

## 10 DAY CLIMATOLOGICAL SUMMARY AND IMPACTS FOR THE FIRST DEKAD (1-10) OF DECEMBER 2017 TOGETHER WITH FORECAST FOR THE THIRD DEKAD (20-31) OF DECEMBER 2017

### 1.0 Introduction

This bulletin reviews the climatic conditions observed during the first dekad (1-10) of December 2017, and highlights the climate forecast for the third dekad (21-31) 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 -5° and 5° 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 first dekad of December 2017 rainfall activity concentrated over southern sector as well as in southwestern and southeastern equatorial sector, of the of the Greater Horn of Africa (GHA).

Much of the equatorial sector as well as in in northwestern and in eastern parts of the southern sector of the GHA experienced poor rainfall performance in the near to below average (1981-2010). Some areas in the north, west and east of Tanzania, southwest of Kenya, and northwestern Eritrea indicated above normal rainfall performance. While much of the GHA recorded near average rainfall.

The southwestern and southern parts of the northern sector, much of the equatorial sector, as well as north and central parts of the southern sector of the GHA warmer than the average (2008-2016) maximum temperatures was recorded during the first dekad of December 2017. Much of the rest of the GHA recording near the average maximum temperature, except for some areas in northern Somalia and southern Tanzania that recorded cooler than the average for maximum temperature.

Some areas covering southwestern and central parts of the northern sector, and in parts of central equatorial sector of the GHA recorded warmer than

the average (2008-2016) conditions for the minimum temperature. Much of the rest of the GHA recorded near the average for the minimum temperature conditions except for some areas in eastern Ethiopia, and in northern Somalia that recorded cooler than the average for minimum temperature during the first dekad of December 2017.

Rainfall forecast for the third 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 northern 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, northern Somalia, western and central Kenya, southern Uganda, Burundi, Rwanda, and in southwestern part of Tanzania which are likely to record average temperatures cooler than 20°C during the third dekad of December.

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### 3.0 Observed rainfall situation during the first dekad (1–10) of December 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 first dekad of December 2017. These are generated from the blending of (Climate Hazard Infra-Red Precipitation) CHIRP data and observed data.

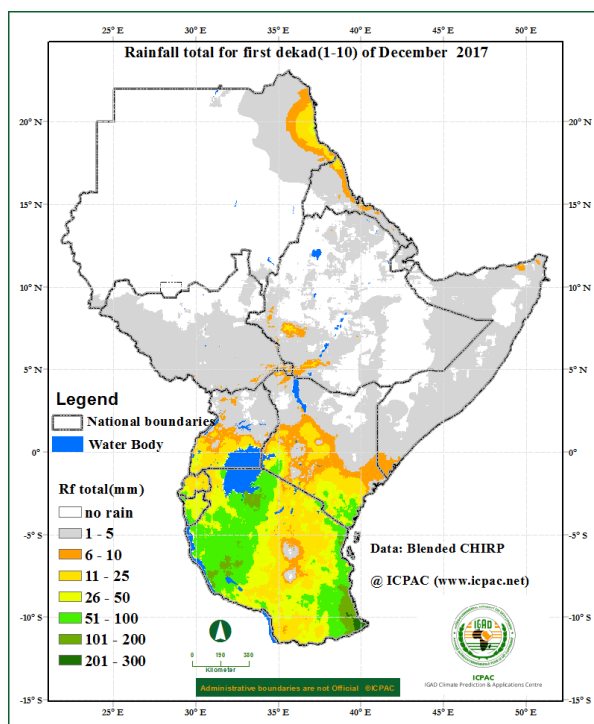
#### Rainfall Distribution and Severity

During the first dekad of December 2017 areas in the northwest, west and east of Tanzania, and in southwestern and southeastern, Kenya rainfall of between 50mm and 200mm was recorded. A few areas in northwest, west, and southeast Tanzania recorded highest range of rainfall which was exceed 200mm. Areas in south of Uganda, southern and central parts of Kenya, much of Rwanda and Burundi, and in much of central and southwestern Tanzania rainfall of between 5mm and 50mm was recorded. Much of the rest of the GHA region recorded less than 5mm of rainfall (Figure 1a).

