# FDRE

# Ministry of Water and Energy

# EMI

# Bio Meteorology and Insurance Index Desk

## Climate Information

## For

## The Health Sector

## 2023 July Monthly Assessment

**July_2023**

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# 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 outbreak areas based on the analysis of temperature and precipitation data.Since the monitoring of temperature and rainfall over a given area can be used to assess the likelihood of outbreak of Malaria with a lag of two months, this information can be an important for early warning tool if used judiciously.

The major objective of this bulletin is in line with the Ethiopia Meteorological Institute strategy of diversifying climate application products to the basic developmental 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 places to be visited by the tourists and to the researcher who is interested in the field of Bio-Climatology.

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

Meanwhile, your comments and constructive suggestions are highly appreciated to make the objective of this bulletin a success, This same bulletin can be accessed online at: http://www.ethiomet.gov.et/bulletins/health_bulletins

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# 1. Introduction

The breeding and development of Climate Sensitive Diseases are highly dependent on weather and climate conditions though other climate factors can play significant roles. Temperature, Rainfall and Humidity are the key parameters which often determine the suitability of the environment for breeding and transmission of Malaria, which is the current Public Health threat in Ethiopia. The outbreak level of malaria depends on certain threshold value of Temperature, Rainfall and Humidity. Thus,

i. If the monthly total Rainfall is >=80mm, suitable for mosquito breeding and malaria transmission.
ii. If the monthly mean air Temperature is $18<=T^{o}<=32^{0}C$, favorable for Mosquitoes development
iii. If the mean monthly RH is >=60%, favorable to complete the transmission cycle of Mosquitoes.

The comfortability of the environment for human and animals depend on if the value of mean daily temperature and relative humidity exceeds a given thresholds. The threshold values are computed as:

- THI= 0.8*T+ RH*T/500 for Human
- THI =0.8*T + RH*(T-14.4) + 46.4 for Cattle

## 1.1. RTH Conditions for Malaria transmission during July 2023

According to the collected and analyzed climate data, during the month of July, most weather observing stations in the Western, Southwestern, Central Eastern, North half and Central parts of the country were recorded rainfall exceeding 80mm. While the monthly mean relative humidity of 60% and above were recorded over South, Southwest, Western, North Western and Northern parts of the country. Similarly, the monthly mean temperature between $18^{o}c$ and $32^{o}c$ was observed over in most parts of the country except on some Northern, Central and Southern Highlands and north eastern and Eastern lowland section of the country. As illustrated in figure 1, Favorable climate conditions for the breading and developments ofmosquito malaria over the square patterns of the map below were observed in half of Western and border of Eastern Amhara , Central,Western and Eastern pocket areas of Oromia, Benishangul gumuz, Northern SNNPR, and Gambela regions.

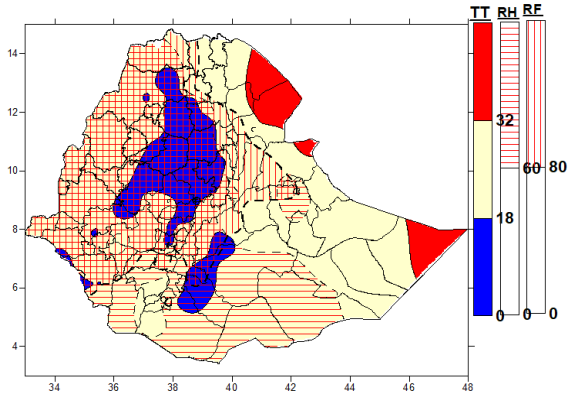

*Fig 1:- Combined temperature, rainfall and relative humidity analysis for July 2023.*

## 2. THI Conditions during July 2023

### 2.1 THI for Human

As a result of Temperature-Humidity Index (THI) analysis, during the month of July heat stress was observed over few places in the lowland parts of southern Somalia, and Afar regions and which contributes only 6% of the recorded stations. Whera as the rest most parts of the country (90% of the recorded stations) experienced comfortable and moderatly comfortable weather conditions.

