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## UGANDA NATIONAL METEOROLOGICAL AUTHORITY

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10<sup>th</sup> February 2020

### **MARCH TO MAY 2020 SEASONAL RAINFALL OUTLOOK OVER UGANDA**

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#### **1. Rainfall performance for September 2019 to January 2020**

Uganda National Meteorological Authority (UNMA) released the Seasonal Climate Outlook for the September to December (SOND) 2019 period on 9th September 2019. It indicated that much of Uganda was expected to receive enhanced rainfall (Above Normal) that could result into disasters such as landslides and floods especially in the areas that are prone to such disasters. The forecast was perfectly correct. From September 2019 to January 2020, several districts in Uganda have been experiencing occasional outbreaks of heavy showers and thunderstorms that resulted into flash floods in most urban areas and landslides in hilly areas.

The spatial distribution of the observed rainfall in terms of total in (mm) and deviation from average rainfall over the country for the months of September 2019 to January 2020 with their corresponding statistics are indicated in the **Annex 1**.

The SOND 2019 rains were associated with positive Indian Ocean Dipole (IOD), that aided higher evaporation, and also created a low pressure zone in western part of the Indian Ocean and hence allowing in reversal winds from the colder parts of Indian Ocean to transport moist air inwards over the continent near the equator, strengthening the ITCZ and leading to larger and more widespread storm clouds that resulted into wetter conditions across many East African countries including Uganda. On a positive note, these rains increased water levels for hydro-power generation, improved pasture for livestock and wild life, and increased soil moisture for agricultural activities over most parts of the country. On a negative note, they led to landslides and floods to some areas that killed people and damaged property in some parts of the country especially Bududa, Sironko, and Bundibugyo Districts.

#### **2. Rainfall outlook for March to May 2020**

March-April-May (MAM) constitutes the first major rainfall season over Uganda. During the 54<sup>th</sup> Climate Outlook Forum for the Greater Horn of Africa (GHACOF54) which was held at Pride Inn Paradise Beach Hotel in Mombasa, Kenya from 27<sup>th</sup> to 29<sup>th</sup> February 2020, the National, Regional and International

Climate Scientists reviewed the state of the global climate system and its implications on the seasonal rainfall over the region. It was observed that the major physical conditions likely to influence the weather conditions over Uganda for the forecast period of March to May 2020 are as follows: -

- i) The current and evolving Sea Surface Temperature (SST) anomalies over global oceans, specifically the increased probability for neutral El Nino Southern Oscillation(ENSO) conditions over equatorial Pacific and Indian Ocean Dipole (IOD) phases through the March to May 2020 period;
- ii) Intra-seasonal variations such as the influence of Madden Julian Oscillations (MJO) which are most significant over the region;
- iii) The influence of regional circulation patterns, topographical features and large inland water bodies;

Based on the above considerations as well as details of the climatology of Uganda and scientific tools for climate analysis and prediction, Uganda National Meteorological Authority (UNMA) has come up with the following rainfall outlook:

Overall, there is an increased likelihood of **near normal to above normal (wetter than average) rainfall** over several parts of the country. The onset of the seasonal rains is expected to be early in South-western (late February) with a gradual progression in other parts of the country. The rainfall onset over the Eastern, Northern and North-eastern Uganda is expected to get established around mid-March to early April. The MAM2020 rainfall season is highly expected to be associated with thunderstorm activity that is likely to be characterized by lightning, strong winds and hailstones in some parts of the country.

