July 2015
No. ICPAC/02/281

IGAD Climate Prediction and Applications Centre Monthly Bulletin, July 2015

For referencing within this bulletin, the Greater Horn of Africa (GHA) is generally subdivided into three sub-regions: The equatorial sector lying approximately between -5^o and 5^o latitude, with the northern and southern sectors occupying the rest of the north and southern parts of the region respectively

1. HIGHLIGHTS/ ACTUALITES

- Rainfall activities were mainly observed over southwestern and central parts of the northern sector as well as western parts of the equatorial sector of the Greater Horn of Africa (GHA) during the month of June 2015;
- During August 2015rainfall period the western and central parts of the northern sector, and western parts of the equatorial sector are likely to receive near normal to above normal rainfall;
- The socio-economic impacts associated with the observed rainfall over the GHA during the month of June 2015 resulted in improved crop, pasture and foliage conditions, increase in water related diseases; and improvement in water resources over some parts of equatorial sectors.

2. INTRODUCTION

In this bulletin, the climatic conditions observed over the GHA region in the month of June 2015 is reviewed and the climate outlook for August 2015 rainfall is also provided. Highlights on the socio-economic impacts associated with both the observed conditions and the outlook is also provided.

There are seven sections in this bulletin. In section 1, the major highlights from both the observed and expected climate conditions are outlined. Section 3 provides an overall summary. The climate patterns that prevailed in the month of April 2015 are discussed under section 4, while the dominant weather systems are discussed in the section that follows. The climate outlook over the GHA for the season of August 2015 is presented in section 6 followed by the socio-economic impacts associated with the observed climatic conditions in June 2015 and those expected from the climate outlook in the final section.

3. SUMMARY

This bulletin has three main components, these are: the climatic conditions observed during the month of June 2015 over GHA, the climate outlook for August 2015 and the impacts associated with both the observed climate conditions and the climate outlook.

Rainfall activities were mainly observed over southwestern and central parts of the equatorial sector; as well as western parts of the equatorial sector of the GHA region during the month of June 2015. The observed rainfall conditions over parts of the Greater Horn of Africa during June resulted in improved crop, pasture and foliage conditions, replenishment of water resources, and reported cases of flooding leading to disruption of livelihood.

The climate outlook for the August 2015 rainfall season indicates an increased likelihood of near normal to above normal rainfall over parts of South Sudan, parts of western Kenya, northern and eastern Uganda; western and central Ethiopia; and southern parts of Sudan. The rest of the region is likely to experience near normal to below normal conditions or generally dry conditions during August 2015 rainfall season (Figure 8).

4. CLIMATE PATTERNS IN JUNE 2015

The climatological summary for the rainfall amounts and rainfall severity indices over the GHA in the month of June 2015 are provided in this section. The rainfall severity indices are derived only for those areas in the GHA region where the month of June is not a generally dry month.

4.1 Rainfall amounts and performance during June 2015

During the month of June 2015, southern, central and eastern parts of South; western parts of Ethiopia, northern and eastern Uganda; as well as parts of western Kenya received between 100mm to above 200mm of rainfall (Figure 1), with southern parts of South Sudan, northern Uganda and south western Ethiopia receiving more than 200mm of rainfall. North western parts of South Sudan; western and coastal Kenya; parts of southern Uganda; southern parts of Sudan as well as parts of central Ethiopia recorded rainfall amounts of between 50mm to 100 mm (Figure 1). While the rest of the GHA received less than 50 mm of rainfall.

