

IGAD Climate Prediction and Applications Centre Monthly Bulletin, August 2014

1. HIGHLIGHTS/ ACTUALITES

- Rainfall activities were mainly observed over the central parts of the northern sector and western parts of equatorial sector of the Greater Horn of Africa (GHA) in July 2014;
- During September to December 2014 much of the western and eastern equatorial sector; south-western parts of the northern sector; and western parts of the southern sector are likely to receive near normal above normal rainfall;
- The socio-economic impacts associated with the observed rainfall over much of the Greater Horn of Africa during the month of July 2014 resulted to improved crop, pasture and foliage conditions as well as improvement in water resources over central parts of northern sector as well as western parts of equatorial sector. Localised flooding and landslides were also observed over parts of the northern sector.

2. INTRODUCTION

This bulletin reviews the climatic conditions observed over the GHA in the month of July 2014, provides the climate outlook for September to December 2014, and highlights the socio-economic impacts associated with both the observed climatic conditions and the climate outlook.

There are seven major sections in this bulletin. 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. The climate patterns that prevailed during the month of July 2014 are discussed under section 4, while the dominant weather systems are discussed in section 5. Section 6 presents the climate outlook over the GHA for September to December 2014. The socio-economic impacts associated with the observed climatic conditions and those expected from the climate outlook are outlined in the final section.

3. SUMMARY

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

In July 2014, rainfall activities were mainly observed over the central parts of the northern sector and parts of western equatorial sector of the GHA. The observed rainfall conditions over parts of the Greater Horn of Africa during July 2014 resulted in improved crop, pasture and foliage conditions, replenishment of water resources and localised flooding.

The regional consensus climate outlook for the September to December 2014 rainfall season indicates increased likelihood of near normal rainfall over most of the GHA, with higher likelihood of above normal rainfall over the western and eastern parts of the equatorial sector. Increased likelihood of near to below normal is indicated over the rest of the GHA (Figure 8).

4. CLIMATE PATTERNS IN JULY 2014

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

4.1 Rainfall amounts and performance during July 2014

Southern part of Sudan; north-eastern part of South Sudan; and northern and western Ethiopia received more than 150mm of rainfall in July 2014 (Figure 1). Rainfall amounts ranging between 50mm and 150mm was received over central and south-western Ethiopia; most parts of South Sudan excluding north-eastern; northern half of Uganda; and western Kenya. Northern Sudan; southern Ethiopia; most parts of Somalia and Kenya; southern half of Uganda; and much of Rwanda, Burundi and Tanzania received less than 50mm of rainfall (Figure 1).

