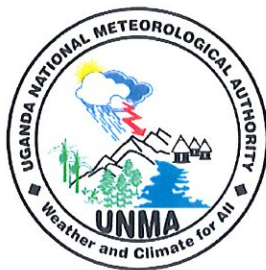


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UGANDA NATIONAL METEOROLOGICAL AUTHORITY

Ref: SCF/SOND/2022

2nd September, 2022

SEPTEMBER TO DECEMBER, 2022 SEASONAL RAINFALL OUTLOOK OVER UGANDA

1.0 GENERAL FORECAST

Uganda experiences two major rainfall seasons of March-April-May (MAM) and September-October-November-December (SOND). However, areas of Northern and some parts of Eastern Uganda experience substantial rainfall during the season of June-July-August (JJA).

Over all, during SOND 2022 season, there is a **high likelihood of near normal (average) to below normal (supressed) rainfall** over most parts of Uganda, as much as September and October are expected to experience **near normal (average)** with a tendency to **above normal (enhanced)** rainfall.

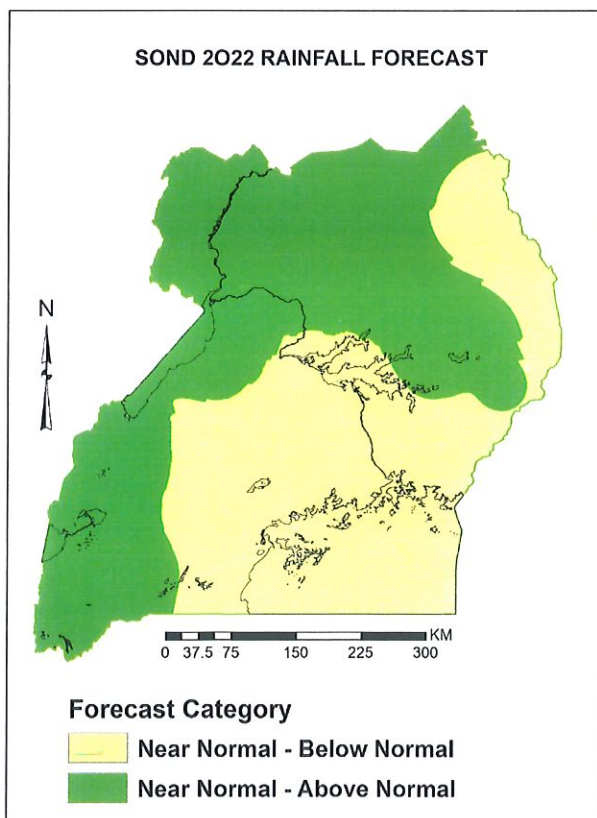


Figure 1: Spatial distribution of seasonal rainfall outlook for SOND 2022

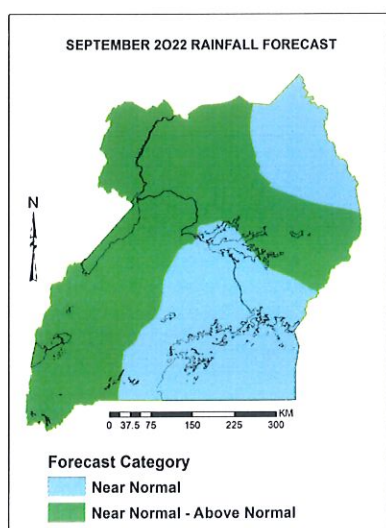
2.0 Detailed Forecast

The major physical conditions that are likely to influence the weather conditions over Uganda and the rest of the countries in the Greater Horn of African region for the forecast period of September to December 2022 include:

