

IGAD Climate Prediction and Applications Centre Monthly Bulletin, February 2014

1. HIGHLIGHTS/ ACTUALITES

- Rainfall activities were mainly observed central block of the southern sector and southern part of the equatorial sector of the Greater Horn of Africa (GHA) in January 2014;
- During March to May 2014 there is increased likelihood of near normal to above normal rainfall over western equatorial areas of the GHA including parts of South Sudan and western Ethiopia.
- The rainfall conditions during the month of January 2014 resulted in improved soil moisture conditions, crop performance, pasture and foliage conditions and replenishment of water resources especially in the central block of the southern sector and southern part of the equatorial sector of the Greater Horn of Africa.

2. INTRODUCTION

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

The bulletin has seven major sections. In section 1, the major highlights from both the observed and expected climate conditions are outlined, while the overall summary is provided in section 3. Section 4 discusses the climate patterns that prevailed in January 2014, while the dominant weather systems are discussed in section 5. In section 6, the climate outlook for March-April-May 2014 over GHA is presented. 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, a summary of the three main components of this bulletin are provided. These three components are; the climatic conditions observed during the month of January 2014 over GHA, the climate outlook for the March-April-May 2014, and the impacts associated with both the observed climate conditions and the climate outlook.

In the month of January 2014, rainfall activities were mainly observed over southern, central and northern parts of Tanzania; western Burundi; and western Rwanda. Most of the equatorial and northern sector including Southern Ethiopia, Kenya, Somalia and northern Tanzania remained dry during January 2014. The observed rainfall conditions during the month of January 2014 resulted in improved soil moisture conditions, crop performance, pasture and foliage conditions and replenishment of water resources especially in the central block of the southern sector and southern part of the equatorial sector of the Greater Horn of Africa.

The regional climate outlook for March to May following the thirty six Greater Horn of Africa Climate Outlook (GHACOF36) indicates increased likelihood of near normal to above

normal rainfall over much western equatorial sector covering western Kenya, Uganda, western Tanzania, Rwanda, Burundi, parts of South Sudan and Western Ethiopia. The rest of the equatorial sector has increased likelihood of near normal to below normal rainfall during March to May 2014 (Figure 8).

4. CLIMATE PATTERNS IN JANUARY 2014

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

4.1 Rainfall amounts and performance during January 2014

Rainfall activities were concentrated over the southern, central and northern parts of Tanzania in the month of January 2014 (Figure 1). These areas received between 100mm and more than 200mm of rainfall. The south-coast, northern and western Tanzania; much of Rwanda and Burundi; and part of western Kenya received between 50mm and 100mm of rainfall. Over much of Sudan, South Sudan, Ethiopia, Somalia and Djibouti; much of Kenya and Uganda; and north-eastern Tanzania, less than 50mm of rainfall was received during the month of January 2014.

