

IGAD Climate Prediction and Applications Centre Monthly Bulletin, January 2015

1. HIGHLIGHTS/ ACTUALITES

- During December 2014 rainfall activities were observed mainly over much of Tanzania, Rwanda and Burundi in the Greater Horn of Africa (GHA);
- During February 2015 much of the southern sector is likely to experience near normal to above normal rainfall;
- The socio-economic impacts associated with the observed rainfall over the GHA during the month of December 2014 resulted in improved crop, water resources, pasture, and foliage conditions over the southern sector. Localised flooding was also reported.

2. INTRODUCTION

This bulletin reviews the climatic conditions observed over the GHA region in December 2014 and provides the climate outlook for February 2015. The socio-economic impacts associated with both the observed conditions and the outlook is finally highlighted.

There are seven sections in this bulletin. The major highlights from both the observed and expected climate conditions are outlined in section 1. Section 3 provides an overall summary. In section 4, the climate patterns that prevailed in the month of December 2014 are discussed, while the dominant weather systems are discussed in the section 5. In section 6, the climate outlook over the GHA for the month of February 2015 is presented. The socio-economic impacts associated with the observed climatic conditions and those expected from the climate outlook are outlined in the last section.

3. SUMMARY

Three main components of this bulletin are summarised in this section. These components are: the climatic conditions observed in the month of December 2014 over GHA; the climate outlook for February 2015; and the impacts associated with both the observed climate conditions and the climate outlook.

Rainfall activities were observed mainly over much of the southern sector as well as southwestern and central parts of the equatorial sector of the GHA region during the month of December 2014. The observed rainfall conditions over parts of the Greater Horn of Africa during December 2014 resulted in improved crop, pasture and foliage conditions and replenishment of water resources.

The regional climate outlook for February 2015 indicates increased likelihood of near normal to above normal rainfall over much of the southern Sector (Figure 8).

4. CLIMATE PATTERNS IN DECEMBER 2014

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

4.1 Rainfall amounts and performance during December 2014

In the month of December 2014, most parts of Tanzania; much of Burundi; eastern and western Rwanda; southern Uganda; and western part and southern tip of Kenya received between 100mm and more than 200mm of rainfall (Figure 1). Central and south-western Kenya; southern Uganda; central Rwanda; western tip, north-western tip and central part of the coastal strip of Tanzania received between 50 and 100 mm of rainfall. Less than 50mm of rainfall was received over much of Sudan, South Sudan, Eritrea, Ethiopia, Djibouti, and Somali; eastern, northern and north-western Kenya; and most parts of Uganda (Figure 1).

