



REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT, NATURAL RESOURCES & REGIONAL
DEVELOPMENT AUTHORITIES

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REVIEW OF RAINFALL DURING THE "LONG RAINS" (MARCH TO MAY) 2016 SEASON AND THE OUTLOOK FOR THE JUNE-JULY-AUGUST (JJA) 2016 PERIOD

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1. HIGHLIGHTS

1.1 PERFORMANCE OF THE MARCH-APRIL-MAY 2016 RAINFALL SEASON

- The March to May 2016 seasonal rainfall has ceased over most parts of the country except the western, Coastal strip, and some parts of Central Rift Valley.
- Most parts of the country experienced near-normal rainfall that was mainly recorded in April and May 2016. A few stations in western Kenya, Nairobi and the Coastal strip recorded above-normal (enhanced) rainfall (more than 125 percent of their seasonal Long-Term Means (LTMs) for March-April-May (MAM)).
- The distribution, both in time and space, was also generally good especially over the western and central regions. The seasonal rainfall onset was, however, quite late over most parts of the country with most areas remaining generally sunny and dry throughout the month of March 2016.

1.2 OUTLOOK FOR JUNE-JULY-AUGUST 2016 PERIOD

The outlook for June-July-August (JJA) 2016 season indicates that:

- The Western highlands, the Lake Victoria Basin, parts of central Rift Valley (Nakuru, Nyahururu) are likely to receive near-normal rainfall with a tendency towards above normal (enhanced rainfall). The Coastal strip is likely to receive near normal rainfall with a tendency to below normal.
- The rest of the country is expected to remain generally dry.
- Most areas in the Central Highlands and Nairobi area are expected to experience cool/cold and cloudy conditions with occasional light rains/drizzles. The day-time temperatures are however likely to be slightly warmer than average.

2. REVIEW OF MARCH-MAY (LONG-RAINS) 2016 SEASONAL RAINFALL

The March-April-May (MAM) 2016 seasonal rainfall has ceased over most parts of the country. An assessment of the rainfall recorded from 1st March to 31st May 2016 indicates that the rainfall was generally good over most parts of the country. Various meteorological stations recorded between 75 and 125 percent of their seasonal Long-Term Means (LTMs) for March to May. A few stations in western and northern Kenya recorded above-normal (more than 125 percent of their seasonal LTMs) rainfall. Several stations in Northeastern, the Coastal Strip and Southeastern Kenya, however, recorded depressed rainfall (less than 75 percent of their seasonal LTMs). The most depressed rainfall of 50 percent was recorded at Garissa meteorological station.

The seasonal rainfall onset was very late over most parts of the country. Indeed the better part of the country remained generally sunny and dry during March 2016. Much of the rainfall was recorded during the second half of April and throughout the month of May 2016. The rainfall distribution, both in time and space, was generally good over most parts of western and central Kenya in April and May but generally poor elsewhere.

Several rainfall storms (intense rainfall within short time intervals) were recorded during the season. On 9th April 2016, for example, Moyale station recorded 163.1mm while on 27th April Marsabit station recorded 155.6mm. Other rainfall storms in excess of 80mm recorded during the season include 96.0mm recorded at Dagoretti Corner on 31st March 2016, 108.2mm and 94.7mm at Mtwapa station on 23rd and 13th April respectively, 91.5mm

at Moi Airbase (Eastleigh) on 29th April, 86.3mm at Kisii on 27th April and 84.7mm at Mombasa station on 5th May 2016.

Up to 31st May, Kakamega Meteorological station recorded the highest seasonal rainfall amount of 801.9mm, which was 118% of its seasonal LTM. Other stations that recorded MAM seasonal rainfall totals exceeding 500mm include; Kisii 788.4mm (116%), Kericho 678.3mm (100%), Dagoretti Corner 636.2mm (130%), Marsabit 596.6mm (150%), Wilson Airport 587.6mm (139%), Moi Airbase 563.2mm (143%), Eldoret (Kapsoya) 561.5mm (172%), Embu 547.2mm (97%) and Eldoret Airport 532.5mm (122%). Thika, Kitale, Kisumu, Mtwapa, Mombasa and Nyeri Stations recorded between 400 and 500mm while the rest of the stations recorded less than 400mm as seen in **figure 1**. The lowest amount of 57.2mm (39%) was recorded at Garissa station in Northeastern Kenya.

