



## **STATEMENT FROM THE FIFTY EIGHTH GREATER HORN OF AFRICA CLIMATE OUTLOOK FORUM (GHACOF58): 25 - 27 MAY 2021; ICPAC, NAIROBI METROPOLITAN AREA, KENYA**

### **INTERNET-BASED LIVE FORUM**

#### **Consolidated Objective Climate Outlook for June to September 2021 Rainfall Season.**

June to September (JJAS) constitutes an important rainfall season, particularly in the northern parts of the Greater Horn of Africa (GHA) where the JJAS rainfall contributes to more than half of the annual rainfall totals. Analysis of global climate model predictions customized for GHA indicates increased chances for wetter conditions during June to September 2021, with 8 of 9 model forecasts favouring wetter conditions (above average rainfall) over most parts of the region. Accordingly, Djibouti, Eritrea, much of the northern two-thirds of Ethiopia, South Sudan and Sudan are likely to experience a wetter than average season. Consistent with a predicted reduction in the number of continuous dry days, IGAD Cluster I (the Karamoja Cluster), which covers parts of Ethiopia, Kenya, South Sudan, and Uganda is indicated to have enhanced probabilities for a wetter than average season. Compared to historical occurrences, western Ethiopia, eastern South Sudan and southern parts of Sudan are predicted to have an enhanced probability for exceeding 400-600 mm accumulated rainfall during JJAS 2021 season. Despite the enhanced probabilities for increased cumulative rainfall, the number of continuous days with daily rainfall exceeding 5 mm is expected to be less than the historical averages over western Ethiopia and southern parts of Sudan.

Most ensemble members of dynamically downscaled predictions for GHA indicate an earlier than average start of the JJAS season over western Ethiopia, eastern South Sudan and southern parts of Sudan. However, the northern and eastern edges of the region including margins of northern Sudan, northern and eastern Eritrea, north-eastern and eastern Ethiopia and northern Somalia are predicted to experience a delayed start to the JJAS 2021 season. The consolidated objective temperature forecast indicates an increased likelihood of warmer than normal surface temperatures over northern Sudan, eastern Eritrea, most parts of Ethiopia and Somalia, eastern Kenya and eastern Tanzania. On the other hand, southern Sudan, much of South Sudan, western half of Kenya, Uganda, Rwanda, Burundi, and western parts of Tanzania are indicated to have enhanced probabilities for near average to cooler temperatures during JJAS 2021 season.

The World Meteorological Organisation (WMO) and the major global climate centres have noted that Sea Surface Temperatures (SSTs) over the equatorial Pacific Ocean have been close to the El Niño Southern Oscillation (ENSO) Neutral state thresholds over the past few months. Global models further indicate that the near neutral (negative)

SST anomalies currently present in the tropical Pacific are expected to remain throughout the forecast period. The Indian Ocean Dipole (IOD), is also expected to remain in the neutral phase through the JJAS 2021 season. The influence of these ocean processes will interact with regional circulation patterns, especially monsoonal winds, Tropical Easterly Jet, and the Somalia Low-level Jet. Their effects also are modulated by topography and large inland water bodies. Updates on the ENSO condition will be provided regularly by WMO and the major climate centres.

*The outlook is relevant for seasonal timescales and covers relatively large areas. Local and month-to-month variations might occur as the season progresses. While sporadic heavy rainfall is most probable over much of the monsoonal region, extended dry spells and below normal rainfall may occur in areas with an increased likelihood of near normal to above normal rainfall and vice versa. ICPAC will provide regional updates on regular basis while the National Meteorological and Hydrological Services (NMHSs) will provide detailed national and sub national climate updates.*

