ICPAC

Statement from the 71st Greater Horn of Africa Climate Outlook Forum (GHACOF71)

25th-26th August 2025, Nairobi, Kenya

1.0 The Climate Outlook Forum

The 71st Greater Horn of Africa Climate Outlook Forum (GHACOF71) was held in Nairobi from August 25-26, 2025. The forum was organised by the IGAD Climate Prediction and Applications Centre (ICPAC) in collaboration with the National Meteorological and Hydrological Services (NMHSs) across the Greater Horn of Africa, the World Meteorological Organisation (WMO), and international partners. The forum reviewed and documented the progress and impacts of the June to September (JJAS) 2025 season, released the consolidated objective regional climate outlook for the October-December (OND) 2025 season, discussed the implications of the OND 2025 climate forecast, and developed practical advice for managing climate risks in various climate-sensitive sectors.

The GHA region comprises Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania, and Uganda. The forum included representatives from disaster risk management, agriculture, livestock, water resources, health, and conflict prevention sectors, along with media, NGOs, humanitarian organisations, and development partners who engaged in co-producing mitigation strategies, ensuring that the outlook and advisories are relevant, actionable, and supportive of resilience building across the region.

2.0 Consolidated forecasts for the October to December 2025 Rainfall Season

The OND season is a critical rainfall period for the equatorial Greater Horn of Africa (GHA), contributing up to 70% of the annual rainfall in parts of Kenya and Somalia. Analysis of predictions from seven Global Producing Centres (GPCs), tailored for the region, indicates an elevated likelihood of below-normal rainfall in OND 2025 across the eastern and southern sector, including southern Ethiopia, much of Somalia, eastern Kenya, and parts of central and southern Tanzania (Figure 1). The strongest signal for drier-than-average conditions (probability 55%) is observed over southern Ethiopia, eastern Kenya, and eastern Tanzania, central to southern Somalia, as well as parts of coastal northern Somalia and northern Eritrea. In contrast, wetter-than-normal conditions are favoured in parts of the western sector, notably in parts of southern South Sudan, north-eastern and south-western Uganda, and localised areas of northern Rwanda. Localised parts of north-eastern Somalia also show weakly enhanced probabilities for above normal rainfall. Parts of southern Ethiopia, northern Somalia, north-western

Kenya, central to northern Uganda, much of Rwanda, and western Burundi have equal chances (33% each), of receiving above-normal, normal, or below-normal rainfall.

The analysis of rainfall probabilities for the OND 2025 season shows a high likelihood (>70%) of exceeding 300 mm in parts of western Kenya, southern Uganda, much of Rwanda and Burundi, and north-western Tanzania (Figure 2). Conversely, the probability of surpassing this threshold is low (<30%) over southwestern Ethiopia, northern and eastern Kenya, central to eastern Tanzania, and southern Somalia. Relative to historical climatology, the likelihood of receiving 300 mm is reduced (by up to 30%) in southern Ethiopia, eastern Kenya, southern Uganda, and most of Tanzania. In contrast, probabilities are above climatological levels in western Kenya, northern and central Uganda, parts of Burundi and Rwanda, as well as north-western Tanzania.

The predicted start dates of the OND 2025 season based on 6 Global Climate Model forecasts *(ECMWF, Météo-France, CMCC-Italy, DWD-Germany, ECCC-Canada, BOM- Australia*) that provide daily rainfall outputs are provided in Figure 3. The analysis indicates higher chances of early to normal onset dates over much of the western parts of the region, including southwestern Ethiopia, much of southern South Sudan, Uganda, western Kenya, much of Burundi, Rwanda, and north-western as well as central Tanzania. In contrast, the eastern parts of the region are forecast to have increased chances of delayed onset. The most spatially coherent areas with predicted enhanced chances for delayed onset are in southern Somalia, parts of eastern and central/western Tanzania and eastern/central Kenya.

