MONTHLY AGROMETEOROLOGICAL BULLETIN
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FORE WARD

This Agro met Bulletin is prepared and disseminated by the National Meteorological Services Agency (NMSA). The aim is to provide those sectors of the community involved in Agriculture and related disciplines with the current weather situation in relation to known agricultural practices.

The information contained in the bulletin, if judiciously utilized, are believed to assist planners, decision makers and the farmers at large, through an appropriate media, in minimizing risks, increase efficiency, maximize yield. On the other hand, it is vital tool in monitoring crop/ weather conditions during the growing seasons, to be able to make more realistic assessment of the annual crop production before harvest.

The Agency disseminates ten daily, monthly and seasonal weather reports in which all the necessary current information's relevant to agriculture are compiled.

We are of the opinion that careful and continuous use of this bulletin can benefit to raise ones agro climate consciousness for improving agriculture-oriented practices. Meanwhile, your comments and constructive suggestions are highly appreciated to make the objective of this bulletin a success.

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SUMMARY
March 2004

During the first dekad of March 2004, the observed below to much below normal rainfall over much of country has worsened the persisted moisture deficit over Belg producing areas since the beginning of February. Similarly the observed much below normal rainfall together with a rise in temperature over Afar, the lowlands of northwestern Amhara, and northern Benishangul-Gumuz including Gambela had negative effect on the availability of pasture and drinking water. Regarding air temperature Assaita, Dubti, Metema, Pawe and Gambela registered extreme maximum air temperature, which were as high as 36.6, 37.5, 40.2, 40.5 and 42.0°C respectively. This condition could maximize the rate of evapo-transpiration and negatively affected the normal growth and development of plants as well. On the contrary, some highlands of central and eastern Oromiya, southern and southeastern Amhara, southern Tigray and northern SNNPR experienced extreme minimum temperature below 5°C during the dekad.

During the second dekad of March 2004, better rainfall activity has been observed in most parts of Belg growing areas. However, the situation is still under deficient moisture status over South and parts of eastern Tigray including parts of northeastern Amhara. Some areas from central, northeastern and eastern Ethiopia received heavy falls ranging from 30 – 50 mm and some areas reported crop damage due to heavy falls. With regard to maximum temperature, a slight decrease in maximum temperature (by about 1°C) was observed over Metema, Pawe and Gambela while the reverse was true for Assaita and Dubti (there was a rise by 2 – 2.1°C). A rise in minimum temperature has been observed over most parts of frost prone areas due to the observed cloud cover. Thus, this situation could favor the normal growth and development of plants.

During the third dekad of March 2004, there was wide spread rainfall over most parts of the country and covers most parts of Belg growing areas including some highlands of western Ethiopia. Besides, some areas from the central and northeaster Ethiopia exhibited heavy falls more than 35 mm. Among the reporting stations Debre Zeit, Hosaina, Abomsa, Metehara and Bati recorded 35.2, 35.6, 39.0, 40.0 and 44.0 mm of heavy falls in one rainy day, respectively. However, Belg growing areas of parts of eastern and southern tip of South Tigray, parts of eastern Amhara, most parts of SNNPR, parts of central, eastern and southern Oromiya exhibited below to much below normal rainfall. Thus, this condition resulted in water stress on crops in some areas. Besides, there was erratic rainfall distribution with extended sunny outbreaks in some areas, which could favor the occurrence of pest and diseases.

Generally, though the rainfall distribution covers most parts of Belg growing areas towards the second half of the month most parts of Belg growing areas exhibited below normal rainfall. Besides, as the analyzed moisture status data indicates most Belg growing areas show monthly values of dry to very dry moisture status. Hence, attention should be given for areas with deficient rainfall condition since the on-set of Belg like Belg growing areas of eastern Tigray, parts of eastern Amhara and SNNPR. However, the rainfall situation observed particularly as of the second dekade of March was better over some Belg growing areas of southeastern Amhara, central Oromiya, pocket areas of eastern SNNPR. Thus, this condition could favour land preparation and sowing activities of long cycle crops like maize and sorghum. Pursuant to the crop phenological

