IGAD Climate Prediction and Applications Centre Monthly Bulletin, May 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 May 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 May rainfall is mainly experienced in areas in the parts of the northern sector as well as western and central parts equatorial sector of the Greater Horn of Africa (GHA). In May 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 May 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 May 2017.

2. HIGHLIGHTS

Rainfall performance was generally good over much of the GHA region, except mainly for a few areas in southwestern Sudan, in parts of Uganda, Rwanda Burundi, and northwestern Tanzania which recorded below average rainfall performance during the month of May 2017 (Figure 1). 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 May 2017 continue to bring with it a relief in some of the areas especially in the equatorial sector of the GHA which were previously facing dry conditions, with the northern sector showing indication of early onset. However some areas especially in the western parts of the equatorial sector are still experiencing impacts of depressed rainfall conditions that has led to deterioration of water and pasture conditions, poor prospect of crop and livestock production, increase in food prices, and general water stress. A few areas especially in the coast and central parts of the equatorial and southern sector recorded incidents of flooding with related impacts in the month of May 2017.

During the month of July 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, and also coastal regions of the equatorial and southern sector of the GHA (Figure 7a).

3. CLIMATE PATTERNS IN MAY 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 May 2017 are provided in this section. The minimum and maximum temperature anomalies are also given.

RAINFALL AMOUNTS AND PERFORMANCE DURING MAY 2017

Rainfall amounts in May 2017

During the month of May 2017, areas covering much of Sudan, southern Eritrea, and southwestern Djibouti, in northwestern and eastern Kenya and western and central part of Tanzania recorded rainfall amount less than 10mm.

Rainfall amounts exceeding 100mm was experienced over much of South Sudan, around central Eritrea, in much of Ethiopia, much of Uganda, in western, central, north-central and southeastern Kenya, in southeastern Somalia, over southwestern Rwanda, and over much of north and eastern Tanzania. A few places in southwestern Ethiopia, in isolated parts of western South Sudan, in southeastern Uganda, in parts of west, central and coastal Kenya and in coastal parts 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).

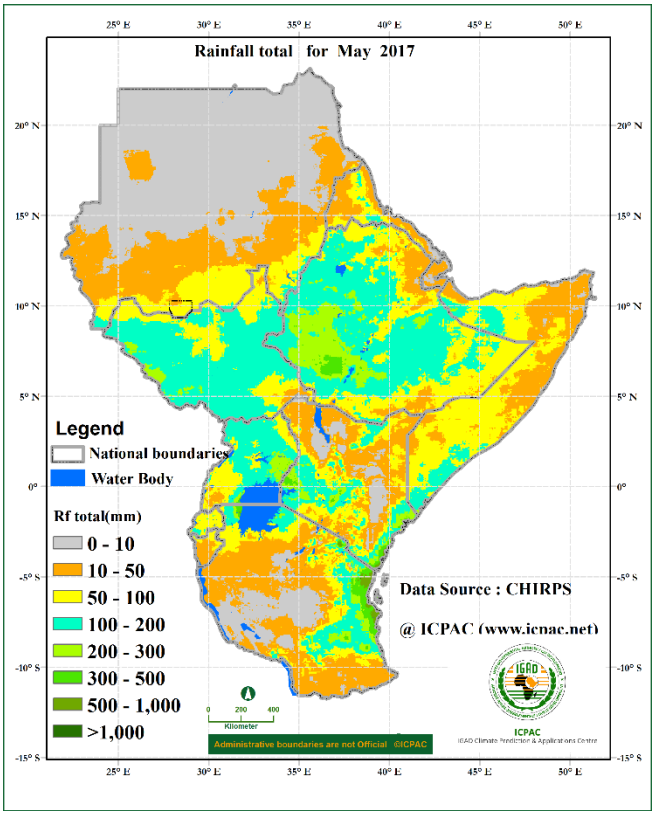

Figure 1: Spatial distribution of rainfall during the month of May 2017*(Data Source : CHIRPS)*

