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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° and 5° latitude, with the northern and southern sectors occupying the rest of the northern and southern parts of the region respectively

1. INTRODUCTION

In this bulletin, the climate condition over the Greater Horn of Africa (GHA) region for the month of January 2017 is reviewed and the rainfall and temperature outlook for March 2017 period is also provided. Highlights on the socio-economic impacts associated with both the observed and the predicted conditions are also given.

In the month of January rainfall is mainly observed in the southern sector with a few areas in the equatorial sector also recording some precipitation. In January 2017, several parts of the equatorial sector remained dry, this can be attributed to the prevailing La Niña conditions and negative Indian Ocean Dipole (IOD). Rainfall have been received in few areas in the southern equatorial sector as well as over the southern sector of the GHA region in the month of January 2017. However in much of these areas the rainfall has been below normal. Warmer than average maximum temperatures have been experienced in much of the western part of northern and equatorial sector, as well as in most of southern sector of the GHA region.

2. HIGHLIGHTS

Rainfall activities were mainly observed over southern sector with areas around south-central and western parts of the equatorial sector, as well as south-central part of the northern sector also recording some rainfall during the month of January 2017. The rainfall performance in most of these areas observed below the average, an indicative of moderately dry to extremely dry conditions.

The depressed rainfall over equatorial and southern sector of the GHA region during the month of January 2017 has been associated with persistence drought conditions leading to deterioration of water and pasture conditions, migration of pastoralists, increase in human-wildlife conflict, poor prospect of crop and livestock production, increase in food prices, water stress, and effect on urban supply and hydroelectricity production.

Rainfall forecast for March 2017 indicates that rainfall is likely to be concentrated in the southern sector as well as southern parts of equatorial sector of the GHA region.

3. CLIMATE PATTERNS IN JANUARY 2017

The rainfall amounts, rainfall performance as compared to the Long Term Mean using percentage of long term average (% of LTM) and Standardized Precipitation Index (SPI) for January 2017 are provided in this section. The minimum and maximum temperature anomalies are also given.

RAINFALL AMOUNTS AND PERFORMANCE DURING JANUARY 2017

Rainfall amounts in January 2017

During the month of January 2017, much of the northern sector and equatorial sector of the GHA, which covers areas over much of Sudan, Djibouti South Sudan, west and east of Ethiopia, Somalia, north of Uganda, southern part of Eritrea, as well as north and east of Kenya recorded rainfall amount less than 10mm.

Rainfall amounts of between 10mm and 50mm was recorded around northern coast of Eritrea, north east and south west of Ethiopia, southern Uganda, western and central Kenya, eastern Rwanda, and over north and north eastern Tanzania. Western part of Rwanda, much of Burundi, western, central and south of Tanzania recorded rainfall amounts of between 50mm and 300mm, with central Burundi, and southwest and southern Tanzania recording between 200mm and 300mm of rainfall (Figure 1).

