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

1. HIGHLIGHTS/ ACTUALITES

- Rainfall activities were mainly observed over the southern sector as well as south western parts of the equatorial sector of the Greater Horn of Africa (GHA) during the month of February 2016;
- During April 2016 rainfall period western and central parts of the equatorial sector as well as the southern and south central parts of the northern 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 February 2016 resulted in improved crop, pasture and foliage conditions, increase in water related diseases; and improvement in water resources.

2. INTRODUCTION

In this bulletin, the climatic conditions observed over the GHA region in the month of February 2016 is reviewed and the climate outlook for April 2016 rainfall season is also provided. Highlights on the socio-economic impacts associated with both the observed conditions and the outlook is also given.

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 February 2016 are discussed under section 4, while the dominant weather systems are discussed in the section that follows. The climate outlook over the GHA for April 2016 is presented in section 6. The socio-economic impacts associated with the observed climatic conditions in February 2015 and those expected from the climate outlook in presented the final section.

3. SUMMARY

This bulletin has three main components, these are: the climatic conditions observed during the month of February 2016 over GHA, the climate outlook for April 2016 rainfall period, and the impacts associated with both the observed climate conditions and the climate outlook.

Rainfall activities were mainly observed over much of the southern sector as well as south western parts of the equatorial sector of the GHA region during the month of February 2016. The observed rainfall conditions over parts of

the Greater Horn of Africa during February resulted in improved crop, pasture and foliage conditions, and replenishment of water resources.

The climate outlook for the April 2016 rainfall season indicates that southern parts of South Sudan; western and southern parts of Ethiopia; much of Uganda; much of Rwanda; northern parts of Burundi; and western, central and north eastern Kenya are likely to receive near normal to above normal rainfall. The northern parts of Sudan; and northern parts of Eritrea; are likely to be generally dry while the rest of the GHA is likely to experience near normal to below normal rainfall conditions during the month of April 2016 (Figure 8a).

4. CLIMATE PATTERNS IN FEBRUARY 2016

The climatological summary for the rainfall amounts and rainfall severity indices over the GHA in the month of February 2016 are provided in this section. The rainfall severity indices are derived only for those areas in the GHA region where the month of February is not a generally dry month.

4.1 Rainfall amounts and performance during February 2016

During the month of February 2016, most of Tanzania excluding the north eastern and the northern parts, much of Burundi, and south western parts of Rwanda recorded between 100mm to more than 200mm of rainfall (Figure 1). The rest of the GHA region recorded between 50mm to 100mm or less than 50 mm of rainfall during the month of February 2016.

