

IGAD Climate Prediction and Applications Centre Monthly Bulletin, April 2014

1. HIGHLIGHTS/ ACTUALITES

- Near-normal to wet conditions were recorded over much of the southern sector; southern, western and central parts of equatorial sector of the Greater Horn of Africa (GHA) during the month of March 2014;
- During May 2014 there is increased likelihood of near normal to above normal rainfall over the western parts of the equatorial sector and western parts of the northern sector of GHA sub-region;
- The observed rainfall conditions during the month of March 2014 resulted in improved soil, crop, pasture and foliage conditions as well as replenishment of water resources.

2. INTRODUCTION

This bulletin reviews the climatic conditions observed over the GHA in March 2014; provides the climate outlook for the month of May 2014; and highlights on the socio-economic impacts associated with both the observed climatic conditions and the climate outlook.

In this bulletin, there are seven major sections. In section 1, the major highlights from both the observed and expected climate conditions are outlined while in section 3, the overall summary is provided. Under section 4, the climate patterns that prevailed in the month of March 2014 are discussed, with the dominant weather systems discussed in section 5. The climate outlook for the month of May 2014 over GHA 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 last section.

3. SUMMARY

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

In the month of March 2014, rainfall activities were mainly observed over much of the Tanzania, Rwanda and Burundi; most parts of Uganda; and western, central and south-western Kenya. The observed near normal rainfall conditions over parts of the Greater Horn of Africa during March 2014 resulted in improved crop, pasture and foliage conditions and replenishment of water resources.

The regional climate outlook for May 2014 indicates increased likelihood of near normal to above normal rainfall over western parts of the equatorial sectors and the southwestern parts of the northern sector. Near normal to below normal rainfall is expected over eastern parts of the equatorial, most parts of southern sector, and northern parts of the northern sector (Figure 8).

4. CLIMATE PATTERNS IN MARCH 2014

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

4.1 Rainfall amounts and performance during March 2014

During the month of March 2014, much of Rwanda, Burundi, and Tanzania excluding the central parts; most parts of Uganda excluding the eastern part; western central and south-western Kenya, southern part of South Sudan; and western Ethiopia received between 100mm and 200mm of rainfall (Figure 1). Most of the Tanzania coast; and eastern and western sides of Lake Victoria received more than 200mm of rainfall. Most of the central and southern parts of South Sudan; western, north-western and south-western Ethiopia; eastern Uganda; much of the north-western Kenya; and central Tanzania received between 50mm and 100mm of rainfall. Much of Sudan, Eritrea, Djibouti and Somalia; northern part of South Sudan; northern, eastern and south-eastern Ethiopia; north-western and eastern Kenya received less than 50mm of rainfall in the month of March 2014 (Figure 1).

