NATIONAL METEOROLOGICAL SERVICES AGENCY
MONTHLY AGROMETEOROLOGICAL BULLETIN
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FORE WARD

This Agro met Bulletin is prepared and disseminated by the National Meteorological Agency (NMA). 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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አፅህሮት

እ.ኤ.አ ኦገስት 2007

እ.ኤ.አ በኦገስት የመጀመሪያው አስርተ ቀናት የዝናቡ ሁኔታ በመጠንም ሆነ በስርጭት ረገድ የመኸር አምራች አካባቢዎችን በስፋት ያዳረሰ እንደነበር ነው የተስተዋለው። ይህም የዝናቡ ስርጭት በአሁኑ ሰአት በማሣ ላይ ተዘርተው በተለያየ የእድገት ደረጃ ላይ ለሚገኙት አዝርእቶች በጎ ጎን ይኖረዋል። ለምሳሌ ያህል ጤፍ በምዕራብ ኦሮሚያ (ካቺሴ) ፣ ምስራቅ አማራ (ባቲ) ፣ ደቡብ አማራ (ዓለም ከተማና ማጀቴ) ባሉት አካባቢዎች በማደግ ላይ ሲሆን ስንዴ በምስራቅ አማራ (ወገልጤና) ፣ ደቡብ አማራ (ሾላ ገበያ) ፣ መካከለኛው አማራ (ደብረታቦር) ፣ መካከለኛው ኦሮሚያ (ኩሉምሳ) እንዲሁም በሰሜን ኦሮሚያ (ፊቼ) በመብቀልና በማደግ ላይ ይገኛሉ። በቆሎ በምስራቅ ቤኒሻንጉል ጉሙዝ (ፓዊ) ፣ ምዕራብ ኦሮሚያ (ነጆ) በማበብ ደረጃ (flowering stage) ላይ የሚገኝ ሲሆን በምዕራብ ኦሮሚያ እንደ ሜሙራ ባሉት አካባቢዎች በመድረስ (full ripeness) ላይ ይገኛል። ጥራጥሬ እንደ አተር እና ባቄላ በምስራቅ አማራ እንደ ወገልጤናና ባቲ ባሉት አካባቢዎች ገና በመብቀል ላይ እንደሚገኙ ከአዝርዕት መረጃ ለማወቅ ተችሏል።

እ.ኤ.አ በኦገስት የሁለተኛው አስርተ ቀናት የክረምት ዝናብ በስርጭት የተስፋፋና በመጠንም የተጠናከረ የነበረ ሲሆን አብዛኛው የክረምት ዝናብ ተጠቃሚ አካባቢዎች ለበርካታ ቀናት ዝናብ እንዳገኙ ነበር የተስተዋለው። በመሆኑም በአሁኑ ሰዓት መኸር አብቃይ እንዲሁም የክረምቱን ዝናብ ተጠቃሚ በሆኑት አካባቢዎች ተዘርተው በመካከለኛ የዕድገት ደረጃ ላይ ለሚገኙ አዝርዕቶች እንዲሁም እንደየአካባቢው የዘር ጊዜ ሁኔታ ገና በመዘራት ላይ ለሚገኙ አዝርዕቶች ከፍተኛ አስተዋፅኦ እንደሚኖረው ይታመናል። በሌላ በኩል ግን ከክረምቱ ዝናብ ተከታታይነትና ጥንካሬ አንፃር በእርሻ ማሳዎች ላይ ሊከሰቱ የሚችሉ አላስፈላጊ የእርጥበት መጠን በአዝርዕቱ ጤናማ ዕድገት ላይ አሉታዊ ተፅእኖ ስለሚኖረው ጥንቃቄ መወሰድ ይኖርበታል። በተጨማሪም በክረምቱ ዝናብ ተከታታይነት የተነሳ በጎርፍ ምክንያት በማሳ ላይ ያሉ ሰብሎች ለጉዳት በተዳረሱበት ጊዜ እንደየአካባቢው ሁኔታ ፈጥነው ሊደርሱ በሚችሉ ሰብሎች የመተካቱ ሂደት አስፈላጊ ነው። ከባድ ዝናብ ያስከተለውን ጉዳት በተመለከ በአይራ መጠኑ 60.6 ሚ.ሜ የሚደርስ ዝናብ መሬትን በመሸርሸር ጉዳት ያደረሰ ሲሆን በአርጆ በረዶና ንፋስ ቀላቅሎ የጣለው ዝናብ (63.2 ሚ.ሜ) በአካባቢው ተዘርተው ባሉ በገብስና በባቄላ ሰብል ላይ ጉዳት ከማድረሱም ባሻገር በአካባቢው የሚገኙ ዛፎችን በመገነጣጠል ከፍተኛ ጉዳት ማድረሱን ከአዝርዕት መረጃ ክፍላችን ለማወቅ ተችሏል።

እ.ኤ.አ በኦገስት የሦሥተኛው አስርተ ቀናት ወቅታዊ ዝናብ ለተወሰኑ ቀናት ከሰሜንና ከሰሜን ምስራቅ እንዲሁም ከምስራቅ የሀገሪቱ አካባቢዎች የመቀነስ አዝማሚያ ያሰየ ቢሆንም ወደ ደቡብ ኢትዮጵያ ግን ተስፋፍቶ ተስተውሏል። ይህም የዝናብ ሁኔታ በሰሜንና በሰሜን ምስራቅ ለሚኖረው የመኸር እርሻ እንቅስቃሴ ማለትም በአካባቢው ተዘርተው ለመድረስ የዕድገት ደረጃ ላይ ላሉ ሰብሎች በጎ ጎን ይኖረዋል። በተጨማሪ በምስራቅ የአገሪቱ አካባቢዎች ለሚኖሩ አርብቶ አደሮች እና ከፊል አርብቶ አደሮች ለመጠጥ ውሃ አቅርቦት አሉታዊ ገፅታ ሊኖረው ይችላል። በሌላ በኩል በምዕራብ በመካከለኛውና በሰሜን ምስራቅ አካባቢዎች ላይ ከባድ ዝናብ የነበረ በመሆኑ በአካባቢው እየተካ ሂዶ ላለው የመኸር እርሻ እንቅስቃሴ በሽክላማ አፈር አካባቢዎች ላይ ላሉ ሰብሎች አሉታዊ ተፅዕኖ ሊኖረው ይችላል። ከመረጃ ጣቢያዎች ካገኘነው መረጃ በአንዳንድ የአገሪቱ ክፍሎች በመጠን እስከ 63 ሚሜ በአንድ የዝናብ ቀን ተመዝግቦ