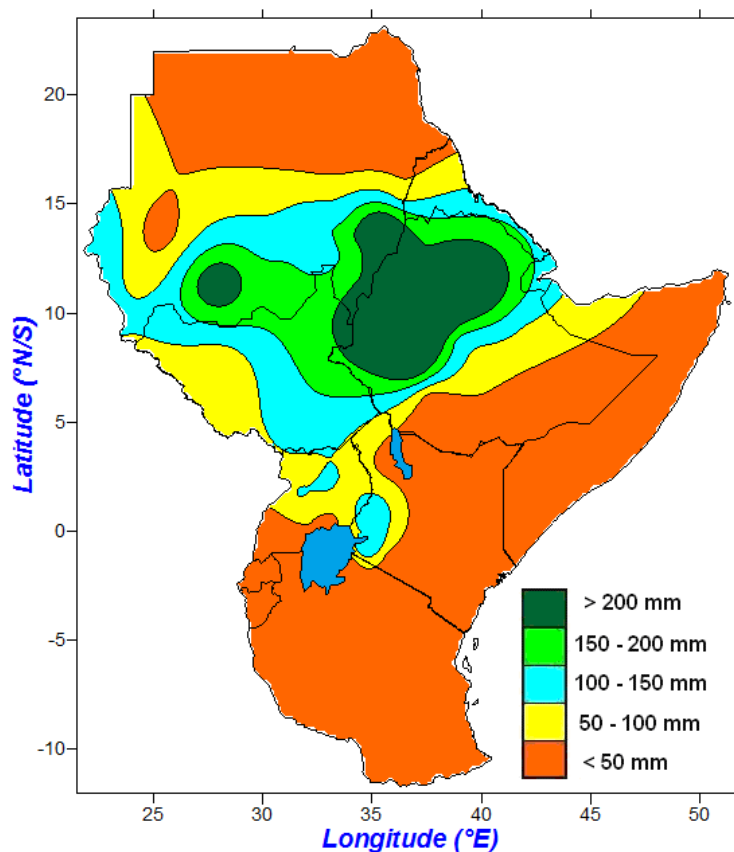


Figure 1: Spatial distribution of rainfall during the month of July 2014

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 July 2014, near normal to wet conditions were recorded over northern and central Ethiopia; southern and south-eastern part of Sudan; northern and southern parts of South Sudan; north-western Uganda; and western Kenya (Figure 2). Over western and south-

western parts of Sudan; eastern and western parts of South Sudan; parts of central and western Ethiopia; eastern, central and south-eastern Uganda; parts of western Kenya; and the coastal strip of southern Somalia, Kenya and northern Tanzania recorded dry conditions in July 2014. Generally dry conditions were recorded over much of Rwanda, Burundi and Tanzania; south-western tip of Uganda; most parts of Kenya and Somalia; southern Ethiopia and northern Sudan.

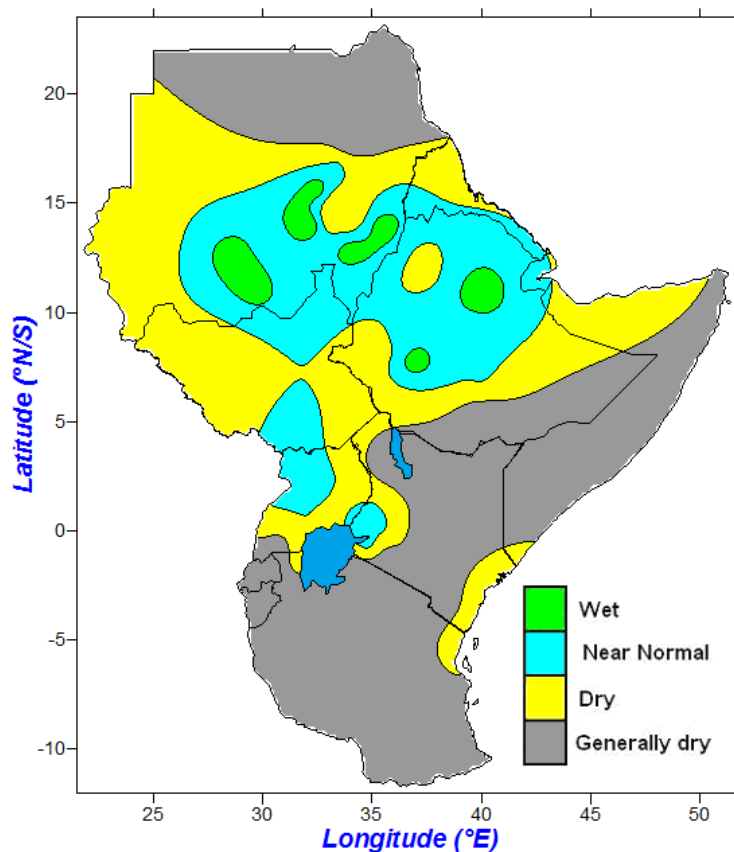


Figure 2: Rainfall severity index for the month of July 2014

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 Jan 2014 to July 2014

The cumulative dekadal rainfall was used to evaluate the rain water stress over GHA region. Figure 3 show the cumulative dekadal rainfall performance since January 2014. Near normal to above normal rainfall was observed mainly over the central parts of the northern sector of the GHA (Figure 3a and 3b), while western parts of the equatorial sector experienced near normal to below rainfall (Figure 3c) respectively.