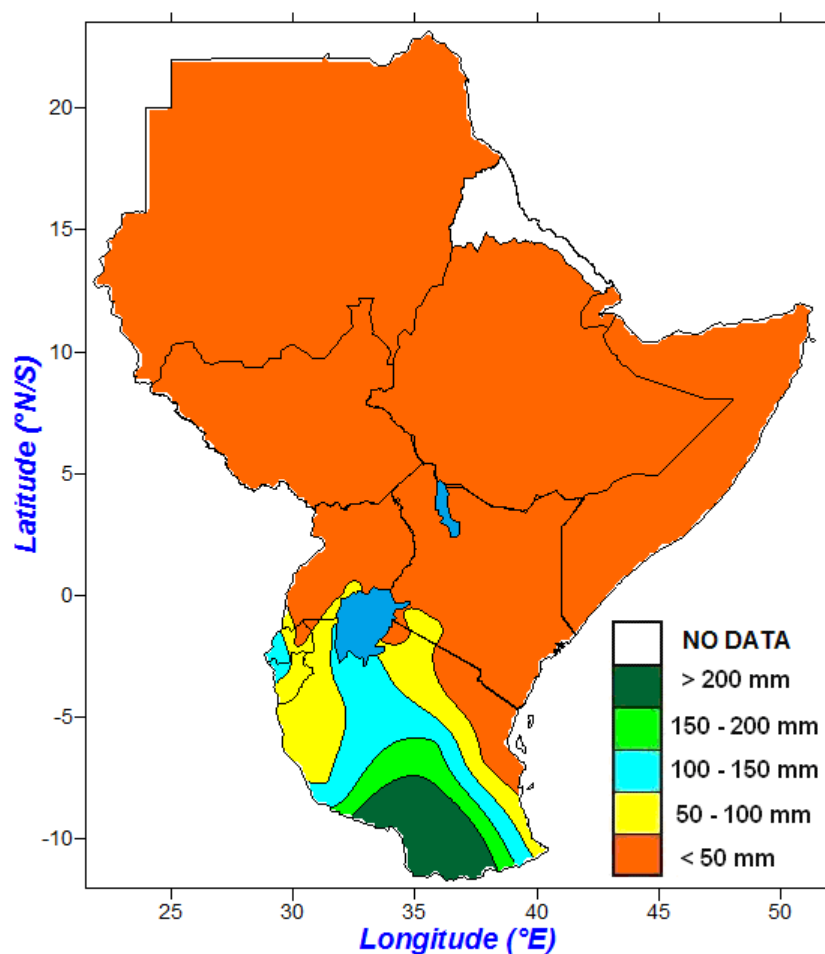


Figure 1: Spatial distribution of rainfall during January 2014

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.

During the month of January 2014, near normal to wet conditions were recorded over southern, central and northern parts of Tanzania; western Kenya; southern Uganda; much of Burundi; and western Rwanda (Figure 2). Dry conditions persisted over much of the remaining parts of the GHA. Over Eritrea, the data for January 2014 was not available for analysis.