ነበር። ከባድ ዝናብ ያስከተለውን ጉዳት ስንመለከት በጊምቢ ሀይለኛ ንፋስ ቀላቅሎ የጣለው ዝናብ በበቆሎና በዘንጋዳ ሰብል ላይ ከፍተኛ ጉዳት አድርሷል።

ባለፈው ወር እ.ኤ.አ ኦገስት 2007 የነበረው ዝናብ መካከለኛውን ኢትዮጵያ ጨምሮ በሀገሪቱ ሰሜናዊ አጋማሽ ላይ የተሻለ ስርጭትና መጠን የነበረው ሲሆን በክረምት ወራት ዝናብ ማግኘት በማይጠበቅባቸው የደቡብ የሀገሪቱ አካባቢዎች ላይም ተስፋፍቶ እንደነበር ነው የተስተዋለው። ይህም የዝናብ ስርጭት ሁኔታ በብዙ አካባቢዎች ተዘርተው በተለያየ የዕድገት ደረጃ ላይ ለሚገኙ አዝርዕቶች የወሃ ፍላጎት እንዲሁም በወሩ ውስጥ የዘር ጊዜ ለተካሄደባቸው አካባቢዎች እንደ ባሌ ፣ ሲዳማ ፣ ከምባታ፣ ጠምባሮና ዋግህምራ የመሳሰሉት የስንዴ ፣ የገብስ ፣ የጤፍ ፣ በቆሎና የባቄላ የዘር ጊዜ የሚካሄድባቸው ስለሆነ የተገኘው ዝናብ በአካባቢዎቹ ለተዘሩት አዝርዕቶች በጎ ጎን ይኖረዋል በተጨማሪም በወሩ ሁለተኛ አስርተ ቀናትና ሶስተኛ አስርተ ቀናት ላይ የዝናቡ ስርጭት ወደ ደቡብ የሀገሪቱ ክፍሎች ላይ ተስፋፍቶ መስተዋሉ በስፍራው ለሚኖሩ የአርብቶ አደሩና ከፊል አርበቶ አደሩ አካባቢ ለውሃ አቅርቦትና በአካባቢው ለሚበቅሉ የግጦሽ ሳር እንዲሁም ለቋሚ ሰብሎች ከፍተኛ አስተዋፅኦ እንደሚኖረው እሙን ነው ። ይሁን እንጂ በወሩ ውስጥ በአንዳንድ የሀገሪቱ ምዕራብ ፣ ደቡብ ምዕራብ ፣ ሰሜን ምስራቅ እነዲሁም በመካከለኛው ኢትዮጵያ አካባቢዎች ከበድ ያለ ዝናብ መጠኑም ከ30-117 ሚሜ የሚደርስ ከባድ ዝናብ በአንድ የዝናብ ቀን ብቻ መዝግበው ነበር። ከከባድ ዝናብ ጋር ተያይዞ በጊምቢ ሀይለኛ ንፋስ ቀላቅሎ የጣለው ዝናብ በበቆሎና በዘንጋዳ ሰብል ላይ በአርጆ በገብስና በባቄላ ሰብል ከፍተኛ ጉዳት ያደረሰ ሲሆን በአይራ በጎርፍ ምክንያት የመሬት መሸርሸር እንደደረሰ ከአዝርዕት መረጃ ከፍላችን ለማወቅ ተችሏል።

የእርጥበት አመልካች ትንተና ማለትም የዝናብ መጠን ሲካፈል ለትነት እንደሚያሳየው እ.ኤ.አ ኦገስት 2007 የነበረው የአየር ጠባይ በማበብ ላይ ላሉ ሰብሎች ምቹ እንደነበረ ያስገነዝባል ።

SUMMARY

August 2007

During the first dekad of August 2007, Kiremt rain was distributed fairly over Meher growing areas of the country areas, which favored crops at different growth stages. Some of reporting stations recorded extreme heavy falls in the range of 85.6 to 106 mm in one rainy day over different parts of the country. The situation might have caused damages on crops at their critical stages of developments (flowering, emergence), in line with this reportedly different crops to have damaged due to water logging over Majete.

During the second dekad of August 2007, the observed widely distributed Kiremt rainfall over Meher growing areas could have a significant contribution for crops which are found at medium growth stages and lately sown crops over the areas. On the other hand, the consecutive and heavy Kiremt rainfall condition might have caused water logging on crop fields particularly in low-lying areas and in areas where the soil type is clay. Therefore, care must be taken in order to decrease crop damage due to water logging. Moreover replanting of crops is necessary over areas where severe crop damage were observed. Regarding adverse weather condition Aira reported landslide and Arjo reported crop damage on Barley and Bean and shattering of trees over the areas due to heavy fall. The rainfall amount was 60.6 and 63.2mm respectively.

During the third dekad of August 2007, the Kiremt normal rainfall distributions have been decreased in northern northeastern and eastern parts of the country but in southern part of the country, there has been an increase. In general this rain fall situation has positive contribution in northern and north eastern parts of the country for Meher Agricultural activities areas especially for the crops which at maturing stage. However, this rainfall situation may have negative impact for pastoral and Agro pastoral areas for water availability in eastern part of the country. However, In western, central and north western parts of the country there have been heavy fall which might have negative impact for Meher agricultural activities for crops in the clay soil areas. Some station reported heavy fall within the range of 30-63mm in one rainy day where the heavy fall cause damage on maize and sorghum crops.