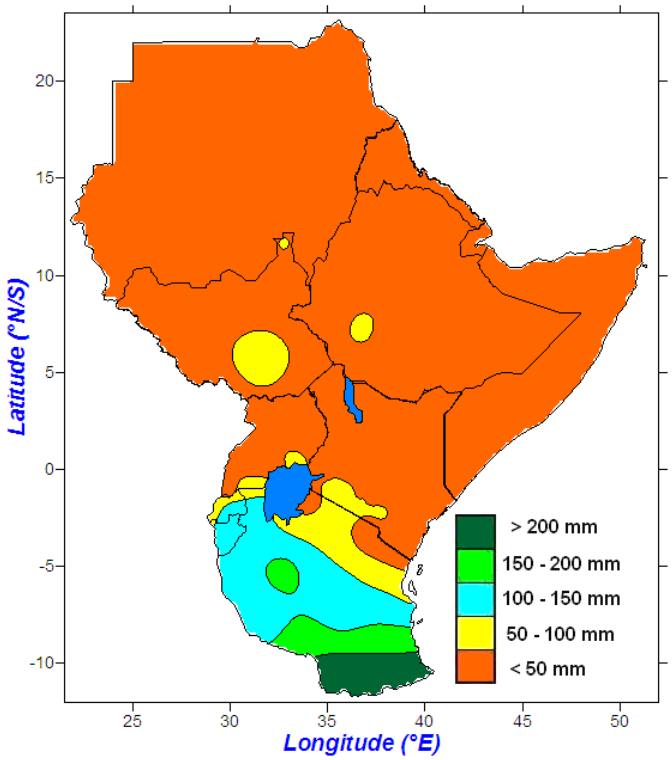

Figure 1: Spatial distribution of rainfall during the month of February 2016

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 February 2016, much of Tanzania, Rwanda, Burundi, south eastern and southern Uganda, and parts of western Kenya recorded near-normal to wet rainfall conditions (Figure 2). The rest of the GHA recorded dry to generally dry rainfall conditions (Figure 2).

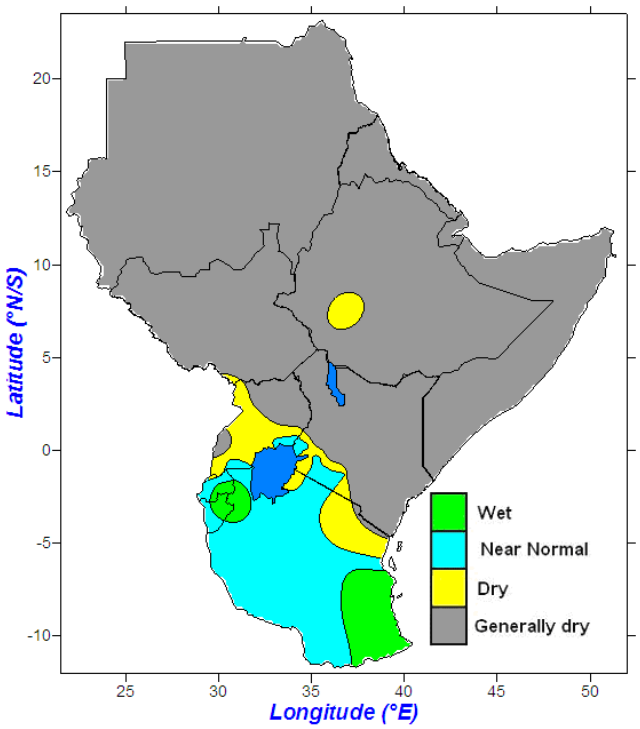

Figure 2: Rainfall severity index for the month of February 2016

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 2016

Figure 3 shows the cumulative dekadal rainfall performance since January 2016. Near normal to below normal rainfall conditions was observed over western parts of the equatorial sector (Figure 3a). The western and south western parts of the southern sector received near normal to above normal rainfall (Figure 3b and 3c).