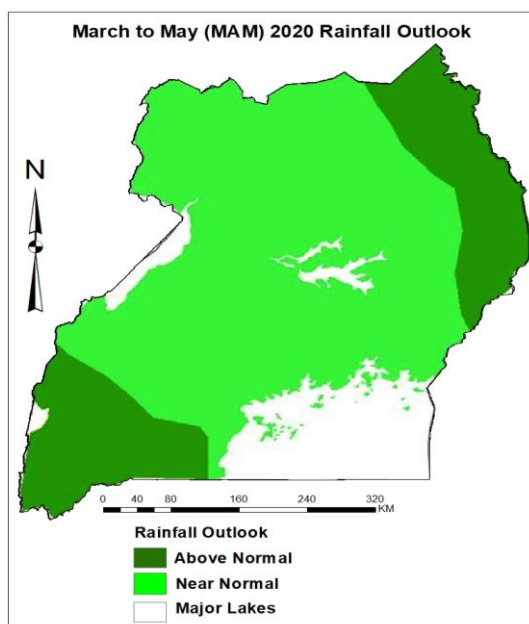


Fig1: Seasonal climate forecast for March to May 2020

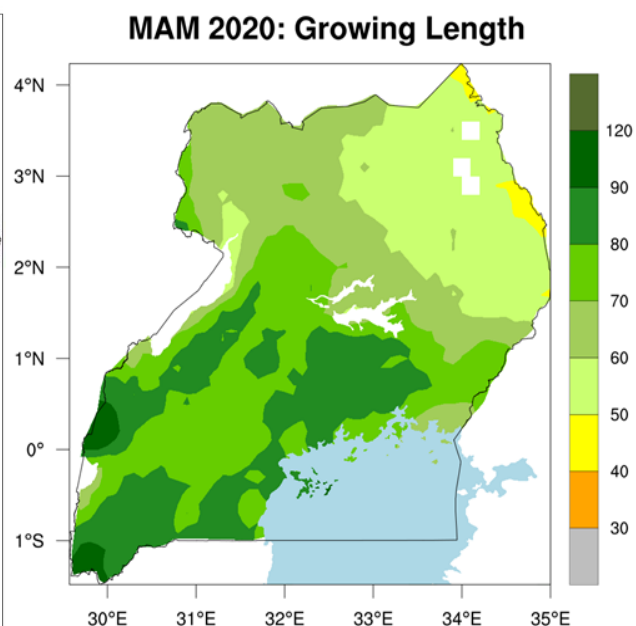


Fig2: Growing length for March to May 2020

Based on the above considerations as well as details of the climatology of Uganda and scientific tools for climate analysis and prediction, Uganda National Meteorological Authority (UNMA) has come up with the following rainfall outlook:

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## **2.1 South and Central Western Uganda**

**2.1.1 South Western:** *(Kisoro, Kabale, Rubanda, Rukiga, Rwampara, Kazo, Rukungiri, Kanungu, Ntungamo, Mbarara, Kiruhura, Isingiro, Ibanda, Kitagwenda, Bushenyi, Buhweju, Mitooma, Sheema, Rubirizi and Kasese) districts.*

The region has been experiencing dry conditions in most areas punctuated by unseasonal rains since January. The onset of the rains is expected around late February to early March. The peak of the rains is expected around early to mid-April and cessation around late May. Overall, the region is expected to receive above normal rainfall (exceeding their average rainfall).

**2.1.2 Western Central:** *(Bundibugyo, Ntoroko, Kabarole, Kyenjojo, Kyegegwa, Kamwenge, Kibaale, Kikuube, Bunyagabu, Kakumiro, Kagadi, Hoima, Buliisa, Masindi, Kiryandongo) districts*

The region has been experiencing isolated light showers and dry conditions since January. The onset of seasonal rains associated with isolated outbreaks of light showers and thunderstorms is expected in around early to mid-March. Thereafter, steady rains are expected to get established with the peak of the rains expected during the month of April. Cessation of the seasonal rains is expected around late May to early June. Overall, there are high chances for the region to receive near normal rains with a slight tendency to above normal rains.

## **2.2 Central Region and Lake Victoria Basin**

**2.2.1 Western areas of Central region:** *(Nakasongola, Luwero, Kyankwanzi, Kakumiro, Kasanda, Nakaseke, Kiboga, Mubende, Sembabule, Western Masaka, Lyantonde, Kyotera and Rakai) districts*

The region has been experiencing isolated rains and some dry conditions since January. The onset of seasonal rainfall associated with occasional outbreaks of showers and thunderstorms is expected around early to mid-March. The peak of the rains is expected to occur around mid to end of April. While the Cessation of the seasonal rains is expected to occur around late May to early June. Overall, there are high chances of near normal rainfall conditions.

**2.2.2 Central and Western Lake Victoria region** *(Kalangala, Kampala, Wakiso, Eastern Masaka, Lwengo, Mpigi, Butambala, Kalungu, Bukomansimbi, Gomba, and Mityana) districts*

The region has been experiencing off seasonal rainfall over several areas since January. The onset of the rains associated with isolated outbreaks of showers and thunderstorms is expected to get established around early to mid-March. The peak of the rains is expected to occur around early to mid-April with cessation around late May. Overall, there are high chances for most of the areas to receive near normal with the tendency to above normal rainfall during this season.

### **2.2.3 Eastern areas of Central region:** *(Mukono, Buikwe, Kayunga, Buvuma) districts*

The region has been experiencing dry conditions with intermittent outbursts of showers and thunderstorms since January. The onset of the seasonal rainfall is expected around early to mid-March, and this is likely to be associated with isolated light showers and thunderstorm. The peak of the rains is expected around early to mid-April with the cessation around late May to early June. Overall, this region is expected to receive near normal rainfall with a slight tendency to above normal rainfall.

### **2.2.4 Eastern Lake Victoria and South Eastern** *(Jinja, Mayuge, Kamuli, Iganga, Bugiri, Namayingo, Luuka, Namutumba, Buyende, Kaliro, Bugweri, Busia and Tororo) districts*

This region has been experiencing outbursts of rain punctuated by dry spells since January in some areas. The onset of the seasonal rains is expected around early to mid-March. The peak is expected around mid-April to early May. The cessation of the rains is expected around late May to early June. Overall, this region has a high chance of receiving near normal to above normal rainfall.

### **2.3 Eastern Central** *(Pallisa, Budaka, Kibuku, Butebo, Mbale, Sironko, Manafwa, Namisindwa, Bududa, Kapchorwa, Kumi, Kalaki, Kaberamaido, Soroti, Serere, Butaleja, Bulambuli, Kween, Bukwo, Bukedea and Ngora) districts.*

This region has been experiencing dry conditions with occasional outbursts of unseasonal rains since January. Onset of the seasonal rains is expected around mid to late March which will eventually lead to steady rain by early to mid-April. The peak of the rains is expected around Mid-May and thereafter moderate relaxation around mid-June. Overall, high chances of above normal rains is expected to occur over this region.