Generally during the month of August the observed better rainfall distribution over northern half of the country including central Ethiopia and areas which are not supposed to get rainfall during the season like southern parts of the country, the situation could have a positive impact on crops' water requirement which are found at different phenological stages. Besides, it could also have a significant contribution for areas which are through their sowing activity like Bale, Sidama, Kembata, Tembaro and Waghimra (wheat, barley, teff, maize and bean). Moreover, the observed widely distributed rainfall during the second and the third dekads of the month could have a positive contribution for the availability of pasture and drinking water over pastoral and agro pastoral areas. Nevertheless, some part of the country like western, southwestern, northeastern and central Ethiopia recorded heavy fall ranging from 30-117mm in one rainy day. As a result, Gimbi reported crop damage on maize and millet; Arjo on barley and bean and Aira reported landslide due to this heavy fall.

Analysis of moisture index over the country (rainfall divided by reference evapotranspiration) indicates that the weather was conducive for crops at their mid – season stages.

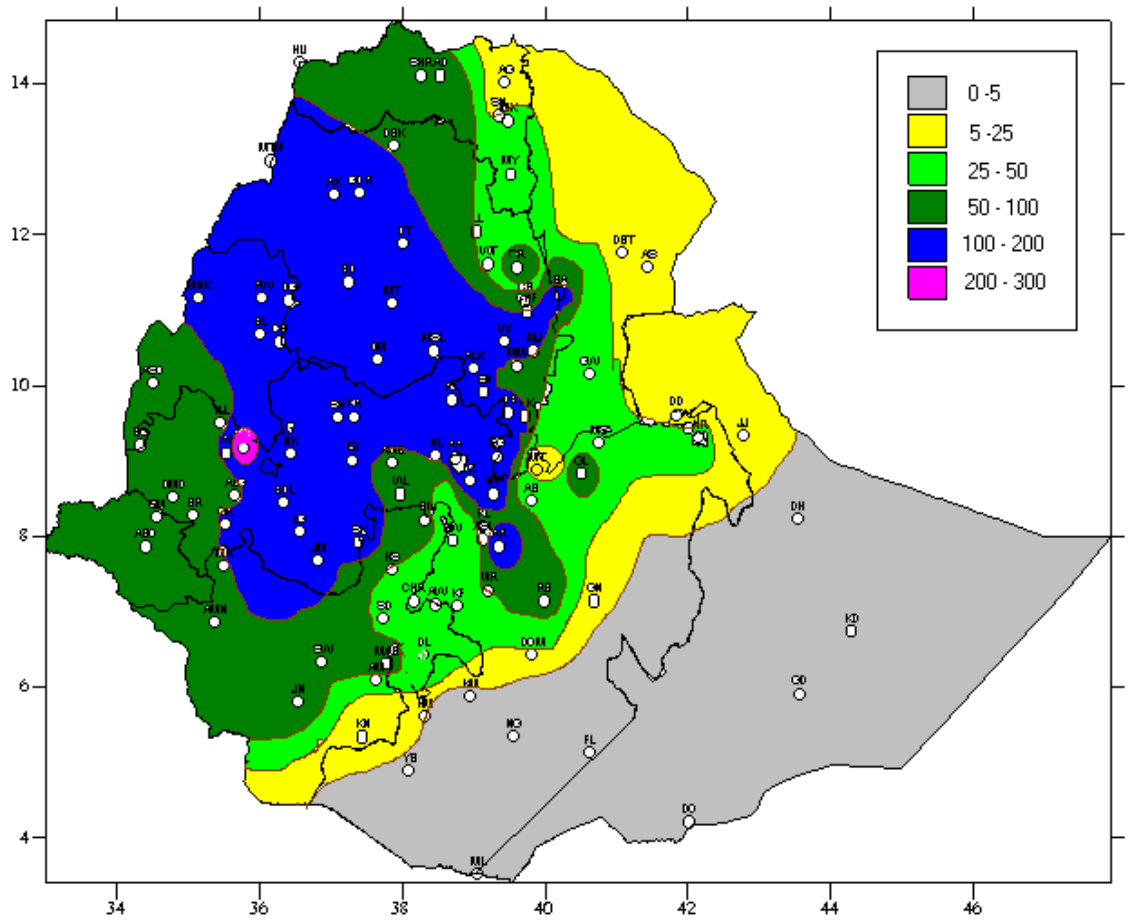


Fig 1. Rainfall distribution in mm (21 – 31 August, 2007)

1. WEATHER ASSESSMENT

1.1 (21- 31 August, 2007)

1.1.1 Rainfall amount (Fig.1)

Only pocket area of western Oromia received 200–300 mm rainfall. Most of Amhara and SNNPR, eastern half of Benishangul-Gumuz, parts of western, central and northern Oromia, and pocket areas of southwestern Tigray experienced 100–200 mm rainfalls. Gambela, most of SNNPR, western half of Tigray and western half of Beshangul-Gumuz, parts of northern and eastern Amhara, western, parts of western, central and southern and pocket area of eastern Oromia exhibited 50-100 mm rainfalls. Eastern half of Tigray, northeastern Amhara, western Afar, and eastern and southern Oromia, western and southern SNNPR received 25–50 mm rainfalls. Eastern half of Afar, northern Somali, southern and eastern Oromia and southern SNNPR experienced 5 -25 mm rainfalls. The rest parts of the country exhibited little or no rainfall.

