



**Conferência sobre o
Impacto das Mudanças
Climáticas na Saúde**

The future of arboviral diseases and the urgent need for malaria and arbovirus integrated prevention and control approaches in Mozambique

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Mosquito-borne diseases of public health concern

Malaria

241 million
cases
> 600,000 deaths

Dengue

105 million
cases
> 4,000 deaths

Yellow fever

109 thousand
cases
51,000 deaths

Chikungunya

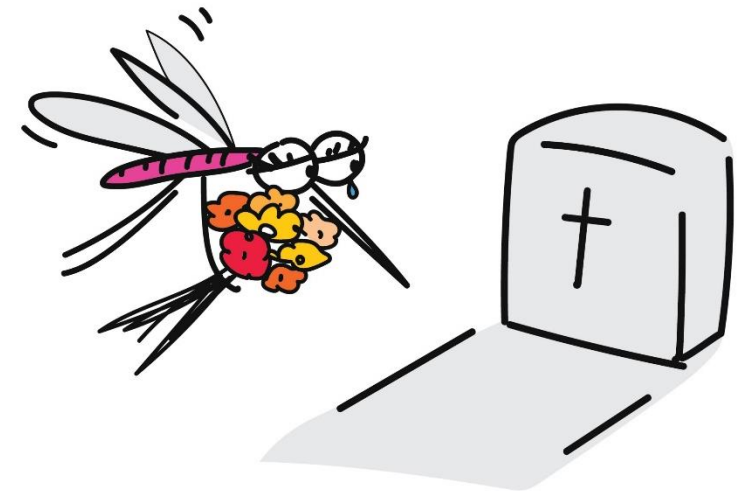
106,000 DALY

Japanese encephalitis

68 thousand
cases
> 20 deaths

West Nile Fever

> 2,588 cases.
1% with
complication



Most implicated vector of arboviruses

Anopheles (483 espécies)

- Malaria
- Filariose linfática
- **O'nyong-nyong virus**
- Rickettsioses

Aedes (935 espécies)

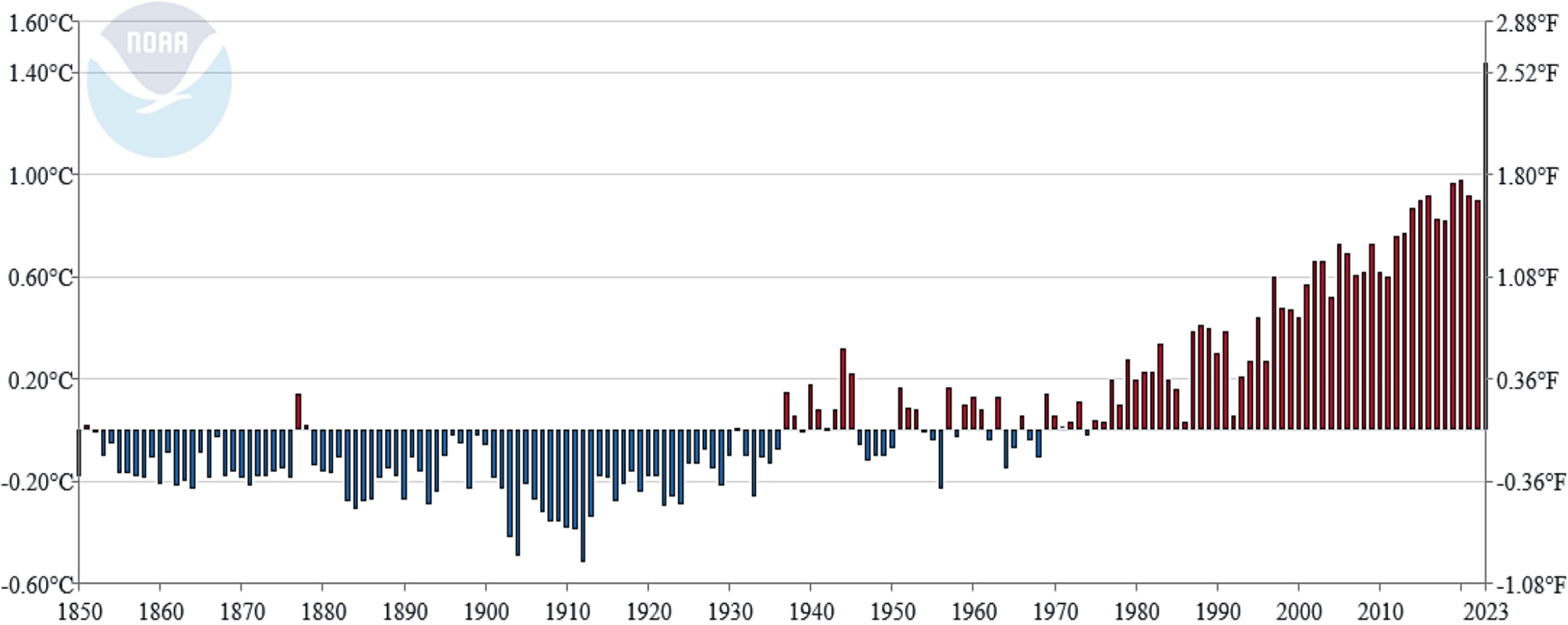
- **Dengue**
- **Chikungunya**
- **Zika virus**
- **Yellow fever virus**
- **Rift valley fever**
- Many other viruses