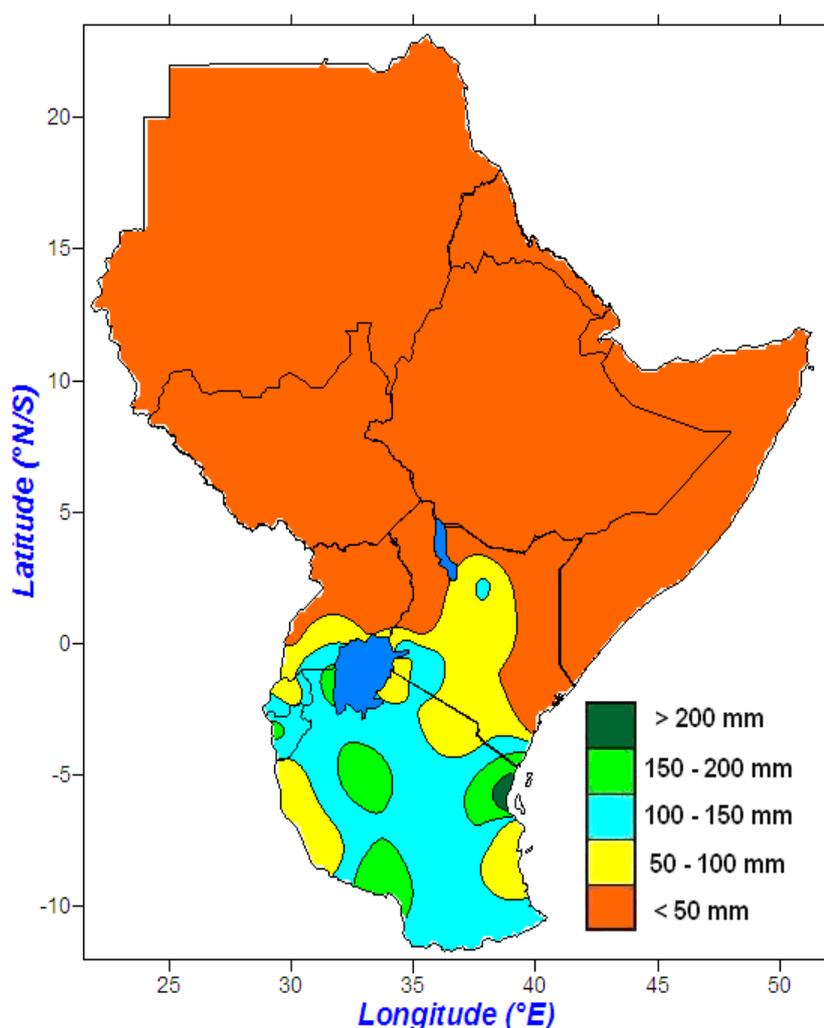


Figure 1: Spatial distribution of rainfall during the month of December 2014

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.

Near normal to wet conditions were observed over much of Tanzania, Burundi and Rwanda; southern half of Uganda; western, central and southern Kenya in the month of December 2014 (Figure 2). Dry conditions were recorded over western and southern parts of Tanzania. Generally dry conditions were recorded over much of Sudan, South Sudan, Eritrea, Ethiopia, Djibouti and Somali; eastern, northern and western Kenya; and the northern half of Uganda.

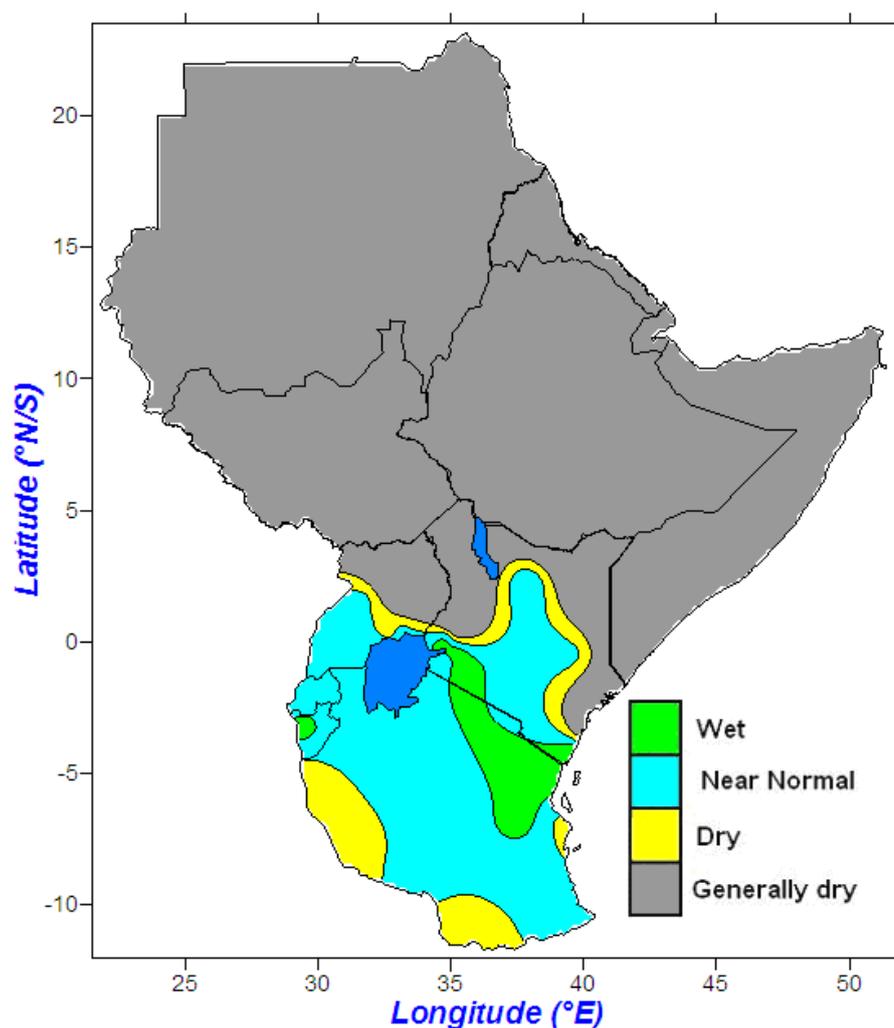


Figure 2: Rainfall severity index for the month of December 2014

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 December 2014

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 above normal rainfall was observed over the western parts of equatorial sector (Figure 3a and 3b) while near normal to below normal rainfall was observed over the western parts of the southern sector of the GHA (Figure 3c).

