IGAD Climate Prediction and Applications Centre Monthly Climate Bulletin, Climate Review for June and Forecasts for August 2018

1. INTRODUCTION

This bulletin reviews the June 2018 climate conditions over the Greater Horn of Africa (GHA) region and highlights the August 2018 rainfall and temperature forecasts together with the socio-economic impacts associated with both the observed and the forecasted climate conditions.

There are six sections in this bulletin. The major highlights from both the observed and expected climate conditions are outlined in section2. Section 3 discusses the climate patterns that prevailed in the month of June 2018, while the dominant weather systems are discussed in section 4. In section 5, the August 2018 climate forecasts over the GHA are presented. The socio-economic impacts associated with the observed climatic conditions and those expected from August 2018 climate forecasts are outlined in section 6.

For referencing within this bulletin, the GHA is generally divided into three sub-sectors: The equatorial sector lying approximately between 5^{o}N and 5^{o}S latitude, with the northern and southern sectors occupying the rest of the northern and southern part of the region respectively.

2. HIGHLIGHTS

Rainfall was mainly concentrated in the southwestern and central part of the northern sector, as well as western and coastal parts of the equatorial sector of the GHA. Some areas in southwestern and southeastern part of the northern sector of the GHA experienced below normal rainfall. Much of the rest of the equatorial and southern part of the northern sector of the GHA experienced near normal or above normal rainfall during the month of June 2018(Figure 2 and 3).

Average maximum temperature cooler than the long-term average was experienced mainly in south central part of the northern sector and central part of the equatorial sector. Much of Sudan and southwest of Tanzania experienced average maximum temperature warmer than the long-term average(Figure 4a).The northern part of the northern sector of the GHA recorded mean minimum temperature warmer than the long term average while a few parts of central equatorial sector and northwest of southern sector of the GHA recorded cooler than the long term average minimum temperature for the month of June 2018.

Some places in the northern sector of the GHA experienced high rainfall amounts leading to flooding and related impacts. The general rainfall condition in the western and central equatorial, and southern part of the northern sector of GHA resulted in improvement in water and pasture conditions resulting to good prospects for crop, and livestock productivity for the month of June 2018.

In June 2018, the Oceanic Nino Index (ONI), one of the primary indices used to monitor the El Nino-Southern Oscillation (ENSO)showed a neutral signal similar to that of1996and 2006 (Figure 7a) and Indian Ocean Dipole (IOD) indicated neutral phase (Figure 7b).The ONI and the IOD are forecasted to persist in their neutral phases in the coming few months to the third quarter of 2018.

In the month of August 2018, rainfall is expected to be concentrated over much of western and central parts of the northern sector and western part of the equatorial sector of the GHA (Figure 8a).

3. CLIMATE PATTERNS IN JUNE 2018

The rainfall amounts (Figure 1) and performance as compared to the long-term mean (1981-2010) using percentage of long term average (Figure 2) and Standardized Precipitation Index (SPI) (Figure 3) for June 2018 are provided in this section. The minimum (Figure 4b) and maximum (Figure 4b) temperature anomalies relative to Long term mean (2008-2016) are also given.

Rainfall performance

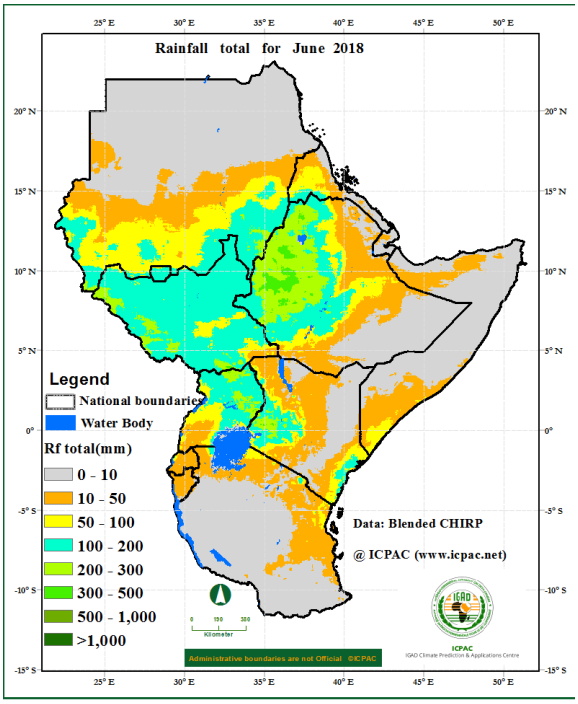

Figure 1: Spatial distribution of rainfall during the month of June 2018*(Data Source : Blended CHIRPS)*

