

IGAD Climate Prediction and Applications Centre Monthly Bulletin, March 2014

1. HIGHLIGHTS/ ACTUALITES

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

2. INTRODUCTION

In this bulletin, the climatic conditions observed over the GHA in the month of February 2014 are reviewed; the climate outlook for the April and May 2014 provided; as well as highlights on the socio-economic impacts associated with both the observed climatic conditions and the climate outlook.

There are seven major sections in this bulletin. The major highlights from both the observed and expected climate conditions are outlined in section 1, while section 3 provides the overall summary. Under section 4, the climate patterns that prevailed in February 2014 are discussed, while the dominant weather systems are discussed in section 5. In section 6, the climate outlook for April and May 2014 over GHA is presented. Finally, 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

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

Rainfall activities were mainly observed over southern Tanzania during the month of February 2014. The observed near normal rainfall conditions over parts of the Greater Horn of Africa during the month of February 2014 resulted in improved crop, pasture and foliage conditions and replenishment of water resources.

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

4. CLIMATE PATTERNS IN FEBRUARY 2014

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

4.1 Rainfall amounts and performance during February 2014

In February 2014, rainfall activities were concentrated over southern Tanzania as well as much of Burundi and western Rwanda (Figure 1). Southern Tanzania; south-western tip of Rwanda and north-western tip of Burundi received more than 150mm of rainfall in February 2014. Parts of western Tanzania; much of Burundi; western Rwanda; and an isolated parcel of south-western Kenya received 100mm and 150mm of rainfall (Figure 1). The rest of Tanzania; eastern half of Rwanda; and southern Kenya received between 50mm and 100mm of rainfall. Much of Sudan, South Sudan, Eritrea, Ethiopia, Djibouti, and Somali; most parts of Kenya and Uganda received less than 50mm of rainfall during the month of February 2014 (Figure 1).

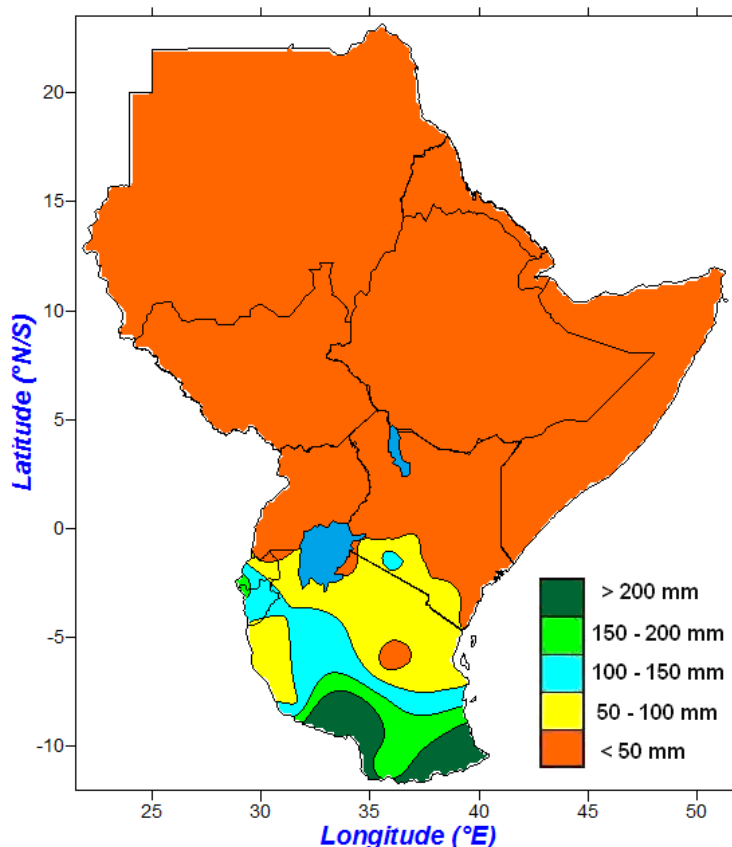


Figure 1: Spatial distribution of rainfall during the month of February 2014

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 parts of south-western and western Kenya; western Uganda; most parts of Rwanda and Burundi; central and southern Tanzania in the month of February 2014 (Figure 2). Dry conditions were recorded over eastern and central Ethiopia; much of Uganda; western Kenya; northern, north-eastern and western Tanzania. Generally dry conditions persisted over much of the remaining parts of the GHA.

