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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 latitudes, 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 western 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 September 2015;
- During November to December 2015 rainfall period most parts of the equatorial sector are likely to receive near normal to above normal rainfall;
- The socio-economic impacts associated with the observed favourable rainfall activities over the GHA during the month of September 2015 include improved crop, pasture and browse conditions and replenishment of water resources. However, rainfall activity also resulted into increased risk of water related diseases, while dry conditions experienced especially in northern sector resulted into moisture stress to both crops and pastures.

2. INTRODUCTION

In this bulletin, the climatic conditions observed over the GHA region in the month of September 2015 is reviewed and the climate outlook for November to December 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 September 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 November to December 2015 is presented in section 6 followed by the socio-economic impacts associated with the observed climatic conditions in September 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 September 2015 over GHA, the climate outlook for November to December 2015rainfall period, and the impacts associated with both the observed climate conditions and the climate outlook.

Rainfall activities were mainly observed over western and central parts of the northern sector; as well as western parts of the equatorial sector of the GHA region during the month of September 2015. The observed rainfall conditions over parts of the Greater Horn of Africa during September 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 November –December 2015 rainfall season indicates an increased likelihood of near normal to above normal rainfall over most parts of the equatorial sector. Southern parts of the northern sector as well as northern parts of the southern sector are likely to experience near normal to below normal conditions, with the rest of the GHA region pointing to a general climatology during November to December 2015 rainfall season (Figure 8).

4. CLIMATE PATTERNS IN SEPTEMBER 2015

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

4.1 Rainfall amounts and performance during September 2015

During the month of September 2015, most parts of the GHA region received between 50mm to 100mm or less than 50mm except western and eastern South Sudan; western Ethiopia; western, central and eastern Uganda; and western Kenya, which received between 100mm to above 200mm of rainfall (Figure 1), with western parts of Ethiopia receiving more than 200mm of rainfall.

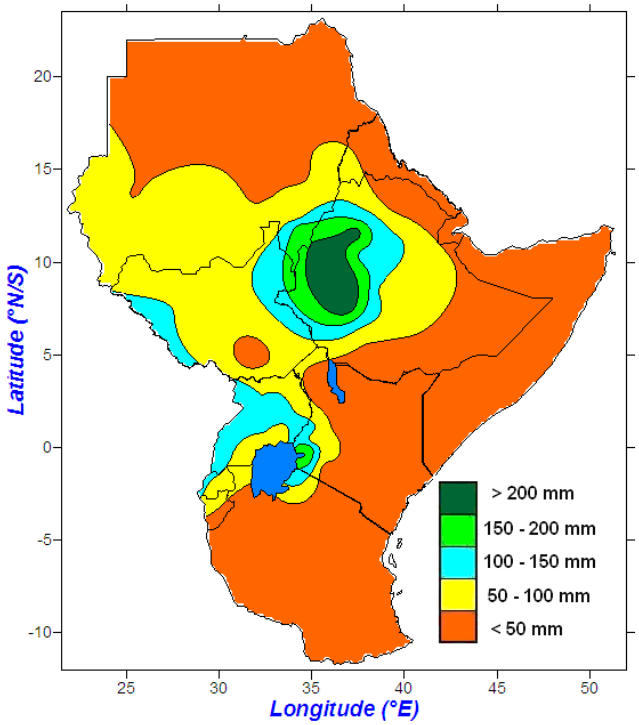

Figure 1: Spatial distribution of rainfall during the month of September 2015

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 September 2015, most of the GHA indicated dry to generally dry rainfall conditions except for south western and south eastern parts of Sudan; south western Eritrea; western and central Ethiopia; north of Rwanda; south of Uganda; and western Kenya, which received near-normal to wet rainfall conditions (Figure 2).