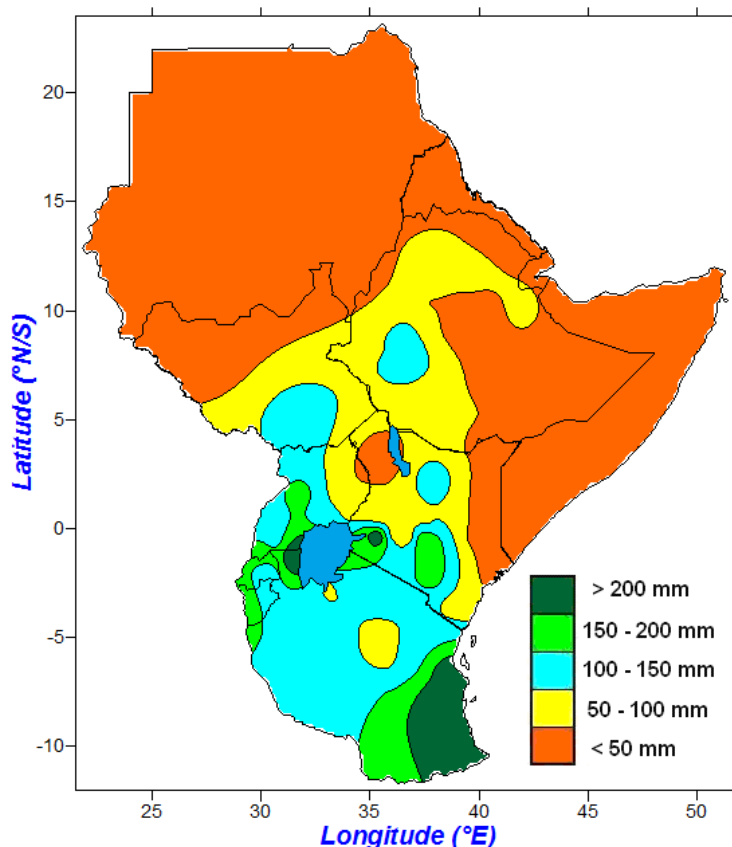


Figure 1: Spatial distribution of rainfall during the month of March 2014

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 much of Tanzania, Rwanda and Burundi; most parts of Uganda excluding eastern part; most parts of Kenya excluding the eastern and north-western parts; southern part of South Sudan; and parts of southern, western and central Ethiopia (Figure 2). Dry conditions were recorded over central and south-eastern parts of South Sudan; eastern Ethiopia; north-western and eastern Kenya; north-eastern Uganda; and isolated parcels over northern, western and south-western Tanzania. Generally dry conditions persisted over central and southern Somalia; northern Ethiopia; northern part of South Sudan; most parts of Eritrea and much of Sudan.

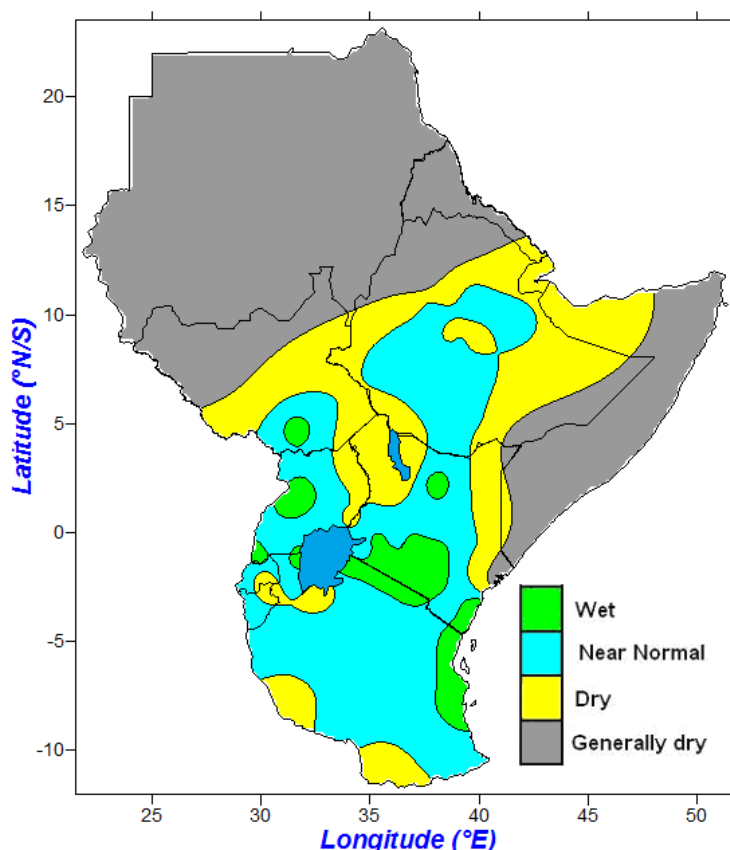


Figure 2: Rainfall severity index for the month of March 2014

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 June 2013. Near normal to above normal rainfall was observed over parts of the equatorial and southern sectors of the GHA (Figure 3a and Figure 3b), while eastern parts of the equatorial sector experienced near to below normal rainfall (Figure 3c) respectively.

