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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

This bulletin reviews the climate condition over the Greater Horn of Africa (GHA) region for the month of February 2017, and also highlights the rainfall and temperature outlook for the month of April 2017 period, together with the socio-economic impacts associated with both the observed and the predicted conditions.

In the month of February rainfall is mainly expected in the southern sector with a few areas in the equatorial sector also recording some precipitation. In February 2017, the ENSO signals show a neutral conditions with the Indian Ocean equatorial SSTs showing average to cooler than average conditions. Rainfall has been received in much of the southern sector and over a few areas in west and southern equatorial sector as well as over the south central part of the northern sector of the GHA region in the month of February 2017.

2. HIGHLIGHTS

Rainfall activities were mainly observed over much of the southern sector with areas around west and central parts of the equatorial sector, as well as south-central part of the northern sector also recording some rainfall during the month of February 2017. The rainfall performance in most of these areas was near average, with some areas recording above average, while a few isolated areas especially in the north of the southern sector, south of the equatorial sector as well as southeast and southwest of the northern sector indicating below average rainfall.

The rainfall condition in the GHA region during the month of February 2017 has brought with it a relief in some of the areas especially in the equatorial and southern sector of the GHA which were previously facing dry conditions. However some areas are still experiencing persistent impacts of drought conditions related 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, and water stress.

During the month of April 2017, rainfall is likely to be concentrated in over much of the equatorial sector, southern sector, as well as south west part of the northern sector of the GHA region.

3. CLIMATE PATTERNS IN FEBRUARY 2017

The rainfall amounts, rainfall performance as compared to the Long Term Mean using percentage of long term average and standardized precipitation index for February 2017 are provided in this section. The minimum and maximum temperature anomalies are also given.

RAINFALL AMOUNTS AND PERFORMANCE DURING FEBRUARY 2017

Rainfall amounts in February 2017

During the month of February 2017, areas covering much of Sudan, southern Djibouti, western Eritrea, much of the northern part of South Sudan, northwest and east of Ethiopia, much of Somalia, as well as northeast and eastern Kenya recorded rainfall amount less than 10mm.

Rainfall amounts exceeding 100mm was experienced in the south western part of Ethiopia, south eastern Uganda extending to western Kenya, in the south western part of Rwanda, over much of Burundi, and over western central and southern Tanzania. The rest of the of the GHA region which covers central and southern Eritrea, parts of Djibouti, central and south western Ethiopia, southern part of South Sudan, northern and western part of Uganda, in areas northern central and south of Kenya, in eastern Rwanda, and over north and north eastern Tanzania recorded between 10mm and 100mm of rainfall. (Figure 1).