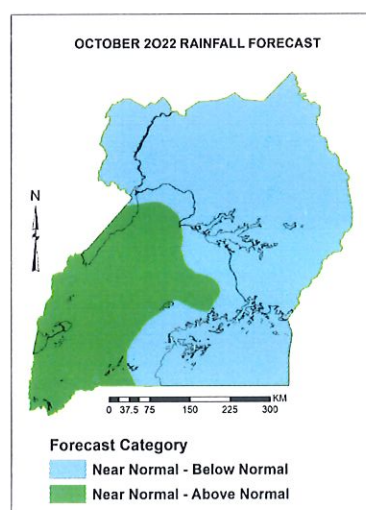
- Current **La Niña** conditions which are predicted to continue over the SOND forecast period suggesting **decreased SOND rainfall** over the region.
- The current **negative** phase of the Indian Ocean Dipole (IOD) is expected to remain **negative** through the forecast period resulting into suppressed rainfall over our region.
- Influence of regional circulation patterns, topographical features and large inland water bodies.

Based on the above factors as well as scientific tools for climate analysis, Uganda National Meteorological Authority (UNMA) has come up with a detailed seasonal outlook as given below: -

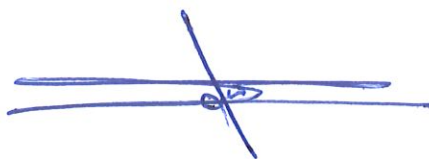
The months of September and October are expected to be wetter than November and December as indicated in figures 2a, 2b, 2c and 2d below: -

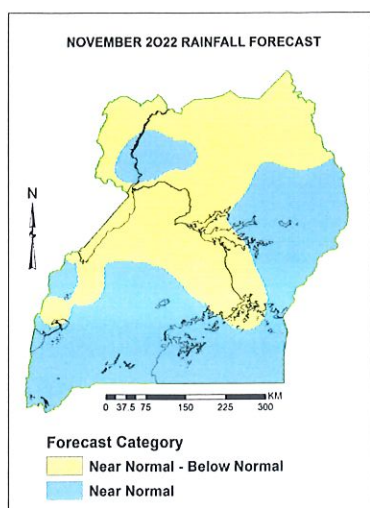


2. a. Rainfall Forecast for September 2022

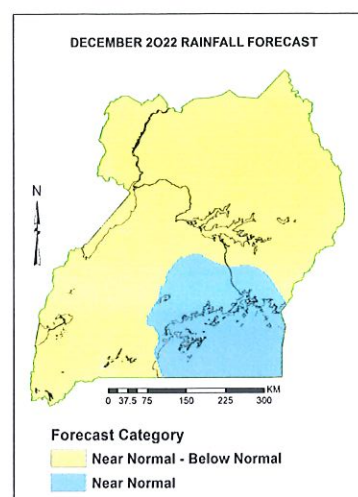


2. b. Rainfall Forecast for October 2022





2.c. Rainfall Forecast for November 2022



2.d. Rainfall Forecast for December 2022

The breakdown of the above forecast is given as follows:

2.1 Lake Victoria basin and central region

2.1.1 Western parts of Central (*Nakasongola, Luwero, Kyankwanzi, Nakaseke, Kiboga, Mubende, Kassanda, Sembabule, Lwengo, Lyantonde and Rakai*) districts.

Most parts of this region are currently experiencing occasional isolated thundershowers signifying the onset of the seasonal rainfall. Wet conditions are expected to prevail during September reaching the peak around late-September to early October. The cessation of rains is expected around early-mid November 2022. Overall, **near normal (average) tending to below normal (suppressed)** rainfall conditions are expected to prevail over this region during the forecast period.

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

This region is currently experiencing occasional outbreak of showers and thunderstorms. Steady rains are expected to get established around early September reaching peak levels around late September. Cessation of the seasonal rains is expected around early to mid-November. Overall, **near normal (average) with tendency to below normal** rainfall conditions are expected to prevail over this region.

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

This area has been experiencing wide-spread showers and thunderstorms since mid-August signaling the onset of the seasonal rainfall. Wet conditions are expected to prevail in most parts of the region reaching the peak in late September to early October. The cessation is expected around the mid to end of November. Overall, **near normal (average) with tendency to below normal** rainfall is expected to prevail over this region.



