Republic of Kenya   **Republic of Kenya**

KENYA METEOROLOGICAL DEPARTMENT   **MINISTRY OF HEALTH**

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

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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 February and March, 2023.

The weather observations indicate generally an increase in maximum temperature 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, 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

The observed climate data for January 2023 indicates an increase in maximum temperature from 27.6°C in December 2022 to 29.8°C in January 2023. However, the maximum temperature anomaly in January 2023 was positive (1.5 above the mean of the month). Rainfall decreased from 166.0mm in

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

December 2022 to 14.3mm in January 2023. The additive model percentage risk in January 2023 was 4.5%.

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

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

The observed climate data for Kisii for January 2023 indicates an increase in maximum temperature from 25.0°C in December 2022 to 27.1°C in January 2023. This observation in January 2023 was positive (1.0°C above the mean of the month). Rainfall decreased from 152.8mm in December 2022 to 23.0 mm January 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 February and March, 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 February, 2023.

Table 3: NANDI MALARIA EPIDEMIC EARLY PREDICTION SYSTEM

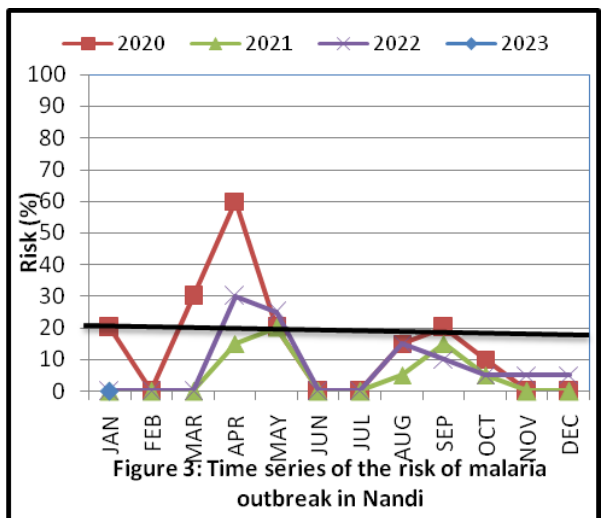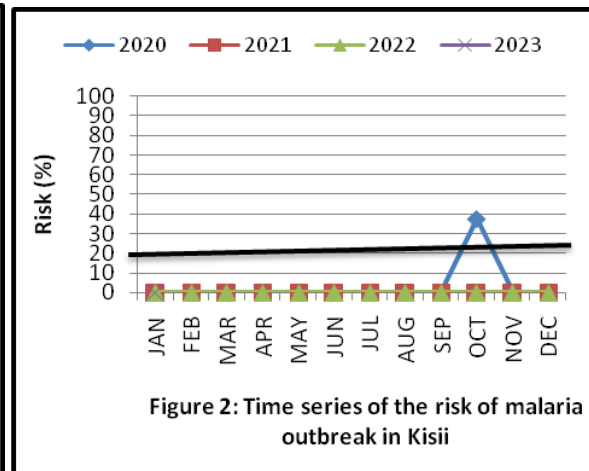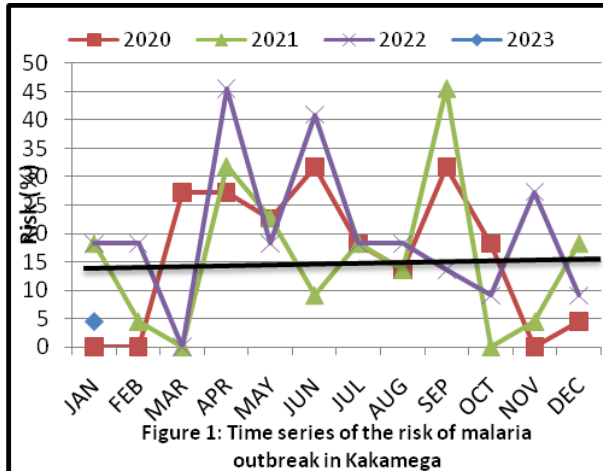| Yr	Mon	Tmax (°C)	Mean Tmax(°C)	Tmax Dev.	Tmin	Mean Tmin	Tmin Dev./anom	Total Temp Dev./Anom.	R/fall (mm)	Temp Dev. Filters	R/fall Filters	Multiplicative Model
2022	12	24.3	24.7	0.6	11.8	10.8	1.0	1.6	167.1	2	0	0
2023	01	26.4	23.3	0.1	8.9	10.9	-2.0	2.1	17.8	5	0	0

The maximum temperature in Nandi increased from 24.3°C in December 2022 to 26.4°C in January 2023. This observation in January 2023 for Nandi

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

was positive (0.1°C above the mean of the month). Rainfall decreased from 167.1mm in December 2022 to 17.8mm in January, 2023. The January, 2023 multiplicative model percentage risk for malaria was Nil.

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