Republic of Kenya

KENYA METEOROLOGICAL DEPARTMENT

Republic of Kenya

MINISTRY OF HEALTH

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

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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 no risk in the other areas in the months of July, 2024 and August, 2024

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 July, 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
2024	01	27.6	28.3	-0.7	239.5	4	0	36.4
2024	02	29.7	29.2	0.5	83.1	0	1	0.0
2024	03	31.3	29.1	2.2	156.7	1	9	9.1
2024	04	28.2	27.3	0.9	329.6	6	1	68.2
2024	05	29.1	26.4	2.7	419.5	6	9	31.8
2024	06	28.1	25.8	2.3	247.4	4	9	59.1

The observed climate data for June, 2024 indicates a decrease in maximum temperature from 29.1°C in May, 2024 to 28.1°C in June, 2024. This observation in June, 2024 was positive (2.3 above the mean of the month). Rainfall decreased from 419.5mm in May, 2024 to 247.4mm in June, 2024. The additive model percentage risk in June, 2024 was **59.1%.**

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

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

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

Table 2: MALARIA EPIDEMIC EARLY PREDICTION SYSTEM: KISII

Yr	Mon	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
2024	01	26.2	26.1	16.4	15.7	0.1	0.7	0.8	0	121.3	0	0
2024	02	29.7	27.0	16.6	16.1	2.7	0.5	3.2	4	194.0	0	0
2024	03	28.8	27.0	16.1	15.9	1.8	0.2	2.0	3	185.7	0	0
2024	04	25.5	25.5	16.7	15.8	0.0	0.9	0.9	0	379.5	4	100
2024	05	26.1	25.1	16.9	15.6	1.0	1.3	2.3	3	300.6	2	37.5
2024	06	26.1	24.6	16.0	15.0	1.5	1.0	2.6	3	93.8	0	0

The observed climate data for Kisii for June, 2024 indicates no change in maximum temperature. This observation in June, 2024 was positive (1.5 above the mean of the month). Rainfall decreased from 300.6mm in May, 2024 to 93.8 mm in June, 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 July 2024 and August, 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 July, 2024.

Table 3: NANDI MALARIA EPIDEMIC EARLY PREDICTION SYSTEM

Yr	Mon	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
2024	01	24.4	23.3	1.1	13.3	10.9	2.4	3.5	303.8	4	3	**75**
2024	02	26.4	23.2	3.2	12.5	11.7	0.8	4.0	123.8	5	0	**0.0**
2024	03	27.7	23.0	4.7	12.1	11.5	0.6	5.3	150.3	5	0	**0.0**
2024	04	24.4	22.8	1.8	16.8	11.2	5.6	7.2	366.3	5	4	**100**
2024	05	24.8	22.7	2.1	12.1	10.7	1.4	3.5	273.0	4	2	**50**
2024	06	24.3	22.7	1.6	16.8	10.9	5.9	7.5	136.5	5	0	**0.0**

The maximum temperature in Nandi indicates a slight decrease from 24.8°C in May 2024 to 24.3°C in June 2024. This observation in June 2024 for Nandi was positive (1.6°C above the mean of the month). Rainfall

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

decreased from 273.0mm in May 2024 to 136.5mm in June 2024. The additive model percentage risk in June 2024 was **NIL.**

Hence, there is no risk of malaria epidemic in Nandi in the month of July 2024 and August 2024. (See Figure 3)

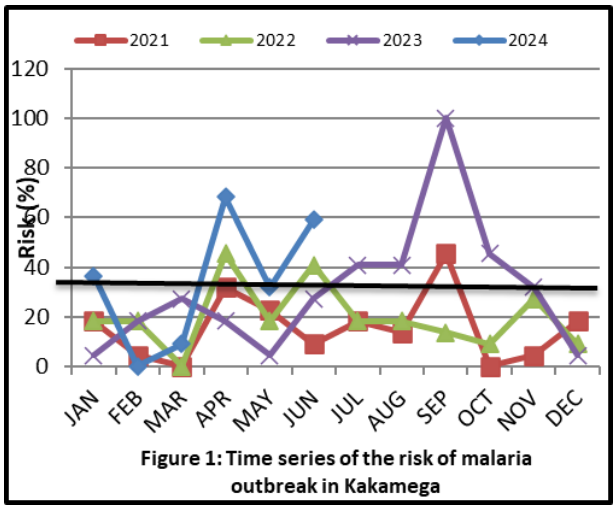

Figure 1: Time series of the risk of malaria outbreak in Kakamega

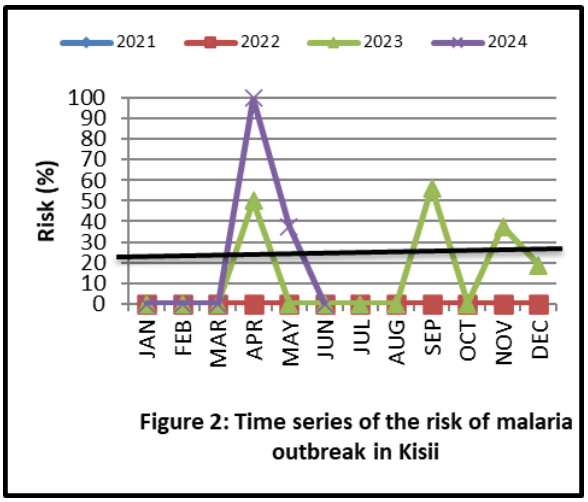

Figure 2: Time series of the risk of malaria outbreak in Kisii

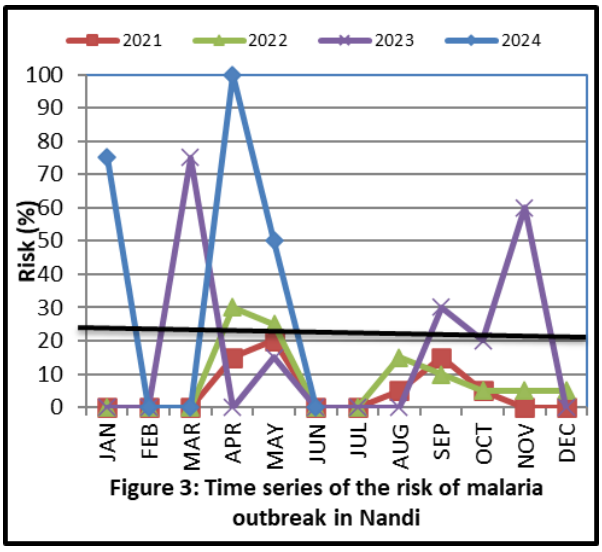

Figure 3: Time series of the risk of malaria outbreak in Nandi

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