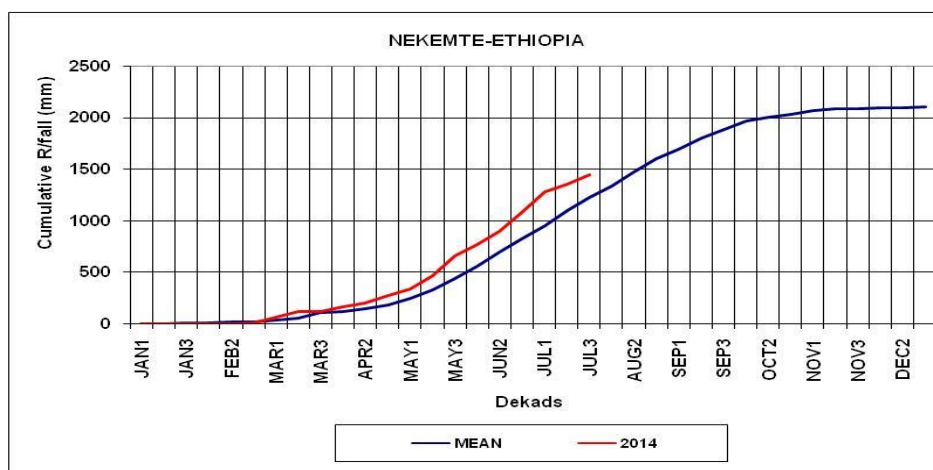


Figure 3a: Cumulative rainfall series for NEKEMTE

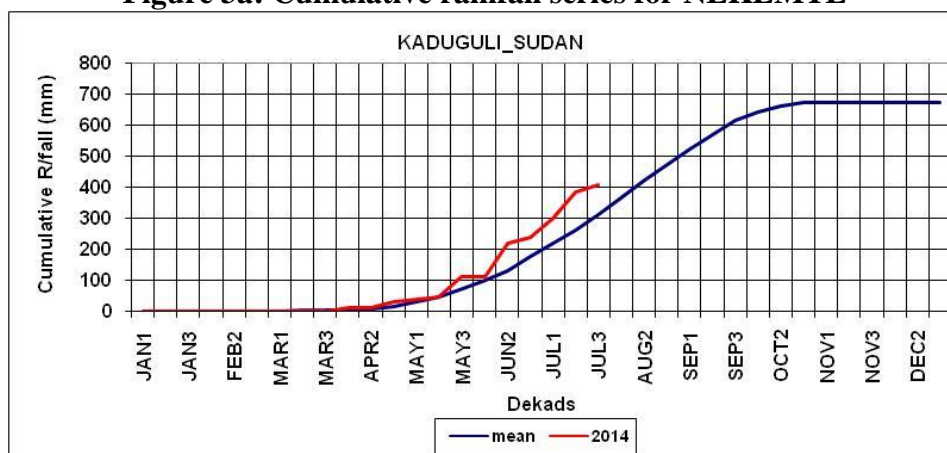


Figure 3b: Cumulative rainfall series for KADUGULI

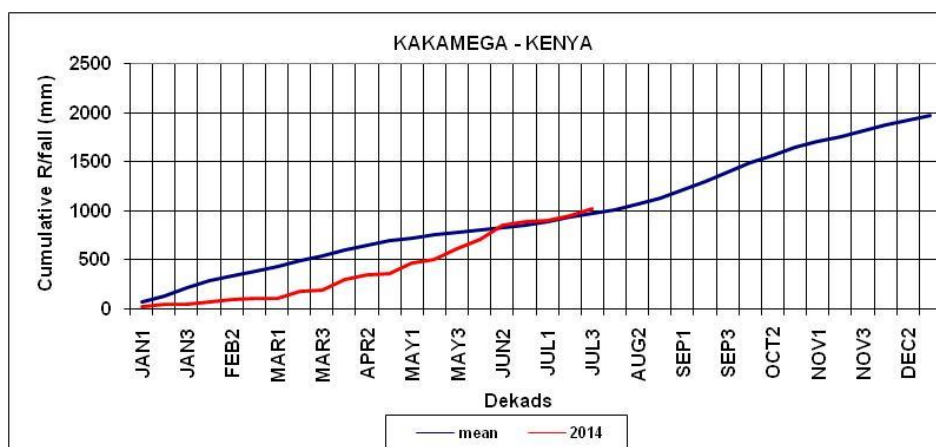


Figure 3c: Cumulative rainfall series for Kakamega

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during May to July 2014

During the period May-June-July 2014, less than 75% of the long-term average rainfall for the May-June-July period was received over northern, north-eastern and western parts of Sudan; north-western and south-eastern tips of South Sudan; southern Ethiopia; central Somalia; north-eastern and south-western tips of Uganda; northern, central and southern Kenya; and much of Rwanda, Burundi and Tanzania (Figure 4). North coast of Tanzania; coastal strip, eastern and western Kenya; southern Somalia; most parts of Uganda and South Sudan; northern, central and western Ethiopia; and central and southern Kenya received between 75% and 125% of the three-month long-term mean rainfall during the May – July 2014 period (Figure 4). Isolated parcels over southern part of Sudan received between 125% and 175% of the long-term rainfall.

