

IGAD Climate Prediction and Applications Centre Monthly Bulletin, JANUARY 2015

1. HIGHLIGHTS/ ACTUALITES

- Rainfall activities were mainly observed southern parts of the southern sector of the Greater Horn of Africa (GHA) during the month of January 2015;
- During March to May season of 2015 western equatorial sector, and western parts of the northern sector is likely to receive near normal to above normal rainfall;
- The socio-economic impacts associated with the observed rainfall over the GHA during the month of January 2015 resulted in improved crop, pasture and foliage conditions as well as improvement in water resources over the southern sectors. Localised flooding was also reported over parts of the southern sector.

2. INTRODUCTION

In this bulletin, the climatic conditions observed over the GHA region in the month of January 2015 is reviewed and the climate outlook for March to May 2015 rainfall season is provided. The socio-economic impacts associated with both the observed conditions and the outlook is finally highlighted.

There are seven sections in this bulletin. In section 1, the major highlights from both the observed and expected climate conditions are outlined. Section 3 provides an overall summary. The climate patterns that prevailed in the month of January 2015 are discussed under section 4, while the dominant weather systems are discussed in the section that follows. The climate outlook over the GHA for the March to May 2015 rainfall season is presented in section 6. The socio-economic impacts associated with the observed climatic conditions and those expected from the climate outlook are outlined in the final section.

3. SUMMARY

The three main components of this bulletin are summarised in this section. These components are: the climatic conditions observed during the month of January 2015 over GHA, the climate outlook for the month of March to May 2015, and the impacts associated with both the observed climate conditions and the climate outlook.

Rainfall activities were mainly observed over southern parts of the southern sector of the GHA region during the month of January 2015. The observed rainfall conditions over parts of the Greater Horn of Africa during January resulted in improved crop, pasture and foliage conditions, replenishment of water resources and isolated cases of flooding leading to disruption of livelihood.

The regional consensus climate outlook for the March to May 2015 rainfall season indicates an increased likelihood of near normal to below normal rainfall over central parts of Sudan, central Eritrea, eastern Djibouti, much of Ethiopia, much of Somalia, most areas of Kenya, much of Tanzania, southwestern and northeastern Rwanda, southeastern Burundi, northeastern Uganda and southeastern parts of South Sudan. Much of Burundi, Rwanda, Uganda and South Sudan, southern parts of Sudan, western parts and northern coast of Kenya as well as extreme southern coast and northern parts of Somalia have increased probability for near normal to above normal rainfall during March to May 2015 rainfall season. (Figure

8).

4. CLIMATE PATTERNS IN JANUARY 2015

The climatological summary for the rainfall amounts and rainfall severity indices over the GHA in the month of November 2014 are provided in this section. The rainfall severity indices are derived only for those areas in the GHA region where November is not a dry month.

4.1 Rainfall amounts and performance during January 2015

During the month of January 2015, central and southern Tanzania received more than 100 mm of rainfall; western half of Rwanda; much of Burundi; northern parts of Tanzania and parts of south western Kenya received between 50mm and 100mm of rainfall while most of the remaining regions of the GHA received less than 50mm of rainfall (Figure 1).

