

IGAD Climate Prediction and Applications Centre Monthly Bulletin, June 2014

1. HIGHLIGHTS/ ACTUALITES

- Rainfall activities were mainly observed over south-western and central parts of northern sector; and western and coastal parts of equatorial sector of the Greater Horn of Africa (GHA) in the month of May 2014;
- During July to August 2014 there is increased likelihood of near normal to above normal rainfall over Ethiopian highlands with the rest of northern sector receiving normal to below normal rainfall;
- The observed rainfall conditions that prevailed during the month of May 2014 resulted in improved crop, pasture and foliage conditions as well as improvement in water resources over south-western and central parts of northern sector; and western and coastal parts of equatorial sector of the Greater Horn of Africa. There were several cases of flooding and landslides in parts of western parts of the equatorial sector. Dry conditions were experienced within much of the agricultural areas of GHA.

2. INTRODUCTION

This bulletin reviews the climatic conditions observed over the GHA in May 2014 and provides the climate outlook for July and August 2014. The socio-economic impacts associated with both the observed climatic conditions and the climate outlook is also finally highlighted.

This bulletin is made of seven major sections. In section 1, the major highlights from both the observed and expected climate conditions are outlined, while an overall summary is provided in section 3. Under section 4, the climate patterns that prevailed in the month of May 2014 are discussed, with the dominant weather systems discussed in section 5. The climate outlook over the GHA for July and August 2014 is presented in section 6. Finally, the socio-economic impacts associated with the observed climatic conditions and those expected from the climate outlook are outlined.

3. SUMMARY

In this section, the three main components of the bulletin are summarised. These components are: the climatic conditions observed in May 2014 over GHA, the climate outlook for July and August 2014, as well as the impacts associated with both the observed climate conditions and the climate outlook.

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

The regional climate outlook for the July to August 2014 rainfall season indicates increased likelihood of near normal to below normal rainfall over most parts of the northern and western equatorial sectors except for parts of north western Ethiopia; south-eastern Sudan and

north-eastern South Sudan which have increased likelihood of receiving near normal to above normal rainfall. The rest of the region is expected to remain generally at this time of the year (Figure 8).

4. CLIMATE PATTERNS IN MAY 2014

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

4.1 Rainfall amounts and performance during May 2014

During the month of May 2014, western Ethiopia; eastern and southern parts of South Sudan; central and south-eastern Uganda; western Kenya; southern coastal of Somalia, much of Kenyan coast and northern coast of Tanzania received more than 150mm of rainfall (Figure 1). Rainfall amounts ranging between 50mm and 150mm was received over western, central and northern parts of South Sudan; northern, central and southern Ethiopia; central and southern Somalia; northern tip and central Kenya; eastern, northern and western Uganda; and north-eastern Tanzania. Most parts of Sudan; much of Eritrea and Djibouti; northern Somalia; northern tip and eastern Ethiopia; parts of north-western, eastern and southern Kenya; south-western tip of Uganda; and most parts of Rwanda, Burundi and Tanzania received less than 50mm of rainfall (Figure 1).