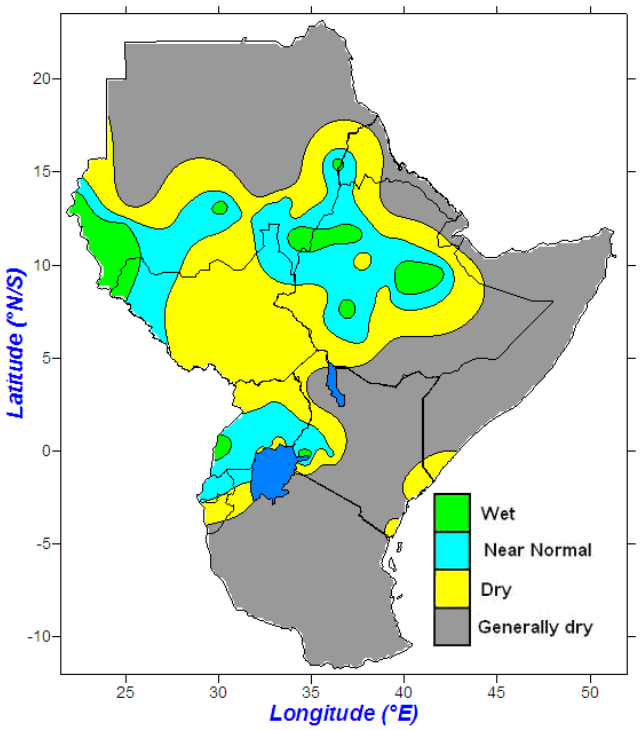

Figure 2: Rainfall severity index for the month of September 2015

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 June 2015

The cumulative dekadal rainfall was used to evaluate the rain water stress over GHA region. Figure 3 shows the cumulative rainfall performance since June 2015. Near normal to above normal rainfall was observed over south central parts of northern (Figure 3a). Near normal to below normal conditions were experienced over south western and western parts of the northern sector (Figure 3b and 3c).

