I C P A C

IGAD Climate Prediction and Applications Centre Monthly Climate Bulletin, Climate Review for April 2018

1. INTRODUCTION

This bulletin reviews the April 2018 climate condition over the Greater Horn of Africa (GHA) region and highlights the June 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 discussed the climate patterns that prevailed in the month of April 2018, while the dominant weather systems are discussed in the section 4. In section 5, the June 2018 climate forecasts over the GHA are presented. The socio-economic impacts associated with the observed climatic conditions and those expected from June 2018 climate forecasts are outlined in the last section.

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

2. HIGHLIGHTS

Rainfall experienced mainly in the equatorial sector, southern and southeastern part of the northern sector, and the southern sector of the GHA. Much of the equatorial sector, southern sector, and southern and southeastern parts of the northern sector of the GHA recorded above normal rainfall conditions during the month of April 2018 (Figure 2 and Figure 3).

Several parts of the equatorial sector and including South Sudan and northern Tanzania was warmer than the average condition for maximum temperature, while northwestern Sudan and western part of Ethiopia was cooler than the average conditions for maximum temperature (Figure 4a). Warmer than the average condition for minimum was experienced mainly in western Sudan. Much of the rest of GHA recorded near the average condition for maximum and minimum temperature during the month of April 2018.

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

In April 2018, the Oceanic Nino Index (ONI), one of the primary indices used to monitor the El Nino-Southern Oscillation (ENSO) signal showed a neutral signal similar to the 1995/1997 period (Figure 7a) and Indian Ocean Dipole (IOD), which is the signal of interaction between the ocean and the atmosphere in the Indian Ocean indicated neutral phase (Figure 7b). The ONI and the IOD is forecasted to persist in a neutral phase in the coming few months to the third quarter of 2018.

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

3. CLIMATE PATTERNS IN APRIL 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 April 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

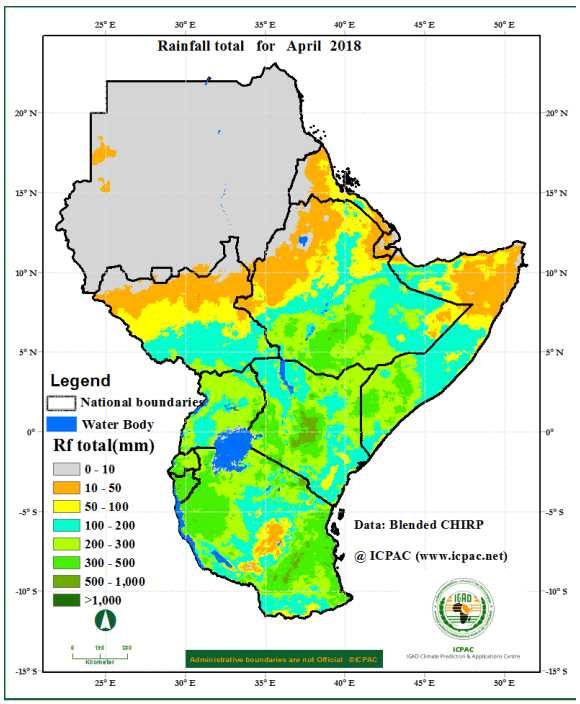

Figure 1: Spatial distribution of rainfall during the month of April 2018*(Data Source : Blended CHIRPS)*

Burundi, Rwanda, Uganda, Kenya, and Tanzania: several parts of these areas recorded rainfall exceeding 100mm. several parts of Uganda western, central and northeastern Kenya, much of Rwanda and Burundi and northwestern and southern and eastern Tanzania recorded rainfall of between 200mm and 1000mm, with central parts of Kenya and a few places in north and eastern Tanzania recording between 500mm and 1000mm. Much of these areas recorded moderately wet to severely wet rainfall conditions.

