

# Assessment of *Belg* 2023 Climate and Climate Outlook of the upcoming *Kiremt* 2023

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## Workshop Report

Accelerating Impacts of CGIAR Climate Research for Africa  
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Titles in this series aim to disseminate interim climate change, agriculture, and food security research and practices and stimulate feedback from the scientific community.

### **About AICCRA**

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## **Introduction**

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Ethiopian Meteorological Institute has been generating seasonal climate outlooks three times a year and provided to socio-economic sectors. Those forecast information are vital inputs to ensure and sustain the development of Ethiopia as the information is used to minimize risks due to weather and climate hazards and maximize positive impacts. Recently, the institute has implemented NFCS-E and started co-designing climate services with key socio-economic sectors expected to strengthen the production, availability, delivery, and application of science-based climate prediction and services in Ethiopia.

In collaboration with AICCRA, EMI held a workshop to present the assessment of the *Belg* 2023 climate and the outlook of the upcoming *Kiremt* 2023. It was held within the NFCS-E framework, mainstreaming climate into key socio-economic sectors for resilience and sustainable development. It was convened on May 16, 2022, at Haile Resort, Adama, Ethiopia, and brought together 300 government officials of WoWE, EDRMC, EMI, representatives from socio-economic sectors, international partners, civic societies, and media.

Three important sessions took place at the workshop. In the opening session, the opening remark was delivered by Mr. Fetene Teshome, Director General of EMI; Dr. Teferi Dejene from AICCRA and Dr. Mariane from WMO RA1 delivered keynote speeches; finally, opening remarks were delivered by H.E Dr. Eng. Habtamu Etefa Minster of MoWE. Presentations on AICCRA, *Belg* 2023 assessment, and the climate outlook of *Kiremt* 2023 were entertained during the second session. In the last session (parallel breakout session), participants were divided into two groups to discuss and present the socio-economic impact assessments of *Belg* 2023 and the potential impacts of *Kiremt* 2023 on health, water, energy, environment, and disaster risk reduction.

## **Objectives**

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The objectives of the workshop were to present and discuss the following.

- The *Belg* (Feb-May) 2023 climate performance assessment at the national level.
- Impact assessments of *Belg* 2023 on key socio-economic sectors (health, water, energy, environment, and disaster risk reduction).
- To predict Ethiopia's coming *Kiremt* (June- September) 2023 climate outlook.
- To identify the potential impact of the upcoming *Kiremt* on key socio-economic sectors (health, water, energy, environment, and disaster risk reduction).

# **Session I: Welcoming remarks**

## **Welcoming Speech**

In his welcoming speech, Mr. Fetene Teshome, Director General of the Ethiopian Meteorological Institute, stated that climate variability has been and is projected to increase under the changing climate. This may indicate even more irregular onset and cessation of a rainy season, perhaps more prolonged dry spells, and too much rain at times. Hence, the farming system and other sectors of the economy become more vulnerable to climate variability and climate change. The increasing pressure will require developing and implementing appropriate methods to address the vulnerability of various economic sectors to weather and climate impact and to further develop their adaptive capacity with improved planning and better management decisions. With the increasing climate variability and changing climate, climate information's role in minimizing risks and optimizing opportunities is non-debatable. The Ethiopian Meteorological Institute is working towards making available climate information that leads to better and informed decisions.

## **Keynote Speech**

Dr. Teferi Dejene, Scientist on Climate Information and Agro-Advisory from AICCRA delivered a keynote speech. Dr. Teferi has provided some background information on AICCRA and the activities done so far under the project. He stated that the Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a new initiative to enhance access to climate information services and climate-smart agriculture technologies in Ethiopia. It is a World Bank-supported project and is being implemented in six African countries, including Ethiopia. AICCRA Ethiopia's goal is to enhance the resilience of farmers to climate change. He mentioned AICCRA and EMI have been working on various areas, and so far, AICCRA supported EMI's 40<sup>th</sup> Anniversary and official endorsement of NFCS-E and will continue working on capacity building and research.

## **Keynote Speech by Dr. Mariane, WMO AR1**

Dr. Marinae from World Meteorological Organization Regional Office for Africa delivers his remarks on the importance of weather and climate information for numerous sectors. He stated that WMO is working closely with various National Meteorological and Hydrological Service Centers to enhance the skill of weather and climate prediction and minimize climate-related shocks' impact. Moreover, Dr. Mariane underlined that working with key sectors on the co-production and dissemination of weather/climate advisories is vital.

## **Official opening remark by H.E Dr. Eng Habtamu Etefa, minister of MoWE**

In his opening speech, H.E. Dr. Eng Habtamu explained the importance of climate information to socio-economic sectors. Data and information are essential for the socio-economic development



of a country. Climate information is vital for countries like Ethiopia, whose economy mainly depends on rain-fed agriculture. It is also crucial for energy, health, water, transport, etc. sectors. Meteorological information is vital to ensure and sustain the country's development and prosperity as the information is used to minimize risks due to weather and climate hazards and maximize the positive impacts of weather and climate situations. He also underlined the initiation of EMI and users of climate information and forecast production under the umbrella of NFCS-E on co-designs of climate services is highly appreciated and should be strengthened further. The *Belg 2023* climate outlook issued some months back indicates the likelihood of normal rainfall over most parts of the country. But sectors were reluctant to use the information, which caused many livestock deaths in Borena and Somali regions.

Finally, the official opening of the workshop was declared.

## **Session II: presentations**

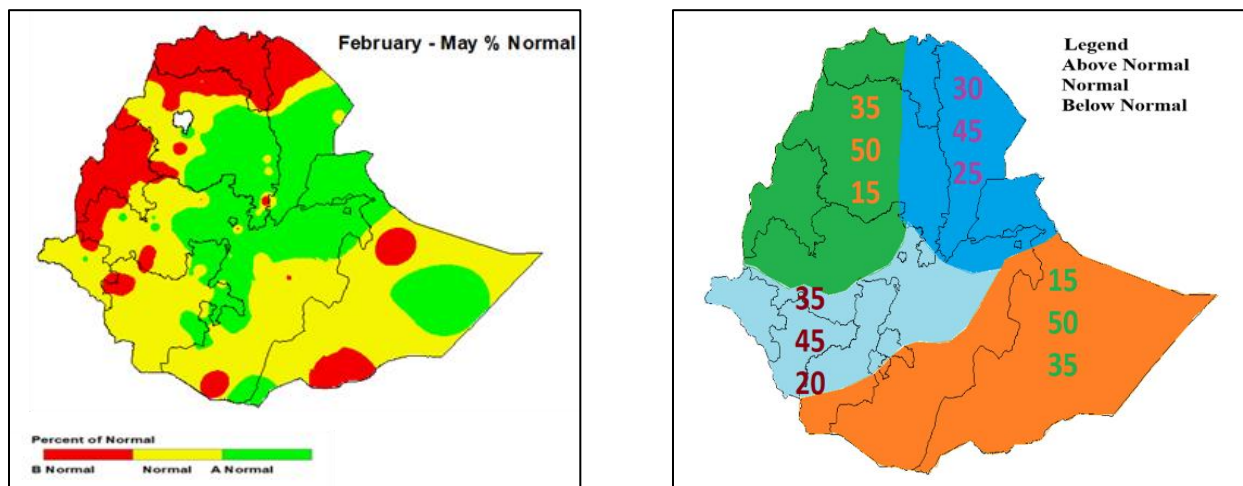
A presentation around the support to strengthen climate services in Ethiopia was presented by Dr. Teferi. In his presentation, the following points were covered:

