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**RAINFALL OUTLOOK FOR AUGUST 2022 AND RAINFALL PERFORMANCE REVIEW
IN JULY 2022**

1. HIGHLIGHTS

1.1. The Rainfall Outlook for August 2022

The forecast for August 2022 indicates that, counties in the Lake Victoria Basin Region, the Highlands West of the Rift Valley, the Central and South Rift Valley, and the Northwestern parts of the country are likely to receive near-average to above-average rainfall (slightly enhanced rainfall). Counties in the Northeast, Coast and Southeastern Lowlands are likely to have mostly sunny and dry weather however occasional showers are likely over the coastal region. Cool/cold and cloudy/foggy conditions with occasional rains are expected to prevail over the Highlands East of the Rift Valley, Nairobi County, and the Central and South Rift Valleys.

Most of the country will experience near-average temperatures, with the exception of the South Rift Valley and parts of the southeastern (Kajiado) region, where temperatures will be above average, and pockets in the northeastern (Marsabit) and northwest experiencing near-average temperatures with a slight tendency to be below average.

1.2. Weather Review for July 2022

Several parts of the country remained generally dry in July 2022. However, the Highlands West of the Rift Valley, the Lake Victoria Basin, the Central and South Rift Valley, the Coastal Strip, and few areas over the Highlands East of the Rift Valley recorded significant amounts of rainfall. This rainfall was generally depressed i.e., it was below the long-term averages for the month of July over the western sector of the country except for Eldoret and Kisumu which recorded above average and near average rainfall respectively. Stations over the Coast recorded near to above average rainfall while most stations over the Highlands East of the Rift Valley recorded near to below average rainfall except Embu which recorded above-average rainfall. Occasional cool and cloudy conditions dominated over the Highlands East of the Rift Valley (including Nairobi County) and parts of the southeastern lowlands during the month. The daytime (maximum) temperatures over the Highlands East of the Rift Valley were generally cool and occasionally dropped to below 18°C. The mean temperatures were however above the long term mean for the month of July over most stations.

2. CLIMATE OUTLOOK FOR AUGUST 2022

The rainfall forecast for August 2022 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 and climatology. **Figure 1a** shows the rainfall climatology in August.

