



**Bulletin N°12/2020**

**Issued on 05 January 2021**

**Climatological Bulletin of December 2020**

**1. INTRODUCTION**

The bulletin has three main components, which include: (i) the review of climate conditions observed over Rwanda in December 2020, (ii) the prediction of the January and February 2021 rainfall and (iii) the highlights on the socio-economic impacts associated with both observed and predicted climate conditions.

**2. HIGHLIGHTS**

- **Rainfall performance in December 2020:** The accumulation of observed rainfall during this month was below the Long Term Mean (LTM) in most parts of the country except Western Province that recorded above rainfall at Bugarama, Rubengera and Kamembe stations.
- **Rainfall expected during January and February 2021:** During the month of January and February 2021, accumulated rainfall ranging between 50mm and 350mm expected over the country depending on the region, the expected rainfall in south western parts of the country are likely to experience slightly enhanced rainfall compared to other parts of the country even though it is below the Long Term Mean while the remaining parts of the country will experience normal rainfall.
- **The impact associated with both observed and predicted climate conditions:** in December 2020, below normal rainfall was observed in most parts of the country, and this led to good performance of rain-fed agriculture which was in maturity to harvesting period but also led to poor performance of localized late planted crops. January 2021, is the beginning of short dry season which experience decreased soil moisture content, shortage of water level and high evaporation among others.

**3. CLIMATE PATTERNS**

This section provides the climatological summary of rainfall and temperature of December 2020 in comparison to the Long Term Mean over Rwanda.

**3.1 Rainfall amounts in December 2020**

During the month of December, rainfall amount recorded over Rwanda was ranging between 10.7mm and 228.3 mm. High rainfalls of 228.3mm recorded at Bugarama station in the Western Province. The Western and Southern Provinces were wet comparatively to other Provinces of the country. The Central region represented by Gitega and Kigali International Airport weather stations of Kigali City recorded 87.8mm and 85.9mm respectively.

- Weather stations of the Southern Province recorded rainfall as follows: Nyamagabe and Byimana stations recorded 124.2mm and 82.1mm respectively,



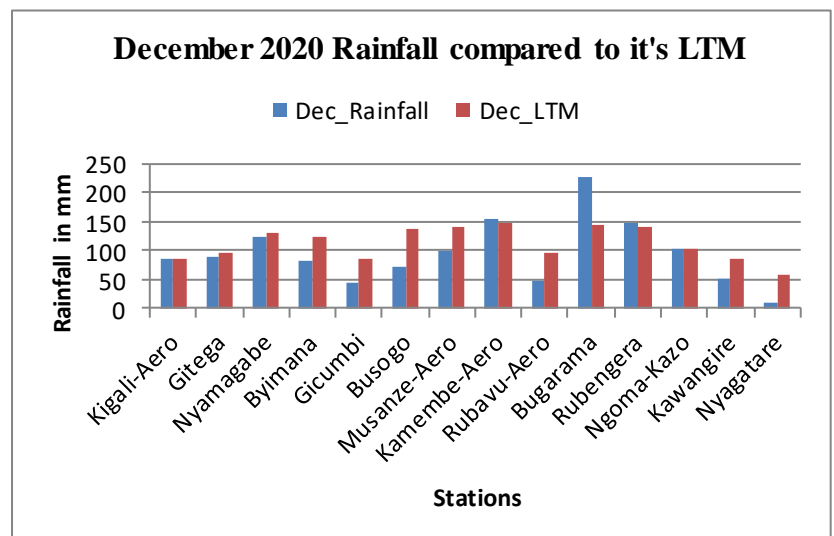
- Weather stations of the Western Province also recorded rainfall as follow: Rusizi 153.8mm, Rubavu 46.8mm, Rubengera 147.2mm and 228.3mm recorded at Bugarama stations,
- Weather stations of the Northern Province recorded rainfall as follows: Gicumbi 44.2mm, Busogo 73.2mm and Musanze Airport stations recorded 99.1mm respectively,
- Weather stations of the Eastern Province recorded rainfall ranging between 102.2mm Ngoma-Kazo, 50.7mm, Kawangire and 10.7mm, Nyagatare stations.

### 3.2 Rainfall performance in comparison to the Long Term Mean

Comparing the performance of the rainfall during the month of December 2020 with the Long Term Mean (LTM) for the same period, it's was observed that the cumulative rainfall of December 2020 was below normal range of Long Term Mean (LTM) in most parts of the country.

The Table and histogram below indicate the rainfall performance of December 2020 compared to the Long Term Mean for the same period over many years.

