



# REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES  
KENYA METEOROLOGICAL DEPARTMENT

Dagoretti Corner, Ngong Road, P. O. Box 30259, Nairobi, Kenya,  
Telephone: 254-20-3867880-5, Fax: 254-20-3876955/387373,  
E-mail:director@meteo.go.ke

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## PRESS RELEASE

### CLIMATE OUTLOOK FOR MARCH-APRIL-MAY 2009 ("LONG RAINS" SEASON)

#### 1. HIGHLIGHTS

- *The March-April-May 2009 seasonal rainfall forecast indicates that most parts of the country are likely to be depressed, except in Western, Nyanza, parts of Rift Valley and Coast Provinces;*
- Sporadic heavy and shortlived rainfall storms may, however, occur in the arid and semi arid lands (ASALS);
- *The rainfall onset is expected to start between the second and third week of March 2009 in Western Kenya and then progress eastward within the season.*

#### 2. REVIEW OF THE OCTOBER-DECEMBER 2008 ("SHORT RAINS" SEASON) AND JANUARY-FEBRUARY 2009

##### 2.1 OCTOBER-NOVEMBER-DECEMBER 2008

The October-November-December (OND) 2008 "Short-rains" seasonal rainfall was characterized by very poor temporal distribution. Most parts of the country experienced heavy and continuous rainfall during the month of October and the first half of November. The rainfall was especially heavy over the Western, Nyanza, Rift Valley, Northeastern, some parts of Central and Nairobi Provinces. This rainfall resulted into flash floods and landslides/mudslides leading to loss of life and property as well as destruction of infrastructure in several areas.

However, the entire country remained generally sunny and dry throughout the second half of November and the entire month of December. During the month of December, for example, most stations in the country recorded monthly totals not exceeding 10mm. Apart from Msabaha, Laikipia Airbase and Kisii stations the rest of the meteorological stations recorded rainfall that was well below 50 percent of their monthly Long Term Means (LTMs). Stations like Malindi, Dagoretti Corner, Moi Airbase, Lodwar, Wajir, Mandera, Eldoret, Embu, Jomo Kenyatta International Airport and Lamu recorded less than a millimeter throughout the month of December.

In terms of seasonal totals, Kisii station recorded the highest seasonal rainfall total of 566.6mm (105%) as compared to its seasonal LTM of 538.7mm. Meru, Kericho, Kakamega, Marsabit, Eldoret International Airport, Wilson Airport, Kisumu, Embu and Nakuru received 539.9mm (79%), 493.9mm (122%), 482.1mm (122%), 391.0mm (132%), 387.9mm (179%), 382.6mm (135%), 326.9mm (92%), 323.1mm (61%) and 309.8mm (171%) as compared to their seasonal LTMs of 688.2, 403.8, 395.3, 296.0, 216.6, 283.7, 354.3, 532.6 and 180.8mm, respectively. The seasonal rainfall performance is depicted in Figures 1(a, b, c, d).

## 2.2 JANUARY- FEBRUARY 2009

Most parts of the country experienced generally sunny and dry conditions and slightly higher than average daytime temperatures during January-February 2009. Occasional light to moderate rainfall, however, occurred over some parts of Western, Nyanza, Rift Valley, Central, Northeastern and the Southern parts of Eastern Provinces. The amounts were significantly high in parts of Western, Rift Valley and Central Provinces where January monthly totals exceeded 100mm. On 26<sup>th</sup> January for example, Embu station recorded heavy rainfall amounting to 76.3mm while Meru station recorded 64.5 and 64.0mm on 15<sup>th</sup> and 16<sup>th</sup> January, respectively.

In January, Kakamega station recorded the highest rainfall total of 163.8mm followed by Kericho, Meru, Kisii, Embu and Kisumu with 136.9, 131.3, 121.4, 116.9 and 115.0mm respectively. The rest of the stations recorded below 80mm.

In February, the situation was generally dry. Kisii station recorded the highest rainfall total of 50.2mm followed by Nyeri, Kisumu, Kericho and Meru with 49.3, 48.7, 40.3 and 32.6mm, respectively. The rest of the stations recorded less than 30mm.

## 2.3 OBSERVED IMPACTS

The heavy rainfall that occurred over various parts of the country in October and November 2008 resulted in flash floods and landslides/mudslides that led to loss of life and property as well as destruction of infrastructure. The most affected regions included the Northeastern Province (Mandera, Wajir and Isiolo) where some areas were periodically submerged in floods.