Culex (807 especies)

- **West Nile Fever virus**
- **Rift valley fever**
- **Japanese encephalitis viruses**
- Many more viruses
- Lymphatic filariasis

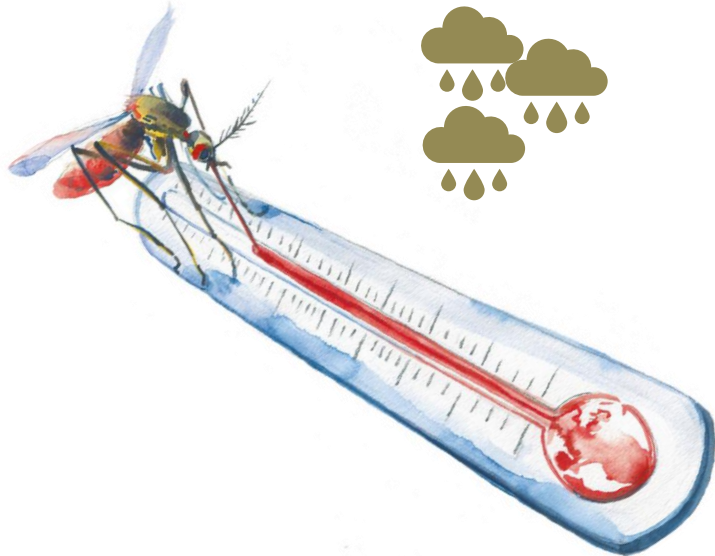
Frequent human-associated arbovirus

The planet earth is “boiling”