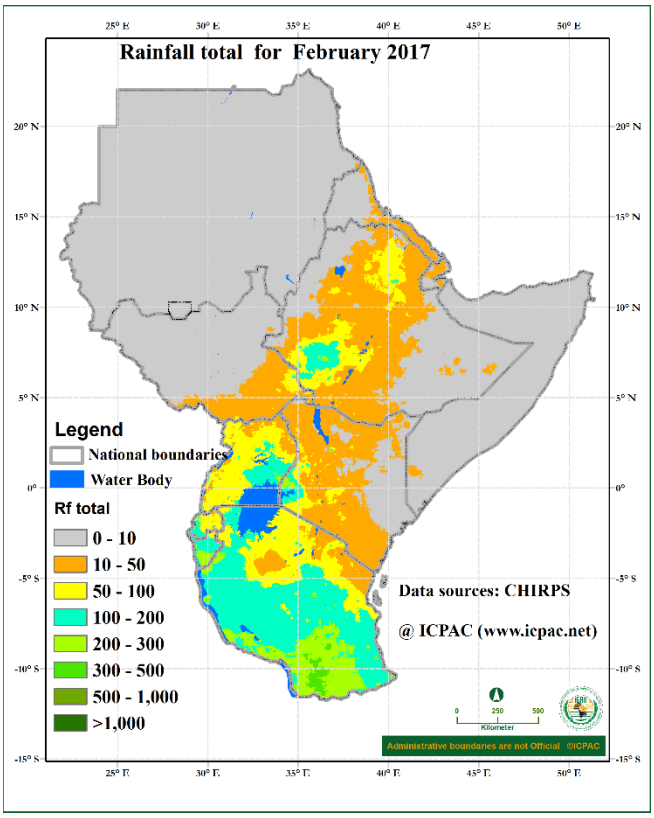

Figure 1: Spatial distribution of rainfall during the month of February 2017

Rainfall severity in the month of February 2017

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

In the month of February 2017 rainfall amounts greater than 125% of the long term average was recorded in southern part of Eritrea, north and western part of Ethiopia, south western South Sudan, much of Uganda, in the north, west and over parts of eastern Kenya, in southern part of Burundi, and in northwest and southern part of Tanzania. These resulted into moderately wet to extremely wet rainfall conditions. A few areas around south west of South Sudan, eastern part of Ethiopia, northern and southern Somalia, eastern part of Rwanda, south western and coastal part of Kenya and in north central Tanzania less than 75% of the long term average rainfall was recorded. These areas correspond to moderately dry to severely dry rainfall conditions. Much of the rest of the Greater Horn of Africa region received between 75% and 125% of long term average rainfall for the month of February which translated to near normal rainfall conditions

