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Meteorological  
Department

MINISTRY OF ENVIRONMENT, CLIMATE CHANGE AND FORESTRY

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**CLIMATE OUTLOOK FOR THE JUNE-JULY-AUGUST 2024 SEASON AND RAINFALL  
REVIEW OF THE MARCH-APRIL-MAY 2024 “LONG RAINS” SEASON**

**1. Highlights**

**1.1. The Outlook for June-July-August 2024 Rainfall Season**

The outlook for the June-July-August (JJA) 2024 rainfall season indicates likelihood of above-average rainfall for the Highlands West of the Rift Valley, Lake Victoria Basin Region, the Rift Valley, parts of the Highlands East of the Rift Valley and the Northwestern Region. The Coastal strip is expected to receive near to above-average rainfall, while the rest of the country will be generally dry.

In the Central Highlands and Nairobi areas, as well as parts of the Southeastern lowlands, cool and cloudy conditions with occasional light to moderate rainfall are anticipated. Overall, temperatures across the country are expected to be slightly warmer than average for the season.

**1.2. Rainfall during the March-April-May 2024 Season**

The March to May 2024 seasonal rainfall has ceased over several parts of the country, except for the Lake Victoria Basin, the Highlands West of the Rift Valley, the Central and South Rift Valley, the Coastal region, and parts of the Highlands East of the Rift Valley, where rainfall is expected to continue. In April, the distribution of rainfall, both in time and space, was good over most parts of the country. However, in March, the distribution was poor, characterized by long dry spells for most of the month and isolated storms during the fourth week. In May, the distribution of rainfall over the Highlands West and East of the Rift Valley, including Nairobi, the Lake Victoria Basin, Central, and South Rift Valley, was good, while the Northern sector and Southeastern lowlands recorded a fair distribution. However, the distribution over the Coastal region was poor, with only Lamu station recording above-average rainfall. An assessment of the rainfall recorded from 1st March to the end of May 2024 indicates that most areas received near to above-average rainfall, except for Malindi, Mtwapa, Msabaha, and Mombasa, which recorded below-average rainfall. The highest seasonal rainfall was received at Ndakai-ini rainfall station in Murang'a County, which recorded a total of 1355.5mm.

The onset of the seasonal rainfall was normal over several parts of the country; the Southeastern lowlands (Voi and Kitui) were the exception in that they recorded an earlier-than-normal onset. A few stations over the Central Rift Valley and Highlands East of the Rift Valley recorded a late onset. The onset over the western part of the country was followed by a long dry spell.

## 2. Forecast for June-July-August 2024

### 2.1. Rainfall Forecast for June-July-August 2024

The climate outlook for the period of June to August 2024 is formulated by considering various factors such as the projected evolution of global Sea Surface Temperature (SST) patterns and upper air circulation. The forecast process involves analyzing the relationships between Sea Surface Temperature Anomalies (SSTAs), Quasi-Biennial Oscillations (QBO), Pacific Decadal Oscillation (PDO), Southern Oscillation Index (SOI), Indian Ocean Dipole (IOD), and rainfall patterns in Kenya.

The forecast for the June-July-August rainfall period suggests that the Highlands West of the Rift Valley, the Lake Victoria Basin, the Rift Valley, parts of the Highlands East of the Rift Valley, and Northwestern regions are likely to receive above-average rainfall. The Coastal Strip is expected to experience near to above-average rainfall. Additionally, the Highlands East of the Rift Valley, including Nairobi County and parts of the Southeastern lowlands, are expected to experience cool and cloudy conditions with occasional light rains. The rest of the country is expected to be generally dry as shown in **Figure 1a**.

In terms of climatology, rainfall is normally concentrated over the Lake Victoria Basin, Highlands West of the Rift Valley, the Rift Valley, parts of the Highlands East of the Rift Valley, and the coastal strip during the June-July-August season. The rest of the country is generally dry during this season, as depicted by Figure 1b.