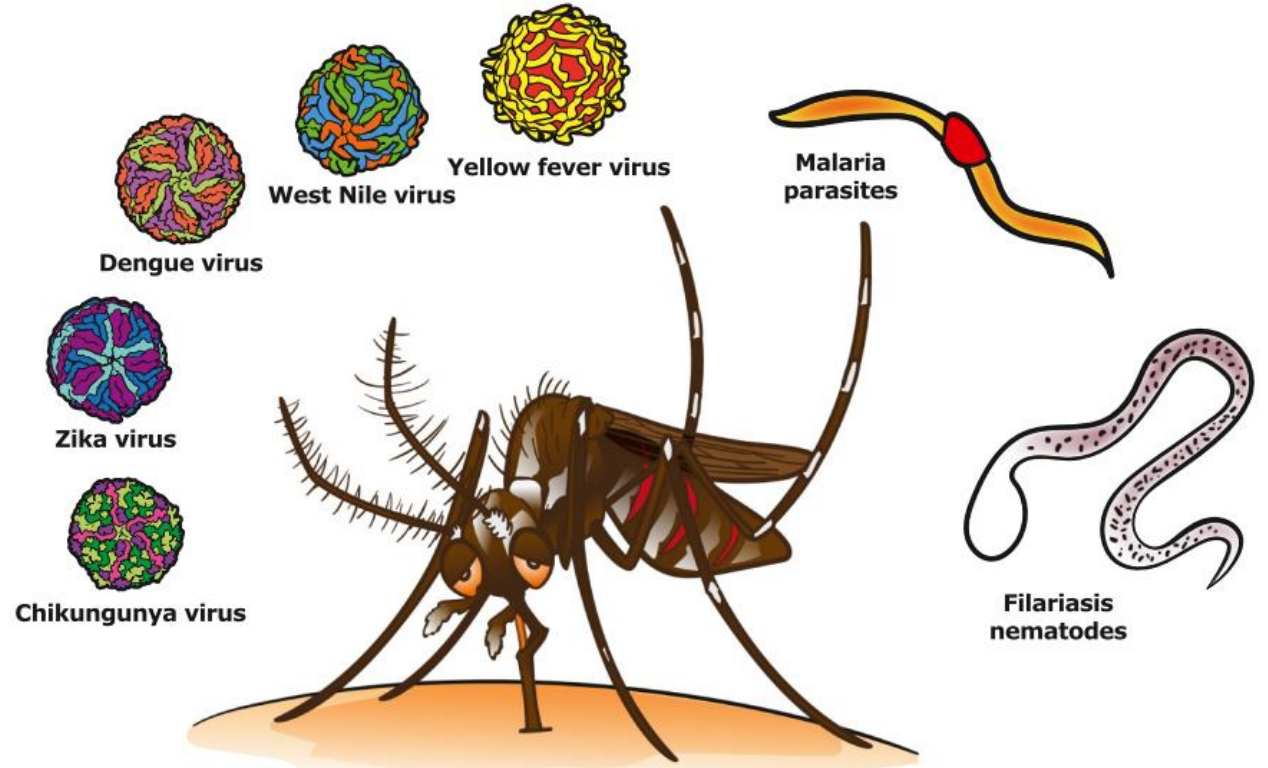


Vector and pathogen traits are climate sensitive

Climate factors

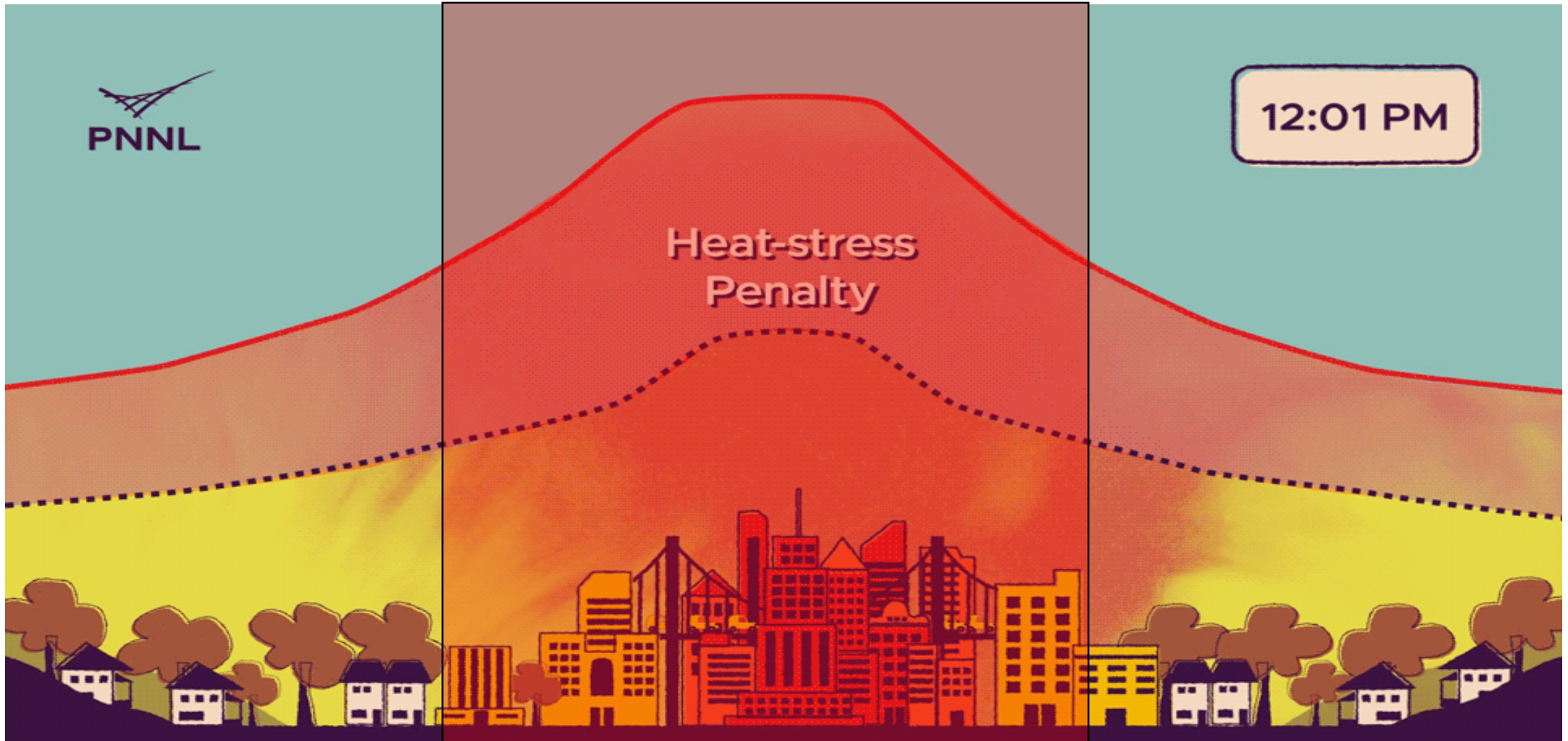


