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PRESS RELEASE

REVIEW OF WEATHER DURING THE OCTOBER-DECEMBER 2015 “SHORT RAINS” SEASON, JANUARY-FEBRUARY 2016 AND THE OUTLOOK FOR THE MARCH-APRIL-MAY 2016 “LONG-RAINS” SEASON

1. HIGHLIGHTS

Depressed rainfall is expected over most parts of the country especially the eastern sector during March-May 2016 “Long-Rains” Season. However, rainfall over most parts of western, central and some northern (Moyale, Marsabit etc) counties is likely to be near-average while the Coastal strip is likely to experience slightly enhanced rainfall.

Most of the eastern sector of the country is likely to remain generally dry during the month of March. Much of the seasonal rainfall is likely to be recorded in April. The seasonal rainfall onset is expected during the second to third week of March over most parts of western Kenya. The better part of the eastern sector, especially Northeastern Kenya is likely to experience the onset during the first to second week of April.

Highly enhanced rainfall was recorded over most parts of the country during October-November-December 2015 “short-rains” season. The enhanced rainfall was associated with severe flooding, landslides/mudslides and loss of lives and property in various parts of the country. Makindu and Garissa were the only stations in the entire country that experienced depressed rainfall (less than 75 percent of their seasonal Long-Term Means (LTMs)).

The January-February 2016 period was generally sunny and dry over most parts of the country. However, several parts of Western, Central Rift Valley and Central Highlands including Nairobi recorded substantial amounts of rainfall especially in February. This rainfall led to flash floods in some parts of Nairobi and Kajiado Counties. Most parts of the country recorded higher than average daytime temperatures during the two months period.

2. WEATHER REVIEW

2.1 OCTOBER-NOVEMBER-DECEMBER (OND) 2015 “SHORT RAINS” SEASON

Most parts of the country experienced heavy and continuous rainfall during the October-December 2015 “short-rains” season. The rainfall was especially heavy over the western and central regions as well as several parts of Northeastern, Southeastern and the Coastal strip of Kenya. This rainfall resulted into severe flooding, landslides/mudslides and loss of lives and property as well as destruction of infrastructure. The areas that were highly affected included Counties in the Western, Rift Valley and Northeastern Kenya.

Most meteorological stations recorded rainfall that was well above 125 percent of their seasonal Long Term Mean (LTM). Eldoret station, for example, recorded more than twice (242 percent) the

amount normally recorded at the station during the OND season. Other stations that recorded more than 200 percent include Eldoret Airport, Narok and Nyahururu. Detailed analysis indicates that the rainfall amounts recorded in some parts of the country were comparable to the amounts that were recorded during the El Niño-driven rainfall of OND 1997. Indeed, the rainfall received at Kitale, Kisii, Kakamega and Nyahururu stations exceeded that recorded during OND of 1997.

Elsewhere, Makindu in Southeastern Kenya and Garissa in Northeastern Kenya were the only stations in the entire country that experienced depressed rainfall (less than 75 percent of their OND LTMs).

The rainfall distribution both in time and space was generally good in most areas. The rainfall was characterized by heavy storms especially during the peak month of November. The heaviest storm amounting to 115.9mm was recorded at Kandongu in Kirinyaga County on 10th November. Several other stations including Kangema, Iyego, Muriranja and Gitugi all in Murang'a, Meru, Kakamega and Kakamega Hill School in Kakamega County, Voi in Taita-Taveta County, Kerugoya in Kirinyaga County, Kericho, Embu, Mtwapa in Kilifi County and Kabete in Kiambu County recorded rainfall storms exceeding 70mm during the season.

In terms of seasonal totals, Kisii station recorded the highest seasonal rainfall total of 837.3mm (155%) as compared to its seasonal LTM of 538.7mm. Meru, Kericho, Embu, Kakamega, Thika and Kisumu stations recorded 775.2mm (113%), 714.7mm (177%), 678.9mm (128%), 638.0mm (161%), 612.6mm (182%) and 536.6mm (152%) respectively.

Figure 1a shows the rainfall amounts recorded during the season (**blue bars**) compared with the LTMs (**red bars**). **Figure 1b** depicts the spatial distribution of the seasonal rainfall performance as a percentage of the LTM.

