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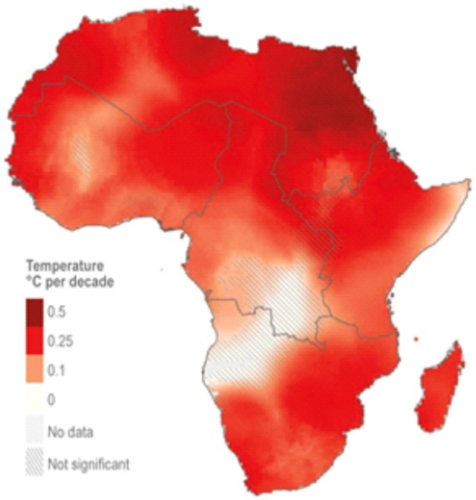
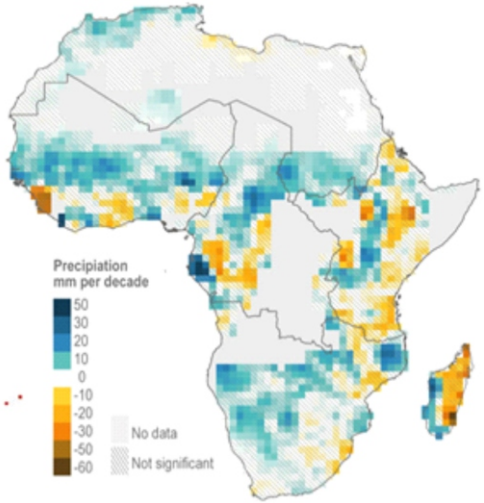
UNIVERSITY OF ZIMBABWE

Climate-Driven Protracted Malaria Surge in Africa:

A Case of Loss and Damage





Climate-Driven Protracted Malaria Surge in Africa: A case of Loss and Damage

Researchers with the University of Zimbabwe have noted the impact of climate change in cases of emerging evidence of high incidences of Malaria in areas that were previously free of the disease. Rising temperatures and extended rainfall seasons are creating ideal conditions for the mosquito vector that transmits malaria, leading to an increase in the number of cases and a spread of the disease to new regions. Geographic locations with similar climatic conditions are widespread in Africa (see Figure 1) suggesting that incidences of malaria will increase across the region.

The Malaria vector is increasingly resistant to existing control measures, affecting poor communities and increasing pressure on African governments to fund new ways of control and treatment.

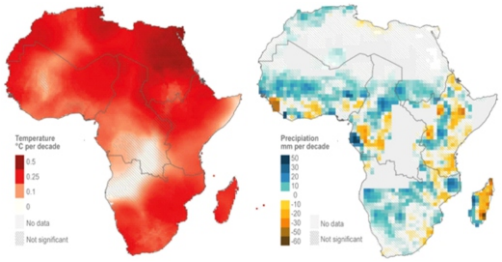


Figure 1: *observed changes in temperature and precipitation (1980 to 2015) in Africa. Source IPCC (2021).*

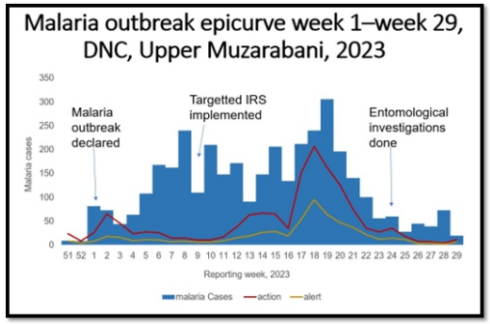


Figure 2: *Peaks of Malaria incidences during the outbreak*

The University of Zimbabwe conducted a research on a malaria outbreak in Upper Muzarabani, Centenary district in 2023. Research has shown increased cases of Malaria expanding into Upper Muzarabani, a place that used to have very low incidences of the disease. The major observations of the impact of climate change related Malaria incidences are:

1. Incidences of Malaria has traditionally been endemic in the Lower Muzarabani area contributing much of the district's malaria cases, but recent observations showed increased incidences in the Upper Muzarabani (see Figure 2)

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2. One observed Malaria outbreak persisted for 29 weeks against a target of control of outbreaks within 2 weeks.
3. All the 4 wards in Upper Muzarabani had a case incidence of greater than 20/1000 population, Nyamanetsa (Ward 14) had the highest incidence of 361/1000 nearly 1 case per every household. This came to an overall attack rate of 132/1000 population against an annual malaria parasite incidence of 60/1000
4. During the outbreak, a major peak came at week 19 despite implementation of outbreak control strategies.
5. Entomological investigations conducted in week 24 of the outbreak noted both phenotypic and genotypic insecticide (*pyrethroid*) resistance with 26. 6% of the sampled mosquitoes expressing CYP6P9a_R allele responsible for *pyrethroid* resistance (Figure 3).

The Need for Urgent Action

The protracted malaria surge in Africa is a public health emergency that demands urgent action. To effectively combat this crisis, we need:

1. Increased Access to Research Funding: We must prioritize research into new and improved malaria control measures, including vaccines, vector control strategies, and antimalarial drugs.
2. Innovation and Development of New Control Measures: We must invest in the development of innovative and effective malaria control measures that can address the challenges posed by climate change and drug resistance.

Join the Fight against Malaria

Together, we can overcome the challenge of climate-driven malaria resurgence in Africa. By supporting research, innovation, and the development of new control measures, we can protect the health and well-being of millions of people.

Entomological investigations – June 2023

Entomological investigation indicator	Findings
Predominant Malaria vector	Total mosquitoes collected 75
Insecticide resistance bioassays (pyrethroids)	(6/9) 67% of malaria vector susceptible at 30 minutes diagnostic time
Genetic insecticide resistance testing (pyrethroids) *CYP6P9a_R*	# of vector samples 30 Homozygous resistant (RR) 8 Heterozygous (RS) 16 Susceptible (SS) 6

Figure 3: *Data on vector resistance to control measures*