

Head Office
Plot 21/28,
Port Bell Road - Luzira
Email: info@unma.go.ug
Email: exdir@unma.go.ug



Tel: +256 414 251 798
Fax: +256 414 251 797
P.O. Box 7025,
Kampala - Uganda.
Website: www.unma.go.ug

UGANDA NATIONAL METEOROLOGICAL AUTHORITY

Ref: SCF/JJA/2022

30th May, 2022

THE SEASONAL RAINFALL OUTLOOK FOR JUNE TO AUGUST 2022 OVER UGANDA

1.0 OVERVIEW

The months of June, July, and August (JJA) are often dry in the southern sector of the country, particularly in areas of the southwestern, central, Lake Victoria basin, and eastern regions, but a continuation of rainy season for northern Uganda. It usually marks the end of the first rainfall season and a harvesting season for crops in most parts of the country.

The National, Regional, and International Climate Scientists reviewed the state of the global climate systems and their implications on seasonal rainfall over the Eastern Africa region at the 61st Climate Outlook Forum for the Greater Horn of Africa, held in Addis Ababa, Ethiopia, from the 17th to 19 May 2022.

It was observed that the major physical conditions, which are likely to influence the weather conditions over Uganda and the rest of the East African region for the forecast period of June to August 2022, are as follows:-

- i. Sea Surface Temperatures (SSTs) over the equatorial Pacific Ocean have reflected La Niña conditions over the past few months and is favored to continue through the forecast period;
- ii. An increased chance for the development of a negative phase of the Indian Ocean Dipole (IOD) which is predicted to continue through the coming season;
- 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 used for climate analysis and prediction, Uganda National Meteorological Authority (UNMA) has come up with the following detailed seasonal rainfall outlook for JJA 2022 as follows:-

1.1. General Forecast

Overall, there is an increased likelihood of **near normal rainfall** with a tendency to **above normal** conditions over the Northern and Eastern regions including Lake Victoria basin. The Western and parts of Central Uganda are expected to experience **near normal** rainfall with tendency to **below normal** while the rest of the country has a high likelihood of experiencing **near normal rainfall** as shown in figure 1 below:-

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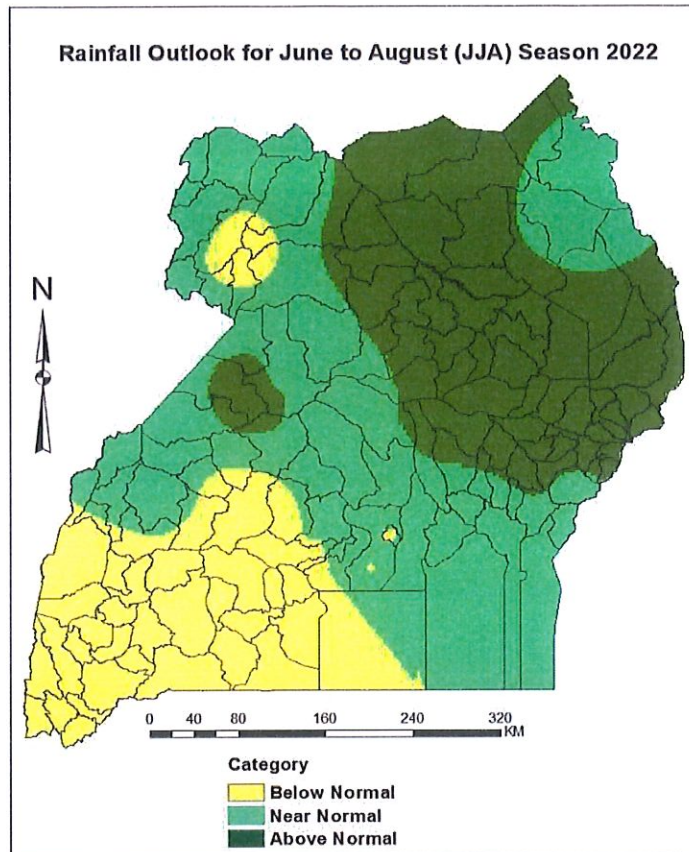


Figure 1: Map of Uganda showing expected spatial distribution of rainfall forecast for the June to August (JJA), 2022 season.

