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June 2019 Bulletin Issue

Monthly Climate Bulletin

Climate Review for May 2019 and Forecasts for July 2019

1. INTRODUCTION

This bulletin reviews the May 2019 climate conditions over the Greater Horn of Africa (GHA) region and highlights the July 2019 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 Section 2. Section 3 discusses the climate patterns that prevailed in the month of May 2019, while the dominant weather systems are discussed in Section 4. In Section 5, the July 2019 climate forecasts over the GHA are presented. The socio-economic impacts associated with the observed climatic conditions and those expected from July 2019 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°N and 5°S latitude, while the northern and southern sectors lie in the north and south of the equatorial region respectively.

2. HIGHLIGHTS

Rainfall was recorded in parts of the northern sector, and western and eastern parts of the equatorial sector of the GHA during the month of May. A few places in western Ethiopia, northern and eastern Kenya and northwest Tanzania recorded below normal rainfall, while much of the rest of the GHA recorded near or above normal rainfall, during the month of May 2019 (Figure 2 and 3).

Several parts of the GHA recorded maximum and minimum temperature that was warmer than or near the climatological mean. However, the western and southeastern parts of the northern sector recorded minimum temperature that was cooler than the climatological mean, while the southeastern parts of the northern sector recorded maximum temperature that was cooler than the climatological mean during the month of May 2019.

Flooding and related impacts was reported in a few areas in western and coastal equatorial sector, western parts of the northern sector and eastern parts of the southern sector of the GHA.

By May 2019, the Oceanic Nino Index (ONI), a primary index used to monitor the El Nino-Southern Oscillation (ENSO) maintained a positive signal (Figure 7a) denoting an El Nino condition. The Indian Ocean Dipole (IOD) indicated a weak positive index (Figure 7b). The ONI and IOD are forecasted to persist in positive phases over much of the third quarter of 2019.

In the month of July 2019, forecast is showing higher chances for depressed rainfall over northern Ethiopia and South Sudan, and increased probabilities for wetter conditions in northern Sudan (Figure 9).

3. CLIMATE PATTERNS IN MAY 2019

The rainfall amounts (Figure 1) and performance as compared to the climatological mean (1981-2010) using percentage of long term average (Figure 2) and Standardized Precipitation Index (SPI) (Figure 3) for May 2019 are provided in this section. The minimum (Figure 4b) and maximum (Figure 4b) temperature anomalies relative to Long term mean (1981-2010) are also shown.

Rainfall performance

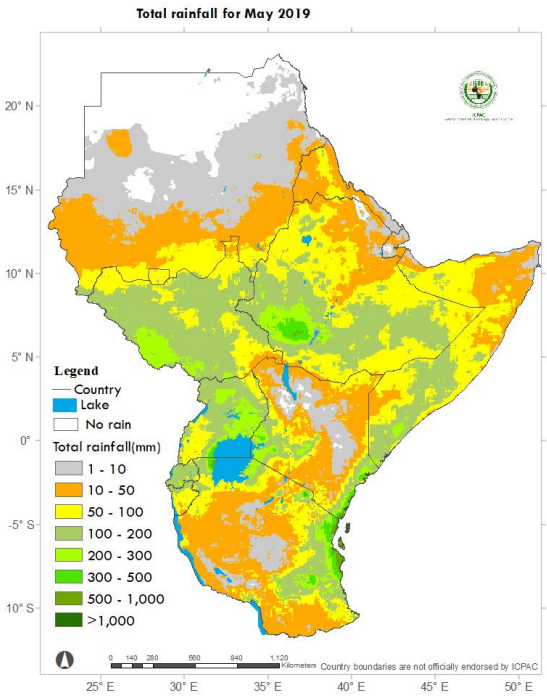

Figure 1: Spatial distribution of rainfall during the month of May 2019*(Data Source: Blended CHIRPS)*

Ethiopia, South Sudan, Somalia, Uganda and Rwanda: several parts of South Sudan and Rwanda, southern parts of Ethiopia, northern, central and southwestern Uganda, and southeastern parts of Somalia recorded rainfall amounts not exceeding of between 100mm and 300mm. Much of the rest of these areas recorded less than 100mm with northeastern Ethiopia and northeastern Somali recording less than 50mm. In a few areas in western Ethiopia and southeastern South Sudan rainfall was less than the mean for the month of May.

