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RAINFALL OUTLOOK FOR THE OCTOBER-NOVEMBER-DECEMBER 2024 SHORT- RAINS SEASON; AND REVIEW OF THE JUNE-JULY-AUGUST RAINFALL SEASON

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1. HIGHLIGHTS

1.1 Rainfall Outlook for the October-November-December 2024 "Short Rains" Season

The Climate Outlook for the October-November-December (OND) 2024 'Short Rains' season indicates that the western sector of the country is expected to receive near to slightly above average rainfall while the central parts of the country and isolated areas over northeast and southeastern lowlands are predicted to receive near to below average rainfall. The Coastal region, most of the Southeastern lowlands and Northeastern Kenya are expected to receive below average rainfall. This will be driven by weak La Nina conditions which are likely to develop during September to November and persist into early 2025 and a neutral Indian Ocean Dipole. The distribution is expected to be poor over most parts of the country with prolonged dry spells and cases of isolated storms.

Temperature is expected to be warmer than average over most parts of the country, except over a few areas in the western sector where temperature is expected to be near normal. Higher probabilities for warmer than average temperatures are expected over central and eastern sectors of the country.

1.2 Review of the Rainfall and Temperature in June-July-August 2024

Significant amounts of rainfall were received over the western sector of the country, the Coastal region and a few areas over the Highlands East of the Rift Valley, including Nairobi county. This rainfall was near to above average over western and Highlands East of the Rift Valley and near to below average over the Coastal region. The Northeast and Southeast remained generally dry though a few days experienced light to moderate rainfall. Intermittent cool and cloudy conditions were experienced over the Highlands East of the Rift Valley including Nairobi and a few areas over South Rift Valley and the Highlands West of the Rift Valley.

Temperatures were warmer than average over most parts of the country except Kisumu where maximum temperatures were near the seasonal LTM and Mandera where minimum temperatures were lower than average.

2. RAINFALL OUTLOOK FOR OCTOBER-NOVEMBER-DECEMBER 2024 "SHORT-RAINS" SEASON

The October-November-December (OND) "Short Rains" season constitutes an important rainfall season in Kenya, particularly in the Central and Eastern regions of the country as shown in **Figure 1b**.

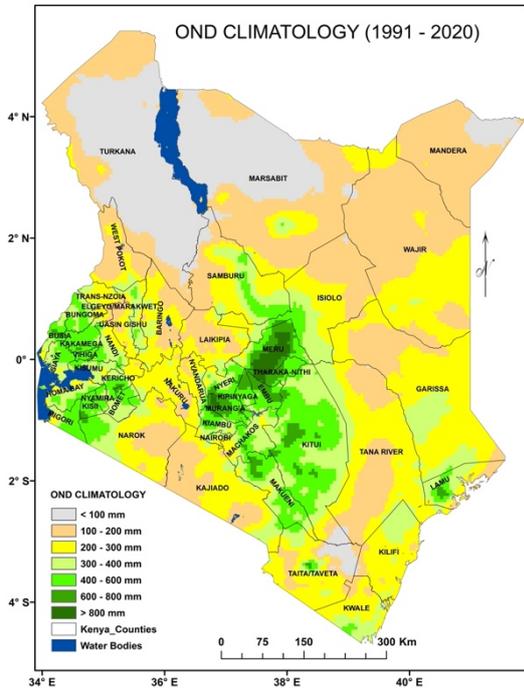


Figure 1a: October to December Rainfall Climatology

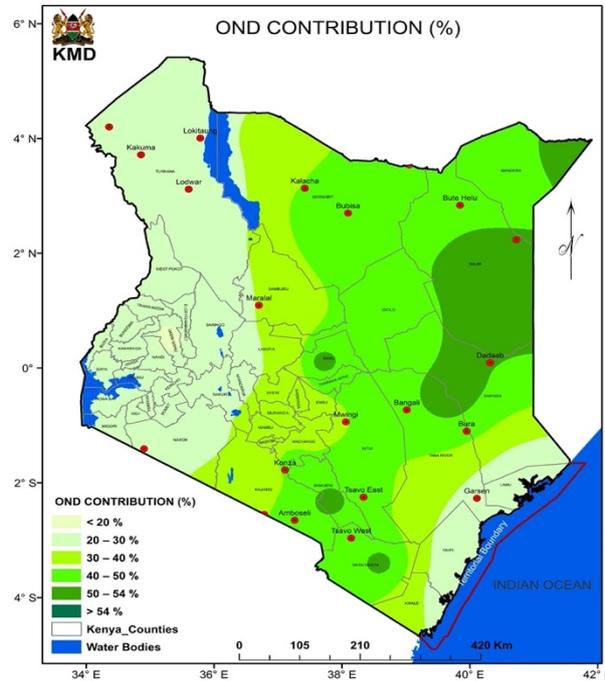


Figure 1b: OND contribution to Annual Rainfall

During OND 2024, it is expected that the eastern sector of the country will experience depressed (below average) rainfall. The Central parts of the country and isolated areas over northeast and southeast are expected to receive near to below average rainfall while the western sector is expected to receive near to slightly above average rainfall (**Figure 1c**).

In **Figure 1c**, the areas projected to receive **near-average rainfall with a tendency toward above-average** amounts are depicted in **light green**. Regions expected to receive **near-average rainfall with a tendency toward below-average** amounts are shown in **yellow**. Meanwhile, the areas forecasted to experience **below-average (depressed)** rainfall are highlighted in **orange**.

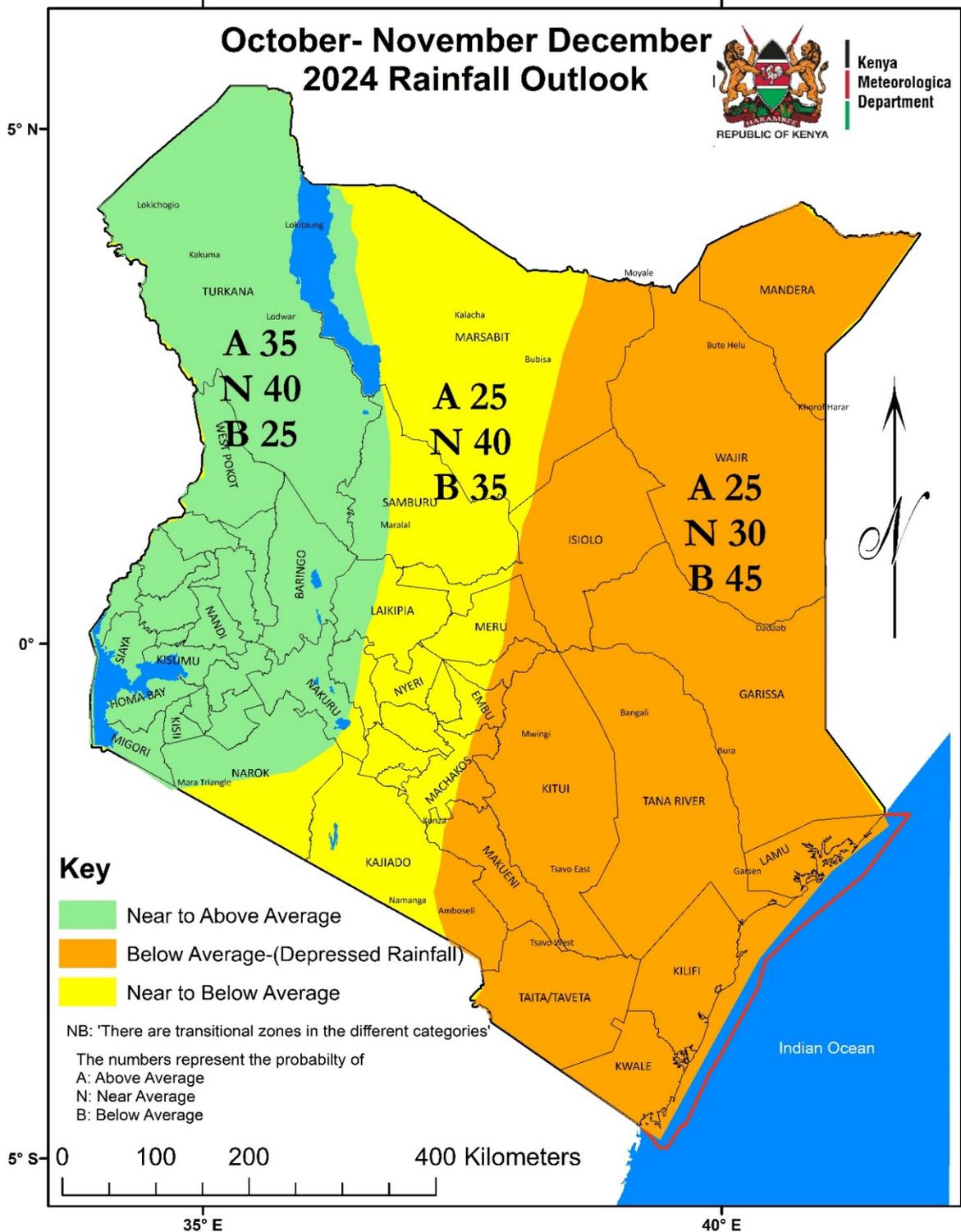


Figure 1c: OND 2024 Rainfall Outlook

The specific outlook for October-November-December (OND) 2024 is as follows:

2.1 The Lake Victoria Basin, Highlands West of the Rift Valley, Central and South Rift Valley: (Siaya, Kisumu, Homa Bay, Migori, Busia, Kisii, Nyamira, Trans Nzoia, Uasin Gishu, West Pokot, Elgeyo Marakwet, Nandi, Kericho, Bomet, Kakamega, Vihiga, Bungoma, Baringo, Nakuru, parts of Narok, parts of Laikipia) **parts of Highlands East of the Rift Valley** (western Nyandarua): These areas are expected to receive rainfall with some breaks

(dry spells) during the season. The expected rainfall is likely to be near to slightly above the long-term average amounts for the season. The distribution of rainfall is likely to be fair to good, with occasional storms expected.