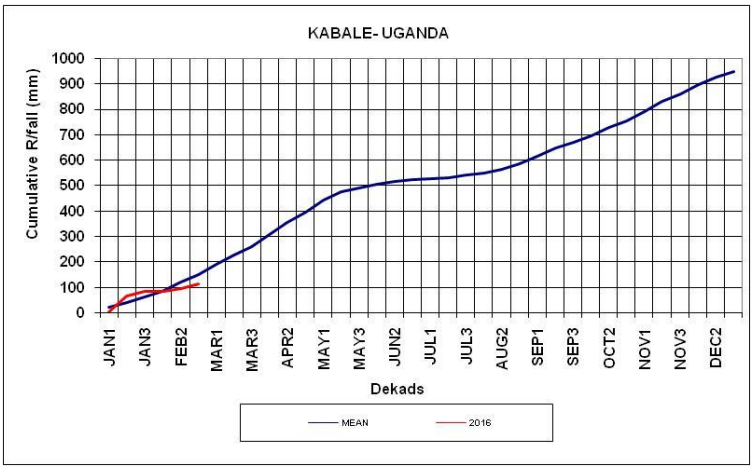

Figure 3a: Cumulative rainfall series for Kabale

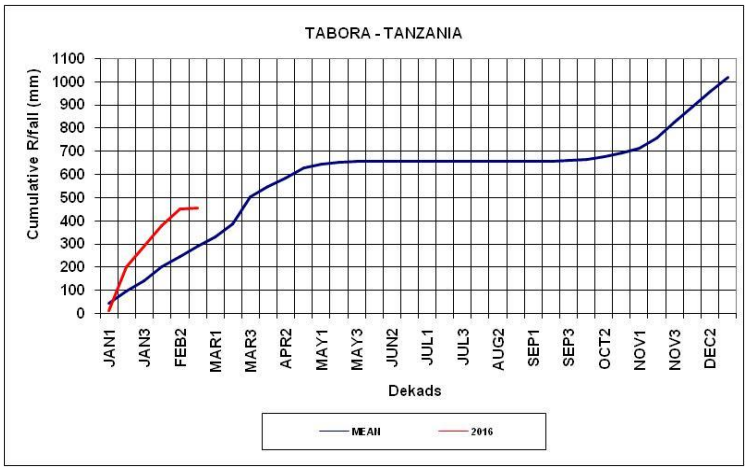

Figure 3b: Cumulative rainfall series for Tabora

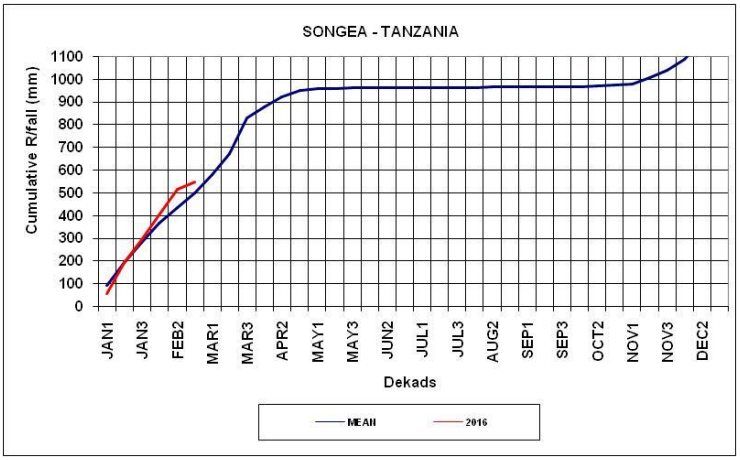

Figure 3c: Cumulative rainfall series for Songea

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during December 2015 to February 2016 period

During December 2015 to February 2016 rainfall period, western and northern parts of Ethiopia; central parts of Eritrea; much of the southern and central parts of South Sudan; northern, central and western parts of Uganda; western, central and parts of eastern Kenya; much of Rwanda; Burundi; Tanzania recorded more than 75% of long term rainfall of the period (Figure 4). More than 125% of the long term rainfall was recorded over north eastern and south eastern Ethiopia; southern parts of South Sudan, central and western parts of Kenyan; and central and south western parts of Tanzania. Much of Sudan; northern and central Somalia; eastern parts of Ethiopia; and coastal parts of Kenya recorded less than 75% of the long term rainfall for the period. While the rest of the region received between 75% and 125% of long term rainfall of the December 2015 to February 2016 rainfall period (Figure 4).