Kenya, Burundi and Tanzania: the northern and eastern parts of Kenya, and central and western parts of Tanzania recorded less than 50mm of rainfall. The Lake Victoria region of Kenya and Tanzania, Western, central and coastal Kenya, and eastern parts of Tanzania recorded rainfall of between 50mm and 300mm with much of Rwanda recording rainfall of between 50mm and 100mm. The northern and eastern parts of Kenya, and northwest parts of Tanzania recorded below normal.

Sudan, Eritrea, and Djibouti: the southern parts of Sudan, some parts of Djibouti, and the western parts of Eritrea recorded between 10mm and 100mm of rainfall. Much of the rest of these areas recorded total rainfall amounts not exceeding 10mm. A few areas in the southwest and southeastern part of Sudan recorded below normal rainfall. Much of the rest of these areas recorded near normal or remained generally dry except for a few areas in Djibouti, and southwest, south-central and eastern Sudan and extending to western Eritrea which recorded above normal rainfall

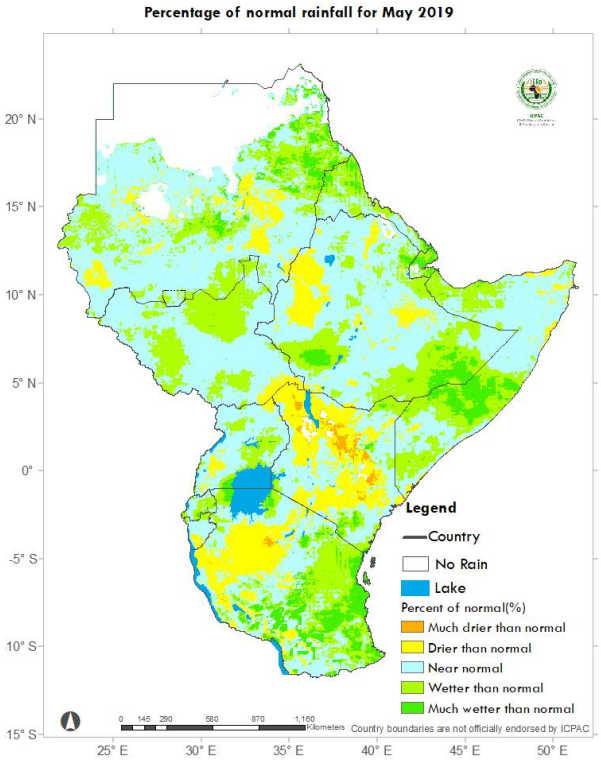

Figure 2: Percentage of average rainfall for May 2019 *(Data Source: Blended CHIRPS)*

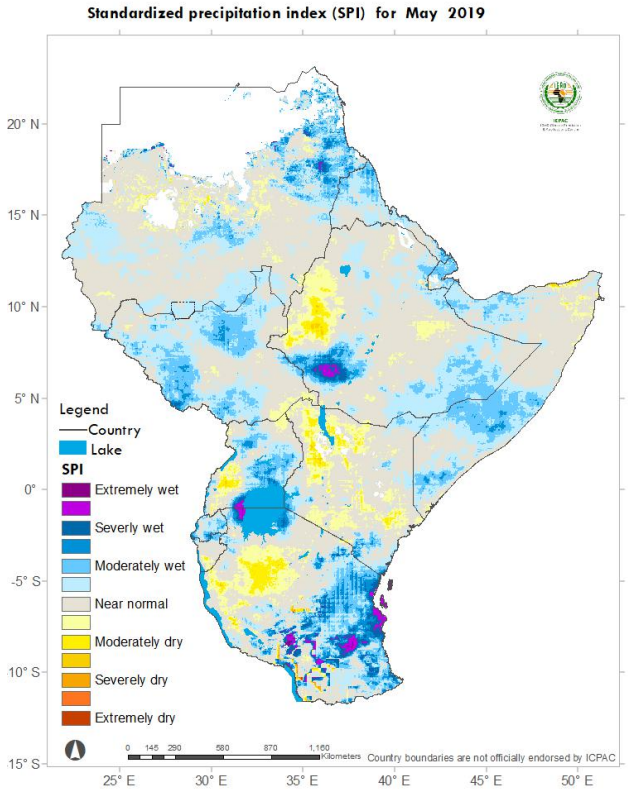

Figure 3: Standardized Precipitation Index for May 2019 *(Data Source: Blended CHIRPS)*

Temperature Conditions

Sudan: western and southwestern Sudan recorded minimum temperature that was cooler than the climatological mean. Much of the rest of the GHA recorded maximum and minimum temperature that was warmer than or near the climatological mean for the month of May.

