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Meteorological  
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**CLIMATE OUTLOOK FOR AUGUST 2024 AND REVIEW OF THE  
RAINFALL AND TEMPERATURE IN JULY 2024**

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## **1. HIGHLIGHTS**

### **1.1. The Rainfall Outlook for August 2024**

The forecast for August 2024 indicates that several parts of the country will experience generally dry and sunny conditions. However, the Highlands West of the Rift Valley, Lake Victoria Basin, Central and Southern Rift Valley, and parts of the Highlands East of the Rift Valley are likely to receive above-average rainfall. The northwestern region is expected to remain generally dry, although some areas bordering Uganda and South Sudan may experience occasional rainfall that is anticipated to be above average. The Coastal Strip is likely to remain generally dry with occasional rainfall expected to be near to slightly above the Long-Term Mean (LTM) for August. Intermittent cool and cloudy conditions, accompanied by rains, are expected to prevail in the Central Highlands, Nairobi area, and parts of the Southeastern lowlands, western Kenya, and the Central and South Rift Valley. Additionally, temperatures are anticipated to be warmer than normal across most parts of the country, except in a few areas of West Pokot, where temperatures are expected to be near the LTM for August.

### **1.2. The Climate Outlook for August-September and October**

The forecast for the next three months indicates that several parts of the country are expected to experience dry weather conditions in August and September, with occasional rainfall in October. However, the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and South Rift Valley, and parts of the Highlands East of the Rift Valley) are expected to receive rainfall throughout the forecast period, with amounts projected to be above average. Isolated areas in the Northwest, particularly those bordering Uganda and South Sudan, are also likely to experience occasional rainfall during this period. This rainfall is expected to be above the August to October LTM. The Highlands East of the Rift Valley, including Nairobi County, and parts of the Southeastern lowlands are expected to experience intermittent cool and cloudy conditions in August, which may extend into early September, with occasional rainfall in October. The Coastal zone is expected to remain generally dry with occasional showers. The northeastern, most of the northwestern, and most of the Southeastern lowlands are forecasted to experience generally sunny and dry weather conditions. However, in October, these regions may witness occasional rainfall, which is expected to be near to below the August to October LTM. Temperatures are expected to be generally warmer than average over most parts of the country.

### 1.3 Rainfall and Temperature Review for July 2024

Several parts of the country remained generally dry in July 2024. However, significant rainfall was recorded in the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and South Rift Valley, the Coastal zone, and the Highlands East of the Rift Valley, including Nairobi County. A few areas in the Southeastern lowlands, Northeast, and Northwest also received occasional rainfall. This rainfall was near to above the July long-term average in most regions, except in Nakuru, Lamu, Kakamega, Lodwar, Marsabit, Mombasa, and Mtwapa, where below-average rainfall was observed.

Intermittent cool and cloudy conditions were experienced over the Highlands East of the Rift Valley, including Nairobi County, as well as parts of the Southeastern lowlands. Maximum temperatures were warmer than average across most of the country, except in Kisumu, where temperatures were cooler than average. Minimum temperatures were also warmer than average throughout the country.

### 2. WEATHER FORECAST FOR AUGUST 2024

The rainfall forecast for August 2024 is based on regression of Sea Surface Temperatures (SSTs), SST gradients, the expected evolution of global SST as well as upper air circulation patterns over Western Kenya and the Coastal region. **Figure 1a** shows the rainfall climatology in August.

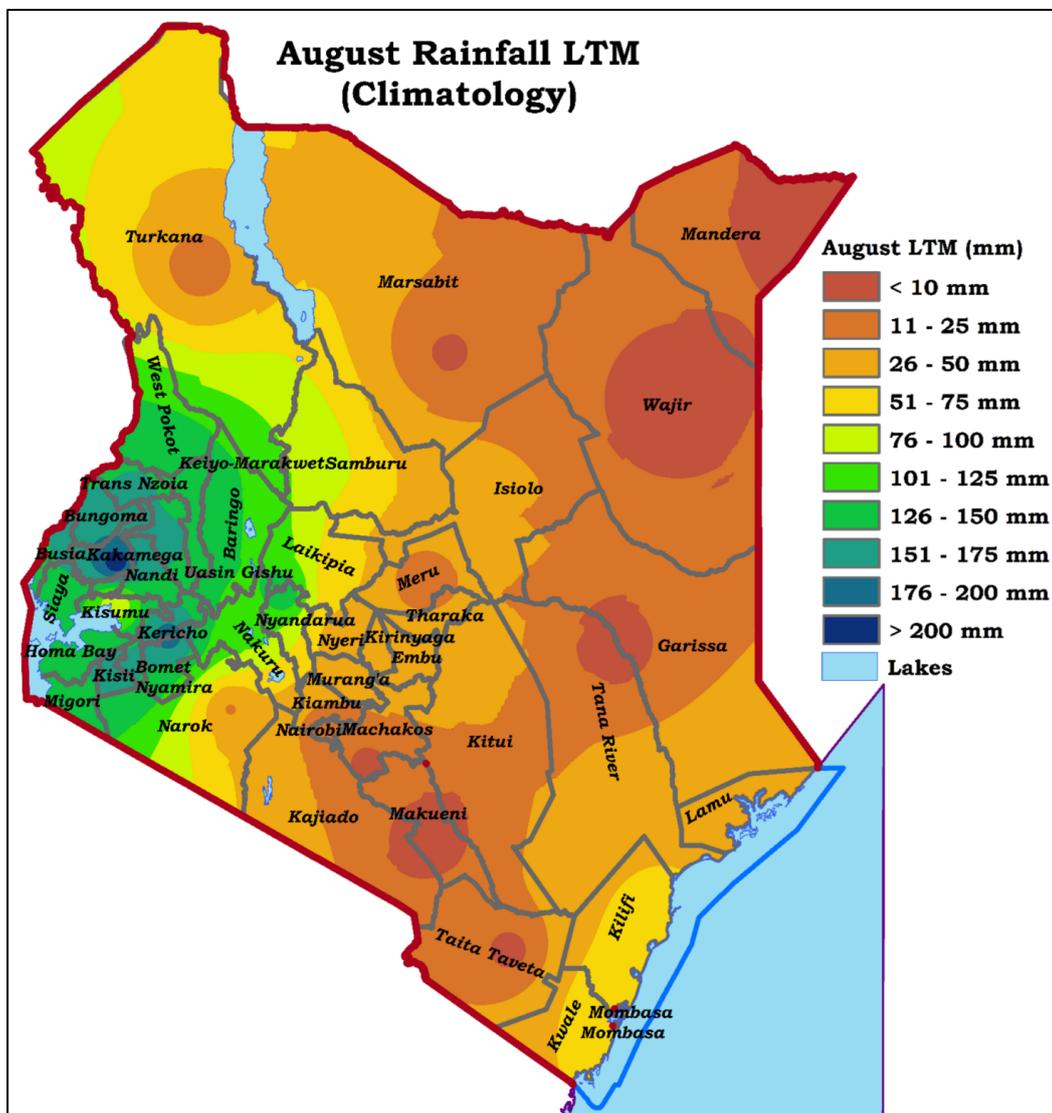


Fig. 1a: August Rainfall Climatology

## 2.1. Rainfall Forecast for August 2024

The forecast for August 2024 indicates that above-average (enhanced) rainfall is likely in the counties of the Lake Victoria Basin, Highlands West of the Rift Valley, Central and Southern Rift Valley, parts of the Northwestern region, and areas of the Highlands East of the Rift Valley. In contrast, the Coastal region is expected to be generally sunny and dry, with occasional rainfall anticipated to be near to slightly above the LTM for August.