South Sudan, Ethiopia, and Somalia: southern part of South Sudan, much of southern and central Ethiopia, and central and southern parts of Somalia recorded rainfall of between 100mm and 500mm with southern Ethiopia and southern Somalia recording between 200mm and 500mm of rainfall. Much of the rest of these areas recorded less than 100mm of rainfall. Southern and eastern South Sudan, eastern and southern parts of Ethiopia, and in several parts of Somalia experienced near normal to severely wet rainfall conditions. A few areas in northwestern South Sudan and northwestern Ethiopia experienced near normal to moderately dry conditions. Northern Somalia and northeastern Ethiopia indicated an improved performance in rainfall conditions, while parts of western Ethiopia and northwestern South Sudan showed deterioration in rainfall performance as compared with March 2018.

Eritrea, and Djibouti: Much of these areas recorded between 10mm and 50mm of rainfall, except for western Eritrea which recorded less than 10mm. Southern Eritrea and much of Djibouti recorded above normal rainfall conditions.

Much of the rest of the GHA recorded less than 10mm of rainfall, and these had generally dry or below normal rainfall conditions.

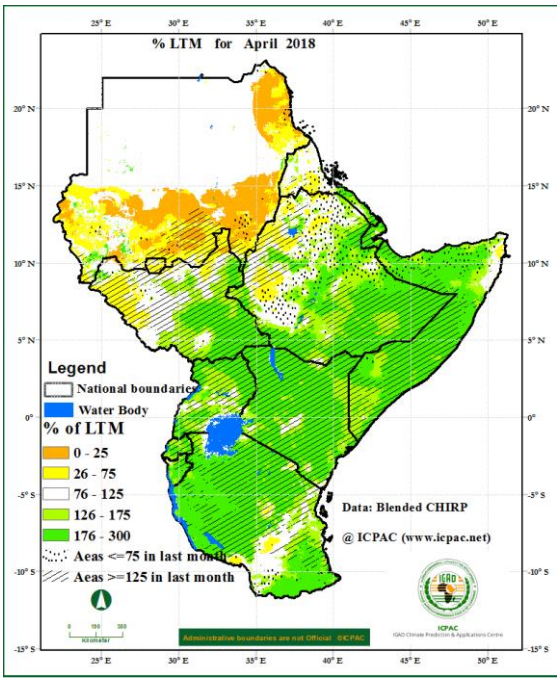

Figure 2: Percentage of average rainfall for April 2018 *(Data Source: Blended CHIRPS)*

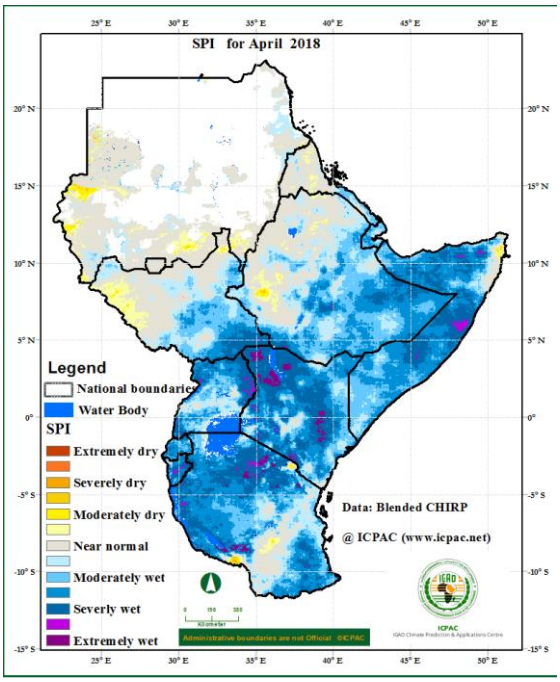

Figure 3: Standardized Precipitation Index for April 2018 *(Data Source: Blended CHIRPS)*

Temperature Conditions

The maximum temperature condition experienced during the month of April 2018 was that:

Sudan, and Ethiopia: northwestern part of Sudan and northwestern Ethiopia experienced conditions cooler than the average for maximum temperature. A few areas in southeast and east of Ethiopia experienced warmer than the average conditions for maximum temperature.