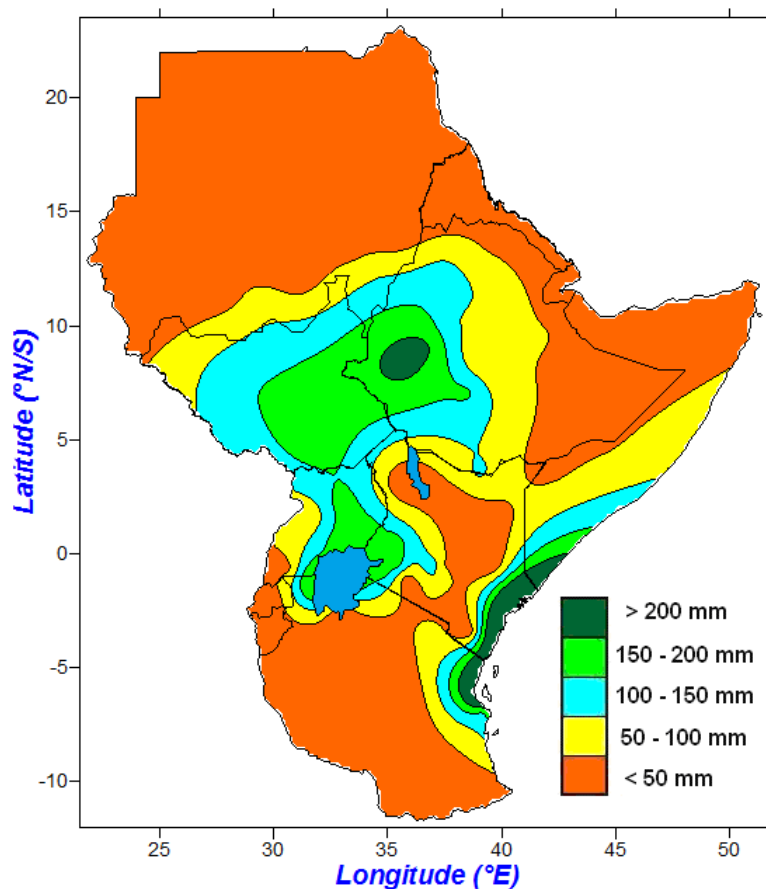


Figure 1: Spatial distribution of rainfall during the month of May 2014

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.

In the month of May 2014, near normal to wet conditions were recorded over central and western Ethiopia with an elongation to southern part; southern tip of Sudan; northern, central and eastern parts of South Sudan; southern and eastern Uganda; parts of northern tip, western, south-western and coastal Kenya; northern and coastal Tanzania (Figure 2). Over much of Rwanda and Burundi; parts of central and eastern Tanzania; parts of southern, central and north-western Kenya; northern, western, south-western and eastern Uganda; western and southern parts of South Sudan; part of southern Sudan; eastern and southern Ethiopia; and most parts of Somalia recorded dry conditions in May 2014. Generally dry conditions were recorded over most parts of Sudan and Djibouti; much of Eritrea; northern tip of Ethiopia; parts of northern and southern Somalia; eastern and north-western Kenya; and central, western and south-western Tanzania.

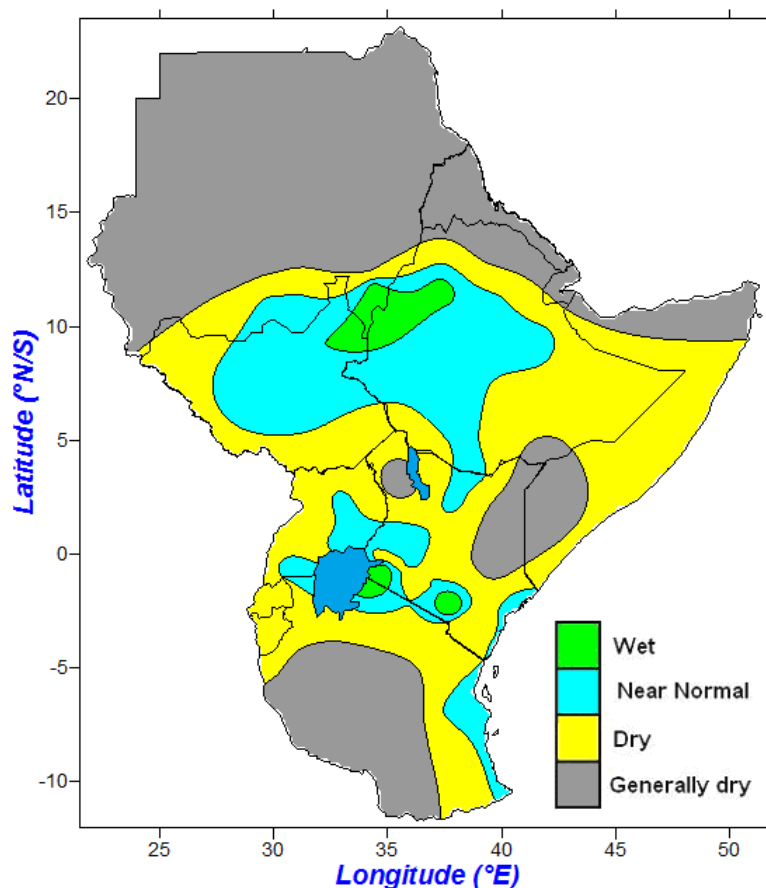


Figure 2: Rainfall severity index for the month of May 2014

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 2013 to March 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 south-western and central parts of the northern sector of the GHA (Figure 3a and Figure 3b), while western parts of the equatorial sector experienced normal to below rainfall (Figure 3c) respectively.

