FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

MINISTRY OF WATER AND ENERGY

NATIONAL METEOROLOGICAL AGENCY

Meteorological Data *and Climatology Directorate*

SEASONAL CLIMATE BULLETIN

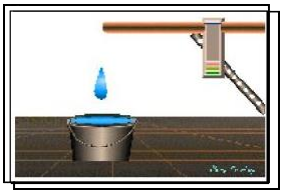
Kiremt 2022/23

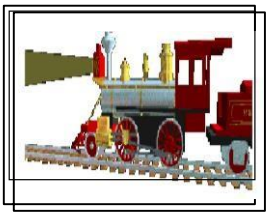
Some Applications of Climate Information

Disaster Management

Construction

Environment & Health



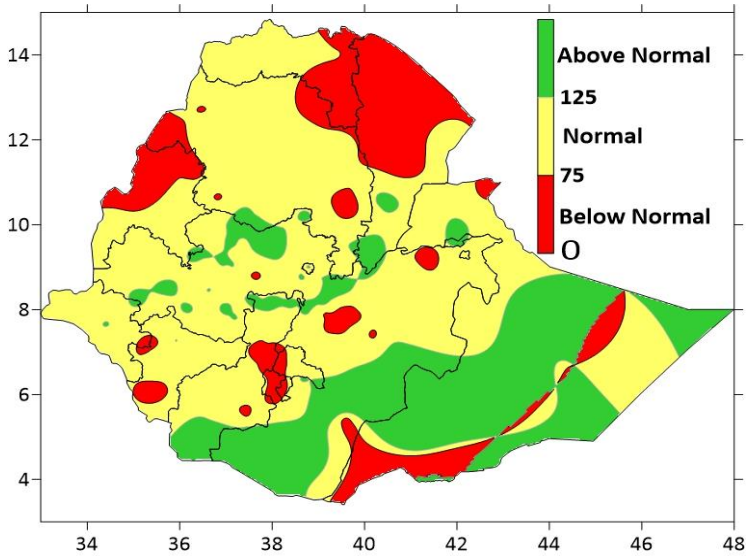


HIGHLIGHTS

The seasonal total rainfall amount of Kiremt 2023 was exceeded 600 mm over Benishangule, southern and most of Amhara region, western Tigray, western part of SNNPR as well as parts of western Oromia. While heavy fall in 24 hours greater than 70mm, during Kiremt 2023 108.4, 95.7, 89.1 and 88mm over Shahura, Bure, Nekemte, and Ginir was reported on the 15th Sep, 22th Jun, 10th Jun and 20th Sep 2023.

During kiremt 2023, days remained hot over South East and north eastern parts of Ethiopia. In particular, extreme maximum temperature values exceeded 43.0 oC over Extreme maximum temperature was recorded over Gewane, Aysha, Elidar, Semera and Mille 43.4, 43.6, 43.8, 44 and 44oC on the 26th of June, 30th Aug, 25th Jun, 25th and 26th of June, respectively. Hence, the extreme minimum temperature values were as low as 0.0, 0.5, 2.0 and 2.5°C Ambamariam, Ayehu, Hageremariam, and Aykel respectively. The temperature anomaly was negative departed some parts of southern Oromia, southern Amhara and Southern Somale. The rest of the country had posetive temperature anomaly**.**

In general, the seasonal rainfall amount of Kiremt 2023 was below normal over northern and northwestern Benishngulgumuz, some parts of eastern Tigray, pocket area of SNNPRs and northern parts of Afar regions. In the most parts of Somale, southeastern parts of SNNPRs, southern parts of Oromia and some pocket area of central Ethiopia are gets above normal, were as the rest of the country getting normal rainfall observed.



Percent of Normal Rainfall of Bega 2022/23

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Foreword

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

The information contained in the 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 some 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 a success.

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1. Introduction

1.1. General

This climate bulletin contains summary of climatic conditions that prevailed over the country during Kiremt 2023.