### **2.4 North Eastern Region:** *(Katakwi, Amuria, Moroto, Kotido, Nakapiripirit, Abim, Napak, Kapelebyong, Nabilatuk, Karenga, Amudat, Kalenga, and Kaabong) districts*

This region has been experiencing dry conditions characterized by isolated rains since January. Outbursts of irregular rains are expected in mid-March which will eventually lead to the onset of steady rain by late March to mid-April. The peak of the rains is expected around early to mid-May, and thereafter moderate relaxation around mid-June. Overall, there are high chances for above normal rains to occur over this region.

## **2.5 Northern region**

### **2.5.1 North Western:** *(Arua, Maracha, Moyo, Obongi, Madi Okollo, Zombo, Nebbi, Pakwach, Yumbe, Koboko, Terego and Adjumani) districts*

The region has been experiencing dry conditions with sporadic rains since January. The onset of the seasonal rains is expected around mid-March to early April with the peak of the rains at around late April to early May, followed by moderate relaxation around mid-June. Overall, there are high chances for this region to receive near normal with a slight tendency to above normal rains.

### **2.5.2 Central Northern Parts:** *(Gulu, Omoro, Lamwo, Nwoya, Amuru, and Oyam) districts*

The region has been experiencing dry conditions with occasional light rains since January. The onset of the seasonal rains is expected to get established around

mid-March to early April with the peak of the rains expected to occur around mid-April to early May. Thereafter, a moderate relaxation of the rain is expected around mid-June. Overall, this region is expected to receive near normal with a slight tendency to above normal rainfalls.

**2.5.3 Southern eastern areas of northern region:** *(Amolatar, Lira, Alebtong, Pader, Otuke, Kitgum, Agago, Kole, and Dokolo) districts*

The region has been experiencing dry conditions, characterized by sporadic rain since January. The onset of the rains is expected around mid-March to early April with the peak of the rains expected around mid to end of April. Thereafter, moderate relaxation of the rainfall is expected around mid-June. Overall, this region is expected to receive near normal with a tendency to above normal rainfall during this season.

### **3. Advisories to different sectors**

#### **3.1 Agriculture and Food Security Sector**

Generally, the March to May (MAM 2020) forecast presents good prospects for improved agricultural production across the country. Farmers and other agricultural practitioners are highly encouraged to take advantage of the expected good rains to optimize food and crop production.

The general advisories include: early prepositioning of seed and other agro/livestock-inputs in/or near agricultural/pastoralist communities, timely land preparation and early planting, expansion of farming acreages, proper seed selection to optimize yields, water harvesting and micro-irrigation (where necessary), maximizing agroforestry/plantation tree planting, restocking livestock farms, fish ponds and apiaries; and intensifying agricultural extension/veterinary services across all agricultural/pastoral communities, among others.

#### **4.2 Disaster Management Sector**

It should be noted that local and month-to-month variations might occur as the season progresses. For example, episodic flash floods might be experienced in some areas leading to loss of lives and destruction of property. Other disasters may arise from possible landslides mostly in mountainous areas of western, south-western and eastern Uganda as well as strong and gusty winds and lightning among others. Therefore, appropriate measures should be taken to avoid loss of life and destruction of infrastructure and property. For instance, Village, Sub county and District Disaster Management committees are advised to report any emerging incidents associated with weather and climate hazards immediately to the concerned authorities and to the Office of the Prime Minister. De-silt the dams in Karamoja sub region to capture and store the water flows from expected rains for use.

### **3.3 Water, Energy and Hydro-Power generation**

Plans for optimization of power generation and distribution should be enhanced due to the expected increased discharge of seasonal rain water into the water bodies; Setting up and protection of vegetated/forested buffer zones around water sources to guard against water pollution should be encouraged and communities should avoid consumption of contaminated water.

### **3.4 Infrastructure, Works and Transport Sector**

The anticipated near normal to above normal rainfall patterns are likely to be occasionally accompanied by intense rainfall events that may lead to flash flooding in some localized places especially in Kampala city and other urban areas. The following measures should be taken:-

Urban authorities need to clear and reduce blockages of the drainage systems to avoid water logging on streets; Strong/violent winds may be experienced that can cause structural damages to buildings (blow off rooftops and collapse of poorly constructed buildings); De-silting drainages and other water channels to curtail flooding is encouraged;

### **3.5 Health**

There is need to increase disease surveillance due to expected upsurges of epidemics of diseases related to rainy season such as malaria, cholera, bilharzia and typhoid, also increase in lower respiratory diseases e.g. asthma due to humid conditions and allergies from some flowering plants are expected. Health authorities are therefore advised to be on the lookout and equip health units with necessary drugs to deal with such situations as they may arise. Therefore the following measures should be done:

Intensify health education and awareness campaigns emphasizing the use of mosquito nets, slashing bushes, disposing open containers, filling up open pits, and draining stagnant water around homesteads in order to reduce breeding places for mosquitoes; Frequent health inspection in all communities is encouraged; Increased prevention for air borne diseases and non-communicable illnesses should be improved; Improve domestic hygiene and Sanitation around homes and schools to reduce on the contamination of water. E.g. use of latrines.

## **4. Conclusion**

The predicted rains require action in sufficient time and in an appropriate manner so as to take advantage of the information. This forecast should be used for planning in all rain-fed economic activities so as to improve economic welfare and livelihoods for all our communities in their localities.