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

This region is currently experiencing showers and thunderstorms indicating the onset of the seasonal rainfall. The peak of the season is expected around late-September to early-October. The cessation is likely to occur around mid to late November. Overall, **near normal (average)** rainfall is expected to prevail over this region.

2.2 Western region

2.2.1 South Western Highlands (*Kabale, Kisoro, Rukungiri, Kanungu, Rukiga, Rubanda, Bushenyi, Rubirizi, Mitooma, Buhweju, Sheema, Rwampara*) districts

Lately, this region has been receiving moderate rainfall signifying the onset of the season. These wet conditions are expected to continue in September reaching the peak around early October to mid-October. Cessation of the seasonal rains is expected around early to mid-November. Overall, **near normal (average) to above normal (enhanced)** rainfall is expected over this region.

2.2.2 South Western Lowlands (*Ntungamo, Isingiro, Mbarara, Ibanda, Kiruhura and Kazo*) districts

The region has been experiencing isolated showers and thunderstorms, signifying the onset of the season. Wetter conditions are expected to get established around mid-late September. Cessation of the seasonal rains is expected around early to mid-November. Overall, **near normal (average) to below normal (suppressed)** rainfall is expected over this region.

2.2.2 Rwenzori sub region (*Kasese, Bundibugyo, Ntoroko, Kabarole and Bunyangabu*) districts

The current rains that are being experienced over this region indicate onset of the seasonal rainfall. Peak rains are expected around early to mid-October. The cessation of the seasonal rains is expected around mid to late-November. Overall, **near normal (average) with slight tendency to above normal** rainfall conditions are likely to prevail over this region.

2.2.2 Central parts of Western (*Masindi, Buliisa, Hoima, Kikuube, Kakumiro Kyenjojo, Kyegegwa, Kamwenge, Kitagwenda, Kagadi and Kibaale*) districts

The current rains that are being experienced over this region indicate onset of the seasonal rainfall. Peak rains are expected around early to mid-October. The cessation of the seasonal rains is expected around mid to late-November. Overall, **near normal (average) with slight tendency to above normal** rainfall conditions are likely to prevail over this region.



2.3 Eastern region

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

The current rainfall being experienced over this region is expected to continue, reaching the peak around late September to early October. The cessation of the seasonal rains is expected around late October to early November. Overall, **near normal (average)** rainfall conditions are expected to prevail over the region.

2.3.2 Eastern parts of *Kyoga* (*Pallisa, Butebo, Budaka, Kibuku, Bukedea, Kumi, Kalaki, Kaberamaido, Serere and Soroti*) districts.

The current rainfall being experienced over this region is expected to continue, reaching the peak around late September to early October. The cessation of the seasonal rains is expected around late October to early November. Overall, **near normal (average) with a tendency to above normal (enhanced)** rainfall conditions are expected to prevail over the region.

2.3.3 Mount Elgon region (*Mbale, Sironko, Manafwa, Bududa, Bulambuli, Namisidwa, Kapchorwa, Kween and Bukwo*) districts

The current rainfall being experienced over this region is expected to continue, reaching the peak around late September to early October. The cessation of the seasonal rains is expected around late October to early November. Overall, **near normal (average) with a tendency to above normal (above average)** rainfall conditions are expected to prevail over the region.

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

This region is currently experiencing moderate rainfall which is expected to continue until the end of September. Thereafter, cessation of the seasonal rains is expected around mid to Late-October. Overall, **near normal (average) to below normal (suppressed)** rainfall conditions are expected to prevail over the region.

2.4 Northern region

2.4.1 West Nile (*Zombo, Nebbi, Pakwach Madi-Okollo, Arua, Koboko, Terego, Maracha, Moyo, Yumbe, Obongi, and Adjumani*) districts

The current rains being received in the region is expected to continue reaching peak level around late September to early October. The cessation of the seasonal rains is expected around late October to early November. Overall, **near normal (average) with a tendency to above normal (enhanced)** rainfall conditions are expected to prevail over the region.

