IGAD Climate Prediction and Applications Centre Monthly Bulletin, April 2017

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 April 2017, and also highlights the rainfall and temperature outlook for the month of June 2017, together with the socio-economic impacts associated with both the observed and the predicted conditions.

In the month of April rainfall is mainly expected in areas in the equatorial sector, southern sector, and also in the southern parts of the northern sector of the Greater Horn of Africa (GHA). In April 2017, the Oceanic Nino Index (ONI) signal showed a neutral state but tending to positive index, with positive Indian Ocean Dipole (IOD) index as at the end of April 2017.

Rainfall has been received in much of the southern sector, over a few areas in west and southern equatorial sector as well as over the south-western and south-central parts of the northern sector of the GHA region in the month of April 2017.

2. HIGHLIGHTS

Rainfall activities were mainly observed over much of the southern sector and also in areas around west and central parts of the equatorial sector, as well as south-central part of the northern sector during the month of April 2017 (Figure 1). The rainfall performance was below the long term average amount for south-central and south-eastern parts of the northern sector; south-western, central and eastern parts of the equatorial sector; and in northwest and central parts of the southern sector of the GHA. A few areas in the central and western part of the northern sector, and also eastern and southern parts of the southern sector recorded above the average rainfall, while the rest of the GHA region recorded near the average rainfall conditions (Figure 2).

The rainfall condition in the GHA region during the month of April 2017 continue to bring 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 especially in the eastern parts are still experiencing persistent impacts of drought conditions that exacerbate 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 June 2017, rainfall is likely to be concentrated in over western and central parts of the northern sector, as well as over a few areas in western and central parts of the equatorial sector of the GHA region (Figure 7a).

3. CLIMATE PATTERNS IN APRIL 2017

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

RAINFALL AMOUNTS AND PERFORMANCE DURING APRIL 2017

Rainfall amounts in April 2017

During the month of April 2017, areas covering much of Sudan, western Eritrea, Djibouti, northern part of South Sudan, northeast part of Ethiopia, and part of northern Somalia recorded rainfall amount less than 10mm.

Rainfall amounts of between 100mm and 500mm was experienced in the southern and southwestern parts of Ethiopia, western and southwestern South Sudan, over much of Uganda, in western, central and northeastern Kenya, in southern Somalia, over much of Rwanda, much of Burundi, and over much of Tanzania, except for the central part of Tanzania. Southeastern Uganda, western Kenya, and east and southern part of Tanzania recorded more than 200mm of rainfall. The rest of the of the GHA region recorded between 10mm and 100mm of rainfall (Figure 1).

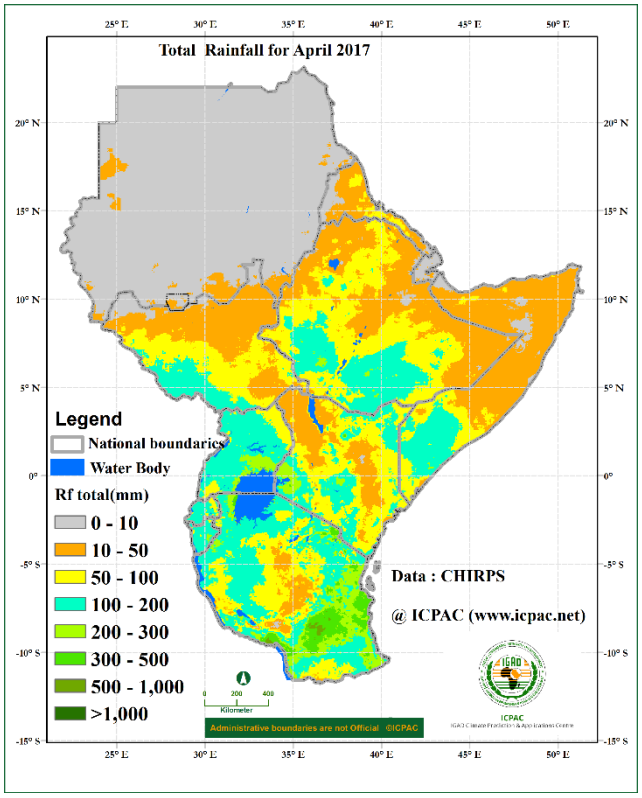

Figure 1: Spatial distribution of rainfall during the month of April 2017*(Data Source : CHIRPS)*