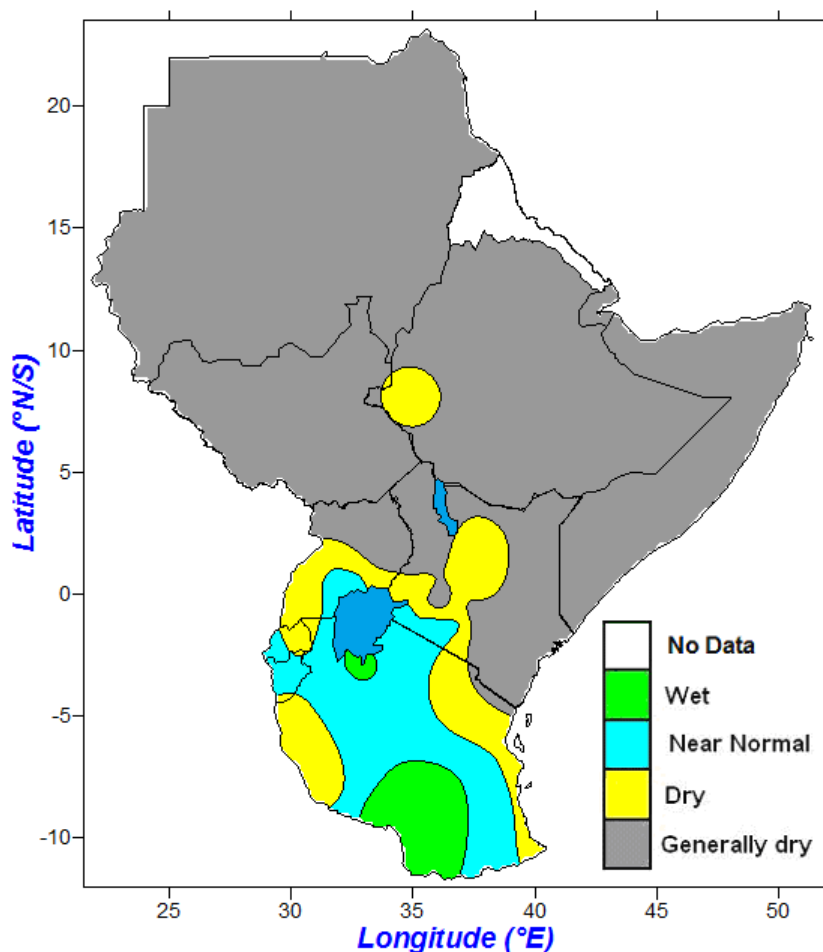


Figure 2: Rainfall severity index for the month of January 2014

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

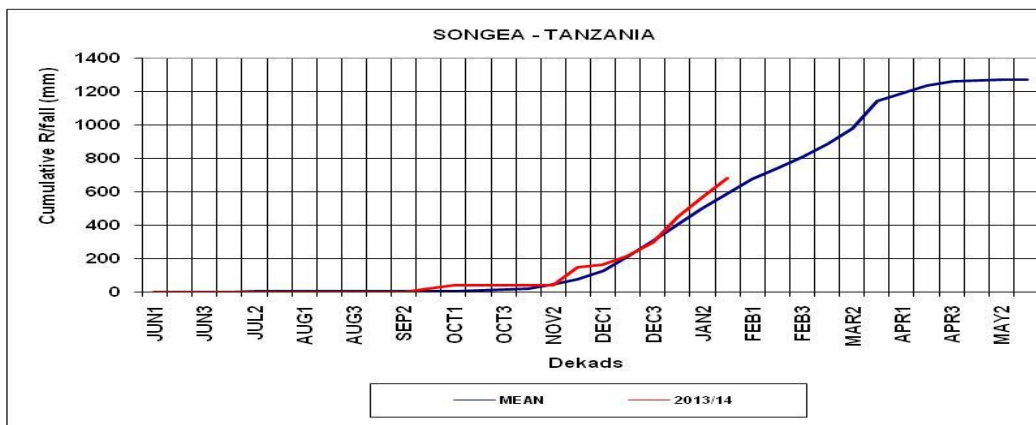


Figure 3a: Cumulative rainfall series for Songee

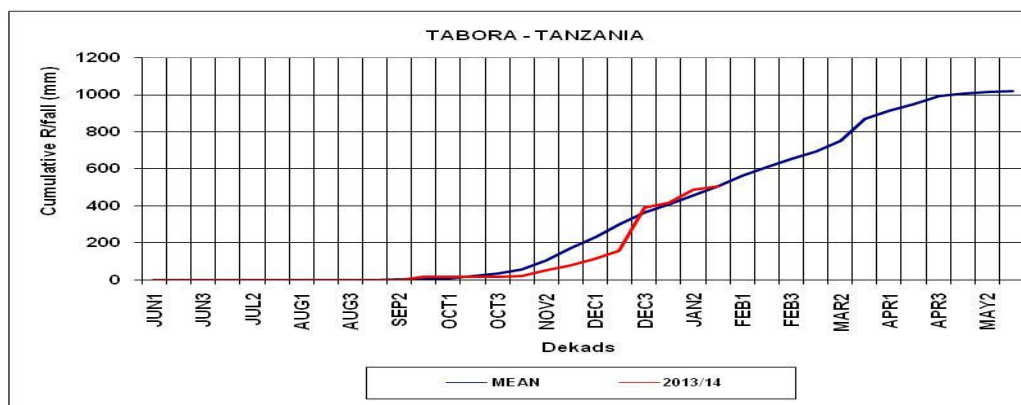


Figure 3 b: Cumulative rainfall series for Tabora



Figure 3 c: Cumulative rainfall series for Dar-ersalam I. Airport

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during November 2013 to January 2014

During the November-December-January 2013/2014 season, less than 75% of the long-term average rainfall for the November-December-January season was received over much of Sudan; northern parts of South Sudan; northern and central Ethiopia; northern and eastern parts of Kenya; east of Lake Victoria; and coastal parts of Tanzania (Figure 4). Over most parts of South Sudan; western and southern Ethiopia; much of Uganda; eastern Rwanda; and most parts of Burundi, Tanzania and Kenya received between 75% and 125% of the three-month long-term mean. Southern parts of South Sudan; eastern Ethiopia; much of Somalia; western block of Rwanda; and north-western Burundi received between 125% and more than 175% of the long-term mean rainfall during the November-December-January 2013/2014 (Figure 4). Data over Eritrea was not available for analysis.

