

# Jijiga Meteorology branch office

## PART I: Agro meteorology part

### Summery of Bega 2009/10

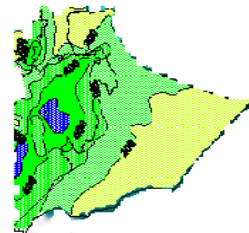
Bega is characterized with sunny and dry weather situation with occasional falls. It extends from October to January. It is small rainy season for the southeastern lowlands under normal condition. During this season, morning and night times are colder and daytime is warmer.

Harvest and post harvest activities are the major practices over most parts of Meher growing areas; it is cropping time for southeastern lowlands of agro pastoral areas to perform water harvesting activities for pastoral and agro pastoral areas.



## Bega 2009/10

Mean Rainfall in(mm) for Belg season



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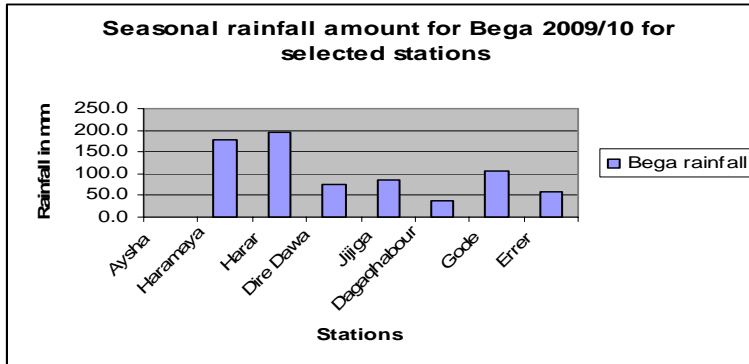
**Prepared by: Agro meteorology Team**

**Date of issue: February 16, 2010**

## Agro meteorological weather assessment for Bega 2009/10

### Rainfall distribution during Bega 2009/10

During this season, Haramaya & Harar received 150-200 mm rainfall. Southern Somali like Gode receive 100-150 mm rainfall. DireDawa, Jijiga, Errer received 50-100 mm rainfall. The rest part Degahabour & Aysha received 0-50 mm rainfall.



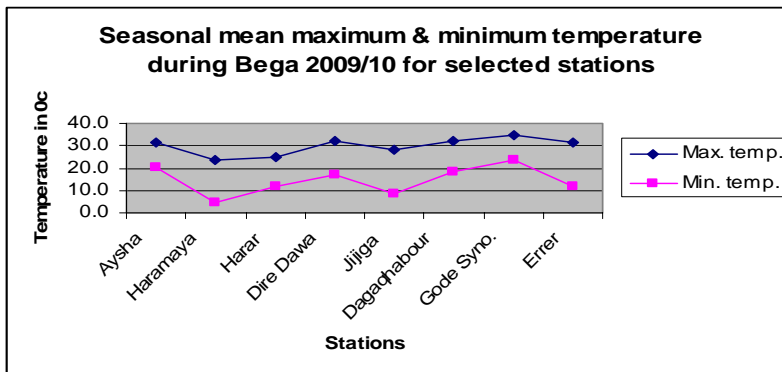
Graph 1.0 Rainfall distribution

### Rainfall anomaly during Bega 2009/10

During this season much part of Somali, DireDawa, Errer, Degahabour, and Aysha received below normal to much below normal rainfall. Pocket areas of Eastern Hararghe like Haramaya, Harar & Gode area received normal to above normal rainfall.

### Temperature anomaly during Bega 2009/10

During this season, stations that exhibited extreme maximum air temperature greater than 35 °c are Aysha, DireDawa & Gode as high as 38.5, 36.5 & 38.0 °c respectively. On the other hand, the stations that records extreme minimum air temperature less than or equal to 5.0 °c also recorded. To mention few of them, Haramaya & Jijiga as low as -3.5 °c & 3.0 °c respectively. This situation might have a negative impact on normal growth and development of plants and livestock & livestock products.