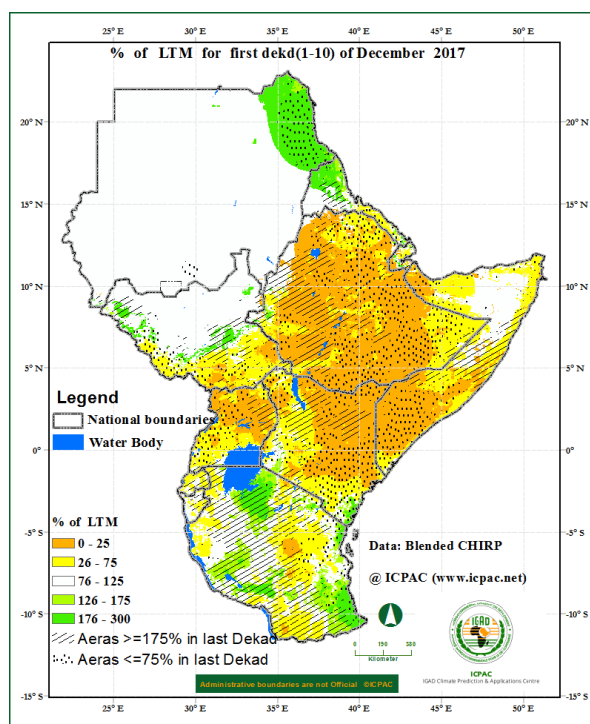
A few areas in eastern Sudan, western Eritrea, northwestern and central parts of Sudan, northern, western and eastern parts of Tanzania, and in southwestern and southeastern Kenya recorded rainfall exceeding 125% of the long term average (1981-2010). Much of Sudan, northern parts of South Sudan, parts of southwestern Eritrea, north-central parts of Somalia, much of Burundi, and in several parts of western and central Tanzania, rainfall of between 75% and 125% of the of the long term average was recorded. Much of the rest of the GHA recorded less than 75%

of the long term average (Figure 1b) during the first dekad of December 2017. Western Ethiopia, northern Ethiopia, central Somalia and in several parts in central and southwestern Tanzania have indicated reduced performance in rainfall as compared with the previous dekad. Northeastern Sudan, Southeastern parts of Kenya, and eastern parts of Tanzania show improved rainfall performance as compared with the previous dekad.

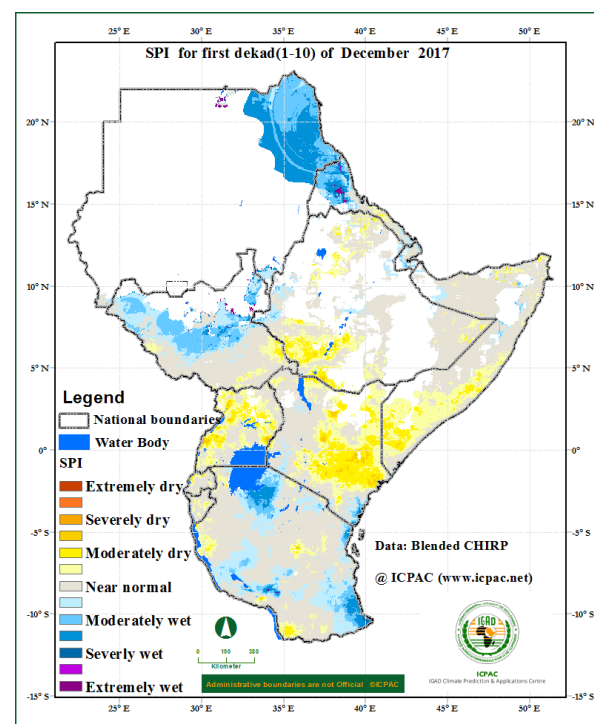
Standardized Precipitation Index (SPI) during the first dekad of December 2017 shows that southwestern Ethiopia, several parts of Uganda, central and eastern Kenya, southern Somalia, and in few parts of western, southwestern an eastern Tanzania experienced moderately dry to severely dry rainfall conditions. Moderately wet to severely wet rainfall conditions was experience in northeastern Sudan, western Eritrea, central-span of South Sudan, southeastern Kenya, and in northern, western and eastern parts of Tanzania. Much of the rest of the GHA experienced near normal rainfall conditions (Figure 1c).



