REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT, CLIMATE CHANGE AND FORESTRY

STATE DEPARTMENT FOR ENVIRONMENT AND CLIMATE CHANGE

KENYA METEOROLOGICAL DEPARTMENT

Ref. No. KMD/FCST/4-2025/MO/01 **Date: 30 December 2024**

CLIMATE OUTLOOK FOR JANUARY 2025 AND REVIEW FOR DECEMBER 2024

1. HIGHLIGHTS

1.1. The Climate Outlook for January 2025

The outlook for January 2025 indicates that most parts of the country will experience predominantly dry weather conditions. However, a few areas, such as the Highlands West of the Rift Valley, the Lake Victoria Basin, the Central and Southern Rift Valley, the Highlands East of the Rift Valley, the Southeastern lowlands, and the Coastal strip, are likely to receive occasional rainfall.

The rainfall forecast for January 2025 is primarily based on empirical statistical models, developed from the expected evolution of Sea Surface Temperature Anomalies (SSTA) over the Pacific, Indian, and Atlantic Oceans. The El Niño Southern Oscillation (ENSO) is currently neutral, with Sea Surface Temperatures (SSTs) near to below average over the Central and Eastern Pacific Ocean. The Indian Ocean Dipole is also neutral, with SSTs near average across most of the Indian Ocean.
Temperature is expected to be warmer than average across the entire country.

1.2. The Outlook for The Next Three Months (January – February- March) 2025

Sunny and dry weather conditions are expected to dominate most parts of the country. However, a few areas in the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and Southern Rift Valley, as well as the Highlands East of the Rift Valley, the Coastal region, and the Southeastern lowlands, may experience occasional rainy days during the forecast period. This rainfall is likely to spread to several places in the Highlands West of the Rift Valley, the Lake Victoria Basin, and Central and Southern Rift Valley by March.

Temperatures are expected to be warmer than average across the entire country.

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2.1 The Rainfall Outlook for January 2025

The forecast indicates that mainly sunny and dry conditions are likely to prevail across most parts of the country during the month. However, a few areas in the Highlands West and East of the Rift Valley, the Lake Victoria Basin, the Central and South Rift Valley, the Southeastern lowlands, and the Coastal region are likely to experience occasional rainy days. This rainfall is expected to be near to below the January Long-Term Mean (LTM). Figure 1 illustrates the probable rainfall pattern for January.