The Southeastern, Northeastern, and most of the Northwestern regions are likely to remain generally sunny and dry throughout the month. Meanwhile, intermittent cool and cloudy conditions, along with occasional morning rains and afternoon showers, are expected over the Highlands East of the Rift Valley (including Nairobi County), parts of the Highlands West of the Rift Valley, and the Central Rift Valley. This pattern marks the gradual end of the cold season. Figure 1b illustrates the rainfall forecast for August 2024.

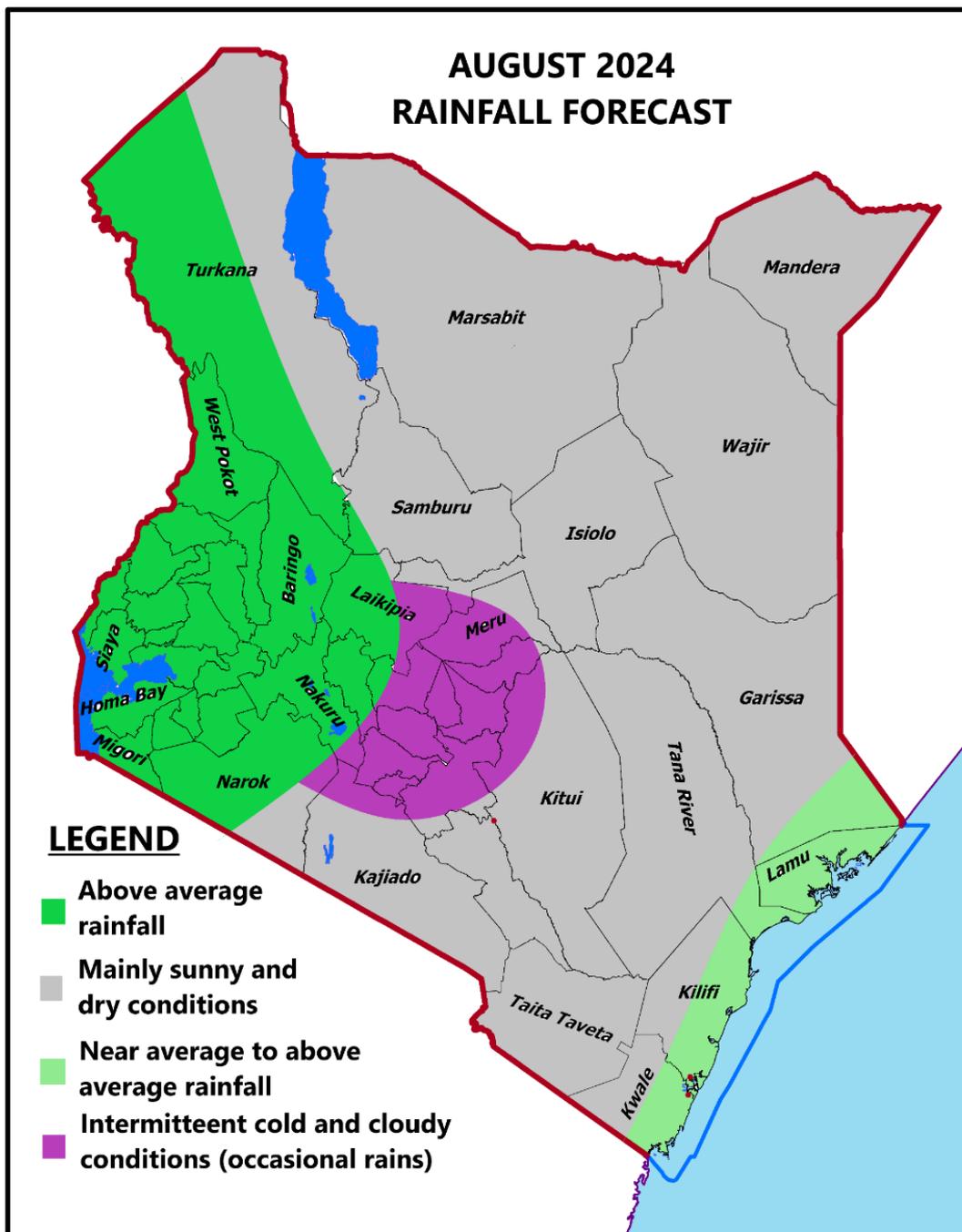


Fig. 1b.: August 2024 Rainfall Forecast

### 2.1.1. Specific Rainfall Outlook

**2.1.1.1. The Lake Victoria Basin, Highlands West of the Rift Valley, Central and South Rift Valley and parts of the Highlands East of the Rift Valley (Siaya, Kisumu, Homa Bay, Migori, Busia, Kisii, Nyamira, West Pokot, Trans Nzoia, Uasin Gishu, Elgeyo Marakwet, Nandi, Baringo, Laikipia, Kakamega, Vihiga, Bungoma, Nakuru, Narok, Kericho, Bomet, and Nyandarua):** Rainfall is expected during August 2024, with the total amount likely to be above the long-term average for the month. Additionally, some parts of Nyandarua and Laikipia counties may experience occasional hailstorms.

#### 2.1.1.2. Northwestern (Turkana, Samburu):

Mainly dry weather conditions are expected to prevail over most areas during the month. However, occasional rainfall is anticipated in a few locations, particularly those bordering Uganda and South Sudan. The total amount of rainfall is likely to be above the long-term average for August. Additionally, strong southeasterly to easterly winds exceeding 25 knots (12.5 m/s) are expected during the month.

#### 2.1.1.3. Northeastern Kenya (Mandera, Marsabit, Wajir, Garissa and Isiolo)

These areas are likely to remain generally sunny and dry. However, a few high-altitude areas in Marsabit County may experience cloudy and foggy conditions in the mornings. Strong southerly winds exceeding 25 knots (12.5 m/s) are expected over some parts of the region.

#### 2.1.1.4. The Highlands East of the Rift Valley including Nairobi County (Nyeri, Kirinyaga, Murang'a, Kiambu, Meru, Embu, Tharaka Nithi)

These counties are expected to experience intermittent cool and cloudy conditions (overcast skies) with occasional light rains in the morning. Occasional afternoon showers are likely to occur over a few places during the month. This rainfall is likely to be near to slightly above the August LTM.