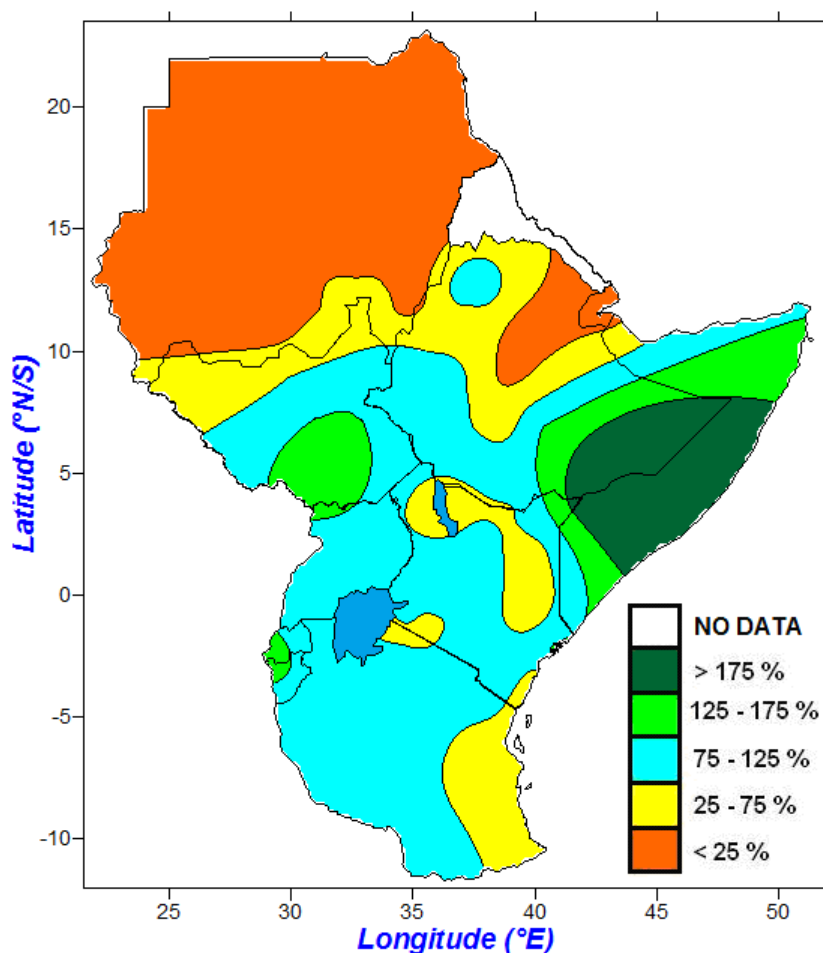


Figure 4: Spatial pattern of rainfall anomalies for November 2013 to January 2014 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

During January 2014, colder than average maximum temperatures were recorded mainly over northern sector of GHA region especially over western, southern and north-eastern Sudan; northern and central Somalia; and eastern tip of Ethiopia (Figure 5a). Western and southern

Kenya also recorded colder than average maximum temperatures in January 2014 (Figure 5a).

Warmer than average maximum temperatures were recorded over most parts of the GHA region especially the equatorial and southern sectors during January 2014 (Figure 5a). Isolated parcels over the central coast of Tanzania; western Rwanda; western and northern Kenya; and central Ethiopia recorded positive maximum temperature anomalies exceeding 2°C (Figure 5a). The monthly maximum temperature for January 2014 over Eritrea was not available for analysis.

