FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

ETHIOPIAN METEOROLOGICAL INSTITUTE

METEOROLOGICLA DATA AND CLIMATOLOGYLEAD LEAD EXECUTIVE

REMOTE SENSING AND CLIMATOLOGICAL DESK

MONTHLY CLIMATE BULLETIN

November 2023

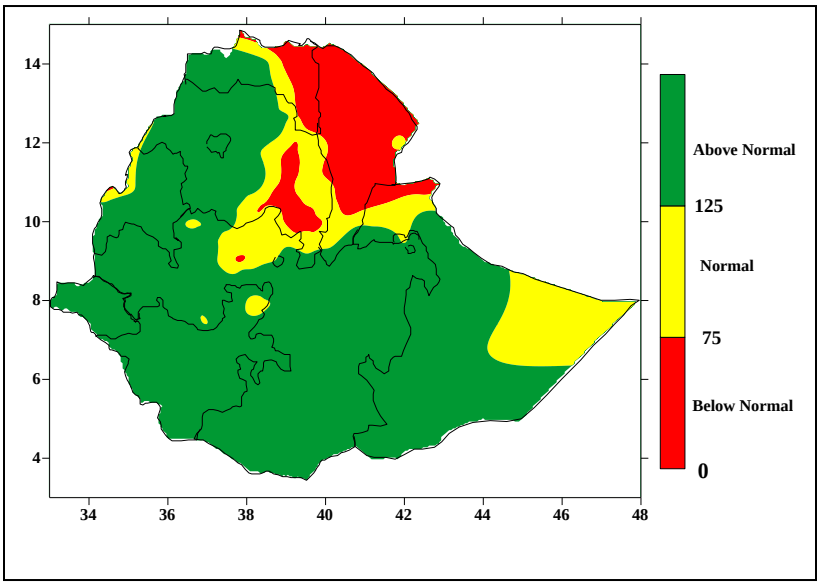
Some Applications of Climate Information

HIGHLIGHTS

During November 2023, days were remained warm over several portions of lowlands of Ethiopia, in particularly over Afar, most part of Somalia, northwest part of the country Benishangul Gumuz and Gambella regions. Specifically, the extreme maximum temperature values were as high as 42.8, 39, 38.6, 38.5, 38.4, 38.1 and 38^{O}C over Ellidar, Fugnuldo, Semera, Ayesha, Metema, Gewane and Sherkole respectively. During November 2023, the monthly rainfall amount exceeded 250 mm or heavier rainfall was occurring over southeast and western Oromia, most part of SNNPR, Gambella and Somali regions. In particular, the monthly total rainfall values of November 2023 were as high as 415, 297, 286.1, 285, 277 and 255.5mm over Ginir, Moyale, Bure, Gambella, Gatira and Hageremariyam respectively.

In general, the monthly total rainfall amount of November 2023 was below normal over part of Afar, some part of Amhara and Tigray regions. On the other hand, it was above normal over SNNPR, Gambella, Oromia, and most part of Somali, Benishangul Gumuz, Amhara and some part of Tigray regions. Current rainfall normal in some parts of Somali, Amhara, and few part of Oromia, Tigray and Benishangul Gumuz regions

SNNPR, Gambella, Benishangul Gumuz, most part of Oromia, Somali, and Amhara, some part of Tigray and Afar regions were wetter than November climatological normal rainfall. On the other hand, most part of Afar, some part of Somali, Amhara, few areas of Oromia and Tigray regions November 2023 was dryer than November normal rainfall.



Percent of normal rainfall of November 2023

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Foreword

This climate bulletin is prepared and disseminated by the Ethiopia Meteorological Institute (EMI). It is aimed at providing climatological information to different services of the community involved in various socio-economic activities.

The information contained in this bulletin is believed to assist planners, decision-makers and the community at large by providing details of the climatic conditions of the nation in a given period.

