

Republic of Kenya



KENYA METEOROLOGICAL DEPARTMENT

Republic of Kenya



MINISTRY OF HEALTH



MALARIA EPIDEMIC EARLY WARNING PREDICTION SYSTEM FOR WESTERN KENYA HIGHLAND FOR SEPTEMBER 2021

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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 **three areas** in the months of September and October 2021.

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 September 2021.

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
2020	12	29.1	27.5	1.6	108.1	0	4	4.5
2021	01	28.3	28.3	0.0	104.2	0	1	18.2
2021	02	29.0	29.2	-0.2	135.2	0	0	4.5
2021	03	30.0	29.1	0.9	92.7	0	1	0.0
2021	04	27.8	27.3	0.5	290.6	6	1	31.8
2021	05	27.0	26.4	0.6	234.7	4	1	22.7
2021	06	27.9	25.8	2.1	161.2	1	4	9.1
2021	07	26.8	25.6	1.2	71.3	0	4	18.2
2021	08	27.5	26.1	1.4	224.0	3	4	13.6

The observed climate data for August 2021 indicates an increase in maximum temperature. However, the maximum temperature

This early detection system for western highlands of Kenya is a collaborative effort between Kenya Meteorological Dept, Kenya Medical

Box 1:

For Kakamega, the epidemic threshold level is 30%.

anomaly in August 2021 was positive (1.4 above the mean of the month). Rainfall increased from 71.3mm in July 2021 to 224.0mm in August 2021. The additive model percentage risk in August 2021 was 13.6%.

Consequently, there is low risk of the Malaria Epidemic outbreak in Kakamega in the month of September and October 2021. (See Figure 1)

Table 2 below shows the malaria epidemic early prediction system for Kisii for September 2021.

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
2020	12	26.1	25.4	15.8	15.4	0.7	0.4	1.1	2	178.4	0	0
2021	01	26.0	26.1	15.8	15.7	-0.1	0.1	0.0	0	73.8	0	0
2021	02	26.5	27.0	16.1	16.1	-0.5	0.0	-0.5	0	192.2	0	0
2021	03	27.7	27.0	15.8	15.9	0.7	-0.1	0.6	0	139.3	0	0
2021	04	25.8	25.5	15.6	15.8	0.3	-0.2	0.1	0	264.6	2	0
2021	05	24.7	25.1	15.7	15.6	-0.4	0.1	-0.3	0	272.7	2	0
2021	06	25.2	24.6	14.9	15.0	0.6	-0.1	0.6	0	94	0	0
2021	07	24.3	24.5	14.4	14.5	-0.2	-0.1	-0.3	0	72.5	0	0
2021	08	25.9	24.9	15.3	14.7	1.0	0.6	1.6	2	167.8	0	0

The observed climate data for Kisii for August 2021 indicates an increase in maximum temperature from 24.3°C in July 2021 to 25.9°C in August 2021. This observation in August 2021 was positive (1.0°C above the mean of the month). Rainfall increased from 72.5mm in July 2021 to 167.8mm in August 2021. 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 September and October 2021. (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 September 2021.

