

IGAD Climate Prediction and Applications Centre Monthly Bulletin, January 2014

1. HIGHLIGHTS/ ACTUALITES

- During the month of December 2013, rainfall activities were mainly concentrated over the south-western parts of the equatorial sector as well as the western parts of southern sector of the Greater Horn of Africa (GHA);
- During February 2014 there is increased likelihood of near normal to above normal rainfall over much of the southern sector.
- The observed near normal rainfall conditions during the month of December 2013 resulted in improved crop, soil, pasture and foliage conditions and replenishment of water resources.

2. INTRODUCTION

In this bulletin, the climatic conditions observed during the month of December 2013 are reviewed; the climate outlook for the month of February 2014 is provided; and the socio-economic impacts associated with both the observed climatic conditions and the climate outlook over the GHA are also highlighted.

The bulletin has seven sections. Section 1 outlines the major highlights from both the observed and expected climate conditions, while the overall summary is provided in section 3. In section 4, the climate patterns that prevailed in December 2013 are discussed, with the dominant weather systems discussed in section 5. The climate outlook for February 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

This section provides a summary of the three main components of this bulletin. The three components are the climatic conditions observed in December 2013 over GHA, the climate outlook for the month of February 2014, and the impacts associated with both the observed climate conditions and the climate outlook.

Rainfall activities were mainly observed over most parts of Tanzania excluding the eastern parts; much of Burundi; southern Rwanda and south-western Kenya in the month of December 2013. The observed near normal rainfall conditions over parts of the Greater Horn of Africa during the month of December 2013 resulted in improved crop, pasture and foliage conditions and replenishment of water resources.

The regional climate outlook for February 2014 indicates increased likelihood of near normal to above normal rainfall over much of the southern sector. Increased likelihood of near normal to below normal is expected over other northern parts of the southern sector as well as the southern parts of the equatorial sector (Figure 7).

4. CLIMATE PATTERNS IN DECEMBER 2013

The climatological summary for the rainfall amounts and rainfall severity indices over the GHA in the month of December 2013 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 2013

In the month of December 2013, rainfall activities were concentrated over the western and southern parts of southern sector as well as south-western parts of the equatorial sector of the GHA (Figure 1). Western and north-western Tanzania and much of Burundi received more than 150mm of rainfall (Figure 1). Southern, central and northern Tanzania; southern and south-western Kenya; southern Rwanda; and part of southern Uganda received between 100mm and 150mm of rainfall. Less than 50mm of rainfall was received over much of Sudan, South Sudan, Ethiopia, Djibouti and Somalia; northern and western Uganda; northern, eastern and north coast of Kenya; and central part of Tanzanian coast. The monthly rainfall data for December 2013 was not available for analysis over Eritrea.