<https://doi.org/10.1038/s41590-020-0648-y>



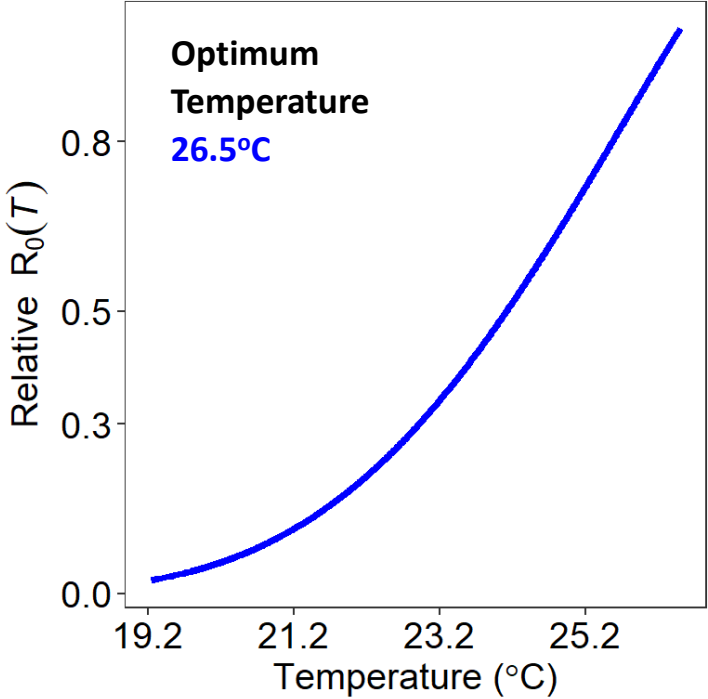
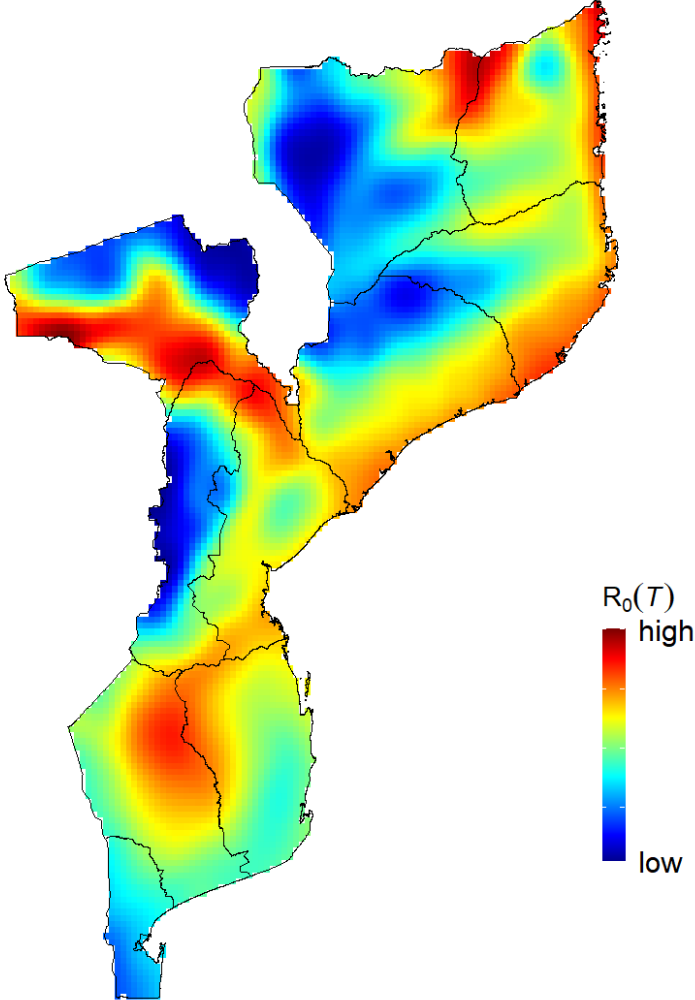
Trends in Parasitology