This bulletin differs from the other real time and near real time bulletins issued by the Agency, which for their input depend only on meteorological stations equipped with single side band radio for data transmission. Though this bulletin is not real time, published with a delay of at least two months, the information contained in this bulletin is based on data coming from a much larger number of meteorological stations. Moreover, the information contained in this bulletin is not sector-specific and a wide range of users can benefit from it. The Agency disseminates monthly, seasonal and annual climatological bulletins in which all-necessary climatological information and significant climatic anomalies are highlighted.

We have a strong belief that various socio-economic activities related to planning disaster mitigation, water resources management, construction, environmental protection, transportation, recreation, tourism and others will be benefited most by the careful and continuous use of this bulletin. Meanwhile, your comments and constructive suggestions are highly appreciated to make the objectives of this bulletin success.

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1. Synoptic Situation

1.1 Surface

The Mascarene high with a mean central pressure value of above 1020hPa was centered at about 36°S, 99°E.

The St. Helena high with a mean central pressure value of above 1018hPa was centered at about 27°S, 8°W.

The Azores high with a mean central pressure value of 1020hPa was centered at about 35°N, 8°W.

1.2 Lower Troposphere (850 hPa vector wind)

Cross-equatorial and westerly flow of below 4m/s was flowing from Arabian Peninsula to Africa continent.

1.3 Middle Troposphere (500-hPa Geo-potential height)

The 500-hPa circulation during November featured above-average heights over the North Pacific Ocean, the western half of North America, Greenland, and most of Siberia, where a maxima in anomalies was recorded, and below-average heights over the Laptev Sea and Scandinavia. The main land-surface temperature signals include above-average temperatures across most of Nolrth America, Europe, Asia, and Russia. The main precipitation signals include below average rainfall totals for the eastern half of North America and for regions along the west coast, and above-average rainfall totals for Europe and eastern Asia

2. Tropical Oceanic and Atmospheric Highlights

During November 2023, sea surface temperatures (SSTs) remained well above-average across the central and eastern equatorial Pacific. The latest monthly Niño indices were +2.2°C for the Niño 1+2 region, +1.9°C for the Niño 3.4 region and +2.1°C for the Niño 3 region. The depth of the oceanic thermocline (measured by the depth of the 20°C isotherm) was above average across the central and eastern equatorial Pacific. The corresponding Sub-surface temperatures were 1-4°C above-average in the far eastern equatorial Pacific.

Reference: NOAA, climate diagnostic bulletin of November 2023

3. Weather

3.1 Temperature

During November 2023, days were remained warm over several portions of lowlands of Ethiopia, in particularly over Afar, most part of Somalia, northwest part of the country Benishangul Gumuz and Gambella regions (Fig. 3.1.2). Specifically, the extreme maximum temperature values were as high as 42.8, 39, 38.6, 38.5, 38.4, 38 and 38.1^{O}C over Ellidar, Fugnuldo, Semera, Ayesha, Metema, Gewane and Sherkole respectively (Table 3.1.1).

On the other hand, the extreme minimum temperature values were below 5^{O}C was observed on many station. It cover some highland parts of Amhara, Oromia and central Ethiopia. Specifically, some of the extreme minimum temperature values were 0, 0.2, 0.4, 1 and 1.4^{O}C over Adele, Mehalmeda, D/berhan, Bore and Gambella respectively (Table 3.1.2).

In General, the monthly average temperature values were partially colder than normal and partially warmer than normal over most parts of the country (Fig. 3.1.3).

Table 3.1.1 Stations with extreme maximum temperature values of greater than or equal to 35^0c during November 2023

Stations	Extreme maximum temperature (^{o}c)	Date
AYSHA	38.5	22
ELIDAR	42.8	11
FUGNUIDO	39	29
Gewane	38	20
METEMA	38.4	26
Semera	38.6	23
SHERKOLE	38.1	27

Table 3.1.2 Stations with extreme minimum temperature values of below or equal to 5^oc during November 2023

Stations	**Extreme minimum temperature (^{o}c)**	**Date**
Robe	4.8	27
ADELLE	0	7
ALEMAYA	2.8	29
AMBAMARIAM	4	26
BORE	1	13
Bui	3.4	30
DEBARK	4.6	30
D/BREHAN	0.4	26
DEBRAWREK	4.8	30
Enewari	3	26
Fiche	3.8	29
GAMBELLA	1.4	13
MEHALMEDA	0.2	25
SHOLAGEBAYA	2.1	27
WEGELTENA	1.6	30

3.2 Rainfall

Normally, November is one of the months of the dryer season of Bega (ONDJ) for most part of the country except southern, south east and south western. The mean monthly rainfall amount exceeds 250 mm over much areas of Southern, southwest and southeast part of the country.