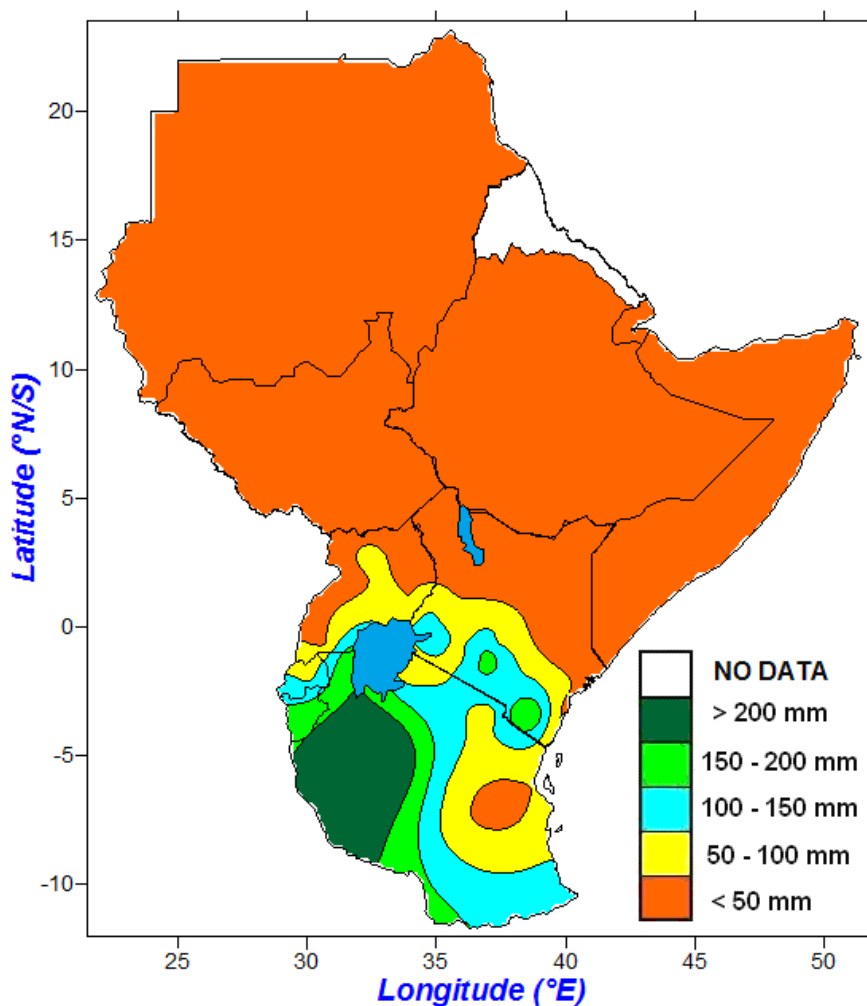


Figure 1: Spatial distribution of rainfall during the month of December 2013

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 most parts of Tanzania excluding the central part of the coast; much of Rwanda and Burundi; southern Uganda as well as western and south-western Kenya in December 2013 (Figure 2). Generally dry conditions were recorded over much of Sudan, South Sudan, Ethiopia, Djibouti and Somalia; northern and eastern Kenya; as well as north-eastern Uganda. Central part of Tanzania coast; northern Uganda; and parts of northern and eastern Kenya recorded dry conditions (Figure 2). Over Eritrea, the data for December 2013 was not available for analysis.