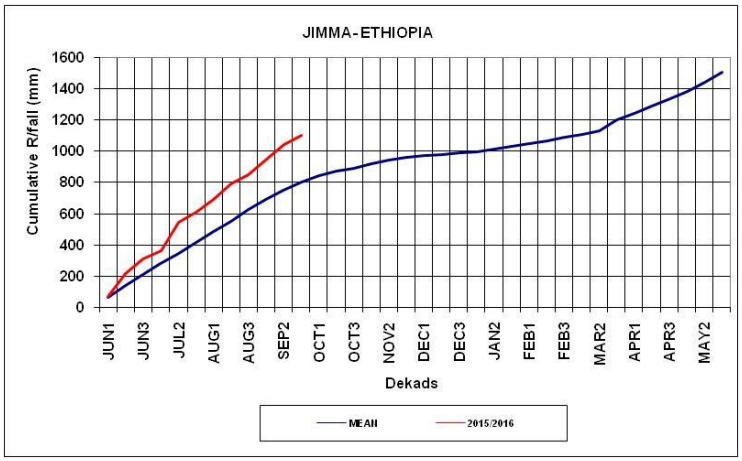

Figure 3a: Cumulative rainfall series for Jimma

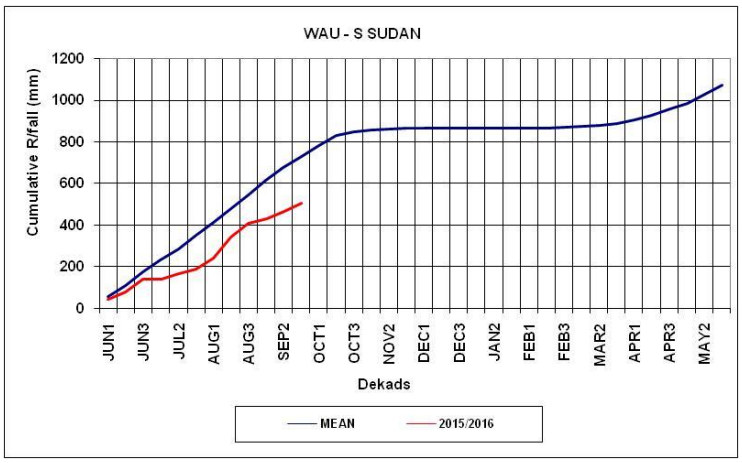

Figure 3b: Cumulative rainfall series Wau

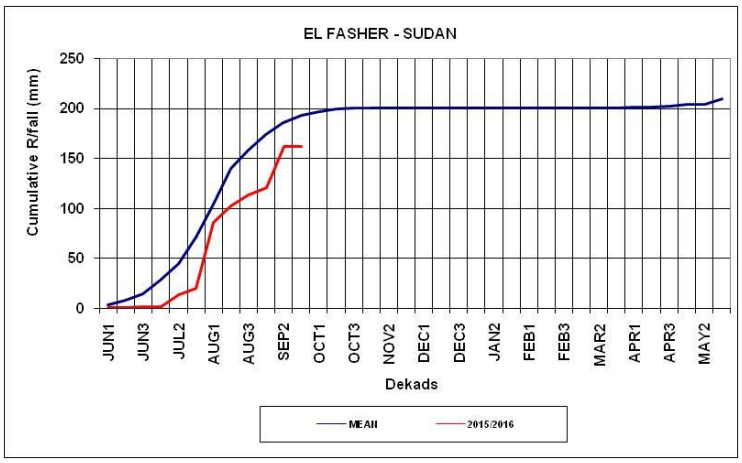

Figure 3c: Cumulative rainfall series for EL- Fasher

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during June to August 2015 period

During July to September 2015 rainfall is mainly expected over the northern sector, and over this period most parts of the GHA region received between 25% to 75% or less than 25% of long term rainfall of the period except southern and eastern parts of Sudan; western parts of Ethiopia; northern parts of South Sudan; south western and south eastern Uganda; western, north eastern and coastal parts of Kenya; and north western and northern coast of Tanzania which recorded rainfall amounts of between 75% to more than 175% of long term rainfall of the period, with northern parts of Tanzania; receiving more than 175% of long-term average rainfall for the three-month long-term mean rainfall during the July-September 2015 period (Figure 4).

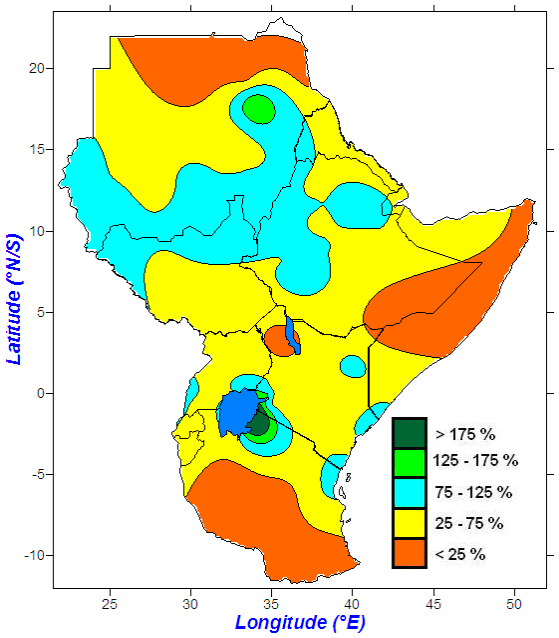

Figure 4: Spatial pattern of rainfall anomalies for July to September 2015 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

During the month of September 2015, warmer than average maximum temperatures prevailed over most parts of the Greater Horn of Africa (GHA) region (Figure 5a) except for isolated regions of southern coast of Kenya which recorded less than average maximum temperatures. Positive maximum temperature anomalies exceeding 2°C were recorded over northern parts of Sudan; southern and eastern parts of Ethiopia, southern parts of South Sudan; parts of western Uganda; parts of Burundi; southern parts of Somalia; parts of western central and coastal Kenya; and north western Tanzania (Figure 5a).