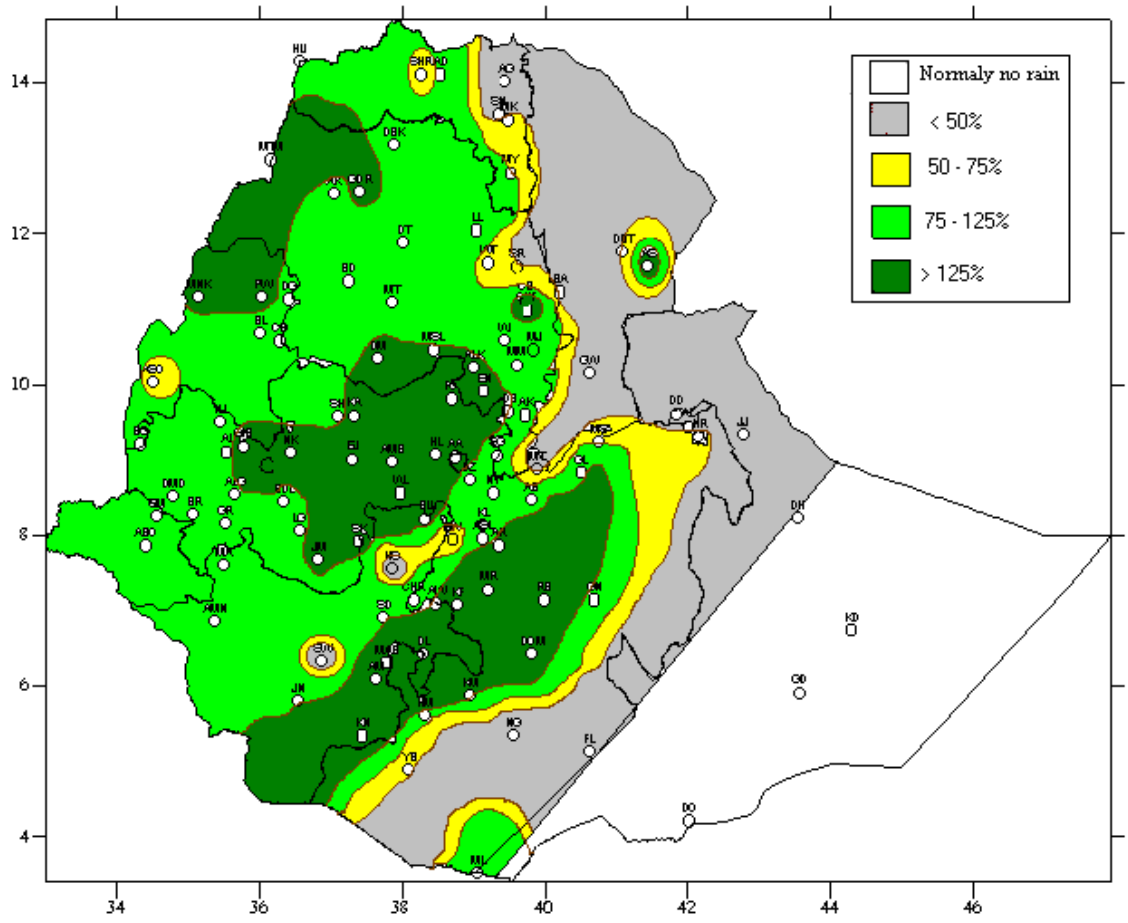


Fig. 2 Percent of normal rainfall distribution (21-31 August, 2007)

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)

Afar, parts of northern Somali, parts of southern & eastern Oromia and eastern Amhara, some parts of eastern and northeastern and pocket area of central Tigray and pocket areas of western Beshangul-Gumuz and central and northern SNNPR received below normal to much below normal rainfall. The rest parts of the country experienced normal to above normal rainfall.