2.0 THE BREAKDOWN OF THE FORECAST FOR EACH REGION

2.1.0 WESTERN REGION

2.1.1 Central Western (*Bundibugyo, Ntoroko, Kabarole, Kyenjojo, Kyegegwa, Kamwenge, Masindi, Buliisa, Hoima, Kikuube, Kakumiro, Kagadi and Kibaale*) districts

The region has been experiencing dry conditions characterized by isolated showers over several parts. These conditions are expected to persist up to around mid-June when light rainfall is likely to set in and continue up to late-July when isolated moderate rainfall are expected to prevail up to the end of the forecast period. Overall, **near normal (average)** with slight tendency to **Above Normal (Enhanced)** rainfall is expected over most parts of the region during JJA period

2.1.2 South Western (*Kasese, Kabale, Rukiga, Rubanda, Kisoro, Rukungiri, Kanungu, Ntungamo, Mbarara, Kiruhura, Isingiro, Ibanda, Bushenyi, Buhweju, Mitooma, Sheema and Rubirizi*) districts

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The isolated showers, which are currently being experienced over this region, are expected to persist up to around mid-June when the dry conditions are expected to set in and continue up to early August. Thereafter, isolated light showers are expected to get established and continue until the end of the season. Overall, **near normal rainfall (average rainfall)** with high tendency to **below normal** is expected to prevail over most parts of the region.

2.2.0 LAKE VICTORIA BASIN AND CENTRAL REGION

2.2.1 Northern and Southern parts of Central (*Nakasongola, Luwero, Kyankwanzi, Nakaseke, Kiboga, Mubende, Kasanda, Sembabule, Lwengo, Lyantonde, and Rakai*) districts.

The dry conditions characterized by isolated showers observed over this region are expected to persist until mid to late June. After that, occasional isolated light rains are expected to set in and continue until the end of the season. Overall, there are high chances of **near normal (usually dry)** conditions with an increased tendency to **below average (drier than usual)** conditions over most parts of the region.

2.2.2 Eastern parts of Central (*Mukono, Buikwe, Kayunga, Buvuma*) districts.


The occasional light rains, which are being experienced in this region, are expected to continue until early August. Thereafter, moderate rains are expected to get established and continue up to the end of the forecast period. Overall, there are high chances for **near normal (average)** rainfall over most parts of this region.

2.2.3 Central and Western Lake Victoria Basin (*Kalangala, Kampala, Wakiso, Masaka, Mpigi, Butambala, Kalungu, Bukomansimbi, Gomba, and Mityana*) districts

The region is experiencing isolated showers, which are expected to continue up to early July. Thereafter, occasional light rains punctuated by dry spells are expected to set in and persist until the end of the season. Overall, **near normal (average)** with a slight tendency to **above normal (enhanced)** is expected to prevail over this region.

2.2.4 Eastern Lake Victoria Basin: (*Jinja, Bugiri, Busia, Mayuge, Namayingo and Tororo*) districts.

Currently, the region is experiencing intermittent rains, which are expected to continue up to early July. Thereafter, these intermittent rains punctuated by dry spells are expected to continue up to the end of the season. Overall, **near normal** with a tendency to **above normal** rainfall during this season is expected to prevail over this region.


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2.3.0 EASTERN REGION

2.3.1 South Eastern: *(Kamuli, Iganga, Luuka, Namutumba, Buyende, Kaliro, and Butaleja) districts*

The isolated showers characterized by dry spells which are being experienced over this region are expected to continue up to early- July. Thereafter, episodic outbreaks of showers and thunderstorms characterized by dry spells are likely to prevail up to the end of the forecast period. Overall, there are high chances of **near normal (average)** rainfall conditions over this region.

2.3.2 Eastern Central: *(Pallisa, Butebo, Budaka, Kibuku, Mbale, Sironko, Manafwa, Namisindwa, Bududa, Bulambuli, Kapchorwa, Kween, Bukwo, Bukedea, Kumi, Kaberamaido, Serere and Soroti) districts.*

The current dry spell, with the occasional outbreak of showers, is predicted to last until mid-June, when a slight decrease in rainfall is expected to begin and last through the end of June. After that, steady rains are expected to get established and last until the end of the season. Overall, there is a good possibility of **near-normal** rainfall with a slight tendency of above-normal rainfall over this region.

2.3.3 North Eastern: *(Amuria, Kapelebyong, Katakwi, Moroto, Kotido, Nakapiripirit, Nabilatuk, Abim, Napak, Amudat, and Kaabong) districts*

The current dry spells, with occasional light rains are expected to continue up to late June when stable rains are expected to set in and continue up to the end of the forecast period. Overall, **near normal (average)** with a higher probability of **above normal (enhanced)** rainfall is expected during the forecast period.

2.4.0 NORTHERN REGION

2.4.1 North Western *(Moyo, Yumbe, Adjumani, Arua, Maracha, Zombo, Nebbi, Pakwach, Koboko) districts*

The current showers and thunderstorms being experienced over this region are expected to continue until early June, when a dry spell will set in and continue up to mid-June. Thereafter, steady rains characterized by dry spell are expected to get established up to the end of the forecast period. Overall, there are high chances for **near normal (average)** rainfall over most parts of this region.

