IGAD Climate Prediction and Applications Centre Monthly Bulletin, September 2014

1. HIGHLIGHTS/ ACTUALITES

- In August 2014, rainfall activities were mainly observed over the central and south-eastern parts of the northern sector and western parts of the equatorial sector of the Greater Horn of Africa (GHA);
- During October to December 2014 wetter conditions are expected over equatorial sector, the rest of the equatorial areas likely to receive near average rainfall;
- The socio-economic impacts associated with the observed rainfall over much of the Greater Horn of Africa during August 2014 resulted in improved crop, pasture and foliage conditions as well as improvement in water resources over central parts of northern sector as well as western parts of equatorial sector. Localised flooding and landslides were also observed over the western parts of the equatorial and southwestern parts of the northern sector.

2. INTRODUCTION

In this bulletin, the climatic conditions observed over the GHA in the month of August 2014 are reviewed, and the climate outlook for October to December 2014 provided. The socio-economic impacts associated with both the observed climatic conditions and the climate outlook is finally highlighted.

Seven sections make up this bulletin. In the first section, the major highlights from both the observed and expected climate conditions are outlined while an overall summary is provided in section 3. The climate patterns that prevailed in August 2014 are discussed under section 4, while the dominant weather systems are discussed in section 5. In section 6, the climate outlook over the GHA for October to December 2014 period is presented. 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 the bulletin are summarised in this section. These components are: the climatic conditions observed in August 2014 over GHA, the climate outlook for October to December 2014 and the impacts associated with both the observed climate conditions and the climate outlook.

Rainfall activities were mainly observed over the central and south-western parts of the northern sector and western parts of equatorial sector of the GHA in the month of August 2014. The observed rainfall conditions over parts of the Greater Horn of Africa during August 2014 resulted in improved crop, pasture and foliage conditions and replenishment of water resources.

The regional climate outlook for October to December 2014 rainfall season indicates increased likelihood of near normal to above normal rainfall over western and coastal parts the equatorial sectors.(Figure 8).

4. CLIMATE PATTERNS IN AUGUST 2014

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

4.1 Rainfall amounts and performance during August 2014

Western and southern parts of Sudan; much of South Sudan and Uganda; and northern and western Ethiopia; and western Kenya received between 100mm and more than 150mm of rainfall during the month of August 2014 (Figure 1). Much of Burundi; south-western Rwanda; most parts of Kenya and Somalia; eastern and southern Ethiopia; Djibouti; northern and central Sudan received less than 50mm of rainfall. Other areas such as central Sudan; central Ethiopia; part of western Kenya; northern tip of Tanzania; and eastern, central and western Rwanda received between 50mm and 100mm of rainfall (Figure 1).

