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WEATHER OUTLOOK FOR THE "LONG-RAINS" (MARCH-MAY) SEASON 2008

1. HIGHLIGHTS

- ***La- Niña*** *conditions (cool sea surface temperatures) continue to be evident over the eastern and central equatorial Pacific Ocean.*
- *The west Indian Ocean has been relatively warm but has started cooling in the month of February 2008.*
- *Some tropical depressions have been persistent over the west Indian ocean even during month of February*
- *The outlook for March to May 2008 indicates that most parts of Kenya are likely to experience near normal rainfall with a tendency towards below normal (i.e. depressed rainfall.) while Western, Nyanza Provinces and some parts Rift Valley are likely to experience near normal rainfall with a tendency towards above normal (i.e. enhanced rainfall).*
- *The rainfall expected in the country is likely to be poorly distributed both in time and space especially in the Arid and Semi-Arid Lands (ASALs).*

2. Review of Weather during the "Short Rains (October-December) 2007 Season and the Observed Situation during January-February 2008 period

2.1 October-December 2007 "Short Rains" Performance

The season happened to coincide with La- Niña (abnormally cool sea surface temperatures) conditions that prevailed over the equatorial eastern Pacific Ocean. As a consequence, most parts of the country experienced depressed rainfall that was also poorly distributed both in space and time. Statically, rainfall amounts below 75% of the long-term mean are described to be within the depressed (below normal) rainfall category. Amounts equal or greater 75% and not exceeding 125% of the long-term are described to be within the near-normal rainfall category while those amounts in excess of 125% of the long-term are within the enhanced (above normal) rainfall category.

There is evidence that during the October – December 2007 season, locations that experienced depressed rainfall included Lodwar, Marsabit (in Northern and northwestern Kenya), Kitale and Eldoret (In North Rift), Kericho and Narok (In Central Rift), Kisii and Kisumu (in Lake Basin),Nyahururu and Laikipia, Thika(in Central highlands), Dagoretti, Wilson and JKIA(in Nairobi), and Malindi and Msabaha (in Coast province). Elsewhere, the rainfall received was within the normal range.

In general, it is clear that the eastern portion of the country experienced substantial rainfall that was within the normal range while the western portion generally experienced depressed rainfall though there were some pockets that experienced near normal rainfall.

2.2 Observed situation during January-February 2008

Sunny and dry weather conditions were dominant over most parts of the country in January 2008. However, some areas in Northeastern Kenya, central highlands including Nairobi and southeastern lowlands received significant amounts of rainfall especially during the third week

of January. During the same period, the central districts experienced very cloudy conditions that were similar to those experienced during the June-July period.

As at 31st January, Machakos station had recorded the highest monthly rainfall total of 113.4mm as compared to its January long-term mean (LTM) rainfall of 47.9mm. Thika, Meru, Wajir, Nyeri, Marsabit, Embu, Kakamega, Moi Airbase, Wilson Airport and Makindu stations recorded 99.0, 95.1, 94.5, 88.4, 76.4, 67.0, 59.9, 58.8, 51.6 and 50.8mm as compared to their LTMs of 37.8, 59.5, 9.4, 57.5, 44.9, 35.2, 76.7, 42.7, 63.7 and 44.2mm respectively**.**

During the month of February, most parts of the country remained generally sunny and dry apart from a few areas within the Lake Basin, highlands west of the Rift Valley and Central Rift Valley that experienced occasional light rainfall**.**

3 Forecast for March-May ("Long-Rains") 2008 Season

This forecast is based on the prevailing and expected Sea Surface Temperatures (SSTs) anomalies 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 continuing La- Niña conditions over eastern and central equatorial Pacific Ocean were also taken into consideration.

Based on the outcome from the assessments, probability distributions were established indicating likelihoods of above-, near-, or below-normal rainfall for predetermined homogeneous (uniform) zones. These zones were aggregated to come up with the final forecast ***(see figure 3).*** In each of these zones:

- Above-normal rainfall is defined as being within the wettest third of the long term recorded rainfall amounts.
- Near-normal rainfall is defined as being within the third of the recorded rainfall amounts centered on the climatological median.
- Below-normal rainfall is defined as being within the driest third of the recorded rainfall amounts.