Rainfall severity in the month of May 2017

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

In the month of May 2017 rainfall amounts greater than 125% of the long term average was recorded mainly in southern and eastern parts of Sudan; over much of Eritrea and Djibouti; over much of north and east of Ethiopia; in northwest and north-east parts of South Sudan; northern part of Somalia and in isolated part of Southern Somalia; over a few areas southwest and south of Uganda; over much of eastern and southeastern Kenya; and over eastern and southern Tanzania (Figure 2). These areas

corresponded to moderately wet to extremely wet rainfall conditions (Figure 3). Rainfall conditions less than 75% of the long term average rainfall was observed in southern part of Sudan; over southeastern part of South Sudan; around southern Ethiopia; in eastern part of central Somalia and isolated parts south of Somalia; around southwestern, central, and northeastern Uganda; in parts of northwest and southwest Kenya; over much western Rwanda; over much of Burundi; and over much of northwest 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 May which translated to near average rainfall conditions. A few areas notable in northeast of Ethiopia, and east of Kenya have shown improvement as compared with the previous month.

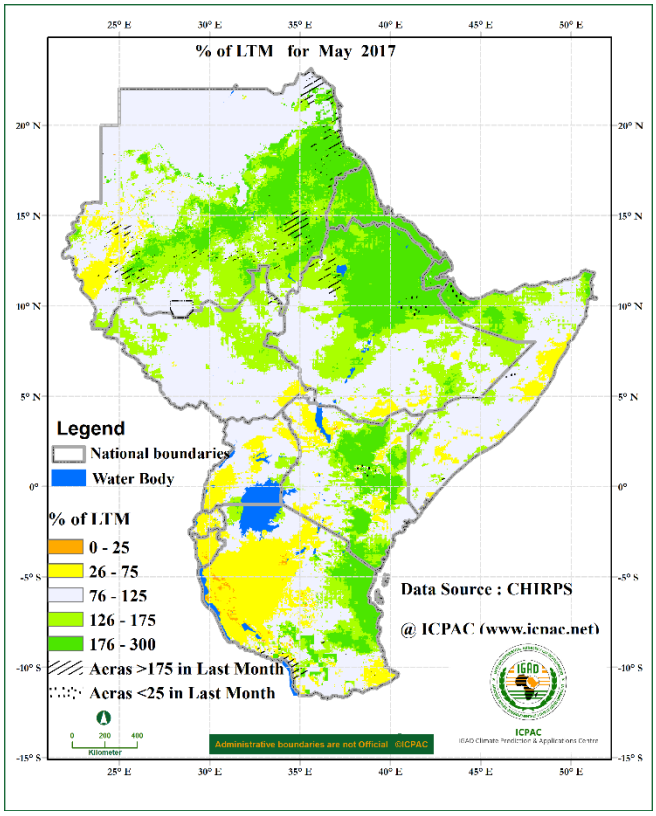

Figure 2: Percentage of average rainfall for May 2017*(Data Source: CHIRPS)*

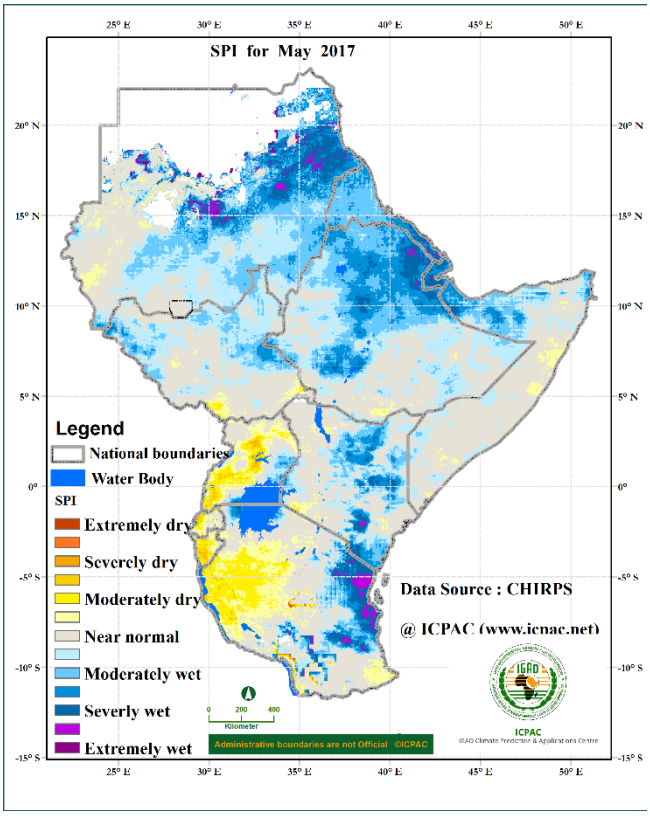