2.2 OBSERVED CONDITIONS DURING JANUARY-FEBRUARY 2016

Generally sunny and dry weather conditions prevailed over most parts of the country during the two months of January and February 2016. Several parts of Western Kenya, Central Rift Valley and Central Highlands including Nairobi, however, recorded substantial amounts of rainfall that caused flash floods in parts of Nairobi and Kajiado Counties. Ngong station, for example, recorded 60.2mm of rainfall on 19th January and 85.0mm on 10th February. Other rainfall storms exceeding 40mm recorded during the period include 61.4mm at Kabete in Kiambu County on 11th February, 55.6mm at Tuthu in Murang'a County on 10th February, 54.5mm at Laikipia Airbase on 17th January, 51.4mm at Makindu on 8th February, 48.4mm at Kandongu in Kirinyaga County on 9th February, 47.1mm at Thika on 10th February, 46.9mm at Kisumu on 18th January and 46.8mm at Moi Airbase (Eastleigh) on 11th February. Several other stations such as Jomo Kenyatta International Airport, Kisii, Dagoretti Corner and Kericho recorded daily rainfall amounts exceeding 30mm.

In terms of temperatures, most parts of the country recorded higher than average daytime temperatures during the two months. In January, Moyale station, for example, recorded an average maximum temperature that was 2.0°C above the long-term average for January while in February, the same station recorded average maximum temperatures 2.3°C above the long-term average for the month.

3. EXPERIENCED IMPACTS

The enhanced rainfall during the OND 2015 season resulted into various positive impacts such as:

- Improved agricultural activities especially in central highlands and southeastern districts.
- Significant improvement of pastures for livestock over most parts of central Rift Valley, Northeastern and Northwestern Kenya.
- Significant increase of water levels in the Seven Forks hydroelectric power generation dams due to the heavy rains in the catchment areas.
- Increased food security in various parts of the country.
- An increase in water resources for domestic and industrial in most parts of the country.

The El Niño-driven October-November-December 2015 seasonal rainfall was associated with severe flooding, landslides/mudslides and loss of life and property as well as destruction of infrastructure in western, central Rift Valley and parts of Central Kenya, Northeastern Kenya and Southeastern Kenya. Several people lost their lives as property worth millions of shillings was destroyed. Roads in various parts of the country were damaged and rendered impassable. This greatly interfered with road transportation in these areas. There was also an outbreak of water-borne diseases in isolated areas. Several people were displaced following severe flooding especially in some parts of western Kenya.

4. FORECAST FOR MARCH-APRIL-MAY (MAM) 2016 “LONG-RAINS” SEASON

March to May constitutes a major rainfall season in most parts of Kenya as well as much of equatorial Eastern Africa. **Figure 2** depicts the mean (average) March-April-May seasonal rainfall. The figure shows that the highest rainfall amounts of over 300mm are recorded over Western, Central, Coastal strip and parts of northern Kenya (Marsabit, Moyale).

This forecast for March-April-May (MAM) 2016 “Long-Rains” is based on the prevailing and the expected evolution of Sea Surface Temperature Anomalies (SSTAs) over the Pacific, Indian and Atlantic Oceans as well as other Synoptic, Mesoscale and local factors that affect the climate of Kenya. These factors were assessed using various tools including ocean-atmosphere models, statistical models, satellite derived information and expert interpretation. The prevailing slightly cooler than average Sea Surface Temperatures (SSTs) in the Western Equatorial Indian Ocean (adjacent to the East African Coast) coupled with warmer than average SSTs in the eastern Equatorial Indian Ocean (adjacent to Australia), were also considered. This configuration constitutes a negative Indian Ocean Dipole (IOD) that is not favourable for good seasonal rainfall in the country especially over the eastern sector.

The predicted onsets, cessation and distribution of rainfall were derived from statistical analysis of past years which exhibit similar characteristics to the current year.

