REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT, NATURAL RESOURCES & REGIONAL DEVELOPMENT AUTHORITIES

KENYA METEOROLOGICAL DEPARTMENT

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WEATHER REVIEW FOR MARCH AND THE OUTLOOK FOR APRIL 2016

1. HIGHLIGHTS

1.1 Weather Review for March 2016

- *Most parts of the country remained generally sunny and dry during March 2016. This was more so in Northeastern, Southeastern and the Coastal strip where most stations recorded rainfall totals barely exceeding 10mm. Wajir, Mandera and Malindi stations recorded no rainfall at all throughout the month;*
- *A few areas in Western and Northwestern Kenya, however, recorded significant amounts of rainfall especially during the second week of the month;*
- *The late onset of the March-May seasonal rainfall resulted into delayed planting and also delayed germination of the dry-planted seeds over most agricultural areas in the country.*
- *The month of March 2016 was characterized by very high daytime and night-time temperatures that caused discomfort to people in various parts of the country.*

1.2 The forecast for April 2016

April marks the peak month of the "Long Rains" season. The outlook for April 2016 indicates that most parts of the country, especially the eastern sector, are likely to experience generally depressed rainfall. Several areas in Western and Central Highlands, the Coastal strip as well as some few areas in Northern (Moyale, Marsabit) and South-eastern (Machakos) Kenya are, however, likely to experience near-average rainfall that may be slightly enhanced in some areas. The rainfall distribution, both in time and space, is likely to be generally poor especially over most of the eastern sector of the country.

2. REVIEW OF THE WEATHER DURING MARCH 2016

2.1 Rainfall Review

The month of March marks the onset of the March-May "long-rains" season in the country. During March 2016, most parts of the country recorded generally depressed rainfall. Indeed, some areas remained sunny and dry throughout the month. This was quite evident in Northeastern Kenya and the Coastal strip where Wajir, Mandera and Malindi meteorological stations recorded no rainfall at all throughout the month.

A few areas in Western and Northwestern Kenya, however, recorded significant amounts of rainfall during the second week of the month. This was more so over places like Lodwar, Kakamega, Eldoret and Kisumu where daily rainfall amounts exceeding 40mm were recorded. The Eldoret station, for example, recorded 71.4mm on 9th March 2016 while on 8th March, Kisumu station in the Lake Victoria Basin recorded 54.0mm. On 8th March, Eldoret Airport, Lodwar and Kakamega stations recorded 47.3mm, 44.5mm and 40.7mm respectively. Kakamega station also recorded 41.7mm on 22nd March.

In terms of monthly totals, Kakamega station recorded the highest rainfall total amount of 115.6mm (67%), as compared to its Long-Term Mean (LTM) rainfall of 172.0mm. Eldoret (Kapsoya), Eldoret Airport, Kisii, Kisumu, Kericho, Lodwar and Narok stations recorded 104.6mm (142%), 100.0mm (100%), 98.6mm (49%), 88.4mm (53%), 68.0mm (39%), 67.7mm (279%) and 53.7mm (54%) respectively. The rest of the stations recorded less than 50mm as depicted in **figure 1a**.

The spatial distribution of the March 2016 rainfall is shown **figure 1b**.

2.2 Temperature Review

Analysis of daily maximum (daytime) temperatures for the month of March during the last fifteen years indicates that March 2016 happens to be among the hottest month during the fifteen years period. This was more so over Northwestern and Northeastern Kenya. Mandera station, for example, recorded a maximum temperature of 41.5^{o}C on 23rd March 2016. Temperatures exceeding 40^{o}C were also recorded at the Mandera stations on several other occasions. These values ranked among the highest for the month of March since 2001. Lodwar and Wajir stations also recorded daytime temperatures that were above 40^{o}C.

Elsewhere, Wilson Airport in Nairobi, recorded a maximum temperature of 31.7^{o}C on 28th March 2016 (the highest in the last fifteen years) as compared to 30.9^{o}C recorded on 11th March 2012. However, further analysis indicated that the temperatures recorded during March 2012 were significantly higher than those of March 2016.

Along the Coastal region, Mombasa station recorded 34.9^{o}C on 17th March 2016. This temperature was significantly low compared with 36.4^{o}C (highest since 2001) recorded on 15th March 2010.