Figure 3: Standardized Precipitation Index for May 2017*(Data Source: CHIRPS)*

TEMPERATURE CONDITIONS

During the month of May 2017, warmer than the average maximum temperatures conditions was experienced over much of South Sudan, in southwestern and south eastern Ethiopia, in parts of central Somalia, around northern and eastern Uganda, in parts of western and central Kenya, in southern part of Burundi, and in northwestern and southern part of Tanzania (Figure 4a). Much of the rest of the Greater Horn of Africa (GHA) recorded near average maximum temperature, except for western part of Eritrea, northern part of Ethiopia, and over isolated parts of eastern Sudan, northern Somalia, southeastern Kenya, and northeastern Tanzania.

Much of the GHA region recorded near the average minimum temperature conditions in the month of May 2017, except for areas covering much of north of Sudan, in southern parts of South Sudan, in parts of western Eritrea, and in parts of southwest, south eastern and isolated areas of northeastern Ethiopia, in isolated parts of north and west Uganda, in a few isolated areas of west and central Kenya, and in parts of southern Tanzania. Cooler than the average minimum for the month of May was recorded I a few places central of Eritrea and north of Ethiopia (Figure 4b).

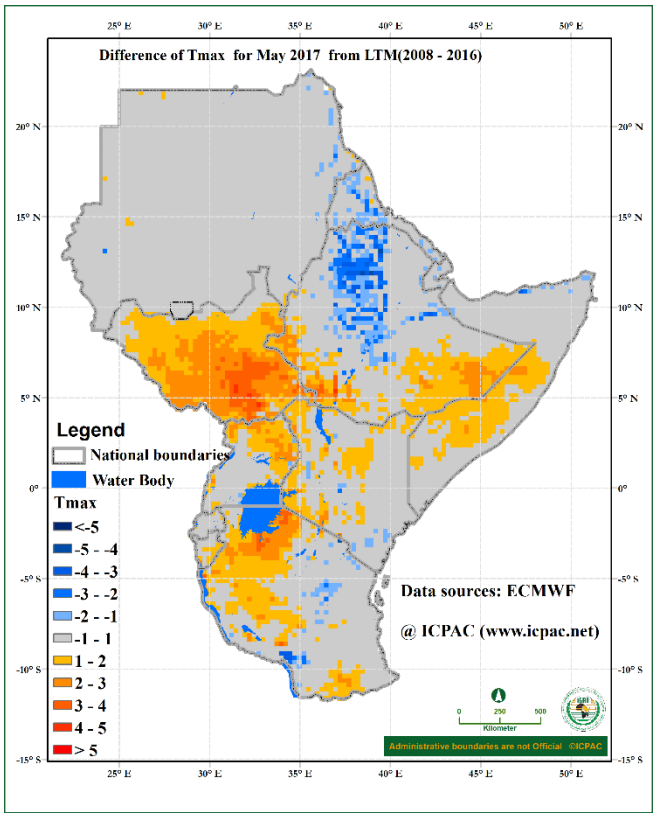

Figure 4a: Maximum temperature anomalies for May 2017 (From LTM 2008-2016 (*Data Source: ECMWF)*

