

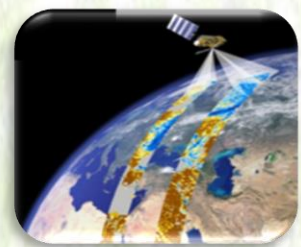
# ETHIOPIA METEOROLOGY INSTITUTE

## Agrometeorological Bulletin

### SEASONAL AGROMETEOROLOGICAL BULLETIN

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Belg 2023 VOLUME 40 No. 15 DATE OF ISSUE: - June 11, 2023



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## **FORE WARD**

This Agro met Bulletin is prepared and disseminated by the Ethiopia Meteorology Institute (EMI). 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.

Director General

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# አህፅሮት

## እ.ኤ.አ በልግ 2023

በመደበኛ ሁኔታ መካከለኛው፣ የሰሜን ከፍተኛ ቦታዎች፣ የምስራቅ ከፍተኛ ቦታዎች፣ ከፊል የመካከለኛው፣ የደቡብ ምዕራብና የደቡብ የሀገሪቱ አካባቢዎች በልግ አብቃይ በመባል ይታወቃሉ። በሰሜን፣ በሰሜን ምሥራቅና በምስራቅ ከአመታዊው ምርት የበልግ ምርት አስተዋፅኦ ከ5-30%፣ በደቡብና ደቡብ ምእራብ ከ 30-60% ይደርሳል። ሰሜን ሸዋ፣ ምስራቅና ምእራብ ሐረርጌ፣ አርሲ፣ ባሌ፣ ሰሜንና ደቡብ ወሎ፣ ቦረናና የደቡብ ብሔር ብሔረሰቦችና ህዝቦች ክልል (ከምባታ፣ ሀድያ፣ ወላይታ፣ ጉለኔ፣ ከፋና ቤንች) የማሣ ዝግጅትና የዘር ጊዜ የሚጀምሩት ከደሴምበር እስከ በፌብሩዋሪ ባለው ጊዜ ውስጥ ነው። በተጨማሪም ወቅቱ የደቡብና ደቡብ ምስራቅ አካባቢዎች ለግጦሽ ሣርና ውሃ አቅርቦት የሚሆን ውሃ የሚያከማቹበት ጊዜ ነው።

እ.ኤ.አ በፌብሩዋሪ ወር 2023 የነበረው የእርጥበት ሁኔታ ሲገመገም በመጀመሪያዎቹ እና በሁለተኛዎቹ አስር ቀናት ሞቃታማ እና ፀሃያማ የአየር ሁኔታ በአብዛኛዎቹ የሀገሪቱ አካባቢዎች ላይ አመዝኖ የቆየ ሲሆን ነገር ግን በሶስተኛው አስር ቀናት የተወሰነ እርጥበት ወደ ሀገራችን አንዲገባ ምቹ ሁኔታ በመፈጠሩ አንዳንድ የሀገሪቱ አካባቢዎች በተለይም በደቡብ ብሄር ብሄረሰቦችና ህዝቦች፣ በሲዳማ፣ በደቡብ ምዕራብ ኢትዮጵያ እና በምዕራብና መካከለኛው ኦሮሚያ ክልሎች እንዲሁም በጥቂት የደቡብ ደጋማ ስፋራዎችና በምስራቅ ኢትዮጵያ አካባቢዎች ላይ ከቀላል እስከ ከፍተኛ መጠን ያለው እርጥበት እንደነበራቸው ከተለያዩ የሀገሪቱ ክፍሎች የተሰበሰቡና የተተነተኑ የግብርና ሚቲዎሮሎጂ መረጃዎች ያመለክታሉ። ከዚህም ጋር ተያይዞ በወሩ የተገኘው እርጥበት የበልግ ሰብል በስፋት አምራች ለሆኑት ለደቡብ ምእራብ አካባቢዎችም ሆነ ለሰሜን ምስራቅ እና ለመካከለኛው የሀገሪቱ አካባቢዎች ላይ የአፈር ውስጥ እርጥበትን ከማሻሻል አንጻረ የማሳ ዝግጅት ለማድረግ አዎንታዊ ሚና ነበረው። በተጨማሪም ለቋሚ ተክሎች የውሃ ፍላጎት መሟላት፣ ለመጠጥ ውሃ እና ለግጦሽ ሳር አቅርቦት የጎላ ሚና ነበረው።

እ.ኤ.አ በማርች ወር 2023 የነበረው የእርጥበት ሁኔታ ሲገመገም አብዛኛዎቹ የምሥራቃዊ አጋማሽ የበልግ ዝናብ ተጠቃሚ የሀገሪቱ አካባቢዎች የተስፋፋ እርጥበት አግኝተዋል። ይህም ሁኔታ በተለይም የበልግ ሰብል አብቃይ በሆኑት የሀገሪቱ አካባቢዎች ላይ የተሻለ የአፈር ውስጥ እርጥበት እንዲኖራቸው ያስቻለ ከመሆኑ ጋር ተያይዞ የማሳ ዝግጅት ለማድረግ እና የተለያዩ ሰብሎችን ለመዝራት አዎንታዊ ሚና የነበረው ሲሆን አስቀድመው ለተዘሩ የበልግ ወቅት ሰብሎችም ሆነ በአካባቢዎቹ ለሚበቅሉ ቋሚ ተክሎች በጎ ጎን ነበረው። በተጨማሪም ከመጀመሪያው አስር ቀን በኋላ ወደ ደቡብና ደቡብ ምስራቅ የሀገሪቱ ስፍራዎች ተስፋፍቶ የነበረው እርጥበት ለአርብቶ አደሮችና ከፊል አርብቶ አደር አካባቢዎች ለመጠጥ ውኃና ለግጦሽ ሳር አቅርቦት በጎ ጎን ነበረው። በአንጻሩም በብዙ ሥፍራዎች ላይ በ24 ሰዓት



ውስጥ መጠኑ ከ30 ሚ.ሜ የበለጠ ከባድ ዝናብ ነበራቸው። ከዚህም ጋር ተያይዞ የተገኘው ከፍተኛ መጠን ያለው እርጥበት በተለይም ውሃ አጠር ለሆኑት አካባቢዎች የዝናብ ውሃን ለማሰባሰብና ለማከማቸት መልካም አጋጣሚን የፈጠረ ቢሆንም በአንዳንድ ቦታዎቻቸው ላይ ቅጽበታዊ ጎርፍና የወንዞች መሙላት ሊያስከትል በመቻሉ በእንሰሳት፣ በሰዎችና በንብረት ላይ እንዲሁም ቀደም ብለው በተዘሩትና በተለያየ የእድገት ደረጃ ላይ በሚገኙት ሰብሎች ላይ አሉታዊ ተፅዕኖ ነበረው። በሌላ በኩል በምዕራብ እና በደቡብ ምዕራብ፣ በሰሜን ምስራቅ፣ በደቡብ ምሥራቅ እና በደቡብ የሀገሪቱ ዳርቻዎች ላይ በአብዛኛዎቹ ቀናት ላይ ከ40 ዲ.ሴ በላይ ሆኖ የተመዘገበ ሲሆን ይህም የነበረው ፀሐያማና ሞቃታማ የአየር ሁኔታ በአካባቢው ከነበረው የእርጥበት እጥረት ጋር ተዳምሮ በወቅቱ አጠቃላይ የግብርና ሥራ እንቅስቃሴ እንዲሁም በአርብቶ አደሩ አካባቢ የእንሰሳት መኖር ውኃ አቅርቦት ላይ አሉታዊ ተፅዕኖ ነበረው።

እ.ኤ.አ በኦገስት 2023 ሲገመገም የመጀመሪያው አስር ቀናት የእርጥበት ሁኔታው በምስራቅ፣ በደቡብ ምስራቅ፣ በመካከለኛው እና በደቡብ ምዕራብ የሀገሪቱ አካባቢዎች ላይ ተወስኖ የነበረ ቢሆንም በሁለተኛውና በሶስተኛው አስር ቀናቶች ለበልግ ዝናብ መፈጠር መንስኤ የሆኑ የአየር ሁኔታ ክስተቶች የተጠናከሩ ስለነበሩ ከሰሜን ምዕራብ በስተቀር በአብዛኛዎቹ የሀገሪቱ አካባቢዎቹ በመጠንም ሆነ በስርጭት ረገድ የተስፋፋና የተጠናከረ እርጥበት ነበራቸው። ይህም ሁኔታ ቀደም ብለው ተዘርተው በተለያየ የእድገት ደረጃ ላይ ለሚገኙ የበልግ ሰብሎች ቀጣይ እድገታቸው ላይ የጎላ ጠቀሜታ የነበረው ሲሆን በተለይም ከኤፕሪል ጀምሮ ለሚዘሩ የረጅም ጊዜ ሰብሎች ማሳን ለማዘጋጀትም ሆነ ዘር ለመዝራት፣ ለቋሚ ሰብሎች የውሃ ፍላጎት መሟላት በተጨማሪም ለአርብቶ አደሮችና ከፊል አርብቶ አደሮች አመቺ ሁኔታን የፈጠረ ነበር። በሌላም በኩል በአብዛኛው የሀገሪቱ ሥፍራዎች ላይ በ24 ሰዓት ውስጥ መጠኑ ከ30 ሚ.ሜ የበለጠ ከባድ ዝናብ የተመዘገበባቸው ሲሆን ከዚህም ጋር ተያይዞ የተገኘው ከፍተኛ መጠን ያለው እርጥበት ለአዝዕርቱ የውሃ ፍላጎት መሟላት፣ ለግጠሽ ሳርና ለመጠጥ ውሃ አቅርቦት በጎ ጎን የነበረውና በተለይም ውኃ አጠር ለሆኑት አካባቢዎች የዝናብ ውሃን ለማሰባሰብና ለማከማቸት መልካም አጋጣሚን የፈጠረ ቢሆንም በብዙ የሀገሪቱ አካባቢዎች የነበረው ከባድ ዝናብና ቅጽበታዊ ጎርፍ በተለያየ የእድገት ደረጃዎች ላይ ባሉ ሰብሎች እንዲሁም በሰው እና በንብረት ላይ በተወሰነ መልኩ አሉታዊ ተፅዕኖ ነበረው።

እ.ኤ.አ በሜይ ወር 2023 ለወቅቱ ዝናብ መኖር አመቺ ሁኔታን የሚፈጥሩ የአየር ሁኔታ ክስተቶች በአብዛኛው የሀገሪቱ አካባቢዎች ላይ እየተስፋፋ የነበረ ሲሆን፣ ከዚህ ጋር በተያያዘ ከሰሜን ምዕራብ በስተቀር በአብዛኛው የአገሪቱ ክፍሎች ላይ የተስፋፋ እና የተጠናከረ የእርጥበት ስርጭቱ ነበራቸው። ይህም ሁኔታ የበልግ አብቃይ እና ተጠቃሚ የሀገሪቱ ክፍሎች ተዘርተው ፍሬ በማፍራት እና በተለያየ የእድገት ደረጃ ላይ ለሚገኙ የበልግ ሰብሎች ቀጣይ እድገታቸው ላይ የጎላ ጠቀሜታ የነበረው ሲሆን፣ እንዲሁም ከኤፕሪል ጀምሮ ለሚዘሩ እንደ ቦቆሎና ማሽላ ለመሳሰሉ የረጅም ጊዜ የመኸር ሰብሎች የማሳ ዝግጅትና ለዘር