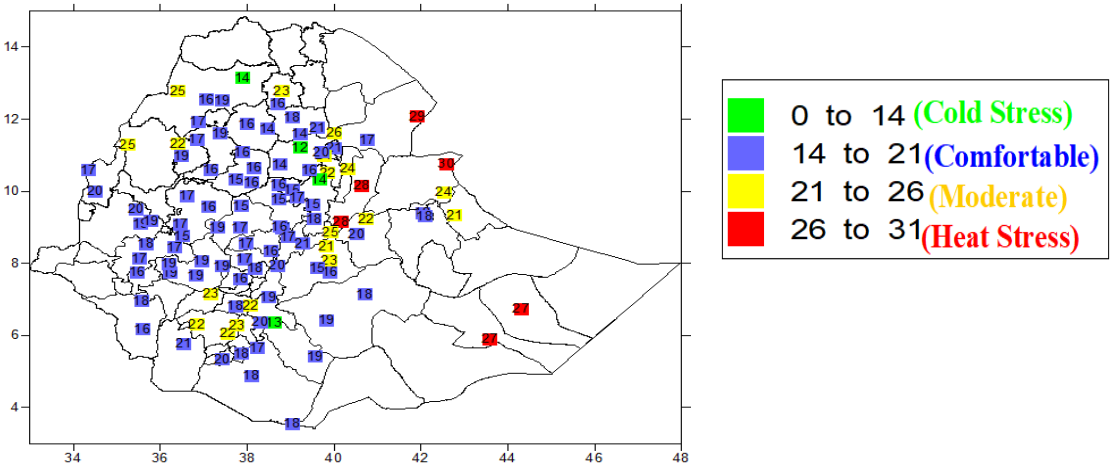


*Fig 2; THI for human during July 2023*

### 2.2. THI for Cattle.

According to the collected meteorological data of July 2023, moderate heat stress for Cattle's was observed over Afar and Somalia regions. Where as the rest parts of the country was dominated by mild to Not-stress conditions.

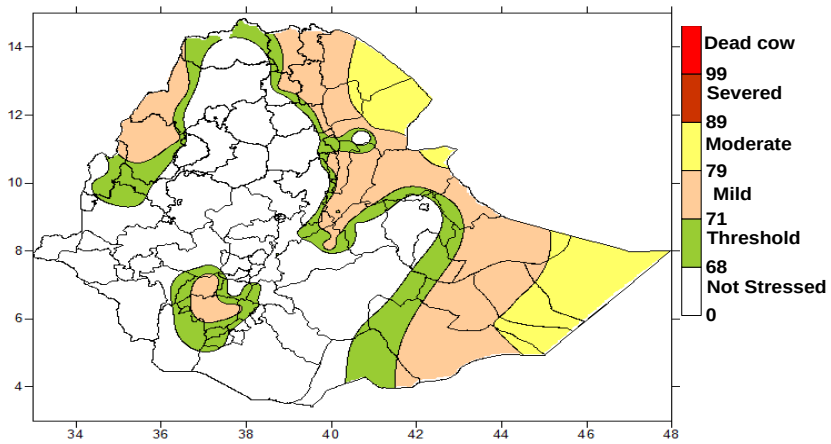


*Fig 3:- THI values for Cattle's during the month of July 2023.*

## 3. Expected Weather Impacts and Advisory on health for first(1-10) dekad of August 2023

### 3.1. Expected Mosquito breeding suitable areas

During the coming first dekad of August 2023, favourable climate condition for Mosquito breeding and development will expected over most parts of Kiremt rainfall benefiting areas. Parts of Western, Southwestern,Northwestern and Central pocket areas of Ethiopia will under suitable conditions for Mosquito breeding sites. Particularly western and Eastern pocket areas of Oromia, Northern SNNPR, Gambela region, most parts of Western and Central Amhara and Benishangul Gumuz regions will suitable for malaria transmission. Therefore, we advices the concerned bodies to avoid the exposure of the community to Mosquitoes through ensuring clean environment and using Mosquitoes nets. All measurments of controling mechanism for vector distribution must be applied.

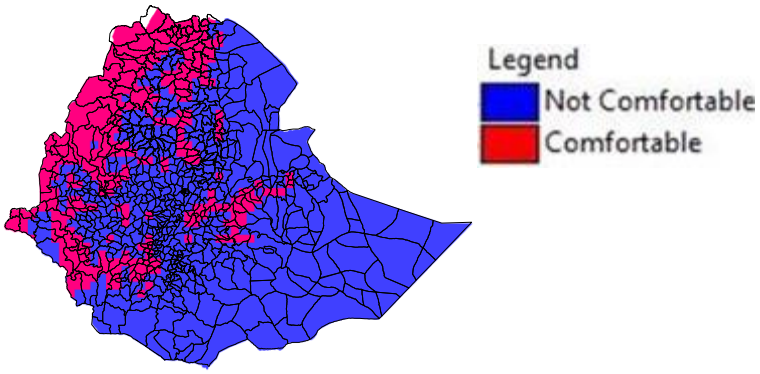


*Fig 4: Suitable weather condition for malaria vector for August 1st dekade 2023*

### 3.2 Temperature Humidity Index (THI)

#### 3.2.1 THI for Cattle

During the coming first dekad of August 2023, Sever tress for non dairy Cattle's will expect over Northern Afar and Mild to Moderate stress condition will expected over most of Afar, Somali, and Gambela regions and also for diary cattle's the stress will be from moderate to mild stress in Afar, Somalie, Eastern Oromia,Southern SNNPR,Gambela, Benishangul Gumuz, and Western border of Amhara. While the rest highland portion of the country will expect to be under none stress conditions.