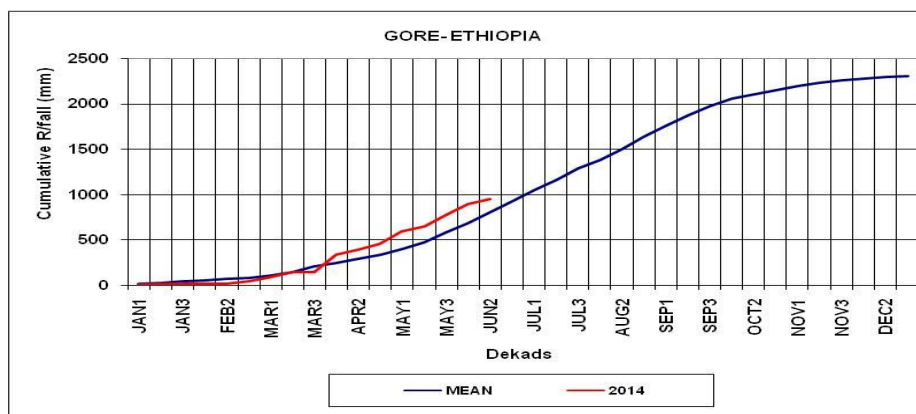


Figure 3a: Cumulative rainfall series for Gore

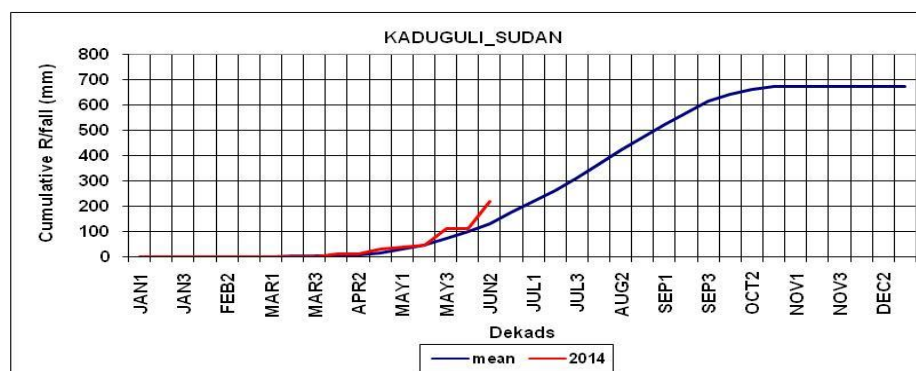


Figure 3b: Cumulative rainfall series for KADUGULI

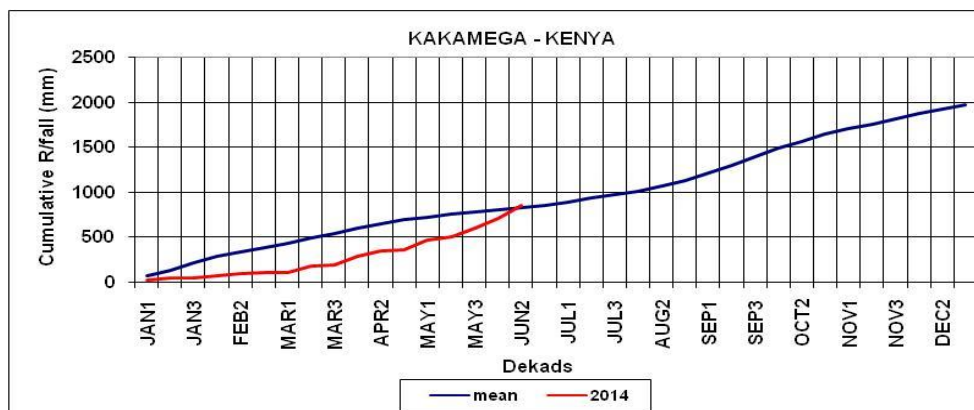


Figure 3c: Cumulative rainfall series for KAKAMEGA

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during March to May 2014

During the March-April-May 2014 period, less than 75% of the long-term average rainfall for the March-April-May period was received over northern and south-western Sudan; northern Eritrea; southern Ethiopia; north-western and south-western Kenya; northern and western Tanzania; southern and southwestern Rwanda; and most parts of Burundi (Figure 4). Southern and eastern Tanzania; most parts of Kenya; much of Somalia, Djibouti and Eritrea; eastern half and western part of Ethiopia; southern part of Sudan; much of South Sudan and Uganda; northern and western Rwanda; and southern Burundi received between 75% and 125% of the three-month long-term mean rainfall during the March-May 2014 