Uganda National Meteorological Authority will continue to monitor the evolution of relevant weather systems particularly the state of the Seas Surface Temperature (SSTs) and Indian Ocean Dipole, and issue appropriate rainfall

alerts, updates and advisories to the users regularly, especially to those areas that have been heavily affected by floods and landslides disasters.



**Dr. Festus Luboyera**  
**Executive Director**

## **EXPLANATORY NOTES ON TERMINOLOGIES USED**

**Above Normal:** This is when the total rainfall is above 125% of the long - term -mean (LTM). Impact on socio-economic activities is mostly boosted especially in the modest degrees of above average.

**Normal:** This is when the total rainfall is in the range of 75% to 125%of the LMT. This range of rainfall is expected to adequately support the normal socio-economic activities for the various areas.

**Below Normal:** This is when the total rainfall is below 75% of the LTM. Under this range there are high chances for socio-economic activities being stressed, the level of stress increasing with increasing rainfall deficiency.

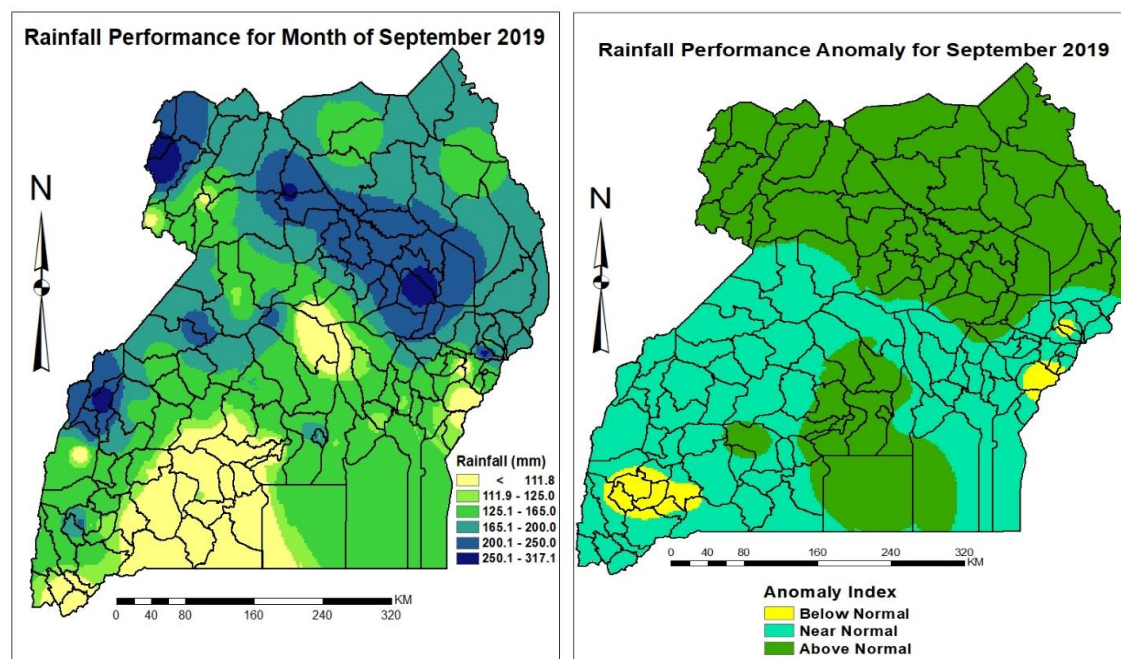
**INPUTS:** This forecast is supported by useful forecast guidance inputs drawn from a wide range of sources including the World Meteorological Organization's Global Producing Centres (WMO GPCs). These inputs were combined into a regional consensus forecast using deterministic and probabilistic modelling alongside expert analysis and interpretation to obtain the national rainfall forecast for the March to May 2020 season.



## **ANNEX 1: PERFORMANCE OF RAINFALL FOR SEPTEMBER – TO – NOVEMBER 2019**

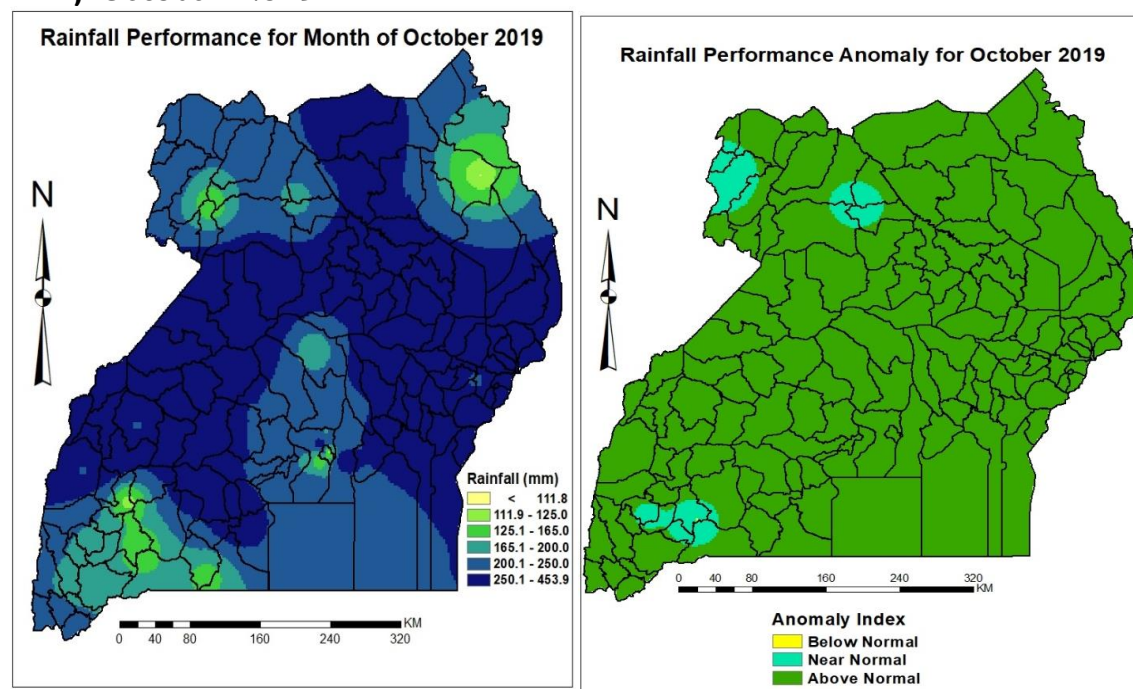
### **a) Spatial distribution for every month from September to January 2020**