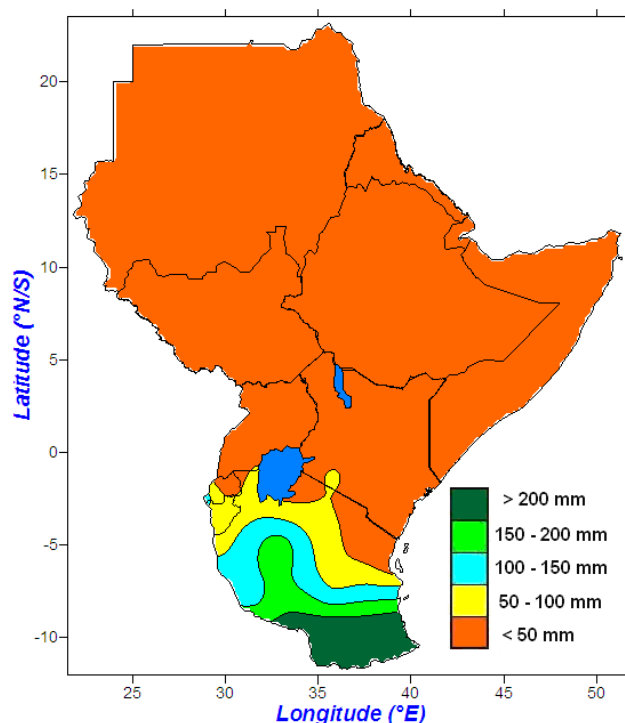


Figure 1: Spatial distribution of rainfall during the month of January 2015

4.2 Climate severity

Rainfall severity indices are derived by considering all observations which are less than 25% (first quartile) of the ranked historical records to be dry while those which are more than 75% (third quartile) are considered wet.

During January 2015, near-normal to wet conditions were recorded over Burundi; western, central and southern parts of Tanzania; and in isolated part of south western Kenya; (Figure 2). Dry conditions were recorded over much of Rwanda; southern Uganda; south western

Kenya; and northern Tanzania. Over much of Sudan, Eritrea, and Djibouti; most parts of Somalia; Ethiopia; most parts of South Sudan; part of north-western and eastern Kenya and northern parts of Kenya generally dry conditions were recorded (Figure 2).

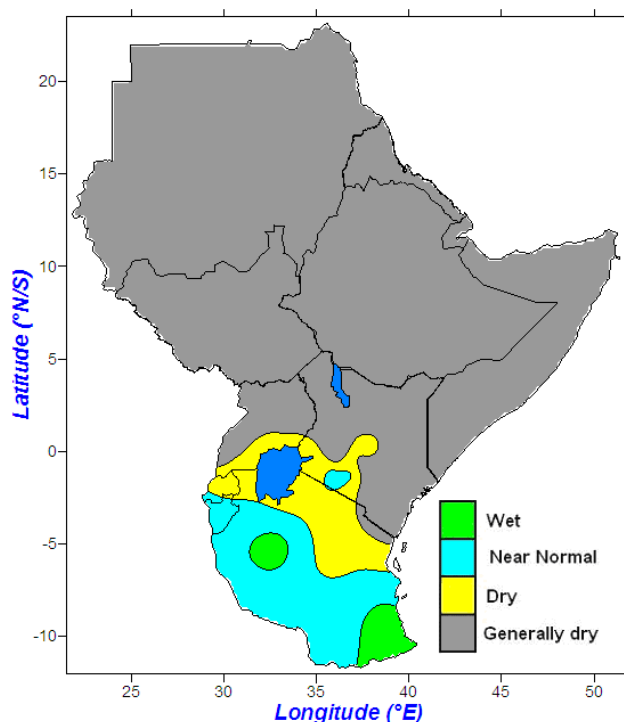


Figure 2: Rainfall severity index for the month of January 2015

4.2.1 Cumulative climate stress severity monitoring

The extent of climate-related impacts on any particular system depends on the severity and duration of the climate stress. Direct and indirect severe impacts on health and food security, water resources and livestock, among other socio-economic sectors emanates from cumulative climate stress severity. The indices used to monitor cumulative rainfall severity over GHA are presented in the next section.

4.2.2 Cumulative rainfall performance from June 2014 to January 2015

The cumulative dekadal rainfall was used to evaluate the rain water stress over GHA region. Figure 3 shows the cumulative dekadal rainfall performance since June. Near normal to below normal rainfall was observed over the central parts of equatorial sector (Figure 3a) while western parts of the southern sector of the GHA experienced near normal to above normal rainfall (Figure 3b and 3c).