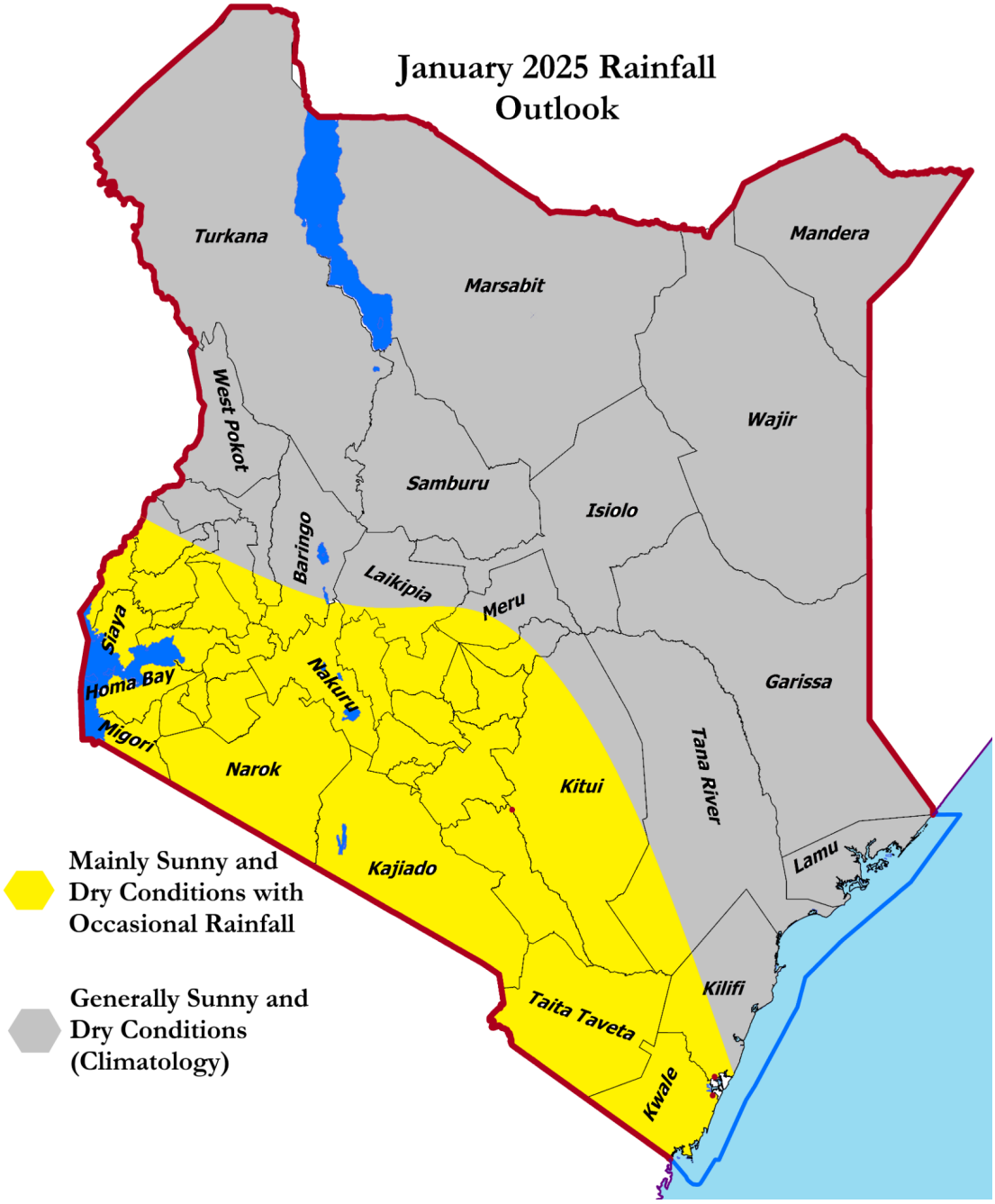

Fig. 1: January 2025 Rainfall Outlook

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2.2 Specific Outlook for Individual Areas

2.2.1 The Lake Victoria Basin, parts of the Highlands West of the Rift Valley and South Rift Valley (Siaya, Kisumu, Homa Bay, Migori, Kisii, Nyamira, Nandi, Narok, Kericho, Bomet, Kakamega, Vihiga, and Busia counties) are likely to experience mainly dry conditions for most of the month. However, a few days may have occasional light to moderate rainfall.

2.2.2 The North Rift, Central Rift Valley and parts of the Highlands West of the Rift Valley (Bungoma, Trans Nzoia, Uasin Gishu, Elgeyo Marakwet, West Pokot, Baringo, Nakuru, Central and Western parts of Laikipia counties) are likely to experience generally sunny and dry conditions throughout the month though a few days may have light rainfall.

2.2.3 North-western Region (Turkana and Samburu counties) are likely to experience sunny and dry conditions during the month. High daytime (maximum) temperatures (30°C - 40°C) are expected to prevail throughout the month.

2.2.4 Highlands East of the Rift Valley and Central Kenya (Nairobi, Nyandarua, Nyeri, Kirinyaga, Murang'a, Kiambu, Meru, Embu, Tharaka-Nithi and eastern parts of Laikipia counties) are likely to experience mainly sunny and dry conditions for most of the month. However, a few days may have occasional light to moderate rainfall.

2.2.5 North-eastern Region (Wajir, Garissa and Isiolo, Mandera and Marsabit) are likely to experience sunny and dry conditions during the month. High daytime (maximum) temperatures (30°C - 40°C) are expected to prevail throughout the month.

2.2.6 South-eastern lowlands (Kajiado, Kitui, Makueni, Machakos and Taita Taveta) are likely to experience mainly sunny and dry conditions for most of the month. However, a few days may have light to moderate rainfall.

2.2.7 The Coastal Strip (Mombasa, Tana River, Kilifi, Lamu and Kwale): are likely to experience mainly sunny and dry conditions for most of the month. However, a few days may have light to moderate rainfall.