#### **i) September 2019**



**Fig 1: September observed rainfall totals (mm) and Deviation from Average**

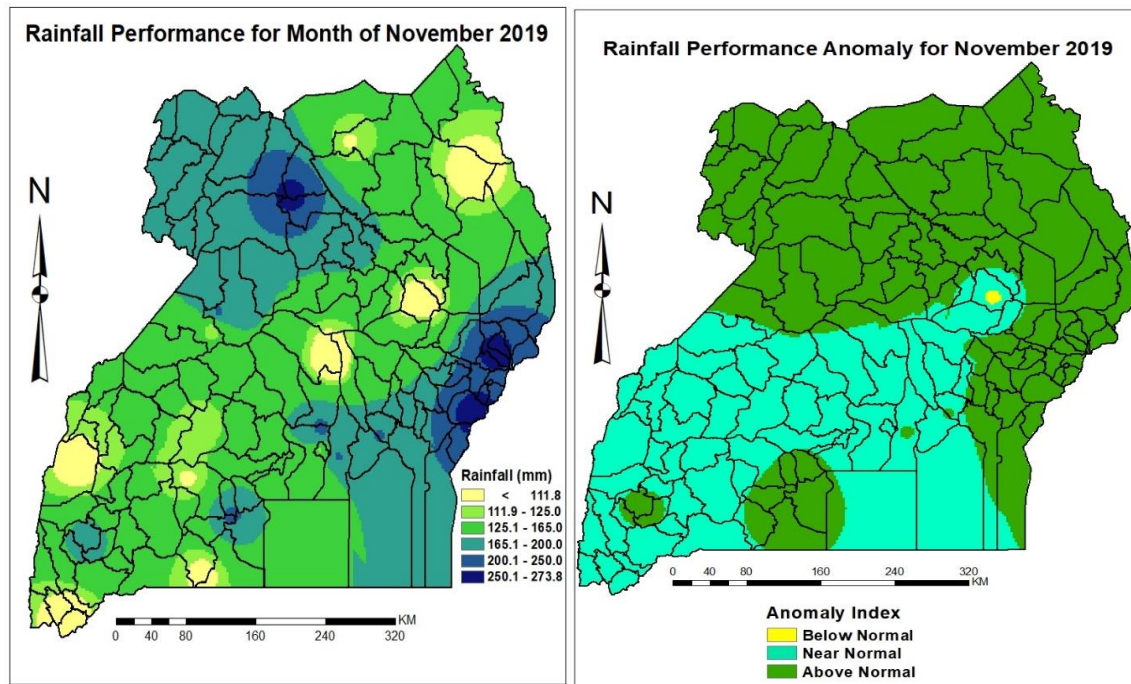
#### **ii) October 2019**



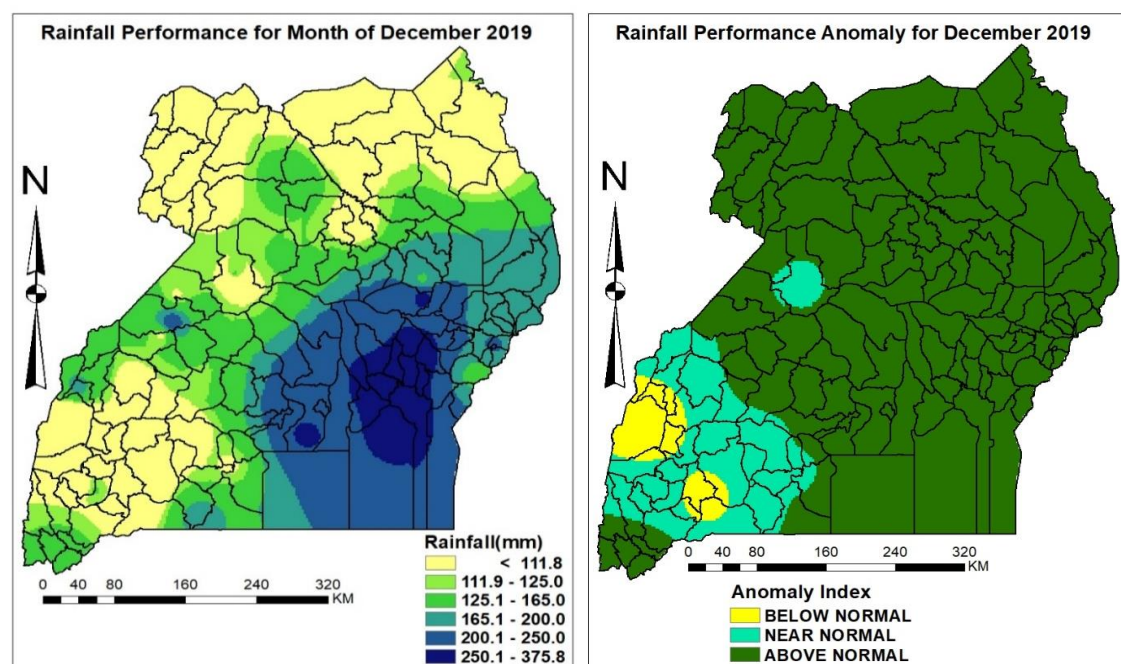
**Fig 2: October observed rainfall totals (mm) and Deviation from Average**