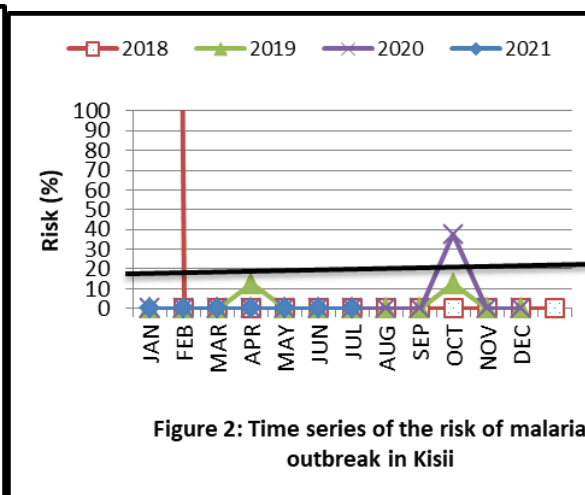
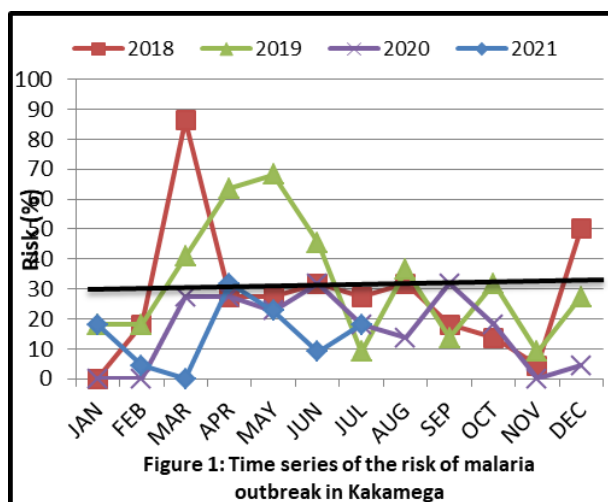
Table 3: NANDI MALARIA EPIDEMIC EARLY PREDICTION SYSTEM

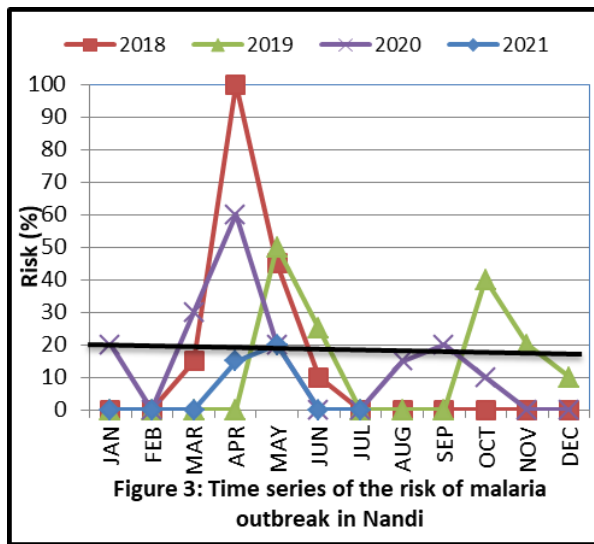
Yr	Mon	Tmax (°C)	Mean Tmax (°C)	Tmax Dev.	Tmin	Mean Tmin	Tmin Dev./anom	Total Temp Dev./Anom	R/fall (mm)	Temp Dev. Filters	R/fall Filter	Multiplicative Model
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2020	12	25.1	23.7	1.4	10.4	10.8	-0.4	1.0	70	1	0	0.0
2021	01	25.0	23.3	1.7	11.0	10.9	0.1	1.8	187.7	2	0	0.0
2021	02	23.3	23.2	0.1	11.5	11.7	-0.2	-0.1	121.7	1	0	0.0
2021	03	26.8	23.0	3.8	11.3	11.5	-0.2	3.6	86.2	4	0	0.0
2021	04	24.5	22.8	1.7	11.9	11.2	0.7	2.4	301.1	3	3	15.0
2021	05	24.1	22.7	1.4	12.0	10.7	1.3	2.7	222.5	3	1	20.0
2021	06	24.1	22.7	1.4	10.9	10.9	0.0	1.4	66.4	2	0	0.0
2021	07	22.7	22.8	-0.1	12.0	10.6	1.4	1.3	117.8	2	0	0.0
2021	08	23.7	23.1	0.6	10.2	10.8	-0.6	0.1	213.3	1	1	5

The maximum temperature in Nandi increased from 22.7°C in July 2021 to 23.7°C in August 2021. This observation in August 2021 for Nandi was negative (0.6°C below the mean of the month). Rainfall increased from 117.8mm in July 2021 to 213.3mm in August 2021. The August 2021 multiplicative model percentage risk for malaria was 5%.. Hence, there is low risk of malaria epidemic in Nandi in the month of September and October 2021. (See Figure 3)

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





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