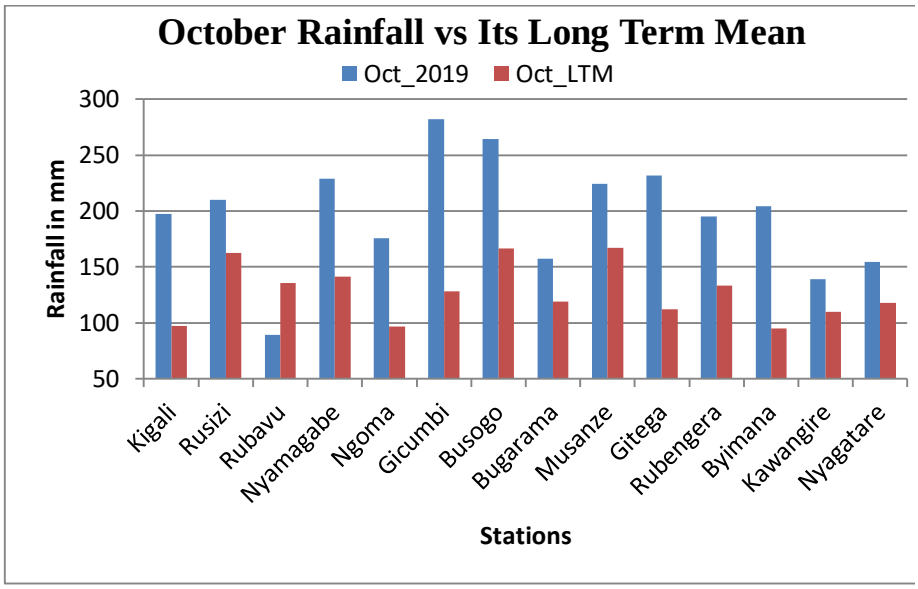


Figure1: *Rainfall performance as Compared to the LTM*

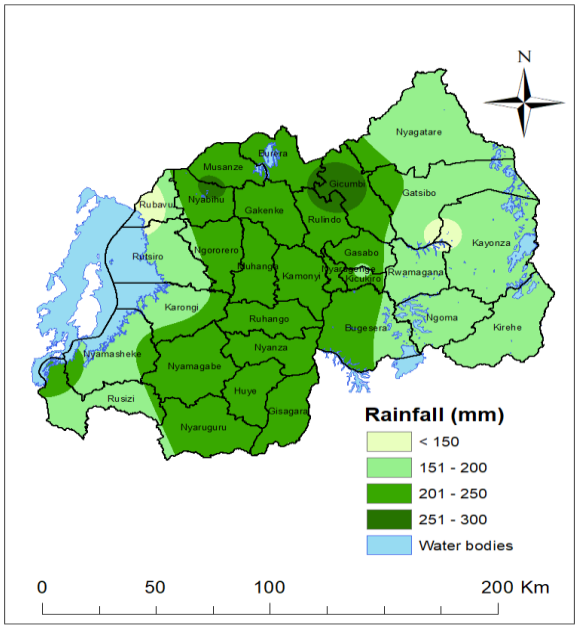


Figure2: *Rainfall distribution of October*

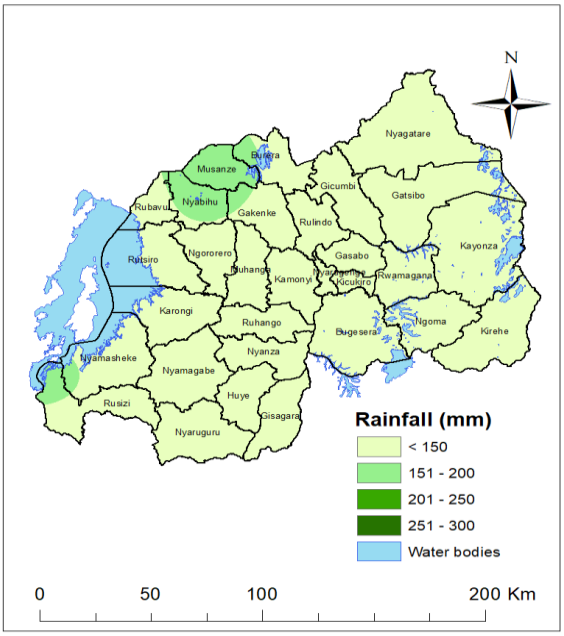


Figure3: *Long Term Mean rainfall distribution*

Figure 2& 3 above show rainfall distribution during October and the rainfall distribution for the same period in the long term.

3.3 Temperature analysis

The highest average maximum temperature of 28.9^{0}C was observed in the Southwest region at Bugarama station. The lowest average maximum temperature was observed in the Northern Province at Gicumbi station with 20.2^{0}C.

The average of minimum temperature was ranging between 10.7(over Busogo) and 18.8^{0}C (over Bugarama). The Northern and Southern provinces were cooler compared to the Eastern and Central regions and western provinces of the country (Figure 4 and 5).