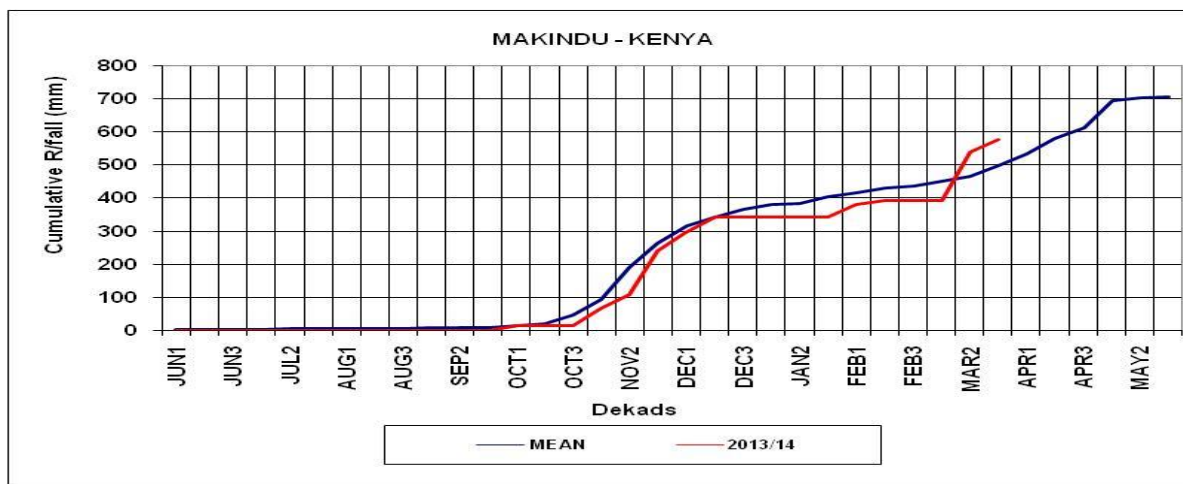


Figure 3a: Cumulative rainfall series for MAKINDU

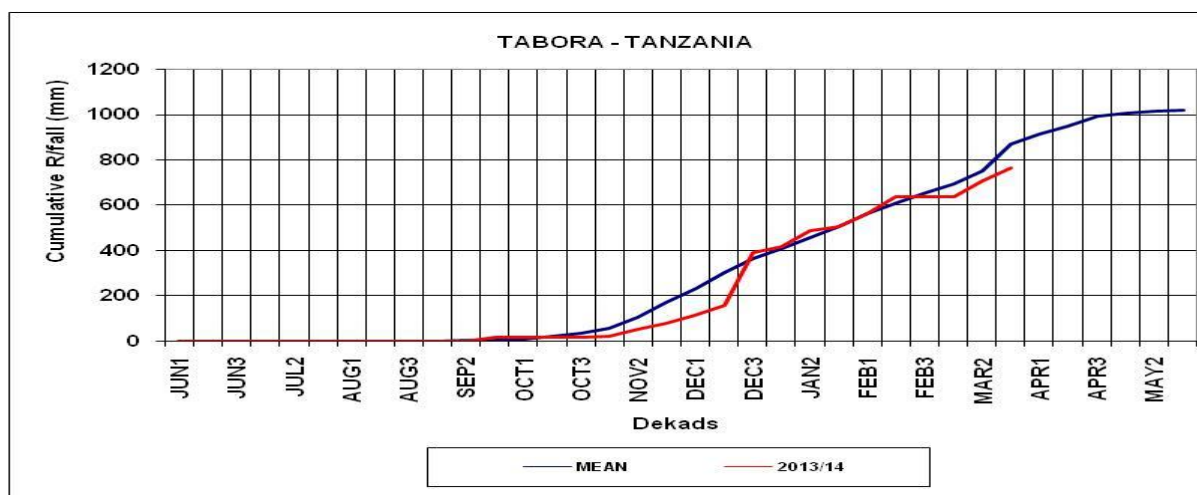


Figure 3 b: Cumulative rainfall series for Tabora

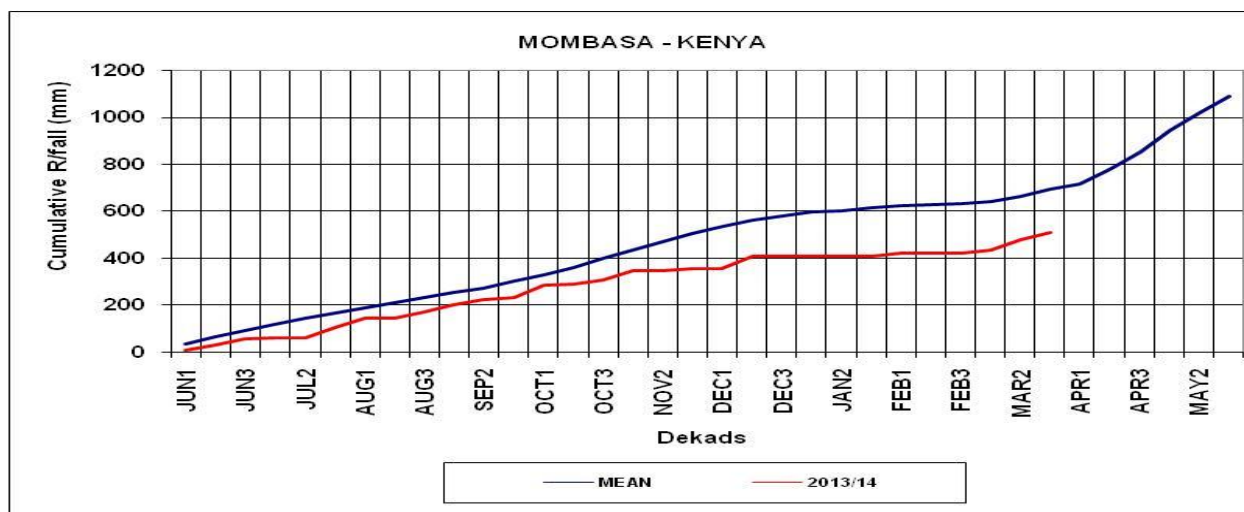


Figure 3 c: Cumulative rainfall series for Mombasa

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during January to March 2014

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

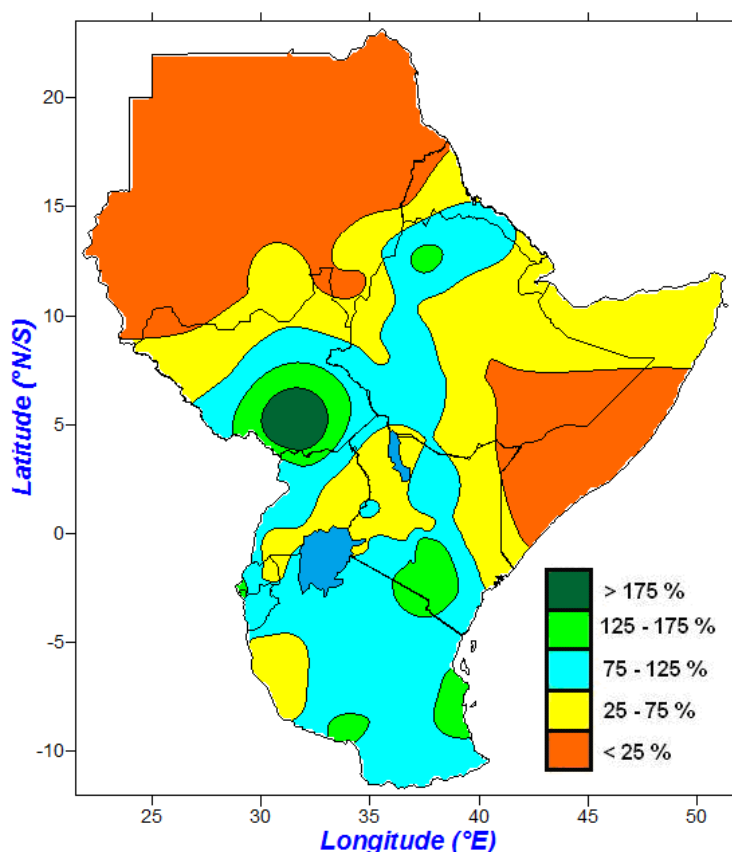


Figure 4: Spatial pattern of rainfall anomalies for January to March 2014 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

Negative anomalies of maximum temperature were recorded mainly over south-eastern tip of Tanzania; on the Kenya – Tanzania border; isolated parcel over western Kenya; on the Uganda – South Sudan border; and northern and north-eastern Ethiopia during the month of March 2014 (Figure 5a). Warmer than average maximum temperature conditions dominated over most of the remaining parts of the GHA region (Figure 5a). Over central Ethiopia; and

south-western and northern tip of Sudan; positive maximum temperature anomalies exceeding 2°C were recorded (Figure 5a).