2.2 Northwestern Counties: (Turkana, Western Samburu) and parts of Northeast (extreme western parts of Marsabit bordering Lake Turkana): These areas are expected to receive occasional rainfall whose amounts are likely to be near to slightly above the long-term average for the season. However, prolonged dry spells are likely, and the expected rainfall is expected to be poorly distributed both spatially and temporally.

2.3 Highlands East of the Rift Valley Counties (including Nairobi area): (Nairobi, Nyeri, Kirinyaga, Murang'a, Kiambu, Meru, parts of Nyandarua, parts of Embu, parts of Tharaka Nithi), **parts of Southeastern Lowlands** (western Machakos, central and western Kajiado), **parts of Northeast** (Central Marsabit) and **parts of Northwest** (Samburu). These counties are likely to experience rainfall with some breaks (dry spells) during the season. The expected rainfall amounts are anticipated to be near to below the long-term average for the season.

2.4 Southeastern Lowlands Counties (Kitui, Makueni, Taita Taveta, Southeastern Kajiado, eastern Machakos and Tana River): These counties are expected to experience intermittent rainfall throughout the season. However, the total rainfall amounts are likely to be below the long-term average for the season. Prolonged dry spells are also likely, and the rainfall is expected to be poorly distributed both spatially and temporally.

2.5 Northeastern Counties (Mandera, Wajir, Garissa, Isiolo and eastern parts of Marsabit): These areas are expected to experience occasional rainfall throughout the season. However, the total rainfall amounts are likely to be below the long-term average for the season. Prolonged dry spells are also likely, and the rainfall is expected to be poorly distributed both spatially and temporally.

2.6 The Coastal Counties (Mombasa, Kilifi, Lamu, Kwale and Coastal part of Tana River): These counties are expected to receive rainfall with intermittent breaks during the season. However, the total rainfall amounts are likely to be below the long-term average for the season. Prolonged dry spells are also likely, and the rainfall is expected to be poorly distributed both spatially and temporally.

3. EXPECTED DISTRIBUTION OF THE OND RAINFALL, ONSET AND CESSATION DATES

3.1 Distribution

The predicted onsets, cessations, and distribution of rainfall were derived from dynamical models and statistical analyses of past years, which showed similar characteristics to the current year, and are as indicated in Table 1.

The analogue (similar) year chosen was 2020. The rainfall outcomes for this analogue year are for reference only and should not be interpreted as part of the forecast. Rather, they provide a sense of the rainfall outcomes that can occur given broadly similar global climate conditions.

The OND 2024 rainfall is expected to be poorly distributed, both in time and space over several parts of the country. The western region is expected to have a fair to good distribution while the central part of Kenya is expected to have a poor to fair distribution. The rest of the country is expected to have a poor distribution. This season will be marked by prolonged dry spells and occasional isolated storms, even in regions where the general forecast indicates **depressed rainfall (below average)**.

3.2 Onset and Cessation

The expected onset and cessation dates for the Counties are as indicated in **Table 1** and **Figure 2** and **Figure 3**.

Table 1: Expected Onset and Cessation for the OND 2024 Rains

Counties	ONSET	CESSATION	DISTRIBUTION
Western Counties (Busia, Vihiga, Kakamega, Bungoma); Nyanza Counties (Kisumu, Siaya, Homa Bay, Nyamira, Migori, Kisii); Counties in Central and North Rift Valley; (Kericho, West Pokot, Nandi, Bomet, Uasin Gishu, Trans Nzoia, Nakuru, Laikipia, Elgeyo Marakwet, Baringo)	Rainfall Continues from September, 2024.	3 rd to 4 th week of December, 2024.	Fair to Good
Counties in Central Kenya (Kirinyaga, Nyeri, Murang'a, Nyandarua, Kiambu, Meru, Embu, Tharaka Nithi); Nairobi	3 rd to 4 th week of October, 2024.	1st-2nd week of December with occasional rains towards the end of December	Poor to Fair
Counties in North Western (Turkana, Samburu)	Rainfall Continues from September, 2024.	4 th week of November to 1 st week of December, 2024.	Poor
Coastal zone (Kwale, Mombasa, Kilifi, Lamu, Coastal part of Tana River)	4 th week of October to 1 st week of November, 2024.	1 st to 2 nd week of December, 2024 over North Coast; 3rd-4th week of December over South Coast	Poor
South Rift Valley: (Narok)	4 th week of October to 1 st week of November, 2024.	3rd - 4th week of December	Poor
Northeastern Counties (Mandera, Wajir, Garissa, Marsabit, Isiolo)	4 th week of October to 1 st week of November, 2024.	4 th week of November to 1 st week of December, 2024.	Poor
Southeastern lowlands (Taita Taveta, Kajiado)	1 st to 2nd week of November, 2024.	1st-2nd week of December with occasional rains towards end of December	Poor
Southeastern lowlands (Makueni, Kitui, Tana River, Machakos)	4 th week of October to 1 st week of November, 2024.	1st-2nd week of December with occasional rains towards the end of December.	Poor

NB: Updates on the onset, distribution, and cessation of rainfall will be provided regularly through weekly, monthly forecasts as the season progresses. These updates will offer detailed information on any changes and developments in rainfall patterns to keep stakeholders informed and support timely decision-making.

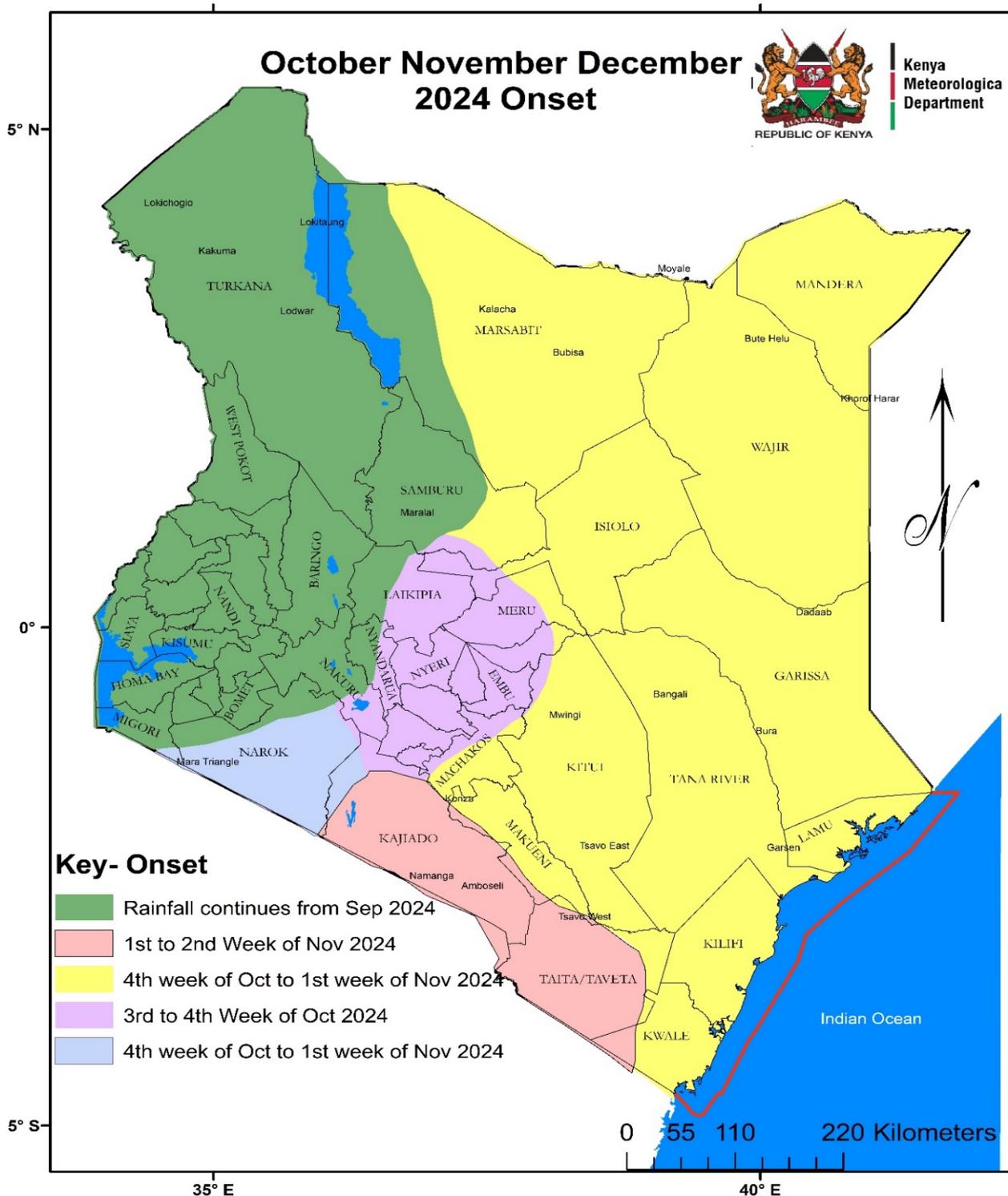


Figure 2: Expected Onset Dates

4 Standardized Precipitation Index (SPI) forecast

In order to contextualize the expected rainfall deficit with respect to past OND seasons and provide an easy assessment of the severity of the expected scenario, the rainfall forecast has been expressed as standard deviations from the mean using the standard deviation index (SPI).

