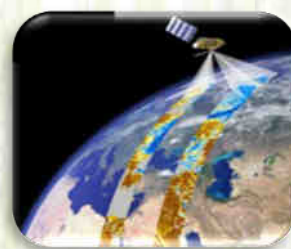


# NATIONAL METEOROLOGY AGENCY

## Agrometeorological Bulletin

### SEASONAL 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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# አህፅሮት

እ.ኤ.አ በጋ 2021/22

በብሔራዊ የሚቲዎሮሎጂ ኤጀንሲ የወቅቶች አከፋፈል መሰረት የበጋ ወቅት ከጥቅምት እስከ ጥር ያለውን ጊዜ የሚያጠቃልል ሲሆን፤ በመደበኛ ሁኔታ ፀሐይም፣ ደረቅ እና ነፋሻማ የአየር ፀባይ በአብዛኛዎቹ የሀገሪቱ አካባቢዎች ላይ የሚያመዝንበት እና አልፎ አልፎ ወቅቱን ያልጠበቀ ዝናብ የሚታይበት ጊዜ ነው። እንዲሁም በሰሜን ምስራቅ፣ በምስራቅ፣ በመካከለኛው እና በደቡብ ደጋማ አካባቢዎች ላይ ከፍተኛ ቅዝቃዜና የውርጭ ክስተት የሚስተዋልበት ወቅት ሲሆን በሌላ በኩል ይህ ወቅት ለደቡብ እና ደቡብ ምሥራቅ ቆላማ የሀገሪቱ አካባቢዎች ሁለተኛና አጭሩ የዝናብ ወቅታቸው ጭምር ነው። ከዚህ ምቹ የአየር ፀባይ ጋር ተያይዞ በአብዛኛው የመኸር አብቃይ በሆኑ አካባቢዎች የተለያዩ ሰብሎች እድገታቸውን የሚጨርሱበት ከመሆኑ ጋር ተያይዞ የሰብል ስብሰባና ድህረ ሰብል ስብሰባ ተግባራት በስፋት የሚካሄድበት ጊዜ ሲሆን በደቡብና በደቡብ ምሥራቅ የአርብቶ አደሩና ከፊል አረብቶ አደር አካባቢዎች ለግጦሽና ለመጠጥ ውሀ እንዲሁም መጠነኛ የሆነ እርሻ እንቅስቃሴ የሚካሄድበት ጊዜ ነው።

እ.ኤ.አ የኦክቶበር ወር 2021 ከመጀመሪያዎቹ አስር ቀናት በስተቀር የተቀሩት ቀናት ደረቃማ የእርጥበት ሁኔታ (dry moisture condition) በአብዛኛዎቹ የሀገሪቱ ክፍሎች ላይ አመዝኖ እንደነበረ ከተለያዩ የሀገሪቱ ክፍሎች ላይ የተሰበሰቡ የግብርና ሚቲዎሮሎጂ መረጃዎች ያመለክታሉ። ይህም ሁኔታ በመድረቅ ሂደት ውስጥ ለሚገኙ ሰብሎች አዎንታዊ ሚና የነበረው ቢሆንም በሌላ መልኩ በተለያዩ ምክንያት ዘግይተው ለተዘሩና እድገታቸውን ላላጠናቀቁ እንዲሁም ተጨማሪ እርጥበት ለሚያስፈልጋቸው የመኸር ጊዜ ሰብሎችም ሆነ ለቋሚ ተክሎች አሉታዊ ጎን የነበረው ሲሆን በተጨማሪም በግጦሽ ሳር እና በመጠጥ ውሃ አቅርቦት ላይ አሉታዊ ጎን ነበረው። ሆኖም ግን በመጀመሪያዎቹ የወሩ አስር ቀናት አጋማሽ በኋላ ለእርጥበት መጨመር ምቹ ከነበረው የሚቲዎሮሎጂ ክስተት መጠናከር ጋር ተያይዞ በብዙ የሀገሪቱ አካባቢዎች ላይ ከመጠነኛ እስከ ከፍተኛ የሚደርስ የእርጥበት ይዘት እንደነበራቸው የተተነተኑ መረጃዎች ያመለክታሉ። ይህም ተጠናክሮ የታየው እርጥበታማ ሁኔታ እድገታቸውን ላልጨረሱና በተለያዩ የእድገት ደረጃ ላይ ለሚገኙ የመኸር ሰብሎችም ሆነ ለቋሚ ተክሎች እድገት የሚያስፈልጋቸውን እርጥበት ከማስገኘት አንጻር አዎንታዊ ሚና ነበረው። በተጨማሪም በጋ ሁለተኛ የዝናብ ወቅታቸው ለሆኑት የአርብቶ አደርና የከፊል አርብቶ አደር አካባቢዎች የተለያዩ የግብርና እንቅስቃሴዎችን እንዲያከናውኑ አዎንታዊ ሚና የነበረው ሲሆን ለግጦሽ ሳርና ለመጠጥ ውሃ አቅርቦት መሻሻልም ገንቢ ሚና ነበረው። ሆኖም ግን አስቀድመው ተዘርተው እድገታቸውን ለጨረሱ እና በመድረቅ ሂደት ውስጥ ለሚገኙ አንዳንድ የመኸር ወቅት ሰብሎች የነበረው እርጥበታም ሁኔታ አሉታዊ ጎን ነበረው።

በተጨማሪም ከእርጥበት መጨመር ጋር ተያይዞ ለሚፈጠሩ እንደዋግ ያሉ የሰብል በሽታዎች በአንዳንድ አካባቢዎች ላይ እንዲከሰቱ አስተቃቋሪ ነበረው።

እ.ኤ.አ በኖቬምበር ወር 2021 በአብዛኛው የሀገሪቱ ክፍሎች ላይ ደረቃማው እርጥበት ከፀሃምና ከነፋሻማነት እንዲሁም ከማለዳና ከሌሊቱ ቅዝቃዜ ጋር በአመዛኙ ተስተውሏል ፡ ፡ ከሚጠበቀው ወቅታዊ የግብርና እንቅስቃሴ አንፃር ሰብል ለመሰብሰብና የድህረ ሰብል ስብሰባ ተግባራትን ለማከናወን አመቺ ሁኔታን የፈጠረ ነበር። ይሁን እንጂ በተለይም በመጀመሪያውና በሁለተኛው አስር ቀናት የደቡብ፣ የደቡብ ምዕራብና የምዕራብ ኢትዮጵያ እንዲሁም የቦጋ ወቅት ዝናብ ተጠቃሚ ባልሆኑት የሰሜን ምስራቅ፣ የመካከለኛውና የምስራቅ የሀገሪቱ አካባቢዎች ላይ አልፎ አልፎ ባሉት ቀናት እርጥበታማ ሁኔታው አመዝናባቸው ተስተውሏል። ይህም ሁኔታ ሙሉ ለሙሉ እድገታቸውን ላልጨረሱ ሰብሎች፣ ለቋሚ ተክሎች እንዲሁም በመኸር ወቅት መጨረሻ ላይ በአፈር ውስጥ በተከማቸው እርጥበት በመታገዝ ለሚዘሩ የጥራጥሬ ሰብሎች ጠቀሜታ ነበረው። እንዲሁም ቦጋ ሁለተኛ የዝናብ ወቅታቸው በሆኑት የደቡብና የደቡብ ምስራቅ የሀገሪቱ ክፍሎች ላይ የተሻለ የእርጥበት ሁኔታ የተስተዋለባቸው በመሆኑ የተገኘው እርጥበት በደጋማው አካባቢ ለተዘሩ ሰብሎች የውሃ ፍላጎት መሟላት እንዲሁም በቆላማው አካባቢ ለሚኖሩት አርብቶ አደሮችና ከፊል አርብቶ አደሮች ለግጦሽ ሣርና ለመጠጥ ውሀ አቅርቦት አዎንታዊ አስተዋጽኦ ነበረው። በሌላም በኩል ከደረቃማው የአየር ሁኔታና ከደመና ሽፋን መሳሳት ጋር ተዳምሮ የማለዳውና የሌሊቱ ቅዝቃዜ በአንዳንድ ደጋማ የሀገሪቱ ክፍሎች በተወሰኑ አካባቢዎች ላይ የቀኑ ዝቅተኛ የሙቀት መጠን ከ5 ዲግሪ ሴልሽየስ በታች ሆኖ የተመዘገበ ሲሆን፣ በጥቂት ቦታዎች ላይም ከዜሮ በታች ሆኖ ተመዝግቧል። ይህም ሁኔታ ሙሉ ለሙሉ ባልደረሱና በተለያዩ የእድገት ደረጃ ላይ በሚገኙ ሰብሎች ላይ በመጠኑም ቢሆን የራሱን አሉታዊ ተጽዕኖ አሳድሯል ፡ ፡