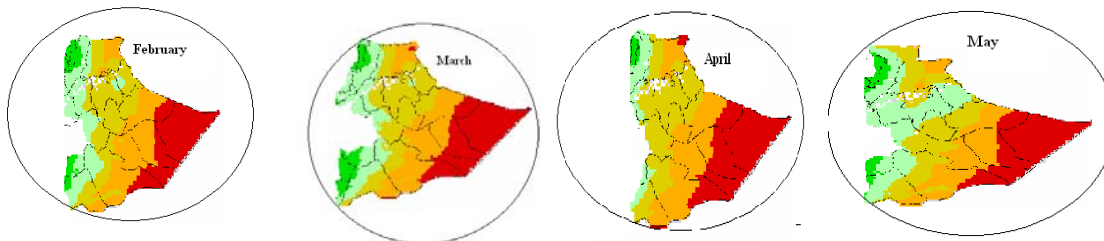
Graph 2.0 Temperature

## Vegetation condition and impact on agriculture during Bega 2009/10

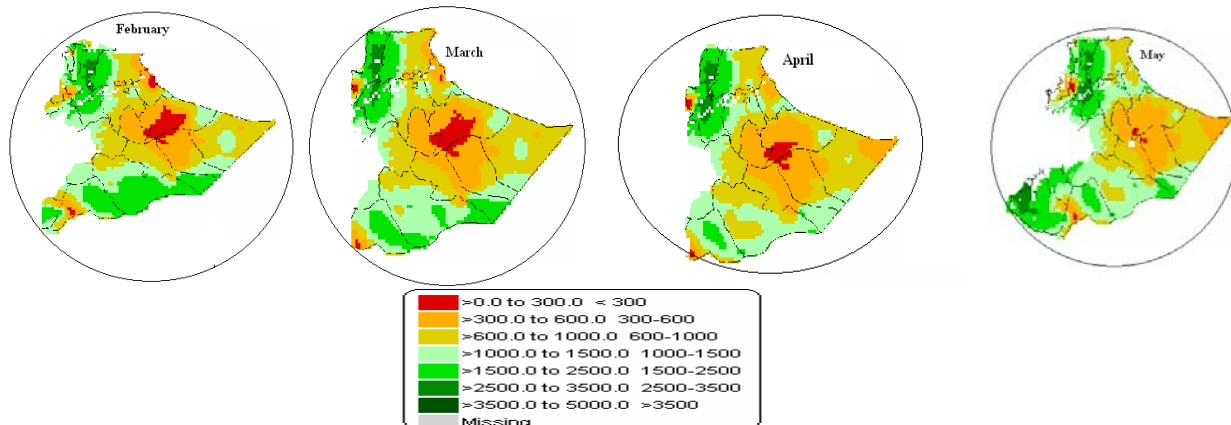
Generally during Bega season, Better rainfall activities were observed over Harar, Southern Somali like Gode, Eastern Hararghe such as Haramaya, Kulubi, Dengago, Dawe, Gursum, Hirna...etc. This situation might have positive impact on the over all agricultural activities. Harvest and post harvest activities are the major practices over most parts of Meher growing areas; it is cropping time for southeastern lowlands of agro pastoral areas to perform water harvesting activities for pastoral and agro pastoral areas. **Frost hazard** has been reported especially in some area of Eastern Hararghe i.e.Haramaya