A probabilistic forecast of SPI can provide advance warning by indicating the chance of the various parts of the country either sliding into or recovering from the alert or the alarm worsening phases of the national drought early warning system. The national drought early warning system uses $SPI < -0.09$ and $SPI < -0.98$ thresholds for the alert and alarm worsening phases respectively. The forecast probabilities for the two scenarios are shown in **Figures 1** and **2**.

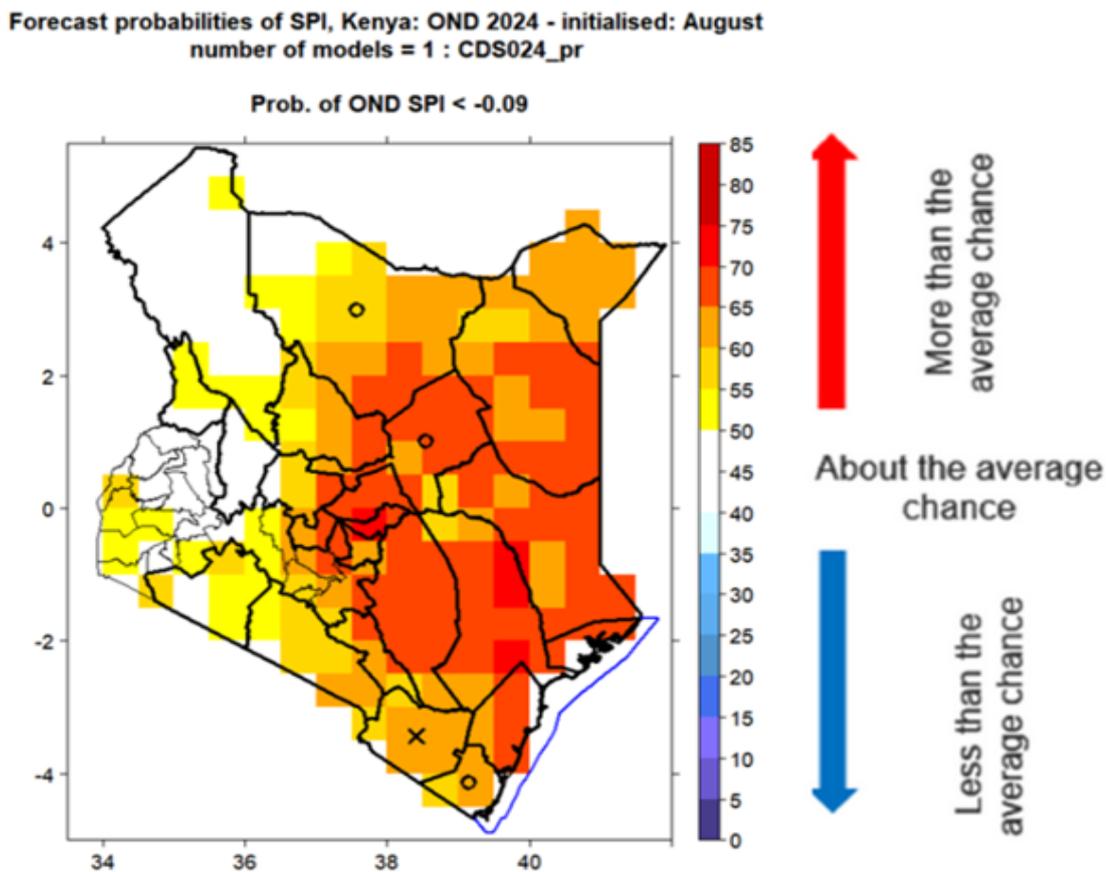


Figure 3a: Forecast probability of the country likely to get into the alert phase

The average chance of $SPI < -0.09$ occurring is 46% but the forecast indicates a high probability of between 50% to 70% over the eastern parts of the country, which is 1 to 1.5 times more likely than the average values for the area (climatology). The chance of the event occurring is therefore higher over the eastern part of the country.

Forecast probabilities of SPI, Kenya: OND 2024 - initialised: August
 number of models = 1 : CDS024_pr

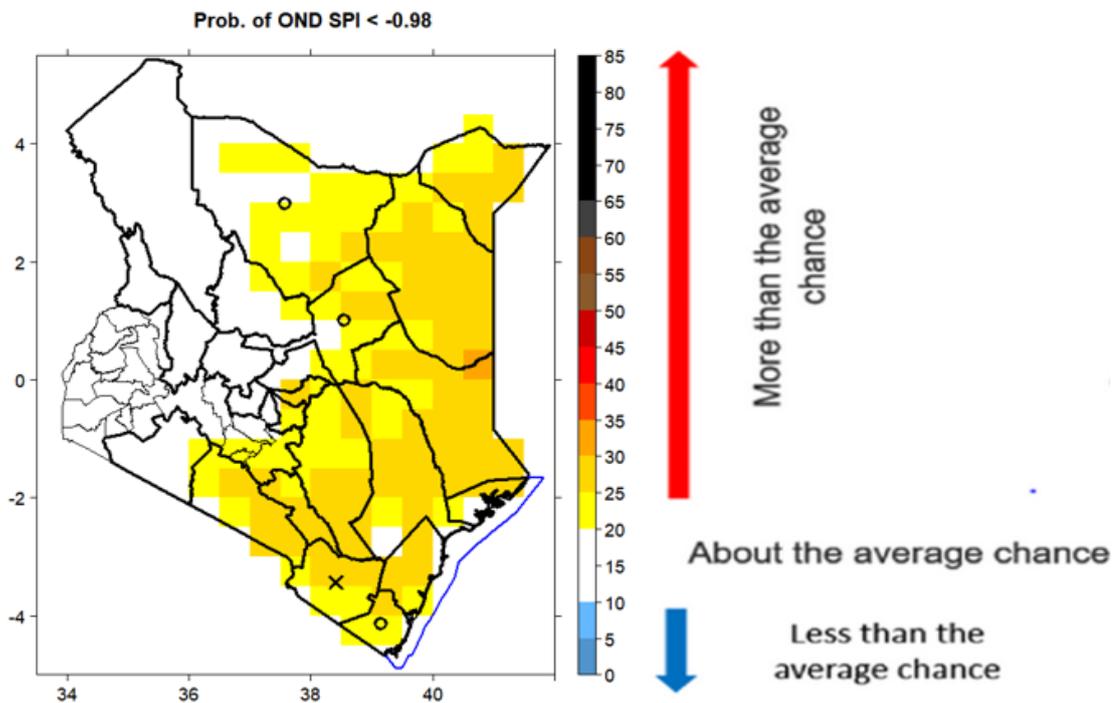


Figure 3b: Forecast probability of the country likely to get into the alarm worsening phase

The average chance of SPI < -0.98 is 16%. The forecast probabilities are between 20% and 30% over the country, which is 1.25 to 1.5 times more likely than climatology. This indicates that there is a slight chance of the eastern parts of the country experiencing severe rainfall deficits during the OND season.

4.1 Skill of the forecast

The skill of both SPI - 0.09 and -0.98 for forecasts initialized in August is quite good over much of the country except that of -0.98 over parts of the south eastern lowlands, as shown by the ROC scores in **Figures 3c and 3d**.

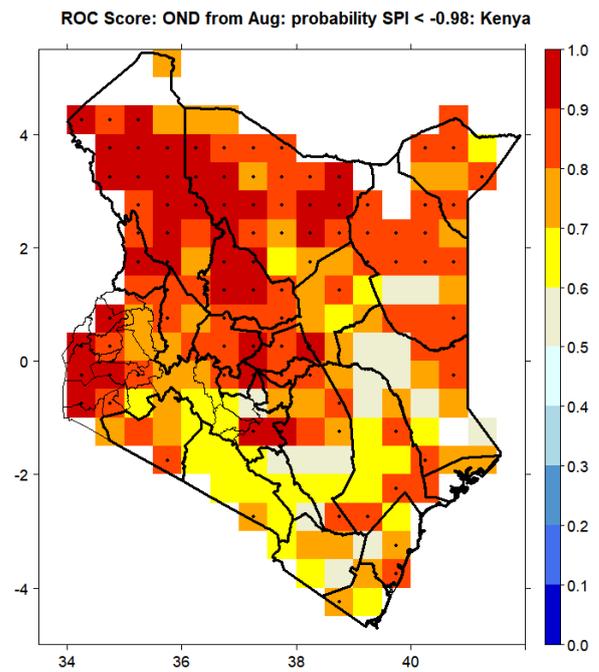
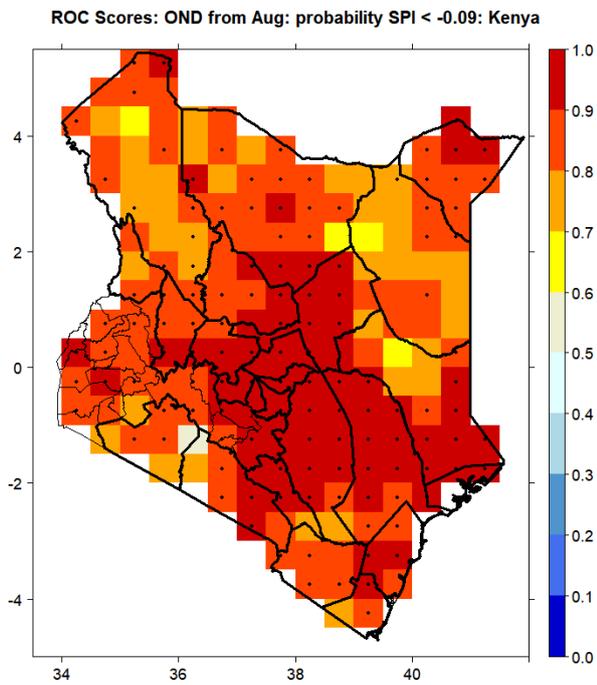


Figure 3 : (c) ROC scores for SPI -0.09

(d) ROC scores for SPI -0.98

These forecasts show that the expected deficit in rainfall over the eastern sector of the country is likely to cause a slide into the alert phase of the drought early warning system, which might progress to the alarm worsening phase as the season progresses.

