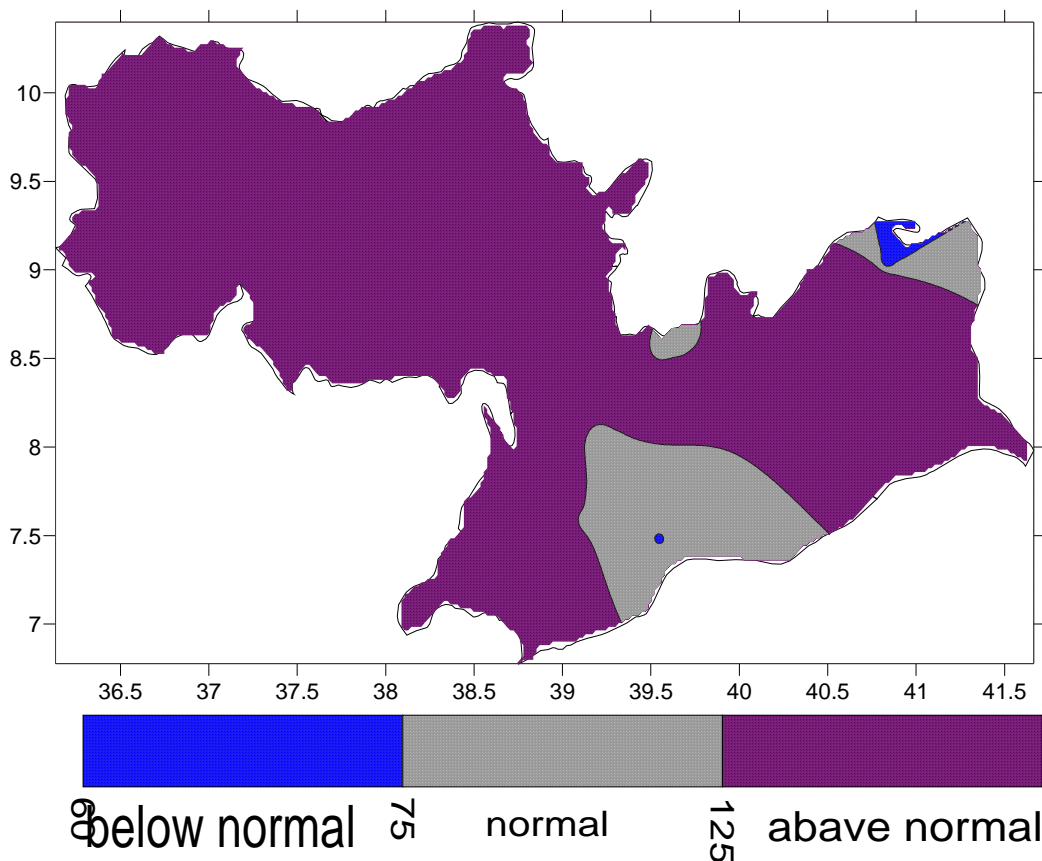


National Meteorological Agency Adama Branch Office Monthly Climate Bulletin May, 2010



Foreword

This climatic bulletin is prepared and disseminated by the National Meteorology Agency of Adama Branch Office. Comments, suggestions, recommendations are significant to the branch office to up grade the quality as well as the quantity of the information contained in the bulletin.

The information contained in the bulletin is believed to assist many socio-economic activity of the region (Oromia) such as tourism, construction, Health and Agriculture at most. We strongly advice these sectors for serious follow up of this bulletin for more valuable benefits from the information in the bulletin.

This bulletin differs from the other real time and near real time bulletins issued by the branch office, which for their input depend only on meteorological stations equipped with single side band ratio for data transmission, though this bulletin is not real time, published with a delay of at least twenty days, the information contained in this bulletin is based on data coming from a much larger number of meteorological station.

Moreover, the information contained in this bulletin is not sector-specific and a wide range of users can benefit from it.

National Meteorology Agency, Adama branch office has issued this bulletin monthly due to the delay of data from different stations the bulletin will be available for the users just 20 days later from the month marked. This may be improved in the near future with strong improvement of the data exchange method among the meteorological stations.

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Weather

1.1 Temperature

May is the last month of belg seasons in which days and nights relatively warm. During this month the days are relatively hot over same parts of East– Shoa and west Harrige at which the monthly main maximum temperature ranges from 24.5-26.5c⁰ (referfig.1) but the nights and early mornings were cooler over arsii zone and most part of north shoa at which the monthly main minimum temperature range from 10 c⁰ to12 c⁰(refer fig.2)

Higher extreme maximum temperature observed over, Kokadam nureara,,adama metehbila ,alemetena, bako, sibusire and ,asigory with value 36.5, 38. 35, 34.5, 34, 33, 33, and 32.5c⁰ respectively (refer table1). Lowest extreme minimum temperature encounter over kulumsa ,Kula ,chancho ,bele and G/garbaguracha, with values of 7.5, 7.5, 8.3, 8.4, 9 and 9 correspondingly in c⁰ (refer table2).