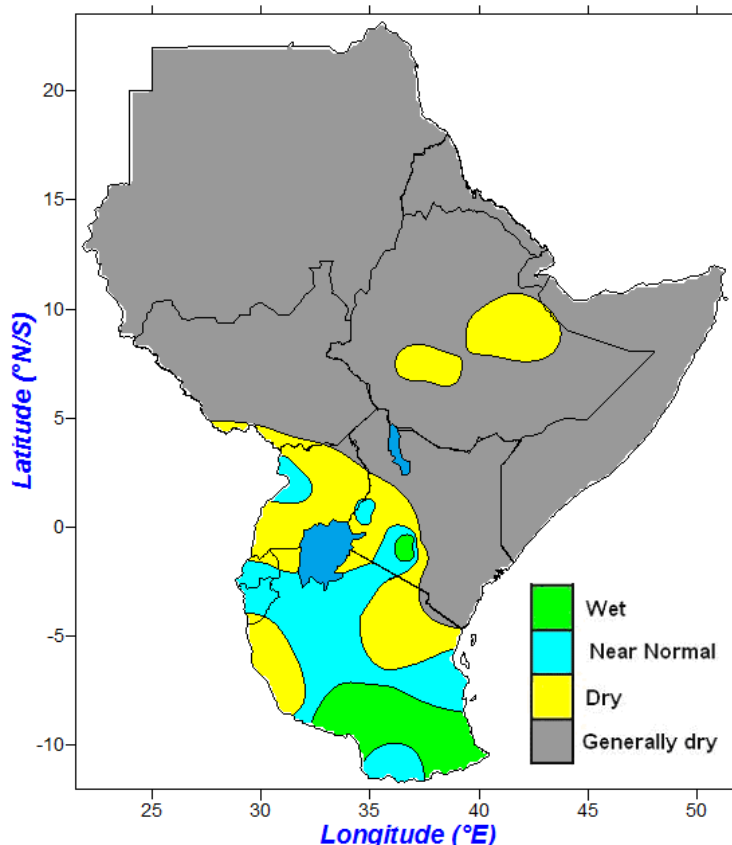


Figure 2: Rainfall severity index for the month of February 2014

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

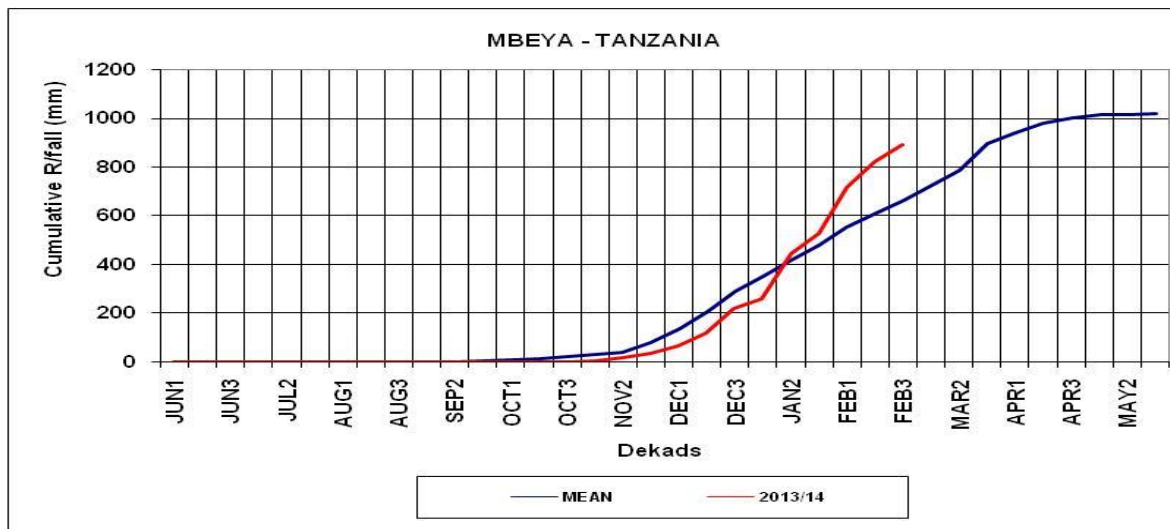


Figure 3a: Cumulative rainfall series for Mbeya

