APPENDIX

Explanation of Key Terms

Categorical Analysis

Categorical analysis involves comparing actual rainfall observations with the Long-Term Mean (LTM) to classify rainfall conditions into three categories: Above Normal (enhanced), Near Normal (average), or Below Normal (suppressed).

Above Normal

Rainfall is classified as above normal when the total amount exceeds 125% of the Long-Term Mean (LTM). In most cases, this leads to positive impacts on socio-economic activities, particularly when the increase is above the average.

Near Normal

This refers to rainfall totals ranging between 75% and 125% of the LTM. Under these conditions, normal socio-economic activities are expected to proceed without significant disruptions.

Below Normal

Rainfall falls into this category when it is less than 75% of the LTM. In such cases, socio-economic activities may experience increasing levels of stress, with the severity depending on the degree of rainfall deficiency.

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MARCH TO MAY 2025 SEASONAL CLIMATE OUTLOOK OVER UGANDA

1.0 INTRODUCTION

Uganda experiences two major rainfall seasons namely; March-April-May (MAM) and September-October-November-December (SOND) as the first and second rainy seasons respectively. However, Northern and parts of Eastern Uganda usually receive substantial rainfall during the months of June-July-August (JJA).

2.0 CURRENT WEATHER CONDITIONS OVER UGANDA

Most parts of Uganda are currently experiencing **dry conditions with high temperatures.**

2.1 Causes of the High Temperatures being experienced in Uganda

Uganda is currently experiencing unusually high temperatures due to a combination of factors. The following are the key drivers behind the high temperatures:

i. The Dry Season

The primary cause of the high temperatures is the ongoing dry season. The period from December to February (DJF) is typically dry across Uganda, with **February** being the **hottest month** of the year. Temperatures begin to rise in mid-January, peak in February, and gradually decline in early March as the March-May (MAM) rainfall season begins.

ii. Influence of the Tropical Cyclone in Indian Ocean

The tropical cyclone currently present over the southern Indian Ocean is affecting Uganda's weather. This cyclone is pulling in moisture that would

otherwise be carried by southeasterly winds into East Africa (including Uganda). As a result, rainfall formation is suppressed, delaying the onset of the MAM rainy season and extending the dry and hot conditions across the country.

iii. Position of the Sun

During **February,** the sun moves closer to equator, which runs through Uganda. It is directly overhead at the equator twice a year, on **March 21st and September 23rd.** As the sun approaches this position in February, solar radiation increases, leading to higher surface temperatures.

iv. Urban Heat Island Effect

Cities and large towns in Uganda experience higher temperatures than surrounding rural areas due to the urban heat island effect. This occurs because of:

- **Heat-absorbing surfaces** such as tarmac roads, pavements, and concrete structures, which retain and release heat into the atmosphere.
- **Greenhouse gas emissions** from vehicles, industries, and other urban activities, which trap heat and contribute to rising temperatures.

2.2 Advice on Coping with the High Temperatures

To stay safe and reduce the impact of extreme heat, consider the following measures:

- Stay Hydrated – Drink plenty of water during the day.
- Limit Physical Activity – Avoid excessive exercise during hot periods.
- Stay Indoors or in a Shade – Reduce exposure to direct sunlight, especially during peak hours.
- Take Frequent Showers – Cooling down with a bath or shower helps regulate body temperature.
- Green Urban Areas – Planting more trees and increasing vegetation cover in cities can help reduce urban heat.

By following these precautions, individuals can minimize the effects of high temperatures and stay safe during this period.
The general public is also advised to **protect our wetlands** and **forests because** they are essential in rainfall formation, and modulation of our climate.

3.0 SEASONAL CLIMATE FORECAST OVER UGANDA

3.1 Summary

- Overall, during MAM 2025, Uganda is expected to receive **near-normal to above-normal rainfall** over most regions.
- A delayed onset of rains is anticipated due to tropical cyclones over the Indian Ocean, with the rains establishing around mid-to-late March.
- The onset is likely to be characterized by isolated thunderstorms, strong winds, lightning, and hailstorms in various parts of the country.
- The peak rainfall is expected between mid-April and early May.
- Temperatures are expected to be warmer than average across the country.