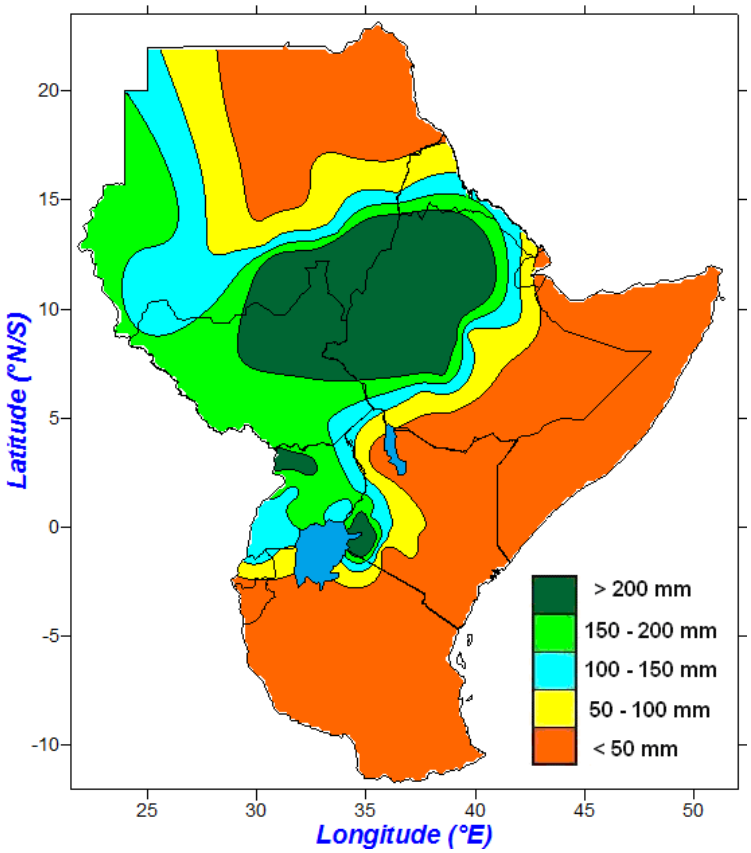

Figure 1: Spatial distribution of rainfall during the month of August 2014

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 recorded over western and southern parts of Sudan; northern and central Ethiopia; most parts of South Sudan; most parts of Uganda; and western Kenya in the month of August 2014 (Figure 2). Dry conditions were recorded over central

Sudan; parts of central and western Ethiopia; south-eastern part of South Sudan; north-eastern Uganda; part of western Kenya; and coastal strip of Kenya and northern Tanzania. Over most parts of Tanzania; much of Burundi; southern Rwanda; most parts of Kenya, Somalia and Djibouti; eastern and southern Ethiopia; and northern Sudan generally dry conditions were recorded.

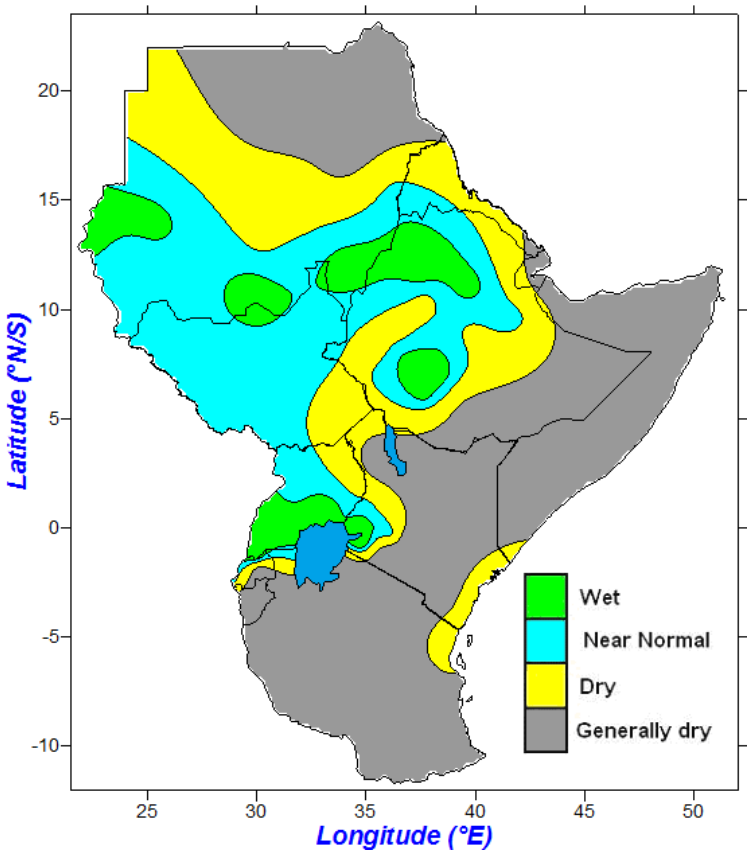

Figure 2: Rainfall severity index for the month of August 2014

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 January 2014 to August 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 January 2014. Near normal to above normal rainfall was observed over the central parts of the northern as well as the western parts of equatorial sector of the GHA (Figure 3a and 3b), while eastern parts of the equatorial sector experienced near normal to below rainfall (Figure 3c) respectively.