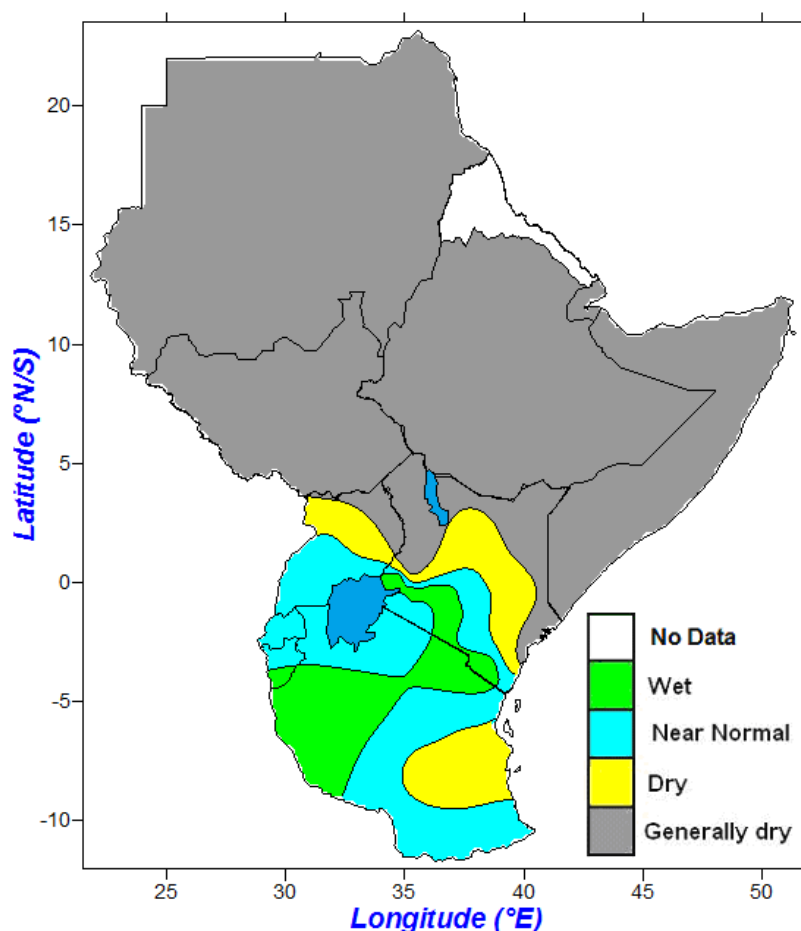


Figure 2: Rainfall severity index for the month of December 2013

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 December 2013

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

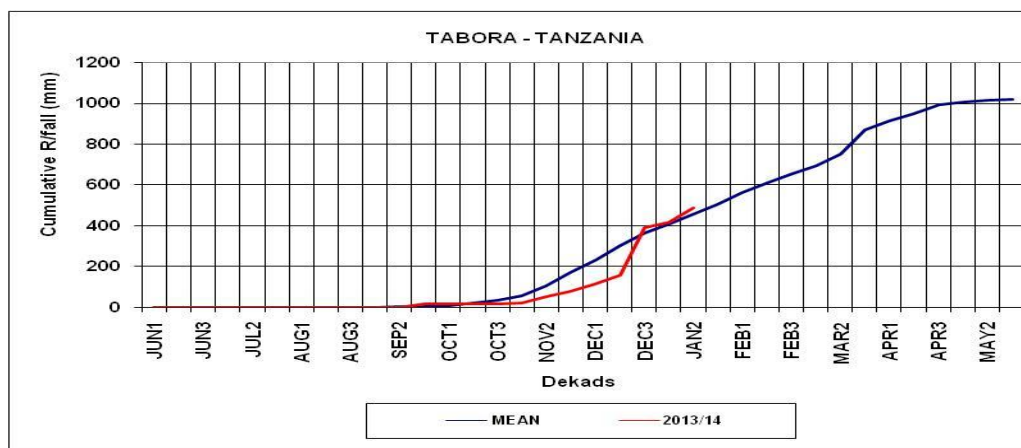


Figure 3a: Cumulative rainfall series for Tabora

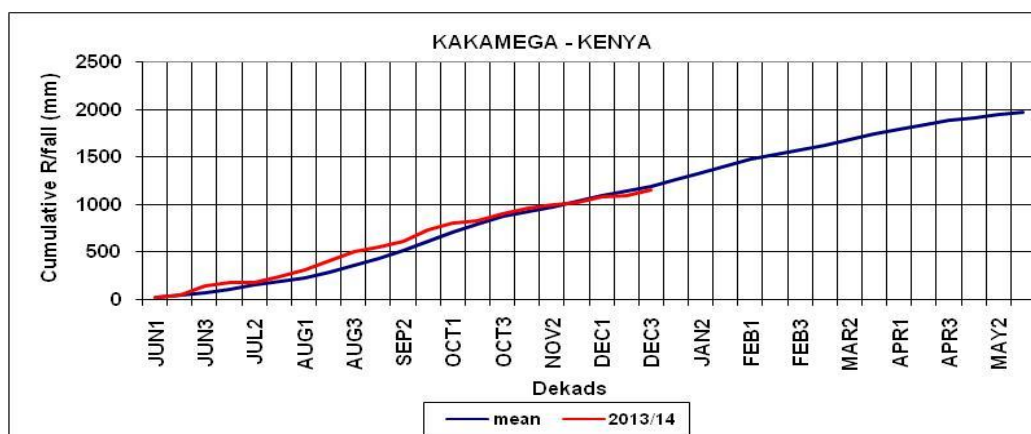


Figure 3 b: Cumulative rainfall series for Kakamega

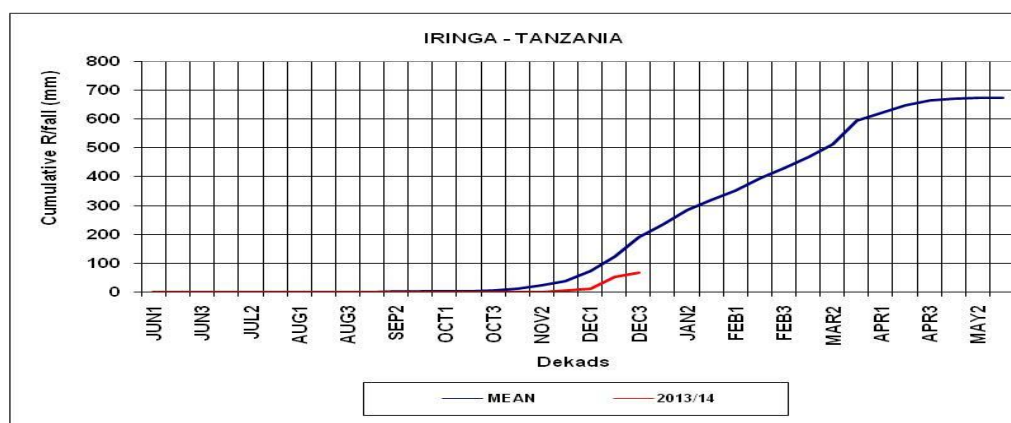


Figure 3 c: Cumulative rainfall series for Iringa

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during October to December 2013

During the October-November-December 2013 season, less than 75% of the long-term average rainfall for the October-November-December period season was received over much of Sudan; north-western part of South Sudan; north-western, eastern and south-western Kenya; and central parts as well as central and southern coastal parts of Tanzania (Figure 4). Between 75% and 125% of the