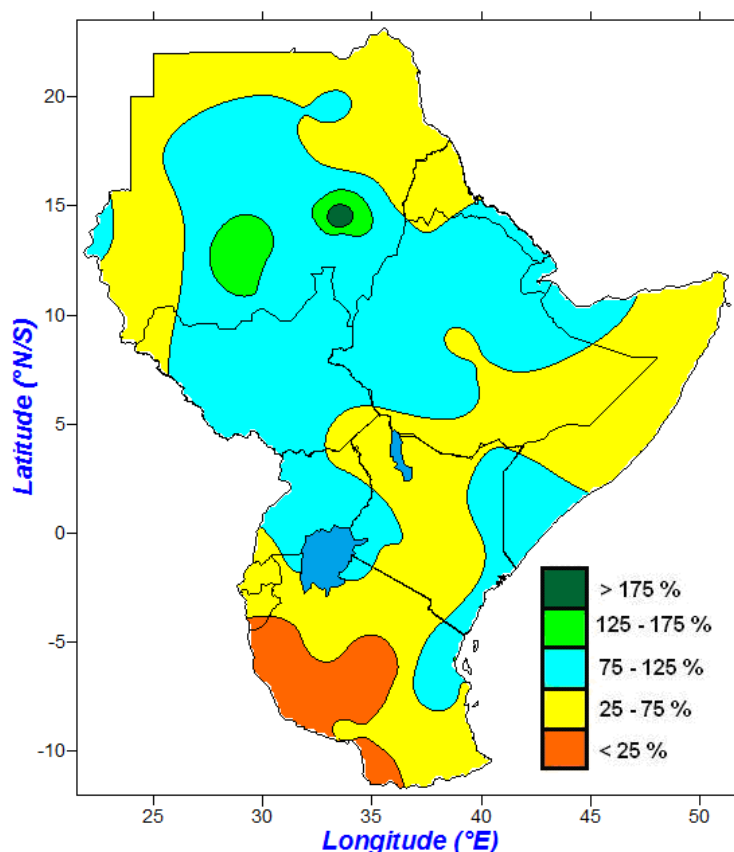


Figure 4: Spatial pattern of rainfall anomalies for May to July 2014 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

In the month of July 2014, warmer than average maximum temperature conditions dominated over much of the GHA region while negative anomalies of maximum temperature were recorded over southern parts of Sudan and central Ethiopia (Figure 5a). Positive maximum temperature anomalies exceeding 2°C were recorded over south-western parts of Sudan; western half of South Sudan; western half of Uganda; northern and southern Ethiopia; south-western Kenya and various parts of Tanzania (Figure 5a).