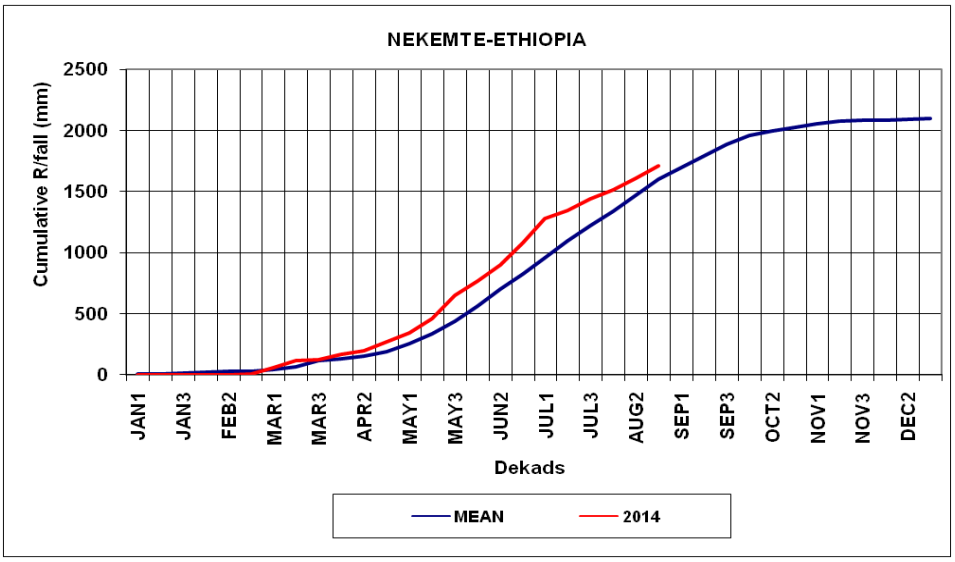

Figure 3a: Cumulative rainfall series for Nekemte

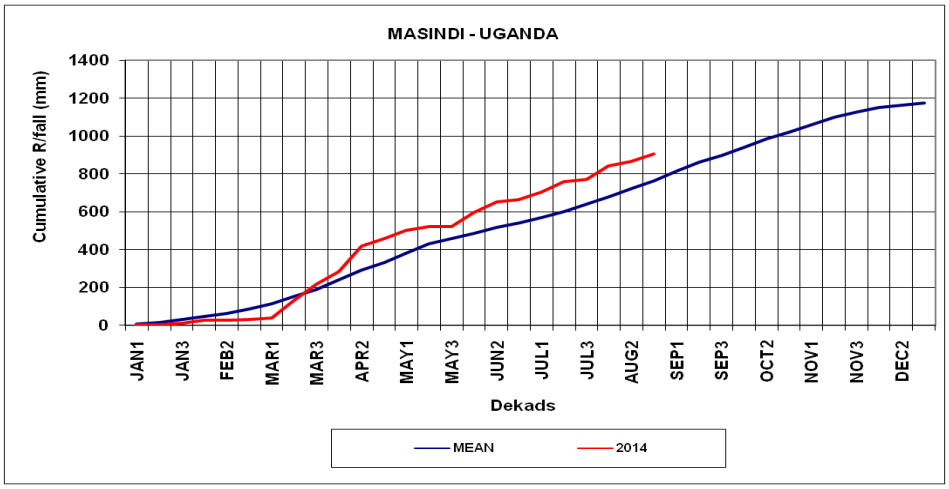

Figure 3b: Cumulative rainfall series for Masindi

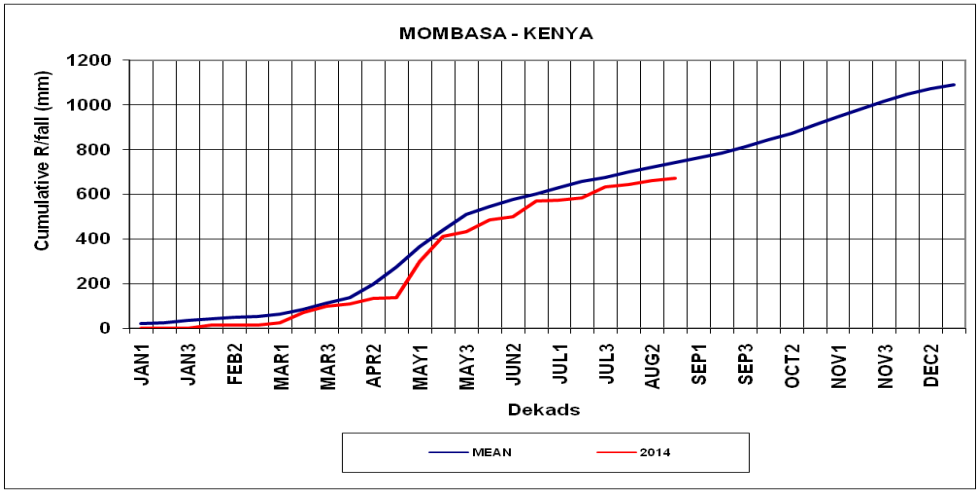

Figure 3c: Cumulative rainfall series for Mombasa

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during June to August 2014

During the period June-July-August 2014, less than 75% of the long-term average rainfall for the June-July-August period was received over north-eastern and south-western parts of Sudan; eastern Ethiopia; much of Somalia; northern and eastern Kenya as well as central and southern Tanzania (Figure 4). North-eastern Tanzania; coastal strip and north-western Kenya; northern half of Uganda; much of South Sudan; northern and western Ethiopia; and most parts of Sudan received between 75% and 125% of the three-month long-term mean rainfall during the June – August 