three-month long-term mean was received over western and northern parts of South Sudan; most parts of Ethiopia, Somalia and Kenya; much of Uganda, Rwanda and Burundi; and northern and western Tanzania. Southern and central parts of South Sudan; south-western, south-eastern and central Ethiopia; and around Mt Elgon on the Kenya-Uganda border received between 125% and 175% of the long-term mean rainfall during the October-November-December 2013 (Figure 4). Data over Eritrea was not available for analysis.

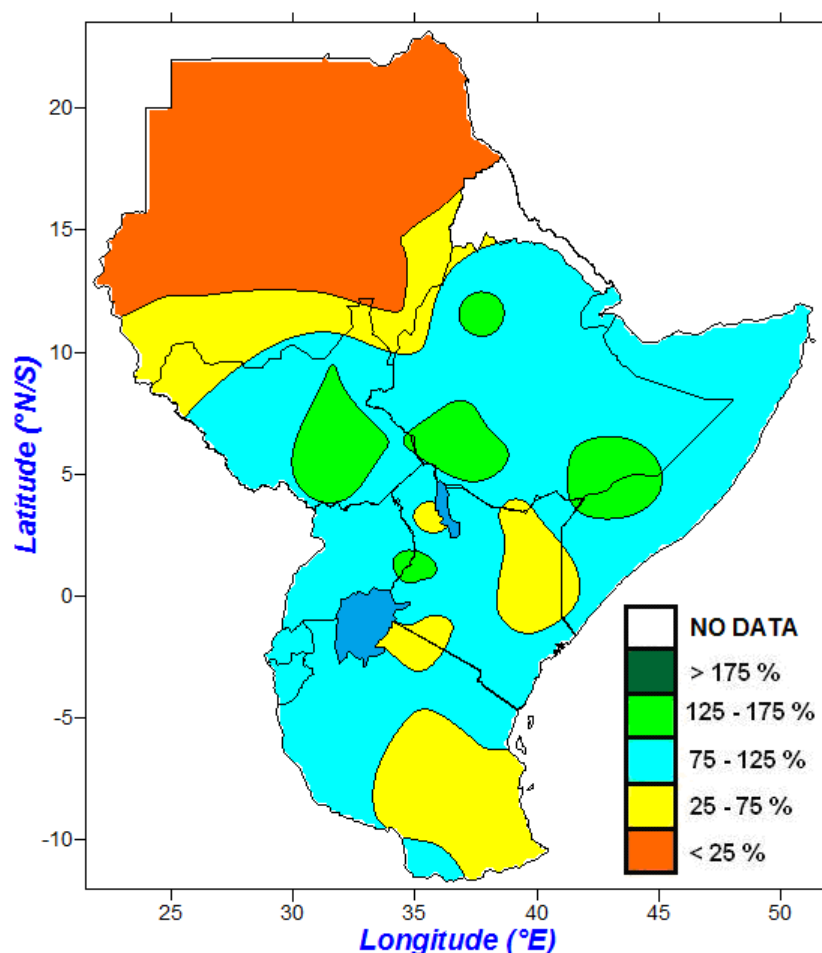


Figure 4: Spatial pattern of rainfall anomalies for October to December 2013 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

Colder than average maximum temperatures were recorded over the northern sector of GHA region during December 2013 (Figure 5a), with isolated parcels over Sudan; eastern block of

South Sudan; northern, central, western and southern Ethiopia recording warmer than average maximum temperatures (Figure 5a).