#### 2.1.1.5. Southeastern Lowlands (Machakos, Makueni, Kitui, Taita Taveta, and parts of Kajiado)

These areas are likely to remain generally sunny and dry. However, intermittent cool and cloudy conditions are expected over some areas, particularly those bordering the Central Highlands and Nairobi County.

**2.1.1.6. The Coastal Strip (Mombasa, Tana River, Kilifi, Lamu, Kwale):** These counties are expected to experience generally dry conditions with occasional showers throughout the month. The amount of rainfall is likely to be near to slightly above the August LTM. It is also expected that strong southerly winds exceeding 25 knots (12.5 m/s) will be experienced during the month.

## 2.2. Temperature Forecast for August 2024

The month of August marks the gradual cessation of the cold season, particularly over the Highlands East of the Rift Valley, including Nairobi County. The temperature outlook for August 2024 indicates that most parts of the country are expected to experience warmer-than-average temperatures. Higher probabilities for above-average temperatures are anticipated over the Central and Eastern regions.

In contrast, parts of West Pokot, especially those bordering Uganda, are likely to experience near-average temperatures. The Highlands East of the Rift Valley, including Nairobi County, and some areas in the southeastern lowlands (Northern Kajiado) may have a few chilly days, with daytime

temperatures occasionally falling below 18°C. The northern sector of the country is likely to experience high temperatures exceeding 30°C, except in Marsabit and parts of Isiolo counties, where temperatures are expected to be more moderate. Overall, the rest of the country is likely to experience moderate temperatures ranging between 20°C and 30°C.

### **2.3. Potential Impacts of Weather in August 2024**

The following are the likely impacts of the weather during the month of August:

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

The above-average rainfall expected over the Highlands West of the Rift Valley, Lake Victoria Basin, and the Central and South Rift Valley may create favorable conditions for agricultural activities. However, hailstorms have been forecasted in parts of the Highlands East of the Rift Valley and the Central Rift Valley, particularly in Nyandarua and parts of Laikipia County. These hailstorms pose a potential risk of crop destruction, which could significantly impact agricultural yields and livelihoods in the affected regions. Farmers and agricultural stakeholders should remain vigilant and take necessary precautions to protect their crops and minimize potential damage from these severe weather events.

#### **2.3.2. Disaster Management Sector**

Lightning strikes remain a significant risk over the Lake Victoria Basin and the Highlands West of the Rift Valley, particularly in Kisii, Kisumu, Nandi, Bungoma (Mt. Elgon areas), and Kakamega Counties. The public is strongly advised to avoid seeking shelter near metallic structures or under trees to reduce the risk of injury or loss of life. Taking these precautions can help prevent accidents and ensure safety especially during thunderstorm events.

#### **2.3.3. Transport and Public Safety**

Fog formation in the Highlands East of the Rift Valley, including Nairobi County, can significantly reduce visibility, posing a danger to motorists. This reduced visibility increases the risk of accidents, particularly along key routes such as the Kikuyu-Kinungi stretch of the Nairobi-Naivasha Highway. Drivers traversing these areas are strongly advised to exercise heightened caution, ensuring they drive at reduced speeds and maintain safe distances between vehicles to mitigate the risks associated with fog.

In addition to its impact on road safety, fog may also cause disruptions at major transportation hubs. Specifically, operations at Wilson and Jomo Kenyatta International Airports could experience interruptions due to reduced visibility, which might affect flight schedules and overall airport operations.

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

Water availability in the ASAL (Arid and Semi-Arid Lands) areas may decline due to the anticipated dry weather conditions. Residents are advised to use the available water sparingly and adopt water conservation practices to ensure their water needs are met throughout the month. Rainwater harvesting is also encouraged in areas expected to receive rainfall.

Conversely, the water catchment areas in the Highlands West and East of the Rift Valley are expected to receive above-average rainfall. As a result, the water levels in the dams and rivers within these catchment areas are likely to be maintained, ensuring a stable water supply for various uses, including agriculture, domestic consumption, and hydropower generation.

### 2.3.5 Environment and Forestry

The expected above-average rainfall over the Highlands West of the Rift Valley, the Lake Victoria Basin, and the Central and Southern Rift Valley is set to significantly enhance soil moisture, creating optimal conditions for tree and vegetation growth. This is a key opportunity to support the National Tree Growing and Restoration Campaign, which aims to grow 15 billion trees by 2032 and increase the tree cover from the current 12% to 30% by 2032. The increased soil moisture will improve the survival rates of newly planted trees and promote the expansion of forested areas.

By capitalizing on these favorable conditions, the public can play a crucial role in this campaign. Engaging in tree planting initiatives not only contributes to achieving the national tree cover target but also has a substantial environmental impact. Increased tree cover will enhance air quality, boost biodiversity, prevent soil erosion, and aid in carbon sequestration, thus mitigating climate change. Moreover, the enhanced forest cover will support ecosystem services, safeguard water resources, and contribute to a more resilient environment for future generations.

### 2.3.6 Health Sector

The anticipated cool and chilly conditions are likely to lead to an increase in respiratory diseases such as asthma, pneumonia, flu, and the common cold, particularly in areas such as Nairobi, the Highlands East of the Rift Valley, parts of the Central and South Rift Valley, and parts of the Highlands West of the Rift Valley. To reduce the risk of contracting these illnesses, the general public is advised to dress warmly and adhere to guidelines provided by Health Authorities. Additionally, it is crucial to avoid using charcoal jikos in poorly ventilated homes, as they emit carbon monoxide gas, which can be harmful and potentially fatal if inhaled. Ensuring proper ventilation and following health recommendations can help prevent respiratory issues and protect overall health during these cold conditions.

## 3. Outlook for August to October 2024

The outlook for the next three months indicates that the Highlands West of the Rift Valley, the Lake Victoria Basin, the Central and South Rift Valley, Nyandarua, and the western parts of Laikipia County are expected to receive rainfall amounts which are likely to be above the August to October LTM. The Northwestern region is likely to remain generally dry for most of the forecast period. However, areas along the Uganda and South Sudan border may experience occasional rainfall, which is expected to be above the August to October LTM.

The Highlands East of the Rift Valley, including Nairobi County, and parts of the Southeastern lowlands and the Central Highlands are likely to experience intermittent cool and cloudy conditions with occasional rains in August that may extend into early September. Occasional rainfall is also expected, especially during the second half of October, with amounts near the August to October LTM. The Coastal region is expected to remain generally dry throughout the forecast period, though a few days may experience rainfall near to below the LTM for August to October. The Northeastern and most of the Southeastern lowlands are expected to remain generally sunny and dry for most of the forecast period, with occasional rainfall possible towards the end of October. This rainfall is expected to be near the August to October LTM over the Southeastern lowlands and near to below average over the Northeastern region.

Temperatures are expected to be warmer than usual over most parts of the country, except for parts of West Pokot and Elgeyo Marakwet, where temperatures are anticipated to be near the August to October LTM. The Central and Eastern parts of the country are expected to have a higher probability of experiencing warmer-than-average temperatures.