እ.ኤ.አ በዲሴምበር ወር 2021 የቦጋው ደረቃማ፣ ፀሃምና ነፋሻማ የአየር ሁኔታ በተለይም በመጀመሪያውና ሁለተኛው አስር ቀናት በአብዛኛው የሀገሪቱ ስፍራዎች ላይ ተስተውሏል። ይህም ሁኔታ በወቅቱ እየተከናወነ ካለው የግብርና እንቅስቃሴ አንፃር በጎ ጎን ነበረው። በመሆኑም በውሩ ውስጥ የተስተዋለው ደረቅ የእርጥበት ሁኔታ የደረሱ ሰብሎች እንዲደርቁ፣ በጊዜ እንዲሰበሰቡና የድህረ ሰብል ስብሰባ ተግባራትን ለማከናወን ምቹ ሁኔታ ነበረው። በሌላ መልኩ በአንዳንድ በአንዳንድ የሰሜን፣ መካከለኛው፣ ደቡብና ምስራቅ የሀገሪቱ ደጋማ ስፍራዎች ላይ ከቀኑ ዝቅተኛ የሙቀት መጠን የተነሳ የለሊትና የማለዳው ቅዝቃዜ ከ5 ዲግሪ ሴልሽየስ በታችና በተወሰኑ ቦታዎች ከ0 ዲግሪ ሴልሽየስ በታች ሆኖ ተመዝግቧል። ይህም የተስተዋለው ቅዝቃዜ በእንሰሳት ጤና፣ በመስኖ በመታገዝ በሚለሙ የፍራፍሬ ተክሎችና በጓሮ አትክልቶች ላይ በጥቂት ቦታዎች ላይ በተወሰነ መጠን አሉታዊ ጎን ነበረው። ይሁንና በዲሴምበር የመጨረሻዎቹ አስራ አንድ ቀናት አልፎ አልፎ ከነበረው የደመና ሽፋን በምዕራብና መካከለኛው አማራ፣ በምዕራብ ኦሮሚያ፣ በጋምቤላ፣ በደቡብ ብሄር ብሄረሰቦችና ህዝቦች ክልል እና በደቡብ ምዕራብ ኢትዮጵያ ስፍራዎች በአንዳንድ ቦታዎች ላይ ከቀላል

እስከ መካከለኛ መጠን ያለው እርጥበት ተመዝግቧል። ይህም ሁኔታ ሙሉ ለሙሉ እድገታቸውን ላልጨረሱ አንዳንድ ሰብሎች፣ ለቋሚ ተክሎች፣ ለአትክልቶችና እንዲሁም ከሰብል ስብሰባ በኋላ ለሚዘሩ እንደ ንያ እና ሽንብራ ለመሳሰሉ የጥራጥሬ ሰብሎችም ሆነ ለእንስሳት የግጦሽ ሳርና የመጠጥ ውኃ አቅርቦት ላይ የተገኘው እርጥበት ጠቀሜታ ነበረው።

እ.ኤ.አ የጃንዋሪ ወር 2022 የበጋው ደረቃማ የእርጥበት ሁኔታ (dry moisture condition) በአብዛኛዎቹ የሀገሪቱ ክፍሎች ላይ አመዝኖ እንደነበረ ከተለያዩ የሀገሪቱ ክፍሎች ላይ የተሰበሰቡ የግብርና ሚቲዎሮሎጂ መረጃዎች ያመለክታሉ። ይህም ሁኔታ የድህረ ሰብል ስብሰባ ተግባራትን በተሟላ መልኩ ለማከናወን አዎንታዊ ሚና ነበረው። በአመዛኙ ደረቃማ ከነበረው ሁኔታ ጋር ተያይዞ የሌሊትና የማለዳዉ ቅዝቃዜ በሰሜን፣ በምስራቅ፣ በመካከለኛውና በደቡብ የሀገሪቱ ደጋማ ቦታዎች ላይ አንጻራዊ ጥንካሪ እንደነበረው መረጃዎች አመልክተዋል። በደብረዘይት 2.4፣ 4.2 እና 4.6 ፣ በአደሌ 3.0 እና 4.0፣ በሐረማያ -2.6፣ 1.0 እና 2.0፣ በአርሲ ሮቤ 3.0 እና 4.0፣ በቡኢ 3.0፣ 3.4 እና 4.0፣ በደብረብርሃን -2.4፣ -1.8፣ 0.0፣ 1.6፣ 1.8፣ 2.2፣ 2.4፣ እና 3.0፣ በዳንግላ 4.5፣ በሮቤ 4.0፣ 4.5፣ በደባርቅ 4.0፣ በእነዋሬ 4.5፣ በፍቼ 3.8፣ እንዲሁም በወገልጤና -1.0፣ 0.6፣ 1.6፣ 2.0፣ 2.5 እና 3.5 በዲግሪ ሴልሽየስ የገኙበታል። ሆኖም ግን በመጀመሪያው እና ሁለተኛው የውሃ አስር ቀናት በሰሜን ምሥራቅ፣ በመካከለኛው፣ በደቡብና በደቡብ ምዕራብ አካባቢዎች ላይ የእርጥበት መሻሻል እንደነበራቸውና በአንዳንድ ቦታዎች ላይም ከቀላል እስከ ከባድ መጠን የሚደረስ ዝናብ እንዳገኙ የተተነተኑ የግብርና ሚቲዎሮሎጂ መረጃዎች ያመለክታሉ። ይህም ሁኔታ የመጠጥ ውኃ አቅርቦትንና የአረንጓዴ እጽዋት ልምላሜ እንዲሁም የግጦሽ ሳር አቅርቦትን ከማሻሻል አንጻር አዎንታዊ ሚና ነበረው። በተጨማሪም የተገኘው እርጥበት ለቋሚ ተክሎች የውሃ ፍላጎት መሟላትም ሆነ በቅርቡ የበልግ ወቅት የማሳ ዝግጅት አስቀድመው ለሚጀምሩ አካባቢዎች የአፈር ውስጥ እርጥበት እንዲሻሻል በጎ ተጽዕኖ ነበረው። በአንጻሩ ግን የነበረው የእርጥበት ሁኔታ የድህረ ሰብል ስብሰባ ተግባራትን ባላጠናቀቁ አካባቢዎች ላይ መጠነኛ አሉታዊ ጎን ነበረው።

በአጠቃላይ የበጋ ወራት 2021/22 የእርጥበት ሁኔታ ሲገመገም በተለይም የክረምቱ ሲሰተም ቀስ በቀስ ከመዳከሙ ጋር ተያይዞ የእርጥበት ሁኔታው ከሰሜንና ከሰሜን ምስራቅ የሀገሪቱ አካባቢዎች ላይ በመጠንም ሆነ በስርጭት እየቀነሰ በአንጻሩ በምእራብ አጋማሽ እና በመካከለኛው የአገሪቱ ክፍሎች ላይ በተወሰነ ደረጃ የቆየበትና በሃደትም የበጋ ዝናብ ተጠቃሚ ወደ ሆኑት ወደ ደቡብ የሀገሪቱ አካባቢዎች ላይ በመጠኑም ቢሆን እየተስፋፋ እንደነበረ ተስተውሏል። ይህም ሁኔታ በሰሜንና በሰሜን ምስራቅ አካባቢዎች ለሚገኙ ለደረሱና ተጨማሪ እርጥበት ለማያስፈልጋቸው ሰብሎች በጎ ጎን ነበረው። በሌላ መልኩ በምዕራብ አጋማሽና በመካከለኛው የሀገሪቱ አካባቢዎች ላይ እርጥበቱ የተሻለ ገፅታ የነበረው መሆኑ በተለያዩ እድገታቸውን ላልጨረሱ ሰብሎች፣ ዘግይተው ለተዘሩ እንዲሁም ቋሚ ተክሎች የውሃ ፍላጎት መሟላት በጎ ሚና ነበረው። እንዲሁም የበጋው ወቅት በደንብ ከመግባቱ ጋር ተያይዞ የተለመደው ደረቅ፣ ፀሃያማና ነፋሻማ የአየር ሁኔታ አመዝኖ ከመቆየቱ ጋር ተያይዞ የክረምት

ተጠቃሚ አካባቢዎች ላይ የሰብል ስብሰባ ለሚደረገው እንቅስቃሴ አወንታዊ ጠቀሜታው የጎላ ነበር። ይሁን እንጂ በተለይም በወቅቱ መገባደጃ በነበሩት ሁለት ወራት የነበረው ቅዝቃዜ ለውርቆ ተጋላጭ በሆኑ በሰሜን፣ በሰሜን ምስራቅ፣ በምስራቅ፣ በመካከለኛውና በደቡብ ከፍተኛ ቦታዎች ዝቅተኛው የሙቀት መጠን ከ5°C በታች በአንዳንድ ቦታዎችም ከ0°C በታች ወርዶ ነበር። ስለዚህ ይህ ሁኔታ በተለይም በመስኖ በሚለሙ የጉዋሮ አትክለቶችና ፍራፊሬ ተክሎች እንደሁም በእንሰሳት ተዋጽኦ ላይ በተወሰነ መልኩ አሉታዊ ጎን ነበረው ። በሌላ መልኩ ደግሞ በደቡብ ምስራቅ እና በከፊል የደቡብ አርብቶ አደሩና ከፊል አርብቶ አደሩ አካባቢዎች የእርጥበት ሁኔታ አመላካች (Moisture Index), ከሳተላት የሚሰበሰበው የእፅዋትን ሽፋን አመላካች (NDVI) እንዲሁም በአረብኛ አደሩ አካባቢ የሚሰላው (Rangeland index based on WRSI) የሚጠቁመው መረጃ እንደሚያሳየው የተጠናከረ የእርጥበት እጥረት በአብዛኛው የደቡብ እና የደቡብ ምስራቅ ቆላማ ቦታዎች ላይ ታይቶ ነበር። በነዚህ አካባቢዎች የተደረገው ግምገማ (Deyr/karan 2022 Postoral and Agropostoral Needs Assessment) እንደሚያመለክተው Hageya/Deyr ወቅታዊ ዝናብ ማግኘት የሚገባቸው በሶማሌ ክልል ደቡባዊ አጋማሽ፣ የደቡብ እርሚያ ክልል በተለይም የቦረና ዞን እንዲሁም ከደቡብ ህዝቦች ደቡብ እሞ ዞን ዳሰነች ወረዳ ያሉ አካባቢዎች ከፍተኛ የሆነ የዝናብ እጥረት ታይቶባቸው ነበር። በዚህ የተነሳ የእንሰሳት መኖም ሆነ የመጠጥ ውኃ አቅርቦት ላይ እጥረት እንደነበርና የምግብ ዋስትናቸውም ዝቅተኛ መሆኑን ከመስክ በተገኙ መረጃዎች መረጋገጥ ተችሏል።

## **SUMMARY**

### **Bega 2021/22**

Based on NMA's seasonal classification, normally the season Bega is characterized with sunny and dry weather condition with occasional falls it extends from October to January. On the other hand, it is a small rainy season for southern and south-eastern lowlands. Harvest and post-harvest activities are the major practices over most parts of Meher growing areas. It is a cropping time for southern and south-eastern agro pastoral areas. Besides it is time to perform water-harvesting activities for pastoral and areas of southern and south-eastern lowlands. The weather situation could favor the outbreak of pest if there is favorable environment, susceptible host and the pest itself. The dry and windy Bega weather situation is favorable for the occurrence and spread of fire. There is a possibility of frost hazard during the season, mainly over north-eastern, central, eastern and southern highlands.

