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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 -5º and 5º 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 southern parts of the southern sector as well as western parts of the equatorial sector of the Greater Horn of Africa (GHA) during the month of March 2016;
- During May 2016 rainfall period much of the western and central parts of the equatorial sector as well as the south western and south central parts of the northern sector are likely to receive near normal to above normal rainfall. above normal temperatures are likely to occur in the northern parts of the northern sector.
- The socio-economic impacts associated with the observed rainfall over the GHA during the month of March 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 March 2016 is reviewed and the rainfall and temperature outlook for May 2016 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 March 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 May 2016 is presented in section 6. The socio-economic impacts associated with the observed climatic conditions in March 2016 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 March 2016 over GHA, the climate outlook for May 2016 rainfall period, and the impacts associated with both the observed climate conditions and the climate outlook.

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

the Greater Horn of Africa during March resulted in improved crop, pasture and foliage conditions, and replenishment of water resources and flooding over a few places.

The climate outlook for the May 2016 rainfall season indicates that much of the southern parts of South Sudan; western and southern parts of Ethiopia; much of Uganda, Rwanda, and Burundi; southern parts of Somalia; northern and north western parts of Tanzania; and western, central and coastal parts of Kenya are likely to receive near normal to above normal rainfall (Figure 8a). Much of Sudan; and northern parts of Eritrea; are likely record above normal temperatures during the month of May 2016. South western parts of Sudan, north eastern parts of South Sudan, western parts of Ethiopia, and western parts of Tanzania are likely to record below normal temperature during the same period (Figure 8b).

4. CLIMATE PATTERNS IN MARCH 2016

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

4.1 Rainfall amounts and performance during March 2016

During the month of March 2016, much of Rwanda, much of Burundi, southern parts of Uganda, and north eastern and southern parts of Tanzania recorded between 100mm to more than 200mm of rainfall (Figure 1). Rainfall amounts of Between 50mm to 100mm was recorded over central and south western Ethiopia; western and central Uganda; north western and western Kenya; and western and eastern Tanzania. The rest of the region recorded less than 50mm of rainfall.