South Sudan, Uganda, Kenya, Somalia and Tanzania: Warmer than the average maximum temperature was recorded in much of South Sudan, several parts of Kenya, northern Uganda, central and southern Somalia, and northern Tanzania.

Much of the rest of the GHA including Eritrea, Djibouti, Rwanda, and Burundi experienced near the average condition for maximum temperature.

The Minimum temperature condition experienced during the month of April 2018 was that:

Sudan, and Eritrea: Eastern Sudan, and southwestern part of Eritrea conditions warmer than average for minimum temperature was recorded.

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

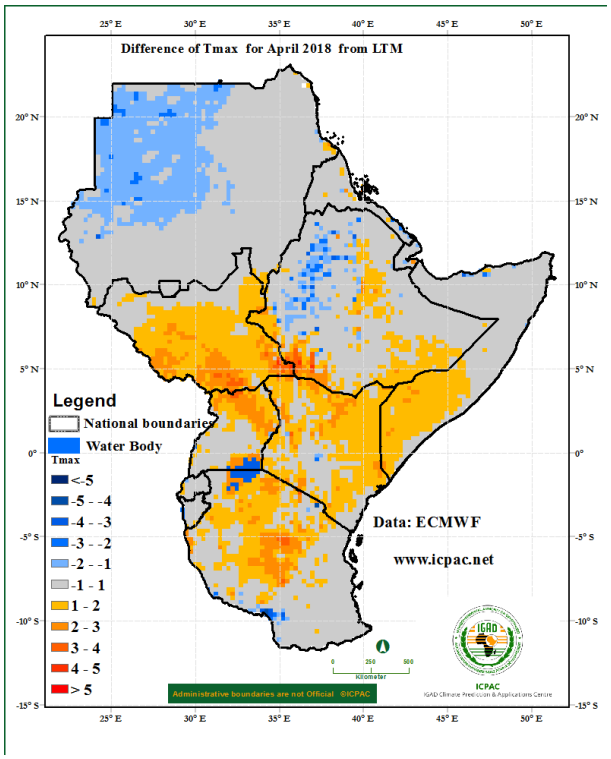

Figure 4a: Maximum temperature anomalies for April 2018 *f*rom LTM, 2008-2017 (*Data Source: ECMWF)*

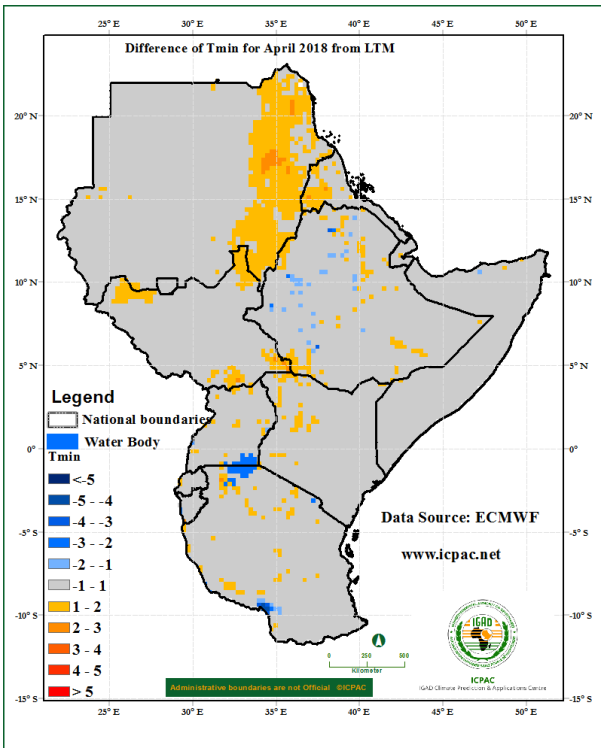

Figure 4b: Minimum temperature anomalies for April 2018 from LTM, 2008-2017 *(Data Source: ECMWF)*