2.4.2 Eastern Northern Parts: *(Lira, Kitgum, Agago, Lamwo, Otuke, Pader, Alebtong, Kole, and Dokolo) districts*


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There is a high likelihood that the current showers and thunderstorms being experienced over this region will continue up to late June, when a relaxation is expected to set in and continue up to mid-July. After that, steady rains are expected to get established and continue up to the end of August. **Overall**, there are high chances for **near normal (average)** rainfall, with a high tendency for **above normal (enhanced)** rainfall over most parts of this region.

2.2.3 Central Northern Parts: (*Gulu, Apac, Pader, Nwoya, Amuru, Oyam and Kiryandongo*) districts

The current rains, which are characterized by thunderstorms, are expected to last until late June, with a little break until mid-July. Following that, persistent rains are expected to develop and continue until the end of August. Overall, there is a high likelihood of **near normal (average)** rainfall with a high tendency of above-normal rainfall over this region.

3.0 EXPECTED IMPACTS

(a) **Potential impacts for areas that are expected to experience Near Normal to Below Normal areas**

- Increased incidences of livestock and crop pests/vectors and diseases is expected;
- Shortage of pasture and water for livestock production;
- Water stress for some crops such as bananas, coffee, tea and fruit trees
- Fish to migrate to deeper waters is expected and this will affect the fish production system;
- High chances of fish nets being washed away by strong winds is expected;
- Water accidents (because of strong water waves) are expected to increase.
- Reduction in water table is expected;
- Reduced availability of surface and ground water;
- Declining levels/drying of streams and other water resources such as boreholes, wells etc. is expected;
- Increased upper respiratory diseases is also expected;
- Increased skin allergies are also likely to occur.

(b) **Potential impacts for areas that are expected to experience near normal to above Normal areas for**

- Likelihood of occurrence of animal and crop diseases and pests/vectors e.g. rift valley fever, foot and mouth disease;
- Post-harvest losses (crops, fish and animals) is expected to be high;
- Water logging is expected to occur and this will affect tuber crops;
- Poor tuber formation in crops e.g. sweet potatoes, yams is expected;
- Increased availability of water for production (crops, fish and animals) is expected.
- Soil erosion is expected;


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- Wastage/ washing of agricultural chemicals (herbicides, pesticides and fertilizers) likely to be high
- Silting of dams, valley tanks, fish ponds and other water harvesting structures due to erosion is expected
- Flash flooding in low lying areas is likely to occur;
- Low production of honey is expected;
- High production of milk due to abundant pastures is expected;
- Increased production of high water intensive crops e.g. rice, yams is expected.
- Enhance water for irrigation during dry spells;
- There will be recharge of ground aquifers and Surface Water bodies;
- Sustainable water supply for hydro power production;
- Available Water for both domestic and industrial use.
- Bursting of river banks may occur and Increase sediment loading expected;
- Improved utilization of Water transport due to increase of water levels;
- Destruction of infrastructures i.e. roads and bridges is expected in few areas.
- Water borne diseases such as typhoid and cholera upsurge expected in areas such as around L. Albert, Bulambuli area, Lake Victoria and Kampala slums;
- Increased prevalence of malaria in West Nile, Karamoja, Eastern region and around Lake Victoria;
- Water contamination from surface runoff is also expected.

3.1 POTENTIAL ADVISORIES

(a): **Advisories for areas that are expected to receive near Normal to below Normal rainfall.**

i. Crops

- Irrigation of farmlands with appropriate technology to sustain crop growth is encouraged;
- Farmers should mulch their gardens to conserve availability of soil moisture;
- Farmers are encouraged to plant short maturing crops such as cowpeas, leafy vegetables
- Backyard/homestead gardening of vegetables such as nakati, dodo, egg-plants, is encouraged
- Store enough food for household use especially cereals;
- Diversify the economic enterprises to strengthen and ensure fallback position;
- Plan and construct water harvesting structures;
- The control of pests and diseases is highly recommended for example termites;
- Use proper post-harvest handling practices to avoid yield losses e.g. the use of super bags, metallic silos, maize cribs, Cocoons, tarpaulins, drying racks is encouraged.
- Carry out good agronomic practices e.g. tendering for perennial crops;


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- Continue to plant/establish long seasoned crops accordingly e.g. fruits trees/agro-forestry trees.

