

**REPORT OF  
THE FIFTY NINTH GREATER HORN OF AFRICA CLIMATE  
OUTLOOK FORUM (GHACOF59) FOR OCTOBER TO  
DECEMBER 2021 RAINFALL SEASON**

**Held Virtually through zoom on 26 August 2021**

**THEME: "Climate Services for Resilience"**

**Nairobi, 2021**

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## **PREFACE**

The fifty-ninth Greater Horn of Africa Climate Outlook Forum (GHACOF59) was organized virtually on 26 August 2021. The main objectives of the forum were to review the feedback the performance and impacts of the previous rainfall season including the users feedback, provide the regional consolidated climate outlook for OND 2021 rainfall season and assess implications of the forecast in key socio-economic sectors over the region. The online forum brought together climate scientists, researchers, decision-makers and users from key socio-economic sectors, governmental and non-governmental organizations, development partners and the civil society among other stakeholders. GHACOF59 was preceded by sectors specific workshops that focused on co-production of climate services, feedback on the use of the previous forecast and impacts of the following season, lessons learned and mitigation measures, and co-production of climate services. This was in addition to week-long climate prediction development workshop which was held from 16 to 20 August 2021 to co-develop regional and national climate forecasts.

The GHACOF59 was organized by the IGAD Climate Prediction and Applications Centre (ICPAC) in collaboration with the National Meteorological and Hydrological Services (NMHSs) of ICPAC's participating member countries and supported by partners. The forum was held within the framework of the IGAD regional strategy for mainstreaming climate information in key socio-economic sectors for disaster risk reduction and sustainable development. The theme of GHACOF59 was "***Climate Services for Resilience***".

The three days-event was attended by 594 participants who joined the virtual meeting, 430 (72.4%) were male, while 164 (27.6%) were female.

ICPAC would continue to organize GHACOFs as one of the most effective ways to strengthen the dialogue between climate scientists and the users of climate services, proactively innovate and improve efforts to deliver better services to intermediary and end-users in the coming seasons.

***Guleid Artan (PhD)***

***ICPAC Director***

## EXECUTIVE SUMMARY

Due to the COVID-19 pandemic, the IGAD Climate Prediction and Applications Centre (ICPAC) held the fifty-ninth Greater Horn of Africa Climate Outlook Forum (GHACOF59) virtually using zoom platform. The GHACOF59 issued the October to December (OND) 2021 climate outlook for the region and formulated mitigation and response strategies as a consequence of the OND 2021 seasonal climate outlook. It also reviewed the June-August (JJA) 2021 seasonal rainfall performance and impacts on the different socio-economic sectors. The forum was supported by the ClimSA and CONFER Projects funded by the European Union as well as DRESS-EA project funded by Adaptation Fund through OSS.

The forum was held within the framework of the IGAD regional strategy for mainstreaming climate information into key socio-economic sectors for resilience and sustainable development. It brought together representatives from National Meteorological and Hydrological Services (NMHSs), global climate centers, regional partners and decision-makers and users from key socio-economic sectors. All the sectorial sessions were held a day before the main event to formulate responses to the regional climate outlook for the OND 2021 rainfall season over the GHA region. The sectors involved during the sectoral sessions were Agriculture and Food Security, Disaster Risk Management (DRM), Water Resources Management and Energy, Livestock, Health, Environment and Forestry, Media, and the Conflict Early Warning and Response Mechanism (CEWARN). Climate Change experts also had a parallel workshop on day one but later joined the various sectors on the second day.

The objective seasonal forecast was developed during the PreCOF59 climate capacity building workshop held from 16th to 20th August 2021. The consolidated objective climate outlook generally indicated higher chance of drier conditions over much of the region specifically over Tanzania, Burundi, Rwanda, Kenya, southern, central and north-western Somalia, southern and south-eastern Ethiopia, and the Red Sea coast of northern Eritrea. Consistent with increased probabilities for below normal rainfall, the start of the season predicted to be delayed, especially over eastern Kenya and southern Somalia. The temperature outlook indicates an increased likelihood of warmer than average surface temperatures across most parts of the region.

The forum provided a structured means for users, researchers, and climate services providers to interact at the regional level to ensure that user needs for the seasonal prediction are met. A total of 594 participants attended the GHACOF59 event virtually.

## **1. SESSION I: SETTING THE STAGE AND OFFICIAL OPENING CEREMONY**

The forum was opened by the Director of the IGAD Climate Prediction and Applications Centre (ICPAC), Dr. Guleid Artan. In his opening remark, Dr. Artan welcomed all the participants and distinguished guests and stated that the region, like many other parts of the world, currently face a series of compounded crises. These crises are exacerbated further by climate change. He mentioned that more frequent and intense extreme events are becoming new normal with their unexpected impacts. Moreover, he added that food insecurity, pests like the desert locust, or an increased frequency of tropical cyclones affect our region's people.

Dr. Artan mentioned that within the past few years we have seen record droughts and record rainfall in the same locations within this region. He said as such the most vulnerable in our population are exposed to severe shocks with little or no time to recover between crisis. He reminded the audience that an early warning without an early action has no benefit. Additionally early warnings are irrelevant if they are not received, understood and trusted by those who need to act-be policy makers or the general public. He recognized representatives from member countries in the event. He gave assurance that ICPAC would continue working with NMHS in member countries to co-produce climate products relevant for sector-specific decision-making.

Mr. Zachary Atheru briefed the participants about the GHACOF event, including the pre GHACOF59 workshops. He noted that the main objective of the GHACOF is to review the performance and impacts of the previous season, share lessons learned in the application of the products, and present the seasonal forecast for the coming season. He noted that the forum provides the opportunity for interactions between producers, users, and decision makes. He indicated that the main outcomes of the GHACOF event are the release of climate outlook for October to December (OND) 2021 and summary for decision-makers. He also highlighted some of the activities undertaken before the main GHACOF event, including the (1) PreCOF59 capacity building training workshop conducted from 16 to 20 August 2021 to produce the regional and national objective climate forecast, (2) the climate services co-production workshop with the key sectors held on 24 August 2021 and (3) the sectoral meeting to generate advisories and response strategies held on 25 August 2021.

### **1.1 Introduction**

The organization of Regional Climate Outlook Forums (RCOFs) was initiated in 1996 in Victoria Falls, Zimbabwe, by the WMO's Climate Information and Prediction Services (CLIPS) project in collaboration

with NMHSs. RCOFs gained momentum as a regional response to the major 1997–1998 El Niño event. The IGAD Climate Prediction and Applications Centre (ICPAC), formerly known as Drought Monitoring Centre (DMC), organized the first RCOF in Nairobi, Kenya, for the March to May (MAM) 1998 rainfall season in February 1998.

The fifty-ninth Greater Horn of Africa Climate Outlook Forum (GHACOF59) was organized by ICPAC in collaboration with the GHA National Meteorological and Hydrological Services (NMHSs), 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 October to December 2021 rainfall season over the GHA region. October to December (OND) is an important rainfall season for the equatorial parts of the Greater Horn of Africa (GHA) region.

This report presents summarizes the activities and discussions the fifty-ninth Greater Horn of Africa (GHA) Climate Outlook Forum (GHACOF59) which was held virtually on 26 August 2021.

## **1.2 Objective of the forum**

The main objective of the forum was to provide the regional climate outlook for the October – December 2021 rainfall season, analyze the potential impacts of the expected climate conditions on different socio-economic sectors, and formulate appropriate mitigation measures as well as advisories. Assessment of the performance and impacts of the preceding seasonal climate was also undertaken. Experiences and lessons learned in using the forecast together with good practices were highlighted in the sectoral reports. The challenges encountered during the season were also reported.

## **1.3 Participants for the forum**

The online forum was composed of climate scientists from the National Meteorological and Hydrological Services (NMHSs) of ICPAC member countries, universities, research institutions, regional and international organizations engaged in climate modelling, prediction and applications for the region. Others were from socio-economic sectors such as agriculture and food security, health, water resources, energy, disaster risk reduction, civil society, and conflict early warning response, among other users. Various regional and international Governmental and Non-Governmental organizations and the donor community are also participated in the forum. The number and percentages are broken down per country and sector in table 1 and 2, receptively. About 37% of the participants are based in Kenya. This is because Kenya is a regional hub for most of the Intergovernmental organizations and NGOs in the region.

It is also the host country and institution of the forum. In terms of sectors, the meteorology and climate services comprised of 38.5% of the total participants.

Table 1: Participants by countries and their percentages out the total participants

No	Countries	Number of participants	Percentage out of total number of participants
<b>ICPAC countries</b>			
1	Kenya	217	36.5
2	Ethiopia	68	11.4
3	Somalia	57	9.6
4	Sudan	44	7.4
5	Uganda	58	9.7
6	South Sudan	26	4.4
7	Rwanda	15	2.5
8	Tanzania	15	2.5
9	Djibouti	15	2.5
10	Burundi	9	1.5
11	Eritrea	1	0.2
Subtotal		524	88.1
<b>Participants from outside of the region</b>			
12	United Kingdom	15	2.5
13	Italy	4	0.7
14	Norway	6	1
15	South Africa	5	0.8
16	Sweden	1	0.2
17	Botswana	1	0.2

18	United States	4	0.7
19	Egypt	1	0.2
20	Germany	5	0.8
21	Switzerland	1	0.2
22	Cape Verde	1	0.2
23	United Arab Emirates	1	0.2
24	Botswana	1	0.2
25	Zambia	1	0.2
26	Zimbabwe	1	0.2
27	Netherlands	1	0.2
	Others	22	3.7
<b>Subtotal</b>		<b>46</b>	<b>11.9</b>

Table 2: the percentage of participants according to their sectors

No	Sector	Percentage out of total
1	Meteorology and Climate Services	38.5
2	Agriculture and Food Security	12.6
3	Environment and climate change	14.3
4	Media / Communication and Information Technology	6.4
5	Water and Energy	5.5
6	Disaster Risk Reduction	6.4
7	Livestock	4.9
8	Education / Academia and Research	3.7
9	Conflict / Law enforcement and Security	1

10	Health	2.4
11	Other	4.3

## 1.4 Methodology

Presentations and plenary discussions were some of the main modes used during the online forum. On 25 August 2021 sectors organized a working session to review the impact of the JJA 2021 season, share lesson and good practices, discuss the outlook of OND 2021, and generate advisories to mitigate the climate.