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2.3 Potential impacts

The following are the likely impacts during the month of January 2025:

2.3.1 Agriculture and Food Security

The dry weather conditions expected during the month will be favourable for harvesting of fast maturing crops such as beans.

2.3.2 Water Resources Management and Energy

The expected sunny and dry conditions are conducive to solar power generation. All are therefore encouraged to take advantage of the prolonged sunny periods by utilizing solar energy for domestic purposes.

However, water availability for both human and livestock needs is likely to decline in the ASAL areas, particularly in the northern parts of the country. Communities in these regions are therefore advised to use the available water sparingly.

Communities in areas likely to receive occasional rainfall are encouraged to harvest rainwater to supplement their water needs.

2.3.3 Health

The high temperatures expected in most parts of the country during January may lead to heat stress and heat-related discomforts, such as headaches and fatigue. The public is therefore advised to keep adequately hydrated and moderate outdoor activities, particularly during the afternoons, to avoid adverse effects of the heat.

3. Climate Review for December 2024

3.1. Rainfall Performance

December marks the cessation of the October to December (OND) seasonal rainfall. An analysis of rainfall data up to 29th December 2024 indicates that several parts of the country experienced below-average rainfall. However, most stations along the Coast (Malindi, Mombasa, Mtwapa, and Msabaha), a few stations in Nairobi and Central regions (Dagoretti Corner, Wilson Airport, and Kangema), the South Rift Valley (Narok), and the Southeastern lowlands (Voi) recorded above-average rainfall.

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Near-average rainfall was observed in Kisumu, Kakamega, Kisii, Embu, and Moi Air Base stations. All the other stations recorded below-average rainfall, as shown in Figures 2a and 2b.

The highest monthly rainfall (270.7 mm) total was recorded at Koromangucha rainfall station in Migori, followed by Miyare rainfall station, also in Migori, with 264.7 mm. Other stations that recorded high rainfall amounts include Nyaroya in Migori (239.4 mm), Kitobo Seed Farm in Taita Taveta (214.2 mm), Muthesya in Machakos (210.8 mm), Kangema in Murang'a (209.2 mm), Kanga in Migori (199.3 mm), Ulanda Girls High School in Migori (193.4 mm), Kuna in Migori (187.6 mm), Ndaka-ini in Murang'a (186.9 mm), Dagoretti Corner in Nairobi (179.5 mm), Msundunyi in Taita Taveta (176.6 mm), Mayori in Embu (169.8 mm), Voi in Taita Taveta (169.5 mm), Wundanyi in Taita Taveta (161 mm), Ndune in Embu (152.7 mm), and Mtepeni in Kilifi (150.7 mm).

The rest of the stations recorded less than 150 mm of rainfall, with most stations in the northwest and northeast receiving no rainfall throughout the month.

The month was characterized by poor rainfall distribution, with some stations remaining generally dry while receiving heavy amounts of rainfall on a few days. This pattern was observed in Embu County and parts of Machakos, Makueni, Taita Taveta, Bungoma, Narok, Kwale, Tana River, and Kilifi counties.

Heavy rainfall exceeding 50 mm in 24 hours was reported at a few stations in the Highlands East and West of the Rift Valley, the Lake Victoria Basin, the Coastal region, and the Southeastern lowlands, as summarized in **Table 1.**

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Table 1: Stations that recorded rainfall above 50 mm in 24 hours

