



REPUBLIC OF KENYA
MINISTRY OF ENVIRONMENT AND FORESTRY
KENYA METEOROLOGICAL DEPARTMENT
Dagoretti Corner, Ngong Road, P. O. Box 30259, 00100 GPO, Nairobi, Kenya
Telephone: 254 (0) 20 3867880-7, 0724 255 153/4
E-mail: director@meteo.go.ke, info@meteo.go.ke
Website: <http://www.meteo.go.ke>
Twitter: [@MeteoKenya](https://twitter.com/MeteoKenya)

**THE WEATHER OUTLOOK FOR THE OCTOBER-NOVEMBER-DECEMBER (OND) 2020
SHORT-RAINS SEASON; SEPTEMBER 2020 WEATHER OUTLOOK; AND REVIEW OF THE
JUNE-JULY-AUGUST (JJA) 2020 RAINFALL SEASON**

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1. HIGHLIGHTS

1.1 Forecast for the October-November-December (OND) 2020 “Short Rains” Season.

The Climate Outlook for the October-November-December (OND) 2020 “Short Rains” season indicates that several parts of the country are likely to experience depressed rainfall while Western Kenya is likely to receive near-average to below-average rainfall. This will be driven by near 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 the central to eastern Pacific Ocean which implies that mild La-Nina conditions are present. The distribution of the rainfall in time and space is expected to be generally poor over several areas especially during the 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 in the country as the cessation begins.

1.2 September 2020 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 with a tendency to above 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 and cloudy conditions especially at the beginning of the month. Sunny and dry conditions are however likely to prevail over the Northeastern, Southeastern and the Coastal counties.

1.3 Review of the Rainfall in June-July-August (JJA) 2020

Several parts of the country experienced significant rainfall during June-July-August (JJA) 2020. Near-average to Above Average rainfall was recorded over several parts of western Kenya while occasional cool and cloudy conditions were observed over the Central Highlands and Nairobi. The JJA temperatures were generally warmer than average over much of the country.

2. FORECAST FOR OCTOBER-NOVEMBER-DECEMBER (OND) 2020 “SHORT-RAINS” SEASON

The “Short Rains” October-November-December (OND) 2020 season constitutes an important rainfall season in Kenya more so in the Central and South-eastern regions of the country.

During OND 2020, it is expected that several parts of Kenya will experience depressed (below average) rainfall that will be poorly distributed both in time and space. Despite the depressed rains, isolated incidences of storms are likely, even in the areas expected to receive depressed rains which may cause flash floods.

Water levels in the Rift Valley lakes are also likely to remain high and may cause flooding in the surrounding areas because the catchments feeding the lakes have continued receive above normal rainfall from the 2019 OND rainfall season to date.

The areas likely to receive **near-average with a tendency to below-average rainfall** include:

Western Counties (Busia, Vihiga, Kakamega, Bungoma); Nyanza Counties (Kisumu, Siaya, Homa Bay, Nyamira, parts of Migori, Kisii); Counties in the Southern, Central and North Rift Valley (Kericho, West Pokot, Nandi, Bomet, Uasin Gishu, Trans Nzoia, Baringo, Elgeyo Marakwet, parts of Nakuru, parts of Narok, parts of Laikipia); Counties in North Western Kenya (Turkana, parts of Samburu). These areas are shown in light blue (cyan) colour in **Figure 1**.

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

Counties in Central Kenya (Nyandarua, Kirinyaga, Nyeri, Murang’a, Kiambu), Nairobi County; Counties in the Eastern Region (Meru, Embu, Tharaka Nithi); some counties in southeastern Kenya (Machakos, Makueni and Kitui) and North Eastern Counties (Mandera, Wajir, Garissa, Marsabit, Isiolo); Counties in the Coast Region (Mombasa, Kilifi, Kwale, Lamu and Tana River); counties in the South, North and Central Rift Valley (Kajiado, parts of Narok, parts of Laikipia, parts of Samburu and parts of Nakuru), and in south Nyanza (parts of Migori); These areas are shown in yellow colour in **Figure 1**.