- Efforts to strengthen data archiving and generation systems
- Efforts to strengthen the forecasting capabilities of EMI at different time scales
- Develop a meteorological-derived flood forecasting system.
- Capacity building of EMI's and sub-national Meteorological offices
- Support the implementation of the NFCS.
- Strength the research activities in EMI
- Support the activities of IRI on data and forecasting tools.

### ***Belg 2023 climate performance assessment and Kiremt 2023 climate outlook***

#### ***Belg 2023 Climate Performance, Mr. Mulualem Abera, EMI***

Mr. Mulualem, in his presentation, covered some background information on common characteristics observed and global systems affecting the season. *Belg 2023* seasons climate performance included rainfall onset, amounts, distribution, and impacts during each decade, month, and season.



**Figure 1.** Percent of normal rainfall for February 1- May 10/2023 (left) and probabilistic forecast of Belg 2023 (right).

He presented the Belg 2023 season assessment, which started on February 3; the rainfall observed is above in Southern and Southwest Ethiopia. Overall, the observed rainfall in Belg was above-normal to normal conditions. He stated that heavy rain was observed over the season, and a new record of rainfall in 24 hrs was recorded in different places.

Finally, he summarized his presentation as

- Dominantly, normal to above-normal rainfall was observed across Southern and Southeastern areas, where Belg is the primary rainy season.
- Normal rainfall was observed over the northwestern and southwestern parts of the country.
- Normal to above-normal rainfall was recorded across northeastern, eastern, and central Parts of Ethiopia as the Belg season is the second rainy season.
- Daily maximum temperature exceeded 40°C over Fugnado, Gambella, Gode, Abobo, Metema, etc.
- In March, the highest rainfall of 107.4 and 104.0 mm was recorded at Dalifagi and Chifera, respectively.
- In April, the highest rainfall of 230.0 and 160.0 mm was recorded in Kebri Dehar and Ginir, respectively.
- During February 2023, dry conditions dominated in most parts of the country.
- During March and April 2023, heavy rainfall was recorded in many stations over the country.
- In the 2<sup>nd</sup> and 3<sup>rd</sup> Dekad and 1<sup>st</sup> and 3<sup>rd</sup> Dekad of March and April, normal to above-normal rainfall was recorded across most parts of the country.

- March was the wettest month, where normal to above-normal rainfall was recorded in most parts of the country.
- Dominantly above-normal rainfall was observed in the country's Southern, Southeastern, and Northeastern parts.
- The Drought index SPI showed extremely wet over N.E., South, and Southeast parts.
- Generally, the forecast for the season agreed with the observed rainfall *Belg* season.

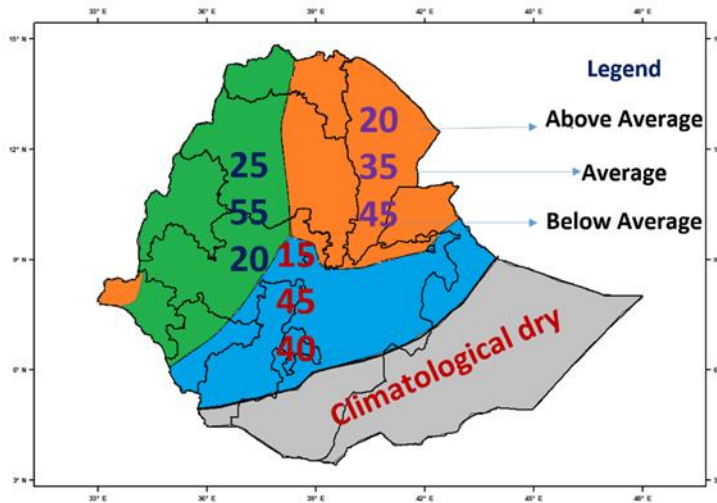
### **Climate outlook for Kiremt (June-Sept) 2023 Season, Asaminew Teshome (Ph.D.), EMI**

Dr. Asaminew started his presentation by highlighting the description of the season according to metrological season classification over Ethiopia and presented the report of the *Kiremt* season in detail and the contribution of *Kiremt*. In addition, he showed what the onset date and cessation date of the *Kiremt* season look like overall in Ethiopia.

According to his presentation, the Indian Ocean dipole condition became positive, and different models show ENSO strengthened El Niño for the *Kiremt* season from June to September. To summarize the current global systems

- ENSO Alert System Status: El Niño Watch ENSO-neutral conditions are observed.
- Equatorial sea surface temperatures (SSTs) are near-to-above average across most of the Pacific Ocean.
- 62% chance of El Niño developing during May-July 2023.
- The Indian Ocean Dipole (IOD) is currently neutral. The IOD index value for the week ending April 23, 2023, was +0.04 °C, within neutral bounds (between -0.40 °C and +0.40 °C).

Dr. Asaminew presented the way of selecting analog years based on ENSO and IOD trends, the identified year 1996/97, 2001/02, and 2008/09, how to assess the condition observed on the ground at the specified analog years, and how to put the tercile probability for the *Kiremt* 2023.



**Figure 2.** The consensus climate outlook for *Kiremt* 2023

## **Discussion**

### **By Dr. Eng. Haptamu Itefa and Mr. Fetene Teshome**

Dr. Eng. Haptamu said what we see in *Belg* season and what we learned from the past forecast condition is critical. And also, what we understand today from the Kiremt 2023 forecast outlook season and what our plan is for this season.

Guest 1 said we have a flood task force from the higher (Federal) to regional task force to follow up on the conditions on the ground. The forecast released by EMI and the observation on the ground are similar. Minister Dr. Eng. Haptamu mentions, "Our country faces two things, first drought, and second flood." He added we must be ready for the coming season and do what we can do.

Guest 2 stated that EMI enhanced its capacity and technology, which is essential for all sectors. And he added EMI must use federal and regional Mass Media to broadcast forecasts. In the coming Kiremt season, we need to plan according to the information released by EMI.

Guest 3 (ቋሚ ኮሚቴ ሰብሳቢ): - I appreciate the institute and EMI giving more accurate and timely information. The information provided by the institute is clear and not questionable. And he asked What happens if the coming season is above-normal or below normal, and he needs more clarification and some advisory for the pastoral area.