## 4. REVIEW OF THE WEATHER DURING JULY 2024

### 4.1. Rainfall Review in July 2024

Several parts of the country remained generally dry in July 2024. However, significant amounts of rainfall were recorded in the Highlands West of the Rift Valley, the Lake Victoria Basin, the Central and South Rift Valley, the Coastal Strip, and the Highlands East of the Rift Valley, including Nairobi County. Analysis of the rainfall received in July 2024 indicates that enhanced rainfall, defined as more than 125% of the long-term mean (LTM), was observed at several stations, including Moi Air Base (1621.3%), JKIA (1093.6%), Dagoretti (519.4%), Wilson Airport (499.6%), Narok (560.4%), Thika (314.2%), Machakos (237.8%), Nyeri (176%), Kericho (144.3%), Kitale (139.7%), and Eldoret (126.6%).

Near-normal rainfall, ranging between 75-125% of the LTM, was recorded in Laikipia (116.3%), Embu (113.5%), Msabaha (112.0%), Malindi (108.3%), Kisumu (106.9%), Moyale (103.0%), Kisii (91.9%), Meru (88.5%), and Nyahururu (87.6%). Below-normal rainfall, characterized by less than 75% of the LTM, was noted at Nakuru (72.6%), Lamu (63.4%), Kakamega (57.9%), Lodwar (39.4%), Mombasa (34.9%), Marsabit (20.2%), and Mtwapa (20.1%). Most stations in the Northeastern and Southeastern lowlands, such as Garissa, Wajir, Mandera, Makindu, and Voi, recorded no rainfall during the month. Intermittent cool and cloudy conditions were experienced over the Highlands East of the Rift Valley, including Nairobi County and parts of the Southeastern lowlands.

Stations that recorded significant amounts of rainfall are detailed in Table 1, which shows that the highest monthly rainfall total (295.7 mm) was recorded at Annex B Wareng rainfall station in Uasin Gishu County, followed by WRA Kapenguria rainfall station in West Pokot with 229.0 mm.

**Table 1: Stations that recorded more than 100mm**

S/N O	Station	County	Amount in mm
1	Annex B Wareng rainfall station	Uasin Gishu	295.7
2	WRA Kapenguria rainfall station	West Pokot	229.0
3	ADC Olng'atongo rainfall station	Trans Nzoia	210.1
4	Nasukuta rainfall station	West Pokot	207.4
5	Eldoret Meteorological station	Uasin Gishu	207.2
6	Kericho Meteorological station	Kericho	203.3
7	Eldoret Airport Meteorological station	Uasin Gishu	194.4
8	Alale Girls school rainfall station	West Pokot	196.0
9	Kaibos mixed school rainfall station	West Pokot	196.0
10	Kitale Meteorological station	Trans Nzoia	195.0
11	Brookside Dairies rainfall station	Uasin Gishu	192.2
12	Moi Air Base Meteorological station	Nairobi	189.1
13	Moi University rainfall station	Uasin Gishu	186.5
14	St Catherine Girls rainfall station	West Pokot	178.9
15	Kapkatet rainfall station	West Pokot	176.2
16	Hekima Academy rainfall station	Uasin Gishu	154.5
17	Khalaba ward rainfall station	Bungoma	149.4
18	Mabanga ATC rainfall station	Bungoma	146.0
19	Nyaroya rainfall station	Migori	144.6
20	Timboroa Forest rainfall station	Uasin Gishu	144.5
21	Ainabkoi Automatic Weather Station	Uasin Gishu	137.3
22	Bungoma water supply rainfall station	Bungoma	136.4
23	Kibabii University rainfall station	Bungoma	132.6
24	Kanduyi Agricultural office rainfall station	Bungoma	131.2
25	Eluuya Girls school rainfall station	Bungoma	130.8

26	Kacheliba DCC rainfall station	West Pokot	125.0
27	Nyahururu Meteorological station	Nyandarua	122.3
28	University of Eldoret	Uasin Gishu	122.0
29	Nabichakha Secondary rainfall station	Bungoma	112.1
30	Kabage Forest rainfall station	Nyeri	106.8
31	Matungu rainfall station	Kakamega	104.8
32	Msabaha Meteorological station	Kilifi	102.6
33	Butere rainfall station	Kakamega	102.2
34	WRA Kitale rainfall station	Trans Nzoia	101.7
35	J.K.IA Meteorological station	Nairobi	101.6

A few stations recorded high amounts of rainfall (more than 50 mm) in 24 hours. For instance, Moi Air Base station in Nairobi recorded 64.0 mm on July 9, while Alale Girls School in West Pokot recorded 60.1 mm on July 22. Eldoret Meteorological Station and Hekima Academy, both in Uasin Gishu County, recorded 54.0 mm and 52.2 mm respectively on July 13, while Eldoret Airport recorded 53.8 mm on July 29. Lower Matasia Station (Ngong) recorded 52.2 mm on July 9.

Figure 2a shows the rainfall recorded from July 1 to July 29, 2024 (blue bars), compared to July LTMs (red bars). Figure 2b depicts the July 2024 rainfall totals.