Ethiopia, and Somalia: northeastern part of Ethiopia and northern Somalia recorded maximum and minimum temperature that was cooler than or near the climatological mean.

Much of the rest of the GHA recorded maximum and minimum temperatures warmer than or near the climatological mean.

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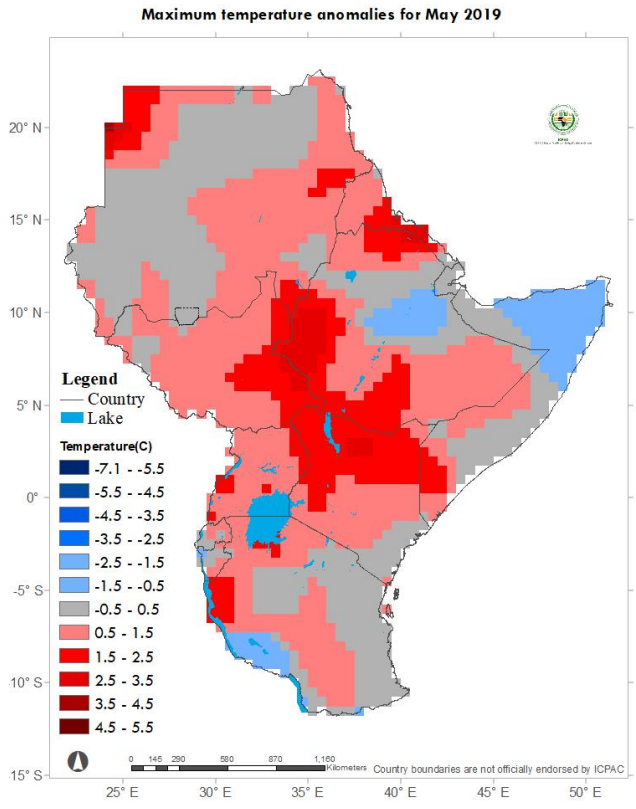

Figure 4a: Maximum temperature anomalies for May 2019 from LTM, 1981-2010 (*Data Source: Data Source: provided by the NOAA-NCEP CPC . GTS gridded data*)

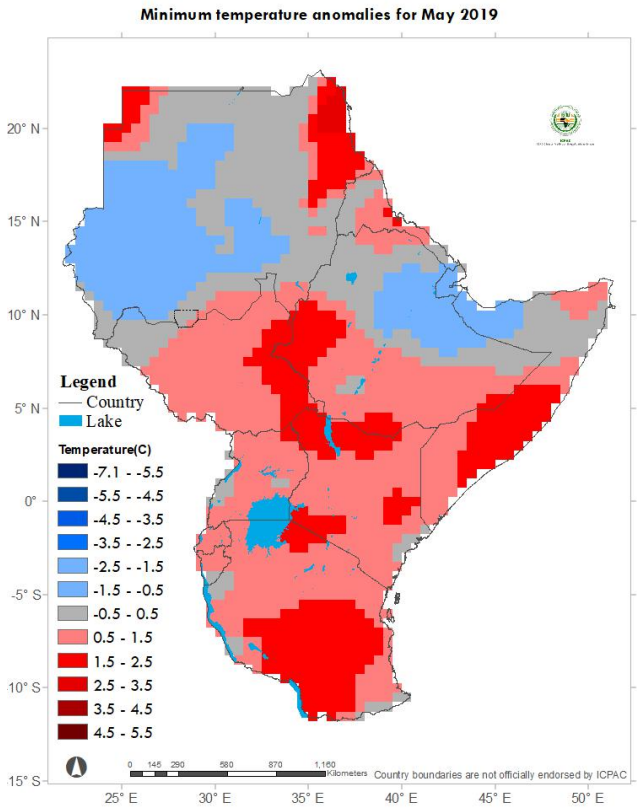

Figure 4b: Minimum temperature anomalies for May 2019 from LTM, 1981-2010 *(Data Source: Data Source: provided by the NOAA-NCEP CPC . GTS gridded data)*

Vegetation Condition Indicators

The Normalized Difference Vegetation Index (NDVI) anomaly for May 2019 (Figure 5) indicates that:

South Sudan, and Ethiopia: indications of deterioration in vegetative condition as compared to the mean was observed in south and central parts of South Sudan, and southern and eastern parts of Ethiopia. However, some areas in the western and central Ethiopia and northwest South Sudan showed signs of improvement in vegetative conditions.