This report is divided into **five sessions**. **The first session** is setting the stage and official opening ceremony. This session also provides a brief introduction of the forum, objective and profile of the attendance. The **second session** presents assessment of the performance of JJAS 2021 seasonal climate over GHA; reports collated from member countries' focal points on performance of JJA 2021 season, good practices and challenges during the season. **Session three** gives current state of global climate system and OND 2021 seasonal climate outlook for the region. **Session four** is on expected impacts and management strategies emanating from the given forecast. Finally, **session five** where the official release of the OND 2021 climate outlook statement followed by a **sixth session** for side events. Three side events followed after the closing of the main GHACOF meeting. The annexes are captured in the last part of this report.

## 2. FEEDBACK ON JJA 2021 SEASONAL CLIMATE PERFORMANCE AND IMPACTS

This session was mainly dedicated to showing the meeting participants the performance of the previous season and to showcase some of the impacts observed during the season with regards to the observed rainfall and temperature from seven sectors including Agriculture and food security, Conflict, Disaster Risk Management, Livestock and Rangelands, Health, Water resources and energy and Environment and forestry. Additionally, sectors reported observed long-term seasonal changes during the JJAS season and implementation and impact of climate service and advisories during JJAS season.

### 2.1 Eastern Africa JJA 2021 season Performance

Mr. Anthony began by first showing the performance of MAM seasonal forecast noting that the MAM forecast that predicted below normal (BN) and above normal (AN) categories performed really well, both

recorded above 60% using the Percent Correct metric. He then presented the JJAS climatology of Eastern Africa noting that rainfall is mainly concentrated in the northern sector of the region and contributes more than 60% of total annual rainfall in most parts. The verification of the JJAS rainfall onset showed that the JJAS rainfall forecast captured the early onset in Sudan, South Sudan & Ethiopia border regions quite well. The JJAS rainfall forecast had indicated that most parts of the northern sector would receive above normal rainfall and this was captured quite well in June and July in Sudan, Eritrea & northern Ethiopia. He noted that moderate to severe wet conditions were observed in Sudan from the SPI assessments while normal conditions were observed in Eritrea, Djibouti, northern Ethiopia. Moderately dry conditions were observed in Uganda, Rwanda, central Ethiopia. He went ahead and noted that JJAS season was warmer compared to climatological conditions.

## **2.2 Overview of JJA sectoral impacts**

### **2.2.1 Agriculture and Food Security**

The feedback from the agriculture and food security sector was presented by Mr. Oliver Kipkoge. He first highlighted the positive feedbacks which included, suppressed breeding and spreading of the desert locust, provision of short-term seasonal loans to farmers by financial institutions, improved access of irrigation waters after rehabilitation of major irrigation networks, and improvement in food security situations in certain countries. Some of the negative impacts highlighted included; crop failure due to moisture stress/long dry spells in belg growing areas and parts of Oromia (Ethiopia), there were incidences of flooding, water logging and soil erosion, and the disruption of livelihood activities for the poor households due to COVID-19 pandemic. Some of the observed long-term seasonal changes reported included; increased dry spells, shift in JJAS rainfall peak, rising water levels in Lake Kyoga in Amolatar. In conclusion, he reported that the climate services and advisories offered during 2021 JJAS informed the promotion of on crop and pasture fields, water harvesting, distribution of agriculture inputs and regular scouts, small scale irrigation technologies, and national campaigns on tree plantation.

### **2.2.2 Conflict**

The negative impacts reported by the Conflict sector included a likelihood of loss of livelihood in South Sudan as a result of the migration of the victims of floods to safer areas which are already inhabited by the host communities thus increase hostilities. There is reported tension and escalation of conflict

between the military who are enforcing the fisheries regulations and communities in Uganda. There was already one casualty reported during an enforcement exercise. There were also reports of increased raids, thefts between South Sudan-Kenya, Ethiopia-Kenya and Uganda-Kenya. In Somalia, the dwindling resources resulted in clan conflicts between farmers and herders, such as clan conflict in Boocame and Burtintle region of Puntland. In Uganda, pastoral communities continued to raid each other leading to deaths and continued cycle of violence prompting the army to launch another phase of disarmament. Some of the positive feedbacks reported included the management of competition for resources to reduce clashes, boosting of local small-scale trade and exchange thereby improving communal relations, and increased food security reduced cases of stealing food stuffs. The presenter reported that climate services and advisories in the 2021 JJA season was disseminated to relevant offices and partners and this had a major impact in, for example, Ethiopia where approximately 50 households from Afar moved from river banks. The information was also used to inform food aid distribution in Sudan, and in Kenya, it facilitated intra/inter community peace dialogues and resource use agreements.

### **2.2.3 Disaster Risk Management**

The talk began on a positive note stating that the region experienced wet conditions which was good for agricultural production and availability of water and pasture. It was also reported that no country had declared state of emergency during the JJAS season. However, several disaster incidences having significant impacts on the lives, livelihoods and infrastructure/services were reported. COVID-19 pandemic had the highest impact in the region followed closely by floods. It was also reported that more than 4 million and 8500 people were affected and displaced by disasters in the IGAD region respectively. Some of the measures taken during the JJAS season included community sensitization, issuing early warnings, relocated communities at high risk, hazard monitoring. Disaster response operations included Cash transfer, distribution of food and non-food item, while recovery and reconstruction were underway in areas affected by disasters. Finally, it was noted the effective multi-sectoral/agency coordination is key before, during and after the disasters

### **2.2.4 Livestock and Rangelands**

The talk began with the positive impacts observed during the JJAS season which included well distributed rainfall in most parts of Ethiopia, adequate pasture and water, improved animal body conditions, and

water harvesting and rehabilitation of animal route and labs were carried out in Gadarif and Kassala, Sudan and in Kenya. Some of the negative impacts included floods in some areas, drought in Borena zone, some districts of Eastern and western Hargeisa, resulting in livestock deaths, increased animal movements in search of feeds, increasing prices of animal products, resource-based conflicts reported in Laikipia County in Kenya, and rising tensions between farmers and livestock pastoral communities during livestock movement as they avoid floods in lowland in South Sudan. Some of the observed long-term seasonal changes reported included; increased occurrence of extreme rainfall events in several areas, late onset of JJAS season (in Sudan and some areas in Ethiopia), and longer than usual dry spells. Finally, the talk concluded by providing insights into the implementation and impacts of climate services and advisories in the 2021 JJA season. Some of them included disease surveillance, supply of vaccination and drugs, development of animal feeds, off take of livestock, large-scale tree planting, and beefing up of one health coordination in Sudan.

### **2.2.5 Health**

The positive impacts reported by the health sector included reduction of cases due to flu, common cold following COVID-19 prevention measures, no cases of diarrhea or pneumonia observed in Burundi, improved food production and availability of dairy products lead to better nutritional status and reduction in infectious diseases in Ethiopia. The negative impacts reported included increased incidences of mosquito-borne diseases such as malaria in all countries, Acute Watery Diarrhea (AWD)/Cholera outbreaks in Somalia, nutritional deficiency threats in Kenya, upsurges of Hepatitis E cases in Bentiu Internal Displaced Person (IDP) camp 2 in South Sudan, and increase in COVID-19 (Delta variant) since June. Some of the observed long-term seasonal changes included heavy rains in Burundi in JJA which is considered dry climatologically, more unusual cold winds and cloudy days and nights particularly during June, July and beginning of August-Somalia, and reduced cases of malaria compared to the same months in previous years. The final part of the presentation focused on the implementation and impact of climate services and advisories in JJA season. The included distribution of long-lasting insecticidal nets (LLINs) and Larval source management, increased sensitization of improving personal hygiene, comprehensive humanitarian responses to cover nutritional deficiency, procurement and distribution of vaccines and gloves, and door to door Mass Drug Administration (MDA) for schistosomiasis deworming in Rwanda.

### **2.2.6 Water Resources and Energy**

The positive impacts reported by the water resources and energy sector included a drop in lake levels due to Low rainfall especially in Lake Victoria basin, enough water for hydropower production (HP), flourishing riverine fishing, water level in the White Nile remain deep enough for navigation of larger barges and water supply infrastructure, and increased groundwater recharge, seasonal and perennial streams flow and shallow groundwater and energy generation. Some of the negative impacts reported during the season included reservoir water levels have been falling steadily leading to reduced HP production in Kenya, interruption of construction-related projects due to persistent high-water levels and wet ground in Uganda, power outages due to collapsing power lines in Sudan and increased impacts on public health due to flash floods including death and injuries, diarrheal diseases and vector-borne diseases transmitted. Some of the measures taken included relocation of households under risk, early warning via radio, TV, print and social media. Some of the observed long-term changes in JJAS season included steady decrease in lake water levels, and early onset of JJAS season in Sudan. Finally, the implementation of advisories was achieved through workshops, social media platforms, radio, TV news and electronic mails, and via the Ministry of Water through hydrologists working together under National Multi-sectorial Water forum.

### **2.2.7 Environment and Forestry**

The positive impacts reported by the environment and forestry sector included above average rainfall favored the development of good forage production for wildlife and livestock, availability of water for wildlife and livestock, good forestry productivity as a result of good rains, improved natural regeneration in riverine forest in central sectors and other natural forest, and mangrove restoration to reduce degradation. Some of the negative impacts reported included land degradation/ soil erosion due to high rainfall, reduction of forage and water for wildlife and livestock, prolonged drought causing degradation of habitats, wildlife migration and human wildlife conflicts, deforestation due to agriculture expansion/charcoal production/timber business and oil production, increased costs in forestry operations associated with challenging infrastructure such as roads, and abundant fodder grass attracts considerable nomads groups, who cause damage to regeneration and young trees. Some of the implementation and impact of climate services and advisories included soil conservation and landscape/ecosystem restoration, fire management practices and rehabilitation of burnt areas, enhanced success of forestry operations due to better planning including species site matching and timely planting, increased surveillance in human-wildlife hotspots, increasing forest connectivity to enhance the natural

resilience, increasing the area under forest (through afforestation and reforestation), and improved early warning and dissemination of climate information.

