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WEATHER OUTLOOK FOR THE OCTOBER-NOVEMBER-DECEMBER 2021 SHORT-RAINS SEASON AND REVIEW OF THE JUNE-SEPTEMBER PERIOD

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1. HIGHLIGHTS

1.1. Forecast for the October-November-December 2021 "Short Rains" Season.

The Climate Outlook for the October-November-December (OND) 2021 "Short Rains" season indicates that most parts of the country are likely to experience depressed rainfall. This will be driven by near to below average Sea Surface Temperatures (SSTs) over the western Equatorial Indian Ocean (adjacent to the East African coastline), coupled with warmer than average SSTs over the eastern Equatorial Indian Ocean (adjacent to Australia). This constitutes a negative Indian Ocean Dipole (IOD) that is not favorable for good rainfall over most of East Africa. Also, Equatorial Sea surface temperatures (SSTs) are near-to-below average across most of the equatorial Pacific Ocean which implies that ENSO neutral conditions are present. Most Global climate and weather forecasting models predict La Nina condition is likely to develop over the OND season. The distribution of the rainfall in time and space is expected to be generally poor over most areas especially during the month of October and the peak month of November. In the month of December, rainfall reduction is expected over several places in the country as the season draws to an end. The temperature forecast indicates that warmer that average temperatures are likely over most parts of the country during the season. There are also enhanced probabilities for warmer than average temperatures in Eastern Kenya.

1.2. September 2021 Weather Outlook

On average, several parts of the country will experience generally sunny and dry weather conditions during the month of September. However, the Lake Victoria Basin, the Highlands West of the Rift Valley and Central Rift Valley are likely to experience near-average rainfall. Occasional light morning showers are expected along the Coastal Strip while the Highlands East of the Rift Valley (including Nairobi County) are likely to experience occasional afternoon showers as well as cloudy conditions in the mornings especially at the beginning of the month. Sunny and dry conditions are however, likely to prevail over the Northeastern, Southeastern and the Coastal regions throughout the month.

1.3. Review of the March-April-May 2021 Rainfall Season

An assessment of the rainfall recorded from 1st March to 31st May 2021 indicates that the rainfall performance was near average to below average over most parts of the country. The distribution, both in time and space, was generally poor over most parts of the country. The month of March had depressed rainfall over the whole country. In April and May 2021, several parts of the country received near to below average rainfall.

The onset of the seasonal rainfall was late over several parts of the country except over the Highlands West of the Rift Valley, the Lake Victoria Basin and parts of the Highlands east of the Rift Valley where the onset was as forecasted.

1.4. Review of the Rainfall in June-July-August 2021

Most parts of the country experienced depressed rainfall during June-July-August (JJA) 2021. Near average to below average rainfall was recorded over several parts of the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and South Rift Valley and along the coast. Cold and cloudy conditions were observed over the Central and Southern Rift Valley and the Highlands East of the Rift Valley, including Nairobi County. The JJA temperatures were generally warmer than average over much of the country. The northeast, northwest and southeast remained generally dry.

2. FORECAST FOR OCTOBER-NOVEMBER-DECEMBER 2021 SEASON

2.1. Rainfall Forecast

The "Short Rains" October-November-December (OND) 2021 season constitutes an important rainfall season in Kenya especially in the Central and South-eastern regions of the country.

During OND 2021, it is expected that most parts of the country will experience depressed (below average) rainfall that will be poorly distributed in both time and space. However, isolated incidences of storms that could cause flash floods are still likely to occur despite the expected depressed rains.

The areas likely to receive **below-average (depressed) rainfall** are:

The Lake Victoria Basin, Highlands West of the Rift Valley and Central and South Rift Valley (Siaya, Kisumu, Homa Bay, Migori, Kisii, Nyamira, Trans Nzoia, Baringo, Uasin Gishu, Elgeyo Marakwet, Nandi, Kericho, Kakamega, Vihiga, Bungoma, Busia, Laikipia, Nakuru and Narok counties);

Counties in North Western Kenya (Turkana, Samburu, West Pokot);

Counties over the Highlands East of the Rift Valley (Nyandarua, Kirinyaga, Nyeri, Murang'a, Kiambu, Meru, Embu, Tharaka Nithi, and Nairobi County);

Counties in southeastern Kenya (Taita Taveta, Kajiado, Machakos, Makueni and Kitui);

North Eastern Counties (parts of Garissa, Marsabit and Isiolo);

Counties in the Coast Region (Mombasa, Kilifi, Kwale, Lamu and Tana River); these areas are marked **Zone 2** in ***Figure 1a***.

The areas with **increased probabilities for below-average (highly depressed) rainfall** are indicated over far North Eastern Counties (Mandera, Wajir, some parts of Garissa, Marsabit and Isiolo); these areas are marked **Zone 1** in ***Figure 1a.***