The Ewaso Nyiro River burst its banks in the lower parts of Isiolo District displacing hundreds of families. More than 170 thousand people were displaced in Northeastern Province while several roads were rendered impassable.

In Central Province, more than ten people were buried alive due to landslides in Murang'a district while swollen seasonal rivers claimed a few lives in Nairobi.

In the Western and parts of the Rift Valley Provinces, floods displaced several people in areas of Budalang'i and Trans Nzoia while in East Pokot, several people were killed by mudslides due to excessive rainfall. Bridges were swept off by flood waters in the same regions.

In Tana River District, a few people were temporarily displaced by floodwaters emanating from heavy rainfall in the upper catchment areas of River Tana.

The poor temporal distribution and the early cessation of the seasonal rainfall had a

negative impact on agricultural activities in the Central, Coast and Southern parts of Eastern Provinces. Pasture for livestock that had initially improved significantly over most parts of northeastern districts also deteriorated due to insufficient rainfall as well as prevailing high temperatures in December, January and February 2009.

### 3. FORECAST FOR MARCH -APRIL- MAY 2009 (“LONG RAINS” SEASON)

The forecast for the “Long Rains” (March-April-May) 2009 season is based on empirical statistical models developed from Sea Surface Temperatures (SSTs) and sea surface temperature gradients. Upper tropospheric and stratospheric winds were also taken into consideration. The LaNina-like conditions in the eastern and central Equatorial Pacific were incorporated. The forecasts from advanced centres were also considered. The predicted onsets, cessation and distribution of rainfall in the season were derived from statistical analysis of past years, which exhibited similar characteristics to this season (analogue years).

Based on the above analyses and model outputs, the outlook for “Long Rains” (March-May) 2009 season (Figure 3) indicates that most parts of the country are likely to experience deficient rainfall except the Lake Victoria basin, Western Highlands, Northwestern Kenya, extreme southeastern lowlands and south coast, that are likely to experience slightly enhanced rainfall. The outlooks for individual areas are as follows:

The following areas are expected to receive near-normal rainfall tending to above normal: **Nyanza Province** (represented by Kisii, Kisumu, Nyamira etc); **Western Province** (Bungoma, Butere/Mumias, Vihiga, Kakamega, etc), **Parts of Rift Valley Province** (Lodwar, Kitale, Eldoret, Kericho etc) and **southern part of Coast Province** (Mombasa, Mtwapa, Vanga, etc)

The following areas are expected to receive near-normal rainfall tending to below normal: **North-eastern Province** (Wajir, Mandera, Garissa etc), **Eastern Province** (Marsabit, Moyale, Isiolo, Kitui, Masaku, Machakos, Makindu, etc), and **most parts of Coast Province** (Lamu, Tana River, Voi, Taita Taveta, etc), **parts of southern and central Rift Valley Province** (Nakuru, Samburu, Narok, Kajiado, Naivasha etc); **Central Province** (Kiambu, Nyeri, Murang’a, Thika, Nyandarua etc); **Nairobi Province** (Dagoretti, Wilson, Kabete etc).

*(NB: The normal distribution of March-April-May seasonal rainfall is shown in Figure 2.)*

#### 3.1 ONSET AND CESSATIONS

- Nyanza, Western, parts of Rift Valley and Southern parts of Eastern Provinces are expected to realize the rainfall onset in the second week of March. The rains are expected to continue into June over Nyanza, Western and parts of Rift Valley Provinces but will cease during the second week of May over the Southern parts of Eastern Province.
- Areas over the central and southern parts of Rift Valley Province will experience their onset during the second to third week of March with the cessation occurring in the second to third week of May.
- The onset over extreme Northern Rift Valley, Central and Nairobi Provinces is expected in the third to fourth week of March with the cessation occurring in the last week of May.
- The Northeastern, Coast and Northern parts of Eastern Provinces will realize the onset during the fourth week of March to the first week of April. The rains will

cease in the fourth week of May over Northeastern and Northern parts of Eastern Provinces. However, rains will continue into June along the coastal strip.