period. South-western and south-eastern of Sudan; northern tip and north-eastern tip of South Sudan; north-western Ethiopia and central coast of Tanzania received between 125% and more 175% of the long-term rainfall (Figure 4). An isolated parcel over north-western Ethiopia received more than 175% of the long-term rainfall.

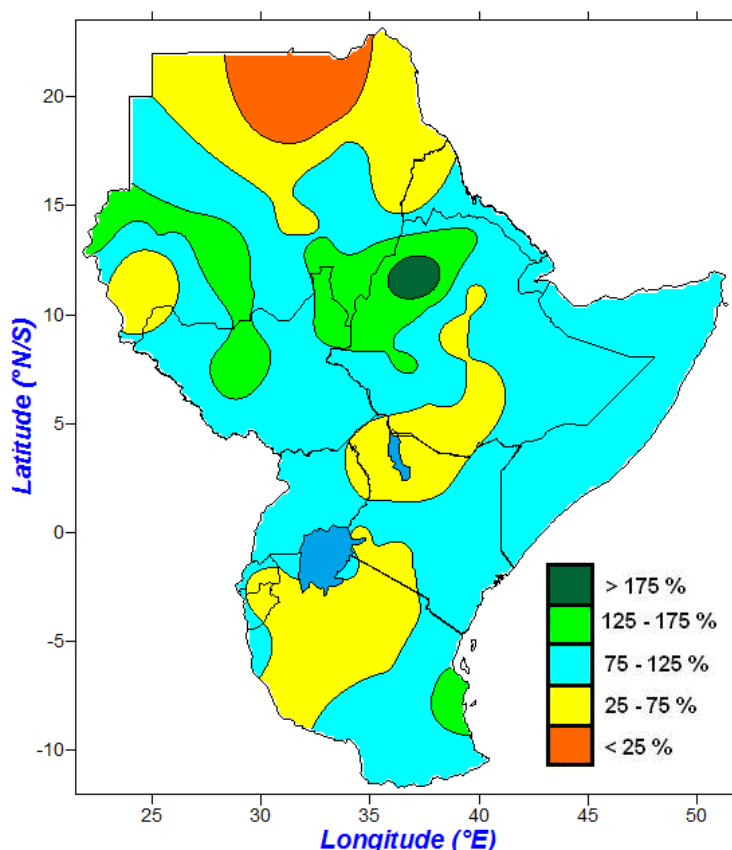


Figure 4: Spatial pattern of rainfall anomalies for March to May 2014 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

In May 2014, negative anomalies of maximum temperature were recorded mainly over southern tip of Tanzania; northern part of South Sudan; south-eastern part of Sudan; northern and north-western Ethiopia and central Eritrea (Figure 5a). During the same period, warmer than average maximum temperature conditions dominated over most of the remaining parts

of the GHA region. Positive maximum temperature anomalies exceeding 2°C were recorded over the Kenya-Ethiopia-Somalia boundary; south-western Kenya; most parts of Burundi; and western Tanzania (Figure 5a).