3.2 The physical conditions that are likely to influence the rainfall performance of MAM, 2025 over Uganda

Several physical conditions are expected to influence Uganda's rainfall patterns during the March to May (MAM) 2025 season. These include:

i) **Position of the Inter-Tropical Convergence Zone (ITCZ):** The movement and orientation of the ITCZ will significantly affect rainfall patterns across the country.

ii) **Madden-Julian Oscillations (MJO):** Variations in the MJO will influence the timing and intensity of rainfall throughout the season.

iii) **Tropical Cyclones in the Southwestern Indian Ocean:** Development of tropical cyclones in this region usually disrupt rainfall onset or lead to intermittent dry spells.

iv) **Influence of Local and Regional Features:** The presence of large inland water bodies (lakes) and highland regions will contribute to variations in rainfall distribution.

3.3 The spatial distribution of expected seasonal rainfall and temperature

The spatial distribution of MAM seasonal rainfall and temperature are indicated in Figures 1 and 2 below. The Probabilities of Exceedance for MAM 2025 Seasonal Rainfall outlook for 200mm and 400mm are given in figures 3 and 4.

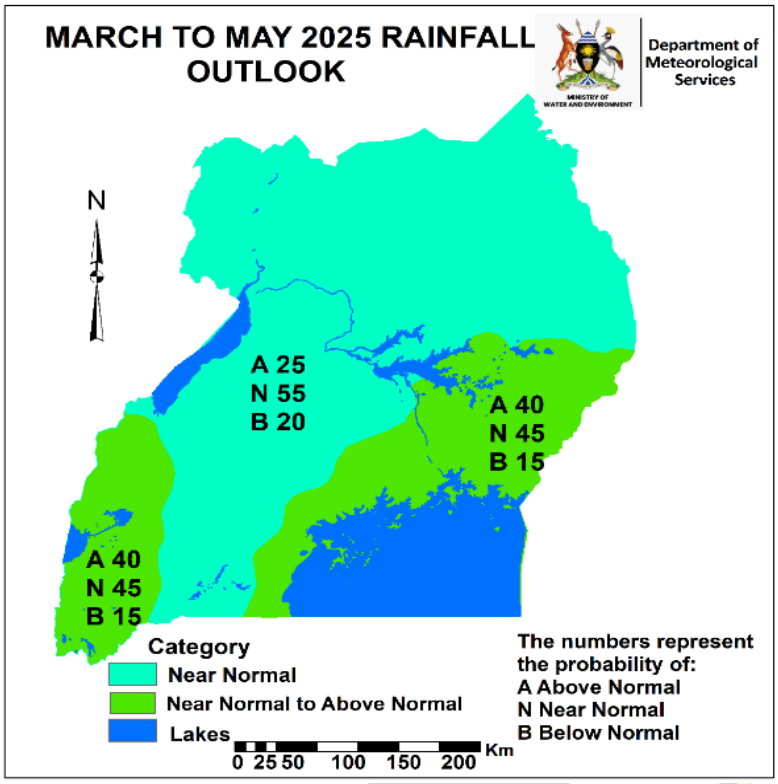

Fig1: Spatial distribution of expected seasonal rainfall during MAM2025

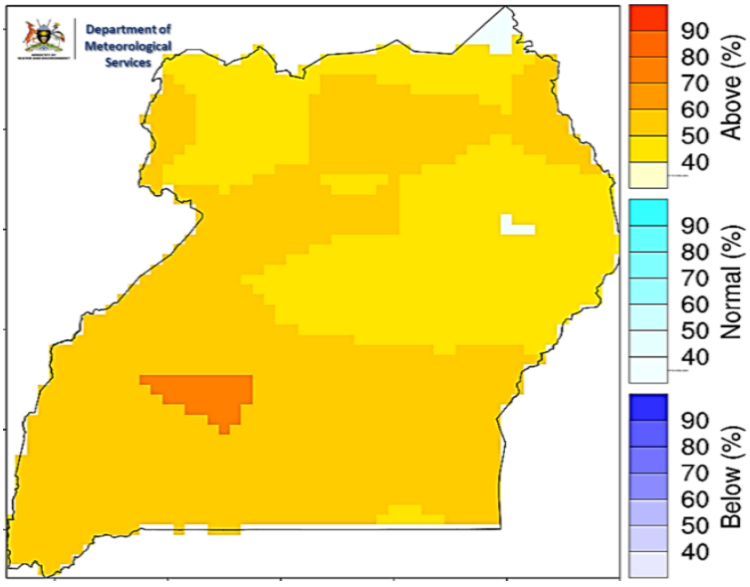

Fig2: Spatial distribution of expected Temperature during MAM2025

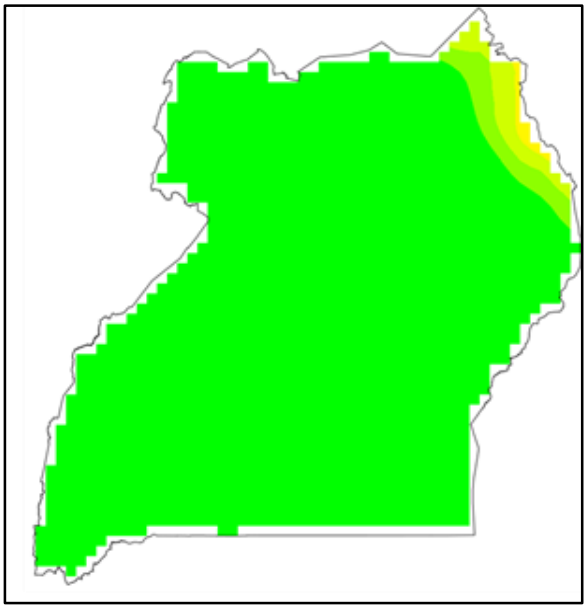

Fig3: Probabilities of Exceedance (200mm)

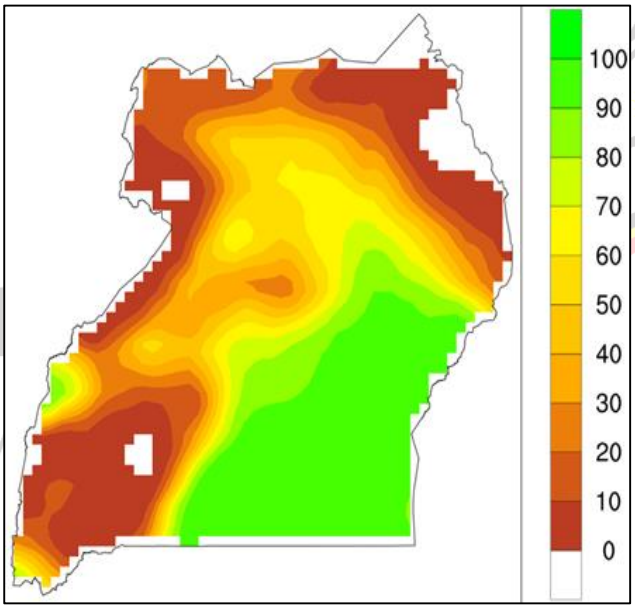

Fig4: Probabilities of Exceedance (400mm)

3.4 Detailed Forecast for different regions

3.5 Western Uganda

3.5.1 Southwestern Region (Districts: Kisoro, Rubanda, Kabale, Rukiga, Kanungu, Rukungiri, Ntungamo, Rwampara, Mbarara, Isingiro, Kiruhura, Kazo, Ibanda, Kitagwenda, Buhweju, Bushenyi, Sheema, Mitooma, Rubirizi, and Kasese)

The dry condition being experienced is expected to persist until early-March, followed by the onset of rainfall around mid-March. Peak rainfall will occur

between mid and late April, with cessation by early June. The region is expected to receive near-normal to above-normal rainfall.