ii. Livestock

- Pasture preservation (hay, silage for livestock) is encouraged
- Sparingly use the available water for livestock, irrigation and domestic purposes;
- Reduce on the stocking rate of livestock;
- Construct and rehabilitate reserve tanks for water harvesting;
- Vaccinate livestock.

iii. Fisheries

- Avoid over loading of boats;
- Fishermen are encouraged to wear life jackets;
- Use sea-worthy boats;
- Lower the stocking rate for fish ponds and cages;
- Construction of reserve tanks/ ponds is encouraged;
- Use water in fish ponds sparingly;
- Use early warning weather updates.

iv. Apiculture

- Improve hygienic practices along honey value chain;
- Put up more bee hives especially the modern ones e.g. Kenya top bar hives;
- Provide water sources to the apiary;
- Maintain the apiary sites e.g. fencing.

v. *Water and Energy sector*

- Declining levels / drying of streams and other water resources such as boreholes, wells etc.
- Reduced availability of surface and ground water;
- Reduction in water table.

vi) Health sector

- Increased upper respiratory diseases is expected

(b) Advisories for areas that are expected to receive *near Normal to above Normal rainfall.*

i) Crops

- Plant drought tolerant crop varieties such as sorghum, millet;
- Pay attention to forecast updates especially the monthly and 10-days;
- Soil and water conservation practices e.g., grass bunds, mulching, digging of trenches to enhance soil moisture retention and reduce soil erosion is encouraged;


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- Control of crop diseases especially fungal and bacterial which are wide-spread during rainy season e.g. potato diseases is encouraged;
- Rehabilitate / reconstruct damaged farm structures in a timely fashion;
- Encourage proper agronomic practices such as timely weeding and harvesting;
- Encourage proper storage of produce;
- Plant high yielding crop varieties (**NB**: Consult ZARDI's and Area extension office)
- Soil testing practice is encouraged.

ii) Livestock

- Establishment of water harvesting structures at household and community levels is encouraged;
- Vaccination and spraying of livestock against diseases and vectors is encouraged;
- Plant and conserve pastures for livestock production (Napier, leguminous pastures/ silage, hay);
- Improve storage facilities for milk like coolers;
- Increase the stocking rates of livestock;
- Encourage value addition for animal products.

iii) Fisheries

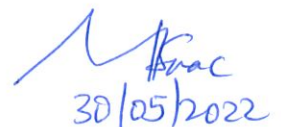
- Construction of drying racks for Mukene, and smoking kilns for bigger fishes is encouraged;
- Encourage proper hygiene and sanitation at landing sites e.g. cleaning of boats;
- Carry ice on board for fish preservation;
- Avoid overloading of fishing crafts;
- Put on life jackets;
- Boats should be sea worthy;
- Use proper storage facilities e.g. well aerated stores;
- Construct boulders around fish ponds;
- Maintain waterways in fishponds.

iv) Apiculture

- Plant flowering plants near apiary;
- Protect hives from harsh weather hazards e.g. wind breaks;
- Caution should be taken when using pesticides near apiaries.

v) Water and Energy sector

- Communities are encouraged to carryout rain water harvesting;


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- Authorities in charge of power production should utilize the available water to increase power output;
- Desilt Valley dams and ponds;
- Installation of lightening conductors is encourage;
- Water Treatment or boiling before consumption/ drinking is necessary;
- Apply sandbags to act as a barrier from bursting water reservoirs;
- Communities should desilt water reservoirs for extra benefits e.g. sand mining.
- Avoid standing under trees when it is raining.

vi) Health sector

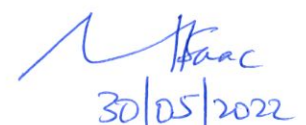
- Communities are advised to improve domestic hygiene to reduce on contamination of water. E.g. proper use of latrines.
- Health education through community awareness and sensitization about those diseases is encouraged;
- Control water pollution is encouraged. E.g. not to release wastewater into rivers, streams and other water sources.
- Water and sanitation good practices should be observed to avoid contamination;
- Enhanced disease surveillance of malaria, typhoid and cholera is encouraged;
- Buffer stocks for anti-malarial is encouraged;
- Communities are encouraged to practice proper disposal of waste including human fecal matter;
- Treat water/boil before consumption.

vii) Disaster Risk Management sector

- Multi-agency approach in response to disasters works best at national and sub national levels.
- Cash transfer is highly recommended to affected families
- Host family programs, which assist affected communities in the different regions of Uganda should be encouraged.

4. CLIMATOLOGY (LONG TERM MEAN) RAINFALL (1981-2010)

The June – to - August period is a major rainy season for the northern parts of the country. Several areas, which are far away north of the Equator, receive considerable rainfall during the June-August (JJA) season, extending sometimes to September with a slight relaxation around June-July, while the rest of the country receives little as seen in figure 2.