## **2.3 Plenary Discussion**

### **Livestock**

Some of the participants wanted to know the relationship between Covid-19 and the price of livestock. It was noted that the price of livestock is controlled mostly by supply and demand and COVID-19 had an impact on this.

### **Water**

Dr. Sabiiti wanted a clarification on the statement which states that a drop in lake levels was positive. Dr Mohammed responded by saying that the current lake levels had been higher than long term means and caused infrastructure and housing inundation. Therefore, a decrease in lake levels caused by increased outflow as well as rainfall deficit is taken as positive.

Maurine Ambani wanted some perspectives on the rising water levels in Lake Tanganyika in Burundi and that it would be interesting to know if the Tanganyika Lake levels will start going up again in the coming season, to inform anticipatory action in case of further flooding from the lake. Dr. Mohammed responded by stating that the lake level increase was as a result of above average rainfall and that it was still hard to tell whether the levels will rise since a larger part of the catchment lies outside GHA region, but the levels could rise depending on the performance of OND season.

### **Health**

Peter Johnston wanted clarification as to whether malaria incidences have increased since some of the reported cases were lower. Dr. Adugna responded by stating that the figures are obtained from reports from member countries that there was a reduction of malaria. He further noted that there is an expectation that during heavy rainfall the mosquitoes are washed away and don't allow transmission. However, it is impossible to rule out the health system unnecessarily reporting low prevalence and close follow up is advisable. Peter Johnston went further to say that the nuances of transmission and rainfall are not always well understood.

### **Environment**

Abduwali Abdi wanted to know whether there are any data on (*Prosopis Juliflora*) invasive species, taking over irrigation farming and grazing land spaces in Somalia and parts of Kenya? He further noted that it would be interesting to get this data and track the speed of the invasion. It needs attention to manage and control locally. He added that it was possible to integrate this data in the EAHWS. Eugene Kayijamahe responded by saying that ICPAC does not have data on invasive species at the moment. ICPALD might be working on this, please check with them.

## **DRM**

Alor Kwaja Kuol noted that in South Sudan there was displacement of people and livestock due to the floods in lower land but it was not captured in the sector reports.

### **3. OCTOBER - DECEMBER 2021 SEASONAL FORECAST**

This focus of the first part of this session was to understand the status of global climate drivers and their expected impact on the short rains season. The second part was to discuss the forecast for the OND 2021 season with associated intra-seasonal characteristics.

#### **3.1 Current state of global climate system**

This part of the session was presented by Dr. Stefan Lines from the UKMET Office. To put the session into perspective, he presented the glaring evidence for global warming that scientists have established as a fact. He showed the continuous increase in global SSTs experienced from as early as 1975. Further, he showed that the warmest 6 years on record have all been from 2015 with 2020 being the second warmest even though La Nina was present. With the current temperature trends (July 2021 being the warmest month on record), he noted that 2021 might be among the warmest years. As at 2020, annual global temperature was 1.28°C warmer than the average for 1850-1900 (WMO).

#### **Why monitor status of global drivers?**

Dr. Stefan also explained why monitoring the status of global drivers is important for climate forecasting. He noted that the atmosphere is full of 'chaos' that make long-lead forecasts difficult. However, using the Sea Surface Temperatures (El Niño / La Niña (ENSO) / Indian Ocean Dipole (IOD) helps to underly the most predictable part of the variability although they do not fully determine the outcome of a season. As the main driver of year-to-year climate variability, the present SSTs are seen to be near to below average across majority of the tropical Pacific and are mostly cooling across the mid to east tropical pacific. Similarly, strong warming in the eastern part of Indian Ocean is evident.

### **El Niño / La Niña – current and projected status**

He also gave an overview of the forecasted SSTs in the NINO 3.4 region. He noted that majority of models show cooling from July conditions and that there are very high chances of ENSO La Nina conditions re-developing over OND. Generally, La Nina means a dry preference in OND (below average rainfall). From August conditions, models show that there is ~ 32% chance for Neutral ENSO and 67 % chance for La Niña.

### **Indian Ocean Dipole (IOD) – current and projected status**

Dr. Stefan also discussed the status of the Indian Ocean, which exhibits east–west sea surface temperature fluctuations on inter-annual timescales and monitored using the Indian Ocean Dipole Index (IOD). Generally, the IOD is expected to have a strong influence for OND. He pointed out that IOD currently, most models are in agreement for negative IOD conditions. He however cautioned that the strength of IOD should be taken into consideration when inferring its effect on OND season.

In summary, Dr. Stefan was able to show the continued evidence of global warming with 2020 being the second warmest on record and the last decade being the warmest on record. He also showed that ENSO neutral conditions are present, tropical Pacific SSTs are cooling slightly, and models predict that La Nina is likely to re-develop over OND and later returning to neutral state into Long Rains. He noted that La Nina in OND typically signifies a preference for below average rainfall (dry). He further pointed out that the IOD index is currently negative, and is expected to remain negative throughout OND hence likely to cause below average rainfall (dry) but we should be careful based on early analysis of the IHFG.

## **3.2 October – December 2021 Greater Horn of Africa Climate Outlook**

This part of the session was done by Dr. Zewdu who started by explaining the significance of the season over the region. He pointed out that OND contribution to annual total is significant over the eastern parts of the region contributing up to 60% over eastern Kenya. To set the basis of the forecast after an understanding of the need for analysing global drivers, he noted that the current observed SSTs from May to July show correspondence with past years during 2016, 2010, 2001, 2020, and 2011.

Having understood the SST patterns, he pointed out that 9 models were calibrated (to account for global and local effects) and the outputs were averaged. Only the dominant category was shown as the objective forecast. The forecast for OND 2021, shows that there are high chances for drier than average conditions over much of the region while western Uganda, and South Sudan do not show any distinct category.

North-eastern Somalia is likely to record average to below average conditions. In terms of probability of rainfall exceeding 200 & 300mm, there is reduced chance (between 10-26 % & 10-15% respectively) over eastern areas and higher chances over the western.

The SPI (Measure of drought index) shows that moderately dry conditions are likely over eastern Kenya and parts of Uganda for the 3 month season. For 6 months (taking into account July-September), large spatial extent is evident while a 12 month index shows enhanced areas with severely dry conditions. However, the northern show excessive wet conditions

For the intra-seasonal characteristics of the season, he pointed out that Onset was calculated using 43 ensemble members. Ethiopia is expected to record onset in October and progress southwards to Tanzania in November. A generally late onset is expected, but western Kenya and South Sudan are expected to record early onset

In terms of temperature, he noted that generally warmer than usual conditions are expected with highest probabilities over the eastern part of the region

In Summary, generally drier conditions are expected in areas where onset is expected to be late, low chances of exceeding 200 and 300 mm over the eastern areas of the region, SPI from Jan-Dec shows multi-season droughts over much of the region and warmer than usual temperatures expected in the coming season.

### **3.3 Plenary Discussion**

The plenary session was a Q & A session and the participants were able to get an opportunity to ask climate related questions. Mr. Oliver Kipkogei wanted to know if there are any updates on the Atlantic dipole and its influence on the western sector of IGAD, including any early indications for MAM'022 based on persistence of current climate drivers. Dr. Stefan stated that he did not have latest information about the current Atlantic dipole status, but made it clear that the ENSO and IOD relations with MAM are different to OND. Further, there is a signal from the models at the moment that MAM '22 will see a return to ENSO neutral conditions. Dr. Andrew Colman added that the relationship is far from strong and there is some evidence that the ENSO/ rainfall relationship can even be reversed.

Dr. Philip Omondi wanted to also know if there is any documented relationship/interaction between ENSO and IOD & consequently influence in rainfall over Eastern Africa. Dr. Stefan responded that there are many complexities to consider on seasonal timescales for this teleconnection. IOD and ENSO can lead to mutual forcing such that e.g. Positive IOD often (but not always) occurs with El Nino. This can

compound the driving influence on seasonal rainfall. Andrew Colman noted that there are studies that are ongoing on the relationship between IOD and ENSO and Dr. Titike has done a study on independence of IOD (Bahaga et al. 2019: <https://rmets.onlinelibrary.wiley.com/doi/full/10.1002/joc.5986>) and Macleod et al. <https://rmets.onlinelibrary.wiley.com/doi/10.1002/asl.1015>

A participant also wanted to know the extent to which long term climate change projections can be incorporated in forecast. Dr Zewdu pointed out that so far, there are no direct indicators of long term CC being incorporated when generating the forecast as research required and Dr. Richard added that some models used, however, take into account carbon dioxide levels.

Mr. Calistus wanted to find out if there's any significance of Madagascar channel cooling to seasonal performance of OND 2021 for East Africa. Dr. Stefan

Responded that the strongest drivers of variability are targeted in the forecast methodology (training against tropical SSTs) but less clear drivers will still be 'picked' up via the GPC dynamical models. He however, said that there is need for detailed research on a potential teleconnection.

Prosper asked if it is possible to predict the tendency of La Nina like weak La nina, Strong or Moderate as of this August 2021 and Dr. Zewdu responded that SSTs from global centres are monitored continuously e.g BoM

Judith inquired on the viability of using analogue years given climate change and Dr. Stefan agreed that there is need to start carefully addressing climate change influence on seasonal norms/extremes. He said that with regards to analogue years, his opinion is to limit the range of acceptable comparable years (to those more recent) such that we have a similar background global situation (temperature). This would account for potential changes in the teleconnections with increasing global temperature due to climate change.

#### **4. SECTOR REPORTS ON IMPACTS AND MANAGEMENT STRATEGIES**

This session covered the impacts on the OND 2021 forecast for the sector with recommended advisory on the anticipated impacts. The season is forecasted to have depressed or below normal rainfall, and below are the anticipated impacts and advisories from the different sectors.