Mesele Mekonen (MoA): - EMI is improving daily but needs to improve and upgrade the output quality. EMI needs airtime on different media to create awareness and distribute information.

We used the *Belg* season information provided by EMI efficiently and shared the info with regional offices.

Meaza (South Gonder) said using the forecast by EMI, we saved many people from floods and helped us do different works. I must emphasize that the information released by EMI will help governmental and non-governmental organizations develop work plans and reduce negative impacts.

Tamru Kejela (MoWE) asked if the Outlook forum is the only way EMI distributes information to end users. And he pinpointed for EMI to plan more media communication to spread the EMI output.

Tesfaye Weldeyes (Ph.D.) said that EMI gives a climate outlook and different questions on how to implement this information. I worry about integrating all sectors to provide end-user information and prepare an action plan after this meeting. After preparing the Action plan for the coming three months, develop a way to monitor every month. According that we identify what we face and improve on the next time.

Antene Shitaye (Federal Police) asked how information is provided to the end users and the language, format, and understandability of the info by the end users.

Getahun stated agriculture was the only sector that developed an action plan for implementation last year based on the EMI forecast and suggested other sectors do the same.

Finally, Mr. Fetene gave feedback to participants and answered raised questions.

Mr. Antene Shitaye said EMI uses different platforms to distribute our information. One of our biggest communication platforms is the NCOF forum. However, he reiterated that EMI must use all communication media to communicate with society. We have ten regional offices that also produce downscaled forecast information for their area and communicate with the local language, but it needs more work to translate the information to the local community.

### **Summary by Dr. Eng. Haptamu**

This *Kiremt* 2023 forecast information is released, so what? We need to plan according to the information released. Then we must develop Action plan for those three months and monitor our implementation.

Over Ethiopia repeatedly happened two extremes that flood and drought. What we can do? How to change the impact to good opportunity? From the funder we got budget to support government, we plan to construct small dam to harvest water and to improve water scarcity.

We need work integrated. It is possible flood is good opportunity for those area by, harvesting the water and implement at the dry season. We all participant on the meeting, now the forecast

is released. So what? What is the next. According to most of partners suggested to create committee to prepare plan and to follow the institutional coordination.

## **Session II: Breakout parallel session**

### ***Belg 2023 Assessment Impact***

#### **Summary of Presentations: *Belg 2023 Assessment for Biometeorology, Mrs. Sintayehu Tewabe***

Mrs. Sintayehu presented the observed agro-meteorological impact during *Belg 2023*. According to her presentation, the following adverse weather conditions happened

In SNNRP, heavy rainfall has caused;

- Loss of animals in Benatsemay Woreda and Goffa Zone.
- Flood damage crops in Basketo and Woliyta Zones
- Agricultural land is out of cultivation due to flood.
- Landslides damaged various crops, vegetables, and fruits in Albuko, Kutabr, and Ambasel woredas and 5.5 hectares of cropland in Gurage Zone.

She summarized the overall impacts on agricultural activities across the country as follows;

- In February, water scarcity, a shortage of animal fodder, and delayed sowing time. In March and April 2023, relatively better moisture was observed over most of the *Belg* growing areas of the country. This condition was favorable for ongoing agricultural activities, long cycle crops, and pasture and drinking water availability over pastoral and agro-pastoral areas.
- The moisture stress was observed over northeastern *Belg* growing areas.
- Dekad to dekad improvement of NDVI and rangeland WRSI lighten the stress of pasture and drinking water over southeastern and southern parts of pastoral and agro-pastoral areas.
- Total crop water requirement in *Belg 2023*, said to be moderate to very good WRSI condition, was observed over central Oromia, southwestern and southern *Belg* growing areas. In the Central parts of northern and eastern highlands, poor to moderate water requirement was observed because of dry spells.

#### **Summary of Presentations: *Belg 2023 Assessment for Hydrometeorology, Mr. Alemu***

Mr. Alemu's presentation focused on the observed *Belg 2023* moisture conditions around the catchments of different river basins and the level of each dam across the country. He presented

the number of rainy days and rainfall amount over the basin (Feb-Apr 2023) and discussed the impact of the resulting floods during the season as follows;

- The flood benefited Awash, middle Abay, Omo Gibe, Rift Valley, and Genale Dawa basins.
- Flash floods from Upper Rift Valley in the Silte zone temporarily displaced people.
- Middle Abay, at Ambasel Wereda, killed eight cattle and 31 goats and damaged 16 houses.
- Awash River basin in Addis Ababa has killed one person.
- Genale Dawa basin displaced animals and humans.

The impact assessment of *Belg* 2023 on river basin and water availability is summarized as follows;

- Due to the late onset of the rainfall, most of the country was under moisture stress in February. However, the rain was enhanced in March and April, and heavy fall events were recorded in Awash, Rift Valley, upper and lower Genale Dawa, and upper Baro Akobo basins. This condition positively impacted improving the surface water availability over *Belg* benefiting catchments.
- Most Baro Akobo, Rift Valley, Omo Gibe, Genaledawa, and the upper and southern parts of Abay experienced humid to Wet conditions.
- On March 1 to 5 days of heavy rain were recorded over Abay, Baro-Akobo, Omo-Gibe, Rift-Valley, Awash, and Genale-Dawa catchments.
- The maximum frequency days (5) of heavy rainfall were recorded in the Genale Dawa catchment. In April, heavy rain was observed over the upper part of the BaroAkobo basin at Mash station.

### **Summary of Presentations: *Belg* 2023 Assessment for Biometeorology, by Desalegn**

Mr. Desalegn presented the observed bio-meteorological impact during *Belg* 2023. The summary of his presentation is as follows;

- In February, the climatic conditions were not favorable. However, in March, the climatic conditions gradually improved in Eastern Somali, Southern, Western, and Eastern pocket areas of Oromia, SNNPR, and most Gambela and Harar regions. In April, the climate conditions became suitable for the malaria vector mosquito breeding and developments in Eastern Somali, southern, western, and eastern pocket areas of Oromia, SNNPR, and most of Gambela.
- Human and cattle discomfort index (THI) during *Belg* 2023 showed comfortable conditions in most parts of the country.

## **Summary of Impacts of Predicted *Kiremt* 2023 Climate on Agriculture, Water, and health sectors**

### **Impacts of predicted *Kiremt* 2023 Climate on Agriculture, Mr Kidus Belay**

Mr. Kidus presented the overview of the upcoming 2023 *Kiremt*, the impact on agriculture, the moisture conditions during the selected analog years 1997, 2002, and 2009, the WRSI of the crop, the NDVI, and the rangeland WRSI in the pastoral and agro-pastoral areas.