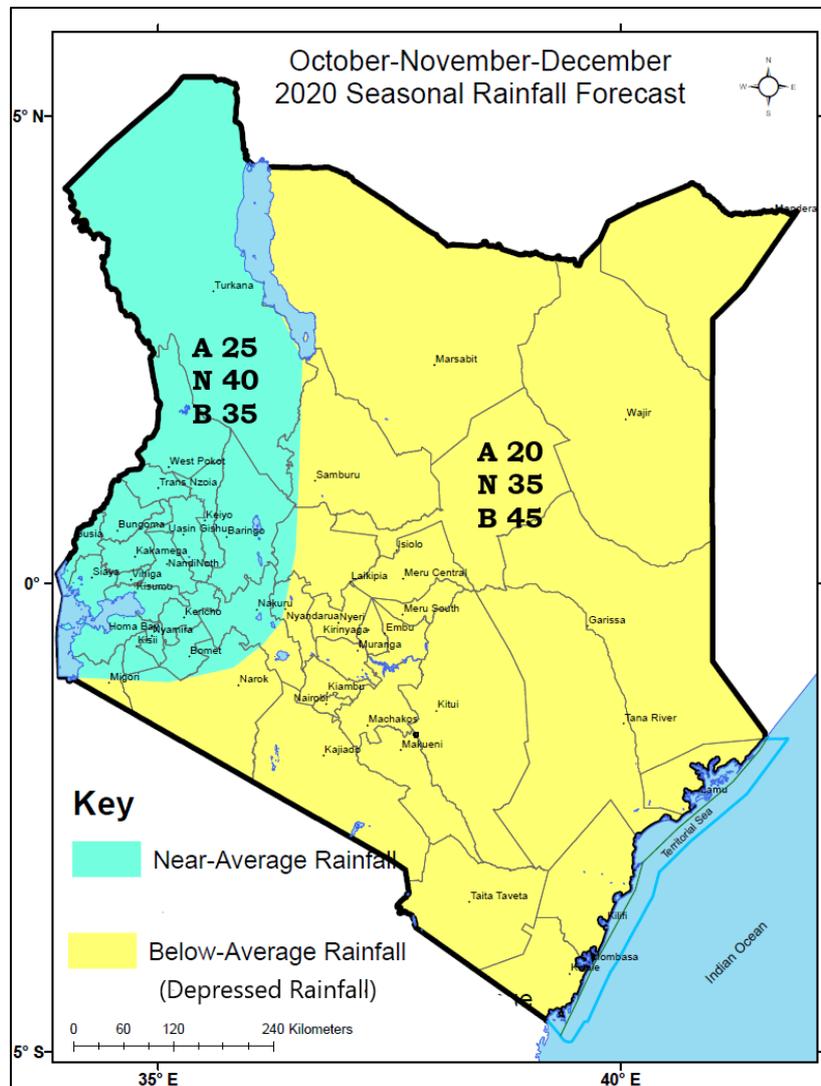


Figure 1: OND 2020 Rainfall Forecast

The specific outlook for October-November-December (OND) 2020 is as follows:

- 1.1. The Lake Victoria Basin, Highlands West of the Rift Valley and Central Rift Valley and some counties in 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, parts of 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 near-average with a tendency to below-average (near to below the long-term average amounts of rainfall) for the season.
- 1.2. Counties in the south of Rift valley and south Nyanza that border Tanzania:** (parts of Narok, Kajiado and Migori): These counties are likely to experience occasional showers and thunderstorms throughout the season. The expected rainfall amounts are however likely to be below the long-term average amounts for the season

1.3. Northwestern Counties especially the areas bordering Uganda and South Sudan (Turkana, West Pokot, parts of Samburu) are also likely to receive occasional showers and thunderstorms. The expected rainfall is also likely to be near-average with a tendency to below-average (near to below the long-term average amounts of rainfall) for the season.

1.4. 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 amounts are likely to be below the long-term average amounts for the season.

1.5. South-eastern Lowlands Counties (Kitui, Makueni, Machakos Taita Taveta, Kajiado): These counties are expected to experience occasional rainfall during the season. The expected rainfall amounts are likely to be below the long-term average amounts for the season.