Uganda, Kenya, and Somalia: several parts of north and western Uganda, Kenya, and southern part of Somalia showed signs of deterioration in vegetative conditions as compared with the mean.

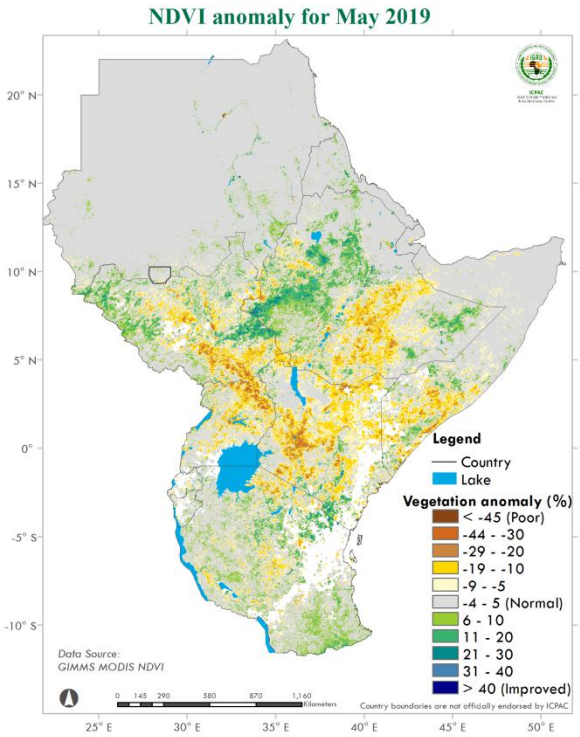

Figure 5: Normalized Difference Vegetation Index (NDVI) for May 2019 *(Data Source: USGS-NASA)*

Much of the rest of the GHA region indicated little or no change in vegetative conditions as compared to the average for the month of May 2019 (Figure 5).

4. STATUS OF THE CLIMATE SYSTEMS

The Sea Surface Temperature (SST) anomaly during the period of May 2019 showed that equatorial Pacific Ocean was dominated by warmer than average SST (Figure 6), this situation currently presents a positive, Oceanic Nino Index (ONI) (Figure 8) and an El Niño condition. Models forecasting El Niño Southern Oscillation ENSO event show a likelihood of a persistent weak El Niño phase through much of the third quarter of 2019. Near average to warmer than average SST conditions dominated the western equatorial Indian Ocean (Figure 6). This pattern has presented a positive signal although the Indian Ocean Dipole (IOD) still persist in the neutral phase (Figure 7). Models show a likelihood of a transition into a positive phase of the IOD within the third quarter of 2019.