**Figure 1a: Rainfall distribution during the first dekad (1-10) of December 2017.** (Data: Blended CHIRP)

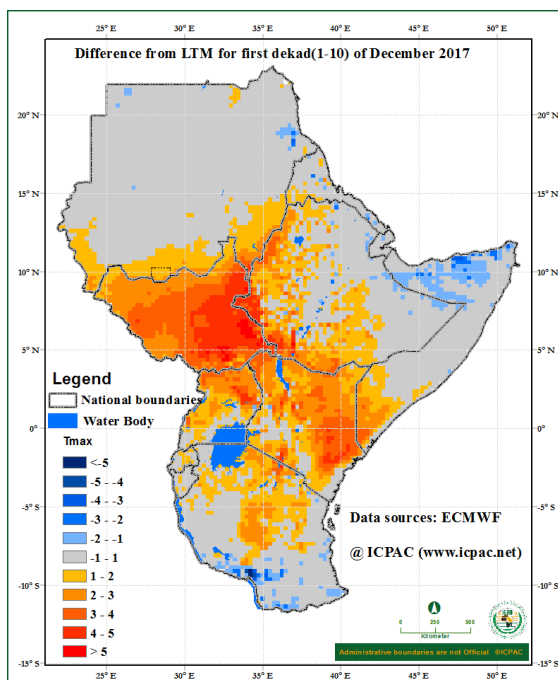


**Figure 1b: Percent of long term average rainfall for the first dekad (1-10) of December 2017** (Data: Blended CHIRP)

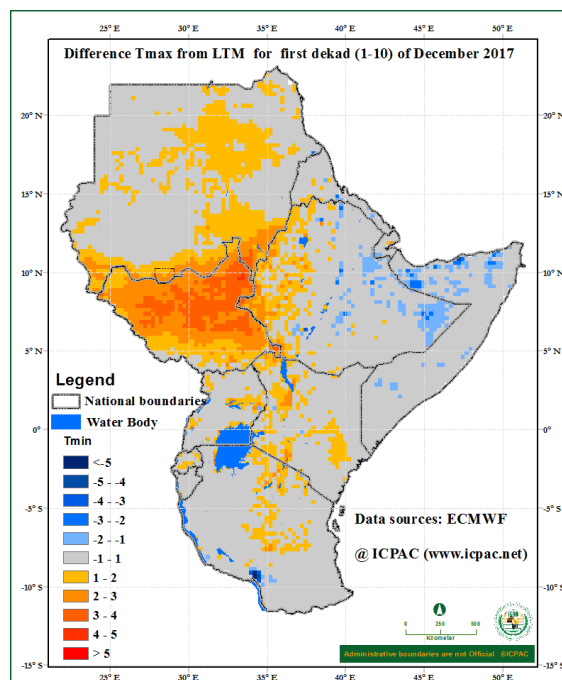


**Figure 1c: Standardized Precipitation Index (SPI) for first dekad (1-10) of December 2017** (Data: Blended CHIRP)

## Maximum and Minimum Temperature Anomaly



**Figure 2: Maximum temperature difference from the average (2008-2016) for the first dekad (1-10) of December 2017 (Data Source: ECMWF)**



**Figure 3: Minimum temperature difference from the average (2008-2016) for the first dekad (1-10) of December 2017 (Data Source: ECMWF)**

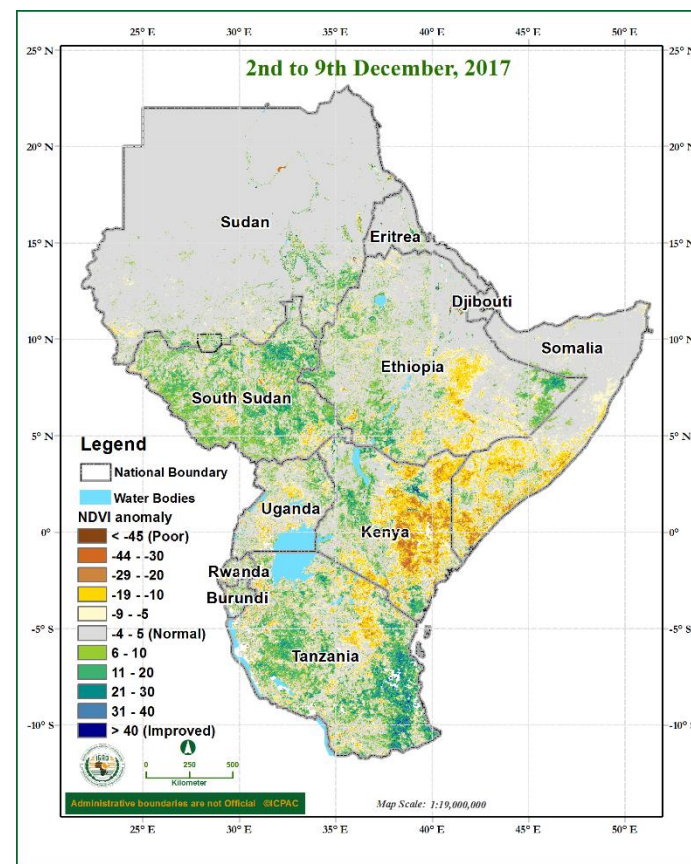
During the first dekad of December 2017 southern parts of Sudan, over much of Sudan, in western and southwestern Ethiopia, over northern, western and eastern Uganda, over much of Kenya, southern Somalia, central Rwanda, western Burundi, and in few areas north and central Tanzania conditions warmer than the average for maximum temperature was observed. Much of the rest of the GHA recorded near average for Maximum temperature except for areas in northern Somalia and southern Tanzania. (Figure 2)