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



The current rains being received in the region is expected to continue reaching peak level around late September to early October. The cessation of the seasonal rains is expected around late October to early November. Overall, **near normal (average) with a tendency to above normal (enhanced)** rainfall conditions are expected to prevail over the region.

2.4.3 Central Parts of Northern (Gulu, Omoro, Apac, Kwanja, Nwoya, Amuru, Oyam and Kiryandongo) districts

The current rains being received in the region is expected to continue reaching peak level around late September to early October. The cessation of the seasonal rains is expected around late October to early November. Overall, **near normal (average) with a tendency to above normal (enhanced)** rainfall conditions are expected to prevail over the region.

3.0 POTENTIAL ADVISORIES TO DIFFERENT SECTORS

3.1 AGRICULTURE AND FOOD SECURITY SECTOR

3.1.2 Areas expected to receive Near Normal to Above Normal Rainfall

a) Crops sub-sector

i) Potential negative impact

- Increased incidences of crop pests and diseases.
- Destruction of crops in areas prone to flooding, waterlogging, hail storms and landslides
- Increased soil erosion in highland districts as result of flash floods and landslides.
- A high likelihood of waterlogging/Flooding and Leaching of soil nutrients.

ii) Potential positive impact

- A boost in crop production leading to optimum crop yield.

iii) Crop Advisories

- In areas prone to water logging, plant crops like rice, yam, sugarcane.
- Early stocking and delivery of farm inputs by partners prior to the onset of seasonal rains.
- Timely planting at the onset of rainfall (start planting by early September)
- Apply fertilizers in split for proper crop nutrient utilization especially nitrogenous fertilizers.
- Plant improved high yielding varieties e.g. *Longe* series, *NABE* series and quick maturing varieties.
- Apply good agronomical practices (GAPs) like timely weeding, spacing of crops, thinning, timely harvesting.
- Soil and water conservation practices e.g. contour bands, grass bands, trenches, water harvesting techniques.



- Crop monitoring and surveillance for pests and diseases and report new epidemics to nearest extension officer.
- Timely control of pests and diseases like the bacterial and fungal diseases (application of rightful pesticides).

3.1.3 Areas expected to receive Near Normal tending to below Normal Rainfall

i) Potential Negative Impact

- Incidences of pests and diseases may occur e.g. termites, maize stalk borers.

ii) Potential Positive Impact

- A likelihood of optimum crop yields

iii) Crop Advisories

- Community should practice mulching of gardens using dry grass and leaves to conserve the soil moisture.
- Farmers should plant short maturing crops like leafy vegetables to counter the impacts of deficit in seasonal rains
- Communities are advised to carryout water harvesting and proper water usage.
- Farming communities should supplement crop production by carrying out irrigation towards the cessation of the seasonal rains.
- Farmers should plant cover crops to conserve moisture and nutrients like *mucuna* and *lablab*.
- Farmers should practice soil and water conservation practices e.g. Permanent planting basins, contour bands, grass bands, trenches, water harvesting.

3.2 FISHERIES SUB-SECTOR

3.2.1 Areas expected to receive Near Normal to Above Normal Rainfall

i) Potential Negative Impact

- Increased likelihood of siltation of fish ponds.
- High cost associated with fish ponds management i.e. feeding.
- Destruction of life cycles of fish as a result of pond flooding.
- Fish intoxication of pods (eutrophication)
- Poor quality of fish products.

ii) Potential Positive Impact

- Increased water flow into the ponds
- Increased natural food in the lakes
- Increased production/recruitment of fish in lakes and rivers

iii) Advisories

- Protect wetlands for seasonal migratory fish as their breeding places e.g. African catfish, lung fish,
- Improve drainage of ponds



- Raise pond banks by adding more soils
- Clear water ways around the fish farms to avoid silting
- Stock fish in ponds due to availability of water
- Prepare drying racks/raised platforms for fish drying.