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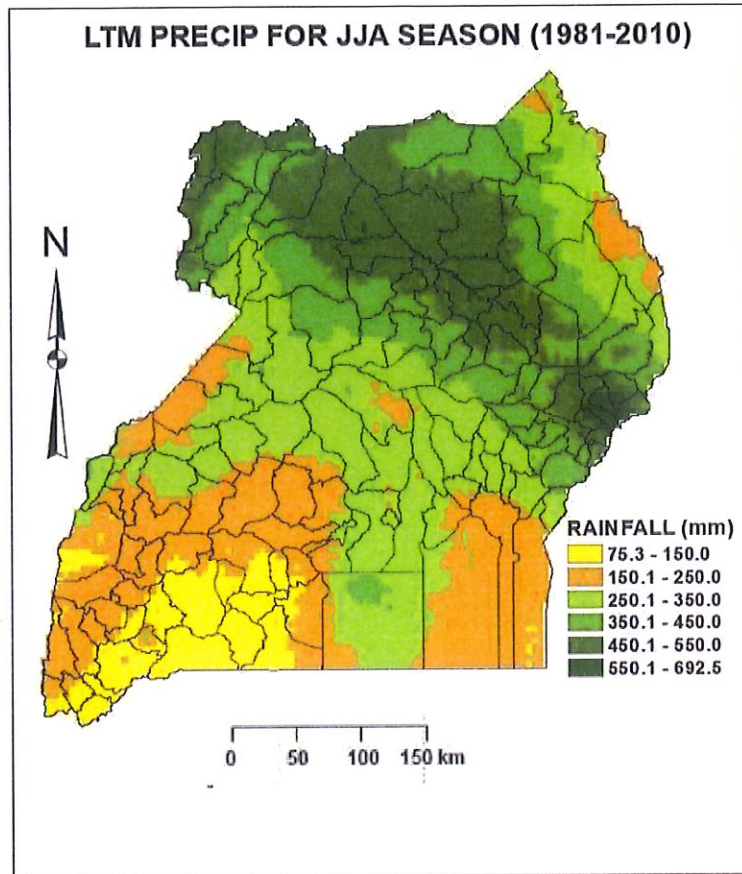


Fig.2: Climatology (Long Term Mean) Rainfall (1981-2010)

5. REVIEW OF THE SEASONAL RAINFALL PERFORMANCE FOR THE MONTHS OF MARCH, APRIL AND MAY (MAM) 2022 OVER UGANDA

The analysis of the seasonal rainfall performance for the months of March, April and May (MAM) 2022 was based on records observed from different weather stations across the country. The results of the analyses are presented in the next sub-sections:-

5.1 Review of the rainfall performance for March 2022

Overall, the month of March was characterised by dry spells over most parts of the country. This was caused by a series of Tropical Cyclone occurrences that included tropical cyclones Batsirai, Gombe and Halima, which occurred in the Indian Ocean during the period of February and March 2022. The tropical cyclones diverted the westerly moist air inflow over East African region into Madagascan region in the Indian Ocean, thus disrupting the onset of seasonal rainfall in several areas of Uganda that was expected to get established around late February to Mid-March.

It was observed that the highest amount of rainfall received during the month of March 2022 was 194.2mm recorded at Kamenyamigo station in Masaka district. This was followed by 176.7mm, 165.3mm and 143.9mm recorded at Masindi, Namulonge and Kawanda weather stations respectively as shown in figure 2.