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

March to May constitutes an important rainfall season over Kenya and much of East Africa in general. ***Figure 2*** depicts the mean (normal) March-April-May seasonal rainfall. The figure shows that, on average during this season, most areas in Western, Nyanza, Central and Nairobi Provinces receive normal (mean) rainfall ranging from 400 to 680mm; south Rift receives normal (mean) rainfall ranging from 250mm to 350mm while the Central Rift receives normal (mean) rainfall in the range 180mm to 250mm; North Rift receives rainfall in the range 90mm to 220mm; Northeastern Province receives mean rainfall in the range 140 to 250mm; Eastern Province normally receives rainfall ranging from 190mm to 390mm while the Coastal Strip receives mean rainfall in the range 300mm to 520mm.

- Comparing the mean rainfall seasonal patterns depicted in figure 2, with the outlook for March-May 2008 (***Figure 3***), it is observed that most parts of Kenya are likely to experience near normal rainfall with a tendency towards below normal (i.e. depressed rainfall.) while Western, Nyanza Provinces and some parts Rift Valley are likely to experience near normal rainfall with a tendency towards above normal (i.e. enhanced rainfall). Specifically, the outlook for March to May 2008 "Long Rains" season indicates that:

i. ***Western Province*** **(**Busia, Butere, Mumias, Vihiga, Kakamega, Bungoma, etc.), ***Nyanza Province (****K*isumu,Siaya, Migori, Kisii, Kuria, Nyamira, Borabu, Gucha,etc**); *North Rift Valley Province*** (Trans Nzoia, Uasin Gishu etc) and the **Central Part of Rift Valley Province** (Molo, Kericho, Nandi, Sotik etc) will receive near normal rainfall with a tendency towards above normal (i.e. enhanced rainfall).

ii. *Much of* ***Central Province*** **(**Nyandarua, Nyeri, Thika, Murang'a, Kirinyaga, Mwea, Maragua, etc.**);** ***Nairobi Province*** **(**Westlands, Embakasi, Kasarani,Dagoretti, etc); ***Southeastern parts of Rift Valley province*** **(**Narok, Kajiado, Ngong, Isinya, Namanga, Loitoktok,etc.); the **extreme Northern parts of Rift Valley Province** (Turkana, Pokot etc); **Eastern Province (**Embu, Meru, Tharaka, Imenti, Mwingi, Machakos, Makueni, Kibwezi, Marsabit, North Horr, Moyale etc); ***Coast Province*** (Malindi, Lamu, Kilifi, Voi, Mombasa, Tana River, Kwale, Msambweni, Kinango, Lungalunga etc); **North Eastern Province (**Garissa, Ijara, Wajir, Mandera, Elwalk, will receive near normal rainfall with a tendency towards below normal (i.e. depressed rainfall).

6. Expected Distribution

The March to May 2008 forecast has been given out when La- Niña conditions are prevailing in the Pacific Ocean. The warm conditions over the Southwestern Indian Ocean may also continue triggering the formation of tropical depressions/cyclones. These scenarios existing in our major oceans are likely to render the expected seasonal rains to exhibit poor distribution both in space and time especially in the Arid and Semi-Arid Lands (ASAL). In these ASAL areas therefore, the rainfall may be experienced in terms of heavy and short lived episodic events with prolonged dry spells in between.

7. Expected Onset and Cessation dates

- Western (Bungoma, Kakamega, Mumias, Butere etc) and Nyanza (Kisii, Kisumu, Bondo, Siaya, Nyamira etc) provinces: The Onset is expected during the first to second week of March. The rainfall is expected to continue into June over especially the high ground areas of these provinces.
- Southern Rift Valley (Kajiado), Southern parts of Eastern Province (Machakos, Makueni, Mwingi etc) and Inland Coast Province (Voi, Taita, Taveta etc) the rains are expected to set-in during third to fourth week of March and cease the second to third week of May.
- North Rift Valley (Trans Nzoia, Uasin Gishu etc) the onset is expected during the second week of March and the rainfall is expected to continue into June.
- Extreme Northern Rift valley (Turkana, Pokot) the onset is expected during the third to fourth week of March while the cessation is expected to be during the second week of May.
- Central high ground areas of Eastern Province (Embu, Meru, etc), Central (Nyeri, Murang'a, Kiambu etc) and Nairobi Provinces the onset is expected during the third to fouth week of March while the cessation is expected during the third week of May.
- Northeastern Province (Garissa, Wajir, Mandera, etc) and northern part of Eastern Province (Marsabit, Moyale) the onset is expected during the fourth week of March to first week of April. The cessation is expected during the first to second week of May.
- Coast Province districts along the Indian Ocean coastline (Mombasa, Kilifi, Lamu, Malindi etc) the onset is expected during the fourth week of March to first week of April. The rainfall is expected to continue into June.