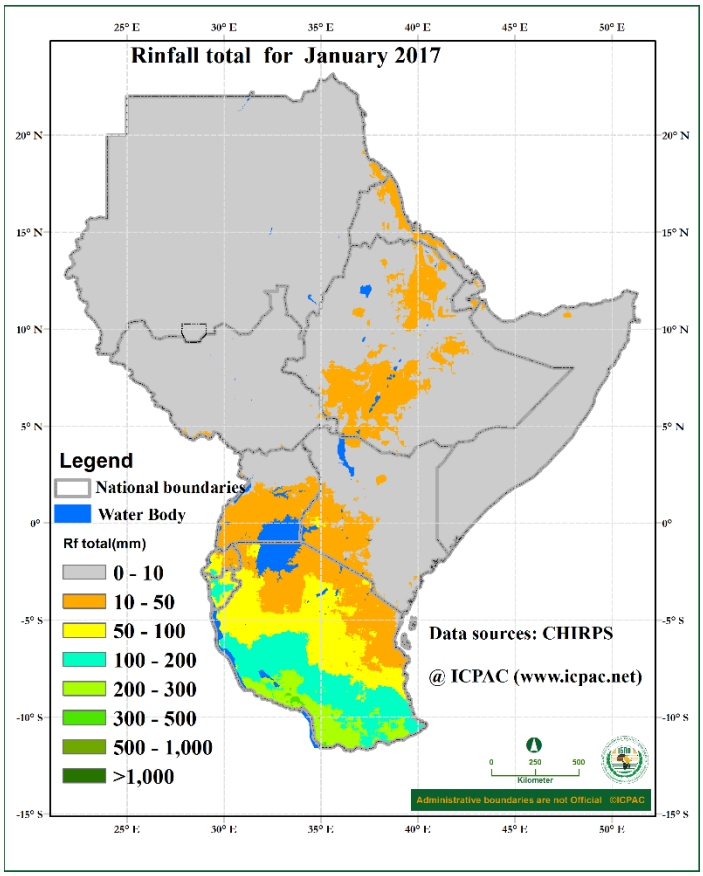

Figure 1: Spatial distribution of rainfall during the month of January 2017

Rainfall severity in the month of January 2017

Figure 2 shows the amount of rainfall received expressed as percentage of long term average for January while Figure 3 shows the standardized precipitation index (SPI) for the same month.

In the month of January 2017 rainfall amounts less than 75% of the long term average was recorded in central and south-western parts of part of Ethiopia, southern part of South Sudan, over much of Uganda, Rwanda and Kenya, southern parts of Somalia, and over much of Tanzania with exception of the southwest and southern parts. Less than 25% of the long term average rainfall amount was recorded in isolated parts of northern Uganda, and central and southern part of Kenya. These areas corresponded to near normal to extremely dry rainfall conditions. Much of the rest of the GHA region received between 75% and 125% of long term average rainfall for the month of January which translated to near normal rainfall conditions with very few isolate places recording more than 125% of long term average rainfall resulting to moderately wet rainfall conditions.