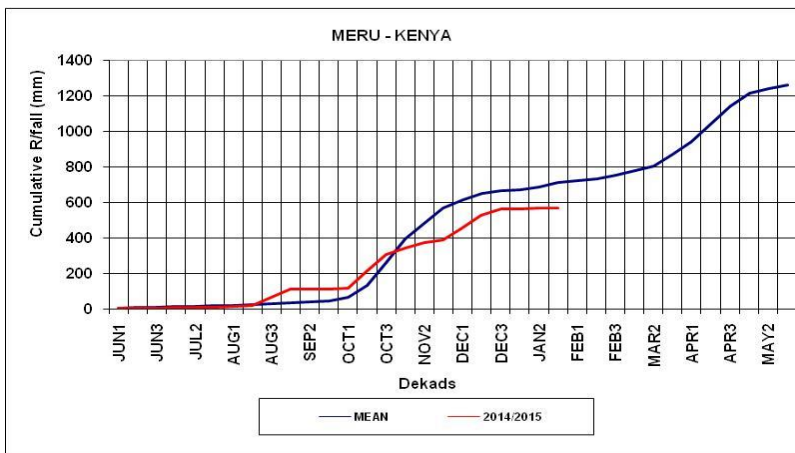


Figure 3a: Cumulative rainfall series for MERU

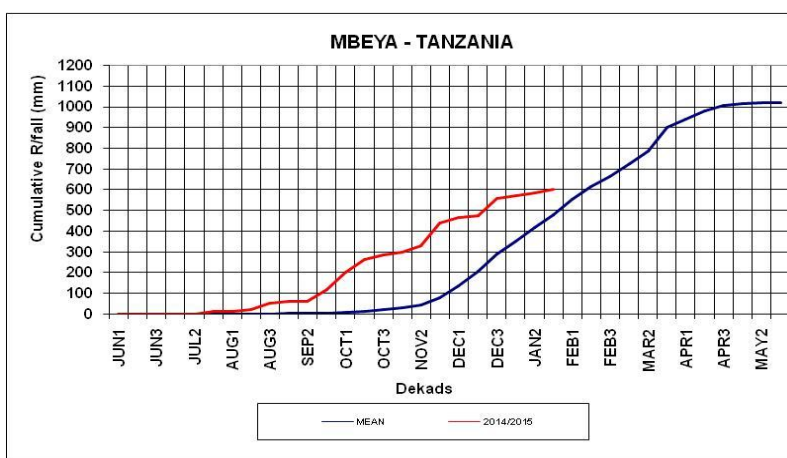


Figure 3b: Cumulative rainfall series for MBEYA

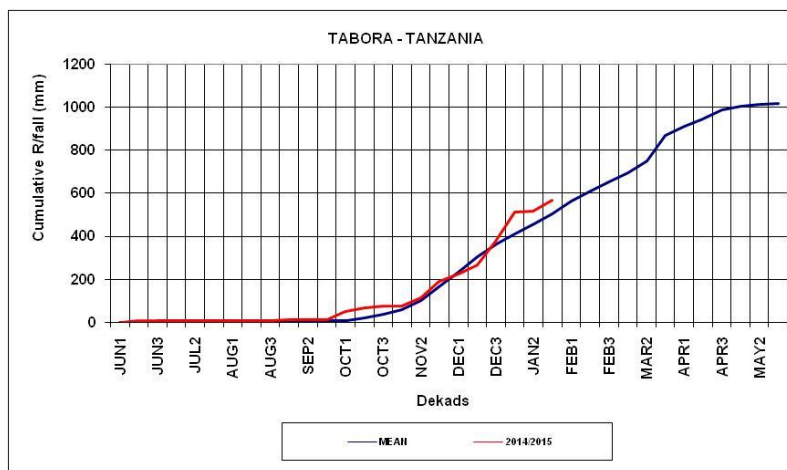


Figure 3c: Cumulative rainfall series for TABORA

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during November 2014 to January 2015 period

During November 2014 to January 2015 period, most parts of Tanzania; Uganda; parts of western, eastern and central Kenya; southern and northern tip of Somalia; southern parts of Eritrea; and southern parts of South Sudan received between 75% and more than 125% of the long-term rainfall for the period (Figure 4). Less than 75% of the long-term average rainfall for the November 2014 to January 2015 period was received over northern, central and south-eastern South Sudan; northern and central Somalia; most parts of Sudan; most parts of Ethiopia and central Kenya. Isolate regions of central and western Uganda; coastal Kenya; and Central Ethiopia received more than 125% of the three-month long-term mean rainfall during the November 2014-January 2015 period (Figure 4).

