



MALARIA EPIDEMIC EARLY WARNING PREDICTION SYSTEM FOR WESTERN KENYA HIGHLAND FOR FEBRUARY 2024

Ref No: KMD/MM/2-2024

Issue Date: 01/02/2024

1. Summary

The model outputs for the malaria epidemic early prediction system for the western highlands of Kenya indicate high risk of Malaria in Kakamega and Nandi in the months of February 2024 and March 2024

The weather observations indicate generally a decrease in maximum temperatures in all the three areas.

2. Model Outputs

2.1 Malaria epidemic early prediction system for Kakamega

Table 1 below shows the malaria epidemic early prediction system for Kakamega for February 2024.

Table 1: MALARIA EPIDEMIC EARLY PREDICTION SYSTEM: KAKAMEGA

Yr.	Month	Tmax	Mean Tmax	Tmax Deviation /anomaly	R/fall (mm)	R/fall Code	Tmax Deviation /anomaly Code	Additive % Risk
2023	12	29.3	27.5	1.8	80.6	0	4	4.5
2024	01	27.6	28.3	-0.7	239.5	4	0	36.4

The observed climate data for January 2024 indicates a decrease in maximum temperature from 29.3°C in December 2023 to 27.6°C in January 2024. This observation in January 2024 was negative (0.7 below the mean of the month). Rainfall increased from 80.6mm in December 2023 to 239.5mm in January 2024. The additive model percentage risk in January 2024 was **36.4%**.

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

Consequently, there is a high risk of Malaria Epidemic in Kakamega in the month of February 2024 and March 2024(See Figure 1)

Table 2 below shows the malaria epidemic early prediction system for Kisii for February 2024.

Table 2: MALARIA EPIDEMIC EARLY PREDICTION SYSTEM: KISII

Yr	Mon	Tmax (°C)	Mean Tmax (°C)	Tmin (°C)	Mean Tmin (°C)	Tmax Dev./anom	Tmin Dev./anom	Total Temp Dev./Anom	Temp Dev./anom Code	R/fall (mm)	R/fall Code	Model Output
2023	12	26.8	25.4	16.3	15.4	1.4	0.9	2.3	3	221.7	1	18.75
2024	01	26.2	26.1	16.4	15.7	0.1	0.7	0.8	0	121.3	0	0

The observed climate data for Kisii for January 2024 indicates a slight decrease in maximum temperature from 26.8°C in December 2023 to 26.2°C in January 2024. This observation in January 2024 was positive (0.4°C above the mean of the month). Rainfall decreased from 221.7mm in December 2023 to 121.3 mm in January 2024. The Model output risk is Nil.

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

Hence, there is no risk of malaria epidemic in Kisii in the month of February 2024 and March, 2024. (See Figure 2).

2.2 Malaria epidemic early prediction system for Nandi

Table 3 below shows the malaria epidemic early prediction system for Nandi for February 2024.

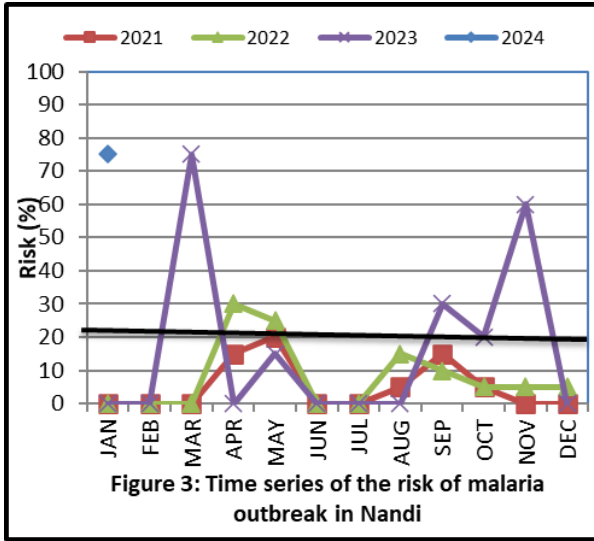
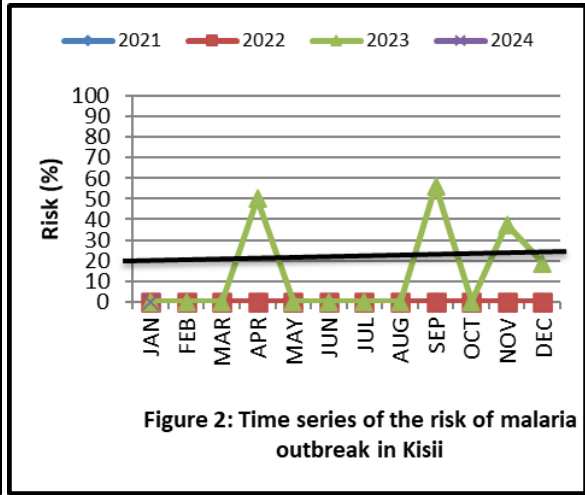
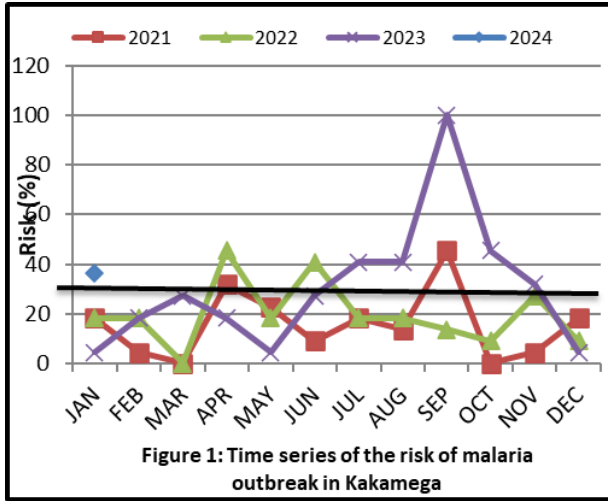
Table 3: NANDI MALARIA EPIDEMIC EARLY PREDICTION SYSTEM

Yr	Mon	Tmax (°C)	Mean Tmax (°C)	Tmax Dev.	Tmin	Mean Tmin	Tmin Dev./anom	Total Temp Dev./Anom	R/fall (mm)	Temp Dev. Filters	R/fall Filters	Multiplicative Model
2023	12	25.4	23.7	1.7	11.4	10.8	0.6	2.3	53	3	0	0.0
2024	01	24.4	23.3	1.1	13.3	10.9	2.4	3.5	303.8	4	3	75

The maximum temperature in Nandi indicates a decrease from 25.4°C in December 2023 to 24.4°C in January 2024. This observation in January 2024 for Nandi was positive (1.1°C above the mean of the month). Rainfall increased from 53.0mm in December 2023 to 303.8mm in January 2024. The additive model percentage risk in January 2024 was 75%.

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

Hence, there is a high risk of malaria epidemic in Nandi in the month of February 2024 and March 2024. (See Figure 3)



Dr Gikungu
DIRECTOR, KENYA METEOROLOGICAL DEPARTMENT