1.6. North-Eastern Counties (Mandera, Marsabit, Wajir, Garissa and Isiolo): These areas are expected to experience occasional rainfall during the season. The expected rainfall amounts are likely to be below the long-term average amounts for the season.

1.7. The Coastal Counties (Mombasa, Tana River, Kilifi, Lamu and Kwale): These counties are expected to receive occasional rainfall during the season. The expected rainfall amounts are likely to be below the long-term average amounts for the season.

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

(a) DISTRIBUTION

The OND 2020 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 cessation begins. Several parts of western Kenya will continue experiencing rainfall from the month of September.

(b) ONSET AND CESSATION DATES

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

Table 1: Expected Onset and Cessation for the OND 2020 Rains

Counties	ONSET	CESSATION
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, 2020.	3 rd to 4 th week of December, 2020.
Counties in Central Kenya (Kirinyaga, Nyeri, Murang'a, Nyandarua, Kiambu, Meru, Embu, Tharaka Nithi); Nairobi;	3 rd to 4 th week of October, 2020.	3 rd to 4 th week of December, 2020.
Counties in North Western (Turkana, Samburu)	3 rd to 4 th week of October, 2020.	4 th week of November to 1 st week of December, 2020.
Coastal Strip (Kwale, Mombasa, Kilifi, Lamu, Coastal part of Tana River)	4 th week of October to 1 st week of November, 2020.	1 st to 2 nd week of December, 2020.
South Rift Valley: (Narok)	4 th week of October to 1 st week of November, 2020.	4 th week of December to 1 st week of January 2021
Northeastern Counties (Mandera, Wajir, Garissa, Marsabit, Isiolo)	4 th week of October to 1 st week of November, 2020.	4 th week of November to 1 st week of December, 2020.
Southern Kenya and parts of the Coast Region: The southeastern lowlands (Taita Taveta, Makueni, Kitui, Tana River, Machakos & Kajiado)	4 th week of October to 1 st week of November, 2020.	3 rd to 4 th week of December 2020.