The forecast indicates that most of the eastern sector of the country is likely to experience generally depressed rainfall. However, the Coastal strip is likely to experience near-normal rainfall with a tendency to above normal (i.e. enhanced rainfall) while the western and central parts of the country and some northern areas (Moyale, Marsabit) are likely to experience near-average rainfall. The specific outlook for March to May 2016 “Long-Rains” Season (depicted in **Figure 4**) is as follows:

- i. **Western Counties** (Busia, Butere, Mumias, Vihiga, Kakamega, Bungoma, etc.); **Nyanza Counties** (Kisumu, Siaya, Migori, Kisii, Kuria, Nyamira, Borabu, Gucha, etc); **Counties in the central and Southern Rift Valley** (Trans Nzoia, Uasin Gishu, Kericho, Nandi, Nakuru, Narok, Kajiado, etc); **Central Counties** (Nyandarua, Nyeri, Kiambu, Murang’a, Kirinyaga, etc.); **Nairobi County** (Westlands, Embakasi, Kasarani, Dagoretti, etc) and **Some Counties in Eastern Province** (Embu, Meru, Marsabit etc); are likely to receive near normal (average) rainfall.
- ii. **Most Counties in Coast Province** (Mombasa, Kwale, Kilifi, Lamu etc) are likely to receive near normal rainfall with a tendency to above normal (i.e. enhanced rainfall).
- iii. **Several Counties in Eastern Province** (Makueni, Isiolo, Machakos, Kitui, etc); **Some Counties in Coast Province** (Tana River, Taita/Taveta, etc); **Most Counties in Northeastern** (Mandera, Garissa, Wajir, etc); are likely to receive near normal rainfall with a tendency towards below normal (i.e. depressed rainfall).
- iv. **Counties in Northern Rift Valley** (Turkana, Pokot, etc) are likely to receive below normal rainfall (i.e. highly depressed rainfall).

5. EXPECTED SEASONAL RAINFALL DISTRIBUTION

The distribution of March to May 2016 “Long-Rains”, both in time and space, is likely to be generally poor over most parts of the country. This will be more so over the eastern sector and in particular the Arid and Semi-Arid Lands (ASALs).

- Highly depressed rainfall is expected over most parts of the country during the month of March 2016. Indeed, sunny and dry weather conditions will be dominant over Northwestern and Northeastern Kenya during the month.
- In April, near average rainfall is expected over the western highlands, Lake Victoria Basin, central Rift Valley, central highlands including Nairobi, the Coastal strip and northern Kenya (Marsabit, Moyale). Most of the Northwestern, Northeastern and Southeastern counties are, however, expected to receive depressed during the month.
- Enhanced rainfall is expected along the Coastal Strip in May. Average rainfall with a slight tendency to above average is likely to occur over the western and central highlands while generally depressed rainfall is expected elsewhere in the country during the month of May 2016.

6. EXPECTED ONSET AND CESSATION DATES

	Region	Onset Dates	Cessation Dates
1	Counties in the Lake Basin and in Highlands West of the Rift Valley	2 nd to 3 rd week of March 2016	Rainfall will continue into June 2016
2	Southern parts of the Rift Valley (Narok, Kajiado etc)	3 rd to 4 th week of March 2016	3 rd to 4 th week of May 2016
3	Central Rift Valley (Nakuru etc)	4 th week of March to 1 st week of April 2016	Rainfall will continue into June 2016
4	Central highlands including Nairobi area	4 th week of March to 1 st week of April 2016	3 rd to 4 th week of May 2016
5	South eastern Counties	4 th week of March to 1 st week of April 2016	2 nd to 3 rd week of May 2016.
6	Coastal Strip	4 th week of March to 1 st week of April 2016	Continues into June 2016
7	North-western Counties	1 st to 2 nd week of April 2016 Generally dry during the month of March	3 rd to 4 th week of May 2016
8	Northern Counties (Marsabit)	1 st to 2 nd week April 2016. Generally dry during the month of March	3 rd to 4 th week of May 2016
9	North-eastern Counties (Wajir, Garissa, Mandera)	1 st to 2 nd week April 2016. Generally dry during the month of March	2 nd to 3 rd week May 2016.

The expected Onset and Cessation dates are also shown spatially in **Figures 3a and 3b** respectively.