5 OND 2024 Temperature Outlook

The temperature outlook shows that most parts of the country are expected to be warmer than average except a few areas over the western sector where temperature is expected to be near average. The Central and eastern parts of the country are expected to have higher probabilities for warmer than average temperature, as illustrated in **Figure 4**.

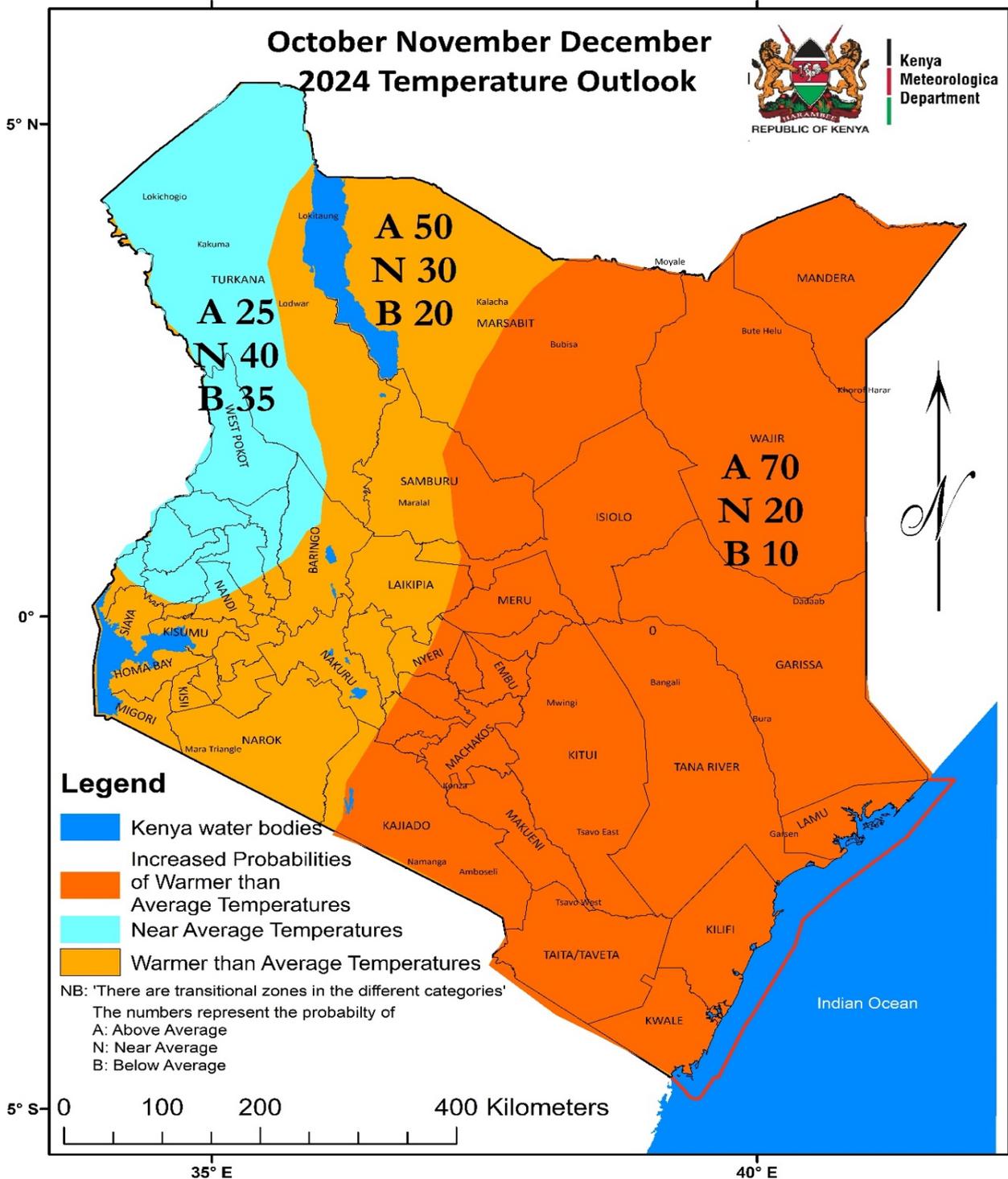


Figure 4: OND 2024 Temperature Outlook

6 POTENTIAL IMPACTS OF THE OND 2024 RAINS

In view of the predicted depressed rainfall, many sectors are likely to be impacted in various ways. With adequate preparations, the country can avoid some of the likely negative impacts while taking full advantage of the positive ones. The most likely impacts are highlighted

a. Agriculture, Food Security and Livestock Development Sectors

Positive Impacts:

- Enhanced agricultural production over the Highlands West of the Rift Valley, Central and parts of South Rift Valley and Lake Basin (western sector). This is likely to enhance food accessibility and lower food prices in these regions.
- Pasture rejuvenation that will enhance livestock production over the western region
- Reduced distances to livestock watering points over the western region.

Negative Impacts:

- Isolated areas over the western sector may experience flooding which may lead to water logging, erosion, nutrient leaching and degradation, which may in turn impact negatively on soil health.
- There may be an influx of pests and diseases for both crops and livestock as a result of excess moisture over the western region
- Excess moisture may also result in pre- and post-harvest challenges, such as spoilage, rotting, and contamination of produce over the western region
- Excess moisture is likely to lead to increased weed proliferation, necessitating weed management strategies though that may in turn increase the cost of production over the western region
- There is a likelihood of shortage of pasture, browse and water over the eastern part of the country.

Mitigation Measures:

- In areas expected to have enhanced agricultural production, farmers are advised to utilize appropriate inputs and embrace climate smart agricultural practices such as soil and water conservation, pasture and fodder conservation and sustainable land management.
- Subsidies on farm inputs i.e. fertilizer and seeds
- Enhancement of infrastructure for pre- and post-harvest processes, including efficient drying, cooling, and storage facilities to reduce losses and contamination in the western region.
- In areas expected to have depressed rainfall, communities are advised to adapt efficient water management practices, grow drought tolerant and fast maturing crops and pasture
- Enhancement of disease and pest surveillance

b. Environment and Natural Resources Sectors

Positive Impacts:

- Near to above average rainfall over the western sector will boost tree planting efforts, contributing to increased forest cover.

- Adequate moisture will promote the growth of diverse flora over the western region enhancing forest biodiversity.
- Higher moisture levels will decrease the likelihood of forest fires, reducing the risk of forest degradation over the western region.
- Opportunities for establishing tree nurseries and other forestry-related businesses will expand, leading to increased employment.

Negative Impacts:

- There may be incidences of landslides and mudslides in hilly areas of the western region
- Strong winds during storms may cause wind snap and wind throw, damaging trees and disrupting forest growth.
- Moist conditions may increase the prevalence of pests and diseases, threatening forest health over the western region
- There may be an increase in forest fires in areas expected to receive depressed rainfall
- Spread of alien species may be witnessed in some areas
- Reduced rainfall may hinder the growth of various flora and fauna, leading to a decline in forest biodiversity in areas expected to receive depressed rainfall
- Increased deforestation and vegetation degradation may occur in areas expected to receive depressed rainfall as communities seek alternative livelihoods such as charcoal burning as a result of decreased agricultural production

Mitigation Measures:

- In areas expected to have good rainfall performance, the Ministry of Environment Climate Change and Forestry should encourage Ministries, Departments, and Agencies (MDAs) and the public to put in place soil conservation measures to minimize environmental degradation caused by soil erosion.
- Encourage communities to plant more indigenous trees to reduce soil erosion and increase forest cover in line with the Presidential directive to increase forest cover by 15 billion trees by 2032.
- Implement tree species diversification and site-species matching to enhance ecosystem resilience.
- Intensify monitoring of forests for pests and diseases, and establish early detection and response systems.
- Maintain vigilance in monitoring forest health, especially in areas prone to fires and environmental degradation.
- Increase community awareness and involvement in managing risks such as landslides and invasive species.
- Promote fire management practices such as fire cut lines, firebreaks, and early burning as well as enhance early warning systems to prevent and manage potential fire outbreaks.

c. Disaster Management Sector

Positive Impacts

- Decline in resource-based conflicts in areas expected to receive near to above average rainfall
- Enhanced food security in areas expected to receive near to above average rainfall
- Improved income sources in areas expected to receive near to above average rainfall