Regarding moisture conditions in JJAS, rainfall during *Kiremt* will be below-normal moisture coverage, which could affect crop growth. Spatial and temporal SPI analysis for each analog year indicates a slight drought signal in most '*Kiremt*' rain-benefiting areas. NDVI analysis showed that near-normal to below-normal vegetation coverage prevailed over most *Meher* crop-growing areas, particularly in June and July. In addition, RLWRSI shows mostly poor conditions across the eastern and northeastern pastoral and agro-pastoral communities.

Finally, Mr. Kidus concluded the expected climate impact on agriculture and proposed advisories.

#### **Forecast**

- Early onset across the southwestern part of Ethiopia
- Erratic temporal distribution with prolonged dry spells will occur during June and September.
- Early cessations in central, eastern, and northeastern parts of the country.
- Occasional heavy rain will occur during July and August.

#### **Positive impacts**

- The early onset over southwest and much of JJAS rainfall benefiting area will favor the sowing of *Meher* crops on time, the existing *Belg* crops, and the recently sown long cycle crops.
- The expected normal and above-normal rainfall in West Tigray, West Amhara, Benishagul Gumuze, West Oromia, Gambella, and Southwestern Ethiopia favor *Meher* agricultural activities and planting of long-cycle crops.
- The expected normal rainfall over North Somali, Central, North, South and Eastern Oromia, and Northern parts of SNNPR.
  - Selecting proper crop and pastures varieties;
  - Determine the date of planting;
  - Proper application of agricultural inputs to increase productivity;



## Negative impacts

- The expected Normal to below-normal rainfall in South Tigray, Afar, Eastern Amhara, and the eastern parts of the country negatively impact food security and nutrition and might trigger resource-based conflicts, atypical pastoral migration and may lead to scarcity of animal products such as milk, meat, and butter in northeastern pastoral communities.
- The expected erratic temporal distribution with prolonged dry spells during June and September is expected to cause moisture stress, increased risk of crop failure, poor germination, and water shortages in pastoral areas.
- The expected early cessations of rain in Central, Eastern, and Northeastern parts of the country would negatively be affected to fulfill the water need of crops and pasture.
- The occasional heavy fall in July and August may lead to floods, landslides, and soil erosion.

## Advisory

- Proper input should be utilized to take advantage of the relatively better condition in areas of expecting normal to above-normal moisture.
- Farmers and concerned bodies should pay attention to crop selection and implement soil water conservation structures in areas where the rainfall is normal and below-normal and erratic distribution.
- Closely monitor pasture and water conditions in agro-pastoral areas.
- Implement proper moisture conservation and water harvesting structures in areas where the rainfall is expected to be below normal.
- Users should interpret the weather outlook in terms of their area of interest and the existing condition of their specific areas;
- Immediately disseminate this (early warning) information to decision-makers.

## Impacts of predicted *Kirmet* 2023 Climate on Bio-Meteorology, Mr. Desalegn Tarekegn

Based on the Climatic condition of the selected analog year, the RTH Outlook for 2023 *Kiremt*, Northwestern, Western, Southern Central, and Central Eastern parts of the country will have favorable conditions for the breeding and survival of mosquitoes. Based on the analog years, lowland pocket areas of Ethiopia's Eastern, Southern, and northern half will have heat stress conditions for humans and Cattle.

## Recommendation

- Concerned organizations must pay attention to vector and water-borne diseases in the upcoming *Kirmet*. The Northwestern, Western, Southwestern, and Central parts of the country will have suitable conditions for mosquitoes.
- Due attention is needed for water-borne diseases in the Northern and Western parts of the country.

## Advisory for Mosquito Vector

- Clean up the environment and stagnant water
- Use mosquito netting over beds and windows,
- Travelers use tents and sleeping bags
- Strengthen surveillance for early detection and timely action
- Educate local communities on health risks and prevention
- Alert health professionals and local authorities to take precautionary measures
- Provide tailor-made public education and community awareness
- Wear the right clothes with long pants and sleeves to cover the skin

## Impacts of predicted Kirmet 2023 Climate on Bio-Meteorology, Mr. Alemu Game Tarekegn

He presented the impact of the upcoming '*Kiremt*' 2023 on the water sector and the water level of the dams. During July and August, for all selected analogy years' good moisture conditions are expected over most of the *Kiremt* rainfall-benefiting areas of the country.

### Positive impact

- In areas where the rainfall forecast is above-normal and normal, river basins will have high water availability and recharged water bodies.

### Negative impact

- Areas with normal and below-normal rainfall might face a shortage of water availability.
- Above-normal and normal rainfall river basin areas might face o flash floods, floods, and landslides. So preparing action plans and disseminating this (early warning) information to decision-makers and communities is recommended.

**June:** Abay, Omo Gibe, Baro Akobo, rift valley, lower and middle parts of Tekeze, upper Wabishebele, upper Awash, and upper Genale Dawa catchments will be wet.

**July:** The wet weather condition over the Central, south, Western, North, and Northwestern catchments of the country.

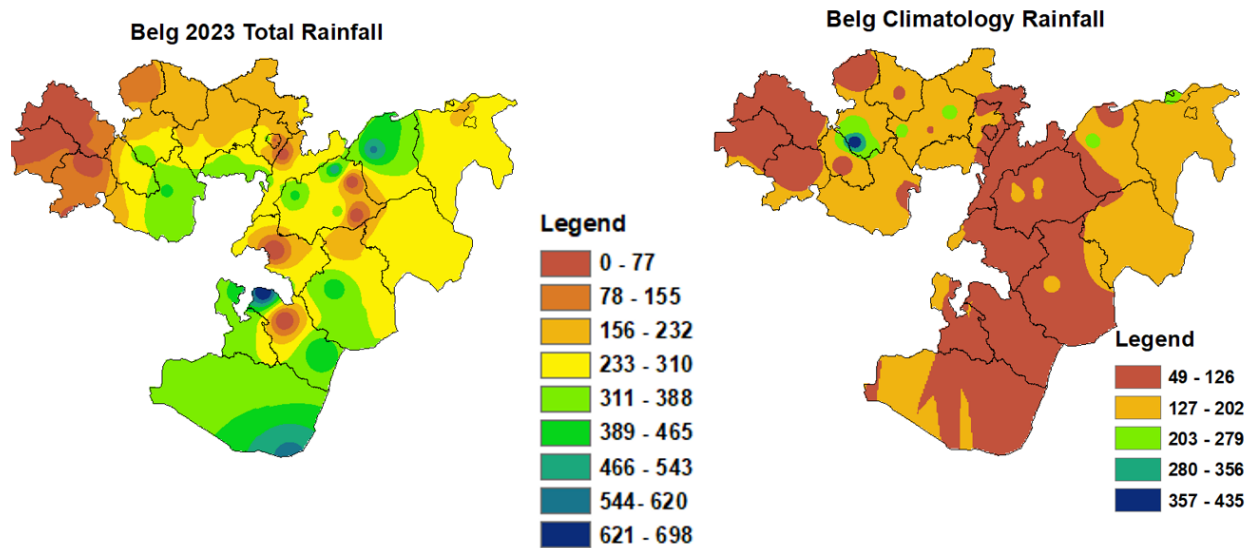
**August:** Abay, Tekeze, most parts of Omo Gibe, Rift Valley, upper and middle Awash, Genale Dawa, and Wabishebele catchments will be wet. The Aridity was expanded more to the South and South Eastern catchments.