Rainfall severity in the month of April 2017

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

In the month of April 2017 rainfall amounts greater than 125% of the long term average was recorded mainly over a few areas in southern and eastern parts of Sudan; parts of western Eritrea; in northwestern Ethiopia; in isolated areas of west and north-east parts of South Sudan; over southeastern part of Uganda; and over eastern and southern Tanzania (Figure 2). These resulted into moderately wet to severely wet rainfall conditions (Figure 3). Rainfall conditions less than 75% of the long term average rainfall was observed in Isolated areas in southern part of Sudan; over northern and southeastern parts of South Sudan; around southwestern, central and eastern Ethiopia; over much of Djibouti; over much of northwest and central parts of Somalia; over much of Kenya; in

southwestern parts of Kenya; over much of southern and eastern Rwanda; over northwest part of Burundi; and over north, central and western Tanzania (Figure 2). Much of these areas correspond to near normal to severely dry rainfall conditions (Figure 3). 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 April which translated to near average rainfall conditions. A few areas notable in southeast of Ethiopia, east and north east of Kenya and southern part of Somalia have shown improvement as compared with the previous month.

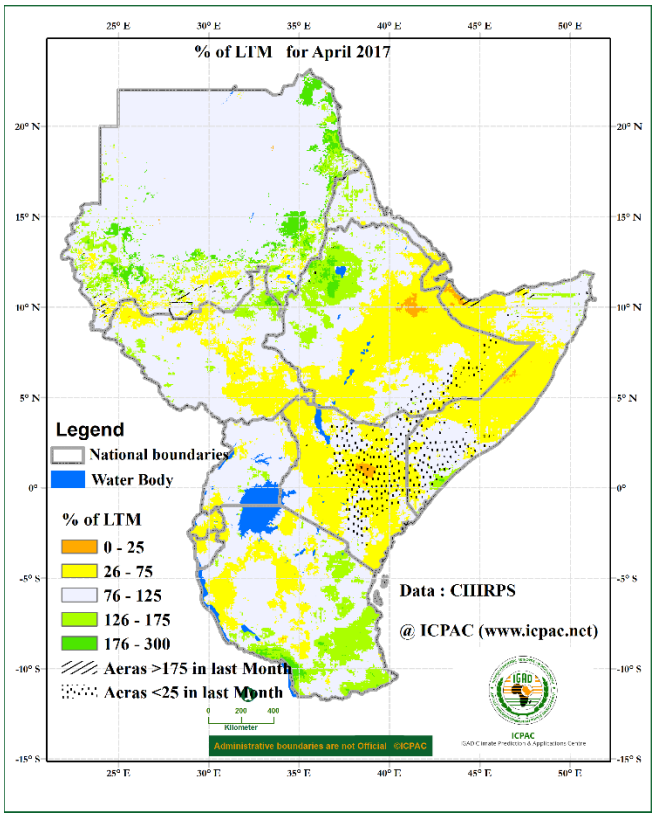

Figure 2: Percentage of average rainfall for April 2017*(Data Source: CHIRPS)*

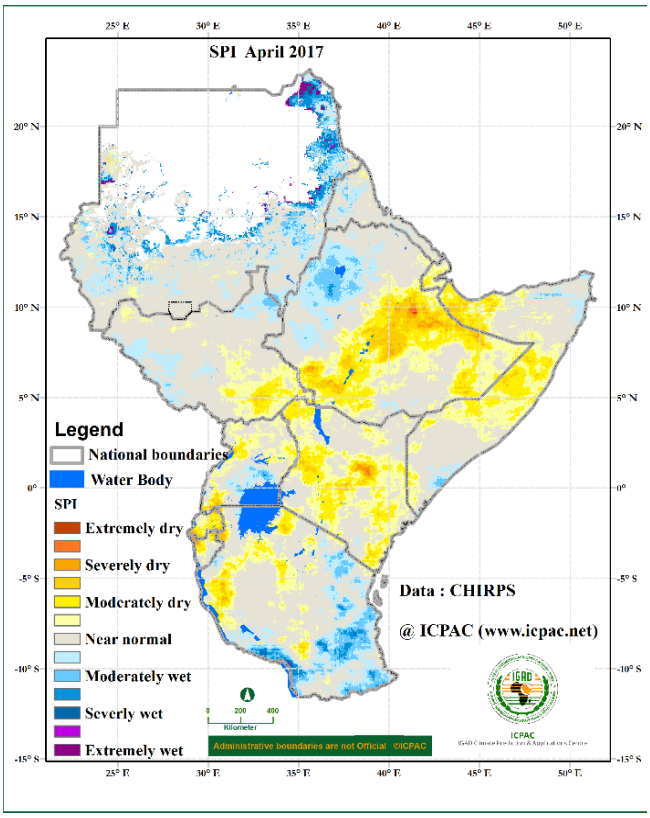

Figure 3: Standardized Precipitation Index for April 2017*(Data Source: CHIRPS)*

TEMPERATURE CONDITIONS

During the month of April 2017, warmer than the average maximum temperatures conditions was experienced over south eastern part of Sudan; in parts of western Eritrea; over much of South Sudan, Uganda, and Kenya; in southern and eastern parts of Ethiopia; south-central of Somalia; in southern parts of Rwanda; southern parts of Burundi; and in northern, northwest and central parts of Tanzania (Figure 4a). Much of the rest of the Greater Horn of Africa (GHA) recorded near average maximum temperature.

Much of the GHA region recorded average minimum temperature conditions in several areas in April, except for areas covering much of Sudan, western parts of Eritrea, much of South Sudan, northern Uganda, northwestern Kenya, western margins and south-eastern parts of Ethiopia, and over isolated areas in western and central Kenya, northern, central and western Tanzania during the month of April 2017 (Figure 4b).

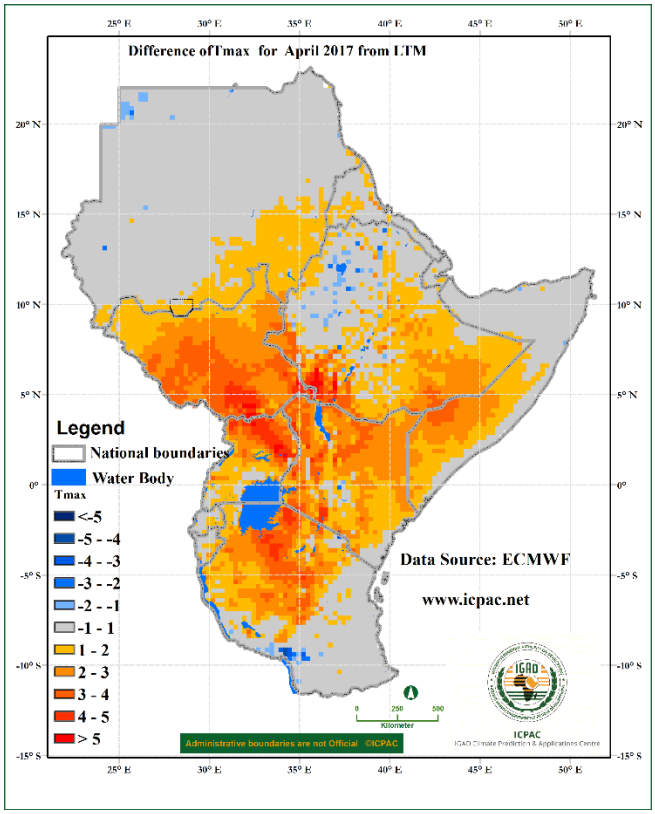

Figure 4a: Maximum temperature anomalies for April 2017 (From LTM 2008-2016(*Data Source:ECMWF)*