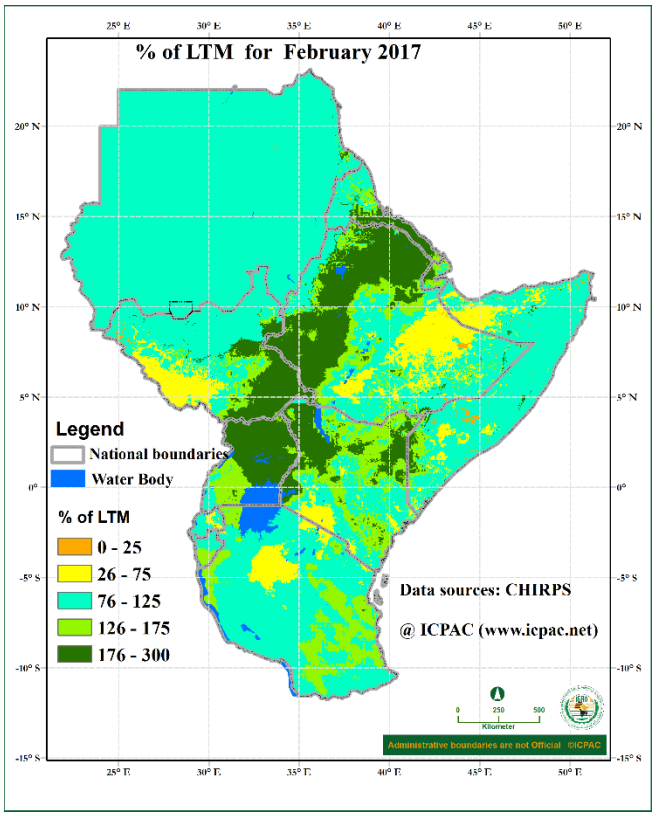

Figure 2: Percentage of average rainfall for February 2017

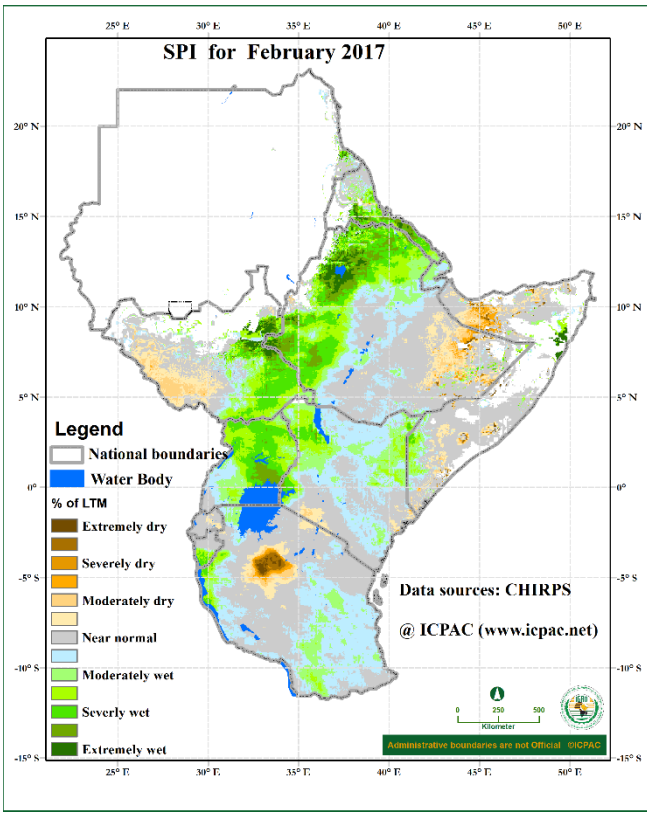

Figure 3: Standardized Precipitation Index for February 2017

TEMPERATURE CONDITIONS

During the month of February 2017, warmer than average maximum temperatures was experienced in some areas in the southern part of South Sudan, south western part of Ethiopia, in south eastern part of Uganda, in the west and southern part of Kenya, and in much of north, central and southern Tanzania. Much of Sudan, Eritrea, Djibouti and northern and north eastern Ethiopia experienced maximum temperature conditions that were below the average maximum temperature (Figure 4a). While the rest of the Greater Horn of Africa (GHA) recorded near average maximum temperature.

Warmer than average minimum temperature was observed in the south west part of, over much of south Sudan, western, eastern and isolated parts of central Ethiopia, over parts of Djibouti, around north and central Somalia, in isolated parts of central Kenya, south west of Uganda and central and north of Tanzania during the month of February 2017. Cooler than average minimum temperature was mainly observed in much of the Sudan while the rest of the GHA region recorded near average minimum temperature during the month of February 2017 (Figure 4b).

