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CLIMATE OUTLOOK FOR JULY 2024 AND A REVIEW OF THE CLIMATE IN JUNE 2024

1. HIGHLIGHTS

1.1. The Forecast for July 2024

The July 2024 weather outlook indicates that most parts of the northern parts of Kenya will be generally dry and sunny while the other parts will have cool and cloudy conditions. The Highlands west of the Rift Valley, parts of the Central and Southern Rift Valley, the Lake Victoria Basin, parts of the Highlands East of the Rift Valley (Nyandarua and Western Laikipia) and parts of Northwestern Kenya are likely to experience near to above normal cumulative rainfall. This rainfall may occasionally extend eastwards into other parts of the Highlands East of the Rift Valley and Nairobi County. Occasional cool and cloudy conditions with light rains are expected in the Central Highlands, Nairobi area, parts of western Kenya, the Central Rift Valley, and the Southeastern Lowlands as the cold season continues. The Coastal zone is expected to receive normal to above normal rainfall totals. Temperatures are anticipated to be warmer than average for July across the entire country.

1.2. The Climate Outlook for July August and September 2024

The forecast for the next three months indicates that several parts of the country are expected to experience dry weather conditions. However, the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and parts of the South Rift Valley are expected to receive rainfall that is likely to be near to above the July to September (JAS) Long Term Mean (LTM). 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 in July and August as well as early September. The Coastal region is likely to experience occasional rainfall during the forecast period. A few areas in Turkana county bordering Uganda and South Sudan may also experience occasional rainfall that is expected to be near to above the July to September LTM. The rest of the country is expected to remain generally sunny and dry. Temperatures are expected to be warmer than usual over the whole country with higher probabilities for warmer than average temperatures over the central, eastern, and parts of northern Kenya.

1.3 Review for June 2024

In June 2024, several parts of the country remained relatively dry. However, rainfall was recorded in the Highlands West of the Rift Valley, the Lake Victoria Basin, the Central and Southern Rift Valley, the Coastal Strip as well as a few areas over the Highlands East of the Rift Valley, including Nairobi County. This rainfall was near to below the long-term averages for the month of June over most stations, with the exception of Dagoretti Corner and Wilson Airport, where above-average rainfall was recorded. Occasional cool and cloudy conditions were experienced over Highlands East of the Rift Valley, Nairobi County, parts of the southeastern lowlands, Central and South Rift Valley.

The daytime (Maximum) and night time (Minimum) temperatures were warmer than average over the whole country with the exception of Mandera, Machakos and Nyahururu where temperatures were lower than their LTMs. A few areas in Highlands East of the Rift Valley including Nairobi county, parts of the southeastern lowlands (Ngong) and Narok occasionally experienced day time temperatures below 20 ^{0}C and nighttime temperatures less than 10^{0}C.

2. WEATHER FORECAST FOR JULY 2024

The weather forecast for July 2024 is based on regression of Sea Surface Temperatures (SSTs), SST gradients and the expected evolution of global SST patterns as well as upper air circulation patterns over Western Kenya and the Coastal region as illustrated in the rainfall climatology map for July.