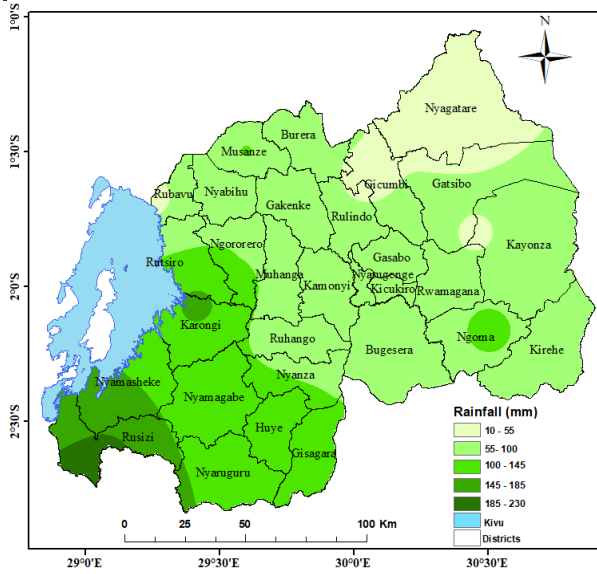
Stations	Dec. 2020	Dec. LTM
Kigali Aero	85.9	87.4
Gitega	87.8	97.2
Nyamagabe	124.2	131.5
Byimana	82.1	122.5
Gicumbi	44.2	86.1
Busogo	73.2	136.0
Musanze Aero	99.1	142.6
Kamembe Aero	153.8	149.2
Rubavu Aero	46.8	96.1
Bugarama	228.3	143.0
Rubengera	147.2	142.6
Ngoma-Kazo	102.2	104.2
Kawangire	50.7	85.7
Nyagatare	10.7	58.7



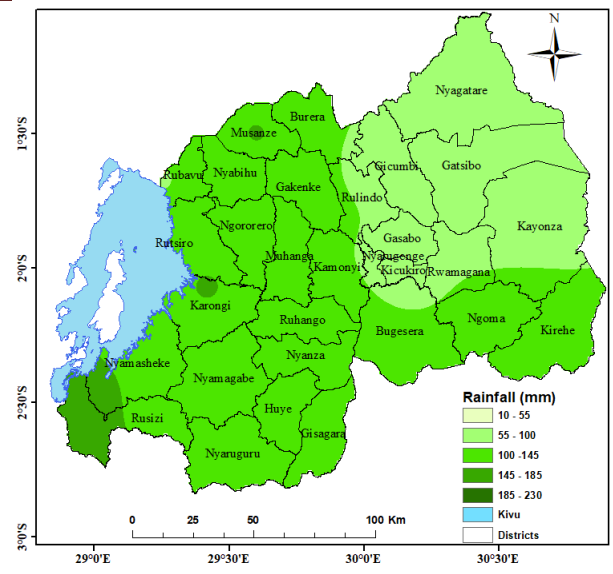
**Figure1:** Rainfall performance as Compared to the Long Term

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

Map 1 & 2 below show rainfall distribution during December2020 and the Long Term Mean for the same period.



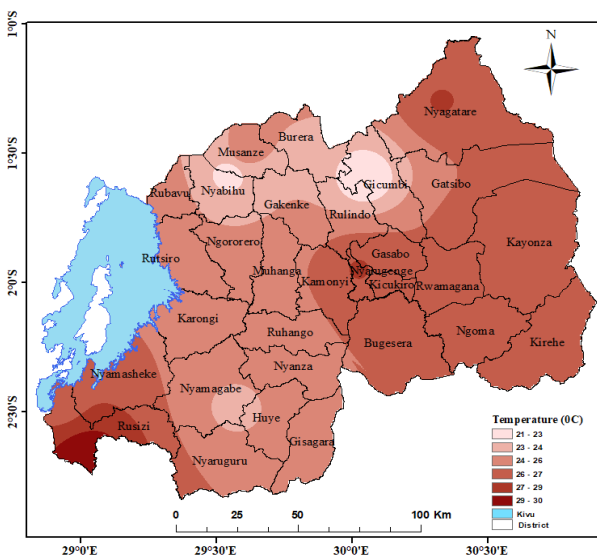
Map1: Rainfall distribution of December 2020



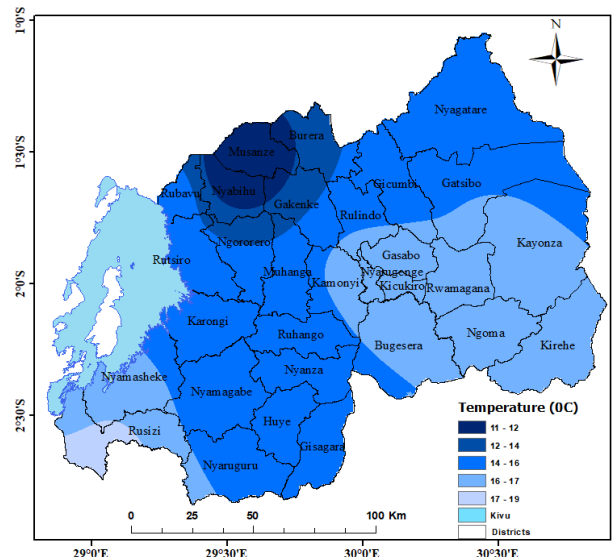
Map2: December Long term mean rainfall distribution

### 3.3 Temperature analysis

The lowest value of maximum temperature was 21.1<sup>0</sup>C, observed at Gicumbi weather station in the Northern Province, the highest value of maximum temperature observed in the southwestern region at Bugarama station with 29.8<sup>0</sup>C. The minimum temperature ranged between 10.8<sup>0</sup>C at Busogo station in the Northern Province and 18.8<sup>0</sup>C observed at Bugarama station in the Western Province. The Northern and Southern Provinces were cooler compared to the Eastern, Western Provinces and Central regions of the country (Map 3 and 4).



