Republic of Kenya

KENYA METEOROLOGICAL DEPARTMENT

Republic of Kenya

MINISTRY OF HEALTH

MALARIA EPIDEMIC EARLY WARNING PREDICTION SYSTEM FOR WESTERN KENYA HIGHLANDS FOR NOVEMBER 2025

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Preamble

This report presents the malaria epidemic early prediction model outputs for the Western Highlands of Kenya, covering Kakamega, Kisii, and Nandi, for the period November to December 2025. The analysis is based on observed climate data (temperature and rainfall) and model simulations that estimate the percentage risk of malaria transmission. Overall, the results indicate a **High to No Risk of malaria epidemic** across the three areas during the forecast period, with Kakamega showing High Risk, Kisii and Nandi present no risk.

1. Model Outputs

1.1 Malaria epidemic early prediction system for Kakamega

Table 1 below shows the malaria epidemic early prediction system for Kakamega for November 2025.

Table 1: MALARIA EPIDEMIC EARLY PREDICTION SYSTEM: KAKAMEGA

Yr.	Month	Tmax (°C)	Mean Tmax (°C)	Tmax Deviation /anomaly	R/fall (mm)	R/fall Code	Tmax Deviation /anomaly Code	Additive % Risk
2025	1	29.9	28.3	1.6	85.3	0	4	18.2
2025	2	32.7	29.2	3.5	3.9	0	16	18.2
2025	3	30.7	29.1	1.6	190.1	2	4	81.8
2025	4	28.7	27.3	1.4	251.1	5	4	40.9
2025	5	27.8	20.4	1.4	502.1	6	4	45.5
2025	6	27.6	25.8	1.8	214.5	3	4	31.8
2025	7	27.6	25.6	2.0	293.2	6	4	45.5
2025	8	26.8	26.1	0.7	145.6	0	1	18.2
2025	9	28.1	26.9	1.2	105.8	0	4	4.5
2025	10	27.0	27.0	0.6	248.7	4	0	36.4

The observed climate data for October 2025 indicates an increase in maximum temperature from 28.1°C in September 2025 to 27.0°C in October, 2025.This observation in October, 2025 *was positive (0.6 above the mean of the month).* Rainfall increased from 105.8mm in September, 2025 to 248.7 mm in October, 2025. The additive model percentage risk is **36.4%.**

Box 1:
For Kakamega, the epidemic threshold level is 30%.

Consequently, there is High risk of Malaria Epidemic in Kakamega in the months of November and December 2025 (See Figure 1)

Figure 1:

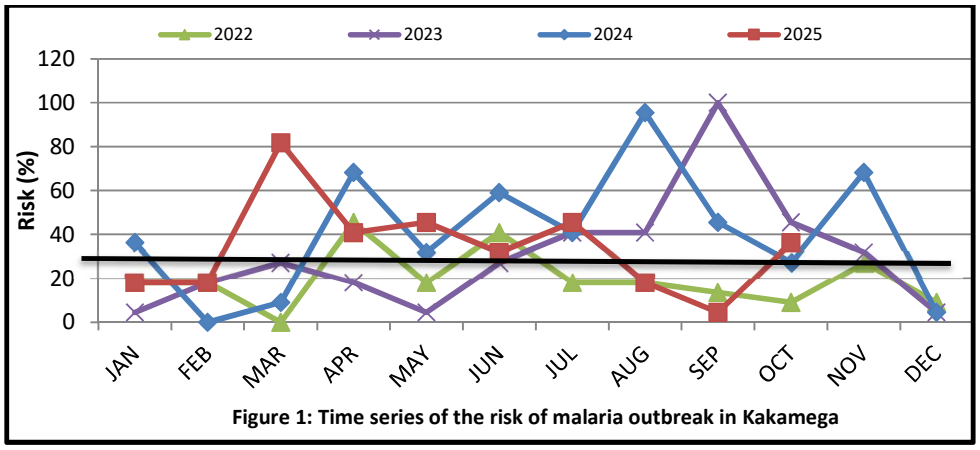

Figure 1: Time series of the risk of malaria outbreak in Kakamega

1.2 Malaria epidemic early prediction system for Kisii

Table 2 below shows the malaria epidemic early prediction system for Kisii for November, 2025.