**September:** the spatial coverage of wet conditions will increase towards the Southern, Western, Eastern, and Southeastern catchments of the country. The normal condition for dams/reservoirs level coupled with the current good condition.

In the end, a discussion forum led by the deputy director general of our institute, Mr. Kenfe Haile Maryam, and the executive of the Integrated Meteorological Advisory Service, Mr. Tarekegn Abera, various comments, and questions were raised and explained.

## **Oromia Region Belg 2023 Climate Performance and Kiremt 2023 Outlook**

Mr. Geda Yayitu provided some background information on common characteristics observed and global systems affecting the season over the region.

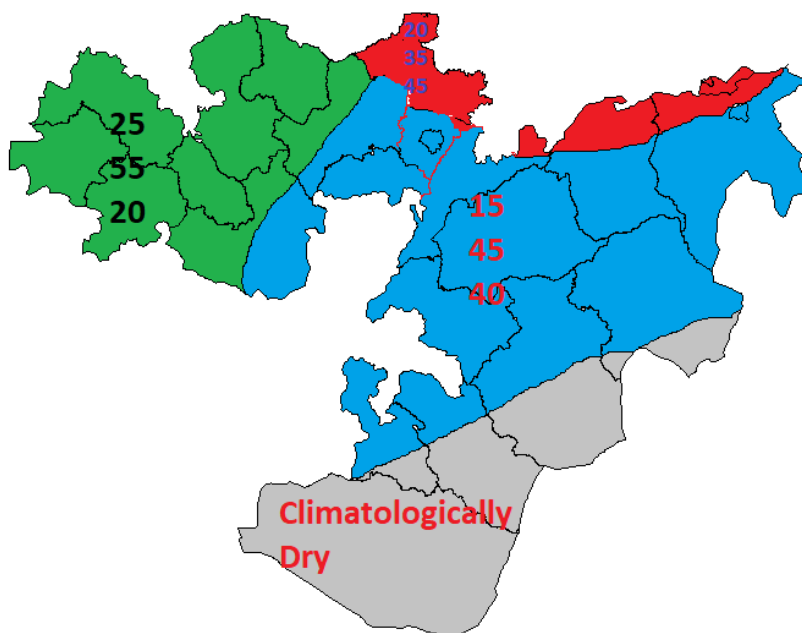


Mr. Geda summarized the assessment of *Belg* 2023 as follows

- The onset was late, and the amount and distribution were erratic.
- Normal to above-normal rain was dominantly recorded across the *Belg* rain-benefiting areas of the region.
- Prolonged dry spells were noticeably observed.
- Generally, high rainfall performance was observed in the Oromia region from Feb-May 10, 2023.

## 'Kiremt' (JJAS) 2023 Outlook for Oromia region

Mr. Geda presented how analog years were selected based on ENSO and identified the analog year 1996/97, 2001/02, and 2008/09; assessed the condition observed on the ground at the identified analog years; and put the tercile probability for the *Kiremt* 2023.



## **Belg 2023 Agro-meteorological Assessment and Impacts of *Kiremt* 2023 seasonal Outlook, Mrs. Dagmawit Aman, ECORMSC**

She presented the observed agro-meteorological impact from Feb-May 2023. Her presentation covered the overall moisture status and vegetation greenness in the past *Belg* season. In addition, she explained the adverse weather condition happened in the region as follows;

- The heavy rainfall recorded at Asela Huruta and Etaya Weredas damaged basic infrastructure.
- In Ziway Dugda and Tiyo woredas, heavy rainfall recorded on 24/7/2015 E.C. has damaged 363 ha of wheat and 205 ha of irrigated wheat land.
- On 13/7/2015, E.C., a landslide damaged 344 ha of maize, 3 ha of sorghum, and 9.5 ha of barley and killed one person at Chole Woreda.
- In west Hararghe, the heavy rainfall damaged bridges, and residences around river banks, damaged seedlings, and killed one person and many cattle in this *Belg* season.

### Summary of the past *Belg* season

- East Shewa, west Shewa, southwest Shewa, wide part of Bale, East Bale, East Welega, Western part of Guji, Western part of Borena, and periphery of Jima showed moist to

humid conditions in March and April. This condition had a positive impact on *Belg* growing areas. In addition, it positively impacted the availability of pasture and drinking water in both the pastoral and agro-pastoral communities. Due to this, field crops are performing well.

Mrs. Dagmawit also presented the 2023 *Kiremt* 2023 agro-Meteorological impact outlook. She highlighted the description of the *Kiremt* season in the region and assessed moisture status, normalized differentiation vegetation index (NDVI), and water requirement satisfaction index (WRSI) for different crops on selected analog years.

Accordingly, she stated

- Early onset across West Oromia and much of JJAS rainfall-benefiting areas.
- Erratic temporal distribution with prolonged dry spells will occur during June and September.
- Early cessations of rainfall in central Oromia region.
- Occasional heavy rain will occur during July and August.
- The expected El Nino and positive IOD will benefit the south and southeastern part of the country.

Finally, she concluded and recommended the following

- 1997 analog year indicated that the June moisture is expected to be good, while the remaining analog years show moderately dry moisture.
- *Belg* growers are recommended to harvest early and prepare for the Meher production season.
- North Shewa, Hararge, Central and South Oromia, Arsi, and Bale lowland areas' pocket areas showed normal to below normal.
- Farmers are encouraged to select drought-tolerant varieties and harvest supplementary water from rain or irrigation.
- Occasional heavy fall in July and August may lead to floods, landslides, and soil erosion.
- The selected analog years' moisture status indicated that the bega rain-benefiting areas' onset might start early (August and September). Thus, pastoral and agro-pastoral areas are recommended to take action (water harvest, land preparation, and sowing activities).

## **Amhara Region *Belg* 2023 Climate Performance and *Kiremt* 2023 Outlook**

The presenter provided background information on common characteristics observed, global systems affecting the season, *Belg* 2023 season climate performance, and its impacts during each dekad, month, and season.