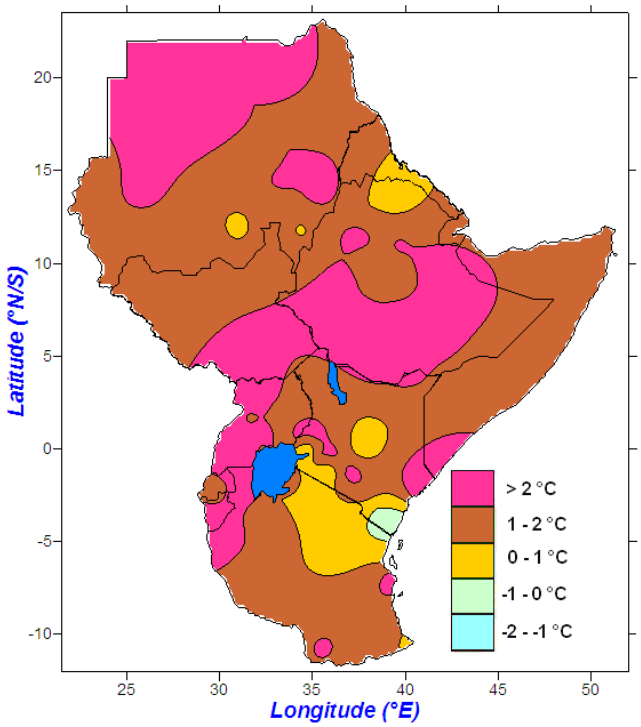

Figure 5a: Maximum temperature anomalies for September 2015

4.4.2 Minimum temperature anomalies

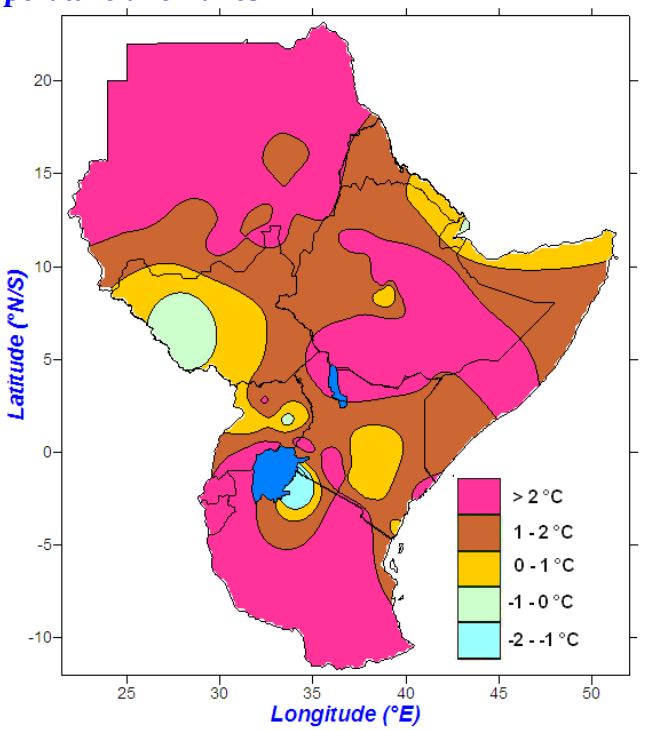

Figure 5b: Minimum temperature anomalies for the month of September 2015

During September 2015, most parts of the GHA received warmer than average minimum temperature anomaly except for western South Sudan, and north western Tanzania (Figure 5b). Positive minimum temperature anomalies exceeding 2°C were observed over Rwanda;

Burundi; Tanzania; northern parts of Sudan; eastern and southern Ethiopia; southern Uganda; central Somalia; and western, central and coastal parts of Kenya (Figure 5b) during the month of September 2015.

5. STATUS OF THE CLIMATE SYSTEMS

During the period of mid September to mid October 2015 above average sea surface temperatures (SSTs) were observed over equatorial Indian Ocean. The eastern equatorial Indian Ocean indicated neutral to cooler than average SSTs, while western equatorial Indian Ocean indicated neutral to warmer than average SSTs (Fig.6) resulting in a positive 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).