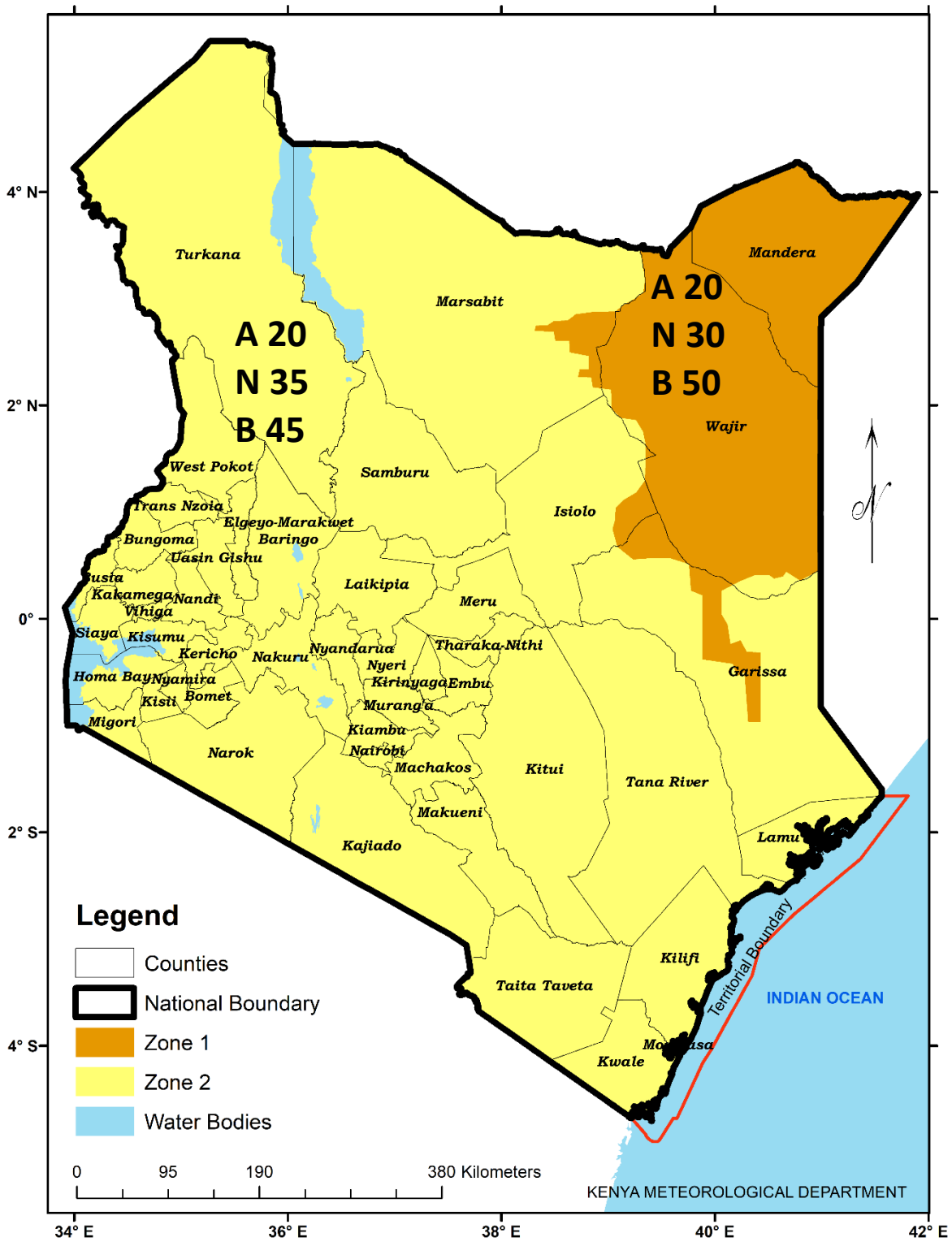

Figure 1a: OND 2021 Rainfall Forecast

The specific outlook for October-November-December (OND) 2021 is as follows:

2.1.1 The Lake Victoria Basin, Highlands West of the Rift Valley and Central and South Rift Valley: (Siaya, Kisumu, Homa Bay, parts of Migori, Kisii, Nyamira, Trans Nzoia, Baringo, Uasin Gishu, Elgeyo Marakwet, Nandi, Kericho, Kakamega, Vihiga, Bungoma, Busia, Laikipia,

Nakuru and Narok): In these counties occasional showers and thunderstorms are expected to continue throughout the season. The expected rainfall is likely to be below the long-term average amounts for the season (depressed rainfall). The peak of the season is expected in November. The expected rainfall is likely to be poorly distributed in both time and space.

2.1.2 Northwestern Counties (Turkana, West Pokot, and Samburu) are likely to experience mainly sunny and dry weather conditions for most of the season. However, showers and thunderstorms are likely to occur on a few days during the season. The expected rainfall amount is likely to be below the long-term average for the season (depressed rainfall). Long dry spells are also likely during the season.

2.1.3 Highlands East of the Rift Valley Counties (including Nairobi area): (Nyandarua, Nyeri, Kirinyaga, Murang'a, Kiambu, Meru, Embu, Tharaka Nithi and Nairobi). These counties are likely to experience occasional rainfall during the season. The expected rainfall is likely to be below the long-term average amounts for the season. The expected rainfall is likely to be poorly distributed in both time and space

2.1.4 South-eastern Lowlands Counties (Kitui, Makueni, Machakos Taita Taveta, and Kajiado): These counties are expected to experience occasional rainfall during the season. The expected rainfall amount is likely to be below the long-term average for the season. The rainfall is likely to be poorly distributed in both time and space.

2.1.5 North-Eastern Counties (Mandera, Marsabit, Wajir, Garissa and Isiolo): These areas are expected to experience mainly sunny and dry weather conditions and only a few days of rainfall. The expected rainfall amount is likely to be below the long-term average for the season and it is likely to be poorly distributed in both time and space.

2.1.6 The Coastal Counties (Mombasa, Tana River, Kilifi, Lamu and Kwale): These counties are expected to receive occasional rainfall during the season. The expected rainfall is likely to be below the long-term average amounts for the season. The expected rainfall is likely to be poorly distributed in both time and space.

2.2. Temperature Forecast for October-December Season

The forecast indicates that warmer that average temperatures are likely over most parts of the country. There are enhanced probabilities for warmer than average temperatures in Eastern Kenya as shown in ***Figure 1b*** below.

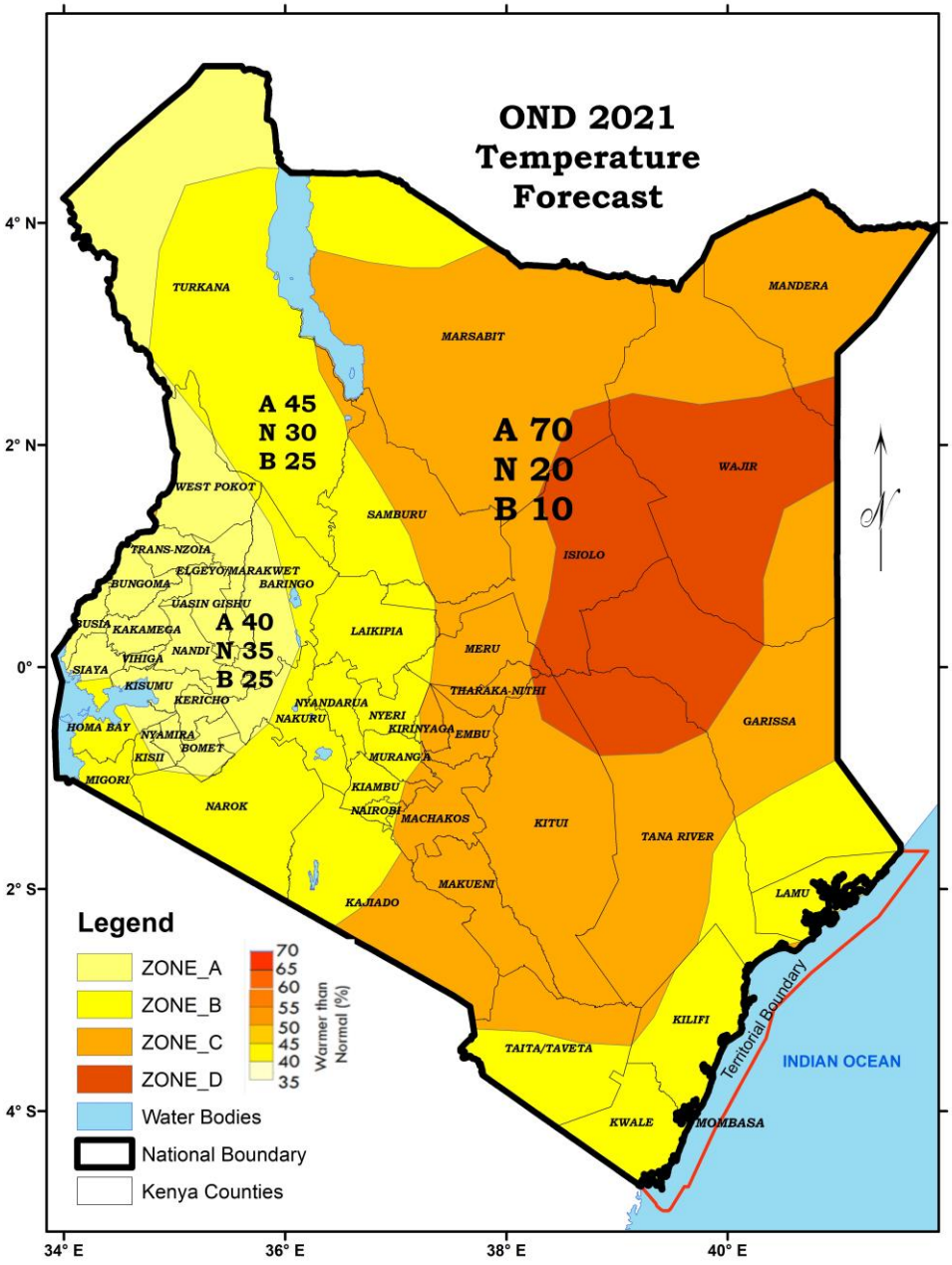

Fig. 1b: OND 2021 Temperature Forecast

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

3.1 Distribution of the OND Rainfall

The OND 2021 rainfall is expected to be poorly distributed, both in time and space, during the onset month of October and the peak month of November. In the month of December sunny and dry conditions are expected to prevail over several places as the season draws to an end.

