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10 DAY CLIMATOLOGICAL SUMMARY AND IMPACTS FOR THE SECOND DEKAD (11-20) OF NOVEMBER 2017 TOGETHER WITH FORECAST FOR THE FIRST DEKAD (1-10) OF DECEMBER 2017

1.0 Introduction

This bulletin reviews the climatic conditions observed during the second dekad (11-20) of November 2017, , and highlights the climate forecast for the first dekad (1-10) of December 2017 and the associated climate impacts over the Greater Horn of Africa (GHA).

For referencing within this bulletin, the Greater Horn of Africa (GHA) is generally subdivided into three sub-sectors: The equatorial sector lying approximately between -5º and 5º latitude, with the northern and southern sectors occupying the rest of the northern and southern parts of the region respectively

2.0 Highlights

During the second dekad of November 2017 rainfall activity concentrated over much of the western and eastern equatorial sector, in the western and eastern parts of southern parts of the northern sector, and over the northwestern and eastern parts of the southern sector of the of the Greater Horn of Africa (GHA).

The rainfall performance was in the near to below average (1981-2010) in most places in the GHA, except for a few places in South Sudan, eastern Ethiopia and northern Kenya that recorded above the average rainfall.

Warmer than the average (2008-2016) maximum temperatures was recorded in western parts of the northern sector, in parts of western and southeastern equatorial sector, as well as in much of the central and southern parts of the southern sector of the GHA during the second dekad of November 2017. Much of the rest of the GHA recording near the average maximum temperature, except for some areas in eastern Ethiopia, and central Somalia that recorded cooler than the average for maximum temperature.

Warmer than the average (2008-2016) conditions for the minimum temperature was observed mainly in much of the western part of the northern sector of the GHA. Much of the rest of the GHA recorded near the average for the minimum temperature conditions during the second dekad of November 2017, except for some areas in eastern Ethiopia, and in northern and central Somalia that recorded cooler than the average for minimum temperature.

Rainfall forecast for the first dekad of December 2017 shows that rainfall is likely to be concentrated in much of the southern sector of the GHA. Much of the northern sector and over several parts of the equatorial sector of the GHA are likely to record little or no rainfall.

Many areas of the GHA is likely to record warm average temperature exceeding 20°C except for northern part of Sudan, western and central highlands of Ethiopia, western and central Kenya, southern Uganda, Rwanda, and in southwestern part of Tanzania which are likely to record average temperatures cooler than 20°C during the first dekad of December.

3.0 Observed rainfall situation during the second dekad (11-20) of November 2017

Figure 1a shows the total rainfall distribution, Figure 1b shows the percent of the long-term average rainfall, and Figure 1c shows the standardized precipitation index (SPI) which is an indicator used to show the number of standard deviations that observed cumulative precipitation deviates from the climatological average, over the GHA region during the second dekad of November 2017. These are generated from the blending of (Climate Hazard Infra-Red Precipitation) CHIRP data and observed data.

Rainfall Distribution and Severity

During the second dekad of November 2017 the total maximum range of rainfall of between 100-200mm was recorded in central part of Kenya. Rainfall exceeding 50mm was recorded in central and northeastern parts of Kenya, and in a few areas in southwestern Uganda, and western Burundi. Much of Sudan, Eritrea Djibouti, northern and central Somalia, northern and central Ethiopia, northern and central parts of South Sudan, in northeastern parts of Uganda, in northwestern Kenya, and in central and southwestern Kenya recorded less than 5mm of rainfall. The rest of the GHA recorded between 5mm and 50mm of rainfall (Figure 1a). (Figure 1a).

A few areas in northwestern and central South Sudan, in southeastern Ethiopia, and in northern and north eastern parts of Kenya, recorded rainfall exceeding 125% of the long term average (1981-2010). Much of the rest of the GHA recorded below 125% of the long term average (Figure 1b) during the second dekad of November 2017. Areas in southern Ethiopia, central and southern Somalia, eastern Uganda, western and coastal parts of Kenya, , and over much of north, central and southwestern Tanzania showed reduced performance in rainfall as compared with the previous dekad.