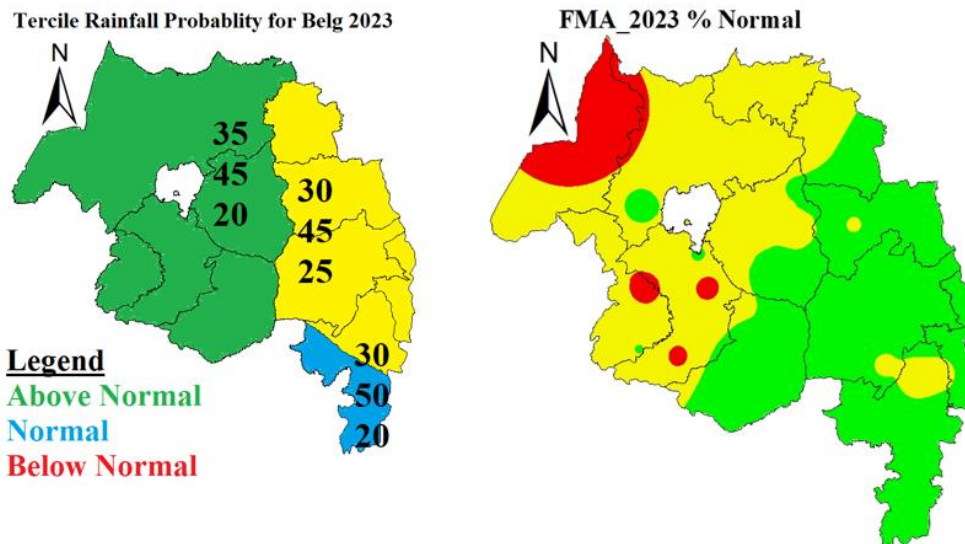


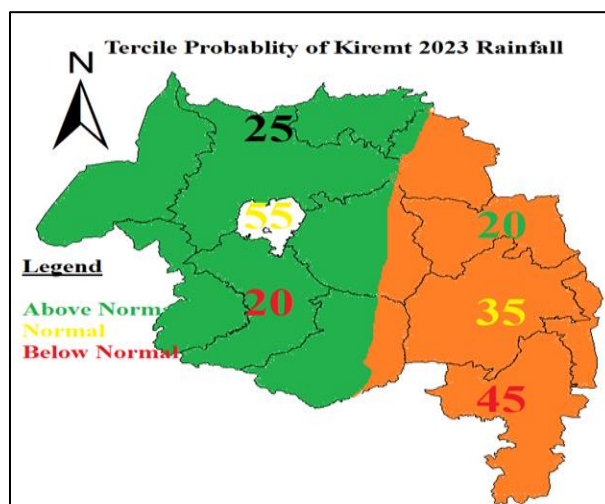
Figure. Forecast verification Map

He summarized the assessment of *Belg* 2023 as follows;

- Neutral condition was observed dominantly in the season.
- Neutral IOD was observed persistently.
- The onset of rainfall during *Belg* 2023 season rain was late, and the ending was extended to some extent.
- In February and March, erratic rainfall distribution and prolonged dry spells were observed. Due to this reason, below-normal rainfall was recorded. In contrast, the rainfall distribution in April and May was better.
- The daytime air temperature was slightly higher than usual in the season.
- Generally, normal to above-normal rainfall was observed over the region.

### ***Kiremt* (JJAS) 2023 Climate Outlook in Amhara region**

In the Amhara region, the *Kiremt* season rainfall is forecasted to start from May 24 to July 3 and ends between September 11 to November 6 over different parts of the region.



The onset and cessation for *Kiremt* 2023 season will be typical over the region. Places like Awi, West Gojjam, East Gojjam, North Gondar, south Gonder, and some parts of East Amhara will experience dominantly normal rainfall. However, most of Eastern Amhara will receive below-normal to normal rainfall. In drought-prone areas, erratic and dry spells will be observed.

The rainfall distribution of '*Kiremt*' 2023 will be erratic and variable in July and August over Eastern Amhara. With the expectation of El Nino watch and Positive IOD of the Pacific Ocean and Indian Ocean during the upcoming N.H. summer monsoon, the Amhara region is anticipated to have Normal weather activity.

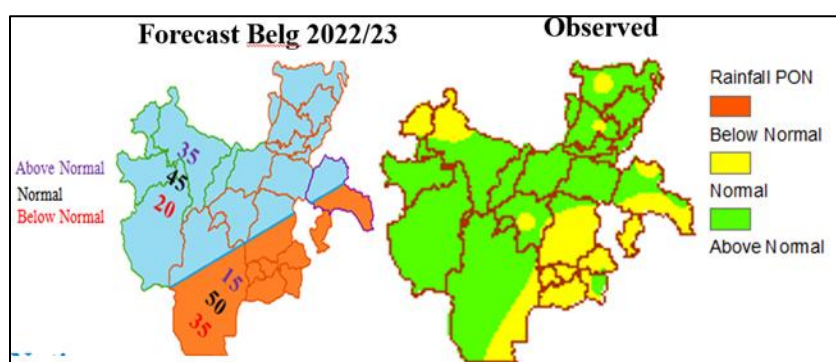
### **Belg 2023 Agro-meteorological Assessment and Impacts of *Kiremt* 2023 seasonal Outlook, WAMSC**

In the Amhara region, normal rainfall is expected to enable good moisture for *Meher* agricultural activities, early plant long-cycle *Meher* crops, and medium-term *Meher* crops and perennial plants. The analyzed Moisture status of all selected analog years in JJAS shows good spatial and temporal moisture coverage but slightly decreased compared to expected. Heavy rains in flood-prone areas can lead to floods, flash floods, and landslides. The enhanced water availability will be essential for hydropower, water supply, irrigation dams, and surface and groundwater levels. It also forecasted improved moisture availability for water resources over most rivers and basins during JJAS. However, domination of wet to very wet moisture conditions may cause overflow and increase runoff over central Amhara rivers and basins.

According to the outlook of the upcoming 2023 *Kiremt*, the region expects a malaria outbreak. As a result, more focus and strong follow-up among all concerned organizations is needed.

## SNNPR/Sidama/ Southwest regions Belg 2023 Climate Performance and Kiremt 2023 Outlook

Mr. Mussie provided some background information on observed and global systems affecting the season over the region. *Belg* 2023 season climate performance included rainfall distribution and impacts during each decade, month, and season.



**Figure: Verification map**

He summarized the assessment of *Belg* 2023 as follows

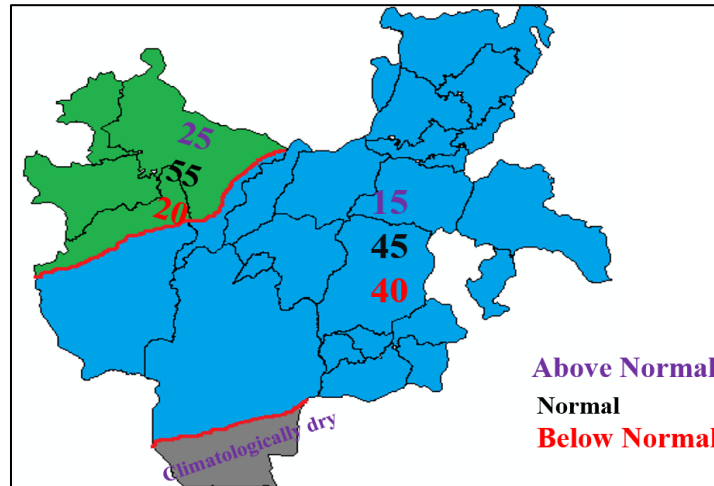
- Normal to above-normal rainfall conditions have been observed in most *Belg* rain-benefiting areas of the regions.
- Heavy rainfall was recorded in the Southwestern, SNNPR, and Sidama regions.