3.5.2 Mid-Western Region (Districts: Bundibugyo, Ntoroko, Kabarole, Bunyangabu, Kamwenge, Kyenjojo, Kyegegwa, Kibaale, Kakumiro, Kagadi, Kikuube, Hoima, Buliisa, and Masindi)

This region is currently experiencing dry conditions, which are expected to persist until mid-March. Seasonal rains are expected to begin around mid-March, peaking from late April to early May, with cessation expected in early June. Overall, the region is expected to experience near-normal rainfall.

3.6 Central Region and Lake Victoria Basin

3.6.1 Western Central Region (Districts: Lyantonde, Sembabule, Mubende, Kasanda, Kyankwanzi, Kiboga, Luwero, Nakaseke, and Nakasongola)

Dry conditions are expected to continue until early March, followed by the onset of rains in mid-March. Peak rainfall will occur between late April and early May, with cessation in early June. Overall, the region is expected to receive near-normal rainfall.

3.6.2 Central and Western Lake Victoria Region (Districts: Kalangala, Kampala, Wakiso, Masaka, Lwengo, Mpigi, Butambala, Kalungu, Kyotera, Rakai, Bukomansimbi, Gomba, and Mityana)

Dry conditions will persist in this region until early March, with rainfall expected to start between early and mid-March. Peak rainfall is expected by mid to late April, with cessation around early June. The region is forecasted to receive near-normal to above-normal rainfall.

3.6.3 Eastern Central Region (Ditricts: Mukono, Buikwe, Kayunga, and Buvuma)

This region is currently experiencing dry conditions, and this is expected to persist until early March. Rainfall onset is expected between early and mid-March, peaking

by mid to late April, and ending in early June. The region is expected to receive near-normal to above-normal rainfall.

3.7 Eastern Uganda

3.7.1 Eastern Lake Victoria and Southeastern Region (Districts: Jinja, Mayuge, Kamuli, Iganga, Bugiri, Namayingo, Luuka, Namutumba, Buyende, Kaliro, Busia, and Tororo)

The prevailing dry condition will continue until early March, with rains beginning by mid-March. Peak rainfall is expected by mid-April to early May, with cessation around early June. Overall, Near-normal to above-normal rainfall is expected.

3.7.2 Eastern Parts of Kyoga Region (Districts: Pallisa, Kibuku, Budaka, Butaleja, Butebo, Kumi, Kalaki, Kaberamaido, Soroti, Serere, Bukedea, and Ngora)

Dry conditions are expected to persist until early March, with seasonal rains expected to begin by mid to late March. Peak rainfall is expected around late April to early May, with relaxation by early June. Near-normal to above-normal rainfall is expected.

3.7.3 Mount Elgon Region (Districts: Mbale, Manafwa, Namisindwa, Bududa, Sironko, Bulambuli, Kapchorwa, Kween, Bukwo)

The prevailing dry conditions are expected to persist until early March, with seasonal rains beginning around mid to late March. Peak rainfall is expected by late April to early May. The rains are expected to relax around early June. Near-normal to above-normal rainfall is expected in this region.

3.8 Northern Region

3.8.1 Northeastern Region (Districts: Katakwi, Amuria, Kapelebyong, Napak, Moroto, Nabilatuk, Nakapiripirit, Amudat, Abim, Kotido, Kaabong, and Karenga)

The region is currently experiencing dry conditions which are expected to end around Mid-March. The seasonal rains are expected between late March and early April.

Peak rainfall will occur by mid to late May, with a slight decrease around early June. The region is expected to receive near-normal rainfall.

3.8.2 Northwestern Region (Districts: Arua, Maracha, Koboko, Terego, Yumbe, Obongi, Moyo, Adjumani, Madi Okollo, Zombo, Nebbi, and Pakwach)

The current dry conditions over this region are expected to persist until mid to late March, followed by the onset of rains. Peak rainfall is expected by early to mid-May, with a slight decrease in early June. Near-normal rainfall is expected in this region.