Standardized Precipitation Index (SPI) during the second dekad of November 2017 shows that much of the GHA experienced near normal rainfall conditions. Areas in western Eritrea, northwestern and central parts of South Sudan; in eastern parts of Ethiopia, an in northern and northeastern Kenya experienced moderately wet to severely wet rainfall conditions. Moderately dry to severely dry rainfall conditions was experienced in parts of central Ethiopia, central Uganda, western, central and coastal Kenya, and in northern ad southwestern Tanzania (Figure 1c).

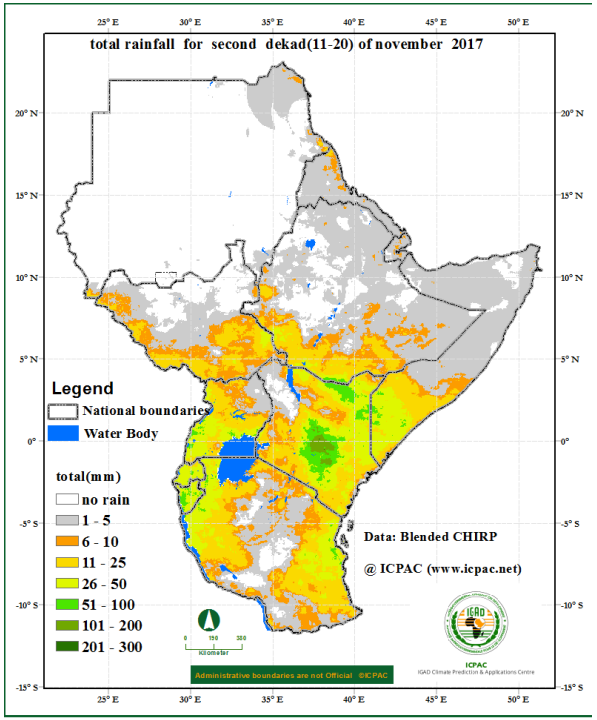

Figure 1a: Rainfall distribution during the second dekad (11-20) of November 2017. *(Data: Blended CHIRP)*

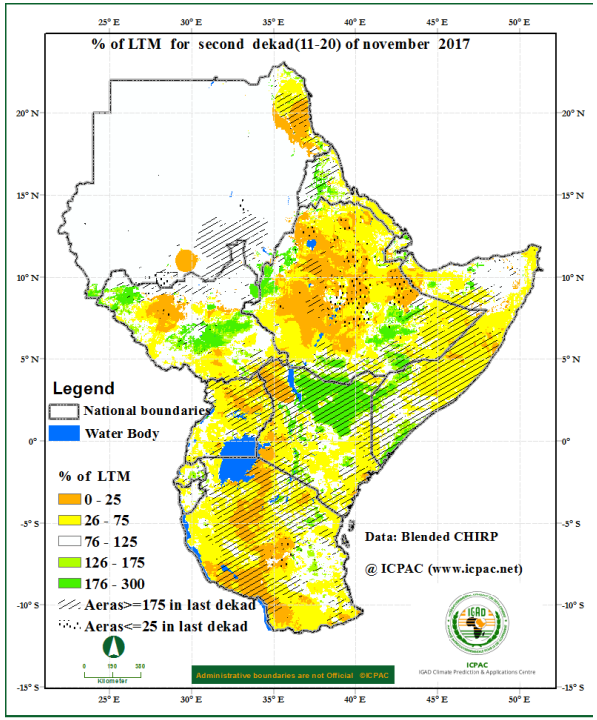

Figure 1b: Percent of long term average rainfall for the second dekad (11-20) of November 2017 *(Data: Blended CHIRP)*