### ***Kiremt* (JJAS) 2023 Climate Outlook**

He presented

- How the analog years (1996/97, 2001/02, and 2008/09) were selected based on ENSO and IOD
- How to assess the condition observed on the ground at the identified analog years
- How to put the tercile probability for the *Kiremt* 2023 season



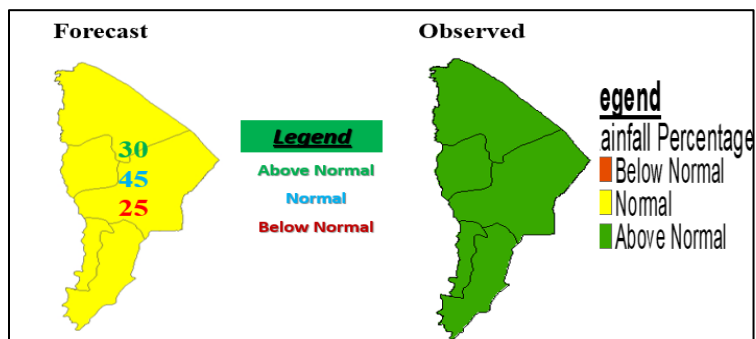


Finally, he summarized what to expect in the upcoming *Kiremt* 2023 season as

- ENSO neutral to El Nino conditions will be expected in the regions
- Positive Indian Ocean dipole will be observed
- Southwestern Ethiopia will receive normal and above-normal rainfall in the 2023 Kiremt season. The region is forecasted to receive 1214 mm of rainfall and heavy rains.
- During the identified analog years, the global condition is ENSO neutral to El Nino and IOD neutral, but the current projection of IOD will be positive.
- All parts of SNNPR and Sidama regions will receive near-normal rainfall.
- Southern & eastern parts of Southwest Ethiopia Region, Most part of SNNPR and all part of Sidama region will be expected Normal and Below Normal Rainfall
- Southern tip parts of SNNPR will be climatologically dry based on the current global and regional weather driving system, but the areas will expect rainfall if IOD-positive dominants.
- Dry days and erratic rainfall will be recorded in the Southwest, SNNPR, and Sidama regions.
- Continuous follow-up of updated meteorological, agro-meteorological forecasts and early warning information is recommended.

## **Afar region Belg 2023 Climate Performance and Kiremt 2023 Outlook**

The presenter compared *Belg* 2023 forecast with the observed on the ground.



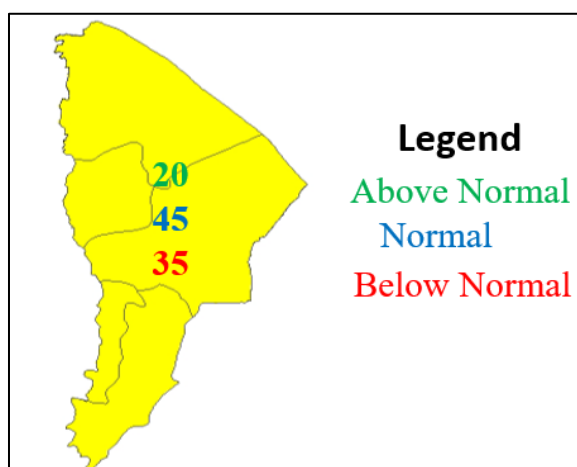
He summarized the assessment of Belg 2023 as follows

- ENSO-neutral conditions were observed.
- Neutral Indian Ocean dipole prevailed in FMAM season
- Most parts of the region received normal to above-normal rainfall.
- The amount and distribution of seasonal rainfall were good in the region.
- Generally, wet weather conditions prevailed in the region.

### **Kiremt (JJAS) 2023 Climate Outlook in Afar region**

The presenter outlined the upcoming coming 2023 Kiremt forecast as follows

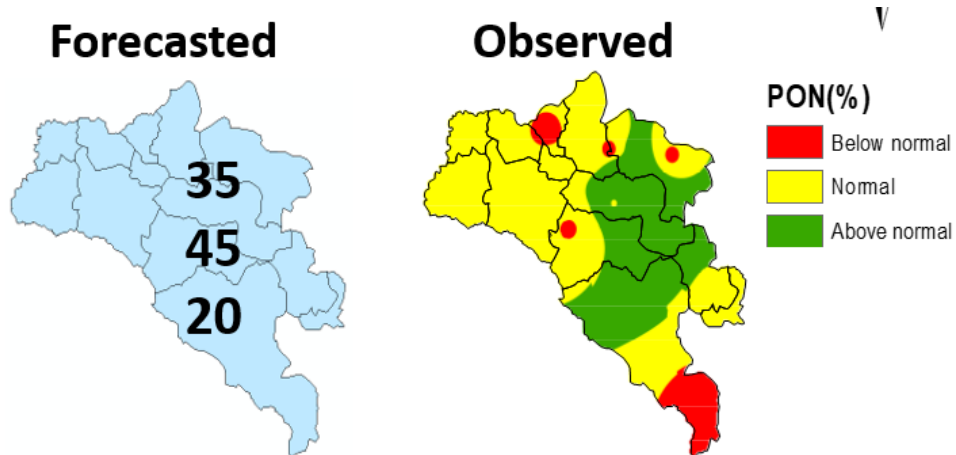
- ENSO neutral to El Nino conditions will be expected.
- Positive Indian Ocean dipole will be observed.
- Daytime maximum temperatures are expected to increase.
- Normal to below-normal seasonal rainfall is expected.
- The expected seasonal rain will have erratic distribution and amount over the region.



## Gambela Region *Belg* 2023 Climate Performance and Kiremt 2023 Outlook

Mr. Shimelis Shiferaw summarized the *Belg* assessment as follows

- During the last two months, most parts of the Gambella region received less rainfall, and dry climate conditions were observed except in Abobo and Metti stations.
- In April, most areas in the region received above-normal rainfall. In some stations, heavy rain was recorded.