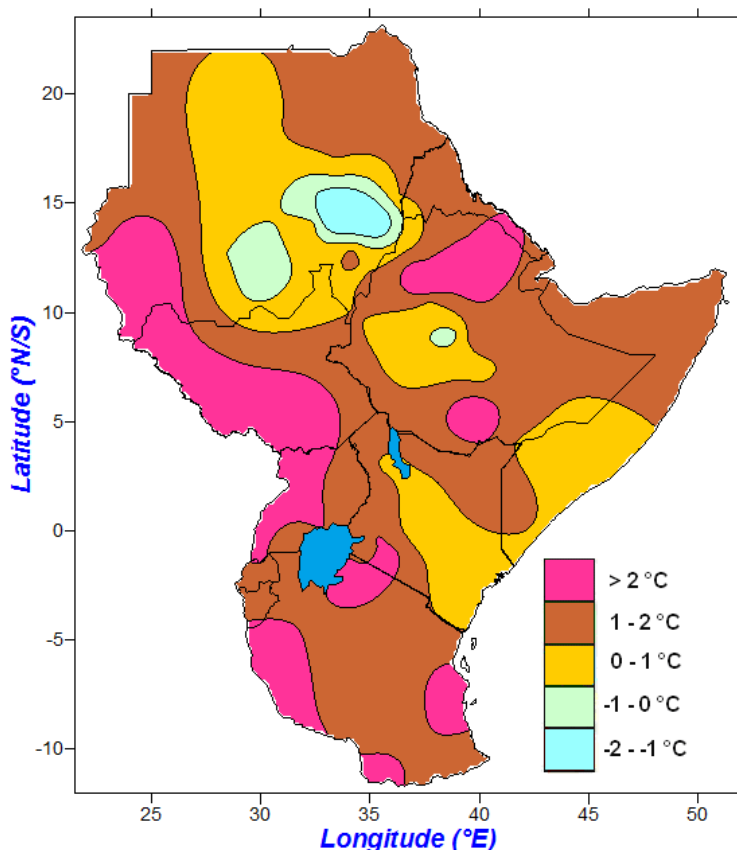


Figure 5a: Maximum temperature anomalies for July 2014

4.4.2 Minimum temperature anomalies

Warmer than average minimum temperature anomalies dominated over much of the GHA region during the month of July 2014 (Figure 5b). Positive minimum temperature anomalies greater than 2°C were recorded over northern part of Sudan; central and eastern Ethiopia; western half of Uganda; eastern half of Rwanda; northern tip of Burundi; south-western Kenya; and northern part of Tanzania. Negative anomalies of minimum temperature were recorded over southern and south-western Tanzania; north-eastern Uganda; western part of South Sudan; and eastern part of Sudan in the month of July 2014 (Figure 5b).

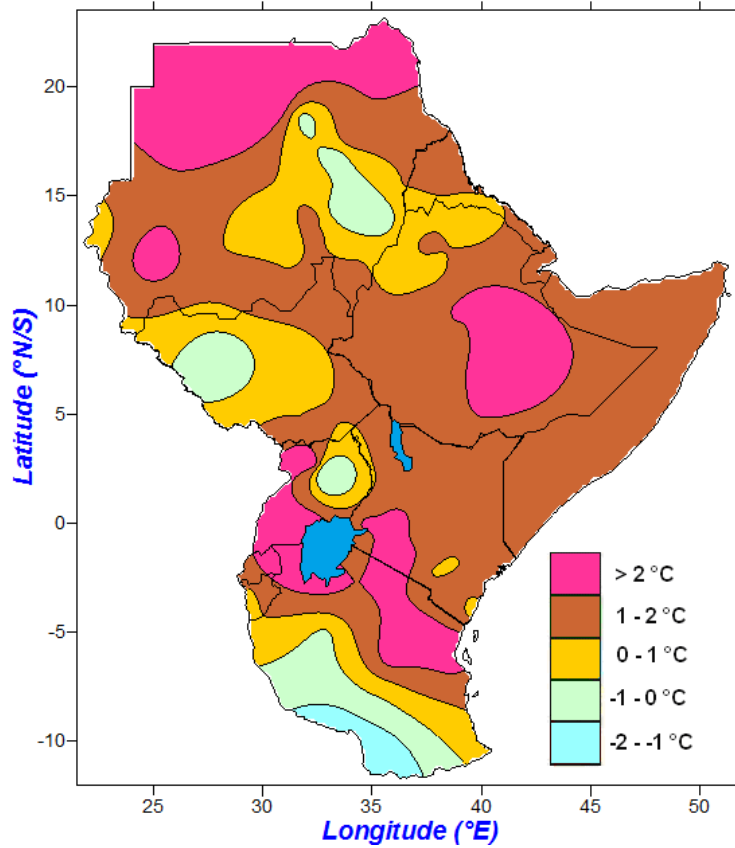


Figure 5b: Minimum temperature anomalies for the month of July 2014

5. STATUS OF THE CLIMATE SYSTEMS

During the months of July August 2014 above average sea surface temperatures (SSTs) were observed over much of the eastern, western and southwestern parts of the Indian Ocean resulting in near normal Indian Ocean dipole index (Fig.7), while below average SSTs were observed over north western and south western parts of Indian Ocean. Warmer than average SSTs were observed across equatorial Pacific Ocean (Fig.6).