	Station	County	Amount (mm)	Date
1	Mayori rainfall station	Embu	164.9	19-12-2024
2	Muthesya rainfall station	Machakos	160.5	19-12-2024
3	Ndune rainfall station	Embu	152.7	19-12-2024
4	Malindi Meteorological station	Kilifi	109.6	9-12-2024
5	Msabaha Meteorological station	Kilifi	98.5	9-12-2024
6	Kirie rainfall station	Embu	96.5	19-12-2024
7	Wote Nziu rainfall station	Makueni	92.5	19-12-2024
8	Kitobo seed farm rainfall station	Taita Taveta	92.5	18-12-2024
9	Chumvini rainfall station	Taita Taveta	89.3	21-12-2024
10	Wundanyi rainfall station	Taita Taveta	85.0	17-12-2024
11	Ekalakala rainfall station	Machakos	82.5	19-12-2024
12	Hola police rainfall station	Tana River	80.1	9-12-2024
13	Narok Meteorological station	Narok	80.0	21-12-2024
14	Msundunyi rainfall station	Taita Taveta	79.9	21-12-2024
15	Bungoma water supply rainfall station	Bungoma	79.5	21-12-2024
16	Vigurungani Chief's office rainfall station	Kwale	78.4	11-12-2024
17	Kalawa rainfall station	Makueni	76.0	19-12-2024
18	Wundanyi rainfall station	Taita Taveta	76.0	23=12-2024
19	Kanduyi Agricultural office rainfall station	Bungoma	75.4	21-12-2024
20	Mtoto Andei rainfall station	Makueni	63.9	9-12-2024
21	Kanyangwa rainfall station	Kilifi	62.7	9-12-2024
22	Gitii Ngura rainfall station	Embu	62.6	19-12-2024
23	Kasigau rainfall station	Taita Taveta	60.2	1-12-2024
24	Kisii Meteorological station	Kisii	60.2	21-12-2024
25	Mwanaminga rainfall station	Kilifi	60.0	12-12-2-24
26	Matsangoni rainfall station	Kilifi	58.0	15-12-2024
27	Kitobo seed farm rainfall station	Taita Taveta	58.0	11-12-2024
28	Khalaba Ward rainfall station	Bungoma	52.5	21-12-2024
29	Kisumu Meteorological station	Kisumu	50.6	18-12-2024
30	Mtepeni rainfall station	Kilifi	50.5	10-12-2024
31	Chengoni Primary rainfall station	Kilifi	50.2	9-12-2024

Figure 2a shows the December 2024 rainfall performance (%) while **Figure** 2b shows total rainfall amounts recorded in December (Blue bars) in comparison with the December LTMs (Red bars)

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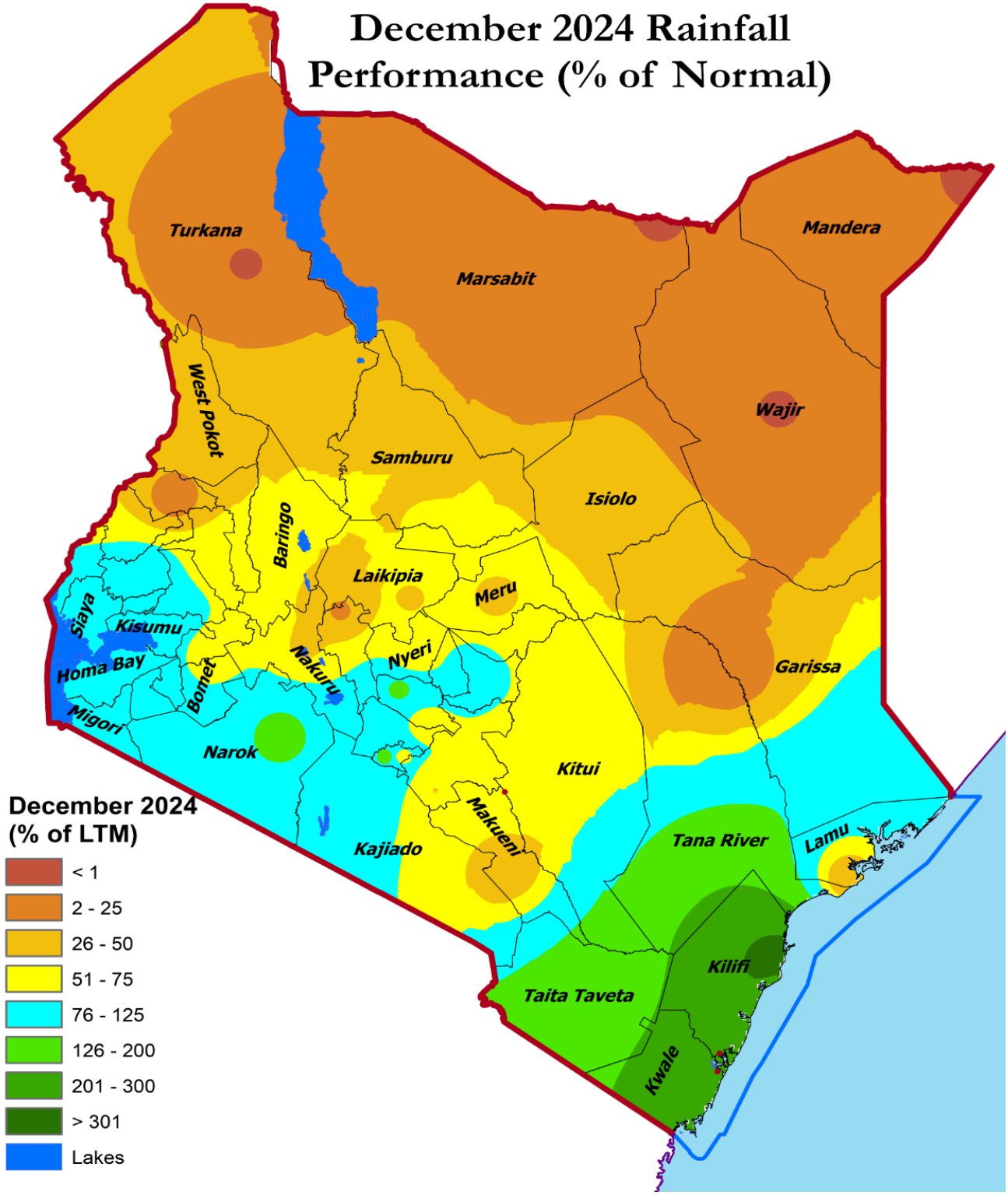