3.2 Onset and Cessation Dates

The forecast indicates that most parts of the country are likely to have a late onset and an early cessation. This is especially pronounced over the Eastern Sector. Several parts of the Highlands West of the Rift Valley, the Lake Victoria Basin, the Central and South Rift Valley will continue experiencing occasional rainfall from the month of September. The expected onset and

cessation dates for the Counties are as indicated in ***Table 1*** and ***Figure 2*** below:

Table 1a: Expected Onset and Cessation for the OND 2021 Rains

Counties	ONSET	CESSATION
The Lake Victoria Basin, Highlands West of the Rift Valley (Siaya, Kisumu, Homa Bay, Migori, Kisii, Nyamira, Trans Nzoia, Baringo, Uasin Gishu, Elgeyo Marakwet, Nandi, Kakamega, Vihiga, Bungoma, Busia); Central and South Rift Valley; (Kericho, Bomet, Nakuru, and Laikipia)	Rainfall Continues from September, 2021.	3rd to 4th week of December, 2021.
Counties in Highlands East of the Rift Valley (Kirinyaga, Nyeri, Murang'a, Nyandarua, Kiambu, Meru, Embu, Tharaka Nithi); Nairobi;	3rd to 4th week of October, 2021.	2nd to 3rd week of December, 2021.
Counties in North Western (Turkana, Samburu)	Undefined onset.	Undefined cessation.
Coastal Strip (Kwale, Mombasa, Kilifi, Lamu, Coastal part of Tana River)	1st to 2nd week of November, 2021.	1st to 2nd week of December, 2021.
South Rift Valley: (Narok)	4th week of October to 1st week of November, 2021.	4th week of December to 1st week of January 2021
Northeastern Counties (Mandera, Wajir, Garissa, Marsabit, Isiolo)	Undefined onset.	Undefined cessation.
Southeastern lowlands (Taita Taveta, Makueni, Kitui, Tana River, Machakos & Kajiado)	2nd to 3rd week of November, 2021.	2nd to 3rd week of December, 2021

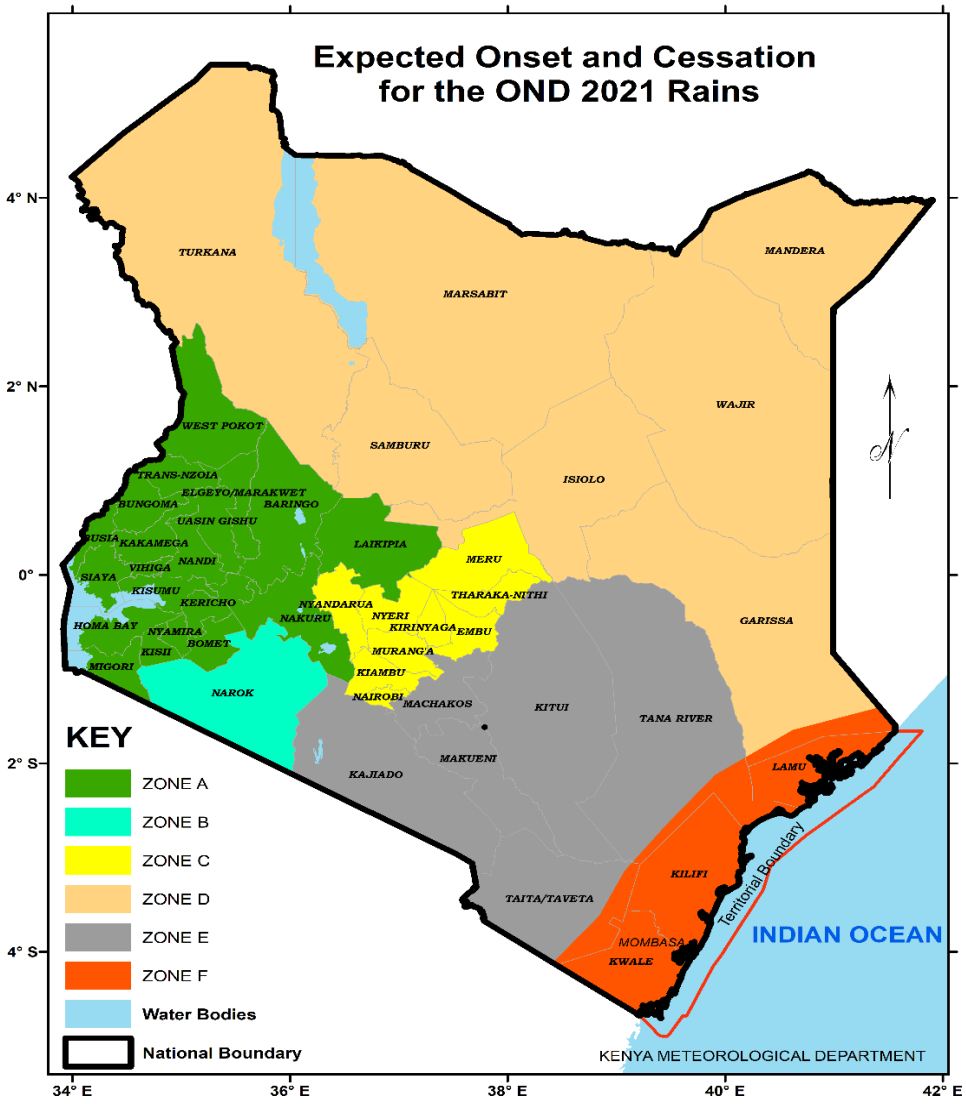

Fig. 2: Expected Onset and Cessation for the OND 2021 Rains

Table 1b: Expected Onset and Cessation for the OND 2021 Rains

	ONSET	CESSATION
ZONE A	Rainfall Continues from September, 2021.	Third to Fourth week of December, 2021.
ZONE B	Fourth week of October to first week of November, 2021.	Fourth week of December to first week of January 2021
ZONE C	Third to fourth week of October, 2021.	Second to third week of December, 2021.
ZONE D	Undefined onset.	Undefined cessation.
ZONE E	Second to third week of November, 2021.	Second to third week of December, 2021
ZONE F	First to second week of November, 2021.	First to second week of December, 2021.

4. Standardized Precipitation Index (SPI) forecast

In order to contextualise 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 forecast of SPI can provide advance warning by indicating the probability of the various parts of the country either sliding into 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 3a** and **3b** below.