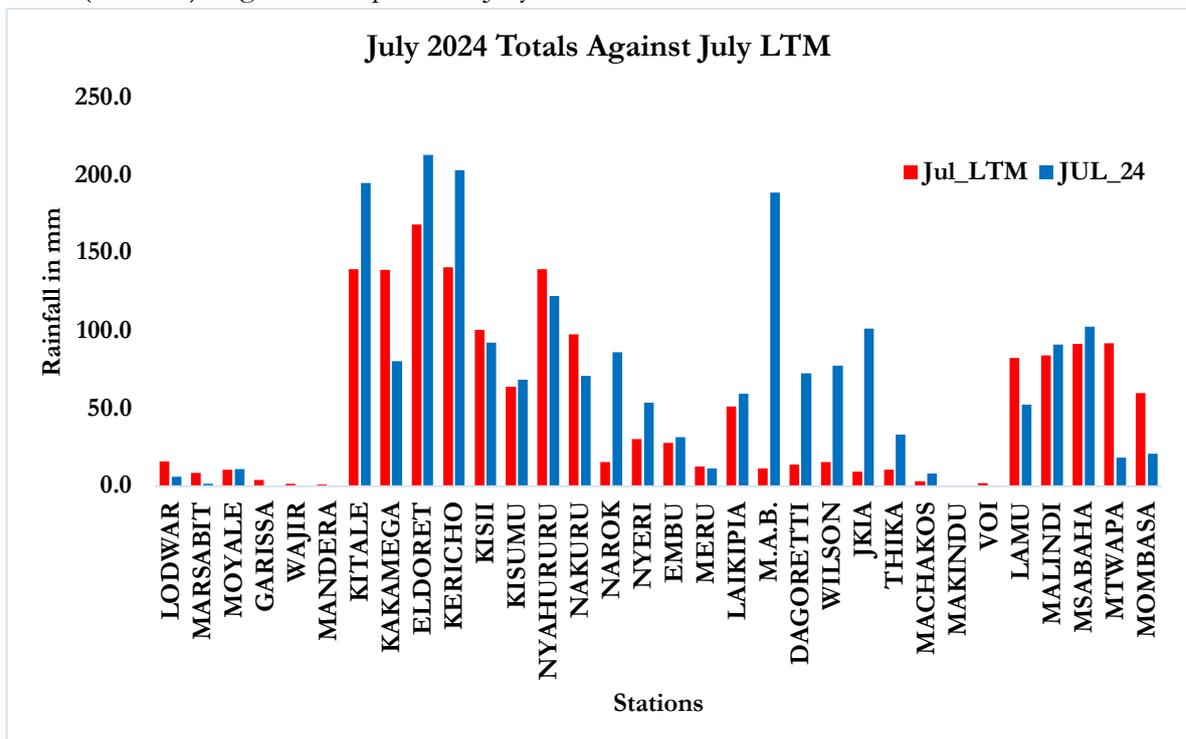


Figure 2a: Rainfall recorded in July 2024 (Blue bars) compared to July LTMs (Red bars).

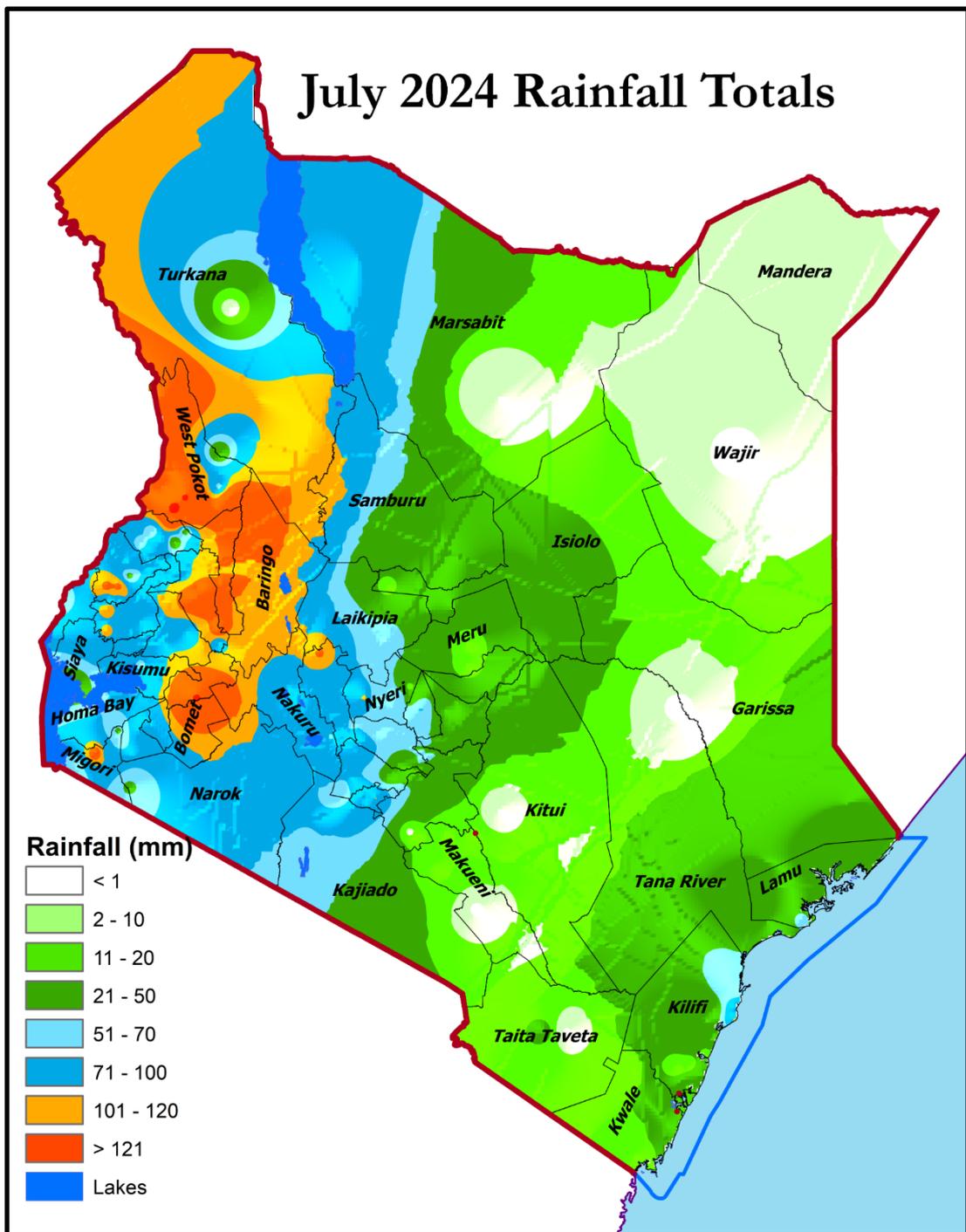


Figure 2b: July 2024 rainfall totals

## 4.2. Temperature Review in July 2024

The month of July marked the peak of the cold season, with areas over the Highlands East of the Rift Valley, including Nairobi County, parts of the Southeastern lowlands, parts of the Highlands West of the Rift Valley, and the Central and South Rift Valley experiencing intermittent cool and cloudy conditions. An analysis of temperatures in July indicates that both daytime (maximum) and nighttime (minimum) temperatures were warmer than the July LTM over most parts of the country, except for Kisumu, where maximum temperatures were slightly cooler than the July LTM. However, a few stations in the Highlands East of the Rift Valley, including Nairobi County and the Southeastern lowlands (Kajiado), recorded daytime (maximum) temperatures below 18°C. For instance, Kangema Station recorded a maximum temperature of 14.7°C on July 18, 15.8°C on July 17, and 16.3°C on July 16. Nyeri recorded 15.5°C on July 18, 16.1°C on July 17, and 17.8°C on July 27. Nyahururu recorded 16.4°C on July 17 and 17.4°C and 19.9°C on July 16 and July 18, respectively. Embu recorded 16.9°C on July 18 and 17.6°C on July 17. Meru recorded 16.5°C on July 17 and 16.9°C on July 18. Kabete recorded 17.1°C on July 18 and 17.7°C on July 16, while Ngong recorded 17.3°C on July 18. The lowest monthly maximum temperature (21.1°C) was recorded at Nyahururu Station.

Several stations in the Highlands East of the Rift Valley, including Nairobi County, and a few stations in the Highlands West of the Rift Valley, South Rift Valley, and Southeastern lowlands occasionally recorded minimum temperatures below 10°C. For instance, Nyahururu recorded the lowest temperature (5.4°C) on July 1 and below 10°C for more than half of the month. Narok recorded 7.4°C and 7.8°C on July 1 and July 12, respectively. JKIA, Ngong, Dagoretti, Kabete, Machakos, Nyeri, Embu, and Meru recorded 8.9°C, 8.9°C, 9.1°C, 9.2°C, 9.2°C, 9.2°C, 9.5°C, and 9.7°C on July 12, respectively. Eldoret recorded 9.7°C on July 9. The lowest monthly average nighttime temperature (9.4°C) was recorded at Nyahururu Station. Figures 3a – 3f visually depict the temperatures observed during the month.