Relative to the previous year of may 2009mean air temperature: - The 2010 may mean air temperature increment observed over same parts of north shoa and adjoin part of central east shoa zone. Where us the decrement is observed over most part of the region. (For detail Refer fig.3)

Table 1 station with extreme maximum temperature of greater than or equal to 26.0⁰c During May 2010.

Station name	Ext.max temperature	Date
Nuraera	36..5	28
Kokadam	38	2
Adama	35	18
Metehbila	34.6	27
Alemetena	34	2
Bako	33	1
Dewaro	33	28
Sibusire	32.5	7
Asgory	31.3	6
Akakimission	30.5	29
Bedesa	30.4	22
Arata	30.3	22
Mojo	30	28
Huruta	30	1
Gelemso	29.6	22
Asebeteferi	29.2	29
Cheffedonsa	29	29

Table 1 stations with extreme minimum temperature of less than or equal to 5 °c During May 2010.

Station name	Ext.Min temperature	Date
kulumsa	7.5	9
Sheno	7.5	24
Kula	8.3	15
Chancho	8.4	28
Bele	9	11
G/Guracha	9	21
Addele	9.3	31
Ayer tena	9.8	30
Assela	10	5
Metehbila	10	14
Addisealem	10	24
Keranio medhanialem	10	31

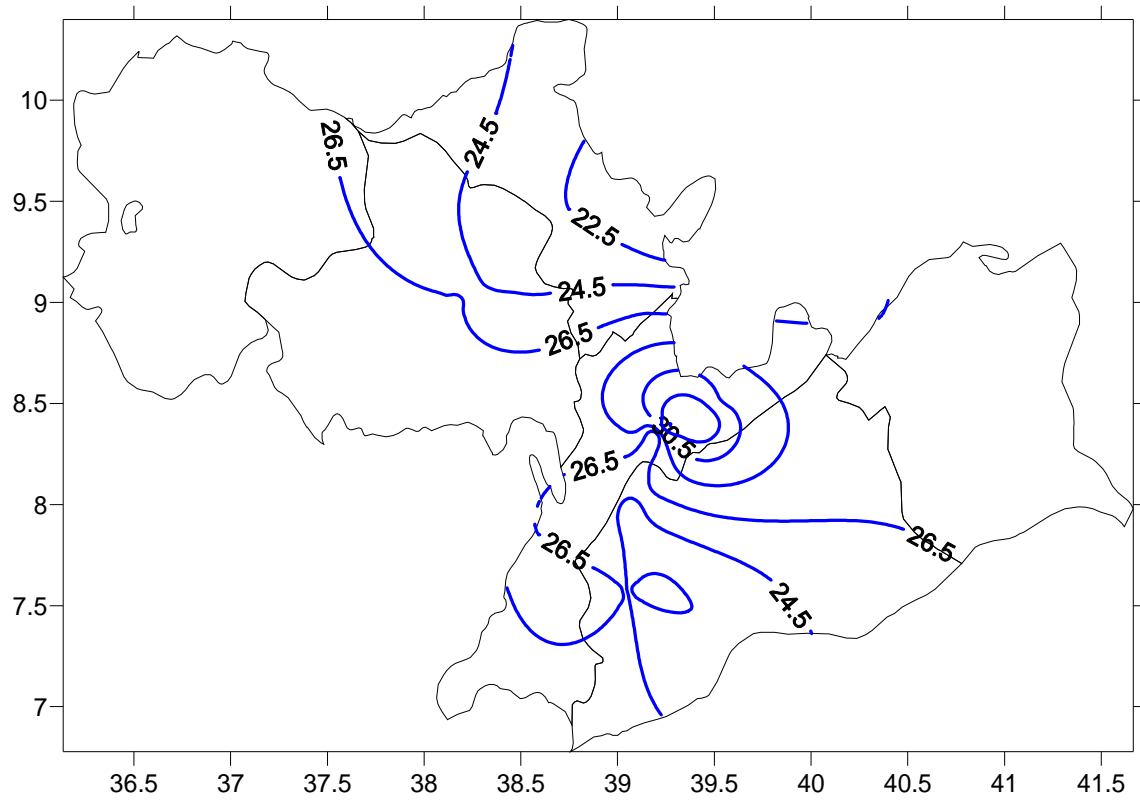


Fig 1: Mean maximum temperature May 2010

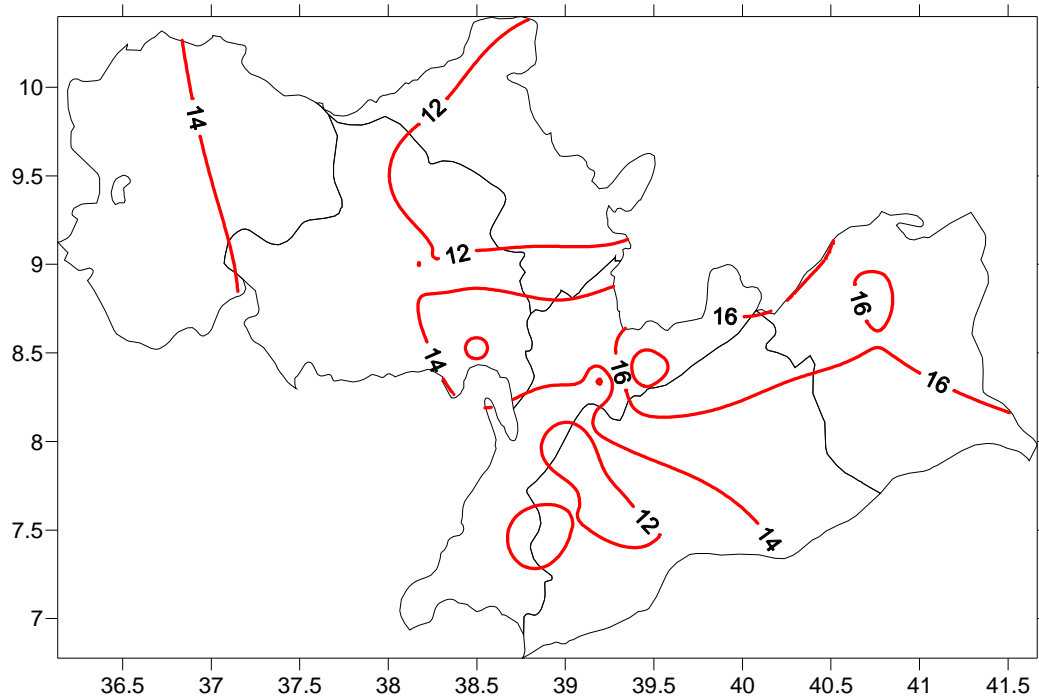


Fig 2: Mean minimum temperature of May 2010.

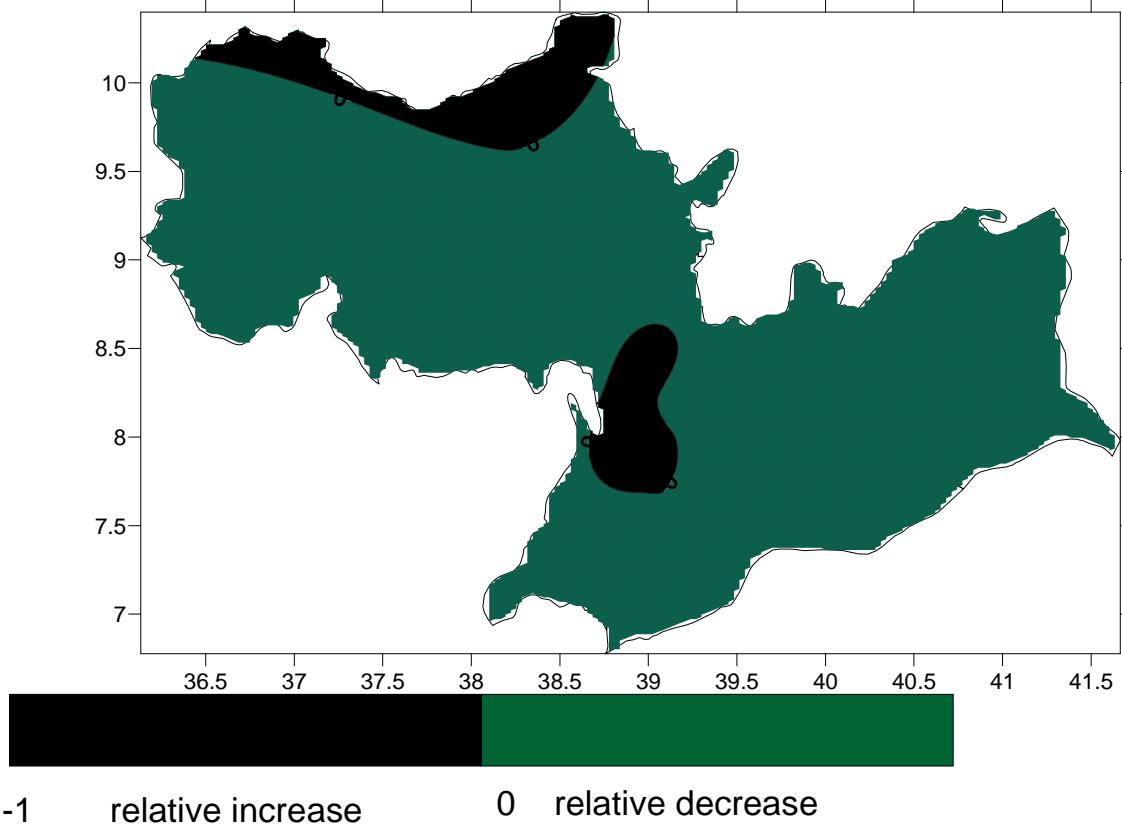


Fig 3: Temperature departure (mean air temperature of May 2010 minus long year mean air temperature of September).

Rainfall

May is one of the months of the dry season known as Belg at which the main rainfall spatial distribution is over the south part of the country. Hence maximum rainfall is over the southern and south east of the Oromia region. During this month the station that administrate under Adama branch office maximum rainfall recorded over East Wellega, and West & East Harirgei zone (**Refer fig 4**). When we are comparing month of May 2009 and 2010. May 2010 was greater rain than 2009. It shows increment in the entire region. (**Refer fig 5**).