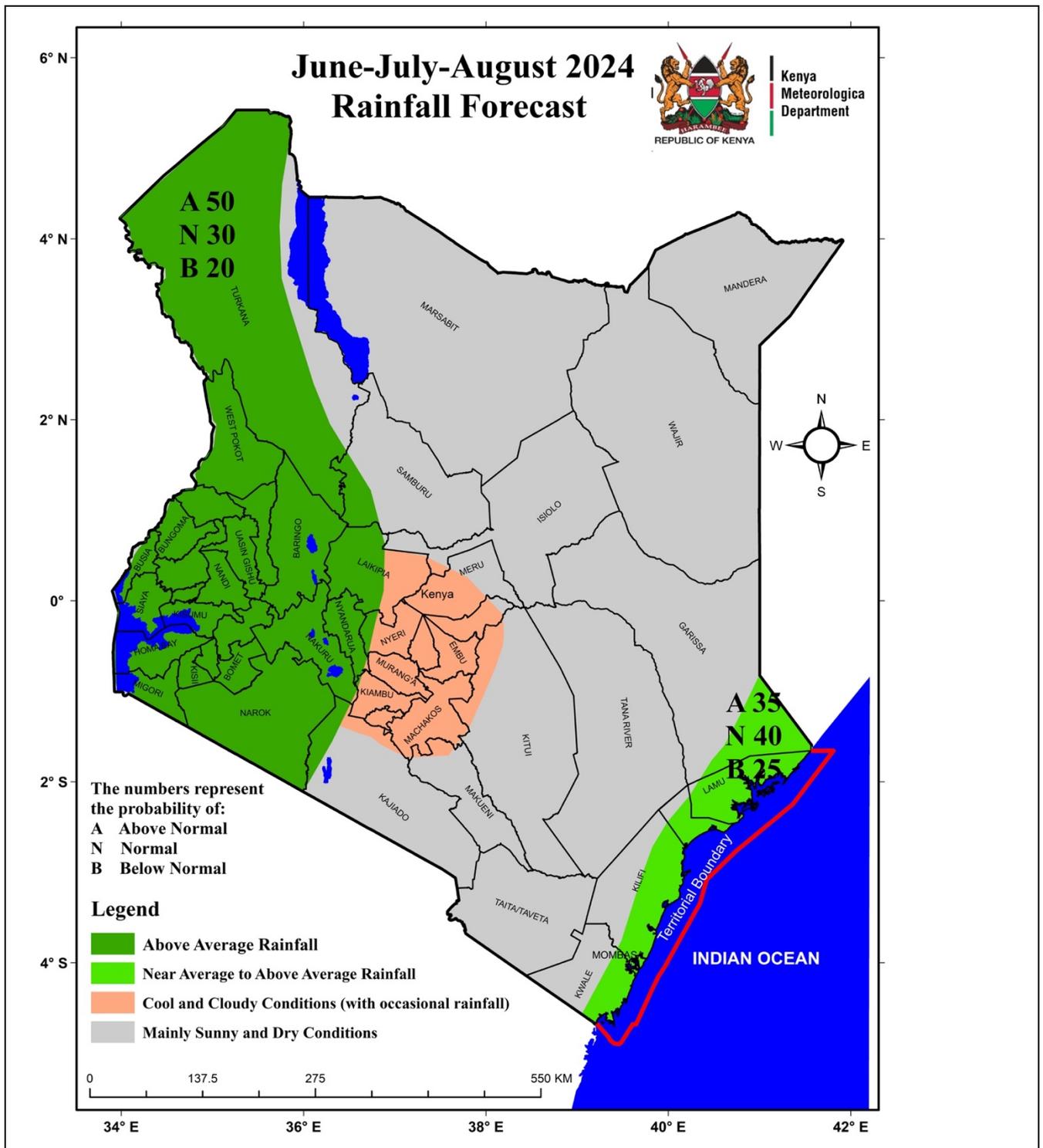


Figure 1a: June-July-August 2024 Rainfall Forecast

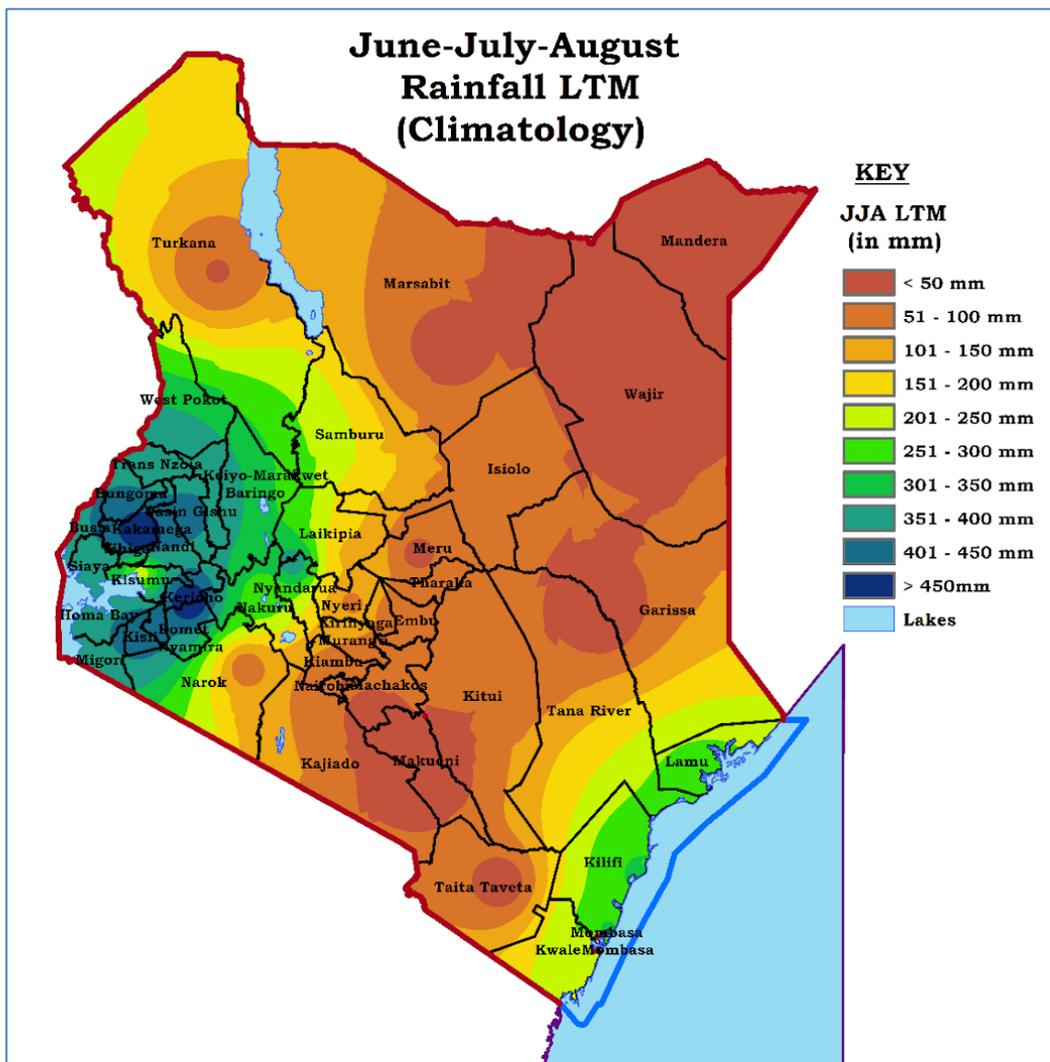


Figure 1b: June-July-August Climatology

The outlook for specific areas is as follows:

**2.1.1. The Lake Victoria Basin, parts of the Highlands West and South Rift Valley: (Siaya, Kisumu, Homa Bay, Migori, Kisii, Nyamira, Narok, Kericho, Bomet and Busia counties); The Highlands West of the Rift Valley and Central Rift Valley: (Trans Nzoia, Baringo, Uasin Gishu, Elgeyo Marakwet, Nandi, Western Laikipia, Nakuru, Kakamega, Vihiga, and Bungoma counties) and parts of the Highlands East of the Rift Valley (Nyandarua North):** Rainfall with occasional breaks is expected to continue throughout the season. The expected total rainfall amounts are likely to be above the long-term average amounts for the season.

The temperatures in this region are expected to be warmer than the average for the season

**2.1.2. Northwestern regions (Turkana and Samburu counties)** are expected to remain generally sunny and dry. However, a few areas bordering Uganda and South Sudan and western parts of Samburu County are likely to receive occasional showers and thunderstorms. The expected total rainfall amounts are likely to be higher than the long-term average amounts for the season. Strong south easterly winds of more than 25 knots are likely during the season.