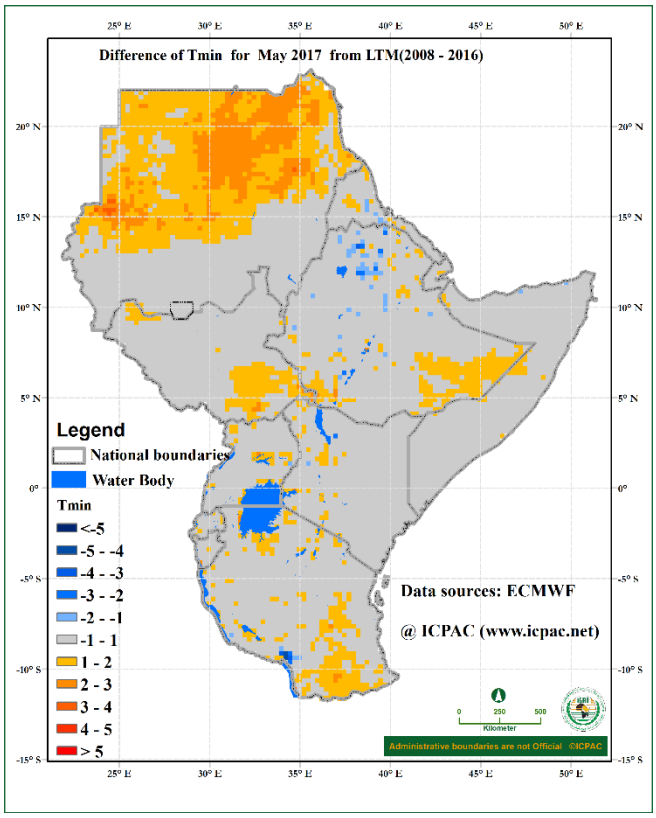

Figure 4b: Minimum temperature anomalies for May 2017 From LTM 2008-2016 *(Data Source: ECMWF)*

4. STATUS OF THE CLIMATE SYSTEMS

The Sea Surface Temperature (SST) anomaly during the period 7th May – 3th June 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 weak positive phase of the Indian Ocean Dipole IOD (Figure 6) similar to recent years such as 1982, 2000 and 2012.

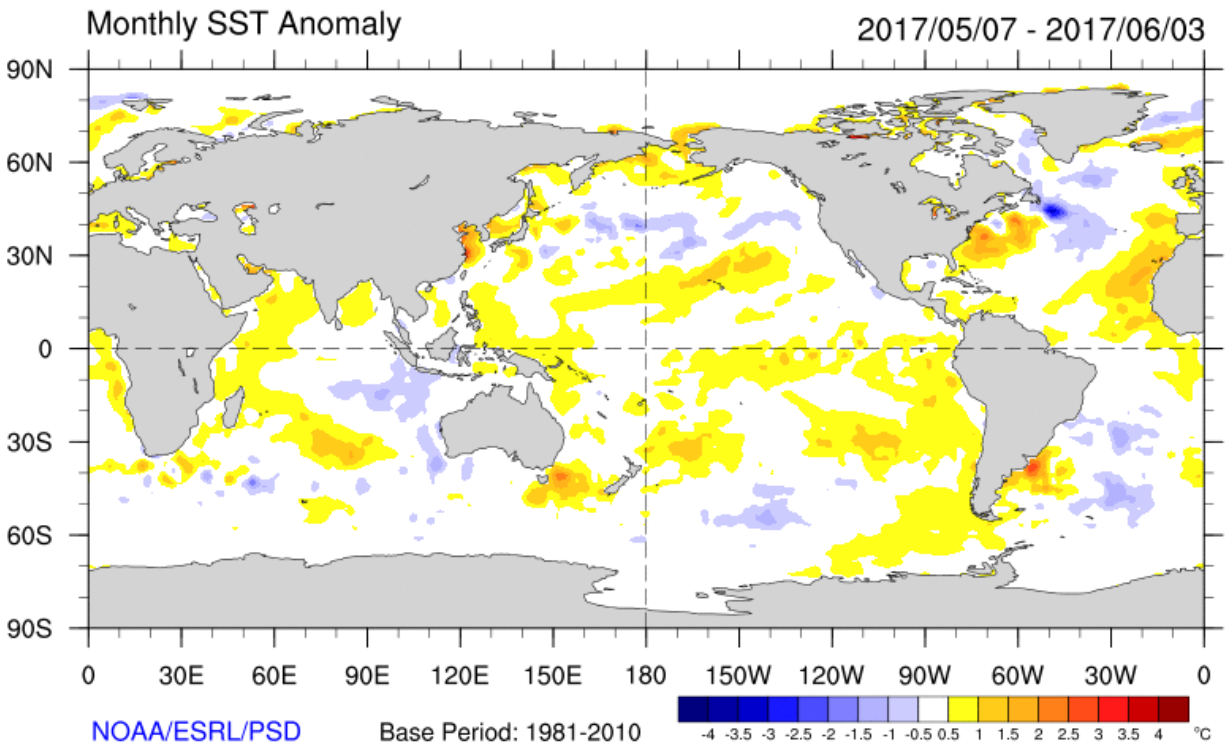

Figure 5: Sea Surface Temperature anomalies for the period 07 May to 03 June 2017 (Courtesy of NOAA/ESRL/PSD)