#### **4.1 Agriculture and Food Security**

The expected positive impacts are: good conditions for crop harvesting e.g., wheat, maize, sorghum, tef, beans in the highlands of Ethiopia, Western Kenya etc. leading to a reduction in post-harvest losses; Reduced pests and diseases for crops e.g., Data Library (DL); Late-onset will enable farmers to get enough time for land preparation; Dry conditions will allow repairs of irrigation and water harvesting infrastructure across irrigated areas. The negative impacts anticipated are: Poor crop prospects due to below normal rains, the likelihood of water stress, and low soil moisture; Below average harvests; Increase in food prices; Likely an increase in the number of vulnerable households requiring the need for expanding relief and other interventions; The delayed onset will lead to delayed planting and could negatively impact long cycle crops; May trigger resource-based conflicts (driver of food insecurity); and poor food security situation especially for ASAL areas in the region

Key response measures/advisories proposed were: Governments and farmers advised to; promote the planting of the short season, early maturing, and drought-tolerant crop varieties, and distribution of seeds on time. Farmers encouraged to seek advice from extension officers/MoA; Promote conservation agriculture practices (minimal tillage, mulching, etc.) in farming areas to reduce evaporation and soil water loss; Promote water harvesting practices for crop supplementary irrigation and for livestock water; Expand irrigated areas, rehabilitate irrigation infrastructure, subsidize irrigation equipment, and promote small scale irrigation technologies for supplementary irrigation; Encourage Govt's and Partners to act early in response to the possible humanitarian crises (climatic and non-climatic shocks) e.g. food assistance; Promote subsidies and crop insurance cover to cushion farmers against climatic shocks; Diversification to other livelihood sources, other income-generating activities e.g. beekeeping; Households urged to practice proper use of available food stocks; and immediately disseminate this (early warning) information to decision-makers.

#### **4.2 Environment and Forestry**

The Environment & Forestry sector anticipates two positive impacts which are: good vegetation and forest productivity in the transition zones of South Sudan and Ethiopia; and decrease in water levels in flooded areas. But there are a number of negative impacts expected: Depressed growth rates of trees already planted in both natural and commercial plantation areas of Ethiopia, Kenya, South Sudan, and Uganda; Natural regeneration of arid lands vegetation reduced (Kenya); Deforestation and vegetation degradation for alternative livelihoods (charcoal production) due to drought Kenya and Tanzania; The increased cost of forestry production; Increased incidence of fires and their associated environmental consequences

including pollution and threats to biodiversity (Kenya, Ethiopia, South Sudan, Uganda); Reduced availability of water and pasture for wildlife and livestock (Kenya, South Sudan); and Increased human-wildlife conflicts (Kenya and Tanzania).

The advisory proposed are; Promote fire management practices - digging fire cutlines, firebreaks, early burning; Promote forage/pasture management (rotational grazing, provision of alternative food eg hay); Provide water for wildlife and livestock (construction of water points); Mobilize resources for human-wildlife conflict management; Planting of moisture-stress (drought) resistant varieties of trees; Improve on drought support livelihoods by providing food to most affected communities; Promote land management/landscape restoration areas affected by floods and drought; rehabilitation of burnt areas; and Enhance capacity building and information dissemination.

### **4.3 Livestock and Rangelands**

Positive implication on the livestock sector were: No restrictions for pastoralists to sell their products; Below normal in most parts of the country but is crop harvesting time; Good Pasture especially South Sudan lowlands; and Enough water in streams and rivers. The negatives are: The outbreak of animal diseases (tickborne, Pneumonia); animal staying under shades most of time; An outbreak of desert locust – favorable breeding conditions; Animal movements; Tension among pastoralists leading to conflicts; Risk of desert locusts; Animal disease outbreak; Lack of forage; Diminished water spouts; Drought conditions on watch Borena zone and Somali region; Deterioration of animal body conditions; Tension among pastoralists arising from internal and external migration; Increased mosquito infestation following an increase in temperature; Internal conflicts within the pastoralists will arise; towards Isiolo, Karamojong Uganda; Competition on grazing - green fodder around the irrigation scheme; Spread of animal diseases around watering points; Inadequate water; Internal movements; from the South to the East; and Most livestock usually move to the south but South Sudan looks dry so this will be a tough season.

Key Advisories were: Monitoring, control, and surveillance of animal diseases; Vaccination of animals; Training of community animal health workers; Desert control measures; Good storage of animal feeds; Country talks following the migration of pastoralists on animal surveillance and disease control; Supply of animal feed and water to severely affected parts; Control of desert locusts; Animal vaccination; Harvest and proper storage of feed; Implementation of MoU in cluster 1:sensitization of the MOU to the communities; Vaccination of animals (CBPP, CBP, PPR); Strategic repositioning by the livestock sector; Give alerts for internal movement of animals for animal vaccination; Strategic offtake (KMC to buy animals to destock animals from farmers; Disease control; since most animals will be residents. It will also be

easier especially for PPR and FMD; Enhance vaccination campaigns; and climate team gives very useful information that can be used to make better inferences but the time does not allow their integration. Users to be allowed more time to “digest” this information.

#### **4.4 Conflict (CEWARN)**

With the prediction of below-normal rains in the region, most MSs have not been spared to the extent that most parts will have low rains which will result in scarce pasture and water. Low food production looking back from MAM, JJA season that was not better. The expected impacts are: Competition over scarce resources Water and pasture; Increased conflicts between hosts and migrants; Conflicts between pastoralists and crop farmers; Increased animal diseases; People from different regions will move to few regions to find labor employment by participating in harvesting on household farms and conflicts with host communities will arise; In Ethiopia, by October there will not be flooding threats in the country season the end of the rainy season in the country; In some productive areas such as Arsi, Oromia in Ethiopia they start harvesting the staple crop teff also other major cash crops; and because of the harvesting season, the food prices are expected to reduce.

Despite the expected challenges we recommend that members of the community to continue with the Joint cross-border dialogues; Activation of resource sharing committees; Joint vaccination through mobile vaccines; Early warning information on drought should be cascaded to the local level targeting the communities that are directly affected by the loss of water and pasture; Capacity building for local peace committees on peacebuilding and conflict management skills; Timely land preparation and early planting, expansion of farming acreages, and promotion of water harvesting and micro-irrigation; The Disaster Risk Management Institutions should review their contingency plans based on OND forecasts 2021; Conduct Community awareness about the potential outbreak of the diseases in the context and surveillance; The governments should give focus on rehabilitating grazing (rangeland) land areas; The governments should give focus on expanding major irrigation canals and underground water pumps in communities; ICPAC should work on rigorous research in the area and report to the government of with specific location.

#### **4.5 Water Resources and Energy**

Expected positive sectoral impacts for this sector are: Enhanced rainwater harvesting in reservoirs and pans as a result of the above-average JJA season; This will secure water for use by pastoralist, irrigation, and hydropower production during the OND season (Ethiopia, South Sudan, Sudan); A further drop in Lake water levels due to depressed rainfall is likely to reduce inundation, displacement of people, and threat to infrastructure around the lakes leading to improved livelihood (Kenya, Uganda Tanzania). The sector also anticipate negative impacts which are: Water scarcity for both domestic and irrigation may be experienced in some basins that are forecasted to receive below-average precipitation (Ethiopia, Kenya, Somalia, Tanzania); Water-related diseases are possible in areas with water scarcity (Ethiopia, Kenya, Somalia); Reduced hydropower generation due to below-average inflows in both JJA and OND seasons(Ethiopia, Kenya); Increased water use/sharing conflict between communities and sectors in areas that are forecasted to receive below-average precipitation (Kenya, Somalia).

Key response measures / advisories proposed are: There is a need to conserve water for those areas that OND will be a dry season (Djibouti, Ethiopia, Sudan); Update basin management plan based on the forecast (Kenya, Uganda, Tanzania); Careful reservoir and lake outflow management to stabilize power production; Provide water trucking services to those in need of water and far from water sources (Kenya, Somalia); Desilt water pans to improve capacity (Kenya, Somalia); Provide water treatment chemicals to households that rely on open water bodies for domestic water (Kenya, Somalia).

#### **4.6 Disaster Risk Management (DRM)**

This is a crosscutting sector with the following anticipated impacts for the OND season: Post harvesting in northern Ethiopia is favored with the current forecast; second harvesting season may be affected by the looming drought in Somalia; Negative impact on water availability Ethiopia and Somalia; Drought expected in the south and southeastern Ethiopia, much of Somalia; Conflict due to migration of pastoralists in search of pasture and water in South Sudan; High temperature and Heatwave leading to bushfire and wildlife migration expected in South Sudan; The expected below normal rainfall may exacerbate the drought in northeastern/eastern/coastal Kenya, Uganda (Teso region/ southwestern/ Karamajo); Floods and landslides may occur in central/western Kenya and Uganda; Inter-community conflicts and human-wildlife conflicts due to limited resources as a result of depressed rainfall Kenya, Uganda, and Tanzania; COVID19 cases are on the rise and may get worse in the coming Uganda season; and the productive sectors will be affected due to the forecasted poor rains.

Key advisories proposed are: Adopt irrigation/water conservation techniques in areas expecting dry conditions; Store animal feeds for expected dry period; Early warning information to be shared with communities; Community-Based organizations and NGOs encouraged to support communities preparedness and response initiatives; Climate-smart agriculture is encouraged and drought-resistant crops for cropping areas Somalia; Sensitization and awareness creation/training for communities on safety measures to undertake at household level; Agriculture sector to advise on early maturing crops in Kenya; Water harvesting at the household level to encouraged; Water trucking for livestock and domestic use; Appeal for Karamoja area (WFP to step in with food and non-food items) Uganda; Early warning to be issued through the national TV next week in Uganda; Request to the government to access relief funds to support flood-prone areas Uganda. In addition to this, General DRR measures are Timely activation of the task force(s) on the drought that involves the different sector ministries; Sensitization of communities at risk and dissemination of drought early warnings and put in place the necessary contingency plans; Promote and plan for Early Actions involving stakeholders to prevent or mitigate the impacts of the drought on the livelihoods; Multi-agency and multi-hazard approach for effective disaster risk reduction; and Promote innovation in DRR.