Kiremt is the main rainy season that covers the period from June to September. The Kiremt rainfall covers most parts of the country with the exception of some part of south and southeast of Ethiopia. The climate of the season is mostly characterized by Cold and moist conditions. Generally, the rainfall of this season is very important for growing of Meher crops.

1.2. Summary of Kiremt 2023

The seasonal total rainfall amount of Kiremt 2023 was exceeded 600 mm over Benishangule, southern and most of Amhara region, western Tigray, western part of SNNPR as well as parts of western Oromia (fig 4.2.1). In general, the seasonal rainfall amount of Kiremt 2023 was below normal over northern and northwestern Benishngulgumuz, some parts of eastern Tigray, pocket area of SNNPRs and northern parts of Afar regions. In the most parts of Somale, southeastern parts of SNNPRs, southern parts of Oromia and some pocket area of central Ethiopia are gets above normal, were as the rest of the country getting normal rainfall observed (fig 4.2.5).

2.0 Synoptic Situation

2.1 Surface

The Mascarene high with a mean central pressure value of 1020hPa. was centered at 30°S, 65°E. The central pressure value was below normal up to -1 hPa. The St. Helena high with a mean central Pressure value of 1020hPa was centered at 30°S, 20°W. The central pressure value was normal to above normal 0 to 1hPa.

The Azores high with a mean central pressure value of 1020hPa was centered at 40°N, 30°W. The central pressure value was normal to above normal 0hPa up to 2hPa.

2.2 Lower Troposphere (850hpa vector wind)

Westerly to southerly flow of wind from 4 -6 m/s was dominant over western and northern parts of the country whereas 6-12m/s wind south eastern parts of the country. The core wind TEJ exceeded 18m/s wester Indian Ocean.

2.3 *Middle Troposphere (500-hpa Geopotential Height*)

The variation of geopotential height valueswas 9 to 18gpm over Red Sea, Arabian Sea and Horn of Africa and adjoining areas.

2.4 Upper Troposphere (200 hpa vector wind)

The strong easterly flow associated with the Tropical Easterly Jet had strengthened and speed of the core exceeded 20m/s along Arabian Seaand 10 to 15m/s of wind was west to eastern parts of the country respectively.

3. Tropical Oceanic and AtmosphericHighlights

ENSO, La Nina Condition continued during June 2021, as negative sea surface temperature (SST) anomalies remained below average across the central and eastern equatorial Pacific Ocean. The latest monthly SST index was -1.0°C in the Niño-3.4 region.

La Nina conditions continued during July 2023, as negative sea surface temperature (SST) anomalies persisted the central and eastern equatorial Pacific Ocean. The monthly SST anomaly index was -1.2°C to -0.5°C in the Niño-3.4 region.

La Niña condition continued during August 2021, as negative sea surface temperature (SST) anomalies further persisted across the central and eastern equatorial Pacific Ocean. The monthly SST anomaly index was -1.0°C in the Niño-3.4 region.

During September 2023, La Niña conditions persisted across the equatorial Pacific Ocean. However, sea surface temperature (SST) anomalies in the central and eastern equatorial Pacific Ocean remained below average. The latest monthly SST index was -1.0°C in the Niño-3.4 region.

Reference: Climate Diagnostics Bulletin 2023.
NOAA/NCEP Composite analysis:
http://www.esrl.noaa.gov/psd/

4. Weather

4.1 Temperature

During kiremt 2023, days remained hot over South East and north eastern parts of Ethiopia (fig.4.2.2). In particular, extreme maximum temperature values exceeded 43.0 ^{o}C over Extreme maximum temperature was recorded over Gewane, Aysha, Elidar, Semera and Mille 43.4, 43.6, 43.8, 44 and 44^{o}C on the 26th of June, 30th Aug, 25th Jun, 25th and 26th of June, respectively (table 4.1.1). Hence, the extreme minimum temperature values were as low as 0.0, 0.5, 2.0 and 2.5°C Ambamariam, Ayehu, Hageremariam, and Aykel respectively (Table 4.1.2 and fig 4.2.3). The temperature anomaly was negative departed some parts of southern Oromia, southern Amhara and Southern Somale. The rest of the country had posetive temperature anomaly (fig.4.2.4).

