Republic of Kenya

KENYA METEOROLOGICAL DEPARTMENT

MINISTRY OF HEALTH

MALARIA EPIDEMIC EARLY WARNING PREDICTION SYSTEM FOR WESTERN KENYA HIGHLAND FOR MARCH 2022

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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 three the areas in the months of March and April 2022.

The weather observations indicate generally an increase in monthly Rainfall amounts 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 March 2022.

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
2021	12	29.5	27.5	2.0	54.4	0	4	18.2
2022	01	29.2	28.3	0.9	70.6	0	1	18.2
2022	02	28.6	29.2	-0.6	103.5	0	0	4.5

The observed climate data for February 2022 indicates a slight decrease in maximum temperature from 29.2°C in January 2022 to 28.6°C in February 2022. However, the maximum temperature anomaly in February 2022 was negative (0.6 below

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

the mean of the month). Rainfall increased from 70.6mm in January 2022 to 103.5mm in February 2022. The additive model percentage risk in January 2022 was 4.5%.

Consequently, there is low risk of the Malaria Epidemic outbreak in Kakamega in the month of March and April 2022. (See Figure 1)

Table 2 below shows the malaria epidemic early prediction system for Kisii for March 2022.

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
2021	12	25.9	25.4	16.1	15.4	0.5	0.7	1.2	2	65.4	0	0
2022	01	26.4	26.1	15.9	15.7	0.3	0.2	0.5	0	96.4	0	0
2022	02	26.5	27.0	15.9	16.1	-0.5	-0.2	-0.7	0	159.3	0	0

The observed climate data for Kisii for February 2022 indicates a slight increase in maximum temperature from 26.4°C in January 2022 to 26.5°C in February 2022. This observation in February 2022 was negative (0.5°C below the mean of the month). Rainfall increased from 96.4mm in January 2022 to 159.3mm in February 2022. 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 March and April 2022. (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 2022.

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
2021	12	25.3	23.7	1.6	11.4	10.8	0.6	2.2	57.6	3	0	0.0
2022	01	25.4	23.3	2.1	11.1	10.9	0.2	2.3	68.6	3	0	0.0
2022	02	25.5	23.2	2.3	11.8	11.7	0.1	2.4	75.6	3	0	0.0

The maximum temperature in Nandi slightly increased from 25.4°C in January 2022 to 25.5°C in February 2022. This observation in February 2022 for Nandi was positive (2.3°C above the mean of the month). Rainfall increased from 68.6mm in January 2022 to 75.6mm in February 2022. The February 2022 multiplicative model percentage risk for malaria was Nil.

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

Hence, there is no risk of malaria epidemic in Nandi in the month March and April 2022. (See Figure 3)

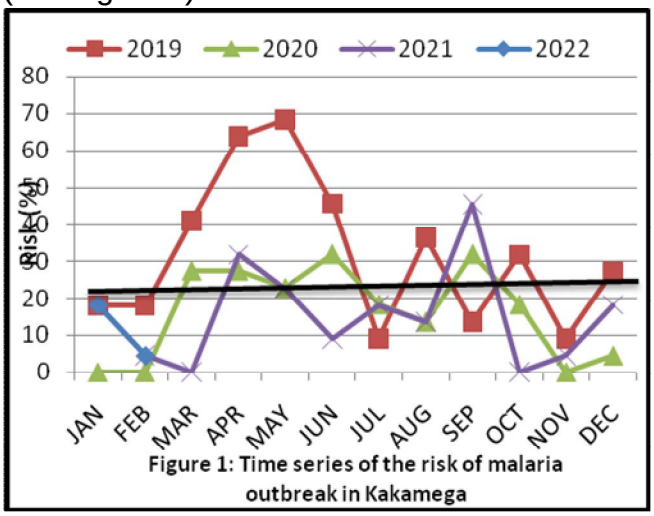

Figure 1: Time series of the risk of malaria outbreak in Kakamega

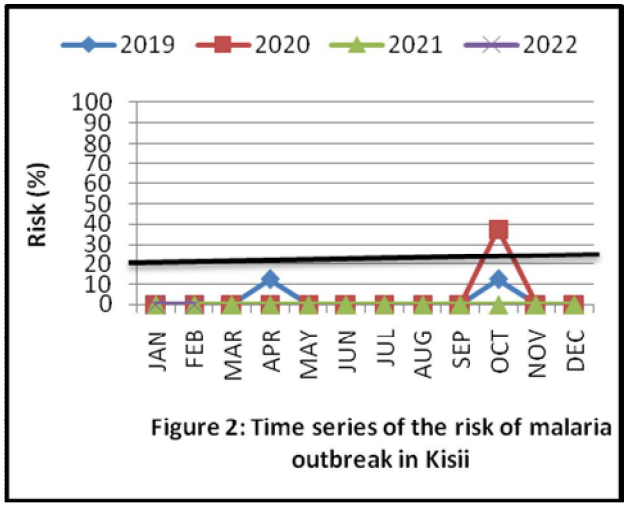

Figure 2: Time series of the risk of malaria outbreak in Kisii

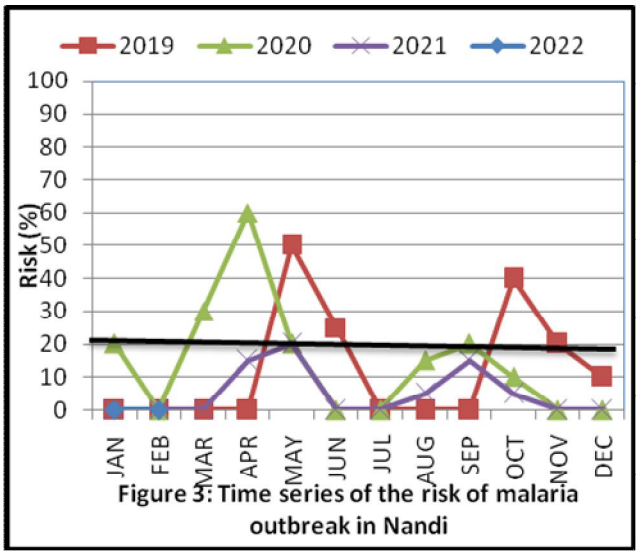

Figure 3: Time series of the risk of malaria outbreak in Nandi

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