Negative Impacts

- There may be cases of landslides and mudslides in hilly areas especially in areas expected to receive near to above average rainfall
- There may be cases of floods and flash floods that may lead to injuries, loss of lives and livelihoods, displacement of people and destruction of critical infrastructure such as shelters, schools, markets, buildings, roads, airstrips, bridges and railway lines.
- There may be an increase in resource-based conflicts both internally and across the borders due to limited resources, particularly water and pasture for livestock in areas expected to receive depressed rainfall.
- Cases of school drop outs may increase in areas expected to receive depressed rainfall
- Mild drought and famine may be experienced as the season progresses in areas expected to receive depressed rainfall.
- Food insecurity may be experienced at household level in areas expected to receive depressed rainfall

Mitigation Measures:

- Awareness Creation to enhance the preparedness of the community in all areas
- Continuous disaster risk assessment and hazard mapping
- Designation of temporary relocation facilities and identification of evacuation routes in areas that may be affected by floods
- Issue advisory on backflows in areas expected to receive near to above average rainfall
- Prepositioning of response resources and equipment in areas expected to receive near to above average rainfall
- Activate conflict resolution mechanisms in areas expected to receive depressed rainfall
- Provision of supplementary feeding in schools in areas expected to receive depressed rainfall
- Encourage animal de-stocking in areas expected to receive depressed rainfall
- Activate enhanced cash transfer programs in areas expected to receive depressed rainfall
- Unconditional cash transfer to the most affected communities.

d. Health Sector

Positive Impacts

- Enhanced food security is expected over the Western, Nyanza and North Rift counties, thus meeting nutritional needs in these areas

Negative Impacts for areas expected to receive near to above average rainfall

- Cases of highland Malaria may increase
- Cases of water contamination are likely leading to outbreaks of water-borne diseases such as Cholera and typhoid
- There may be emergence of vector borne diseases such Rift Valley fever
- Health services may be disrupted

Negative Impacts for areas expected to receive near to depressed average rainfall

- Vector-borne diseases such as Ndengue fever and Chikungunya are likely to emerge over the coastal region, as well as yellow fever in Isiolo County
- Water scarcity is likely to lead to water washed diseases such as trachoma and scabies and water-borne diseases such as Diarrhea
- Cases of malnutrition are likely to increase

Mitigation Measures

- Intensified disease surveillance and reporting for timely actions in all areas
- Provision of food supplementation to most vulnerable especially the undernourished children in areas expected to receive depressed rainfall
- Distribution of water treatment chemicals (chlorine and alum) as well as enhancement of Water and Sanitation Hygiene (WASH) practices among the communities in all areas
- Sensitization and education on utilization of prevention nets, as well as distribution of Long-lasting Treated Nets (LLNTs) in high risk counties
- Prepositioning of medical supplies in all areas
- Enhance public awareness and education on preventive measures in all areas
- Provision of medical camps as well as activation of public health emergency operation centers in all areas

d. Transport and Public Safety Sector

Positive Impacts (Eastern Regions):

- Favorable conditions for ongoing construction projects
- Reduced transport disruptions and costs
- Increased demand for transport services leading to higher revenue

Negative Impacts (Eastern Regions)

- Air Pollution may arise from dusty gravel roads

Negative Impacts (Western Regions):

- Likelihood of floods that may cause infrastructure damage and transport disruptions
- Increased risk of accidents due to slippery roads and poor visibility
- Possibility of landslides that may lead to disruption of transport Systems

Mitigation Measures

- Unblocking and desilting of existing drainage structures and designing new ones
- Creating awareness on road safety such as advising road users to drive at lower speeds in poor weather
- Maintaining road infrastructure, ensuring that roads are properly marked and road signage are in place
- Ensure there exist alternative routes/ modes of transport

e. Water Sector

Positive Impacts

- Increased inflows into water reservoirs in the western part of the country
- Availability of water for domestic and agricultural use in the western region

Negative Impacts

- Contamination of water sources from overflowing latrines in the western region
- Decrease in water resources in most of the lowland areas within the Country – Athi, Tana, and Ewaso Ng'iro Basin
- Limited access to water in the eastern sector of the country affecting domestic, industrial and irrigation water source

- Drying up of water pans in ASAL counties
- Increased water resource based conflicts

Reduced inflow into the water reservoirs, dams and rivers in the eastern region

Mitigation Measures

- Continuous monitoring of water levels for planning and decision making
- Enhance water harvesting by constructing storage structures and desilting of water pans and dams
- Conflict management strategies in conflict hotspots such as mapping and community engagement
- Promote water conservation measures, reuse and recycling
- Activation of strategic boreholes, rehabilitation of boreholes & drilling of drought emergency boreholes/wells in areas expected to receive depressed rainfall
- Water trucking in areas expected to receive depressed rainfall

f. Energy Sector

Positive Impacts

- The hydropower generation dams over the Western and Northwestern regions (Sondu and Turkwel) are anticipated to maintain or slightly increase their water levels. This stability supports reliable power generation and reduces the risk of major disruptions
- Biogas use over the western sector is expected to improve due to availability of water and animal feed supply

Negative Impacts

- The Sondu and Turkwel dams may overflow as a result of the rainfall received during the June to August season and the expected rainfall during the October to December season
- Biogas use over the eastern sector may be negatively affected by reduced water and animal feed supply
- Wood fuel (charcoal and wood) supply is expected to be below normal over the northeast and parts of the southeast. This is expected to negatively affect forests and reduce tree cover

Mitigation Measures

- Close monitoring of water levels and enhancing dam management systems
- Early warning alerts to the downstream communities in case of anticipated water overflow
- Diversification of energy sources at the household level to avoid overreliance on firewood and charcoal

7 REVIEW OF THE CLIMATE DURING MARCH - MAY AND JUNE - AUGUST 2024

7.1 MARCH - MAY 2024 SEASON

An assessment of rainfall from 1st March to 31st May indicates that most parts of the country experienced above average rainfall except a few areas over the Highlands West of the Rift Valley (Kisii, Kericho, Kitale), Lake Basin (Kisumu), Coastal region (Lamu), Northeast (Wajir) where near average rainfall was recorded and most stations over the Coast (Malindi, Msabaha, Mtwapa and Mombasa) where below average rainfall was recorded. 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, Lake Basin and the Rift Valley and fair over Northeastern, Northwestern, and Southeastern lowlands. Over the Coast, the distribution was poor with prolonged dry spells over most of the month and isolated days with heavy rainfall.

The onset of the season was realized during the fourth week of March 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 (Nakuru and Laikipia), Highlands East of the Rift Valley (Meru, Nyeri and Nyahururu), a few stations over the Lake Basin (Kisumu), most stations over the Coast (Malindi, Mtwapa, Msabaha and Mombasa) and all the stations over Northeast and Northwestern Kenya where the onset was observed during the first week of April.

The season was characterized by severe storms over several parts of the country where rainfall more than 100mm in 24 hours was recorded over several stations. Nguu Masumba rainfall station in Makueni County recorded 152.8mm in 24 hours on 10th April, while Thika Meteorological station recorded 150.3mm on 15th April. More than 30 stations across the country recorded above 100 mm in 24 hours. The highest seasonal rainfall total was recorded at Ndaka-ini station in Murang'a County with 1355.5mm, followed by Gatere Forest station also in Murang'a County with 1261.5mm. Dagoretti, Chuka forest, Kimakia, Kangema, Kagwe Tea Factory, Wilson, Kabete, Moi Air Base and Ngong stations recorded more than 1000mm of rainfall during the season. 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. This is illustrated in **Figure 5**.