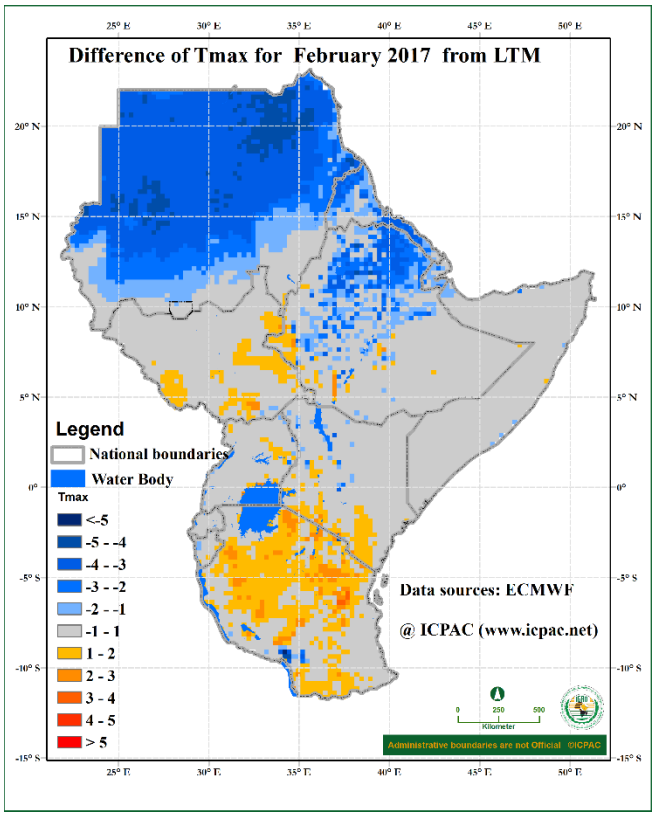

Figure 4a: Maximum temperature anomalies for February 2017

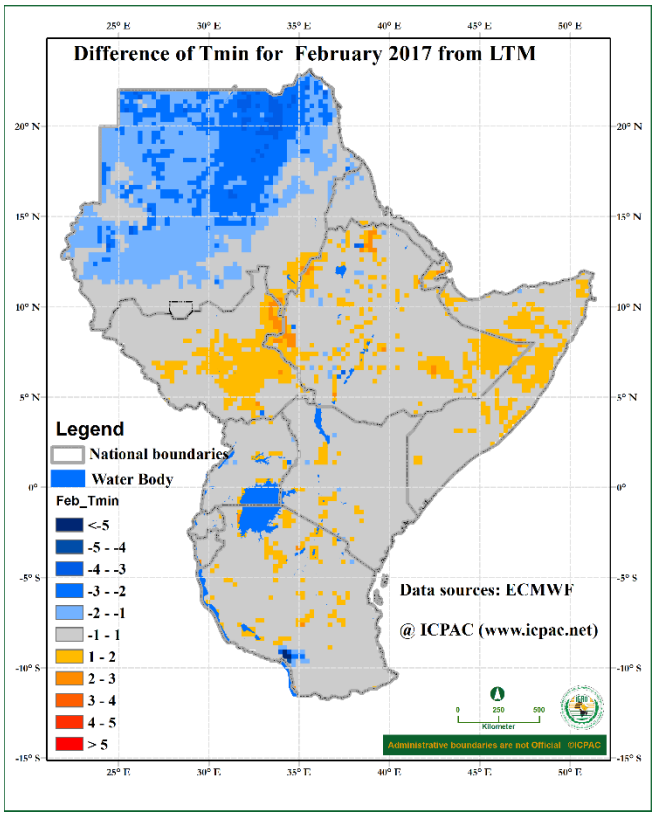

Figure 4b: Minimum temperature anomalies for February 2017

4. STATUS OF THE CLIMATE SYSTEMS

The seas surface temperature (SST) anomaly during the period between February 12th and March 11th of 2017, show that over central equatorial Pacific Ocean stretching towards the eastern equatorial Pacific region (Niño 4 to Niño 1&2.) near average to warmer than average SST anomaly has been dominant (Figure 5). However this situation currently presents a neutral ENSO conditions (Figure 6b). Near average to cooler than average to sea surface temperature conditions dominated much of central and eastern equatorial Indian Ocean (Figure 5) with near average to warmer than average sea surface temperature being experienced in the western equatorial Indian Ocean. This pattern has presented a positive phase of the Indian Ocean Dipole IOD (Figure 6) similar to recent years such as 1985, 1990, 1993, and 2011.

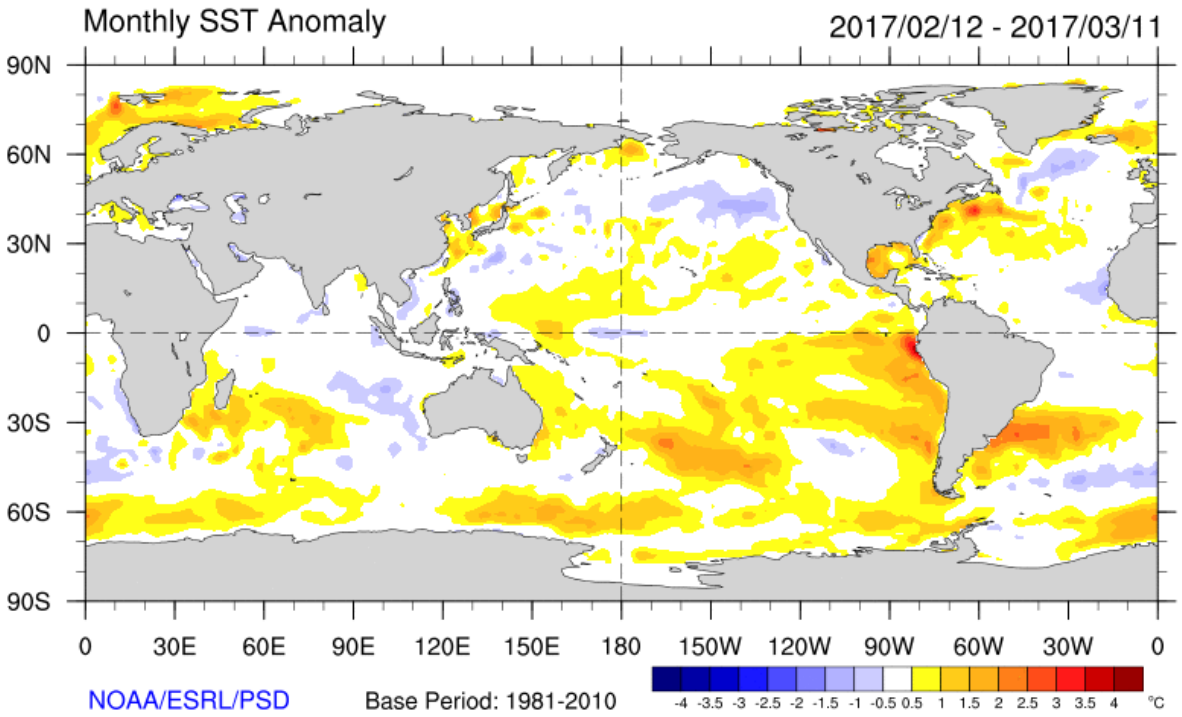

Figure 5: Sea Surface Temperature anomalies for the period 08 February 2017 to 04 February 2017 (Courtesy of NOAA/ESRL/PSD)