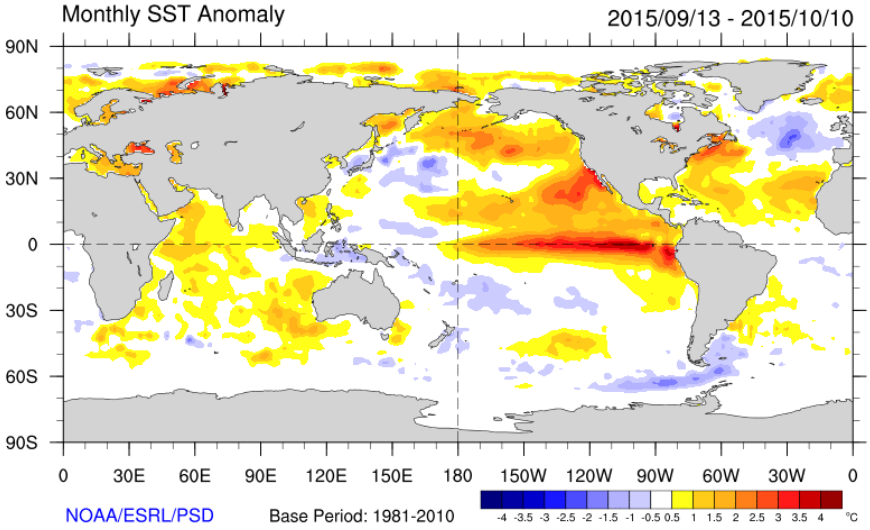

Figure 6: Sea Surface Temperature anomalies for the period 13 September to 10 October 2015 (Courtesy of NOAA)

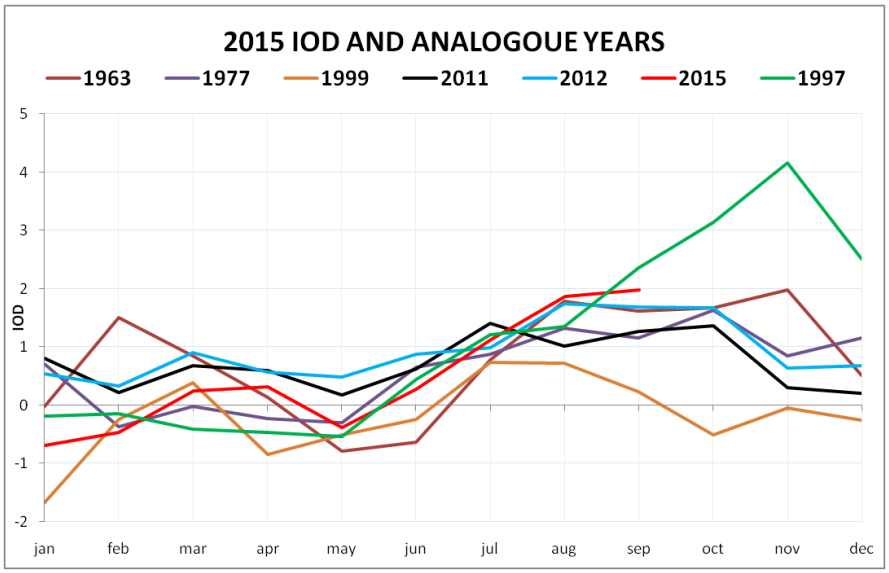

Figure 7a: Indian Ocean Dipole (IOD) for 2015 and Analogue Years

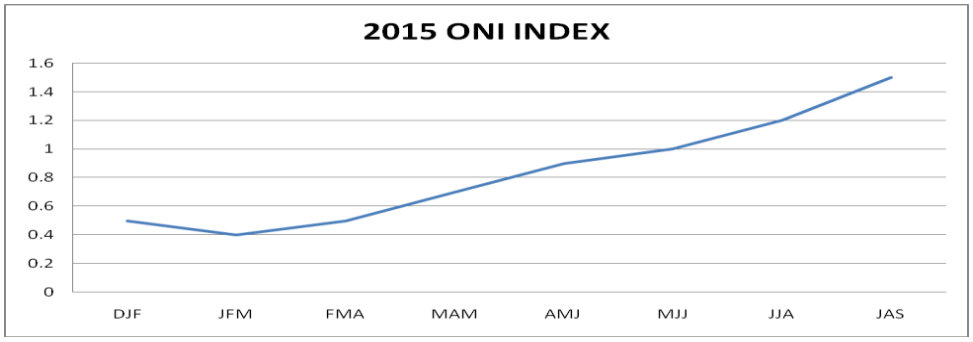

Figure 7b: ENSO index for 2014/2015

6.0 CLIMATE OUTLOOK FOR NOVEMBER TO DECEMBER 2015

The rainfall outlook for November to December 2015 period indicates a likelihood of near to above normal rainfall over most parts of Kenya, Uganda, southern parts of Somalia; southern Ethiopia; northern Tanzania; most parts of Rwanda and Burundi (Figure 8). Most parts of South Sudan; central and eastern Ethiopia; central and northern Somalia; north western Kenya; central Tanzania; and northern Uganda are likely to receive near normal to below normal rainfall. The rest of the region is likely to experience climatologic rainfall conditions (Figure 8).