The region which under the Adama branch office have got normal to above normal rainfall.

East Wellega, north and west Shoa, West Harirge and East Aris zone have got above normal rainfall. South West Arsi zone, and pocket area of West Harirge have got normal rainfall. Pocket area of West Harirge have got below normal rainfall.

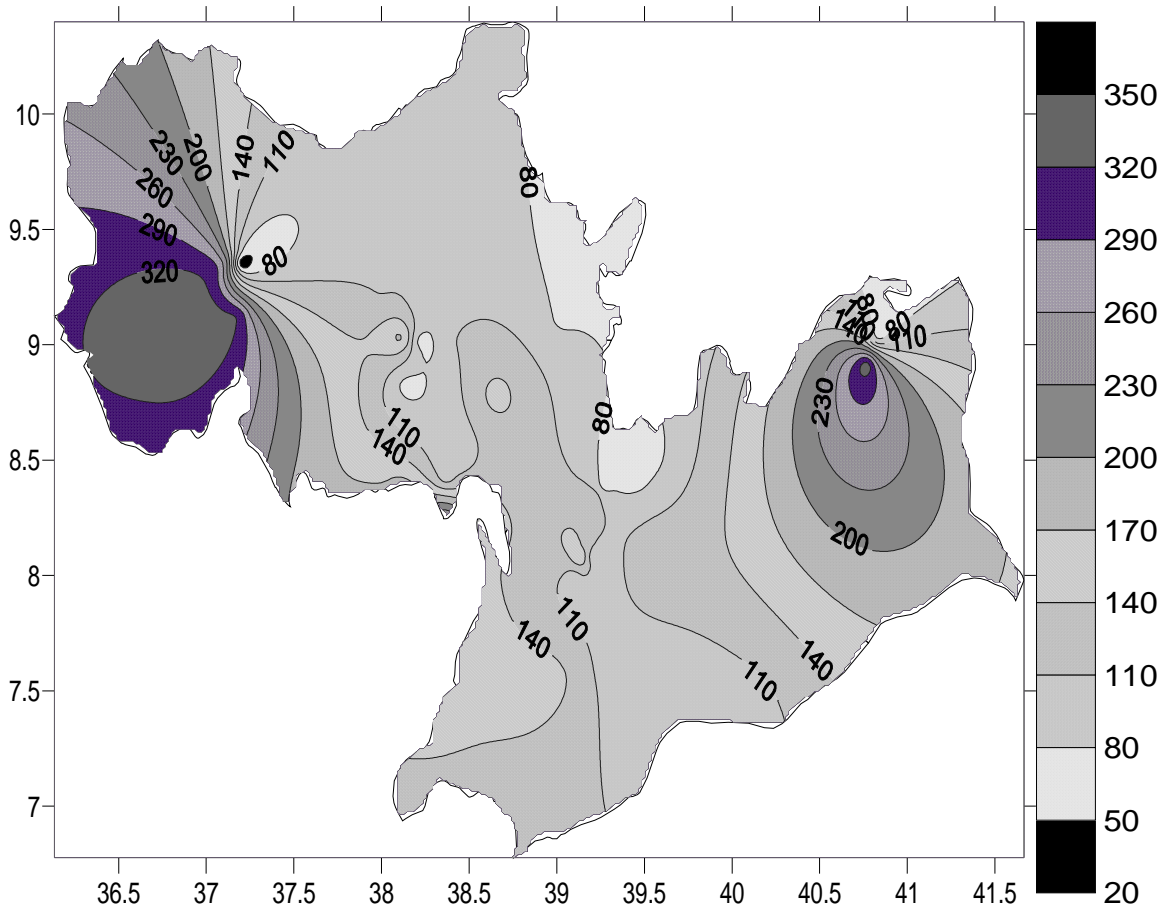
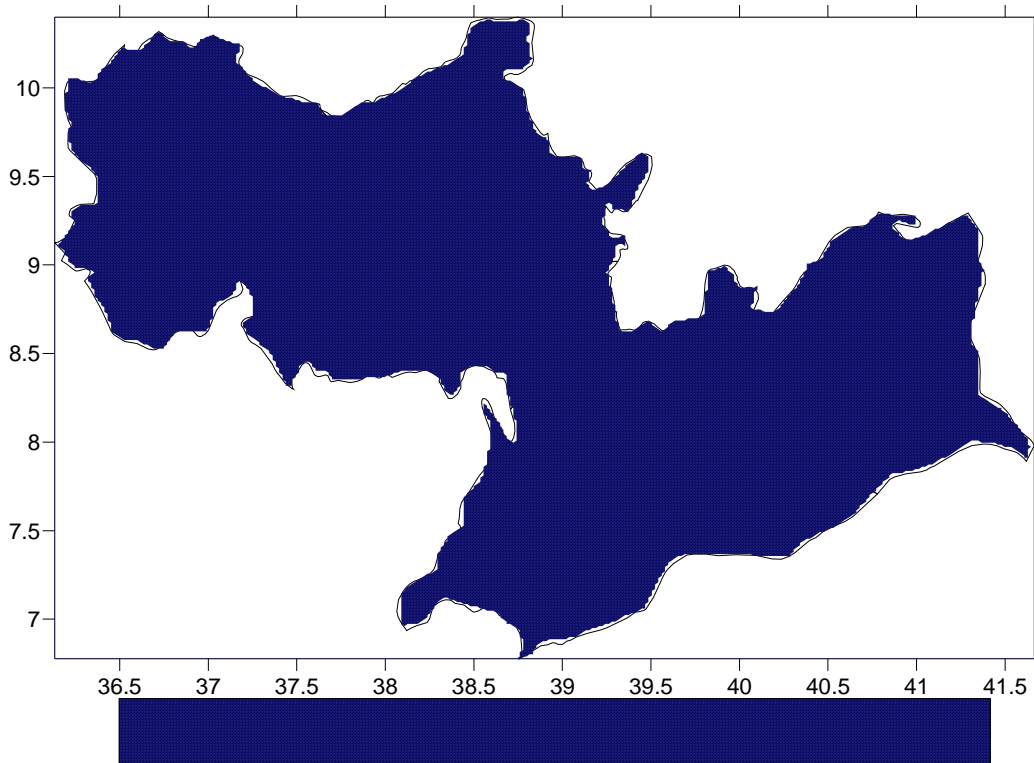


