



Climatological Bulletin of November 2024

1. INTRODUCTION

The bulletin has three main components, which include: (i) the review of climate conditions observed over Rwanda during November 2024, (ii) rainfall prediction for December 2024 and (iii) the highlights on the socio-economic impacts associated with both observed and predicted climate conditions.

2. HIGHLIGHTS

- **Rainfall performance in November 2024:** The accumulation of observed rainfall during the month of November 2024 was above the range of the Long-Term Mean (LTM) in most parts of the country, with 43 stations out of 44 recorded rainfall surplus. However, small areas of Ngoma District in Eastern Province recorded rainfall below the range of Long-Term Mean (LTM).
- **Rainfall expected during December 2024:** The amount of rainfall ranging between 100 and 400 mm is expected across the country. The expected rainfall is Above the range of LTM, in the first dekad rainfall will be above the range of LTM while the second and third dekads rainfall is expected to be in normal range. In this month, the minimum and maximum temperatures are expected to be in the range of LTM.
- **The impact associated with both observed and predicted climate conditions:** Due to observed rainfall in November 2024, soil moisture increased over most parts of the country, thus impacted agriculture activities positively. In December 2024, high rainfall compared to the Long-Term Mean is expected; this will continue to benefit the crops which still at growing stages, however it may have negative impacts to the crops approaching harvest.

3. CLIMATE PATTERNS

This section provides the climatological summary of rainfall and temperature of November 2024 in comparison with its Long Term Mean (LTM) over Rwanda.



3.1 Rainfall amount in November 2024

During the month of November 2024, rainfall amount recorded over Rwanda ranged between 84.7 and 377.7mm. High rainfall amount of 377.7 mm was recorded at Byimana weather station in Ruhango District while less rainfall amount of 84.7 recorded at Zaza station in Ngoma District.

- **Weather stations of the Central region including Kigali City:** rainfall amount of 193.7 mm was recorded at Kigali International Airport weather station located in Kicukiro District while Gitega weather station located in Nyarugenge District recorded 192.9 mm.
- **Weather stations of the Southern Province:** Byimana weather stations recorded 377.7 mm, Cyahinda 280.4 mm, Kibeho 276 mm, Nyakibanda recorded 250.3 mm, Kaduha 249 mm, Kibangu 247.5 mm, Nyamiyaga 240.6 mm, Gikongoro station recorded 238.4 mm, Gihinga_Gacurabwenge 214.3 mm, Kansi 180.2 mm and Rubona Station recorded 199.4 mm,
- **Weather stations of the Western Province** recorded amount of rainfall as follow: Kamembe-aero 321.2 mm, Nyange 294 mm, Ntendezi 284.8 mm, Muramba (Paroisse) 267.3 mm, Murunda (Paroisse) 252.3 mm, Kirimbi 219.8 mm, Mibirizi 193.4 mm, Bugarama 192.8 mm, Rwankeri 173 mm, Gisenyi Airport 169 mm and Rubengera 158.8 mm.
- **Weather stations of the Northern Province** recorded rainfall as follows: Rutongo 279.2 mm, Butaro recorded 271.2 mm, Kinigi 254.1 mm, Rushashi recorded 252.8 mm, Cyabingo 239.2 mm, Byumba 224.2 mm, Busogo recorded 216.7 mm and Ruhengeri recorded 186.3mm.
- **Weather stations of the Eastern Province:** Nyagahanga recorded 273.2 mm, Nyamata Paroisse 225.6 mm, Ruhuha 176.9 mm, Kirehe 172.4 mm, Nyagatare station 165.7 mm, Kibungo-Kazo 169.1 mm, Kagitumba 159.5 mm, Kawangire recorded 129.3 mm, Mpanga 129.1 mm, Mwiri station recorded 114.9 mm and Zaza 84.7 mm.