Stations that recorded below normal rainfall (less than 75% of their MAM LTMs) include Laikipia (72%), Mandera (67%), Makindu (66%), Wajir (64%), Lamu (62%), Meru (62%), Machakos (53%), Malindi (50%), Voi (49%), Msabaha (44%) and Garissa (39%).

3. EXPERIENCED IMPACTS

The good rainfall recorded over much of the country was associated with, among others:

- Good crop performance over the agricultural areas especially in the central and western highlands including the maize-basket areas of Trans Nzoia and Uasin Gishu;
- Good pasture for livestock in the pastoral areas of Narok, Kajiado and other areas within Rift Valley as well as the northern parts of the country; and
- Increase in water levels to full capacity in the Seven-Forks as well as Turkwel and Sondu Miriu hydroelectric power generation dams;

The heavy rainfall recorded in the central highlands including Nairobi, several parts of western Kenya and central Rift Valley, however, resulted into flash floods and landslides that claimed several lives. The situation was worsened by poor drainage in Municipalities like Nairobi where there was huge destruction and loss of property.

4. FORECAST FOR JUNE-JULY-AUGUST 2016

Rainfall is normally concentrated over the western region and the coastal strip during the June-July-August (JJA) season. The rest of the country remains generally dry as seen in **figure 2**.

The climate outlook for June to August 2016 is based on the expected evolution of global Sea Surface Temperature (SST) patterns as well as upper air circulations patterns. The process involves regression of sea surface temperatures (SSTs) anomalies, SST gradients, Quasi-Biennial Oscillations (QBO), Southern Oscillation Index (SOI) and Indian Ocean Dipole (IOD) on the Kenyan rainfall patterns. The expected distribution is based on statistical analysis of past years, whose characteristics were found to exhibit similarities to the current year (analogue years).

The forecast indicates that the Western highlands, the Lake Victoria Basin, parts of central Rift Valley (Nakuru, Nyahururu) are likely to receive near-normal rainfall with a tendency to above normal (enhanced rainfall). The Coastal strip is likely to receive near normal with a tendency to below normal rainfall while the rest of the country is expected to remain generally dry as depicted in **Figure 3**.

Most areas in the Central Highlands and Nairobi area are expected to experience cool and cloudy conditions with occasional drizzles or light rains. The specific outlooks for individual areas are as follows:

The Western Highlands (*Kitale, Kericho, Nandi, Eldoret, Kakamega, Bungoma, Butere/Mumias, Vihiga etd*), **Lake Victoria Basin** (*Kisumu, Nyando, Kisii, Busia*), **parts Central Rift Valley** (*Nakuru, Ol Kalao, Nyahururu*) are likely to receive near-normal rainfall tending to above normal (enhanced) rainfall;

The entire Coastal strip (*Lamu, Malindi, Msabaha, Mombasa, Kilifi, and Mtwapa*) will receive normal to below normal rainfall (depressed rainfall).

The southern parts of Central Rift Valley (Narok, Kajjado) and northwestern regions especially those bordering Uganda/Sudan (*Lokichoggio, Lokitaung etc*) are likely to receive Occasional rainfall (showers and thunderstorms). Sunny and dry weather conditions are, however, likely to prevail for most of the season.

The Central Highlands (Kiambu, Nyeri, Embu, Meru, Murang'a); Nairobi Area (Dagoretti, Kabete, Wilson, Jomo Kenyatta International Airport, Eastleigh etc); are likely to experience cool and cloudy conditions with occasional light rains/drizzles. Occasional prolonged hours of overcast skies (cloudy conditions) resulting to cold and chilly conditions are expected. The daytime temperatures are, however, likely to be slightly warmer than average during the period. A few days may turn out to be extremely cold with temperatures falling below 18°C in some areas.

Most parts of Northeastern Kenya (Wajir, Mandera, Garissa, Moyale, Marsabit, Isiolo, Garbatulla) and Southeastern lowlands (Machakos, Makindu, Kitui, Mwingi, Kibwezi, Voi, Taveta) are expected to remain generally sunny and dry throughout the period. The southeastern regions bordering the central districts (Machakos area) are likely to experience occasional cool and cloudy conditions with light rains.

5. POTENTIAL IMPACTS EXPECTED

The following are the expected impacts during the coming season:

5.1 Agriculture and Food Security Sector

The expected enhanced rainfall in western Kenya will lead to good crop performance and agricultural production. The cloudy and drizzly conditions in central highlands are also favorable for good crop performance.