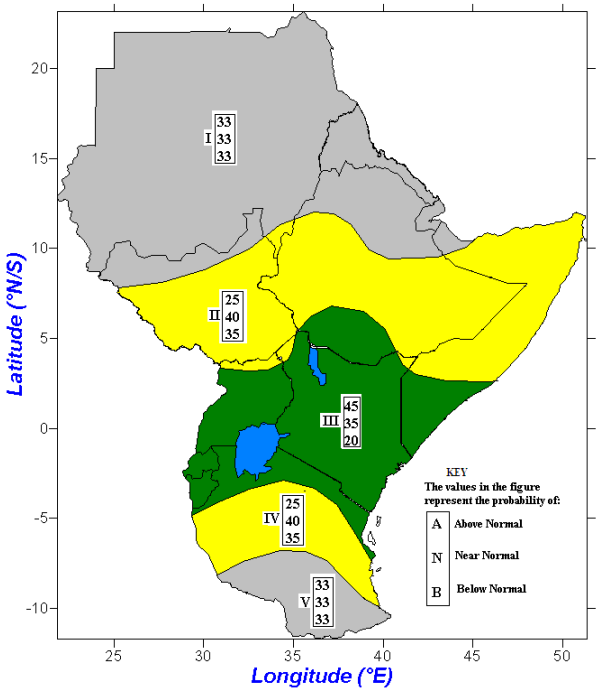

Figure 8: Climate Outlook for November - December 2015 rainfall

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 September 2015 and August 2015 indicates that most of the GHA region showed deteriorated or no

change in vegetative conditions except for region in the southern parts of Sudan; western and north western Ethiopia; isolated parts of south western Uganda; southern Somalia; north eastern Tanzania; eastern and north western South Sudan; and parts of central Kenya, which showed an improvement in vegetation conditions (Figure 9).

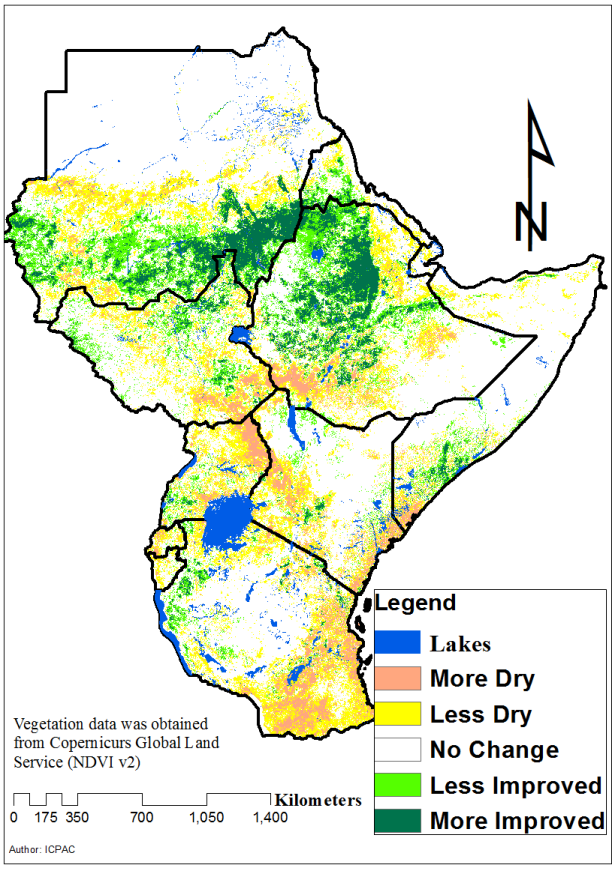

Figure 9: Vegetation difference between September and August 2015 over the Greater Horn of Africa

7.2 Impacts of observed climate conditions during September 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:

- Commencement of farming activities (ploughing and planting) in some areas;
- Improvement of crop, pasture and browse conditions;
- Replenishment of water reservoirs;
- Localised flooding leading to destruction of property, displacement of people, and disruption of livelihood;
- Increased risk of water related diseases;

In regions that experienced dry conditions the impacts were:

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

7.3 Potential impacts for November - December 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.