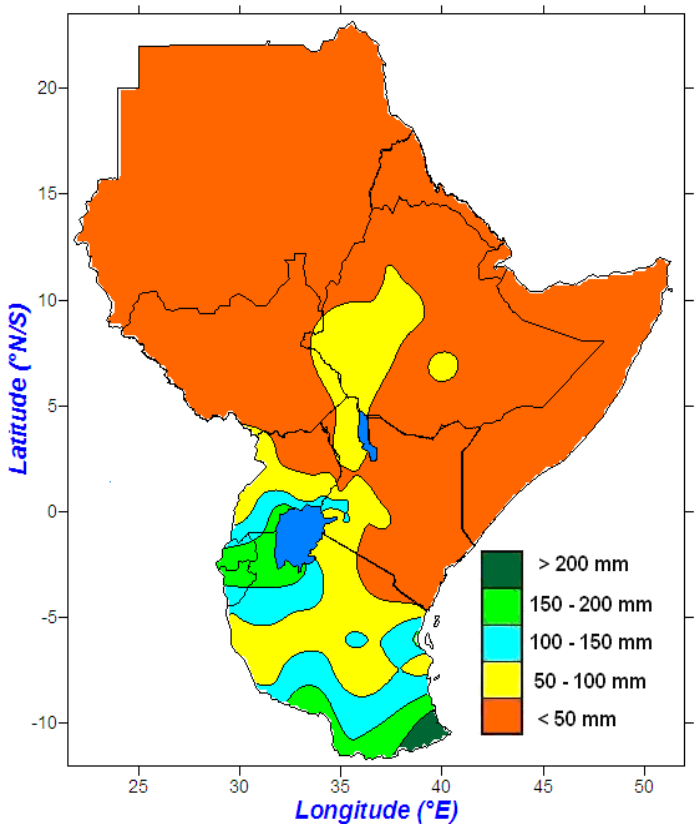

Figure 1: Spatial distribution of rainfall during the month of March 2016

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

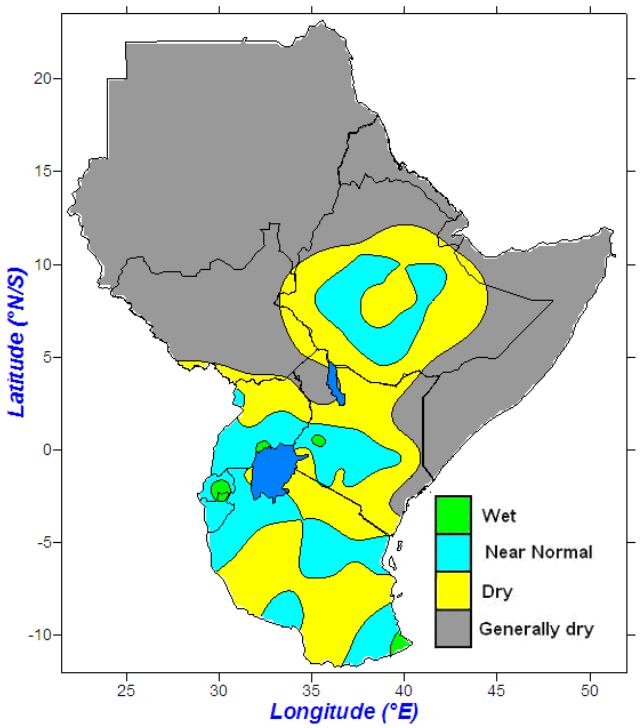

Figure 2: Rainfall severity index for the month of March 2016

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 above normal rainfall conditions was observed over western parts of the equatorial sector and western and south western parts of the southern sector (Figure 3a, 3b and 3c).