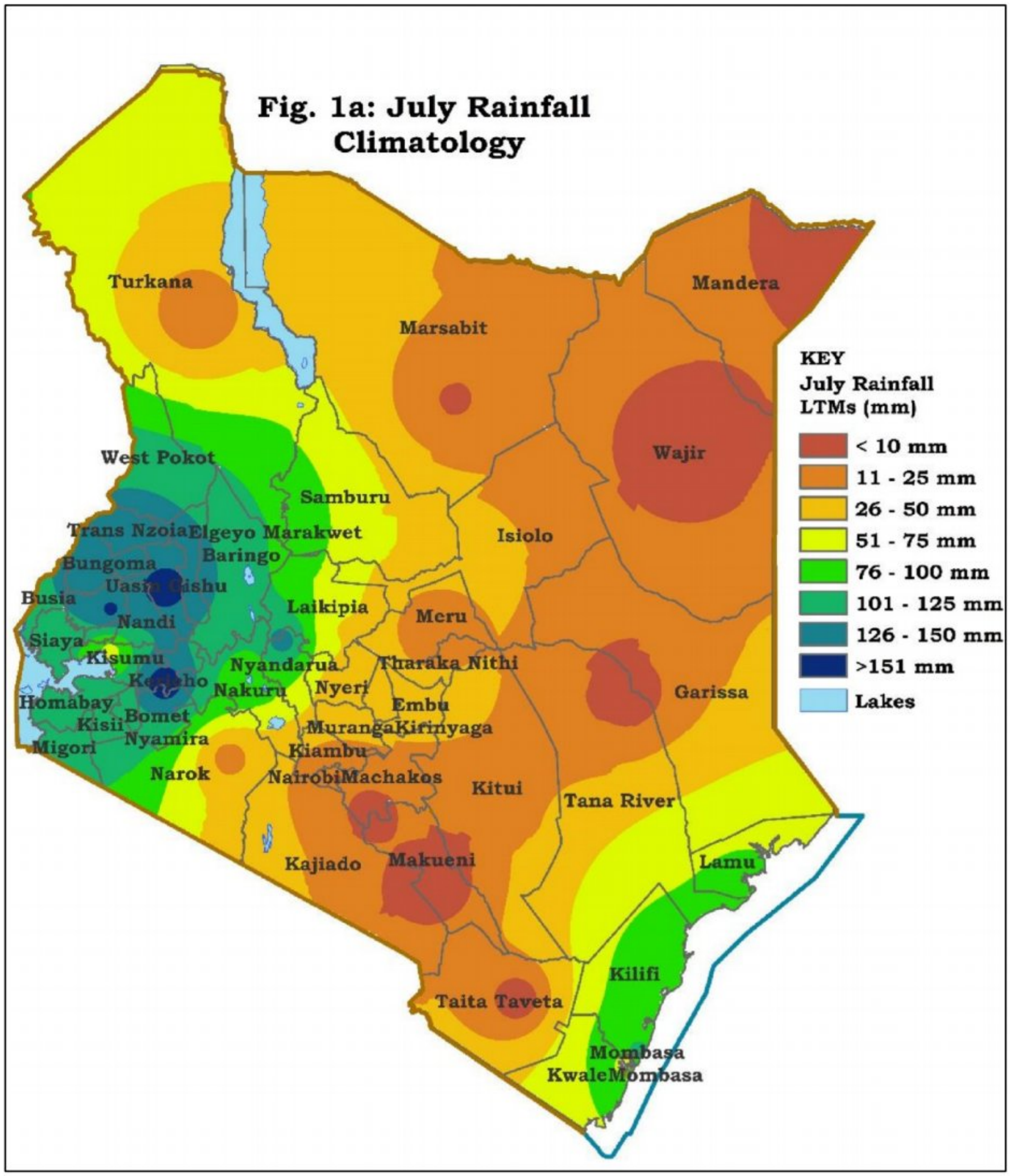

Fig 1a: July rainfall climatology

2.1. Rainfall Forecast for July 2024

The forecast indicates that most parts of the northern Kenya will be generally dry and sunny while the rest of the country will have cool and cloudy conditions during the month of July 2024. However, near to above-average rainfall is expected over several parts of the Highlands West of the Rift Valley, Central and South Rift Valley, Lake Victoria Basin, parts of the Northwest and parts of the Highlands East of the Rift Valley (Nyandarua). The Coastal strip is also likely to experience near to above average rainfall. Occasional cool and cloudy conditions with light rains will be observed in the Central Highlands, including the Nairobi area, and some parts of western Kenya, the Central Rift Valley, as well as the Southeastern Lowlands as the cold season continues. Additionally, occasional afternoon showers emanating from western Kenya may also be experienced over the Central Highlands and Nairobi County. **Figure 1b** illustrates the July 2024 rainfall forecast.