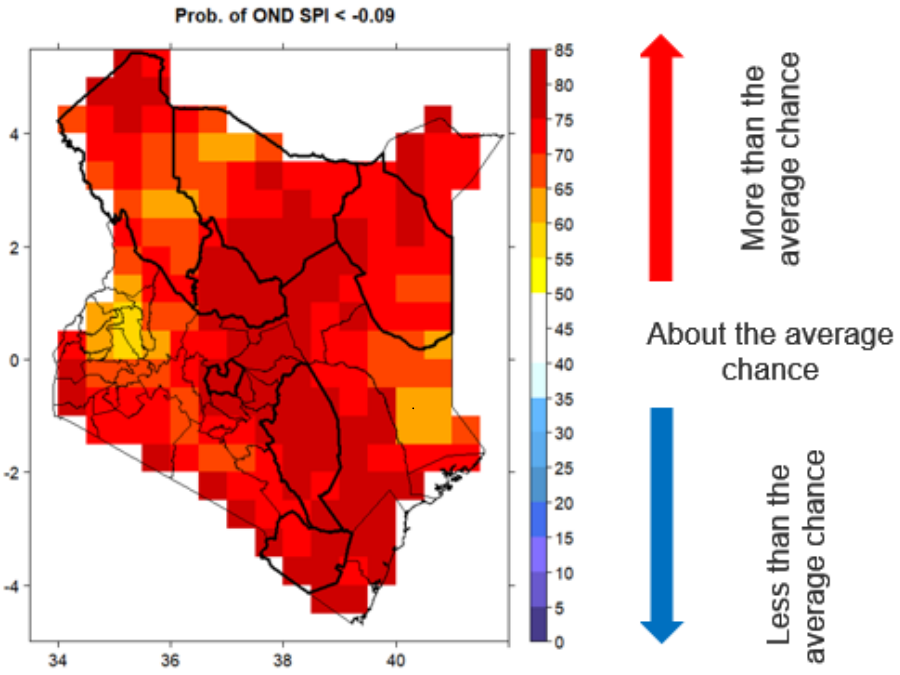

Figure 3a: Forecast probability of the country likely to be on high alert

The average chance of SPI<-0.09 is 46%. The Probabilities exceed 70% over much of the country. This forecast shows that there is about 1.5 times the usual chance of the country sliding into alert phase.

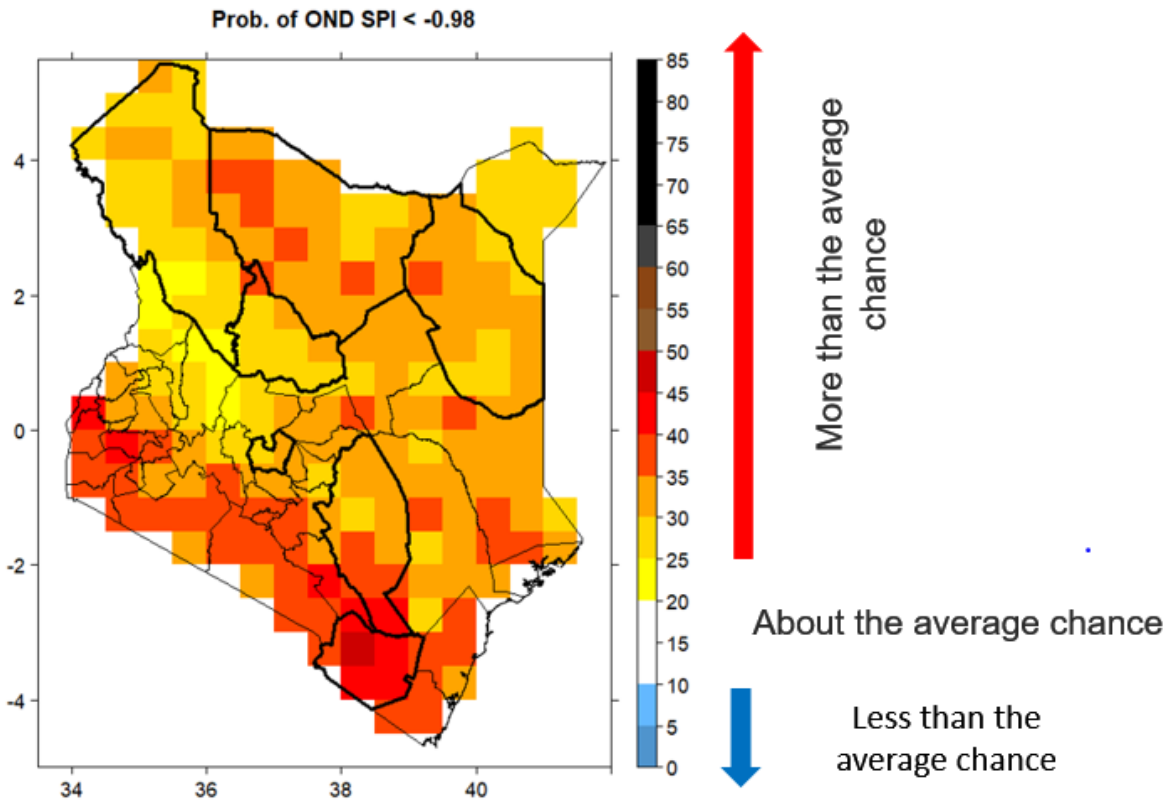

Figure 3b: Forecast probability of the country likely to get into into the alarm worsening phase

The average chance of SPI<-0.98 is 16%. The forecast probabilities exceed 35% over much of the country and are enhanced over the southeastern and northern parts. This indicates that there is about 1.5 times the usual chance of the country sliding into the alarm worsening phase.

These forecasts show that the prevailing drought over the northern and eastern parts of country is likely to deteriorate and extend to other parts of the country.

5. POTENTIAL IMPACTS OF THE OND 2021 RAINS

Analysis of the rainfall performance for the past seasons MAM and JJA indicates that most parts of the country especially the eastern and northern Kenya have experienced rainfall deficit. The forecasted depressed rainfall during the month of October to December indicates a likelihood of drought conditions that may worsen as the period progresses over most of the arid and semi-arid regions of northern and eastern Kenya. The most likely impacts on various sectors are highlighted below.

5.1. Agriculture, Food Security and Livestock Development Sectors

The food security and nutrition situation in most parts of the arid and semi-arid (ASALs) areas in the northern and eastern parts of Kenya is likely to deteriorate. Late onsets, poor distribution and reduced amounts of rainfall is likely to negatively affect agricultural production especially in areas that have been mentioned above particularly in the Eastern sector where reliance on the short rains is high.

In the agricultural counties in the Western sector of Kenya, the farming communities should take advantage of the expected rains and maximize on crop yield through appropriate land-use management. Farmers are also advised to liaise with the State Department of Agriculture for advice on the appropriate seeds to plant. The poor (depressed) rainfall performance expected in some of the ASALs is likely to impact negatively on the availability of foliage and pasture in the pastoral areas of Northeastern, Northwestern and Southeastern Kenya.

5.2. Environment and Natural Resources Sectors

Forest fires and their associated environmental consequences such as pollution and threats to biodiversity are expected to increase in areas expected to receive highly depressed rainfall. Thus, governments and communities are advised to promote fire management practices such as fire cut lines, firebreaks and early burning. Cases of deforestation and vegetation degradation are expected to increase as people look for alternative livelihoods such as charcoal burning due to drought. Measures should be put in place to improve on drought support livelihoods.

5.3. Disaster Management Sector

In the ASALs, where depressed rainfall is expected, lack of pasture and water for domestic use and livestock are likely to exacerbate the dry conditions experienced in the months of June, July and August 2021, coupled with the dry conditions expected in September 2021 and below average rainfall expected during the OND short rains season. Human-wildlife and inter-community conflicts over the limited resources are likely to escalate in these areas, where cases of malnutrition and food shortage are also expected to increase. Relevant government authorities should therefore put in place the necessary contingency plans and early actions to avoid loss of lives.