3.2 Rainfall performance in comparison to the Long-Term Mean

Comparing the performance of the rainfall during the month of November 2024 with the Long-Term Mean (LTM) for the same period, it was observed that the rainfall of November 2024 was above normal range of the Long-Term Mean (LTM) except small parts of Ngoma District in Eastern Province which recorded below normal range of Long-Term Mean (LTM). The Figure 1 shows that over 44 weather stations, forty-three (43) stations recorded rainfall surplus, while only Zaza station located in Ngoma District recorded rainfall deficit.

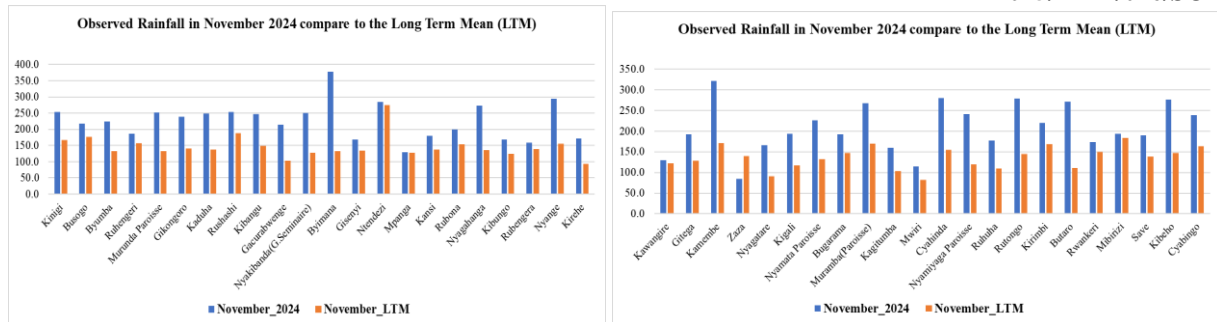
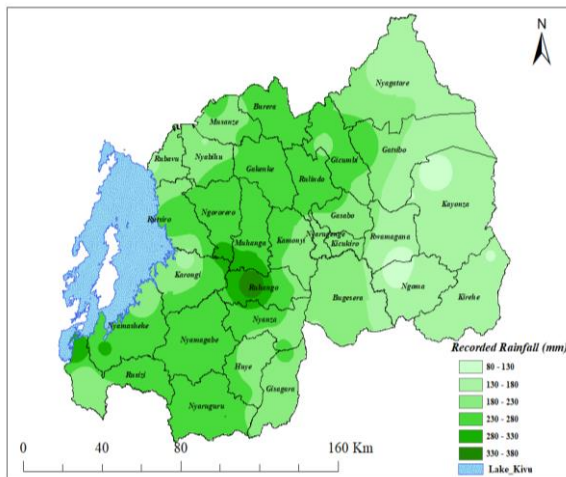
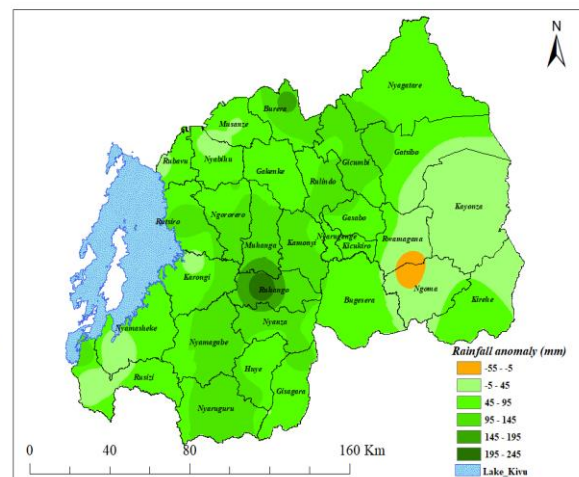


Figure 1 &2 above show rainfall performance during November 2024 and the deviation from the Long-Term Mean (LTM) for the same period.