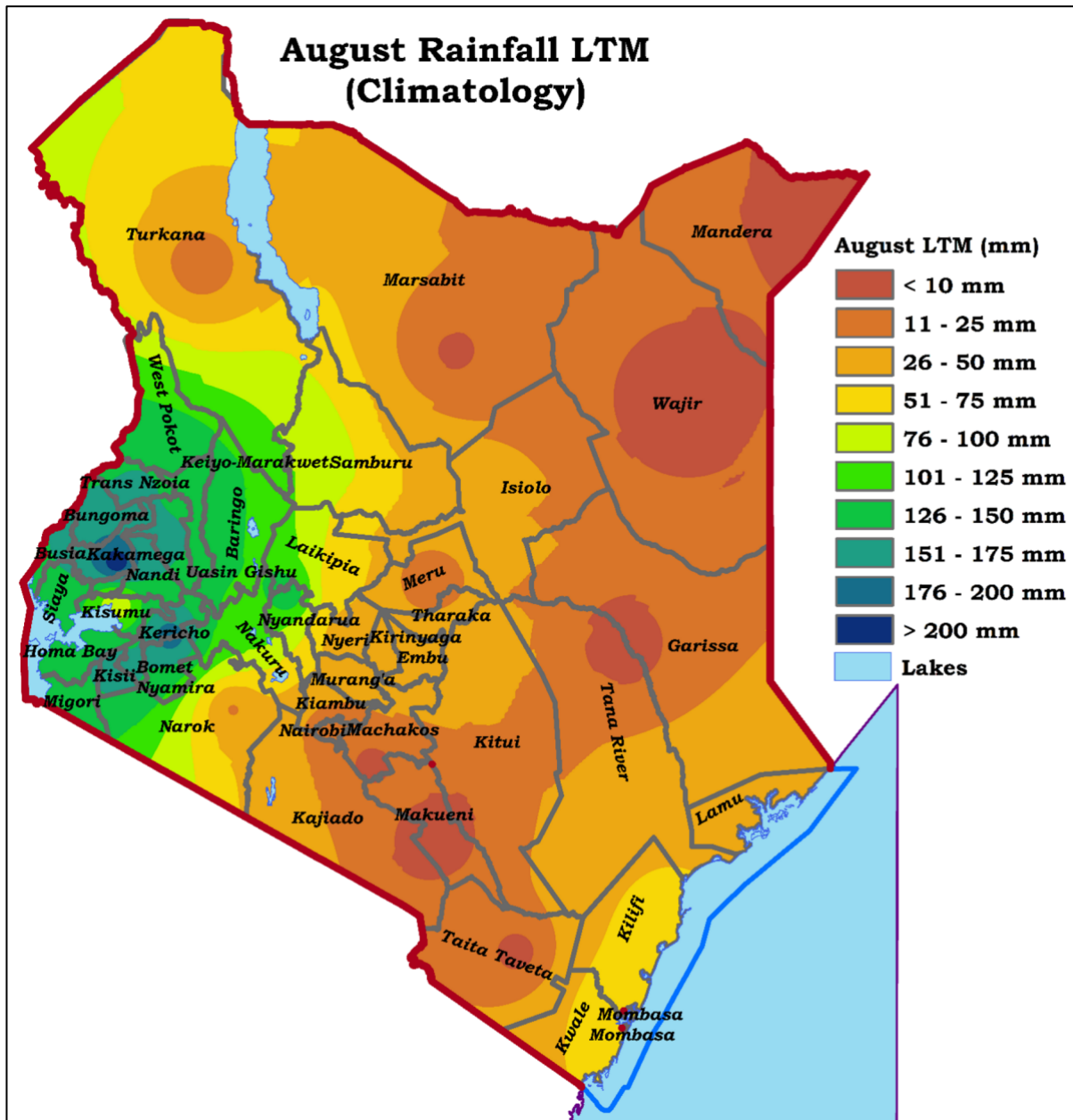


Fig. 1a: August Rainfall Climatology

2.1. Rainfall Forecast for August 2022

The forecast indicates that near-average to above-average (slightly enhanced) rainfall will be recorded over parts of the Lake Victoria Basin, Highlands West of the Rift Valley, Central and Southern Rift Valley, and Northwestern parts of the country. The Coastal region is likely to be sunny and dry; however, occasional showers are likely. The Southeastern and Northeastern regions are likely to remain generally sunny and dry.

Occasional cool and cloudy conditions with light morning rains and drizzle are likely to be observed over the Highlands East of the Rift Valley (including Nairobi County) and some parts of the Highlands West of the Rift Valley as well as the Central Rift Valley as the cold season gradually ends in August. **Figure 1b** illustrates the August 2022 rainfall forecast.