In western Kenya, lightning strikes are highly probable, especially in Kisii, Kisumu, Nandi, Kakamega and Bungoma (Mt. Elgon areas) counties.

5.4. Health Sector

Diseases associated with lack of proper nutrition and poor hygiene due to scarcity of food and water are likely to increase over the northwestern, northeastern and parts of southeastern lowlands. Thus rapid vulnerability assessment should be carried out as well as provide food relief and food supplements to the vulnerable and most vulnerable population respectively. Water scarcity may lead to water washed and water related diseases. Measures should therefore be put in place to strengthen treatment services as well as provide drinking and domestic water in the ASAL areas.

The northern and eastern parts are likely to be susceptible to dust storms, which may lead to an increase in respiratory tract diseases. This maybe complicated by the prevailing Covid-19 pandemic, notwithstanding the fact that its development is yet to be fully understood.

The relevant authorities should therefore, sensitize the public and equip health care facilities with necessary drugs to be able to deal with such situations as they arise.

5.5. Transport and Public Safety Sector

The expected flash floods may lead to destruction of transport systems, especially infrastructure in low-lying areas of Western Kenya and Tana River Basin.

5.6. Water and Energy Sector

Availability of water for general and domestic use is expected to continue deteriorating in the ASAL areas of eastern and northern parts of the country due to the expected depressed to highly depressed rainfall. Relevant authorities should put in place measures to subsidize the communities living in the affected areas.

Water levels in dams, water pans and Lakes is expected to reduce. Reduced inflows into the water reservoirs and hydropower dams may negatively affect hydropower generation. Careful reservoir management and continuous monitoring of water levels should be carried out in order to stabilize power production.

6. REVIEW OF THE WEATHER DURING MARCH-MAY (LONG-RAINS) 2021 AND JUNE-JULY-AUGUST JJA 2021 SEASONS

6.1. March-May (Long-Rains) 2021

An assessment of the rainfall recorded from 1st March to 31st May 2021 indicates that the rainfall performance was near average over the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and South Rift Valley, the Highlands East of the Rift Valley (including Nairobi County) and parts of the southeastern lowlands. The coast and northeastern counties recorded below average rainfall.

The distribution, both in time and space, was generally poor over most parts of the country. The month of March was characterized by mainly dry weather conditions. Depressed rainfall was recorded over the whole country except in Meru, where above average rainfall was recorded. In April, several parts of the country received near to below average rainfall. In May, several stations across the country recorded near average to above average rainfall except over northeast and the Coast, where below average rainfall was recorded. Rainfall recorded over the coast and northeast was less than 30% of their MAM LTMs. Most of the stations over the coast recorded the lowest ever MAM totals in the history of the respective stations.

During MAM 2021, only three stations (Eldoret, Lodwar and Meru) recorded rainfall that was above their MAM LTM. The most enhanced rainfall of 153.8% was recorded at Eldoret station. This was followed by Lodwar at 131.7% and Meru at 132.7%. Stations that recorded near average rainfall include Wilson (124.1%), Dagoretti (120.1%), Kisumu (110.6%), Moi Air Base (109.1%), Thika (96.2%), Kisii (92.9%), Kericho (90.3%), Makindu (89.8%), Laikipia (87.4%), Kakamega (92.1%), Embu (85.0%), Narok (79.2%),

Mandera 78.2%), Moyale (83.1%), Nyahururu (76.5%), J.K.I.A (76.9%) and Nakuru (78.5%). The remaining stations recorded less than 75% of their MAM LTMs with the lowest rainfall being recorded in Mtwapa and Lamu at 10% and 7.6% respectively.

Kisii Meteorological Station recorded the highest seasonal rainfall total of 661.5mm (92.9%). Other stations that recorded more than 400mm of rainfall during the season include Kakamega (634.5), Meru (600.3mm), Kericho (603.8mm), Kisumu (583.8mm), Dagoretti (575.8mm), Wilson (496.9mm), Embu (500.9mm), Eldoret (509mm), Moi Air Base (450.2mm) and Thika (425.6mm). The rest of the stations recorded between 100mm and 300 mm with Voi, Mombasa, Mtwapa, Wajir, Garissa and Lamu recording less than 100mm of rainfall during the season. Garissa Met Station recorded the least amount of 39.0mm.

Figure 4a shows the amount of rainfall recorded during the MAM 2021 season **(Blue bars)** up to 31st May 2021 as compared to the MAM seasonal LTMs **(Red bars). Figure 4b** shows the MAM 2021 seasonal rainfall performance as a percentage of the LTMs.

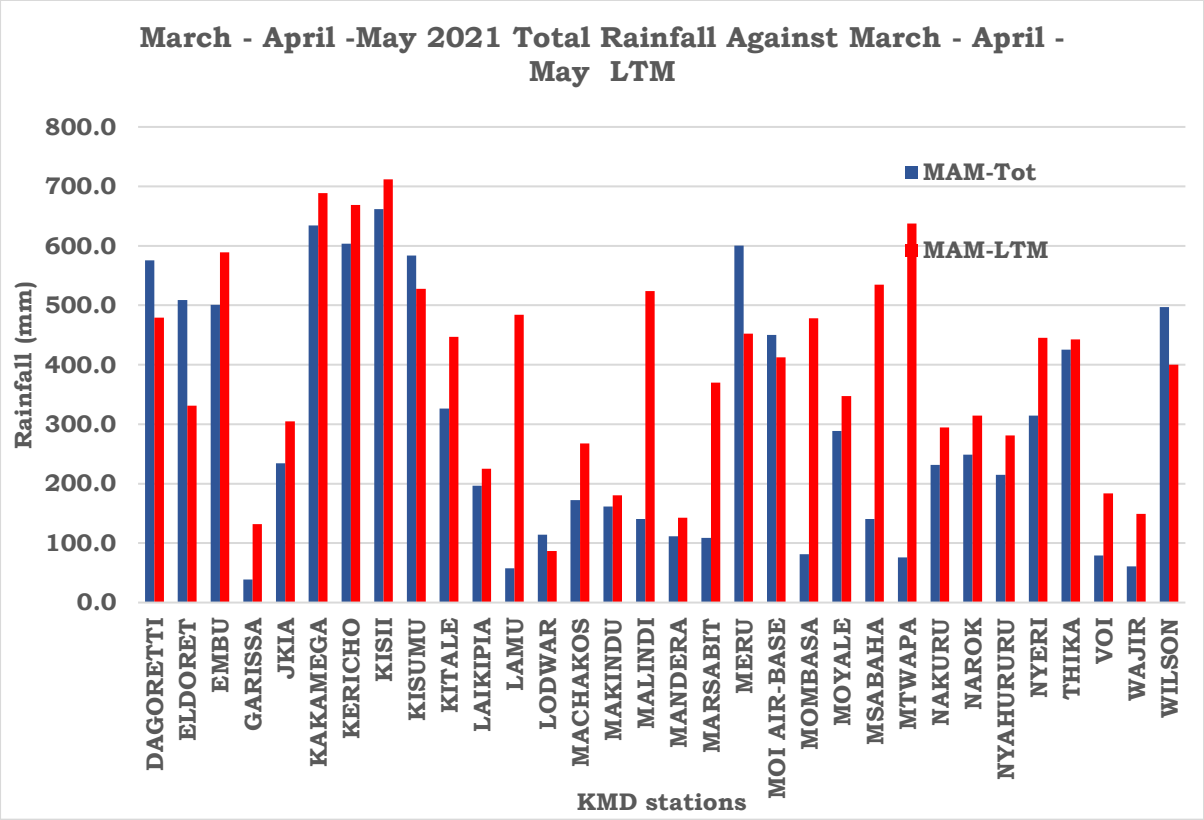

Figure 4a: MAM 2021 Rainfall Totals Compared to MAM Seasonal LTM.