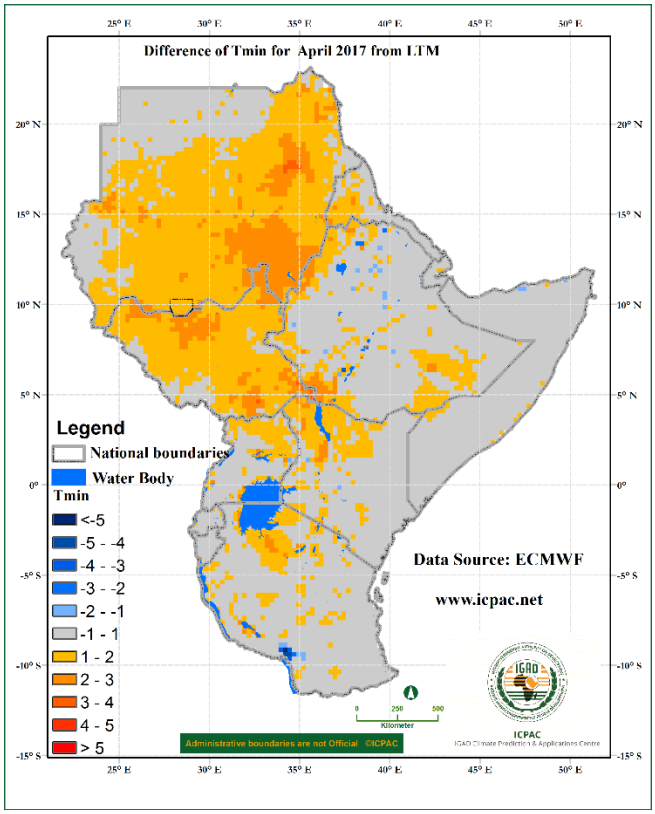

Figure 4b: Minimum temperature anomalies for April 2017 From LTM 2008-2016 *(Data Source:ECMWF)*

4. STATUS OF THE CLIMATE SYSTEMS

The Sea Surface Temperature (SST) anomaly during the period April 9 – May 6 2017 showed that over central equatorial Pacific Ocean stretching towards the eastern equatorial Pacific region (Niño 4 to Niño 1&2 areas) near average to warmer than average SST anomaly has been dominant (Figure 5), however this situation still currently presents a neutral ENSO phase (Figure 6b). Near average to cooler than average SST conditions dominated much of central to 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 1982, 2000 and 2012.