The temperatures in this region are expected to be warmer than the average for the season

**2.1.3. The Coastal Strip (*Mombasa, Kilifi, Lamu, Kwale counties and coastal parts of Tana River County*)** is expected to receive occasional rainfall during the season. The region is likely to receive near to above-average rainfall (slightly enhanced).

The temperatures in this region are expected to be warmer than the average for the season

**2.1.4. Highlands East of the Rift Valley (including Nairobi area): (*Nyandarua South, Nyeri, Kirinyaga, Murang'a, Kiambu, Meru, Embu, Tharaka Nithi, Nairobi counties and the eastern parts of Laikipia County*):** These counties are likely to experience cool, cloudy and foggy conditions with occasional light rains. Occasional afternoon and night showers are also likely, especially during the month of June. The total rainfall amounts during the period are expected to be close to the long-term average for the season.

These areas are expected to experience cool conditions with daytime (Maximum temperatures) occasionally falling below 18°C.

**2.1.5. The North-Eastern region (Mandera, Marsabit, Wajir, Garissa, Isiolo counties)** is expected to be generally sunny and dry throughout the forecast period. However, a few high-ground areas in Marsabit County may experience occasionally cloudy and foggy conditions with light rains, especially in the morning. Strong southerlies to southeasterly winds of more than 25 knots are likely during the season.

The temperatures in this region are expected to be warmer than the average for the season

**2.1.6. South-eastern Lowlands (Kitui, Makueni, Machakos, Tana River, Taita Taveta, and Kajiado counties)** are expected to be generally sunny and dry throughout the forecast period. Areas bordering the Central Highlands and Nairobi (parts of Machakos, Kajiado, Kitui counties), Chyulu & Taita hills in Makueni and Taita Taveta Counties) are likely to experience occasional cool and cloudy conditions with light rains.

The temperatures in this region are expected to be warmer than the average for the season. However, a few areas bordering Nairobi and Central Highlands may occasionally experience cool daytime (Maximum) temperatures.

**2.1.7. The Coastal Strip (*Mombasa, Kilifi, Lamu, Kwale counties and coastal parts of Tana River County*)** is expected to receive occasional rainfall during the season. The region is likely to receive near to above-average rainfall (slightly enhanced).

The temperatures in this region are expected to be warmer than the average for the season

### **3. EXPECTED POTENTIAL IMPACTS**

The following are the likely impacts during the June-July- August season: Cases of isolated flooding are likely over the low-lying areas and flood plains especially over the Lake Victoria Basin. Relevant authorities are advised to put in place measures to avert possible negative impacts that could arise. Residents in these areas are advised not to walk or drive through flooded rivers or moving water.

Cases of lightning strikes are likely over the Lake Victoria Basin and Highlands West of the Rift Valley. The public is advised not to shelter near metallic structures or under trees.

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

The rainfall expected over the Highlands West of the Rift Valley, Lake Victoria Basin, Central, and South Rift Valley may be conducive for crop production. Relevant authorities are advised to put in place pests and diseases surveillance, control and preventive measures.

### **3.2. Health Sector**

Respiratory diseases like asthma, pneumonia, flu, and the common cold are likely to increase over Nairobi County and the Highlands East of the Rift Valley due to the expected cold conditions. The public in these areas is advised to adopt warm dress codes and follow advice from the Ministry of Health. They are also advised to avoid using charcoal *jikos* in poorly ventilated houses as they may produce carbon monoxide gas that is lethal when inhaled.

Malaria transmission is expected to be normal over the Lake Victoria Basin, the Highlands West of the Rift Valley, Northwestern, though there may be an increase over the Coastal region due to the predicted warmer-than-average temperatures during the season. Respiratory diseases and eye infections are likely to occur over the Northeastern region due to dust storms. Health authorities are therefore advised to preposition and redistribute medical supplies and insect-treated nets in the affected areas.

### **3.3. Transport and Public Safety Sectors**

Fog formation in the areas that are expected to experience cold and cloudy conditions may pose danger for motorists due to low visibility. Care should be taken while driving in these areas, especially along the Nairobi-Nakuru Highway and particularly on the Kikuyu-Kinungi stretch in Kiambu County.

Light rains and drizzles may also cause roads to be slippery. Road users are advised to take utmost care to minimize accidents that may result from such weather conditions. Foggy weather is also likely to occasionally cause operational disruption at the Wilson and Jomo Kenyatta International Airports.