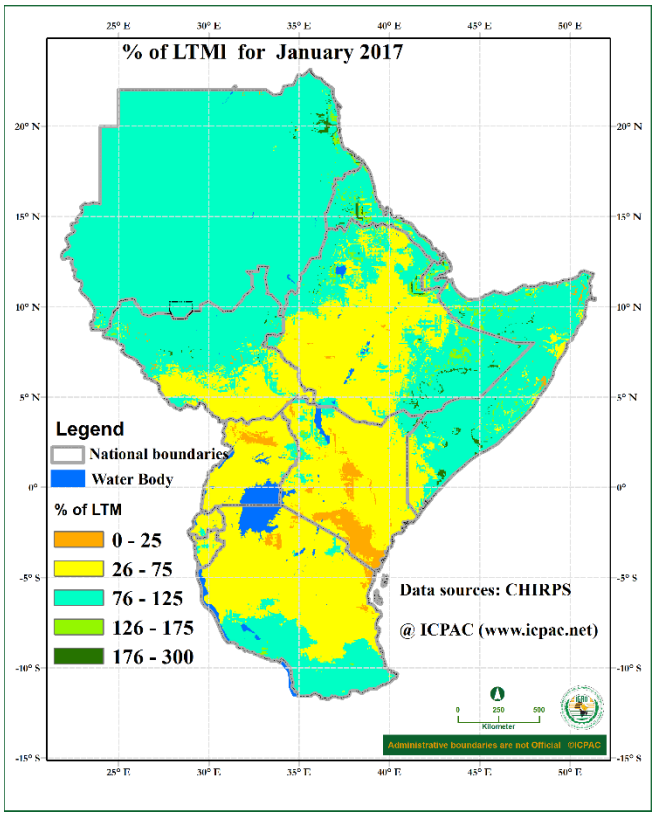

Figure 2: Percentage of average rainfall for January 2017

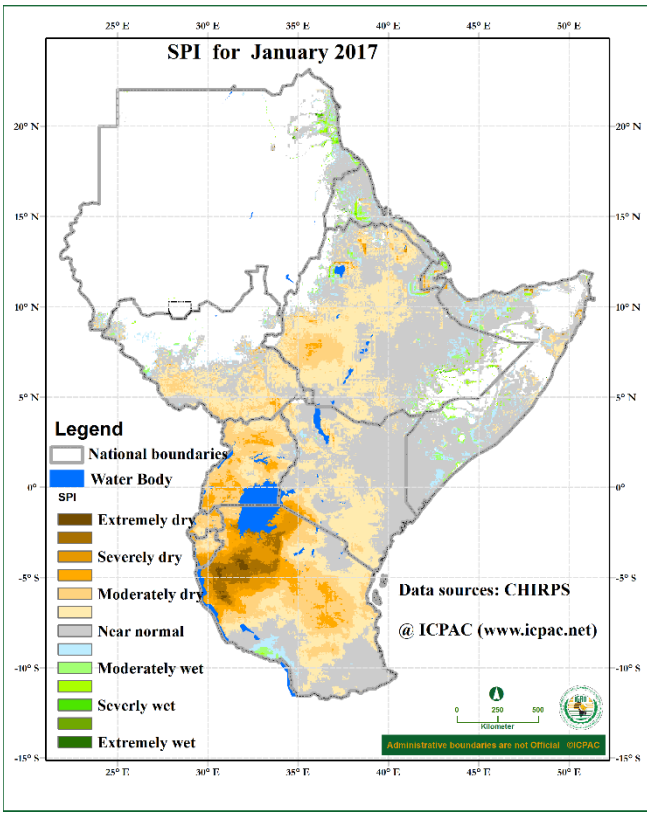

Figure 3: Standardized Precipitation Index for January 2017

TEMPERATURE CONDITIONS

During the month of January 2017, warmer than average maximum temperatures was experienced in much of Sudan, south Sudan, Uganda, Rwanda, Tanzania, western part of Eritrea, west of Ethiopia, western and south of Kenya and east and south of Burundi (Figure 4a). While the rest of the GHA recorded near average maximum temperature.

Warmer than average minimum temperature was observed north over much of Sudan, South Sudan, western Kenya, central and northern parts of Tanzania and over few parts of western and southern Uganda. Central part of Ethiopia, northeast of Kenya and part of northern Somalia recorded cooler than average minimum temperature while much of the rest of the GHA region recorded near average minimum temperature during the month of January 2017 (Figure 4b).