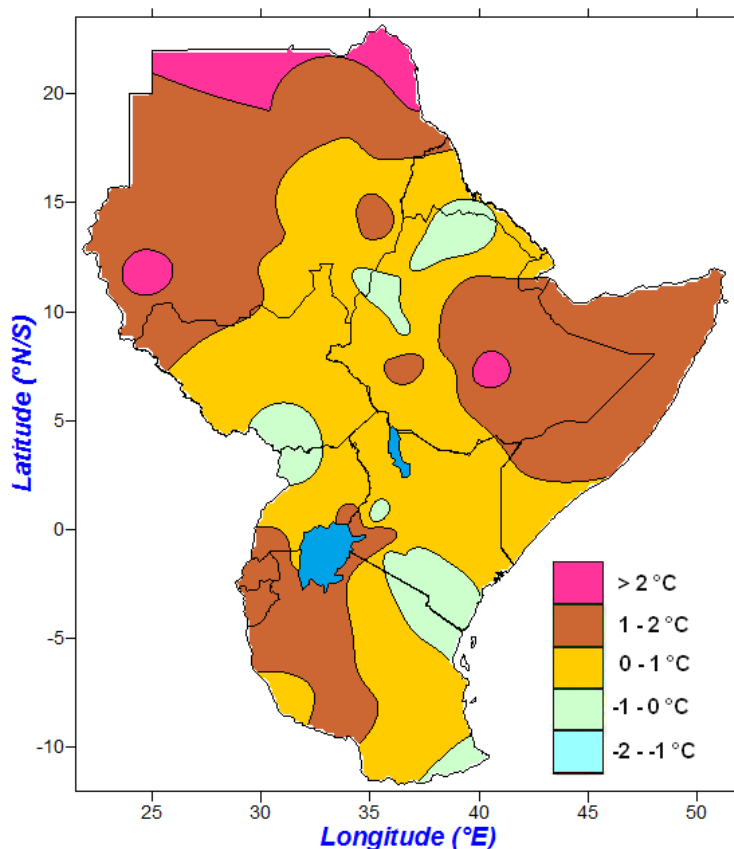


Figure 5a: Maximum temperature anomalies for March 2014

4.4.2 Minimum temperature anomalies

Warmer than average minimum temperature conditions dominated over most parts of the GHA region during the month of March 2014 (Figure 5b). Positive minimum temperature anomalies greater than 2°C were recorded over eastern, central and southern parts of Sudan; south-western Kenya; and on the Uganda – Tanzania border. Over South Sudan – Kenya – Ethiopia border; part of eastern Kenya; and southern Tanzania recorded negative anomalies of minimum temperature in the month of March 2014 (Figure 5b).