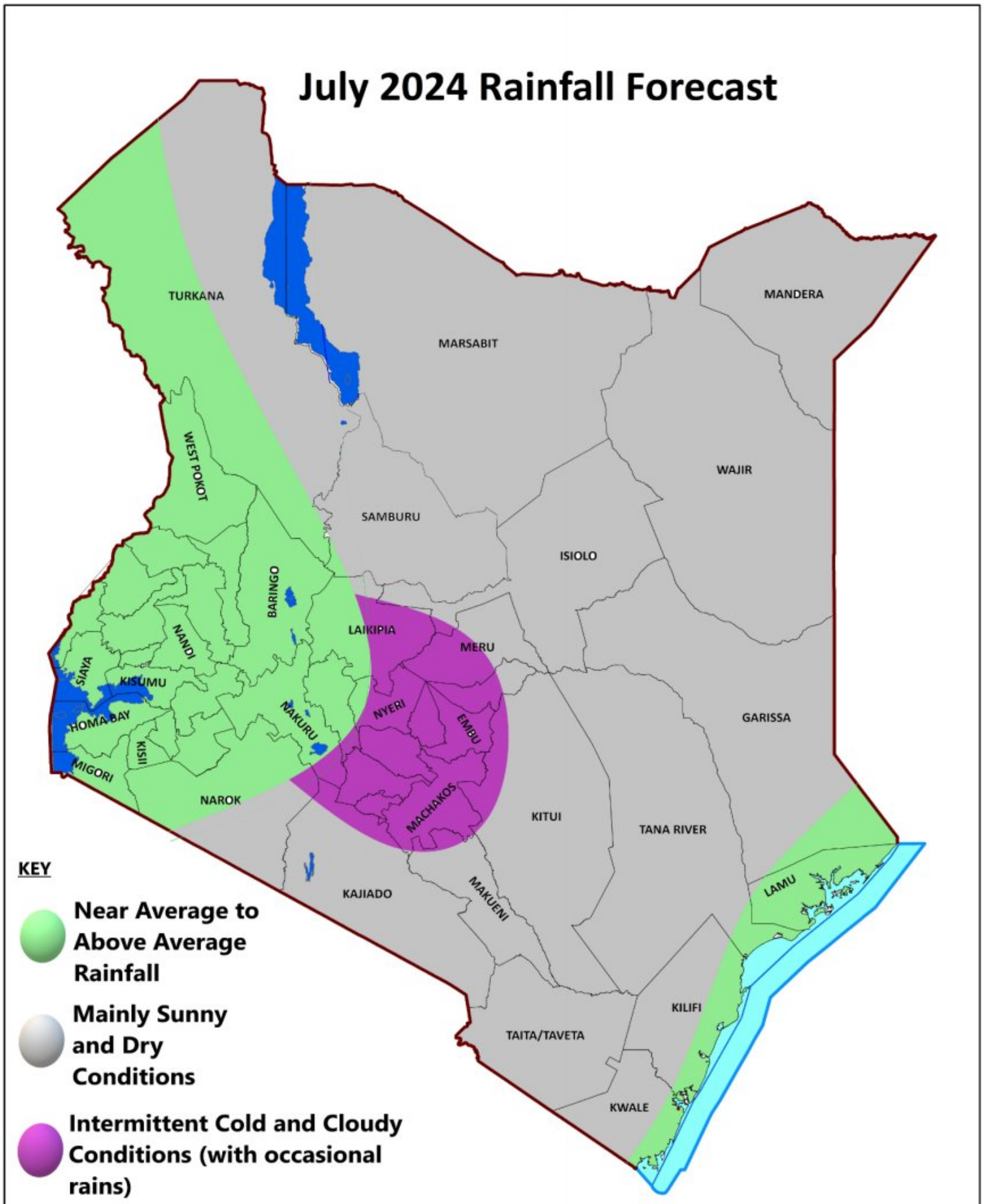

Fig. 1b: July 2024 Rainfall Forecast

2.2. Specific Rainfall Outlook for Individual Areas

2.2.1. The Lake Victoria Basin, Highlands West of the Rift Valley, Central and South Rift Valley (Siaya, Kisumu, Homa Bay, Migori, Kisii, Nyamira, Trans Nzoia, Baringo, West Pokot, Uasin Gishu, Elgeyo Marakwet, Nandi, Laikipia, Nakuru, Narok, Kericho, Bomet, Kakamega, Vihiga, Bungoma and Busia, Parts of the Highlands East of the Rift Valley (Nyandarua and Western Laikipia):

Rainfall with some breaks is expected during the month. The expected total rainfall amount is likely to be near to above the long-term average amounts for July.

2.2.2. Northwestern (Turkana and Samburu):

Mainly sunny and dry weather conditions are expected to prevail over most areas during the month. However, occasional rainfall is expected over a few areas, especially those bordering Uganda and South Sudan. The expected total rainfall amount is likely to be near to above the long-term average amounts for July.

2.2.3. The Coastal Strip (Mombasa, Tana River, Kilifi, Lamu, Kwale) These counties are expected to receive occasional rainfall during the month. The expected total rainfall amount is likely to be near to above the long-term average for July.

2.2.4. The Highlands East of the Rift Valley (including Nairobi County):

(Nyandarua, Nyeri, Kirinyaga, Murang'a, Kiambu, Meru, Embu, Tharaka Nithi, Nairobi)

These counties are expected to experience occasional cool and cloudy (overcast skies) conditions, with occasional light morning rains. The cumulative rainfall in this region is likely to be near to above the long-term average amounts for July. Some days are expected to be cold and chilly with daytime (maximum) temperatures falling below 18°C in various parts due to overcast skies. Occasional afternoon and evening showers are likely to occur.

2.2.5 Northeastern Kenya (Mandera, Marsabit, Wajir, Garissa and Isiolo counties) are likely to remain generally sunny and dry. However, a few high ground areas, especially in Marsabit county are likely to experience occasional morning cloudy and foggy conditions.

2.2.6 South-eastern Lowlands (Kitui, Makueni, Machakos, Taita Taveta, Kajiado counties and most parts of Tana River County) are expected to be generally sunny and dry during the month. However, a few areas bordering the Central Highlands and Nairobi (parts of Machakos, Kajiado, Kitui counties), Chyulu and Taita Hills in Makueni and Taita Taveta Counties) are likely to experience occasional cool and cloudy conditions with light rains.

2.3. TEMPERATURE FORECAST FOR JULY 2024

The month of July marks the peak of the cold season, especially over the Highlands East of the Rift Valley including Nairobi County. The temperature forecast for July 2024 indicates that the Highlands East of the Rift Valley including Nairobi County and parts of the Southeastern lowlands are expected to experience low temperatures even though they are likely to be slightly higher than the July average. However, a few days may experience maximum temperatures below 18^0C and minimum temperatures below 10^0C.

Most of the northern sector is likely to experience high temperatures (>30^0C) except over Marsabit and parts of Isiolo counties where temperatures are expected to be moderate. The rest of the country is likely to experience moderate temperatures between 20 to 30^0C. These temperatures are expected to be warmer than the July LTM.