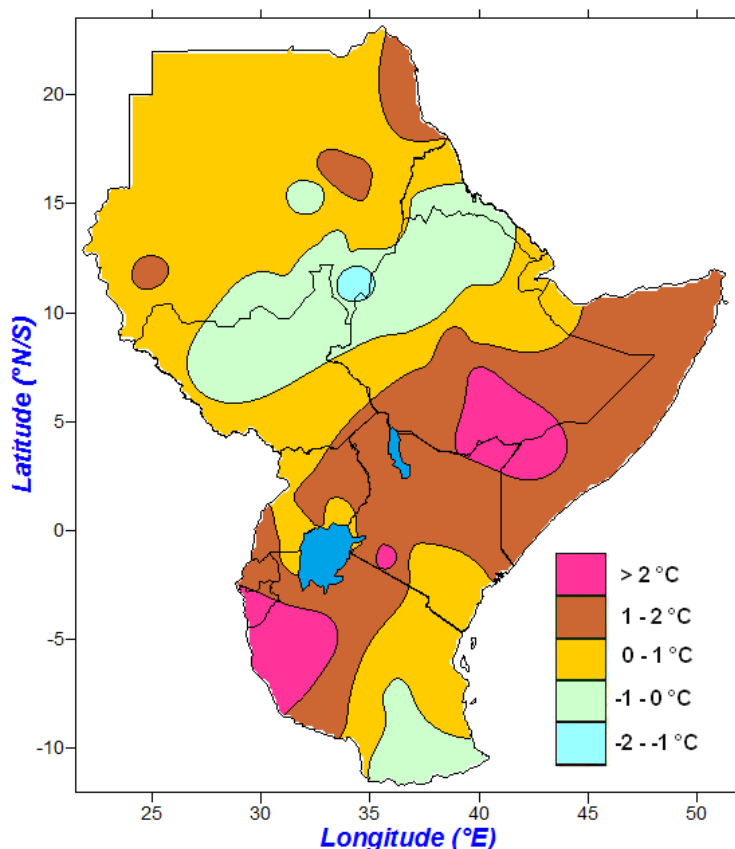


Figure 5a: Maximum temperature anomalies for May 2014

4.4.2 Minimum temperature anomalies

Warmer than average minimum temperature conditions dominated over most parts of the GHA region during the month of May 2014 (Figure 5b). Positive minimum temperature anomalies greater than 2°C were recorded over northern half of Sudan; central and southern Somalia; eastern, central and western Kenya; and western of Lake Victoria. Negative anomalies of minimum temperature were recorded over northern tip of Ethiopia; most parts of South Sudan; northern and north-western Uganda; and southern and south-western parts of Tanzania in May 2014 (Figure 5b).

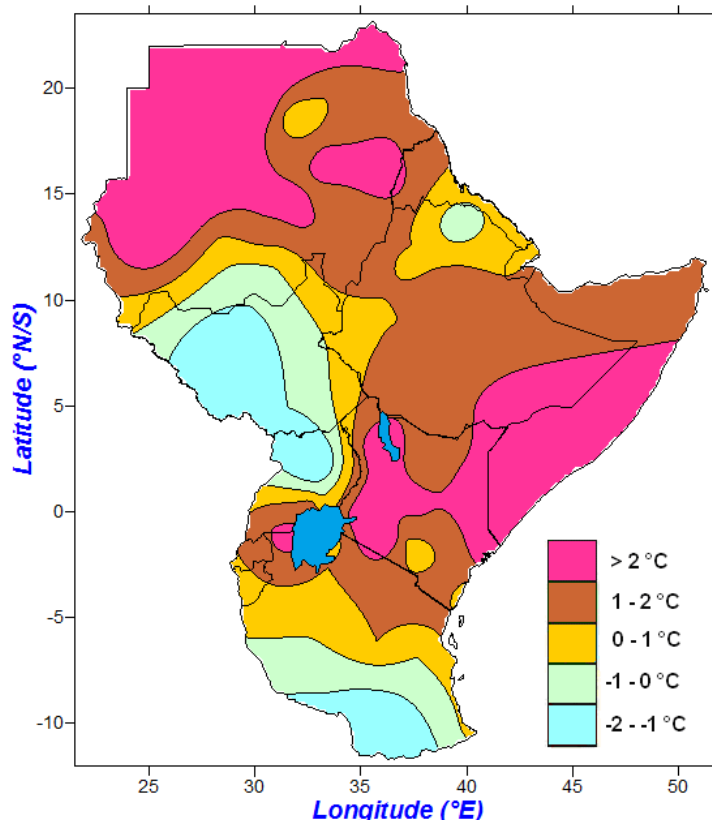


Figure 5b: Minimum temperature anomalies for the month of May 2014

5. STATUS OF THE CLIMATE SYSTEMS

During May 2014 above average sea surface temperatures (SSTs) were observed over much of the eastern, western and southern parts of the Indian Ocean while near average SSTs were observed over the central parts of Indian Ocean (Fig.6) resulting in a slightly positive Indian Ocean dipole (Fig.7). Warmer than above average SSTs were observed across equatorial Pacific Ocean.