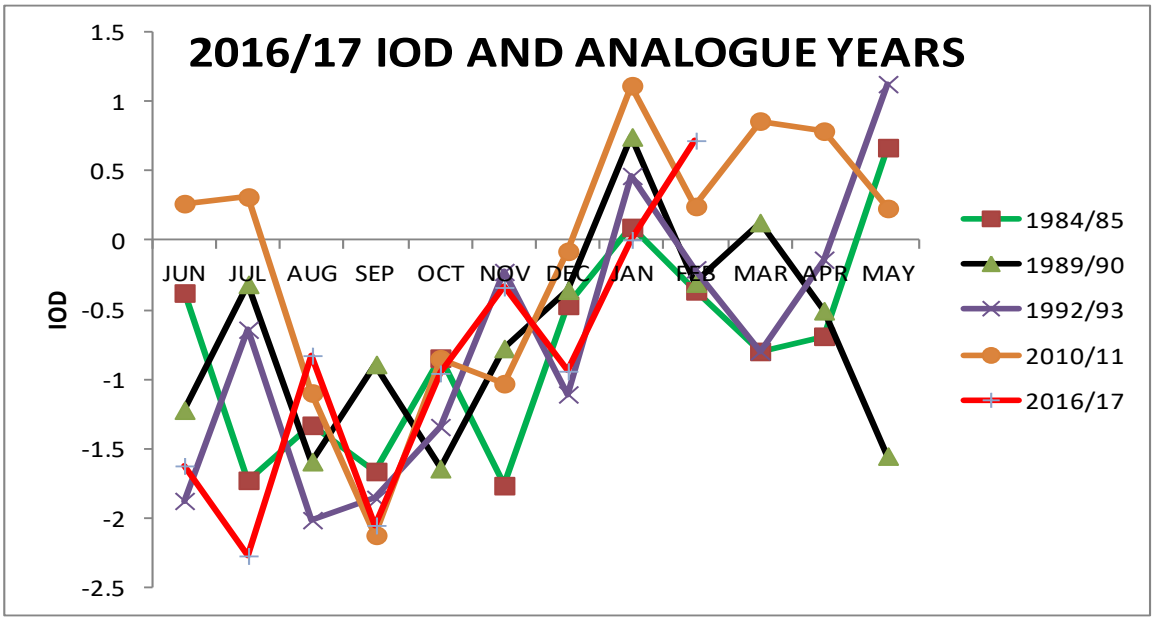

Figure 6a: The Indian Ocean Dipole (IOD) during 2016/17 and analogue years.

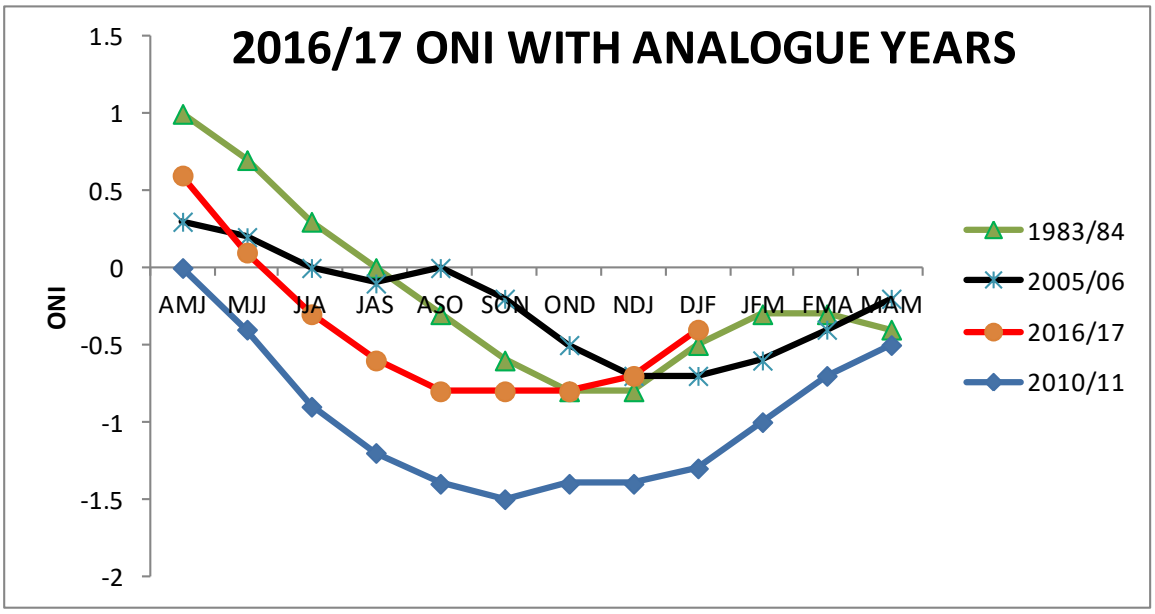

Figure 6b: The Oceanic Nino Index (ONI) Indian Ocean Dipole (IOD) during 2016/17 and analogue years.