During the month of October 2021, dry moisture condition was prevailed over most parts of the country. The dry moisture condition had a positive impact particularly for crops which were found under drying and harvesting conditions. However, the condition had a negative effect on perennial plants and lately sowing Meher season crops which might require additional moisture for further growth and development. Likewise, the suppressed rainfall during the month might lift up further pressure to access pasture and drinking water on the pastoralist and agro pastoralist areas. However, during the first dekad of the month exceptionally enhanced moisture was reported from the agro meteorological stations and in line with that some places including most of Amhara, Benshangule, west, central and south of Oromia, Gambella, SNNPR, Sidama and south of Afar received light to moderate rainfall while some areas including Metehara, Gedayana, Bore, Ejaji, Kachise, Shambu, Ginir, Jara, Bedele, Bulehora, Tepi, Buei, Debark and Debrwerk were experiencing heavy rainfall during the first few days of the month. The enhanced moisture during the month in general could have a positive implication for Bega season rain benefiting areas of pastoral and agro-pastoral communities as well as for the further development of perennial plants and Meher season crops which are found under various growing stage. However, the enhanced moisture during the month might disrupt the crop harvest in the places where crops were fully matured and well dried out. Furthermore, the moisture observed in some places might trigger wet condition driven crop diseases such as rust and the likes.



During the Month of November 2021 it was observed that the Bega season dry, sunny and windy weather accompanied with night and early morning cooling condition prevailed over most parts of Kiremt rain benefiting area of the country. Besides, the observed dry and sunny condition should be taken as good opportunity to perform harvest and post-harvest activities over the place where Meher season crops are fully matured. On the other hand, the observed enhanced moisture on the first and second dekad of the month particularly over the southern, south-western, western including north-eastern, central and eastern parts of the country might have positive implication for fulfilling the water need of various Meher crops and perennial plants. Similarly, since Bega is the second rainy season for the southern and south-eastern parts of the country, the received moisture during the month could play very crucial role to perform the water need of different crops and perennial plants. Moreover, the condition had positive impact for improving the availability of pasture and drinking water over both the pastoral and agro pastoral community. Besides the decrease in extreme minimum temperature over the highlands of central, eastern and northern frost prone areas recorded below  $5^{\circ}\text{C}$  and some places recorded below  $0^{\circ}\text{C}$ . This night and early morning extreme cooling condition negatively affected late sown crops not yet attain maturity and vegetable grown under irrigation and found at different phase of growth.

During the month of December 2021, the Bega season dry, sunny and windy climate condition prevailed across the country and this situation was more pronounced during the first and second dekad of the month. Given the current state of agricultural activities, the dry condition was favourable for the timely dry out of matured crops and to conduct harvest and post-harvest activities. On the other hand, in line with the dry condition some of the northern, central and south-eastern parts of the country recorded minimum temperatures below  $5^{\circ}\text{C}$  while some few places remained below zero degree Celsius. This cold and chill condition might have some negative impact on livestock health, irrigated Bega season crops and over various horticulture plants. However during the last dekad of December light to moderate moisture was recorded over western and central Amhara, Central Oromia, Gambella, SNNPR and south-western of the country. This condition favours toward the water satisfaction of not fully matured crops, perennial plants, for various horticulture crops and for some of legumes which often planted after harvest of Meher crops. In addition, it might have positive impact on ensuring the availability of pasture and drinking water over pastoral and agro pastoral areas.

During the month of January 2021, the information obtained from agro meteorological stations indicated that during the month of January Bega season dry moisture condition prevailed across most parts of the country. This condition was favorable for the ongoing post-harvest activities for Meher season crops. In relation to the prevailing dry condition some station, including D/Zeit 2.4, Addele 3.0, Arsi Robe 3.0, Buie 3.0, D/Brihan, 4.5, Dbark 4.0, Enwari 4.5 and Fiche 3.8, recorded below 5<sup>0</sup>C and even in some few places there was a record of minimum temperature below zero degree Celsius, to mention, Haramaya -2.6, D/Brihan, -2.4, and Wegel Tena,-1.0. This condition might negatively affect the growth of Bega season horticulture crops, perennial plants and various vegetables. However, the station report also indicated that during the first and second dekad of the month certain places in the north east, central, south and southwest part of the country received light to heavy rainfall in mm. This situation might be positive to sustain the growth of fodder and pasture and the availability of drinking water in the pastoral and agro pastoral area. In addition, it also positive toward fulfilling the daily water need of perennial plants as well as improving the soil moisture content and thus may favor the early time land preparation.

Generally the moisture obtained during Bega 2021\_22 season was favorable for the performances of Meher crops that are not yet fully matured , perennial plants, late sown pulses and Oil Seeds which often sowing with residual moisture at the end of Meher season over highlands. The indicated poor performance of moisture index, vegetation cover and Rangeland index based on WRSI during Bega 2021\_22 was affected availability of pasture and drinking water over southern and southeastern pastoral and agro-pastoral area. Moreover, the situation was confirmed by field reports due to persistent of severe moisture stress on Hageya/Deyr rain over southern and south-eastern pastoral regions consistently emerging of severe drought situations in the southern half of Somali, lowlands of Borena Zones of Oromia region and SNNP region of South Omo zone Dasenech woreda. Moreover, the observed dry and sunny Bega season should be taken as good opportunity to perform harvest and post-harvest activities over the place where Meher season crops are fully matured. However the observed decrease in extreme minimum temperature as low as 5<sup>0</sup> C lowering up below 0<sup>0</sup> C over frost prone areas of high lands might have been frost risk on Meher crops that were not yet fully matured, Fruits and vegetables grown under irrigation and animal's products.