report, sowing of maize and sorghum was underway in some areas of northeastern SNNPR during the second dekad of the month. Teff was at emergence stage over some areas of eastern Amhara. However, medium field condition has been reported due to water stress. The observed below normal rainfall condition over pastoral and agro pastoral areas of southern Oromiya and most parts of Somalia could exacerbate the prolonged deficient moisture situation that persisted over the areas. Therefore, alternate coping mechanism should be practiced in order to mitigate the effect of occurrence of water stress. In addition to that better water harvesting activities are advisable for those areas with deficient rainfall condition as of the onset of the season. On the contrary, some areas of central, northeastern and eastern Ethiopia received heavy falls ranging from 30 – 73 mm. As a result some stations reported crop damage due to heavy falls like Bati and Sanka and some have reported damage due to flood like Werebabu and Assayta. The erratic rainfall situation over some areas of northeaster, southern, southeastern and eastern mid land and lowlands of Ethiopia would favor the occurrence of pest and disease. Thus, the concerned personnel should under take proper measures ahead of time to minimize the effect.

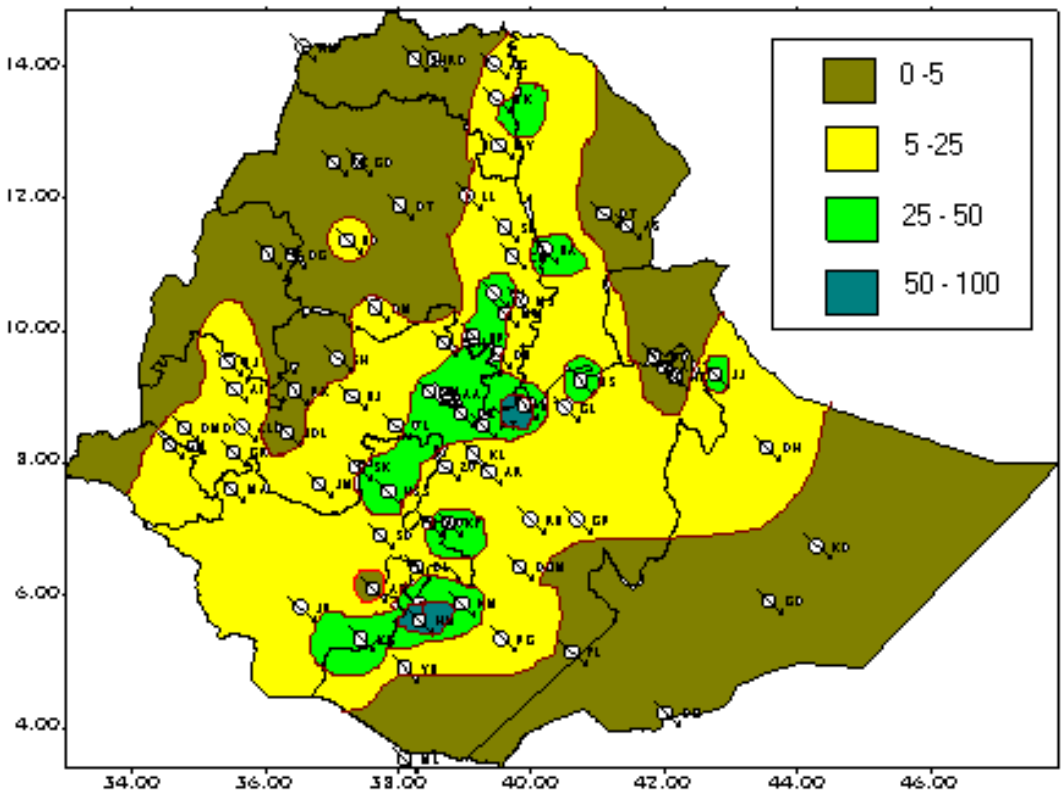


Fig 1. Rainfall distribution in mm (21- 31 March, 2004)

1. WEATHER ASSESSMENT

1.1 21- 31 March 2004

1.1.1 Rainfall amount (Fig.1)

Pocket areas of southern Amhara and southern Oromiya received falls greater than 50 mm. Few areas of Tigray, Afar, eastern Amhara, central Oromiya and few areas of northern and southeastern SNNPR experienced falls ranging from 25 – 50 mm. Eastern Tigray, most parts of Afar, Oromiya, SNNPR and Gambela including parts of northern Somali received 5 – 25 mm of rainfall. There was little or no rainfall for the rest of the country.