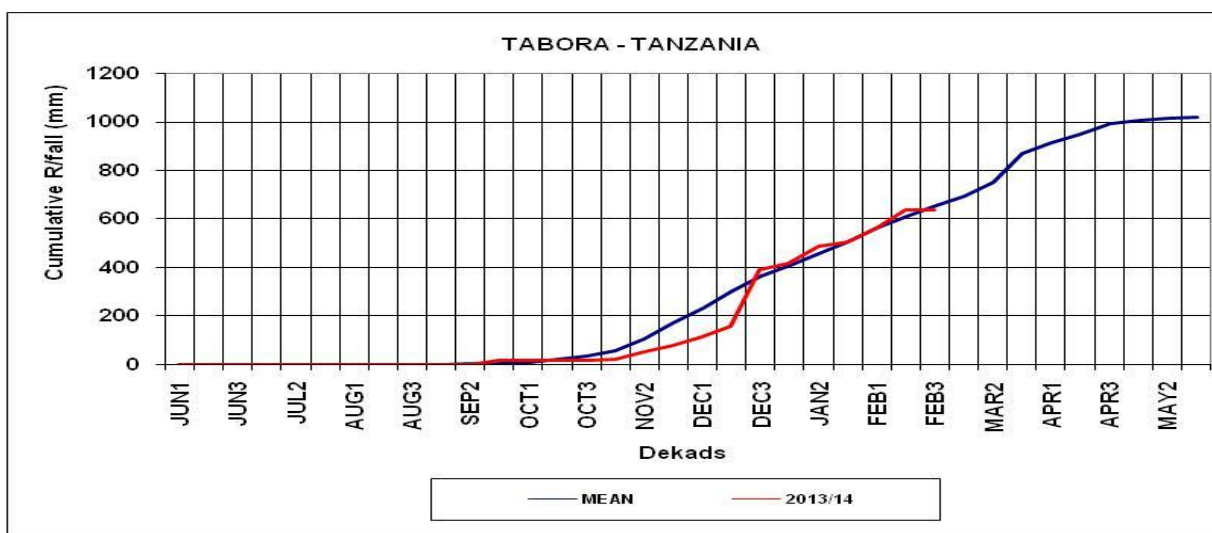


Figure 3 b: Cumulative rainfall series for Tabora

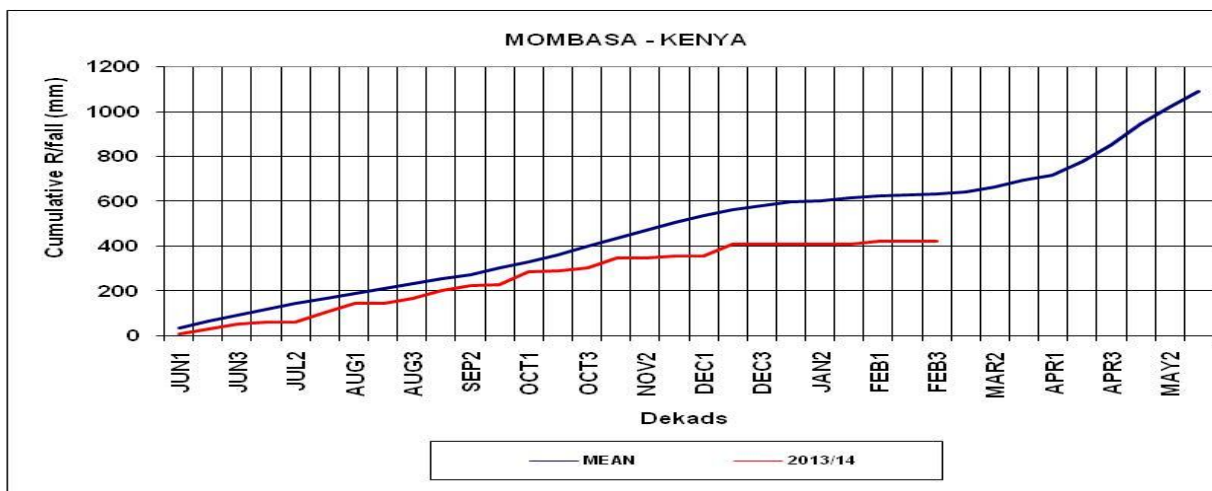


Figure 3 c: Cumulative rainfall series for Mombasa

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during December 2013 to February 2014