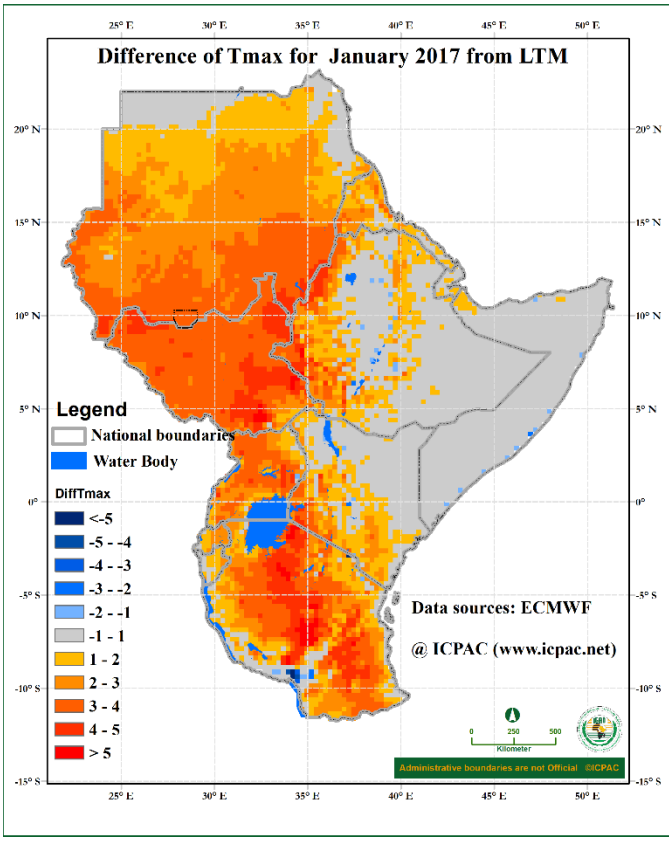

Figure 4a: Maximum temperature difference from LTM for January 2017

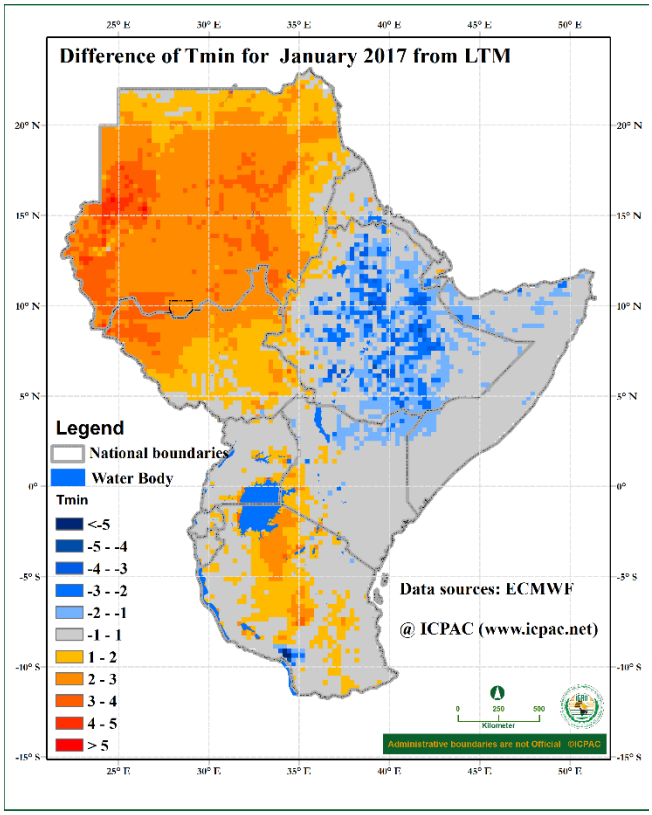

Figure 4b: Minimum temperature difference from LTM for January 2017

4. STATUS OF THE CLIMATE SYSTEMS

The seas surface temperature anomaly during the period between January 8th and February 4th of 2017, indicate that near average to cooler than average sea surface temperature (SSTs) is experienced over central equatorial Pacific Ocean stretching towards the eastern equatorial Pacific region (Niño 3, Niño 3.4 and Niño 4 regions), however the eastern equatorial Pacific region (Niño 1+2) indicated warmer than the average SST (Figure 5). However this situation currently presents a neutral ENSO conditions. Cooler than average to average sea surface temperature conditions are indicated in much of the equatorial Indian Ocean (Figure 5) during the same period and this pattern has presented a neutral phase of the Indian Ocean Dipole (IOD) (Figure 6). This pattern is more similar to recent years such as 1985, 1990, 1993, and 2011.