Sudan, South Sudan, and Ethiopia: several parts of South Sudan, western and central Ethiopia, and a few areas in southern part of Sudan recorded rainfall of between50mm and 200mm.Western parts of Ethiopia recorded rainfall of between 300mm and 500mm. Some parts of south central Sudan, southwestern South Sudan and eastern Ethiopia recorded below normal rainfall conditions, with much of the rest of these areas recording above normal or normal rainfall conditions.

Kenya and Uganda: western and coastal parts of Kenya and much of Uganda except for southwestern areas recorded rainfall of between 50mm and 300mm. Most of these areas experienced moderately wet to severely wet rainfall conditions.

Eritreaand Somalia: Southwestern Eritrea and

southeastern Somalia received rainfall of between 10mm and 100mm of rainfall. Several parts of Eritrea experienced above normal rainfall conditions, while several parts of Somalia experienced below normal rainfall conditions.

Djibouti, Burundi and Rwanda: much of Burundi and Rwanda, and some parts of Djibouti recorded rainfall of between 10mm and 50mm. Most of these areas experienced above normal rainfall.

Much of the rest of the GHA recorded less than 10mm of rainfall that resulted to generally dry or below normal rainfall conditions.

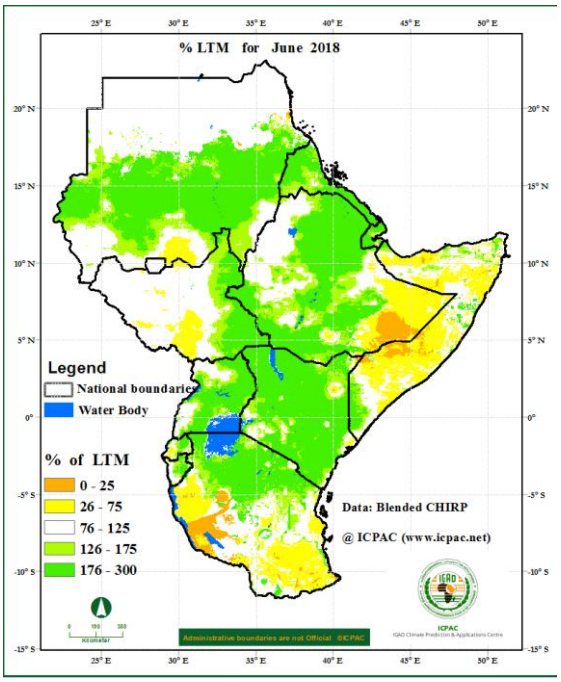

Figure 2: Percentage of average rainfall for June 2018*(Data Source: Blended CHIRPS)*

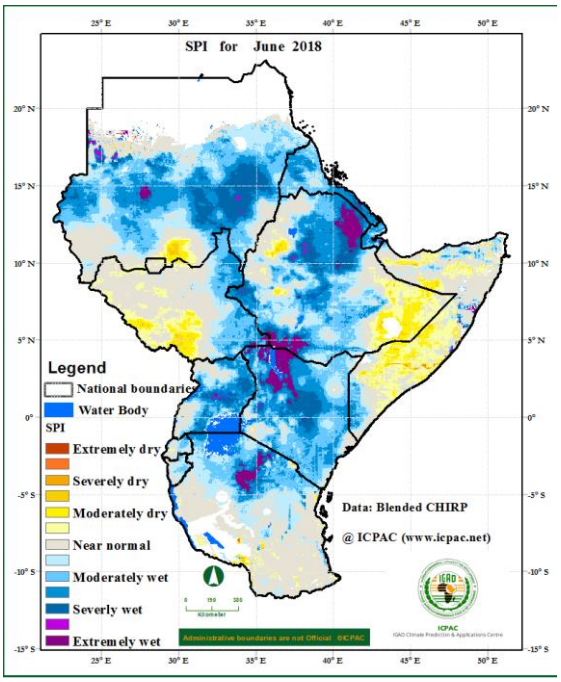

Figure 3: Standardized Precipitation Index for June 2018*(Data Source: Blended CHIRPS)*

Temperature Conditions

Sudan, and South Sudan: much of South Sudan experienced maximum temperatures warmer than the average. The northern part of Sudan also experienced minimum temperatures warmer than the average.