The minimum nighttime temperatures during the month of March 2016 were also among the highest recorded during the last fifteen years. A good example was at Wilson Airport station where the minimum temperatures recorded on 1st, 3rd, 7th, 8th, 18th, 19th and 20th March 2016 happened to be among the highest 15 values recorded since 2001. Indeed, the values recorded on 18th, 20th, 3rd and 7th March 2016 ranked among the highest five since 2001. Mombasa station also recorded high night temperatures on 12th, 19th and 21st March 2016.

3. SEA SURFACE TEMPERATURE ANOMALY PATTERNS AND THE ITCZ

During this period, warmer than average Sea Surface Temperatures (SSTs) prevailed over most of the Southern Indian Ocean to the east of Madagascar (the Mascarene region) as well as eastern Indian Ocean adjacent to Australia. Neutral SSTs prevailed over the western Equatorial Indian Ocean adjacent to the East African coast. These temperature patterns were not conducive for rainfall over most parts of the country and especially the eastern sector. The zonal arm of the rain-bearing Inter-Tropical Convergence Zone (ITCZ) was mainly over central and southern Tanzania for most of the month. The meridional arm was mainly situated over central Africa, occasionally shifting to some parts of western Kenya. This situation led to generally sunny and dry weather conditions over most parts of the country.

Warm SSTs continued in the eastern and central equatorial Pacific Ocean, an indication that strong El Niño conditions were still present in the Pacific.

4. EXPERIENCED IMPACTS

- Planting in the agricultural areas of the country was delayed as a result of the late onset of the March-April-May seasonal rainfall. The seeds that were dry-planted were yet to germinate in some areas due to lack of sufficient rainfall. The light rainfall received over much of the country was not conducive for crop germination;
- In the pastoral areas of Rift Valley, Northwestern and Northeastern Kenya, pastures for livestock were diminishing as a result of the delayed rainfall.

5. FORECAST FOR APRIL 2016

April marks the peak month of the “Long Rains” season. The rainfall forecast for April 2016 is based on regression of Sea Surface Temperature Anomalies (SSTAs) on Kenyan rainfall, Sea Surface Temperature (SST) gradients and the expected evolution of global SST patterns. The forecast indicates that most of the eastern sector of the country is likely to experience depressed rainfall. Several areas in Western and Central Highlands, the Coastal strip and some areas in Northern Kenya (Marsabit,

Moyale) and Southeastern Kenya (Machakos) are, however, likely to experience slightly enhanced rainfall. The rainfall may occasionally be characterized by heavy storms. The rainfall over most of the eastern sector of the country is also likely to be poorly distributed, both in time and space. ***Figure 2*** shows the expected rainfall performance during April 2015. According to this figure it is expected that:

The Western highlands and the Lake Victoria basin (Kericho, Kakamega, Kisumu, Kisii, Eldoret, Kitale, Elgon, etc), Central Rift Valley (Nakuru, Narok, Kajiado), Central Highlands and Nairobi (Embu, Nyeri, Meru, Murang'a, Kiambu, Dagoretti, etc), a few areas in Southeastern Kenya (**Machakos, Kitui, Kangundo), areas in Northern Kenya** (**Marsabit, Moyale**), and **the Coastal Strip** (**Lamu, Malindi, Msabaha, Kilifi, Mombasa, Mtwapa**) are likely to experience near-average to above-average (slightly enhanced) rainfall;
The Northwestern Kenya (**Lodwar, Lokichoggio, Lokitaung**), **Most of Northeastern Kenya** (**Mandera, Moyale, Wajir, Isiolo, Garbatulla, Garissa etc**), and **Most of Southeastern Kenya (Makindu, Voi, Taita, Taveta etc**) are likely to experience near-average rainfall with a high tendency to below-average (generally depressed rainfall).

6. POTENTIAL IMPACTS

- Crop performance is expected to improve over most agricultural areas of western and central Kenya due to the expected good rainfall performance. Farmers should therefore take advantage of the good rains and apply the appropriate farming methods in order to maximize on the yield.
- Pasture for livestock is likely to improve slightly despite the depressed rainfall expected over most pastoral areas in the country.
- There are chances of some floods occurring in Nyando, Budalangi and Kano plains. Cases of lightening strikes are also probable especially in western Kenya. Contingency measures should therefore be put in place to avoid any loss of live and property.
- The Seven-Folks power generating dams are expected to experience increased inflows due to the expected enhanced rainfall in the catchment areas.
- Water resources in Northeastern Kenya are likely to be limited due to the expected depressed rainfall. 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.