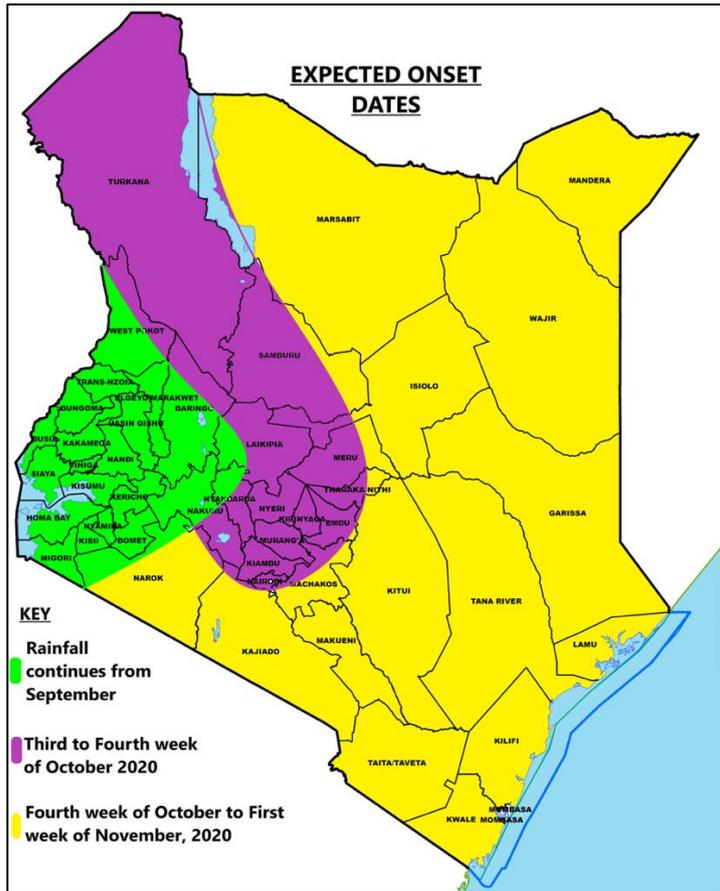


Figure 2: Expected Onset Dates

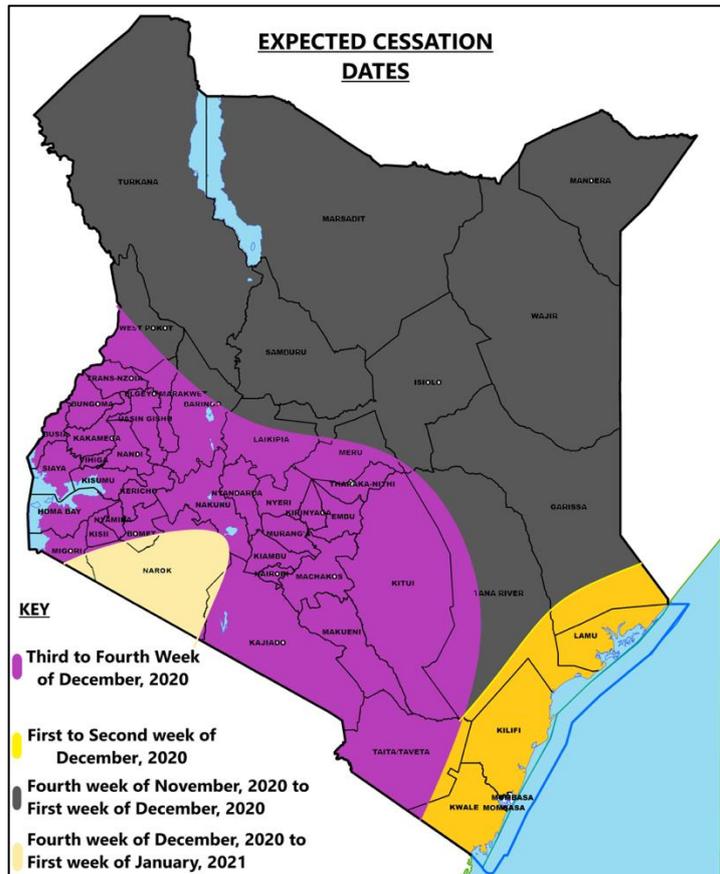


Figure 3: Expected Cessation Dates

4. POTENTIAL IMPACTS OF THE OND 2020 RAINS

In view of the forecasted 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

In the agricultural counties of Western Kenya where near-average to below average rainfall performance is expected, the farming communities should take advantage of the expected rains and maximize on crop yield through appropriate land-use management. Farmers are advised to liaise with the State Department of Agriculture for advice on the appropriate seeds to plant. In areas where the rainfall is expected to be depressed, farmers are also advised to liaise with the State Department of Agriculture to get advice on appropriate crops that are drought resistant in order to make the best use of the anticipated poor rainfall performance.

The poor (depressed) rainfall performance expected in some of the Arid and Semi-Arid Lands (ASALs) is likely to impact negatively on the availability of foliage and pasture in the pastoral areas of Northeastern, Northwestern and Southeastern Kenya. The livestock sector is also expected to have adverse impacts from pests and diseases associated with drought. It is recommended to farmers in pastoral areas, to consider destocking of their livestock in order to minimize losses and liaise with the agriculture and livestock departments for livestock vaccinations and pesticides due expected diseases and pest infestations.

b. Environment and Natural Resources Sectors

In areas expected to have good rainfall performance, the Ministry of Environment 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. People should also be encouraged to plant more indigenous trees in order to reduce soil erosion and increase forest cover in line with the Presidential directive to increase forest cover by 10% by the year 2022.

c. Disaster Management Sector

In the ASALs where depressed rainfall is expected, water scarcity and lack of pasture for domestic use and livestock are likely to be exacerbated due to the dry conditions experienced in the months of July and August 2020 and the dry conditions expected in September 2020. Human-wildlife and inter-community conflicts over the limited resources are likely to escalate, in these areas.