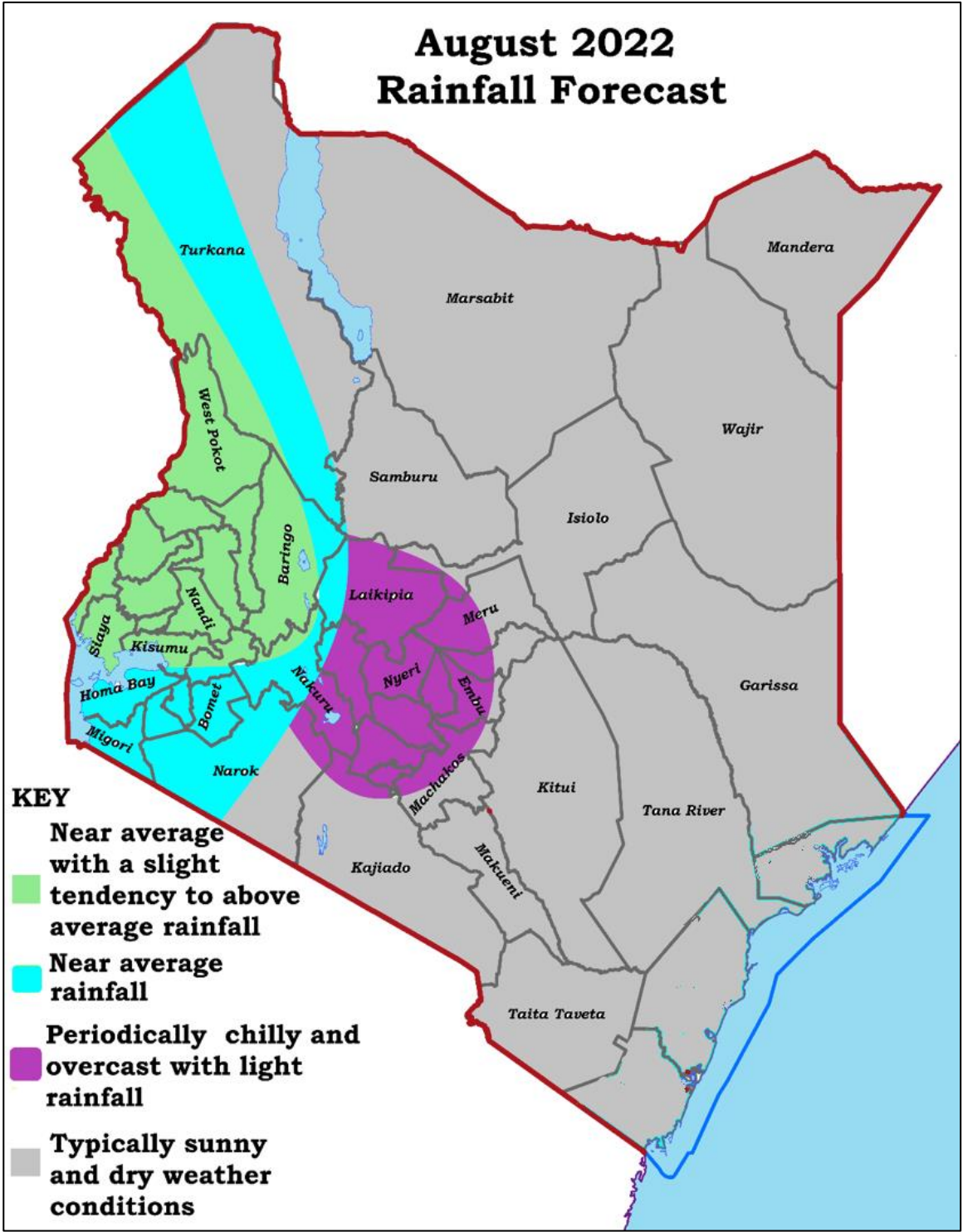


Fig. 1b: Rainfall Forecast for August 2022

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 (Siaya, Kisumu, Homa Bay, Migori, Kisii, Nyamira, Trans Nzoia, Baringo, Uasin Gishu, Elgeyo Marakwet, Nandi, Laikipia, Nakuru, Narok, Kericho, Bomet, Kakamega, Vihiga, Bungoma and Busia): Occasional rainfall is expected during the month of August 2022. The expected total rainfall amount is likely to be near to above the long-term average amounts for August. The rainfall is likely to be above average during the first week and near average for the remainder of the month.

2.1.1.2. Northwestern (Turkana, West Pokot, Samburu):

Occasional rainfall is expected during the month, especially in regions bordering South Sudan and Northern Uganda. The expected total rainfall amount is likely to be near to above the long-term average amounts for August. The rainfall is likely to be above average during the first week and near average from the second week of the month. Strong southeasterly to easterly winds of more than 25knots (12.5m/s) are likely during the month.

2.1.1.3. The Coastal Strip (Mombasa, Tana River, Kilifi, Lamu, Kwale) The Coastal Strip is expected to experience generally dry conditions with occasional showers during the month. Strong southerly winds of more than 25knots (12.5m/s) are likely.

2.1.1.4. 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 conditions (overcast skies) with occasional rains and drizzle. Occasional afternoon showers are likely to occur especially at the beginning of the month. In some parts of Nyandarua and Laikipia counties, occasional hailstorms are likely.

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. Occasional cool and cloudy conditions are however, likely to occur over some counties especially those bordering the Highlands East of the Rift Valley.

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

These areas are likely to remain generally sunny and dry. Strong southerly winds of more than 25knots (12.5m/s) are likely over some parts during the month.