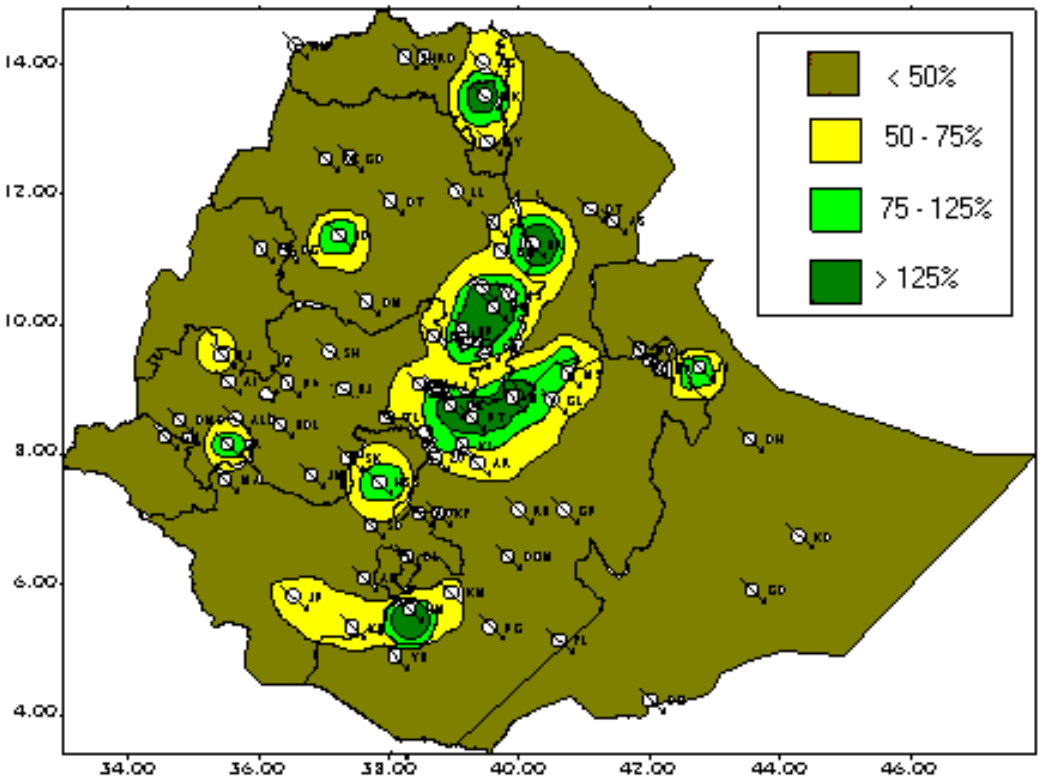


Fig. 2 Percent of normal rainfall (21- 31 March, 2004)

Explanatory notes for the Legend:
< 50-Much below normal
50-75%-Below normal
75-125%- Normal
> 125% - Above normal

1.1.2 Rainfall Anomaly (Fig. 2)

With the exception of few areas of eastern Tigray, pocket areas of western, eastern and southeastern Amhara, pocket areas of western, southern and central Oromiya, southern margin of Afar and few areas of northern SNNPR the rest of the country were under below to much below normal rainfall.

