# Ethiopian Meteorology Institute

## Health-Meteorology Bulletin

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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 Second Dekad of January 2026

## 1.1 Malaria prone areas during Second Dekad of January 2026

Regarding the climatic conditions for malaria breeding and transmission, during the second dekad of January 2026, there were No Suitable climate conditions observed over all the country as illustrated in Figure 1.

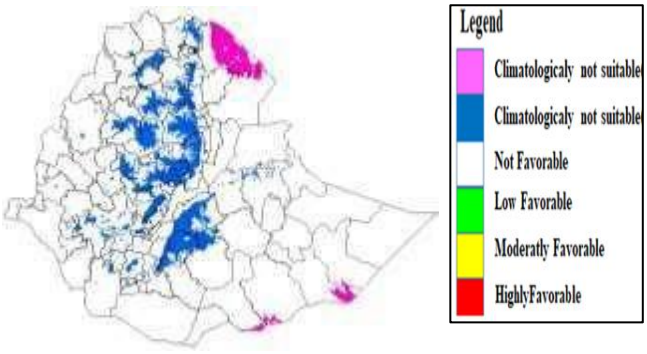
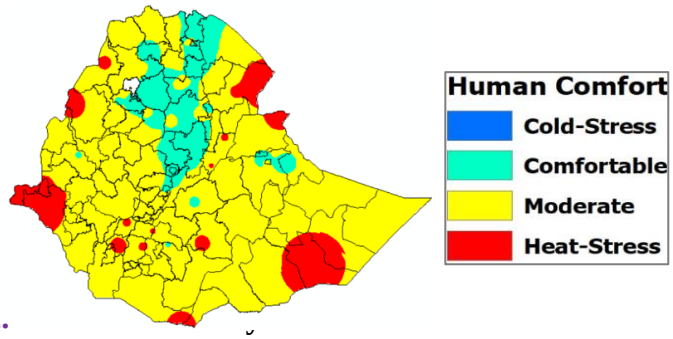



Figure 1: Malaria Prone areas

## 1.2 Climate comfort Conditions

### 1.2.1 Comfortability for Human

Over the border parts of Western Amhara, Benishangul Gumuz, Gambela, South Ethiopia region, Southern Somali and Afar region were experienced heat stress condition for human daily activities during the Second dekad of January 2026, but most parts of the country were in pleasant weather conditions as illustrated in Figure 2.




1.2.

Figure 2: Human comfort index

As with human comfort, there were no significant heat stress conditions that affected cattle production; however, as illustrated in Figure 3, some border parts of Afar, Somali, Gambela, Benshangul gumuz and Benishangul Gumuz were experienced heat stress conditions of the country.

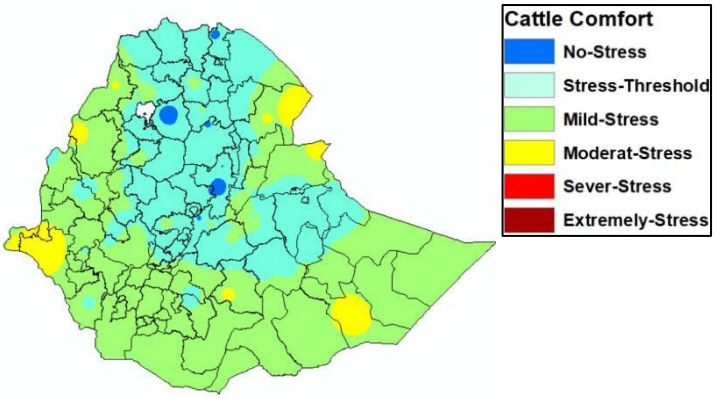



Figure 3: Cattle Comfort index

## 2. Expected Weather Impact on Health for Third dekad of January 2026

### 2.1Expected Mosquito breeding areas

In Most parts of the country there will not suitable Climate condition for the breading and transmission of malaria during the coming Second dekad of January 2026, as shown in figure 4.