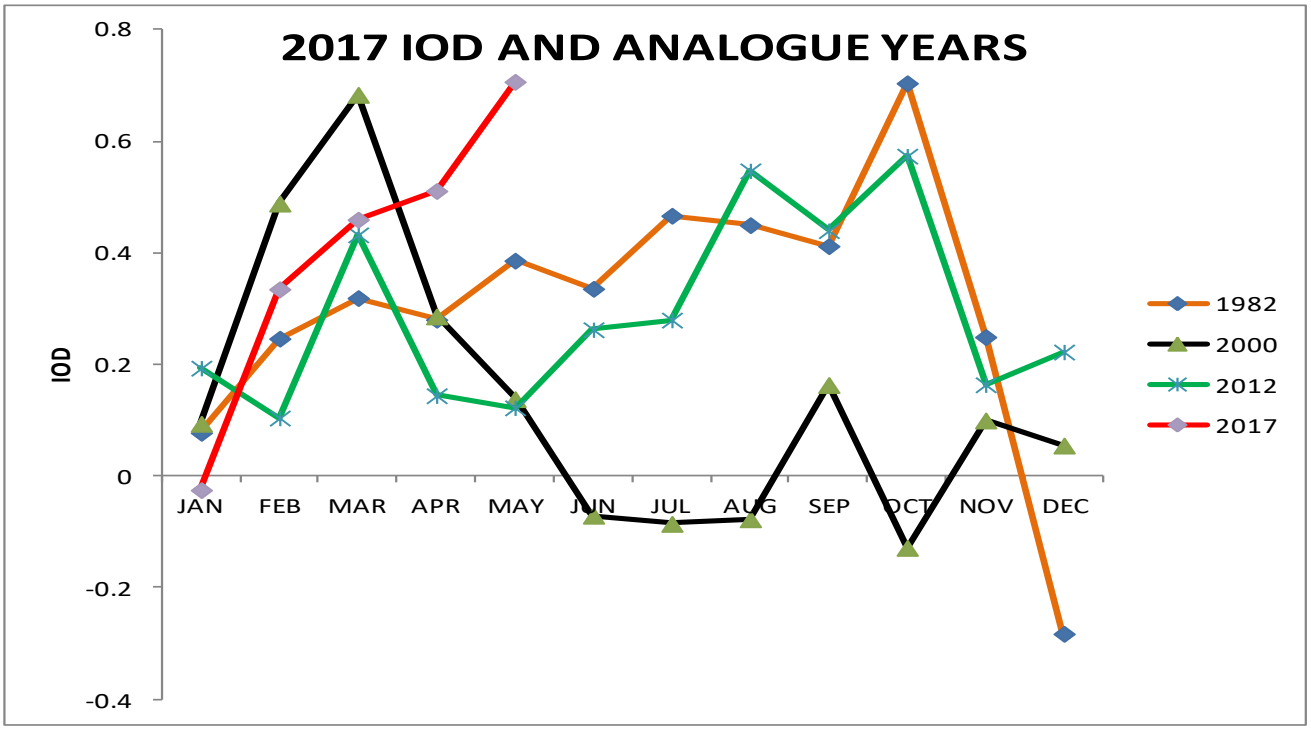

Figure 6a: The Indian Ocean Dipole (IOD) during 2016/17 and analogue years (*Data Source:NOAA*).