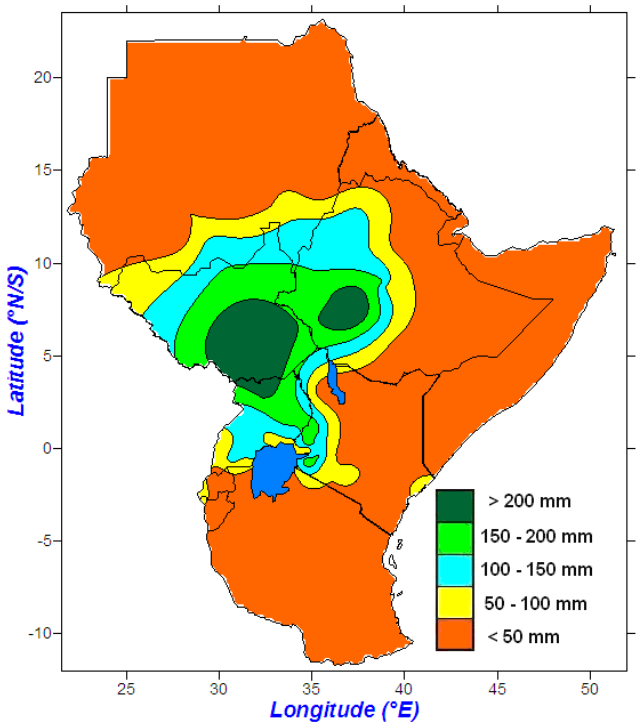

Figure 1: Spatial distribution of rainfall during the month of June 2015

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 June 2015, near-normal to wet conditions were observed over central and southern parts of South Sudan; northwestern and southwestern Ethiopia; northern, central and eastern Uganda as well as parts of western Kenya. Near normal to dry rainfall conditions were experienced of western and coastal parts of Kenya; south western and north eastern Uganda; parts of western Ethiopia; southern parts of Sudan; as well as northwestern and eastern parts of South Sudan. The rest of the GHA indicates generally dry conditions.

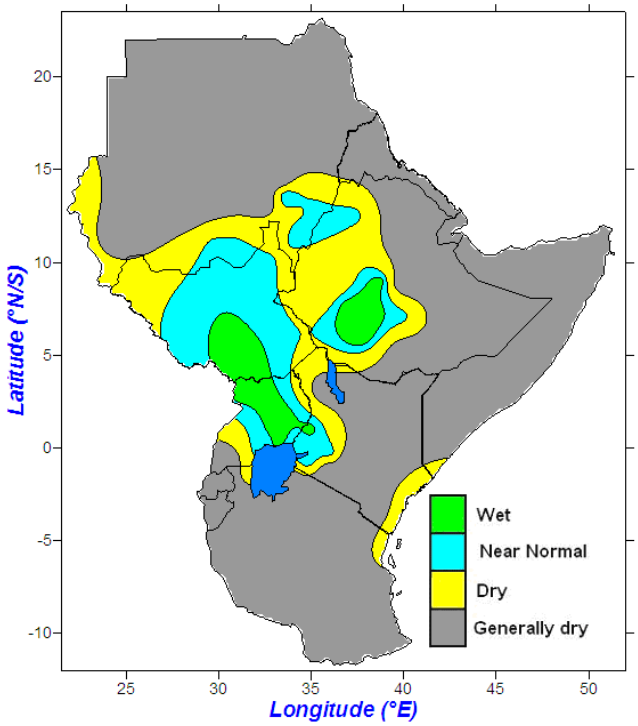

Figure 2: Rainfall severity index for the month of June 2015

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 2015

The cumulative dekadal rainfall was used to evaluate the rain water stress over GHA region. Figure 3 shows the cumulative dekadal rainfall performance since January 2015. Near normal to above normal rainfall was observed over southwestern parts of northern sector as well as western parts of equatorial sector (Figure 3b, 3a). Near normal to dry conditions were experienced over eastern parts of the equatorial sector (Figure 3c).