Figure 2a: December 2024 Rainfall Performance (%) Against December LTM

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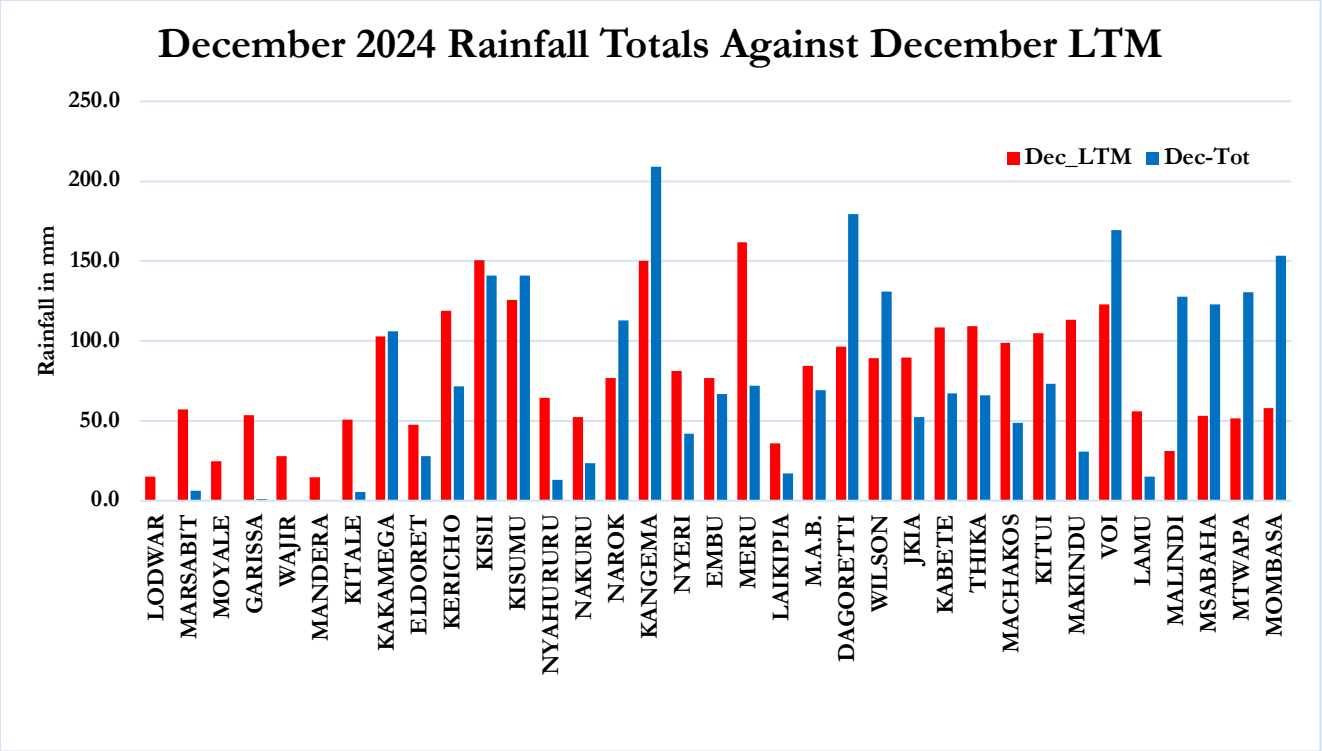