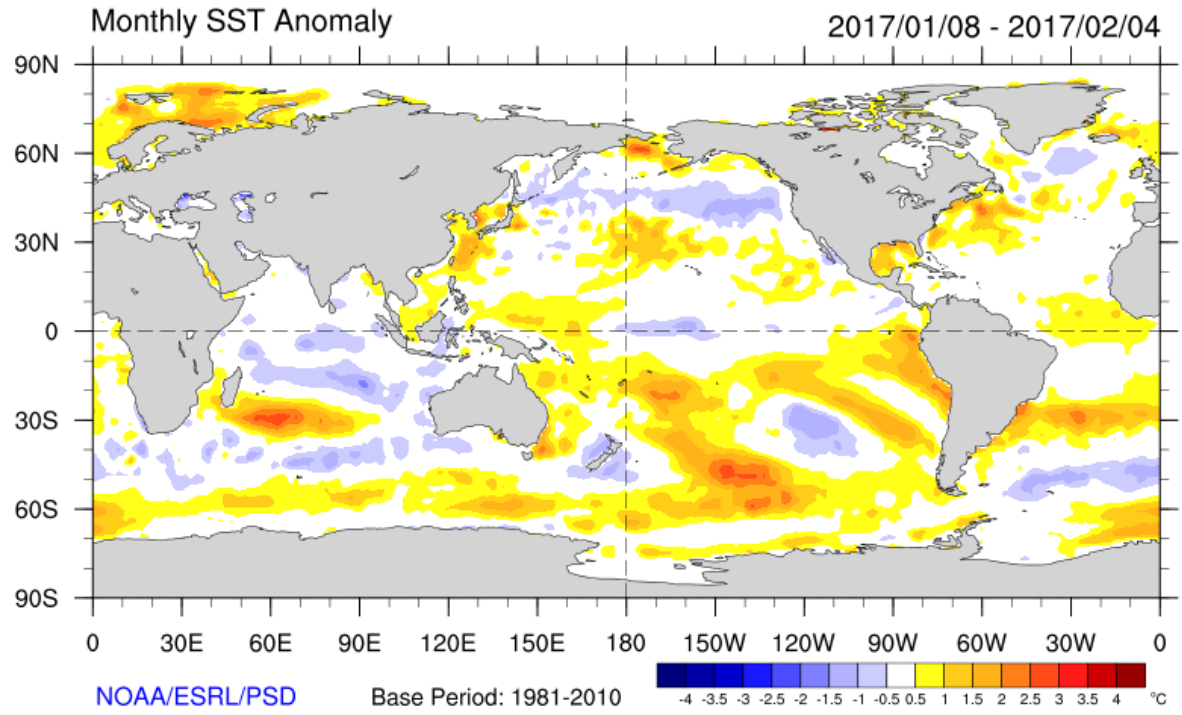

Figure 5: Sea Surface Temperature anomalies for the period 08 January 2017 to 04 February 2017 (Courtesy of NOAA/ESRL/PSD)

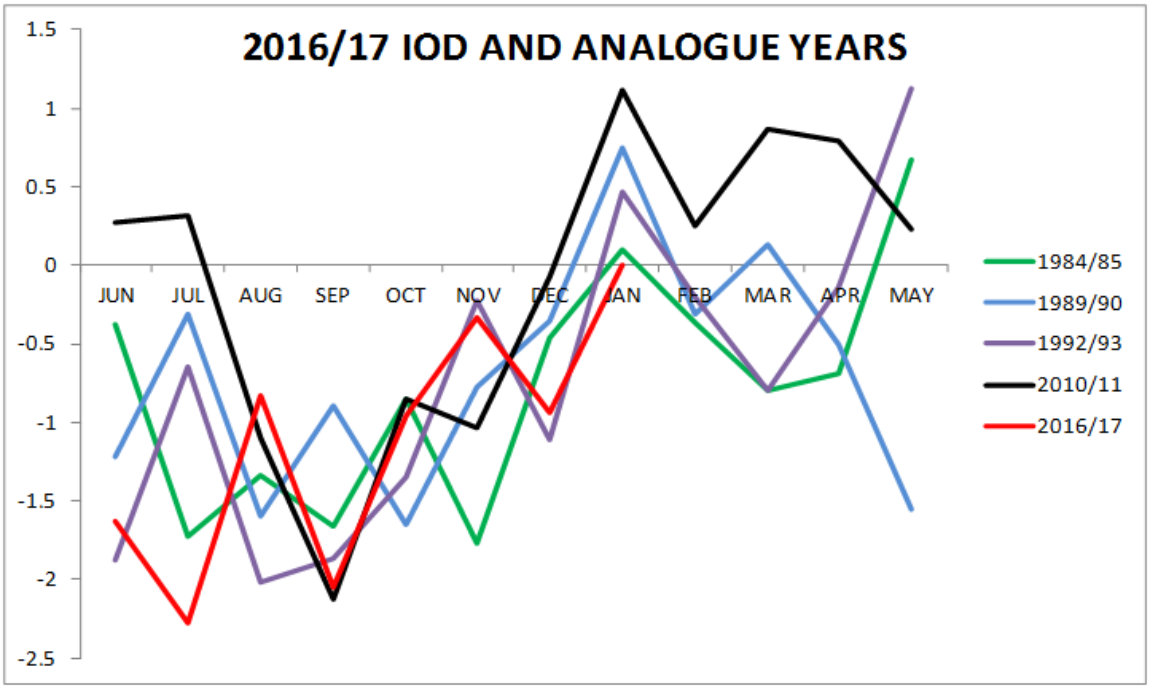

Figure 6: The Indian Ocean Dipole (IOD) during 2016/17 and analogue years.