### Over view of selected analog Years

#### Rangeland production over pastoral and agro-pastoral areas in Kg/ha for Belg 2003



#### Rangeland production over pastoral and agro-pastoral areas in Kg/ha for Belg 2007



#### Expected weather impacts on agriculture during the coming Belg 2010

Belg season air mass from Indian Ocean invaded South-eastern part of Somali. Due to this, near normal rainfall will expected over belg rain benefited areas. It is the time for water harvesting over pastoral and agro pastoral areas of southern and southeastern Ethiopia. parts of Eastern Hararghe, Harar, southern and southeastern Somali will expect a probability of near normal to below normal condition which is conducive for Belg agricultural activities, availability of pastor & water over pastoral and agro pastoral areas with Slight negative impact over isolated areas, thus, farmers need to utilize rain water harvesting, moisture conservation and planting of suitable crops needing less water requirements. Parts of Eastern Hararghe will expected to experience probability of normal moisture condition, which will have a positive impact for Belg agricultural activities, availability of pastor & water over pastoral and agro pastoral areas with slight moisture stress over pocket area of the country.

**PART II: by FORECAST AND ANALYSIS TEAM**

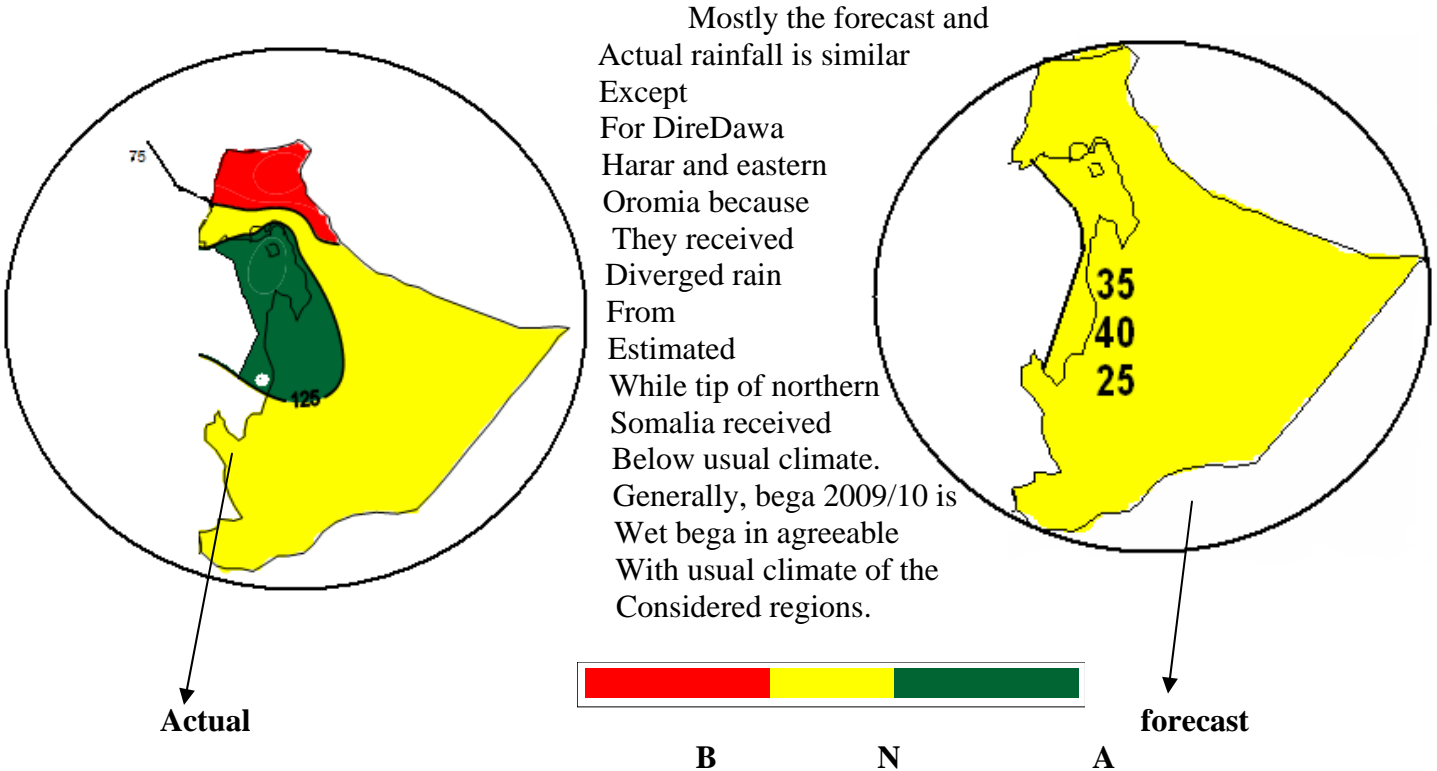
**Seasonal climate assessment of Bega 2009/10**

Bega is the extension of months from October to January. It is time of occurrence of unusual rainfall, frost and cold weather.