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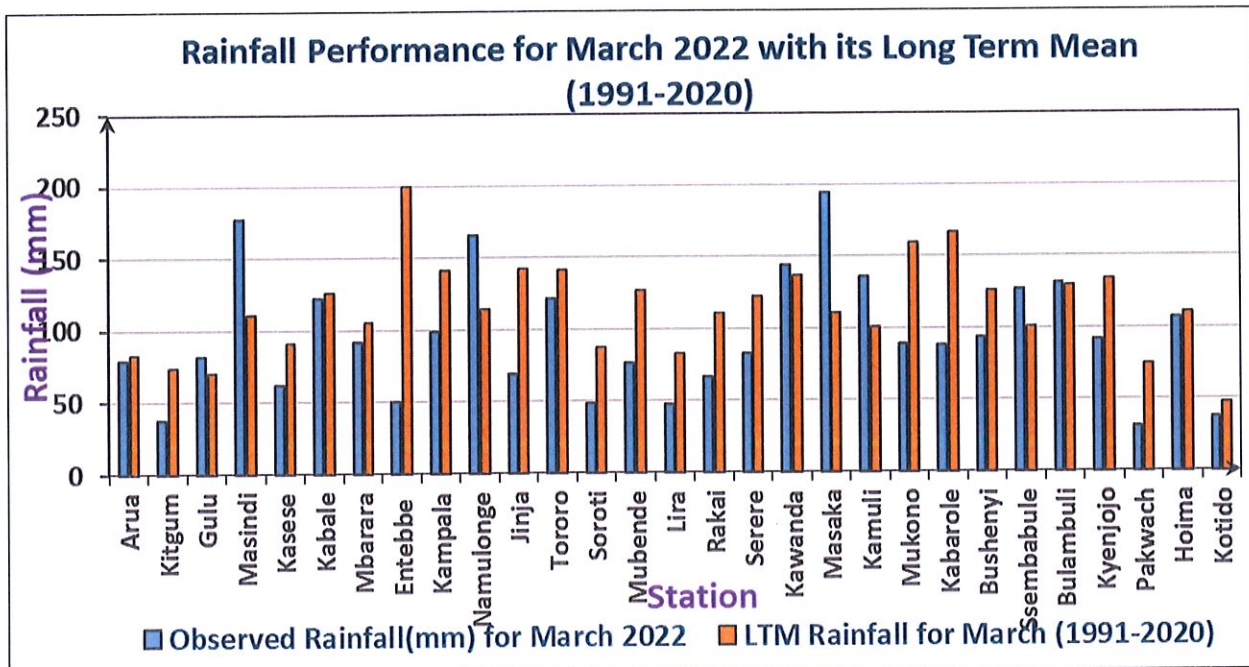


Fig.2: Rainfall performance for March 2022

The maximum rainfall received in a single day was recorded at Kamenyamigo station in Masaka district with an amount of 73.8mm on 22nd March 2022. This was followed by Kihonda and Masindi stations in Masindi district with 73.1mm and 70.1mm respectively on 25th March 2022. Kawanda station in Wakiso district recorded the fourth-highest maximum 24-hour fall of 50.7mm on 29th March 2022.

In terms of temporal distribution (number of rainy days in a month), Namulonge station in Wakiso district had 14 rain days, followed by Bushenyi and Bulindi stations in Hoima district with 13 rain days each while Kyenjojo station recorded 12 rain days.

The general spatial rainfall distribution for the month of March 2022 is shown in figure 3.

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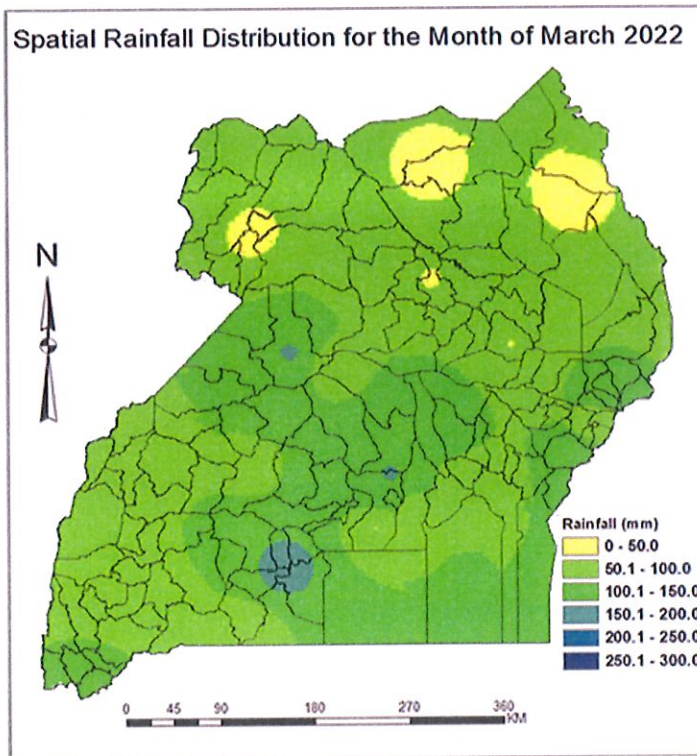


Fig.3: Spatial rainfall distribution for March 2022

5.2 Review of the rainfall performance for April 2022

The analysis of rainfall performance for the month of April 2022 indicated that the first ten days of the month were dry in most parts of the country. Thereafter, enhanced/wetter rainfall conditions were experienced over most areas from mid to late April 2022. In general, several parts of the country experienced near normal (average) rainfall conditions with Lake victoria areas and Mt. Rwenzori highlands reliaising pockets of above normal (above average) conditions.