### **3.4. Water Resources Management and the Energy Sectors**

Water availability is expected to be good in most parts of the country owing to the good rains experienced during the MAM season. However, residents in areas expected to remain dry are advised to conserve and use the available water efficiently to ensure their water needs are met throughout the dry season. Residents in areas expected to receive occasional rainfall are encouraged to practice rainwater harvesting to boost their water reserves. Water levels in the hydropower-generating dams across the country are expected to remain at normal levels.

### **3.5. Environment**

The above-average rainfall expected over the Lake Victoria Basin, Highlands West of the Rift Valley, Rift Valley, and parts of the Highland East of the Rift Valley are likely to maintain conducive soil moisture for the growing of trees. Therefore, the public is encouraged to take advantage of this and plant trees to increase forest cover.

## **4. REVIEW OF MARCH-MAY (LONG-RAINS) 2024 SEASONAL RAINFALL**

The March-April-May (MAM) 2024 seasonal rainfall has ceased over most parts of the country except over the Lake Victoria Basin, the Highlands West of the Rift Valley, the Rift Valley, the Coastal Strip, and parts of the Highlands East of the Rift Valley where rainfall is expected to continue up to June. The distribution, both in time and space, was good over most parts of the country, especially in April. In March, the distribution was poor over most parts of the country with prolonged dry spells and isolated heavy storms during the fourth week. The distribution in May was good over the Highlands West and East of the Rift Valley including Nairobi and fair over Northeastern, Northwestern, and Southeastern lowlands. Over the Coastal region, the distribution was poor with long dry spells for most of the month and a few days with heavy rainfall. Lamu is the only station over the Coast that experienced above-average rainfall in May, with all the other stations experiencing below-average rainfall.

The start of the season was normal over several parts of the country except over a few areas in Southeastern lowlands (Kitui and Voi) where the onset was earlier than normal (First and Second week of March) respectively and a few stations over Central Rift Valley and Highlands East of the Rift Valley where the onset was late. An assessment of the seasonal rainfall recorded from 1st March to 28th May 2024 indicates that near to above-average rainfall was recorded over most parts of the country except over Malindi, Mtwapa, Msabaha, and Mombasa which recorded below-average rainfall.

The highest seasonal rainfall total was recorded at Ndaka-ini station in Murang'a County with 1355.5mm, followed by Gatare Forest station also in Murang'a County with 1261.5mm as shown in Table 1. The rest of the stations recorded less than 700mm of rainfall. In some stations such as Nyahururu, Moi Air Base, Dagoretti Corner, Wilson Airport, JKIA, Kabete, Thika and Machakos, MAM 2024 was the wettest season in history.

**Table 1: Stations that recorded more than 700mm of rainfall in MAM 2024**

S/NO	Station	County	Amount in mm
1	Ndaka-ini rainfall station	Murang'a	1355.5
2	Gatare Forest rainfall station	Murang'a	1261.5
3	Dagoretti Meteorological station	Nairobi	1247.1
4	Chuka Forest Rainfall station	Tharaka Nithi	1202.1
5	Kimakia Forest Rainfall station	Murang'a	1198.1
6	Kangema Meteorological station	Murang'a	1183.8
7	Kagwe Tea Factory Rainfall station	Kiambu	1144.3
8	Wilson Meteorological station	Nairobi	1093.6
9	Kabete Meteorological station	Nairobi	1088.4
10	Moi Air Base Meteorological station	Nairobi	1044.4
11	Ngong Meteorological station	Kajiado	1006.1
12	Chinga Tea Factory Rainfall station	Nyeri	999.1
13	Thika Meteorological station	Kiambu	985.9
14	Nkanini Farm Rainfall station	Kiambu	964.6
15	Embu Meteorological station	Embu	955.7
16	Lower Matasia Rainfall station	Kajiado	919.7
17	Kianamu Rainfall station	Embu	892.2
18	MIAD Kandongu Rainfall station	Kirinyaga	874.5
19	Kisii Meteorological station	Kisii	863.5
20	Kirie Rainfall station	Embu	853.9
21	Kakamega Meteorological station	Kakamega	841.2
22	JKIA Meteorological station	Nairobi	838.3
23	Kiambicho Rainfall station	Murang'a	831.7
24	Machakos Meteorological station	Machakos	830.2
25	Kabage Forest Rainfall station	Nyeri	817.2
26	Castle Forest Rainfall station	Kirinyaga	800.2
27	Kericho Meteorological station	Kericho	799.0
28	Kasafari Rainfall station	Embu	798.1
29	Kitui Meteorological station	Kitui	750.2
30	Mbooni Rainfall station	Makueni	749.1
31	Sony Sugar Rainfall station	Migori	743.3