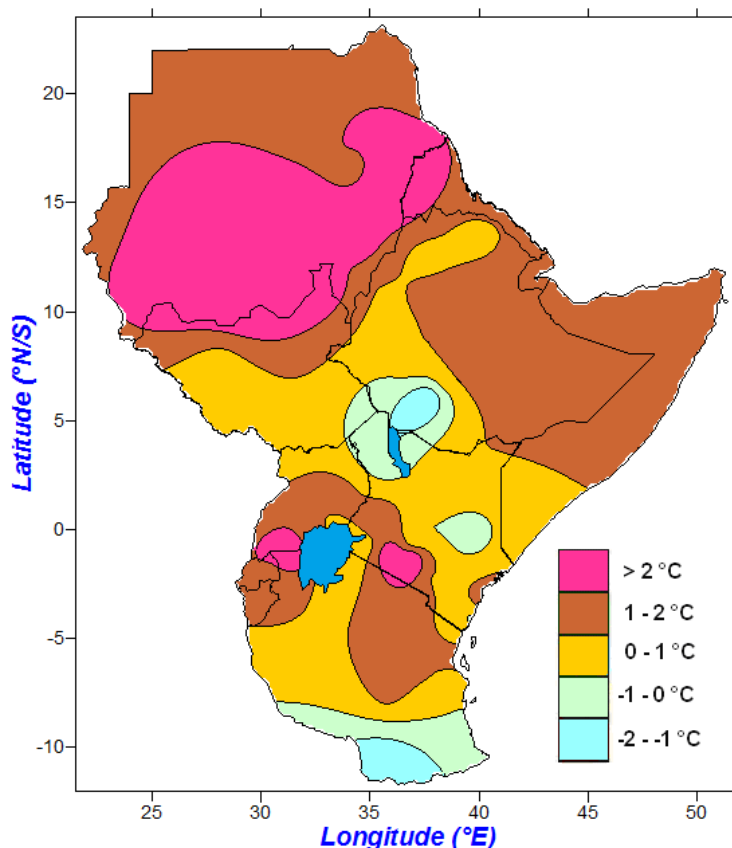


Figure 5b: Minimum temperature anomalies for the month of March 2014

5. STATUS OF THE CLIMATE SYSTEMS

During April 2014 above average sea surface temperatures were observed over much of the eastern and southern parts of the Indian Ocean (Fig.6) and near average SSTs over western parts of the Indian Ocean resulting in a negative Indian Ocean dipole (Fig.7). Slightly above average Sea Surface Temperatures were observed across equatorial Pacific Ocean. These conditions have negative implications on GHA rainfall during May 2014.

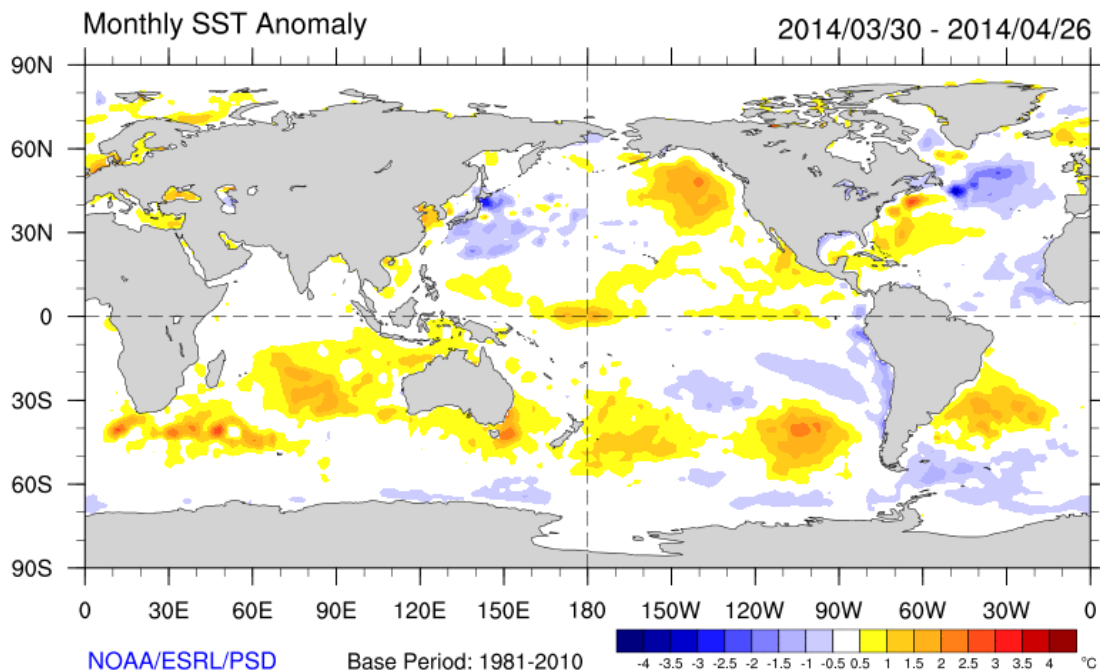


Figure 6: Sea Surface Temperature anomalies for the period 30 March 2014 to 26 April 2014 (Courtesy of NOAA)