Over the equatorial and southern sectors of GHA, warmer than average maximum temperatures were recorded (Figure 5a), with isolated parcel over eastern Kenya and coastal Tanzania recording positive maximum temperature anomalies exceeding 2°C. Negative maximum temperature anomalies were recorded over much of the Kenya-Tanzania border in the month of December 2013 (Figure 5a). The Eritrean monthly maximum temperature for December 2013 was not available for analysis.

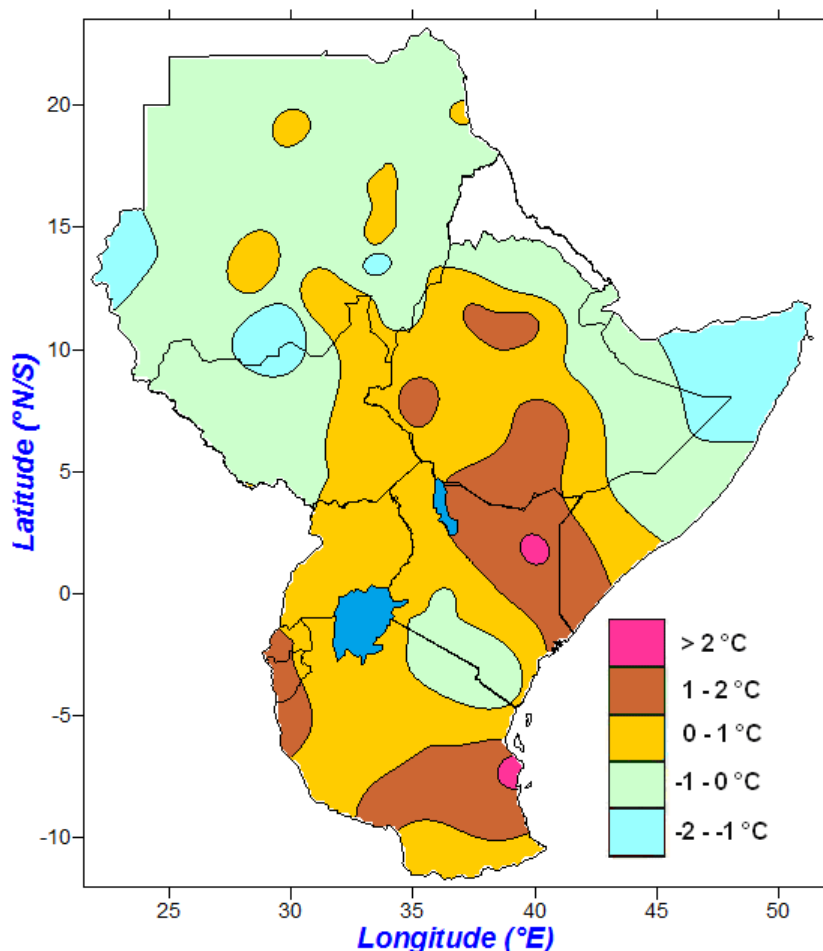


Figure 5a: Maximum temperature anomalies for December 2013

4.4.2 Minimum temperature anomalies

Warmer than average minimum temperatures dominated most parts of the GHA region, in the month of December 2013 (Figure 5b), with positive minimum temperature anomalies greater than 2°C being recorded over several isolated parts of Sudan; western Kenya; south-western Uganda; northern Rwanda and northern Tanzania. Negative minimum temperature anomalies were recorded over north-eastern Sudan; northern part of South Sudan; eastern block of Ethiopia; much of Djibouti; central and northern Somalia; and southern tip of Tanzania (Figure 5b). Eritrea did not provide the minimum temperature for analysis.