2014 period (Figure 4). Southern Ethiopia; central and western Kenya; southern half of Uganda; much of Rwanda and Burundi; and north-western, western and central Tanzania received between 125% and more than 175% of the long-term rainfall.

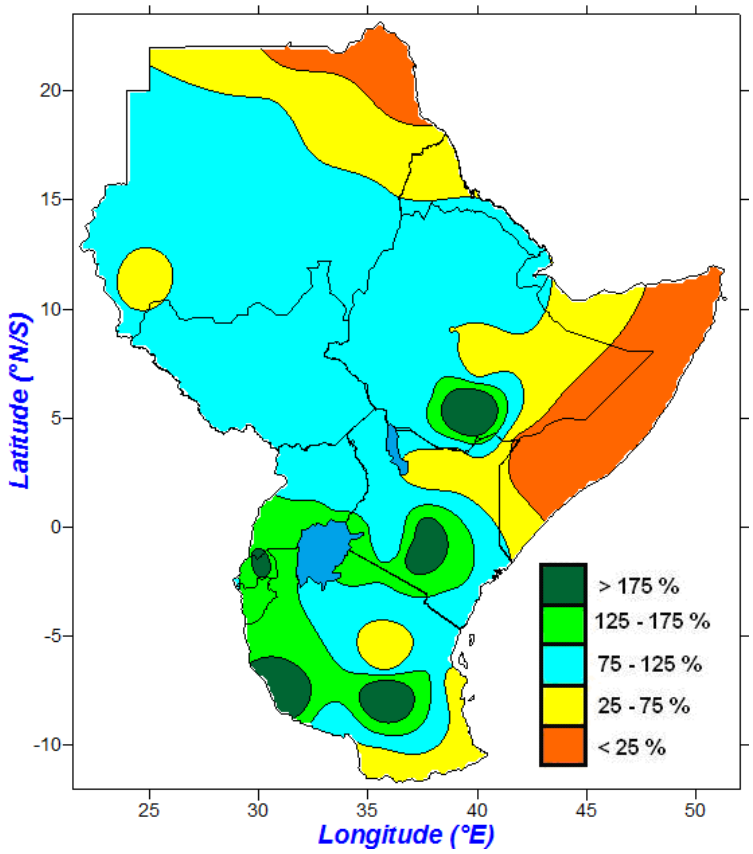

Figure 4: Spatial pattern of rainfall anomalies for June to August 2014

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

Warmer than average maximum temperature conditions dominated over much of the GHA region during the month of August 2014 (Figure 5a). Positive maximum temperature anomalies exceeding 2°C were recorded over north-eastern tip of Sudan; southern Ethiopia; northern and eastern Kenya; southern tip of Somalia; and central coast of Tanzania. However, negative anomalies of maximum temperature were recorded over eastern and southern parts of Sudan; northern tip of South Sudan; and southeast of Lake Victoria (Figure 5a).

