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I. 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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II. Assumptions

i. Malaria: According to the International Research Institute for Climate and Society, (IRI), the predicted conditions of rainfall, temperature, and relative humidity are used in determining the degree of incidence for malaria.

- When rainfall is above 80 mm, the temperature is between 25°C and 32^{0}C, and relative humidity is greater than 80%, the region is at high risk and is placed under high incidence.
- When the temperature is between 20°C and 25°C, relative humidity is between 70 and 80%, and rainfall is above 80 mm, then moderate incidence is advised.
- Low incidence for malaria is issued when the temperature is in the range of 18^{0}C-20°C, relative humidity is 60 - 70% and rainfall is above 80 mm.
- No incidence is required when the temperature is less than 18°C, relative humidity less than 60%, and rainfall amount below 80 mm.

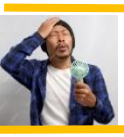
Based on these, climate variables have ***a one to two months*** postponed (delayed) effect on the spread of malaria.

ii. Human heat index: is a measure of how hot it feels when relative humidity is factored with the actual air temperature. The levels of caution for heat index are classified as follows:

- Cold stress when THI is <14, ***Asthma, Pneumonia, Common Cold and flu***
- Comfortable when THI is 14-21, ***pleasanter***
- Moderate when THI is 21-26, ***No more effects***
- Heat stress when THI is >26, ***heat stroke, heat cramps, hyperthermia, respiratory and cardiovascular diseases***

iii. Cattle heat index: The climatic condition for Cattle is a measure that accounts for the combined effects of environmental temperature and relative humidity on cattle. The level of heat stress for cattle classified as follows:

- Not Stressed when THI is <68, ***free from heat stress***
- Stressed threshold when THI is 68 – 71, ***impact less stress starting***
- Mild stress when THI is 72 – 79, ***stress begins and calf rate affected***
- Moderate stress when THI **is** 80 – 89, ***Milk production affected***
- Severe stress when THI is 90 – 99, ***very significant losses in milk production***
- Extremely stress when THI is >100, ***ultimate dead of cows***



1. Weather impact Assessment on Health for May 2026

1.1 Malaria prone areas during May 2026

During the May 2026, the prevailing climatic conditions across the country were **Low to Moderate** favorable condition for malaria vector breeding and transmission over: Liben and Daawa zones in Somali, Southern, Central and Western Oromia zones, all zones of South, Southwest, and Central Ethiopia regions, all zones of Sidama, Agnuak, Majang, Itang special woredas in Gambela and Assosa zone in Benishangul Gumuz region as illustrated in Figure 1.

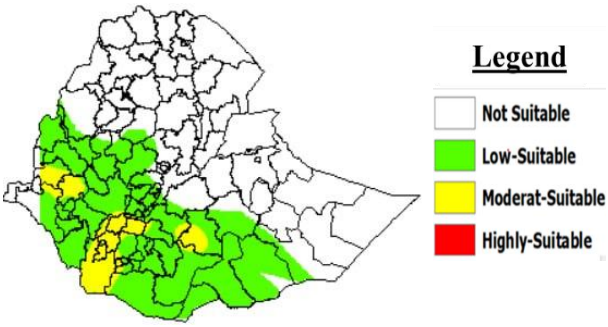


Figure 1: Malaria Prone areas

1.2 Climate comfort Conditions

1.2.1 Comfortability for Human

Afar, Somali, Gambela, Metehara, Metema and around Arba Minch there was moderate to high heat risk climate conditions that disrupts human's day-to-day activities. However, some pocket high land areas of the Northern, Southern, Central and Western parts was in a good condition for human's day-to-day activity and all over health status as illustrated in Figure 2.

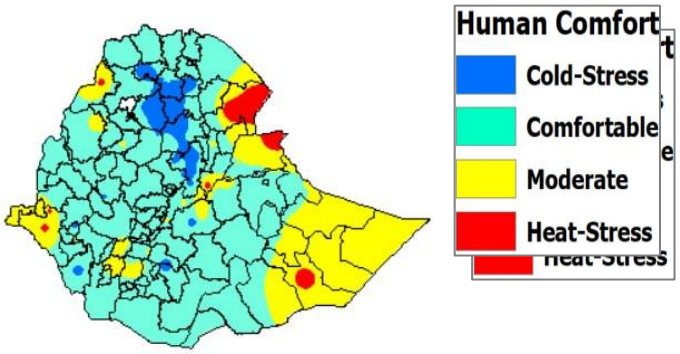


Figure 2: Human comfort index

1.2.2 Comfortability for Cattle

Except Afar, which is moderate stress condition, other parts of the country were experienced non-significant heat stress that could negatively affect cattle production and productivity as shown in Figure 3.