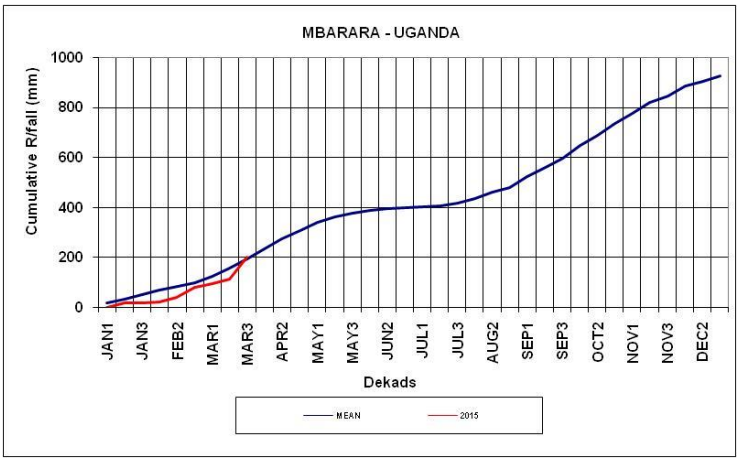

Figure 3a: Cumulative rainfall series for Mbarara

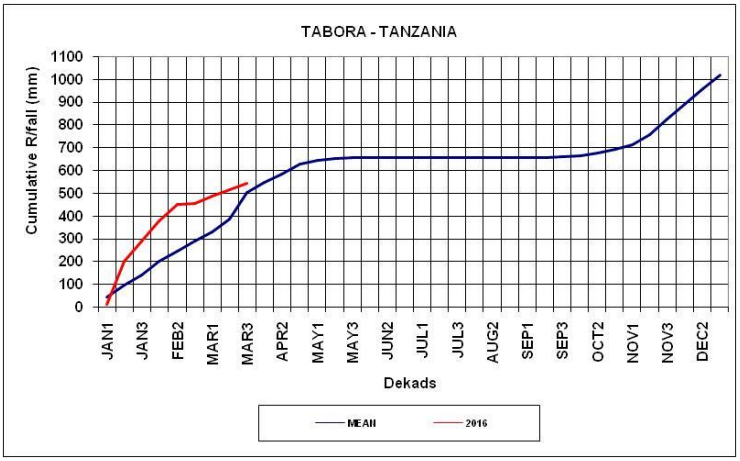

Figure 3b: Cumulative rainfall series for Tabora

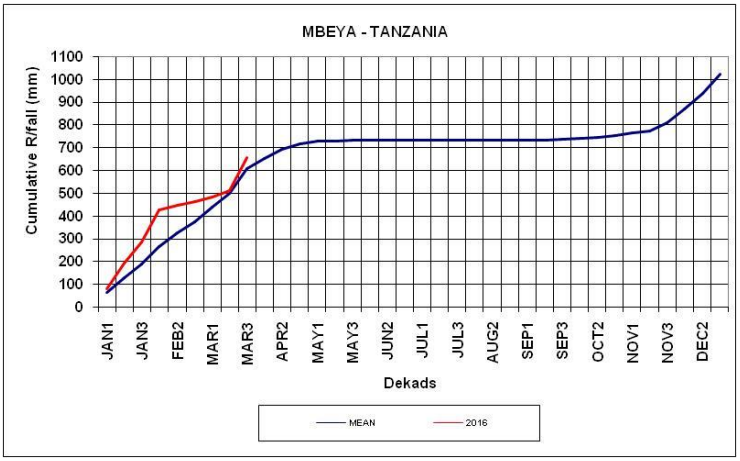

Figure 3c: Cumulative rainfall series for Mbeya

4.3 Rainfall anomalies

4.3.1 Rainfall anomalies during January to March 2016 period

During January to March 2016 rainfall period, eastern parts of Sudan; north western, central and south western parts of Ethiopia; western, central and southern parts of South Sudan; northern and south western Uganda; western parts of Kenya; much of Rwanda; much of Burundi; and much of Tanzania between 75% to more than 175% of long term rainfall of the period (Figure 4). Much of Sudan, much of Djibouti, southern parts of Eritrea, eastern parts of Ethiopia, much of Somalia, and eastern parts of Kenya recorded less than 25% of long term average rainfall for the period. The rest of the region recorded between 25% to 75% of long term average rainfall for January to March (Figure 4).

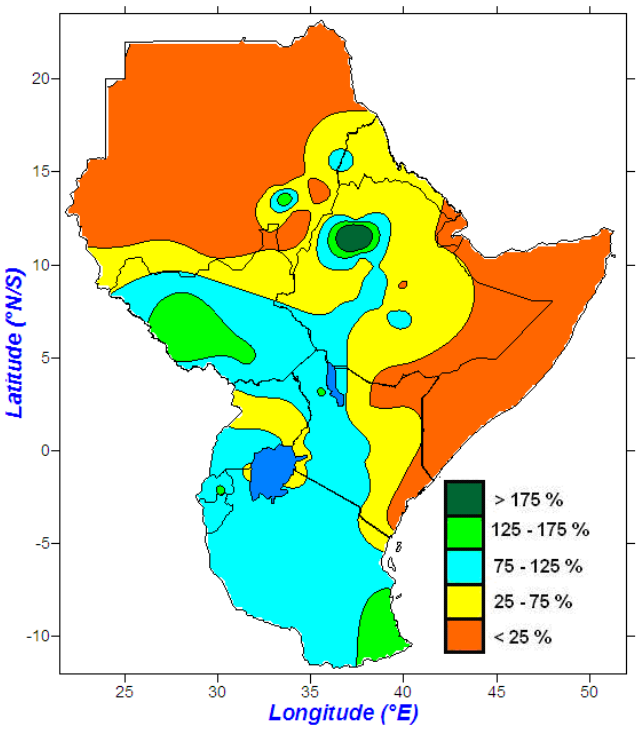

Figure 4: Spatial pattern of rainfall anomalies for January to March 2016 period

4.4 Temperature anomalies

4.4.1 Maximum temperature anomalies

During the month of March 2016 warmer than average maximum temperatures prevailed over most parts of the Greater Horn of Africa (GHA) region (Figure 5a). Positive maximum temperature anomalies exceeding 2°C were recorded over most of the GHA region(Figure 5a).