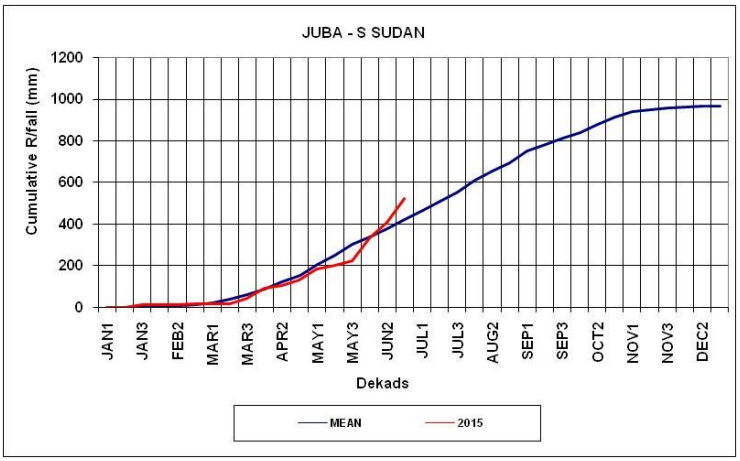

Figure 3a: Cumulative rainfall series for Juba

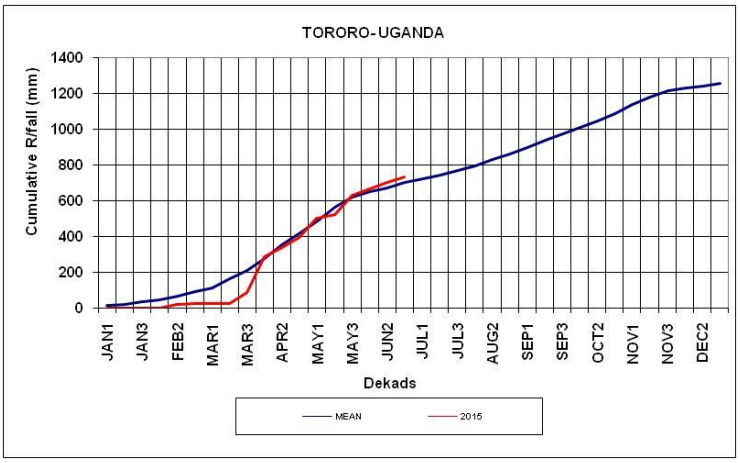

Figure 3b: Cumulative rainfall series Tororo

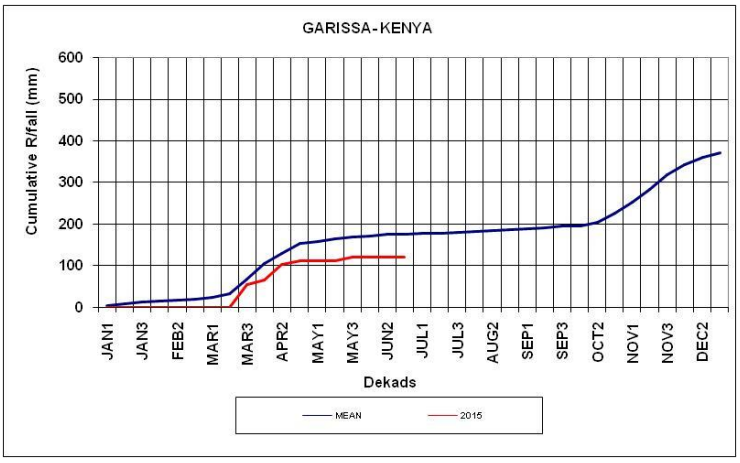

Figure 3c: Cumulative rainfall series for Garissa

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during April to June 2015 period

During April to June 2015 period Rwanda; parts of Burundi; much of Uganda; northern and coastal parts of Tanzania; southern parts of South Sudan; central and south western parts of Ethiopia; northern Eritrea; Djibouti; northern tip of Somalia; southeastern parts of Sudan; and central, western and southern parts of Kenya received between 75-125% of long term average rainfall for the period with northern parts of Tanzania; parts of western, and southern Kenya receiving between 125% to more than 175% of long-term average rainfall (Figure 4). Most parts Somalia; eastern, northern and parts of western Ethiopia; northern parts of South Sudan; southern and eastern parts of Sudan; southern Eritrea; south western Burundi; and southern parts of Tanzania received between 25% to 75% of long term average rainfall. The rest of the region received less than 25% of the long-term rainfall (Figure 4) for the three-month long-term mean rainfall during the April-June 2015 period.