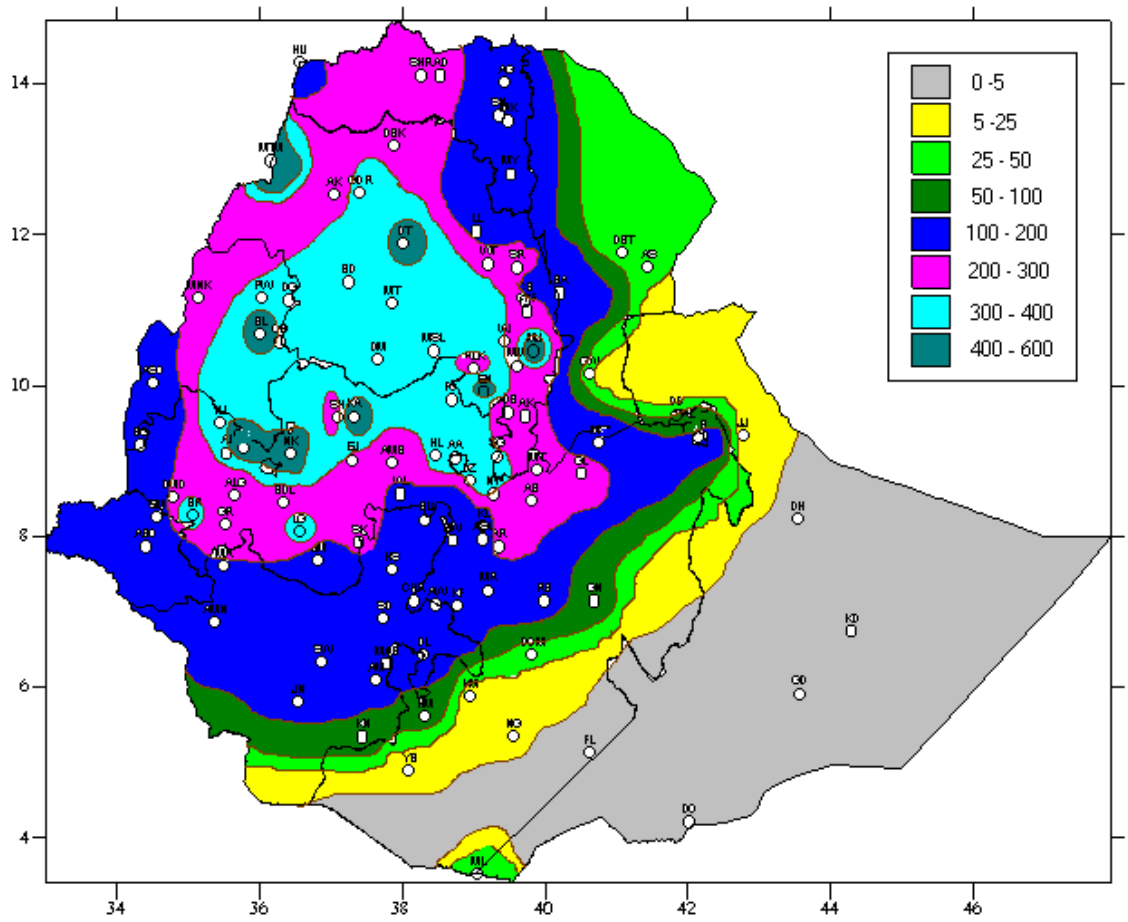


Fig. 3 Rainfall distribution in mm for the month of August 2007

1.2 August, 2007

1.2.1 Rainfall distribution (Fig.3)

Pocket areas western Oromia and eastern Beshangul-Gumuz, tip of western and pocket areas of central and eastern Amhara received 400–500 mm rainfall. Parts of western, northern and central Oromia, southern, central, southeastern and western Amhara, eastern and southern Beshangul-Gumuz exhibited 300–400 mm rainfall. Parts of western, central, eastern and southern Oromia, western, northern and eastern Amhara, western half of Tigray, western and northern Beshangul-Gumuz and the adjoining parts of southern Afar exhibited 200 -300 mm rainfalls. Gambela, most of SNNPR, some parts of western, southern and eastern Oromia, western Afar, eastern and northeastern Amhara, some parts of eastern, northern and tip of western Tigray received 100–200 mm rainfalls. Some parts of southern SNNPR, southern and eastern Oromia and western and southern Afar experienced 50–100 mm rainfall. Parts of southern SNNPR, southern and eastern Oromia, western Somali and eastern and southern Afar received 25- 50 mm rainfall. Parts of southern and eastern Oromia, northern and western Somali and southern Afar exhibited 5-25 mm. the rest parts of the country received little or no rainfall.

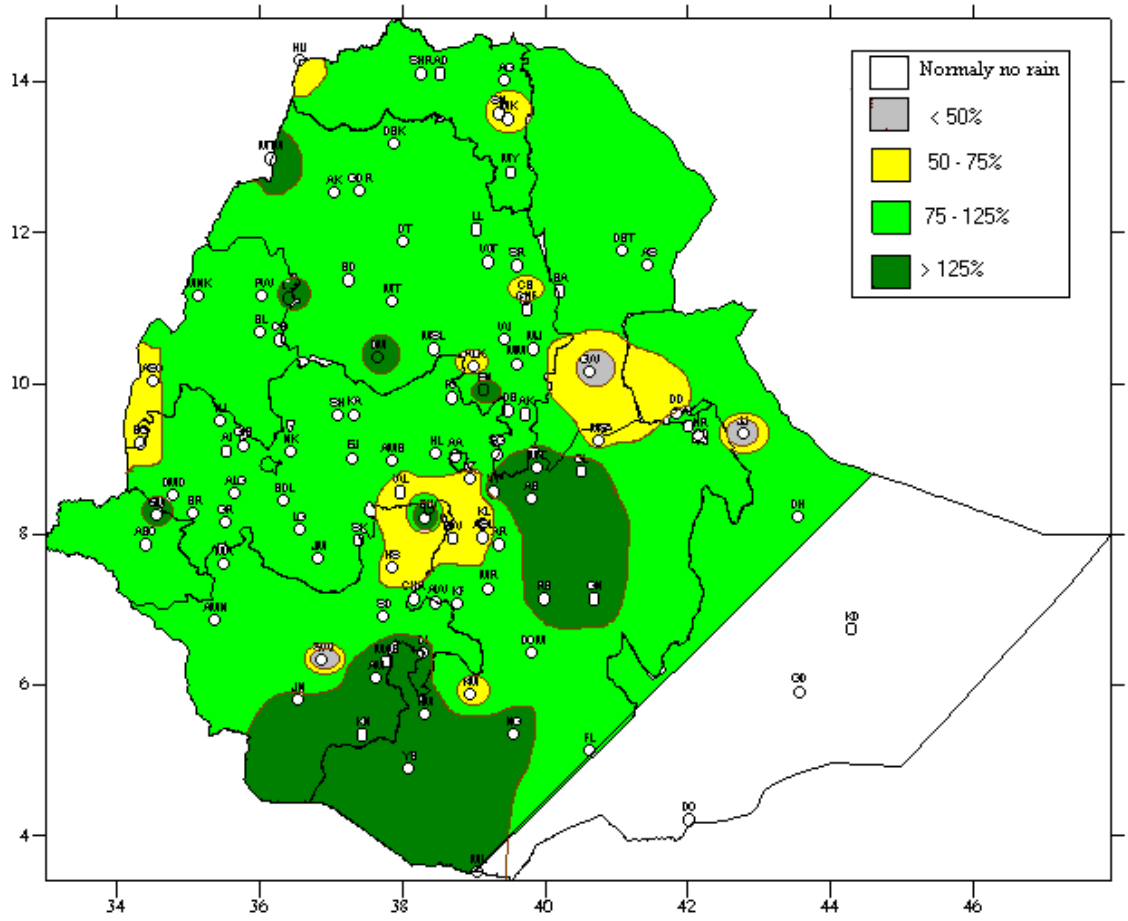


Fig. 4 Percent of Normal Rainfall distribution for the month of August, 2007

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)

Pocket areas of central and southern and western tip of Oromia, pocket areas of northern and central SNNPR, northern Somali, eastern and southern Amhara and eastern and western Tigray and some parts of western Beshangul-Gumuz and southern Afar experienced below normal to much below normal rainfall. The rest parts of the country received normal to above normal rainfall.