CLIMATE OUTLOOK FOR FEBRUARY 2017

The rainfall forecast for March

The rainfall outlook for March 2017 over the GHA region given in Figure 7a shows that rainfall is mainly to be experienced over much of Tanzania, Rwanda, Burundi, south and eastern part of Uganda, south and coastal part of Kenya, and over few areas in the south west of Ethiopia, southern part of South Sudan, and south of Somalia. Much of the Sudan, Eritrea, Djibouti, north of South Sudan, north of Somalia and much of Ethiopia excluding the south west and central parts are likely to record less than 10mm of rainfall during the month of March 2017.

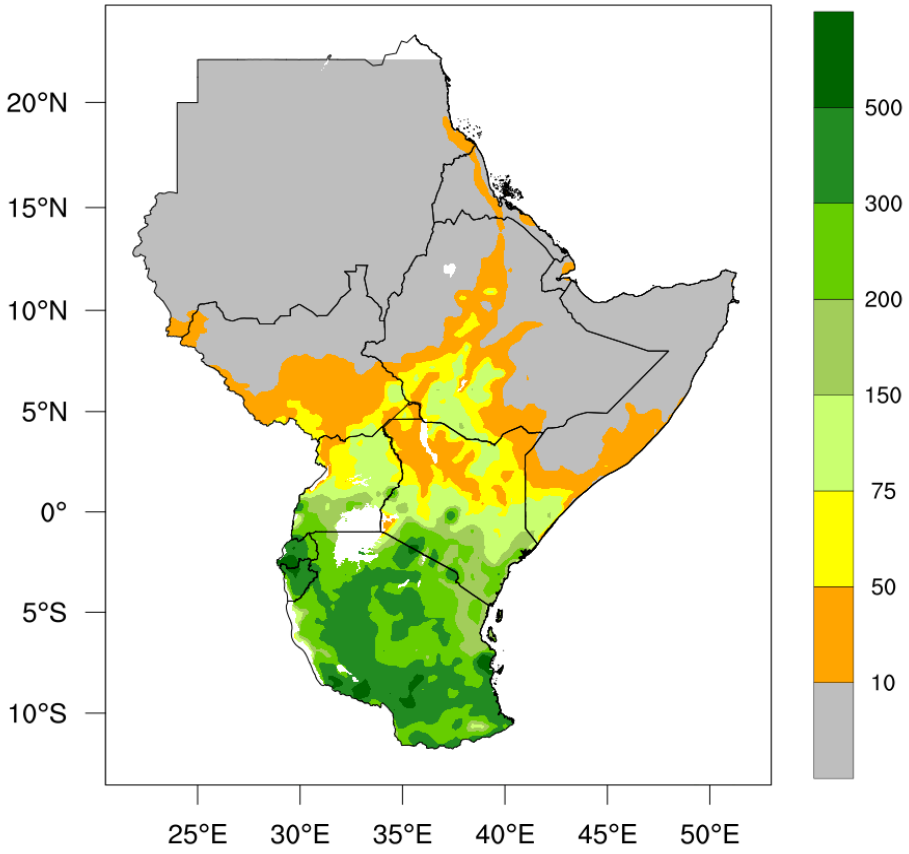

Figure 7a: Rainfall Outlook for March 2017

Temperature Outlook for March 2017

The temperature forecast for GHA region for March 2017 is given in Figure 7b and it indicates that more than 24°C is likely to be observed in the southern part of Sudan extending to much of South Sudan and eastern margins of Ethiopia; over western and southern Eritrea; north eastern and south eastern Ethiopia; north western and northern Uganda; northwest, north and eastern parts of Kenya; central and southern Somalia; and over eastern Tanzania. Average temperature less than 18 °C is likely to be observed in northwest of Sudan; over central Eritrea; over central and highlands of Ethiopia; northern Somalia; central highlands of Kenya; over much of Rwanda, central Burundi; and over south western Tanzania. The rest of the GHA is likely to record average temperature of between 18°C and 22°C in the month of March 2017.