#### **4.7 Health Sector**

The anticipated impacts for Sudán and South Sudan are; Increase of Meningitis cases; Increase of Allergan's and bronchial Asthma due to the sand storm; Cases like dengue fever; Malaria upsurge due to continuing flooding in some parts of the country due to flooding favorable for vector-borne diseases such as malaria; and HEV (Hepatitis E Virus). Proposed advisories for these impacts are; Early detection of cases & treatment and meningitis vaccination; control of *Aedes aegypti* mosquitos; Raise awareness on the use of facemask and cover and clean the water container; Assessment of current stock levels of malaria diagnostics such as Rapid Diagnostic Tests(RDTs), Artemisinin combination Therapy(ACTs ), and Long Lasting Insecticide Treated Nets (LLINs); Key messages on Hepatitis E Virus should continue within the community through Home Promoters(HPs), Community Health Workers (CHWs), and Kondial Radio.

Kenya expected impacts are: Nutritional conditions related to food deficits especially in North, North Eastern, parts of South Eastern Kenya; Water washed diseases especially trachoma and scabies; Increase in enteric diseases related to poor hygiene e.g. Dysentery, Diarrhoea; Heat stress and air pollution especially in ASAL areas; Expect reduced mosquito-born diseases e.g. Malaria. Dengue, filariasis across the country. Advisories are: Rapid vulnerability assessment, food relief to vulnerable

populations and food supplements to most vulnerable; Strengthen treatments services for trachoma and skin infections; Provision of drinking and domestic water in ASAL through bowzers; Undertake public and targeted risk communication, public education, and promotion of household practices to all vulnerable populations.

Ethiopia impacts are: Malaria is exacerbated in areas with still better rainfall due to the enhanced role of rising temperature; Shortage of food and poor nutrition that come from a shortage of animal feed (most of the communities are pastoralists); Cholera and other diarrheal diseases associated with shortage of water. Advisories are: Health education, strengthening case management, and persistent use of mosquito nets; Availing animal feed and water to animals to improve dairy products; Improved water supply for households and community possibly before the drought occur

Burundi expects decrease in agricultural production with all its consequences on health: increase in acute malnutrition; Decrease of vector-borne diseases like malaria; Diarrheal diseases due to the lack of water and after open defecation during JJA season which is dry in Burundi. It is advised the support should be given to low-income households with food, strengthen the management of acute malnutrition; Keep up malaria prevention and treatment interventions, as it's endemic, and since we don't know the duration of the rains and their quantity over the whole season; Observe and keep key components of WASH

In Uganda, expected impacts are: Malaria upsurge in some districts of Lango region e.g Amolatar and Karamoja region, westinile and Acholi regions in the districts of Madiokolo, Lamwo, Ajuman, Apac, Amuru, Maracha, Terego, and Pader where malaria transmission is currently high; Cholera outbreak in some parts of Karamoja like Kotido and Moroto in case of low rainfall towards November and December (Water shortage); Possible Cholera outbreak in Kasese in case rainfall is high. Advisories are: Share early warning systems with the districts, the preposition of malaria commodities enhanced health education and enhanced surveillance of malaria cases, Prioritize routine distribution of nets in the mentioned Districts; Health education, availability of water (Kotido&Moroto), Enhanced surveillance for the disease, a buffer of cholera vaccine for Kotido, Kotido, and Kasese.

Somalia expected impacts are: A serious shortage of water sources for both humans and Animals; Outbreaks of Diarrhoea and Cholera; Population displacement leading to more IDPs; A serious shortage of food availability/Food insecurity; Malnutrition; Loss of human and animal lives. Advisories: Implementation of all AWD/Cholera Preventive Measures and case management activities including enhancing surveillance and capacity building; Nutrition interventions are implemented based on the need

of the target population and groups; General food distribution; and Water tracking.

## **4.8 Climate Change**

IPCC summary for policymakers (AR6) are as follows:

- A red code for humanity
- CO2 concentrations are the highest in 2 million years
- The last decade was hotter than any period in 125,000 yrs
- We have approximately 10 years to act.
- Current policies and climate plans (NDCs) are deeply insufficient.

With the current impacts of climate change on agriculture in Eastern Africa region, it is proposed that we should: Enhanced agroforestry practices; Improve rangeland management; Resilient CSA practices; Diversification / Biodiversity management; Resilience building through management of climate risks; Prolonged dry spell, short rains, and low frequency of rain; Increased use of greenhouse; Shifting of Agro-Ecological Zones; Data monitoring for emerging and new pests and diseases.

Below is a list of key specific priorities of IGAD member states to be presented for negotiation at cop 26

- Financing of adaptation & Mitigation activities
- Carbon Market mechanism
- Global Stock-taking issues
- Finalization of PA Rule BK
- L&D issues to be finalized
- Avoidance of double claims
- Koronivia Joint Work on Agriculture
- Guidelines for national capacities for LDCs

## **4.9 Plenary discussion**

From Geoffrey Sabiiti: @Oliver, Thanks for a very informative presentation. Is it advisable for farmers to increase or decrease the area planted given the expected depressed rainfall? Increased acreage will increase production in tonnes!

From Oliver Kipkogei: @Sabiiti, the key point is to ensure that farmers are advised on the proper selection of seed varieties given the season. There is also a need to diversify into other livelihood sources

From Hamud Osman Ibrahim: Thank you for the good presentation on agriculture and food security. Are you sharing your presentation? - Joseph.

From Oliver Kipkogei: With increased likelihood for 3 sequential poor seasonal rains; OND'2020 to OND'2021?. could this lead to a very dire food security situation over the eastern horn, compounded by the current multi-layered shocks, c19.4?

From Oliver Kipkogei: @Gedion temperature and rainfall definitely impact on the breeding of FAW. High rainfall washes away FAW larvae and is a deterrent. The coming season might be conducive for FAW (negative impact) and need to undertake continuous monitoring and control in the coming season.

From Oliver Kipkogei: @Gideon, yes, an example is the Kilifi area that has had continuously failed seasons of MAM and JJA and the food security situation is already dire. NDMA has already given an alert on that regards

From Hamud Osman Ibrahim: This is for Dr. Zewdu, there are a lot of recommendations for early warning dissemination of the shared climate information. Is there any arrangement to downscale this climate early warning information to the cluster levels, sharing with district councils, environmental officers etc? Joseph Muhumuza.

From Zewdu Segele : @Hamud: NMHSs have been with us last week to develop national and subnational level climate information. NMHSs use ICPAC facilities to develop those forecasts, In addition, ICPAC will develop downscaled climate information for IGAD Clusters (Karamoja, Manderu, etc.). The sub-regional clusters will cover cross-border areas of South Sudan, Uganda, Ethiopia, Kenya, and Somalia. We plan to hold this sub-regional climate forum and user engagement in late September.

From Alor Kwaja Kuol Arop: conflict over water and pasture is highly expected in SS putting into consideration there will be movement within the country and also from the neighboring countries, what are measures required to deal with impacts Q for the Water sector.

From Mohammed A Hassan (ICPAC): It will be good to set up water sharing and conflict resolution committees. Awareness to the incoming communities on agreeing to water days and other arrangements will help reduce conflicts.

From Dominic Kathiya Lokeris: In addition to Dr. Zewdu's submission/ response. A downscaling of climate services following GHACOF was done in 2020 for Karamoja Cluster (IGAD Cluster 1) for the MAM Rainy Season and it was quite successful in bringing climate information to the end-users at the clusters.

From Stefan Lines: Dr. Philip - thank you for the great presentation. Looking ahead, how can/will ICPAC explore the impact of anthropogenic climate change on seasonal extremes - is there an opportunity to bridge the gap with decadal model analysis? Also - how do we go about reconciling disparities between observed trends and projections from the modeling community, such as the East African rainfall paradox - to give us more confidence in the expected change to the climate over the GHA?

From Philip Omondi: @Stefan, thanks for your Q. I will combine it with the outcome AR6 that there are few CC publications to go to the review. More research is needed using observed data from the region that member states are still not willing to share.

From Marta Baraibar: Great presentation Zachary! So many great innovations in adopting digital marketing, APIs, automation, MoUs with Public broadcasters, morning TV, and Radio shows to disseminate the forecast and discuss sustainable development!

## **5. SESSION V: PARTNERSHIPS**

### **5.1 East Africa Drought Watch**

Generally, the East Africa region is highly vulnerable to extreme weather and climatic events – drought on one hand, and floods on the other. Further, the majority of the region’s population is highly dependent on rain-fed agriculture, which means that the food security situation in the region is highly sensitive to weather and climate events.

In view of this, ICPAC in collaboration with EU JRC, have developed the East Africa Drought Watch, which is a regional drought monitoring system covering 11 countries. The system continuously and automatically monitors drought conditions in the region every 10 days, providing actionable information to influence policy, support early warning and action, and inform change | adaptation of land use.

Specifically, it provides:

- 10-day warnings | alerts for developing and actual droughts, as well as recovery from drought conditions
- Comprehensive location specific reports (time series) – it is possible to get a time series analysis of a particular geographic location.

The system's plus point comes from the fact that it utilises a modern Mapviewer that allows one to integrate all data, both in time and space. Three main parameters are followed through time:

- Rainfall anomalies (SPI for several parameters), which can be computed for various periods, ranging from 1 month up to 4 years
- Soil moisture anomalies and
- Vegetation response

The three parameters are analysed leading to a Combined Index, which is what is used to communicate | alert a community. Going forward, there is a need to further tune the Combined Index to the East Africa climate, landscape and land use, as well as expand it with more member states' data.

Click [here](#) to interact with the system

## 5.2 ClimSA

This is a 3-year project, running from January 2020 to December 2023, and funded by the 11<sup>th</sup> European Development Fund. The objective is to strengthen climate services value chains at the regional, national and sub-national levels.

While it has two focus countries, that is Kenya and Uganda, ClimSA benefits all the IGAD member states, through its five result areas, which are aligned with the GFCS pillars:

- User interface platform (UIP)
- Climate services information system
- Observations and monitoring
- Research, modelling and prediction
- Capacity development

So far, the project has had a number of notable achievements some of which include supporting the establishment of a National Framework for Climate Services (NFCS) for Kenya, contributing to GHACOFs and co-production activities, providing new and improved climate products to FSNWG (a regional UIP for the agriculture and food security sector), supporting the Kenya Meteorological Department (KMD) to organise the first and second Kenya national climate outlook forums, developing an Agriculture Watch Platform, with technical backstopping from EU JRC, as well as supporting the development of Summary for Decision Makers, with advisories, after every seasonal forecast.