During the December-January-February 2013/2014 season, less than 75% of the long-term average rainfall for the December-January-February period was received over much of Sudan, South Sudan, Ethiopia, Eritrea, Djibouti, Somalia and Uganda; the northern half of Kenya; and the central coast of Tanzania (Figure 4). Much of Burundi; most parts of Rwanda and Tanzania; and southern half of Kenya received between 75% and 125% of the three-month long-term mean. Isolated parcels over southwestern Kenya, western Tanzania and south-western tip of Rwanda received between 125% and 175% of the long-term mean rainfall during the December-January-February 2013/2014 (Figure 4).

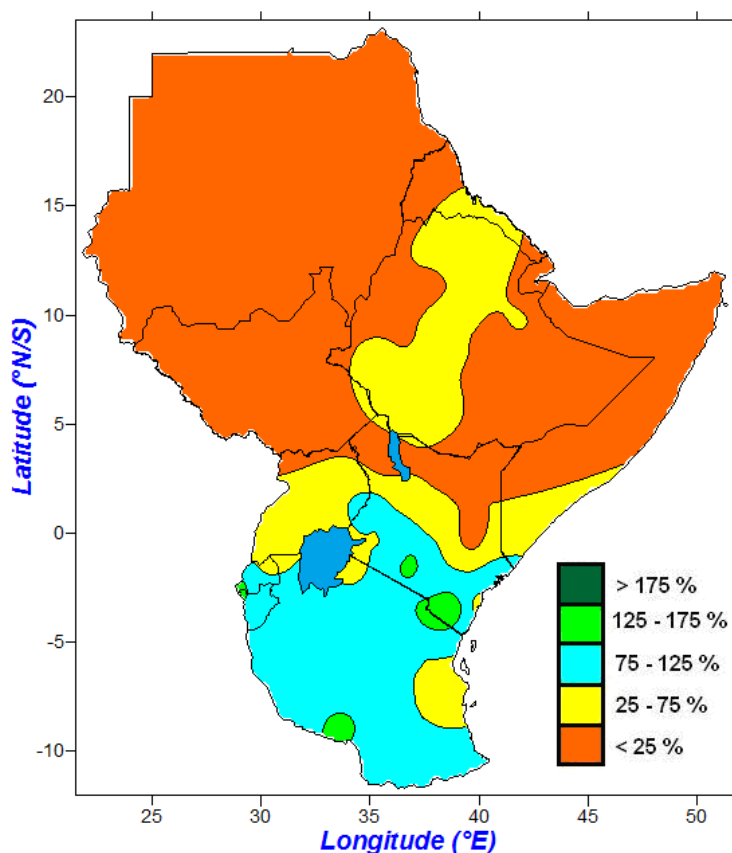


Figure 4: Spatial pattern of rainfall anomalies for December 2013 to February 2014 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

Negative anomalies of maximum temperature were recorded mainly over western and south-eastern Sudan; western and southern Kenya; and northern Tanzania during the month of February 2014 (Figure 5a). The southern tip of Tanzania also recorded colder than average maximum temperatures. Warmer than average maximum temperature were recorded over most parts of the GHA region (Figure 5a). Only Central Ethiopia and an isolated parcel of western Ethiopia recorded positive maximum temperature anomalies exceeding 2°C (Figure 5a).