2.4. POTENTIAL IMPACTS

The following are the likely impacts during the month of July:

2.4.1. Agriculture and Food Security Sector

The expected rainfall is anticipated to be conducive for agricultural production, particularly in the high-potential counties in the Lake Victoria Basin Region, Highlands West of the Rift Valley, as well as Central and parts of the Southern Rift Valley.

There may be incidences of crop damage by frost in parts of the Highlands East of the Rift Valley as the cold season reaches its peak during the month.

2.4.2. Transport and Public Safety

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

Light rains and drizzles may also cause roads to be slippery. All road-users are advised to take utmost care to minimize accidents that may result from such weather conditions.

Fog may occasionally pose a challenge to operations at the Wilson and Jomo Kenyatta International Airports.

2.4.4. Health Sector

Due to the expected cool and chilly conditions, cases of respiratory diseases such as asthma, pneumonia, flu, and the common cold are likely to increase 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 avoid contracting diseases, the general public is advised to dress warmly and to follow the advice of the Health Authorities. They are also advised not to use charcoal *jikos* in poorly ventilated homes because they emit carbon monoxide gas, which is life threatening if inhaled.

2.4.5. Water Resources Management and the Energy Sectors

Water availability over the ASAL areas may decline due to the dry weather conditions expected in these areas. Residents are advised to use the available water sparingly and embrace water conservation practices to ensure their water needs are met during the month.

2.4.6. Environment

The expected rainfall over the Highlands West of the Rift Valley, Lake Victoria Basin Region, Central, and parts of the Southern Rift Valley is anticipated to maintain conducive soil moisture for tree growth. Stakeholders are encouraged to seize this opportunity to plant and grow trees. It is also essential to implement measures to conserve the environment alongside tree planting efforts.

3. OUTLOOK FOR JULY TO SEPTEMBER

The climate outlook for the next three months indicates that the Highlands West of the Rift Valley, the Lake Basin, the Central Rift Valley and parts of the South Rift Valley are likely to experience rainfall with some breaks throughout the forecast period. This rainfall is likely to be near to above the July to September LTM. The Northwestern region is likely to remain generally dry. However, a few areas bordering Uganda and South Sudan are likely to experience occasional rainfall that is expected to be above the July to September LTM. The Highlands East of the Rift Valley including Nairobi County is expected to be mainly cool and cloudy with occasional light rains in July and August with a likelihood of the cool conditions extending into early September. The rest of September is likely to be generally dry. The Coastal

region is likely to experience occasional rainfall during the forecast period which is expected to be near the July to September LTM. The Southeastern lowland is expected to remain generally dry during the forecast period. However, a few areas bordering the central highlands and Nairobi are likely to experience occasional cold and cloudy conditions in July and August and early September. The remaining part of September is expected to be generally dry. The Northeastern region is expected to remain dry during the forecast period. However, a few high ground areas in Marsabit county are likely to experience occasional cloudy and foggy conditions in the mornings especially in July and August.

Temperature is expected to be warmer than the average for July over the whole country. The Coastal region, Highlands East of the Rift Valley including Nairobi county, Northeastern, the Southeastern lowlands, eastern parts of Turkana county and central and eastern parts of Samburu county are expected to have higher probabilities for warmer than average temperatures.

4. REVIEW OF THE WEATHER IN JUNE 2024

4.1. Rainfall Review in June 2024

Several parts of the country remained relatively dry in June. However, several stations over the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and South Rift Valley as well as the Coastal Strip and a few areas over the Highlands East of the Rift Valley including Nairobi county received rainfall. An analysis of the June 2024 rainfall indicates that several parts of the country experienced near to below-average rainfall for June. Dagoretti Corner and Wilson Airport are the only stations that recorded above average rainfall at 177.9% and 171.9% respectively. Near average rainfall was recorded in Kakamega (116.3%), Eldoret (101.3%), Malindi (99.9%), Moi Air Base (99.4%), Mtwapa (93.0), Msabaha (84.3%), Thika (81.1%), Kericho (80.4%) and Mombasa (79.9%). All the other stations received below average rainfall (less than 75% of the June LTM) with most stations over Northeast, Northwest and Southeastern lowlands receiving no rainfall at all throughout the month. Kibabii University station of Bungoma county reported 227.8 mm; this was the highest amount of rainfall reported in June; in second place was Kakamega Meteorological station with 224.6mm. Other stations that recorded more than 100mm of rainfall are shown in Table 1.

Table 1: Other stations that recorded above 100 mm of rainfall

S/NO	Station	County	Amount in mm
1	KANDUYI AGRICULTURAL OFFICE RAINFALL STATION	BUNGOMA	218.7
2	BUNGOMA WATER SUPPLY RAINFALL STATION	BUNGOMA	214.0
3	KHALABA WARD RAINFALL STATION	BUNGOMA	208.9
4	MACHWELE VOCATIONAL CENTRE RAINFALL STATION	BUNGOMA	198.2
5	KAPKATET RAINFALL STATION	WEST POKOT	169.8
6	MABANGA A.T.C RAINFALL STATION	BUNGOMA	168
7	NABICHAKHA SECONDARY RAINFALL STATION	BUNGOMA	165.9
8	KITINDA SECONDARY RAINFALL STATION	BUNGOMA	161.6
9	MOI UNIVERSITY RAINFALL STATION	UASIN GISHU	141.7
10	KAIBOS MIXED SECONDARY SCHOOL	WEST POKOT	138.5
11	KERICHO METEOROLOGICAL STATION	KERICHO	134.4
12	MALINDI METEOROLOGICAL STATION	KILIFI	126.4
13	KANYANGWA RAINFALL STATION	KILIFI	125