Table 2: MALARIA EPIDEMIC EARLY PREDICTION SYSTEM: KISII

Yr	Month	Tmax (^{0}C)	Mean Tmax (^{0}C)	Tmin (^{0}C)	Mean Tmin (^{0}C)	Tmax Dev./ anom	Tmin Dev. /anom	Total Temp Dev./ Anom	Temp Dev./ anom Code	R/fall (mm)	R/fall Code	Model Output
2025	1	29.9	26.1	16.9	15.7	3.8	1.2	5.0	5	206.4	1	0
2025	2	29.2	27.0	11.3	16.1	2.2	-4.8	-2.6	0	47.6	0	0
2025	3	27.3	27.0	16.7	15.9	0.3	0.8	1.1	2	168.7	0	0
2025	4	25.5	25.5	16.3	15.8	0.0	0.5	0.5	0	287.1	2	0
2025	5	25.5	25.1	16.2	15.6	0.4	0.6	1.0	2	366.7	4	50
2025	6	25.2	24.6	15.6	15	0.6	06	1.3	2	126.9	0	0
2025	7	25.0	24.5	15.3	14.0	0.5	0.8	1.3	2	169.0	0	0
2025	8	24.9	24.9	15.2	14.7	0.0	0.5	0.5	0	125.6	0	0
2025	9	26.2	26.0	15.8	15.1	0.2	0.7	0.8	0	255.5	2	25
2025	10	25.6	25.8	15.8	15.2	-0.2	0.6	0.4	0	301.6	3	0

The observed climate data for Kisii for October, 2025 indicates a decrease in maximum temperature from 26.2°C in September, 2025 to 25.6°C in October, 2025. This observation in October, 2025 was *negative (0.2 below the mean of the month).* Rainfall increased from 255.5mm in September, 2025 to 301.6mm in October, 2025.

Box 2:
For Kisii, the epidemic threshold level is 20%.

The model output risk is **NIL. Therefore, there is no risk of malaria epidemic in Kisii in the months of November and December 2025.** (See Figure 2).

Figure 2:

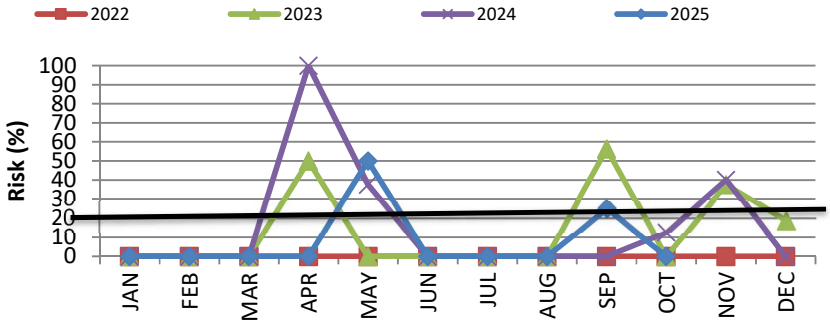

Figure 2: Time series of the risk of malaria outbreak in Kisii

1.3 Malaria epidemic early prediction system for Nandi

Table 3 below shows the malaria epidemic early prediction system for Nandi for November, 2025.