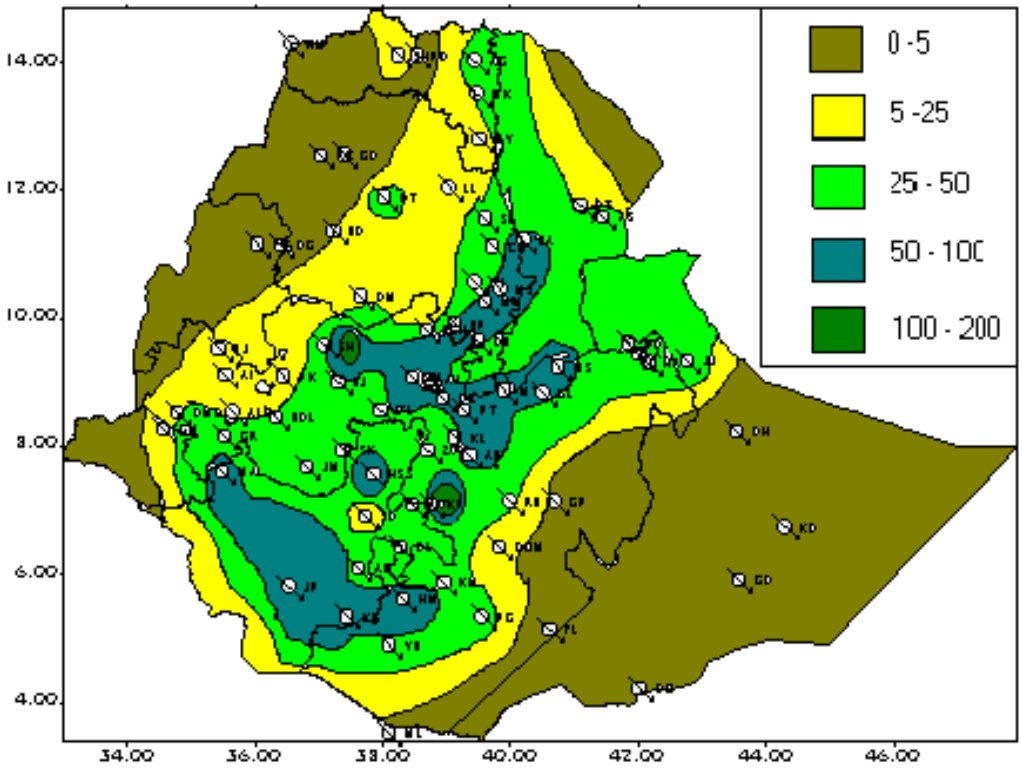


Fig. 3 Rainfall Distribution in mm for the month of March 2004

1.2 March 2004

1.2.1 Rainfall Amount (Fig.3)

Pocket areas of western and central Oromiya received falls greater than 100 mm. Parts of eastern and southeastern Amhara, parts of central Oromiya, parts of central and eastern Oromiya experienced falls in the range of 50 –100 mm. Most parts of eastern half of Tigray and Amhara, most parts of Oromiya, Afar, northeastern SNNPR, eastern Gambela and northern Somali experienced 5-50 mm of rainfall. The rest of the country received less than 5 mm rainfall.

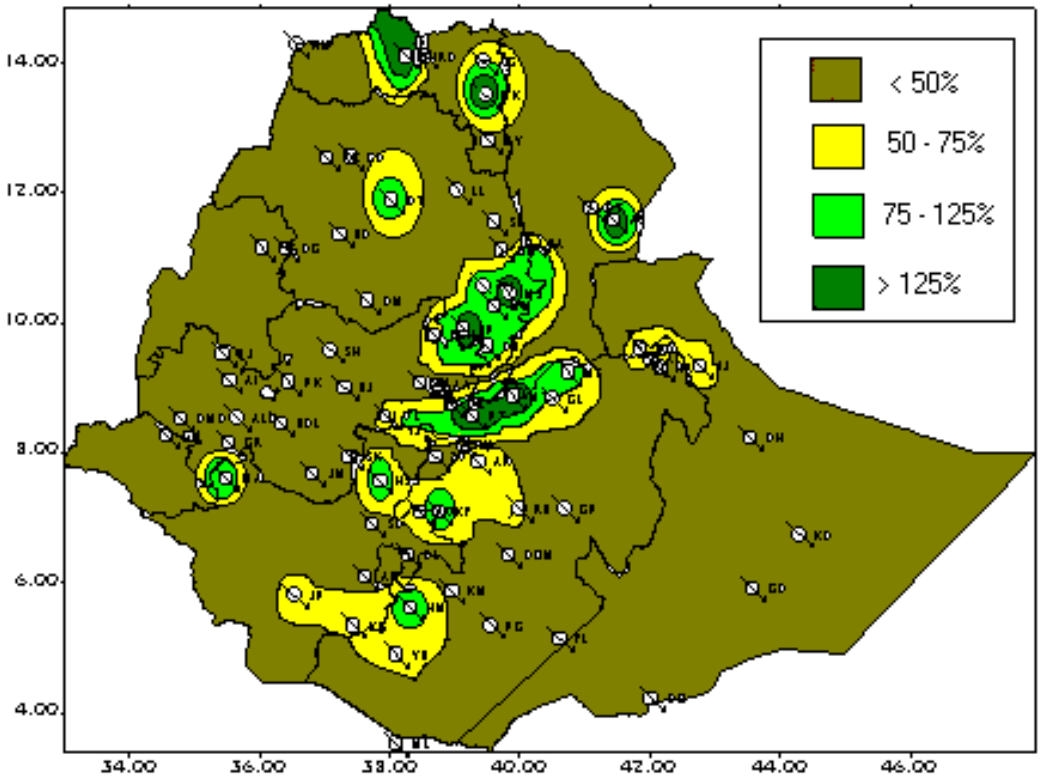


Fig. 4 Percent of Normal Rainfall for the month of March 2004

Explanatory notes for the Legend:
< 50 -Much below normal
50-75%-Below normal
75-125%- Normal
> 125% - Above normal