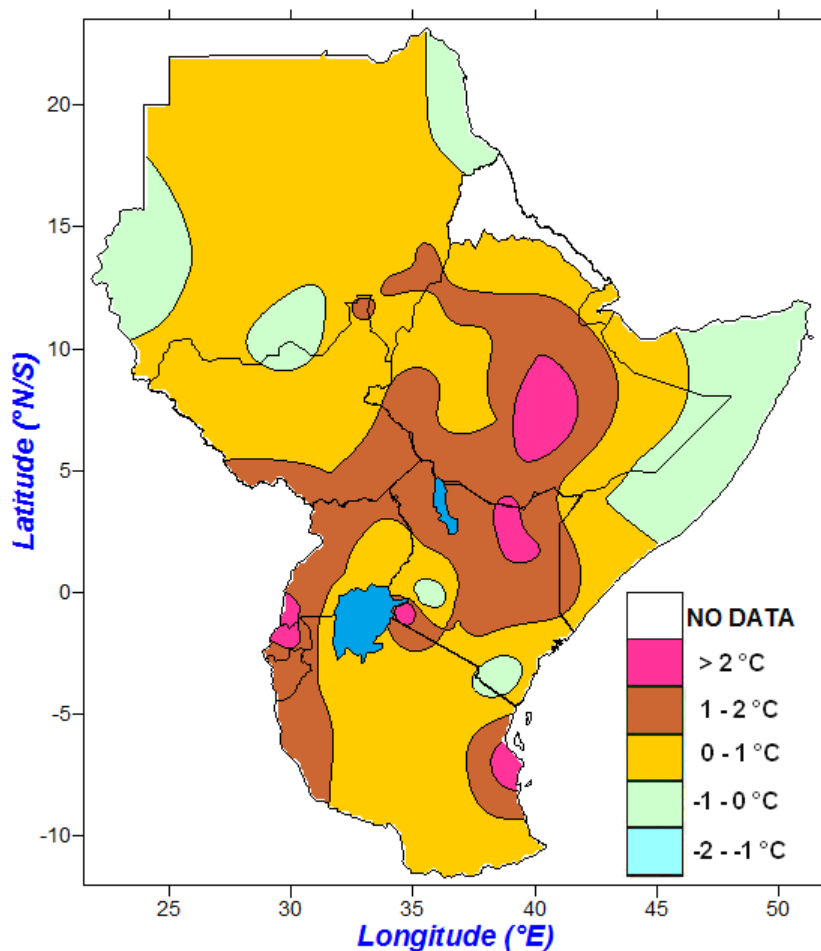


Figure 5a: Maximum temperature anomalies for January 2014

4.4.2 Minimum temperature anomalies

Warmer than average minimum temperatures dominated most parts of the GHA region during January 2014 (Figure 5b), with positive minimum temperature anomalies greater than 2°C being recorded over north-western and south-eastern parts of Sudan; central Ethiopia; north-western and southern Uganda. Negative minimum temperature anomalies were recorded over southern Sudan; north-eastern Ethiopia; Djibouti; northern Somalia; north-western, western and south-coast of Kenya; and southern tip of Tanzania (Figure 5b). Eritrea did not provide the January 2014 minimum temperature for analysis.