Table 3: NANDI MALARIA EPIDEMIC EARLY PREDICTION SYSTEM

Yr	Month	Tmax (^{0}C)	Mean Tmax (^{0}C)	Tmax Dev.	Tmin	Mean Tmin	Tmin Dev. /anom	Total Temp Dev. /Anom.	R/fall (mm)	Temp Dev. Filters	R/fall Filters	Multiplicative Model
2025	1	25.1	23.3	1.8	11.8	10.9	0.9	2.7	101	3	0	**0**
2025	2	27.6	23.2	4.4	16.8	11.7	5.1	9.5	32.7	5	0	**0**
2025	3	25.9	23.0	2.9	12.7	11.5	1.2	4.1	189.5	1	0	**0.0**
2025	4	24.8	22.8	2.0	12.4	11.2	1.2	3.2	267.6	4	2	**50.0**
2025	5	23.4	22.7	0.7	12.3	10.7	1.6	2.3	283.7	3	2	**50.0**
2025	6	23.3	22.7	0.6	17.2	10.9	6.3	6.9	196.3	5	0	**0.0**
2025	7	22.9	22.8	0.1	12.0	10.6	1.4	1.5	183.1	2	0	**0.0**
2025	8	23.0	23.1	-0.1	11.6	10.8	0.8	0.8	163.1	1	0	**0.0**
2025	9	24.0	23.3	0.7	11.0	11.6	-0.1	0.6	170.3	1	0	**0.0**
2025	10	23.0	23.3	-0.3	11.9	10.7	1.2	0.8	238.1	1	1	**5.0**

The maximum temperature in Nandi indicates a decrease from 24.0°C in September, 2025 to 23.0°C in October, 2025. This observation in October, 2025 for Nandi was *negative (0.3°C below the mean of the month).* Rainfall increased from 170.3mm in September, 2025 to 238.1mm in October, 2025.

Box 3:
For Nandi, epidemic threshold level is 20%.

The additive model percentage risk is **5.0%.**

Hence, there is no risk for malaria outbreak for the months of November and December 2025. (See Figure 3)

Figure 3:

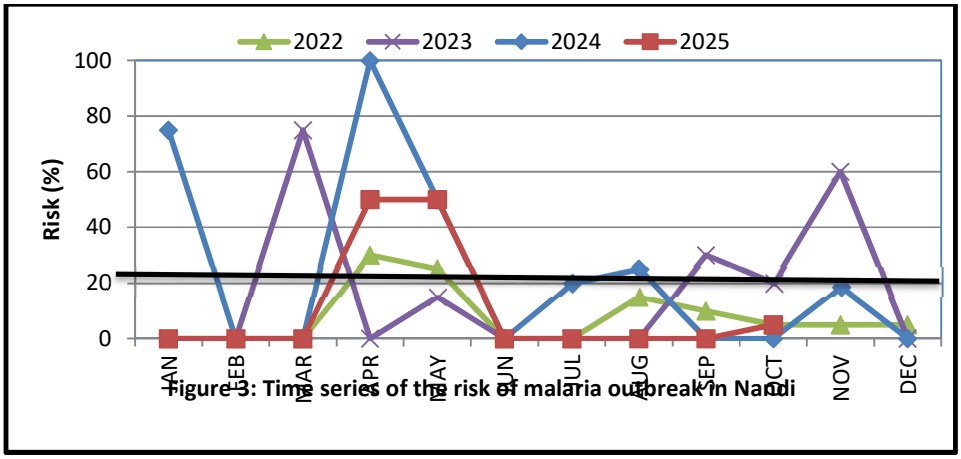

Figure 3: Time series of the risk of malaria outbreak in Nandi

3. Disclaimer

The information presented in this bulletin is based on predictive models and observed climate data, which are subject to change. While every effort has been made to ensure the accuracy and reliability of the data, the following should be noted.

Public Health Advisory: This bulletin is intended for informational purposes only. It should not be used as the sole basis for public health decisions. Local health authorities should be consulted for actionable guidance and preventive measures against malaria.

Continuous Monitoring: Malaria transmission dynamics are influenced by numerous factors, including temperature, rainfall, and human behaviour. Continuous monitoring and updates to the predictive models are essential for accurate assessments.

Updates: This bulletin reflects data and predictions as of August 2025. Future updates will be issued when new data becomes available.

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