Eritrea Djibouti and Tanzania: a few areas in southern part of Tanzania recorded maximum temperatures warmer than the long-term average. Several parts of Eritrea and Djibouti recorded minimum temperature warmer than the average, while northwestern Tanzania recorded cooler than the average minimum temperature.

Ethiopia Kenya Uganda: central and southern parts of Ethiopia, northwest and central parts of Kenya, northeast and south-central Uganda recorded cooler than the average for maximum temperature. North eastern Ethiopia experienced warmer than the average

condition for minimum temperature, while cooler than the average condition for minimum temperature was experienced in northwestern Kenya.

Much of the rest of the GHA recorded near the average condition for maximum and minimum temperature.

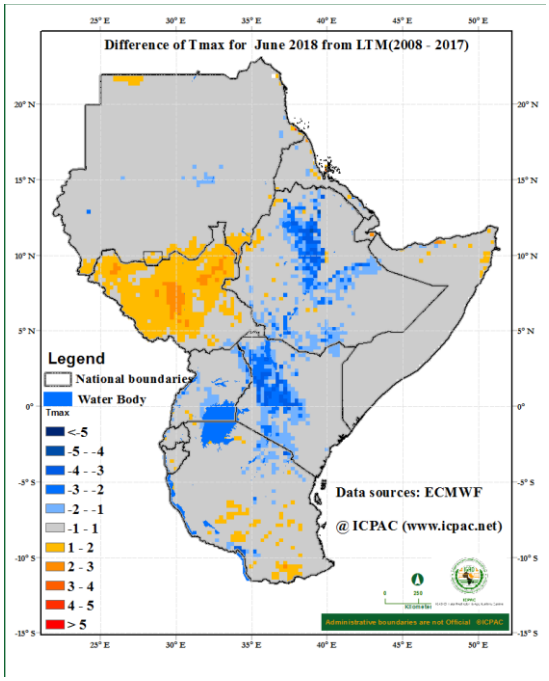

Figure 4a: Maximum temperature anomalies for June 2018 *f*rom LTM, 2008-2017 (*Data Source: ECMWF)*

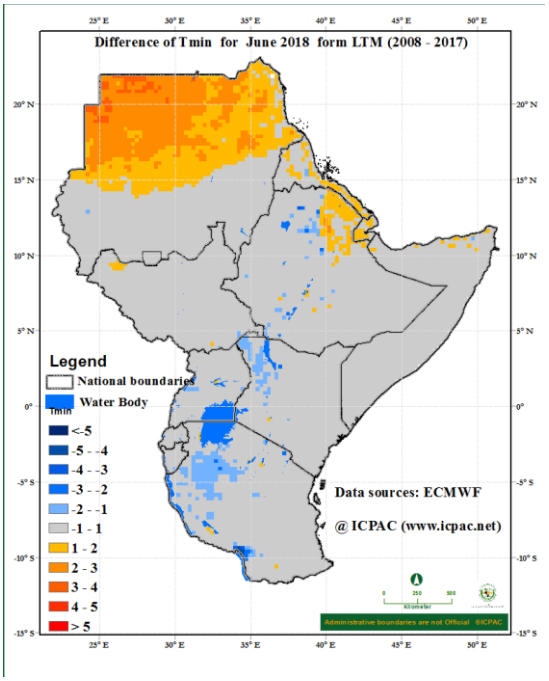

Figure 4b: Minimum temperature anomalies for June 2018 from LTM, 2008-2017 *(Data Source: ECMWF)*

Vegetation Condition Indicators

The Normalized Difference Vegetation Index (NDVI) anomaly for June 2018(Figure 9) indicates that:

Sudan, South Sudan, Ethiopia, Somalia, Uganda and Tanzania: Southern part of Sudan, eastern South Sudan, parts of central and eastern Ethiopia, southern part of Somalia, in a few areas in eastern, central and southeastern Uganda, and over several parts of Tanzania experience improved vegetative conditions as compared to the long-term average. A few places in northwestern South Sudan and western Ethiopia experienced deterioration in vegetative conditions as compared to the long-term average.