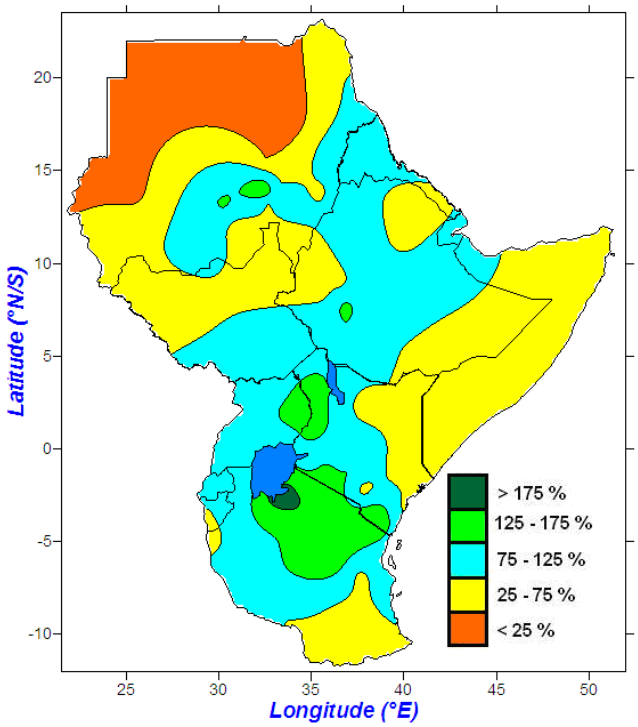

Figure 4: Spatial pattern of rainfall anomalies for April to June 2015 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

During the month of June 2015, warmer than average maximum temperatures prevailed over most parts of the Greater Horn of Africa (GHA) region (Figure 5a) except for isolated areas over central and northern Ethiopia as well as central Kenya which recorded less than average maximum temperatures. Positive maximum temperature anomalies exceeding 2°C were recorded over Djibouti; Somalia; south eastern parts of Ethiopia, eastern and north-eastern Kenya; southern Somalia; western Tanzania; and south western parts of Sudan (Figure 5a).