እርሻ እንቅስቃሴ፣ ለቋሚ ሰብሎች የውሀ ፍላጎት መሟላት በተጨማሪም ለአርብቶ አደሮችና ከፊል አርብቶ አደር አካባቢዎች ለግጦሽ ሳር እና ለመጠጥ ውሃ አቅርቦት አመቺ ሁኔታን የፈጠረ ነበር። በአንዳንድ ቦታዎች ላይ አልፎ አልፎ የነበረው ከባድ መጠን ያለው ዝናብ ለአብዛኛው የእርሻ እንቅስቃሴ ጠቀሜታው የጎላ ነበር ። በተጨማሪም በአንዳንድ ቦታዎች ላይ አልፎ አልፎ የነበረው ከባድ ዝናብ ምንም እንኳን በጥቂት ቦታዎች ላይ አሉታዊ ጎን ቢኖረውም ለአብዛኛው የእርሻ እንቅስቃሴ ጠቀሜታው የጎላ ነበር ። በሌላ በኩል በሀገሪቱ ቆላማ አካባቢዎች የቀኑ ከፍተኛ የሙቀት መጠን በተለይም በምዕራብ እና በደቡብ ምዕራብ፣ በሰሜን ምስራቅ፣ በደቡብ ምሥራቅ እና በደቡብ የሀገሪቱ ዳርቻዎች ላይ በአብዛኛዎቹ ቀናት ከ40 ዲ.ሴ በላይ ሆኖ የተመዘገበ ሲሆን ይህም የነበረው ፀሐይምና ሞቃታማ የአየር ሁኔታ ከእፅዋትና ከአካባቢያቸው የሚኖረውን ትነት ስለሚያባብሰው ከበልግ ዝናብ መውጣት ጋር ተዳምሮ በወቅቱ አጠቃላይ የግብርና ሥራ እንቅስቃሴ እንዲሁም በአርብቶ አደሩ አካባቢ የእንሰሳት መኖር ውኃ አቅርቦት ላይ አሉታዊ ተፅዕኖ ነበረ።

የበልግ 2023 አጠቃላይ በእርሻ ስራ እንቅስቃሴ ላይ የነበረው ሁኔታ ሲገመገም ከበልግ ወቅት ዝናብ አገባብ ጀምሮ በተለይም በመጀመሪያው እና በሁለተኛዎቹ የፌብሩዋሪ አስር ቀናት በአብዛኛው የሀገሪቱ አካባቢዎች ላይ ደረቃማ የአየር ጠባይ ተስተወሏል። ምንም እንኳንም የነበረው ደረቅ ሁኔታ የበልግ ወቅት የእርሻ እንቅስቃሴን ቀድመው ለሚጀምሩ አካባቢዎች በተወሰነ መልኩ አሉታዊ ተጽዕኖ ቢኖረውም ከፌብሩዋሪ ሁለተኛው አስር ቀን በኋላ በነበሩት ተከታታይ የበልግ ወራቶች የተሻለ ዕርጥበት ወደ ሀገራችን በመግባቱ በአብዛኛው የበልግ አብቃይም ሆነ የበልግ ዝናብ ተጠቃሚ የሀገሪቱ ክፍሎች ላይ በመጠንም ሆነ በስርጭት ረገድ የተስፋፋና የተጠናከረ እርጥበት ነበራቸው። ይህም የተገኘው እርጥበት ለዘር እና ለማሳ ዝግጅት የእርሻ ስራ እንቅስቃሴ፣ ቀደም ብለው ተዘርተው በተለያዩ የእድገት ደረጃ ላይ ለሚገኙ የበልግ ሰብሎች፣ ለቋሚ ተክሎች የውሃ ፍላጎት መሟላት እንዲሁም በአርብቶ አደሮችና ከፊል አርብቶ አደር አካባቢዎች ለመጠጥ ውሃና ለግጦሽ ሳር አቅርቦት ጠቀሜታ የነበረው ሲሆን በተለይም ለተከታታይ ወቅቶች የእርጥበት እጥረት የነበራቸውና በልግ ዋነኛ የዝናብ ወቅታቸው የሆኑት በዚህ ወቅት በዋናነት Gui/Genna ዝናብ በሚጠበቅባቸው በደቡብ እና ደቡብ ምስራቅ የሀገሪቱ ክፍሎች ለሚገኙ አርብቶ አደሮችና ከፊል አርብቶ አደሮች በደጋማው አካባቢ የበልግ ወቅት አዝዕቶችን ለመዝራት፣ ለመጠጥ ውኃና ለእንሰሳት መኖር አቅርቦት ላይ ከፍተኛ ጠቀሜታ ነበረ። በሌላም በኩል ከአፕሪል ወር ጀምሮ ወደ ምዕራብ አጋማሽ የሀገሪቱ ክፍሎች ተስፋፍቶ የነበረው እርጥበት ለረጅም ጊዜ ሰብሎች የማሳ ዝግጅትና ለዘር እርሻ እንቅስቃሴ አመቺ ሁኔታን የፈጠረ ነበር። በሌላም በኩል በአብዛኛው የሀገሪቱ ሥፍራዎች ላይ በ24 ሰዓት ውስጥ መጠኑ ከ30 ሚ.ሜ የበለጠ ከባድ ዝናብ የተመዘገበባቸው ሲሆን ከዚህም ጋር ተያይዞ የተገኘው ከፍተኛ መጠን ያለው እርጥበት ለአዝዕቶቹ የውሃ ፍላጎት መሟላት፣ ለግጦሽ ሳርና ለመጠጥ ውሃ አቅርቦት በጎ ጎን የነበረውና በተለይም ውሃ አጠር ለሆኑት አካባቢዎች የዝናብ ውሃን ለማሰባሰብና ለማከማቸት መልካም

አጋጣሚን የፈጠረ ቢሆንም በብዙ የሀገሪቱ አካባቢዎች የነበረው ከባድ ዝናብና ቅጽበታዊ ጎርፍ በተለያዩ የእድገት ደረጃዎች ላይ ባሉ ሰብሎች እንዲሁም በሰው እና በንብረት ላይ በተወሰነ መልኩ አሉታዊ ተፅዕኖ ነበረው። በሌላ በኩል በምዕራብ እና በደቡብ ምዕራብ፣ በሰሜን ምስራቅ፣ በደቡብ ምሥራቅ እና በደቡብ የሀገሪቱ ዳርቻ ቆላማ ስፍራዎች ላይ የቀኑ ከፍተኛ ሙቀት እስከ 45 ዲግሪ ሴልሽየስ ሆኖ የተመዘገበ ሲሆን ይህም የነበረው ፀሐይማና ሞቃታማ የአየር ሁኔታ በአካባቢው ከነበረው የእርጥበት እጥረት ጋር ተዳምሮ በወቅቱ አጠቃላይ የግብርና ሥራ እንቅስቃሴ እንዲሁም በአርብቶ አደሩ አካባቢ የእንሰሳት መኖርና የመጠጥ ውግ አቅርቦት ላይ አሉታዊ ተፅዕኖ ነበረው።

ጠቅለል ባለ መልኩ የዘንድሮው በልግ 2023 በተወሰኑ በልግ አብቃይ አካባቢዎች ዝናቡ ለጥቂት ቀናት ዘግይቶ ከመጀመሩና በአንዳንድ ቦታዎች ላይ የነበረው ከባድ ዝናብ በተወሰነ መልኩ አሉታዊ ጎን የነበረው ቢሆንም በመጠንም ሆነ በስርጭት በበልግ አብቃይም ሆነ የበልግ ዝናብ ተጠቃሚ ስፍራዎች ላይ በስፋት የነበረው እርጥበት በአብዛኛው የበልግ ወቅት የግብርና እንቅስቃሴ ላይ ከፍተኛ ጠቀሜታ ነበረው ።

## **SUMMARY**

### **Belg 2023**

Based on NMA's seasonal classification, Belg is consisting of four months starting from February and ending with the month of May. 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 Welayita, 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.

During the month of February 2023, particularly in the first and second dekad of the month, dry moisture condition prevailed across most parts of the country. However, during the last dekad, some places had received certain amount of moisture. According to agro-meteorological information collected from various parts of the country, light to moderate rainfall was recorded in the SNNPR, Sidama r, south-western region of the country, western and central Oromia, some areas of southern highlands and eastern Ethiopia. Moisture obtained during the month played certain positive role for conducting land preparation in the southwest, the north-east and central parts of the country, where Belg season agricultures are practiced widely. In addition, it might also have positive contribute toward the supply of water for perennial plants and ensure the availability of drinking water and pasture for pastoral and agro pastoral communities.

During the month of March 2023, most of eastern half Belg rain benefiting areas of the country was prevailed good moisture condition in amount and distribution. This situation had positive contribution for land preparation, sowing of Belg crops as well as satisfies the water need of perianal plants and availability of pastors and drinking water across the pastoral and agro-pastoral areas. Moreover especially, after the first dekad of the month relative increase in moisture was observed over southern and south-eastern pastoral and agro-pastoral areas including, the south-western, north-eastern and central parts of the country which condition was sustain sowing of long cycle crops as well as satisfy the water need of perennial plants. In addition, the situation was also favourable the generation of pasture and



the availability of drinking water over pastoral and agro pastoral areas. Heavy rainfall was also recorded in 24 hours over most part of Belg rain benefiting areas of the country, the obtained heavy fall could be favourable for farmers who are in moisture stress areas, to collect and store rainwater where that can be used in time of deficit. However the observed heavy fall might have created flood and river flow which has negative impact on animals, people and property, as well as on the crops that were sown earlier and at different stages of development. In general, the observed moisture during the month played a significant role toward alleviating the dry moisture observed due to the slight late onset of Belg rainfall as well as improves the soil moisture content and replenishes the water points. On the other hand, in the low-land areas of the western, north-western, north-eastern and southern parts of the country, the highest temperature of the day was recorded above 40 degrees Celsius. It had negative impact on the overall agricultural activity and the supply of animal fodder and water in the pastoral area.

During the month of April 2023, in the first dekad of the month the moisture condition prevailed only over eastern, south-eastern, central and western parts of the country. During the second and third dekad rain bearing meteorological phenomena was strengthening in amount and distribution over much of Belg rain benefiting area of the country except north western parts. This situation might have positive impact on moisture requirement of different Belg and Meher long cycle crops found at various phases of growth, perennial plants, general agricultural activities, improve pasture and drinking water availability in pastoral and agro pastoral low land areas. Besides, the observed heavy rainfall over much of the country might have positive impact on the ongoing Belg agricultural activities normally moisture deficit areas and water harvesting where that can be used in time of deficit. Moreover the observed widespread rainfall distribution could also have indispensable contribution on the availability of pasture and drinking water for pastoral areas. On the other hand, the observed extreme heavy fall greater than 30mm in one rainy day may cause flood and water logging on crops field in low lying areas and soil erosion on sloppy areas as well as it could affect the sowing activities by washing away the newly sown Meher seeds in areas where sowing activities are the main practices at this time of the year.