Vegetation Condition Indicators

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

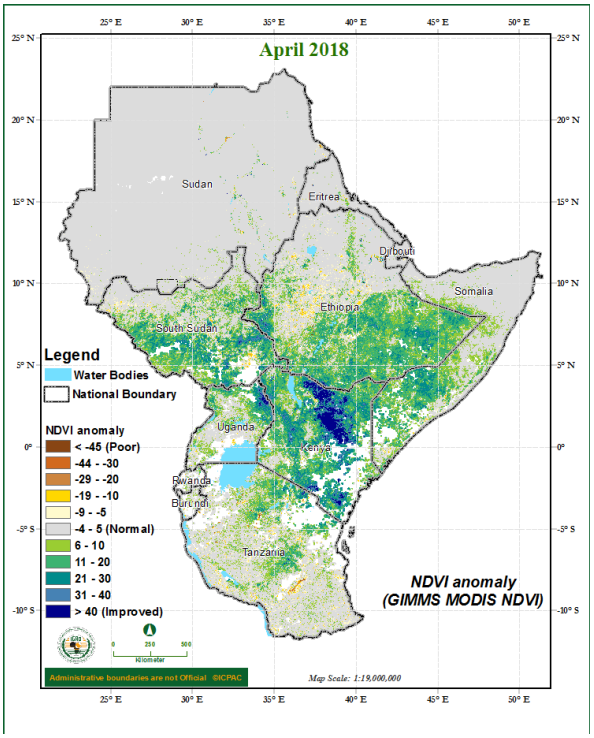

Figure 9: Normalized Difference Vegetation Index (NDVI) for April 2018 *(Data Source: USGS-NASA)*

South Sudan, Ethiopia, Uganda, Kenya, Somalia and Tanzania: Several areas in South Sudan, southern Ethiopia, northern and eastern Uganda, much of Kenya, parts of central and southern Somalia, and northern Tanzania experience improved vegetative conditions as compared to the long term average.

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 April 2018. (Figure 9).

4. STATUS OF THE CLIMATE SYSYEMS

The Sea Surface Temperature (SST) anomaly during the month for the period of 1st to 28th April 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 slightly negative Oceanic Nino Index (ONI) and neutral La Niña phase (Figure 7) nearly similar to the 1995/1996 period models show a likelihood of persistent neutral ENSO through to the mid of the year 2018. Near average to warmer than average SST conditions dominated western sides of equatorial Indian Ocean with average to cooler than the average SST conditions over the eastern equatorial Indian Ocean (Figure 5). This pattern has presented a positive but 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.