8. Potential Impacts

8.1 Agriculture and Food Security Sector

In the agricultural areas of Western, Nyanza, and parts of Rift Valley provinces where rainfall is expected to be near normal tending to above normal, the farming communities should take advantage and maximize crop yield through appropriate land-use management. It is advisable that farmers work closely with the Ministry of Agriculture on ways of taking advantage of the expected good rainfall.

In the areas like Central, Eastern, Coast, Northeastern and parts of Rift valley province where the rainfall is expected to be near normal to below normal and also poorly distributed with prolonged dry spells, farmers are advised to liaise with the Ministry of Agriculture to make best use of rains by planting appropriate crop cultivars.

8.2 Disaster Management Sector

Problems related to water and pasture scarcity are likely to occur in the pastoral areas of the Northwestern and Northeastern districts of the country in the coming season. There is therefore potential for Human/human and Human/wildlife conflicts over limited water and pasture resources in these areas. Close monitoring of the conditions on the ground and contingency measures such as destocking of animals and rehabilitation of boreholes and other watering point are necessary in order to adequately build the resilience of resident households and communities to cope with the situation.

Landslides and strong winds are likely to be experienced in areas expecting slightly enhanced rainfall over Western and parts of Rift Valley Provinces. Lightning strikes may also be prevalent in western Kenya especially Gusii districts and Kakamega. Budalangi and Kano areas are also likely to experience some degree of flooding.

The National Disaster Operations Centre is there advised to take the necessary measures that would ensure minimization of any negative impacts resulting from the forecast conditions.

8.3 Energy Sector

Both the Turkwel and Sondu Miriu catchments are expected to experience normal rainfall with a slight tendency to above normal during the coming season (March-May) while the Tana catchment is expected to experience normal rainfall with a slight tendency to below normal. Overall there will be adequate water for optimal hydropower generation during the coming season.

8.4 Transport and Public Safety

Flash floods may still be experienced in some parts of Central, Western, Eastern and Coast Provinces. This may lead to transport problems especially during rush hours 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 cumulus clouds especially in the afternoon hours. Such clouds are associated with severe turbulence (rapid updrafts (vertical air movement) / downdrafts (downward air movement) and cross winds) and lightning strikes.

8.5 Water Resources Management Sector

Water resources for drinking, sanitation and industrial use are expected to be adequate in municipalities in Western province, Nyanza and parts of Rift valley province. Elsewhere in the country, available water should be well managed in case of any rainfall deficits. This should be more so in the marginal areas in order to cater for the animal and human population needs.

Local Authorities

Municipalities especially those located in regions expected to experience near normal to above normal rainfall are advised to open up drainage systems early enough so as to avoid water accumulation surface runoff on the surface that leads to flash flooding.

8.6 Health

Water borne diseases associated with water scarcity and poor sanitation as well as flooding may emerge in areas expected to receive depressed/enhanced rainfall. 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. There is also need to be on the lookout for Highland Malaria in regions that are expected to receive enhanced rainfall.

8.7 Industry

In areas expecting slightly enhanced rainfall, some sections of the road network may be muddy and slippery. Vehicles may stall in the muddy sections. In areas expecting depressed rainfall, both agricultural and animal production may decline. This scenario is likely to result in late delivery or non delivery of raw materials and industrial products to the industries and distribution outlets respectively.

STANSLAUS M. GACHARA
FOR DIRECTOR OF METEOROLOGICAL SERVICES & PERMANENT REPRESENTATIVE OF KENYA WITH THE WORLD METEOROLOGICAL ORGANIZATION