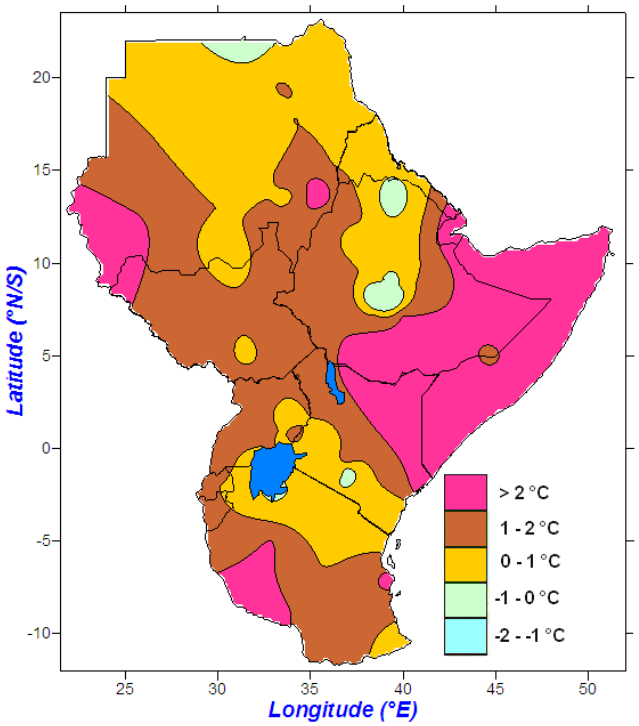

Figure 5a: Maximum temperature anomalies for June 2015

4.4.2 Minimum temperature anomalies

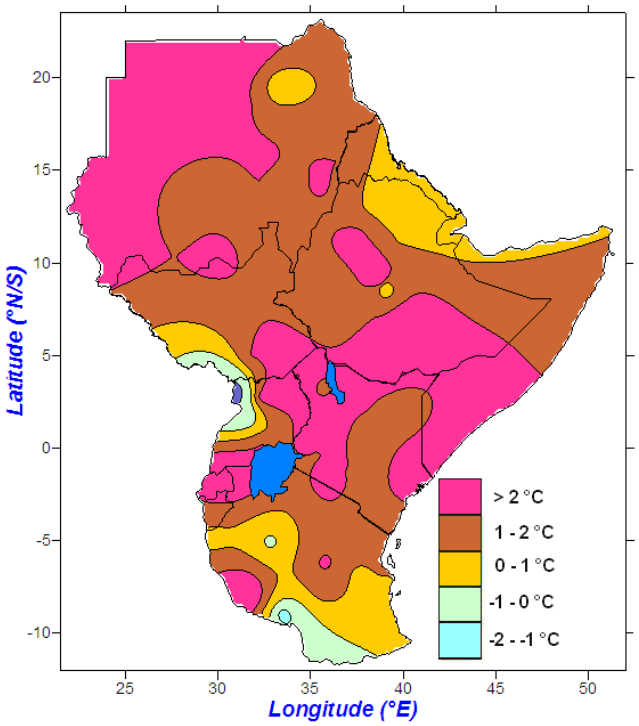

Figure 5b: Minimum temperature anomalies for the month of June 2015

During June 2015, most parts of the GHA received warmer than average minimum temperatures except for southwestern South Sudan, northwestern Uganda, and southwestern Tanzania (Figure 5b). Positive minimum temperature anomalies exceeding 2°C were observed

over Rwanda; northern Burundi; western Tanzania; southern Somalia; central and southern Ethiopia; Eastern Sudan; eastern and southern Uganda; and western; northern and eastern parts of Kenya (Figure 5b) during the month of June 2015.

5. STATUS OF THE CLIMATE SYSTEMS

During the period from mid June to early July 2015 above average sea surface temperatures (SSTs) were observed over central equatorial Indian Ocean. The eastern equatorial Indian Ocean indicated neutral to warmer than average SSTs, while western equatorial Indian Ocean indicated neutral to cooler than average SSTs (Fig.6) resulting in weak and negative Indian Ocean dipole index (Figure.7a). Warmer than average SSTs were observed over eastern equatorial Pacific Ocean (Figure. 6) an indication of positive ONI Index (Figure 7b).

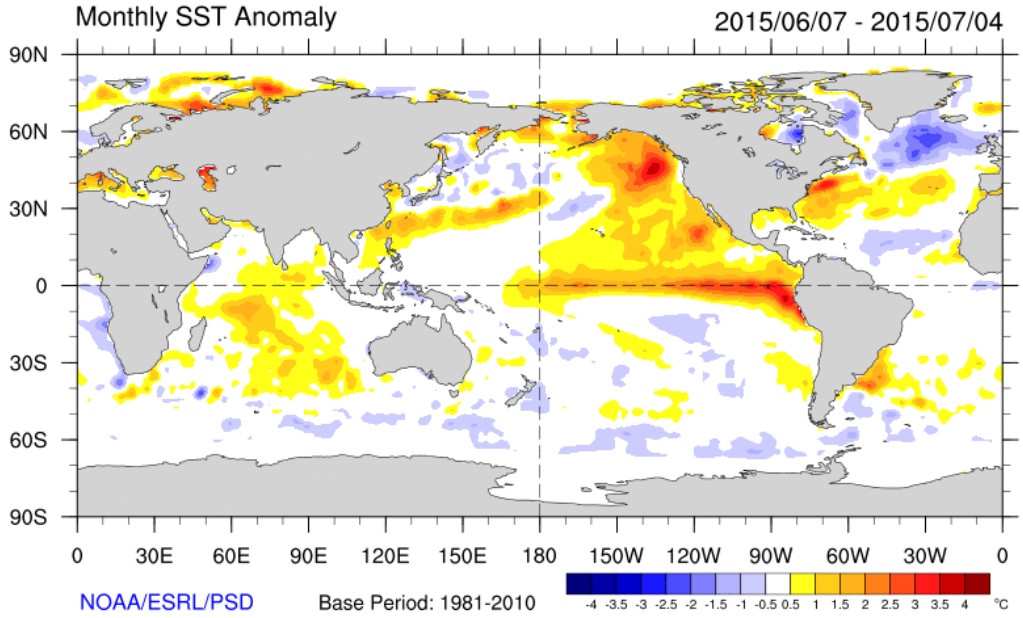

Figure 6: Sea Surface Temperature anomalies for the period 07 June to 04July 2015 (Courtesy of NOAA)