### **The Climate Outlook Forum**

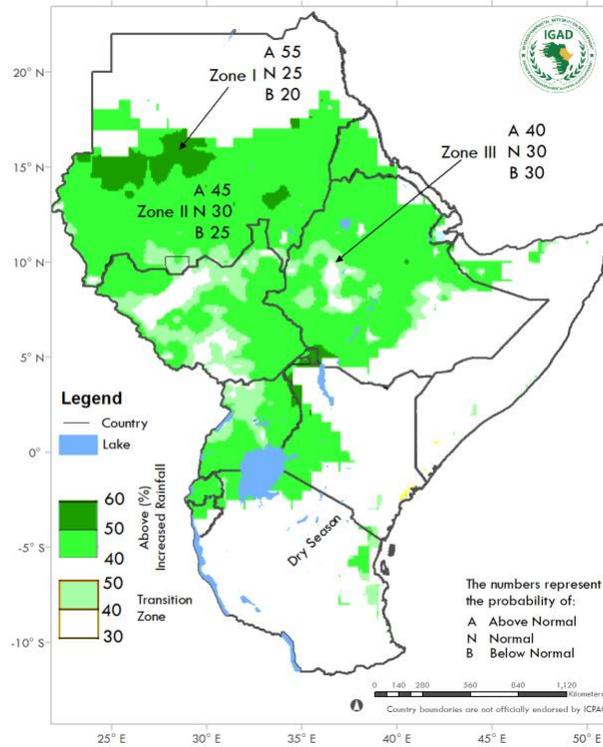
The Fifty-eighth Greater Horn of Africa Climate Outlook Forum (GHACOF58) was convened from 25<sup>th</sup> to 27<sup>th</sup> May 2021 by the IGAD Climate Prediction and Applications Centre (ICPAC) in collaboration with the National Meteorological and Hydrological Services (NMHSs) of IGAD Member States, World Meteorological Organization (WMO) and other partners to document and share the climate impacts across the region and to formulate responses to the regional climate outlook for the June to September 2021 rainfall season over the GHA region. The GHA region comprises Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania and Uganda. The forum reviewed the state of the global climate system including the El Niño Southern Oscillation (ENSO) conditions, SSTs over Atlantic and Indian Oceans and IOD, and considered their impacts on the GHA during June to September 2021 rainfall season. Climate information users from sectors such as disaster risk management, agriculture and food security, livestock, health, environment, media, conflict, and water resources as well as non-governmental organisations and development partners actively participated in the formulation of mitigation strategies of the potential impacts of the objective climate forecast in their respective sectors.

### **Methodology**

Guidance and valuable forecast information was drawn from a wide range of sources including the World Meteorological Organisation's Global Producing Centres (WMO GPCs) and National Meteorological and Hydrological Services. These inputs were combined using deterministic and probabilistic modelling techniques to obtain the regional consolidated objective rainfall forecast for the period June to September 2021. The objective seasonal forecast was developed during the PreCOF58 one-week climate capacity building workshop held from 17<sup>th</sup> to 21<sup>st</sup> May 2021. During this workshop, regional scientists and national forecasters from 10 ICPAC Member States used ICPAC's FCDO-funded High-Performance Computing (HPC) cluster, through remote connection, and co-developed regional and national-level climate outlooks. GHACOF58 was preceded by sectoral co-production meetings from 25<sup>th</sup> – 26<sup>th</sup> May 2021.

Experts examined the prevailing and predicted SSTs over the Pacific, Indian and Atlantic Oceans as well as other global, regional and local climate factors that affect the rainfall evolution during JJAS season. These factors were assessed using dynamical and statistical models. The regional consolidated objective forecast is produced from outputs of 9 global state-of-the-art seasonal prediction systems. The current capability of seasonal to inter-annual climate forecasting allows for the prediction of departures from mean conditions on large spatial scales with consideration of scales of processes that contribute to regional and sub-regional climatic conditions. Forecast probability distributions are established objectively to indicate the likelihood of above-, near-, or below-normal rainfall for each zone. Above-normal rainfall is defined as within the wettest third of recorded rainfall amounts in each zone; near-normal is defined as the third of the recorded rainfall amounts centred around the climatological median; below-normal rainfall is defined as occurring within the driest third of the rainfall amounts. Climatology here refers to weather conditions, averaged over a 30-year period. Probability distributions for temperature are also

established. The objective June – September rainfall outlook is given in Figure 1 and temperature outlook in Figure 2.