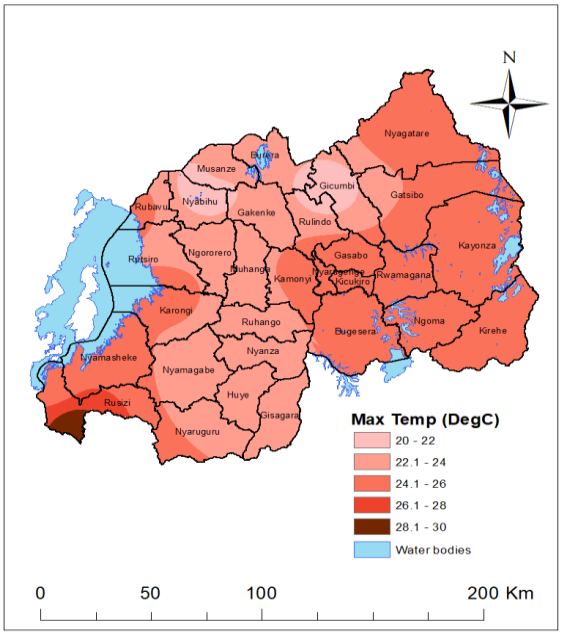


***Figure4**:October Maximum Temperature*

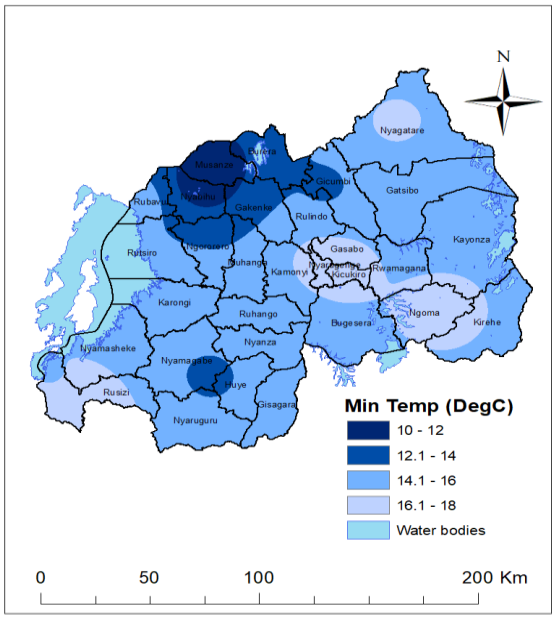
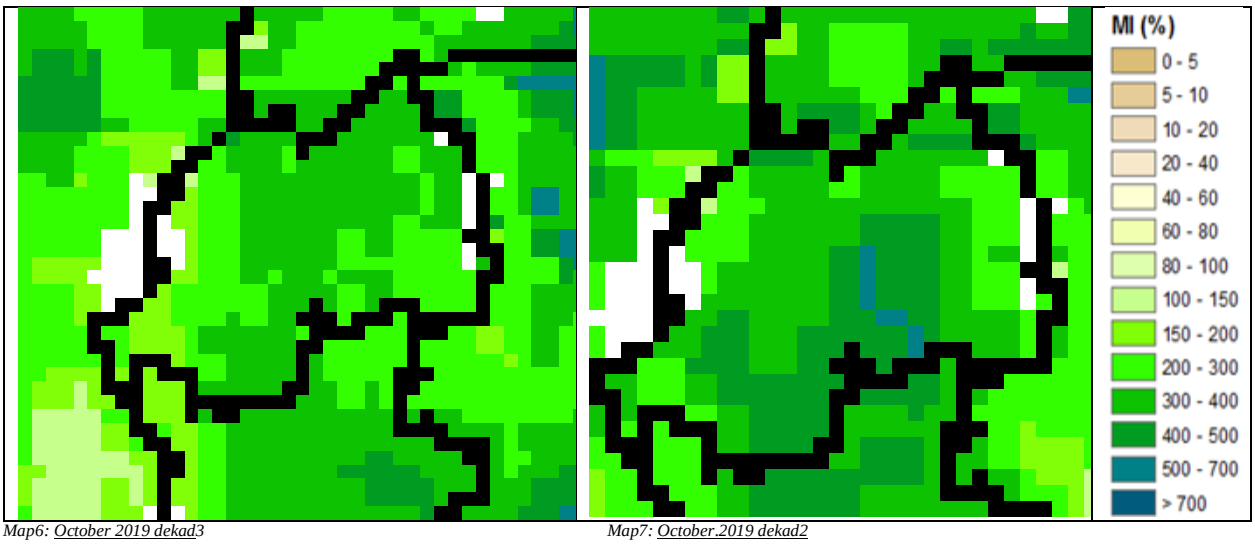


***Figure5**:OctoberMinimum Temperature*

4. Soil Moisture

Satellite images: Soil Moisture Index (MI)

Comparing the 3rd dekad to the 2nd dekad of October 2019, the satellite derived moisture is showing that the soil moisture is increased and continues to increase as a result of the wet weather condition observed over the country. (see **Map6&7**).