# Moisture Status Of Bega 2021/22

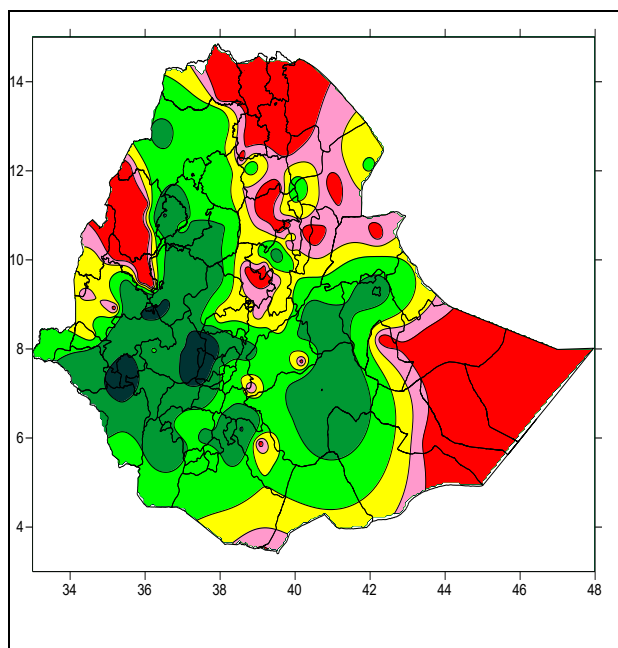


Figure 1. Moisture status for the month of October 2021

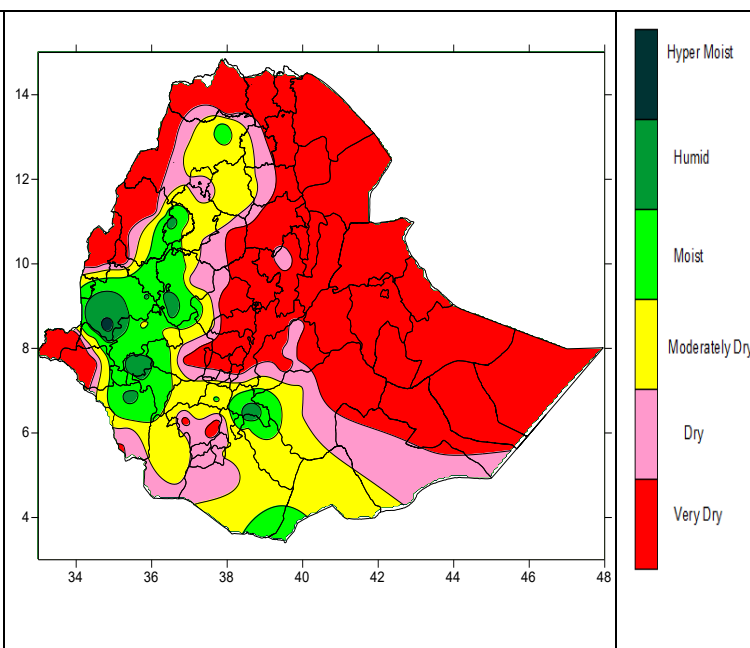


Figure 2. Moisture status for the month of November 2021

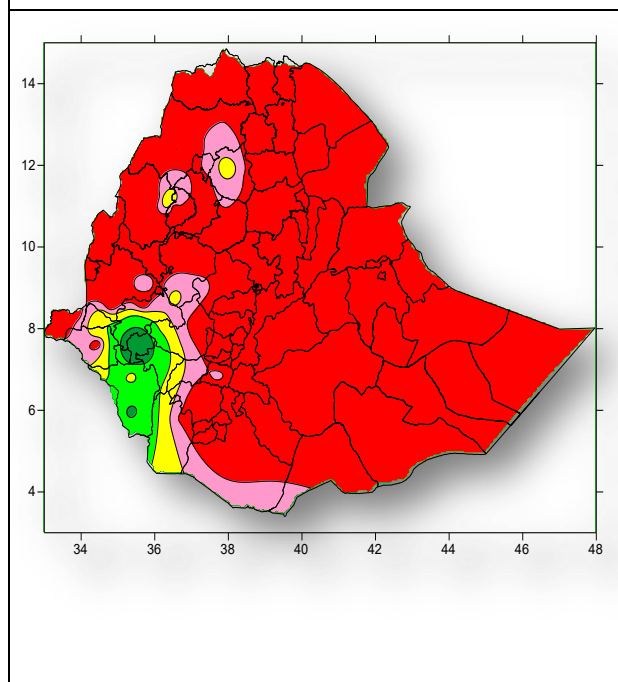


Figure 3. Moisture status for the month of December 2021

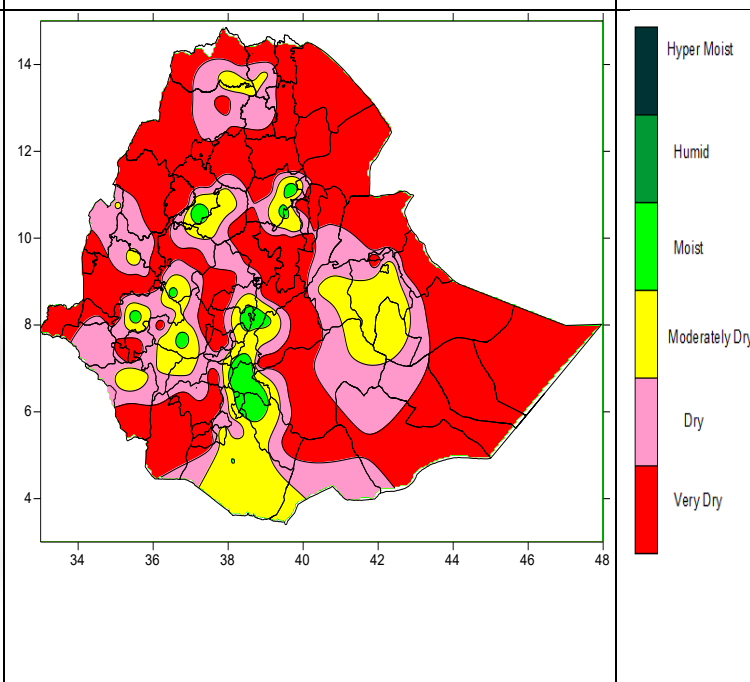
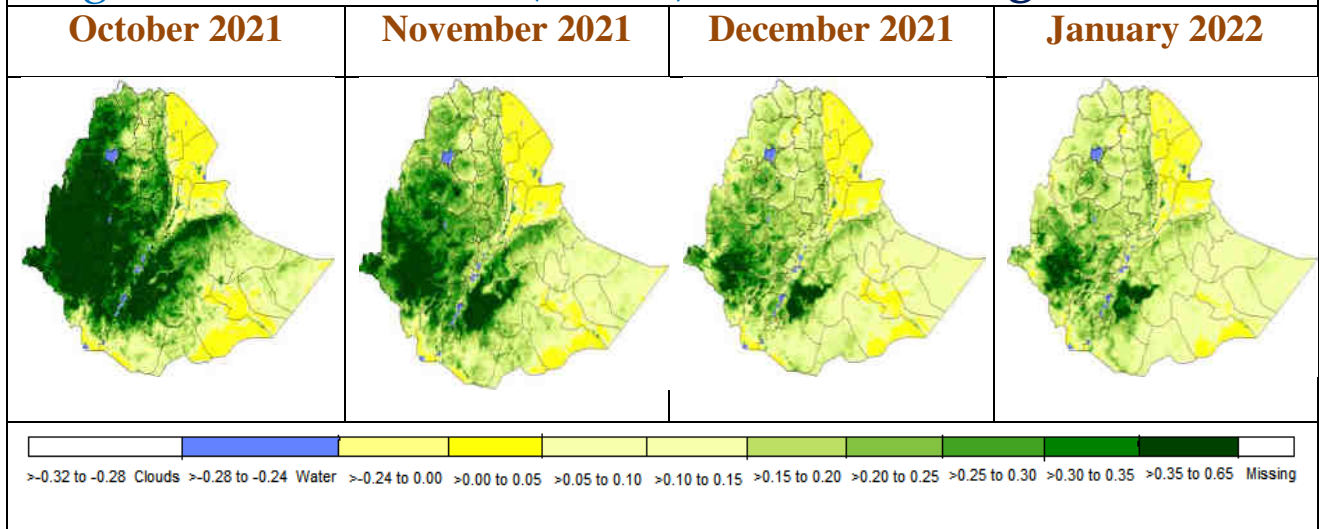


Figure 4. Moisture status for the month of January 2022

## Vegetation Greenness (NDVI) in fraction Bega 2021/22



## Vegetation Greenness (NDVI) in fraction -[Compared to Normal]

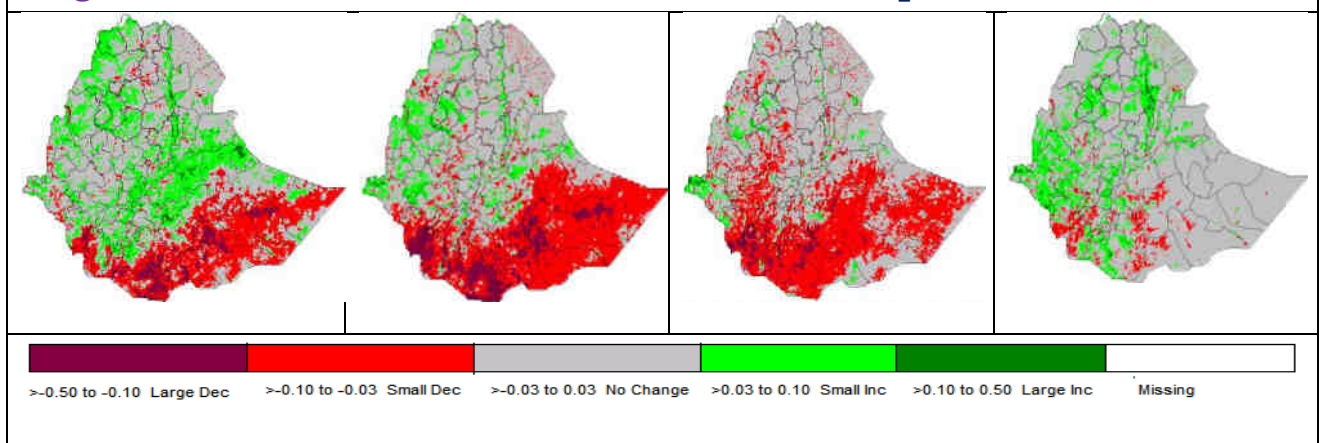


Fig. 5. Vegetation Greenness (NDVI) in fraction and Compared to Normal Bega (October 2021- January 2022)

## Rangeland WRSI in % - Bega 2021/22

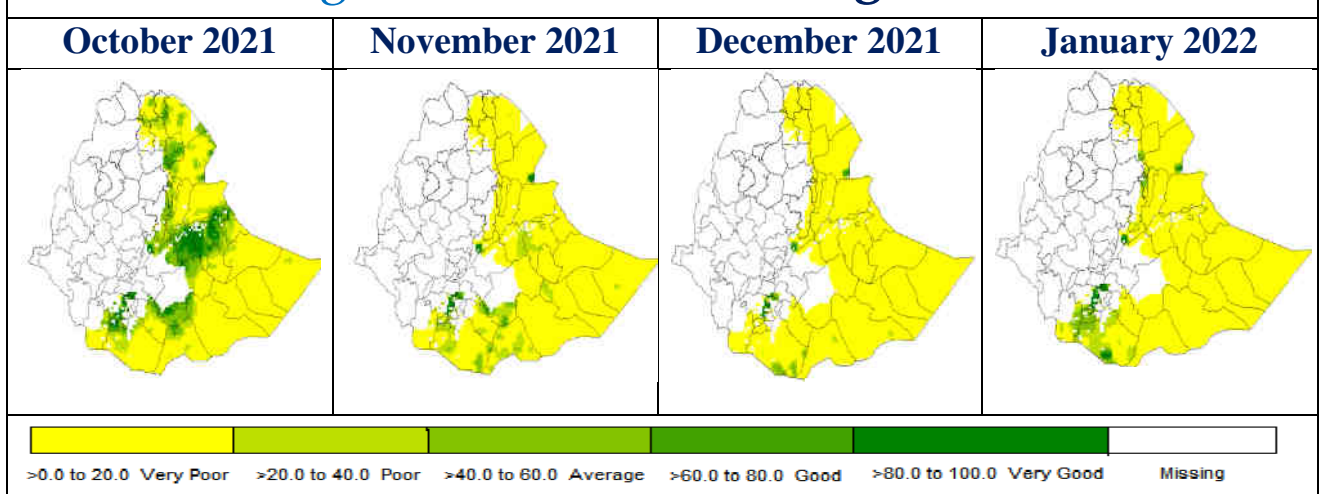


Fig.6. Rangeland WRSI in % Bega (October 2021- January 2022)