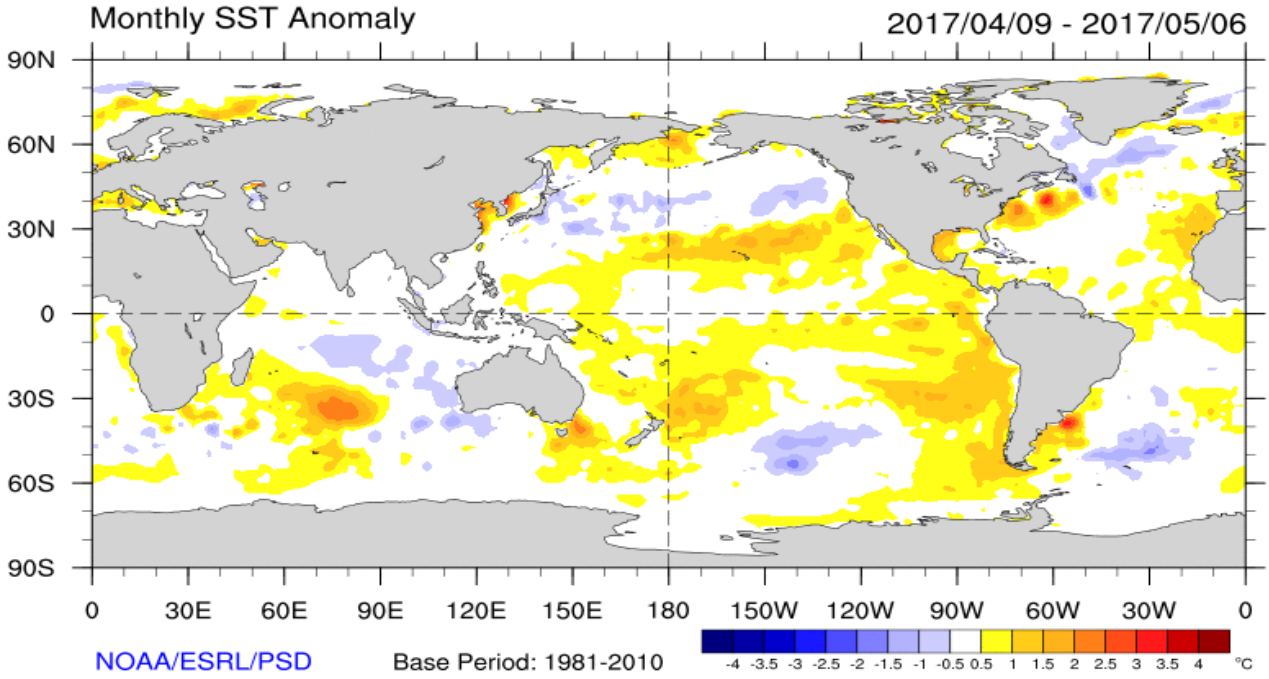

Figure 5: Sea Surface Temperature anomalies for the period 09 April to 06 May 2017 (Courtesy of NOAA/ESRL/PSD)