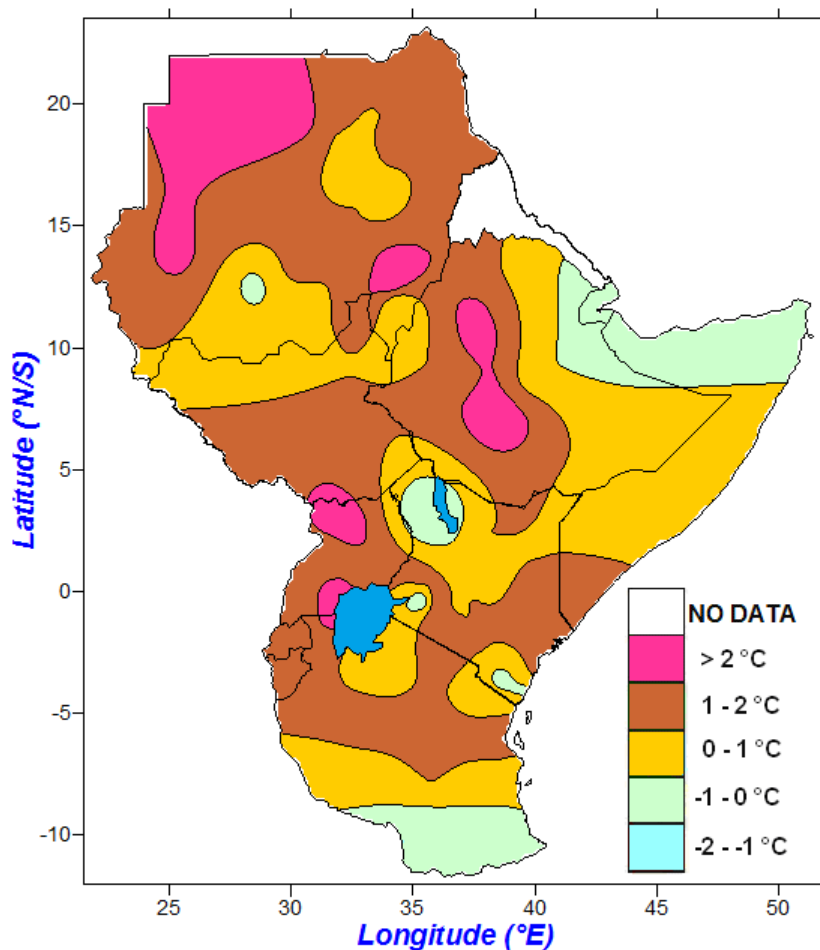


Figure 5b: Minimum temperature anomalies for the month of January 2014

5. STATUS OF THE CLIMATE SYSTEMS

During January and February 2014, colder than average sea surface temperatures persisted over western Indian Ocean and Arabian sea while the southwestern Indian Ocean remained warmer than average. Two tropical cyclones formed over southwestern Indian Ocean during February 2014, namely Fobane (6-14 February 2014) and Guito (18-22 February 2014) resulting in heavy rainfall over the southern and equatorial sectors. ENSO neutral conditions persisted over the tropical Pacific Ocean during February 2014. Figure 6 shows the sea surface temperature anomaly patterns during February 2014 and figure 7 shows the Indian Ocean dipole.

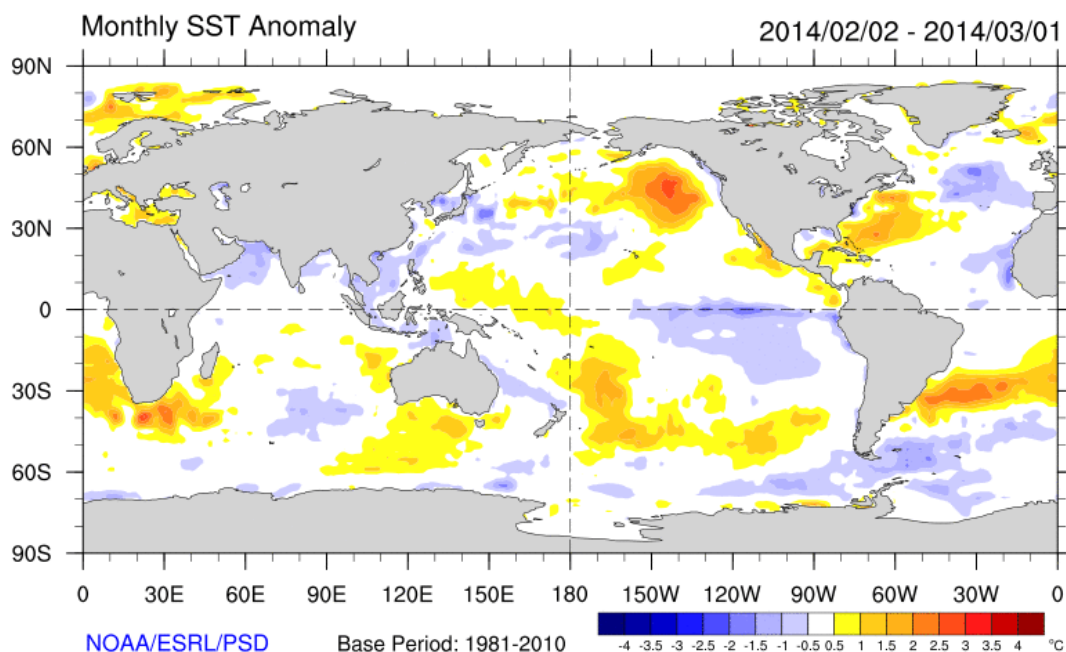


Figure 6: Sea Surface Temperature anomalies for the recent month from 2 February to 1 March 2014 (Courtesy of NOAA)