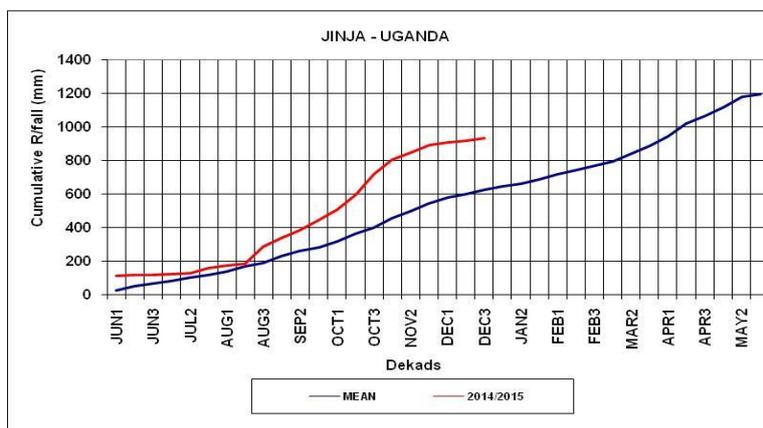


Figure 3a: Cumulative rainfall series for Jinja

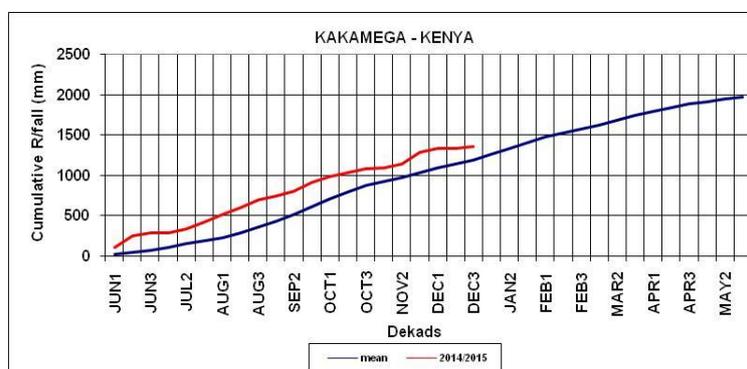


Figure 3b: Cumulative rainfall series for Kakamega

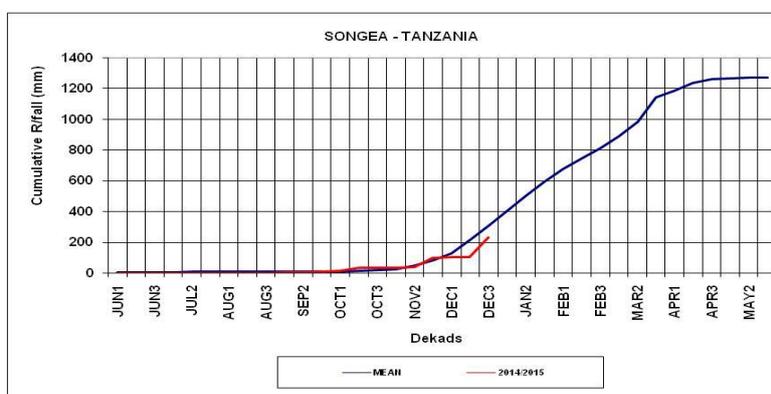


Figure 3c: Cumulative rainfall series for Songea

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during October to December 2014 period

During October-November-December 2014 period, central and eastern parts of Sudan; northern and central Ethiopia; western Kenya; south-western and south-eastern Uganda; and northern tip of coastal strip of Tanzania; received between 125% and more than 175% of the long-term rainfall for the period (Figure 4). Most parts of Tanzania and Kenya; much of Uganda, Rwanda and Burundi; southern Somali; south-eastern, southern and western Ethiopia; and eastern and southern parts of South Sudan received between 75% and 125% of the three-month long-term mean rainfall during the October – December 2014 period. Less than 75% of the long-term average rainfall for the October-November-December period was received over northern half of Sudan and western parts; most parts of South Sudan; northern Somali; eastern Kenya; and southern Tanzania (Figure 4).