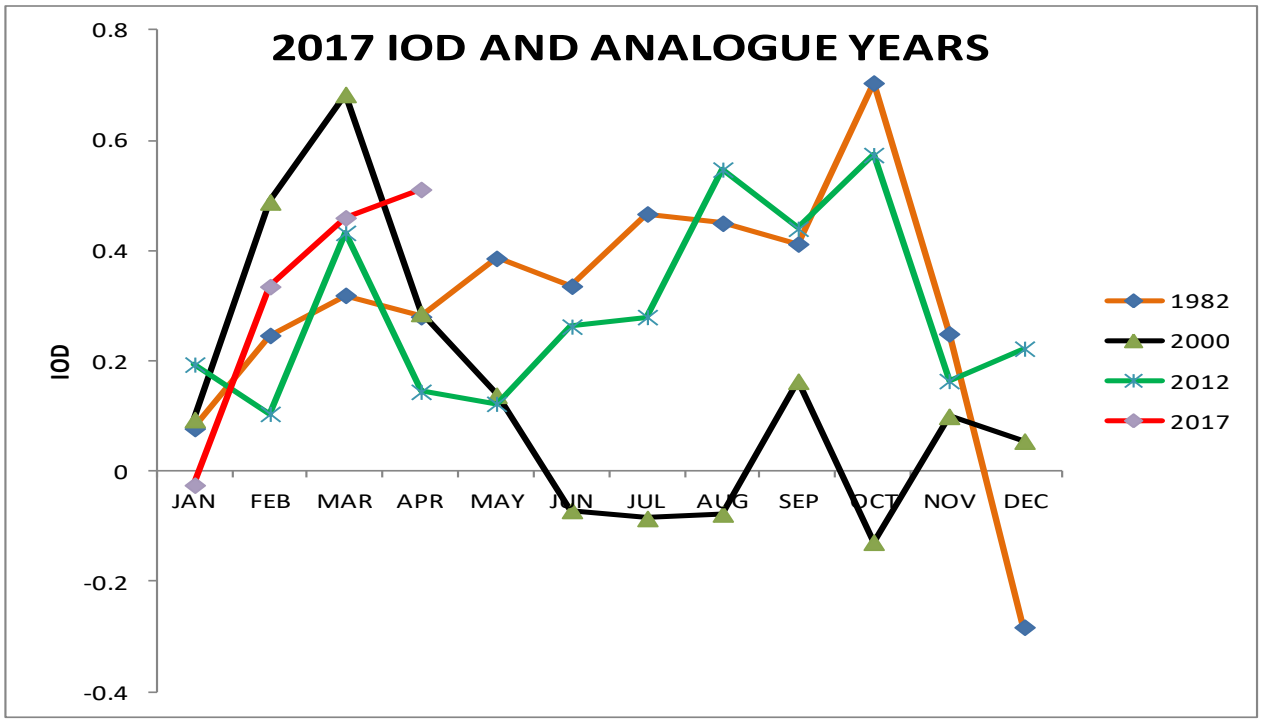

Figure 6a: The Indian Ocean Dipole (IOD) during 2016/17 and analogue years.

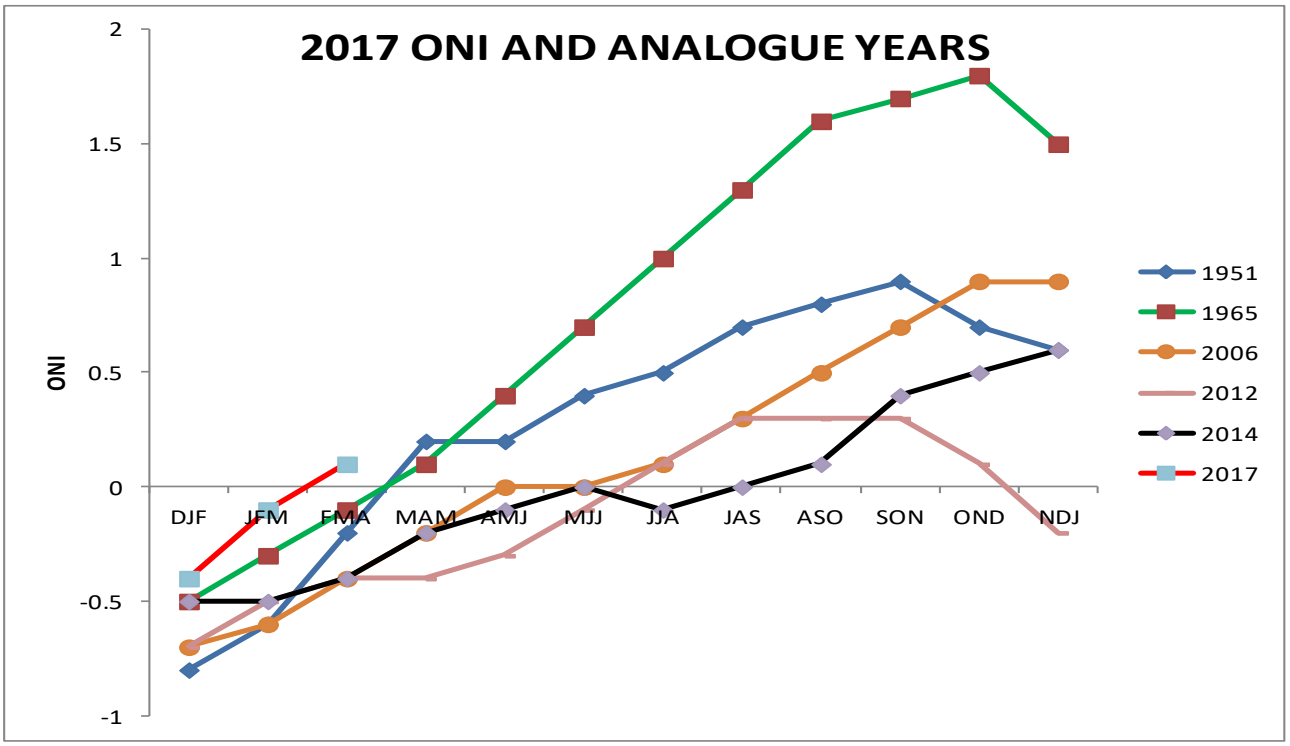

Figure 6b: The Oceanic Nino Index (ONI) during 2016/17 and analogue years.