3.2.2 Areas expected to receive below Normal Rainfall

i) Potential Negative Impact

- Slightly lower catches of fish

ii) Potential Positive Impact

- Reduced water accidents
- Reduced postharvest losses of fish

iii) Advisories

- Harvest water into reservoirs for future use
- Manage/clear water ways leading to the ponds
- Monitor the water quality in ponds
- Construct drying racks for some fish species e.g. silver fish (*mukene*)
- Provide right fish feed rations for rapid growth
- Protect Fish breeding areas

3.3 LIVESTOCK SUB-SECTOR

3.3.1 Areas expected to receive Near Normal to Above Normal Rainfall

i) Potential Negative Impact

- Increased disease incidences and vectors
- Death of animals in flooded areas
- Poisoning due to contamination of water
- Damage of pastures which are less resistant to floods.
- Poor preservation of animal feeds such as pastures

ii) Potential Positive Impact

- Adequate water
- Adequate pasture for water tolerant plants

iii) Advisories

- Monitoring and surveillance of vectors and disease epidemics
- Disease control such as vaccination and treat animals including timely deworming of animals
- Control of vectors such as ticks



- Move the animals to less flooded areas
- Restock the farms with animals
- Proper disposal of dead animals to minimize contamination and disease spread
- Water harvesting and construction of water dams
- Provide animals with safe/clean water-treatment of water on the farm
- Provide animals with adequate quality feeds and water to increase production
- Plant and preserve pastures (hay and silage making)
- Proper storage of animal feeds under dry conditions.
- Construct quality/stable animal structures with waterproof roofs and non-slippery ground.

3.3.2 Areas expected to receive Near Normal to Below Normal Rainfall

i) Potential Negative Impact

- Incidences of diseases and vectors

ii) Potential Positive Impact

- Adequate water and animal feed
- Conducive weather conditions for pasture and forage growth
- Conducive environment for breeding and increased production
- Vaccinate and treat animals including timely deworming of animals
- Control of vectors
- Harvest water for animals
- Monitoring and carry out continuous disease surveillance and report any epidemics
- Provide animals with adequate quality feeds and water to increase the production
- Plant early maturing pastures
- Preserve pastures (hay and silage making)
- Proper storage of animal feeds under dry conditions to avoid aflatoxins

3.4 APICULTURE/BEE KEEPING SUB-SECTOR

3.4.1 Areas expected to receive Near Normal to Above Normal Rainfall

i) Potential Negative Impact

- Destruction of flowers and bee hive may result in low honey production
- Destruction / loss of beehives

ii) Potential Positive Impact

- Adequate water

iii) Advisories

- Abundance of flowering plants required by bees
- Plant more flowering crops around the apiaries to reduce swarming
- Proper maintenance of apiary farm i.e. slashing the bushes
- Provide shades to beehives against the weather

3.4.2 Areas expected to receive Near Normal to Below Normal Rainfall

i) Potential Negative Impact



- Low flowering of plants due to deficit of rainfall and dry spell events.
- Low / limited water for honey production

ii) Potential Positive Impact

- Increased honey production and other bee products
- Increased bees population due to low impacts of heavy rains on bee hives.

iii) Advisory

- Plant more flowering crops around the apiary
- Provide shades to beehives against the weather
- Set more beehives for increased production
- Plan for water sources near beehives settings

3.5 DISASTER RISK REDUCTION (DRR) SECTOR

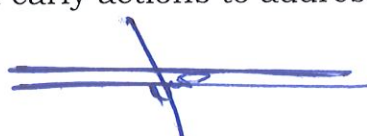
3.5.1 For areas expected to receive Near Normal to Above Normal Rainfall during this season

i) Expected Impacts:

- Heavy down pours that may cause flooding during the peak of the rainfall season are expected
- Water logging in prone areas such as low-lying areas
- Mud slides and landslides in Elgon, Kigezi Highland and Rwenzori sub regions are expected.
- R. Onyama near Elegu boarder post may burst its bank.
- Lightning strikes are expected.
- Heavy storms that may cause buildings and sanitary facilities to collapse particularly to those constructed in wetland areas expected.

ii) Advisory:

- Installation of lightening arresters in areas prone to lightening.
- Communities are advised to plant trees to reduce run off speed of the water
- Communities in low lying areas/flood prone areas to relocate to safe areas
- Opening of drainage channels
- The DDMC of Amuru DLG to closely monitor R. Onyama near Elegu boarder post.
- Mobilize communities to support dissemination of the warning information
- Prepositioning Emergency shelter stocks for schools that may be affected
- Media – advising on dissemination of the seasonal forecasts
- Municipal authorities should intensify on proper solid waste management to reduce on the risk of urban flooding
- Communities are advised not to take shelter under tall structures when it's raining against lightning strikes.
- Conserve water for domestic use and production
- Strengthening of Early Warning systems and early actions
- Activation of District Contingency Plants (DCPs)
- Prepare disaster structures on drills to enhance their capacities to respond to the emergencies
- Maintenance of Covid 19 SOPs
- Engage communities to design early actions to address the identified impacts.



- Following the subsequent UNMA weather updates for effectiveness
- The Public may report any emergencies to the NECOC on **0800 177777**

3.6 WATER AND ENERGY SECTOR

3.6.1 Near normal to above Normal

i) Implications (Positive)

- Expect increased availability of water for use (power generation, domestic use, industries, etc)

ii) Advisories

- Take advantage of the available water to increase hydro-electricity power production,
- Encourage water harvesting through: construction of valley dam and underground tanks, use of rain harvesting tanks.

iii) Implications (Negative)

- Expect ground water contamination from surface runoff leading to disease transmission such cholera, diarrhea and dysentery
- High chances of increased surface and groundwater levels, leading more water in the riverines and flash floods in flood prone regions and bursting of river banks eg Nyamwamba in Rwenzori and Manafwa, Namatala in Elgon.
- Increased sediment loading into the water bodies and water storage facilities such as valley dams/tanks, reservoirs, ponds and other water passages.

iv) Advisories

- Encourage communities to boil water before drinking to kill most of the germs
- Plan for treatment kits in case of diseases outbreaks,
- NWSC should check their distribution systems for leakages to minimise water contamination,
- Proper waste management to minimise its inflow into water channels
- Awareness- creation on proper sanitation
- Encourage installation of lightening conductors to minimise the lightning incidents and accidents,
- Communities should avoid flood plains, riverbanks, lake shores and wetlands,
- Unblock drainage channels most especially in the urban centers,
- Use sandbags to stabilize the river and reservoir banks,
- De-silting of the water storage facilities,
- Encourage planting of trees and grass (elephant) to reduce erosion,
- Stabilize riverbanks using gabions in areas where planting grass is not possible,
- Embrace catchment management mechanisms,
- Continuous monitoring of water level and weather patterns

3.6.2 Near Normal – Below normal



i) Implications

- Reduction in water supply,
- Drop in water levels for both surface and groundwater,
- Drying of water sources such boreholes, shallow wells, springs and seasonal wetlands,
- Expect reduced/no inflow into the water storage facilities such as valley dams/tanks, ponds,

ii) Advisories

- Encourage communities to conserve water during the period when there is rain,
- Carryout water rationing especially in areas to experience water shortage,
- Rehabilitation of all monitoring stations that were damaged in the previous seasons,
- Review permitted allocation for water users, and review the water release policy for Lake Victoria,
- Discourage settlement in dry flood plains, rivers banks and lake shores,
- De-silt the water facilities,
- Embrace catchment management mechanisms,
- Continuous monitoring of water level and weather.