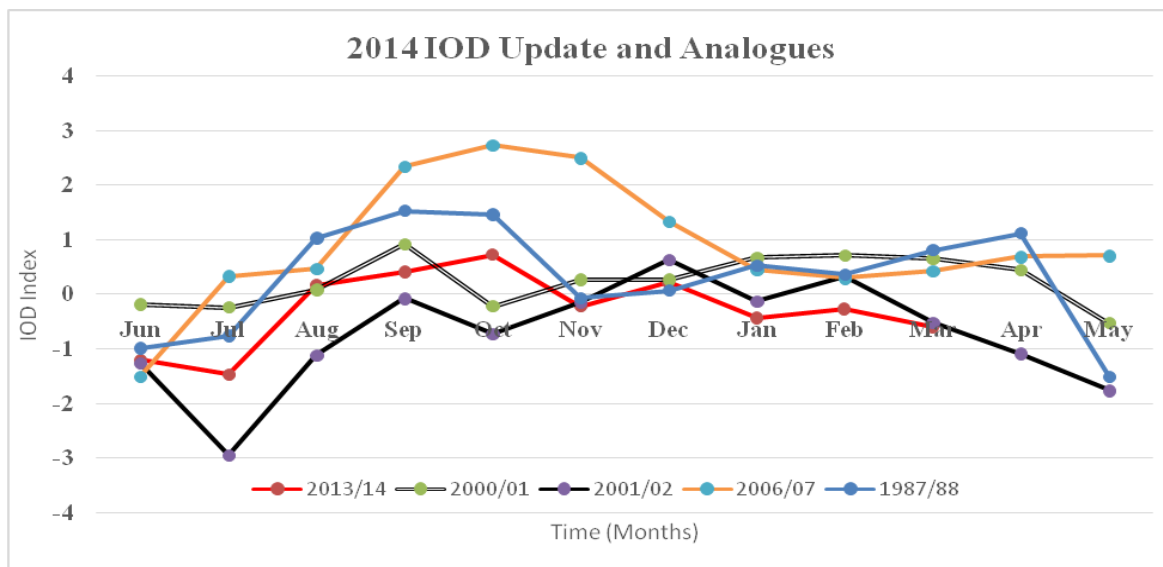


Figure 7: Indian Ocean Dipole (IOD) for 2014 and Analogue Years

6. CLIMATE OUTLOOK FOR May 2014

The climate outlook for April–May 2014 indicates that near to above normal rainfall is expected over much Burundi; Rwanda; Uganda; western Kenya; northwestern Tanzania; much of South Sudan; central Ethiopia and Djibouti. Near to below normal rainfall is likely to be experienced over much of Kenya; much of Somalia; central and notheastern Tanzania; southern, eastern and northern Ethiopia; much of Eritrea; southeastern parts of Sudan and northwestern parts of South Sudan. The rest of GHA is likely to remain generally dry (Fig.8).