Fig 4: Monthly total rainfalls during May 2010 .in mm



○
Relatively decrease in the entire region

Fig 5: Rainfall departure of May (2010-2009).

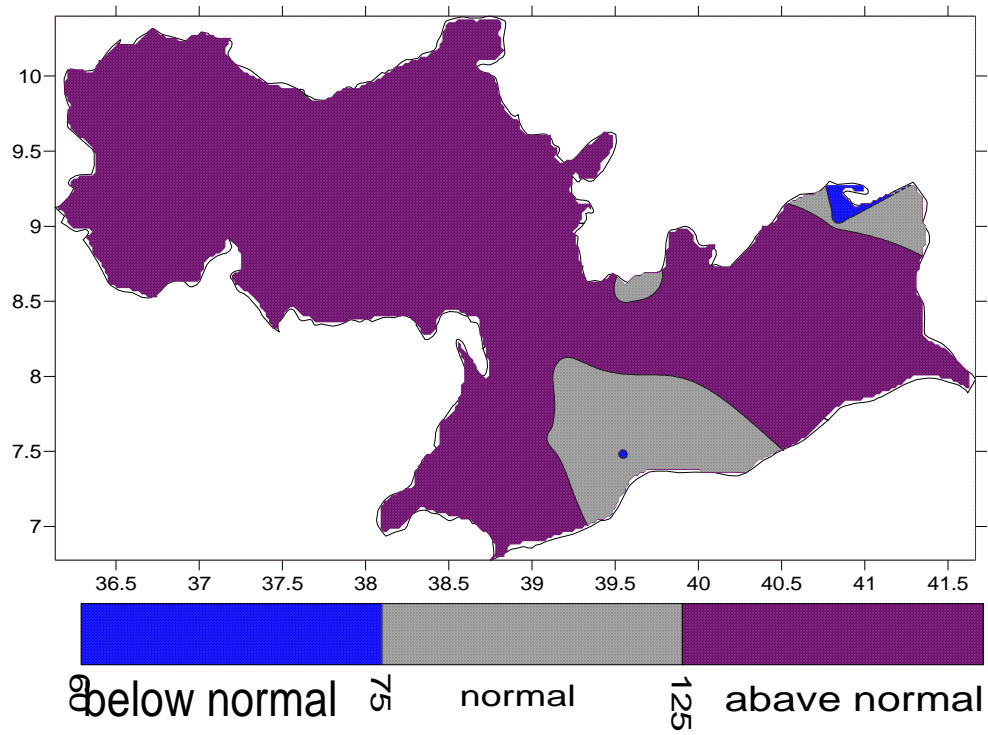


Fig 6: Percent of normal rainfall of September 2000

PART-II

CLIMATE INFORMATION FOR THE HEALTH SECTOR

Foreword

This “climate information for the health sector” Bulletin has been designed to convey essential information regarding the monitoring of human comfort conditions based on the analysis of temperature and humidity data and also for the monitoring of malaria out break areas based on the analysis of temperature and precipitation data.

Since the monitoring of temperature and rainfall over a give area can be used to assess the likely hood of out break of malaria with a lag of two months, this information can be an important early warning tool if used judiciously.

The major objective of this bulletin is in line with the National Metrological Agency’s strategy of diversifying climate application products to the basic development sectors (such as the Health, the water, the agricultural sector etc...).This bulletin can be a very important source of information to health professionals engaged in the monitoring of public Health, to tourism Agents and institutions who advise tourists regarding the comfort conditions of the place to be visited by the tourists and to the researcher who is interested in the field of Bio-climatology.

We are of the opinion that careful and continuous use of this bulletin can benefit to the improvement of early warning system and preparedness in the health sector.

Mean while, your comment constructive suggestion is highly appreciated to make the objective of this bulletin a success.