During November 2023, the monthly rainfall amount exceeded 250 mm or heavier rainfall was occurring over southeast and western Oromia, most part of SNNPR, Gambella and Somali regions.

In particular, the monthly total rainfall values of November 2023 were as high as 415, 297.6, 286.1, 285.4, 277 and 255.5mm over Ginir, Moyale, Bure, Gambella, Gatira and Hageremariyam respectively. The daily rainfall values of more than 60mm was observed over Hageremariyam, Masha, Ginir, Gambella, Limugenet, Metehara and Konso stations respectively (Tables 3.2.1).

In general, the monthly total rainfall amount of November 2023 was belownormal over part of Afar, some part of Amhara and Tigray regions. On the other hand, it was above normal over SNNPR, Gambella, Oromia, and most part of Somali, Benishangul Gumuz, Amhara and some part of Tigray regions. November 2023 rainfall was normal in some parts of Somali, Amhara, and few part of Oromia, Tigray and Benishangul Gumuz regions (Fig. 3.2.2).

SNNPR, Gambella, Benishangul Gumuz, most part of Oromia, Somali, much of Amhara, some part of Tigray and Afar regions were wetter than November 2022 rainfall. On the other hand, most part of Afar, some part of Somali, Amhara, few areas of Oromia and Tigray regions November 2023 was dryer than November 2022 rainfall (Fig. 3.2.3).

Table 3.2.1. Stations with more than 60mm of rainfall in 24 hours during November 2023

Stations	**Amount (mm)**	**Date**
Metehara	63.5	18
GAMBELLA	76.6	5
GINIR	80	2
HAGEREMARIAM	107.4	7
KONSO	63	5
LIMUGENET	72	4
MASHA	80.6	18

Table 3.2.2. Stations with more than 250mm of monthly total rainfall during November 2023

Station	Amount
BURE	286.1
GAMBELLA	285.4
Gatira	277
GINIR	415
HAGEREMARIAM	255.5
MOYALE	297.6