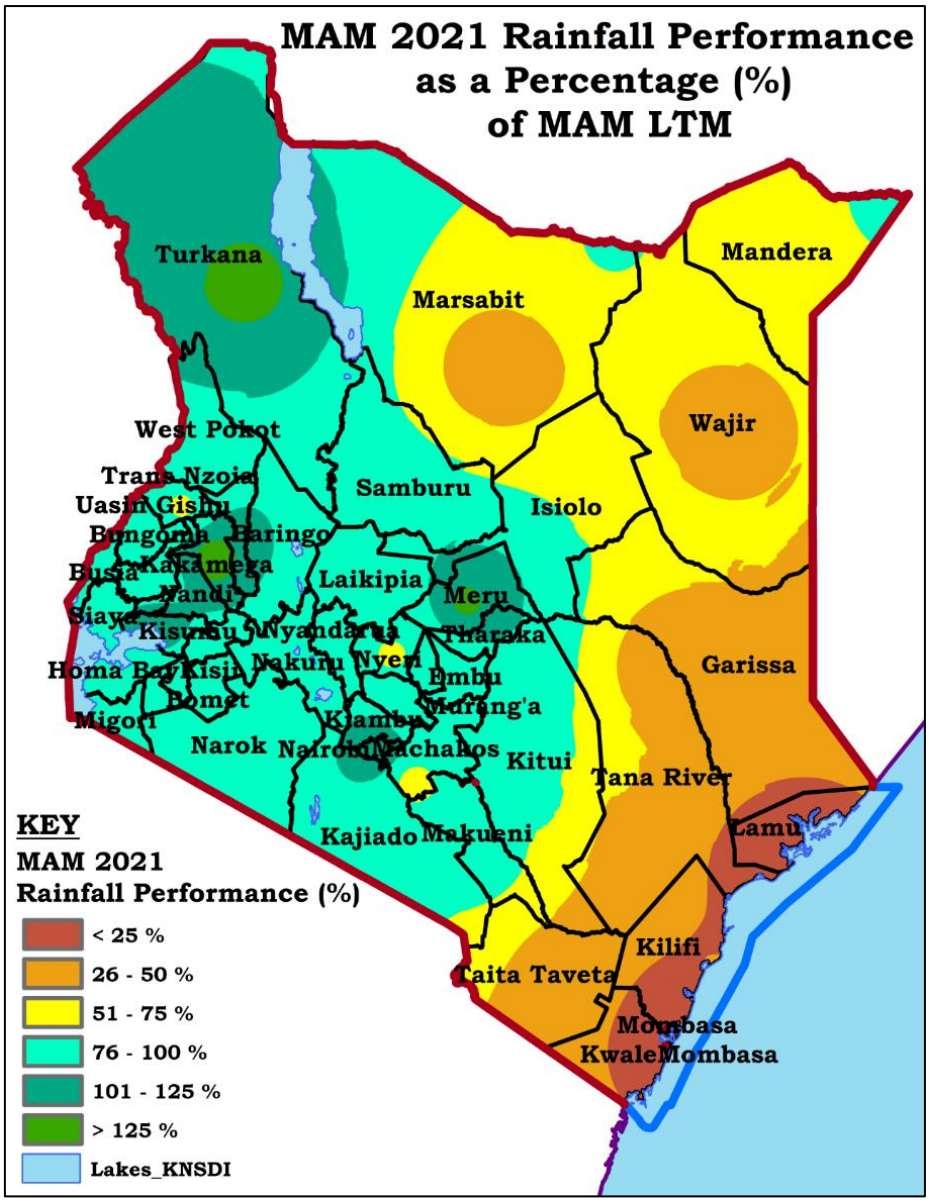

Figure 4b: MAM 2021 Rainfall Performance as a Percentage (%) of MAM LTM

6.2. JUNE-JULY-AUGUST JJA 2021

6.2.1. June-July-August JJA 2021 Rainfall Review

Most parts of the country experienced depressed rainfall during June-July-August (JJA) 2021. Near-average to below average rainfall was recorded over several parts of the Highlands West of the Rift Valley, the Lake Victoria Basin, Central and South Rift Valley, Northwest as well as the Coastal region in line with the JJA 2021 forecast. Few stations in Central Kenya received significant rainfall amounts, as they were below average especially in the months of July and August. Occasional cool and cloudy conditions were observed over the Highlands East of the Rift Valley including Nairobi County as well as some parts of the southeastern lowlands, Central and southern Rift Valley during the season. The JJA temperatures were generally warmer than average over much of the country.

Several stations in Highlands West of the Rift Valley, Central and South Rift Valley, Lake Basin and the Coastal regions recorded near-average to below average (depressed) rainfall as compared to the JJA LTMs. Kakamega station recorded the highest amount of 424.1mm (80.5 %) compared to its JJA LTM of 526.8mm. Other stations that recorded above 300mm include Eldoret 349.5mm (84.2%), Kericho 346.5mm (67.6%), Kisii 344.2mm (76.6%), Nakuru 325.7mm (119.5%) and Nyahururu 321.7mm (83.2%). Lamu, Kitale, Mtwapa, Msabaha, Kisumu, Malindi and Laikipia recorded 230.2mm (59.6%), 228.8mm (79%), 207.2mm (65.1%), 185.8mm (58.1%), 174.5mm (74.9%), 153.8mm (51.5%) and 102.5mm (73.2%) respectively. The rest of the stations recorded less than 100mm as seen in ***Figure 5a. Figure 5b*** shows the JJA 2021 Rainfall Totals **(in blue bars)** 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