Comparisons of the current tropical Sea Surface Temperature (SST) pattern and the observed and predicted evolution of the Niño3.4 index with observed SST and Niño3.4 in previous years identify 2021 as having a similar evolution to the May-July 2025 average tropical SST conditions and the anticipated Niño3.4 index trajectory (Figure 4a). Rainfall performance during OND in 2021 shows drier-than-normal conditions over much of the eastern sector of the region, consistent with the OND 2025 objective consolidated forecast. The below-normal rainfall observed in the identified analogue year over the eastern Horn of Africa (which had La Niña active in OND) supports the likely influence of a developing La Niña on the predicted raised chances of below-normal eastern-sector rainfall for OND 2025 (Fig. 4b); however, the analogue-year rainfalls should not be considered replacements or alternatives to the objective forecast.

The consolidated objective temperature forecast (Figure 5) from 7 Global Producing Centres (GPCs) indicates an increased likelihood of warmer-than-average surface temperatures across the GHA. Probabilities of warmer-than-average temperatures are highest over the eastern side of the GHA, with peak probabilities over eastern parts of Kenya, Ethiopia, Eritrea, as well as for Djibouti and much of Somalia. Average to cooler-than-average conditions are expected over cross-border areas of Uganda, South Sudan, Ethiopia, and Kenya, as well as localised areas of north western Sudan.

The outlook is relevant for seasonal timescales and for relatively large geographical areas. Local and month-to-month variations might occur as the season progresses. For example, while drier than usual seasonal-average conditions are most probable in eastern parts of the GHA regions that usually receive rain in the OND season, transient wet spells may occur in areas with an increased likelihood of below normal to near normal rainfall and vice versa. ICPAC will provide regional updates on a regular basis, while the National Meteorological and Hydrological Services (NMHSs) will provide detailed national and sub-national climate updates.

3.0 Methodology

In line with the recommendation of the World Meteorological Organisation (WMO), ICPAC has implemented an objective seasonal forecast procedure to generate climate forecasts for the Greater Horn of Africa (GHA). August 2025 initialised seasonal forecasts from 7 Global Producing Centres (GPCs) were utilised and processed using two calibration techniques (canonical correlation analysis and linear regression) to develop the OND 2025 seasonal climate outlook. The final consolidated forecast is obtained by averaging the forecasts generated by all 7 models and the two calibration approaches. The seven Global Climate Models used for producing the regional consolidated forecast are *CMCC, COLA-RSMAS-CCSM4, DWD, ECMWF, Météo-France, NASA-GEOSS2S, and NCEP-CFSv2*.

Forecast probability distributions are established objectively to indicate the likelihood of above-normal, normal, or below-normal rainfall for each zone. Above-normal rainfall is defined as the upper third of historical OND rainfall totals, below-normal as the lower third, and normal as the range between the upper and lower third of the rainfall totals. Climatology here refers to the historical series of observed weather conditions over the 30-year period (1991-2020). Forecast probability distributions for temperature are also established. The rainfall and temperature outlooks for OND 2025 for various zones within the GHA region are given in Figure 1 and Figure 5, respectively.