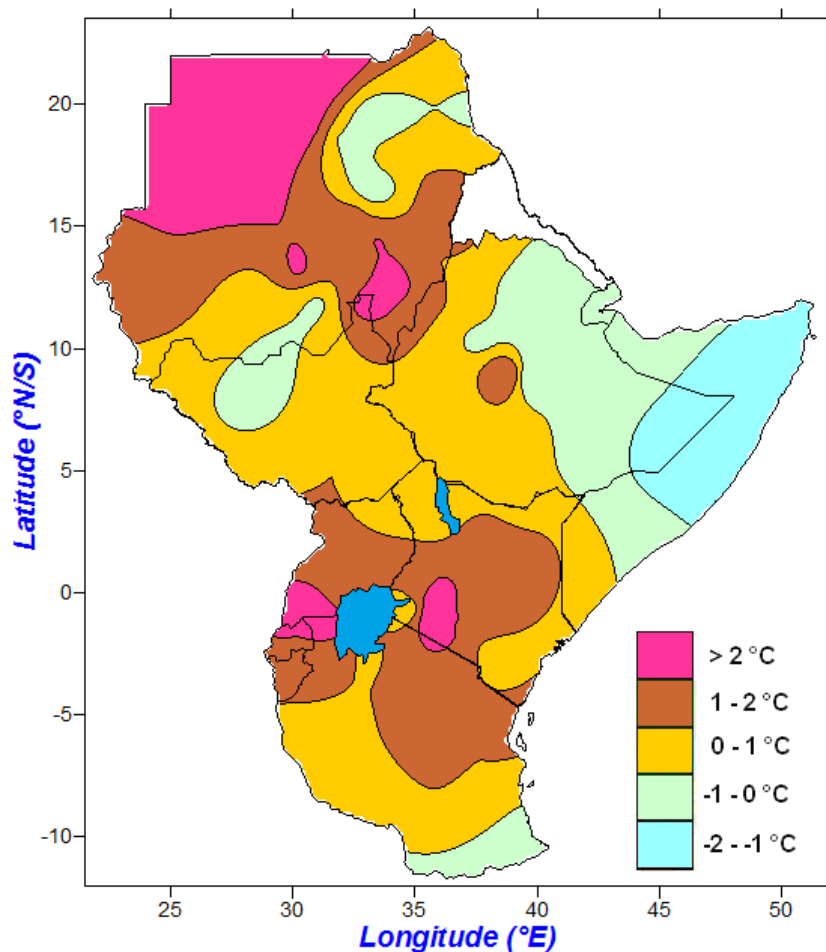


Figure 5b: Minimum temperature anomalies for the month of December 2013

5. STATUS OF THE CLIMATE SYSTEMS

During December 2013 near- average sea surface temperature persisted across the equatorial area of the 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 December 2013. These conditions have implications on likely performance GHA rainfall during February 2014.