14	ELDORET AIRPORT METEOROLOGICAL STATION	UASIN GISHU	123
15	MSABAHA METEOROLOGICAL STATION	KILIFI	117.6
16	MTWAPA METEOROLOGICAL STATION	KILIFI	113.8
17	MATUNGU RAINFALL STATION	KAKAMEGA	107.9
18	MIYARE RAINFALL STATION	MIGORI	104.6
19	BUTERE RAINFALL STATION	KAKAMEGA	104.2
20	MUKAKULA FARM RAINFALL STATION	BUNGOMA	100.4

Figure 2a displays the rainfall measurements recorded in June 2024, represented by blue bars, in comparison to the long-term averages for the month of June, represented by red bars. Figure 2b presents the actual rainfall totals for June 2024.

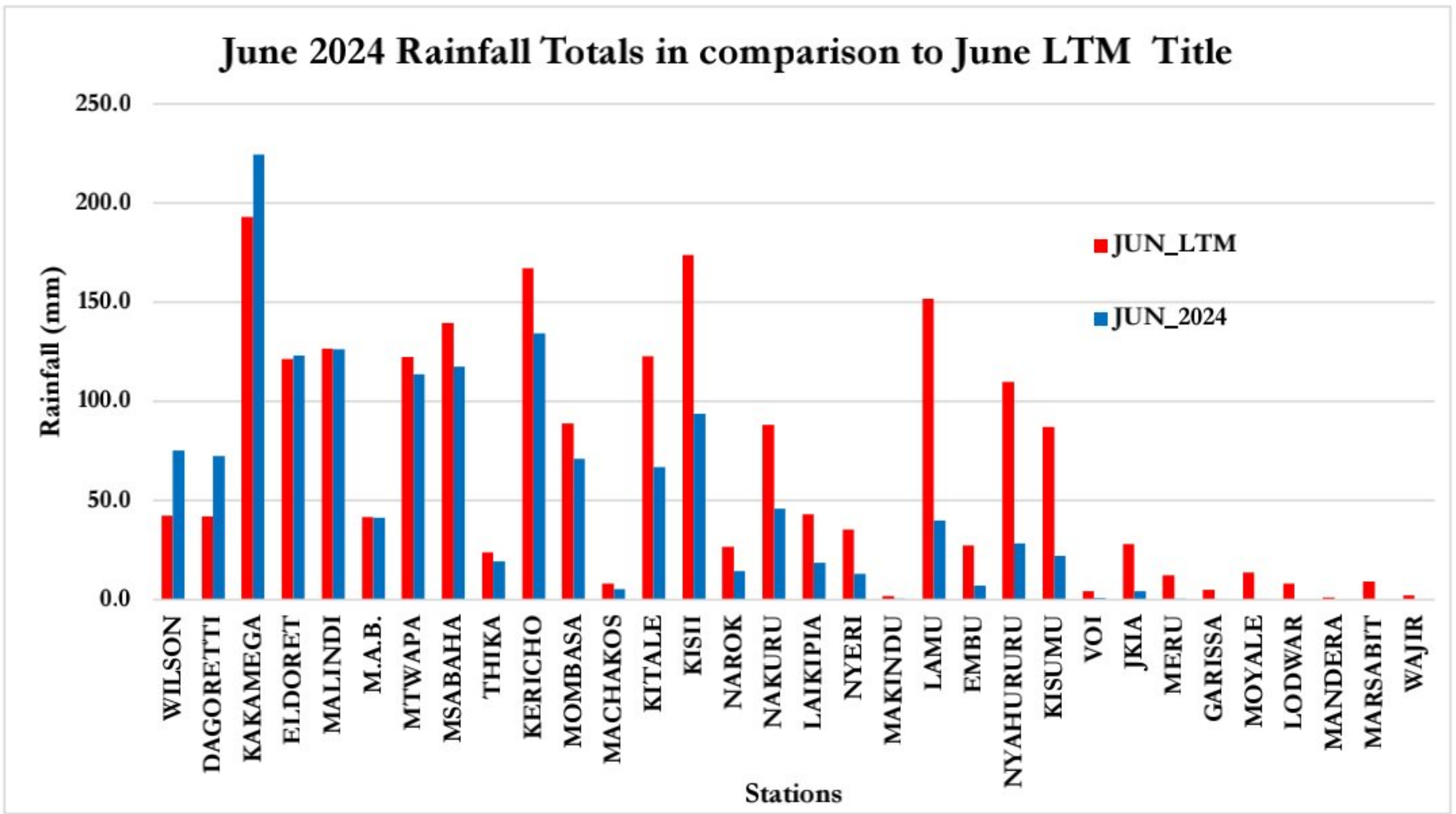

Fig. 2a: June 2024 Rainfall Totals in comparison to June LTM

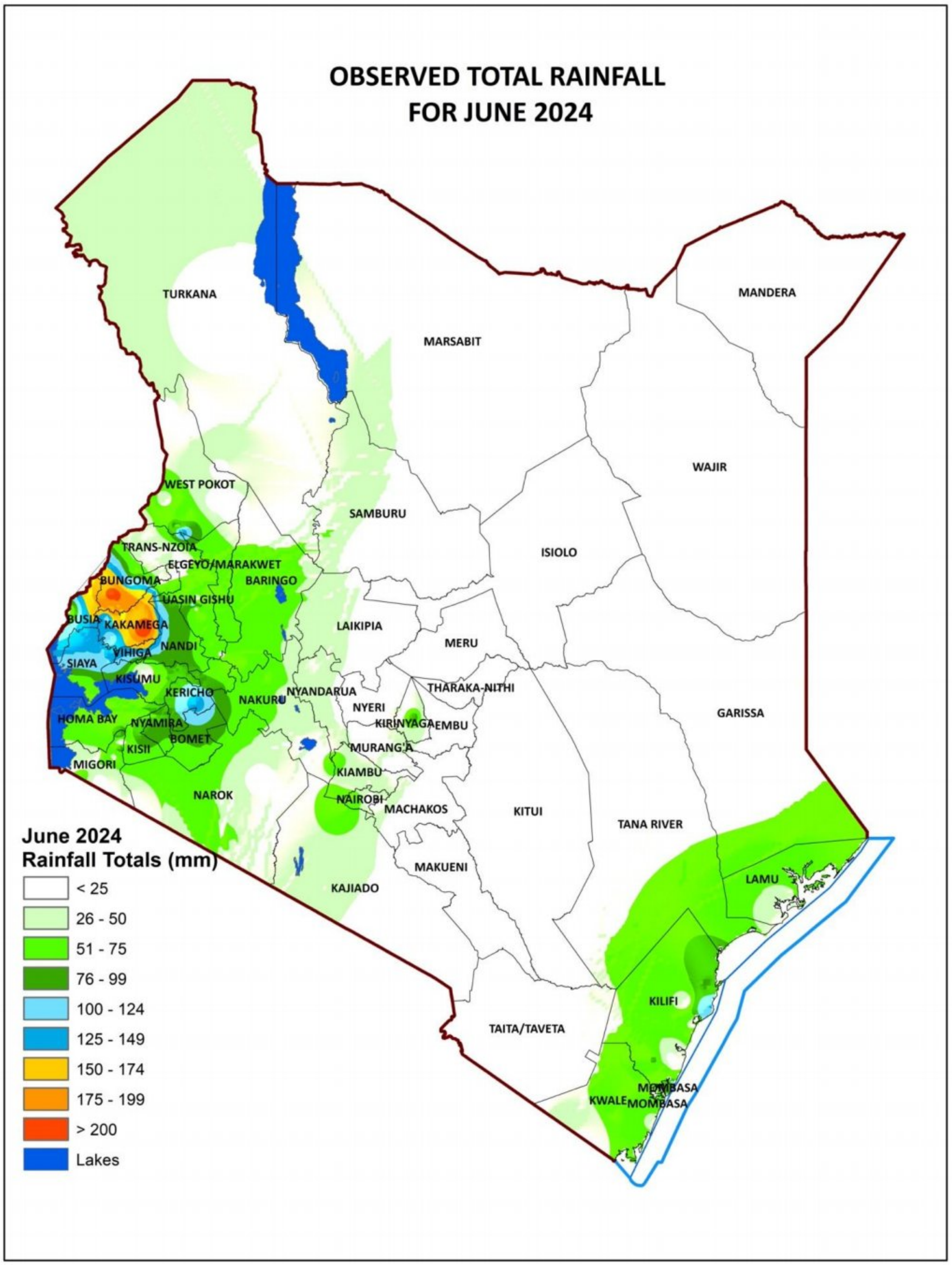

Fig. 2b: June 2024 Rainfall Totals

4.2 Temperature Review

The month of June marks the beginning of the cold season particularly over the Highlands East of the Rift Valley, Nairobi County and parts of the Southeastern lowlands. The daytime (maximum) temperatures were warmer than average over the whole country. However, a few areas over the Highlands East of the

Rift Valley including Nairobi county, parts of the Southeastern lowlands and parts of South Rift Valley occasionally recorded maximum temperatures below 20 ^{0}C. For instance, Ngong meteorological station recorded 17.5 ^{0}C on 9th June while Kangema, Narok and Kabete recorded 18.0 ^{0}C, 18.4 ^{0}C and 18.4 ^{0}C respectively on the same day. The lowest monthly maximum temperature (21.9 ^{0}C) was recorded in Ngong Meteorological station.