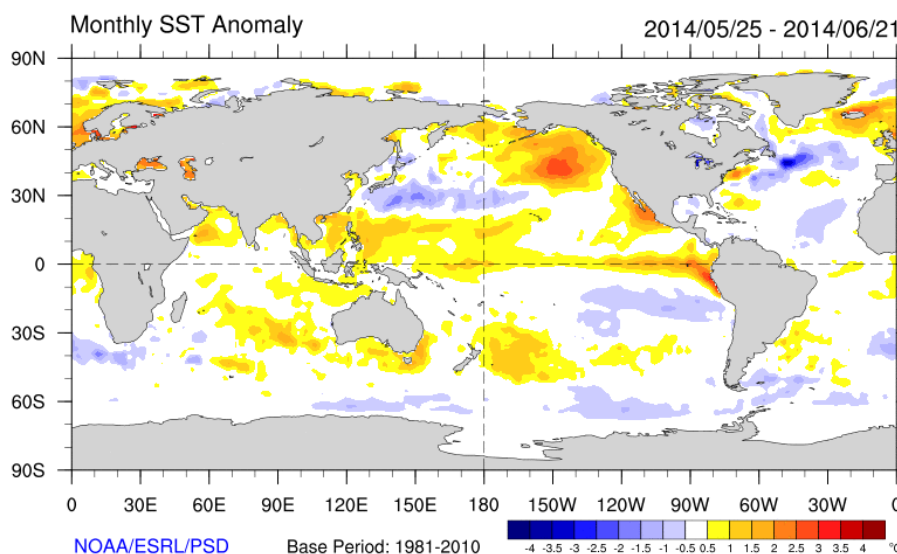


Figure 6: Sea Surface Temperature anomalies for the period 27 April 2014 to 24 May 2014 (Courtesy of NOAA)

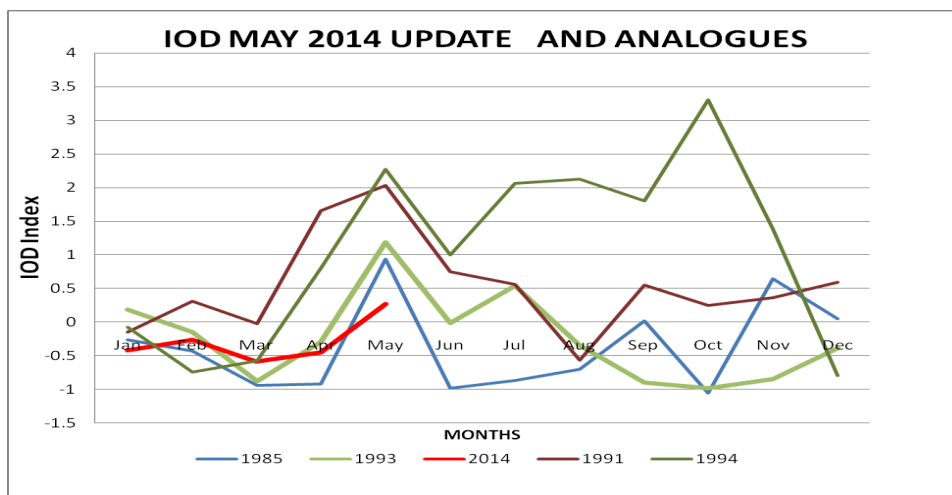


Figure 7: Indian Ocean Dipole (IOD) for 2014 and Analogue Years

6. CLIMATE OUTLOOK FOR JULY –AUGUST 2014

The outlook for July to August 2014 indicates that western Ethiopia and eastern Sudan are likely to receive normal to above normal rainfall. The rest of the northern sector consisting of eastern and southern Ethiopia, Djibouti, Eritrea, South Sudan, Uganda and western Kenya are likely to receive normal to below normal rainfall (Figure 7). The rest of the GHA including Tanzania, Burundi, Rwanda, and eastern Kenya are expected to remain generally dry during July to August 2014 (Figure 7).