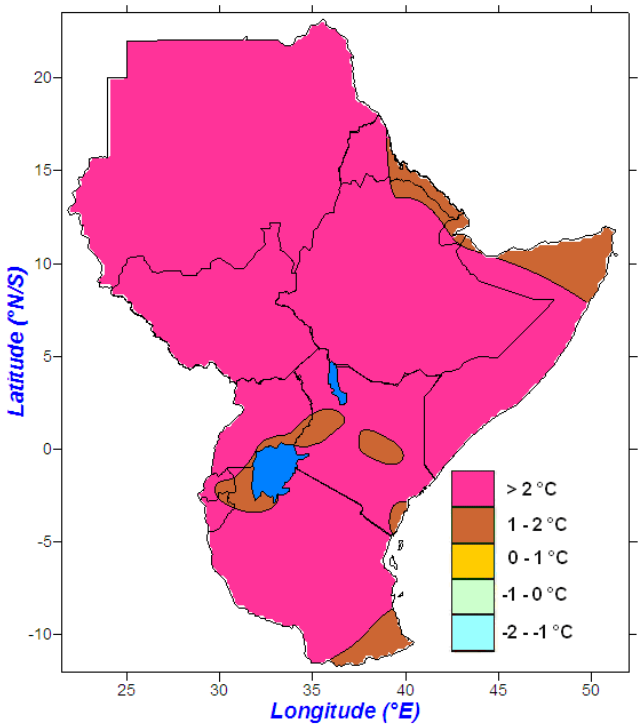

Figure 5a: Maximum temperature anomalies for March 2016

4.4.2 Minimum temperature anomalies

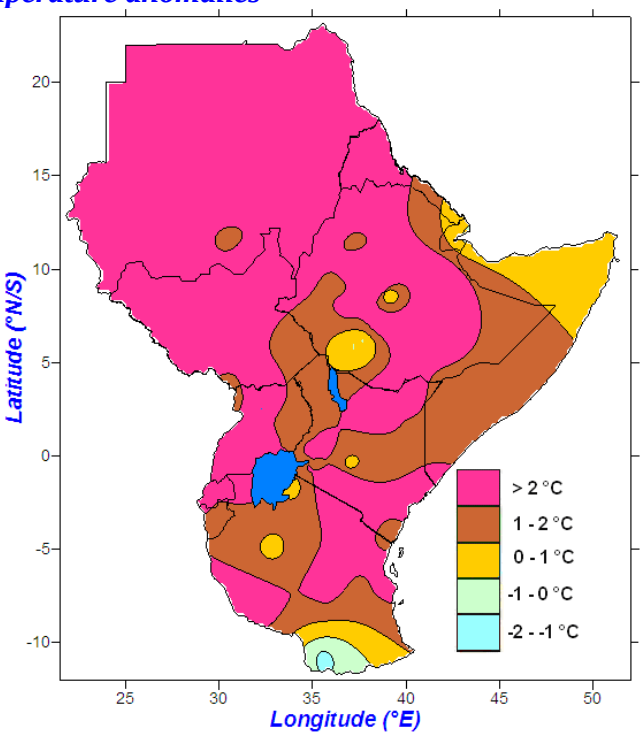

Figure 5b: Minimum temperature anomalies for March 2016

During the month of March 2016, most parts of the GHA recorded warmer than average minimum temperature anomaly. South western Tanzania recorded negative temperature anomalies. Positive minimum temperature anomalies exceeding 2°C was recorded over much of Sudan; western Eritrea; much of South Sudan; north western, central and eastern Ethiopia;

western parts of Uganda; western, north eastern and south western Kenya; southern parts of Somalia; much of Rwanda; north western, western and eastern Tanzania (Figure 5b).

5. STATUS OF THE CLIMATE SYSTEMS

During the period between the middle of March and the middle of April 2016 above average sea surface temperatures (SSTs) were observed over equatorial Indian Ocean. The generally warming in the equatorial Indian Ocean results in a neutral Indian Ocean dipole index (Figure.7a). Warmer than average SSTs were observed over central and eastern equatorial Pacific Ocean (Figure. 6).