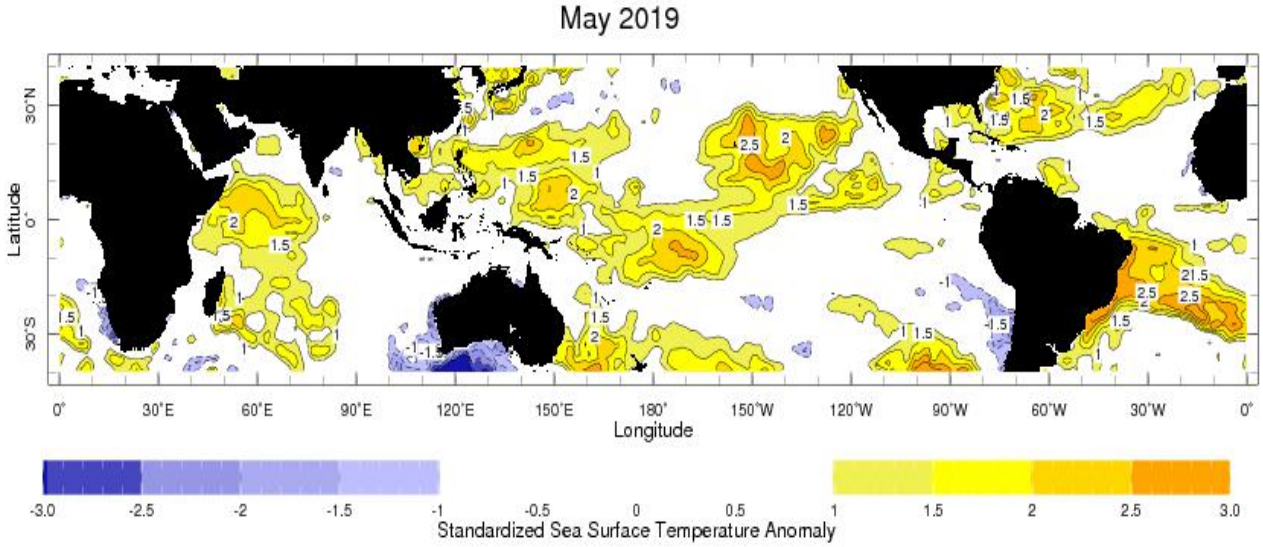

Figure 6: Sea Surface Temperature anomalies for the period of May 2019

(*Source: NOAA NCEP***)**

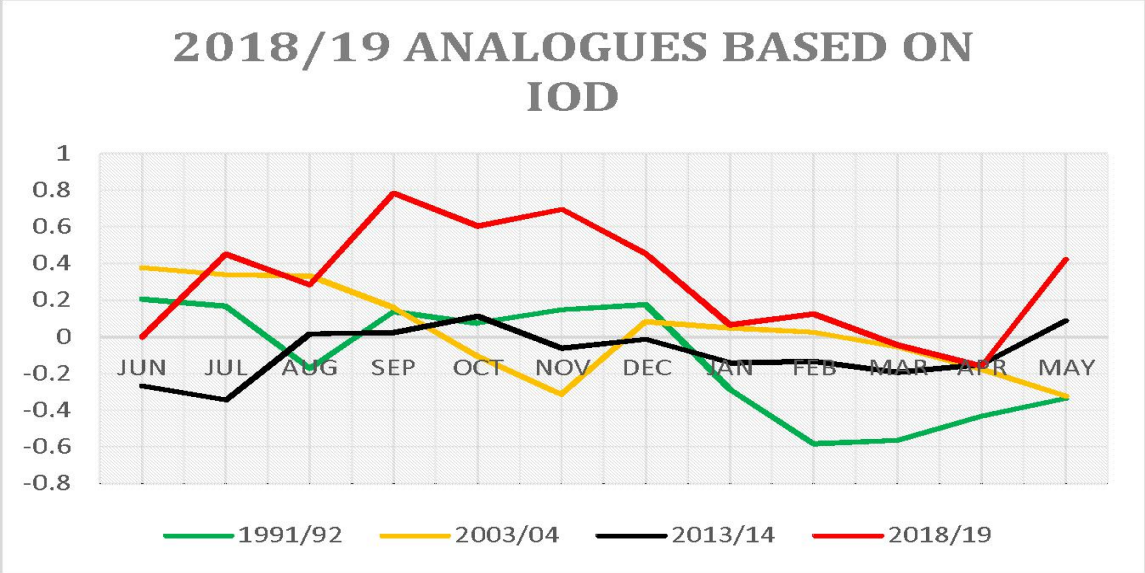

Figure 7: The Indian Ocean Dipole (IOD) during 2019 and analogue years.