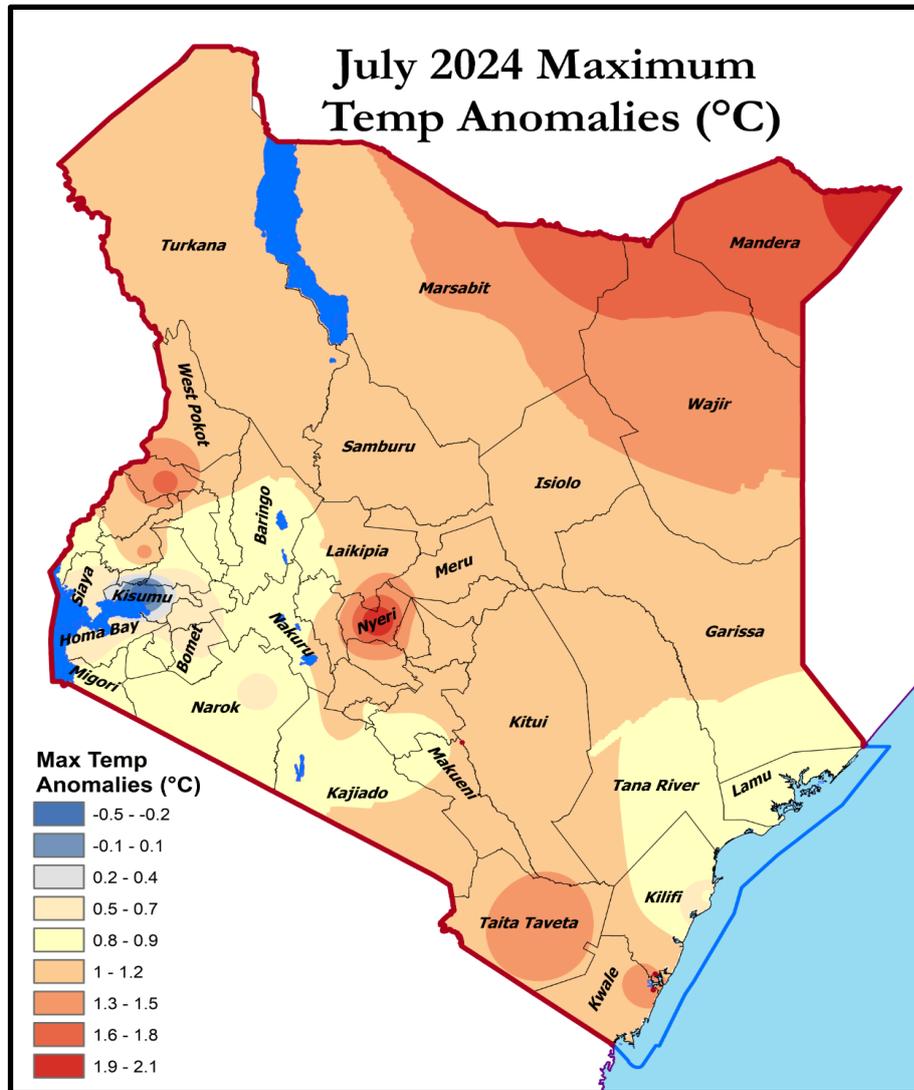


Fig. 3a: July 2024 Maximum Temperature anomalies

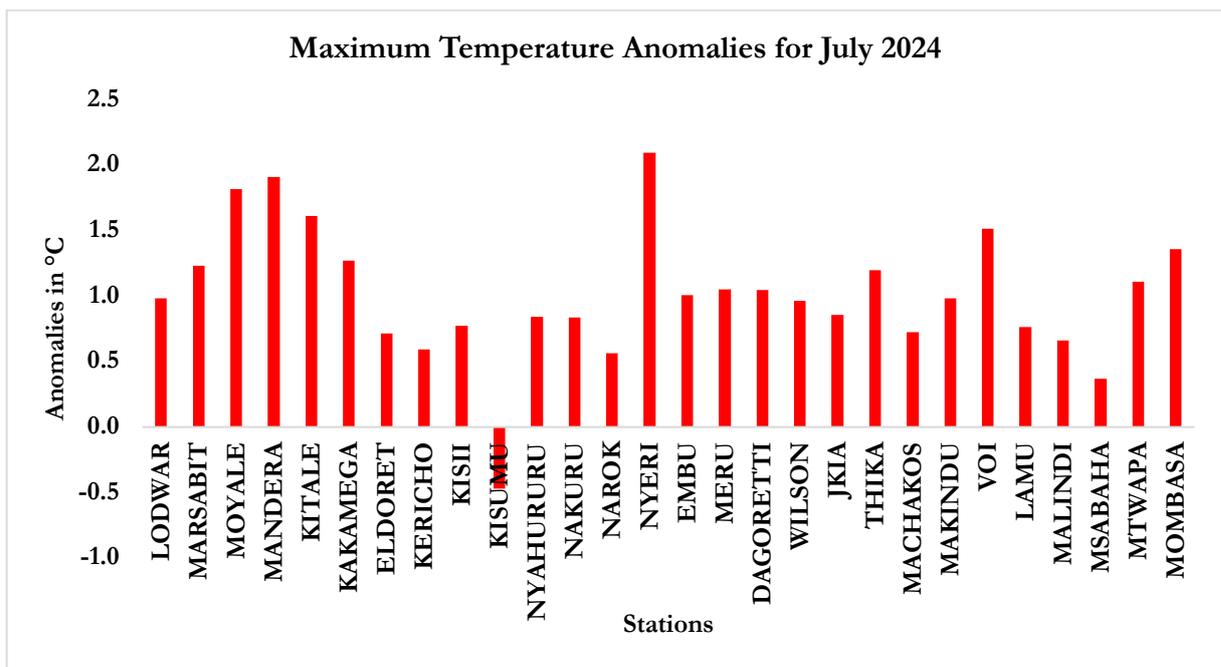


Figure 3b.: Maximum Temperature Anomalies for July 2024

Temperature Anomalies refer to the deviations from the long-term average or normal temperatures recorded for a specific time period, in this case the month of July. Positive anomalies indicate that the temperature for that period was higher than the long-term average, while negative anomalies signify that the temperature was lower than the long-term average.