NB: This forecast should be used in conjunction with regular updates issued by this Department.

Mr. J. G. Kongoti
DIRECTOR OF METEOROLOGICAL SERVICES & PERMANENT REPRESENTATIVE OF KENYA WITH WMO

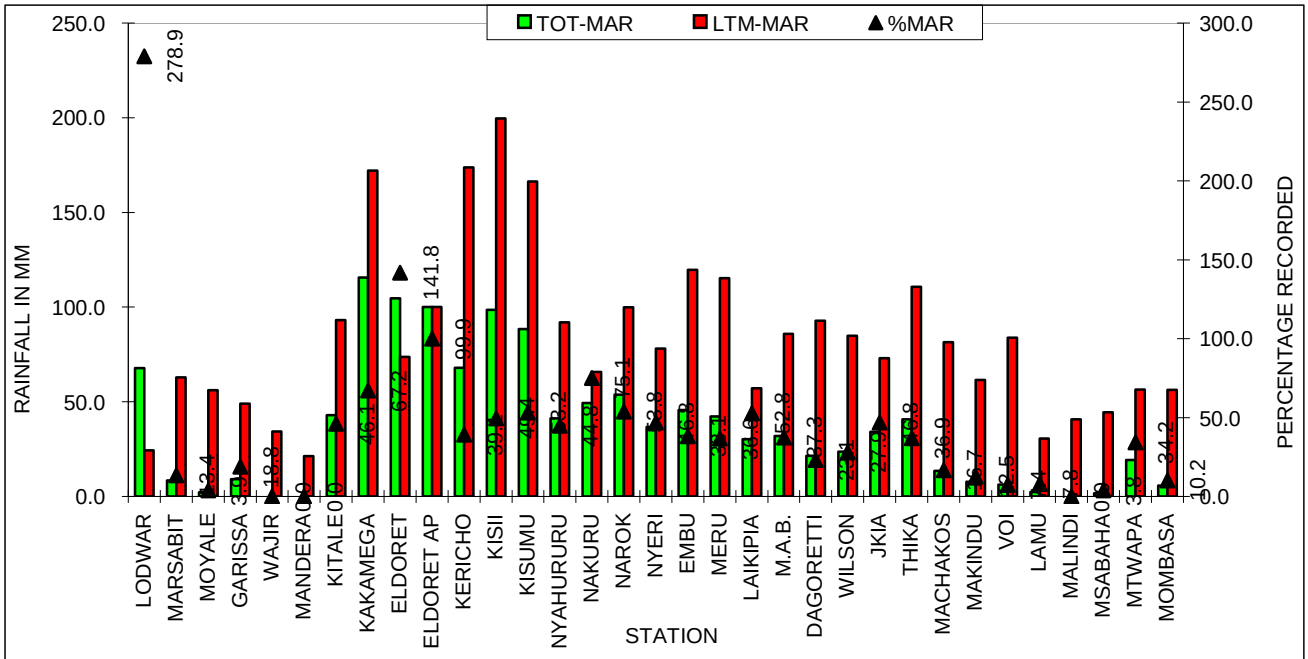

FIGURE 1A: MARCH 2016 RAINFALL (Green) AS COMPARED TO THE LONG-TERM MEAN (Red)