The season was characterized by severe storms over several parts of the country. For instance, Nguu Masumba rainfall station in Makueni recorded 152.8mm in 24 hours on 10th April, while Thika Meteorological station recorded 150.3mm on 15th April. Other stations that recorded very heavy rainfall in 24 hours are shown in Table 2.

**Table 2: Stations that recorded very heavy rainfall in 24 hours during MAM 2024**

S/NO	Station	County	Amount in mm	Date
1	Nguu Masumba rainfall station	Makueni	152.8	10/04/2024
2	Thika Meteorological Station	Murang'a	150.3	15/04/2024
3	NIA Mwea Rainfall station	Kirinyaga	147.0	15/04/2024
4	Faza Secondary Rainfall station	Lamu	140.7	23/05/2024
5	Kiima Kiu Rainfall station	Makueni	140.2	05/04/2024
6	Lamu Meteorological station	Lamu	138.4	23/05/2024
7	Kasafari Rainfall station	Embu	130.0	03/04/2024
8	Kianamu Rainfall station	Embu	127.9	03/04/2024
9	Dagoretti Meteorological station	Nairobi	124.2	24/03/2024
10	Kibauni Rainfall station	Machakos	123.6	20/04/2024
11	Kikumbulyu South Rainfall station	Makueni	122.7	11/04/2024
12	Wilson Meteorological station	Nairobi	123.4	24/03/2024
13	Koitogos Farm Rainfall station	Trans Nzoia	122.0	20/04/2024
14	Kianamu Rainfall station	Embu	119.5	23/04/2024
15	Kinna Rainfall station	Isiolo	118.6	07/04/2024
16	Kairungu Rainfall station	Kitui	118.5	25/04/2024
17	Miad Kandongu Rainfall station	Kirinyaga	118.3	08/04/2024
18	Wote Rainfall station	Makueni	118.2	08/04/2024
19	Ikisaya Primary Rainfall station	Kitui	117.4	08/04/2024
20	Kiguru Rainfall station	Kitui	114.6	3/05/2024
21	Dagoretti Meteorological station	Nairobi	113.6	20/04/2024
22	Lamu Fisheries Rainfall Station	Lamu	113.1	23/5/2024
23	Managia Rainfall station	Embu	112.0	03/04/2024
24	Kabete Meteorological station	Nairobi	111.3	22/04/2024
25	Ngong Meteorological station	Kajiado	108.5	14/04/2024
26	Nkanini Farm Rainfall station	Kiambu	105.0	5/05/2024
27	Mukaa Rainfall station	Makueni	103.6	05/04/2024
28	Moi Air Base Meteorological station	Nairobi	103.6	24/03/2024
29	Njuki-ini Forest rainfall station	Kirinyaga	100.7	03/04/2024
30	Muthesya Rainfall station	Machakos	100.4	06/04/2024
31	Wilson Meteorological station	Nairobi	100.3	20/04/2024
32	Kimakia Forest Rainfall station	Murang'a	100.3	23/04/2024

**Figure 3a** shows the amount of rainfall recorded during the MAM 2024 season (**Bluebars**) up to 26<sup>th</sup> May 2024 as compared to the MAM seasonal LTMs (**Redbars**). **Figure 3b** shows the MAM 2024 seasonal rainfall performance as a percentage of the LTMs.