Kenya: several parts of Kenya indicated improved vegetative conditions as compared to the long-term average.

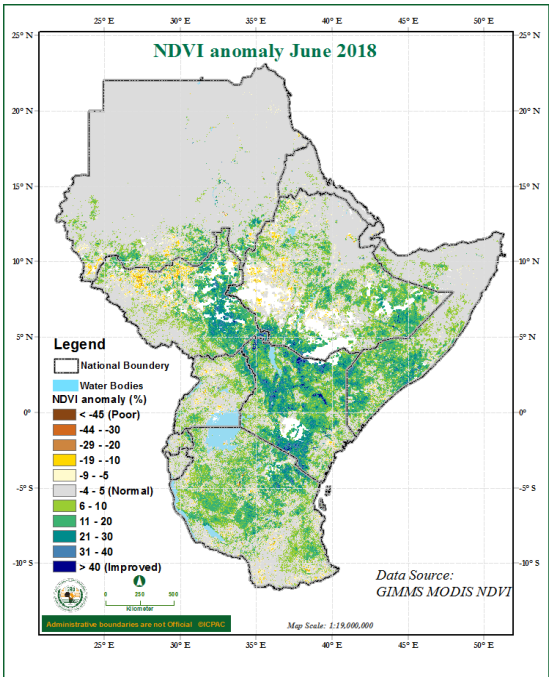

Figure 9: Normalized Difference Vegetation Index (NDVI) for June 2018*(Data Source: USGS-NASA)*

Much of the rest of the GHA region indicated little or no change in vegetative conditions as compared to the long-term average for the month of June 2018. (Figure 9).

4. STATUS OF THE CLIMATE SYSYEMS

The Sea Surface Temperature (SST) anomaly during the period of 10thJuneto 16th June 2018 showed that central equatorial Pacific Ocean stretching towards the eastern equatorial Pacific region (Niño 4 to Niño 1&2 areas),was dominated by cooler to near average SST anomaly, with the area stretching from central towards western equatorial Pacific Ocean showing warmer than average SST (Figure 5), this situation currently presents a neutral Oceanic Nino Index (ONI) and neutral El Niño Southern Oscillation (ENSO) phase (Figure 7) nearly similar to the 2010 period. Models show a likelihood of persistent neutral ENSO through to the third quarter of the year 2018. Near average to cooler than average SST conditions dominated equatorial Indian Ocean(Figure 5). This pattern has presented a neutral phase of the Indian Ocean Dipole(IOD) (Figure 7). Models show a persistence of a neutral phase of the IOD through to the mid of the third quarter of the year2018.