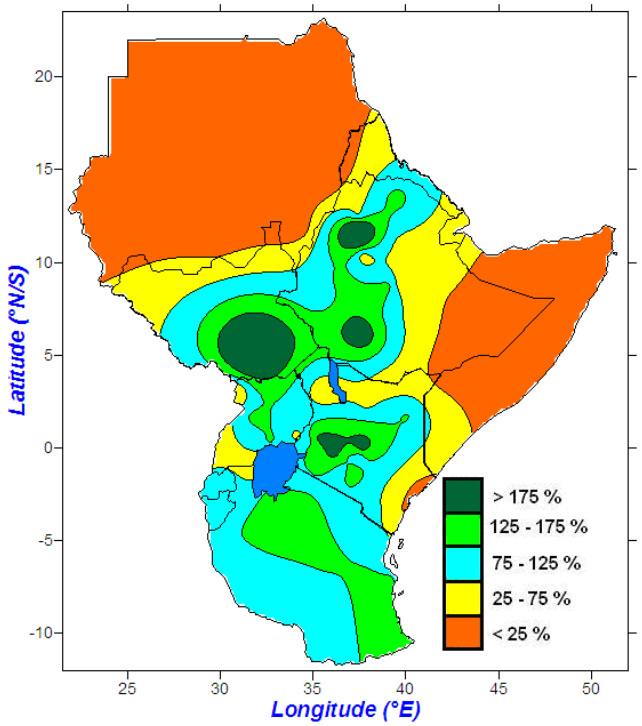

Figure 4: Spatial pattern of rainfall anomalies for December 2015 to February 2016 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

During the month of February 2016 warmer than average maximum temperatures prevailed over most parts of the Greater Horn of Africa (GHA) region (Figure 5a). However for parts south western Sudan and isolated part of south eastern Sudan; north western and central parts of South Sudan; and south eastern parts of western Kenya recorded less than average maximum temperatures. Positive maximum temperature anomalies exceeding 2°C were recorded over eastern and central parts of Ethiopia; much of Uganda; extreme western parts of Kenya; and south western and northern Tanzania (Figure 5a).