2.2. Temperature Forecast for August 2022

The temperature outlook for August 2022 indicates that the Highlands East of the Rift Valley (including Nairobi County) are expected to experience cold temperatures that are likely to be near the long-term mean for the month of August. Thus, the daytime (maximum) temperatures over these areas may occasionally fall below 18°C while night time (minimum) temperatures over Nyandarua County may fall below 10°C. This is mainly due to the incursion of

cold winter air from the southern Hemisphere, which experiences winter during this time of year.

Near average temperatures are expected over the Highlands West of the Rift Valley, Central Rift Valley, the Coastal region and most of the Northeastern region.

Slightly cooler than average temperatures are expected over Northwest and parts of Northeast (Marsabit).

Warmer than average temperatures are expected over the South Rift Valley and the Southeastern lowlands.

2.2.1. Specific Temperature Outlook

2.1.1.1 Counties in the Highlands East of the Rift Valley including Nairobi (*parts of Nyandarua, Nyeri, Kirinyaga, Murang'a, Kiambu, Meru, Embu, Tharaka Nithi and Nairobi*); **parts of Southeastern Lowlands** (*Machakos and parts of Kajiado*); **parts of Laikipia**; are expected to experience cool and cloudy conditions during the month. A few days are expected to be cold and chilly with daytime (maximum) temperatures falling below 18°C in various parts due to overcast skies. The temperatures are, however, likely to be near the long term mean temperatures for the month of August.

2.1.1.2 The Southeastern Lowlands (*Makueni, Taita Taveta, Kitui*); **the Coastal Strip** (*Lamu, Tana River, Kilifi, Mombasa and Kwale*), **the Northeast** (*Mandera, Marsabit, Wajir, Isiolo, Garissa*) are likely to experience near average temperatures. The temperatures are however, likely to be warmer than the long term mean temperatures for the month of August.

2.1.1.3 Counties in the Northwest (*Turkana, Samburu, West Pokot*); **the Highlands West of the Rift Valley** (*Trans Nzoia, Uasin Gishu, Elgeyo Marakwet, Kakamega, Kisii, Nandi, Vihiga, Bungoma*); **the Lake Victoria Basin** (*Busia, Kisumu, Siaya, Homa Bay, Migori*), **the Central Rift Valley** (*parts of Laikipia, Nakuru, Baringo,*); **and the Southern Rift Valley** (*parts of Kajiado, Kericho, Bomet, Narok*) are likely to experience warm temperatures. The temperatures are likely to be near the long term mean temperatures for the month of August.

2.3. Potential Impacts of Weather in August 2022

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

2.3.1. Agriculture and Food Security Sector

The sunny and dry weather conditions expected over the ASAL areas of Northeastern, Northwestern and parts of the Southeastern lowlands are expected to have negative effect on food, water, pasture and browse for consumption. Close monitoring of the situation is therefore necessary to avert the stress on human life and loss of livestock.

The expected enhanced rainfall in the Highlands West of the Rift Valley, Central and North Rift Valley is likely to provide sufficient soil moisture to sustain agricultural production.

2.3.2. Disaster Management Sector

It is anticipated that the current drought affecting the ASAL regions of the Northern and Eastern sectors of the country will worsen. Conflicts over the scarce resources, particularly water, pasture, and browse, are likely to continue. In order to prevent loss of lives, livelihoods, and livestock, relevant authorities and humanitarian organizations are advised to step up the measures already in place. Additionally, it is advised that local leaders encourage communal resource sharing and foster peace.

2.3.3. Transport and Public Safety

Fog formation in the Highlands East of the Rift Valley (including Nairobi County) may pose a danger to motorists due to low visibility. Drivers in affected areas are therefore advised to be cautious, especially along the Kikuyu-Kinungi stretch of the Nairobi-Naivasha Highway.

Fog may occasionally lead to interruption of operations at the Wilson and Jomo Kenyatta Airports.

2.3.4. Water Resources Management and the Energy Sectors

It is expected that the availability of water for both human and livestock use in the ASAL areas of the Northern and parts of the Eastern sectors of the country will continue to decline. Efficient water management and tracking should therefore be enhanced to ensure enough water resources are available for the human and livestock needs in these areas.