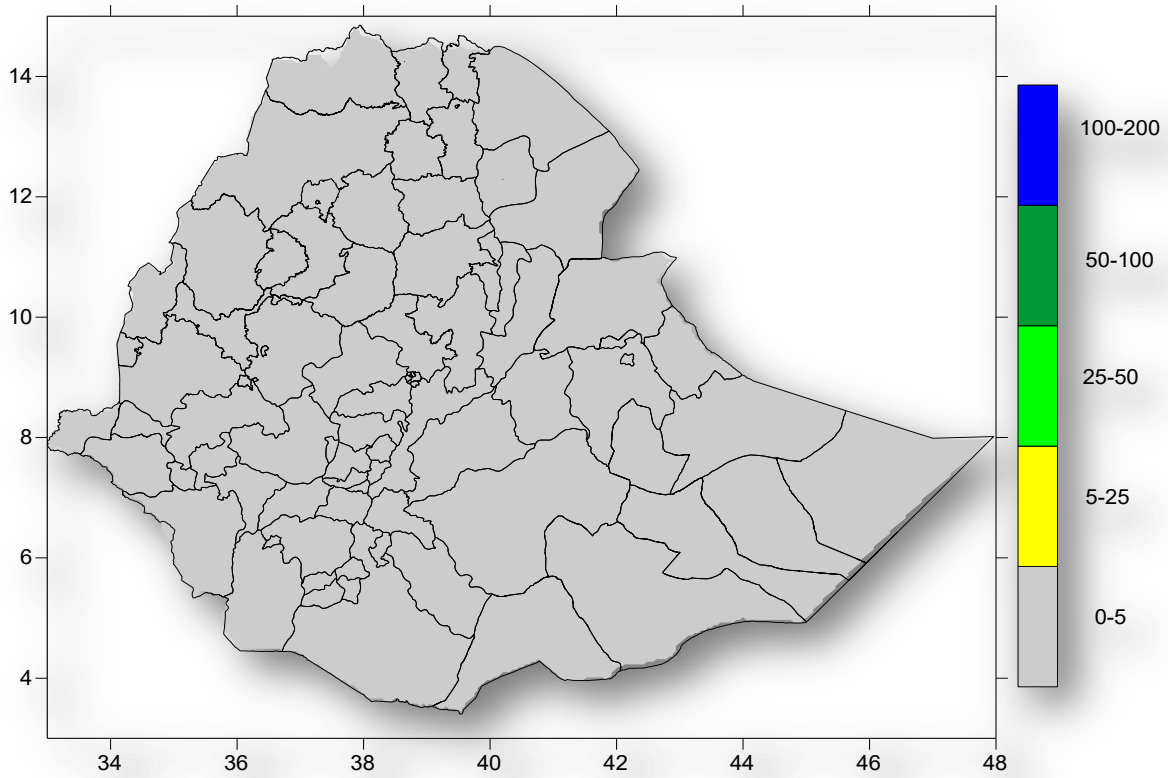


Fig 7. Rainfall distribution in mm (21 – 31) January 2022

## 1. WEATHER ASSESSMENT

### 1.1. Rainfall amount (21 – 31) January 2022

January 3<sup>rd</sup> dekad all parts of the countries received 0-5mm Rain fall.

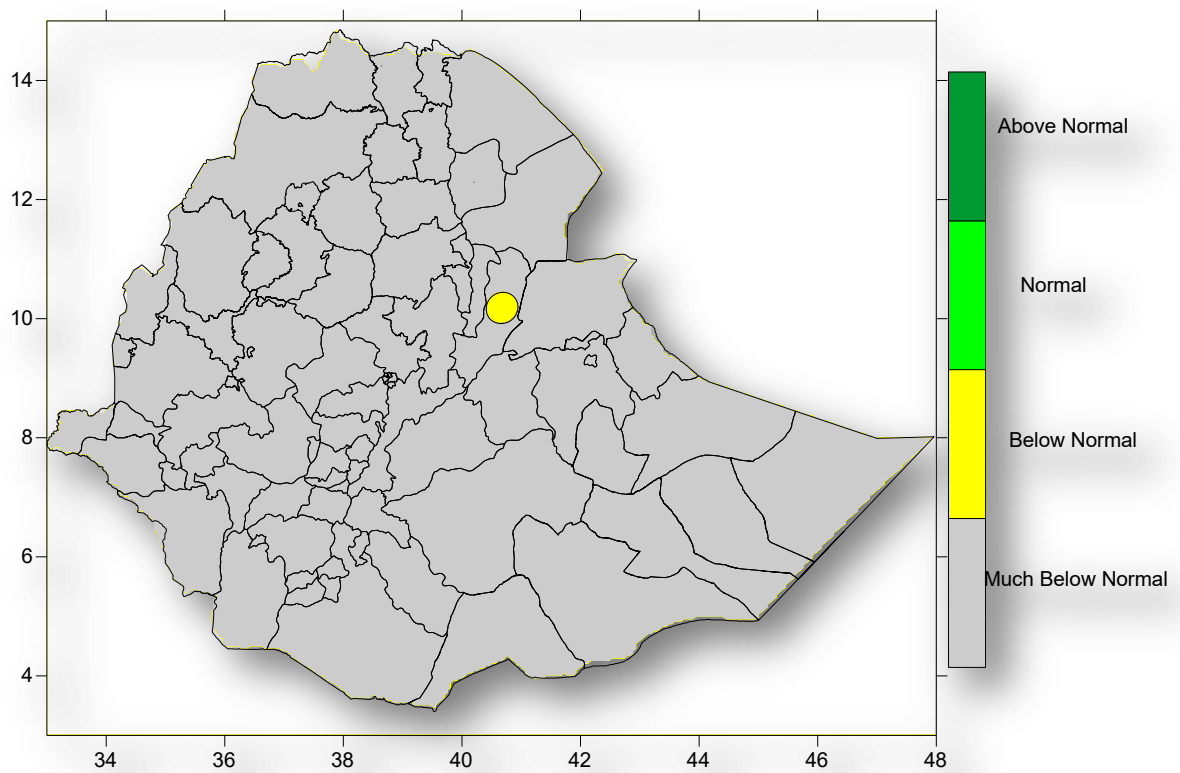


Fig. 8. Percent of normal rainfall distribution (21 – 31) January 2022

**Explanatory notes for the Legend**

- < 50-Much below normal
- 50-75%-Below normal
- 75-125%- Normal
- > 125% - Above normal

**1.2. Rainfall Anomaly (21 – 31) January 2022**

All parts of the countries exhibited Below Normal too Much Below Normal.

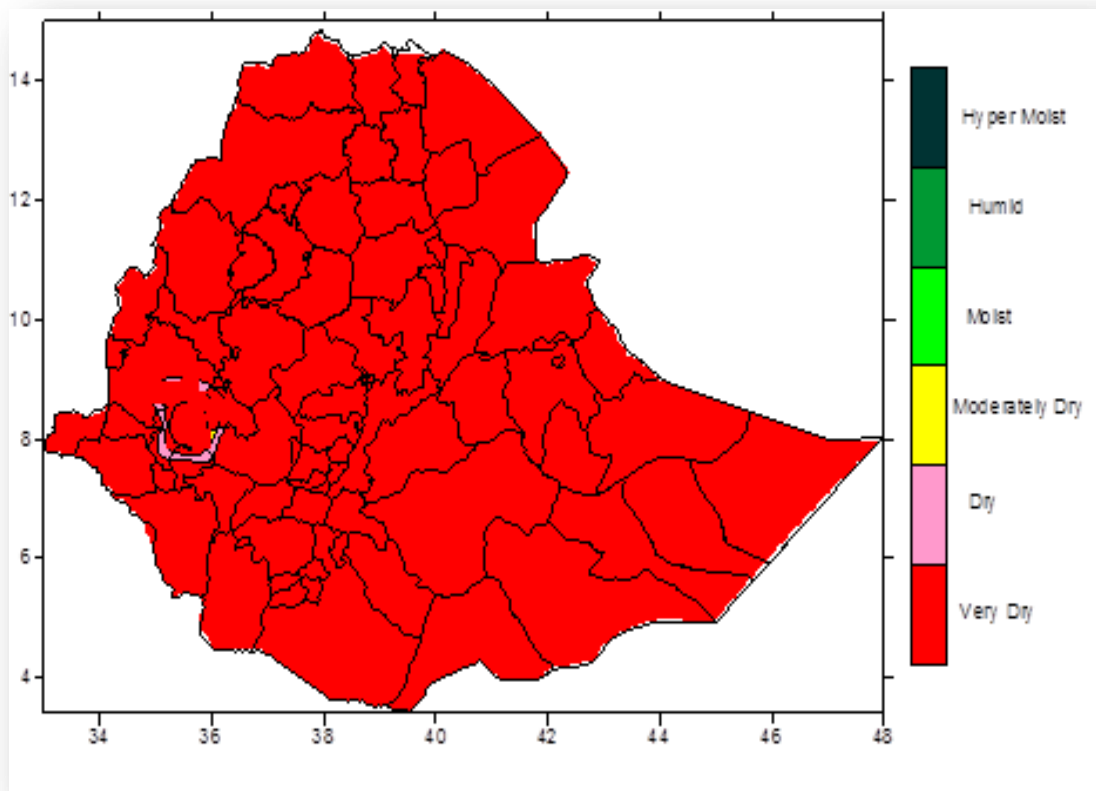


Fig.9. Moisture Status (21 – 31) January 2022

### 1.3. Moisture status (21 – 31) January 2022

During the third dekad of January 2022, all parts of the countries exhibited dry to very dry moisture condition.