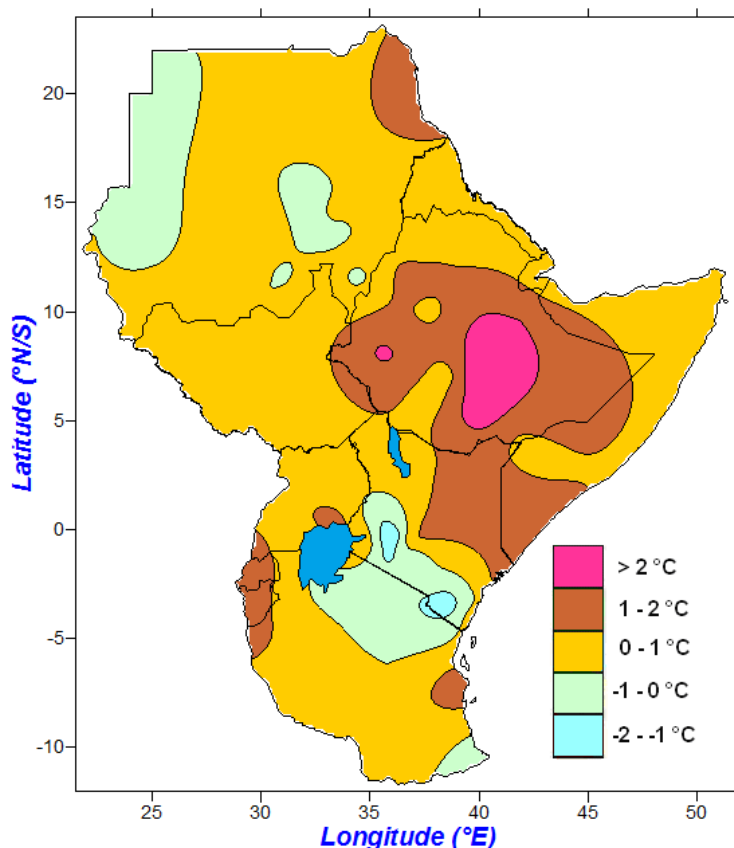


Figure 5a: Maximum temperature anomalies for February 2014

4.4.2 Minimum temperature anomalies

During the month of February 2013, warmer than average minimum temperatures dominated most parts of the GHA region (Figure 5b). Positive minimum temperature anomalies greater than 2°C were recorded over north-western and south-eastern parts of Sudan; central and southern Ethiopia; northern part of South Sudan; isolated parts of western Kenya; southern Uganda; northern tip of Tanzania; and much of Rwanda. Over southern parts of Sudan; southern Eritrea; eastern Djibouti; much of northern and central Somalia; northern Uganda; and southern Tanzania recorded negative anomalies of minimum temperature in February 2014 (Figure 5b).

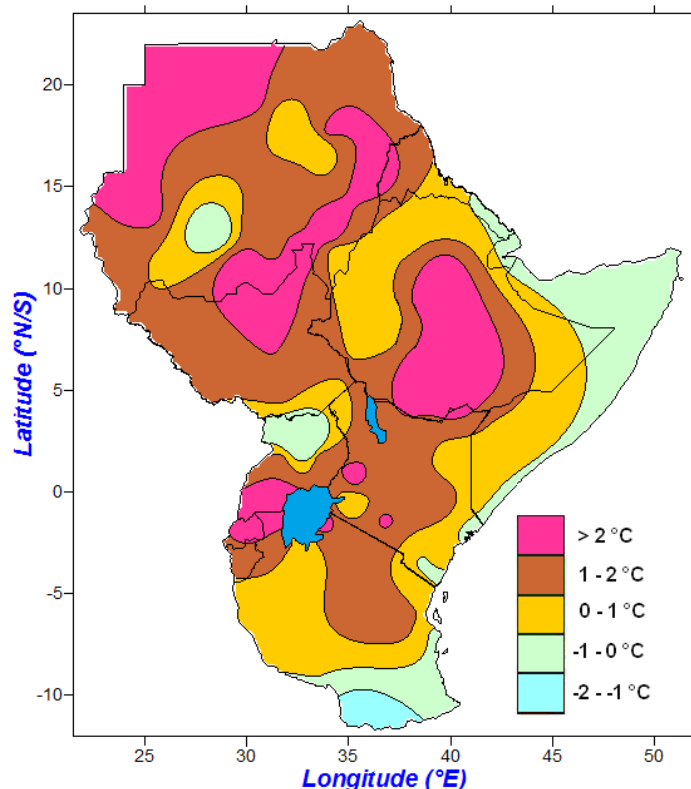


Figure 5b: Minimum temperature anomalies for the month of February 2014

5. STATUS OF THE CLIMATE SYSTEMS

During February 2014 near- average sea surface temperatures persisted across the equatorial Indian Ocean (Fig.6) resulting in a positive but not significant Indian Ocean dipole (Fig.7). ENSO-conditions persisted, as reflected by near-average Sea Surface Temperature across much of the equatorial Pacific Ocean. The monsoon circulations over western Indian Ocean were weaker than average during February 2014. These conditions have implications on likely performance GHA rainfall during April and May 2014.

