



MALARIA EPIDEMIC EARLY WARNING PREDICTION SYSTEM FOR WESTERN KENYA HIGHLAND FOR MARCH 2023

Ref No: KMD/MM/1-2023

Issue Date: 06/03/2023

1. Summary

The model outputs for the malaria epidemic early prediction system for the western highlands of Kenya indicate low risk of malaria outbreak in all the three areas in the months of March and April, 2023.

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 March, 2023.

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
2022	12	27.6	27.5	0.1	166.0	1	1	9.1
2023	01	29.8	28.3	1.5	14.3	0	4	4.5
2023	02	28.6	29.2	-0.3	43.8	0	0	18.2

The observed climate data for February 2023 indicates a decrease in maximum temperature from 29.8°C in January 2023 to 28.6°C in February 2023. However, the maximum temperature anomaly in February 2023 was negative (0.3 below the mean of the month). Rainfall increased from 14.3mm in January 2023 to 43.8mm in February 2023. The additive model percentage risk in February 2023 was 18.2%.

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

Consequently, there is low risk of the Malaria Epidemic outbreak in Kakamega in the month of March and April, 2023. (See Figure 1)

Table 2 below shows the malaria epidemic early prediction system for Kisii for March, 2023.

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
2022	12	25.0	25.4	15.4	15.4	-0.4	0.0	-0.4	0	152.8	0	0
2023	01	27.1	26.1	15.4	15.7	1.0	-0.3	0.7	0	23.0	0	0
2023	02	30.0	27.0	16.9	16.1	3.0	0.8	3.8	4	22.7	0	0

The observed climate data for Kisii for February 2023 indicates an increase in maximum temperature from 27.1°C in January 2022 to 30.0°C in February 2023. This observation in February 2023 was positive (3.0°C above the mean of the month). Rainfall slightly decreased from 23.0mm in January 2023 to 22.7 mm February 2023. The Model output risk is Nil.

Box 2:

For Kisii, the epidemic threshold level is 20%.

Hence there is low risk of malaria epidemic in Kisii in the month of March and April, 2023. (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 March, 2023.

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 Filter	Multiplicative Model
2022	12	24.3	24.7	0.6	11.8	10.8	1.0	1.6	167.1	2	0	0
2023	01	26.4	23.3	0.1	8.9	10.9	-2.0	2.1	17.8	5	0	0
2023	02	29.6	23.2	6.4	10.3	11.7	-1.4	5.0	13.2	5	0	0

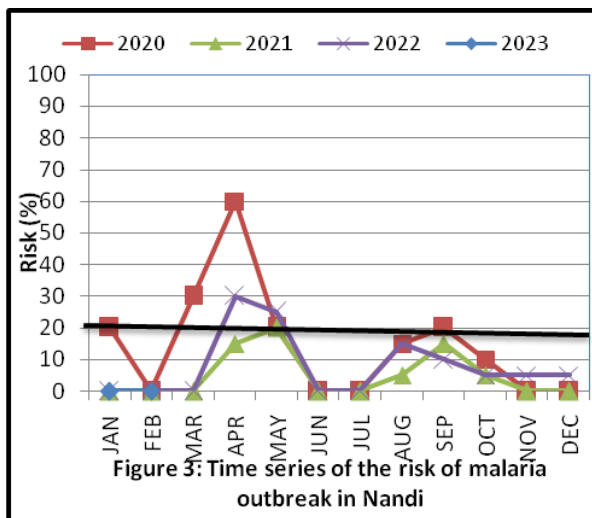
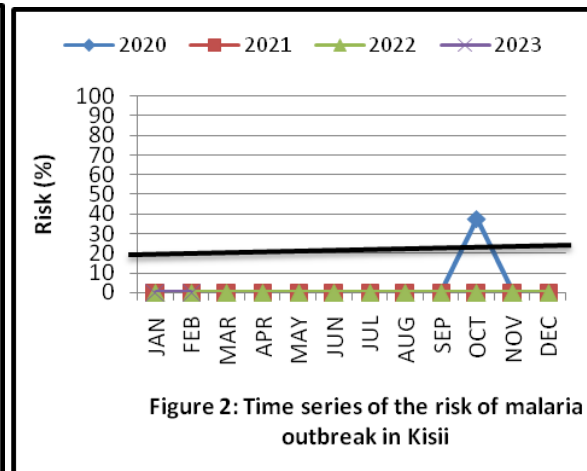
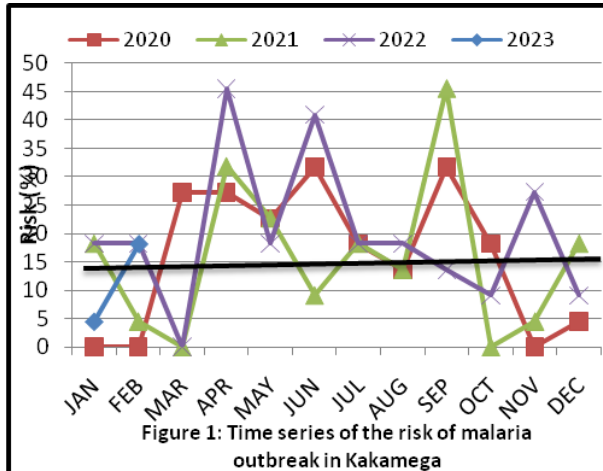
The maximum temperature in Nandi increased from 26.4°C in January 2023 to 29.6°C in February 2023. This observation in February 2023 for Nandi

Box 3:

For Nandi, epidemic threshold level is 20%.

was positive (6.4°C above the mean of the month). Rainfall decreased from 17.8mm in January, 2023 to 13.2mm in February, 2023. The February, 2023 multiplicative model percentage risk for malaria was Nil.

Hence, there is low risk of malaria epidemic in Nandi in the month of March and April, 2023. (See Figure 3)



Dr Gikungu
DIRECTOR, KENYA METEOROLOGICAL DEPARTMENT