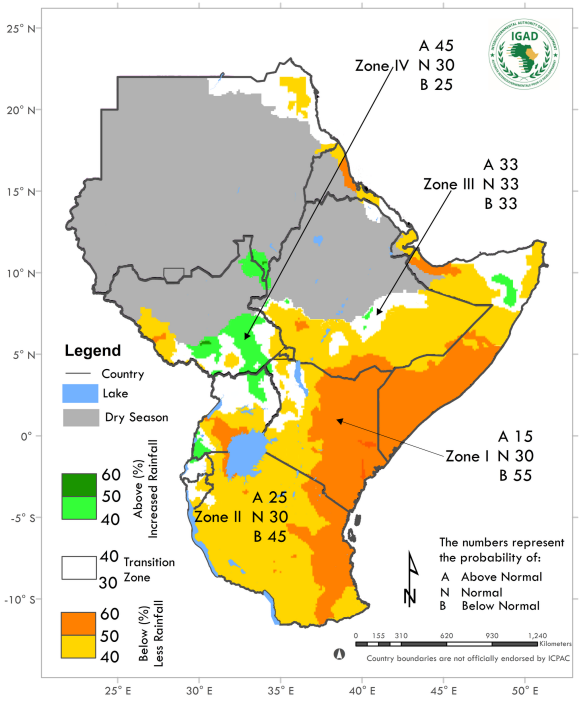
Experts also examined the prevailing and predicted SSTs over the Pacific, Indian, and Atlantic Oceans as well as other global and regional climate factors that affect the rainfall evolution during the OND season. These factors were assessed using dynamical and statistical models. Equatorial SST conditions are near average in the central-west Pacific and below average in the eastern Pacific Ocean. The WMO and major GPCs have indicated that ENSO-neutral conditions are likely to persist over the next several months, with a 50% chance of La Niña —a climate phenomenon typically associated with drier conditions in parts of Eastern Africa—developing between October and December. The Indian Ocean Dipole (IOD) index is currently neutral and is expected to remain in weak negative to neutral conditions in the coming months. Forecast skill for IOD is lower than ENSO (La Niña/El Niño), and current model forecasts still indicate a wide range of possible outcomes.

The interannual variability of OND rainfall in Eastern Africa is strongly linked to SST anomalies in the tropical Pacific and Indian Oceans. La Niña events (tropical Pacific) and negative IOD (Indian Ocean) are typically associated with below-normal OND rainfall over much of the GHA. While predictions show enhanced probabilities for below-normal rainfall in eastern and southern parts of the GHA, the enhancement is relatively modest (55% compared to a 33% climatological chance), and this may reflect the short-lived nature and predicted uncertainty regarding the phase of the IOD and ENSO. Updates on ENSO and IOD conditions will be provided regularly by the WMO and major climate centres.

The seasonal forecast was developed during the pre-COF71 climate capacity building workshop held at ICPAC from 18th to 22nd August 2025. During this workshop, regional scientists and national forecasters from ICPAC member states assessed the progress of the ongoing JJAS 2025 season and developed regional and national-level climate outlooks for the upcoming OND season using ICPAC's High-Performance Computing (HPC) cluster.

4.0 Probability Forecast of Rainfall for October to December 2025

The rainfall outlook for various zones within the GHA region is given in Figure 1 below:



Zone I: In this zone (orange), the below normal rainfall (drier) category has the highest probability (55%). The probability for normal and above normal categories are 30% and 15%, respectively.

Zone II: In this zone (yellow) also, the below normal rainfall (drier) category also has the highest probability (45%). The probabilities of the near normal and above normal categories are 30% and 25% respectively.

Zone III: In this Zone (white), the probabilities of below, normal, and above are equal at 33%. This equal probability zone is also considered a transition zone.

Zone IV: In this zone (light green), the probabilities for the above normal category are highest (45%). Probabilities for the normal and below normal categories are 30% and 25% respectively.

Figure 1. Probability forecast of rainfall for various zones within the GHA region for October to December 2025. Grey shading indicates regions where OND is climatologically a dry season.

Note: In Fig 1, the numbers (next to A, N and B) for each zone indicate the probabilities of rainfall in each of the three categories: above, near, and below-normal. For example, in Fig. 1, 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) is for the below-normal category. In the case of Zone-I (Fig. 1), for instance, there is a 55% probability of rainfall occurring in the below-normal category, 30% probability of rainfall occurring in the near-normal category, and 15% probability of rainfall occurring in the above-normal category. It is emphasised that boundaries between zones should be considered as transition areas.