Bega is the second rainy season for southern Somali, but dry and windy for Diredawa, Harar, Eastern Oromia and northern Somali region.

The seasonal rains performed well over Diredawa, Harar and Eastern Oromia. Northern Somali received near normal while southern Somali received below normal even though Bega is the second rainy season.

Generally, Bega 2009/10 was found to be categorized under wet category and extreme minimum temperature was decreased while extreme maximum temperature was persisting on usual line.



**Introduction to Belg season**

The belg season is main rainy season for southern Somali and second rainy season for northern Somali, Diredawa, Harar and eastern part of Oromia. It includes the month Mid February to May where April is the major rainy month. It is characterized by strong intra-seasonal variability while the extension of middle latitude trough to ward the region, Indian Ocean, Atlantic Ocean and ITCZ are the main rain bearing systems.

## Climate of Belg season (mean)

Area	Monthly rainfall				Belg rainfall
	Feb.	mar	Apr	may	
Southern Somali	0-5	5-25	50-100	50-100	100-200
Northern Somali	25-50	25-50	50-125	25-75	200-300
DireDawa	25-50	50-100	100-150	25-75	200-300
Harar	25-50	50-100	100-125	50-100	200-300
Eastern Oromia	25-50	50-100	125-150	100-150	300-400

Table 1: mean rainfall of belg in mm

Techniques used to forecast the coming belg 2010 are Tele-connection (based on ENSO information, regional climatic indices), Analogue method (Pre-seasonal climate performance, regional and global climatic indices), Climate Predictability Tool (CPT), Statistical method (Compilation, analysis and computation of various statistical parameters like Probabilistic method, Tercile probabilities).

The presence of El Niño across the equatorial Pacific Ocean, Sea surface temperatures (SST) increase from 1.0°C-2.5°C being above-average across much of the central and east-central equatorial Pacific, and Warm SST over southwest Indian Ocean and eastern Atlantic Oceans as well as relatively warm pool over central Mediterranean Sea are positive feedback for the belg rainfall.

Relatively enhanced seasonal rainfall patterns observed from analogue years over northern Somali, DireDawa, Harar and eastern Oromia while southern Somali recorded limited rainfall during past analogue years. The rainfall was on set in normal time, spatial and temporal distributions. April was performed well in each analogue year's relative to other months of the season.

The Current and seasonal trends of main features of belg rain bearing factors like El Niño indicators are showing further signs of weakening ,By Various prediction models favor from moderate to weak El Niño conditions during Belg 2010.