Map1: Rainfall distribution of November 2024



Map2: November 2024 rainfall anomaly

3.3 Temperature analysis

Maximum and minimum temperatures were higher in most parts of the country compared to the Long-Term Mean (LTM). The lowest maximum temperature recorded was 20.2 °C at Kinigi weather station in the Northern Province, while the highest maximum temperature recorded was 29.2 °C at Bugarama station in Western Province. The minimum temperature ranged between 11.8 °C at Busogo station in the Northern Province and 20.3 °C at Bugarama station in the Western Province. Generally, some parts of Southwestern, Eastern Province and Kigali City were warmer compared to other parts of the country, whereas Nyabihu, Musanze and Burera Districts were cooler compared to the remaining parts of the country (Map 3 and 4).



Figure 3 and 4 below show temperature deviation (anomalies) from the Long-Term Mean (LTM) in November 2024

Compared to the Long-Term Mean, the maximum temperature showed an increased trend over most parts of the country with Ntendezi station which increased by 1.7°C in November 2024 with exception of Kansi Station, which observed a decrease of 3.2°C. Concerning the minimum temperature; it was increased in numerous locations of the country with Kirehe station increased by 3°C .

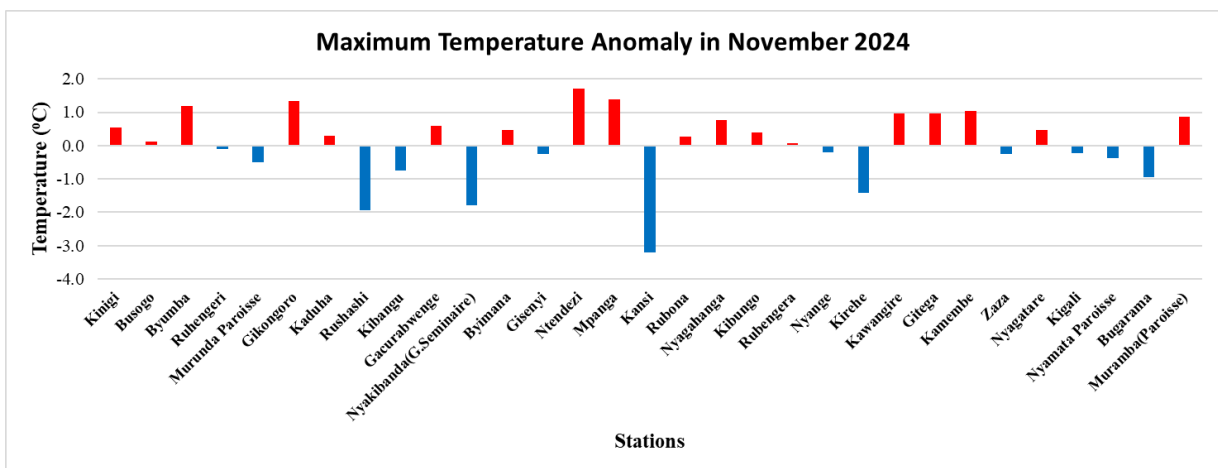


Figure 3 shows that the maximum temperature increased over many parts of the country during November 2024 compared to the Long Term Mean.