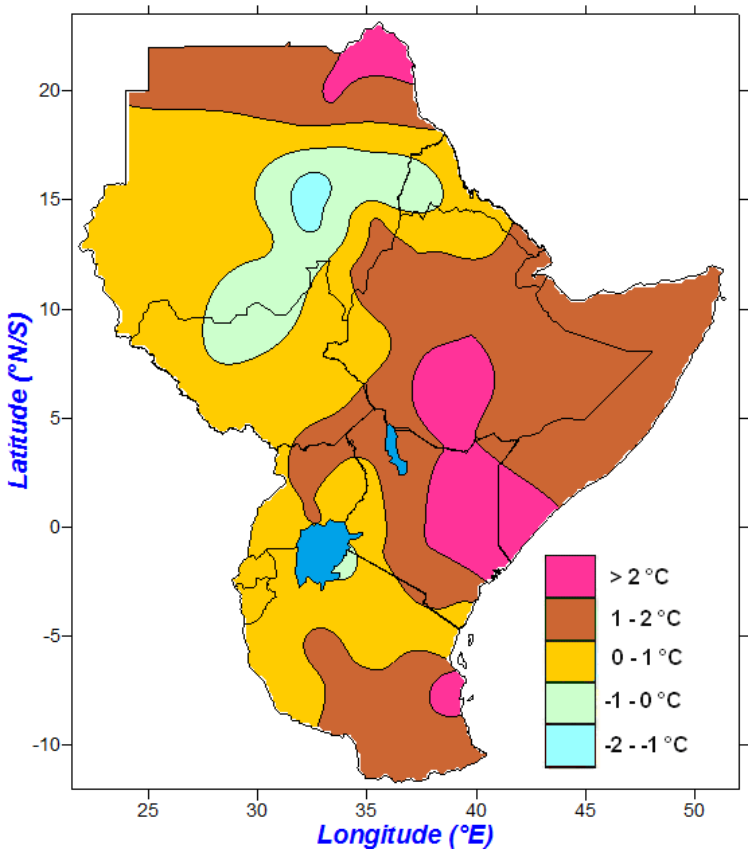

Figure 5a: Maximum temperature anomalies for August 2014

4.4.2 Minimum temperature anomalies

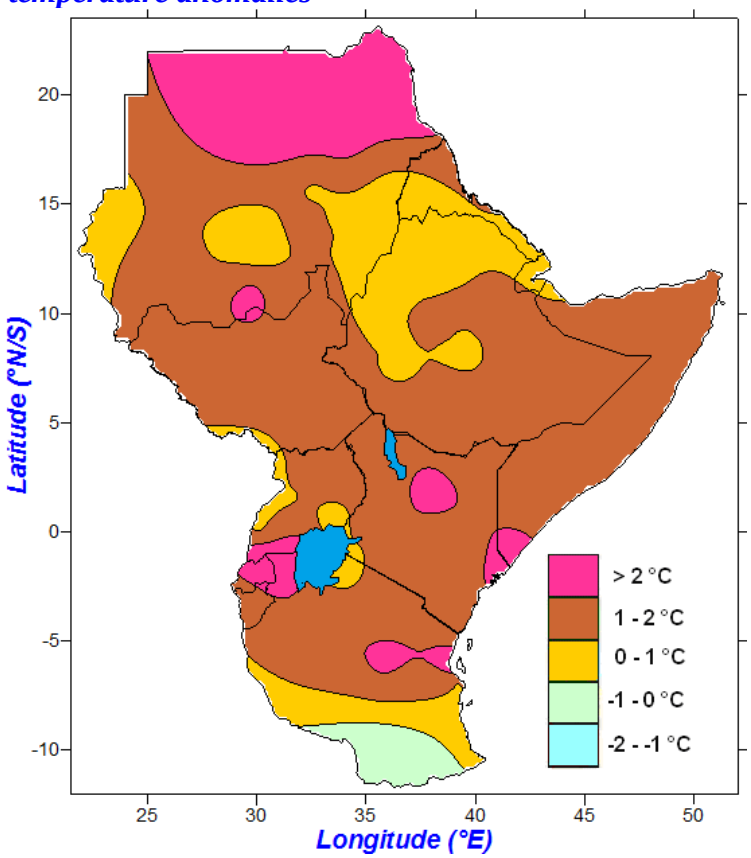

Figure 5b: Minimum temperature anomalies for the month of August 2014

Negative anomalies of minimum temperature were recorded over southern Tanzania in the month of August 2014 (Figure 5b). Warmer than average minimum temperature anomalies dominated the rest of the GHA region. Positive minimum temperature anomalies greater than 2°C were recorded over northern part of Sudan; southern Uganda; most parts of Rwanda; northern tip and an inland elongation from the north coast of Tanzania; northern Kenya; and the coastal strip around the Kenya-Somalia border (Figure 5b).