Poor harvest is likely to characterize most parts of the southeastern lowlands where the MAM rainfall performed poorly and generally dry weather conditions are expected in June-July-August period.

5.2 Disaster Management Sector

In the Arid and Semi-Arid Lands (ASALs), problems related to water scarcity and lack of pasture for livestock are likely to start emerging as the pasture and water gradually deteriorate due to the expected sunny and dry conditions in June-July-August. Close monitoring of the evolving conditions is necessary to avert any incidents. Flooding in the western parts of the country may be expected and precautions need to be instituted.

5.3 Health Sector

In areas such as Nairobi, Central highlands, Central Rift Valley and parts of the highlands west of the Rift Valley, cases of respiratory diseases like asthma, pneumonia and common colds (flu) are expected to be on the increase due to the expected cool/cold conditions. The general public (especially the young and elderly members of society) is advised to adopt warm dress code to avoid contracting such diseases.

In western and Nyanza, cases of Malaria may increase as a result of the forecasted enhanced rainfall coupled with the already very wet conditions in the region. The health authorities should therefore be on the lookout to facilitate supply of drugs necessary to combat these diseases.

ADVISORY: *During chilly days, the public is advised not to be lighting jikos in poorly ventilated houses. Burning charcoal produces Carbon Monoxide gas that is lethal when inhaled.*

5.4 Transport and Public Safety

The wet conditions expected over Western Kenya and some parts of Central Rift Valley may lead to transport problems, especially in areas where the roads become impassable when it rains. Foggy conditions expected along the Nairobi-Naivasha road may lead to poor visibility, a situation that poses danger to motorists and pedestrians, especially along the Kikuyu-Kinungi stretch. All should, therefore, take utmost care to minimize accidents that may result from such weather conditions.

Landing at Jomo Kenyatta International Airport (JKIA) may occasionally be made impossible by thick fog and associated very poor visibility leading to diversion of aircrafts to other airports.

5.5 Water Resources Management and the Energy Sectors

The good performance of the "Long Rains" March-May 2016 led to increased water levels in hydro-electric

power generating dams. The levels are likely to be maintained in the coming three months as a result of the expected cloudy conditions and low evaporation rates in dams.

The water capacity for domestic use is also expected to remain good in most municipalities. It is however, likely to deteriorate in the coming three months over the ASALs areas due to the expected generally sunny and dry weather conditions.