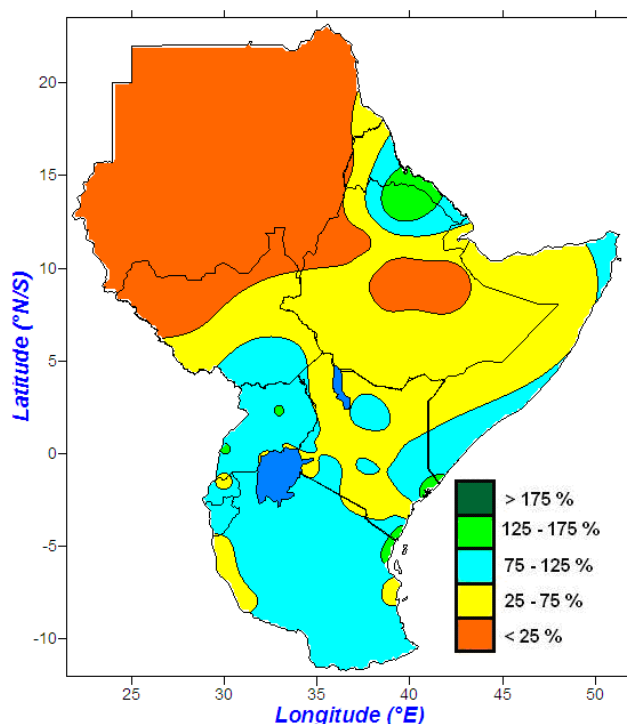


Figure 4: Spatial pattern of rainfall anomalies for November 2014 to January 2015 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

Warmer than average maximum temperature conditions prevailed over most parts of southern and equatorial sectors as well as the eastern part of the northern sector of the GHA region during the month of January 2014 (Figure 5a). Positive maximum temperature anomalies exceeding 2°C were recorded over eastern and northeastern Kenya; southern parts of Ethiopia; south western parts of Uganda; western Kenya; and north eastern parts of Rwanda. Negative anomalies of maximum temperature were recorded over most parts of Sudan; northern Eritrea; northern part of South Sudan; north-western Uganda; and central and south-eastern Tanzania (Figure 5a).