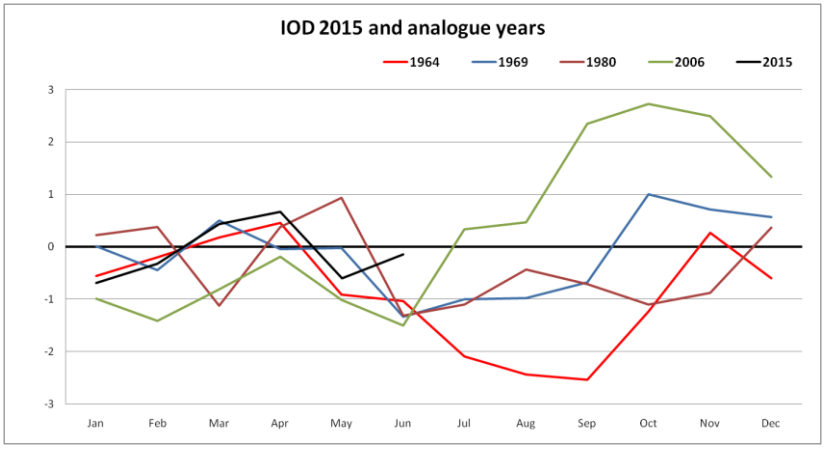

Figure 7a: Indian Ocean Dipole (IOD) for 2015 and Analogue Years

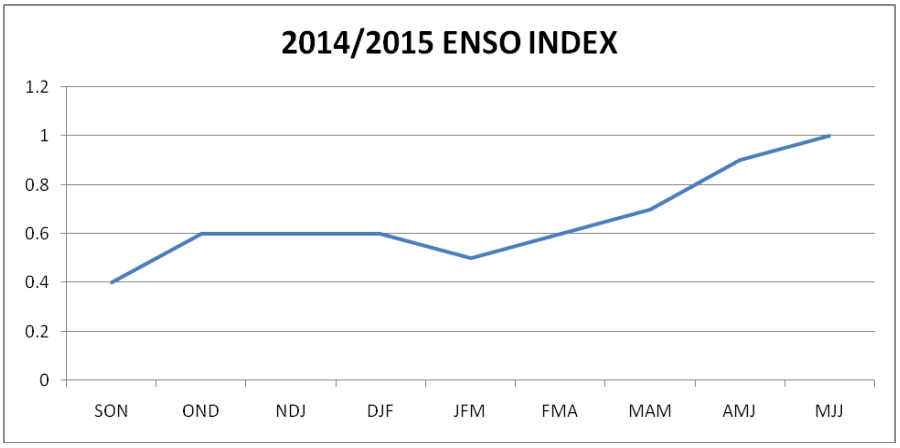

Figure 7b: ENSO index for 2014/2015

6.0 CLIMATE OUTLOOK FOR AUGUST 2015

The rainfall outlook for August 2015 indicates a likelihood of near to above normal rainfall over most parts of South Sudan; southern parts of Sudan; western Ethiopia; northern and eastern Uganda; and parts of western Kenya (Figure 8). Near normal to below normal rainfall is likely to be experienced over most parts of Eritrea; Djibouti; central parts of Sudan; extreme northern Somalia; parts of Rwanda; parts of western and central Kenya; and northern and eastern parts of Ethiopia. The rest of the region is likely to remain generally dry (Figure 8)