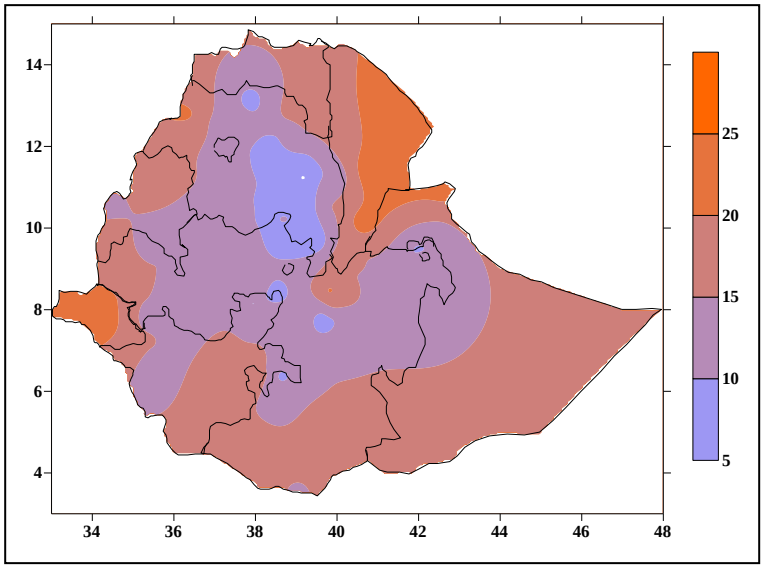

Fig. 3.1.1. Mean minimum temperature in °c during November 2023

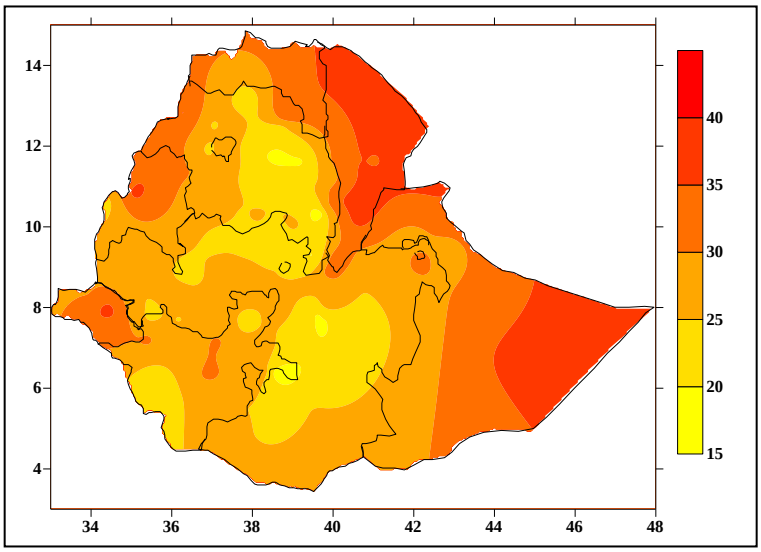

Fig. 3.1.2. Mean maximum temperature in °c during November 2023

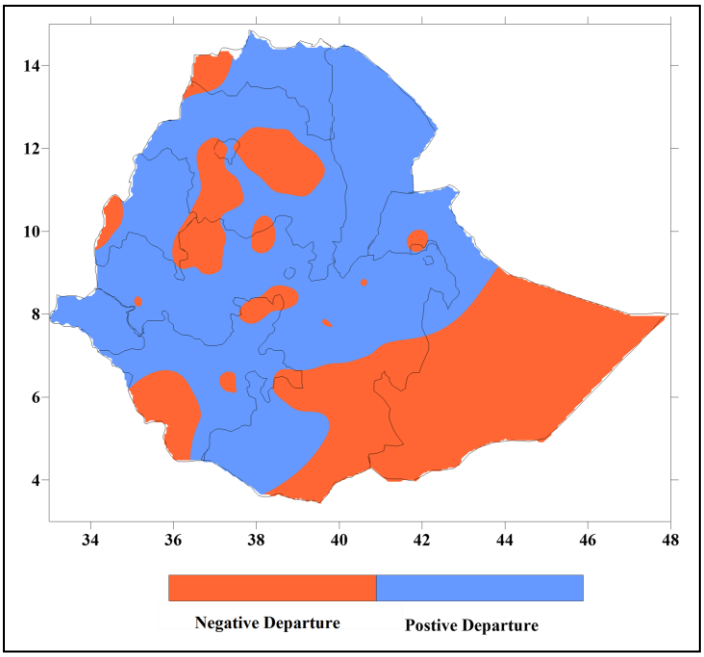

Fig.3.1.3. Departure of monthly average temperature from normal during November 2023

