

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN METEOROLOGICAL INSTITUTE
Meteorological DATA AND CLIMATOLOGY
SEASONAL CLIMATE BULLETIN
Kiremt 2022

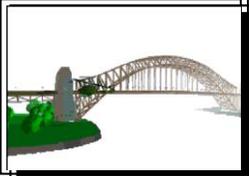
Some Applications of Climate Information



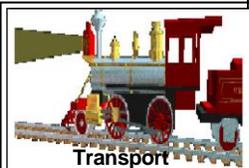
Disaster Management



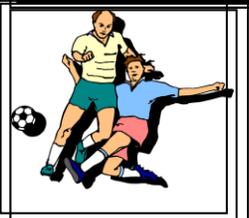
Water Resources Management



Environment & Health



Transport

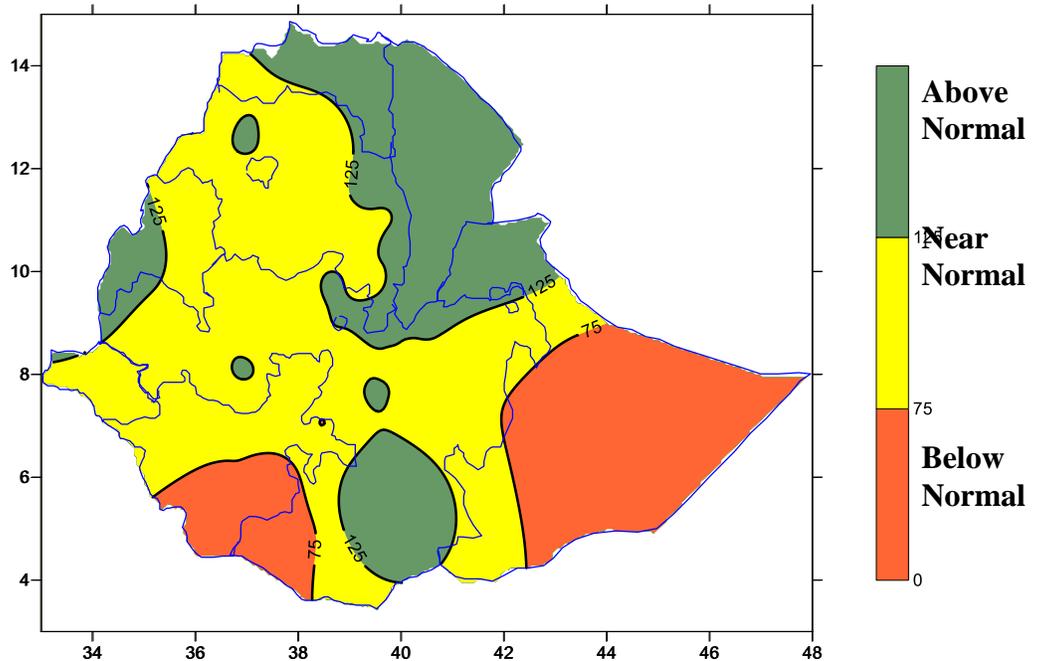


Recreation & Tourism

HIGHLIGHTS

The rainfall activity of *Kiremt 2022* was near normal over most parts of the country and above normal over parts of western, southern and northeastern Ethiopia. A rainfall deficiency is the case over parts of south Oromia and Somali. *Kiremt 2022* was wetter than 2021 over much of the northern half of the country and the opposite happened over the southern half.

Higher values of extreme maximum temperature values were recorded during June, July and September months. In particular, the extreme maximum temperature values had exceeded 42°C over Elidar, Aysha, Gewane, Awash Arba and Dubti. On the other hand, nights and early mornings were cold on some occasions over Amba Mariam, Debre Birhan, Mehalmeda, Nefas Mewucha and Wegeltena. The seasonal minimum temperature recorded to be less than 11°C over the highlands of Amhara and Central Ethiopia.



Percent of Normal Rainfall of the *Kiremt 2022*

Foreword

This climate bulletin is prepared and disseminated by Ethiopian Meteorological Institute (EMI). It is aimed at providing climatological information to different services of the community involved in various socio-economic activities and giving some highlights about major synoptic situations.

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 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 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* 2022.