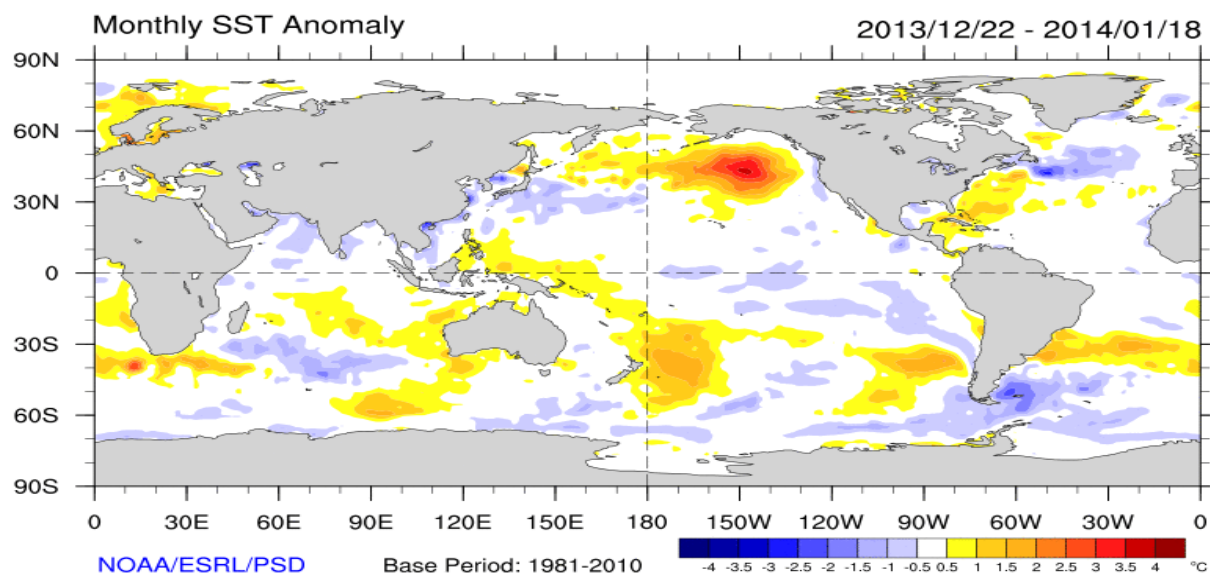


Figure 6: Sea Surface Temperature anomalies for the period 22 December 2013 to 18 January 2014 (Courtesy of NOAA)

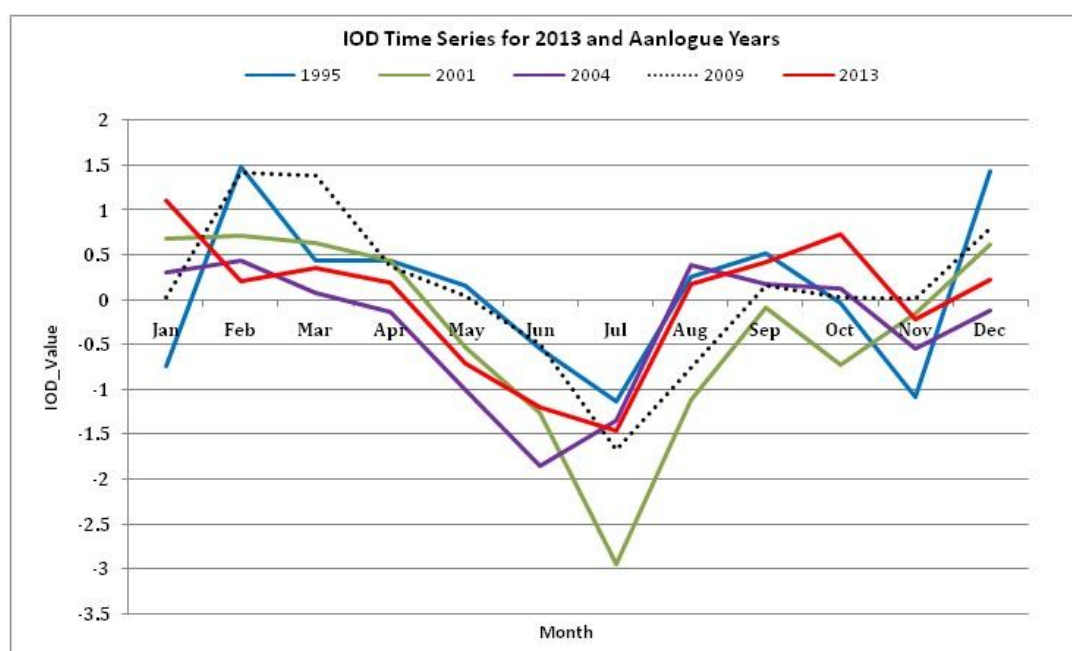


Figure 7: Indian Ocean Dipole (IOD) for 2013 and Analogue Years

6. CLIMATE OUTLOOK FOR FEBRUARY 2014

The climate outlook for February indicates that near to below normal rainfall is expected over southwestern Kenya; southern Uganda; much of Tanzania; Rwanda; Burundi. Southern and south-western Tanzania is likely to experience near to above normal rainfall. The rest of GHA is likely to remain generally dry (Fig.8).