During the month of May 2023, under normal circumstance the rainfall activity has been decreasing from eastern, north-eastern, central and southern parts of the country and expands to western half of the region. During the month under review rain bearing meteorological system was strengthening in amount and distribution over most parts of the country except north-western parts. This situation would have significant contribution for

Belg crops which were at different phenological stage, Perennial plants, sowing of long cycle crops like maize and sorghum including pulse crops and also fevered for pasture and drinking water over pastoral and agro postural area of the country. On the other hand, occasional heavy fall > 30mm in one rainy day observed over some parts of the country which have positive contribution for general agricultural activities. However in some parts may cause flood and water logging on crops field in low lying areas. Besides, the increasing of maximum temperature with decreasing of rainfall over low land parts of the country might have negatively affected seasonal agricultural activities.

During Belg season 2023 the moisture has started after the second dekad of February delayed by more than a dekads and with poor temporal distribution over south-western and north-eastern parts which normally Belg rain started earlier. After the second dekad of February most of Belg growing and Belg rainfall areas experienced better moisture in amount and distribution. After the second dekad of February most of Belg growing and Belg rainfall benefiting areas experienced good moisture in amount and distribution. Also, the main rainfall region Gui/Genna rains over SNNPR, southern Oromia and Somali have significant improvement of rainfall after the second dekad of February. The experienced of good rainfall amounts as depicted on MI, NDVI and RLWRSI, which indicate better moisture receiving comparing with the previous consecutive seasons. This situation might have positive impact on moisture requirement of different Belg and Meher long cycle crops found at various phases of growth, perennial plants, improve pasture and drinking water availability in pastoral and agro pastoral low land areas. Moreover over the Gui/Genna rain-regimes of south and southeast Ethiopia, the whole index obtained in each month were above average, hence good moisture conditions were experienced over the major portions of these regions. This is consistent with good rainfall performance during the Belg 2023 season. In addition to this, the long rains have started on time over much portions of western and southwestern Ethiopia suitable for land preparation and planting of long cycle crops like maize and sorghums. Generally all Agro meteorological information indicated except few dekad delay of onset to the season over Belg producing areas and the Gui/Genna rains have started on time. Hence the enhanced moisture conditions were persisted over the major portions of these regions that have improved the moisture condition that persisted poor rainfall in these regions for the past several months. On the other hand, occasional heavy fall > 30mm in one rainy day observed over many parts of the country which have positive contribution for general agricultural activities. However in some parts may cause flood and water logging on crops field in low lying areas. Besides, in the low-land areas of the western, north-western,

north-eastern and southern parts of the country, the highest temperature of the day was recorded above 40 degrees Celsius. It had negative impact on the overall agricultural activity and the supply of animal fodder and water in the pastoral area.

## Belg 2023 Moisture Status Map

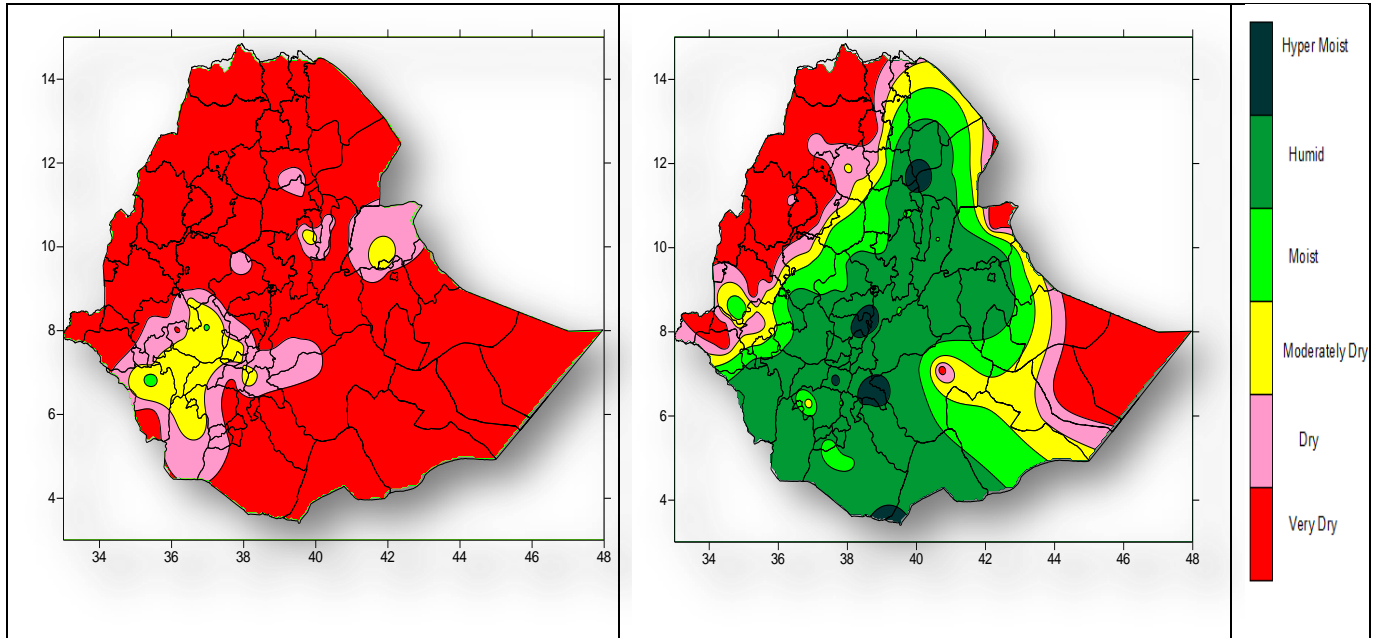


Figure 1. Moisture status for the month of February 2023

Figure 2. Moisture status for the month of March 2023

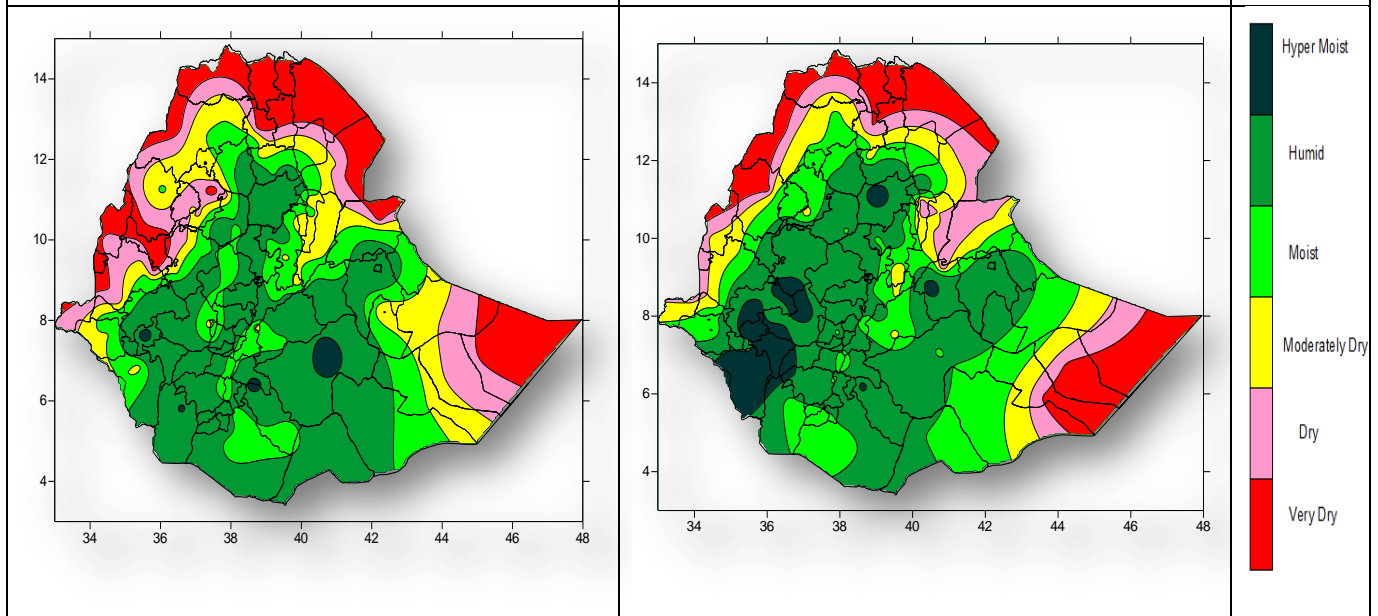


Figure 3. Moisture status for the month of April 2023

Figure 4. Moisture status for the month of May 2023

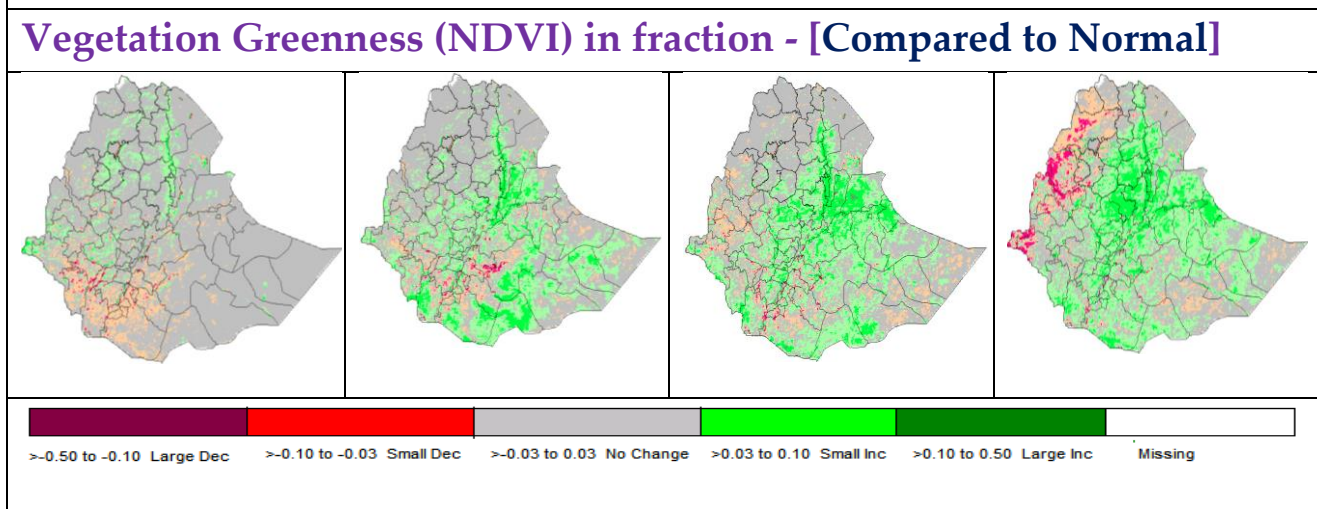
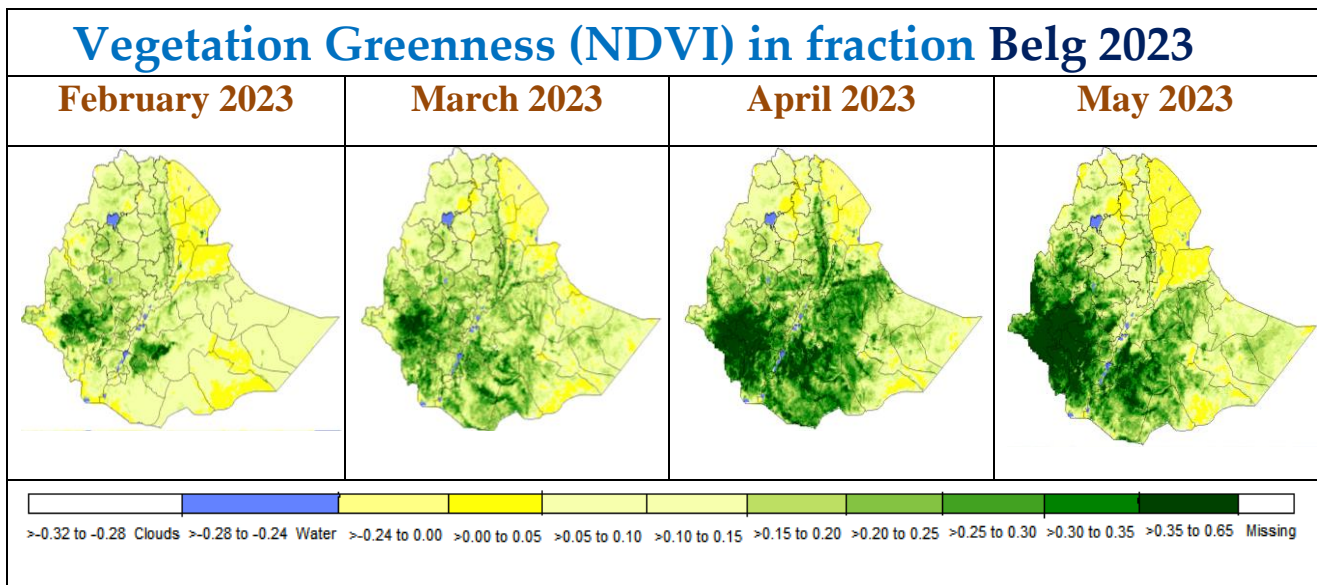