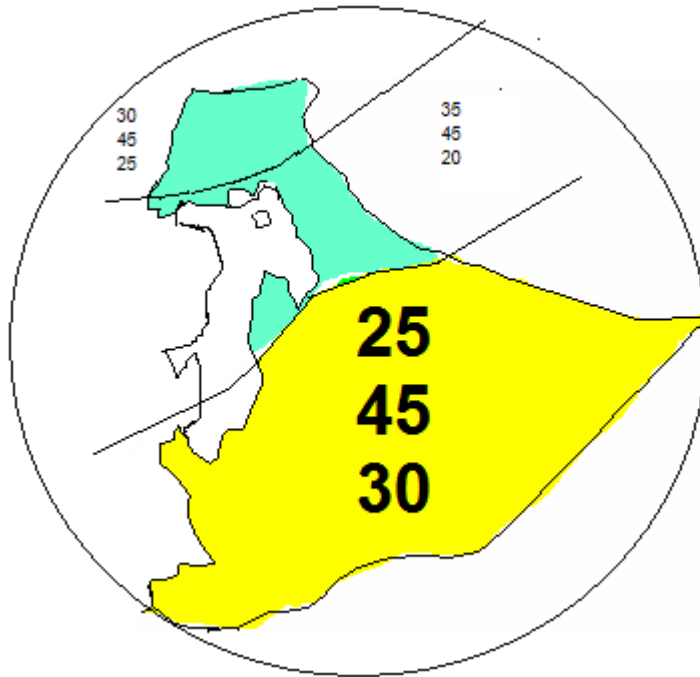
Belg 2010 is highly likely to be under moderate to weak El Niño. Southern Atlantic and Indian Oceans are currently warmer than normal.

**Legend**

Above Normal

Normal

Below Normal



## Climate outlook

More or less the usual climate will exist over many parts of the regions. Near normal onset of the seasonal rains, Occasional dry spells during the major rainy months, normal to below normal rain are expected in the pocket area while normal to above rain fall is expected in Northern Somali, Diredawa, Harar and eastern Oromia.

In general, the seasonal rains predicted for the Belg will be close to adopted climate. Besides, the expected Belg rains will be better than the past two years.

# Seasonal Hydro Meteorological Bulletin

## PART III

### Highlight Of Bega 2009 and out look of belg2010

The moisture performance of October upper Wabi-Shebele was observed wet condition. Central Wabi-Shebel was humid and semi humid condition and lower WabiShebele were remaining dry condition.

The moisture performance of November central Wabi-Shebele were humid to semi humid condition. The rest part of catchments was remaining dry to semi dry condition. Some station reported heavy falls within those four were in upper Wabi-Shebele catchment's (Bali Mountains).

During December 2009, there was arid and semi-arid condition. Most areas North tip parts of the catchments was covered by dry condition whereas small pocket areas covered by semi-arid condition some areas such as Dire-Dawa, Harar and Aysha but Haremaya, Kulubi and Hirna areas was semi arid condition. In addition to that small pocket in North East parts of the catchments was covered by dry condition. The moisture performance of December Wabi Shebele were remained dry to semi dry condition were remained dry to semi dry condition

Based on the analog year 2007, in February Wet condition are expected on the upper Wabi-Shebele ; but In March wet condition are expected some pocket area of the catchment's with climatic condition of semi humid to humid condition.

When we see the general expectation of April and may, wet condition will perform most of the catchments.

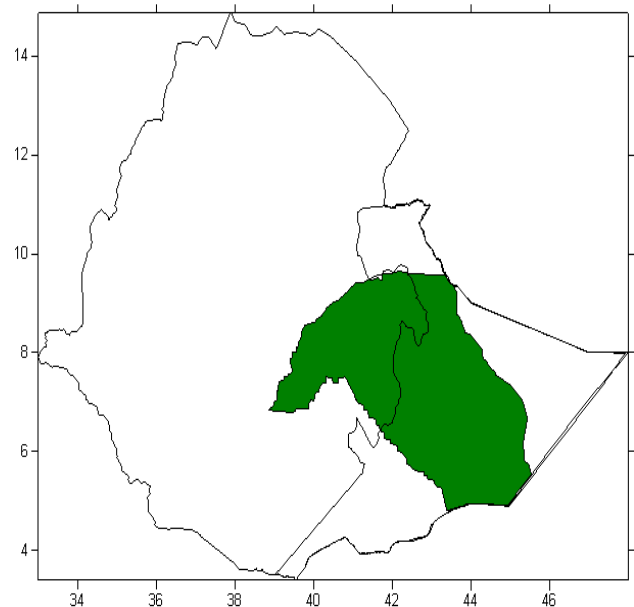
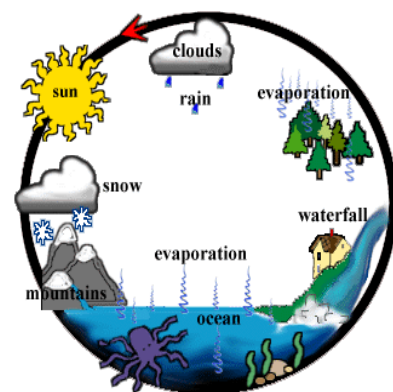
### Jijiga Meteorological Branch Office