Nighttime (minimum) temperatures were warmer than average over most parts of the country except over Mandera, Nyahururu and Machakos where temperatures were cooler than average for the respective stations. A few stations in the Highlands West of the Rift Valley, Central and South Rift Valley, Southeastern lowlands, Highlands East of the Rift Valley and several stations over Nairobi occasionally recorded nighttime temperatures below 10 ^{0}C. For instance, Laikipia recorded 8.5 ^{0}C on 13th June while Eldoret and Kericho recorded 9.6 ^{0}C and 9.8 ^{0}C respectively on 18th and 24th June. Narok, Dagoretti Corner, JKIA, Kabete, Ngong and Machakos recorded 7.0^{0}C, 8.9^{0}C, 8.3^{0}C, 9.1^{0}C, 7.6^{0}C, and 7.3^{0}C respectively on 25th June. Nyahururu recorded nighttime temperatures below 10^{0}C throughout the month except on 9th and 20th June when temperatures were above 10^{0}C. The lowest monthly minimum temperature (7.6^{0}C) was recorded at Nyahururu Meteorological station. Figures 3a and 3b show the maximum and minimum temperature anomalies where positive anomalies indicate temperatures were warmer than average while negative anomalies indicate cooler than average temperatures.

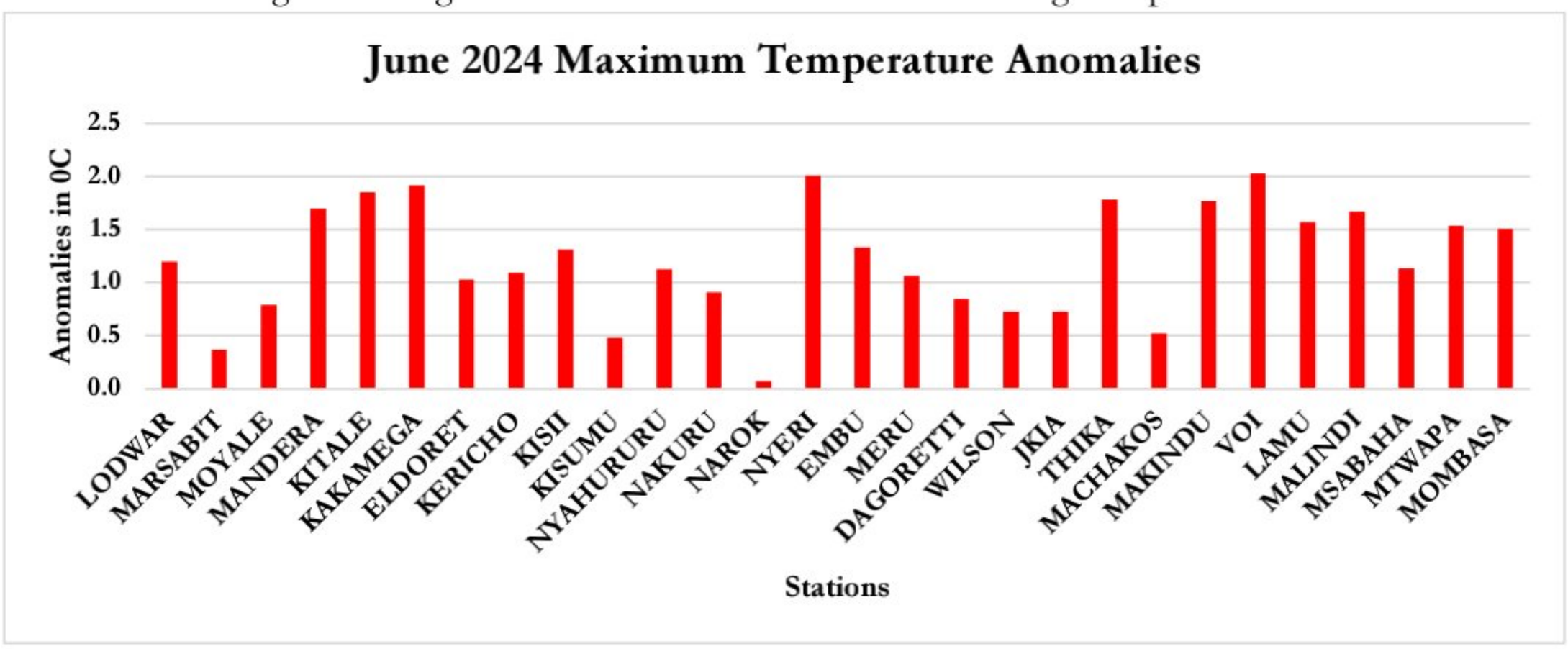

Fig 3a: June 2024 Maximum Temperature Anomalies

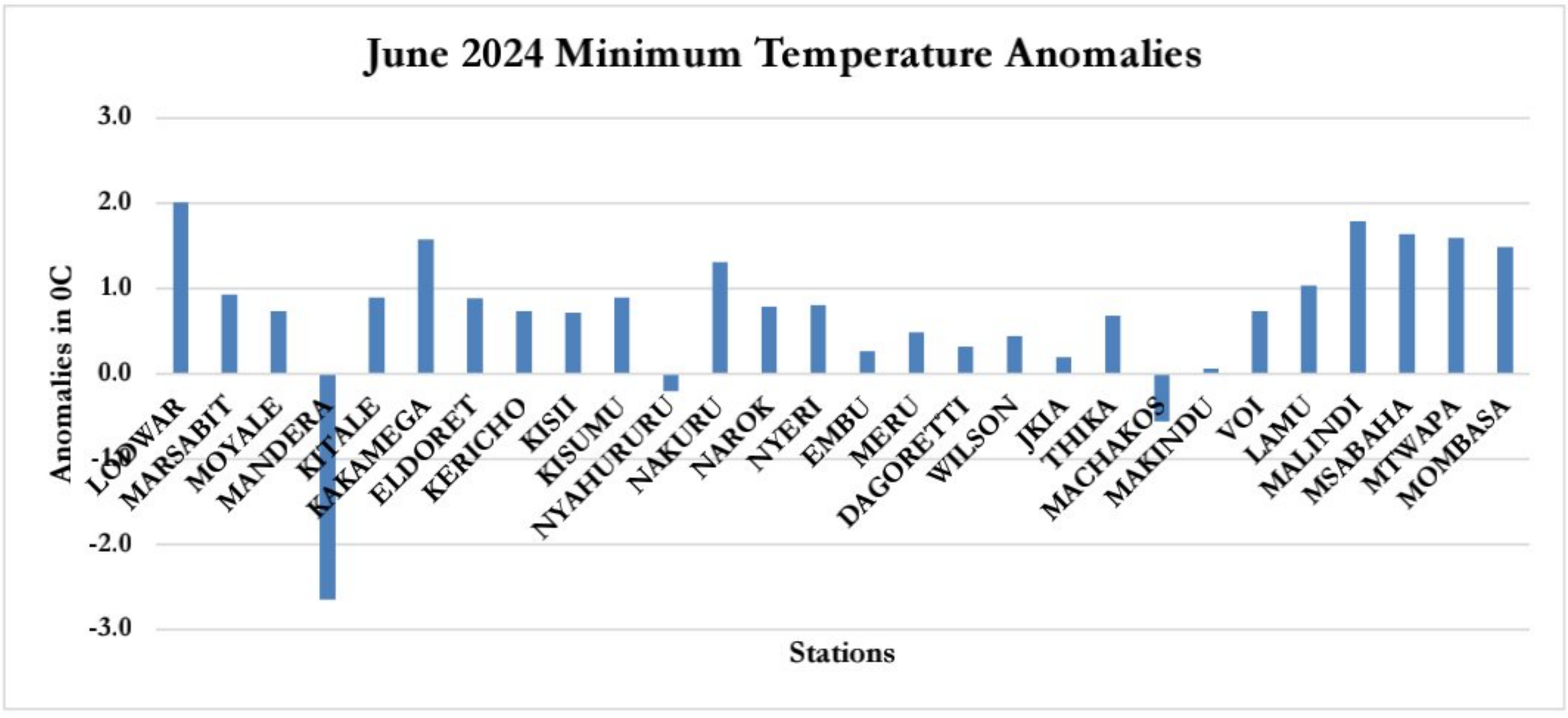

Fig 3b: June 2024 Minimum Temperature Anomalies

4.3 EXPERIENCED IMPACTS

3.3.1. Agriculture and Food Security Sector

The rainfall experienced over the Coastal region was conducive for agricultural practices. Farmers took advantage of the rainfall and planted some varieties of crops. Over the western sector of the country including the Rift Valley, the rainfall enhanced the growth of crops that were planted during the long rains season.