1. Rainfall, Temperature and Humidity conditions

The total rainfall amount of May 2010 was excesses over most of the Belg rain benefiting area: with normal events to above normal events rain is recorded for the month of May over most of the region that administrated under Adama branch office. Besides, the monthly total rainfall amount did exceed 80mm over most parts of the region except West Hararge and most parts of Arsi rainfall recording stations. (Figures 1a and 1b)

On the other hand, the daily mean temperature values were more than 18 to 32 °c except some parts of Arsi, East Shoa and East Wellega regions. However the monthly average relative humidity did not exceed 60% over most region except West and east Shoa some parts of Arsi region. (Figures 2a and 2b)

As Per Grover-kopec et al 2006, the suitable climatic conditions for transmission of malaria in Africa are; **when the monthly precipitation (rainfall) accumulation is at least 80mm, the monthly mean temperature is between 18°c and 32°c and the monthly relative humidity is at least 60%.**

This some approach is applied to the rainfall, temperature and Relative humidity data of May 2010, of region that administrated under Adama branch office so as to produce figure 3. During May 2010, the monthly total rainfall amount did exceed 80mm over most rainfall recording stations except some parts and **also relative humidity is more than 60% over some rainfall-recording stations**. On the other hand the daily mean temperature values were between 18 to 32 over most part of region. **Therefore, climatologically conditions were suitable for spread of malaria over some parts of the region (Figure 3).** However; one needs to into account other non climatic conditions for monitoring the spread of malaria

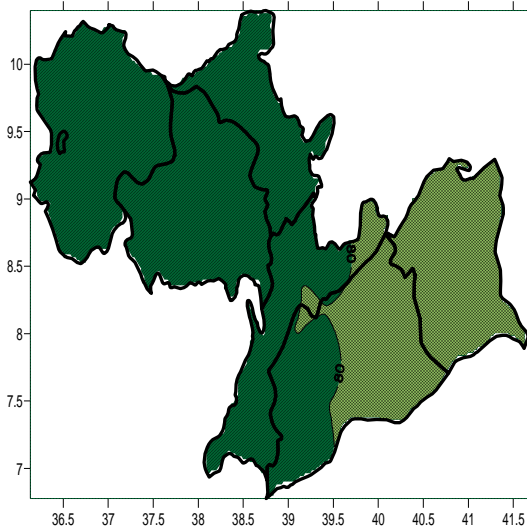


Fig .a

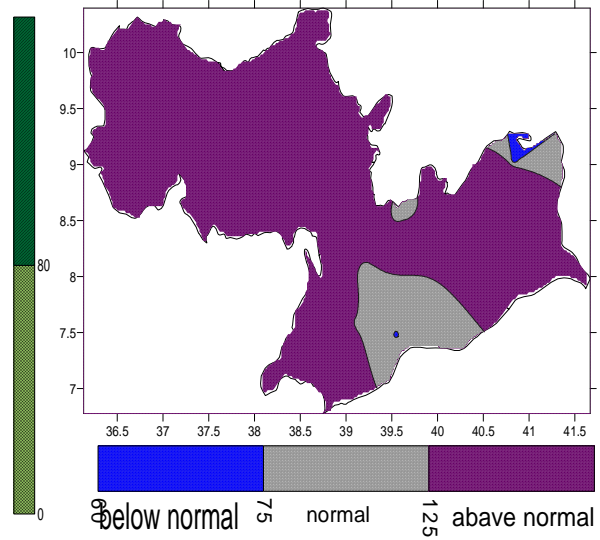


Fig. b

Figure 1 Rainfall assessment of May 2010. (a) Monthly total rainfall amount in mm. Hatched areas had monthly rain fall amount of at list 80mm, and (b) percent of normal rainfall May 2010.