Fig. 5. Vegetation Greenness (NDVI) in fraction and Compared to Normal Belg ( Feb- May) 2023

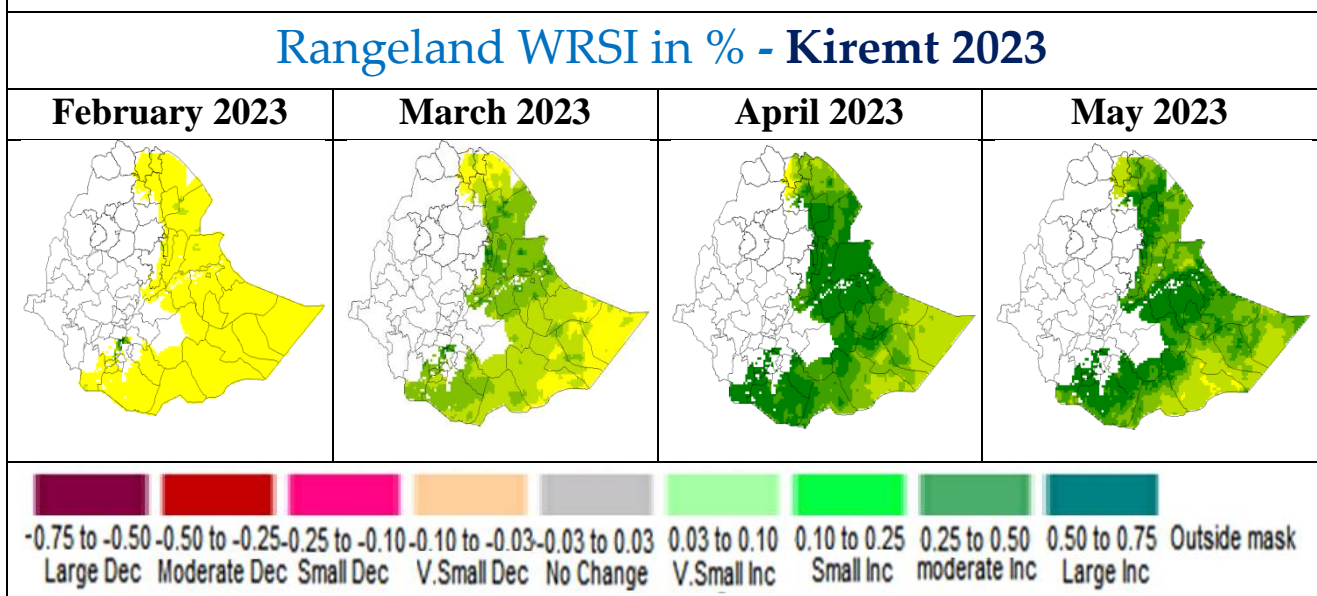


Fig.6. Rangeland WRSI in % Belg ( Feb- May) 2023



## Planting Dekad in dekad – Belg 2023

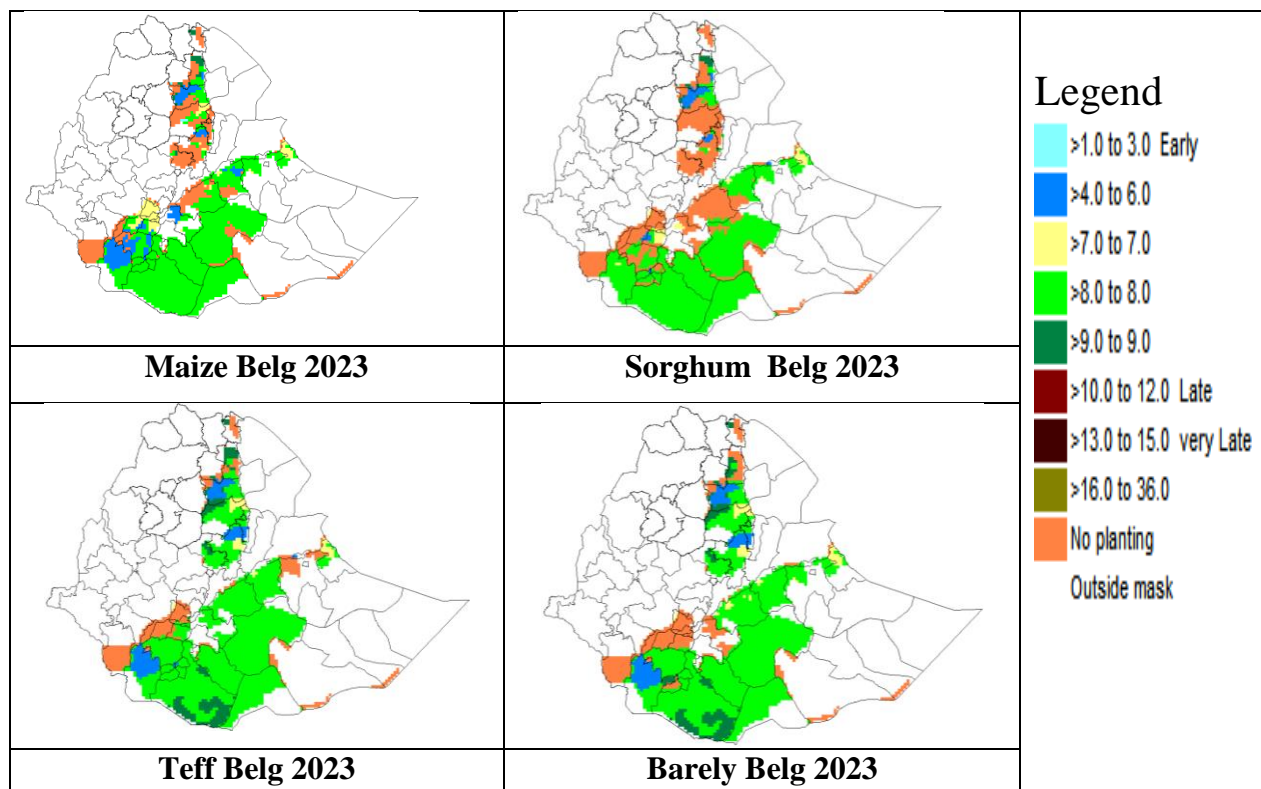


Fig. 7. Belg 2023 Planting oportuntuy of four major crops (Belg\_Maize, Sorghum, Teff and Barely)