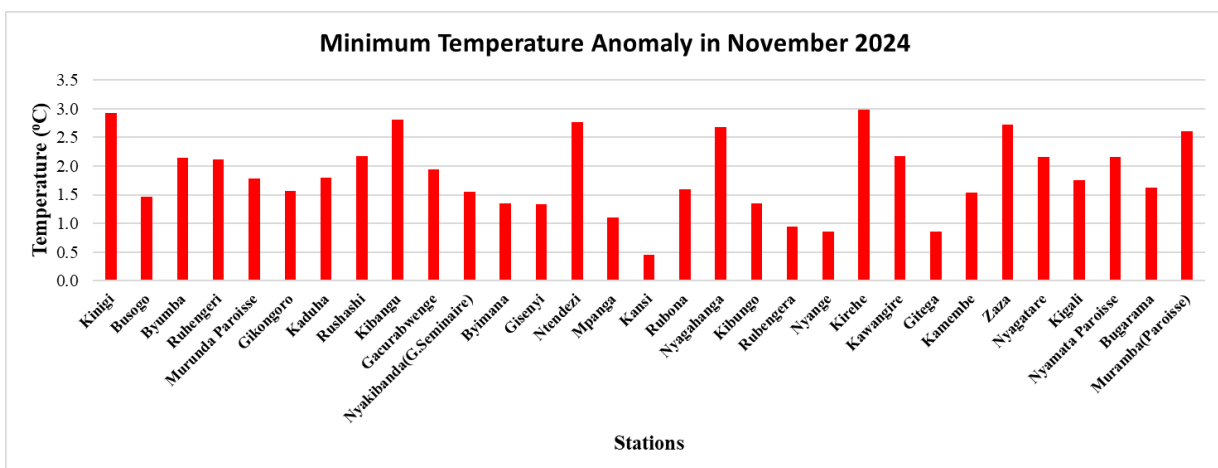
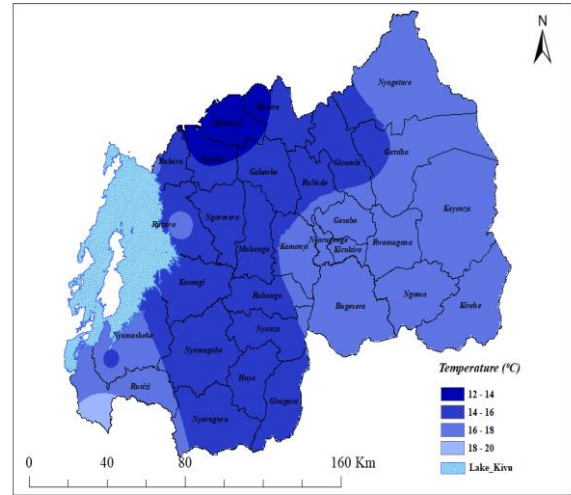
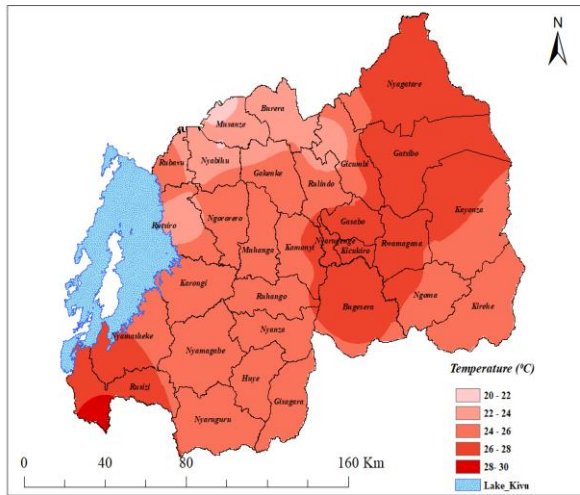


Figure 4 shows that the minimum temperature increased in most parts of the country during November 2024 compared to its Long Term Mean.



Map3: November 2024 Maximum Temperature Map4: November 2024 Minimum Temperature

4. Soil Moisture Index (SMI)

The soil moisture content increased over many parts during the month of November 2024 due to the rainfall accumulation across the country. The soil moisture is expected to continue increased in December 2024, as a result of enhanced rainfall expected.

5. Climate outlook for December 2024

For more information on December 2024 climate outlook click [here](#)

6. IMPACTS ON SOCIO-ECONOMIC SECTORS

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

6.1 Impacts of observed climate condition.

The observed rainfall in November 2024 had a positive impact on the agriculture sector, particularly on pasture and crops that required water. In some areas of the country, negative effects such as crops damage and disaster related to heavy rain and strong were observed.

6.2 Potential likely impacts for December 2024

Expected rainfall in December 2024 will be above the range of the Long-Term Mean (LTM), particularly in the first dekad. The increased rainfall may continue to improve soil moisture



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availability for crops still at growing stages. However, it may have the negative impacts on crops that are approaching harvest and lead to some negative consequences like landslides and some disease outbreaks.

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).