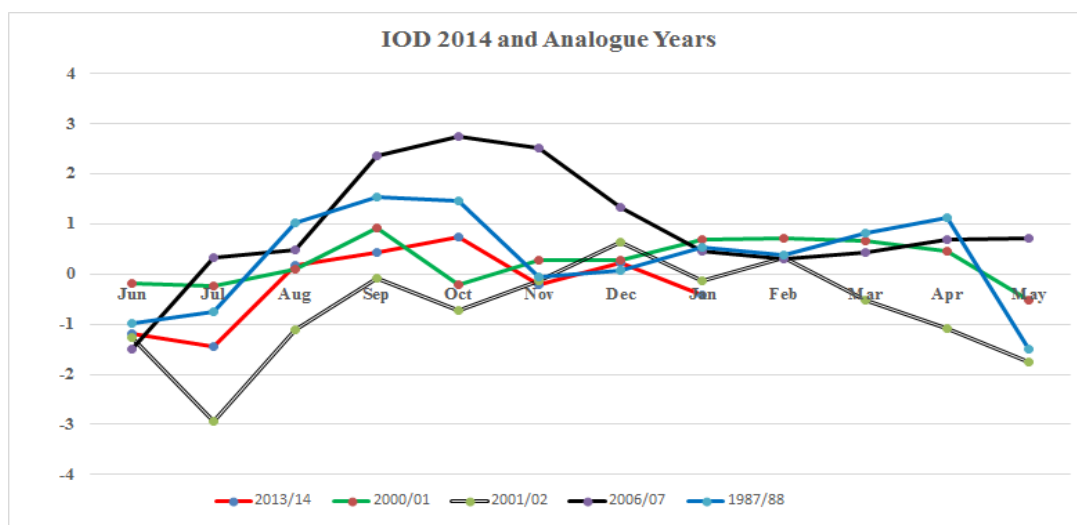


Figure 7: Indian Ocean Dipole (IOD) for 2013 and Analogue Years

6.0 CLIMATE OUTLOOK FOR MARCH TO MAY 2014

6.1 The Climate Outlook Forum

The Thirty Sixth Greater Horn of Africa Climate Outlook Forum (GHACOF 36) was convened from 26th to 28th February 2014, at the Imperial Botanical Beach Hotel, Entebbe, Uganda by the IGAD Climate Prediction and Applications Centre (ICPAC) and partners to formulate a consensus climate outlook for the March to May 2014 rainfall season over the GHA region. The GHA region comprises Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania and Uganda.

The forum reviewed the state of the global and regional climate systems and their implications on the March to May seasonal rainfall over the sub-region. Among the principal factors taken into account were the observed and predicted SSTs in the tropical Pacific, Atlantic and Indian Oceans. The dominant climate forcing processes included neutral ENSO conditions that are expected to persist through the forecast period, warmer than average SSTs over central Indian Ocean as well as colder than average SSTs over the western Indian Ocean and Arabian Sea, weak negative Indian Ocean Dipole (IOD); ongoing and potential formation of tropical cyclones over south-western Indian Ocean.

Users from agriculture and food security, livestock, water resources, disaster risk management, health, Gender, Civil society, Non- Governmental Organisations and development partners formulated the potential implications of the consensus climate outlook and developed mitigation strategies for their respective countries and sectors. The media on the other hand formulated strategies for effective dissemination of the consensus climate outlook and its potential impacts.

6.2 Rainfall Outlook for March to May 2014

The rainfall outlook for various zones within the GHA region is given in figure 8 below.