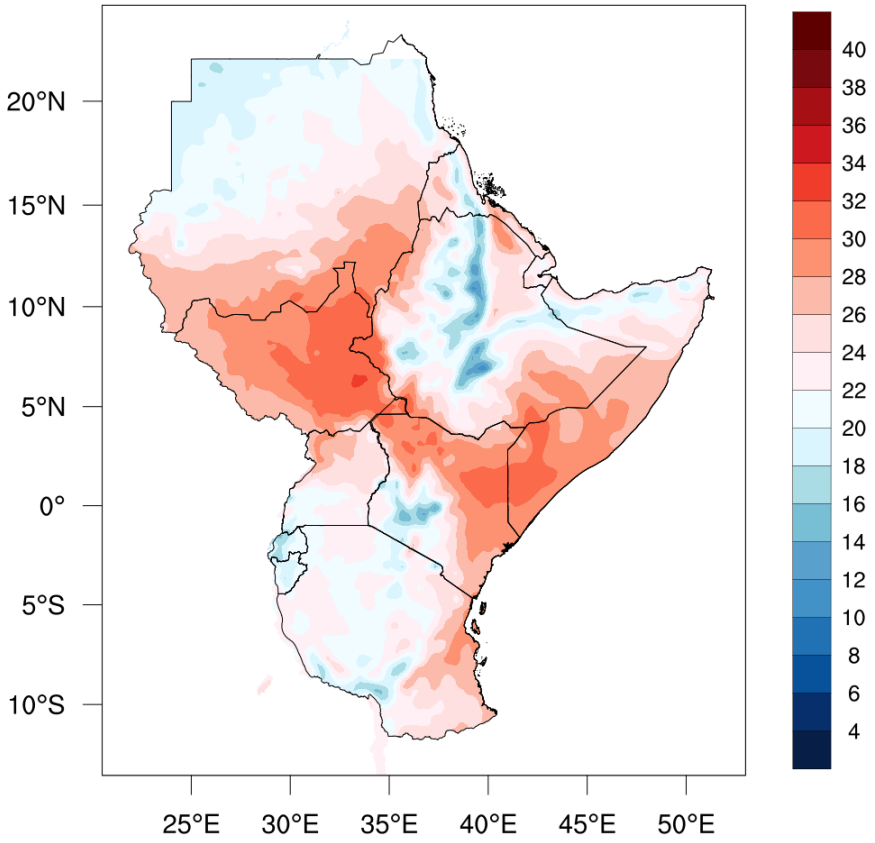

Figure 7b: Mean temperature outlook for March 2017.

5. IMPACTS ON SOCIO-ECONOMIC SECTORS

The socio-economic impacts associated with observed rainfall conditions and those from the climate outlook are provided below.

Vegetation condition indicators and associated impacts

The Normalized Difference Vegetation Index (NDVI) anomaly for January 2017 indicated that vegetative conditions deteriorated around the south-central part of the northern sector, and over much of southern, and equatorial sector of the Greater Horn of Africa (GHA). These areas include southeast of South Sudan extending to the southwest part of Ethiopia; over much of Uganda, southern Kenya, south of Somalia, north, east and south of Tanzania, south of Rwanda; and western parts of Rwanda. Improved vegetative conditions observed in few areas around northeast and west part of South Sudan, and over western parts of Tanzania. The rest of the Greater Horn of Africa indicated little or no change in vegetative conditions. (Figure 8).