### **5.3 Down2Earth (D2E)**

This is primarily a research project, running from September 2020 to August 2024, and funded through the EU Horizon 2020 Program. The objective is to translate climate information into multi-level decision support for social adaptation, policy development, and resilience to water scarcity in the Horn of Africa Drylands (HADs).

Its focus is addressing water scarcity and food security challenges in the drylands of Ethiopia, Kenya and Somalia.

The project encompasses six work packages:

- Model and tools development
- Mobile app development
- Community research and engagement
- Improvement of climate change adaptation policies
- Climate services capacity building
- Dissemination and communication

These, along with the different activities that contribute to their achievement, are distributed among a consortium of 14 implementing institutions from eight countries, and coordinated by Cardiff University. D2E's foreseen outcomes include enhanced climate services capability, enhanced adaptation policies and communication, improved water forecasts, and robust climate change scenarios using the IPCC-CMIP5 model outputs.

Some of the project's achievements so far include identification of project sites for community engagement and socio-economic surveys (Isiolo county in Kenya, Saba-boru district in Ethiopia, and Odweine district in Somalia), formation of teams (nomination of national focal points and deployment of project staff), and production of a monthly project newsletter.

## 5.4 WISER

This project has been running since 2016 and is expected to end in 2021. Its aim is to transform accessibility, quality and use of climate information in the region.

Specifically, the project aims to strengthen the capacity of ICPAC to deliver improved and usable weather and climate products and services, anchored on the principles of co-production and user engagement. It also aims to increase the resilience of vulnerable populations to weather and climatic shocks by supporting the provision of wide-reaching services, that cascade down to national and sub-national levels and are tailored to user needs.

An analysis of WISER's impact, so far, shows that following its implementation:

- 3 million households have had improved access to weather and climate information services (WCIS),
- 489 000 households are actually using improved WCIS
- 8.2 million individuals are more resilient
- GBP.207 million worth losses have been avoided

In addition, the project has convened learning events which have culminated in four policy briefs:

- Designing the next generation of co-producers of climate services
- Enhancing co-production in climate services projects (a shift to immersive co-production)
- Redefining 'business as usual' with a gender lens and
- Creating accessible and sustainable climate services through capacity development of NMHSs, which emphasises that capacity development within NMHSs should not be around technical capacity only, but holistic to enable them make stronger business cases

The project will extend to December 2021 to support ICPAC to:

- Strengthen the Somalia Inter-Ministerial Meteorological Working Group
- Create a Community of Practice of climate and weather in the East Africa region and
- Produce guidelines on provision of WCIS in fragile environments

## 5.5 Inter-Regional Platform for the Management of Desert Locusts and other Transboundary Pests

This is a relatively new project, running from July 2020 to August 2024, as part of the World Bank's Emergency Locust Responses Program Phase 3 (SSELRP).

The goal of the project is to strengthen synergies, sustained management, and control of desert locusts and other transboundary pests in the IGAD region. Key within this is the development of more robust early warning and early response systems in the region.

Based on the knowledge that the effective ultimate control | management of desert locusts and other trans-boundary pests in the IGAD region and surrounding areas requires dedicated and sustained involvement of all affected countries, and agencies employing an area-wide approach, the platform will be extended to other countries affected by the pest such as Yemen and Saudi Arabia. Additionally, its management will involve IGAD member states and partners such as DLCO-EA.

Some of the expected deliverables of the project include:

- Development of guidelines for national preparedness plans
- Support IGAD member states to finalise their national preparedness plans
- Development of a regional preparedness plan and
- Knowledge management and communication products

## **5.6 Plenary discussions**

Maureen Ambani from WFP appreciated the development of the drought forecast. She asked the presenter that if this forecast could be integrated to the drought watch platform considering ICPAC has started developing SPI forecast? She further requested for a clarification on the thresholds of SPI| vegetation| soil moisture used to define the drought indicator levels and whether the thresholds are uniform across the region or differentiated by country, sub-national level or livelihood zone. Viola responded the SPI forecast will be integrated to the platform. She further added that during the East Africa Hazards Watch side event in the afternoon there will be a demo on the Drought Watch and there will be more time to discuss the methodology behind the Combined Drought Index we have developed.

Andrew Colman noted that ICPAC used to be Drought Monitoring Centre, Nairobi as bit of history to support the idea of developing drought related products. The presenter agreed that ICPAC initially started as IGADD with the main mandate to monitor Drought and support mitigation/adaptation efforts in the region.

Emmah Mwangi also asked whether the same thresholds have been used for the whole region. The presenter responded that yes, the same thresholds have been used at the moment for monitoring at regional level; in the next phase (starting next year) the team will be working with National Agencies to customize to the product to national level which can then be downscaled to sub-national levels as well.

Wani Nelson noted that the drought hazard watch only monitors drought in an interval of 10 days but drought is a slow onset. He asked how will the long-term forecast be integrated? Tarekegn Abera also asked a follow-up question how could the three parameters integrated and produce a single threshold for drought monitoring? Alfred responded the techniques used is by combining data from different sources that confirm each other in time and space. He suggested to join them in the afternoon session during the East Africa Hazards Watch side event session as more details will be shared during the session.

Petterson Kitoo also asked if there are plans to increase the watch period for long term planning as current drought watch is for 10 days? Viola responded the warnings are issued (updated) every 10 days but the indicators for example precipitation anomalies considered are SPI-1, SPI-3 and SPI-12.

Dr. Sabiiti requested Dr. Hussen to unpack the "climate services value chain" described in his presentation. Dr. Hussen responded that the climate services value chain describes the entire process from production to use of climate information. It includes the development, dissemination and use of climate and weather information by end users in decision making.

Fiona Percy also asked John of WISER to share more information on the ICPAC Community of Practice in East Africa.

## **6. SESSION V: RELEASE OF FORUM STATEMENT AND CLOSING OF THE FORUM**

After the reporting and discussions, ICPAC director was invited to officially release the statement and thereafter officially closed the meeting. The statement for the GHACOF59 is provided in **Annex I**.

## **5 SESSION V: Side events**

### **5.1 East Africa Hazards Watch – a new ICPAC climate service**

The main objective of this session was to introduce users on the new platform called EA Hazards Watch. There were 64 participants in attendance during the session. It was noted that they are increasingly becoming more interested on impact-based forecasting. This was noted to be one of the reasons for developing the platform. The platform provides information on hazards, exposure/vulnerability and risk/impact. Additional categories have been added to the platform which now contains; Rainfall, temperature, climate change, agriculture, pests, food security, drought, floods, tropical cyclones, and socio-economic data. It was noted that there are plans to add more layers (e.g., warning layers and air pollution) to the system. Participants were then taken through each category and other useful

functionalities (e.g., share and other interactive functionalities) of the system. Some users requested layers on forest degradation to be included in the system. There was also a suggestion to make YouTube videos on how to operate the system.

## **5.2 Agriculture Monitoring for Eastern Africa**

ICPAC in collaboration with European Commission Joint Research Centre (EU-JRC) conducted a side event on the sidelines of GHACOF 59 on the Agriculture Monitoring for Eastern Africa system (<https://agriculturehotspots.icpac.net/>) for Crop and Rangelands monitoring. The main objective was to raise awareness within the wider GHACOF 59 stakeholders particularly to the MS focal points, FSNWG stakeholders and other partners on the existence and the potential that the ICPAC agriculture hotspot system offers as a decision support tool. This is part of ClimSA key activities that supports capacity building on use of Earth Observation (EO) data to improve decision making in agriculture and food security sector at regional, national, and sub-national levels.

The side event session started with opening remarks from ICPAC and JRC and then followed by a presentation on the introduction to the system by Dr. Felix Rembold from JRC. ICPAC, led by Mr. Oliver Kipkogei then made an online demonstration highlighting key navigation tools and products that can be obtained from the system including the 10 day automatic warnings including warning levels, indicators like Water Satisfaction Index (WSI), Standardized Precipitation Index (SPI), biomass conditions, rainfall, crop and rangeland masks, progress of the season, phenology, sub-national statistics and High Resolution Viewer based on Sentinel 1 and 2 images, among others.

Participants expressed huge interest on the system as an essential tool in agriculture and food security sector decision making for food security crises prevention and response planning anticipation in the region. The positive feedback and the technical questions posed by stakeholders confirmed the relevance and suitability of the platform for regional and national use. This engagement is part of a series of many that ICPAC plans to undertake with its member states and stakeholders to ensure successful adoption of the system as part of its early warning systems.

## **5.3 Climate Data Managers Working Group**

The regional data managers side event meeting on climate data sharing was held on 26 August 2021. The purpose of the meeting was to review the progress on status of implementation of recommendations and resolution of Data Managers meeting held at Villa Rosa Kempinski Hotel, Nairobi, Kenya from 5<sup>th</sup>-

9<sup>th</sup> July 2021. The meeting attended by Mr. Ahmed Omar Hamed, National Meteorological Agency, Djibouti, Mr. Onesmus Ruirie, Kenya Meteorological Department, Mr. Melese Lema, National Meteorological Agency, Ethiopia, Ms. Eman Hassan Sultan, Sudan Meteorological Authority (SMA), Mr. Mikaya Murye Sule, South Sudan Meteorological Department. Also, in attendance were 4 staffs from IGAD climate prediction and application Centre (ICPAC). The representative of Uganda National Meteorological Authority (UNMA) and Somalia didn't manage to join the meeting. The meeting was a virtual, through discussions, PowerPoint presentations and questions and answers sessions. The opening of the meeting was officially opened by the Mr.Zachary, who welcomed the participants and wished them fruitful deliberations during this very import task assigned to them by their respective organizations.

After the fruitful deliberations, the participants reached a consensus on the following recommendations.