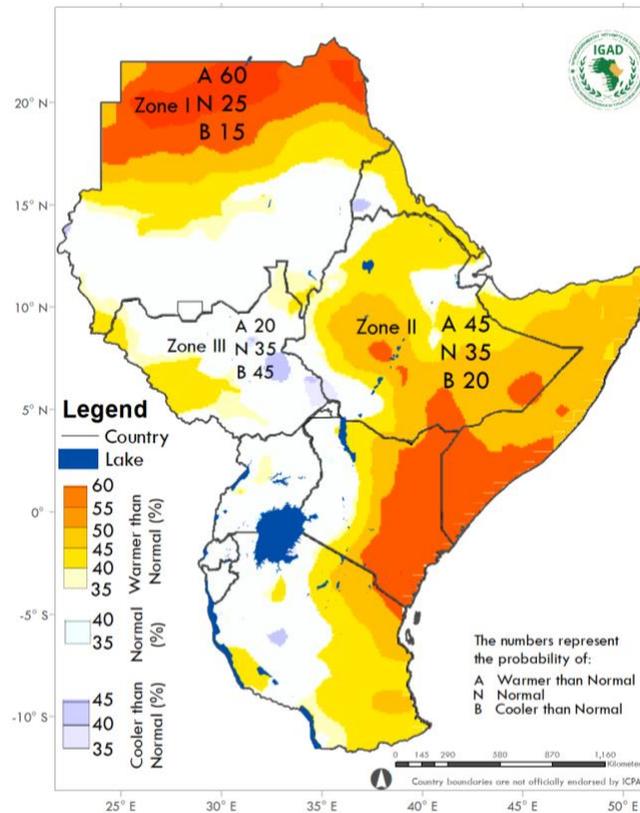
### Rainfall Outlook for June to September 2021

The rainfall outlook for various zones within the GHA region is given in Figure 1 above.

- Zone I:** In this Zone (dark green shading) the above normal rainfall (wetter) category has the highest probability. The probability varies with location and can be read from the legend. For the most widespread dark green shade (50-60%) the probabilities for all three categories are provided.
- Zone II:** In this Zone (all bright green shading) the above normal rainfall (wetter) category also has the highest probability. The probability varies with location and can be read from the legend. For the most widespread green shade (40-50%) the probabilities for all three categories are provided. The difference between Zones I & II is the increasing probability for the wetter than average category in Zone I.
- Zone III:** In this Zone (light blue to light green), the above normal rainfall (wetter) category has the highest probability (37-43%). The probabilities for the other categories are provided.
- Zone IV:** This Zone (white) is usually dry during June to September.

## Temperature Outlook for June to September 2021

The temperature outlook for various zones within the GHA region is given in Figure 2 below.



**Zone I:** Increased likelihood for above normal mean temperature (i.e., warmer)

**Zones II:** Increased likelihood for near normal to above normal mean temperature

**Zones III:** Increased likelihood for below normal mean temperature (i.e., cooler)

**Note:** The numbers for each zone indicate the probabilities of rainfall or temperature in each of the three categories, above-, near-, and below-normal. The top number (A) indicates the probability of rainfall occurring in the above-normal category; the middle number (N) is for near-normal and the bottom number (B) for below-normal category. For example, in Zone I in Figure 1, there is 55% probability of rainfall occurring in the above-normal category; 25% probability of rainfall occurring in the near-normal category; and 20% probability of rainfall occurring in the below-normal category. It is emphasised that boundaries between zones should be considered as transition areas.

### Contributors

GHACOF 58 was organized jointly by the IGAD Climate Prediction and Applications Centre (ICPAC) and National Meteorological and Hydrological Services (NMHSs) of the Greater Horn of Africa (GHA). The forum was supported by the ClimSA Project funded by the European Union. Contributors to the regional climate outlook

included representatives of NMHSs from GHA countries (Insitut Geographique du Burundi; Meteorologie Nationale de Djibouti; National Meteorological Agency of Ethiopia; Kenya Meteorological Service; Rwanda Meteorological Agency; South Sudan Meteorological Service; Sudan Meteorological Authority; Somalia Meteorological Authority and Uganda National Meteorological Authority) and climate scientists as well as other experts from national, regional and international institutions and organizations: ICPAC; Met Office, UK; and WMO Global Producing Centres (GPCs).