7. POTENTIAL IMPACTS

7.1 Agriculture, Food Security and Livestock Sectors

In the agricultural counties of Western, Nyanza, Rift Valley, central highlands and the Coastal strip where average rainfall performance is expected, the farming communities should take advantage of the expected good rains and maximize crop yield through appropriate land-use management. Farmers are advised to liaise with the Ministry of Agriculture. The expected late onset and poor temporal distribution of the seasonal rainfall is, however, likely to delay planting in most agricultural areas.

In other agricultural counties like the Southeastern Kenya where the rainfall is expected to be generally depressed, farmers are also advised to liaise with the Ministry of Agriculture to get advise on the best use of rains by planting appropriate crops that are drought resistant.

The poor rainfall performance expected over the Arid and Semi-arid Lands (ASALs) is likely to impact negatively on the livestock sector. Pastures and browse for animals may not regenerate to optimum levels.

7.2 Disaster Management Sector

Lightning strikes may still occur in western Kenya especially within Kisii and Kakamega counties. Isolated cases of flooding in places like Budalang'i and Kano areas as well as landslides/mudslides in susceptible areas of Western, central and Rift Valley are also likely to occur. The National Disaster Operations Centre is, therefore, advised to be on standby in order to ensure mitigation of any negative impacts that may arise from the forecast conditions.

7.3 Energy Sector

The Tana River, Turkwel and Sondu Miriu catchment areas are expected to experience near-normal rainfall during the coming season (March-May 2016). It is, therefore, expected that the level of water in the Seven Forks and other hydroelectric power generation dams will improve slightly during the season.

7.4 Transport and Public Safety

Flash floods are likely to occur especially in Western, the Coastal strip and some parts of Central Kenya. This may lead to transport problems and more so in areas where the roads become impassable when it rains. Slippery roads may also pose dangers to motorists and pedestrians. All should, therefore, take utmost care during the rainy period.

Light aircrafts are advised to take utmost care in the western routes and avoid flying through deep convective clouds that are associated with severe turbulence and lightning, especially in the afternoon hours.

7.5 Water Resources Management Sector

Water resources for drinking, sanitation and industrial use in the coastal region, western and central municipalities of the country are expected to improve due to the expected good rainfall in the regions. Elsewhere, the resources are likely to diminish due to the expected depressed rainfall especially in Northeastern, Northwestern and Southeastern Kenya. The currently available water should therefore be well managed especially in the marginal areas in order to cater for the animal and human population needs.

7.6 Local Authorities

Municipalities located in western central and the coastal regions, where good rainfall is expected, are advised to open up drainage systems early enough so as to avoid water accumulation due to surface runoff that leads to flash flooding. The Municipalities are also encouraged to develop capacities that cater for an ever-increasing population.