- I. ICPAC shall provide the necessary support to fill NMHSs gaps in order to enable them to fulfill their obligation set out in this agreement.
- II. The need to harmonize the Climate data Management Systems (CDMSs) in the region to to guide on data sharing, data policy and practice for the exchange of weather and climate data and Products between the NMHSs and ICPAC
- III. share tools and methods used in generating products.
- IV. The need of continuation of participation of Regional Data Managers Working Group (RDMWG) in GHACOFs to facilitate implementation of tasks described in RDMWG Term of Reference (ToR).
- V. ICPAC should come up with clear proposed actions, official request and roadmap to fast track the implementation of 840 additional observational and Automatic Weather Stations (AWS) requested by ICPAC
- VI. The RDMWG needs to come up with a unified CDMS for the region
- VII. The RDMWG needs to assess and identify a manufacturer that develops robust AWS that can overcome the challenges so far being realized by member NMHSs. This can be used to negotiate for best prices for member countries.
- VIII. Data rescues and digitization is still a major challenge in the region and RDMWG should look into ways to rescue and digitize such data in member NMHSs

## **ANNEXES**

### **Annex I: Statement for the GHACOF59**

#### **STATEMENT FROM THE FIFTY NINTH GREATER HORN OF AFRICA CLIMATE OUTLOOK FORUM (GHACOF59): 24-26 August 2021; ICPAC, NAIROBI METROPOLITAN AREA, KENYA**

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

##### **Consolidated Objective Climate Outlook for October to December 2021 Rainfall Season.**

October to December (OND) constitutes an important rainfall season, particularly in the equatorial parts of the Greater Horn of Africa (GHA), where the OND rainfall contributes 20-70% of the annual total rainfall. Analysis of global climate model predictions from 9 Global Producing Centres (GPCs) customized for GHA indicates increased chances for drier conditions during October to December 2021 over much of the region. Specifically, there are raised chances of a drier than average season over Tanzania, Burundi, Rwanda, Kenya, southern, central and north-western Somalia, southern and south-eastern Ethiopia, and the Red Sea coast of northern Eritrea. Probabilities are especially enhanced for below average rainfall over the cross-border areas of Kenya and Somalia. Near-average to below average rainfall conditions are indicated over northeastern Somalia. Except for few areas where drier than average rainfall conditions are favoured, equal probabilities for the below, normal, and above average categories are indicated over much of South Sudan and southern parts of Sudan as well as western and northern Uganda.

Compared to the usual chances, the predicted probabilities of total seasonal rainfall exceeding 200 mm and 300 mm are enhanced over South Sudan, northwestern Uganda and southwestern Ethiopia. In contrast, predicted probabilities for exceeding 200 and 300 mm are lower than usual over most other regions and notably so over eastern Kenya and southern Tanzania. Consistent with enhanced probabilities for below average rainfall, the start of the season is expected to be delayed by up to two weeks, especially over eastern Kenya and southern Somalia.

The consolidated objective temperature forecast from 9 Global Producing Centres (GPCs) indicates an increased likelihood of warmer than average surface temperatures across GHA. Probabilities of warmer than average temperatures are most enhanced from eastern Kenya to Somalia, eastern parts of Ethiopia, and eastern Sudan.

A Standardized Precipitation Index (SPI) analyses of observed and predicted precipitation for 3, 6, and 12 months indicates long-term rainfall deficits in many parts of equatorial and southern regions. Notably,

past observed deficits as well as forecasts to 31 December 2021 indicate a 12-month SPI representative of moderate to severe multi-season drought conditions in the region, particularly over Uganda, southwestern Ethiopia, eastern Kenya, southern Somalia, and Tanzania. Owing in part to the excessive rainfall experienced in the northern parts of GHA in summer, increased moisture surpluses are indicated north of about 10N latitude.

The World Meteorological Organisation (WMO) and the major global climate centres have noted that Sea Surface Temperatures (SSTs) over the equatorial central Pacific Ocean are likely to cool over the coming months. Global models further indicate that the Indian Ocean Dipole (IOD), which is known to have significant effects during the short (October to December - OND) rains is also expected to persist at negative IOD levels through the majority of OND 2021. This season's configuration of the ENSO and IOD is expected to interact with regional circulation patterns in a way that typically depresses seasonal rainfall in the region. 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. Spells of heavy rain and above normal rainfall may occur in areas with an increased likelihood of below normal seasonal totals 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-ninth Greater Horn of Africa Climate Outlook Forum (GHACOF59) was convened from 24<sup>th</sup> to 26<sup>th</sup> August 2021 by the IGAD Climate Prediction and Applications Centre (ICPAC) in collaboration with the GHA National Meteorological and Hydrological Services (NMHSs), 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 October to December 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, IOD, and SSTs over the Pacific and Indian Oceans, and considered their impacts on the GHA during October to December 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

management strategies for the potential impacts of the objective climate forecast in their respective sectors.

## **Methodology**

Guidance and valuable information on factors expected to influence the upcoming season were drawn from a wide range of sources. Predictions from dynamical seasonal climate models, including those of the World Meteorological Organisation's Global Producing Centres (WMO GPCs-LRF) formed the primary forecast inputs.

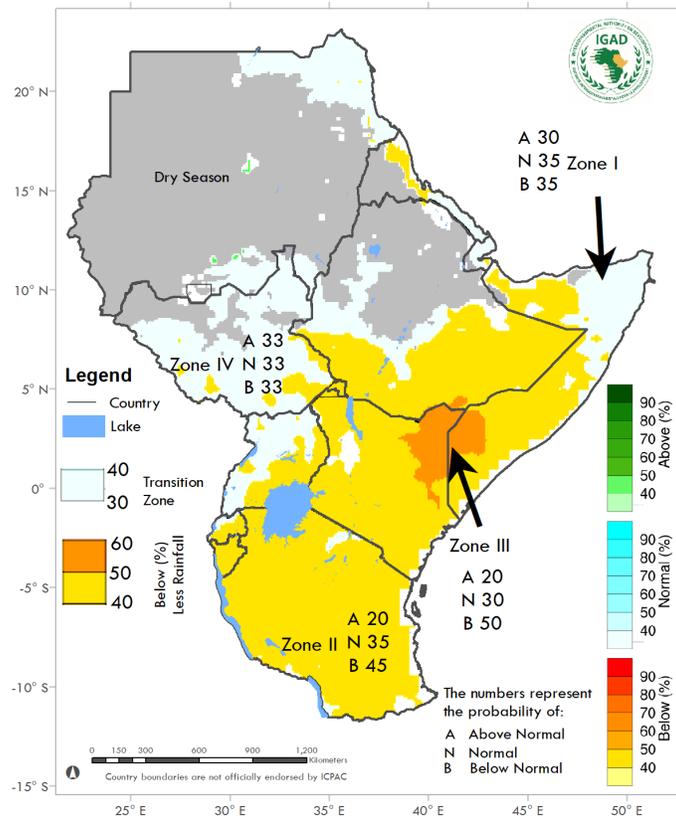
The objective seasonal forecast was developed during the PreCOF59 climate capacity building workshop held from 16<sup>th</sup> to 20<sup>th</sup> August 2021. During the workshop, experts examined the prevailing and predicted SSTs over the Pacific, Indian and Atlantic Oceans as well as other global, regional and local climate factors that affect the rainfall evolution during OND season. These factors were assessed using dynamical and statistical models. The regional consolidated objective forecast is produced by recalibrating outputs from 9 global state-of-the-art seasonal prediction systems (WMO GPCs-LRF and other models). Regional scientists and national forecasters from 10 ICPAC Member States used ICPAC's FCDO-funded High-Performance Computing (HPC) cluster through remote connection to co-develop regional and national-level climate outlooks. Climate prediction products were used by sectoral experts and climate providers to co-assess expected impacts, draft mitigation strategies, and co-produce advisories. The sectoral meetings were held from 24<sup>th</sup> – 25<sup>th</sup> August 2021 preceding the GHACOF59.

The current capability of seasonal to inter-annual climate forecasting allows for the prediction of departures from mean conditions on a regional domain, 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 middle third of the recorded rainfall amounts; 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 (1991-2020). Probability distributions for temperature are also established.

The rainfall and temperature outlooks for October to December 2021 for various zones within the GHA region are given in Figure 1 and Figure 2, respectively. Figure 3 provides Standardized Precipitation Index for 3-, 6, and 12-month time scale.

### **Rainfall Outlook for October to December 2021**

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

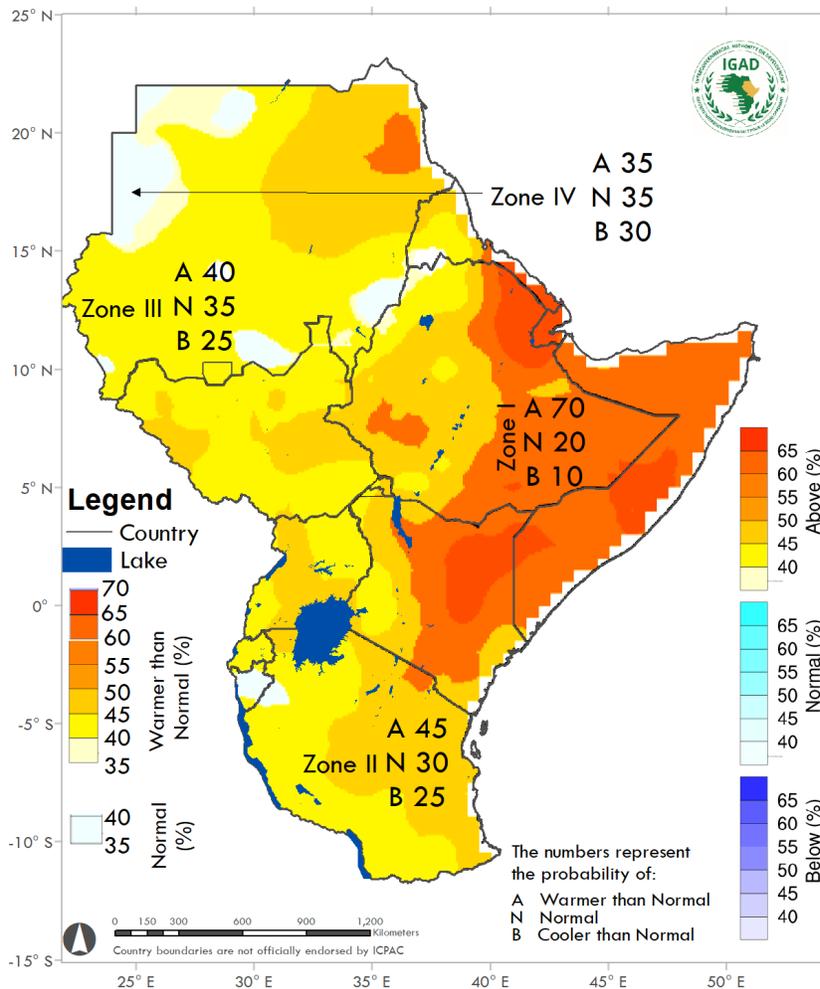


**Figure 1: Rainfall outlook for October to December 2021**

- Zone I:** In this Zone (light blue) probabilities for the near normal and below normal rainfall categories are equal at 35%, and slightly greater than for the above normal category.
- Zone II:** In this Zone (all yellow) the below normal rainfall (drier) category has the highest probability (45%). The probabilities of the near normal and above normal categories are 35% and 20% respectively.
- Zone III:** In this Zone (orange), the below normal rainfall (drier) category has the highest probability (50%). The probabilities for the other categories are provided.
- Zone IV:** In this Zone (light blue) the probabilities for the below, normal, and above are equal.