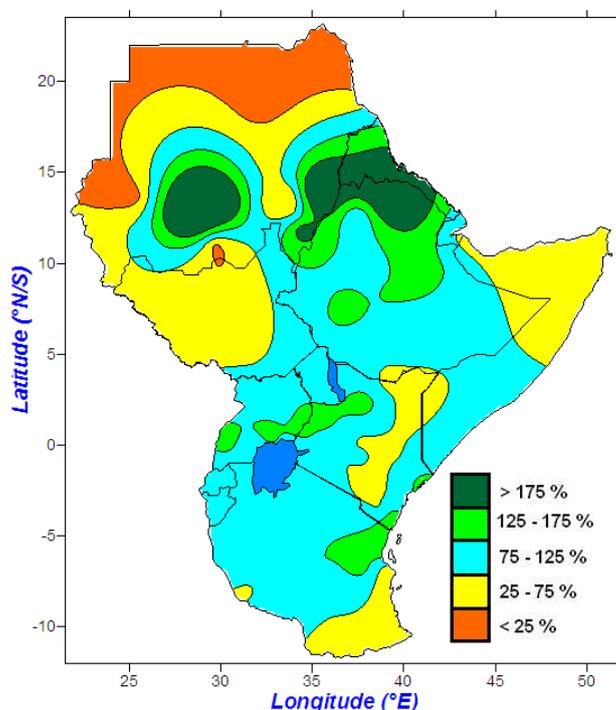


Figure 4: Spatial pattern of rainfall anomalies for October to December 2014 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

Over much of the GHA region, warmer than average maximum temperature conditions prevailed in the month of December 2014 (Figure 5a). Positive maximum temperature anomalies exceeding 2°C were recorded over eastern Sudan; central Ethiopia; and the Kenya-Somalia-Ethiopian border. Negative anomalies of maximum temperature were recorded over northern Tanzania; eastern Uganda and northern Ethiopia (Figure 5a).