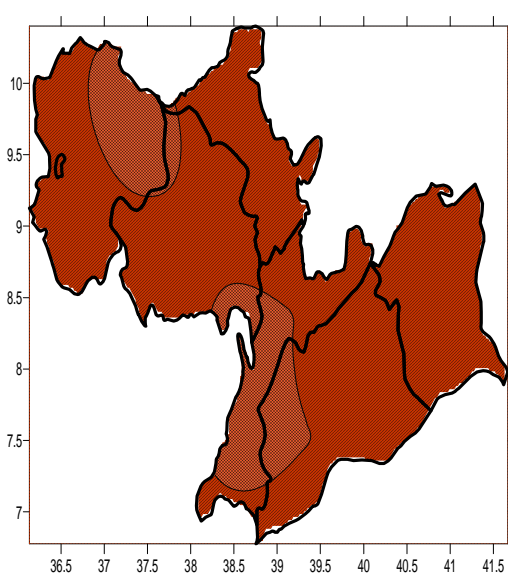


Fig .a

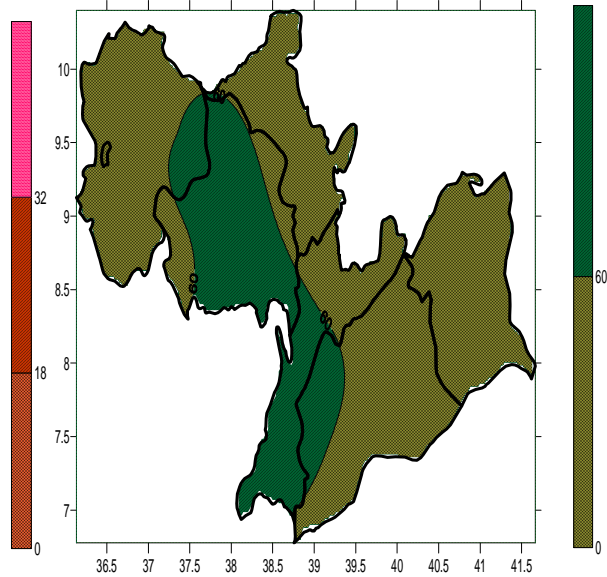


Fig. b

Figure 2 Temperature and Relative humidity assessment of May 2010.(a) daily mean temperature in °c of May 2010Hatched area had daily mean temperature of 18 to 32 °c ,and (b) monthly average relative humidity of 60%and above.

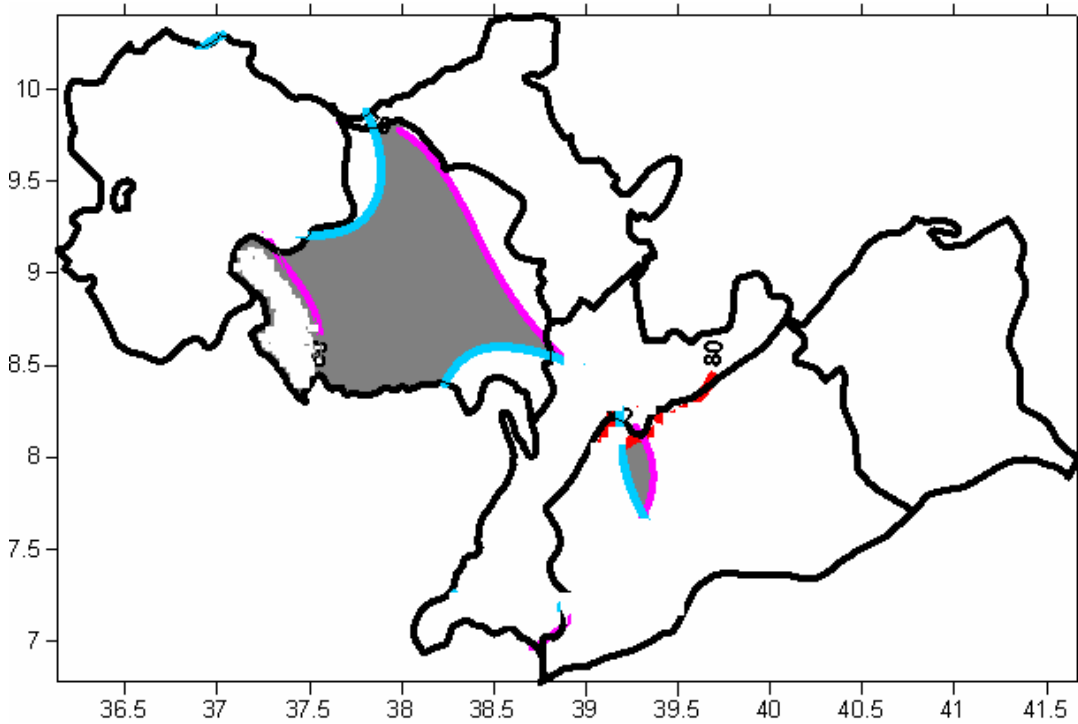


Figure 3. Shaded areas were suitable regions for malaria out break.

2. Temperature Humidity Index (THI) conditions

The temperature Humidity Index (THI) approach, which was developed by the US weather Bureau in 1959, is applied to the temperature and humidity data over selected station in oromia region that administrated under Adama branch office to assess the discomfort condition during May 2010. According to this approach, if the THI value exceed 26 all most all population feel uncomfortable (here we refers to it is “uncomfortable”), the THI value between 21 to 26 half of the population feel uncomfortable (here we refers to it as ”moderate”) and if the THI value are less than 21 almost all population feel comfortable (here we refers to it as ” comfortable”) With respect to heat stress.

Based on this approach comfortable condition with respect to heat stress dominant over most places but some places feel moderate and uncomfortable condition listed in the following during this month. (Table1)

Table1. Temperature Humidity Index (THI) frequency over selected stations in Adama Branch during May 2010.

station	Number of days with THI value			Total Number of Days With the Available Data
	>21 Comfortable	21-26 Moderate	>26 Uncomfortable	
Adama	5	26	0	31
Ambo	31	0	0	31
Adele	31	0	0	31
Arsi robe	31	0	0	31
Kulumsa	31	0	0	31
Kachise	31	0	0	31
Fitche	31	0	0	31
Measo	1	30	0	31
Metahara	0	28	3	31
Waliso	31	0	0	31

Reference

Grover-Kopek et al 2006 (-Web-based climate information resource for malaria control in Africa, Malar J.2006; 5:35 published online 2006July)

Weather report from different station of oromia in adaama branch during may, 2010