3.8.3 Central Northern Region (Districts: Gulu, Omoro, Lamwo, Nwoya, Amuru, Oyam, and Kiryandongo)

Dry conditions being experienced will continue until early March, with rainfall expected to begin by mid to late March. Peak rainfall will occur around early May, followed by a slight decrease by early June. The region is likely to receive near-normal rainfall.

3.8.4 Eastern Areas of Northern Region (Districts: Dokolo, Amolatar, Alebtong, Lira, Kole, Otuke, Pader, Kitgum, Apac, and Agago)

The region is currently experiencing dry conditions, which are expected to end by early to Mid-March. The seasonal rains are expected around mid to late March. Peak rainfall will occur by early May, followed by a slight decrease around early June. The region is expected to receive near-normal rainfall.

4.0 IMPLICATIONS OF THE FORECAST

The MAM forecast indicates that the country will experience near-normal to above-normal rainfall, which is expected to impact various socio-economic sectors, particularly agriculture and food security, health and water resources, among others.

5.0 POTENTIAL IMPACTS OF THE EXPECTED WEATHER DURING MAM 2025

The anticipated weather conditions may result in both challenges and opportunities:

5.1 Agriculture and Food Security

5.1.1 Crops

Positive Impacts:

- Increased water availability for agriculture.
- Improved crop yields for rain-fed crops that require wet conditions.
- Favorable conditions for perennial crops like coffee (Robusta) and bananas.
- Increased natural food for aquatic life in lakes and rivers.

Negative Impacts:

- Increased waterlogging, flooding, and leaching, especially in low-lying areas with poor drainage.
- Higher incidence of pests and diseases, particularly in mono-cropped zones and vegetable farms (fungal and bacterial infections).
- Crop destruction due to flash floods, hailstorms, and strong winds.
- Post-harvest losses caused by damp conditions, leading to mold, rotting, and aflatoxin contamination.
- Soil erosion and fertility loss in steep or overgrazed areas.

Advisories for Crop Farmers

- Plant crops at the onset of rains and use high-yielding, improved varieties.
- Use a mix of long-maturing and short-duration crops to maximize yields.
- Apply good agronomic practices such as timely weeding, proper spacing, and thinning.
- Implement soil and water conservation measures, including mulching, drainage channels, and contour farming.
- Harvest and store excess produce in silos, cribs, or hermetic bags to reduce post-harvest losses.
- Monitor and control pests and diseases through integrated pest management.
- Establish nurseries in well-drained areas.
- Practice water harvesting for future use.
- Invest in value addition to maximize agricultural benefits.

5.1.2 Fisheries

Positive Impacts:

- Improved water quality due to increased inflows that disperse waste.
- Abundant natural food sources in lakes, boosting fish production.
- Higher fish production for flood-adaptive species.

Negative Impacts:

- Increased water weeds, hindering fishing activities.
- Fish losses due to flooding of ponds and water bodies.
- Increased siltation in ponds, reducing oxygen levels and water quality.
- Infrastructure damage, including pond banks and nets.
- Post-harvest losses due to transport disruptions in some places especially the rural murram roads
- Increased risks of water accidents and loss of fishing equipment.

Advisories for Fisheries

- Protect fish breeding areas and clear waterways around fish farms.
- Raise pond dykes and stock fish in ponds to take advantage of increased water availability.
- Set up elevated drying racks and roofed platforms for fish processing.
- Use life jackets for safety and avoid night travel on lakes.
- • Ensure boats are in good condition and follow weather updates before setting sail.

5.1.3 Livestock

Positive Impacts:

- Replenished water sources for animals.
- Availability of hardy grasses for grazing.

Negative Impacts:

- Increased incidence of diseases and parasites (ticks, foot and mouth disease, trypanosomiasis).
- Damage to pastures, especially in flood-prone areas.
- Overstocking in shelters during heavy rains, leading to disease outbreaks.
- Animal poisoning from flood water contamination.
- Loss of livestock due to waterlogging and cold weather exposure.