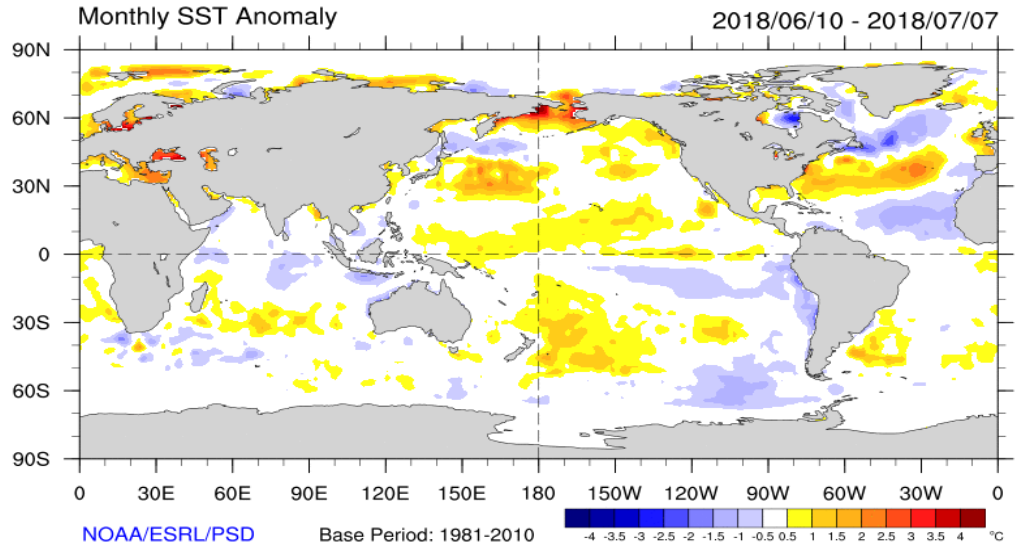

Figure 5: Sea Surface Temperature anomalies for the period 10thJune 2018to 7thJuly 2018 (*Source: NOAA/ESRL/PSD***)**

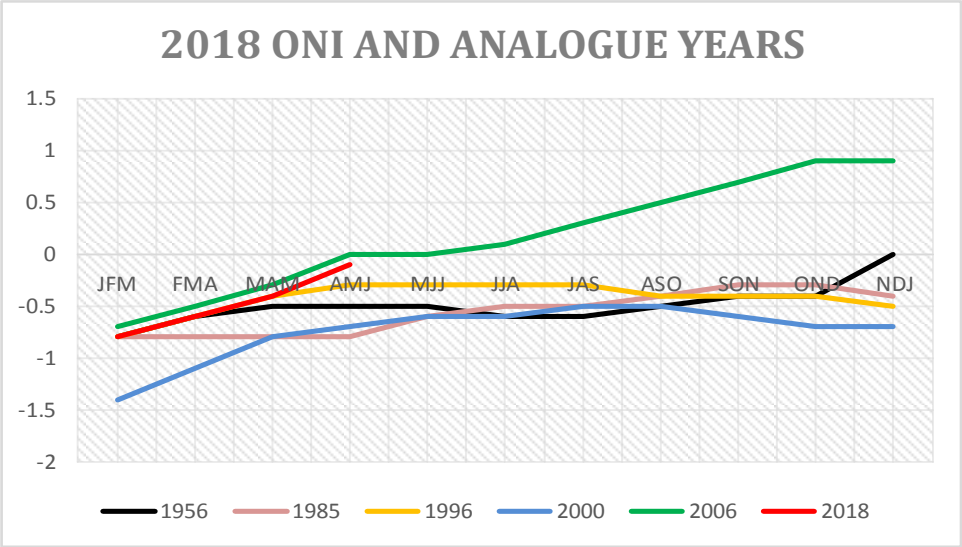

Figure 6: The Indian Ocean Dipole (IOD) during 2018 and analogue years.

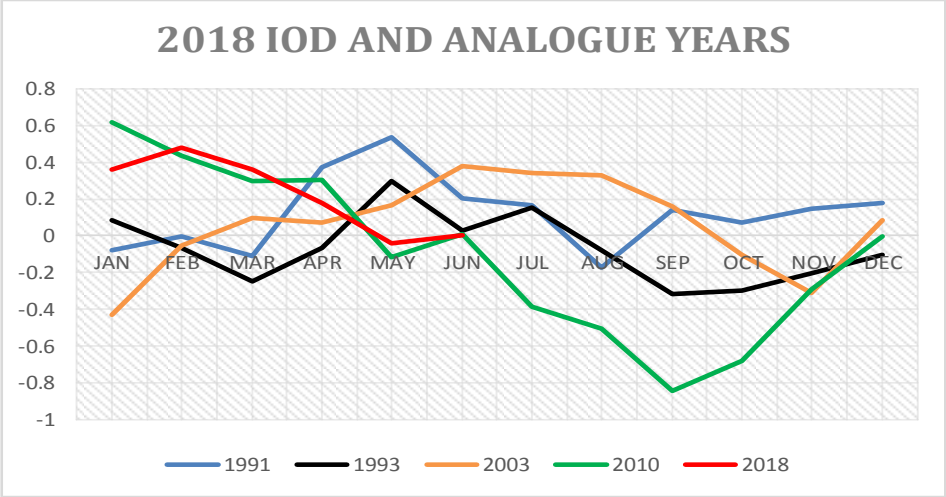

Figure 7: The Oceanic Nino Index (ONI) during 2017/18 and analogue years.