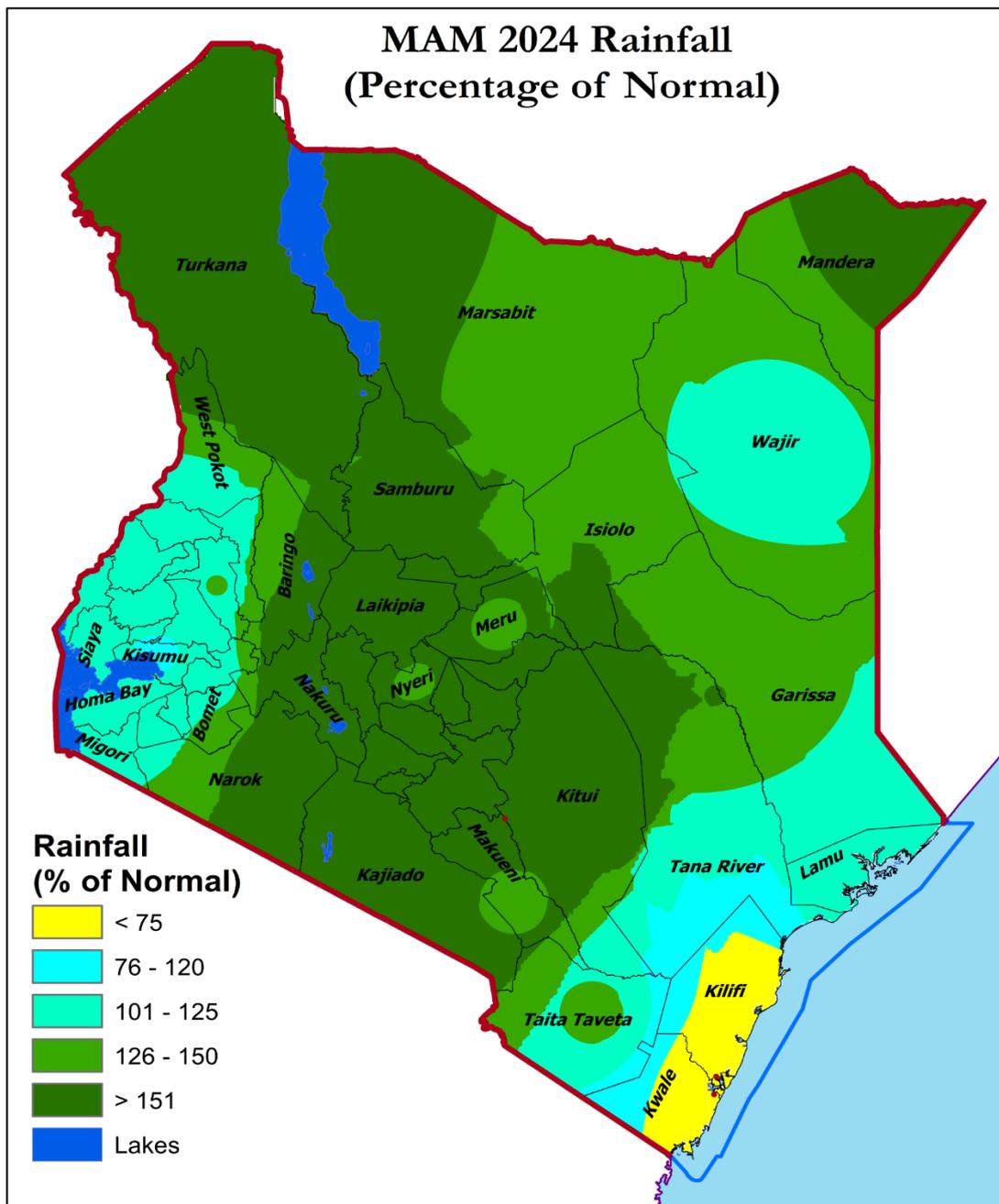


Fig. 5: March to May 2024 Rainfall Percent of Normal

7.2 JUNE TO AUGUST 2024 SEASON

7.2.1 JUNE TO AUGUST RAINFALL REVIEW

Several parts of the western sector of the country, the Coastal region and a few areas over the Highlands East of the Rift Valley including Nairobi county experienced significant rainfall during the June-July-August (JJA) 2024 period. Near-average to above average rainfall was recorded over several parts of Western, Highlands East of the Rift Valley including Nairobi county. Near to below average rainfall was recorded over the coastal region. The northeastern and southeastern regions remained generally dry though a few days experienced light to moderate rainfall that was above average in Makindu, near average in Machakos and Moyale and below average in the other areas. Intermittent cool and cloudy conditions were observed over the Central Highlands including Nairobi area and a few areas over the Highlands West of Rift Valley, South Rift Valley and the Southeastern lowlands.

The highest seasonal rainfall total in Uasin Gishu County (649.7mm) was recorded in Annex B Wareng rainfall station in Uasin Gishu. This was followed by Moi University rainfall station also in Uasin Gishu with 627.6mm. Other stations that recorded high amounts of rainfall are Kericho Meteorological station (585.1mm), Kapkatet (570.2mm), Eldoret Meteorological station (566.8mm), Khalaba Ward rainfall station (545.7mm), Kaibos Secondary rainfall station (530.2mm), Kanduyi Agricultural Office rainfall station (509.5mm), Bungoma Water Supply rainfall station (506.1mm), WRA Kapenguria rainfall station (489.6mm), Eldoret Airport Meteorological station (481.6mm), Mabanga ATC rainfall station (475.2mm), Nabichakha Secondary rainfall station (467.7mm), Nabkoi Forest rainfall station (450.0mm), Hekima Academy rainfall station (447.9mm), Nasukuta rainfall station (442.4mm), Kibabii University rainfall station (407.2mm), Timboroa Forest rainfall station (403,6mm), Kitinda Secondary rainfall station (403mm), Macwhele Vocational rainfall station (400.5mm). The rest of the stations recorded less than 400 mm of rainfall with the lowest amounts (less than 10mm) being recorded in most stations over Northeast and Southeastern lowlands.

Figure 6a, and Figure 6b show the JJA 2024 percent of JJA Normal and JJA 2024 rainfall totals. **Figure 6c** shows the JJA 2024 totals (in blue bars) in comparison to JJA LTMs (in red bars).

Rainfall as % of LTM / Range	Description
< 75%	Below Normal (Depressed) rainfall
75% and 125%	Near normal rainfall
> 125%	Above Normal (Enhanced) rainfall