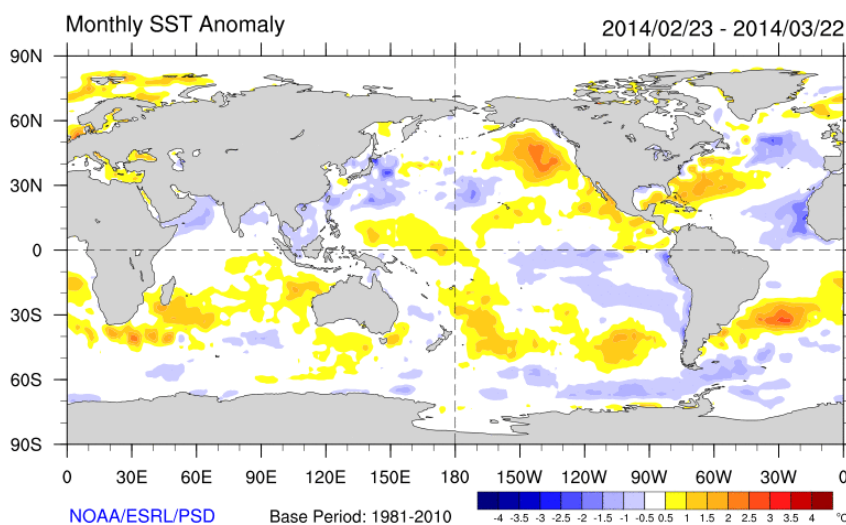


Figure 6: Sea Surface Temperature anomalies for the period 23 February 2014 to 22 March 2014 (Courtesy of NOAA)