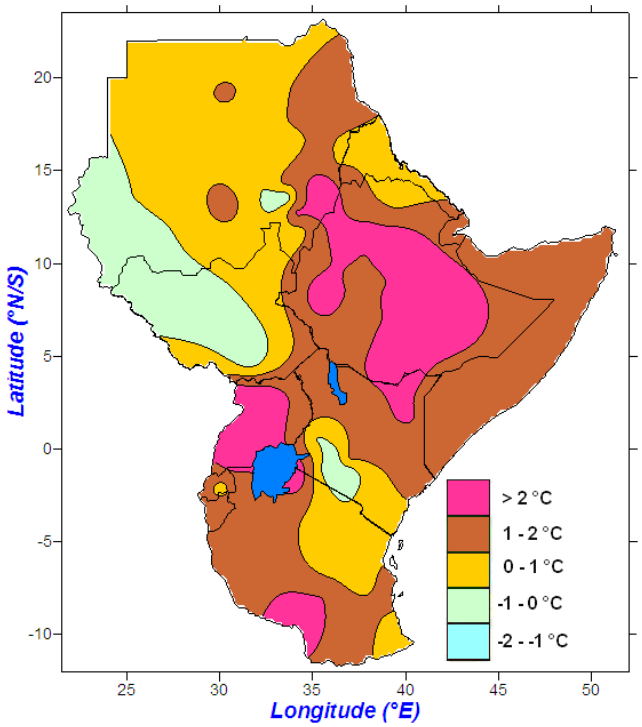

Figure 5a: Maximum temperature anomalies for February 2016

4.4.2 Minimum temperature anomalies

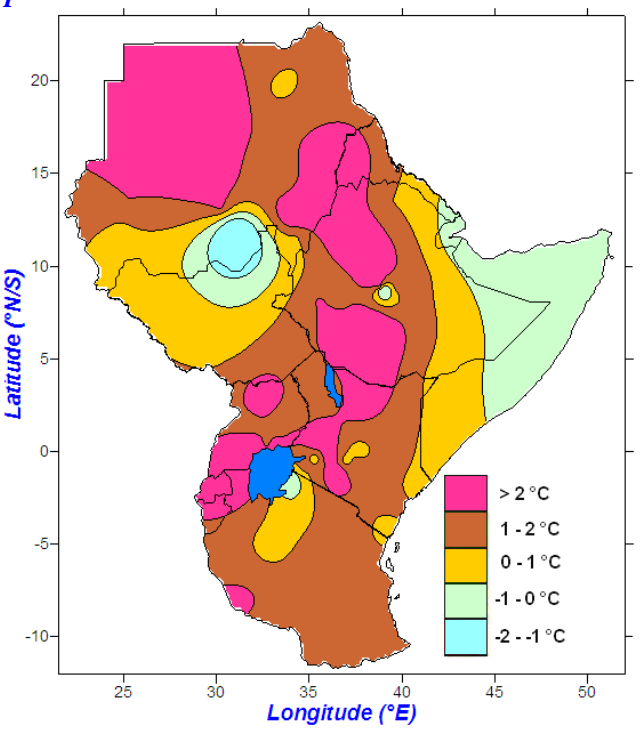

Figure 5b: Minimum temperature anomalies for the month of February 2016

During the month of February 2016, most parts of the GHA recorded warmer than average minimum temperature anomaly. South central parts of Sudan; isolated part of central Ethiopia; much of Djibouti; southern parts of Eritrea; eastern parts of Ethiopia; northern and central parts of Somalia; and northern parts of Tanzania recorded negative temperature anomalies. Negative

minimum temperature anomalies exceeding 2°C was recorded over north western and western parts of Sudan; south western parts of Eritrea; north eastern and southern parts of Ethiopia; northern and southern parts of Uganda; northern, western, and central parts of Kenya; over much of Rwanda; northern parts of Burundi and western part of Tanzania (Figure 5b).

5. STATUS OF THE CLIMATE SYSTEMS

During the period between the middle of February and the beginning of March 2016 above average sea surface temperatures (SSTs) were observed over equatorial Indian Ocean. The eastern equatorial Indian Ocean indicated warmer than average SSTs, while western equatorial Indian Ocean indicated near normal SSTs anomalies (Figure. 6) resulting in a negative Indian Ocean dipole index (Figure.7a). Warmer than average SSTs were observed over central and eastern equatorial Pacific Ocean (Figure. 6).

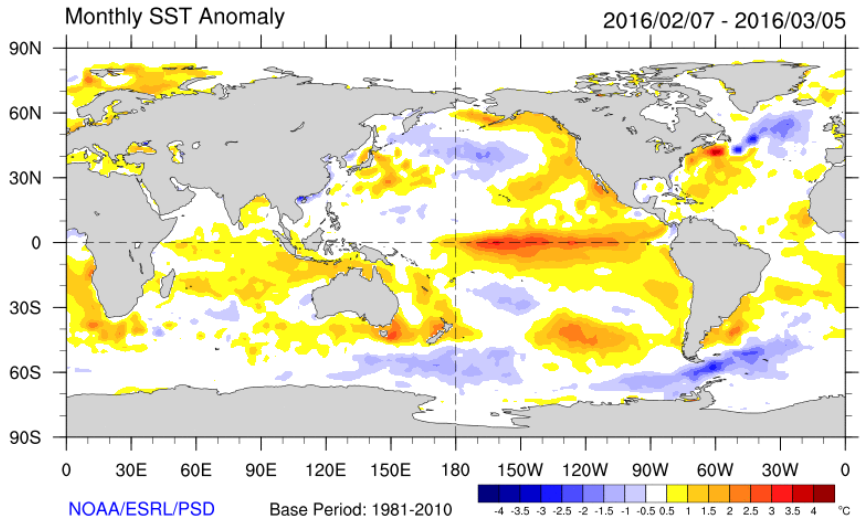

Figure 6: Sea Surface Temperature anomalies for the period 7 February to 05 March 2016 (Courtesy of NOAA)