5.0 Probability of Seasonal Rainfall Exceeding 300mm

The probability of seasonal rainfall accumulations exceeding user-relevant thresholds may be used to aid the management of risks in the food security and agriculture sectors. The probability of exceeding 300mm of seasonal rainfall during the OND 2025 season is given in Figure 2. For the OND 2025 season, the forecast probabilities of exceeding 300mm are lower for the eastern parts of the region compared to the western parts. Additionally, in eastern parts, the forecast probability of rainfall accumulations exceeding 300mm in OND 2025 is reduced relative to the historical chance (Fig. 2, right)

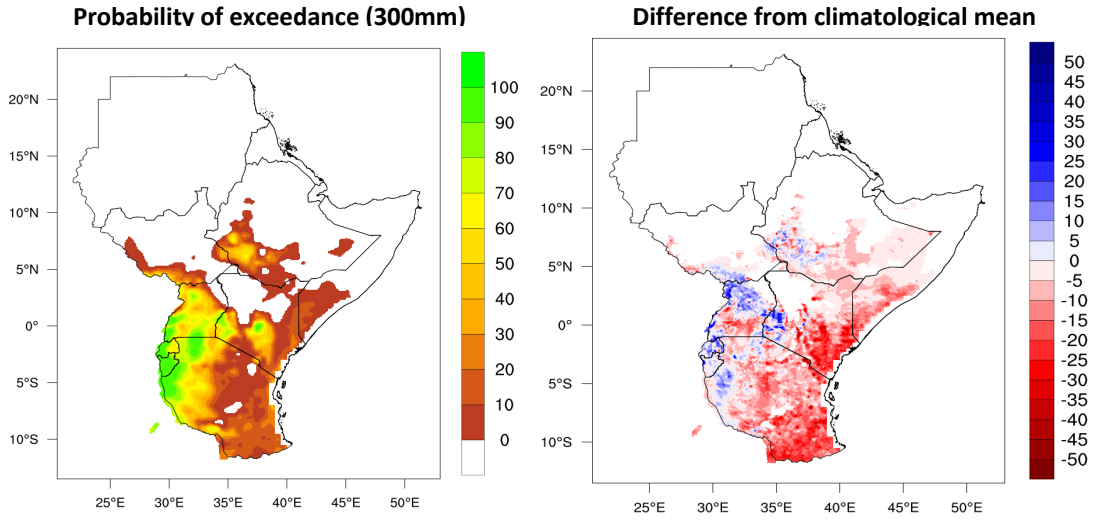


Figure 2: Forecast probability of OND 2025 accumulated seasonal rainfall exceeding 300mm (left) and the difference between these probabilities and historical climatology for the same period (right).

6.0 Probability Forecasts of the Start of the OND 2025 Season and the Expected Average Onset Dates

The predicted most likely start dates of the OND 2025 season, the spread in onset dates from the different ensemble members, as well as forecast probabilities for three categories of onset time (early/normal/late) are provided in Figure 3. The forecast was generated by utilising daily rainfall outputs from six Global Climate Models (ECMWF, Météo-France, CMCC-Italy, DWD-Germany, ECCC-Canada, BOM- Australia) from the C3S Climate Data Store, incorporating a collective of 223 ensemble members. Onset progresses southwards, consistent with the movement of the Inter Tropical Convergence Zone. Confidence in onset dates is highest (standard deviation lowest) over most parts of Tanzania, Burundi, Rwanda, Uganda, central Kenya, southern Ethiopia and central parts of Somalia.