7.7 Health Sector

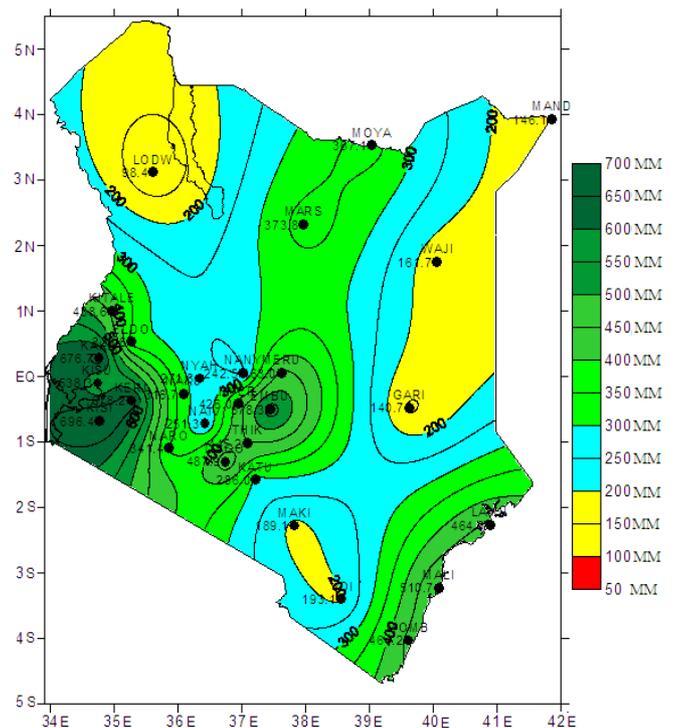
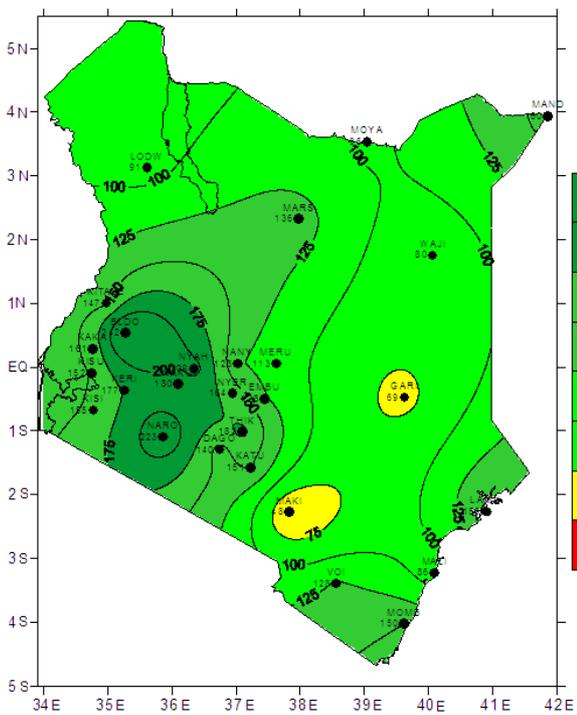
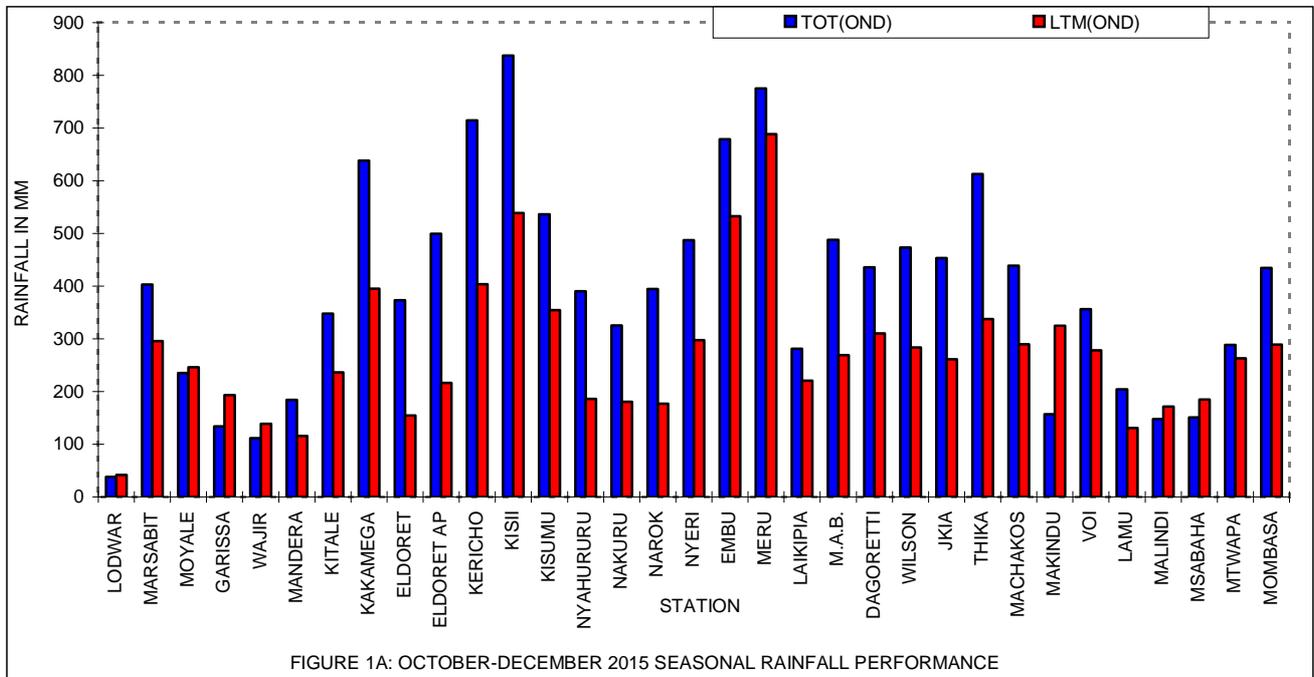
Diseases like cholera may emerge in areas expected to receive depressed rainfall. The problem of malnutrition may be on increase in the same areas. Health authorities are, therefore, expected to be on the look out and equip hospitals with necessary drugs to be able to deal with such situations as they arise.