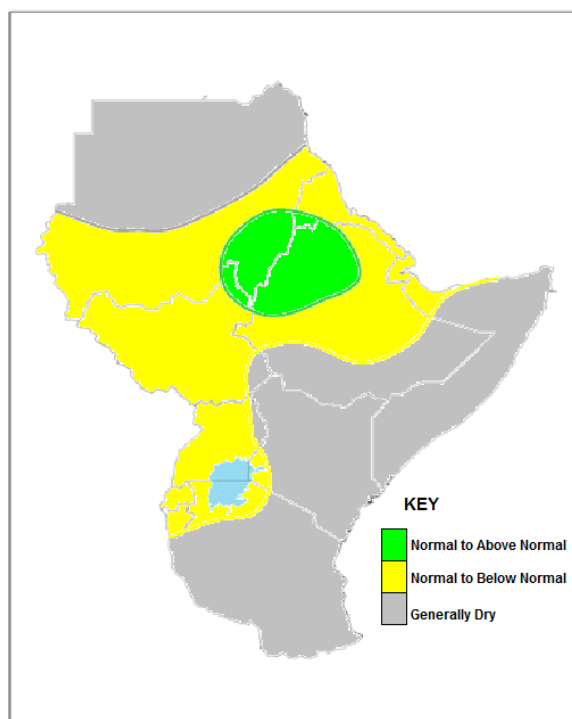


Figure 8: Climate Outlook for the July to August 2014 rainfall season

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 Vegetation condition indicators and associated impacts

The difference of the Normalized Difference Vegetation Index (NDVI) between April and May 2014 indicates improved vegetation conditions over much of South Sudan; northern Uganda; southern Somalia; western and eastern Ethiopia; coastal and northeastern Kenya as well as parts of southern Tanzania. Parts of southern Kenya; north of Tanzania; and southern Ethiopia indicated less improved vegetation while rest of the region indicated no change in vegetation conditions as shown in figure 9.

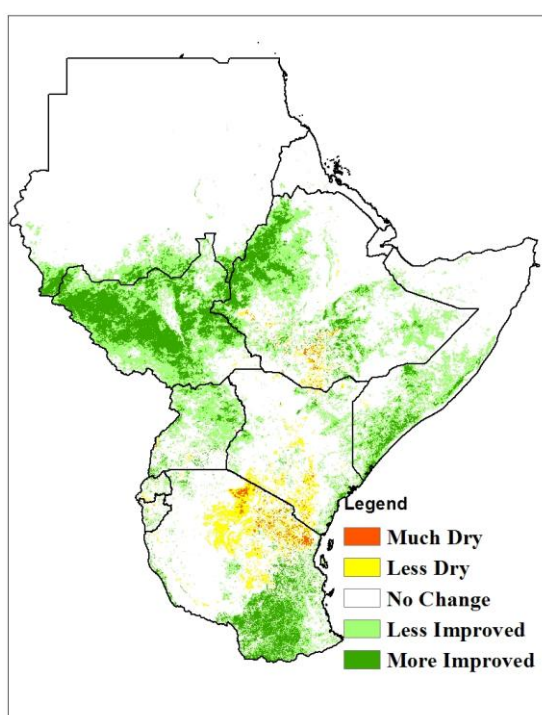


Figure 9: Vegetation difference between April and May 2014 over the GHA

7.2 Impacts of observed climate conditions during May 2014

The socio-economic impacts associated with the observed rainfall over much of south-western and central parts of northern sector; and western and coastal parts of equatorial sector of the Greater Horn of Africa during the month of May 2014 were as follows:

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

On the other hand, dry conditions were experienced within much of the agricultural areas of GHA.

- Moisture stress
- Depletion of water reservoirs
- Low crop and pasture performance
- Reduced livestock productivity

7.3 Potential impacts for July 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 and landslides, leading to loss of life, displacement of people, and destruction of property;
- Outbreaks of water related diseases.

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

- Poor prospects for crop and pasture performance;
- Depletion of water reservoirs.
- If the dry conditions persist within the agricultural areas, this could lead to a drought and may cause significant water and pasture scarcity, crop and livestock losses.