1.2.2 Rainfall Anomaly (Fig. 4)

With the exception of pocket areas of northern and eastern Tigray, parts of eastern and southeastern Amhara, few areas of central Oromiya, pocket areas of northeastern SNNPR and pocket areas of northern, central and southern Afar, most parts of the country exhibited below to much below normal rainfall.

1.3 TEMPERATURE ANOMALY

Some areas of northeastern and northwestern lowlands, southeastern lowlands and Rift Valley areas exhibited extreme maximum temperature ranges from 35 - 44°C for 15 – 25 consecutive days. However, a decrease in maximum temperature has been observed towards the second half of the dekad relatively due to improved cloud cover in the aforementioned areas.

2. WEATHER OUTLOOK

2.1 For the first dekad of April 2004

The Belg rainfall normally covers all the Belg rain benefiting areas at the beginning of April. In line with this, the southeastern lowlands start to enjoy their main rainy season towards the end of March or at the beginnings of April. The rain producing system, which are already established during the last week of March, are expected to continue with their strength over much of the seasonal rain benefiting areas. Generally, much of Oromiya, SNNPR Gambela, Harari and Somali will have normal to above normal rainfall whereas eastern Tigray, much of Amhara, southern Afar and Benishangul-gumuze are anticipated to get near normal rainfall. Furthermore, heavy falls are highly probable at few places of SNNPR, Somali and Oromiya. On the other hand, few places of western Aamhara and Tigray are highly likely to get below normal rainfall.

2.1 For the month of April 2004

In the coming month, much of eastern Tigray and Amhara, Oromya, Somalia and SNNPR, the monthly rain will exceed it normal values. Besides, Afar, Gambela and western Oromya will have near normal rains on the other hand, Borena areas situated over western half of Tigray and Amhara as well as Benshangul - Gumuz and likely to get near normal rains. It is worthy to note here that some places of southwestern, southern, eastern and northeastern will experience heavy showers that will generate short–leaved flash flood.

3. AGROMETEOROLOGICAL CONDITIONS AND IMPACT ON AGRICULTURE

3.1 VEGETATION CONDITION AND IMPACT ON AGRICULTURE

Generally, though the rainfall distribution covers most parts of Belg growing areas towards the second half of the month most parts of Belg growing areas exhibited below normal rainfall. Besides, as the analyzed moisture status data indicates most Belg growing areas show monthly values of dry to very dry moisture status. Hence, attention should be given for areas with deficient rainfall condition since the on-set of Belg like Belg growing areas of eastern Tigray, parts of eastern Amhara and SNNPR. However, the rainfall situation observed particularly as of the second dekad of March was better over some Belg growing areas of southeastern Amhara, central Oromiya, pocket areas of eastern SNNPR. Thus, this condition could favour land preparation and sowing activities of long cycle crops like maize and sorghum. Pursuant to the crop phenological report, sowing of maize and sorghum was underway in some areas of northeastern SNNPR during the second dekad of the month. Teff was at emergence stage over some areas of eastern Amhara. However, medium field condition has been reported due to water stress. The observed below normal rainfall condition over pastoral and agro pastoral areas of southern Oromiya and most parts of Somalia could exacerbate the prolonged deficient moisture situation that persisted over the areas. Therefore, alternate coping mechanism should be practiced in order to mitigate the effect of occurrence of water stress. In addition to that better water harvesting activities are advisable for those areas with deficient rainfall condition as of the onset of the season. On the contrary, some areas of central, northeastern and eastern Ethiopia received heavy falls ranging from 30 – 73 mm. As a result some stations reported crop damage due to heavy falls like Bati and Sanka and some have reported damage due to flood like Werebabu and Assayta. The erratic rainfall situation over some areas of northeaster, southern, southeastern and eastern mid land and lowlands of Ethiopia would favor the occurrence of pest and disease. Thus, the concerned personnel should under take proper measures ahead of time to minimize the effect.