1.3 TEMPERATURE ANOMALY

Some stations recorded extreme maximum temperature 35^{o} C and above for 13-30 consecutive days. Dubti, Assayta, Gambela, and Gode recorded extreme maximum temperature as high as 41.6, 40.6, 37.5 and 37.0 ^{o}C respectively. The situation might have a negative impact on the normal growth and development of plants.

2. WEATHER OUTLOOK

2.1 FOR THE FIRST DEKAD OF SEPTEMBER 2007

Under normal condition, the Kiremt rain-producing systems start retreating south and westward from the beginning of September. Not withstanding with this, the wet weather activity is highly likely to continue across the northern, northeastern as well as eastern regions. In line with this, there are enhanced probabilities of getting normal to above normal rains over the major portions of Tigray, Amhara, Benishangul-Gumuz, Oromiya, Gambella and SNNPR. Moreover, near normal rains are anticipated across the Afar, Dire Dawa, Harari, central and northern Somali and east Oromiya. In contrast, most of southern margins of Oromiya and SNNPR will have light rains occasionally. Like the previous dekad, there will be heavy rains that accompanied by hail and thunders at some places of Oromiya, Gambella, Benishangul-Gumuz, Amhara and west Tigray.

2.2 FOR THE MONTH OF SEPTEMBER 2007

During the past couple of months, weak La Nina situation dominated the global as well as regional circulation system that indirectly induced positive synergy for the improved wet season across the major portions of the country. Various sources are continued to indicating that the contribution of weak La Nina event through out the remainder of 2007. In line with this, the Kiremt rains will continue to favor the Kiremt rain – benefiting regions. Besides, regionally induced oceanic and atmospheric systems will have positive contribution toward the continuation of Kiremt rains over northern, western half, central and eastern as well as southwestern regions. In general, in the coming September, most parts of Tigray, Amhara, Benishangul-Gumuz, Gambella, western and central Oromiya as well as SNNPR are expected to get normal to above normal rains. Similarly, northeast and east Ethiopia, which include Afar, Dire Dawa, Harari, central and northern Somali and eastern Oromiya will get near normal rains. In contrast, occasional rain showers are likely to occur over southern Oromiya and southern margins of SNNPR. In association with strong radiation afternoon developing convective cloud probably generate thundery heavy showers and hails at some places of central and western half of the country.

3. AGROMETEOROLOGICAL CONDITIONS AND IMPACT ON AGRICULTURE
3.1 VEGETATION CONDITION AND IMPACT ON AGRICULTURE

Generally, during the month of August, the observed better rainfall distribution over northern half of the country including central Ethiopia and areas which are not supposed to get rainfall during the season like southern parts of the country, could have a positive impact on crops' water requirement which are found at different phenological stages. Besides, it could also have a significant contribution for areas which are through their sowing activity like Bale, Sidama, Kembata, Tembaro and Waghimra (wheat, barley, Teff, maize and bean). Moreover, the observed widely distributed rainfall during the second and the third dekads of the month could have a positive contribution for the availability of pasture and drinking water over pastoral and agro pastoral areas. Nevertheless, some part of the country like western, southwestern, northeastern and central Ethiopia recorded heavy fall ranging from 30-117mm in one rainy day. As a result, Gimbi reported crop damage on maize and millet; Arjo on barley and bean and Aira reported landslide due to this heavy fall.

Analysis of moisture index over the country (rainfall divided by reference evapotranspiration) indicates that the weather was conducive for crops at their mid – season stages.

Pursuant to crop phenological report Teff was at emerging stage in some areas of south western Oromia (Sokoru) and eastern Oromia (Gelemso). It was at third leaf stage in some areas of northern SNNPR (Hossaina), central Oromia (Wolliso), south western Oromia (Chira), western Oromia (Kachise), eastern Amhara (Sirnka), and northern Tigray (Shire) but it was at shooting stage over southern Amhara (Alem Ketema) and central Amhara (Debre Tabor). Moreover it was at tasseling stage in some areas of eastern Amhara (Bati). Maize was at ninth leaf stage in some areas of eastern Amhara (Sirnka) and it was at wax ripeness stage in some areas of, western Oromia (Nejo, Sokoru, Bedelle and Ayehu) and central Oromia (Wolliso). While it was at full ripeness stage in some areas of eastern Oromia (Gelemso) and it was under harvesting at Chira. Wheat was at emerging, third leaf, tillering and earing stages in some areas of western Oromia (Shambu), eastern Amhara (Wegel Tena & Shola Gebeya), and central Amhara (Debre Tabor) respectively. Sorghum was at tillering and tasseling stages in some areas of western Oromia (Kachise, Nejo), and flowering stage in some areas of southwestern Oromia (Chira). Millet was at emerging, tillering and shooting stages in some areas of western Amhara (Dangila), eastern Benshangul Gumuz (Bullen) and western Oromia (Nejo) respectively. Sowing of barley was underway in some areas of western Oromia (Shambu), while it was at tillering and flowering stag in some areas of central and southern Amhara (Debre Tabor and Mehal Meda) respectively. Barely was slightly infested by weeds at Mehal Meda and Debre Tabor. Beans were at budding stage in some areas of eastern Amhara (Wegel Tena and Shola Gebeya), and it was at flowering stage in some areas of western Oromia (Shambu) and southern Amhara (Mehal Meda). Peas were at budding stage in some areas of eastern Amhara (Bati). Nug was at elongation stage in some areas of eastern Benshangul- Gumuz (Bullen and Chagni). Sesame was at flowering stage in some areas of eastern Benshangul- Gumuz (Pawe) and it was slightly damaged due to disease. Oat was at third leaf stage in some areas of eastern Amhara (Wegel Tena). Pepper was at flowering stage in some areas of western Oromia (Ayehu).