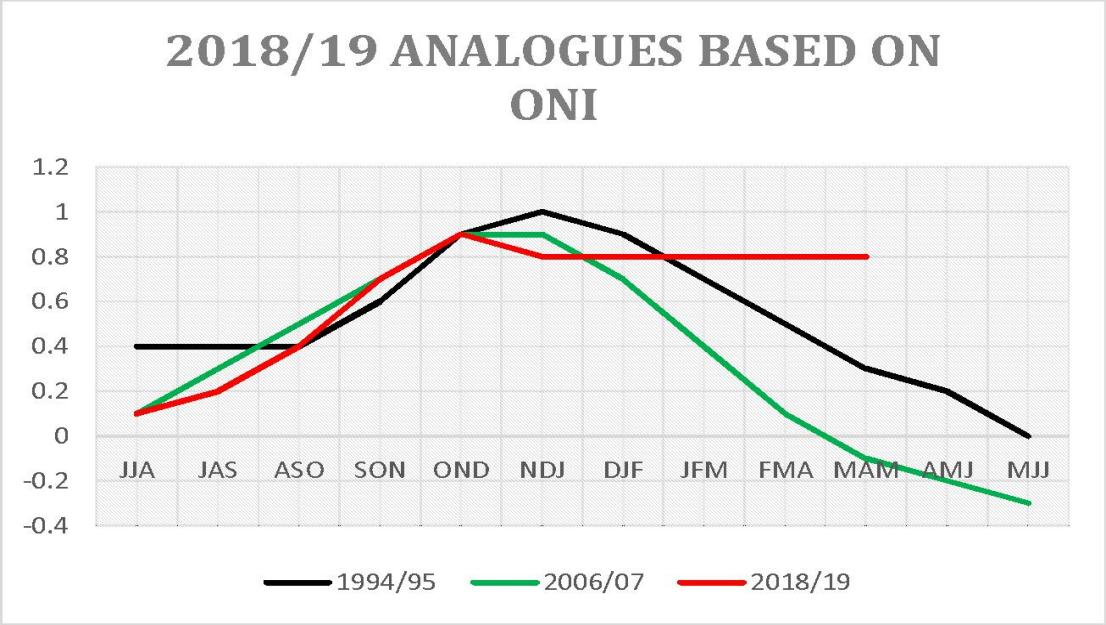

Figure 8: The Oceanic Nino Index (ONI) during 2019 and analogue years.

5. CLIMATE OUTLOOK FOR JULY 2019

The latest global climate model ensemble forecast for July 2019 (Figure 9) indicates high chances of drier than average conditions over South Sudan, western Uganda, and northern and eastern Ethiopia, and parts of eastern Sudan. On the other hand, parts of Sudan and western Eritrea are likely to experience wetter conditions. Off-season rains are anticipated over some parts of equatorial and southern GHA, which are normally dry and cold in July. Warmer mean temperatures are expected in most regions during the coming months.

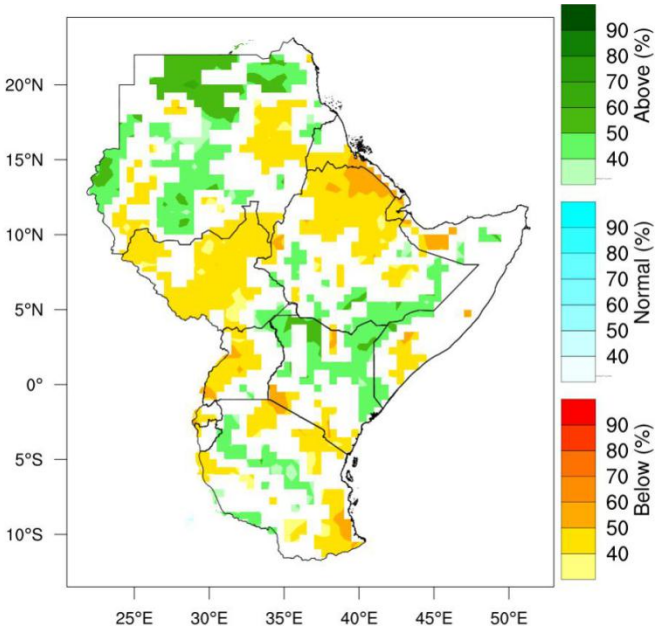

Figure 9: Probability-based rainfall forecast for July 2019.

6. IMPACTS ON SOCIO-ECONOMIC SECTORS

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

Impacts of observed and forecasted climate conditions

During the month of May 2019, some places in eastern and central parts of the equatorial sector continued to experienced dry conditions increase the likelihood of poor crop, water, and livestock performance.

Considering that the month of July is one of the most significant months contributing to the June-September season in northern sector of the GHA, the drier than average rainfall forecast over northern Ethiopia and South Sudan should be closely monitored. ICPAC will provide regional updates on a regular basis while the National Meteorological and Hydrological Services (NMHSs) will provide detailed national and sub-national updates.

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