3.2 EXPECTED WEATHER IMPACTS ON AGRICULTURE DURING THE COMING DEKAD

The anticipated normal to above normal rainfall over much of Tigray and Amhara, Oromiya, Somali and SNNPR would benefit the remaining Belg agricultural activities and land preparation and sowing activities for long cycle crops like maize and sorghum. Besides, it would have positive impact on the availability of pasture and drinking water for pastoral areas. It would also favour agro pastoral activities over the lowlands of Oromiya and Somali. The expected near normal rainfall over Gambela and western Oromiya would favour long cycle crops and improve the vegetation condition of the area. The expected near normal rain over western half of Tigray and Amhara as well as Benishangul-Gumuz would facilitate land preparation and sowing activities of long cycle crops. The anticipated heavy showers over some places of southwestern, southern, eastern and northeastern parts of the country would affect season’s agricultural activities. Thus, the concerned professionals should take precaution ahead of time in low-lying areas, in areas where the soil type is clay and near riverbanks.

Table 1 Climatic and Agro-Climatic elements of different stations for the month of March 2004

	Stations	Region	A/ rainfall	Normal	%of Normal	ETo mm/day	Monthly ETo	M-status
1	Adigrat	TIGRAI	31.1	45.3	68.7	4.5	139.5	D
2	Adwa		0	14.6	0.0	5.1	158.1	VD
3	Mekele		35.3	26.2	134.7	6.9	213.9	D
4	Metema		0	0.1	0.0	NA	NA	NA
5	Michew		19.7	58.7	33.6	4.3	133.3	D
6	Senkata		23.1	69.3	33.3	NA	NA	NA
7	Shire		6.8	1.3	523.1	6.0	186	VD
1	Assayta	AFAR	0	73.3	0.0	6.8	210.8	VD
2	Dubti		0	3.8	0.0	6.1	189.1	VD
1	Bahirdar	AMHARA	5.1	12.2	41.8	4.2	130.2	VD
2	Bati		54.9	67.3	81.6	4.2	130.2	MD
3	Combolcha		39.5	80	49.4	4.3	133.3	MD
4	D.Birhan		20.7	64.9	31.9	NA	NA	NA
5	D.Markos		14.1	48.1	29.3	4.8	148.8	VD
6	Dangla		2.3	19.9	11.6	4.4	136.4	VD
7	Enwary		75.8	54.1	140.1	5.6	173.6	MD
8	Gonder		0.6	18.6	3.2	5.7	176.7	VD
9	M.Meda		74.8	72.6	103.0	4.4	136.4	M
10	Majete		103.7	72.4	143.2	4.6	142.6	M
11	S.Gebeya		22.6	32.8	68.9	4.6	142.6	VD
12	Sirinka		36.9	91.6	40.3	4.7	145.7	MD
13	Wegel Tena		8.1	52.2	15.5	4.7	145.7	VD
14	Wereilu		31.5	12.3	256.1	5.4	167.4	VD
1	Aira	OROMIYA	0.4	9.3	4.3	3.0	93	VD
2	Alemaya		25.4	75.3	33.7	5.0	155	D
3	Arsi Robe		57.1	102.3	55.8	4.5	139.5	MD
4	Bedelle		32	76.9	41.6	3.8	117.8	MD
5	D.Dollo		27.6	71.2	38.8	4.2	128.96	D
6	D.Mena		7.5	84	8.9	5.3	164.3	VD
7	D.Zeit		69.4	44	15.7	5.4	167.4	MD
8	Ejaji		31.3	71.5	43.8	5.0	155	D
9	Fitche		58.8	62.9	93.5	4.0	124	MD
10	Gelemso		49.4	73.7	67.0	5.2	161.2	MD
11	Gore		34	104.7	32.5	4.2	130.2	MD
12	Jimma		43.8	92.9	47.1	3.5	108.5	MD
13	K.Mengist		48.5	103.3	47.0	4.1	127.1	MD
14	Koffele		39.4	115.9	34.0	3.8	117.8	VD
15	Kulumsa		27.9	82.1	34.0	5.2	161.2	D
16	Masha		94.6	143.5	65.9			
17	Meisso		74.7	74.6	100.1	3.5	108.5	M
18	Meraro		24.1	39.8	60.6	4.3	133.3	VD
19	Metehara		80.5	39.1	205.9	5.6	173.6	MD
20	Nazreth		77.4	42.8	180.8	NA	NA	NA
21	Neghele		27.4	61.1	44.8	6.4	198.4	D