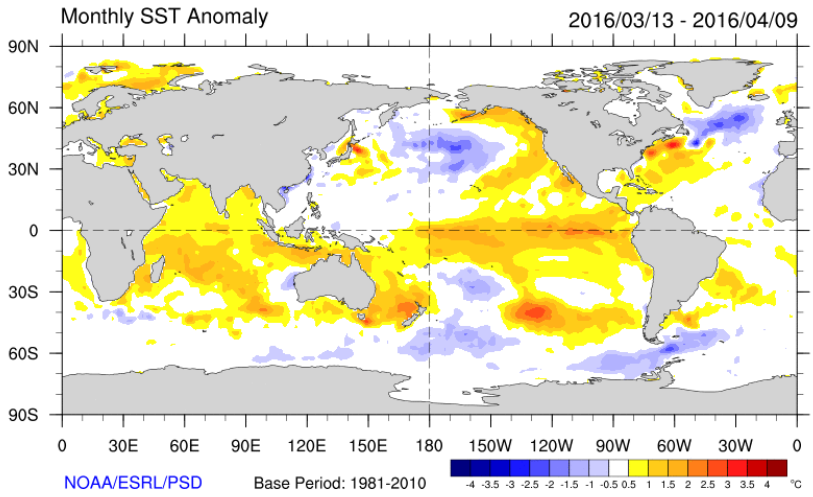

Figure 6: Sea Surface Temperature anomalies for the period 7 February to 05 March 2016 (Courtesy of NOAA)