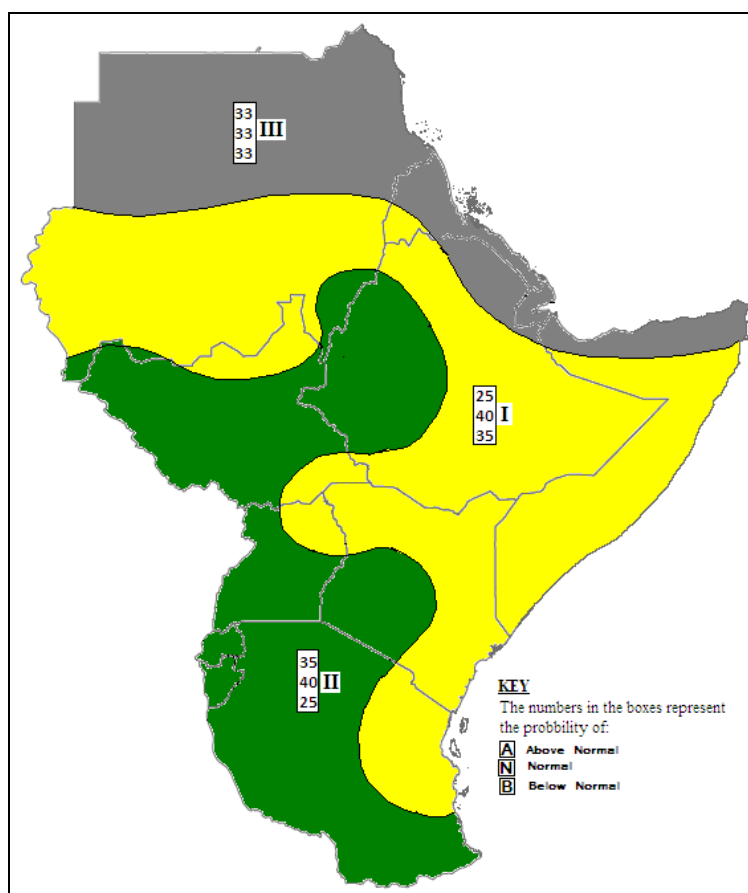


Figure 8: Greater Horn of Africa Consensus Climate Outlook for the March to May 2014 rainfall season

Zone I: Increased likelihood of near normal to below normal rainfall.

Zone II: Increased likelihood of near normal to above normal rainfall.

Zone III: This zone is usually dry during March to May 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 December 2013 and January 2014 indicates improved vegetation conditions over much of Tanzania, Rwanda; Burundi as well as central and western Kenya. Most parts of South Sudan; Ethiopia, northern Uganda, northern and eastern Kenya as well as southern parts of Somalia showed deteriorated vegetation while rest of the region indicated no change in vegetation conditions as shown in figure 9.

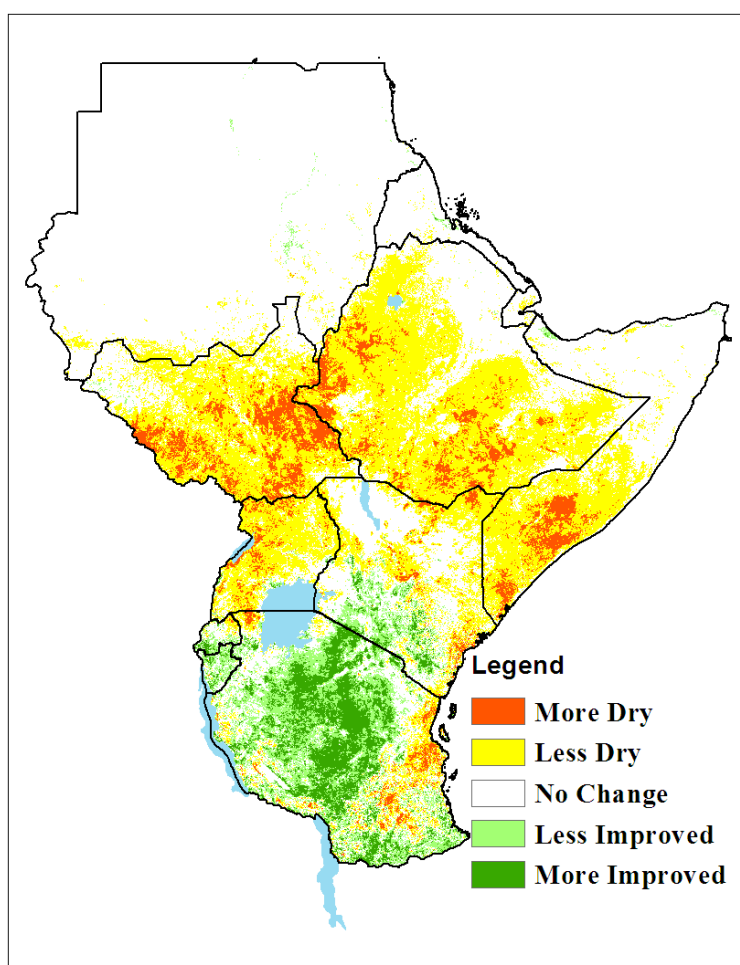


Figure 9: NDVI difference between December 2013 and January 2014

7.2 Impacts of observed climate conditions during January 2014

The socio-economic impacts associated with the observed rainfall over the Southern sector as of the Greater Horn of Africa region during the month of January 2014 are highlighted below:

- Favourable soil moisture conditions which subsequently improved crop, pasture and foliage conditions;
- Replenishment of water resources;

7.3 Potential impacts for March-May 2014 climate outlook

The areas expected to receive normal to above normal rainfall during MAM 2014 rainfall season 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.