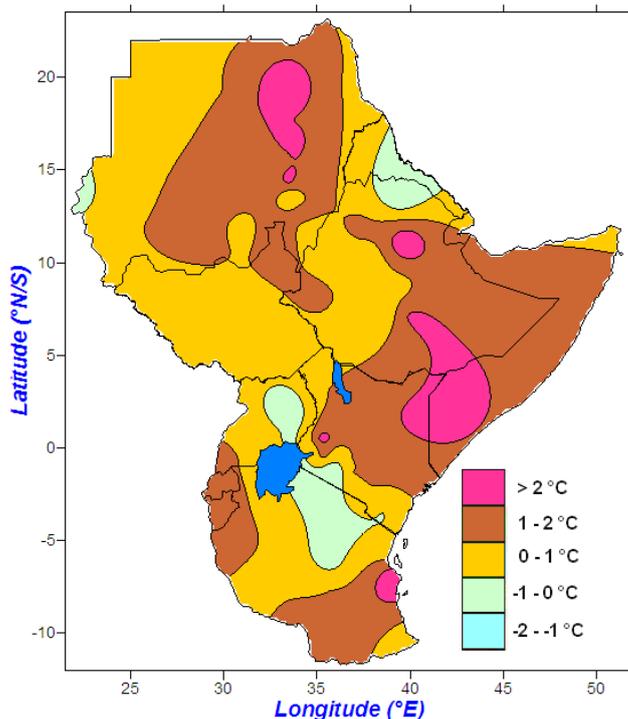


Figure 5a: Maximum temperature anomalies for December 2014

4.4.2 Minimum temperature anomalies

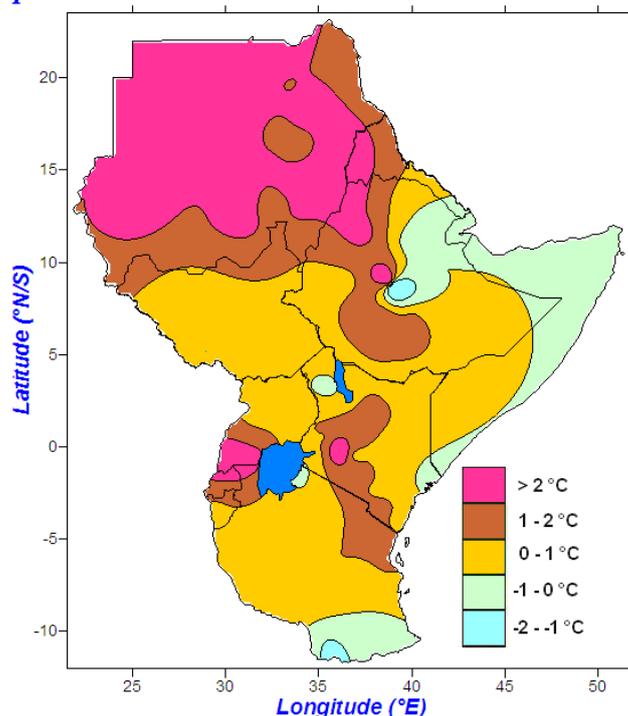


Figure 5b: Minimum temperature anomalies for the month of November 2014

During the month of December 2014, negative anomalies of minimum temperatures were recorded over central Ethiopia, Djibouti and northern Somali; north-western Kenya; and southern tip of Tanzania (Figure 5b). Warmer than average minimum temperature anomalies dominated over the rest of the GHA region. Positive minimum temperature anomalies greater than 2°C were recorded over most parts of Sudan; northern Ethiopia; western Kenya; and southern Uganda bordering Rwanda and Tanzania (Figure 5b).

5. STATUS OF THE CLIMATE SYSTEMS

During December 2014 to mid January 2015 warmer than average sea surface temperatures (SSTs) were observed across western equatorial Pacific Ocean (Figure. 6). Near average SSTs were observed over much of the northern, central and eastern Indian Ocean while above average SSTs were observed over southern parts of the Indian Ocean (Fig.6) resulting in neutral Indian Ocean dipole index (Figure.7).

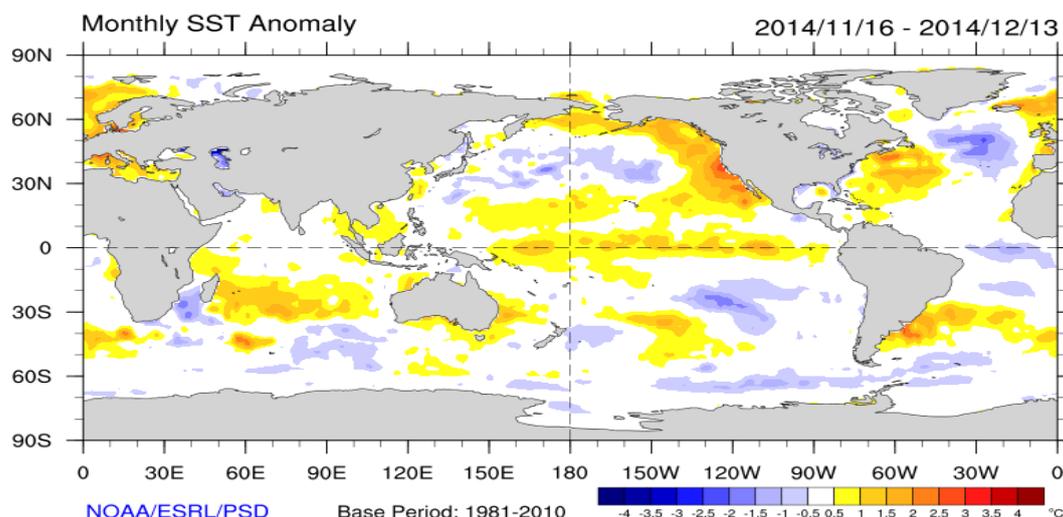


Figure 6: Sea Surface Temperature anomalies for the period 16 November to 13 December 2014 (Courtesy of NOAA)