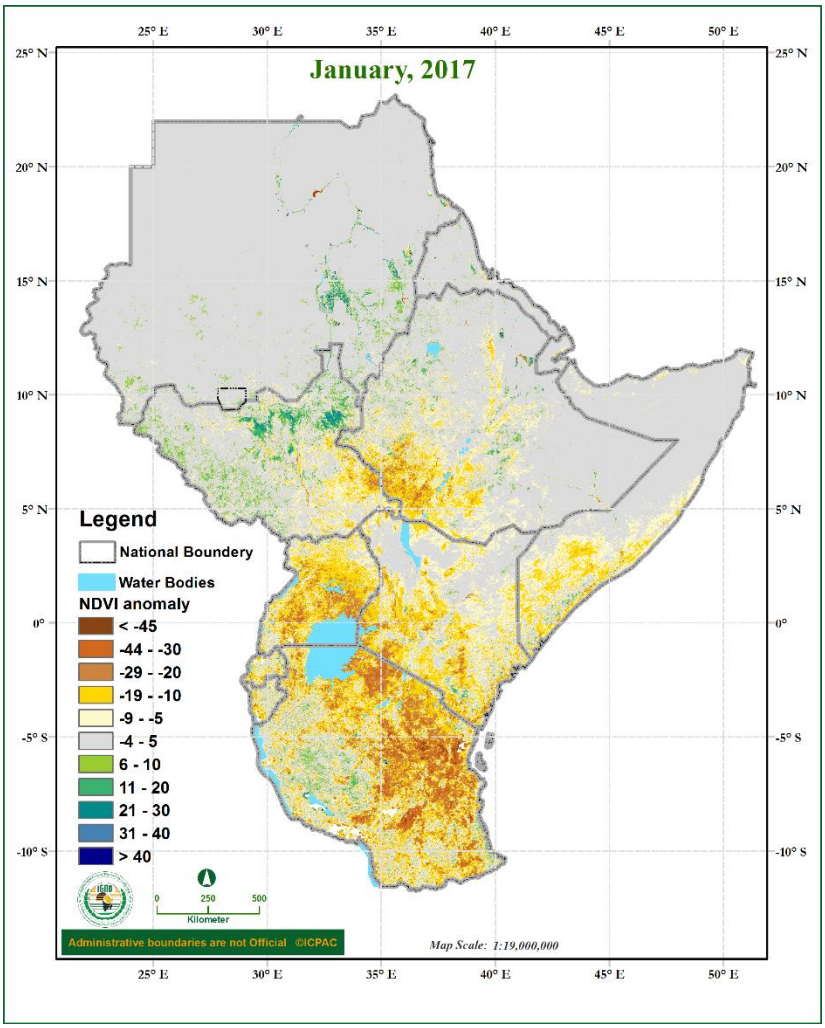

Figure 8: Normalized Difference Vegetation Index (anomaly) of January 2017 over the Greater Horn of Africa (data source: USGS).

Impacts of observed climate conditions during January 2017

The socio-economic impacts associated with the observed rainfall over much of the GHA during the month of January 2017 caused by the extended dry periods and the depressed rainfall condition has led to:

- Increased water stress leading to water shortages in urban centres and towns across the east Africa region, reported in Kenya, Uganda and Tanzania.
- There is increased risk of food insecurity and increase in food prices, in areas round the equatorial and southern sector of the GHA.
- Deterioration in pasture conditions leading to loss of livestock and poor prospects of livestock production, and migration of pastoralists has also been reported also in many areas of the GHA region and this has included increased tension in contest of water and pasture resources in arid lands, migration of pastoralists, and human wildlife conflict.
- Prospects of reduced performance in crop conditions, has been reported in areas as which has experienced crop losses and prospects of reduced production in tea in Kenya. This can also be due to the delayed onset in some areas in the equatorial sector and southern sector leading to delayed farming.

Potential impacts for March 2017 climate outlook

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

- Improvement in pasture and crop conditions leading to good prospects for crop and livestock performance.
- Improvement in water resources and replenishment of reservoirs.
- Increased Prevalence 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.
- Continued deterioration of pasture and water resources leading to water related crop and livestock stress.
- Existence of water related diseases.

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