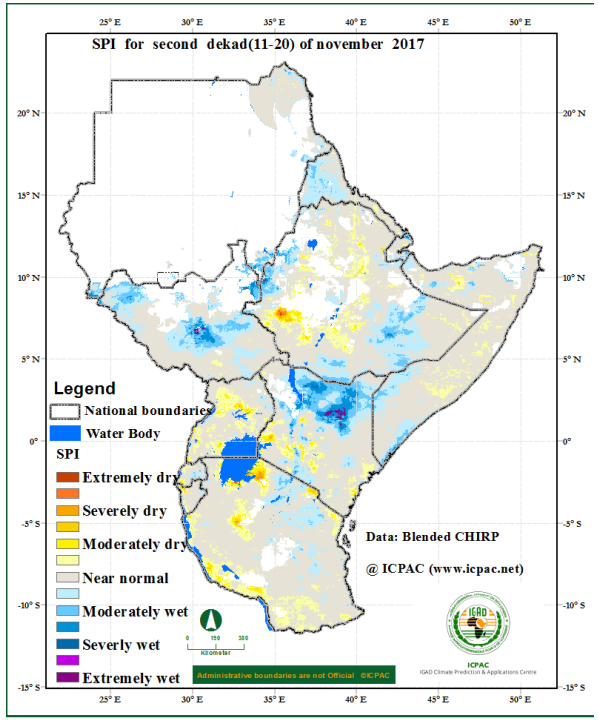

Figure 1c: Standardized Precipitation Index (SPI) for second dekad (11-20) of November 2017 *(Data: Blended CHIRP)*

Maximum and Minimum Temperature Anomaly

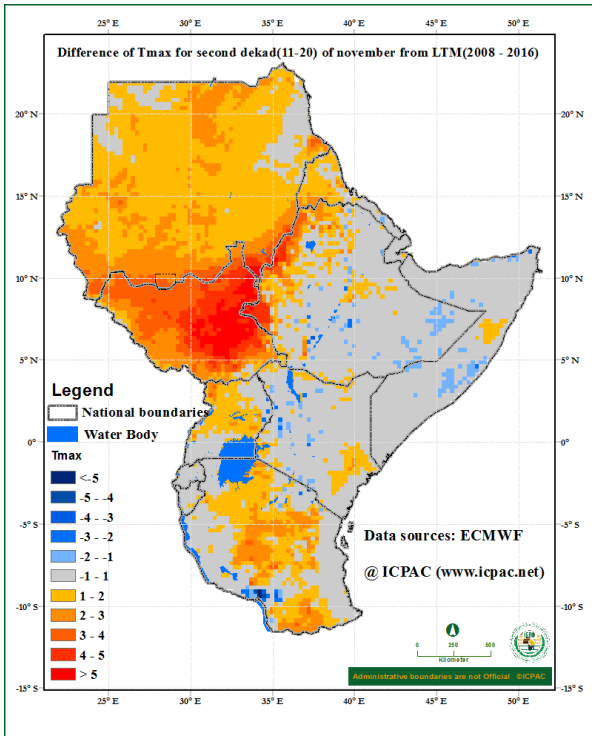

Figure 2: Maximum temperature difference from the average (2008-2016) for the second dekad (11-20) of November 2017*(Data Source: ECMWF)*

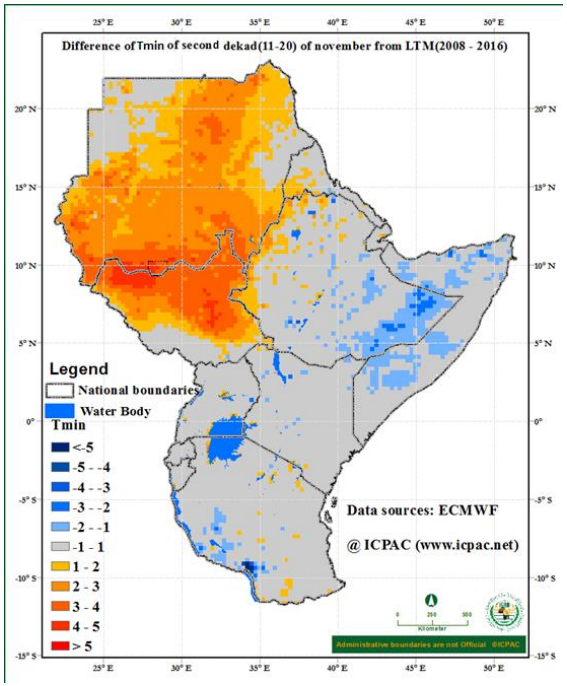

Figure 3:Minimum temperature difference from the average (2008-2016) for the second dekad (11-20) of November 2017*((Data Source: ECMWF)*