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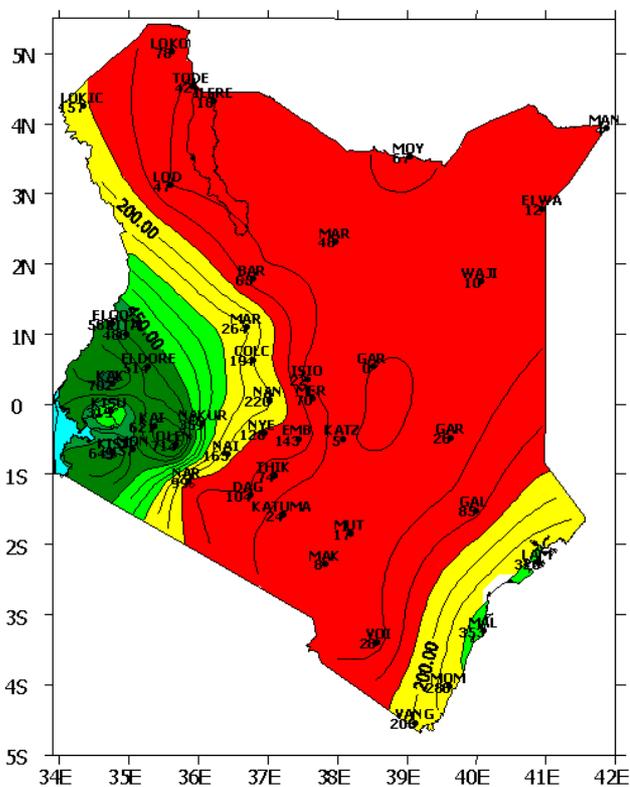
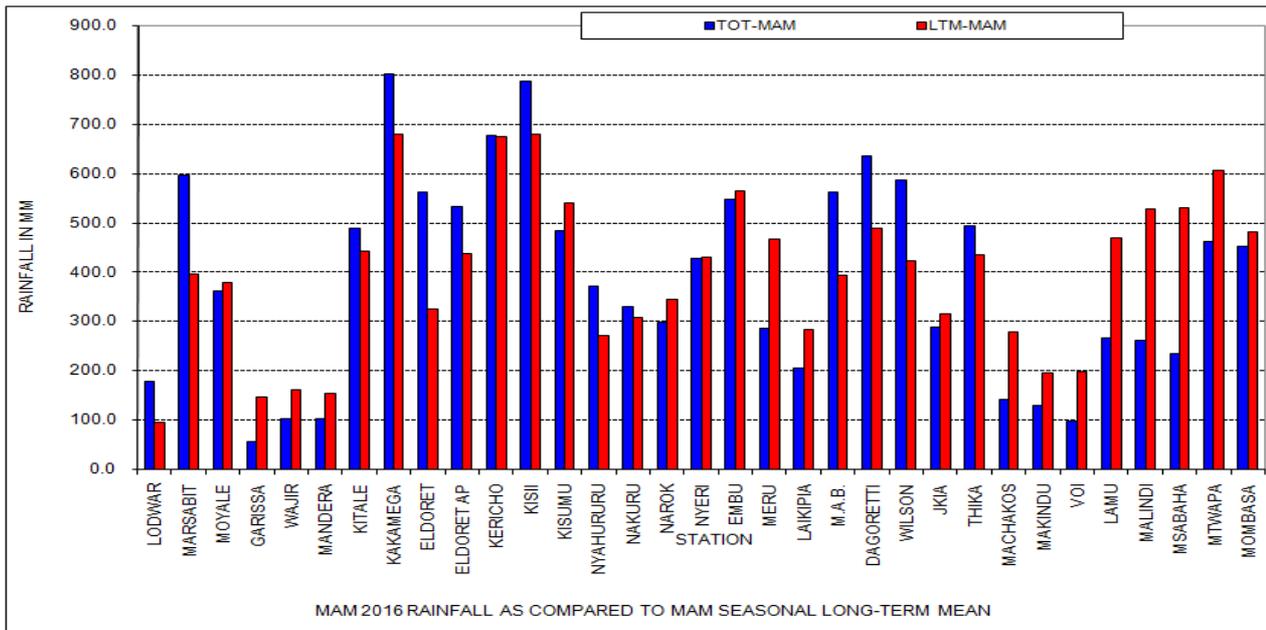


Figure 2: Normal JJA Rainfall

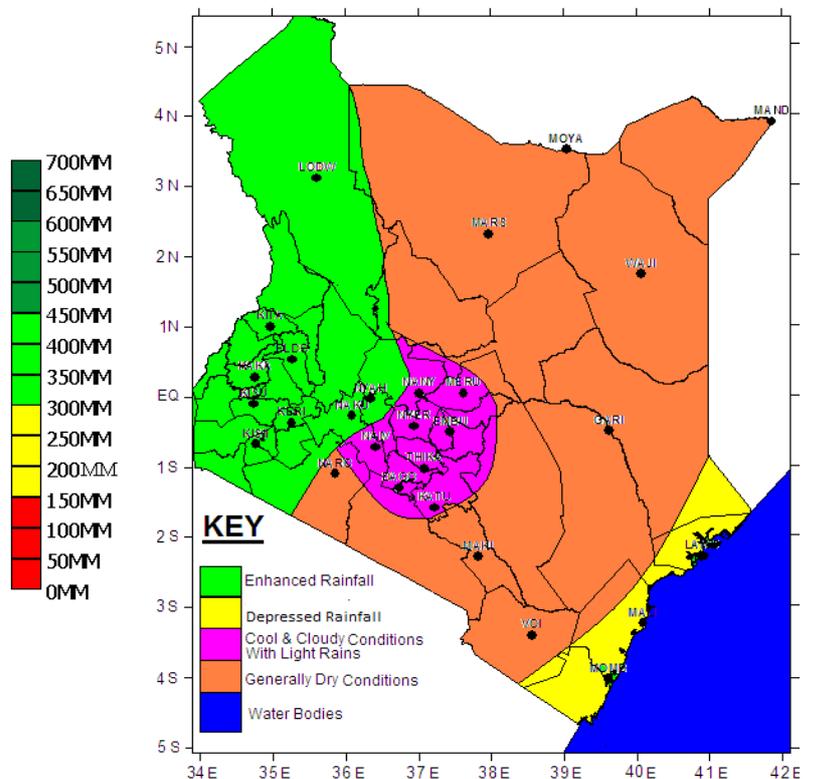


Figure 3: JJA 2016 Rainfall Outlook