5. STATUS OF THE CLIMATE SYSTEMS

During the months of August to September 2014, tropical ocean sea surface temperatures (SSTs) remained near average. There was no significant shift towards anticipated El Niño like conditions in the tropical Pacific. Indian Ocean remained warmer than average in the equatorial eastern end and nearly neutral in the western side adjacent East Africa coast and extending to Arabian sea (Fig.6), a condition resulting in persistence of a weak negative Indian Ocean Dipole mode.

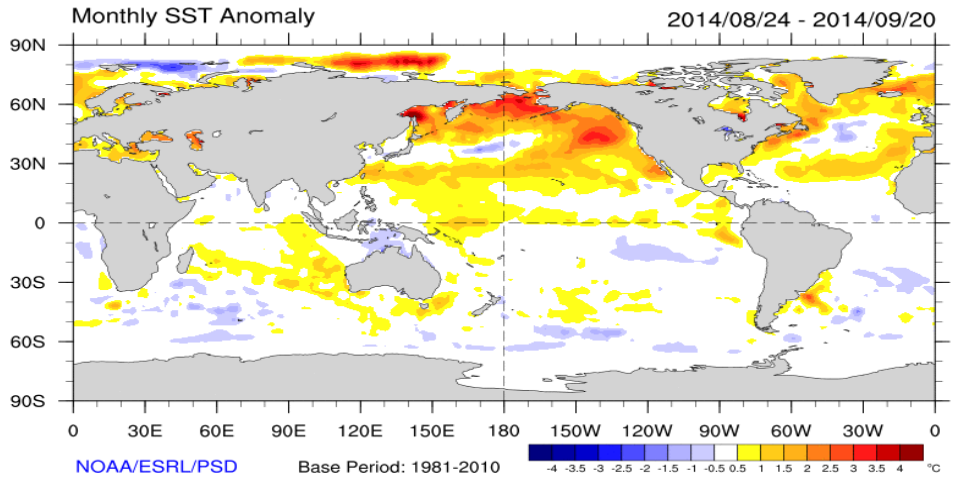

Figure 6: Sea Surface Temperature anomalies for the period 24 August to 20 September 2014 (Courtesy of NOAA)