Conditions warmer than the average for maximum temperature was observed over much of Sudan, South Sudan, western Eritrea, western Ethiopia; in in parts of northwestern to southeastern Uganda, southeastern Kenya; and in much of north, central and south of Tanzania during the second dekad of November 2017. Ares in southeastern Ethiopia, central Somalia and in western parts of Kenya experienced cooler than the average condition for maximum temperature. The rest of the region recorded near the average conditions for the maximum temperature (Figure 2)

Much of Sudan, northern parts of South Sudan, and in southwestern parts of Eritrea, recorded warmer than the average for minimum temperature second dekad of November 2017. Much of the rest of the GHA region recorded minimum temperature near the average conditions, except for eastern parts of Ethiopia, northern and central parts of Somalia and in southwestern parts of Tanzania which recorded cooler than the average or minimum temperature(Figure 3).

4.0 Vegetation condition indicators

Normalized Difference Vegetation Index Anomaly

The Normalized Difference Vegetation Index (NDVI) anomaly for the period between 16th and 23rd November 2017 (Figure 4) indicates that southwestern Ethiopia, over much of central and southern Somalia, eastern Kenya, and in northern and central Tanzania experienced deterioration in vegetative conditions as compared to the long term average vegetative conditions. Much of South Sudan, southeastern parts of Sudan, in southwestern and eastern part of Ethiopia, in northern and northeastern Uganda, in northwestern Kenya, northwestern and eastern Tanzania showed improvement in vegetative conditions as compared to the long term average vegetative conditions. The rest of the GHA showed little or no change in vegetation conditions compared to the long-term average of the same period.

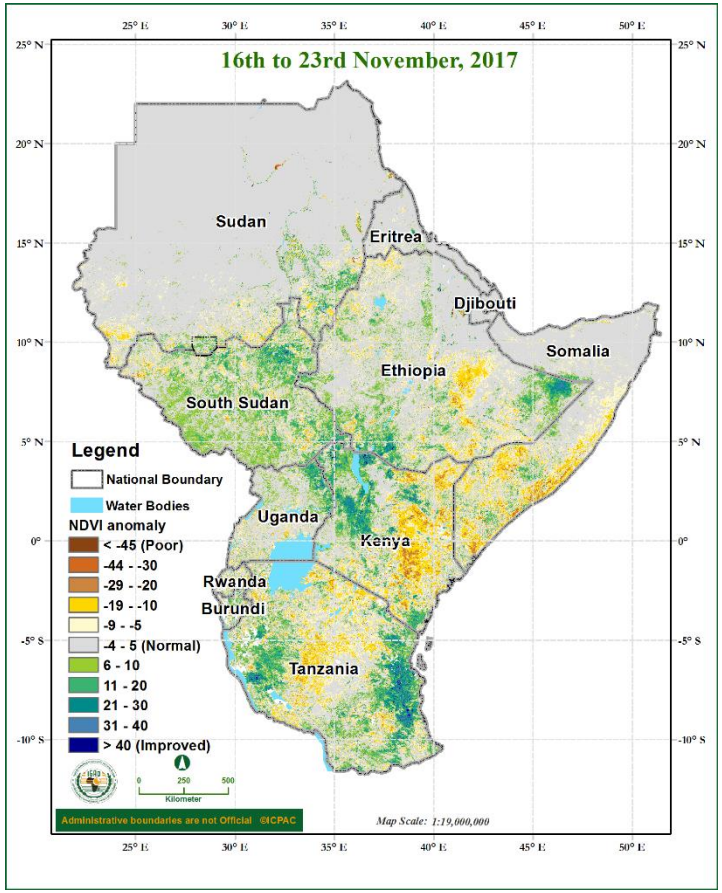

Figure 4: NDVI anomaly for the period between 16th and 23rd November 2017 (Data Source: USGS NASA)