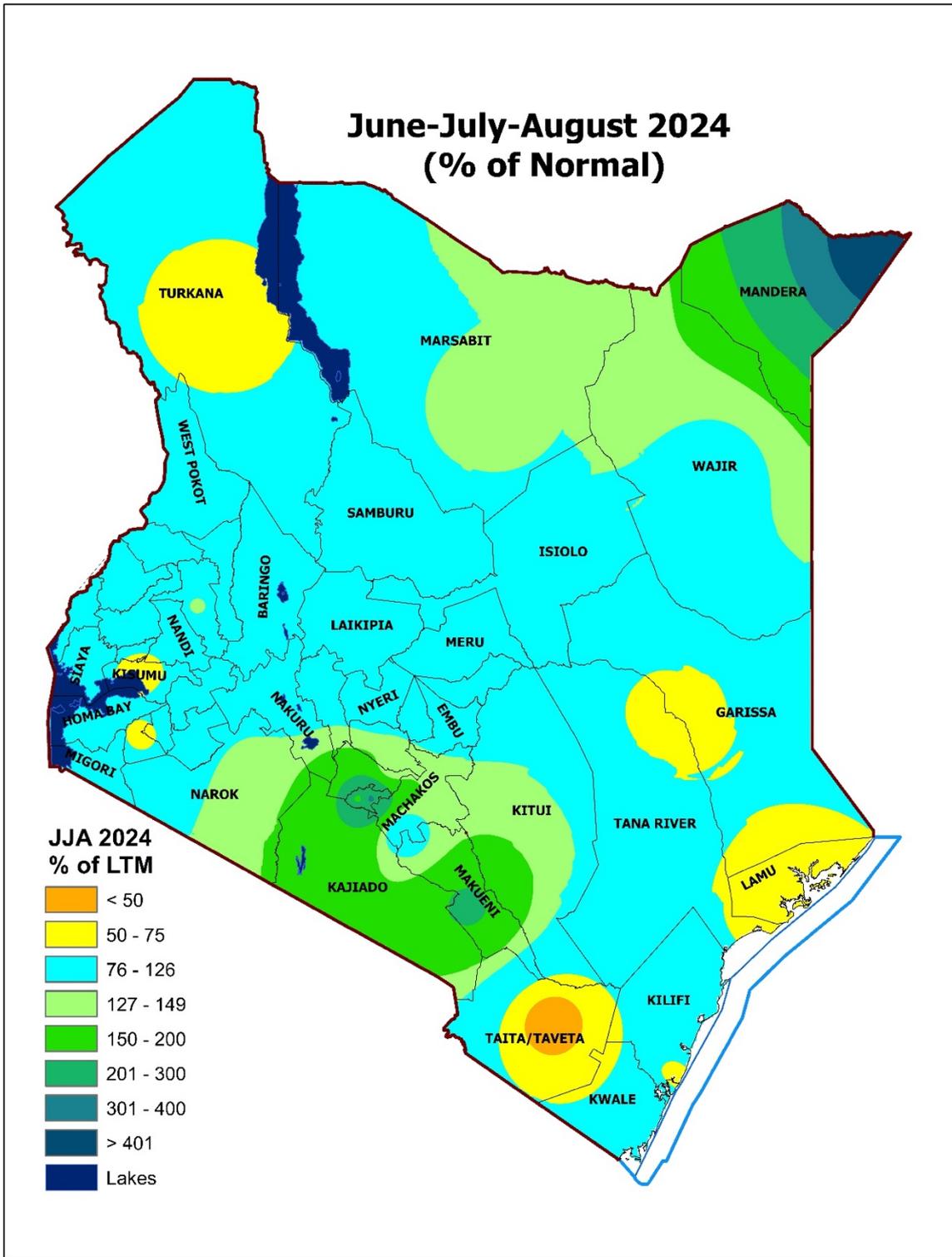


Figure 6a: JJA 2024 Rainfall Totals

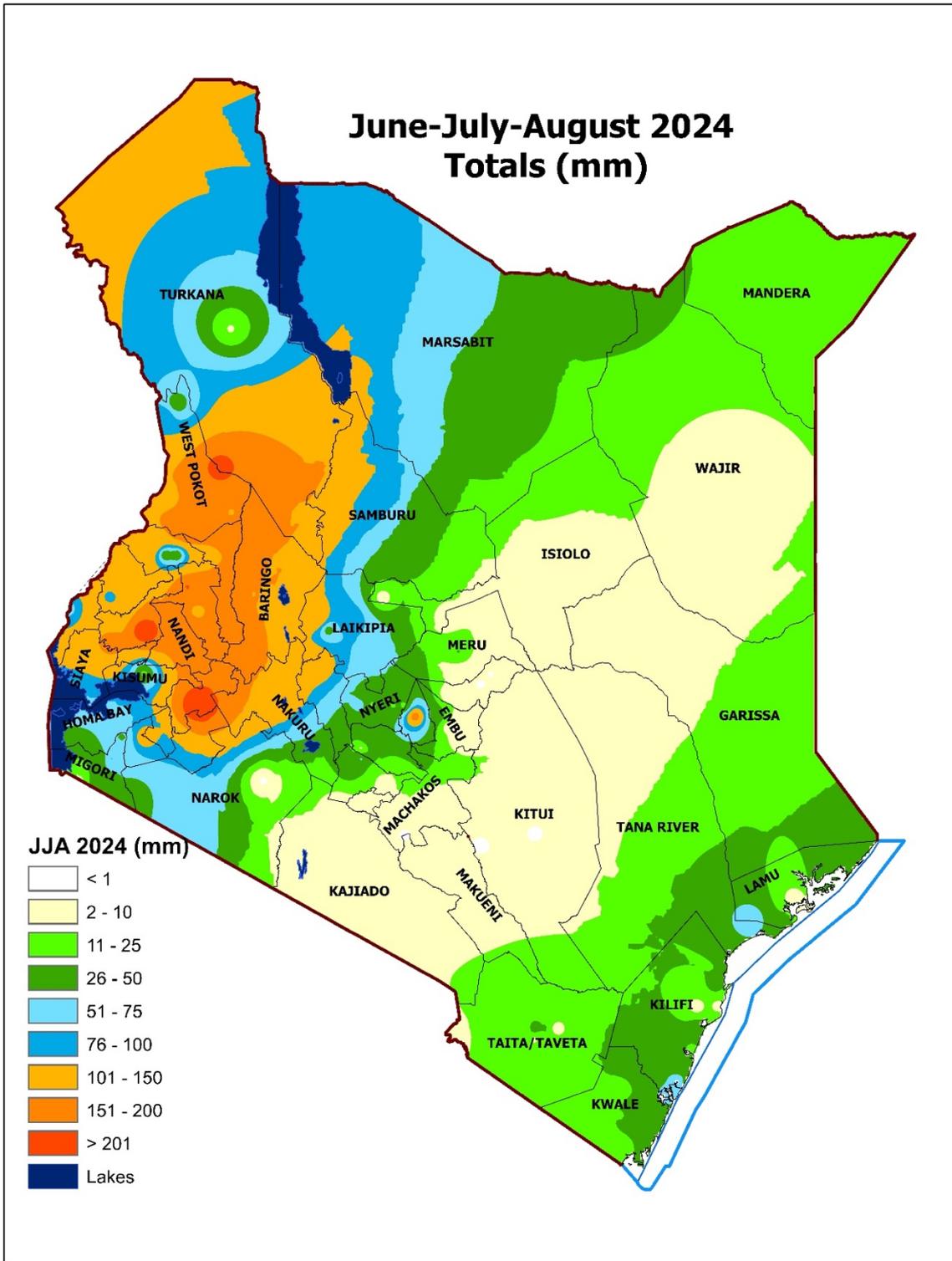


Figure 6b: JJA 2024 Rainfall Performance as a Percentage of JJA LTM

JJA 2024 Rainfall Totals in comparison to JJA LTMs

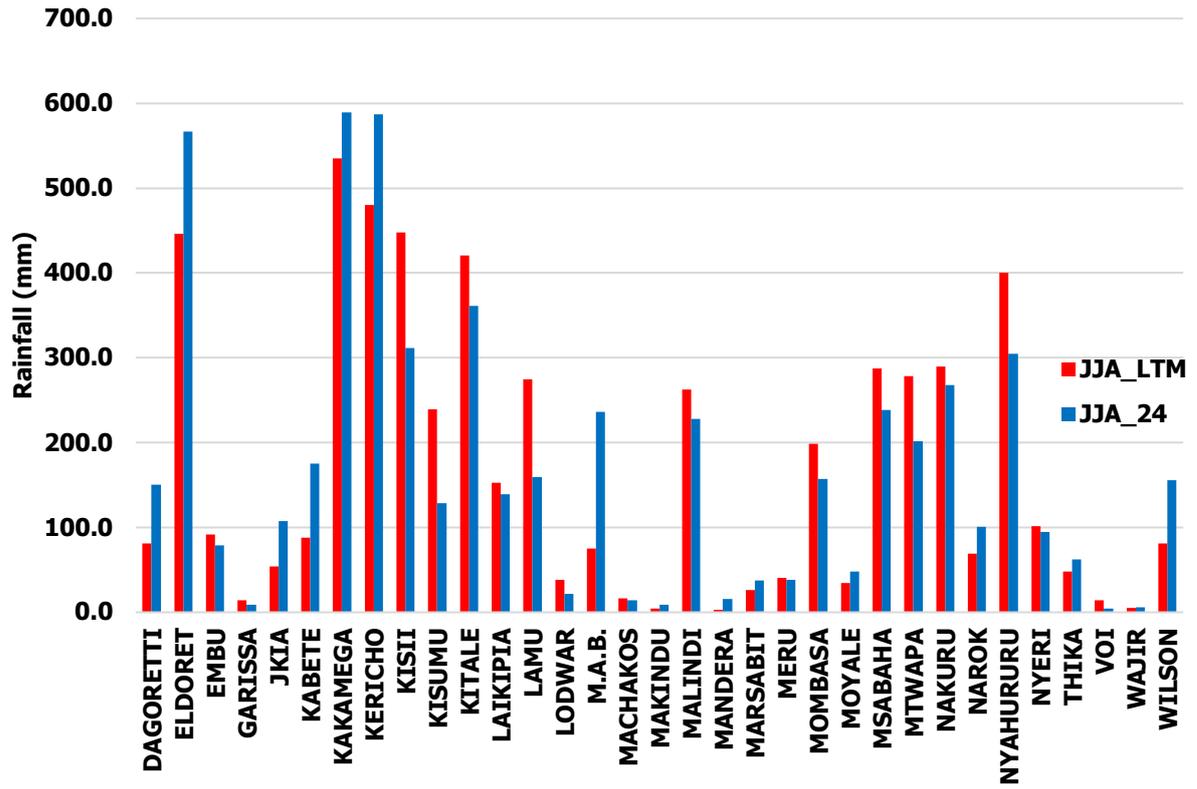


Figure 6c: JJA 2024 Rainfall Totals in comparison to JJA LTMs

7.2.3 JUNE - AUGUST 2024 TEMPERATURE REVIEW

The JJA temperatures were generally warmer than average over much of the country. Maximum temperatures were warmer than average over most parts, except Kisumu where the readings were near the June to August LTM. However, a few days over the Highlands East of the Rift Valley, including Nairobi county, and parts of the Southeastern lowlands were extremely cold with temperatures below 20°C. For instance, Kangema Station recorded a maximum 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 and 16.1°C on July 17. Nyahururu recorded 16.4°C while Embu recorded 16.9°C on July 18. Meru recorded 16.5°C on July 17 and 16.9°C on July 18. Nyahururu recorded 16.7 °C on 20th and 22nd August while Kangema recorded 17.0°C on 24th August.

Minimum temperatures were warmer than average over most parts, except Mandera where temperatures were cooler than average. Mean temperatures were warmer than average over the whole country. However, a few stations over the Highlands East of the Rift Valley including Nairobi county, South Rift Valley and parts of the Southeastern lowlands recorded temperatures less than 10°C. For instance, Narok recorded 7.0°C on 25th June while Nyahururu recorded 5.4°C on 1st July and 6.4°C on 1st and 11th of August. Machakos recorded 8.4°C on 5th August.

Mean temperatures were warmer than average across the entire country. Figures 7a, 7b and 7c respectively depict maximum, minimum and mean temperature anomalies in June, July and August 2024.