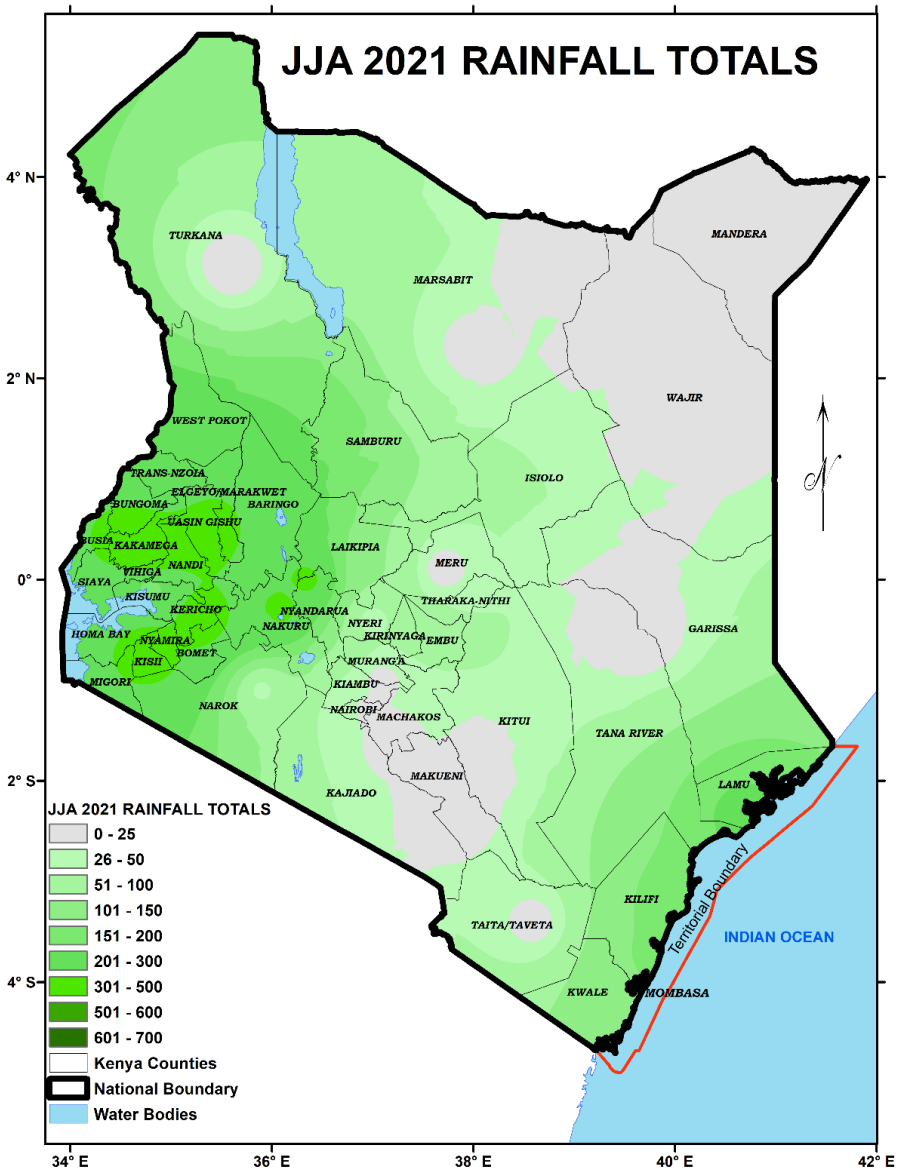

Figure 5a: JJA 2021 Rainfall Totals

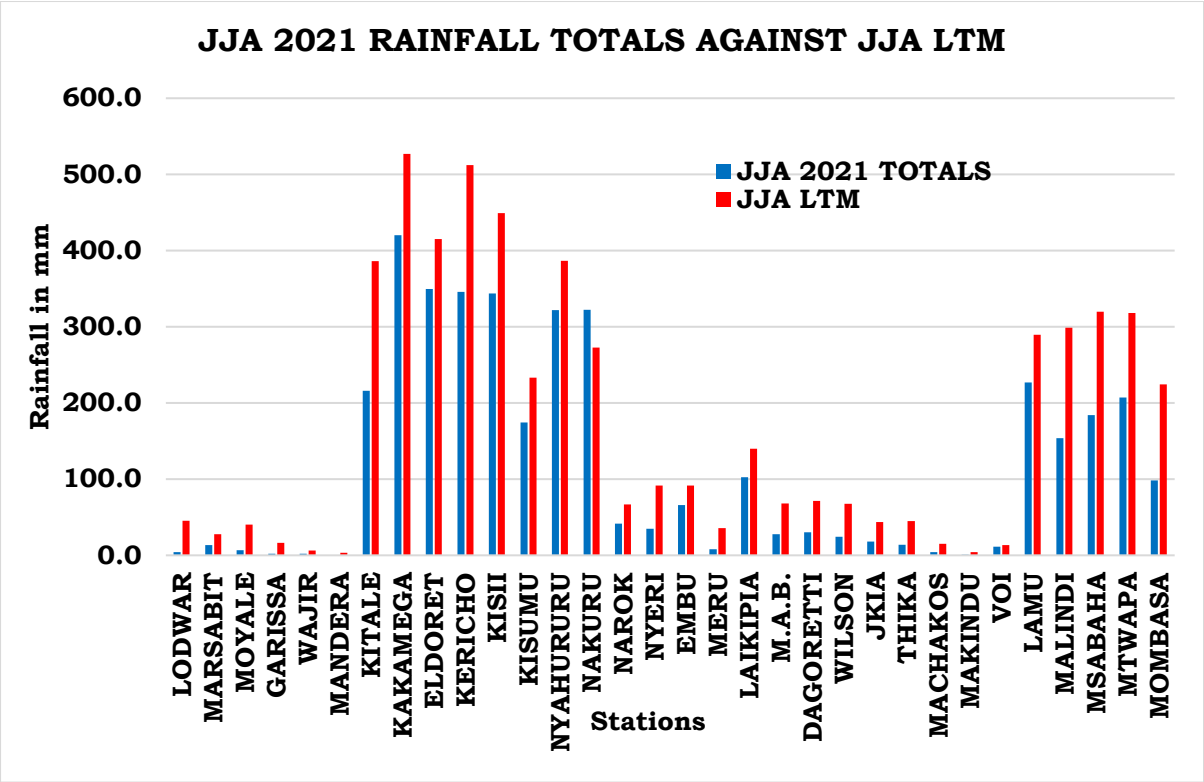

Figure 5b: JJA 2021 Rainfall Totals in comparison to JJA LTMs

Generally sunny and dry weather conditions were recorded in the Northeastern counties and parts of Southeastern lowlands while the Central highlands, including Nairobi County and parts of southeastern lowlands, experienced cool and cloudy conditions. Most stations in these regions recorded less than 50mm of rainfall during the three-month period. Some stations like Meru, Moyale Lodwar, Machakos, Wajir, Garissa and Makindu recorded less than 10mm throughout the period. Mandera station recorded no rainfall at all throughout the season.

6.2.2. June-July-August JJA 2021 Temperature Review

Analysis of the JJA 2021 mean temperatures indicate that temperatures were warmer than average in most stations across the country except in Embu where below normal temperatures were observed. However, the daytime temperatures in the Central highlands and Nairobi area occasionally fell below 18°C and they were cooler than average over most places in July. The **figure 6** below show the JJA 2021 Temperature anomalies.