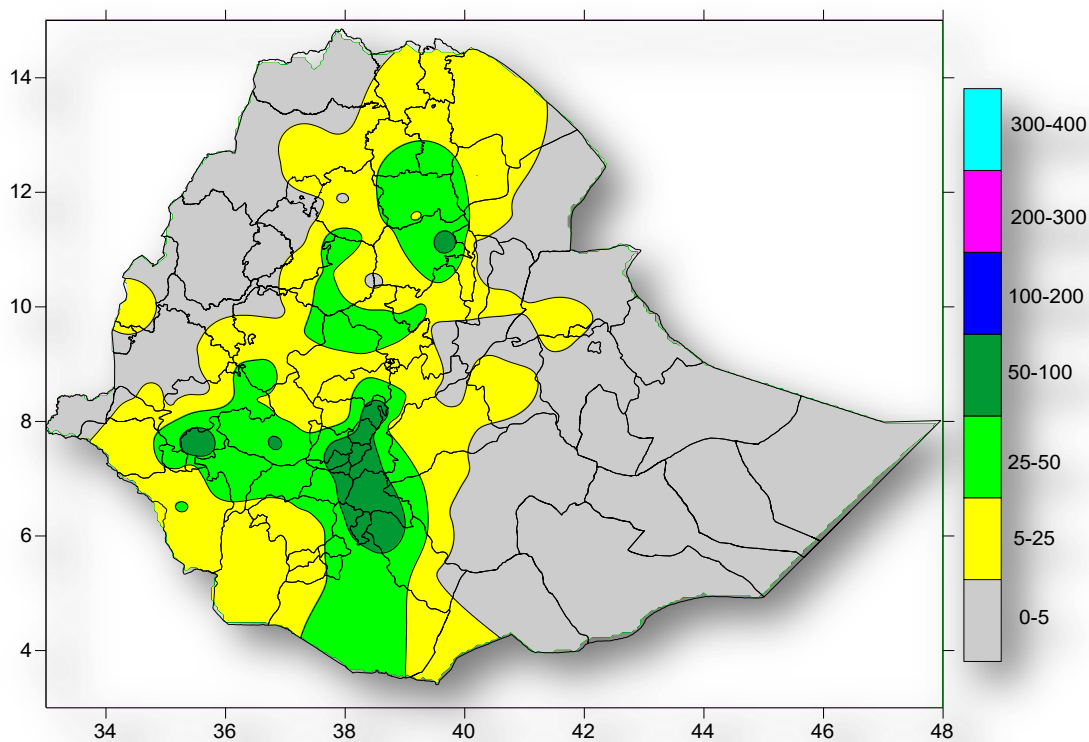


Fig. 10. Rainfall amount in mm for the month of January 2022

#### 1.4. Rainfall amount on the month of January 2022

During the Month of January 2022 pocket area of south Wollo, Oromia especial zone, Sheka, Jimma, Gurage, Selti, Alaba, KT, Hadiya, Sidama and Gedeo received 50-100mm Rain fall. south Tigray, Wag Himra, south and north Wollo, Oromia especial zone, east and west Gojam, north west and south west Shewa, Illubabur, Gambela zone 2, Godere, Sheka, Keffa, Dawero, KT, Welayita, Gamo gofa, Dirashe, Amaro, Borena, Guji, Arsi and Bale received 25-50mm Rain fall. Central, east and south Tigray, north and south Gonder, north and south Wollo, Oromia especial zone, Afar zone 1, 2, 3, 4 & 5, Shinile, Bahir Dar, west and south west Shewa, Addis Ababa zone, Arsi, west Harergie, Assosa, Tongo, Gambela zone 1, 2 & 3, Gamo gofa, South Omo, Dirashe, Konso, Amaro, Arsi, Bale and Liben received 5-25mm Rain fall. The rest parts of the countries received 0-5mm Rain fall.



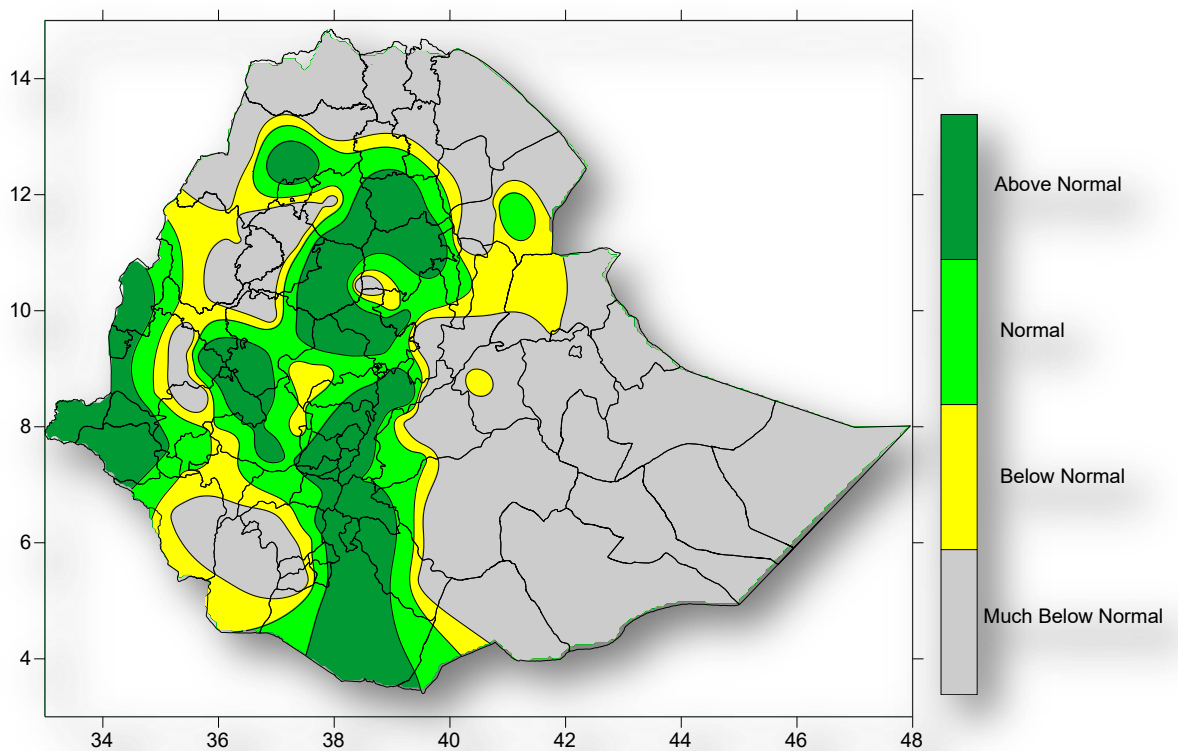


Fig. 11. Percent of Normal Rainfall for the month of January 2022

#### Explanatory notes for the Legend

- < 50- Much below normal
- 50-75%- Below normal
- 75-125%- Normal
- > 125% - Above normal

#### 1.5. Rainfall Anomaly on the month of January 2022

During the Month of January 2022 Gurage, Selti, Hadiya, Alaba, Welayita, Sidama, Gedeo and Guji North Shewa, east Gojam, Sheka, KT, Hadiya, Welayita, Gamo gofa, Gedeo, Guji, Amaro and Borena North and south Gonder, north and south Wollo, Oromia especial zone east, west Gojam, east and west Wellega, north, west and south west Shewa, Addis Ababa zone, Gurage, Arsi, Bale, Jimma, YEM, Alaba, KT, Dawero, Assosa, Tongo, Gambela zone 1, 2 & 3, Godere, Sheka, Keffa, Bench Maji, Basketo, Gamo gofa, Sheka, South Omo, Konso, Amaro, Dirashe and Liben exhibited Normal to Above Normal. The rest parts of the countries exhibited Below Normal too Much Below Normal.