The highest rainfall amount during the month was recorded at Jinja station with a total of 351.9mm. This was followed by Entebbe in Wakiso district and Buginyanya in Bulambuli District with amounts of 275.7mm and 258.1 respectively. The lowest amount were however experienced at Kalongo S/C station in Nakasongola district with 50.3mm as shown if figure 4.

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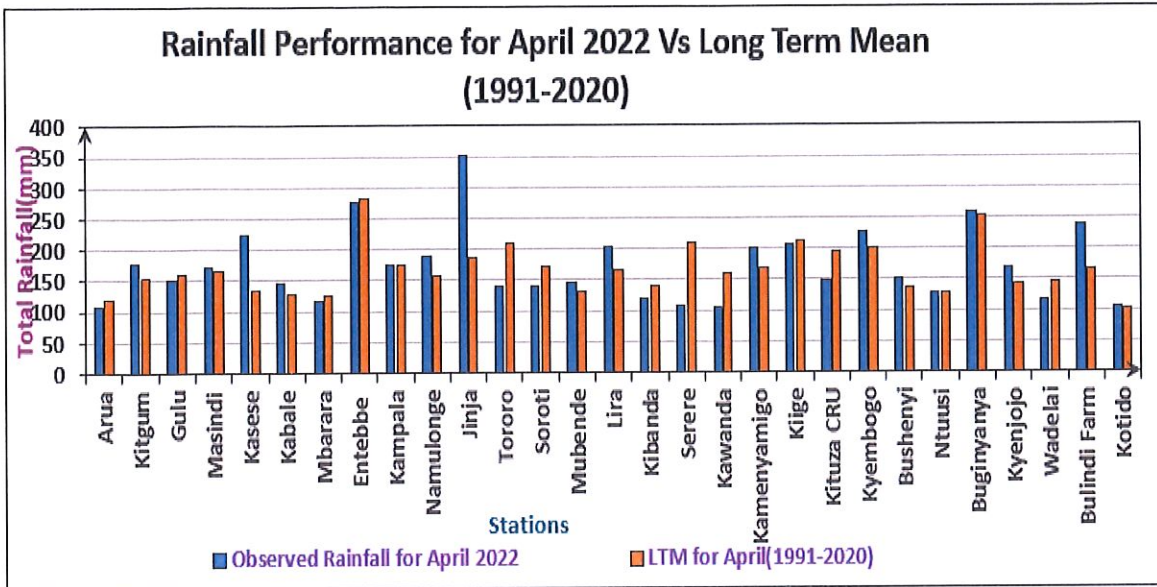


Fig.4: Rainfall performance for April 2022

For temporal rainfall distribution (number of days with rainfall activity), Entebbe in Wakiso district experienced the highest number of rainy days with a record of 19 days. This was followed by Budduda station with 18 days while Jinja, Entebbe, Buginyanya and Kyembogo stations recorded 17 rainy days each during April 2022.

The highest maximum fall (highest amount recorded in 24 hours) was observed in Entebbe with amount of 89.6 mm on 20th April 2022 and Katigondo Seminary in Kalungu district with amount of 78.8 on 19th April 2022.

The general spatial rainfall distribution for the month of April 2022 is shown in figure 5.

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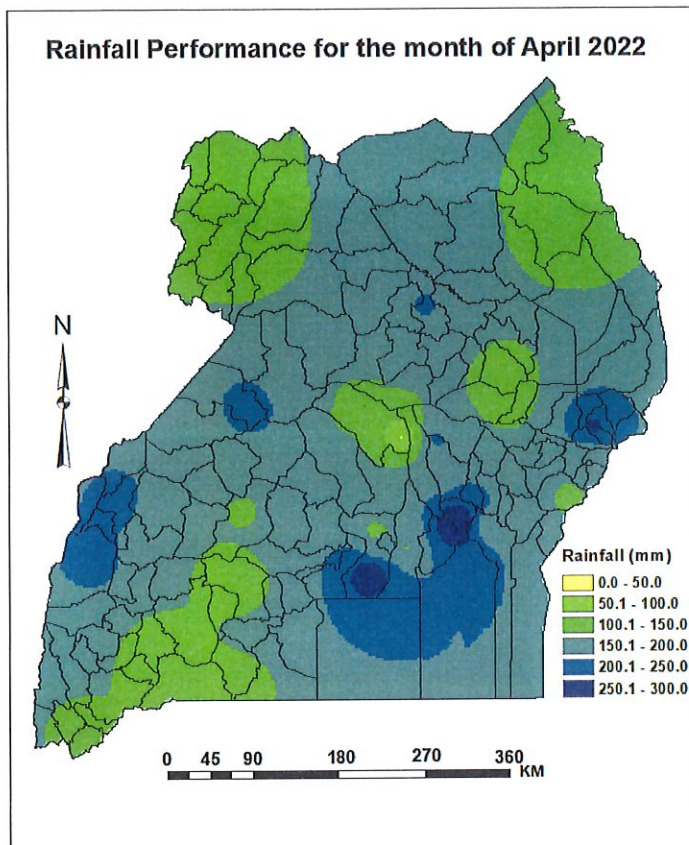