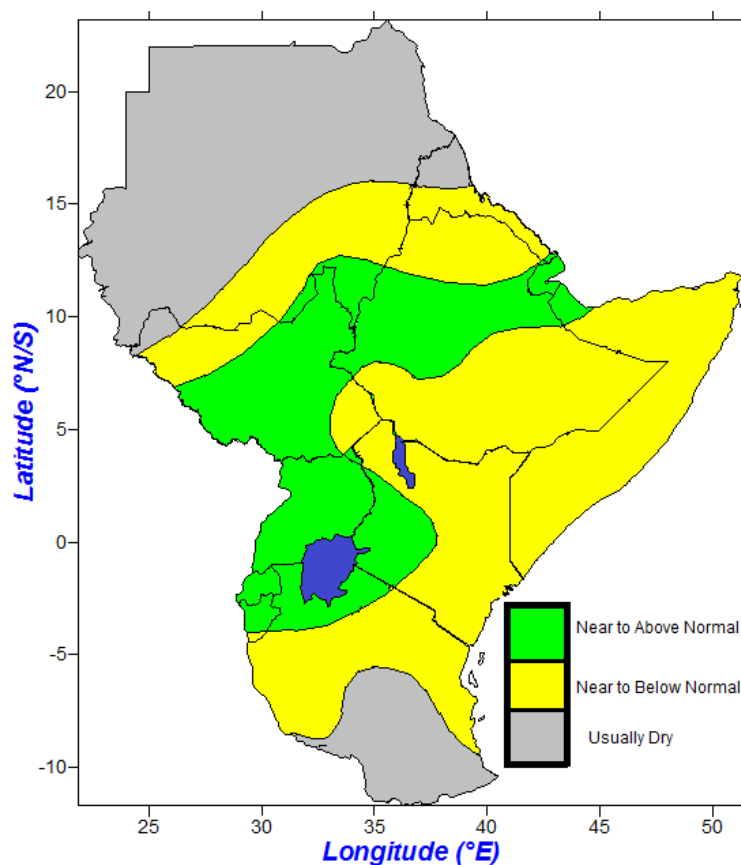


Figure 8: Climate Outlook for May 2014

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 February and March 2014 indicates improved vegetation conditions over much of Tanzania; western Uganda; southwestern and central Ethiopia; parts of central and northern Kenya as well as western parts of South Sudan. Northeastern parts of South Sudan; southern Tanzania; southern Somalia and northern coast of Kenya indicated less improved vegetation while rest of the region indicated no change in vegetation conditions as shown in figure 9.

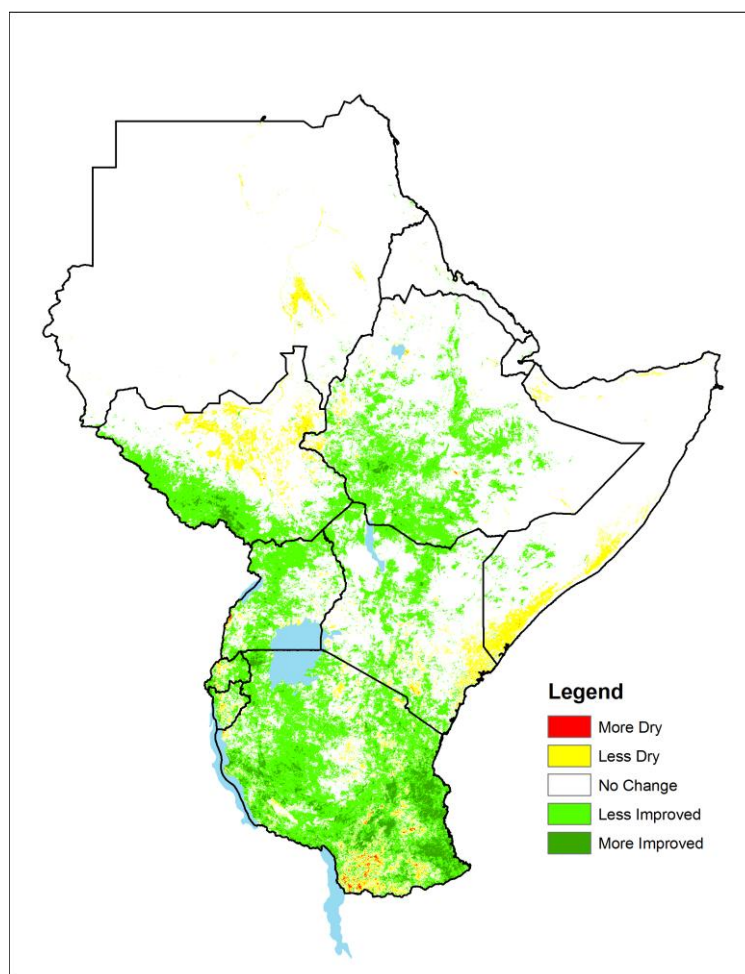


Figure 9: Vegetation difference between February and March 2014 over the GHA

7.2 Impacts of observed climate conditions during March 2014

The socio-economic impacts associated with the observed rainfall over the southern sector as well as parts of the equatorial sector of the Greater Horn of Africa region during the month of March 2014 were as follows:

- Enhanced soil moisture conditions which subsequently resulted in improved crop, pasture and foliage conditions;
- Replenishment of water reservoirs;
- Localised flooding;
- Outbreaks of water related diseases.

7.3 Potential impacts for May 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, leading to loss of livelihood, 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;
- Outbreaks of water related diseases.