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 2020

2. Synoptic Situation

2.1 Surface

- The mean central pressure value of the Mascarene High was about 1020 hPa and it was centered between 0° to 40°S latitudes and 45°E to 90°E longitudes.
- The mean central pressure value of the Azores High was about 1020 hPa and it was centered between 30° to 40°N and 30°W to 45°W.
- The mean central pressure value of the St. Helena High was ranging from about 1020 hPa to 1025 hPa and it was centered between 25°S to 30°S and 5°E to 10°W

2.2 Lower Troposphere (850 hPa Vector Wind)

In June 2022, southwesterly wind with speed of 0-4 m/s was dominant over east Africa and adjoining areas. In July 2022, southeasterly flow was crossing the equator having a speed of 2-4 m/s and then changed its direction to southerly after crossing the equator. In August 2022, 4-12 m/s southwesterly flow observed over most of the horn of Africa. Southeasterly flow with a speed of 12 m/s was passing the equator in

September 2022 and then diverges to east and southwest after crossing the equator.

2.3 Middle Troposphere (500 hPa Geopotential Height)

The observed variations in geopotential height during *Kiremt* 2022 are summarized in the table below.

Month	Near normal Heights	Above average heights	Moderate below average heights	Below average heights
Jun 2022	Most of the mid latitudes	Along arctic circle	North Pacific Ocean, Greenland and Russia	
Jul 2022		North Pacific Ocean, central North America, eastern regions of the North Atlantic Ocean, Europe and central Eurasia		Bering Strait and Hudson Bay
Aug 2022		For most of the hemisphere with the largest above-average height anomalies centered over Eurasia and the Bering Sea	Central Russia.	
Sep 2022		Largest above-average height anomalies centered	North America	Siberia and the Bering Sea.

		over the North Atlantic and the North Pacific Oceans		
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2.4 Upper Troposphere (200 hPa wind vector)

During September and August 2022 strong upper tropospheric easterly flow, associated with the Tropical Easterly Jet (TEJ), was dominant over the tropical areas between West Africa and India with speed ranging 5-30 m/s in August and September, while weak westerly flow (not more than 15 meters per second).

2.5 ENSO conditions

Sea surface temperatures remained below 0°C over the central and eastern Pacific in *Kiremt* 2022 and the monthly Niño indices based on OISSTV2.1 ranges between -0.6°C and -1.0°C for Niño 3.4 region.

Reference: Climate Diagnostics Bulletins published during the year 2022.

3. Weather

3.1 Temperature

Higher values of extreme maximum temperature values were recorded during the June, July and September, refer to Table 3.1.1 and Figure 3.1.1. In particular, the extreme maximum temperature values had exceeded 42°C over Elidar, Aysha, Gewane, Awash Arba and Dubti. On the other hand, nights and early mornings were cold on some occasions over Amba Mariam, Debre Birhan, Mehalmeda, Nefas Mewucha and Wegel Tena (Table 3.1.2). The seasonal minimum temperature recorded to be less than 11°C over the highlands of Amhara and Central Ethiopia (Fig. 3.1.2)

Table 3.1.1 Extreme Maximum Temperature Values in excess of 42°C during *Kiremt* 2022

Station Name	Month	Date	Ext. Max. Temp in °C
Elidar	7	19	42.8
Aysha	6	13	43
Aysha	7	8	43
Aysha	7	8	43
Aysha	9	17	43
Gewane	6	15	43.4
Awash Arba	6	25	44
Dubti	9	19	44
Dubti	6	12	44.5
Elidar	6	12	44.8
Semera	6	13	45.8
Elidar	9	30	46
Dubti	7	2	46.5
Dubti	7	2	46.5

Table 3.1.2 Extreme Minimum Temperature Values less than 2°C during the year 2021

Station Name	Month	Date	Ext. Max. Temp in °C
Ambamariam	9	28	3.2
Amba Mariam	8	11	4.2
Debre Brehan	6	4	4.8
Ambamariam	7	24	5
Mehalmeda	7	29	5
Nefasmewucha	6	28	5.5
Debre Tabor	8	25	5.5
Mehal Meda	8	28	5.5
Mehalmeda	9	17	5.6
Wegel Tena	8	16	5.8

3.2. Rainfall

The rainfall activity of *Kiremt* 2022 was near normal over most parts of the country and

above normal over parts of western, southern and northeastern Ethiopia. A rainfall deficiency is the case over parts of south Oromia & Somali (Fig. 3.2.2). *Kiremt* 2022 was wetter than 2021 over much of the northern half of the country and the opposite occurred over the southern half (Fig. 3.2.3).