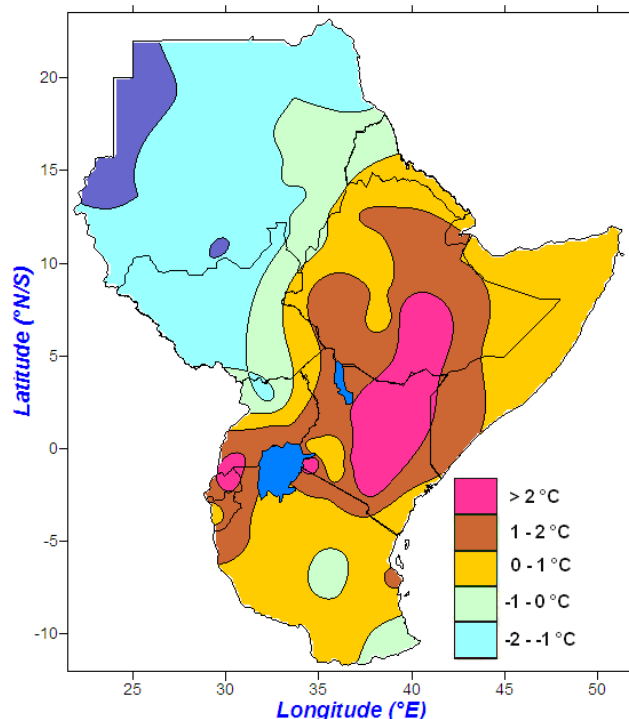


Figure 5a: Maximum temperature anomalies for January 2015

4.4.2 Minimum temperature anomalies

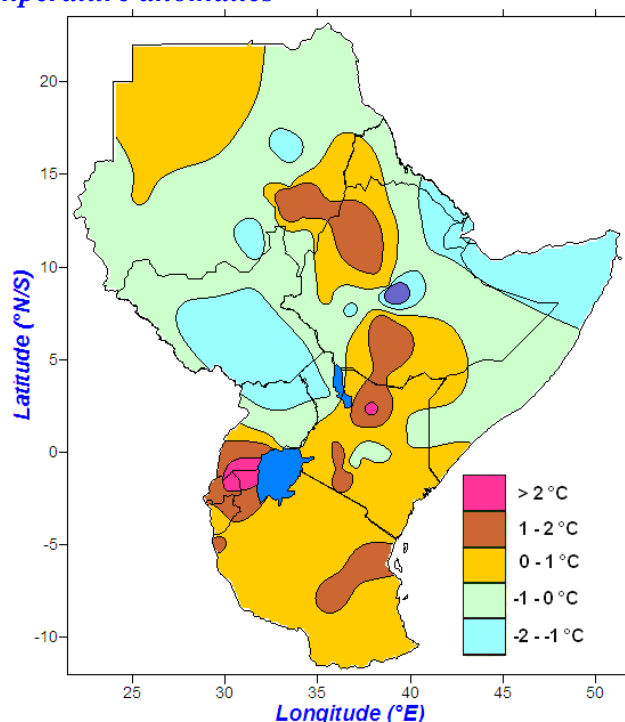


Figure 5b: Minimum temperature anomalies for the month of January 2015

During January 2015, negative anomalies of minimum temperatures were recorded over most parts of southern and north-eastern Sudan; parts of central and southern Eritrea; northern and central Somalia; northern Uganda; south western, central, and north eastern Ethiopia; most parts of South Sudan and central Kenya. Warmer than average minimum temperature anomalies dominated most parts of Tanzania; south western Uganda; Rwanda; Burundi; most parts of Kenya; southern and north eastern Ethiopia; parts of eastern and north western Sudan

during January 2015 (Figure 5b). Positive minimum temperature anomalies greater than 2°C were recorded over south western Uganda; north eastern Tanzania; and eastern Rwanda (Figure 5b).

5. STATUS OF THE CLIMATE SYSTEMS

During the period of January to mid February 2015 above average sea surface temperatures (SSTs) were observed over southern and eastern parts of the Indian Ocean while the western parts of the Indian ocean indicated a cooler than normal SST temperature (Fig.6) resulting in slightly below normal Indian Ocean dipole index (Figure.7). Warmer than average SSTs were observed across equatorial Pacific Ocean (Figure. 6).

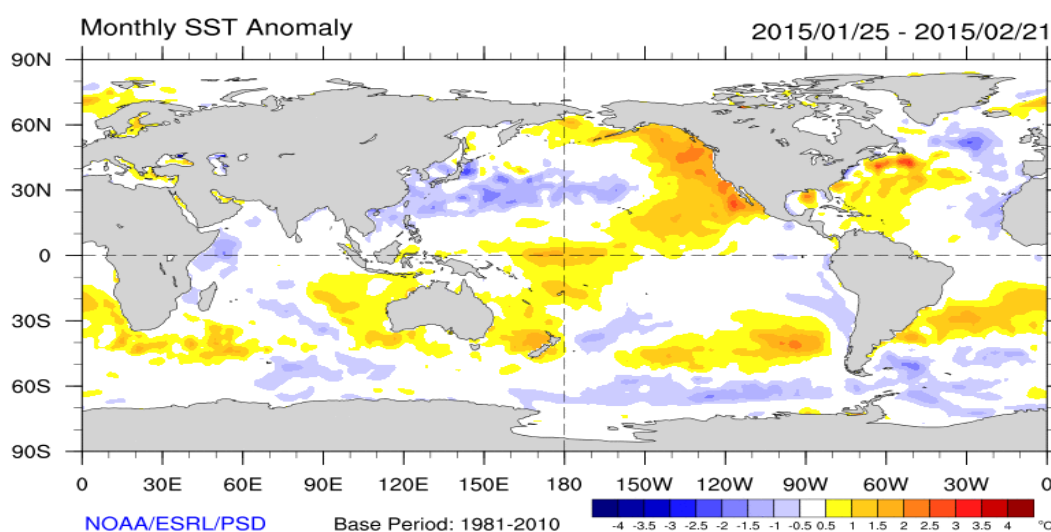


Figure 6: Sea Surface Temperature anomalies for the period 16 November to 13 December 2014 (Courtesy of NOAA)