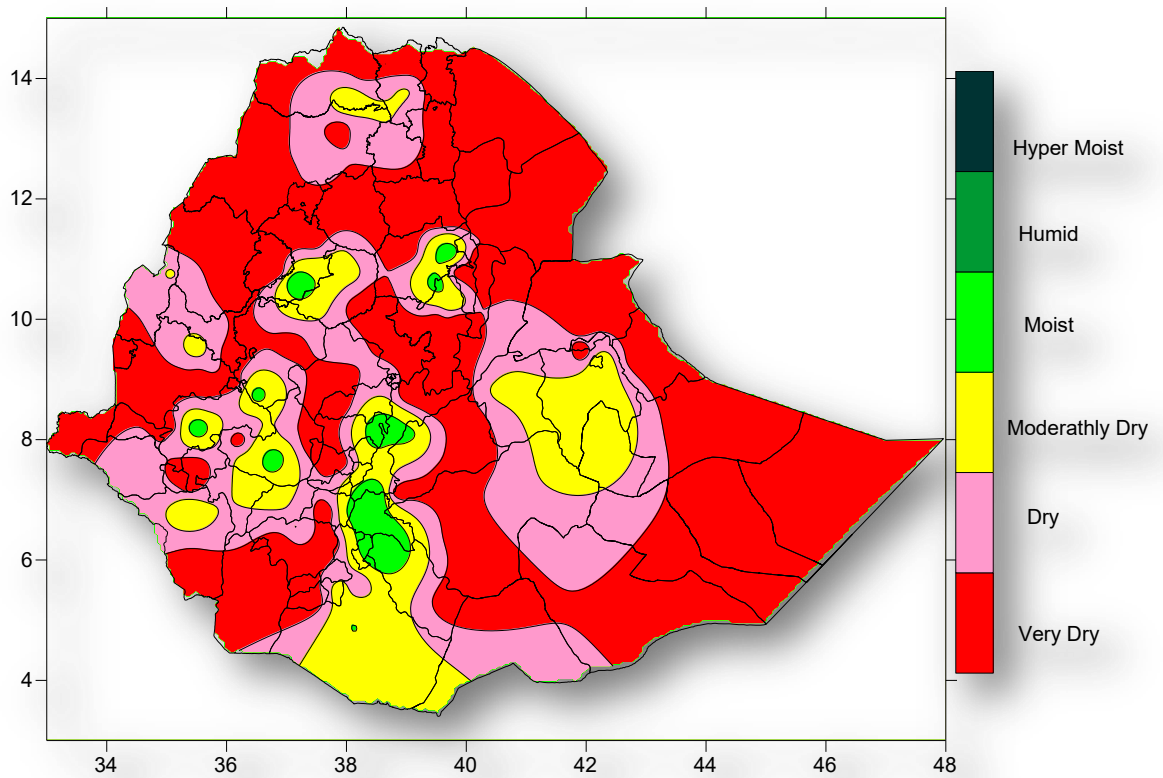


Fig. 12. Moisture status for the month of January 2022

### 1.6. Moisture status on the month of January 2022

During the month January 2022 Pocket Area of south Wollo, east Gojam, Illubabur, Jimma, Gurage, Arsi, Hadiya, Sidama, Gedeo and Guji exhibited Hyper Moist too moist. The rest parts of the countries exhibited Moderately Dry to Very Dry.

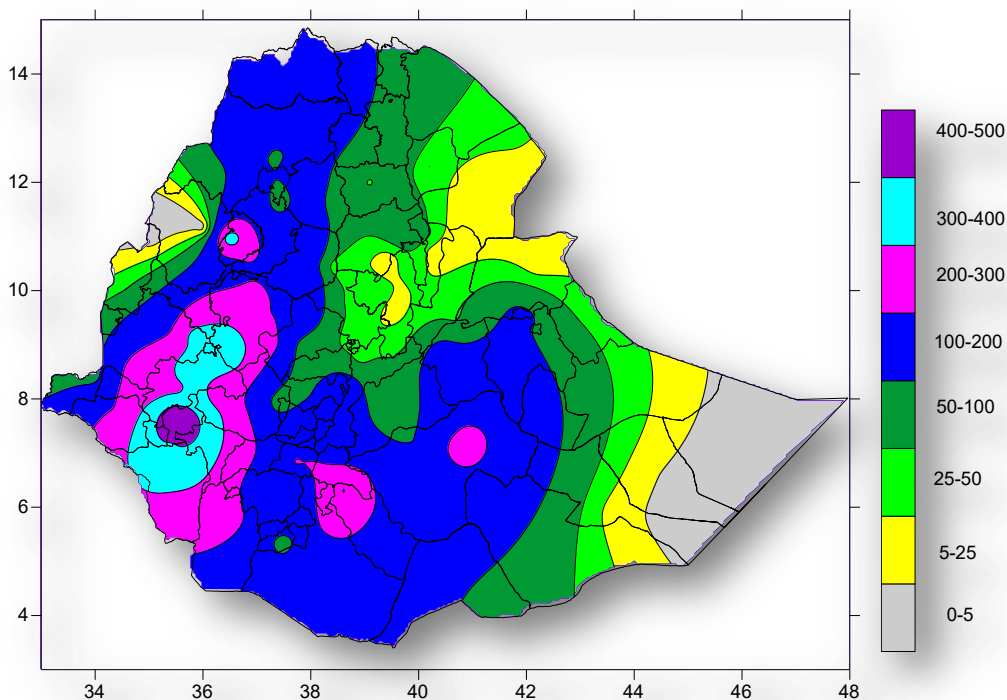


Fig.13. Rainfall amount in mm for Bega 2021/22

### 1.7. Rainfall Amount on Bega season 2021/22

During Bega 2021 pocket area of Sheka, Godere, Bench Maji, Illubabur and Keffa received 400-500mm Rain fall. West and east Wellega, Illubabur, Sheka, Keffa, Godere, Agew-Awi, Bench Maji and Dawero received 300-400mm Rain fall. Agew-Awi, west Gojam, Gambela zone 1 & 2, Illubabur, Jimma, YEM, Dawero, Basketo, South Omo, Dirashe, Sidama, Gedeo, Guji and Bale received 200-300mm Rain fall. west, central, south and east Tigray, Wag Himra, north and south Gonder, Bahir Dar, west and east Gojam, Kamashi, west and east Wellega, Gambela zone 1, 2 & 3, north, west and south west Shewa, Jimma, Gurage, Selti, Alaba, KT, Hadiya, Dawero, Gamo gofa, Gedeo, Dirashe, Amaro, Borena, Guji, Bale, west and east Harergie, Harer, Fik, Liben, Afder and Gode received 100-200mm Rain fall. Addis Ababa zone, Afar zone 2, 3, 4 & 5, west, south west and north Shewa, Gurage, Arsi, north and south Wollo, Wag Himra, central and south Tigray, Metekel, Tongo, Gambela zone 3, Harer, Jigjiga, Degehabur, Gode, Liben and Afder 50-100mm Rain fall. Metekel, Assosa, Afar zone 1, 2, 3, 4 & 5, Oromia especial zone, Shinile, Addis Ababa zone, Jigjiga, Degehabur, Gode, Koraha and Afder received 25-50mm Rain fall. Metekel, Assosa, Afar 1 & 3, Shinile, Koraha, Afder and Warder received 5-25mm Rain fall. The rest parts of the countries received 0-5mm Rain fall.

600mm of rain fall. Afar zone 1, Shinile, Burji, Degehabur, Bale, Gode, Guji, Konso and Amaro received 200-400mm of rain fall. Shinile, Amaro, Borena, Guji, Bale, Liben, Afder, Gode, Korahe, Degehabur and Warder received 50-100mm of rain fall.

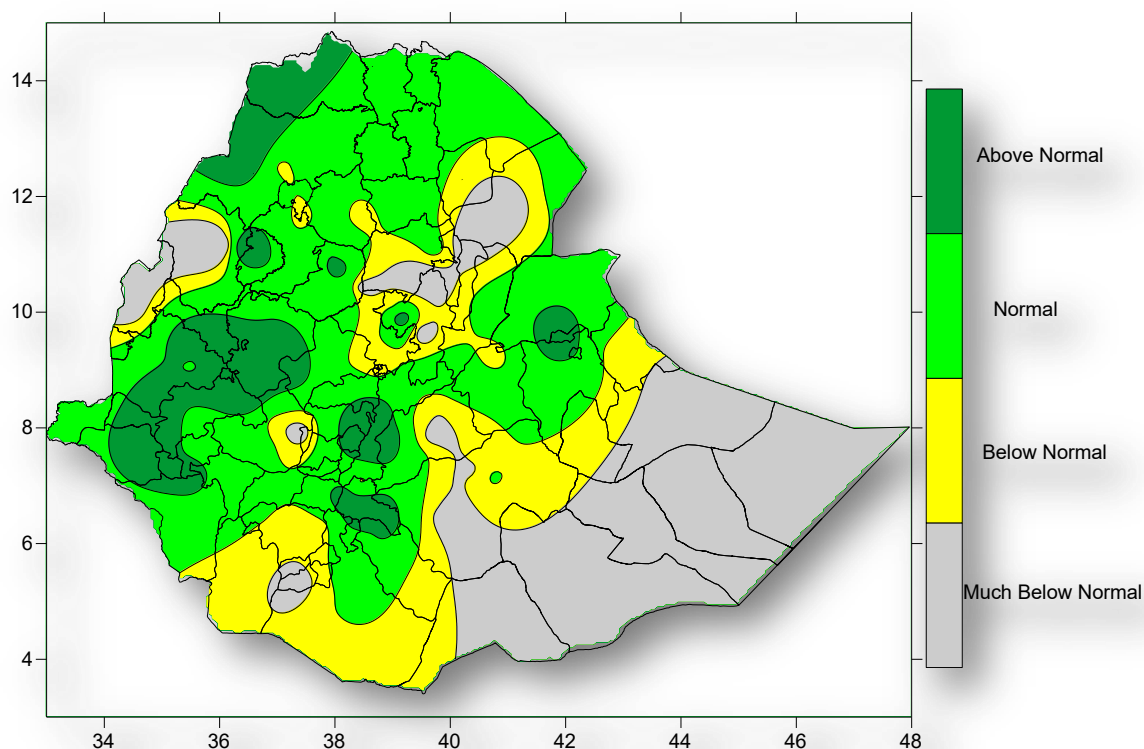


Fig.14. Percent of Normal Rainfall for Bega 2021/22

#### Explanatory notes for the Legend

- < 50-Much below normal
- 50-75%-Below normal
- 75-125%- Normal
- > 125% - Above normal

#### 1.8. Rainfall Anomaly on Bega Season 2021/22

During Bega 2021 pocket area of Metekel, Assosa, Tongo, north and south Wollo, south Gonder, Oromia especial zone, Afar zone 1, 2, 3, &5, Addis Ababa zone, west Harergie, Gamo gofa, South Omo, Dirashe, Amaro, Borena, Guji, Bale, Liben, Afder, Fik, Gode, Degehabur, Korahe and Warder exhibited Below Normal too Much Below Normal. The rest parts of the countries exhibited Normal to Above Normal.