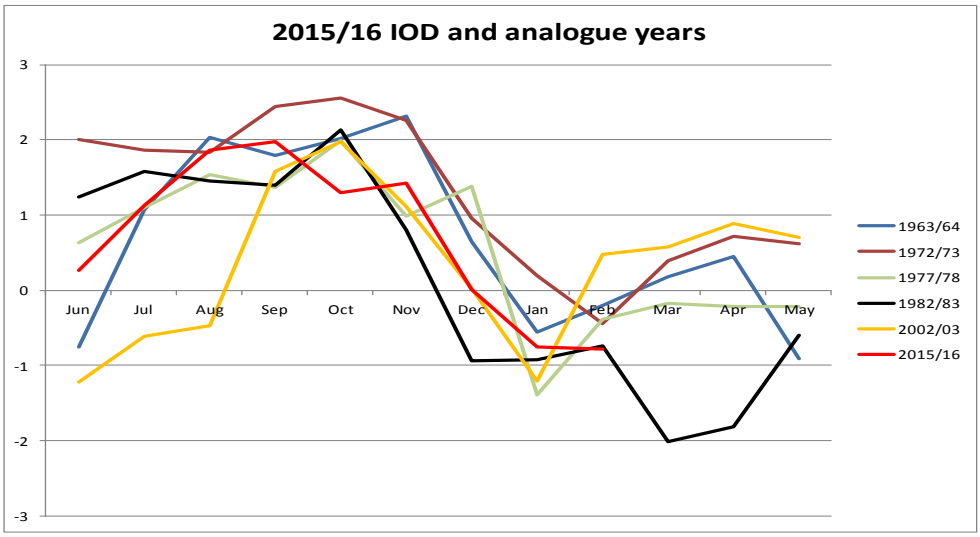

Figure 7a: Indian Ocean Dipole (IOD) for 2015/2016 and Analogue Years

6.0 CLIMATE OUTLOOK FOR APRIL 2016

6.2 Rainfall Outlook for April 2016

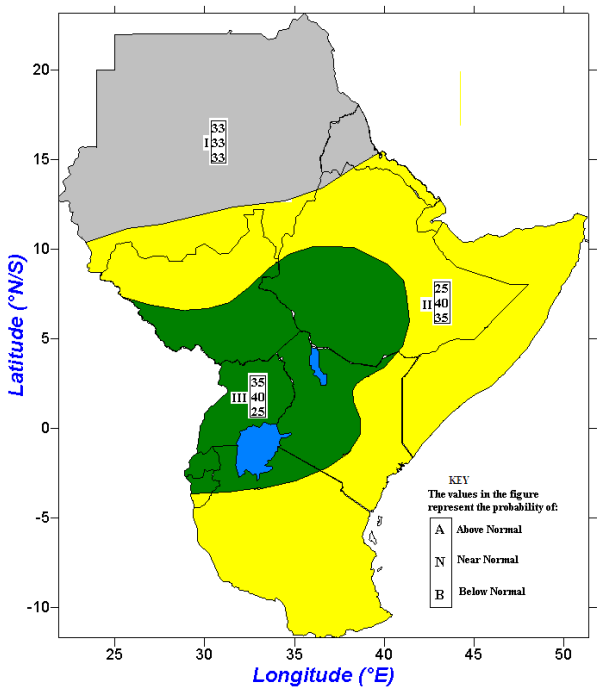

Figure 8a: GHA rainfall Outlook for the April 2016

Zone I: Usually dry during March to May.
Zone II: Increased likelihood of near normal to below normal rainfall.
Zone III: Increased likelihood of near normal to above normal rainfall.