Advisories for Livestock Farmers

- Vaccinate and treat animals, including timely deworming.
- Store animal feed properly to prevent spoilage.
- Improve drainage in animal shelters and construct waterproof roofs.
- Move animals to less flood-prone areas.
- Harvest and store pasture as hay and silage before the peak rains.
- • Restrict grazing near contaminated water sources.

5.1.4 Beekeeping

Negative Impacts:	Positive Impacts:
• Reduced foraging time due to regular rains. • Increased incidences of hive pests (wax moths, small hive beetles). • Weakened bee immunity due to excessive moisture, leading to fungal and bacterial infections. • Destruction of hives by strong winds and heavy rainfall.	• Adequate moisture for nectar production, leading to higher honey yields. • Increased bee population due to abundant flowering plants.

Advisories for Beekeepers

- Protect hives by placing them under tree canopies or shelters.
- Secure hives with ropes to prevent wind damage.
- Encourage planting of bee-attractive flowers and conserve natural pollinator habitats.
- Avoid using harmful pesticides near apiaries.

5.2 WATER, ENERGY, AND HYDRO-POWER GENERATION

Positive Impacts:	Negative Impacts:
• Increased water availability for domestic and agricultural use. • Reduced irrigation costs due to natural rainfall. • Improved groundwater recharge. • Boosted Hydropower Production: More water flow into hydropower dams will enhance electricity generation, reducing power shortages.	• Urban and riverine flooding. • Sedimentation in hydropower plants, disrupting electricity generation. • Water contamination, leading to disease outbreaks. • Increased spread of water weeds. • Heavy rainfall and storms could damage electricity lines, transformers, and hydropower plants, causing blackouts.

Advisories for Water, Energy, and Hydro-Power Generation

- Monitor water levels to provide early warnings.
- Improve drainage networks and desilt dams.
- Restore riverbanks by planting bamboo for soil stability.
- Enhance waste disposal systems to prevent water contamination.

5.3 HEALTH

Positive Impacts:	Negative Impacts:
• Improved nutrition due to increased food production. • Higher family incomes, improving access to healthcare services.	• Higher risk of disease outbreaks, including malaria, cholera, and respiratory infections. • Disruption of health services due to floods. Psychological trauma from loss of lives and property. • Increased malnutrition due to crop destruction.

Advisories for Health

- Public health teams should sensitize communities on disease prevention.
- Promote the use of mosquito nets and safe water consumption.
- Stock essential medicines in health facilities.
- Provide psychosocial support for affected individuals.
- Install lightning arrestors and other safety systems.
- Ensure timely reception and dissemination of weather updates through various communication platforms for the health sector.

5.4 DISASTER RISK MANAGEMENT

Positive Impacts:	Negative Impacts
▪ Replenishment of water sources: rivers, lakes, and underground water tables will be restored, ensuring water availability.	▪ Heavy rains could lead to flash floods in low-lying areas and landslides in mountainous regions, destroying homes and infrastructure, especially in Elgon, Kigezi, and Rwenzori regions. ▪ Destruction of homes, roads, and social infrastructure. ▪ Increased risk of waterborne diseases. ▪ Loss of lives and displacement of communities. ▪ Road accidents due to poor visibility and slippery roads. ▪ Increased water levels in major lakes and rivers, leading to possible overflow.

5.5 EDUCATION SECTOR	
Positive Impacts: • Increased water availability for school use through roof water harvesting	**Negative Impacts:** • Heavy rains may damage classrooms and school facilities, disrupting learning. • Increased Absenteeism: Flooded roads and bridges may make it difficult for learners and teachers to reach schools.

6.0 CONCLUSION

The March to May 2025 season is expected to bring near-normal to above-normal rainfall in most parts of Uganda. The onset of rains will vary by region, with most areas experiencing rainfall from mid to late March and peak rainfall between April and May. The season will end around early to mid-June in most parts of the country.

The predicted rainfall requires timely action to mitigate risks and take advantage of favorable conditions. This forecast should guide planning in all climate-sensitive sectors to enhance economic resilience and community well-being.

The Ministry of Water and Environment, through the Department of Meteorological Services will continue monitoring the weather patterns and regularly issue updates to support planning and decision-making.

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