The eastern and southern parts of Sudan, over much of South Sudan, western Ethiopia, in western, eastern, and central part of Kenya, southern and eastern Rwanda, western and eastern parts of Uganda, and northern and central parts of Tanzania recorded warmer than the average for minimum temperature during the first dekad of December 2017. Much of the rest of the GHA region recorded near the average conditions for minimum temperature, except for eastern parts of Ethiopia, and in northern of Somalia which recorded cooler than the average or minimum temperature (Figure 3).

## 4.0 Vegetation condition indicators

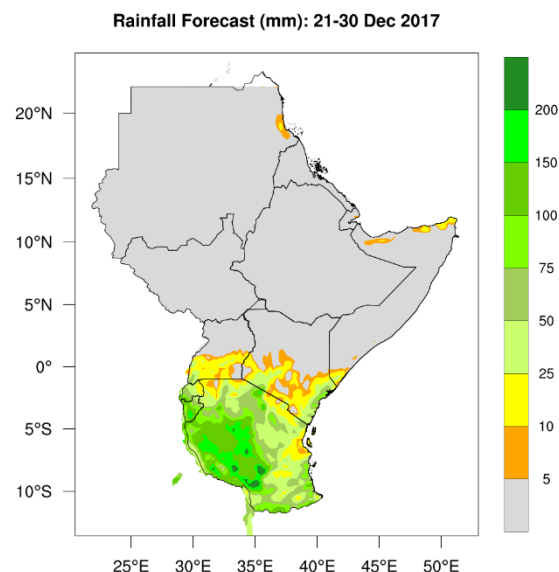
### Normalized Difference Vegetation Index Anomaly

The Normalized Difference Vegetation Index (NDVI) anomaly for the period between 2<sup>nd</sup> and 9<sup>th</sup> December 2017 (Figure 4) indicates that much of South Sudan, parts of southwestern and eastern Ethiopia, over northwestern and southeastern Kenya, and western and eastern Tanzania, improvement in vegetative conditions as compared to the long term average vegetative conditions was experienced. Southeastern parts of Ethiopia, over much of southern Somalia, eastern and south-central Kenya, and in parts of northeastern Tanzania deterioration in vegetative conditions as compared to the long term average vegetative conditions was experienced. The rest of the GHA showed little or no change in vegetation conditions compared to the long-term average of the same period.

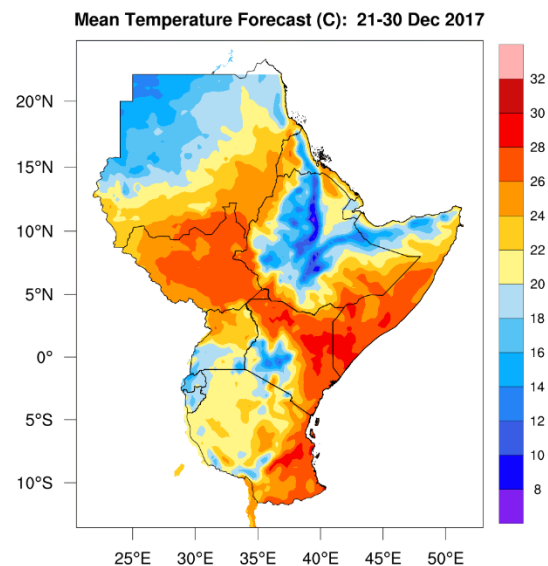


**Figure 4: NDVI anomaly for the period between 2<sup>nd</sup> and 9<sup>th</sup> December 2017 (Data Source: USGS NASA)**

## 5.0 Climate Forecast



**Figure 5: Precipitation forecast for the third dekade (21-31) of December 2017** (Source: WRF-ICPAC)



**Figure 6: Forecast for average temperature for the third dekade (21-31) of December 2017** (Source: WRF-ICPAC)

### Rainfall Forecast

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

### Temperature Forecast

The average temperature forecast for third dekade 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, Burundi, and in southwest of Tanzania. The rest of the GHA is likely to record average temperature higher than 20°C.

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## 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

The equatorial region experience dry conditions leading to deteriorating water and pasture conditions.

From the climate forecast for the third 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 December-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>).

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