#### Hydrom

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## **Introduction**

Wabi-shebele catchment's is one of the major river catchment's is one the major river catchments of Ethiopia and it is also the largest of all river catchments with total area coverage of 205,697sq.km. Its basin starts from Mt.Gololcha with altitude of 3626 mts above sea level, which is located over high lands of Bale. The basin ends over Ogaden lowland with altitude of 200 mts above sea level over Somali region. Its geographical location is located on East, North and South Eastern half of Bale; in Hararghe Southern part of Garamuleta Mountains and West of 43 degree E, South and South Eastern part of Arsi. It includes the number of very high peaks of Battu and Chilalo Mountain at the upper part and descends to the South following Wabi-shebele River which receives its perennial waters from the upper catchments through many tributaries and towards arid type of climate in the South East lowlands. It is also located between latitudes of 4.7 to 9.8 and between longitudes of 38.8 to 45.5. The total volume of water over this catchment's is about 3.16 Bm<sup>3</sup>/annuum.

The flow regime of this river is governed by two rainy seasons with different characteristics. The first from March to May leads to high flood peak at Gode in April to May, and the second from July to September, results in large flood volume, with generally modest peak around Gode area.

In this Bulletin, there are many computing steps of different calculations based on Thornthwaite for water budget in order to produce this hydro-meteorological assessment for Belg 2009 that depict the aridness of the area.

**Notice**:-1) Meteorological parameters that are used in this publication are:-

Daily maximum, Daily minimum, Mean Daily, Mean monthly temperature and Total rainfall of the month

**Notice**:2 Heavy rainfall intensity is greater than 7.5mm/hr,Medium rainfall intensity is between 2.5 & 7.5mm/hr, and Light rainfall intensity is less than 2.5mm/hr.

The Forecast of the oncoming Belg season is also made in the form of aridity map that depict the aridity of the catchments. There is also general interpretation of hydro-meteorological outlook for the oncoming Belg 2010.

Bega 2009/10 areas around the catchments is dry season have performed not bad moisture condition in the northern tip of the catchments, owing to this moisture condition its implication on the various hydrological impacts along the basin were good in providing water for drinking , agricultural activities and hydropower generation among others.

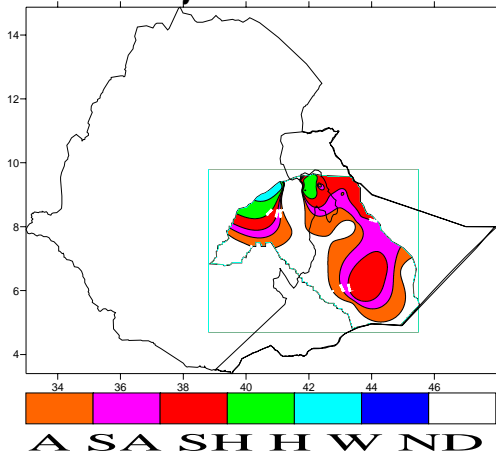
**When we see specifically on monthly basis:-**

The moisture performance of October upper Wabi Shebele was observed wet condition. Central Wabi -Shebel was humid and semi humid condition and lower WabiShebele were remaining dry condition.