## Computed Crop WRSI on Belg\_2023\_Maize, Sorghum, Teff and Barely

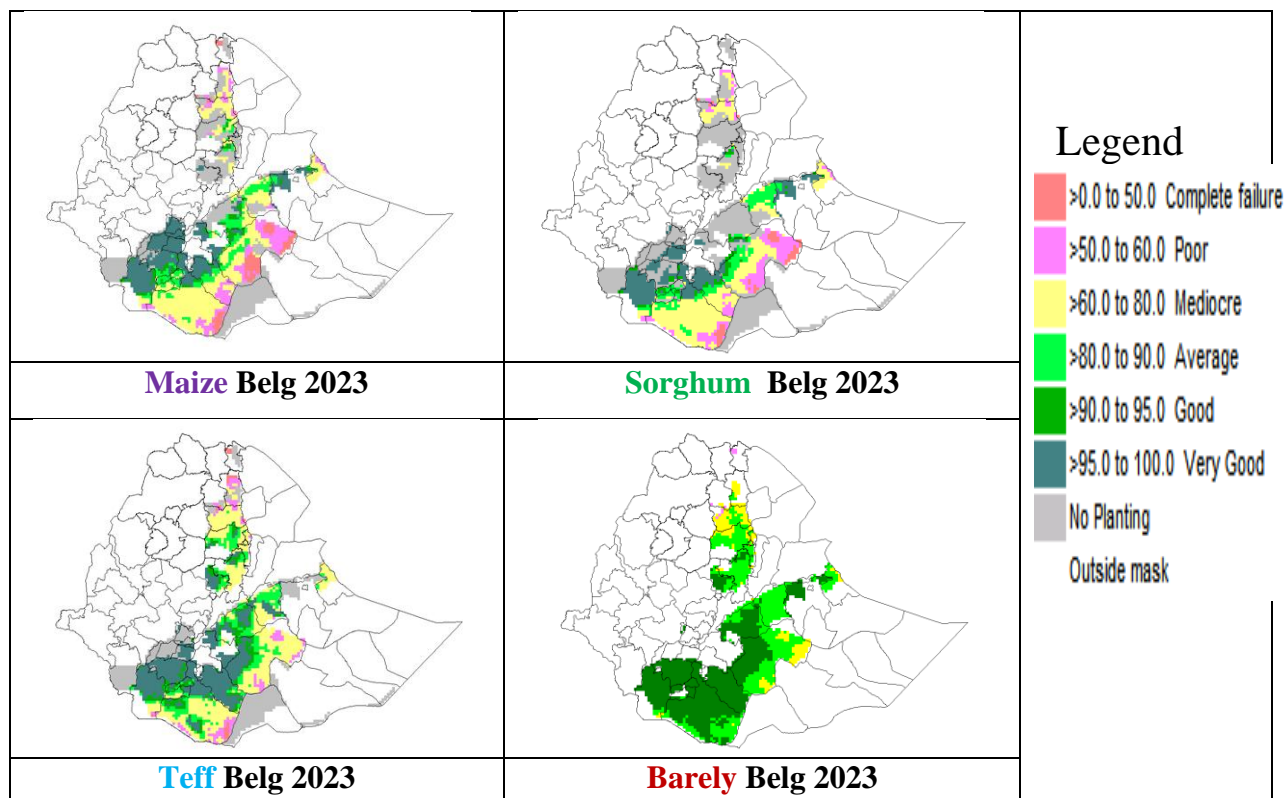
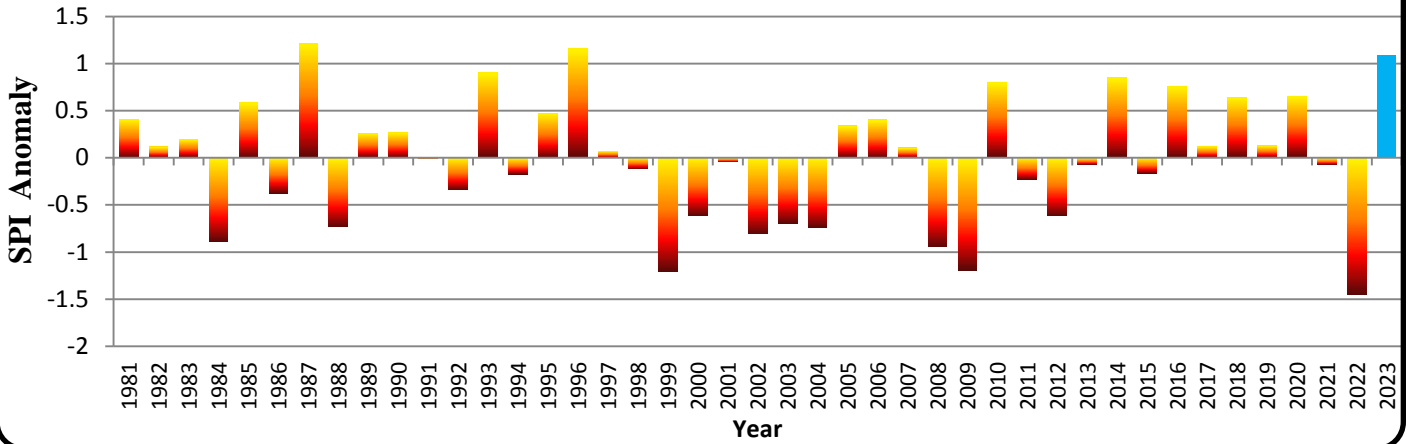
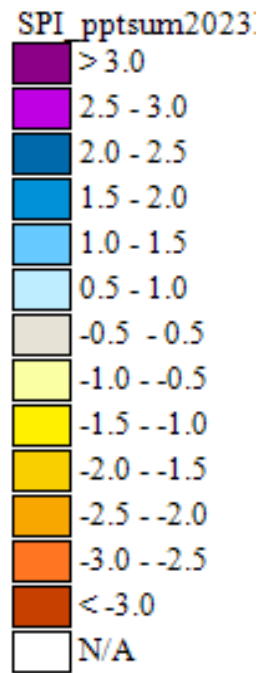
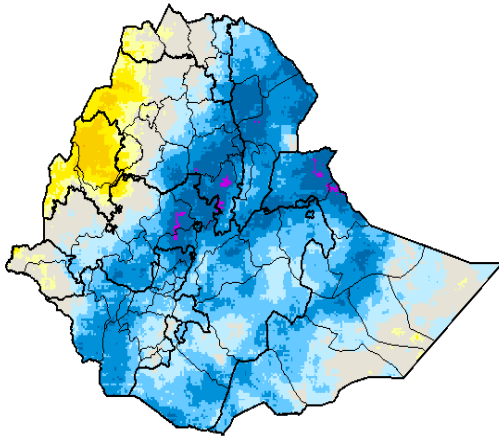


Fig. 8. Computed Crop WRSI on Belg\_2023 Maize, Sorghum, Teff and Barely

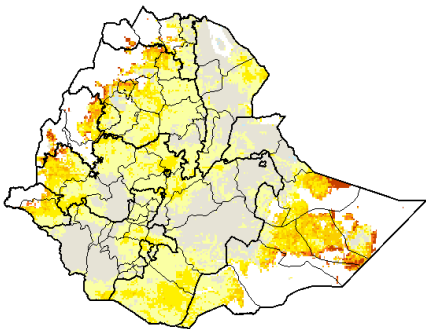
## SPI Trend\_Belg 1981\_2023



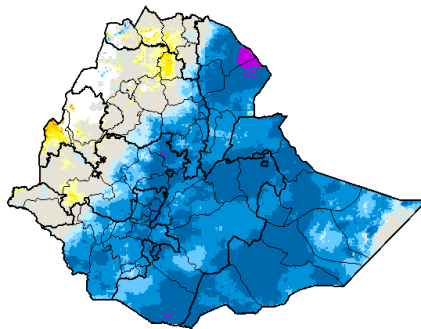
### Belg 2023 SPI



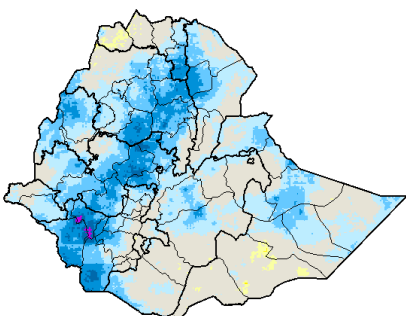
#### SPI Feb 2023



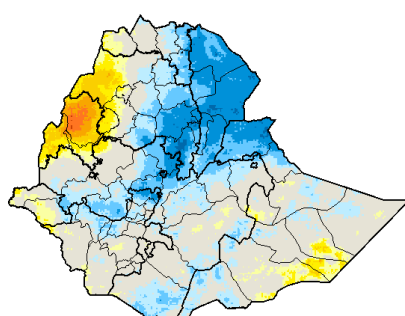
#### SPI Mar 2023



#### SPI Apr 2023



#### SPI May 2023



# 1. WEATHER ASSESSMENT

## 1.1. Rainfall amount (21 – 31) May 2023

During Third Dekad of May 2023 the rain fall distribution was:- pocket areas of West Wellega, Illibabur and Sidam Zones are recived 100-200mm rain fall. West Tigray, North Gonder and South Gonder, Bahir Dar, Agew Awi, East Gojjam, Kamashe, West and East Wellega, Illibabur, West and South West Shewa, Gurage, Siliti, Alaba, Hadiya, Sidama, Gedo, Guji, Half of Borena, Bale, Liben and half of Afder Zones are recived 50-100mm rain fall. Central and Easyt Tigray, half of North Gonder, and South Gonder, South Weelohalf of Metkel, pocket areas of Kamash and West Wellega, Arsi, West and East Hararghehalf of Afder, Degahabur and Gode, Fik Jijiga and half of Shinile Zones are 25-50mm rain fall. South Tigray, Waghamera, Afar Zone 2,5&3, pocket areas of Assosa, Gambella zone 1,2&3, Godere, Keffa, Dawero, some areas of Bench Maji, Basketo, Dirashe, Konso and Borena, half of Shinile, Degahabur Gode, Afder, Korahe and Wardar Zones are 5-25mm rain fall. He rest part of the country During this dekade recives 0-5mm rain fall.

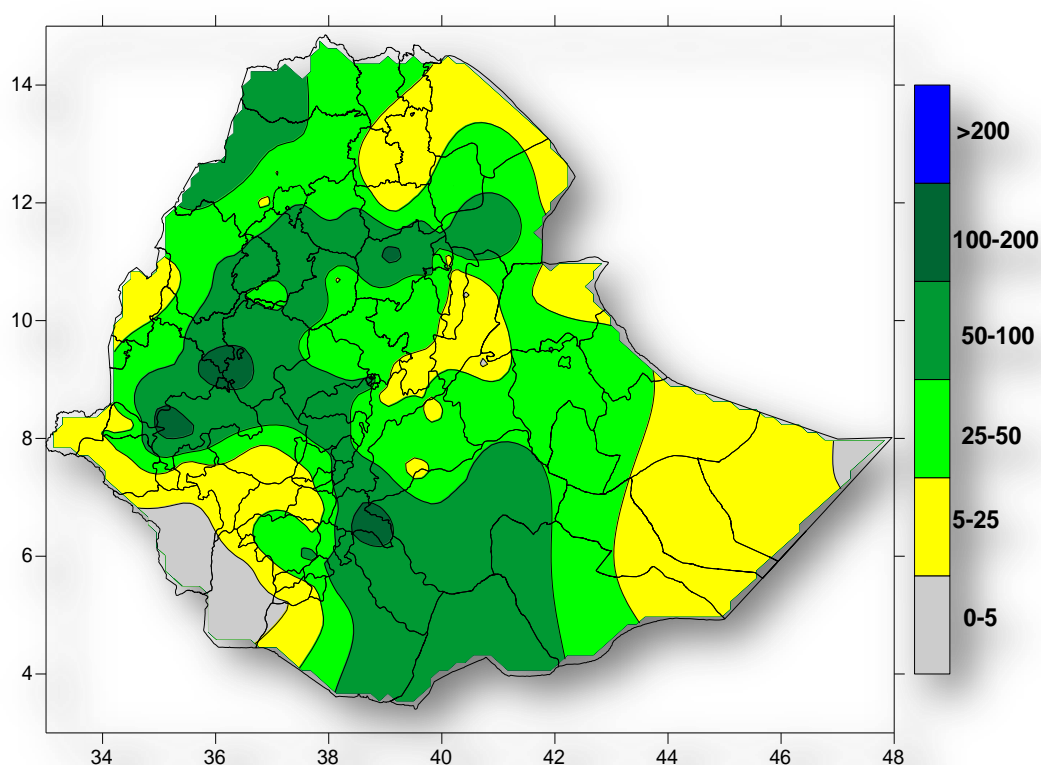


Fig 9. Rainfall distribution in mm (21 – 31) May 2023

## 1.2. Rainfall Anomaly (21 – 31) May 2023

During Third Dekade of May 2023 the rain fall anomaly was, most part of the country received Normal to Above Normal rain fall condition. On the other hand some part of the country zones (West , Central, East T and South igray, pocket areas of Assosa, Tango, Gambela Zone 1,2&3, Godere, Sheka, half of Jimma, Bench Maji, Keffa, Dawero, Basketo, South Omo, Dirsha, Konso and Amaro Zones are get Much Below Normal to Below Normal Rain fall anomaly.