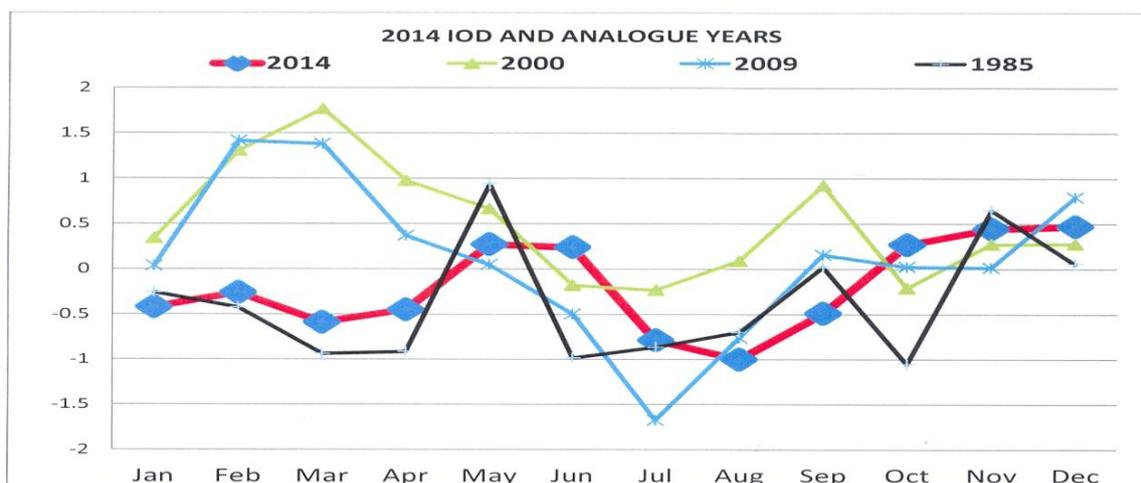


Figure 7: Indian Ocean Dipole (IOD) for 2014 and Analogue Years

6. CLIMATE OUTLOOK FOR FEBRUARY 2015

The climate outlook for February 2015 indicates likelihood of near normal to above normal rainfall over western, central and southern Tanzania. Northern and eastern Tanzania; southern Kenya; Rwanda; Burundi and southern Uganda are likely to receive normal to below normal rainfall (Figure 8). The rest of the GHA is expected to remain generally dry.

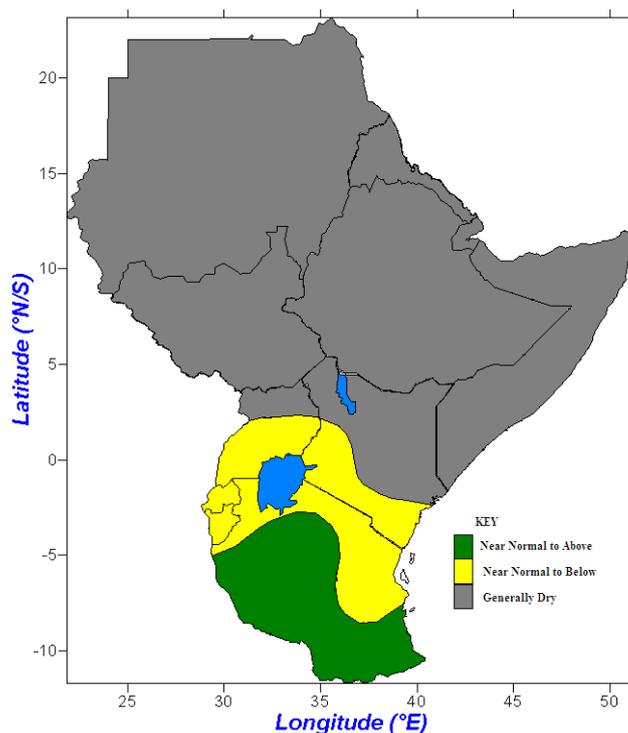


Figure 8: Climate outlook for February 2015

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 December 2014

The socio-economic impacts associated with the observed rainfall over much of the Greater Horn of Africa during the month of December 2014 were as follows:

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

In regions that experienced dry conditions the impacts were:

- Poor pasture and water availability leading to reduced livestock productivity;
- Poor crop performance.

7.2 Potential impacts for February 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;
- Flooding that may lead to 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:

- Reduction in water resources.