7.8 Environment

In areas expected to have good rainfall performance, the Ministry of Environment, Water and Natural Resources should encourage residents to put in place soil conservation measures to minimize environmental degradation. People should also be encouraged to plant more indigenous trees in order to increase forest cover.

NB: This outlook should be used with 24 hour forecasts and regular updates issued by this Department.

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WITH THE WORLD METEOROLOGICAL ORGANIZATION**



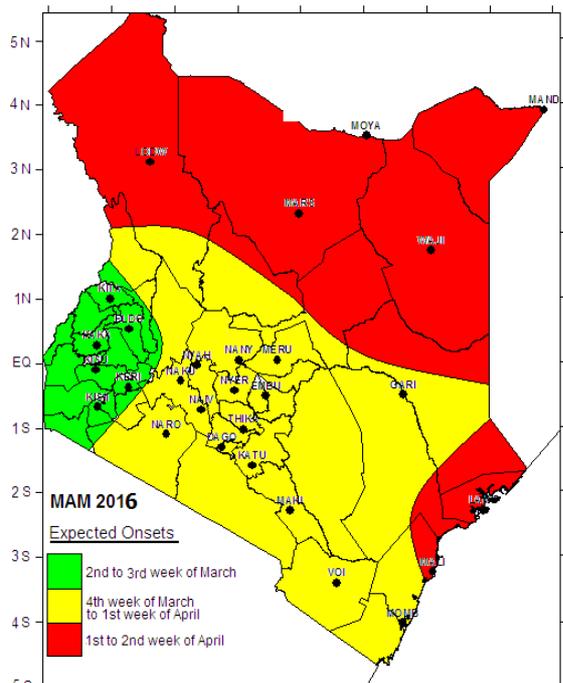


FIG. 3A: EXPECTED ONSET DATES MARCH-MAY 2016 SEASONAL RAINFALL ONSET

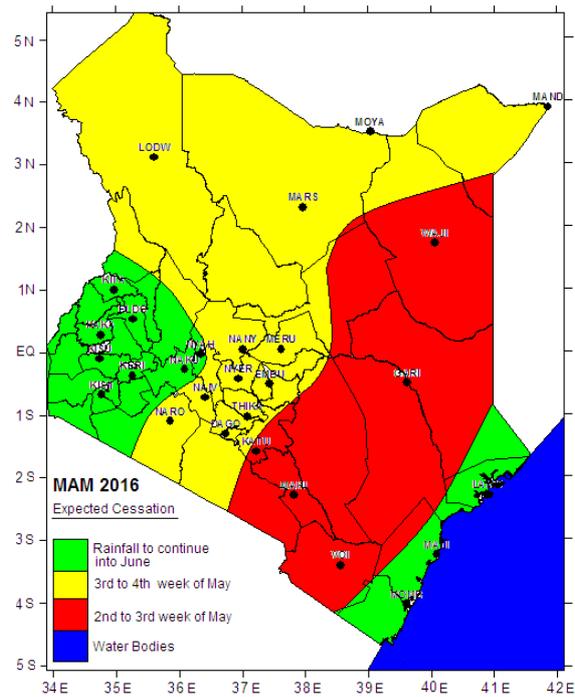


FIG. 3B: EXPECTED CESSATION DATES MARCH-MAY 2016 SEASONAL RAINFALL CESSATION