5. CLIMATE OUTLOOK FOR JUNE 2017

The rainfall forecast for June

The rainfall outlook for the month of June 2017,given in Figure 7a, is forecasted using Weather Research and Forecasting (WRF) tailored for the GHA region. It shows that rainfall is likely to be experienced over southern part of Sudan; over much of South Sudan; over western and central parts of Ethiopia, over north-eastern parts of Uganda; over western Kenya; around south-eastern and northern parts of Somalia and also in eastern and southern Tanzania. The rest of GHA region which include northern parts of Sudan; northwest and central Eritrea; northern, eastern and southern Ethiopia; northern, central, and southwestern Somalia; over much of Kenya except the western and central parts; and over much of Rwanda, Burundi and Tanzania are likely to record less than 10mm of rainfall (Figure 7a).

Temperature Outlook for June 2017

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

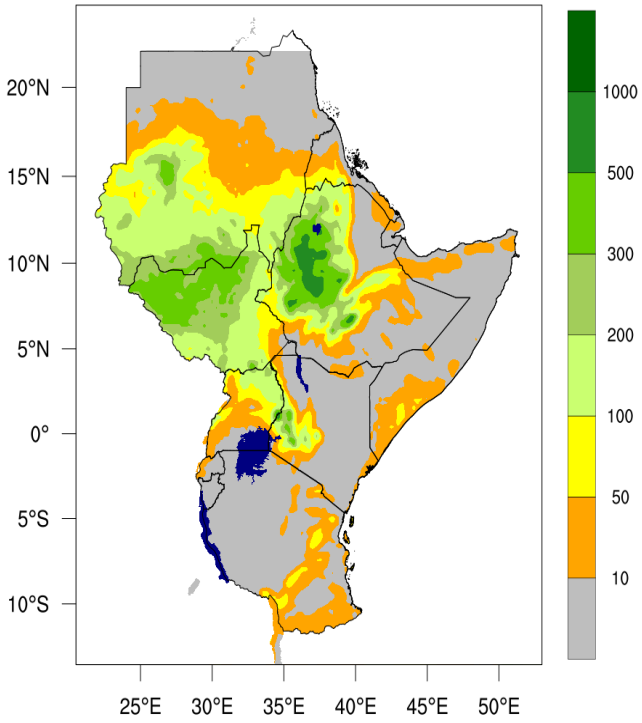

Figure 7a: Rainfall Forecast for June 2017

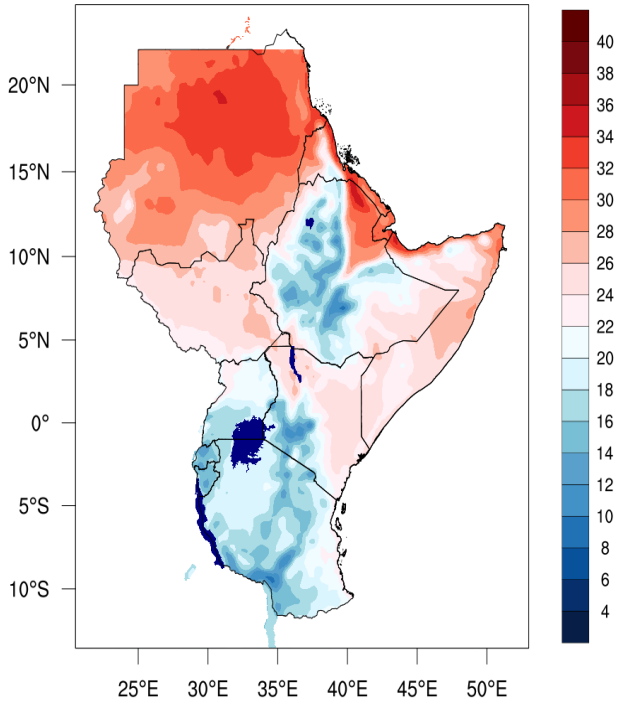

Figure 7b: Mean temperature forecast for June 2017.