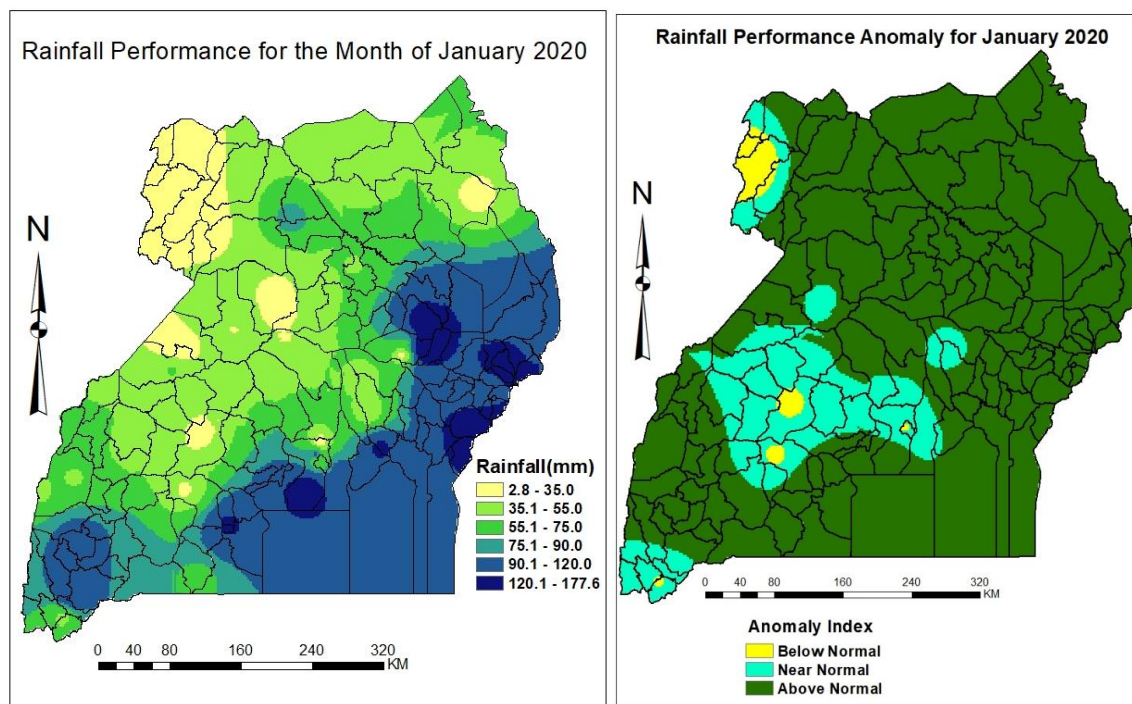
### iii) November 2019



**Fig 3: November observed rainfall totals (mm) and Deviation from Average**

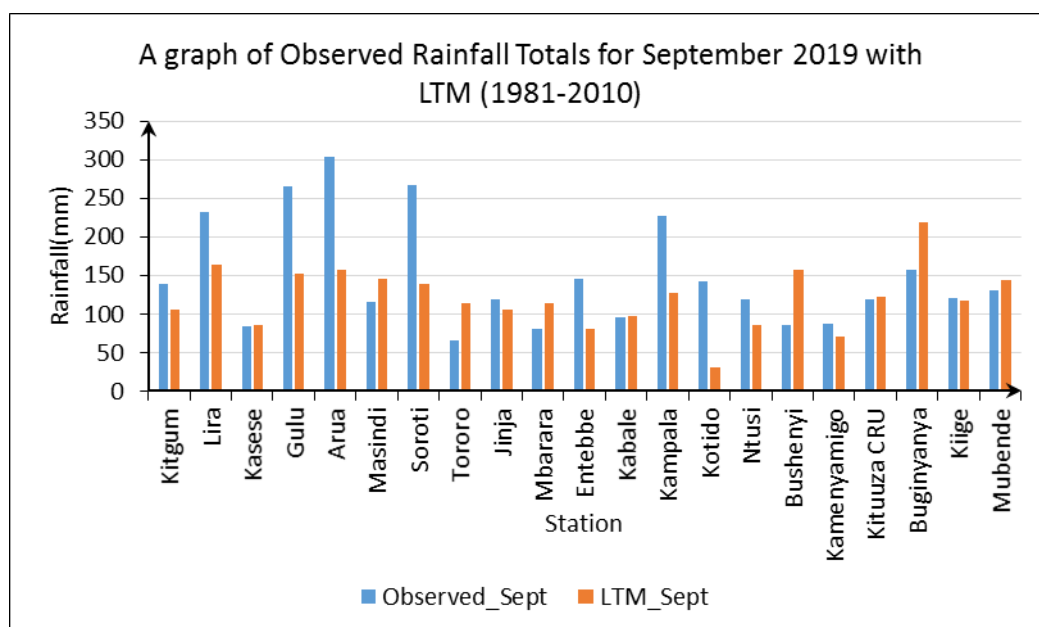


**Fig 4: December observed rainfall totals (mm) and