3.7 HEALTH SECTORS ADVISORIES

3.7.1 Near Normal – above normal

i) Impacts:

Recently flooding around mount Elgon- Kapchorwa, Bulambuli, Namisindwa, Sironko and Manafwa most affected areas as Mbale City and Teso region expected to continue.

ii) Advisories:

With high expectation of increased malaria transmission and water borne diseases like cholera and dysentery in the areas, surveillance and Preparedness for possible epidemics of the above-mentioned diseases to be enhanced

3.7.2 Near normal – Below normal

i) Impacts

Recently there was an outbreak yellow fever in Masaka District (1 case in Kabasese parish in Bukakata subcounty). The place is bushy with a lot of mosquito breeding.

ii) Advisories:

- Epidemic Task forces at Central level and district levels should be activated
- The ongoing antimalarial and Malaria Rapid Diagnostic Kit-tests (MRDTs) redistribution calls for more anti-malarial stocks.
- Long Lasting Insecticide Treated Mosquito Nets (LLINs) to be distributed in upsurge districts and areas with expectation of flooded



- All health facilities conducting Antenatal Care (ANC) to be stocked with LLNs for Routine distribution
- Routine sensitisation against yellow fever to continue
- Enhanced surveillance and preparedness

3.7 Works and infrastructure sector

3.7.1 Near Normal to Above Normal

i) Impacts

- We anticipate Water logging on streets due to heavy rains that may be experienced according to the forecast.
- We expect increased water sedimentation rate in drainage systems due to increased water flow.
- Structural damage on both roads, bridges, buildings and other structures is expected to occur due to thunderstorms and strong winds affiliated to the high intensities of rainfall that may be experienced.
- There is an expectancy of losing lives and property due to anticipated high intensities of rainfall.
- Due to the high rainfall intensities, it is likely that reduced visibility for transport on land, over water and in air will be a challenge.

ii) Advisories

- Desilt drainage systems to avoid water logging
- Road constructors and builders should take pre-caution when constructing especially during the month of September that is; Re-plan their projects or request for extensions basing on the weather and climate updates from UNMA.
- Marine transporters and all other lake and river users should take precautions and take safety measures while on the lakes and should always use the advisories given by UNMA on a daily basis
- People travelling to hilly and mountainous areas should take precautions because of poor visibility, flash floods, slippery of roads, and landslides during rainfall hours.
- Urban Authorities and Engineers association of Uganda should ensure compliance and safety regulations to ensure that there is low vulnerability to death during the forecast period.
- Local Government Officials (LGs) and Urban authorities should ensure that roads and bridges in wetlands are highly maintained
- Road users should avoid moving through water logged areas and make use of alternative routes that are not flood and landslide prone areas.

4.0 IMPLICATIONS OF CURRENT RAINFALL FORECAST

The near normal average) to below normal (below average) rainfall predicted for September to December (SOND) 2022 rainfall season over most parts of the country is expected to be characterised by dry spells.

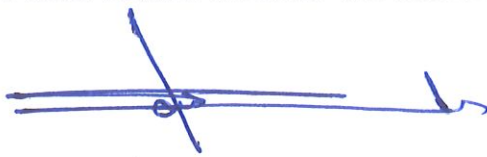


This implies that there are high chances for socio-economic activities to continue normally in areas where near normal (average/adequate) rainfall is expected while in areas of rainfall deficiency (those areas with below normal/average rainfall) the activities are likely to be stressed. The level of stress is expected to increase with increasing rainfall deficiency.

5.0. CONCLUSION

Uganda National Meteorological Authority (UNMA) will continue to monitor the evolution of relevant weather systems particularly the state of the Sea Surface Temperatures (SSTs) and Indian Ocean Dipole, and issue appropriate updates and warnings to the users regularly.

Users of this rainfall outlook are, therefore, urged to make good use of daily, ten day and monthly updates that are issued regularly by UNMA through some FM radios, UBC and UNMA website www.unma.go.ug



David W. Elweru
Ag. EXECUTIVE DIRECTOR

APENDIX

Explanatory Notes to Terminologies

- Above Normal:** This is when the total rainfall is above 125% of the Long Term Mean (Thirty-year average rainfall). Impact on socio-economic activities is mostly boosted especially in the modest degrees of above average.
- Near Normal:** This is when the total rainfall is in the range of 75% to 125% of the Long Term Mean (Thirty-year average rainfall). 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 Long Term Mean (Thirty-year average rainfall). Under this range there are high chances for socio-economic activities being stressed, the level of stress increasing with increasing rainfall deficiency.