5. CLIMATE OUTLOOK FOR AUGUST 2018

The climate outlook for temperature and precipitation for the month of August 2018 are generated from the GHA region customizedWRF model.

The August 2018 rainfall forecast

During the month of August 2018,rainfall will be concentrated over much of South Sudan, southern parts of Sudan, southwest Eritrea, western, north and central Ethiopia, and in parts of Uganda, and western Kenya. Some parts of Djibouti, northern and southeast Somalia, and coastal Kenya are also likely to record rainfall activities (Figure 8a).Much of the areas covering northern Sudan, central and coastal Eritrea, south and eastern Ethiopia, north and eastern Kenya, north and central Somalia, and much of Rwanda, Burundi and Tanzania are likely to record small amount of rainfall or remain generally dry.

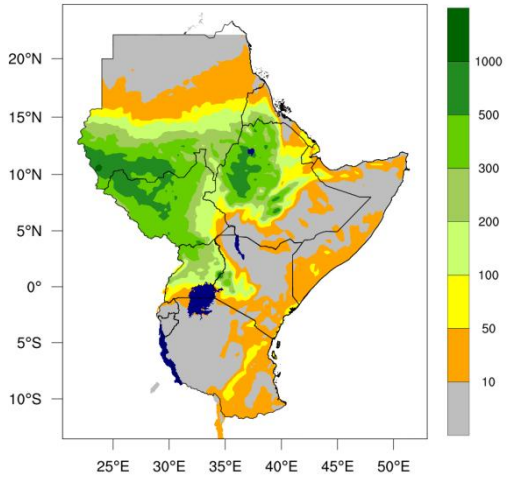

Figure 8a: Forecast of rainfall total for August 2018

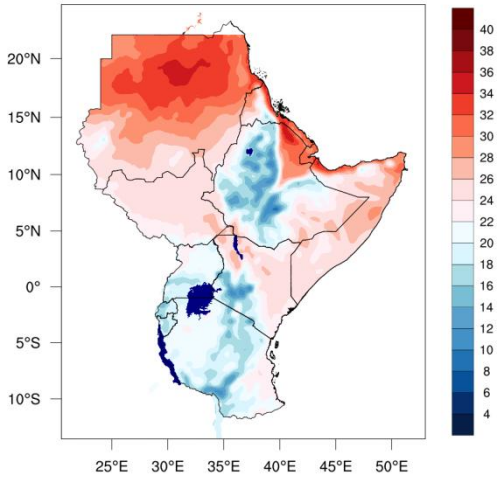

Figure 8b: Mean temperature forecast for August 2018.

August 2018 Temperature forecast

Average temperature of cooler than 22°C is likely to be observed over western and central Ethiopian highlands, southern parts of Uganda, western and central Kenya, over much of Rwanda, Burundi, and over much of Tanzania. Much of the rest of the GHA is likely to record average temperatures warmer than 22°C(Figure 8b).

6. IMPACTS ON SOCIO-ECONOMIC SECTORS

The socio-economic impacts associated with observed climate conditions are provided below.

Impacts of observed climate conditions during June 2018

During the month of June 2018,several areas especially in western and central equatorial sector and western and southern parts of the northern sector of the GHA experienced good rainfall performance leading to improved pasture and water conditions during June 2018.Some areas in the northern sector experienced flooding conditions which led to loss of lives and livelihood, destruction to infrastructure, and reported cases of water related diseases.

Potential impacts for August 2018 climate outlook

In the month of August 2018, the forecasted climate is likely to result to improved water availability, improved crop and pasture conditions leading to good prospects for crop and livestock performance especially in parts of the northern sector of the GHA. South western parts of Sudan, northern part of South Sudan, and western Ethiopia are expected to experience high rainfall amounts which might lead to localised flooding and the associated impacts.

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