### 3.2 EXPECTED DISTRIBUTION

In March, most parts of the country including the Nyanza, Western and Rift Valley Provinces are expected to receive generally depressed rainfall. Indeed, the Northeastern and Northern parts of Eastern Provinces are likely to remain generally dry throughout the month. A few areas to the extreme southern Kenya are, however, likely to experience slightly enhanced rainfall during the month.

Rainfall is expected to be depressed over the better part of the country during the peak rainfall month of April. The areas to be most affected by this deficit will be the Northeastern, Central, Nairobi and Northern parts of Eastern Provinces. The rainfall is, however, likely to be slightly enhanced over Nyanza, Western and parts of Rift Valley.

In May, most parts of the country are expected to experience enhanced rainfall. However, the Northeastern Province and Northern parts of Eastern Province will continue to experience depressed rainfall.

*NB: Despite the expected poor rainfall distribution, sporadic heavy rainfall storms may still occur and which could result in flash floods in some of the regions expected to receive depressed rainfall.*

### 3.4 POTENTIAL IMPACTS

#### 3.4.1 Agriculture and Food Security Sector

In the agricultural areas of western Kenya (Nyanza, Western Provinces, North Rift including Northwestern part of the country) where enhanced rainfall is expected, the Ministry of Agriculture is requested to encourage farmers to make use of the good season by optimizing crop yield through appropriate and timely land-use management.

In areas where deficient rainfall is expected (especially in the Arid and Semi-Arid Lands, (ASALs) that constitute the agricultural marginal areas as well as the agro-pastoral and pastoral areas), the Ministry of Agriculture is requested to encourage farmers to make use of fast maturing and drought resistant varieties of crops. In view of this, agricultural officers are urged to be in place to advice farmers accordingly.

Water and land conservation measures in agro-pastoral marginal areas should be put in place to maximize agricultural production and ensure food security.

#### 3.4.2 Disaster Management Sector

It is important to note that the ASALs (notably most parts of Northeastern Province) have experienced a prolonged dry spell. Deficient rainfall is again expected during the forthcoming "Long Rains" season. This will put more stress on livelihoods and the environment in these areas.

There are high chances that flooding will once again occur in flood-prone areas of Bundalangi, Nyando and Kano .

Other disasters may arise from possible strong and gusty winds and lightening etc. The Ministry in charge of Special Programmes and the National Disaster Operations Centre (NDOC) are urged to use this seasonal forecast and device appropriate measures, including contingency/response plans and increased targeted resource transfers, to affected populations, in order to avoid loss of life, destruction of property and infrastructure.

### **3.4.3 Energy Sector and Industry**

High rainfall deficits were experienced in the catchment areas for the main hydroelectric power-generating dams during the last rainfall season OND,2008. The anticipated deficient rainfall during the coming season, of MAM 2009, may compromise the recharging of the dams and negatively affect the operations of hydropower generation for domestic use and the manufacturing industry.

The Ministry of Energy is urged to use this seasonal forecast therefore, for constant surveillance and monitoring including taking contingency measures where necessary to avoid rationing and disruption of industrial activities.

### **3.4.4 Transport Sector**

The anticipated rainfall patterns may be accompanied by intense rainfall events that may lead to flooding and slippery roads in some areas. Motorists are advised to take utmost care whenever such events occur.

Small aircrafts are advised to take utmost care in the western routes and avoid flying through deep cumulonimbus clouds especially in the afternoon hours when convection is high. Such clouds are associated with severe turbulence and lightening discharges. Bad weather may occasionally lead to diversion of some international flights from Jomo Kenyatta International Airport to other airports like Moi International Airport.

### **3.4.5 Water Resources Management**

Water supply to major urban centers may be negatively impacted in areas expected to receive depressed rainfall. Proper water resource management that includes water conservation and rain-water harvesting need to be encouraged. Water resources Managers are encouraged to look into problems related to water scarcity in the marginal areas which should be well managed to cater for the animal and human population needs in order to minimize conflicts. Rehabilitation of the existing boreholes and temporary dams (sand dams, shallow wells) in such areas may be necessary as temporary solutions to the water scarcity problem.

### **3.4.6 Public Health**

Areas expected to receive enhanced rainfall are likely to see an upsurge of water-borne diseases like malaria. In areas forecasted to experience rainfall deficits, poor sanitation related to diseases like cholera may also emerge. The Ministry in charge of Public Health is encouraged to use this forecast to map possible endemic areas and to intensify surveillance of malaria and other related diseases.