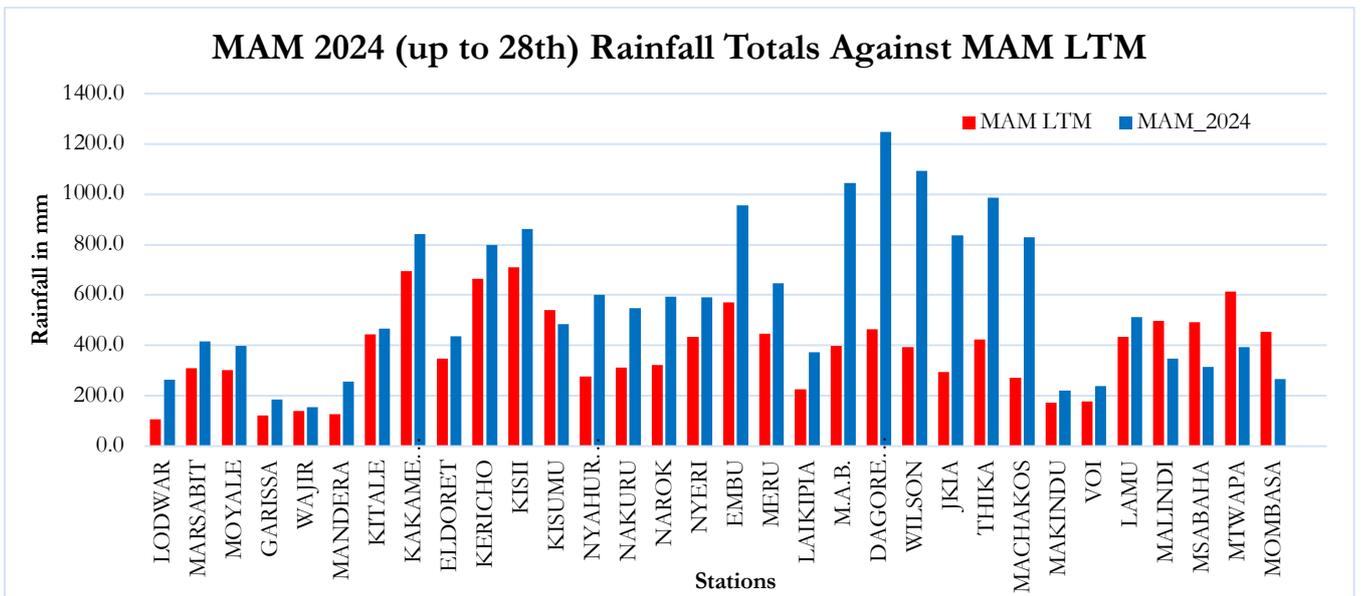


Figure 3a: MAM 2024 Rainfall Totals Compared to MAM Seasonal LTM.