The water catchment areas over the Highlands West of the Rift Valley are expected to receive slightly enhanced rainfall during the month. It is, therefore, expected that the optimum water levels in the hydroelectric power generation dams will be maintained. However, the water levels in the hydroelectric power generating dams in the Highlands East of the Rift Valley may reduce due to the expected dry weather conditions in these areas. Thus careful reservoir management and continuous monitoring of water levels should be carried out in order to stabilize power production.

2.3.5 Environment

The slightly enhanced rainfall expected over the Highlands West of the Rift Valley, Lake Victoria Basin, Central and Southern Rift Valley is likely to sustain soil moisture for tree and vegetation growth. The public is, therefore, advised to take advantage of this and plant trees in order to contribute to the national target of 10% forest cover by the year 2022 while putting in place measures to conserve the environment.

3. REVIEW OF THE CLIMATE IN JULY 2022

3.1. Rainfall Review in July 2022

In July 2022, several parts of the country remained largely dry. However, only a small portion of the Highlands East of the Rift Valley and the Lake Victoria Basin in the Highlands West of the Rift Valley, as well as the Central and South Rift Valley, the Coastal Strip, and a few other locations, saw significant amounts of rainfall. Except for Eldoret, which received above-average rainfall, and Kisumu, which received near-average rainfall, this rainfall was generally depressed, i.e., it was below the long-term averages for the month of July over the western sector of the country. Stations over the Coast recorded near to above average rainfall while most stations over the Highlands East of the Rift Valley recorded near to below average rainfall except Embu that recorded above average rainfall. Occasional cool and cloudy conditions dominated the Highlands East of the Rift Valley including Nairobi county and parts of the Southeastern lowlands.

Analysis of the July 2022 monthly rainfall from 1st to 28th July 2022 indicates that several parts of the country experienced near to below-average rainfall. As at 28th June, 2022, Eldoret Meteorological Station had recorded the highest monthly rainfall total of 268.3 (159.3% of its July LTM). This was followed by WRA Kapenguria with 219.3mm. Other stations which recorded above 100 mm include Eldoret Airport (174.9mm), Castle forest station (164.7mm), Kaibos Mixed secondary (164.2mm), Kapkatet (148.8mm), Kibisi secondary school (146.9mm), Kimunye tea factory (144.4), Kamweti ATC (140.1mm), Kangaita tea farm (135.4mm), ADC Japata (128.0mm), Malindi (126.4mm), Mtwapa(125.5mm), Mainet Toro secondary school (125.0mm), Kangaita forest station (123.0), ADC Olngatongo (122.9mm), Elgon downs (119.5mm), Mabanga ATC (116.1mm), ADC Sabwani (101.6mm) and Lamu (101.4mm). The rest of the stations recorded less than 100mm of rainfall with Lodwar and Makindu recording no rainfall at all throughout the month.

Figure 2a shows the rainfall recorded from 1st to 28th July, 2022 (Blue bars) compared to July LTMs (Red bars). **Figure 2b** depicts the July 2022 rainfall totals.