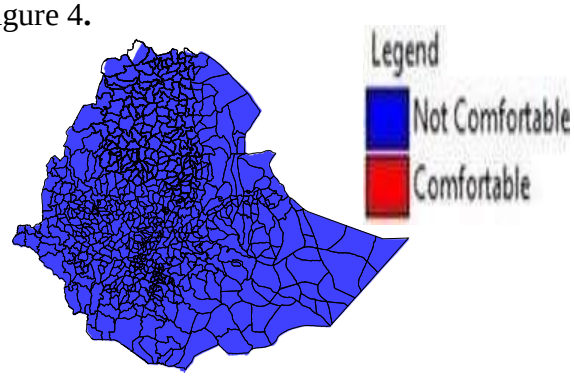



Figure 4: Expected malaria prone areas

### 2.1Temperature Humidity Index

#### 2.2.1 Human Comfort Condition

For the coming Third dekad of January 2026 , pleasant weather conditions are expected over most parts of the country, except in Afar, South Ethiopia, Gambela and western Amhara (Metema), where conditions will be partially uncomfortable for human daily activities, indicating possible signs of heat stress, as shown in Figure 5.

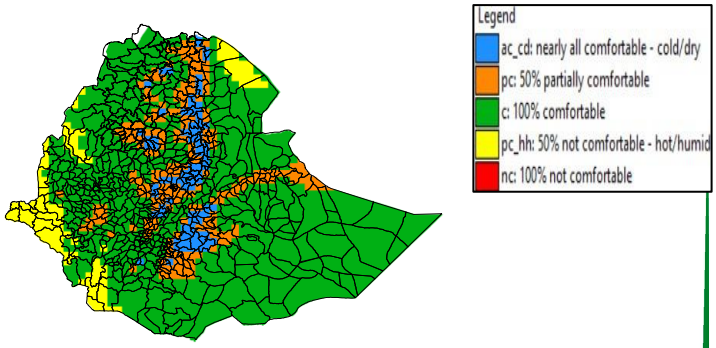



Figure 5: Expected Human comfort index

#### 2.2.2 Cattle Comfort Condition

Similar to human comfort conditions, cattle are expected to experience mild to moderate heat stress over most lowland areas of Afar, Somali, Gambella, South Ethiopia, South west Ethiopia, Benishangul Gumuz, Western Amhara and Western Tigray in the coming Third dekad of January 2026. However, the Southern, central, and northern midland and highland areas of the country will expected to remain free from heat stress, as shown in Figure 6.

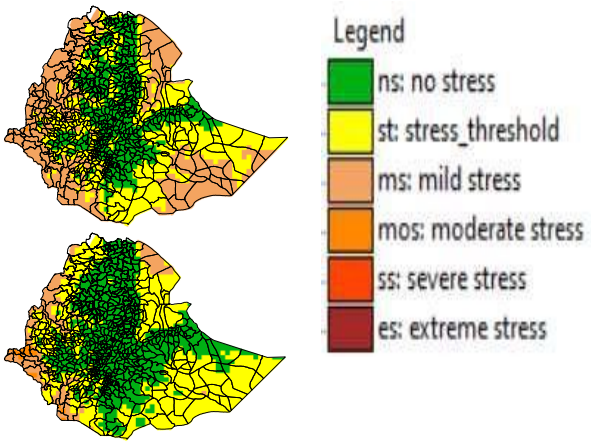
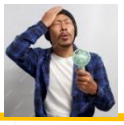



**Figure 6: Expected** Dairy (Top) and Non-Dairy (Bottom) Cattle comfort



# 3. Summary

According to the **Second dekad of January 2026 climate-health analysis, there were no suitable** climate conditions for malaria breeding similarly, for the coming **Third dekad of January 2026 indicate that most parts of the country will continue to experience No suitable** conditions for malaria transmission**.** However, non-significant heat stress conditions exist in the low-lying border areas of the eastern, northeaster, western, and southern parts of Ethiopia, particularly in the Afar, Gambela, Somali, and South Ethiopia regions, affecting human and cattle activity and productivity.

# 4.Advisory

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

- Attention to any incidence, especially for malaria disease in such favourable areas
- Controlling measures and activity are advised
- Reducing the environmentally aggravating condition
- Awareness creation campaign to the community and sharing of the climate-health update
- Avoid any exposure of the community to mosquitoes by ensuring clean environment and using Mosquitoes nets.