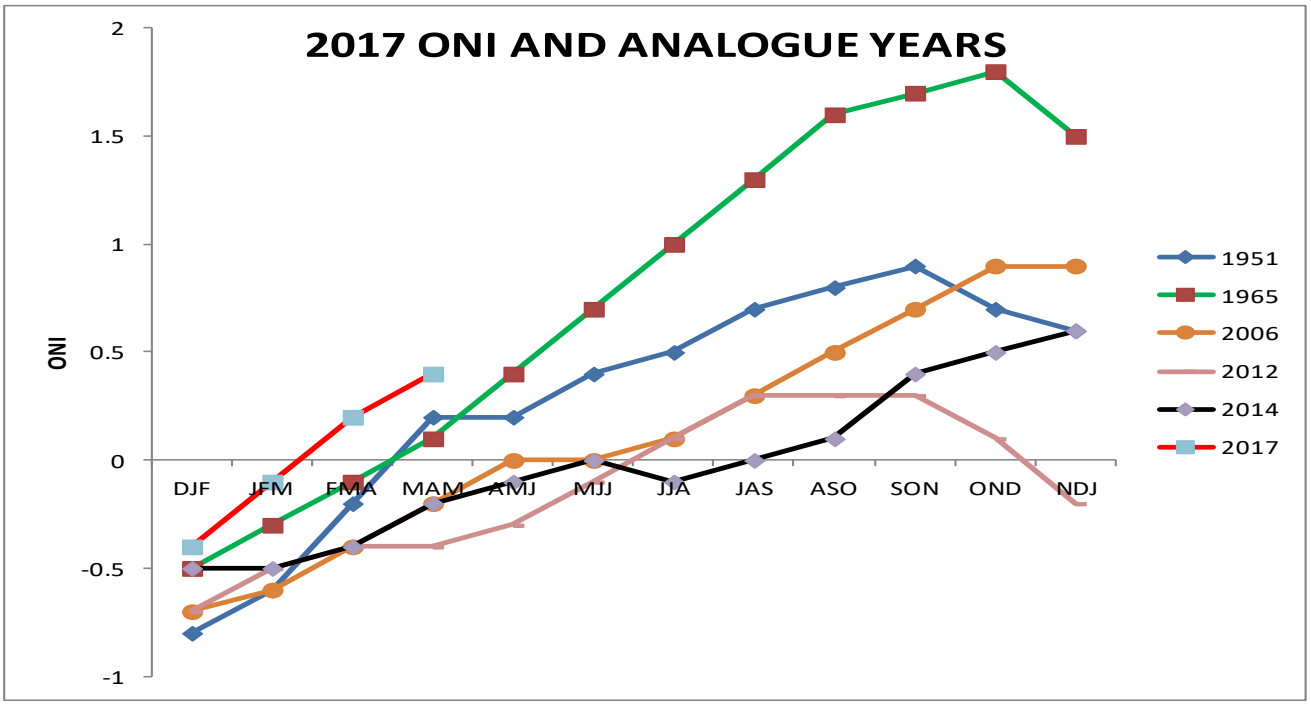

Figure 6b: The Oceanic Nino Index (ONI) during 2016/17 and analogue years (*Data Source:NOAA*).

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5. CLIMATE OUTLOOK FOR JULY 2017

The rainfall forecast for July

In the month of July 2017, rainfall is likely to be concentrated over southern part of Sudan; over much of South Sudan; around western and central Eritrea; in western and central parts of Ethiopia, over north and eastern parts of Uganda; in western and coastal Kenya; around south-eastern part of Somalia; in northern Rwanda; and also in eastern Tanzania. The rest of GHA region which include northern parts of Sudan; south and eastern and southern Ethiopia; northern, central, and southwestern Somalia; over northern, eastern and south-central parts of Kenya; and over much Burundi; and much Tanzania are likely to record less than 10mm of rainfall (Figure 7a). Areas around southern Eritrea, areas covering much of Djibouti, eastern part of South Sudan, southern and eastern parts of Ethiopia, part of northern Uganda, in north, central and southwestern Somalia, and in central, north and northeastern parts of Kenya have higher chances of recording below the average rainfall. With the rest of the GHA region having better chances of near average to above average rainfall conditions.

Temperature forecast for July 2017

Average temperature of more than 24°C is likely to be observed in much of Sudan, south Sudan, Somalia, Djibouti, Eritrea, northeast and east of Ethiopia, in northern 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 central and southwestern parts of Tanzania. The rest of the GHA is likely to record average temperature of between 18°C and 24°C in the month of July 2017. Much of the GHA region has higher chances of recording warmer than the average mean temperature for the month of July, except for the eastern and south-central parts of Sudan, much of Eritrea, northern parts of

Ethiopia, northern and central parts of Somalia, northeast and southern Uganda, in western, central and north-central Kenya, over northern Rwanda, and in north and south of Tanzania, which are likely to record average to cooler than the average mean temperature in the month of July 2017.