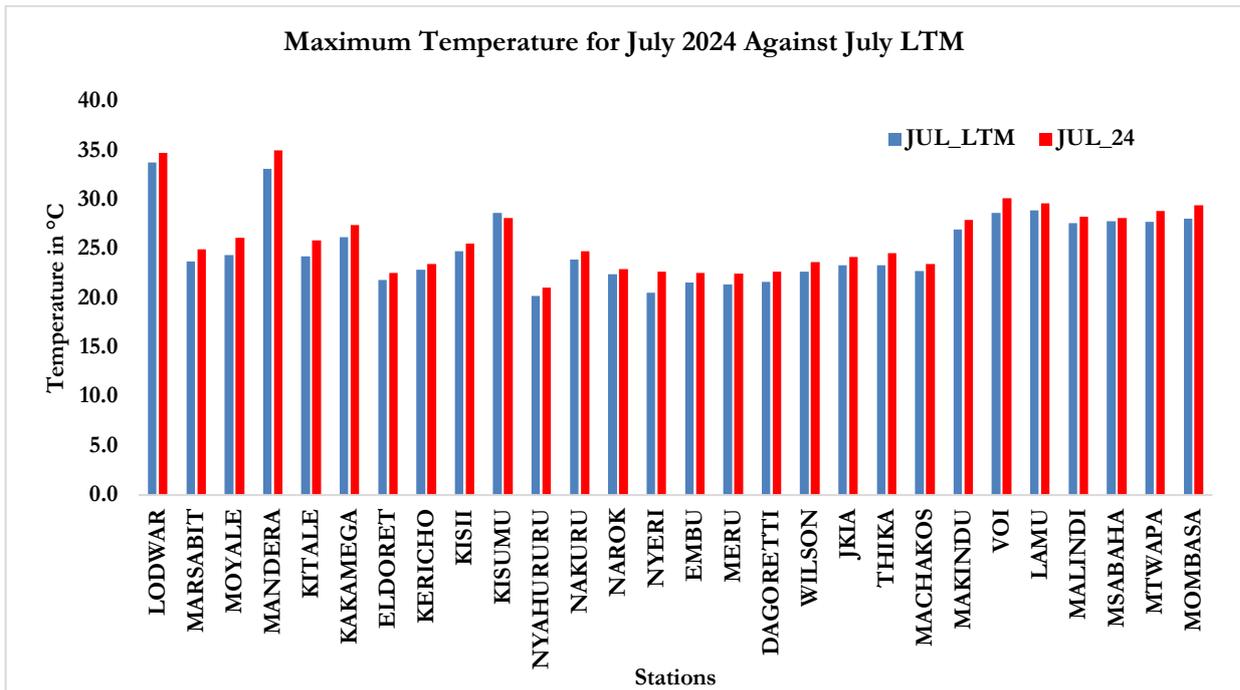


Fig. 3c: Maximum Temperatures for July 2024 against July Maximum Temp LTM

The average monthly maximum temperature for July represents the typical high temperatures experienced during that month. It is calculated by averaging the highest recorded temperatures for each day in July.

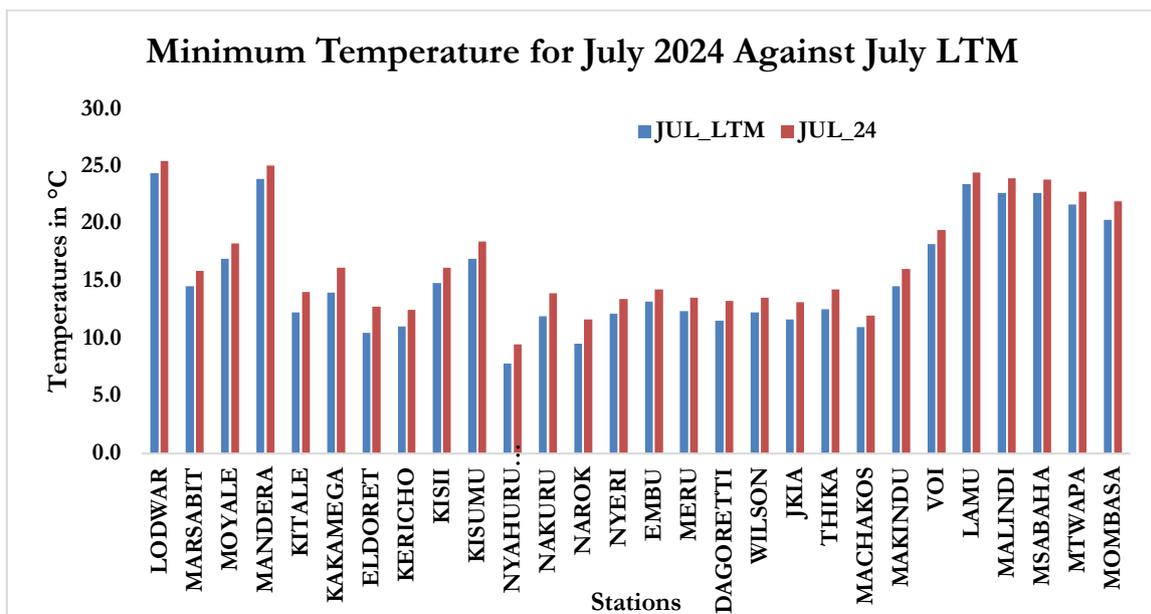


Figure 3d: Minimum Temperatures for July 2024 against the Minimum Temp LTM

The average minimum temperature for July represents the typical low temperatures experienced. It is calculated by averaging the lowest recorded temperatures for each day in July.