Station Name	Lat	Long	T.RF	E.RF	Date	M.Max	E.Max	Date	M.Min	E.Min	Date	PON
Nuraera	8.40	39.46	71.8	40.2	6	34.4	36..5	28	20.6	17	7	32
Kokadam	8.38	39.25	80.2	23.5	5	34.1	38	2	14.3	10.8	9	42.5
Adama	8.52	39.54	68.1	28	5	30.2	35	18	17.4	13.4	6	62.2
Metehbila	8.32	39.54	97.4	35.6	13	31.5	34.6	27	17.3	10	14	
Alemetena			95.8	30.5	6	30.8	34	2	16.6	15	5	
Bako	5.45	38.09	163	32.6	4	28.6	33	1	14.4	13.2	12	
Dewaro			71.6	18.3	6	29.9	33	28	15.6	11.5	5	
Sibusire	8.02	36.52	302.8	49	2	28.1	32.5	7	15.7	13	2	161.5
Asgory			57.6	21.8	24	29	31.3	6	13.5	11.3	31	
Akakimission	8.52	38.48	95.2	29.4	13	27.2	30.5	29	16.5	11.6	30	69.1
Bedesa	8.92	40.77	338.8	87.2	13	28	30.4	22	15.6	10.3	6	130.6
Arata	7.56	39.02	154.3	26	9	27.8	30.3	22	15.4	14	26	73.1
Mojo	8.37	39.09	119.5	34.8	7	29	30	28	14.6	11	2	50.5
Huruta	8.08	39.20	89.2	24	8	27.1	30	1	15.4	13.5	17	85.5
Gelemso	8.82	40.52	229.1	62.2	13	26.6	29.6	22	16.3	14.6	27	127.4
Asebeteferi	9.03	40.83	65.1	15	14	28.3	29.2	29	17.2	15	9	104.1
Cheffedonsa	8.97	39.13	89.1	35.8	10	26.2	29	29	13	11.5	26	45.5
Tulubolo	8.39	38.12	185.3	32	23	27.1	29	4	12.3	11	4	83.2
Tefki			43.3	12.7	10	27.3	29	28	13.9	11.5	20	
Guhastion	10.00	38.15	106.4	26.3	12	25.7	28.6	1	12.8	11.2	14	52.8
Kimoye	9.02	38.21	67.6	23.2	18	26.6	28.5	8	13.9	12	30	
Keranio medhanialem			88.9	20.5	10	25.6	28.4	3	12.4	10	31	
Bele	7.05	37.35	106.3	30.3	13	22.8	28	16	10.8	9	11	
kulumsa	8.00	39.09	93.8	21.9	7	24	26.7	3	9.9	7.5	9	
G/Guracha	9.48	38.25	108.6	25.5	7	24.1	26.5	1	10.8	9	21	
Addisealem	9.03	38.24	73.7	13	22	25.1	26.5	30	12	10	24	
Ayer tena	9.02	38.45	115.9	24.5	24	24.9	26.5	30	12.9	9.8	30	
Gedo	8.34	39.20	136.2	18.3	30	24.7	26	8	11.5	10.2	7	
Chancho	9.18	38.45	99.2	18	10	22.9	25.4	3	10.5	8.4	28	
Assela	7.57	39.08	125.6	17.3	7	21.7	24.8	2	11.2	10	5	104.9
Kula	8.38	39.25	130.9	47.6	15	23	24.5	6	11.3	8.3	15	
Addele	7.48	39.54	80	14.4	18	22.6	24.2	6	12	9.3	31	109.7
Sheno	9.33	39.30	63.5	13	15	20.6	23.1	30	10.2	7.5	24	43.3
Arbu culule	10.07	38.42	94.2	12.2	9							
Homi	9.37	37.14	191.7	27.8	4							
Koremash	9.35	37.20	27.5	9.1	9							
Shambu	9.34	37.07	293.6	45	28							194.3
Inchini	9.19	38.20	95.6	17.5	10							
Abebe kerenso	9.18	38.00	113.3	19.7	24							
Goben	9.13	37.18	320.5	37.1	6							
Sendafa	9.09	39.01	77.4	12.3	17							
Gimbibila	9.03	38.12	184.5	23.5	4							

Ginchi	9.03	38.12	68	20	25							
Welenkomi	9.02	38.20	84.8	17.4	27							
Bussa	8.83	38.12	71.4	32.8	29							
Boneya	8.78	38.65	153.1	37.2	6							60.2
Biloboshe	8.53	36.59	300.1	41.3	27							142.4
Awash melka	8.42	38.36	94.6	16.9	11							32.7
Wellenchiti	8.39	39.25	74.7	47.3	5							58.6
Dilela	8.37	38.02	175.4	31.9	10							
Lemen	8.36	38.40										
Chitu	8.33	37.59	180.4	39.3	6							
Suten	8.24	38.37	273.7	32.3	19							
Meki	8.09	38.48	151.2	66.4	13							63.7
cholle	8.08	39.53	138.9	35.1	1							

Explanatory note: - T.RF- monthly total rainfall
M.Max- Main maximum temperature
E.Max- Extreme maximum temperature
M.Min- Main maximum temperature
E,Min- Extreme minimum temperature
PON- Percent of normal rainfall
Lat— latitude
Lon -- longitude