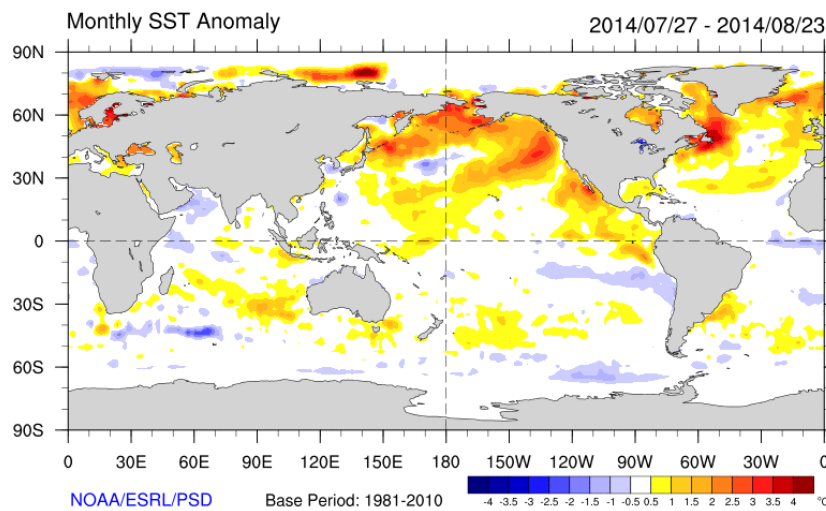


Figure 6: Sea Surface Temperature anomalies for the period 27 July 2014 to 23 August 2014 (Courtesy of NOAA)

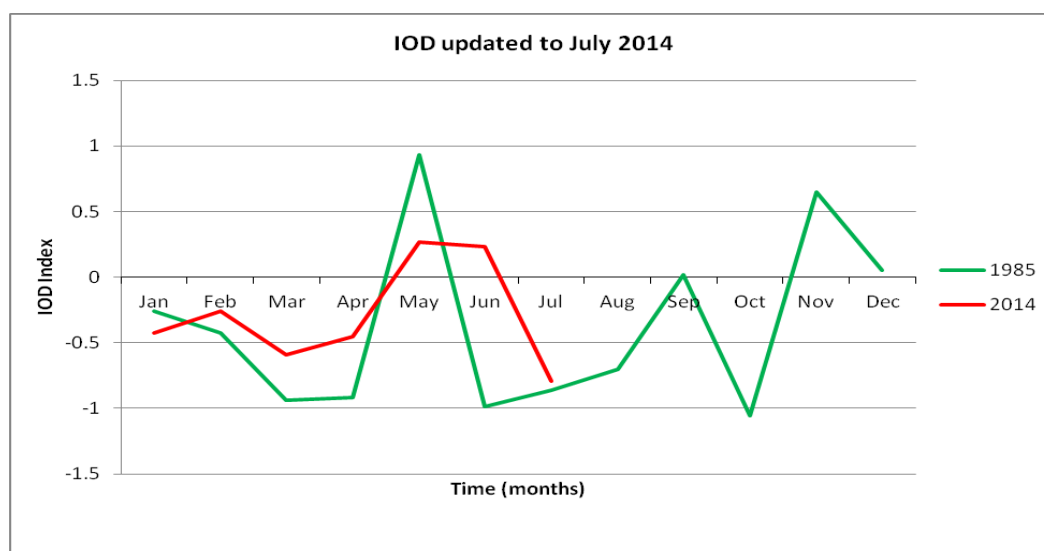


Figure 7: Indian Ocean Dipole (IOD) for 2014

6. CLIMATE OUTLOOK FORUM FOR SEPTEMBER TO DECEMBER 2014

6.1 The Climate Outlook Forum

The Thirty Eight Greater Horn of Africa Climate Outlook Forum (GHACOF38); was convened from 2 to 26 August 2014 at Sheraton Hotel, Addis Ababa, Ethiopia by the IGAD Climate Prediction and Applications Centre (ICPAC) in collaboration with the World Meteorological Organization (WMO), and partners in order to formulate a consensus regional climate outlook for the September to December 2014 rainfall season over the GHA region.