**Temperature Outlook for October to December 2021**

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

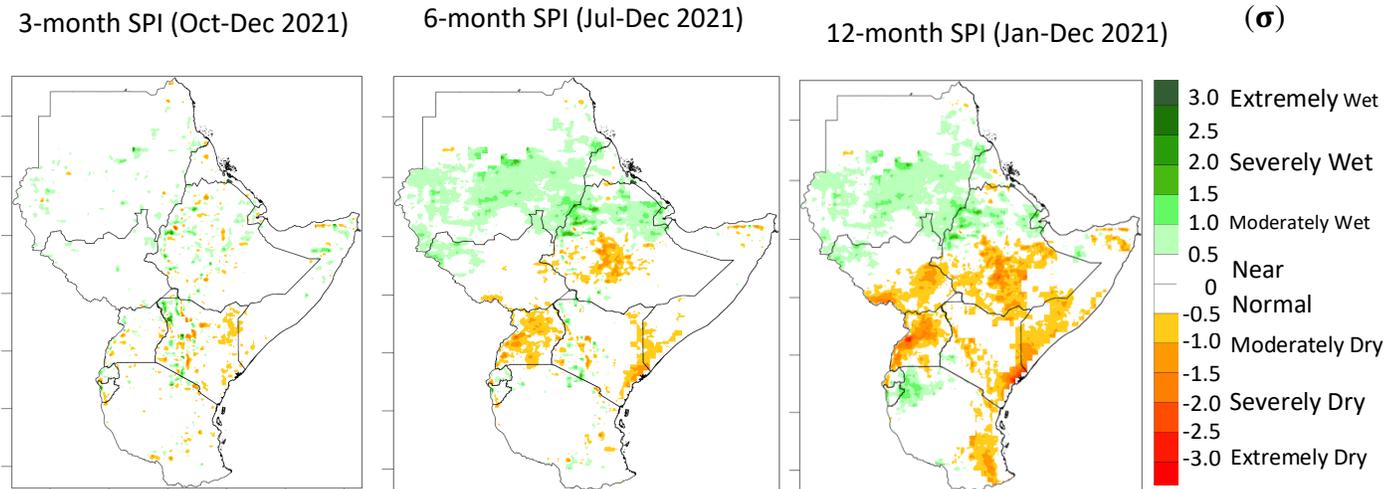


**Figure 2: Temperature outlook for October to December 2021**

- Zone I:** In this Zone the above normal mean temperature (i.e., warmer) category is most likely at 70% (the probabilities of the other categories are also provided).
- Zones II:** In this Zone also the above normal mean temperature category has the highest probability (at 45%).
- Zones III:** In this Zone also the above normal mean temperature category has the highest probability (at 40%).
- Zones IV:** In this Zone probabilities for the near normal and above normal mean temperature categories are equal at 35%, and slightly greater than for the below normal category.

**Note: The numbers for each zone indicate the probabilities of rainfall/temperature in each of the three categories, above-, near-, and below-normal. The top number (A) indicates the probability of 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 1 in Figure 1, there is 30% probability of rainfall occurring in the above-normal category; 35% probability of rainfall occurring in the near-normal category; and 35% probability of rainfall occurring in the below-normal category. It is emphasised that boundaries between zones should be considered as transition areas.**

**Precipitation-based Drought Outlook based on Standardized Precipitation Index (SPI)**



**Figure 3: Standardized Precipitation Index**

**Contributors**

GHACOF 59 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 and CONFER Projects funded by the European Union as well as DRESS-EA project funded by Adaptation Fund through OSS. 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).

## Annex II: Programme for the GHACOF59

### THE FIFTY NINTH GREATER HORN OF AFRICA CLIMATE OUTLOOK FORUM (GHACOF59)

*Theme: " Climate Services for Resilience"*

26 August 2021

#### PROGRAMME

TIME	ACTIVITY	FACILITATION	
<b>SESSION I: SETTING THE STAGE AND OFFICIAL OPENING</b>			
09:30 –09:45	<ul style="list-style-type: none"> <li>Participants join zoom and self-introduction by video and through chat box</li> </ul>	<b>MODERATOR</b> Fiona Percy, Linda Ogallo	
09:45 – 10:15	<ul style="list-style-type: none"> <li><b>Opening Statement:</b> - ICPAC Director, <i>Dr Guleid Artan</i></li> <li><b>Briefing on the forum event:</b> - <i>Zachary Atheru, ICPAC</i></li> </ul>	<b>MODERATOR</b> Fiona Percy <b>RAPPORTEUR:</b> Wawira Njoka	
<b>SESSION II: FEEDBACK ON JJA 2021 SEASONAL CLIMATE PERFORMANCE AND IMPACTS</b>			
10:15 -10:25	<ul style="list-style-type: none"> <li><b>Eastern Africa JJA 2021 season Performance:</b> - <i>Anthony Mwanthi, ICPAC</i></li> </ul>	<b>MODERATOR:</b> Philip Omondi	
10:25 -11:15	<ul style="list-style-type: none"> <li><b>Overview of JJA sectoral impacts</b> <ul style="list-style-type: none"> <li>Agriculture and Food Security</li> <li>Conflict (CEWARN)</li> <li>Disaster Risk Management</li> <li>Health</li> <li>Livestock and Rangelands</li> <li>Media</li> <li>Water Resources &amp; Energy</li> <li>Environment &amp; Forestry</li> </ul> </li> <li>Plenary Discussion (questions from chat box)</li> </ul>	<b>RAPPORTEUR :</b> Herbert Misiani	
<b>SESSION III: OCTOBER - DECEMBER 2021 SEASONAL FORECAST</b>			
11:15 – 11:40	<ul style="list-style-type: none"> <li>Current state of global climate system: <i>Stefan Lines, UK Met Office</i></li> <li>GHA OND 2021 seasonal forecast: <i>Zewdu Segele, ICPAC</i></li> <li>Plenary Discussions</li> </ul>	<b>MODERATOR:</b> Masilin Gudoshava <b>RAPPORTEUR:</b> Eunice Koech	
11:40 -11:50	<b>VIRTUAL BREAK</b>		
<b>SESSION IV: SECTOR REPORTS ON IMPACTS AND MANAGEMENT STRATEGIES</b>			
11 : 50 – 12 :50	<b>Reporting by Sectors on key implications and management strategies for OND 2021 season</b>		<b>MODERATOR:</b> Kassim Farah <b>RAPPORTEUR :</b> Jully Ouma
	<ul style="list-style-type: none"> <li>Agriculture and Food Security</li> </ul>	<ul style="list-style-type: none"> <li>Health</li> </ul>	
	<ul style="list-style-type: none"> <li>Climate Change</li> </ul>	<ul style="list-style-type: none"> <li>Livestock and Rangelands</li> </ul>	
	<ul style="list-style-type: none"> <li>Conflict (CEWARN)</li> </ul>	<ul style="list-style-type: none"> <li>Water Resources &amp; Energy</li> </ul>	

	<ul style="list-style-type: none"> <li>Disaster Risk Management (DRM)</li> </ul>	<ul style="list-style-type: none"> <li>Media</li> </ul>	
	<ul style="list-style-type: none"> <li>Environment &amp; Forestry</li> </ul>		
12:50 – 13:00	<ul style="list-style-type: none"> <li><b>Plenary discussion</b></li> </ul>		
<b>SESSION V</b>	<b>PARTNERSHIPS</b>		
13:00 – 13:45	<ul style="list-style-type: none"> <li>Eastern Africa Drought Watch: <i>Viola Otieno &amp; Alfred De Jager</i></li> <li>ClimSA: <i>Hussen Seid, ICPAC</i></li> <li>RICCAMA: <i>Philip Omondi, ICPAC</i></li> <li>Down2Earth: <i>Abebe Tadege, ICPAC</i></li> <li>Inter-regional Platform on Desert Locusts: <i>Abdi Jama, ICPAC</i></li> <li>WISER: <i>John Mungai, WISER</i></li> </ul>		<p><b>MODERATOR:</b> Ahmed Amdihun</p> <p><b>RAPPORTEUR:</b> Charity Sammy</p>
<b>SESSION VI: RELEASE OF FORUM STATEMENT AND CLOSE OF THE FORUM</b>			
13:45 – 14:00	Release of GHACOF 59 Statement		
<b>14:00 – 14:30.</b>	<b>LUNCH BREAK</b>		
<b>SESSION VI:</b>	<b>SIDE EVENTS</b>		
14:30 – 16:00	<ul style="list-style-type: none"> <li>6 East Africa Climate Hazards Watch</li> <li>7 Agriculture Monitoring for Eastern Africa</li> <li>8 Climate Data Managers Working Group</li> </ul>		<p><b>MODERATOR:</b> Abubakr Babiker</p>
<b>CLOSING OF GHACOF 59</b>			