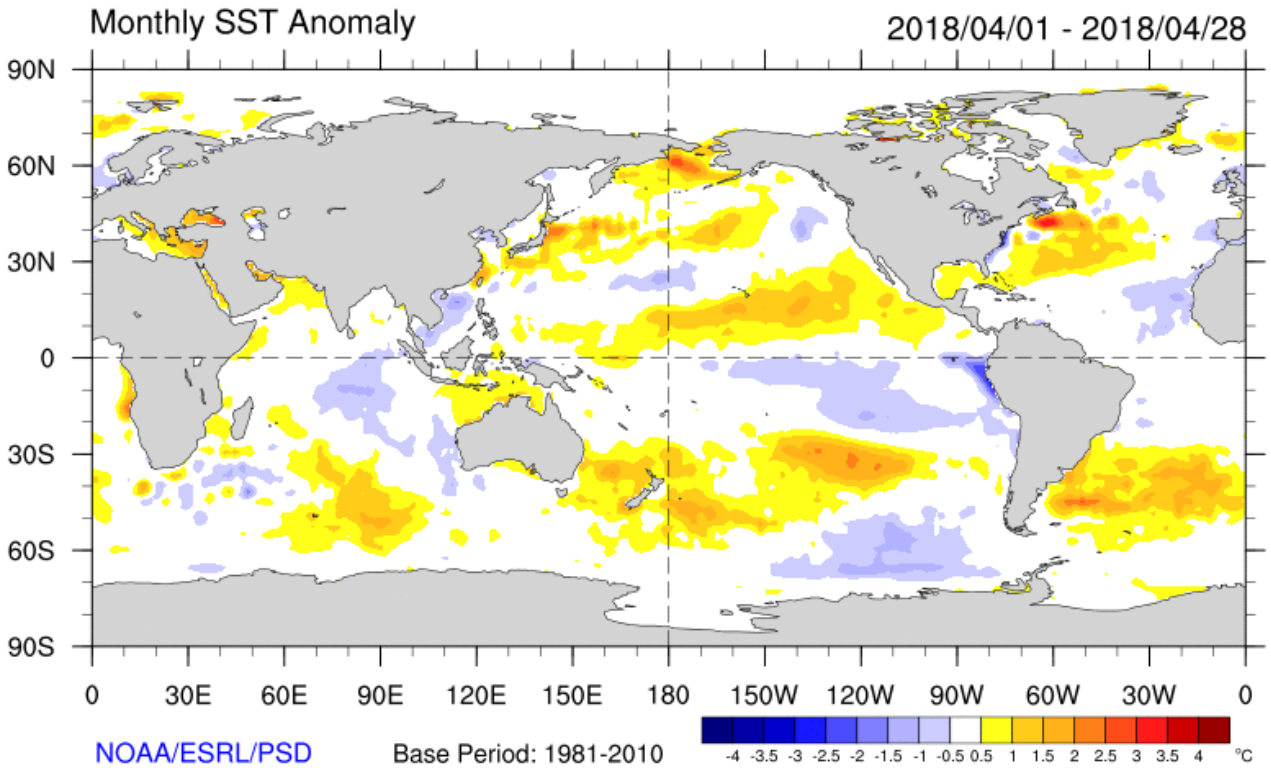

Figure 5: Sea Surface Temperature anomalies for the period first April 2018 to 28 April 2018 (*Source: NOAA/ESRL/PSD***)**

