

FDRE
Ministry of Water and Energy
EMI
Bio Meteorology and Insurance Index Desk



Climate Information
For
The Health Sector
Monthly Bulletin

August_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 Health 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 $\geq 80\text{mm}$, suitable for mosquito breeding and malaria transmission.
- ii. If the monthly mean air Temperature is $18 \leq T^{\circ} \leq 32^{\circ}\text{C}$, favorable for Mosquitoes development
- iii. If the mean monthly RH is $\geq 60\%$, 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:

- $\text{THI} = 0.8 * T + \text{RH} * T / 500$ for Human
- $\text{THI} = 0.8 * T + \text{RH} * (T - 14.4) + 46.4$ for Cattle

1.1. RTH Conditions for Malaria transmission during August 2023

According to the collected and analyzed climate data for August month, favorable climate conditions for the breeding and developments of mosquito vector were observed over most parts of Western half. Moderately favorable conditions were observed in pocket areas of Benshangul Gumuz, Western Oromia, Dire Dawa and pocket areas of Gambela regional states. whereas low favorable conditions were observed in Western and pocket areas of Eastern Amhara, Most parts of Benshangul gumuz, Western and Eastern Harerge in Oromia, most parts of Gambela and Northern parts of SNNPR regions as illustrated in figure 1.

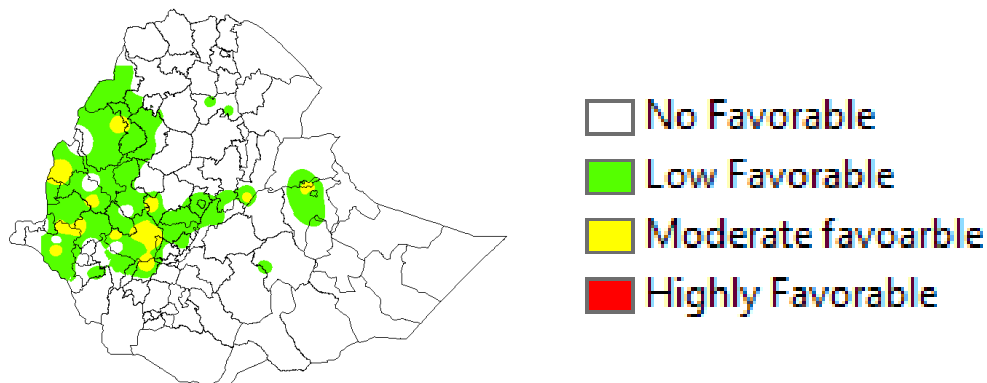


Fig 1:- Combined temperature, rainfall and relative humidity analysis for August 2023.

2. THI Conditions during August 2023

2.1 THI for Human

As a result of Temperature-Humidity Index (THI) analysis, during the month of August heat stress was observed over few places in the lowland parts of southern Somalia, Central Gambela and Afar regions and which contributes only 6% of the recorded stations, whereas, the rest most parts of the country (88% of the recorded stations) experienced comfortable and moderately comfortable weather conditions. The rest highland parts were in cold stress.

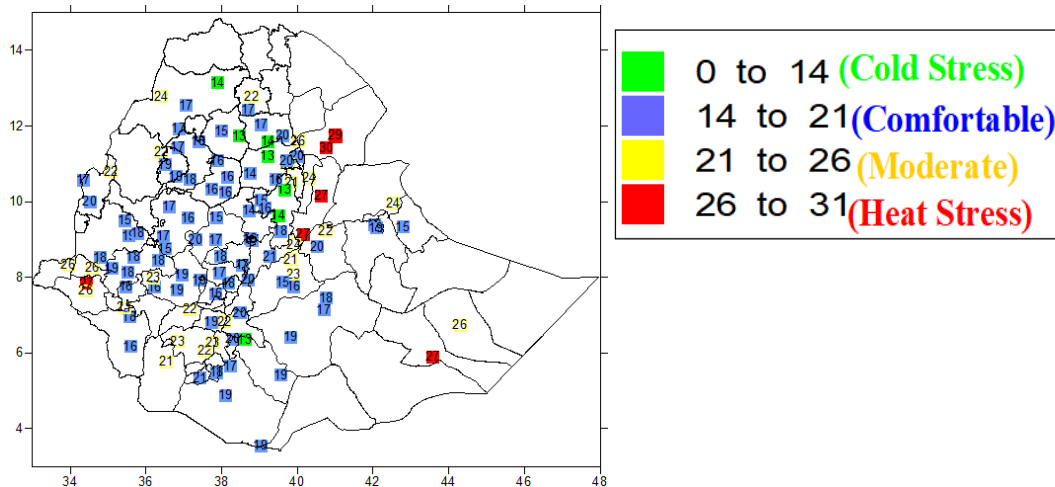


Fig 2; THI for human during August 2023

2.2. THI for Cattle.

According to the collected meteorological data of August 2023, severed heat stress was observed in eastern lowlands of Afar and Northern Somalia moderate heat stress was observed over Afar and Somalia regions. Whereas the rest parts of the country was dominated by mild to Not-stress conditions.

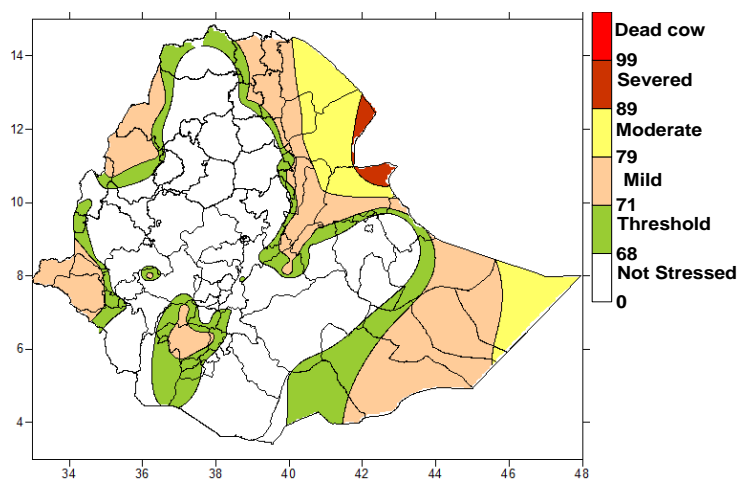


Fig 3:- THI values for Cattle's during the month of August 2023.