In western Kenya where near-average to below-average rainfall is expected, lightning strikes are highly probable, especially in Kisii, Kisumu, Nandi, Kakamega and Bungoma (Mt. Elgon areas) counties. As mentioned earlier some parts of the country have been experiencing continuous rainfall from the 3rd quarter to 2019 to date. This means that some rivers and lakes may continue to experience rising water levels.

Cases of flooding, landslides/mudslides in Western Kenya as well as Central Rift Valley are also highly probable. Some infrastructure like buildings and bridges may collapse and some roads may be cut off due to high rainfall amounts. The Ministry of Interior and Coordination of National Government and other humanitarian institutions are therefore advised to put in place measures to avert possible negative impacts that may arise including loss of lives, livelihoods and property.

d. Health Sector

In areas expected to receive near-average to below-average rainfall, water-borne diseases such as malaria are likely to emerge.

Dry areas are likely to be susceptible to dust storms which may lead to an increase in respiratory tract diseases. Poorly drained areas may cause pools of stagnant water which may become conducive breeding areas for disease-causing pathogens. Water scarcity may lead to water related and water washed diseases e.g. cholera, typhoid, scabies, trachoma.

e. Transport and Public Safety Sector

The expected rainfall may cause slippery roads in some parts of the country, resulting in conditions that may cause road accidents. Flash floods may cause transport challenges especially during rush hour and more so in areas where there is poor drainage.

f. Water and Energy Sector

The major river catchment areas for the country's hydroelectric power generating dams are forecast to receive near-average to below-average rainfall. This means that surface water run-offs may register maintained inflows into rivers Sondu Miriu, Turkwel, Tana and Athi.

However, energy production may be adversely affected by water shortages especially towards the end of the season.

In the water sector, areas where we expect near to below average rainfall water may become contaminated as a result of occasional flooding. Areas likely to experience depressed rainfall may lead to water conflicts among communities.

5. REVIEW OF THE WEATHER DURING JUNE-JULY-AUGUST JJA 2020

Several parts of the country experienced significant rainfall during June-July-August (JJA) 2020. Near-average to above average rainfall was recorded over several parts of Western, Central, Northwest as well as parts of the Coastal region as forecasted in the JJA 2020 forecast. Occasional cool and cloudy conditions were observed over the Central Highlands and Nairobi area during the season. However, Central Kenya received significant rainfall amounts at the beginning of the season. The JJA temperatures were generally warmer than average over much of the country.

Several stations in Western, Central Rift Valley, Lake Basin and the Coastal regions recorded significant amounts of rainfall during the season. The

rainfall was near-average to above-average (enhanced) in several stations as compared to the JJA LTMs. Kitale recorded the highest amount of 723.8mm (187.4 percent) compared of its LTM of 386.2mm. Other stations that recorded above 200mm include Eldoret- 587.1mm, Kakamega – 517.0mm, Nyahururu - 470.0, Kericho – 468.3mm, Kisii -408.0mm, Nakuru – 405.1mm, Msabaha – 394.5mm, Kisumu – 305.7mm, Malindi - 304.6mm and Lamu – 225.4mm. Nyeri, Laikipia, Mombasa, Mtwapa, Dagoretti, Wilson stations recorded between 100 and 200mm while the rest of the stations recorded less than 100mm as seen in **Figure 4**. **Figure 5** shows the JJA 2020 Rainfall Totals (in green 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