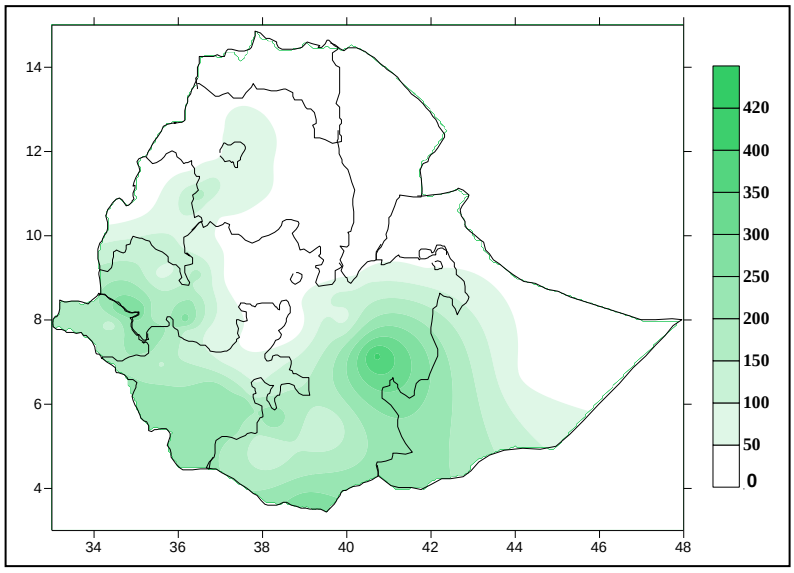

Fig.3.2.1. Monthly total rainfall in mm during November 2023

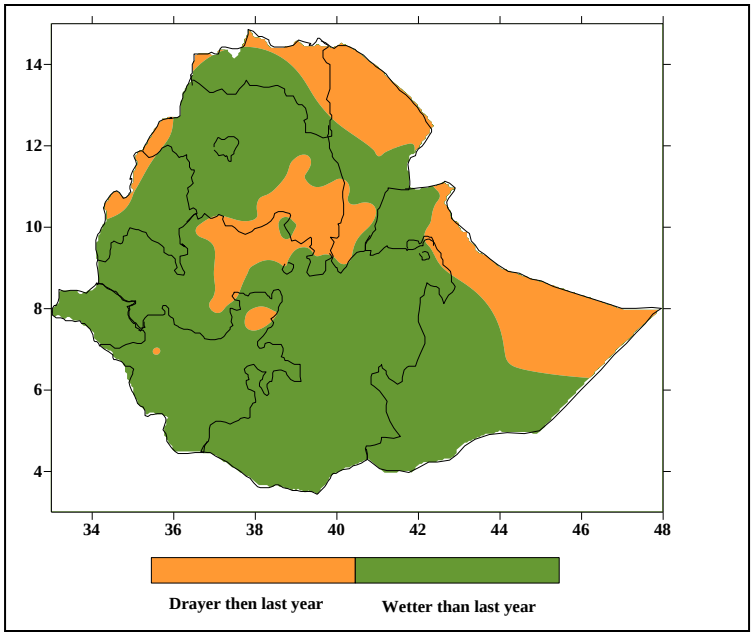

Fig. 3.2.3. Monthly total rainfall of November 2023 minus monthly total rainfall of November 2022

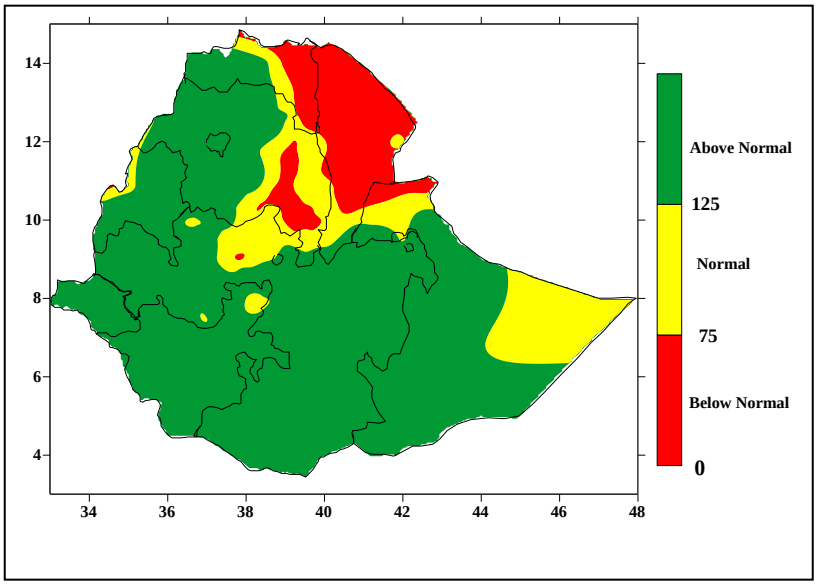

Fig. 3.2.2. Percent of normal rainfall during November 2023