Table 4.1.1 Stations with extreme maximum temperature values of greater than or equal to 40.0^{o}C during Kiremt 2023.

Table 4.1.1 Stations with extreme maximum temperature values of greater than 40^{o}C during Kiremt 2023

Name	Extreme Tmax(^{0}c)	Date	Month
AWASH ARBA	41	30	July
CHIFRA	41	2	July
Metehara	41.6	26	June
Gode	41.6	21	Augest
Chifra	42	27	June
DUBTI	42	22	September
Gewane	42.2	1	July
Gewane	42.4	29	September
Ejaji	42.5	6	June
Aysha	43	29,30	June
DUBTI	43	15	Augest
MILLE	43	26	Augest
Gewane	43.4	26	June
AYSHA	43.5	30	Augest
Semera	43.6	26	Augest
AYSHA	43.6	24	September
Elidar	43.8	25	June
Mille	44	26,27	June
Semera	44	25, 27	June
MILLE	44	30	July
MILLE	44	21	September
SEMERA	44	20	September
Gode	44.2	4	September
ELIDAR	44.8	31	July
Awash arba	45	24	June
Semera	45	7	July
Dubti	45.5	27	June
AYSHA	45.5	2	July
DUBTI	45.5	6	July

Table 4.1.2 Stations with extreme Minimum temperature values less than 2^{o}C during Kiremt 2023

St.Name	Extr.tmin(^{0}c)	Date	Month
Ambamariam	4	26	June
Arba Minch	4.8	26	June
Ayehu	0.5	8	June
Ghion	3.6	2	June
Wegeltena	5.8	26	June
DEBREZEIT(AF)	4.2	28	July
AMBAMARIAM	4.2	9	July
AYKEL	2.5	7	July
HAGEREMARIAM	2	11	July
Ambamariam	0	1	Augest
Nefasmewucha	4	1	Augest
Gundomeskel	5.3	30	Augest
Bore	5.5	28	Augest
Alemketema	5.8	9	September
AMBAMARIAM	4.4	2	September
BORE	7	5	September
Bui	6	22	September
D/BREHAN	7.2	14	September
MEHALMEDA	6.5	15	September
WEGELTENA	7.4	19	September

4.2 Rainfall

Normally Kiremt is wet season for Kiremt- rain-benefiting areas of western, central, northwestern and southwestern Ethiopia.

The climate of this season is characterized by cold and wet days. The mean seasonal rainfall amount of this season exceeds 1000mm over much of the Kiremt-rain-benefiting areas with larger amount of rainfall occurring over western, Central and north western Ethiopia.

The seasonal total rainfall amount of Kiremt 2023 was exceeded 600 mm over Benishangule, southern and most of Amhara region, western Tigray, western part of SNNPR as well as parts of western Oromia (fig 4.2.1)

While heavy fall in 24 hours greater than 70mm, during Kiremt 2023 108.4, 95.7, 89.1 and 88mm over Shahura, Bure, Nekemte, and Ginir was reported on the 15th Sep, 22th Jun, 10th Jun and 20th Sep 2023 (table 4.2.1).

In general, the seasonal rainfall amount of Kiremt 2023 was below normal over northern and northwestern Benishngulgumuz, some parts of eastern Tigray, pocket area of SNNPRs and northern parts of Afar regions. In the most parts of Somale, southeastern parts of SNNPRs, southern parts of Oromia and some pocket area of central Ethiopia are gets above normal, were as the rest of the country getting normal rainfall observed (fig 4.2.5).