The forum reviewed the implications of Sea Surface Temperature (SST) anomalies over the tropical Oceans including (i) the phase and strength of Indian Ocean Dipole mode (IOD), possible development of Cyclones over the western Indian Ocean; (ii) SST anomalies over equatorial eastern Pacific region and the evolution of the El Niño conditions during the forecasts period, and (iii) SST anomalies over the Atlantic ocean. The influence of these ocean processes will be modulated by regional circulation patterns, and the influence of topography and large inland water bodies. Guidance and valuable forecast inputs were drawn from a wide range of sources including the World Meteorological Organisation's Global Producing Centres (WMO-GPCs), APEC Climate Centre and Korea Meteorological Administration (KMA), The UK-Met Office and the National Oceanic and Atmospheric Administration (NOAA) Africa desk as well as the National Meteorological and Hydrological Services (NMHSs) of the Greater Horn of Africa. Inputs were also provided by the UNESCO, Western Indian Ocean Marine Sciences Association (WIOMSA) and the United States Geological Survey (USGS).

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 for the period of September to December 2014.

6.2 Rainfall Outlook for September to December 2014

The rainfall outlooks for the GHA region is given in figure 8.

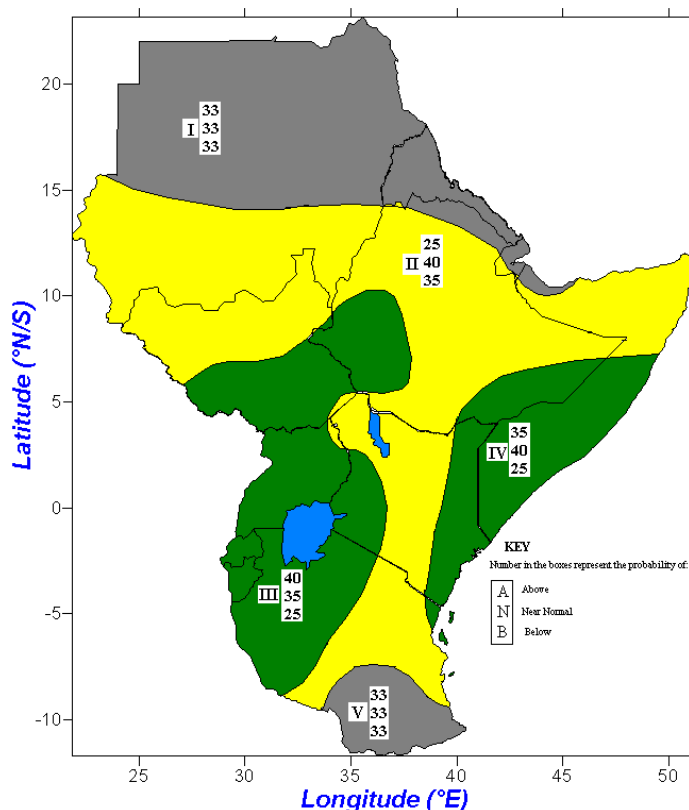


Figure 8: Greater Horn of Africa Consensus Climate Outlook for September to December 2014 rainfall season

Zone I & V: These areas are usually dry during September to December season

Zone II: Likelihood near normal to below normal rainfall

Zone III & IV: Increased likelihood of near normal to above normal rainfall

Note:

The numbers for each zone indicate the probabilities of rainfall in each of the three categories, above-, near-, and below-normal. The top number indicates the probability of rainfall occurring in the above-normal category; the middle number is for near-normal and the bottom number for below-normal category. For example, in zone IV, there is 35% probability of rainfall occurring in the above-normal category; 40% probability of rainfall occurring in the near-normal category; and 25% probability of rainfall occurring in the below-normal category. It is emphasised that boundaries between zones should be considered as transition areas.

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 Impacts of observed climate conditions during July 2014

The socio-economic impacts associated with the observed rainfall over much of the Greater Horn of Africa during the month of July 2014 were as follows:

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

In regions that experienced dry conditions the impacts were:

- Poor livestock productivity;
- Poor crop performance in some parts of the equatorial sector.

7.2 Potential impacts for September to December 2014 climate outlook

The areas expected to receive normal to above normal rainfall during SOND 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.