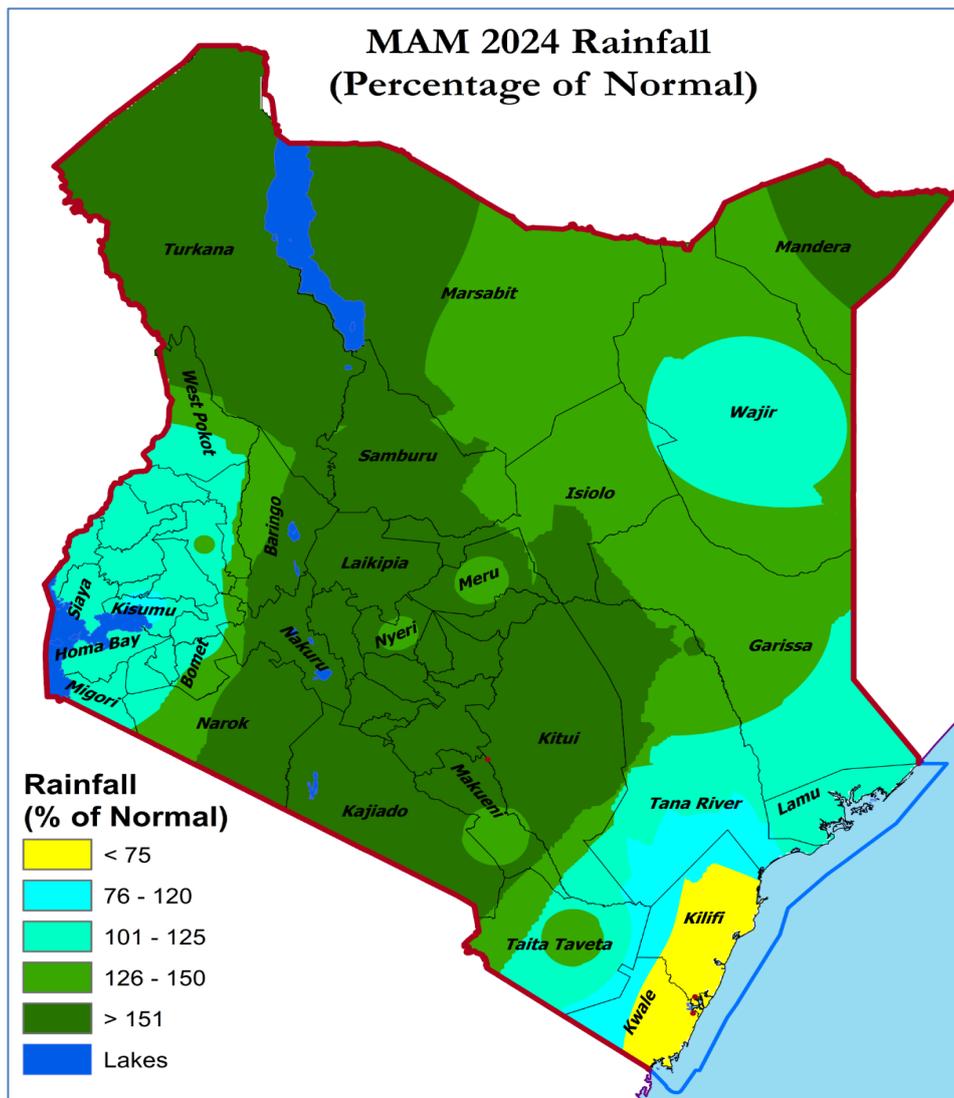


Figure 3b: MAM 2024 Rainfall Performance as a Percentage (%) of MAM LTM

<i>Rainfall performance categories</i>	
<i>Range</i>	<i>Category</i>
<i>Below 75% of the LTM</i>	<i>Below Normal (Depressed) rainfall</i>
<i>Between 75% and 125% of the LTM</i>	<i>Near normal rainfall</i>
<i>Above 125% of the LTM</i>	<i>Above Normal (Enhanced) rainfall</i>

#### **4.1. EXPERIENCED IMPACTS OF MAM 2024**

##### **5.1.1 Agriculture and Food Security Sector.**

The rainfall experienced throughout the season provided favorable conditions for agricultural activities in key agricultural regions such as the Highlands East and West of the Rift Valley, Lake Victoria Basin, Central and South Rift Valley, as well as the Southeastern lowlands. However, the heavy rainfall also resulted in significant crop damage in various parts of the country. A lot of livestock were killed by floods and landslides.

##### **5.1.2 Disaster Management Sector**

The heavy rainfall experienced on various dates across several parts of the country resulted in several significant impacts. Apart from floods, the Disaster Management teams had to deal with the impacts of cyclones Hidaya and Ialy that made history by their proximity of their trajectories to the equator.

##### **5.1.3 Health Sector**

Cholera cases were reported in Tana River, Lamu and Siaya Counties. Public health authorities and local health facilities implemented measures such as disease surveillance, hygiene promotion campaigns, and provision of medical treatment to address the cholera outbreaks and safeguard the health and well-being of the affected populations.

##### **5.1.4 Transport and Public Safety**

The heavy rainfall experienced during the season led to the disruption of road and rail transport services and the destruction of infrastructure in different parts of the country. Additionally, the strong winds experienced in May as a result of cyclones Hidaya and IALY led to the disruption of marine services in the Indian Ocean.

##### **5.1.5 Water Resources Management and the Energy Sectors.**

Water availability for both humans and livestock improved across most regions of the country. Essential water sources such as Ndaka-ini, Sasumua, and Ruiru dams, which supply water to Nairobi, reached full capacity due to the increased rainfall. Additionally, all Seven Forks dams were full and spilling over. However, the heavy rains occasionally led to disruptions in power supply in some parts of the country.

##### **5.1.6 Environment**

The rainfall experienced during the season was conducive to the growth of trees and rejuvenation of vegetation over most parts of the country. However, it also led to landslides, mudslides, land degradation, soil erosion, and loss of vegetation in some areas.

***NB: This outlook should be used together with the 24-hour, 5-day, 7-day, monthly forecasts, special forecasts, regular updates as well as advisories issued by this Department. Weekly County forecasts are available from County Meteorological Offices.***

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