4.3.2. Disaster Management Sector

Strong winds persisted in the Eastern and Coastal regions of the country, leading to significant impacts. In Watamu, Kilifi County, the winds were so intense that they caused trees to fall, resulting in property damage and disruption to some of the community activities. Meanwhile, downstream in the Tana Delta, flooding continued to pose challenges, affecting local residents and their livelihoods. Additionally, strong waves created rough seas, leading to the disruption of fishing activities in Kilifi County.

4.3.4. Transport and Public Safety

Fog was observed in a few counties in the Highlands East of the Rift Valley (Meru), the Northeast (Marsabit) and the Southeastern lowlands (Makindu and Ngong). For example, Meru reported two consecutive hours of fog on 20th and 24th June, while Marsabit reported two consecutive hours of fog on 15th June. Ngong and Makindu reported two consecutive hours of fog on 8th June and 21st June respectively. However, this had no significant impact on transportation or public safety.

4.3.5. Water and Energy Sector

The occasional rainfall experienced during the month over the catchment areas of the Seven Forks hydro power generating dams led to overflow of Masinga, Kamburu and Kiambere dams.

Power supply was temporarily disrupted in Jiwe leupe, Kilifi County after power lines were destroyed by strong winds on 11th June.

NB: This outlook should be used together with the 24-hour, 5-day, 7-day, special forecasts and regular updates/advisories issued by this Department as well as Weekly County forecasts developed and availed by County Meteorological Offices.

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DIRECTOR OF KENYA METEOROLOGICAL SERVICES