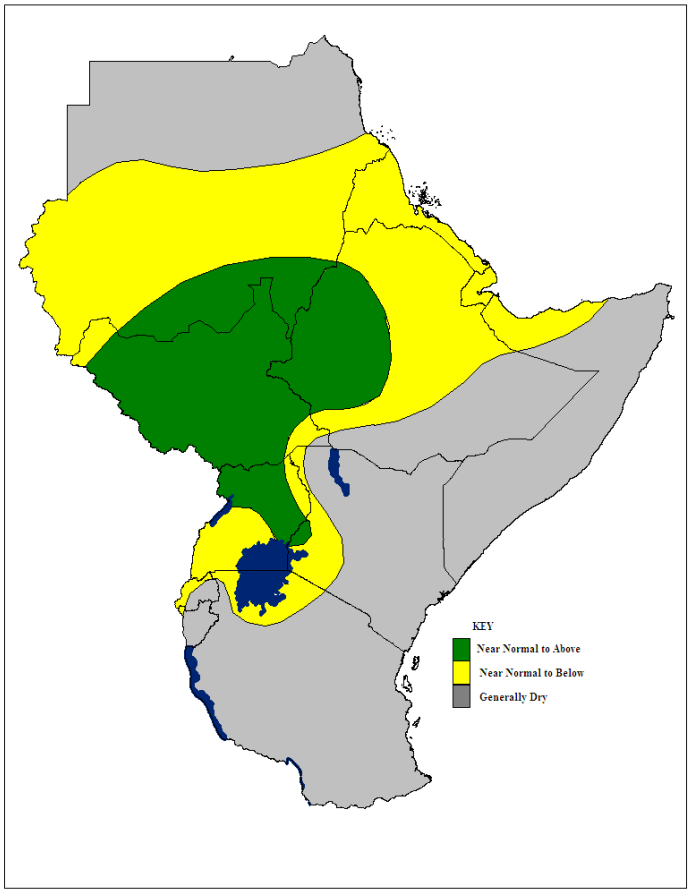

Figure 8: Climate Outlook for August 2015 rainfall

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 June 2015 and May 2015 indicates improved vegetation conditions over southern and eastern Sudan; northern and eastern South Sudan; northwestern Ethiopia; northern Somalia; north eastern, central and coastal parts of Kenya; eastern and northern coast of Tanzania; parts of eastern Uganda; and central parts of Rwanda and Burundi. The rest of the indicated deteriorated or no change in vegetation conditions (Figure 9).

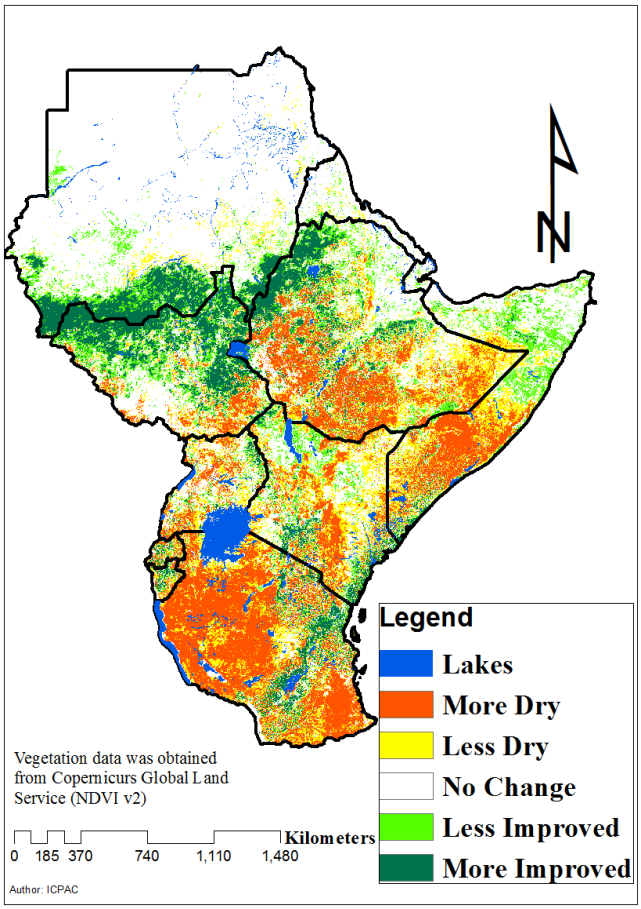

Figure 9: Vegetation difference between June and May 2015 over the Greater Horn of Africa

7.2 Impacts of observed climate conditions during June 2015

The socio-economic impacts associated with the observed rainfall over much of the Greater Horn of Africa during the month of June 2015 were as follows:

- Improved crop, pasture and foliage conditions;
- Replenishment of water reservoirs;
- Localised flooding leading to destruction of property, displacement of people, and disruption of livelihood;
- Increased water related diseases;

In regions that experienced dry conditions the impacts were:

- Poor pasture and water availability leading to reduced livestock productivity;
- Water and food scarcity.
- Increased water related diseases;
- Poor crop performance.

7.3 Potential impacts for August 2015 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;
- Improvement in water resources and replenishment of reservoirs;
- Flooding that may lead to disruption of livelihood of people, and destruction of property;
- Outbreaks of water related diseases.

The areas expected to receive near normal to below normal rainfall are likely to have the following impacts:

- Poor prospects for crop and pasture performance;
- Risk of water scarcity;
- Outbreaks of water related diseases.
- If the dry conditions occur within the agricultural areas, this could lead to water stress conditions and may cause significant water and pasture scarcity, crop and livestock losses.