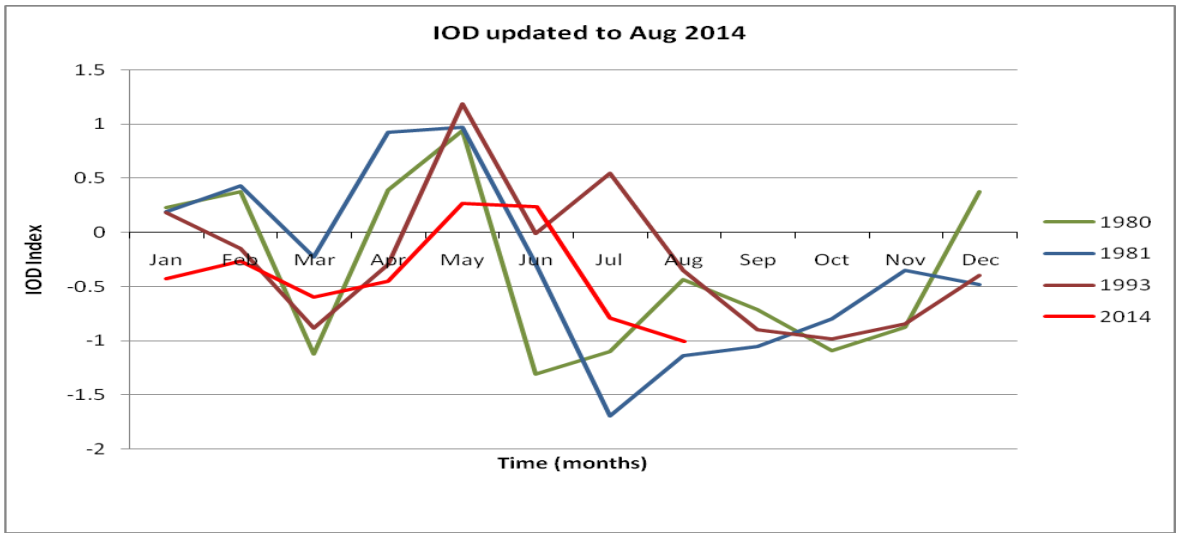

Figure 7: Indian Ocean Dipole (IOD) for 2014 and Analogue Years

6. CLIMATE OUTLOOK FOR OCTOBER-DECEMBER 2014

The outlook for October to December 2014 indicates that the equatorial western sector covering southern extreme of South Sudan, Uganda, western Kenya, Rwanda, Burundi, western and northern Tanzania as well as parts of coastal Kenya and Southern Somalia are likely to receive normal to above normal rainfall. Southern Ethiopia, most of Kenya and Tanzania are expected to receive normal to below normal rainfall while the rest of the region will remain generally dry (Figure 7).

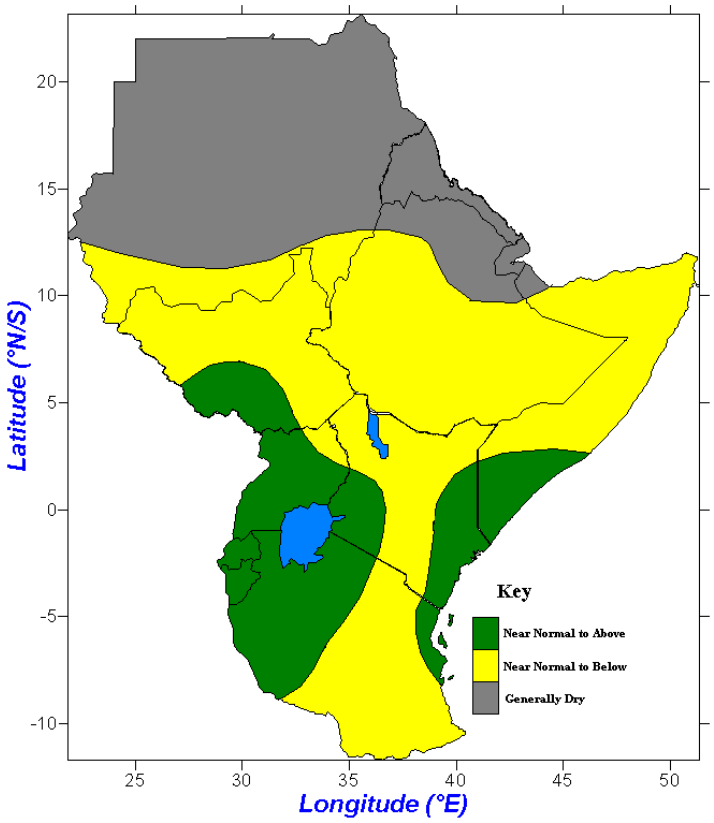

Figure 8: Climate Outlook for October to December 2014 rainfall season

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 August 2014

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

- Improved crop, pasture and foliage conditions;
- Replenishment of water reservoirs;
- Localised flooding and landslides;
- Outbreaks of water related diseases;

In regions that experienced dry conditions the impacts were:

- Poor livestock productivity
- Poor crop performance in some parts of the equatorial sector.

7.2 Potential impacts for October - December 2014 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 displacement 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;
- Reduction in water reservoirs.
- If the dry conditions persist within the agricultural areas, this could lead to water stress conditions and may cause significant water and pasture scarcity, crop and livestock losses.