22	Nedjo		12.8	37.7	34.0	4.1	127.1	D
23	Nekemte		12.7	65.1	19.5	4.1	127.1	VD
24	Robe (Bale)		25.8	50	51.6	4.6	142.6	D
25	Sekoru		36.7	90.9	40.4	4.1	127.1	MD
26	Shambu		18	66.4	27.1	4.1	127.1	D
27	Woliso		48.7	64.1	76.0	6.1	189.1	MD
28	Yabello		38.2	73.2	52.2	5.2	161.2	D
29	Zeway		24.5	57.3	42.8	5.9	182.9	D
1	Gode	SOMALI	0	16.5	0.0	NA	NA	NA
2	Jijiga		27.1	52	52.1	NA	NA	NA
1	A.Minch	SNNPR	14.4	67.1	21.5	4.8	148.8	VD
2	Awassa		42	65	64.6	4.3	133.3	MD
3	Dilla		13.3	34.5	26.5	4.1	127.1	VD
4	Hosaina		94.6	95.2	99.4	7.4	229.4	MD
5	Jinka		23.7	42.9	55.2	4.2	130.2	VD
6	Konso		58.2	83.5	69.7	3.9	120.9	MD
7	Masha		18.4	61.9	29.7	3.4	105.4	VD
8	Sodo		6.6	41.1	16.1	6.2	192.2	VD
1	Gambela	GAMBELA	4	27.7	14.4	NA	NA	NA
1	Pawe	B/GUMUZ	0.1	5.8	1.7	4.7	145.7	VD
2	Assosa					6.3	195.3	VD
1	A.A.Obs.	A.A	49.5	70.4	70.3	4.0	124	MD
1	Dire Dawa	D.D	35.4	66.1	53.6	5.0	155	D
1	Harar	Harai	25.1	60.8	41.3	4.8	148.8	D

Legend

VD	Very Dry	< 0.1
D	Dry	0.1 - 0.25
MD	Moderately Dry	0.25 - 0.5
M	Moist	0.5 - 1
H	Humid	>1

Explanatory Note

ETo Reference Evapotranspiration (mm)

DEFNITION OF TERMS

ABOVE NORMAL RAINFALL: - Rainfall in excess of 125% of the long term mean

BELOW NORMAL RAINFALL: - Rainfall below 75 % of the long term mean.

NORMAL RAINFALL: - Rainfall amount between 75 % and 125 % of the long term mean.

BEGA: - It is characterized with sunny and dry weather situation with occasional falls. It extends from October to January. On the other hand, it is a small rainy season for the southern and southeastern lowlands under normal condition. During the season, morning and night times are colder and daytime is warmer.

BELG: - Small Rainy season that extends from February to May and cover s southern, central, eastern and northeastern parts of the country.

CROP WATER REQUIREMENTS: - The amount of water needed to meet the water loss through evapotransipiration of a disease free crop, growing under non-restricting soil conditions including soil water and fertility.