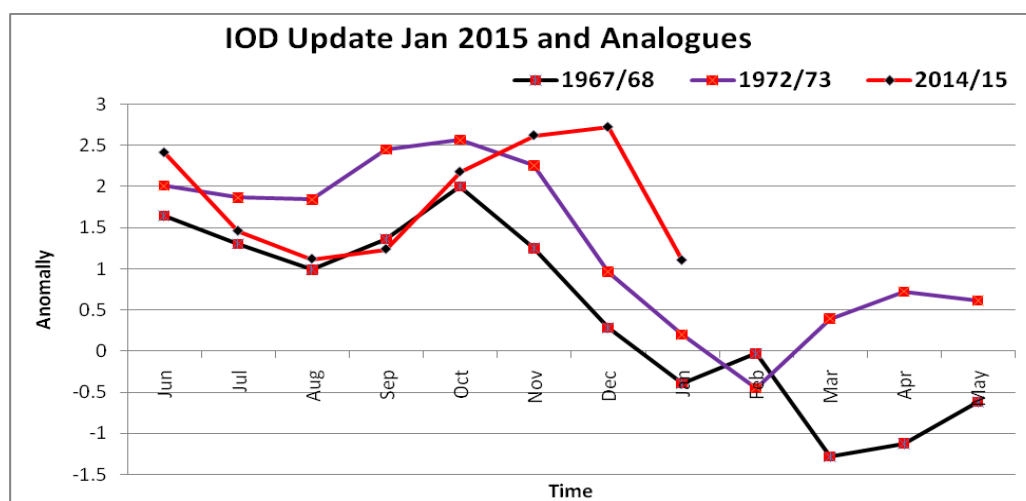


Figure 7: Indian Ocean Dipole (IOD) for 2014 / 2015 and Analogue Years

6.0 CLIMATE OUTLOOK FOR MARCH TO MAY 2014

6.1 The Climate Outlook Forum

The Thirty Ninth Greater Horn of Africa Climate Outlook Forum (GHACOF 39) was convened from 23rd to 25th February 2015, at Boma Hotel, Nairobi, Kenya by the IGAD Climate Prediction and Applications Centre (ICPAC), the Kenya Meteorological Service (KMS) the World Bank and partners to formulate a consensus climate outlook for the March to May 2015 rainfall season over the GHA region. The GHA countries are; Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania and Uganda. The theme of the forum was **“Early Warning to Cope with Climate Variability and Change in Support of Resilience Building”**. The forum reviewed the evolving status of the global and regional systems which are expected to influence regional climate during March to May 2015 rainfall season in the region.

The forum reviewed the state of the global and regional climate systems and their implications on the March to May seasonal rainfall over the sub-region. Among the principal factors taken into account were the observed and predicted SSTs in the tropical Pacific, Atlantic and Indian Oceans. The dominant climate forcing processes included neutral ENSO conditions that are expected to persist through the forecast period, warmer than average SSTs over central Indian Ocean as well as colder than average SSTs over the western Indian Ocean and Arabian Sea, weak negative Indian Ocean Dipole (IOD); ongoing and potential formation of tropical cyclones over south-western Indian Ocean.

Users from agriculture and food security, livestock, water resources, disaster risk management, health, Gender, Civil society, Non- Governmental Organisations and development partners formulated the potential implications of the consensus climate outlook and developed mitigation strategies for their respective countries and sectors. The media on the other hand formulated strategies for effective dissemination of the consensus climate outlook and its potential impacts.

6.2 Rainfall Outlook for March to May 2015

The rainfall outlook for various zones within the GHA region is given in figure 8 below.