3.2 EXPECTED WEATHER IMPACT ON AGRICULTURE DURING THE COMING MONTH

The anticipated normal to above normal rainfall over western Amhara, Benshangul-Gumuz, Gambella, SNNPR, western half of Oromia, eastern half of Tigray and Amhara including central Oromia would have a positive contribution for the water requirement of most crops, which are at different phenological stages at this time of the year. Moreover the expected good moisture condition would favor sowing activities of pulses in most parts of the country and would also favor sowing activities of cereals like teff, sorghum and maize over the mid lands of southern Ethiopia. In addition to these, the expected normal to above normal September rainfall would favor the availability of pasture and drinking water over the lowland of southern and south eastern Ethiopia which are supposed to get rainfall as of the second dekad of September under normal circumstance. Nevertheless, the expected heavy fall together with hailstorm over the above aformentiond areas would have a negative impact on crops as well as livestock production. Therefore, close monitoring should be necessary over low-lying areas and near riverbanks in order to minimize the effect of adverse condition due to heavy fall. On the other hand the expected near normal rainfall over Dire Dawa, Harari, central Somali, eastern Oromia and some areas of Afar would have a significant contribution for the availability of water and perennial crops over the areas. Moreover, adjoining areas of southern Oromia, SNNPR and southern Somali expected to have little amount of rainfall over the areas. Therefore, appropriate water harvesting techniques should be necessary where little rainfall is expected.

Table 1. Climatic and Agro-Climatic elements of different stations for the month of August 2007

No.	Stations	Region	Total rainfall	Normal	% of Normal	ETo mm/day	Monthly ETo	Moisture Status
1	**Adigrat**	**TIGRAI**						H
2	**Adwa**		263.8	251.7	104.8	3.39	105.09	H
3	**Humera**		103.6	204.6	50.6	NA	NA	NA
4	**Maichew**		178.3	198.9	89.6	3.32	102.92	H
5	**Mekele**		141	202	69.7	3.52	109.12	H
6	**Senkata**		128	198	64.4	2.62	90.52	H
7	**Shire**		228	286	79.8	3.24	100.44	H
1	**Assayta**	**AFAR**	42.4	36.3	116.8	NA	NA	NA
2	**Dubti**		40.0	48.0	83.3	6.14	190.34	D
3	**Gewane**		19.7	100.3	19.6			
1	**A. Ketema**	**AMHARA**	188.3	347.5	54.2	2.77	85.87	H
2	**Aykel**		281.3	354.5	79.4	NA	NA	NA
3	**B.Dar**		328.8	381.8	86.1	3.2	99.2	H
4	**Bati**		163.7	193.6	84.6	NA	NA	NA
5	**Bullen**		454.9	366.5	124.1	2.88	89.28	H
6	**Combolcha**		175.7	256.3	68.6	3.76	116.56	H
7	**Chefa**		243.4	263.4	92.4	3.42	106.02	H
8	**D.Birhan**		277.5	261.6	106.1	2.68	83.08	H
9	**D.Markos**		311.2	205.4	151.5	2.9	89.9	H
10	**D.Tabor**		439.2	435.1	100.9	NA	NA	NA
11	**Dangla**		386.5	262.9	147.0	2.9	89.9	H
12	**Enwary**		463	171	270.3	2.53	78.43	H
13	**Gonder**		331	299	110.5	3.23	100.13	H
14	**M.Meda**		272	260	104.9	3.14	97.34	H
15	**Majete**		438	301	145.4	4.13	128.03	H
16	**Metema**		419	234	178.7	4.81	149.11	H
17	**Lalibela**		197	232	85.1	2.64	81.84	H
18	**S. Gebeya**		343	297	115.5	2.6	80.6	H
19	**Sirinka**		246	247	99.6	NA	NA	NA
20	**Wegeltena**		211	231	91.2	3.32	102.92	H
21	**Wereilu**		315	342	92.0	2.95	91.45	H
		OROMIYA						
1	**Ambo Agri.**							
2	**Abomsa**		206.3	161.5	127.7	3.87	119.97	H
3	**Aira**		232.5	277.4	83.8	2.94	91.14	H
4	**Alemaya**							
5	**Alge**		249.1	329.5	75.6	NA	NA	NA
6	**Ambo**		218.3	203.2	107.4	2.71	84.01	H
7	**Arjo**		586	342.6	171.0	NA	NA	NA
8	**Bedelle**		288.1	316.9	90.9	NA	NA	NA
9	**Begi**		160.0	218.4	73.3	NA	NA	NA
10	**Bui**		155.7	87.9	177.1	NA	NA	NA
11	**Chira**		196.2	224.5	87.4	NA	NA	NA
12	**D.Dollo**		193.0	167.1	115.5	2.75	85.25	H
13	**D.Mena**		26.2	27.2	96.3	NA	NA	NA
14	**D.Zeit**		128.7	219	58.8	3.12	96.72	H
15	**Ejaji**		267	221	120.6	NA	NA	NA
16	**Fitche**		321	338	95.1	2.92	90.52	H
17	**Gelemso**		240	172	139.7	4.02	124.62	H