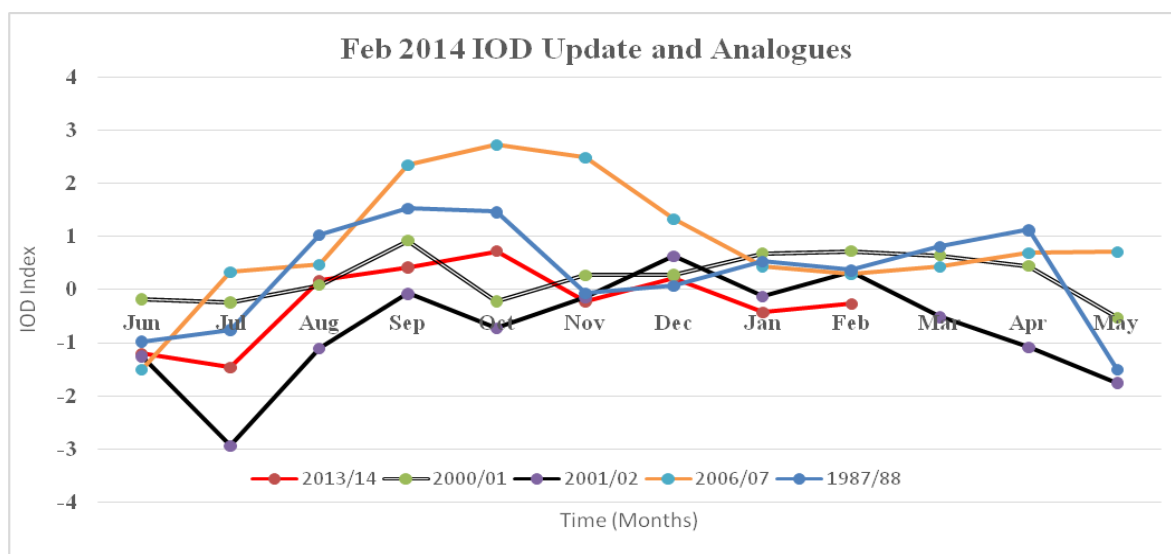


Figure 7: Indian Ocean Dipole (IOD) for 2013 and Analogue Years

6. CLIMATE OUTLOOK FOR April-May 2014

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

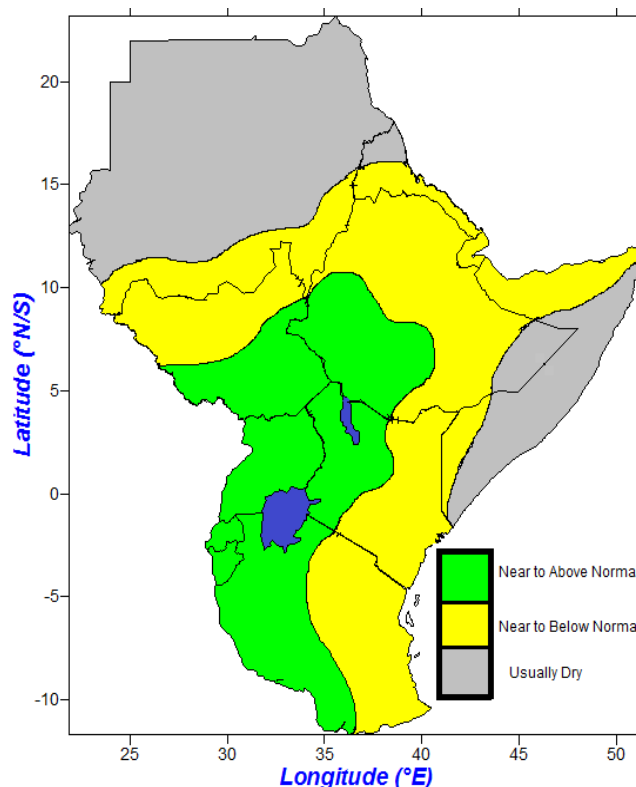


Figure 8: Climate Outlook for April-May 2014

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 January and February 2014 indicates improved vegetation conditions over parts of central and southern Tanzania as well as western South Sudan. Most parts of the equatorial sector including Kenya, southern Somalia, Uganda, Rwanda and Burundi, and parts of central Ethiopia and eastern South Sudan indicated deteriorated vegetation while rest of the region indicated no change in vegetation conditions as shown in figure 9.

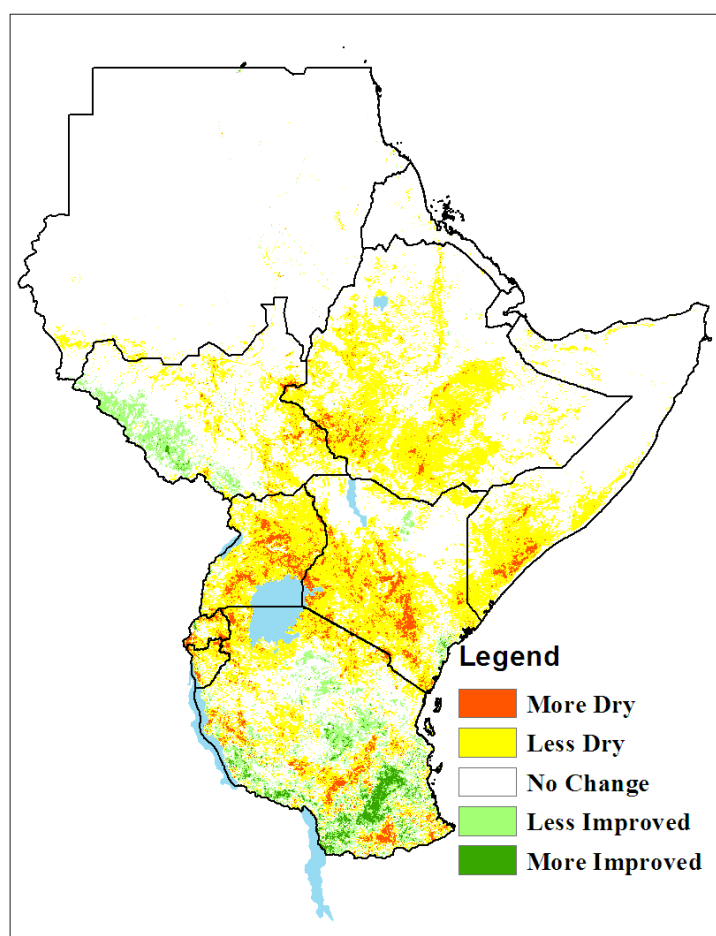


Figure 9: Vegetation difference between January and February 2014 over the GHA

7.2 Impacts of observed climate conditions during February 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 February 2014 are highlighted below:

- 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 April 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 landslides, 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.