Generally we advise to perform heat stress reducing mechanisms for cattles like making a shade, Providing Drinking, Conduct Monitoring, control, and surveillance of animal diseases over the sever stress ecpected areas.

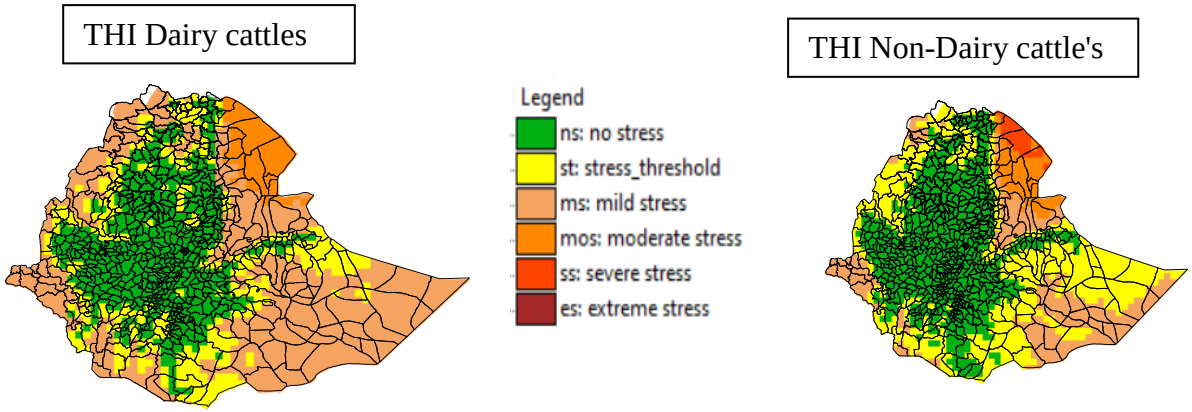


*Fig 5: THI condition for Diary and Non-diary Cattles*

### 3.2.2 THI for Human

During the coming first dekad of August 2023, 100% uncomfortable weather conditions will expect over Afar. and also hot and humid 50% uncomfortable conditions will expect over Southern and Northern Somali, Southern Afar, Gambela and lowlands of Southern SNNPR regions of the country. The rest most parts of the country will be under comfortable weather conditions.

For the coming ten days, in Afar region northern parts residents reduce exposure of heat and make all measuring mechanisms of heat stress like Drink more water than usual, light-colored clothing and sunscreen, Take cool showers or baths to cool down, Avoid overdressing,

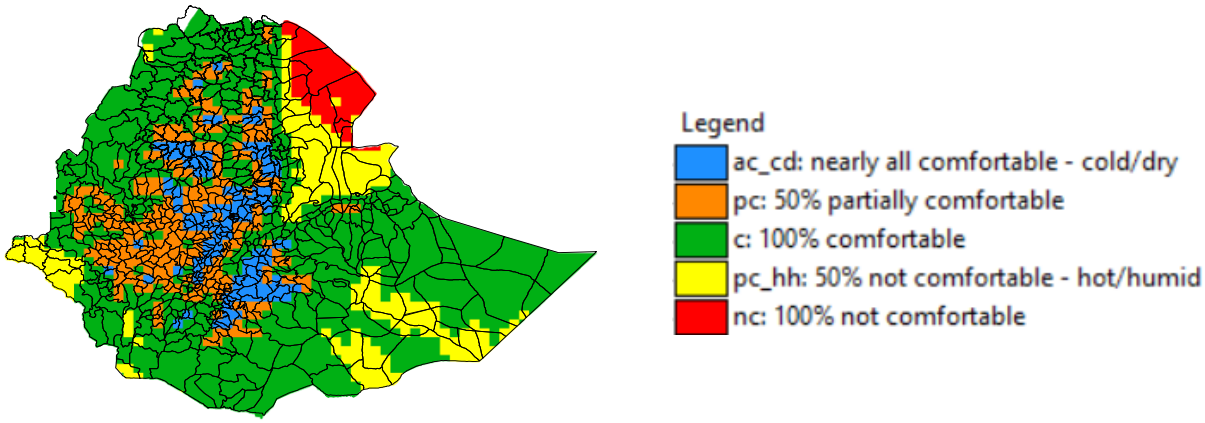


Fig 6 : THI for Human August 1st dekad 2023.