## **2. AGROMETEOROLOGICAL CONDITIONS AND IMPACT ON AGRICULTURE**

### **2.1. VEGETATION CONDITION AND IMPACT ON AGRICULTURE DURING BEGA, 2021/22**

Generally the moisture obtained during Bega 2021\_22 season was favorable for the performances of Meher crops that are not yet fully matured , perennial plants, late sown pulses and Oil Seeds which often sowing with residual moisture at the end of Meher season over highlands. The indicated poor performance of moisture index, vegetation cover and Rangeland index based on WRSI during Bega 2021\_22 was affected availability of pasture and drinking water over southern and southeastern pastoral and agro-pastoral area. Moreover, the situation was confirmed by field reports due to persistent of severe moisture stress on Hageya/Deyr rain over southern and south-eastern pastoral regions consistently emerging of severe drought situations in the southern half of Somali, lowlands of Borena Zones of Oromia region and SNNP region of South Omo zone Dasenech woreda. Moreover, the observed dry and sunny Bega season should be taken as good opportunity to perform harvest and post-harvest activities over the place where Meher season crops are fully matured. However the observed decrease in extreme minimum temperature as low as 5<sup>0</sup> C lowering up below 0<sup>0</sup> C over frost prone areas of high lands might have been frost risk on Meher crops that were not yet fully matured, Fruits and vegetables grown under irrigation and animal's products.

## 2.2. EXPECTED WEATHER IMPACT ON AGRICULTURE DURING THE COMING BELG, 2022 SEASON

Normally central parts of northern highlands, eastern highlands, parts of central, south-western and southern Ethiopia are known as Belg growing areas. The contribution of Belg rainfall is ranging from 5-30% over north, north-eastern, and eastern highlands, whereas 30-60% over south and south-western parts of the country from annual total crop production of the areas. North Shewa, East and West Hararge, Arsi, Bale, north and south Wello, Borena and SNNPR (Kembata, Hadiya and Wolaita, Gurage, Keffa and Bench) start their land preparation and sowing activities during December to February. It is the time for water harvesting over pastoral and agro pastoral areas of southern and south-eastern Ethiopia.

The analyzed moisture Status, Standardized Precipitation Index (SPI) and total crops water requirement (WRSI) in most of analogue years expected to favor sowing of long cycle crop over western half including south western Belg producing areas. However moderate to poor performance shows over northern half of Belg growing areas and south and south-eastern pastoral and agro-pastoral areas. Thus, farmers and the concerned body need to give attention for those areas and utilize rain water harvesting, moisture conservation and adoption of suitable crops needing less water requirement. Moreover the observed better NDVI and Range land WRSI after the month of March of the selected all analogue years expected to favor Belg agricultural activities, planting of long cycle crops and availability of pasture and drinking water.

The expected to receive *Normal to above normal seasonal rain over much of western half of the country* enable get good moisture which would have an advantage of Belg agricultural activities, planting of long cycle crops and availability of pasture and drinking water. Therefore, proper input should be utilized to take advantage of the relatively better condition.

Whereas, the expected to receive *Near normal to below normal seasonal rain to prevail across the South and South-eastern regions, where Belg is the main rainy season and across second rainy season (North-Eastern, Central and southern high ground of Eastern Ethiopia)* which will have expected probability of moisture stress and negatively affecting Belg crop performance, early depletion of water and pasture resources may lead to scarcity of milk and other livestock products and negatively impacting food security and

nutrition and it may trigger resource-based conflicts, atypical pastoral migration. Therefore we advised proper moisture conservation, rain water harvesting and adopt irrigation, planted early maturing crops and Store animal feeds for use during the dry period can help in coping with expected moisture stress and occurrences of dry spells in the season.

*The expected late onset and erratic in distribution and amount over much portion of the country* which will have expected probability of moisture stress and erratic rainfall distribution over Belg rain benefiting areas would favour the outbreak of pest and diseases.

*The expected to enhance day time maximum temperature over much of the country,* particularly over the low land areas would affect the water need of Belg crops and it would also enhance evapo-transpiration. Thus, farmers and the concerned bodies proper attention should be given in terms of selection crop which tolerant to moisture stress and soil water conservations method.

Generally due to the intera-seasonal variability nature of the Belg season may experience erratic rainfall during Belg 2022. Due to this the expected intra-seasonal variability and occurrence of dry spells across Belg growing and pastoral areas, including drought prone regions may influence the season. Thus, proper management of the available moisture and cultivation of moisture stress resistance crops should be undertaken for the coming season can help in coping with expected occurrences of dry spells.

Moreover we advise immediately disseminate this (early warning) information to decision makers, timely activation of the task force(s) on drought that involves the different sector ministries and also farmers advised using climate and weather updates as provided by the national meteorological agency.

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### **3. DEFINITION 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 south eastern 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 covers southern, central, eastern and north-eastern 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.

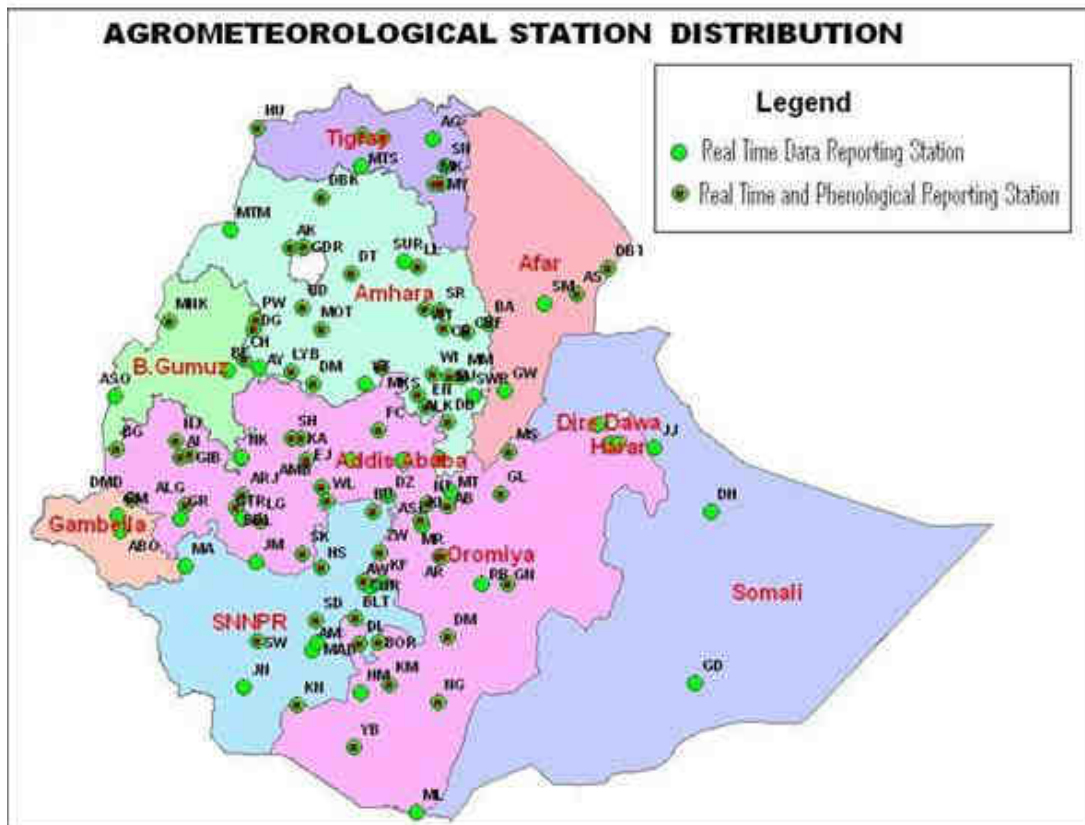
**ITCZ:-** Inter-tropical convergence zone (narrow zone where trade winds of the two hemispheres meet.

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

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



## AGROMETEOROLOGICAL STATION DISTRIBUTION



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
AlemKetema	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	SG
Assosa	ASO	Filtu	FL	M/Abaya	MAB	Gebeya	SG
Awassa	AW	Gambela	GM	Maichew	MY	Sirinka	SR
Aykel	AK	Gelemso	GL	Majete	MJ	Sodo	SD
B. Dar	BD	Ginir	GN	Mashete	MA	WegelTena	WT
Bati	BA	Gode	GD	Masha	MA	Woliso	WL
Bedelle	BDL	Gonder	GDR	Mekele	MK	Woreilu	WI
BUI	BU	Gore	GR	Merraro	MR	Yabello	YB
Combolcha	CB	H/Mariam	HM	Metehara	MT	Ziway	ZW
D. Berehan	DB	Harer	HR	Metema	MTM		
D. Habour	DH	Holleta	HL	Mieso	MS		
				Moyale	ML		