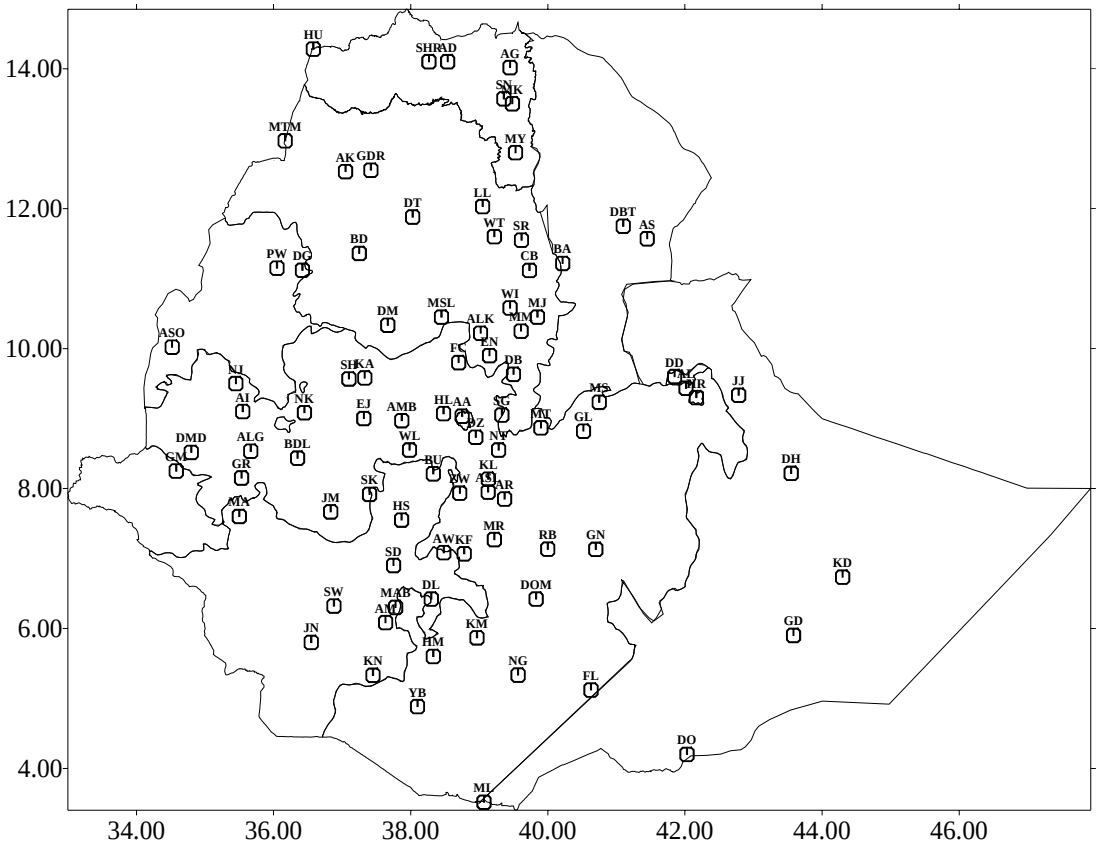
DEKAD: - First or second ten days or the remaining days of a month.

EXTREME TEMPERATURE: - The highest or the lowest temperature among the recorded maximum or minimum temperatures respectively.

ITCZ: - Intertropical convergence zone (narrow zone where trade winds of the two hemispheres meet.

KIREMT: - Main rainy season that extends from June to September for most parts of the country with the exception of the southeastern lowlands of the country.

RAINY DAY: - A day with 1 or more mm of rainfall amount.



Station	CODE
A. Robe	AR
A.A. Bole	AA
Adigrat	AG
Adwa	AD
Aira	AI
Alemaya	AL
Alem Ketema	ALK
Alge	ALG
Ambo	AMB
Arbaminch	AM
Asaita	AS
Asela	ASL
Assosa	ASO
Awassa	AW
Aykel	AK
B. Dar	BD
Bati	BA
Bedelle	BDL
BUI	BU
Combolcha	CB
D.Berehan	DB
D.Habour	DH
D.Markos	DM
D.Zeit	DZ
D/Dawa	DD
D/Mena	DOM
D/Odo	DO
D/Tabor	DT
Dangla	DG
Dilla	DL
Dm.Dolo	DMD
Dubti	DBT
Ejaji	EJ
Enwary	EN
Fiche	FC
Filtu	FL
Gambela	GM
Gelemso	GL
Ginir	GN
Gode	GD
Gonder	GDR
Gore	GR
H/Mariam	HM
Harer	HR
Holleta	HL
Hossaina	HS
Humera	HU
Jijiga	JJ
Jimma	JM
Jinka	JN
K.Dehar	KD
K/Mingist	KM
Kachise	KA
Koffele	KF
Konso	KN
Kulumsa	KL
Lalibela	LL
M.Meda	MM
M/Abaya	MAB
Maichew	MY
Majete	MJ
Masha	MA
Mekele	MK
Merraro	MR
Metehara	MT
Metema	MTM
Mieso	MS
Moyale	ML
M/Selam	MSL
Nazereth	NT
Nedjo	NJ
Negelle	NG
Nekemte	NK
Pawe	PW
Robe	RB
Sawla	SW
Sekoru	SK
Senkata	SN
Shambu	SH
Shire	SHR
Shola Gebeya	SG
Sirinka	SR
Sodo	SD
Wegel Tena	WT
Woliso	WL
Woreilu	WI
Yabello	YB
Ziway	ZW