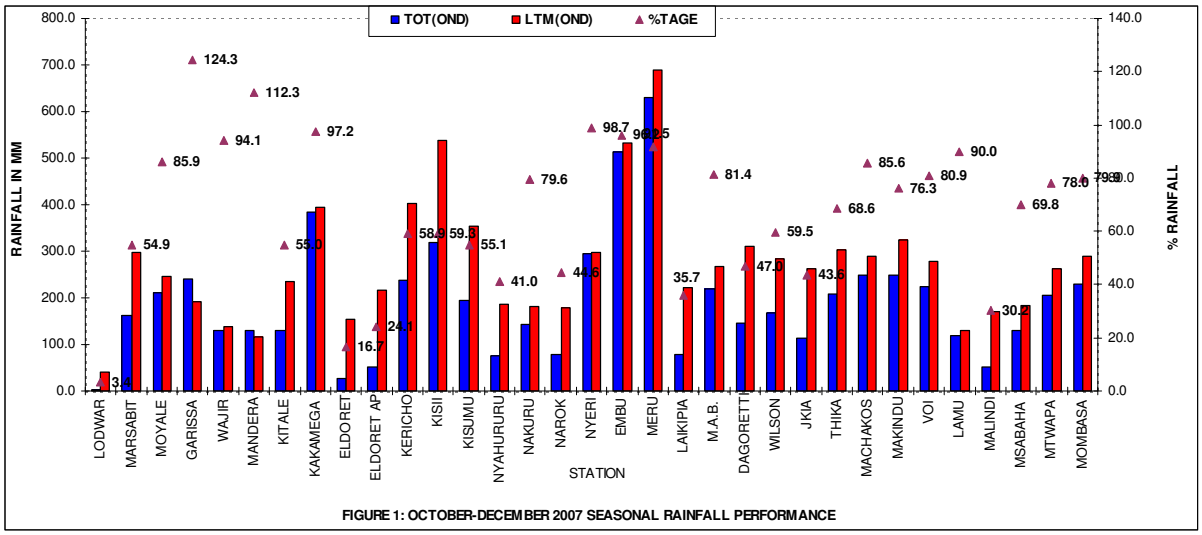

FIGURE 1: OCTOBER-DECEMBER 2007 SEASONAL RAINFALL PERFORMANCE

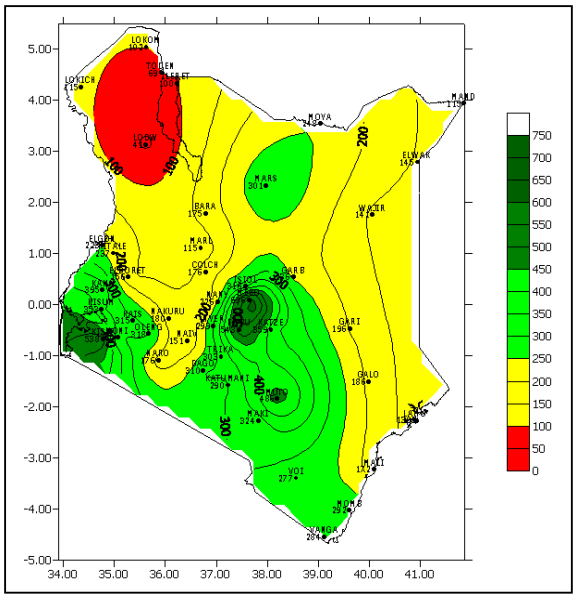

FIG. 2: MEAN MARCH-MAY SEASONAL RAINFALL

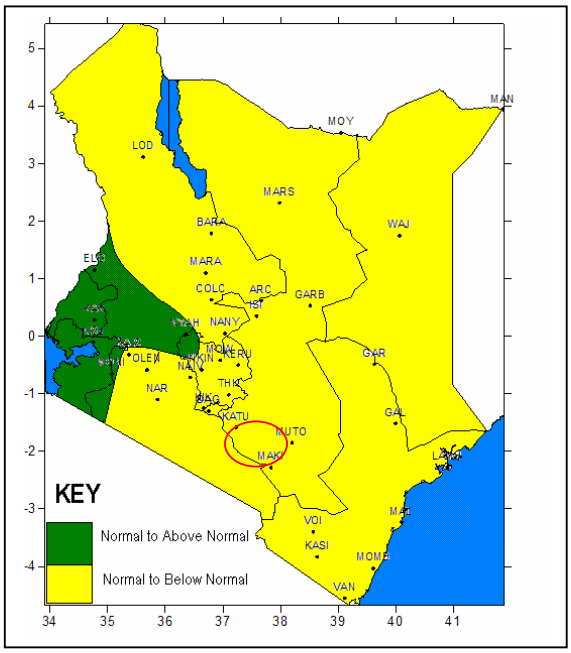

FIG. 3: MARCH-MAY 2008 RAINFALL FORECAST