CLIMATE OUTLOOK FOR APRIL 2017

The rainfall forecast for April

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

Temperature Outlook for April 2017

The average temperature forecast for GHA region for April 2017 given in Figure 7b shows that more than 24^{o}C is likely to be observed in much of Sudan, south Sudan, Somalia, Djibouti, Eritrea, north and east of Ethiopia, northern part of Uganda, north and eastern parts of Kenya, and eastern Tanzania. Average temperature less than 18 ^{o}C is likely to be observed in central and west of Ethiopia, southern part of Uganda, western and central Kenya, over much of Rwanda, Burundi, and in the west and central Tanzania. The rest of the GHA is likely to record average temperature of between 18^{o}C and 22^{o}C in the month of April 2017.

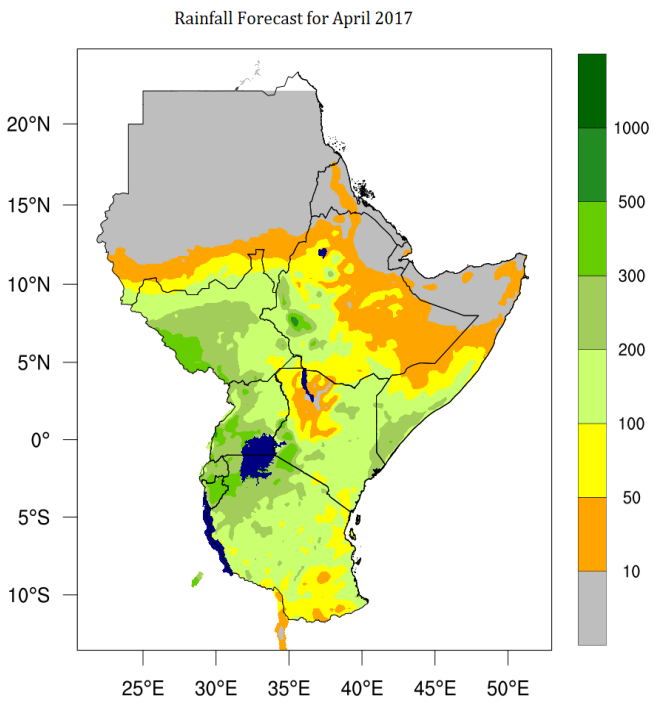

Figure 7a: Rainfall Outlook for April 2017

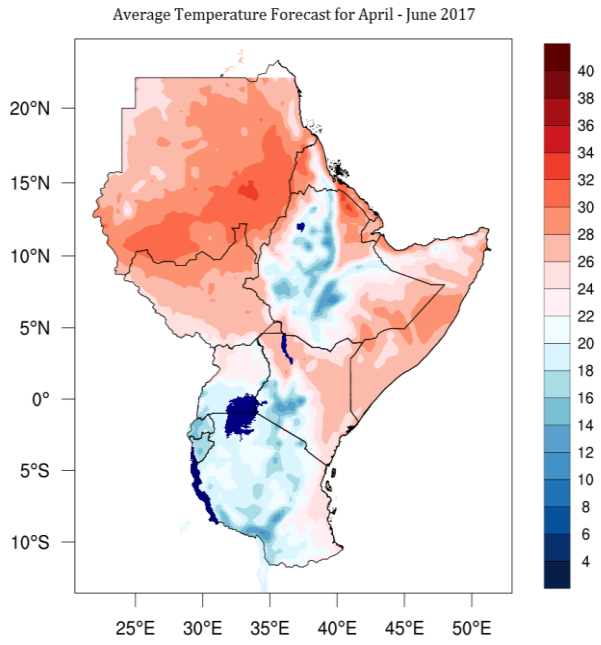

Figure 7b: Mean temperature outlook for April 2017.

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 February 2017 indicated that vegetative conditions deteriorated around the south western part of Ethiopia, over much of Uganda, over central southern and coastal Kenya, in areas around south west of Somalia, over much of Rwanda, western and northern part of Burundi and over much of northern and north eastern Tanzania. Improved vegetative conditions was observed in a few areas around northeast and western 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).