Deviation from Average**

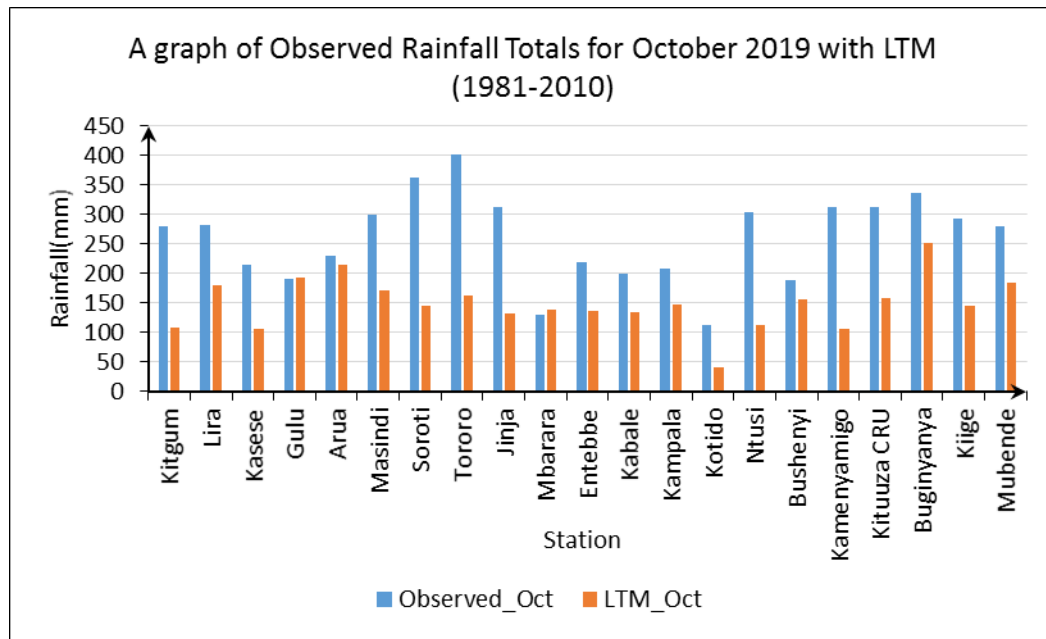


**Fig 5: January observed rainfall totals (mm) and Deviation from Average**

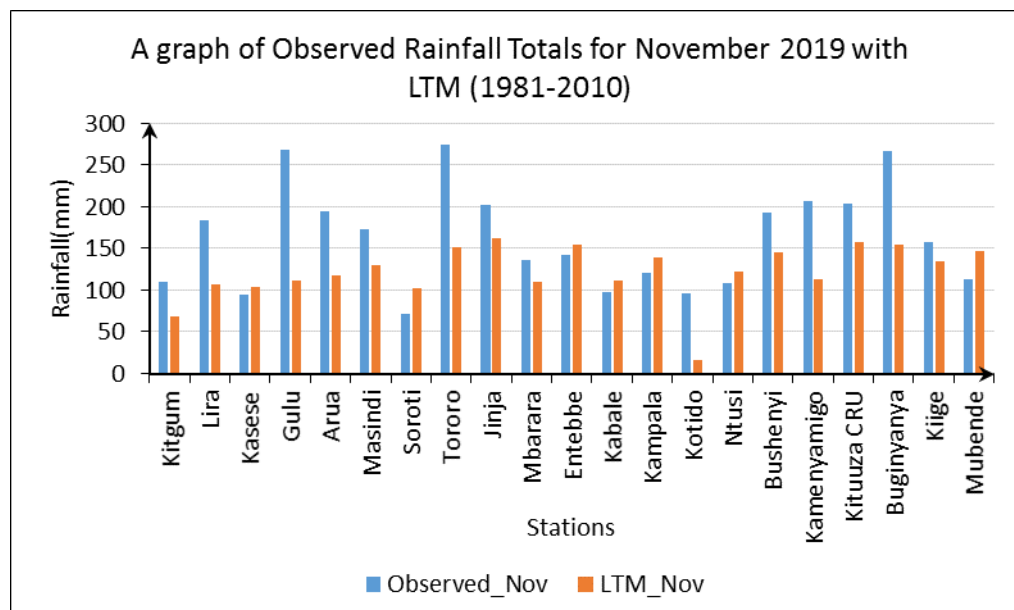
#### **b) Rainfall Performance against Long Term Mean**