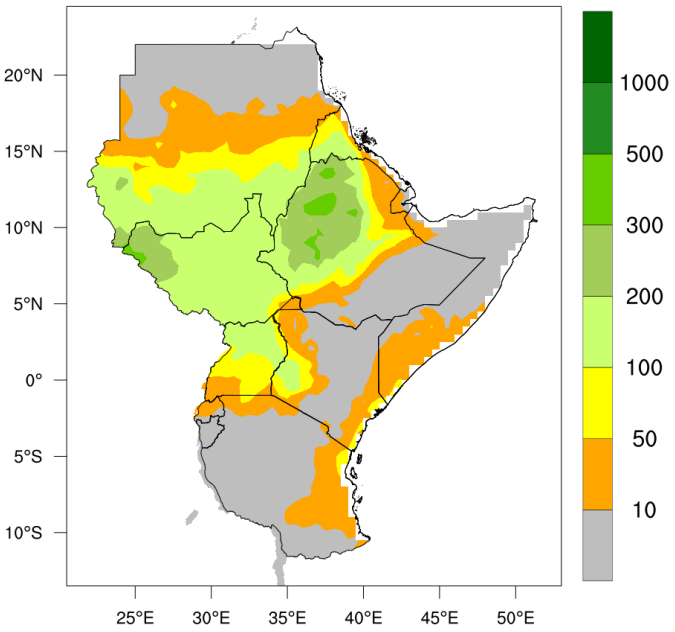

Figure 7a: Rainfall total forecast for July 2017 *Data: WRF Model).*

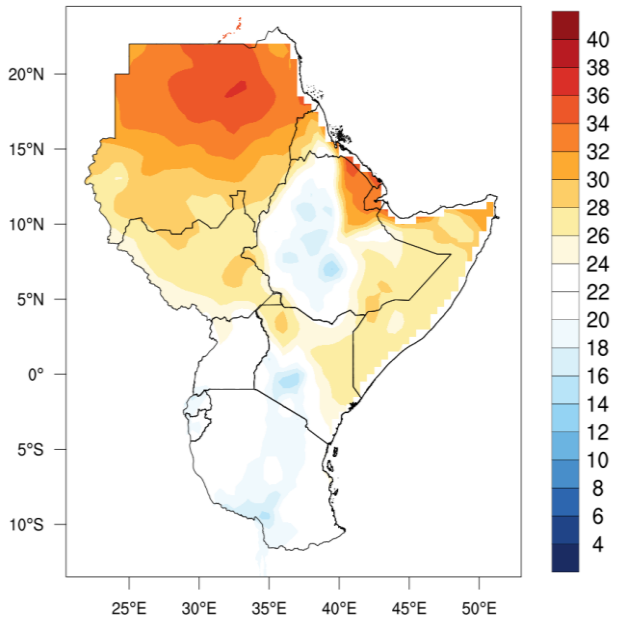

Figure 7b: Mean temperature forecast for July 2017 *Data: WRF Model).*

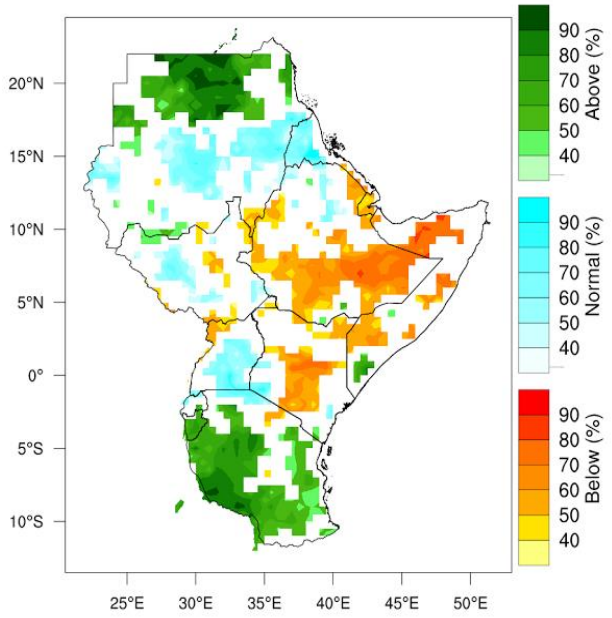

Figure 7c: Rainfall terciles probability forecast for July 2017 *Data:GCMs ensemble).*