The *Kiremt* Seasonal total rainfall amount of the year 2022 exceeded 1200 mm over western parts of the country (Fig. 3.1.2). A seasonal rainfall amount of more than 1200 recorded over Gore, Chagni, Aykel, Nedjo, Gimbi, Bahir Dar, Gundomeskel, Bedele, Limu Genet, Arjo and Nekemete (Table 3.2.2). On the other hand, the *Kiremt* 2022 total rainfall amount was below 200 mm over most of Somali, parts of southern Oromia and small places of SNNPR.

Table 3.2.2 *Kiremt* total rainfall amount in excess of 1200 mm during the year 2022

Station Name	Rainfall amount (mm)
Gore	1215.7
Chagni	1236.3
Aykel	1268.3
Nedjo	1311.5
Gimbi	1373.6
Bahir Dar	1374.1
Gundomeskel	1425
Bedele	1433.7
Limu Genet	1460.2
Arjo	1566.7
Nekemete	1656.5

Table 3.2.1 Heavy fall in excess of 70 mm within 24 hours in the year 2021

Station Name	Month	Date	Rainfall (mm)
Gundo Meskel	8	9	80
Ginir	9	5	80
Lare	8	23	82
Bati	8	1	83
Imdiber	6	4	84
Lare	9	3	88
Limugenet	9	5	88.2
Gundomeskel	9	1	90.6
Bati	7	28	91.5
Abole	7	13	96
Dire dawa	8	15	98.7
Gambella	8	19	109
Bahir dar met	7	2	110
Nejo	7	2	113
Gore	8	22	125.4
Debark	7	31	127
Nekemete	6	18	135
Fugnuido	9	29	140