Table 4.2.1. Station(s) with more than or equal to 70mm of rainfall in 24 hours during Kiremt 2023

Stations	Amount (mm)	Day	Month
GORE	72	16	Jun
NEKEMTE	89.1	10	Jun
ALGIE	80	30	Jun
BURE	95.7	22	Jun
BAHIR DAR MET	78.2	5	July
JIMMA	82.4	30	July
GIMBI	70.3	26	July
SHERKOLE	72.5	30	July
DALIFAGI	70	20	Augest
D/TABOR	71.9	1	Augest
SIRINKA	75.2	1	Augest
MASHA	76.4	30	Augest
ASSOSSA	80.1	15	Augest
GUNDOMESKEL	82	30	Augest
BURE	84.6	23	Augest
FUGNUIDO	84.6	31	Augest
D/BREHAN	72	15	September
GIDAAYANA	74	10	September
GINIR	88	20	September
LARE	82.2	11	September
MASHA	80.6	4	September
SHAHURA	108.4	15	September
SIRINKA	83.5	1	September

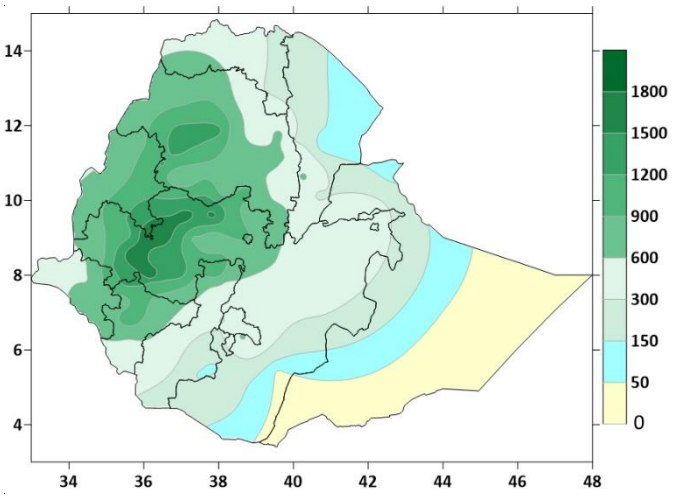


fig. 4.2.1. Seasonal Total Rainfall in mm during Kiremt 2023

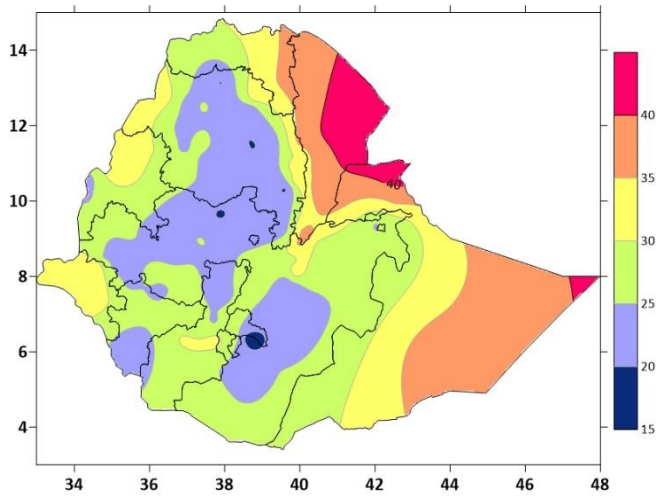
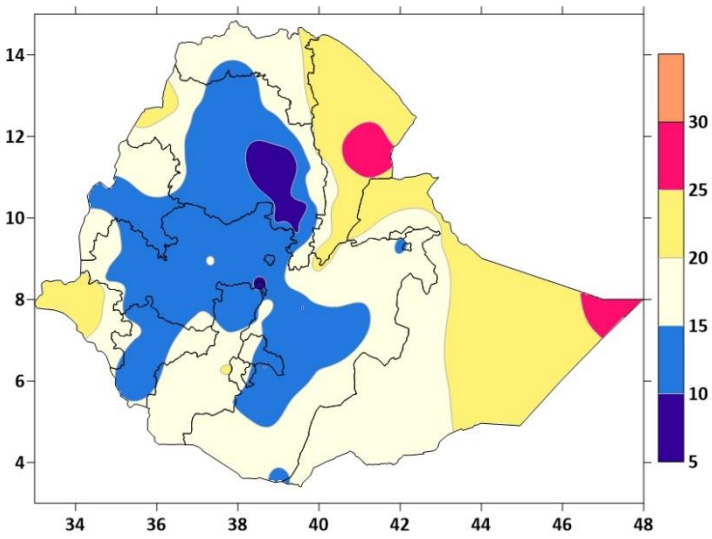