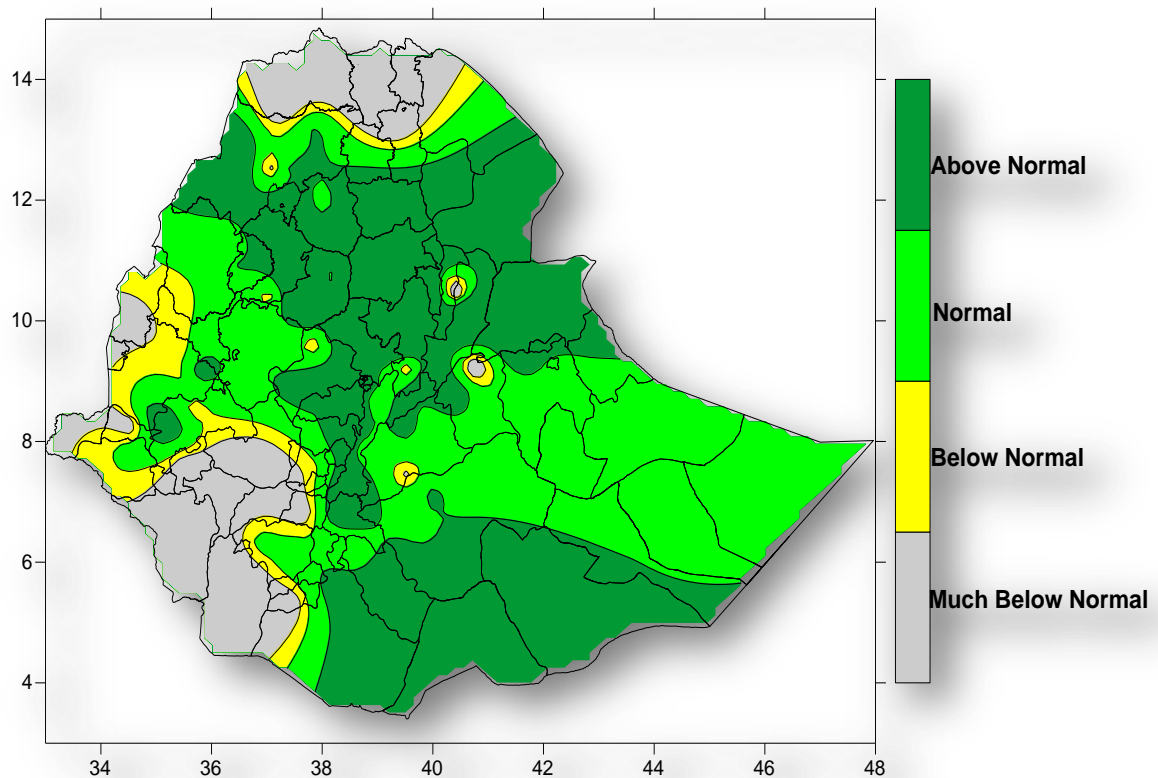


Fig. 10. Percent of normal rainfall distribution (21 – 31 May 2023)

### Explanatory notes for the Legend

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



### 1.3. Moisture status (21 – 31) May 2023

During the third decade of May 2023, Most parts Belg rain receiving areas except South east, north western and parts nort easter parts of the country exhibited moist to hyper moist soil moisture. The rest parts of the countries exhibited Moderately Dry too Very Dry.

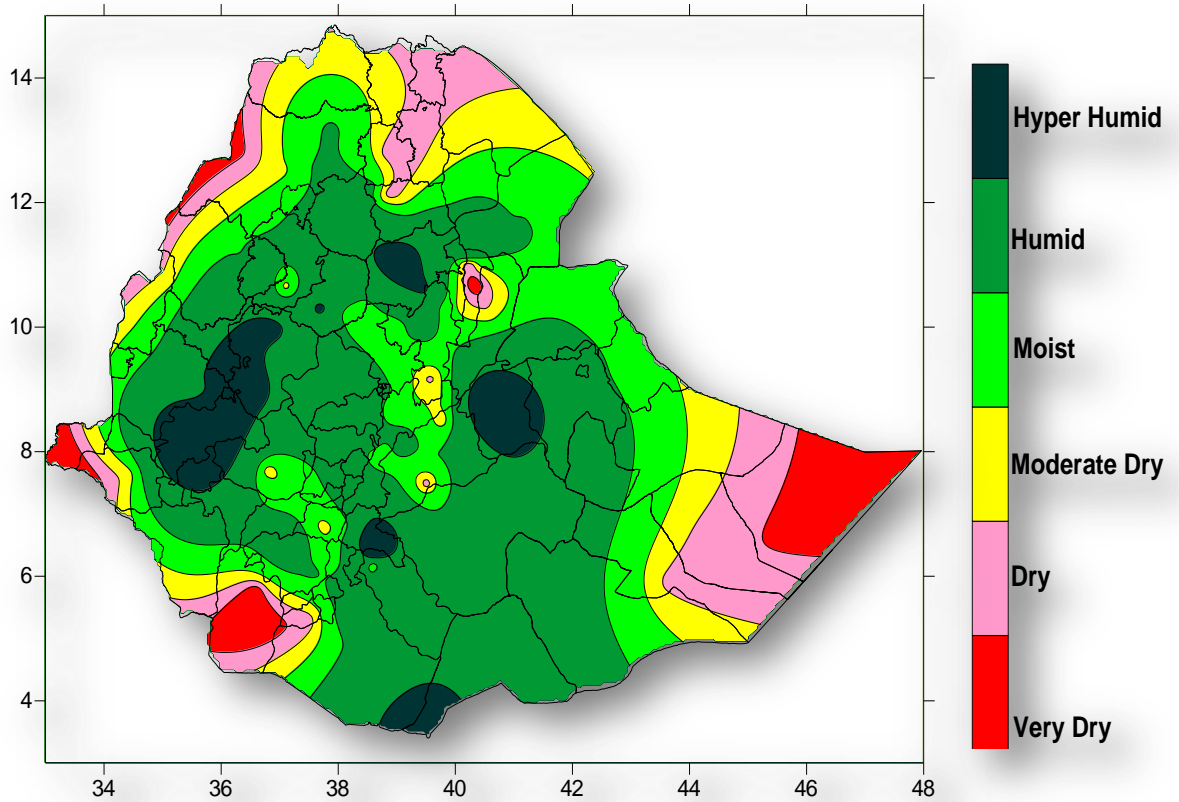


Fig.11. Moisture Status (21-31 May 2023)

#### 1.4. Rainfall amount on the month of May 2023

During the Month of May 2023, pocket areas of South Wello, Tip areas of East Gojjam, pocket areas of East and West Wellega, Illibabur, Sheka, Godere, Keffa, Dawero, Bench Maji, Gedo, Guji Zones are received  $>200$ mm rain fall. South Gonder, North Wello, Bahir Dar, East Gojjam, Oromia, Zone, Kamashe, West and East Wellega, West and South West Shewa, Gambella Zone 2&3, Godere, Jimma, Gurage, Alaba, Siliti, Hadiya, Wolita, Bench Maji, Basketo, Sidama, Arsi, South Omo, Konso, Amaro, Borena, Guji, Liben, Bale, Fik, West and East Hararghe, Jijiga, Afar Zone 1, pocket areas of Degahabur, Gode and Afdar Zones are received 100-200mm rain fall. Pocket areas of West Tigray, North and South Gonder, Wagomera, Afar Zone 3,4&5, Shinile, Bahir Dar Sgew Awi, Kamashe, West, Wellega, Gambella Zone 1,2&3, pocket areas of South Omo, Dirashi, Konso, Amaro and Borena, half of Afdar, Gode and Dehahabur Zones are received 50-100mm rain fall. The rest part of the country received 0-50mm rain fall.

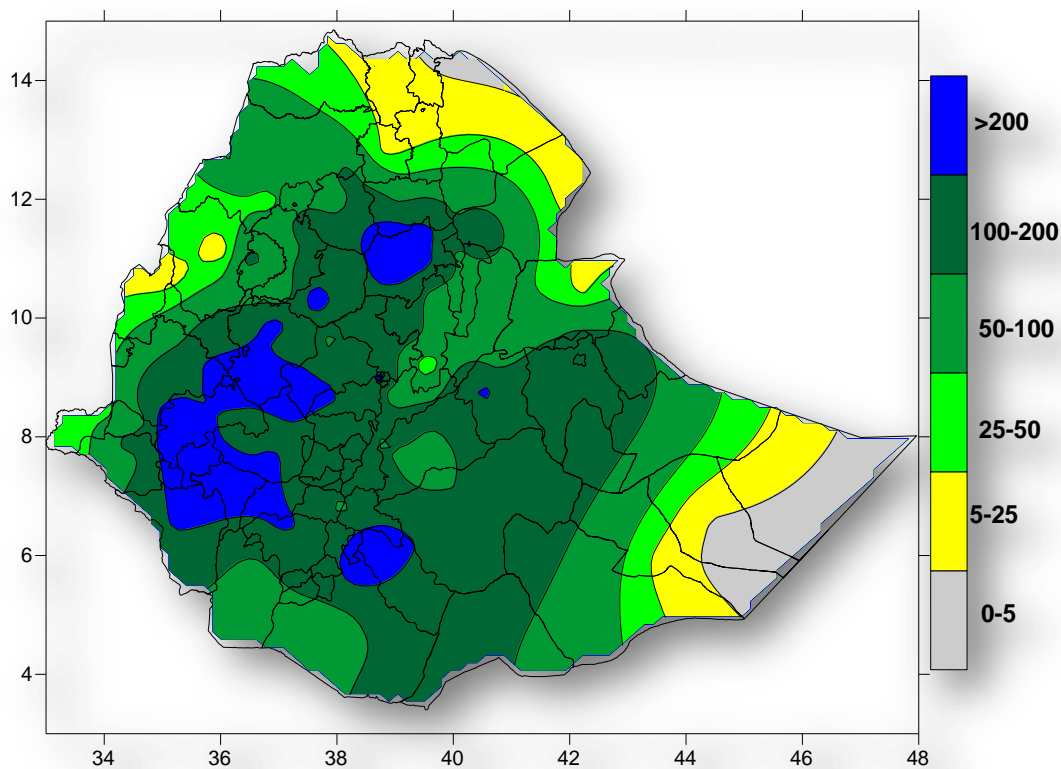


Fig. 12. Rainfall amount in mm for the month of May 2023

### 1.5. Rainfall Anomaly on the month of May 2023

During the month of May 2023, the rain fall anomaly was, Pocket areas of North gonder, Waghemera, Afar Zone 1,2,3,4&5, North and South Wello, Oromia Zone, Bahir dar, East Gojjam, Agew Awi, Kamashe, East and West Wellega, West and South West Shewa, Illibabur, Jimma, Gambela Zone1&2, Gurage, Siliti, Aalaba, Hadiya, SidamaSheka, Godere,Keffa, Bench Maji,Dawero, Basketo, Gedo, South OMO, Amaro, Borena, Guji, Liben, Bale, Arsi,West and East Hararghe, Shinile, Jijiga,Some parts of Fik, Degahabur and Afder Zones are exhibited Above Normal To Normal rain fall condition. The rest part of the country was Much Below Normal to Below Normal rain fall condition.