Figure 2b: December 2024 monthly rainfall totals against December LTM

3.2 Temperature Performance

The maximum temperatures were warmer than average in most stations, except for Eldoret, Kisii, Kisumu, Narok, Voi, Malindi, Msabaha, and Mtwapa, where the observed temperatures were lower than normal. The highest positive anomalies were observed in the central parts of the country, as well as in some stations in northeastern Kenya (Mandera and Moyale) and the southeastern lowlands (Makindu), with anomalies exceeding 1°C. Kisumu recorded the highest negative anomaly, also exceeding 1°C, as shown in Figure 3a. The highest monthly average maximum temperature (36.2°C) was recorded in Mandera, while Nyahururu recorded the lowest monthly average maximum temperature at 21.9°C.

The minimum temperature was warmer than average across the entire country, except for Lodwar, where it was near the December Long-Term Mean (LTM), as shown in Figure 3b. The highest monthly average minimum temperature (25.3°C) was recorded in Malindi, while Nyahururu recorded the lowest monthly average minimum temperature at 9.7°C.

Note: Anomalies refer to the deviation from the mean. Positive anomalies indicate that the temperature was higher than normal, while negative anomalies indicate that the temperature was lower than normal.

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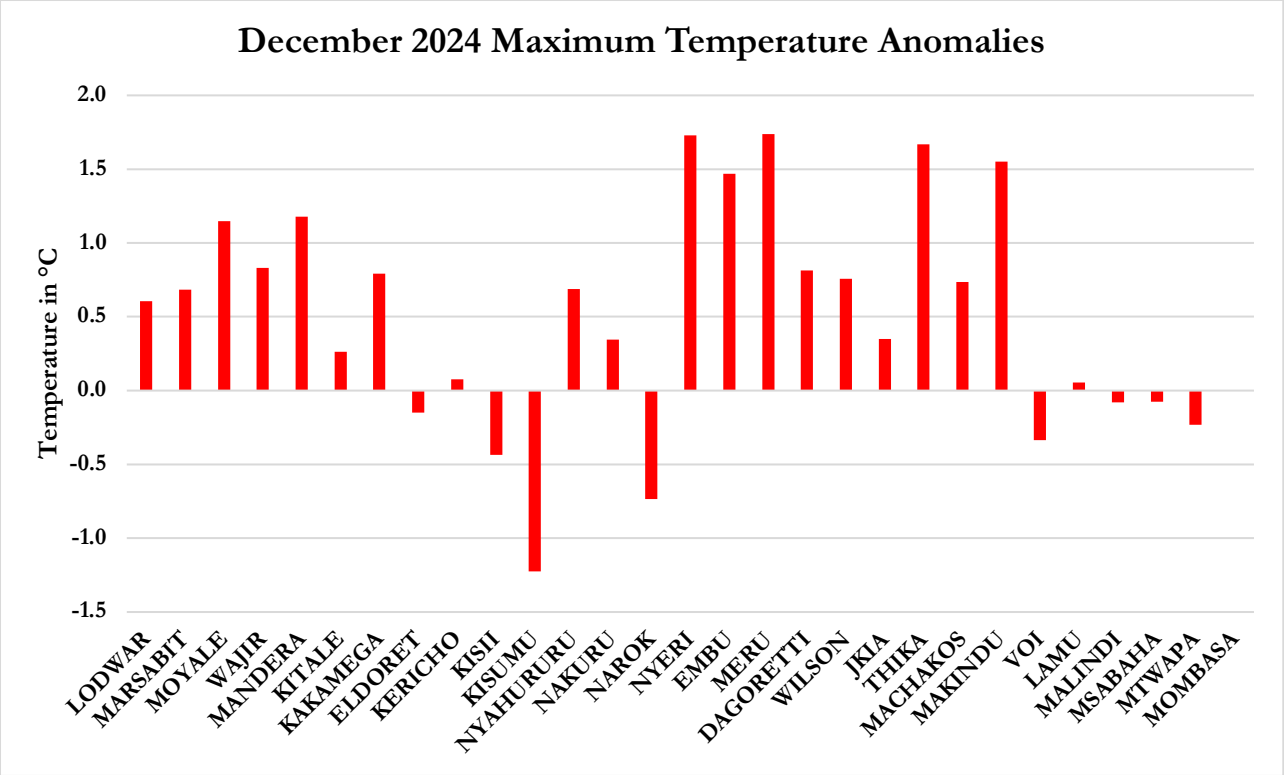