### **3.4.7 Livestock sector**

Scarcity of pasture and water for livestock is likely to persist in marginal and pastoral areas (Eastern, Northern and Northeastern districts), where rainfall is expected to be depressed. The Ministry in charge of Livestock Development is urged to use this forecast and

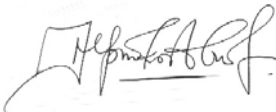
encourage pastoral communities. Pastoralists to destock and remain with only strategic stocks. Rehabilitation of watering points is also encouraged to avoid conflicts and civil insecurity.

#### 3.4.8 Environment

The Ministry of Environment and Mineral Resources is urged to use this seasonal forecast to note areas expected to receive enhanced rainfall and to encourage residents in these areas to put in place soil conservation measures to minimize environmental degradation. Those areas expected to experience depressed rainfall, particularly marginal areas, the Ministry should urge residents to take extra precautionary measures to conserve the fragile environment.

Municipalities are encouraged to construct storm drainage systems and open up clogged drainages to avoid piling of flood waters in cities and towns from rain showers.

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



Dr. Joseph R. Mukabana, MBS.  
**DIRECTOR OF METEOROLOGICAL SERVICES**

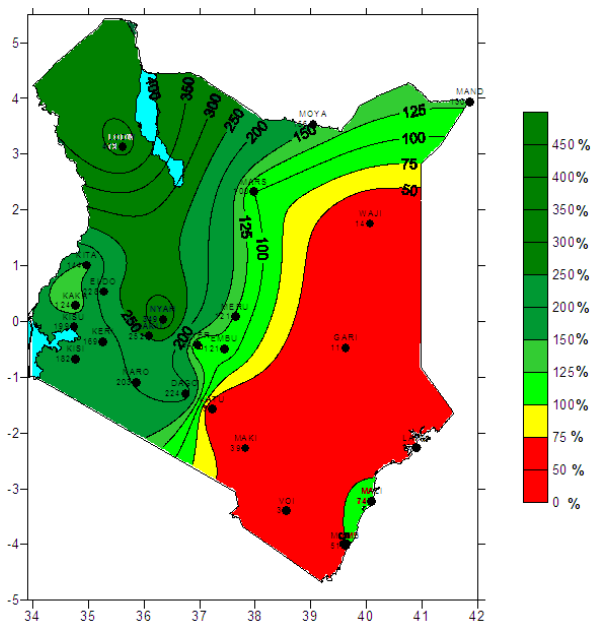


Figure 1a: October 2008 Rainfall Performance

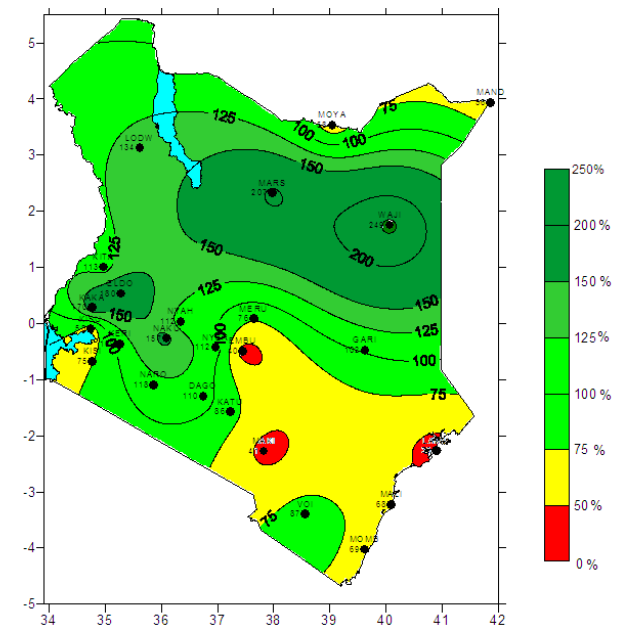


Figure 1b: November 2008 Rainfall Performance