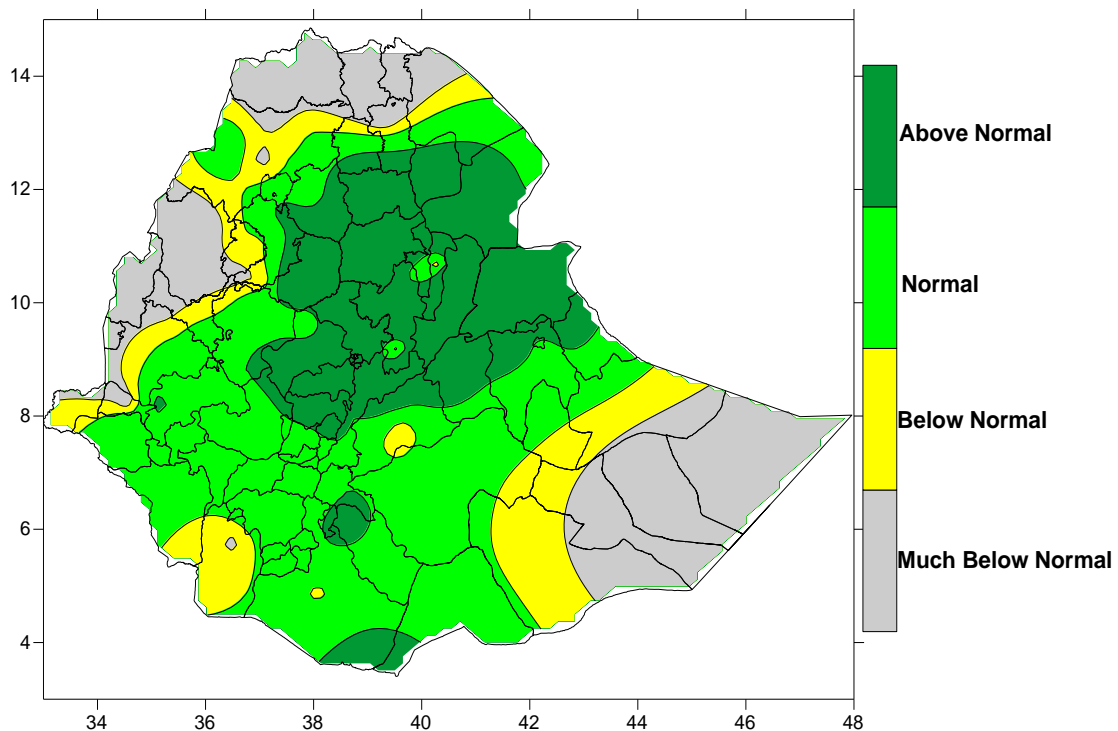


Fig. 13. Percent of Normal Rainfall for the month of May 2023

#### Explanatory notes for the Legend

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

### 1.6. Moisture status on the month of May 2023

During the third decade of May 2023, Most parts Belg rain receiving areas except South east, north western and parts nort easter parts of the country exhibited moist to hyper moist soil moisture. The rest parts of the countries exhibited Moderately Dry too Very Dry.

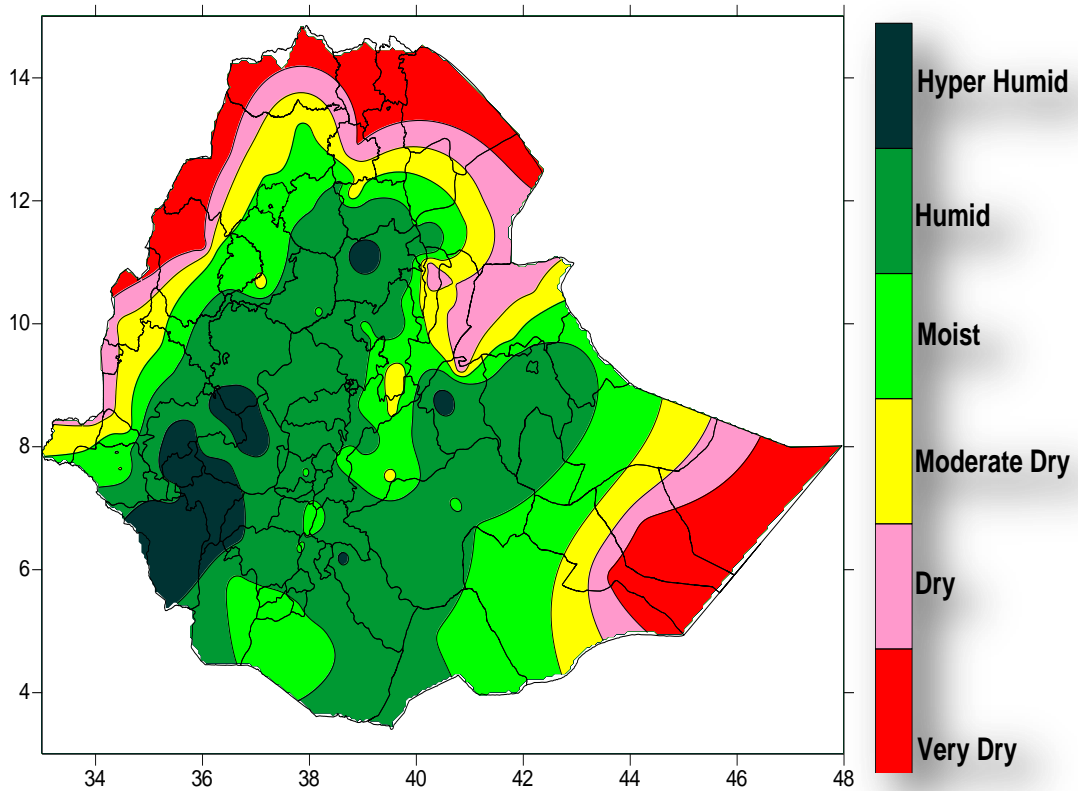


Fig. 14. Moisture status for the month of May 2023



### 1.7. Rainfall Amount on Belg season 2023

During Belg Season of 2023 from February to May, the rain fall North and South Wello, Oromia Zones are, East Gojjam, Afar Zone 1, East Wellega,, West and South West Shewa, Addis Ababa Zone, Illibabur, Jimma, Gurage, Siliti, Alaba, Hadiya, Sidama, Arsi, West and East Haraghe, Sheka, Godere,effa. Dawero, Bench MAJI, Basketo, South omo, Dirsha, Konso,Amaro, Gedo, Amaro, Borena, Guji, Bale, Arsi, pocket areas of Liben, Afder, Gode, Fik an Korahe Zones are recived 200 up to 300mm rain fall. North and South Gonder,Waghimera, South Tigray, Baher Dar, Agew Awi, Kamashe, West Wellega, Gambella Zone1&2, pocket areas of Borena, Afder, Liben, Wardar, Dwgahabur, Shinile, Afar Zone1&2, Zones are recived 100-200mm rain fall. The rest part of the country received 0-100mm rain fall.

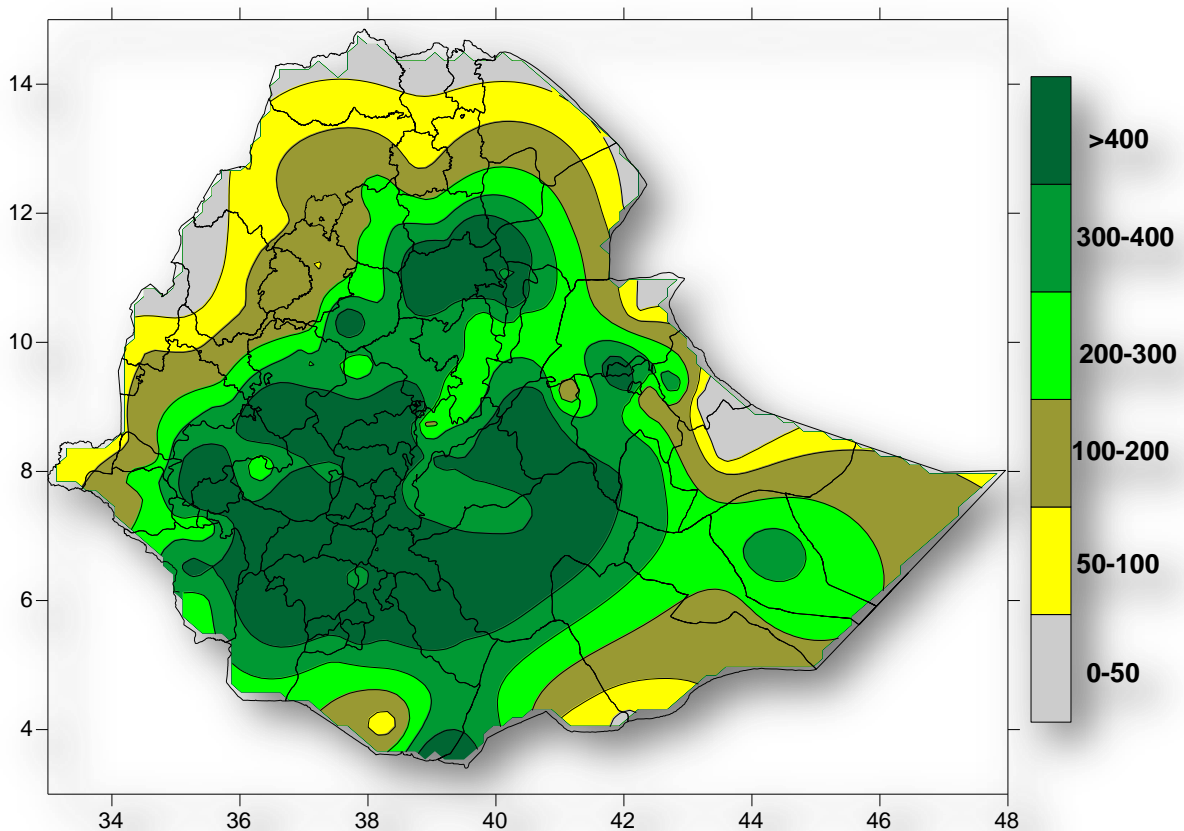


Fig.15. Rainfall amount in mm for Belg 2023

### 1.8. Rainfall Anomaly on Belg Season 2023

During Belg 2023 season the rain fall anomaly was,most part of the country recived Normal to Above Normal rain fall condition. On the other hand some part of the country zones (West , Central, East T and South igray, Assosa, Metkel pocket areas of Kamashe, pocket areas of GodereJimma and Keffa, Borena Zone,pocket areas of Liben Afer, Fik and Degahabur Zones are Much Below Normal to Below Norma rain fall condition.