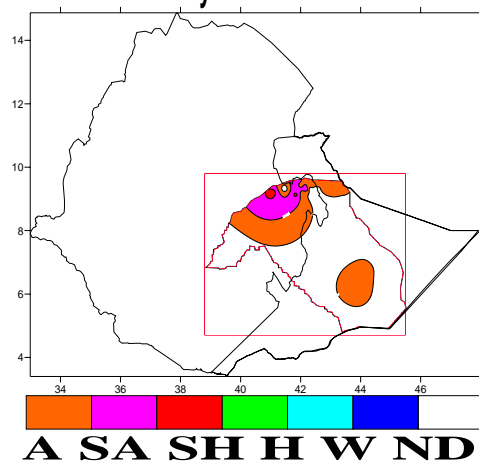
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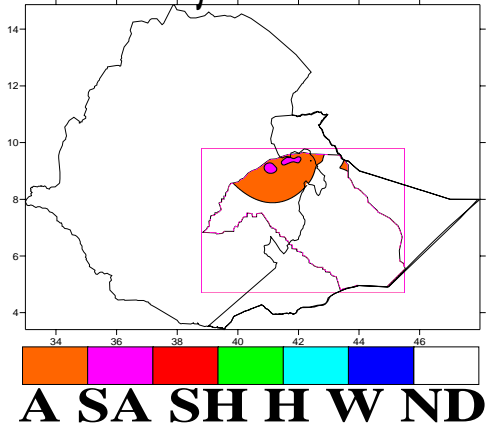
**October aridity index over the catchment**



**November aridity index over the catchment**



**December aridity index over the catchment**



Legend & CLIMATE	PE INDEX
W=wet	More than 128
H= humid	64-127
SH=sub -humid	32-63
SA=Semi-arid	16-31
A=Arid	Less than 16
ND= no data	

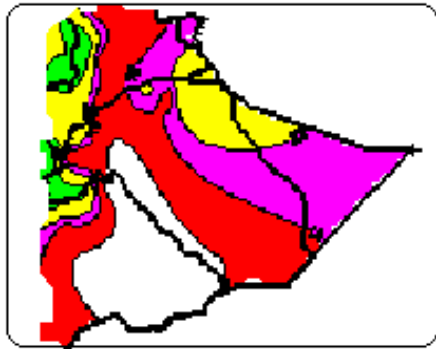
**Out look on Wabi-shebale catchment's for Belg 2010**

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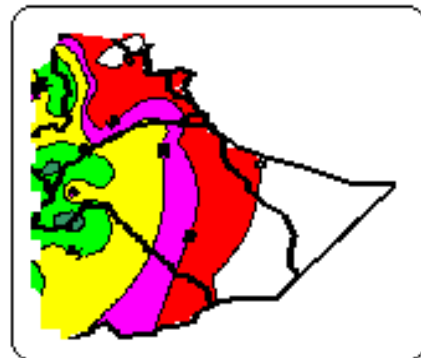
When we see the general expectation of April and may, wet condition will perform most of the catchments.

It should be noted that the contribution of Belg rainfall season for surface runoff is very insignificant over most parts of the catchments for runoff; the usual care should be taken in the lower catchments, especially around Gode and Kelafo areas

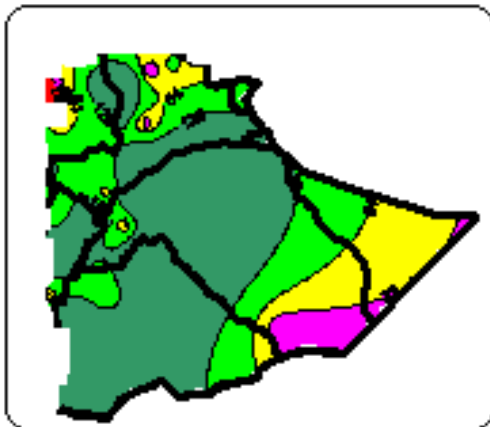
Expected Aridity index of February, 2010



Expected Aridity index of March, 2010



Expected Aridity index of April, 2010



Expected Aridity index of May, 2010