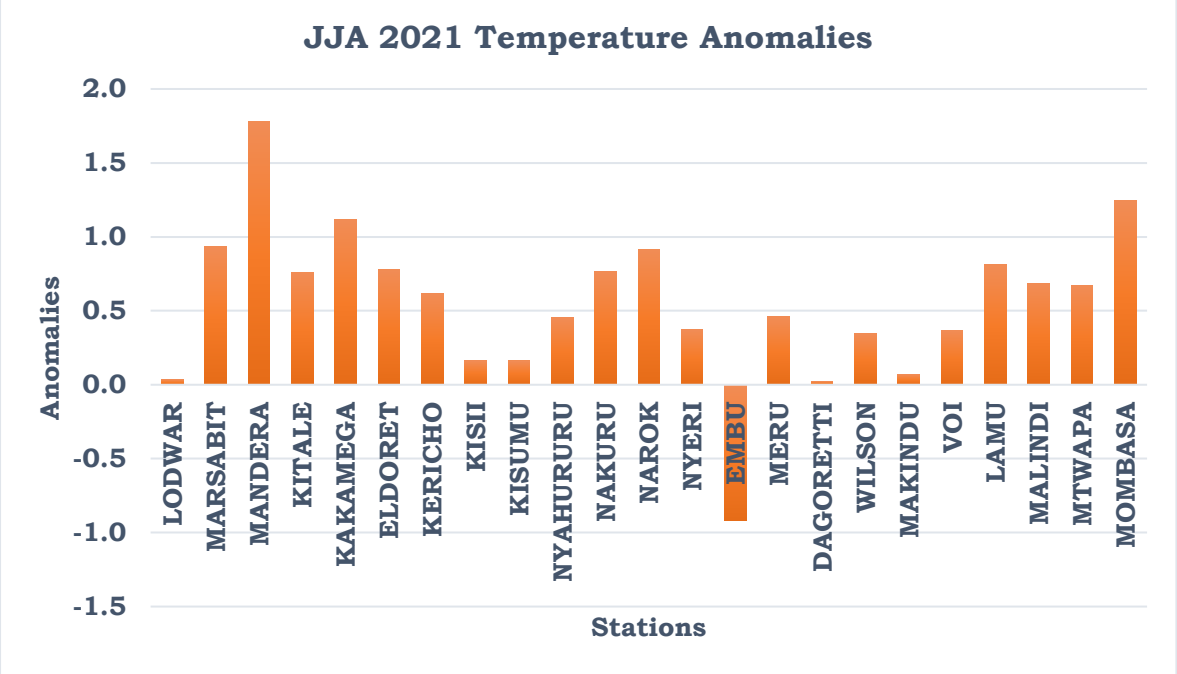

Fig. 6: JJA 2021 Temperature Anomalies

6.1 EXPERIENCED IMPACTS IN THE MAM AND JJA 2021 SEASONS

6.1.1 Agriculture and Food Security Sector

The onset of the season delayed and the rains started end of April and early May. In the MAM season, the long dry spells over the northern sector led to reduced pasture for livestock among the pastoralist communities. The depressed rains had a serious impact on the staple foods such as maize, beans, potatoes and the vegetables in the region. The farmers lost inputs such as fertilizer, labor cost and generally the whole season was poor.

During the season, there were reports of livestock deaths in Mandera, Marsabit and Turkana Counties. There were reports of crop failure in Soy and Moiben constituencies of Uasin-Gishu County in the Highlands west of the Rift valley.

In the JJA season, the prolonged dry conditions over the ASAL regions resulted in insufficient pasture and water for livestock as well as reduced food and water for human consumption. There were cases of crop failure and food shortage in Lamu, Kilifi and Marsabit Counties. There were cases of livestock death in Marsabit, Kilifi and Wajir Counties. In Lamu County over 2000 people faced starvation, over 9000 people were in need of treatment for malnutrition in Marsabit County and more than 200,000 people in Kilifi County had to survive on one meal a day.

6.1.2 Disaster Management Sector

During the **MAM** season, there were landslides in Murang'a County that led to destruction of property. Floods and Flash floods occurred in Western region (Bungoma, Kakamega), Rift Valley region (Bomet, Narok), Eastern region (Kitui, Machakos), Nairobi region, Nyanza region (Homabay, Migori), where 73 deaths were reported, 5 injured, 1 missing, 7,485 Households displaced and 40,995 population affected.

Flash floods were reported in Kibra Nairobi following heavy downpour in May, 2021. Four people were killed while attempting to cross a swollen river.

Kericho and Kakamega counties reported cases of lightning with 1 death and 4 injured. Structural collapse occurred in Kakamega County resulting in 5 deaths and 8 injured. Flooding also affected those within the Lake Victoria basin and few over the Tana River basin. These floods led to displacement of people and destruction of property. Livestock was washed away in Baringo south. Learning was paralysed in Budalangi, Kisumu and Homabay counties as schools were flooded and school property destroyed. Heavy rains caused power lines to fall to the ground in Nakuru near Kabarak University. Hailstones reported in Naivasha and Kisii led to destruction of crops. Drought was reported in Turkana County where over 185,000 people face acute water and food shortage. There is also shortage of water and pasture for livestock. Desert locusts were reported in the Northern Kenya and parts of Rift Valley.

During the **JJA** season, there was conflict over water, pasture and grazing fields between residents of Isiolo and Wajir counties where five people were killed and several others injured. Resource-based conflicts were also reported in Laikipia County. Floods occurred in Budalangi, Busia County where 800 Households were displaced. Strong winds were experienced in Kakamega County. In Narok, Vihiga, Kisii, Nandi, Nairobi, Muranga, Embu, Machakos, Kiambu, Meru and Bomet had swelling of rivers following heavy rains and 23 deaths were reported.

Drought has affected more than 20 ASAL counties where over 2.4 million people in these areas are in dire need of food aid.

Strong winds of more than 25knots were reported over the coast, northeast and parts of the southeastern lowlands. These winds caused structural damage to houses in Kilifi County.

6.1.3 Transport and Public Safety

During the **MAM** season, flooding in Tana River and the Lake Victoria basin led to the destruction of roads and bridges. For instance, sections of Garissa-Hola-Garsen road and Bura-Madogo road were washed away due to heavy rains. In the Lake Victoria basin, the Migori-Homa Bay Road was cut off after the Oria-Riat bridge on river Kuja collapsed. The Bondo-Usenge road was also cut off after Dhogoye bridge was destroyed by heavy rains. There was paralysis of transport and traffic snarl-up in Nairobi following heavy rains and flooding.

During the **JJA** season, fog occurrence was reported along the Nairobi-Nakuru highway, over several counties in the Highlands East of the Rift Valley and over a few counties in Northeast. Meru, Marsabit and Nyeri stations reported between five to eight consecutive hours of fog on diverse dates in the months of June, July and August.

6.1.4 Water Resources Management and the Energy Sectors

During the **MAM** season, some rivers including the Mara, Tana and Ewaso

Nyiro and several streams across the country had reduced water flow due to depressed rainfall experienced in the catchment areas. There was disruption of water supply services especially in the ASALs e.g., about 70-90% of water pans have dried up in Isiolo, Wajir & pastoral areas of Garissa & Tana River. Below normal inflows recorded in the hydropower plants in the eastern part of Kenya while Near normal inflows recorded in the hydropower plants in the western part of Kenya. Turkwel dam levels remained high.
There was power outage in sections of Nairobi as the Nairobi west substation was flooded after the Nairobi Dam burst its banks following heavy rains in the city.

During the **JJA** season, the near average to below average rainfall received in June, July and August over the Lake Victoria Basin led to a drop in Lake levels. Reservoir water levels have been falling steadily as a result of depressed rainfall over the catchment areas leading to reduced hydro power production.

6.1.5 Environment

During the **MAM** season, the occasional rainfall in the Lake Victoria basin, Highlands West of the Rift Valley and Highlands East of the Rift Valley provided sufficient moisture to sustain vegetation growth.

During the **JJA** season, the Ministry of Environment and Forestry took advantage of the forecast to plant and grow trees in Elgeyo Marakwet County and other parts of the country.

The prolonged drought in ASAL areas led to reduction of water and forage for wildlife, degradation of habitats, wildlife migration and human wildlife conflicts. There were increased number of fire incidents in Tsavo West and Chyulu conservation areas.

The strong winds reported over the Coast, Northeast and parts of the southeastern lowlands limited air security patrols in protected areas.

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

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