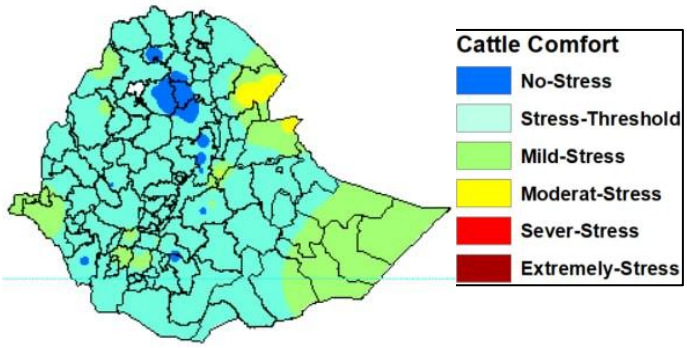


Figure 3: Cattle Comfort index

2. Expected Weather Impact on Health for first Dekad of June 2026

2.1 Expected Mosquito breeding areas

In the upcoming ten day, all zones of Western Oromia, and lowlands of Bale zones of Oromia, some pocket areas of Southwest and Central Ethiopia region, Eastern parts of Gambela, Assosa and Kamashi zones in Benishangul Gumuz region will be under suitable weather condition for the breading and transmission of malaria for 1-10 of June 2026 as shown in figure 4.

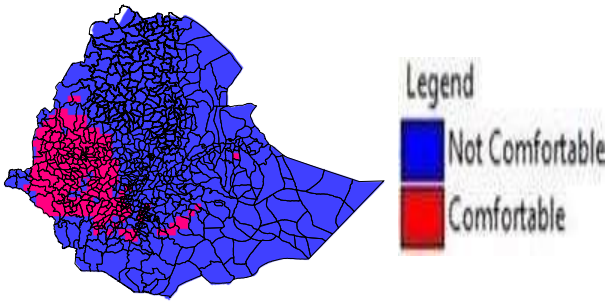


Figure 4: Expected malaria prone areas

2.1 Temperature Humidity Index

2.2.1 Human Comfort Condition

Afar, Somali, Gambela, South Omo, Metema, Mankush, Quara, and pawi zones will be under unpleasant weather conditions for the coming 10 days. However, other highland and mid-land areas of the country will experience a comfortable weather condition for human's daily activities as shown in Figure 5.

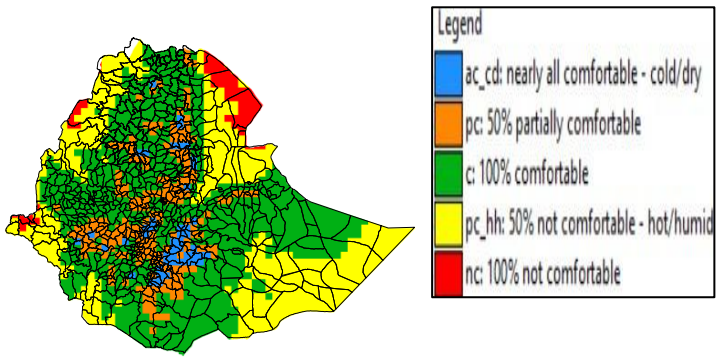


Figure 5: Expected Human comfort index

2.2.2 Cattle Comfort Condition

None impactful weather condition will expected to Cattle's product and productivity as well as their health status all over the country in the coming June 1st dekad of 2026, as shown in Figure 6.

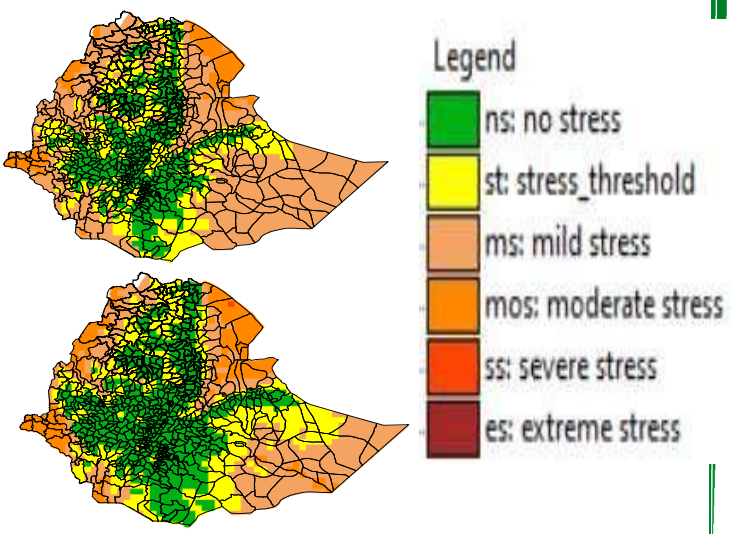
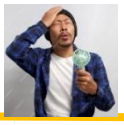


Figure 6: Expected Dairy (Top) and Non- Dairy (Bottom) Cattle comfort



3. Summary

Shifting of climate suitability were occurred from South-eastern to the Western parts of Kiremt benefiting areas to the transmission of Malaria. Oromia, South, South-western and Central Ethiopia, Sidama, Gambela and Benishangul Gumuz region are expanded suitable climate condition for the transmission of malaria. However the heat stress condition during this period was from moderate to high heat risk conditions in most parts of the country. Particularly Afar, Somali, Gambela, South Ethiopia, Benishangul Gumuz, and Western Amhara region were some of the highly heat-prone regions during this month for Human's health and daily activity.

4.Advisory

Use and implement the following recommendations in places that are favourable for the development of malaria and other vector-borne related diseases;

- Strengthen malaria surveillance in favourable areas
- Implement vector control measures
- Promote environmental sanitation
- Conduct community awareness campaigns
- Encourage mosquito net usage
- Monitor heat stress impacts on vulnerable populations and livestock