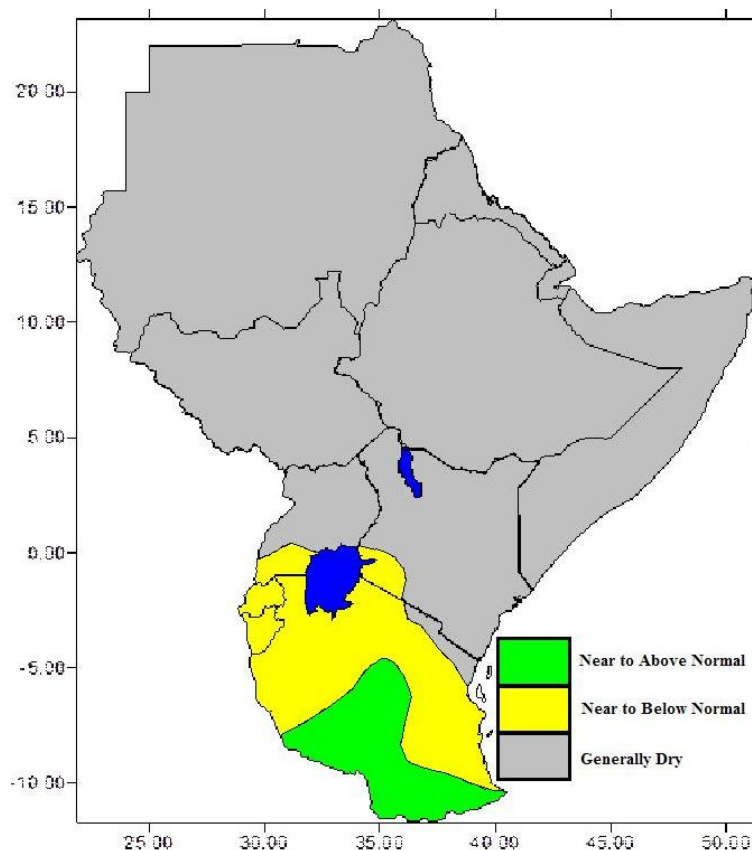


Figure 8: Climate Outlook for February 2014

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 November and December 2013 indicates improved vegetation conditions over much of Tanzania, Rwanda; Burundi; central and eastern Kenya; and southern Somalia . Most parts of South Sudan; north-eastern Ethiopia, northern Uganda, and southern parts of Sudan showed deteriorated vegetation while rest of the region indicated no change in vegetation conditions as shown in figure 9.

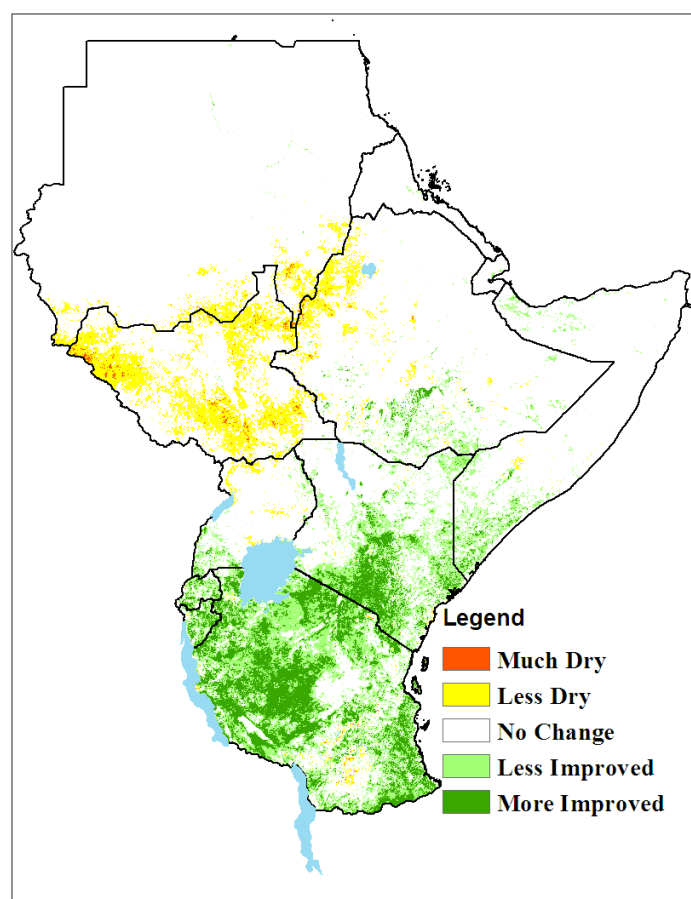


Figure 9: Vegetation difference between November and December 2013 over the GHA

7.2 Impacts of observed climate conditions during December 2013

The socio-economic impacts associated with the observed rainfall over the Southern sector as well as equatorial sector of the Greater Horn of Africa region during the month of December 2013 are highlighted below:

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

7.3 Potential impacts for February 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 livestock performance;
- Outbreaks of water related diseases.