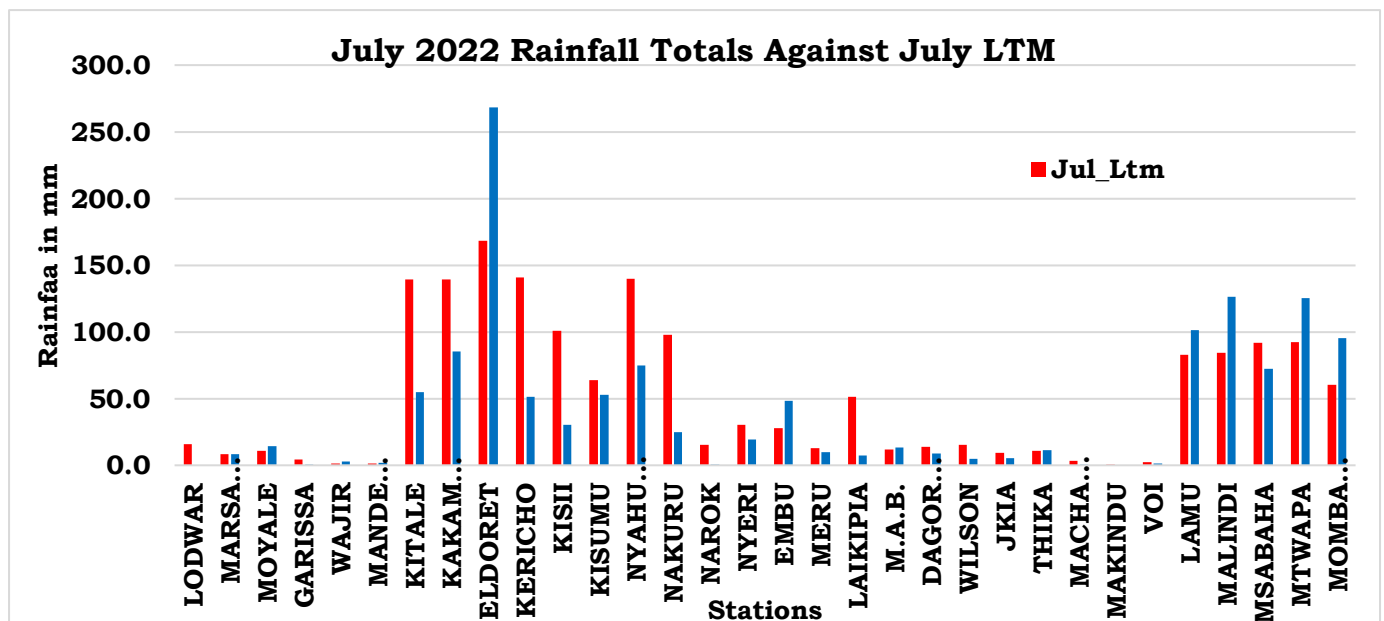


Fig. 2a: July 2022 rainfall totals against July LTM

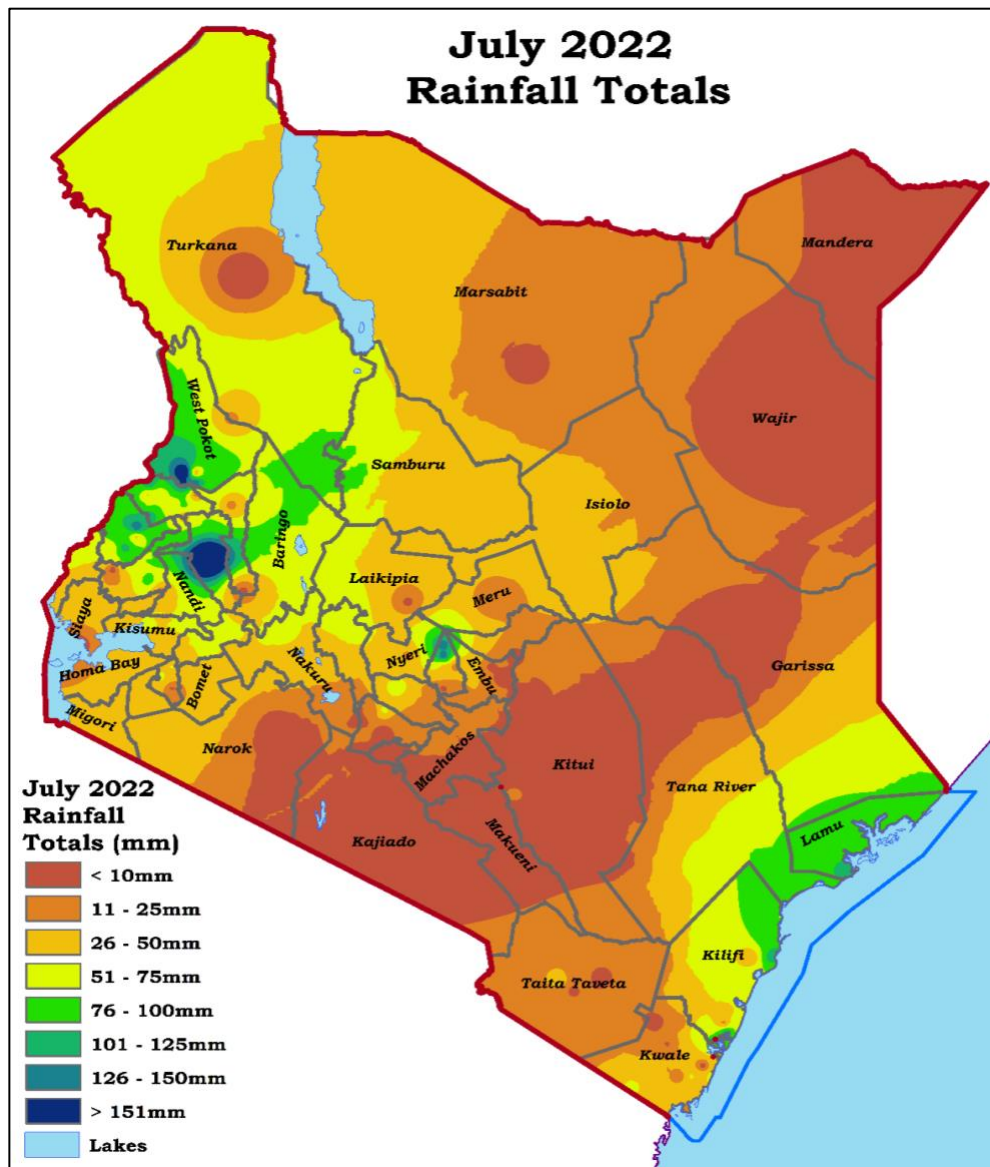


Fig. 2b: July 2022 rainfall totals

3.2. Temperature Review in July 2022

The month of July marked the peak of the cold season especially over the Highlands East of the Rift Valley including Nairobi County. An analysis of temperature up to 28th July indicates that most parts of the country recorded mean temperatures that were above the long term mean for the month of July as had been predicted in the July forecast. However, Marsabit, Wajir, Kisumu, Nyeri, Embu, Voi, Lamu and Msabaha experienced below average temperatures. Several stations over the Highlands East of the Rift Valley including Nairobi County recorded day time (Maximum) temperatures that were below 18°C. For instance, Kangema and Nyeri stations recorded a maximum temperature of 14.1°C on 9th July. On the same day, Dagoretti, Kabete and Ngong recorded 16.9°C, 16.4°C and 15.0°C respectively. On 12th July, Ngong, Kabete and Kangema recorded 15.2°C, 15.5°C and 15.6°C respectively. The lowest monthly average day time temperature (19.2°C) was recorded in Kangema station. Nyahururu, Narok, Kericho, Machakos, Jomo Kenyatta International Airport and Ngong occasionally recorded night time (minimum) temperatures below 10°C. For instance, Nyahururu station recorded a minimum temperature of 3.6°C on 14th, 5.4°C

on 24th and 7.4°C on 13th July. Narok recorded 6.2°C on 24th and 7.5°C on 25th July while Machakos recorded 9.0°C on 13th and 25th July. The lowest monthly average night time temperature of 8.5°C was recorded in Nyahururu station.

3.3. EXPERIENCED IMPACTS

The rainfall recorded over the Highlands West of the Rift Valley, Lake Basin, Central and south Rift Valley, the coastal region and Highlands East of the Rift Valley was associated with the following impacts:

3.3.1. Agriculture and Food Security Sector.

The dry conditions in the ASAL areas of the country's northern and eastern sectors resulted in insufficient food, pasture, browse, and water for human and livestock needs.

3.3.2. Disaster Management Sector

Drought conditions in the Northern and Eastern parts of the country have been exacerbated by the dry conditions experienced in July.

Over the northeast, strong winds of more than 25 knots were reported (Marsabit County). These winds, however, did not cause any structural damage.

3.3.3. Water Resources Management and the Energy Sectors.

The rainfall received in July continued to maintain optimum level of water in the hydroelectric dams over the Highlands West of the Rift Valley.

3.3.4. Transport and Public Safety

Fog occurrence was reported along the Nairobi-Nakuru highway and over few areas in the Highlands East of the Rift Valley and Northeast. For instance, Nyeri Meteorological Station reported three consecutive hours of fog on 23rd and 15th July while Marsabit reported five consecutive hours of fog on 8th July 2022. The fog did not significantly affect 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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