Map6: October 2019 dekad3

Map7: October.2019 dekad2

5. Rainfall forecast for November

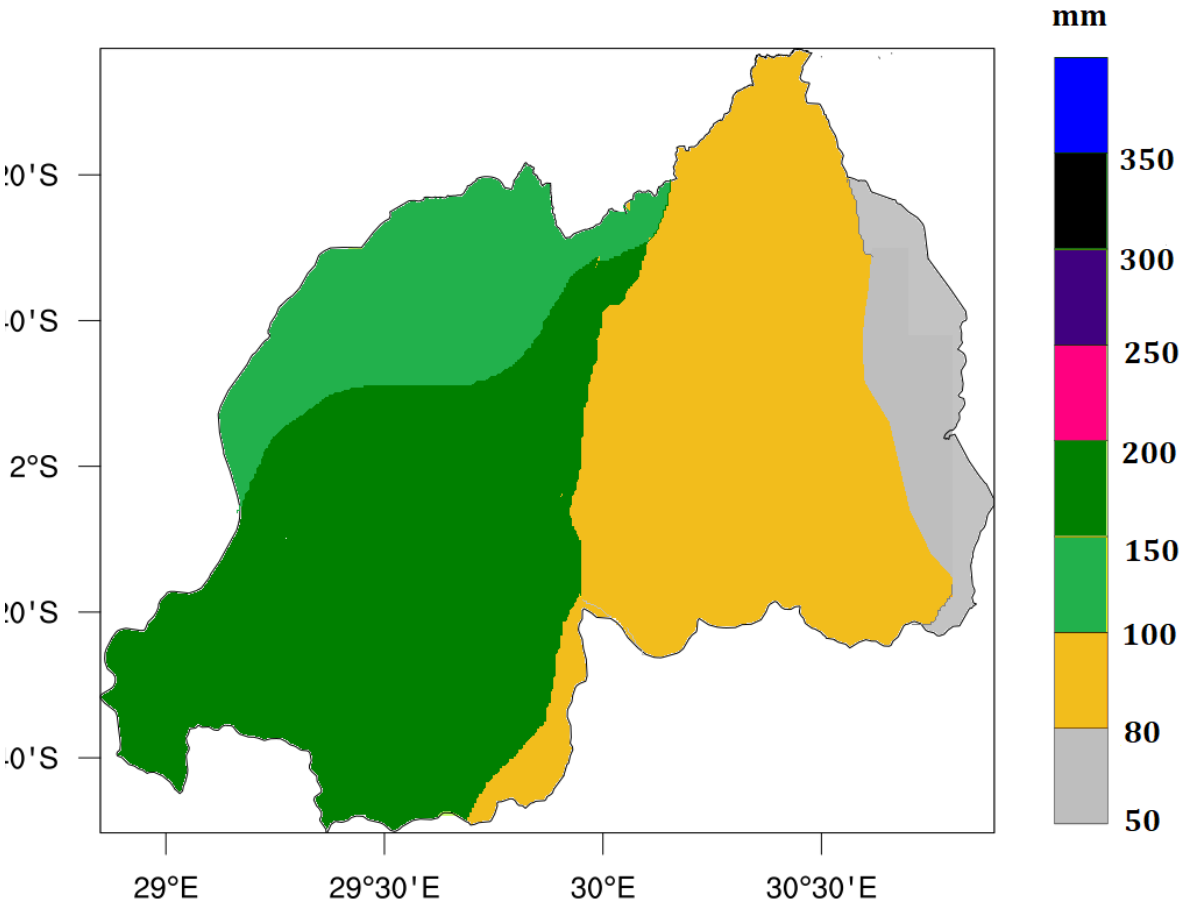


Figure 8: rainfall prediction for November

The rainfall during November 2019; in this period of thirty days, the rainfall is expected to received in all districts of Rwanda, and different regions will receive the rainfall in the following ranges:

- Central region and North Eastern region: expected to receive rainfall amount ranging between 80mm and 100mm.
- Extreme Eastern: expected to receive rainfall amount ranging between 50mm to 80mm
- North western region: expected to receive rainfall amount ranging between 100mm to 150mm.
- South western and Southern region: expected to receive rainfall amount ranging between 150mm to 200mm.

6. IMPACTS ON SOCIO-ECONOMIC SECTORS

The socio-economic impacts associated with observed long term climatic conditions during the month of October are illustrated below:

6.1 Impacts of observed climate condition.

During this period of ten days, the rainfall accumulation was above the long term mean (LTM) in most parts of the country, and impacts associated with:

- Improved crop, pasture and foliage conditions in same places.
- Crop failure due to anaerobic respiration in same parts of the country.
- Replenishment of water reservoirs;
- Inundation in wetland areas.
- Soil Erosion

6.2 Potential likely impacts for the November 2019.

The areas expected to receive above normal rainfall are likely to have the following impacts:

- Improvement in pasture and crop conditions leading to good prospects for crop and livestock performance;
- Improvement in water resources and replenishment of reservoirs;
- Flooding and desease transmission.
- Water realated diseases

N.B: This forecast should be used in conjunction with the daily (24-hour), Three (3), Five (5) and Seven (7) days forecasts issued by the Rwanda Meteorology Agency (Meteo Rwanda)