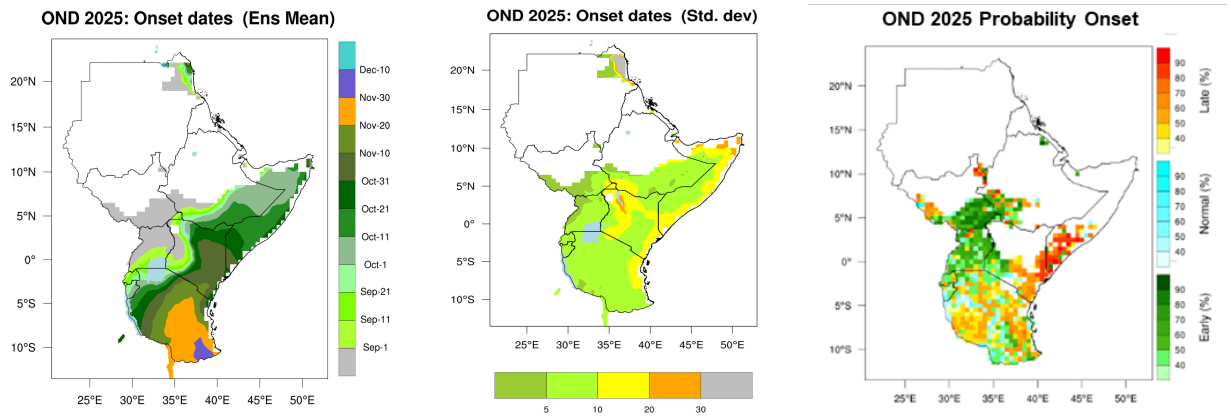


Figure 3: The map on the left indicates the most likely rainfall onset dates for the OND 2025 season from model ensemble mean values. The middle map shows the standard deviation of predicted onset dates from the different ensemble members (days) and is a measure of uncertainty in the ensemble mean values. The map on the right indicates the forecast probabilities for three (tercile) categories of onset timing (early/normal/late).

7.0 Analogue Years based on the Current Global SST Pattern and Nino3.4 Index Evolution

The selection of analogue years based on the Nino3.4 index is carried out by calculating the correlation and the mean difference between the combined observed and forecast evolution of Nino3.4 in the target year and the corresponding Nino3.4 index for the same period in previous years (Fig. 4). The analysis found that 2021 has the highest correlation and lowest mean difference and is selected as the analogue year (Fig. 4, right). The SST anomaly pattern for May-July 2025 is compared with that of the May-July 2021 analogue year in Fig. 4 (left). The evolution of the Nino3.4 index in the analogue year, as well as the observed/predicted evolution in 2025, is characterised by the development of weak La Niña conditions later in the year.