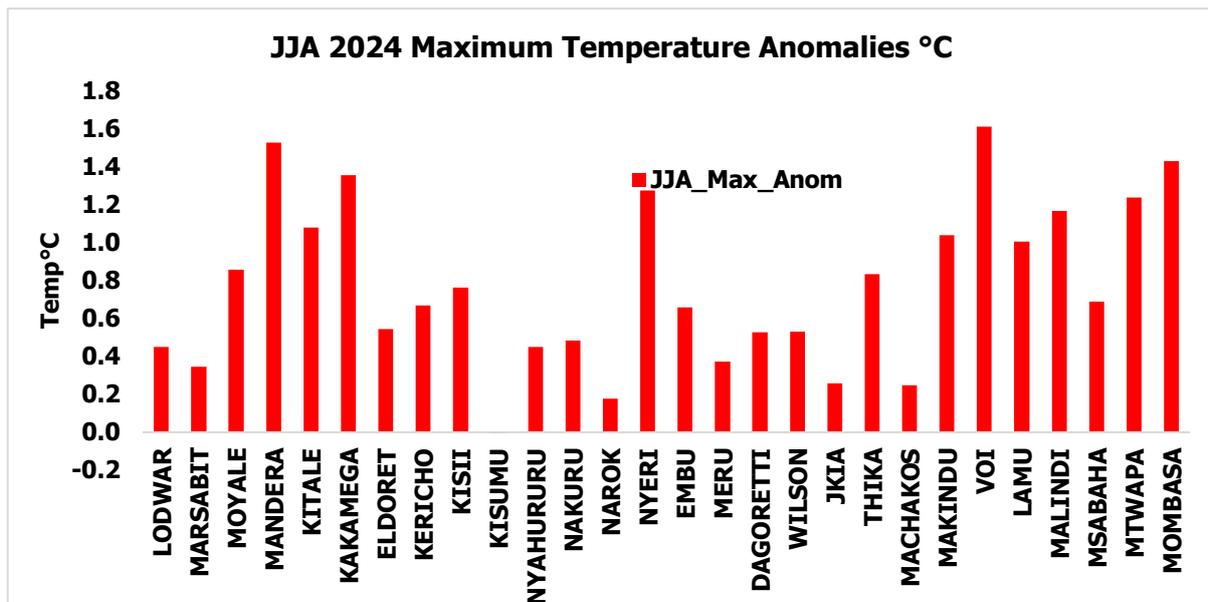


Figure 7a. Maximum temperature anomalies in 2024

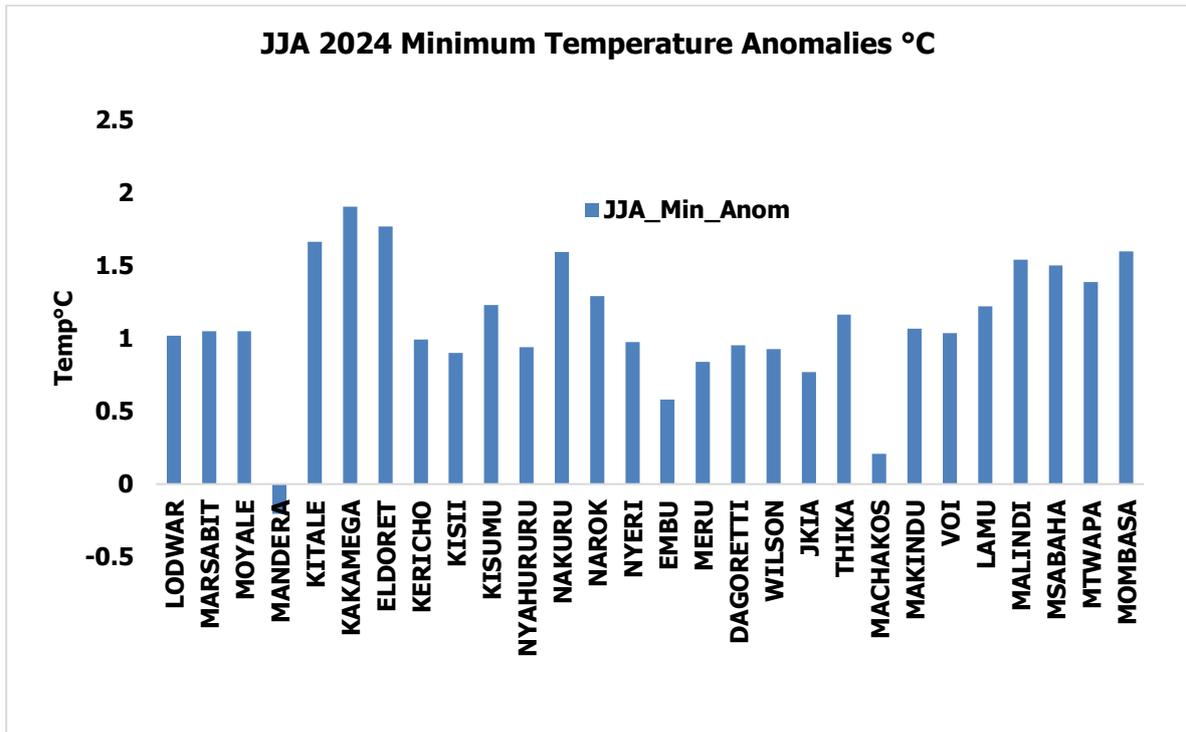


Figure 7b. Minimum temperature anomalies in 2024

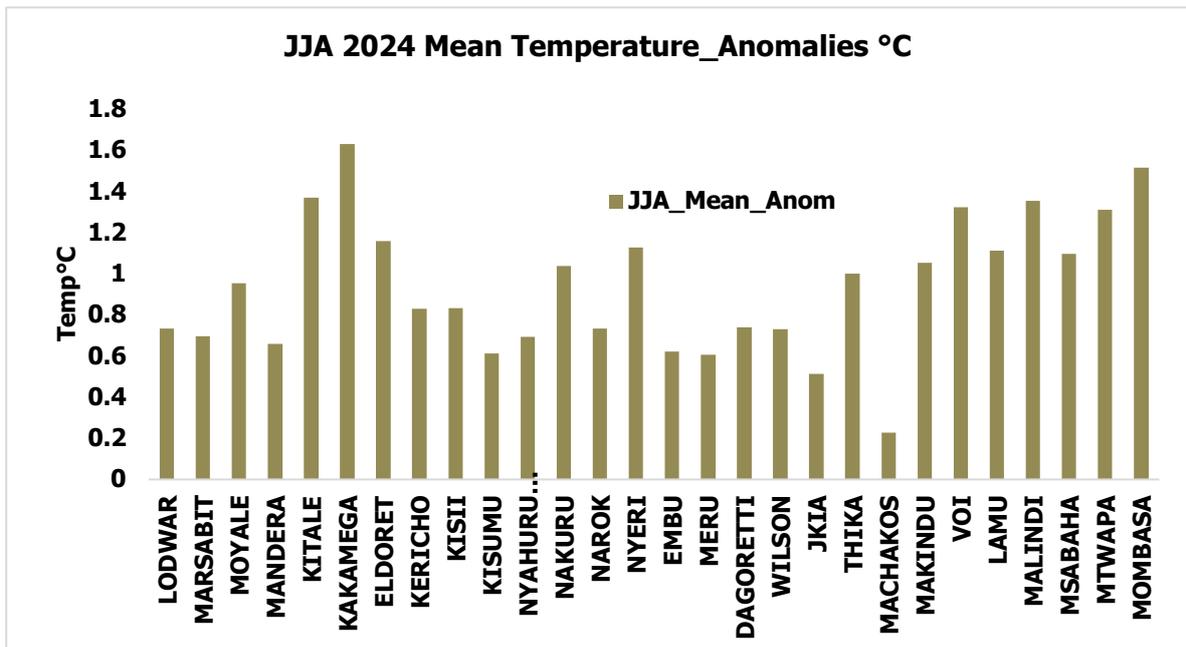


Figure 7c. Mean temperature anomalies in 2024

7.3 EXPERIENCED IMPACTS IN JJA 2024

7.3.1 Agriculture and Food Security Sector

- Livestock was killed and farm produce destroyed following landslides in Kapkombe and Kasisit villages of Baringo county caused by heavy rains on 6th and 7th August
- Crops were destroyed in Gatimu ward of Nyandarua County and Ngobisi village of Elgeyo Marakwet after heavy rains caused flooding and mudflow (Elgeyo Marakwet) on 16th and 15 August respectively
- The rainfall experienced across Western Kenya, the Rift Valley, Northwest, and parts of Central Kenya was enough to significantly improve soil moisture levels. This increase in moisture was beneficial for both agricultural activities and livestock production, as it supported crop growth and improved the health of grazing animals.
- In the Coastal region, the rainfall experienced in June was useful for agricultural practices. Farmers took advantage of the rainfall to plant various crops.

7.3.2 Disaster Management Sector

- Five people were killed, several households displaced and property destroyed following a landslide in Kapkombe and Kasisit villages of Baringo county after heavy rains on 6th and 7th August
- Strong winds persisted in the Eastern and Coastal regions of the country, leading to significant impacts. In Watamu, Kilifi County, the winds were intense enough to cause trees to fall, resulting in property damage and disruption to community activities. Downstream in the Tana Delta, flooding continued to challenge local residents and their livelihoods.
- Additionally, strong waves created rough seas, disrupting fishing activities in Kilifi County. On July 3, a boat capsized in Watamu due to the strong winds, resulting in the death of one person while two others drowned in Magarini ward of Kilifi county and Mashundwani of Lamu county on 14th and 20th August respectively. Three fishermen were injured after their boat capsized at Kinyaule Gongoni, Kilifi County on 21st August
- A man was swept away as he attempted to cross the swollen river Seyia along the Kisima-Wamba road in Samburu county on 19th August
- Learning in Ngobisi Primary school of Soy south ward in Elgeyo Marakwet was disrupted and businesses in Ngobisi village destroyed following heavy rains in the area on 15th August

7.3.3 Transport and Public Safety

- Transport was temporarily disrupted in different parts of Elgeyo Marakwet after a mudslide blocked the Kibigos road on 23rd August and mudflows blocked the roads leading to Ngobisi village on 15th August

- On July 29th, a landslide struck the Kabasis area of Baringo Central on Sunday night, 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 observed in the Highlands East of the Rift Valley (Meru), the Northeast (Marsabit), and the Southeastern lowlands (Makindu and Ngong) during June and July. Meru had 2 hours of fog on June 20th and 24th, and in July, experienced 16 hours on July 17th, 8 hours on July 22nd, and 6 hours on July 13th and 27th. Marsabit had 2 hours of fog on June 15th and 6 hours on July 25th, with additional fog on July 6th, 18th, and 22nd. Ngong and Makindu saw 2 hours of fog on June 8th and 21st, respectively. In Nairobi, Wilson Airport had 7 hours of fog on July 29th and 4 hours on July 25th and 28th. Despite the fog, there were no significant impacts on transportation or public safety.

7.3.4 Water Resources Management and the Energy Sectors

The occasional rainfall experienced in June over the catchment areas of the Seven Forks hydro power generating dams led to the 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 June 11th 2024.

7.3.5 Environment

The Ministry of Environment, Climate Change and Forestry took advantage of the forecast to plant trees in various parts of the country.

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



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