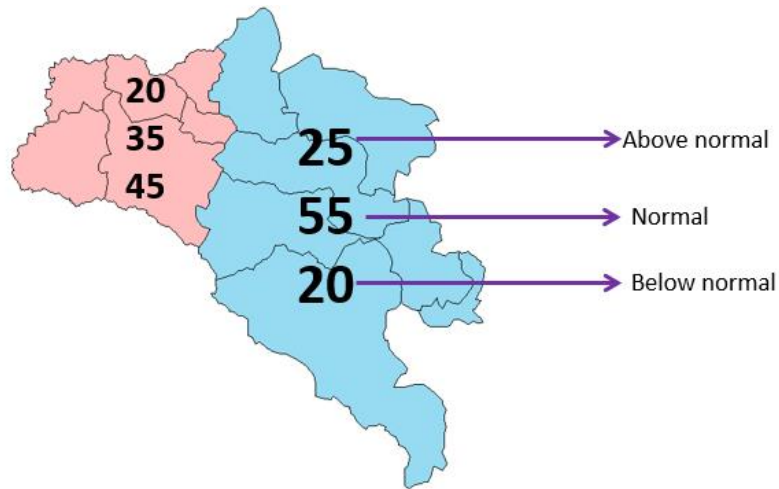


- In general, the region received normal to above-normal rainfall.

### ***Kiremt* (JJAS) 2023 Climate Outlook in Gambela Region**

Mr. Shimelis summarized the *Kiremt* outlook as follows;

- Selected analog years show below-normal rainfall except 1997, showing normal rainfall observed.
- Equatorial sea surface temperatures (SSTs) are near-to-above average across most of the Pacific Ocean.
- ENSO-neutral conditions will continue through the Northern Hemisphere spring, with a 62% chance of El Niño developing during May and July 2023.
- In general normal to below-normal rainfall is expected.
- Users should follow climate and weather forecast provided by the GRMSC and EMI.



## Conclusion

After the breakout session, all the groups presented the output from their discussion. Mr. Fetene and Dr. Teferi Dejene led the final session. Participants raised some questions about the tailored weather and climate information at the grass root level. Moreover, they mentioned the need for more research for the accuracy and reliability of the weather and climate services. Mr. Fetene described that the institute is working closely with various sectors to enhance its services at national and regional levels. Dr. Teferi said they would continue supporting EMI to improve Ethiopia's weather and climate services.

# Annex

## Workshop Program

**Topic: National Climate Outlook Forum for 'Kiremt' 2023**

**Time & Date: - 13-14 May 2023 Place: Adama, Haile Resort**

Session One: Opening of the forum			
Time	Program	Responsible	Facilitator
08:30 – 09:00	Registration	Organizers	Mrs. Hirut Alemu PR executive officer at EMI
09:00 - 09:10	Welcoming Speech	Mr. Fetene Teshome, DG of EMI	
09:10-09:15	Keynote speech	Agnes Kijazi (PhD) Director, Regional Office for Africa WMO	
09:15-09:30	Opening Speech	H.E. Dr.Eng. Habtamu Itafa, Minister, Ministry of Water and Energy	
Session Two: 'Belg' 2023 climate assessment and 'Kiremt' 2023 climate outlook			
09:30-09:35	Overview of AICCRA	Teferi Dejene (PhD), Climate Scientist, ILRI/NORCE	Chair: Asaminew Teshome (PhD)  Rapporteurs Mr. Leta Bekele. Mr. Abate Getachew
09:35-09:50	Weather and climate service at EMI	Mr. Kiefe H/Mariam DDG of EMI	
09:50-10:40	Assessment and evaluation of Belg 2023 rainfall performance over Ethiopia	Mr. Mulualem Abera	
10:40-11:10	Tea/coffee break	Hotel	
11:10-12:00	National Climate Outlook for Kiremt 2023 over Ethiopia	Asaminew Teshome (PhD)	
12:00-12:10	Presentation from co-production sectors	Expert for MoA	
12:10-13:00	Short discussion	H.E. Dr.Eng. Habtamu Itafa, Minister, Ministry of Water and Energy and Mr. Fetene Teshome, DG of EMI	
13:00-14:00	Lunch break	Hotel	Hotel
14:00-14:30	Press release	Mr. Fetene Teshome, DG of EMI and Asaminew Teshome (PhD)	

Session Three:	Parallel sessions		
14:30-15:30	Assessment of Agro, Hydro and Bio-meteorological impacts of <i>Belg</i> 2023 climate conditions	Mrs. Sintayehu Abera, Mr. Alemu Gamini and Mr. Desaleng Tarekeng	Chair: Kassa Fekadu Rapp. Mr. Tarekeng A. Mr. Bekele Kebebe
15:30-16:30	Climate impact assessment on agriculture, water, health, NDRMC and environment.	Focal from each sectors	Chair: Mr. Tsegaye Ketema
14:30-15:30	Impacts of predicted Kiremt 2023 Climate on Agriculture, Water and health sectors	Mr. Kidus Belay, Mr. Alemu Gamini and Mr. Desaleng Tarekeng	Chair: Kassa Fekadu Rapp. Mrs. Habtam Jember Mr. Chaka Nathai
15:30-16:30	Climate impact assessment on agriculture, water, health, NDRMC and environment.	Presentation from sectors	
15:00-16:30	General Discussion	Mr. Fetene Teshome, DG of EMI and Mr. Kinfe H/Mariam DDG of EMI	
16:30-17:30	Tea/Coffee break and adjourn	Hotel	
Day Two:	'Kiremt' 2023 NCOF continued		
09:00-09:20	Recap of the first day in their respective groups		Rapporteurs
09:20-09:40	Presentation from Oromia RMSC		Chair: Mr. Kinfe H/Mariam DDG of EMI
09:40-10:00	Presentation from Amhara RMSC		
10:00-10:20	Presentation from SNNPR/Sidama/S.W. region RMSC		Rapporteurs Mr. Leta Bekele. Mr. Abate Getachew
10:20-10:50	Tea/Coffee break	Hotel	Hotel
10:50-11:10	Presentation from Somali RMSC		Chair: Mr. Henock Hailu

11:10-11:20	Presentation from Afar RMSC		Rapporteurs Mr. Leta Bekele. Mr. Abate Getachew
11:20-11:30	Presentation from Gambella RMSC		
11:30-11:40	Presentation from Benishangul RMSC		
11:40-13:30	Group discussion	D.G. and DDG of EMI	
13:30-14:30	Lunch	Hotel	Hotel
14:30-16:00	General discussion continued	D.G. and DDG of EMI	
16:00-17:30	Tea/coffee adjourn		

Photos







# AICCRA

Accelerating Impacts of CGIAR  
Climate Research for Africa



## About AICCRA

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a project that helps deliver a climate-smart African future driven by science and innovation in agriculture.

It is led by the Alliance of Bioversity International and CIAT and supported by a grant from the International Development Association (IDA) of the World Bank.

Discover more at [aiccra.cgiar.org](http://aiccra.cgiar.org)

AICCRA Eastern and Southern Africa is led and hosted by OneCGIAR centers:

Alliance



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