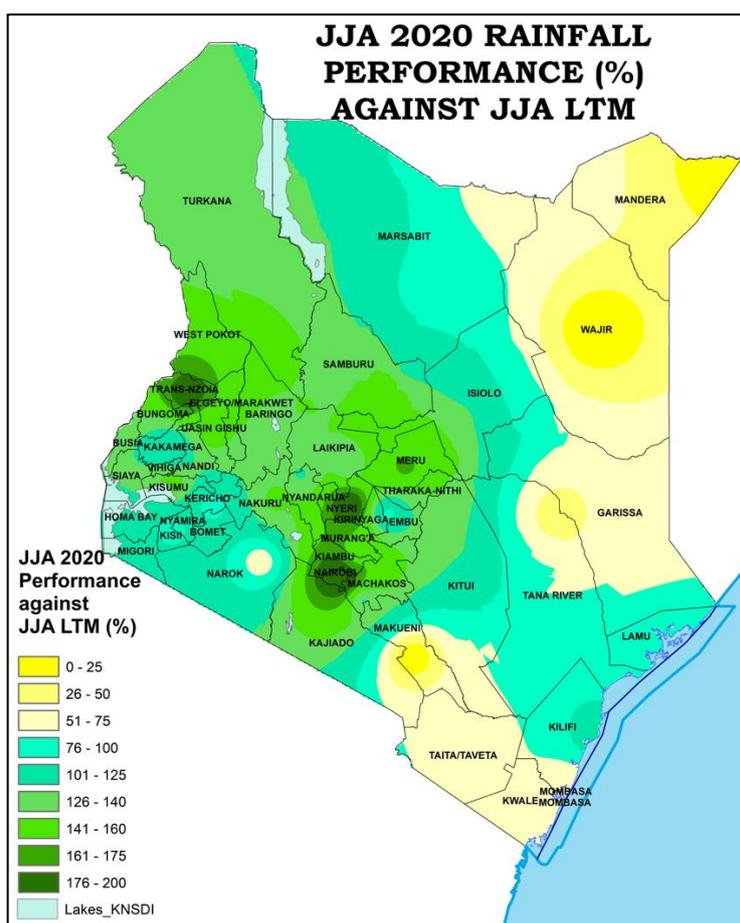


Figure 4: JJA 2020 Rainfall Performance as a Percentage of JJA LTM

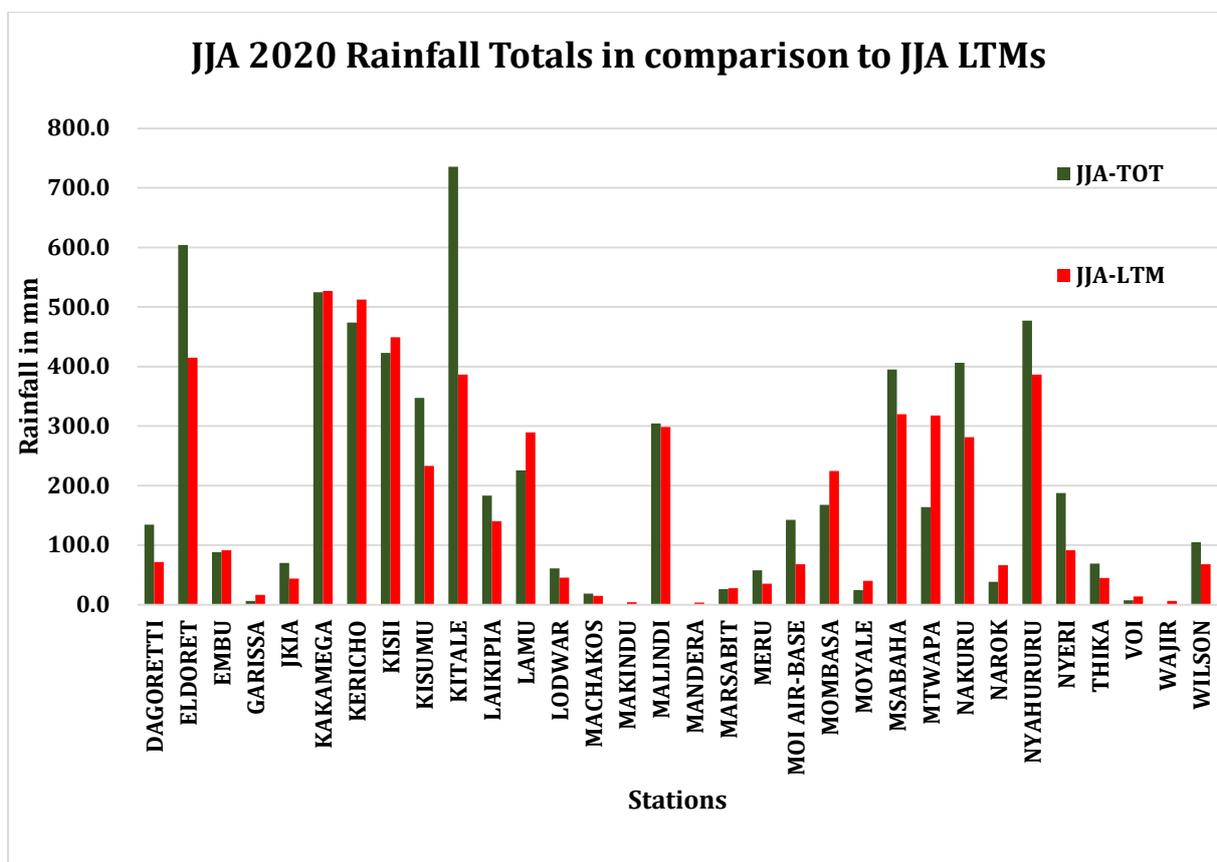


Figure 5: JJA 2020 Rainfall Totals in comparison to JJA LTMs

Generally sunny and dry weather conditions were recorded in the Northeastern, Southeastern and parts of Central Kenya. Most stations in these regions recorded less than 100mm during the three-month period. Some stations like Machakos, Voi, Garissa, Wajir, Makindu and Mandera recorded less than 20mm throughout the period. The lowest seasonal amount of just 0.0mm was recorded at Mandera Meteorological station.

Analysis of the JJA 2020 air temperatures indicate that both the minimum (night-time) and maximum (day-time) temperatures were warmer than average at several stations with generally sunny conditions dominating. However, the daytime temperatures in the Central highlands and Nairobi area occasionally fell below 20°C.

6.1 EXPERIENCED IMPACTS

6.1.1 Agriculture and Food Security Sector

In the pastoral areas of the Rift Valley, availability of pasture for livestock was good. The conditions were also favorable for agricultural crop production especially in the high potential areas.

6.1.2 Disaster Management Sector

Incidences of flooding were reported in: -

- West Pokot on 20th August 2020 due to the rains in Mt. Elgon and Cherangani Hills Catchments. At least 1,000 families were displaced.
- The Lake Naivasha National Park car parking area was flooded on 21st August 2020 after a heavy downpour.

- Tangulbei River in Baringo County burst its banks which led to the death of one person, displacement of several families and the destruction of property and livelihoods