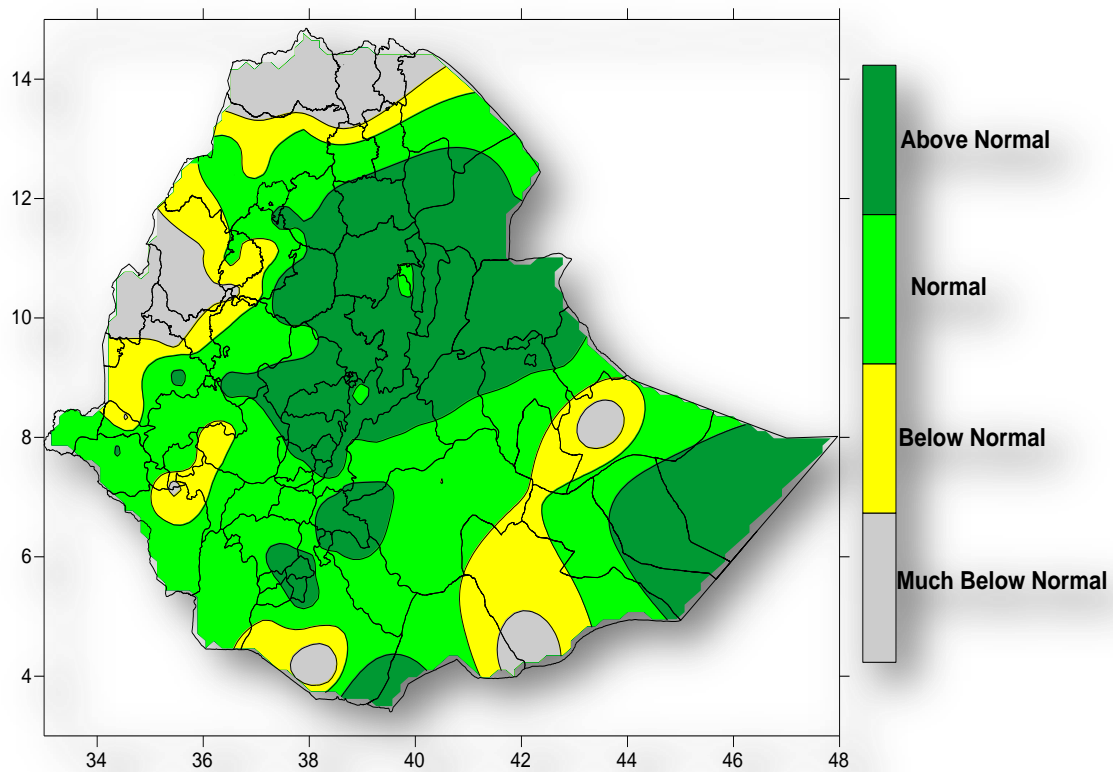


Fig.16. Percent of Normal Rainfall for Belg 2023

#### Explanatory notes for the Legend

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

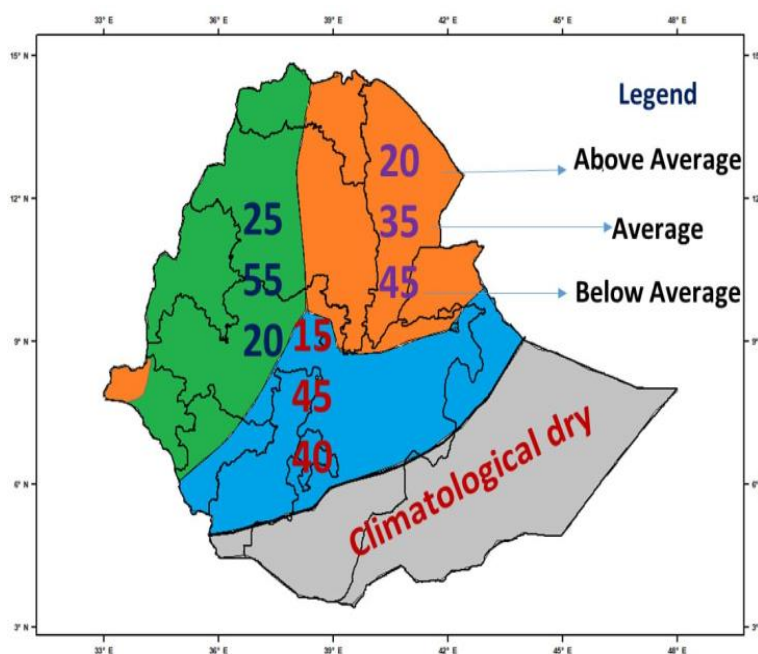
## **2. AGROMETEOROLOGICAL CONDITIONS AND IMPACT ON AGRICULTURE**

### **2.1. VEGETATION CONDITION AND IMPACT ON AGRICULTURE DURING BELG 2023**

During Belg season 2023 the moisture has started after the second dekad of February delayed by more than a dekads and with poor temporal distribution over south-western and north-eastern parts which normally Belg rain started earlier. After the second dekad of February most of Belg growing and Belg rainfall areas experienced better moisture in amount and distribution. Also, the main rainfall region Gui/Genna rains over SNNPR, southern Oromia and Somali have received better moisture and a significant improvement of rainfall after the second dekad of February. Due to the experienced of good rainfall amount as depicted on MI, NDVI, RLWRSI and WRSI, ( Fig. 5. Vegetation Greenness (NDVI) in fraction, Fig.6. Rangeland WRSI in % and Fig. 8. Computed Crop WRSI on Belg 2023) which indicate better moisture receiving comparing with the previous consecutive seasons. This situation might have positive impact on moisture requirement of different Belg and Meher long cycle crops found at various phases of growth, perennial plants, general agricultural activities, improve pasture and drinking water availability in pastoral and agro pastoral low land areas. Moreover over the Gui/Genna rain-regimes of south and southeast Ethiopia, the whole index obtained in each month were above average, hence good moisture conditions were experienced over the major portions of these regions. This is consistent with good rainfall performance during the Belg 2023 season.

## 2.2. EXPECTED WEATHER IMPACT ON AGRICULTURE DURING THE COMING KIREMT, 2023 SEASON

### TERCILE PROBABILITY FOR Kiremt (JJAS) 2023



#### IMPLICATION OF THE SEASON

- Early onset across south west and much of JJAS rainfall benefiting area;
- Erratic temporal distribution with prolonged dry spells will occur during June and September;
- Early cessations from central, eastern and north eastern portion of the country;
- Occasional heavy rain will occur during July and August.

In normal situation Kiremt is the season that fulfills the water requirement of long cycle crops which are planted in the months of April-May and Meher crops that achieve maturity during the Bega season. In addition to the Kiremt rain, the Belg seasonal rainfall, the rainfall amount and distribution during the months of April and May has significant impact on the performance of long cycle crops (maize and sorghum).

As of the moisture conditions for JJAS all selected analogue years, most of Kiremt RF benefiting areas had shown below average moisture coverage which could slightly affected water requirement of Meher crop. April and May moisture can suitable for land preparation and planting long cycle crops like maize and sorghums. Spatial and temporal SPI analysis for

each analogue year indicates significant slight drought signals in some parts of Kiremt rain benefiting areas. The NDVI analysis indicated that, near normal to below normal vegetation coverage was prevailed over most of Meher crop grown areas particularly in the month of June and July. The RLWRSI shown mostly poor condition across the eastern and north eastern pastoral and agro pastoral community

As for the seasonal outlook for Kiremt 2023, the country is likely to be Most of the recent and prognostic products are indicting the likelihood of continuing of Equatorial sea surface temperatures (SSTs) are near-to-above average across most of the Pacific Ocean and 62% chance of El Niño developing during May-July 2023. The Indian Ocean Dipole (IOD) is currently neutral. This will dominate the performance of Kiremt 2023. Hence, it has slight negative contribution for the performance of moisture during the upcoming Kiremt season.

In this regard, the expected dominantly normal to above normal rainfall over West Tigray, west Amhara B.Gumuze, west Oromia, Gambella, and south western region in the positive aspect can favorable Meher agricultural activities and planting of long cycle crops. Then proper input should be utilized to take advantage of the relatively better condition in areas of expecting normal to above normal moisture. However, most places under above normal rainfall category are normally known as moisture excess areas, the expected above average rainfall may cause saturation of soil moisture and leading to water logging, soil erosion, weed infestation, and fungus driven crop diseases. Moreover, due to longer wet spells, application of inputs, such as fertilizers and pesticides may become difficult to apply. The major challenge for areas under above average category is excessive moisture. To cope up this challenge, farmers are advised to select excess moisture tolerant crop varieties for planting. In addition, they should clear the existing drainage channels as well as preparing new drainage structure, if it is required, to drain out excessive moisture from crop fields. To minimize the risk related to flood, early preparation of diverting the runoff to the normal path of the stream flow is recommended.

The forecasted onset across the south-western and much of JJAS rainfall benefiting area is expected to be favourable for land preparation and the timely planting of Meher crops. In line with the normal commencement of the seasonal rain, the expected moisture during June possibly will have positive implication for the existing Belg crops as well as long cycle crops which were planted during April and May. However the expected occasional heavy



rains during July and August may cause of flood across flood prone areas, in line with these, landslide will occur over isolated places.

On the other hand, areas which are positioned in the category of dominantly normal to below normal rainfall is expected over Addis Ababa, central Somali, eastern and southern high lands of Oromia region, eastern half of South Western region, Sidama and SNNP. In addition to this Afar, eastern and southern Amhara, eastern and southern Tigray, northern Somali and Gambela including Nuer zone expected dominantly normal to below normal season with Erratic temporal distribution and few prolonged dry spells will occur during June and September may influence the season which have expected probability of moisture stress, increase the risk of crop failure, poor germination and pastoral water shortages. Thus, farmers and the concerned bodies proper attention should be given in terms of selection crop which tolerant to moisture stress, determine date of planting, proper application of agricultural inputs to increase productivity, widely use soil water conservations method and closely monitor pasture and water conditions. The early cessations from central, eastern and north eastern portion of the country and normal to below normal moisture across north-eastern and eastern pastoral and agro pastoral areas negatively impacting food security and nutrition it may trigger resource-based conflicts, atypical pastoral migration and may lead to scarcity of animal products such like milk, meat and butter. Finally users should interpret the weather outlook in terms of their area of interest and the existing condition of their specific areas and immediately disseminate this (early warning) information to decision makers as well as regularly updated agro meteorological information.

### **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.

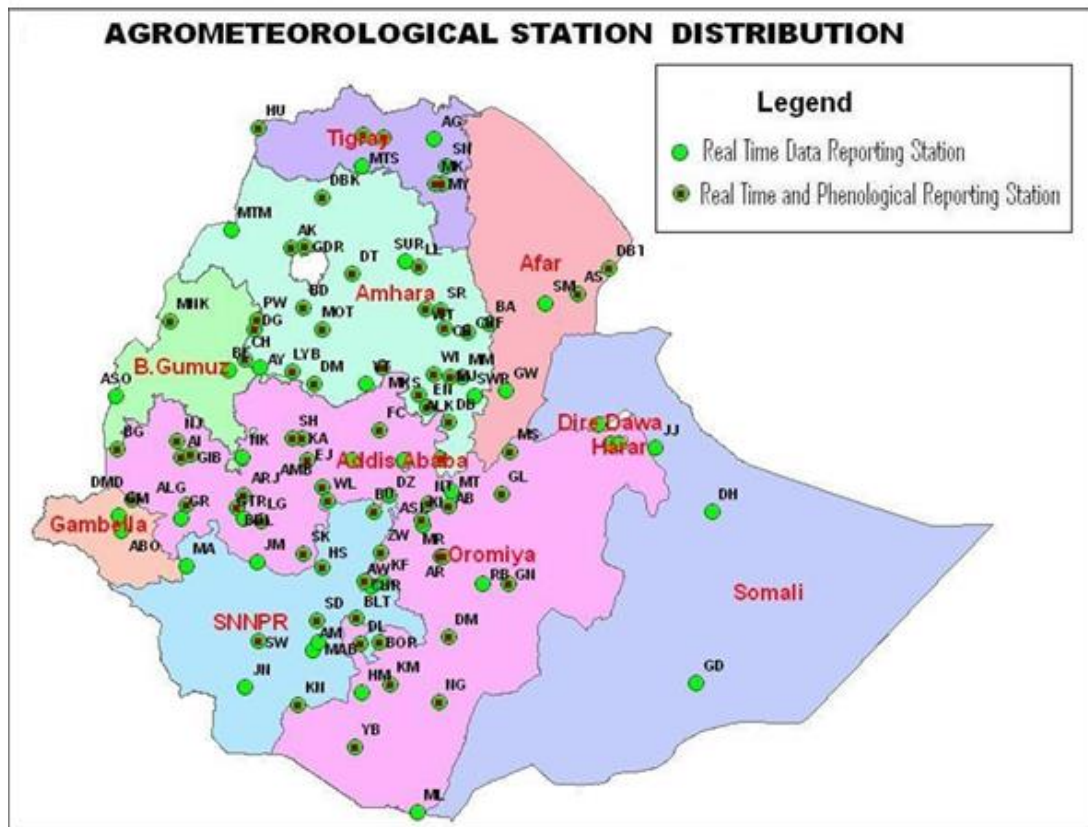
**DEKAD:** - First or second ten days or the remaining days of a month.

**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



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		