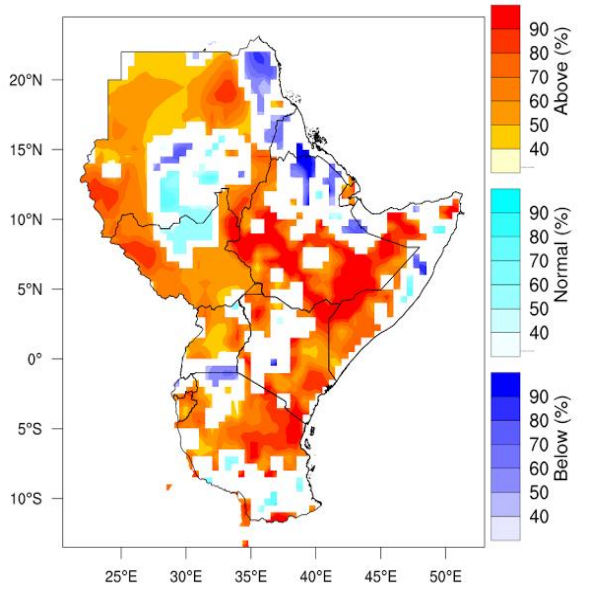

Figure 7d: Mean temperature terciles probability forecast for July 2017 *Data: GCMs ensemble).*

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 May 2017 indicated that vegetative conditions showed deterioration as compared to the long term average in areas around northwest and southern parts of South Sudan; around southern and eastern parts of Ethiopia; over northern parts of Uganda; over much of Kenya; in central and southern areas of Somalia; and over parts of northern Tanzania. Improvement in vegetative conditions as compared with the long term average was observed in areas around west, central and northeast of South Sudan, in northwestern and in eastern part Ethiopia; in isolate areas west, northeast and southeast of Kenya; in some part south of Somalia; and in northeastern and southern part of Tanzania. The rest of the Greater Horn of Africa indicated little or no change in vegetative conditions. (Figure 8).

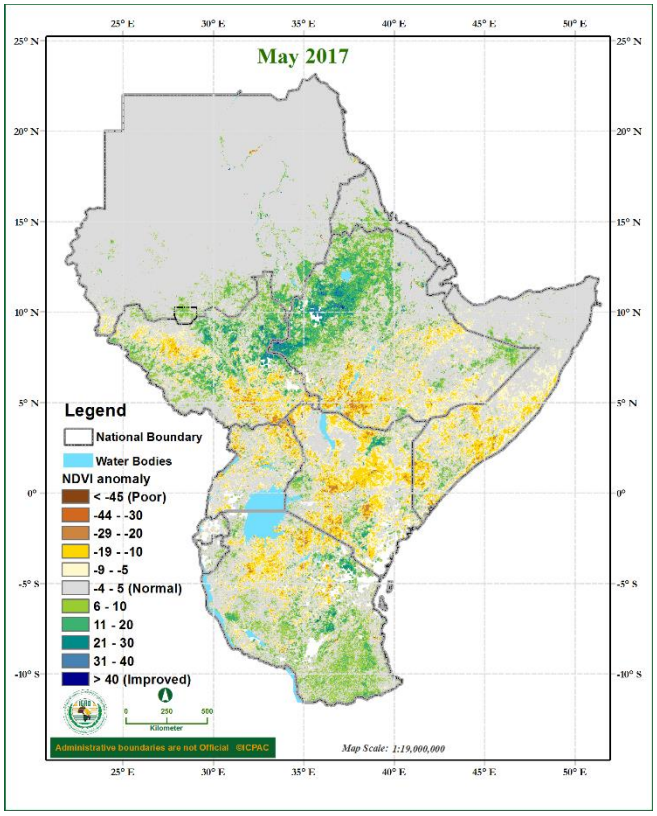

Figure 8: Normalized Difference Vegetation Index (NDVI) of May 2017 over the Greater Horn of Africa (Data Source: USGS NASA)

Impacts of observed climate conditions during May 2017

During the month of May 2017 several places in the Greater Horn of Africa still continued to experience depressed rainfall related impact that has led to continued water stress, poor pasture and crop performance, increased risk of food insecurity, and associated increase in food prices, reported in some areas round the equatorial and southern part of northern sector sector of the GHA; there is reported cases of climate related diseases.

However some areas in the 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 and central Kenya) sectors of GHA during the month of May 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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