Map3: December Maximum Temperature



Map4: December Minimum Temperature



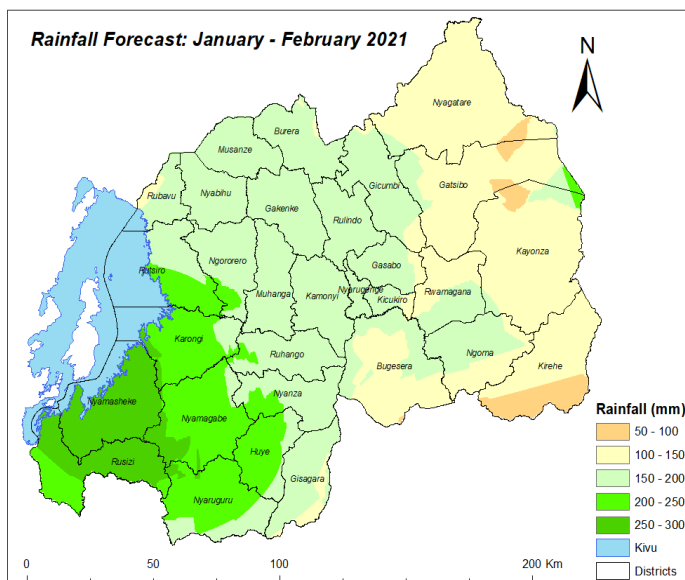
#### 4. Soil Moisture Index (MI)

Comparison of soil moisture content of November and December 2020, it was observed that the soil moisture content decreased during the month of December because of the dry weather conditions experienced during the observation period over most parts the country. The soil moisture will continue to decrease in January 2021, as results of expected dry weather conditions within the forecasted period.

#### 5. Rainfall forecast for January and February 2020

The months of January to February 2021 (JF) constitutes part of important rainfall period for the country; the climate systems indicate that there are chances of normal to below normal rains over most parts of the country. The National climate outlook forecast for January to February 2021 rainfall indicates that, south western parts of the country are likely to experience slightly enhanced rainfall compared to other parts of the country even though it is below the Long Term Mean while the remaining parts of the country will experience normal rainfall.

The expected rainfall is mostly associated with the topographic nature of the country coupled with neutral conditions for Indian Ocean Dipole (IOD) with moderate la Nina conditions in Pacific Ocean throughout the month of February 2021.



Map 5: Rainfall prediction for January and February 2021

The rainfall outlook for different locations is as follows: **Rainfall ranging between 250-300 mm** is expected in Nyamasheke district and most parts of Rusizi district and South western of Nyamagabe.

**Rainfall ranging between 200-250 mm** is expected in most parts of Nyamagabe, Nyaruguru and Huye districts, and in South western parts of Nyanza, most parts of Karongi, Southern parts of Rutsiro and South western parts of Rusizi and Ngororero districts.



**Rainfall ranging between 150-200 mm** is expected in Northern Province (Musanze, Burera, Gicumbi, Gakenke and Rulindo), Western Province (Rubavu, Nyabihu, remaining parts of Ngororero and Rutsiro districts), Southern Province (Gisagara, Ruhango, Muhanga, Kamonyi, remaining parts of Nyanza and eastern parts of Huye and Nyaruguru), Kigali city (Nyarugenge, Kicukiro and Gasabo) and Eastern Province (north eastern parts of Bugesera, Northern parts of Ngoma and southern parts of Rwamagana).

**Rainfall ranging between 100-150 mm** is expected in Eastern Province (Nyagatare, Gatsibo, Kayonza, northern Rwamagana, southern Bugesera, Ngoma and most parts of Kirehe).

**Rainfall ranging between 50-100 mm** is expected in extreme south of Kirehe district.

## 6. IMPACTS ON SOCIO-ECONOMIC SECTORS

The socio-economic impacts associated with observed climatic conditions and the likely impact in the forecasted period are illustrated below:

### 6.1 Impacts of observed climate condition.

During the month of December 2020, the rainfall accumulation was below the Long Term Mean (LTM) in most parts of the country, this led to poor performance for some crops which were still in need of rainfall. Good rainfall observed over Western and Southern Provinces, led to improved crop, pasture and foliage conditions and water availability in localized areas.

### 6.2 Potential likely impacts for January and February 2021.

During the forecasting period, the expected rainfall may affect post harvest handling activities, therefore relevant authorities are advised to put in place both preventive and mitigative strategies to cope with aforementioned effects.

***N.B: This forecast should be used in conjunction with the Six hours, Daily (24-hour), Three (3), Five (5) Seven (7) and 10 days forecasts issued by the Rwanda Meteorology Agency (Meteo Rwanda).***