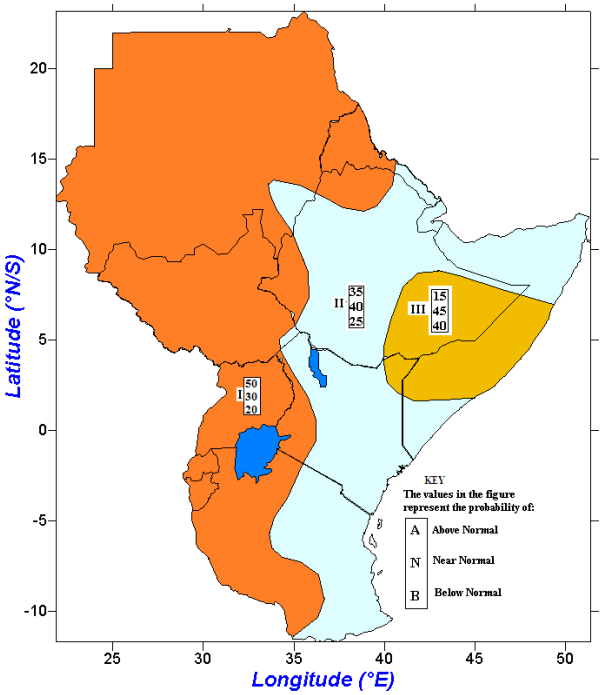

Figure 8b: GHA mean temperature Outlook for the April 2016

Zone I: Increased likelihood of above normal mean temperatures.
Zone II: Increased likelihood of near normal mean temperatures.
Zone III: Increased likelihood of near normal to below normal mean temperatures.

Note:
The numbers for each zone indicate the probabilities of rainfall and mean temperature in each of the three categories, above-, near-, and below-normal. The top number indicates the probability of rainfall and mean temperature occurring in the above-normal category; the middle number is for near-normal and the bottom number for the below-normal category. For example in zone III, Figure 8a, 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. In zone I, Figure 2, there is 50% probability of mean temperature occurring in the above-normal category; 30% probability of mean temperature occurring in the near-normal category; and 20% probability of mean temperature occurring in the below-normal category. The 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 Vegetation condition indicators and associated impacts

The difference of the Normalized Difference Vegetation Index (NDVI) between February and January 2016 indicates that much improvement in vegetative conditions was observed over much of Tanzania; parts of Burundi; south central and north eastern Kenya; and western parts of South Sudan (Figure 9). Deteriorated vegetative conditions were observed over southern parts of Sudan; western and southern parts of Ethiopia; much of Uganda; western central and eastern parts of Kenya; southern parts of Somalia; and parts of Rwanda (Figure 9). The rest of the region indicated little or no change in vegetative conditions (Figure 9).

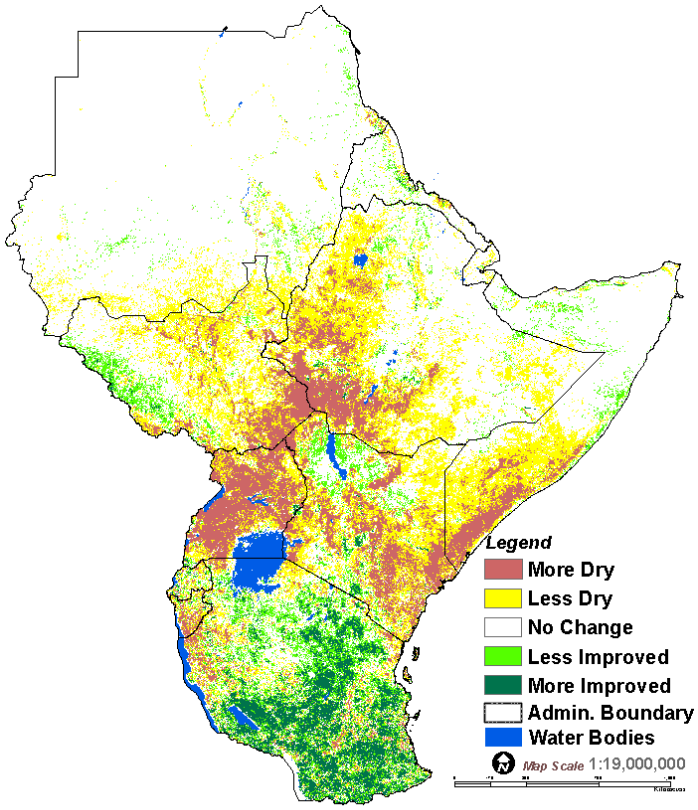

Figure 9: Vegetation difference between February and January 2016 over the Greater Horn of Africa

7.2 Impacts of observed climate conditions during February 2016

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

- Improved crop, pasture and foliage conditions;
- Replenishment of water reservoirs;
- Increase of water related diseases;

In regions that experienced dry conditions the impacts were:

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

7.3 Potential impacts for April 2016 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 and instances of landslides, 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;
- 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.