18	**Gimbi**		413	332	124.4	NA	NA	NA
19	**Ginir**		54	37	146.5	NA	NA	NA
20	**Gore**		277	331	83.7	2.62	81.22	H
21	**H. Mariam**		81	41	196.3	1.69	52.39	H
22	**Jimma**		176	213	82.5	2.71	84.01	H
23	**K.Mengist**		22	31	70.3	2.63	81.53	MD
24	**Kachise**		407	410	99.1	2.48	76.88	H
25	**Koffele**							
26	**Kulumsa**		86	135	63.7	2.72	84.32	H
27	**Lumugenet**		312	278	112.4	NA	NA	NA
28	**Masha**							
29	**Metehara**		158	125	126.0	3.3	102.3	H
30	**Meiso**		114	166	68.5	4.45	137.95	M
31	**Moyale**		28	9	315.3	3.35	103.85	MD
32	**Nazreth**		344	214	160.8	4.02	124.62	H
33	**Neghele**		8	6	145.5	NA	NA	NA
34	**Nedjo**		307	312	98.4	NA	NA	NA
35	**Nekemte**		445	377	118.1	2.47	76.57	H
36	**Robe(Bale)**		161	119	135.1	3.13	97.03	H
37	**Sekoru**		210	223	93.9	2.63	81.53	H
38	**Shambu**		260	376	69.2	3.08	95.48	H
39	**Wolliso**		175	279	62.9	NA	NA	NA
40	**Yabello**		17	14	126.5	2.92	90.52	D
41	**Ziway**		78	119	65.9	3.191	121.21	
1	**Jijiga**	**SOMALI**	14	121	11.6	NA	NA	NA
2								
3	**A.Minch**	**SNNPR**	100.5	44.1	227.9	3.17	98.27	H
4	**Awassa**		105.1	125.7	83.6	3.24	100.44	H
5	**Bilate**		65.6	67.3	97.5	NA	NA	NA
6	**Dilla**							
7	**Hosaina**		121	184	65.6	3.16	97.96	H
8	**Jinka**		147	79	186.4	2.59	80.29	H
9	**Konso**		75	25	299.2	3.48	107.88	D
10	**M.Abay**		107	54	199.6	3.91	121.21	M
11	**Sawla**		113	303	37.3	2.97	92.07	H
1	**Assosa**	**B/GUMUZ**	163.6	236.7	69.1	3.01	93.31	H
2	**Chagni**		304.4	354.2	85.9	2.82	87.42	H
	Pawe		373.2	388.3	96.1	2.93	90.83	H
1	**Gambela**	**Gambela**	315	198	159.1	NA	NA	NA
2	**Abobo**							
3	**A.A.Obs.**	**A.A**	312.6	278	11.5	2.35	72.85	H
4	**A.A. Bole**		245.4	236.2	103.9	3.2	99.2	H
1	**Diredawa**	**D.D**	89.9	126.6	71.0	6.57	203.67	MD
1	**Harar**	**Harai**	136	118	114.7	3.2	99.2	H

Legend

VD	Very Dry	< 0.1
D	Dry	0.1 - 0.25
MD	Moderatly 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 evapotranspiration of a disease free crop, growing under non-restricting soil conditions including soil water and fertility.

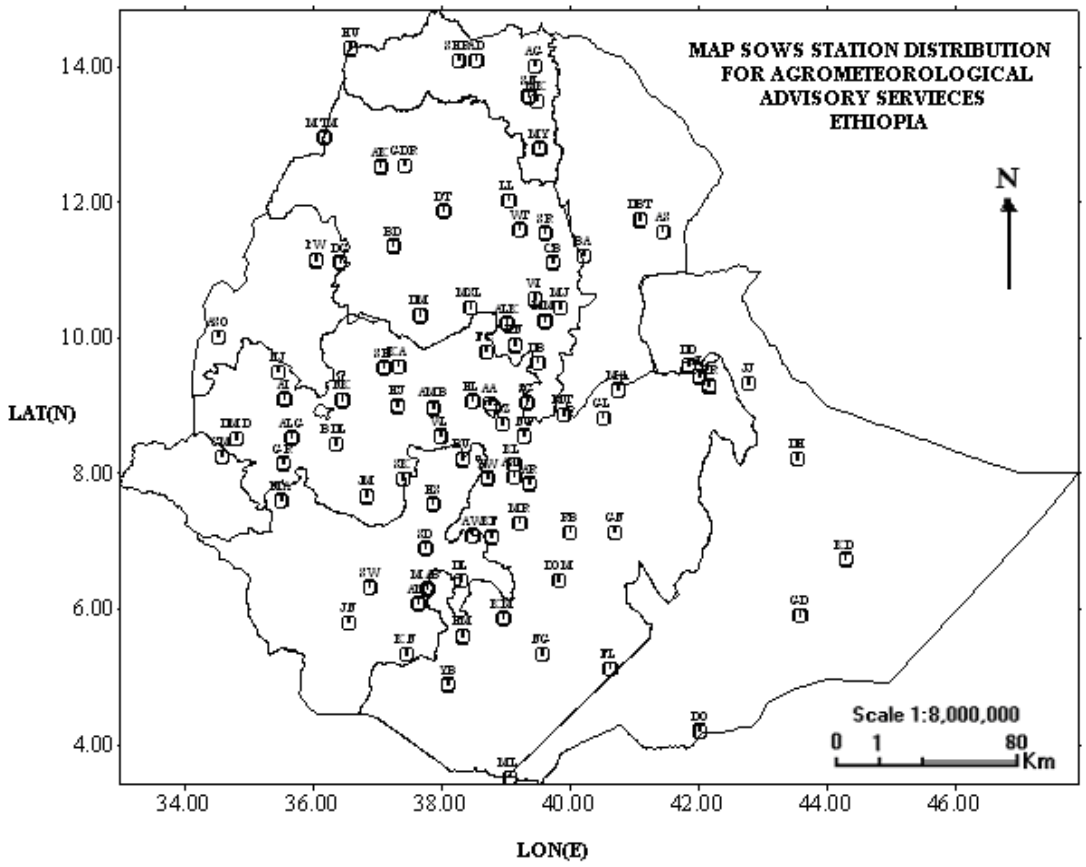
DEKAD: - First or second ten days or the remaining days of a month.

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