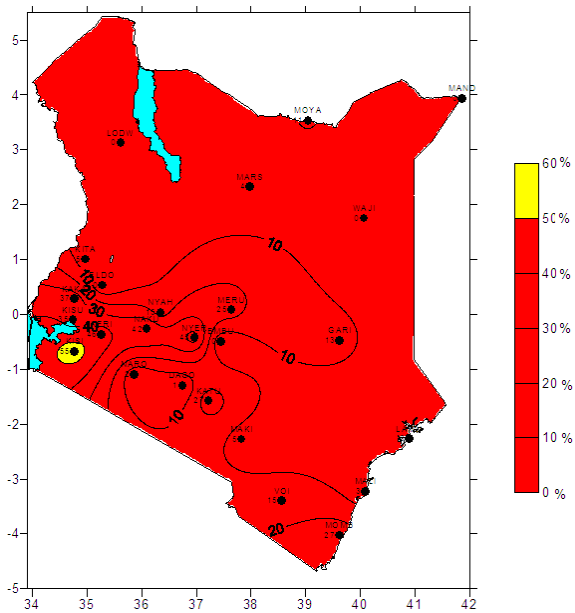


Figure 1c: December 2008 Rainfall Performance

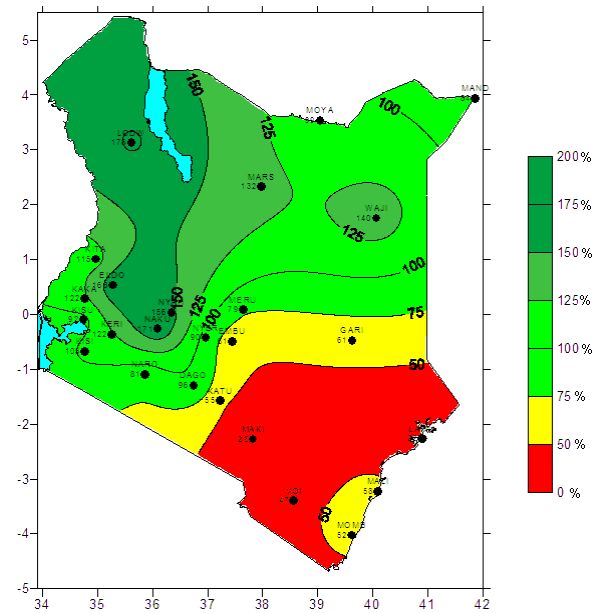
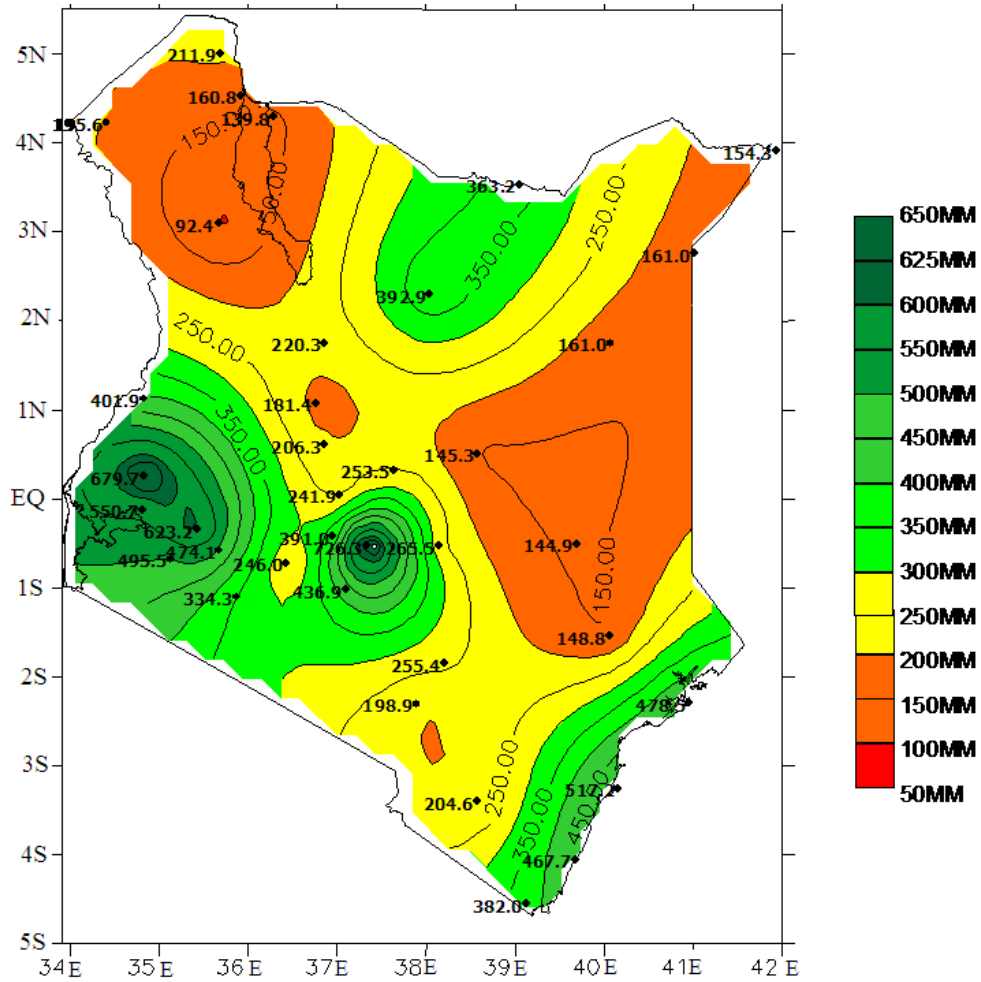
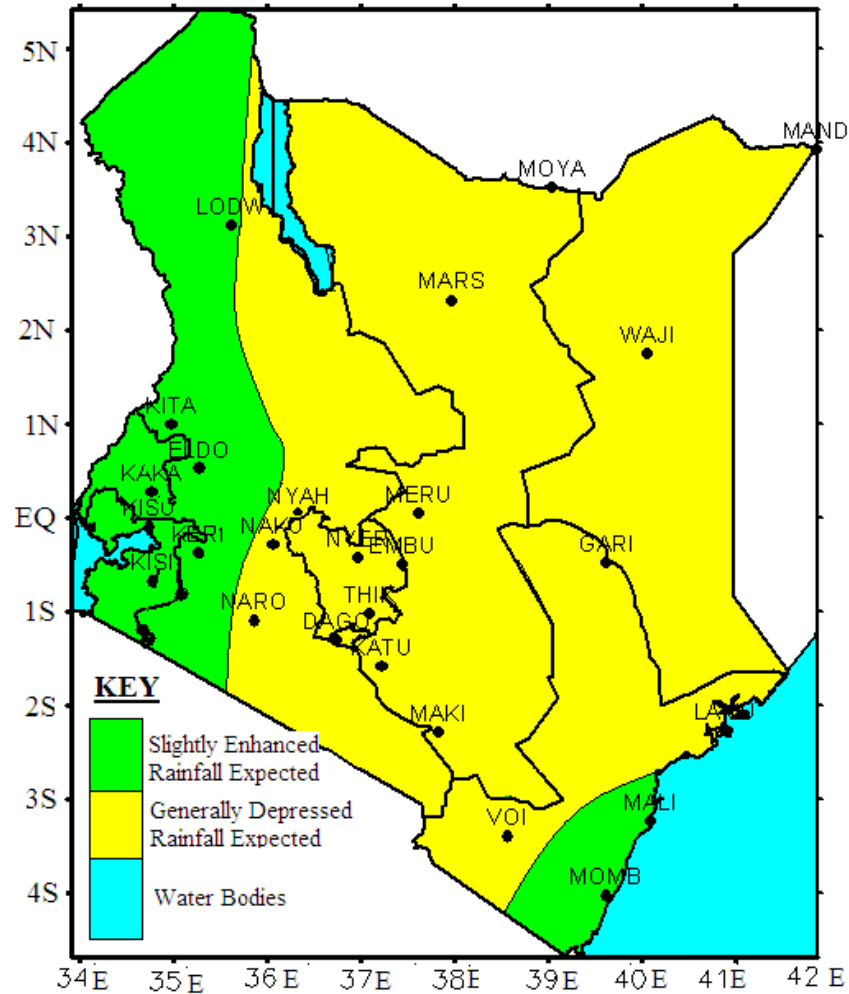


Figure 1d: OND 2008 Rainfall Performance



**FIGURE 2: MARCH-MAY MEAN RAINFALL DISTRIBUTION**



**FIGURE 3: MARCH-MAY 2009 RAINFALL FORECAST**

**ZONE I:** Increased likelihood of slightly enhanced rainfall (normal rainfall tending to above normal) over Western Province, Nyanza Province, North Rift, and South Coast.

**ZONE II:** Increased likelihood of Generally Depressed rainfall (normal rainfall tending to below normal) over Eastern Province, Central Province, North Eastern province and most parts of Coast Province including North Coast.