6. 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 April 2017 indicated that vegetative conditions showed deterioration as compared to the long term average in areas around southern Ethiopia, southwestern South Sudan, over northern, and eastern parts of Uganda, over much of Kenya, in southern areas of Somalia, and over parts of northern and northeastern Tanzania. Improvement in vegetative conditions as compared with the long term average was observed in areas around northeast and western parts of South Sudan, and over western Ethiopia, around southwestern Uganda, and in parts of west, east and southern Tanzania. The rest of the Greater Horn of Africa indicated little or no change in vegetative conditions. (Figure 8).

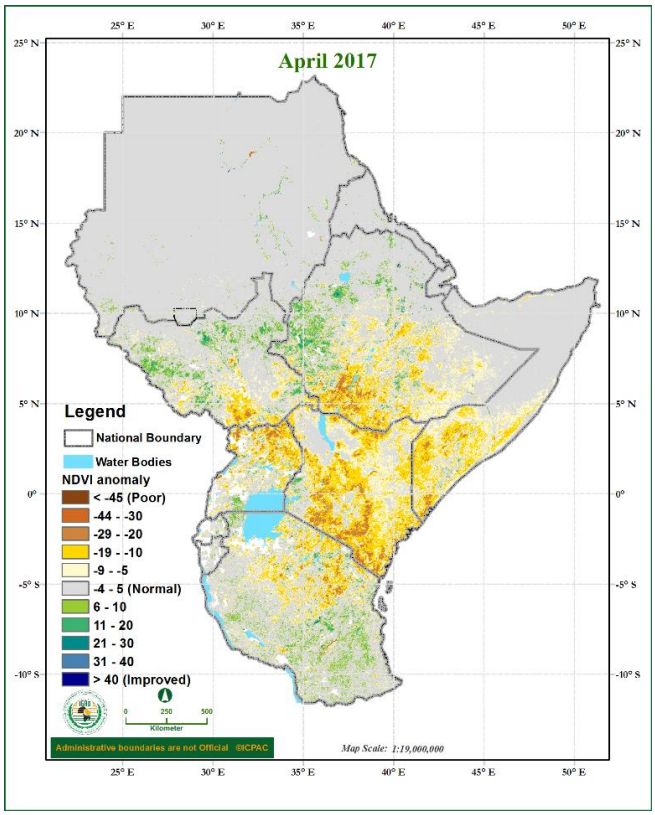

Figure 8: Normalized Difference Vegetation Index (NDVI) of April 2017 over the Greater Horn of Africa (Data Source: USGS NASA)

Impacts of observed climate conditions during April 2017

During the month of April 2017 several places in the Greater Horn of Africa still continued to experience drought related impact that has exacerbated continued water stress, poor pasture and crop performance, increased risk of food insecurity, and associated increase in food prices, reported in several areas round the equatorial and southern part of northern sector sector of the GHA; there is reported cases of increased human-wildlife tension especially over competition of scarce water and pasture resources, and also case of climate related diseases.

However some areas in the southern sector and equatorial 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 with good and healthy crops which have acted as a relief from the previously dry conditions, some incidences of flooding were reported in few isolated areas over the equatorial (coastal Kenya) and southern sectors of GHA during the month of April 2017.

Potential impacts for June 2017 climate outlook

The probable impacts from the June 2017 climate forecast show much of the south-western, south-central and south-eastern parts of the northern sector, as well as western and central parts of the equatorial sector of the GHA likely to have improved water, crop and pasture conditions leading to good prospects for crop and livestock performance. However some parts especially in eastern and southern parts of the equatorial sector are likely to receive little or rainfall which are likely to result into a continued deterioration of water and pasture resources leading to water related crop and livestock stress and poor prospects for crop and livestock performance.

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