Fig. 4.2.2. Maximum Temperature in ^{o}c during Kiremt 2023



4.2.3 Minimum Temperature in ^{0}C During 2022/2023

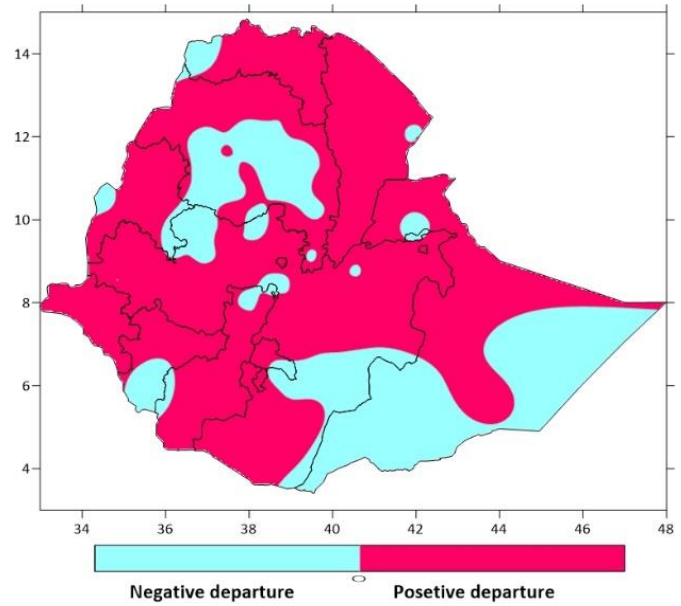


Fig 4.2.4 Seasonal temperature of Kiremt 2023minus seasonal LTM of Kiremt

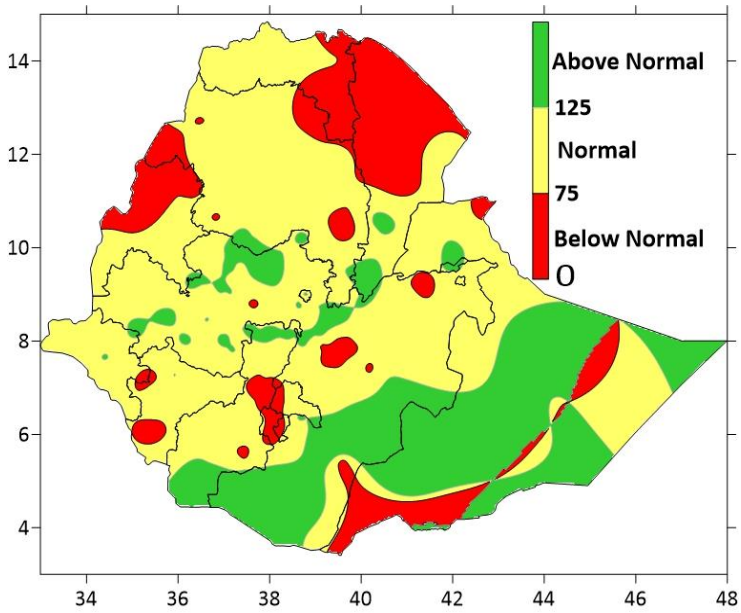


Figure. 4.2.5. Percent of Normal Rainfall of Kiremt 2023