Figure 3a: December Maximum Temperature Anomalies

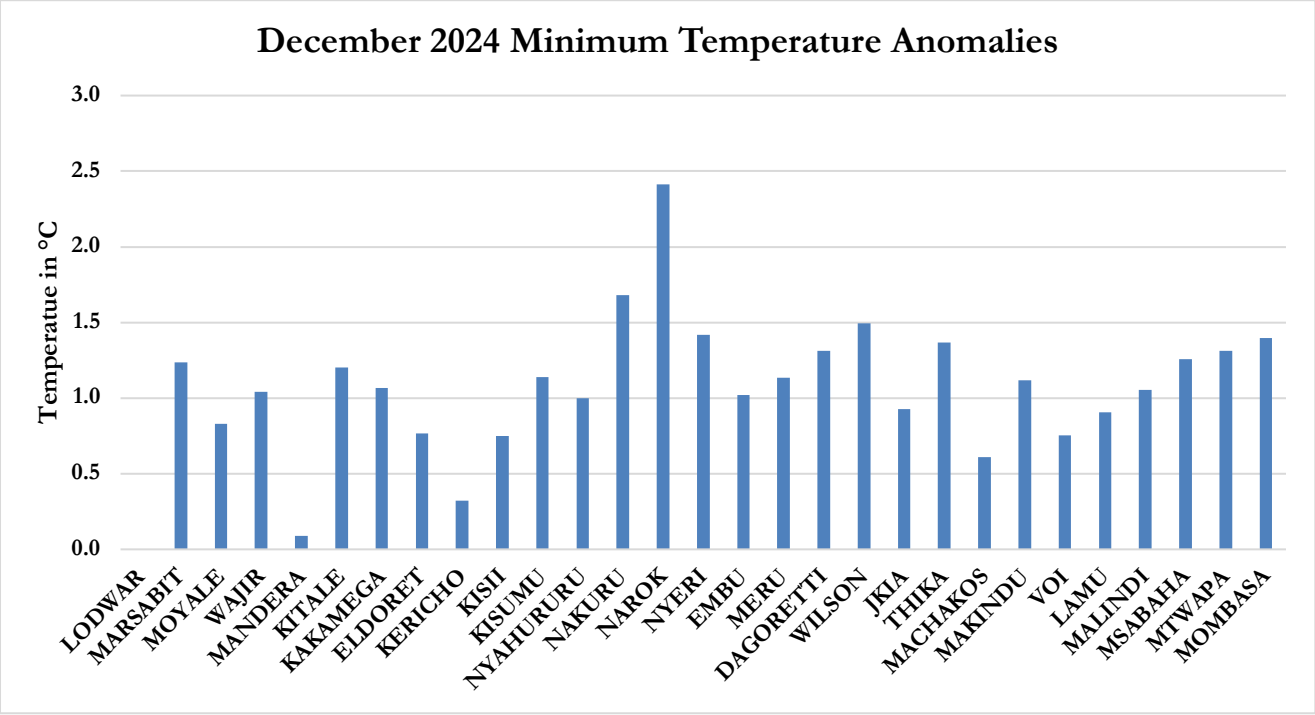

Figure 3b: December Minimum Temperature Anomalies

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

KEY OF SCIENTIFIC WORDS USED

Rainfall performance is generally categorized as follows:

- Below 75% of the LTM – Below Normal (Depressed) rainfall
- Between 75% and 125% of the LTM - Near normal rainfall
- Above 125% of the LTM – Above Normal (Enhanced) rainfall

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