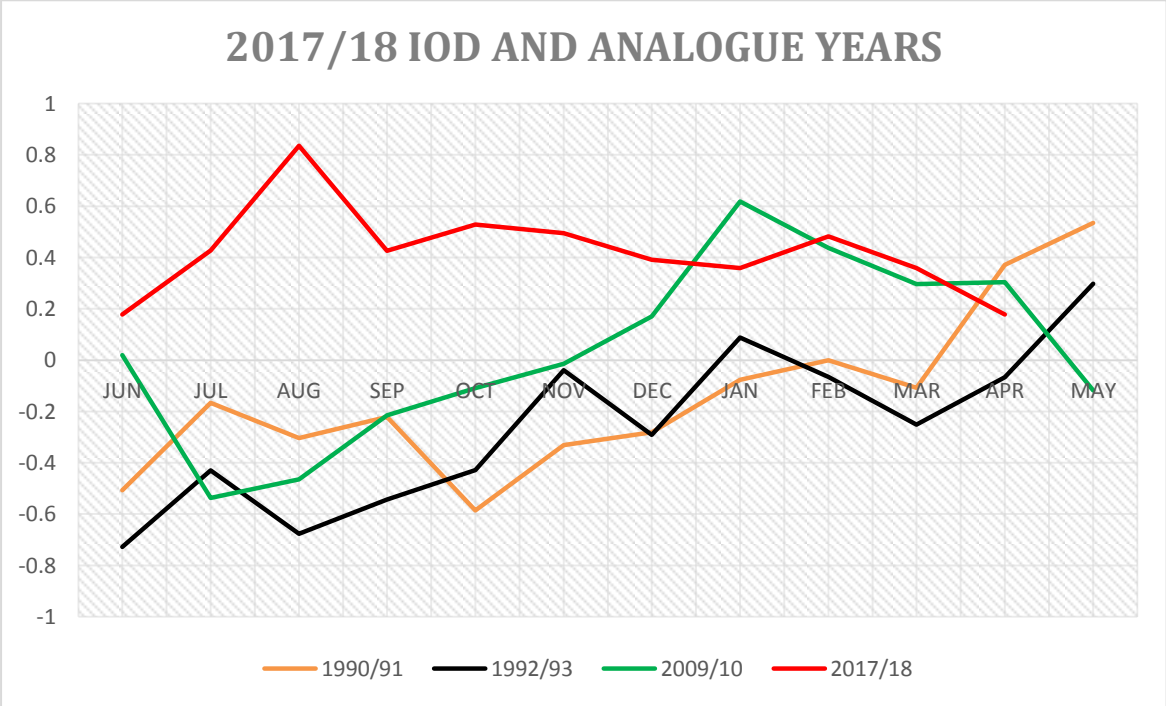

Figure 6: The Indian Ocean Dipole (IOD) during 2017/18 and analogue years.

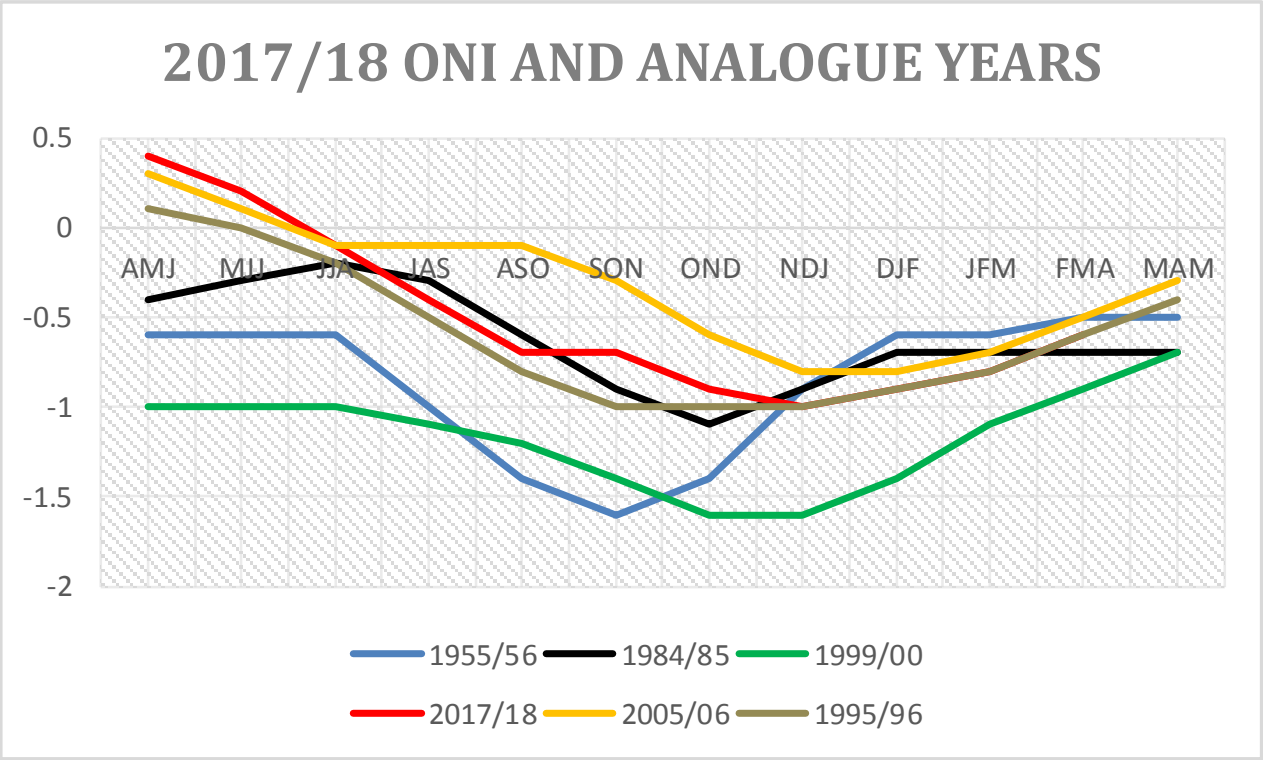

Figure 7: The Oceanic Nino Index (ONI) during 2017/18 and analogue years.