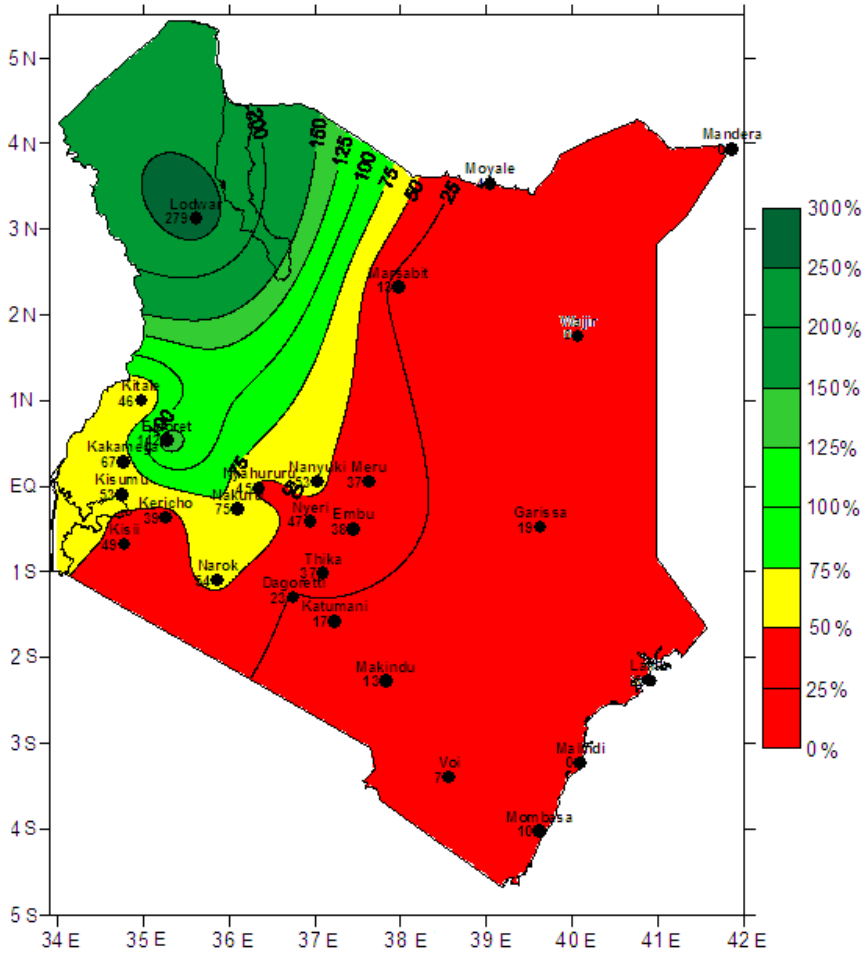

Figure 1b: March 2016 Spatial Rainfall Distribution

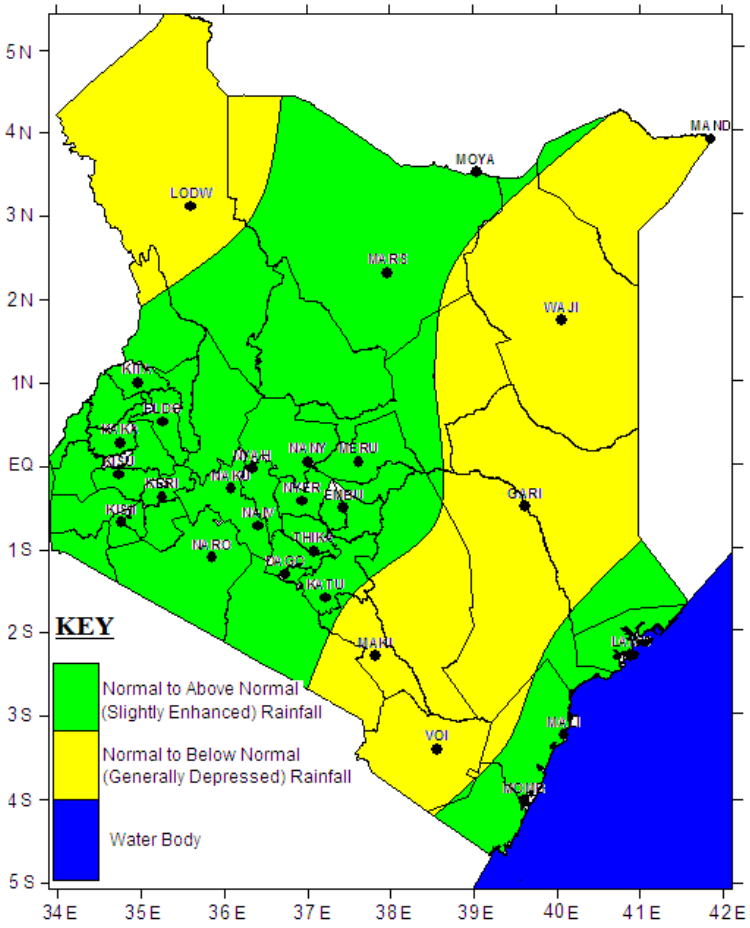

Figure 2: Rainfall Outlook for April 2016