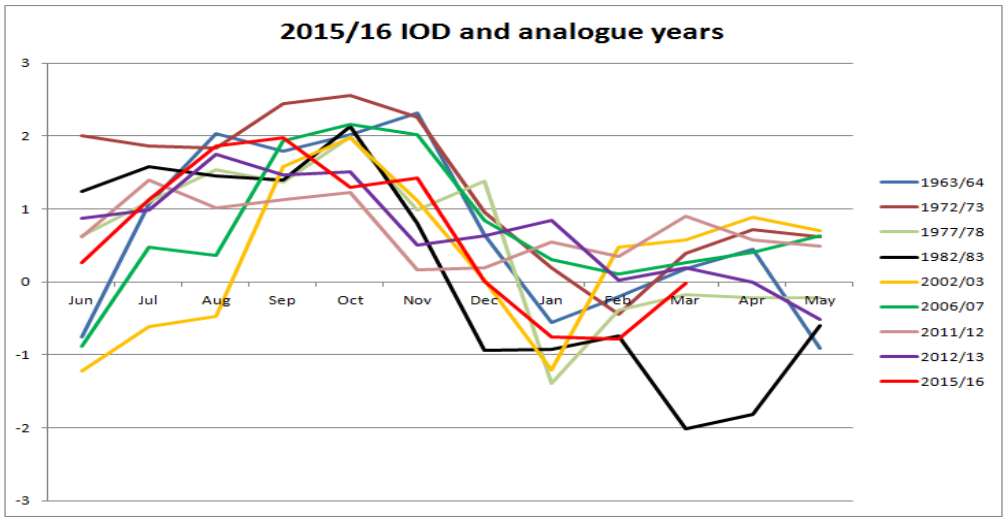

Figure 7a: Indian Ocean Dipole (IOD) for 2015/2016 and Analogue Years

6.0 CLIMATE OUTLOOK FOR MAY 2016

6.2 Rainfall Outlook for May 2016

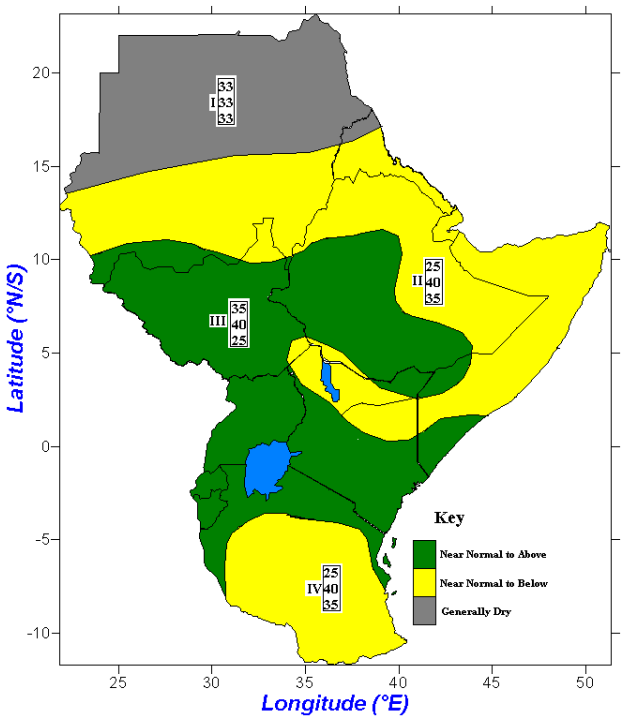

Figure 8a: GHA rainfall Outlook for the May 2016

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

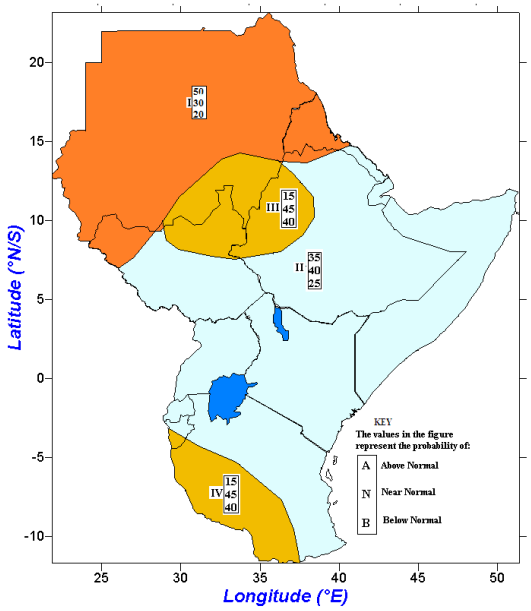

Figure 8b: GHA mean temperature Outlook for the May 2016

Zone I: Increased likelihood of above normal mean temperatures.

Zone II: Increased likelihood of near normal mean temperatures tending to above.
Zone III and IV: 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 March and February 2016 indicates improvement in vegetative conditions over southwestern parts of Sudan; western parts of South Sudan; isolated patches over southern Ethiopia; western parts of Uganda; southern parts of Rwanda; over most of Burundi; and western and southern parts of Tanzania (Figure 9). Deteriorated vegetative conditions were observed over few parts of southern and southwestern Sudan; northern and southeastern parts of South Sudan; few places in the western and south western Ethiopia; eastern parts of Uganda; over much of western and central parts of Kenya; around southern coast of Somalia; as well as north eastern parts of Tanzania (Figure 9). The rest of the region indicated little or no change in vegetative conditions (Figure 9).

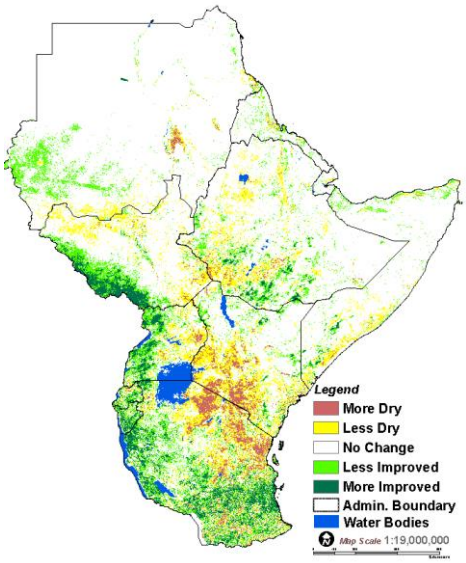

Figure 9: Vegetation difference between March and February 2016 over the Greater Horn of Africa

7.2 Impacts of observed climate conditions during March 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;
- Flooding over selected areas

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 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.