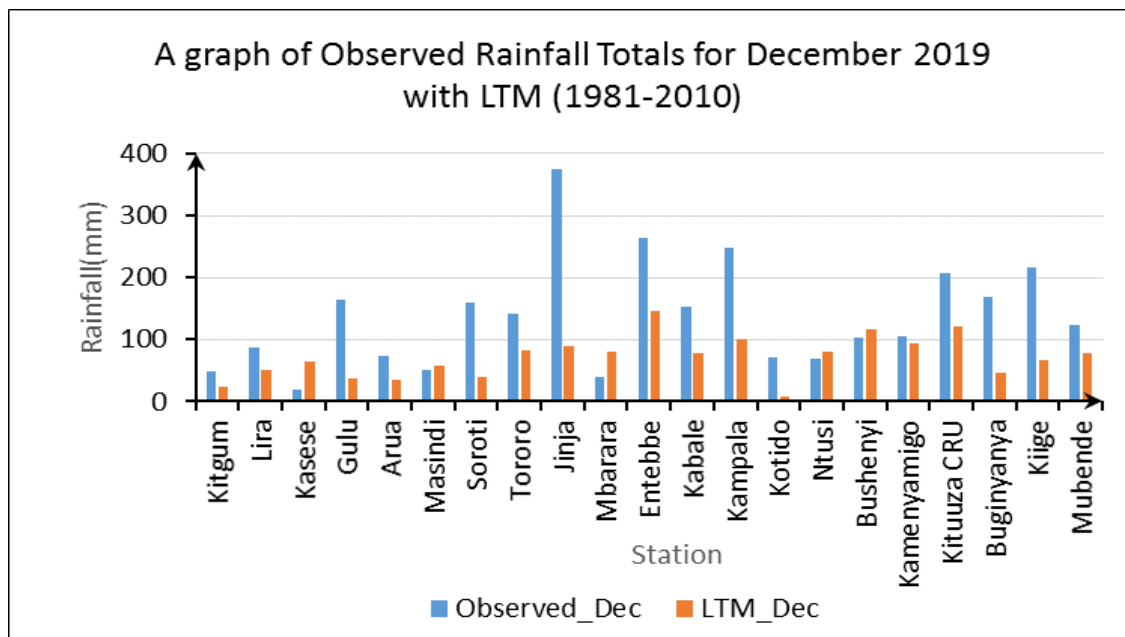
**Fig 6: A graph of Rainfall performance for September 2019 with the LTM (1981-2010)**



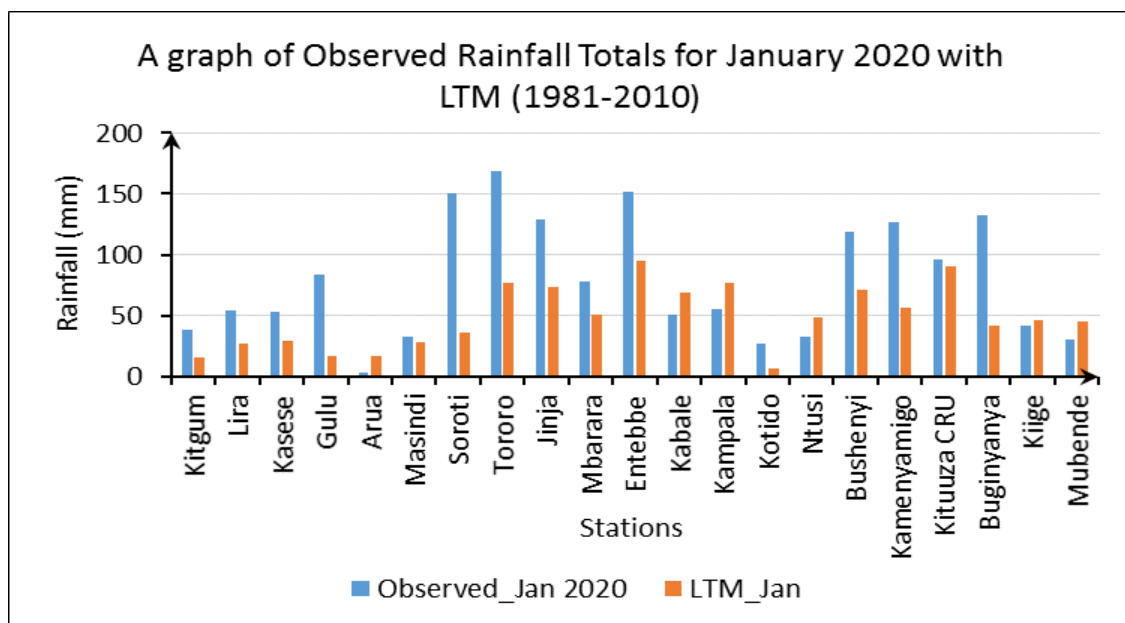
**Fig7: A graph of Rainfall performance for October 2019 with the LTM (1981-2010)**



**Fig8: A graph of Rainfall performance for November 2019 with the LTM (1981-2010)**



**Fig9: A graph of Rainfall performance for December 2019 with the LTM (1981-2010)**



**Fig10: A graph of Rainfall performance for January 2020 with the LTM (1981-2010)**