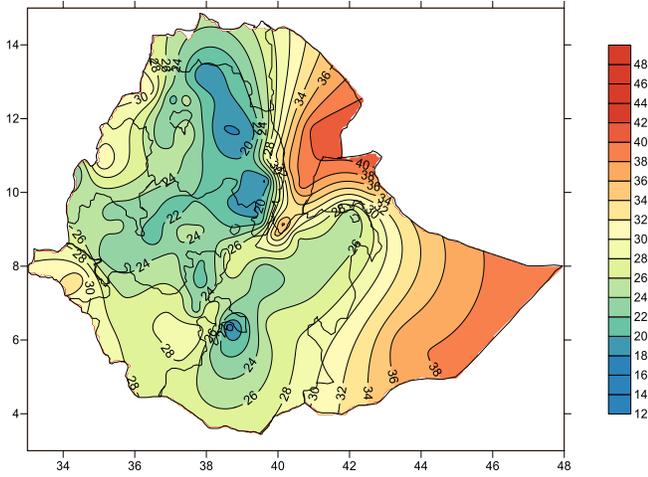


Figure 3.1.1 Seasonal maximum temperature in °C for Kiremt 2022

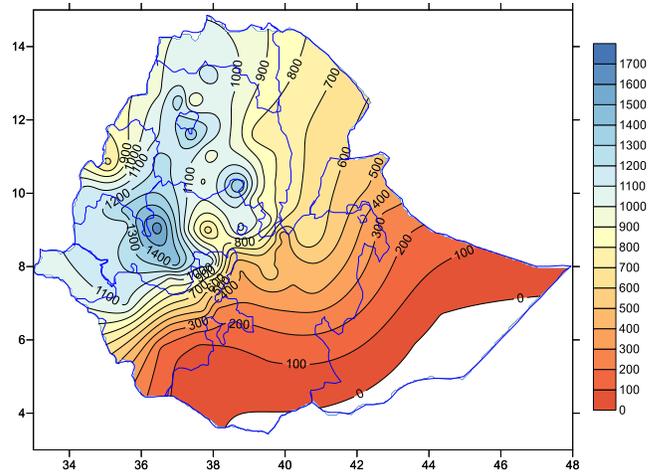


Figure 3.2.1 Kiremt seasonal total Rainfall amount in mm of the year 2022

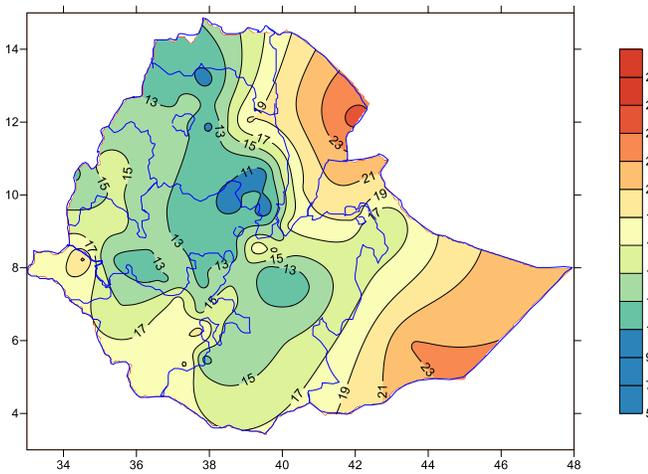


Figure 3.1.2 Seasonal minimum temperature for Kiremt 2022 in °C

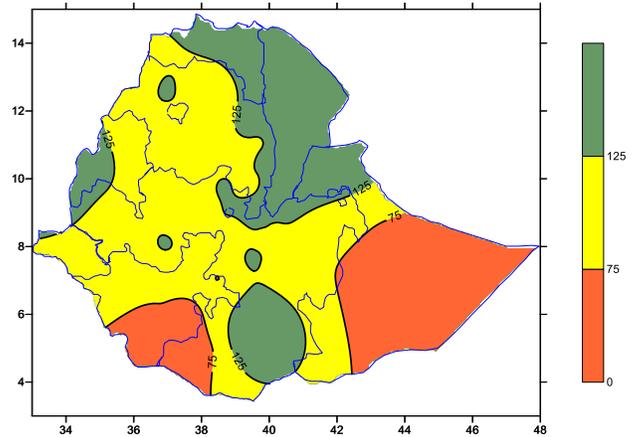


Figure 3.2.2 Percent of normal rainfall for Kiremt 2022

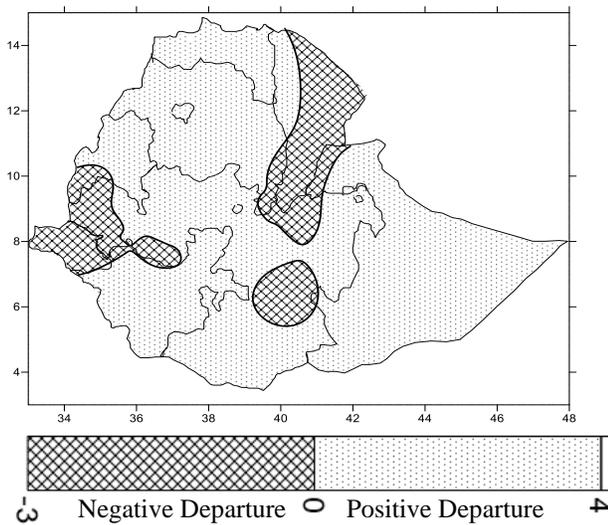


Figure 3.1.3 Mean temperature departure from 1981-2010 normal

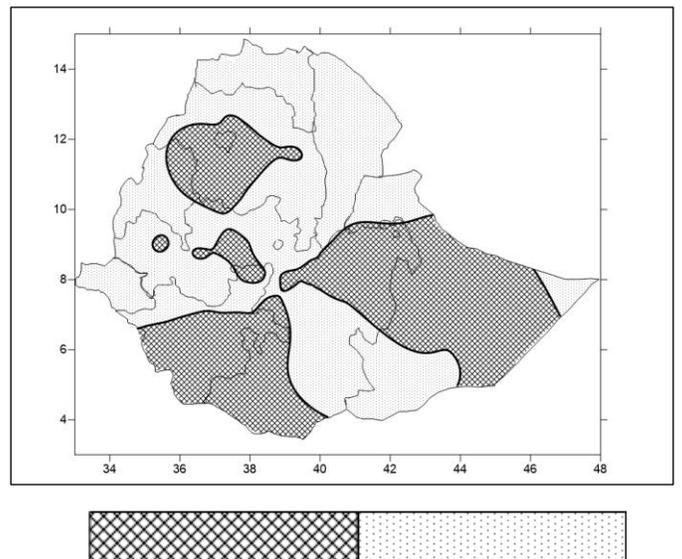


Figure 3.2.3 Kiremt 2022 rainfall minus Kiremt 2021 rainfall