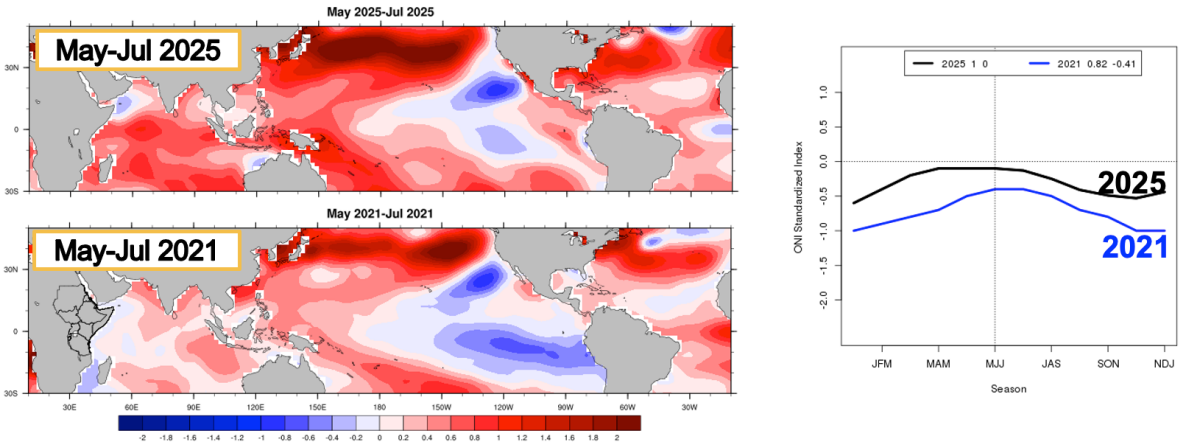
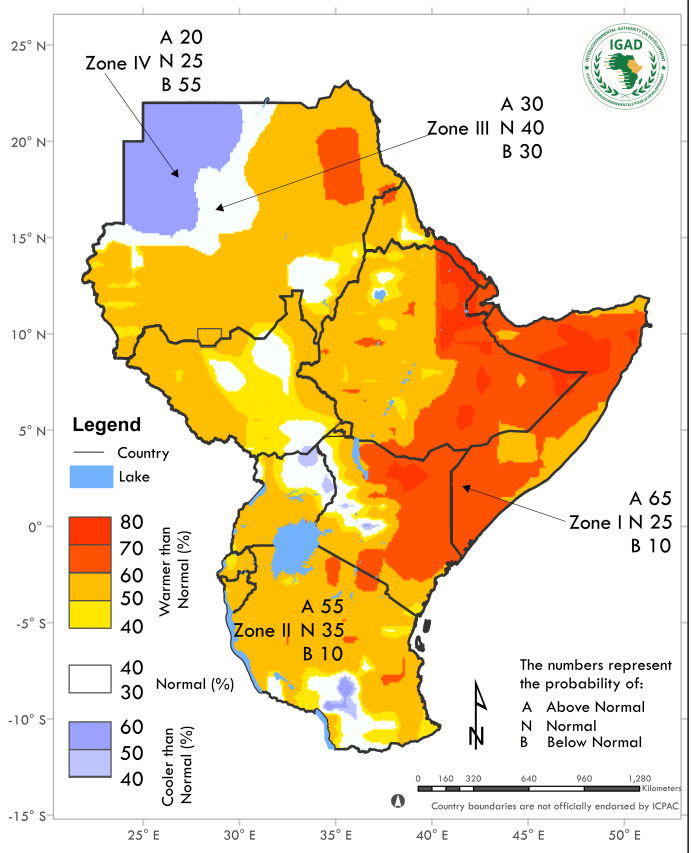


Figure 4: The plot on the left (top) shows the current (May - Jul 2025) pattern of SST anomalies over the tropical Oceans. The plot on the right shows the evolution of the Nino3.4 index in 2025, extended by the predicted values (black), compared with the observed evolution for the year (2021), which most closely matches that shown for 2025. The closeness of the match is measured by the temporal correlation and the mean difference (given in the boxes). The May-July 2021 SST anomalies (i.e. for the selected analogue) are provided (left, bottom) for comparison with the May–July 2025 anomalies.

8.0 Probability Forecast of Temperature for October to December 2025

The temperature outlook for various zones within the GHA region is given in Figure 5 below.



Zone I: In this Zone (dark orange), the above-average temperature (i.e., warmer) category is most likely at 65%. The probabilities for the near-average and below-average categories are 25% and 10%, respectively.

Zones II: In this Zone (orange), the above-average temperature category also has the highest probability (at 55%). The probabilities of the near-average and below-average categories are 35% and 10%, respectively.

Zones III: In this Zone (light blue), the probability of the near normal category is highest at 40%. The probabilities of the below-average and above-average categories are equal, at 30% and 30%, respectively.

Zones IV: In this Zone (blue), the below-average temperature category has the highest probability (at 55%). The probabilities of the near-average and above-average categories are 25% and 20%, respectively.

Figure 5: Probability forecast of mean surface temperatures for OND 2025 season.

Partners

GHACOF 71 was organised by IGAD's Climate Prediction and Applications Centre (ICPAC) in collaboration with the National Meteorological and Hydrological Services (NMHSs) of the Greater Horn of Africa (GHA) and climate scientists, specialised institutions of IGAD (ICPALD, CEWARN), ACMAD, as well as other experts from national, regional, and international institutions and organisations: UK Met Office, NOAA CPC-International Desk and WMO Global Producing Centres (GPCs). Kenya Meteorological Department hosted the event.

Funders