

Ethiopian Meteorology Institute

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Institute**

Tell: 251(0)11 6615779

Fax: 251(0)11 6625292

P.O.Box 1090

Website:

<http://www.ethiomet.gov.et/>

Telegram:

<https://t.me/BiometService>



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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 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

Director General
Ethiopia Meteorology Institute
P.O.Box 1090
Tel: 251(0)11 6615779
FAX 251(0)11 6625292
Web: www.ethiomet.gov.et
Addis Ababa, Ethiopia

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°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°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 December 2025

1.1 Malaria prone areas during December 2025

In the last month of year 2025, illustrated in figure 1 below in December month, there were no suitable climate condition to the breeding and transmission of Malaria. But be aware that the last two months suitable conditions will expand for the next months.

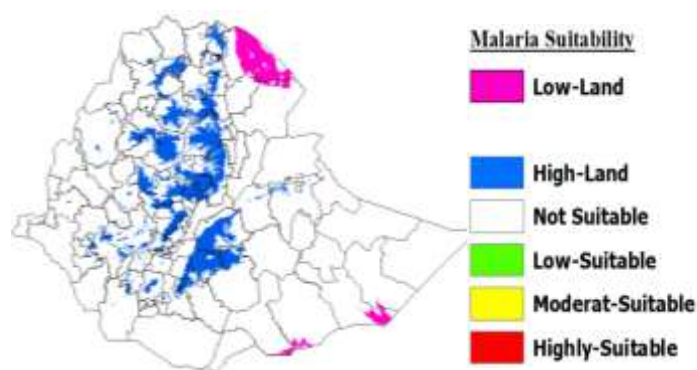


Figure 1: Malaria Prone areas

1.2 Climate comfort Conditions

1.2.1 Comfortability for Human

Most parts of the country experienced fairly good weather for human daily activities in December 2025, with the exception of a few lowland areas of the Afar, Gambela, Benishangul Gumuz and Northern and Southern Somali regions, which were experiencing heat stress, as the figure illustrates 2.

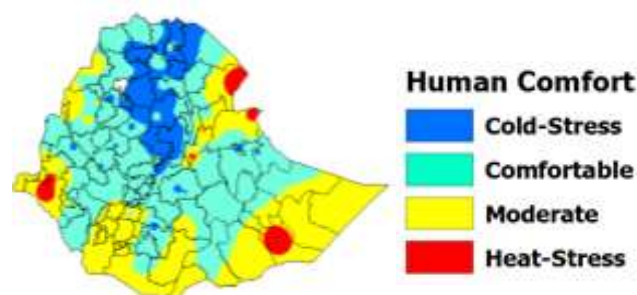


Figure 2: Human comfort index

1.2.2 Comfort ability for Cattle

As with human comfort, there were no significant heat stress climate conditions that affected the production and health of the cattle; however as of figure 3 below, moderately heat stress condition was experienced in the Afar, Somali, and Gambela regions of the country.

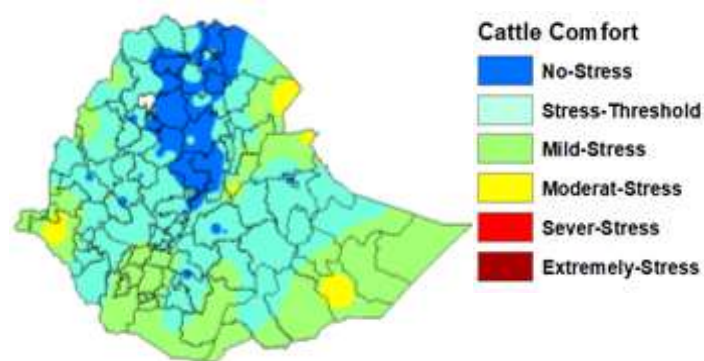


Figure 3: Cattle Comfort

2. Expected Weather Impact on Health for 1st dekad of January 2026



2.1 Expected Mosquito breeding areas

In most parts of the country there will not suitable climate condition for the breeding and transmission of Malaria during the upcoming first ten days of January 2026, as shown in figure 4.

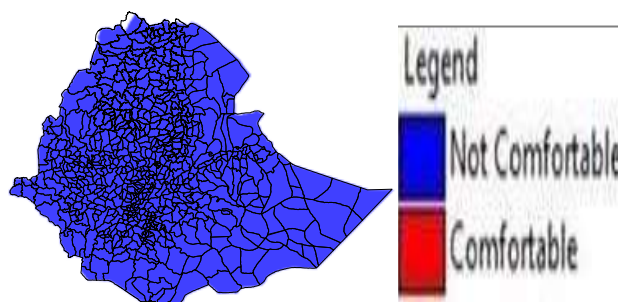


Figure 4: Expected malaria

2.2 Temperature Humidity Index

2.2.1 Human Comfort Condition

In the upcoming ten days of January 2026, Gambela, Northern Afar and Southern parts of South Ethiopia, and South Somali region will be in a partial heat stress condition, but other most parts of the country will in comfortable climate condition for Humans daily activity. There will be an increase of cold stress in the morning and nigh time for most highland areas of the south, North, and Central parts of the country, as shown in Figure 5.

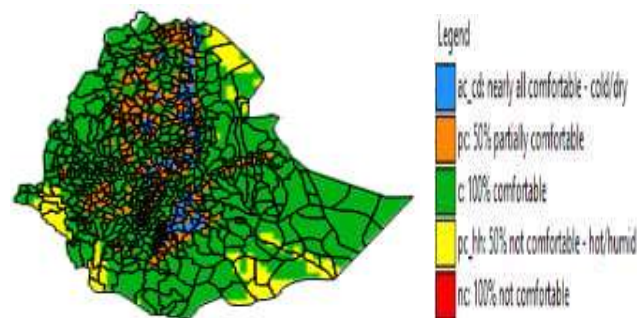


Figure 5: Expected Human comfort

2.2.2 Cattle Comfort Condition

Equivalent to the comfort of humans, there will not facing significant heat stress conditions over the next ten days of January for the production and health of cattle's, as illustrated in Figure 6.

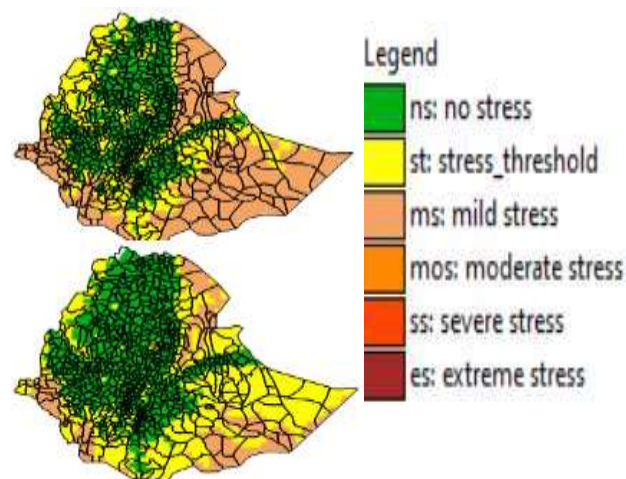


Figure 6: Expected Dairy (*Top*) and Non-Dairy (*Bottom*) Cattle comfort



3. Summary

According to the December 2025 climate-health analysis, there were no favourable climate conditions for malaria breeding and transmission. As a result, malaria exposure will decrease in most parts of the country for the coming one to two months. However, non-significant heat stress conditions are existed in the low-lying border areas of Eastern, Northeaster, Western and Southern 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.