5. CLIMATE OUTLOOK FOR JUNE 2018

The climate outlook for temperature and precipitation for the month of June 2018 are generated from the GHA region customized WRF model.

The June 2018 rainfall forecast

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

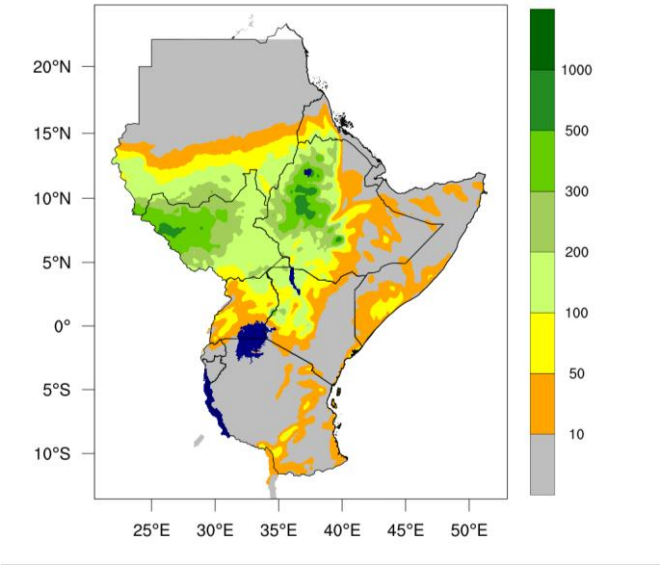

Figure 8a: Forecast of rainfall total for June 2018

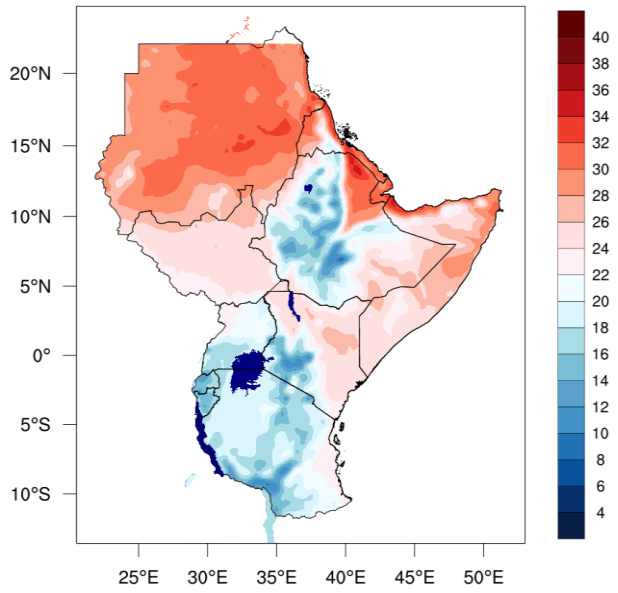

Figure 8b: Mean temperature forecast for June 2018.

The June 2018 Temperature forecast

Average temperature of cooler than 22°C is likely to be observed over western and central Ethiopian highlands, several parts of Uganda, western and central Kenya, over much of Rwanda, Burundi, and 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 in April 2018 and those from the June 2018 rainfall and temperature forecast are provided below.

Impacts of observed climate conditions during April 2018

During the month of April 2018, several areas especially in the central and southeastern parts of the northern sector, central and southwestern parts of the equatorial sector as well as northwestern parts of the southern sector of the GHA experienced good rainfall performance leading to improved pasture and water conditions during April 2018. Some areas in the equatorial and southern sector including parts of Kenya, Uganda, Rwanda and Tanzania experienced flooding conditions which led to loss of lives and livelihood, destruction to infrastructure, and reported cases of water related diseases.

Potential impacts for June 2018 climate outlook

In the month of June 2018, the forecasted climate is likely to result to improved water availability, crop and pasture conditions leading to good prospects for crop and livestock performance especially in parts of the northern sector of the GHA. Parts of western Kenya, South Sudan, and western

Ethiopia are expected to experienced high rainfall amounts which might lead to localised flooding and the associated impact.

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