Fig.5: Spatial rainfall distribution for March 2022

5.3 Review of the rainfall performance for 1st - 20th May 2022

During the period 1st to 20th May 2022, the highest amount of rainfall according to the station records obtained was realized at Namulonge station in Wakiso district with a total of 162.1mm. This was followed by Entebbe airport station and Entebbe water resource department in Wakiso district with amounts of 159.6mm and 157.5mm respectively while Buduuda station recorded 154.6mm. The lowest amount of rainfall was recorded at Karengere Agro meterological station in Rubanda district with a total of 0.8mm.

For temporal rainfall distribution (number of rainy days), Buduuda station recorded the highest number of rainy days with observation of 13 days in the first 20 days May 2022. This was followed by Kibanda in Rakai district and Buginyanya Station in Bulambuli district with totals of 12 days and 11 days respectively.

The highest maximum fall (highest amount recorded in a single day) was observed at Namulonge station with amount of 74.8 mm on 8th May 2022 followed by Buginyanya with 60.4mm and 6th May 2022 .

The general spartial rainfall distribution for or period 1st to 20th May 2022 is shown in figure 5.

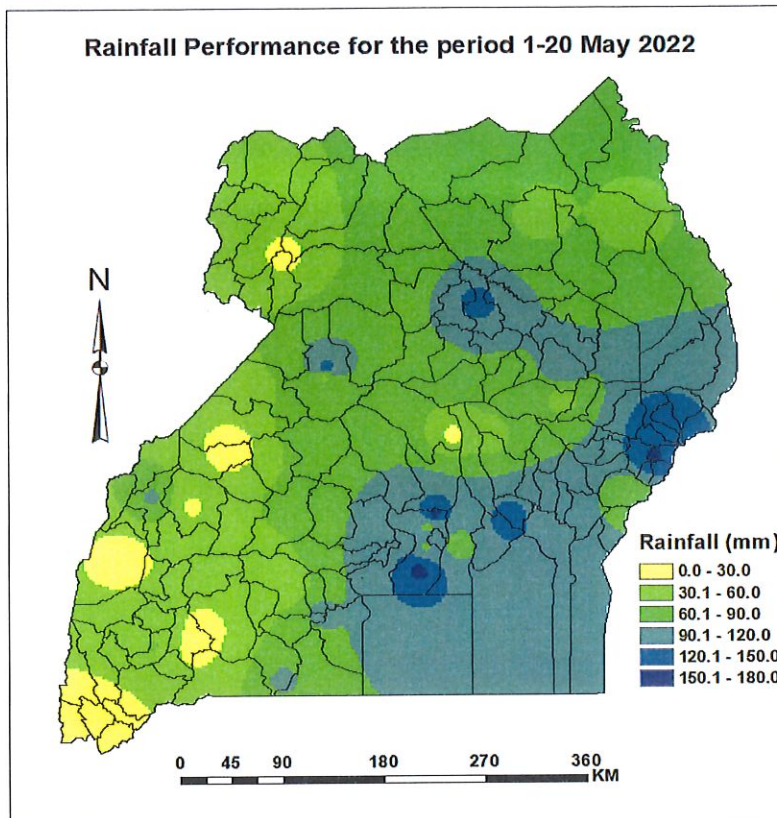


Fig.6: Performance of actual observed Rainfall for period 1st to 20th May 2022.

6. ACCURACY

This forecast is up to 80% accurate. It 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 objectively deterministic and probabilistic modelling alongside expert analysis and interpretation to obtain the rainfall forecast for this June-July-August (JJA) season.

UNMA will continue to monitor the evolution of relevant weather systems and accordingly issue appropriate updates and advisories to the users.

Isaac Mugume (PhD)
For: EXECUTIVE DIRECTOR

EXPLANATORY NOTES TO TERMINOLOGY

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. In this range, the 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 increases with the increasing rainfall deficiency.

Note: The status of seasonal forecasting allows for Prediction of spatial and temporal averages over larger areas and may not fully account for all physical and dynamical factors that influence short-term climate variability. Users of this outlook are, therefore urged to make good use of daily, ten day and monthly updates issued by the Uganda National Meteorological Authority regularly.