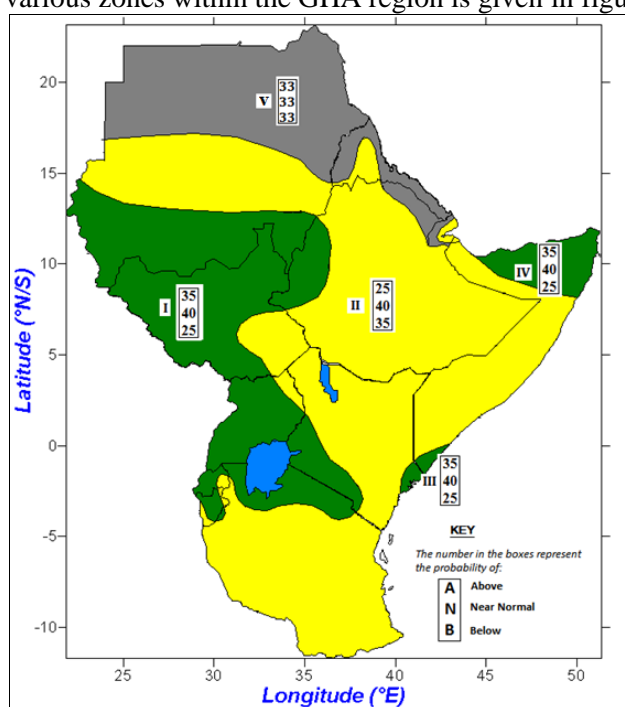


Figure 8: Greater Horn of Africa Consensus Climate Outlook for the March to May 2015 rainfall

Zone I: Increased likelihood of near normal to above normal rainfall indicated over much of Burundi, Rwanda, Uganda and South Sudan, southern parts of Sudan, extreme western Ethiopia and southwestern Kenya.

Zone II: Increased likelihood of near normal to below normal rainfall over central parts of Sudan, central Eritrea, eastern Djibouti, much of Ethiopia, much of Somalia, most areas of Kenya, much of Tanzania, southwestern and northeastern Burundi, southeastern Rwanda, northeastern Uganda and southeastern parts of South Sudan.

Zone III: Increased likelihood of near normal to above normal rainfall Indicated over northern coast of Kenya extending to extreme southern coast of Somalia.

Zone IV: Increased likelihood of near normal to above normal rainfall indicated over parts of northern Somalia.

Zone V: Usually dry during March – May season over northern Sudan, much of Eritrea, western Djibouti and extreme northeastern Ethiopia.

Note:

The numbers for each zone indicate the probabilities of rainfall in each of the three categories, above-, near-, and below-normal. The top number indicates the probability of rainfall occurring in the above-normal category; the middle number is for near-normal and the bottom number for the below-normal category. For example in zone II, covering much of GHA there is 20% probability of rainfall occurring in the above-normal category; 45% probability of rainfall occurring in the near-normal category; and 35% probability of rainfall occurring in the below-normal category. The boundaries between zones should be considered as transition areas.

7.0 IMPACTS ON SOCIO-ECONOMIC SECTORS

The socio-economic impacts associated with observed rainfall conditions and those from the climate outlook are provided below.

7.1 Impacts of observed climate conditions during January 2014

The socio-economic impacts associated with the observed rainfall over much of the Greater Horn of Africa during the month of January 2015 were as follows:

- Improved crop, pasture and foliage conditions;
- Replenishment of water reservoirs;
- Localised flooding leading to destruction of property, displacement of people, and disruption of livelihood;
- Increase of water related diseases;

In regions that experienced dry conditions the impacts were:

- Poor pasture and water availability leading to reduced livestock productivity.
- Increase in water related diseases
- Poor crop performance.

7.2 Potential impacts for March to May 2015 climate outlook

The areas expected to receive normal to above normal rainfall are likely to have the following impacts:

- Good prospects for crop and livestock performance;
- Improvement in water resources and replenishment of reservoirs.
- Flooding that may lead to disruption of livelihood of people, and destruction of property;

- Outbreaks of water related diseases.

The areas expected to receive near normal to below normal rainfall are likely to have the following impacts:

- Poor prospects for crop and pasture performance;
- Increase in food insecurity,
- Reduction in water reservoirs.
- If the dry conditions occur within the agricultural areas, this could lead to water stress conditions and may cause significant water and pasture scarcity, crop and livestock losses.