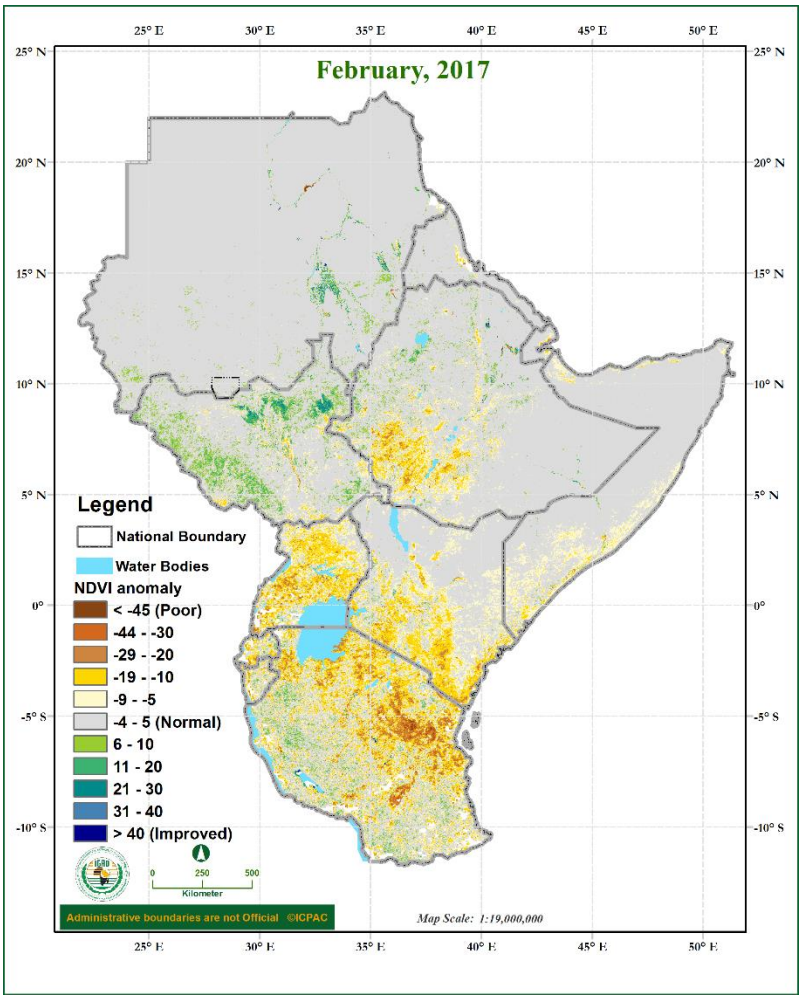

Figure 8: Normalized Difference Vegetation Index (NDVI) of February 2017 over the Greater Horn of Africa

Impacts of observed climate conditions during February 2017

During the month of February 2017 several places in the Greater Horn of Africa still continued to experience drought related impact has led to: Increased water stress leading to water shortages in urban centres and towns across the east Africa region, reported in Kenya, Uganda, Rwanda and Tanzania; there is reported crop loss leading to poor prospects of crop production, increased risk of food insecurity, and associated increase in food prices, reported in several areas round the equatorial and southern sector of the GHA; there is reported cases of increased cases of insecurity and conflict related to poor pasture and water conditions, these have resulted into loss of livestock, poor prospects of livestock production, and migration of pastoralists.

However some areas in the southern sector have reported improved pasture and water conditions, some areas in the western part of the equatorial sector have also received a substantial amounts of rainfall which have acted as a relief from the previously dry conditions

Potential impacts for April 2017 climate outlook

From the outlook provided, in the month of April 2017, much of the southern sector and western part of the equatorial sector as well as south western and south central part of the northern sector

are likely to have improved water, crop and pasture conditions leading to good prospects for crop and livestock performance. However some parts especially in south eastern Northern sector, eastern and central equatorial sector as well as eastern and southern part of the southern sector are likely to receive little or rainfall which are likely to result into a continued deterioration of pasture and water resources leading to water related crop and livestock stress and poor prospects for crop and livestock performance.

For more information contact
ICPAC P.O. Box 10304, 00100 Nairobi,
KENYA;
Tel: +254-020-3514426
E-mail: director@icpac.net

Website: www.icpac.net