5.0 Climate Forecast

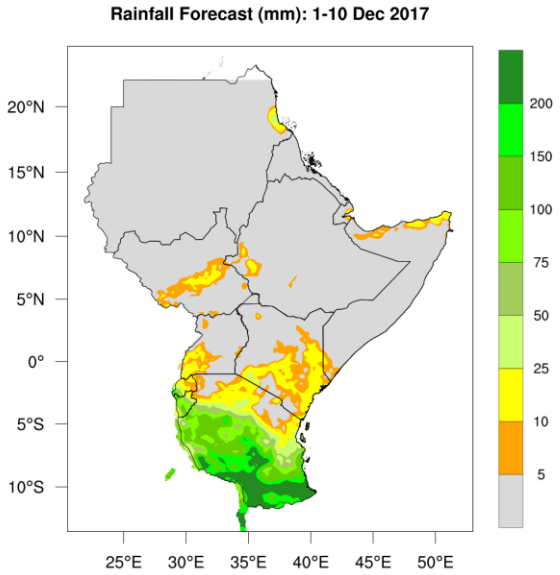

Figure 5: Precipitation forecast for the first dekad (1-10) of December 2017 (Source: WRF-ICPAC**)**

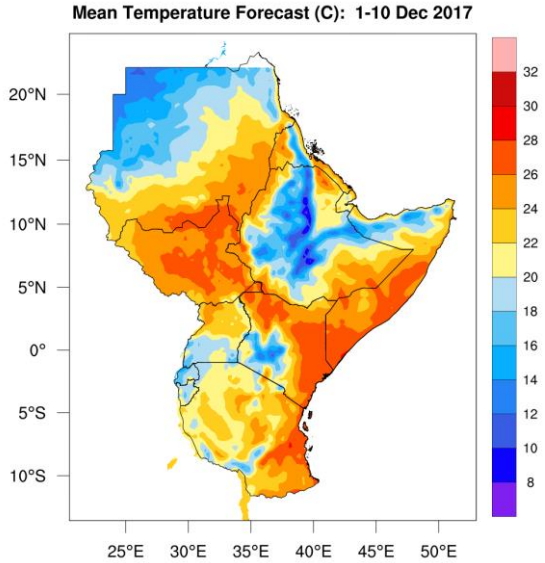

Figure 6: Forecast for average temperature for the first dekad (1-10) of December 2017 (Source: WRF-ICPAC)

Rainfall Forecast

The rainfall forecast for the first dekad of November 2017 in Figure 5 indicates that rainfall is likely to be concentrated over much of Tanzania and Burundi, and in some parts of Rwanda, southeastern Kenya, and southwestern Uganda. The rest of the GHA region is likely to experience little amount of rainfall or remain generally dry during the first dekad of December 2017.

Temperature Forecast

The average temperature forecast for first dekad of December 2017 (Figure 6) indicates the likelihood of recording cool average temperature lower than 20°C in northern parts of Sudan, central and western Ethiopia, northern part of Somalia, southern Uganda, western and central parts of Kenya, in much of Rwanda, central parts of Burundi, and in parts of west and southwest of Tanzania. The rest of the GHA is likely to record average temperature higher than 20°C.

6.0 Impacts on socio-economic sectors

The socio-economic impacts associated with the observed rainfall and temperature conditions are highlighted below:

6.0 Impacts associated with observed climate conditions

From the climate forecast for the first dekad of December 2017 parts of the southern sector of the GHA are likely to have sufficient rainfall performance, which may lead to improved water resources and pasture resources leading to improved condition of water resources, crop and livestock productivity. Some areas in southern and southwestern parts of Tanzania are likely to experience high rainfall amounts which may result into localised flooding.

NB: *This ten day bulletin contributes towards the update of the November-December- (SOND) seasonal outlook provided during the 47th Greater Horn of Africa Climate Outlook Forum (GHACOF47) in Zanzibar, Tanzania (http://www.icpac.net/index.php/climate-monitoring/seasonal-forecasts.html).*

For more information contact
ICPAC P.O. Box 10304, 00100 Nairobi, KENYA; Tel: +254-020-3514426
E-mail: director@icpac.net **Website: www.icpac.net**