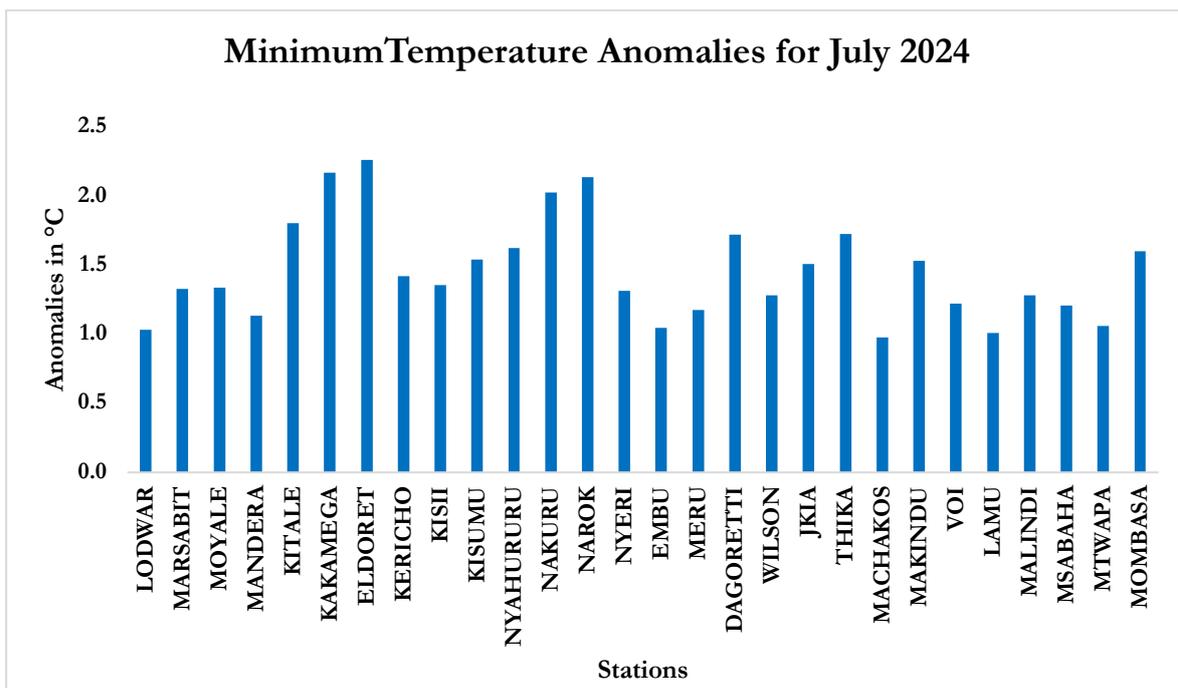


Figure 3e: Minimum Temperatures Anomalies for July 2024

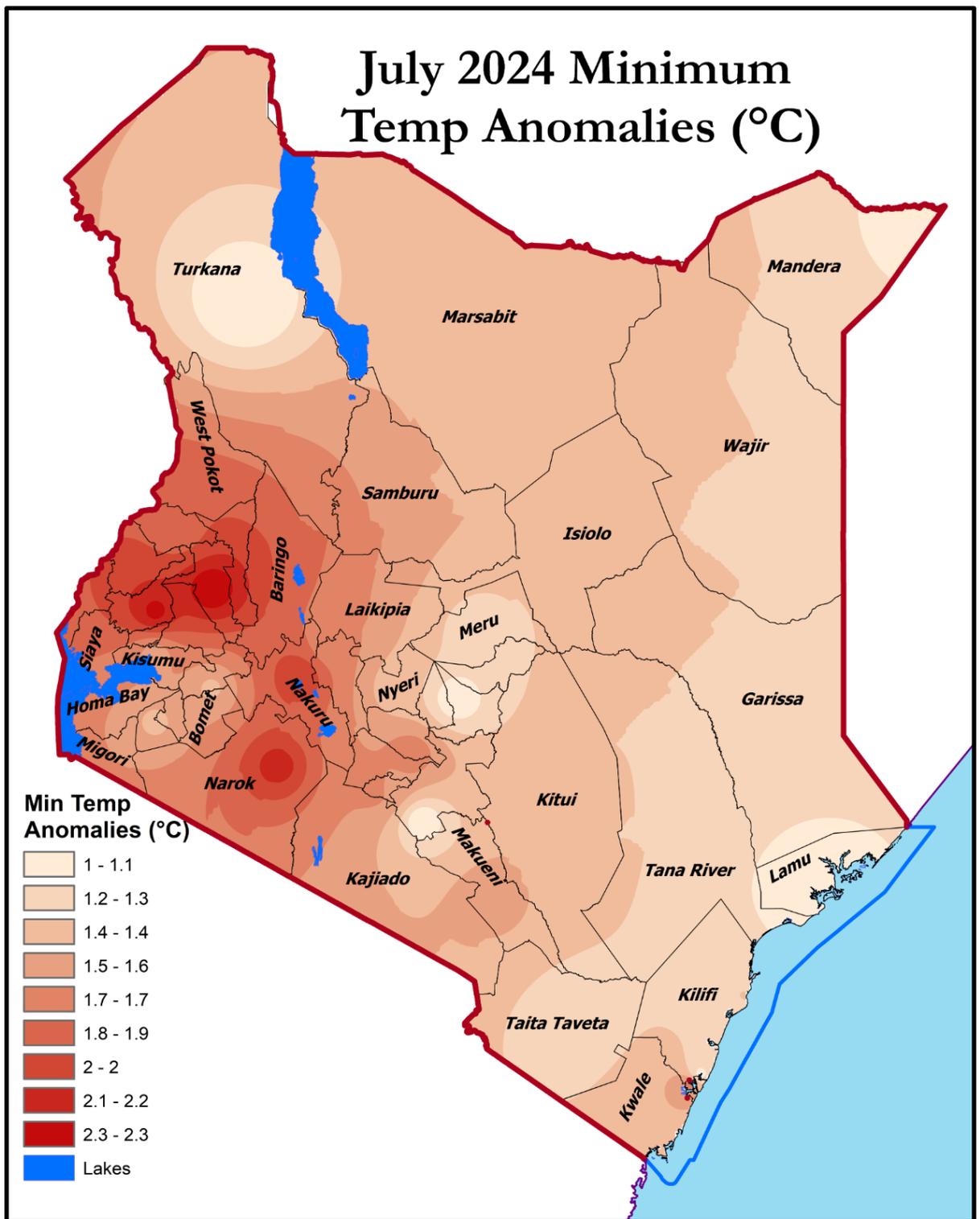


Figure 3f.: Minimum Temperature Anomalies for July 2024

### 4.3. EXPERIENCED IMPACTS

The following impacts were experienced in July:

#### 4.3.1. Agriculture and Food Security Sector.

The rainfall experienced over Western Kenya, the Rift Valley, North West, and parts of Central Kenya was enough to significantly improve soil moisture levels. This increase in moisture is beneficial for both agricultural activities and livestock production, as it supports the growth of crops and enhances the health of grazing animals. The improved soil conditions are expected to positively impact agricultural yields and offer better grazing opportunities, contributing to overall improvements in food and livestock security in these regions.

#### 4.3.2. Disaster Management Sector

A boat capsized in Watamu, Kilifi County, on July 3 due to strong winds, resulting in the death of one person.

#### 4.3.3. Water Resources Management and the Energy Sectors.

The rainfall received in July helped maintain optimal water levels in the hydroelectric dams located in the Highlands West of the Rift Valley, benefiting water resources management and the energy sector.

#### 4.3.4. Transport and Public Safety

On July 29th, a landslide struck the Kabasis area of Baringo Central, following heavy downpours that affected a section of the tarmac along the Kabarnet-Tenges Road. The landslide blocked this crucial route, disrupting travel and transportation in the region.

Fog was reported in several areas of Nairobi and a few locations in the Highlands East of the Rift Valley and Northeast. For instance, Meru experienced 16 consecutive hours of fog on July 17, 8 hours on July 22, and 6 hours on July 13 and July 27. Wilson Airport recorded 7 consecutive hours of fog on July 29 and 4 hours each on July 25 and July 28. Nyeri reported 6 hours of fog on July 28 and 5 hours on July 9. Marsabit experienced 6 consecutive hours of fog on July 25 and 4 hours on July 6, July 18, and July 22. Moi Air Base recorded 6 hours of fog on July 25, while JKIA., Dagoretti, and Ngong each reported 4 hours of fog on the same day. The fog did not, however, significantly impact transport or public safety.

***NB: This outlook should be used in conjunction with the Department's 24-hour, 5-day, 7-day, special forecasts, and regular updates, as well as Weekly County forecasts developed and made available by County Meteorological Offices.***



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