- Floods were reported in Lamu and Tana River counties, while water levels rose in Lake Victoria. These incidents led to the displacement of people and the destruction of property and livelihoods. Flashfloods were also experienced in Nairobi County after a heavy storm on 13th June 2020.
- Strong winds of more than 25 knots persisted over the eastern sector, northwestern as well as the Coastal Strip throughout the period under review.

6.1.3 Transport and Public Safety

- Cold and cloudy conditions persisted in highlands east of the Rift Valley including Nairobi, Central and Southern Rift Valley.
- Fog was reported along the Nairobi-Nakuru highway and most counties in the Highlands East of the Rift Valley. There was a traffic snarl up on 20th July 2020, along the Laikipia road, after a heavy storm, where ice flakes were seen on the ground.
- Following the heavy rains on 24th July 2020, Lake Baringo has been steadily rising and motorists were advised to exercise caution along the highway section between Marigat-Loruk-Chemolingot.
- Meru Meteorological Station reported six hours of fog on 13th June 2020. Nairobi-Nakuru highway railway underpass was flooded and cut off transport on 14th June 2020.

6.1.4 Water Resources Management and the Energy Sectors

The rainfall received in June, July and August, continued to maintain high level of water in the dams, rivers and lakes. Turkwel Dam has reached the highest water level for the first time since its construction.

6.1.5 Environment

The Ministry of Environment took advantage of the forecast to plant and grow 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/advisories issued by this Department as well as Weekly and Monthly County forecasts developed and availed by County Meteorological Offices.



Stella Aura, MBS

DIRECTOR, KENYA METEOROLOGICAL DEPARTMENT