Climate change is expanding transmission risk

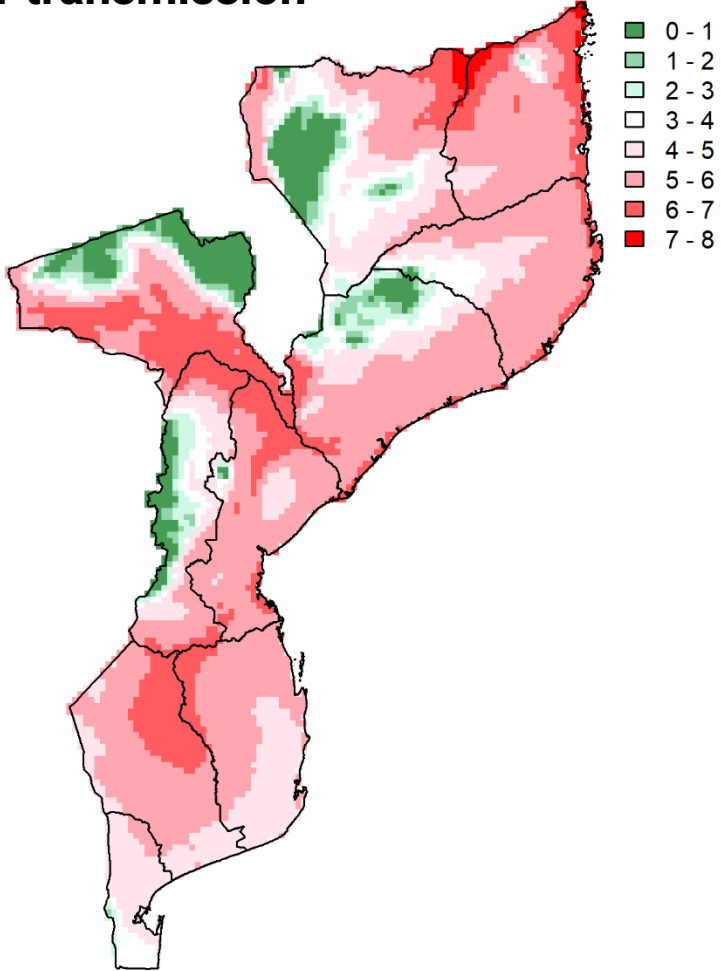


Thermal suitability for dengue transmission in Mozambique

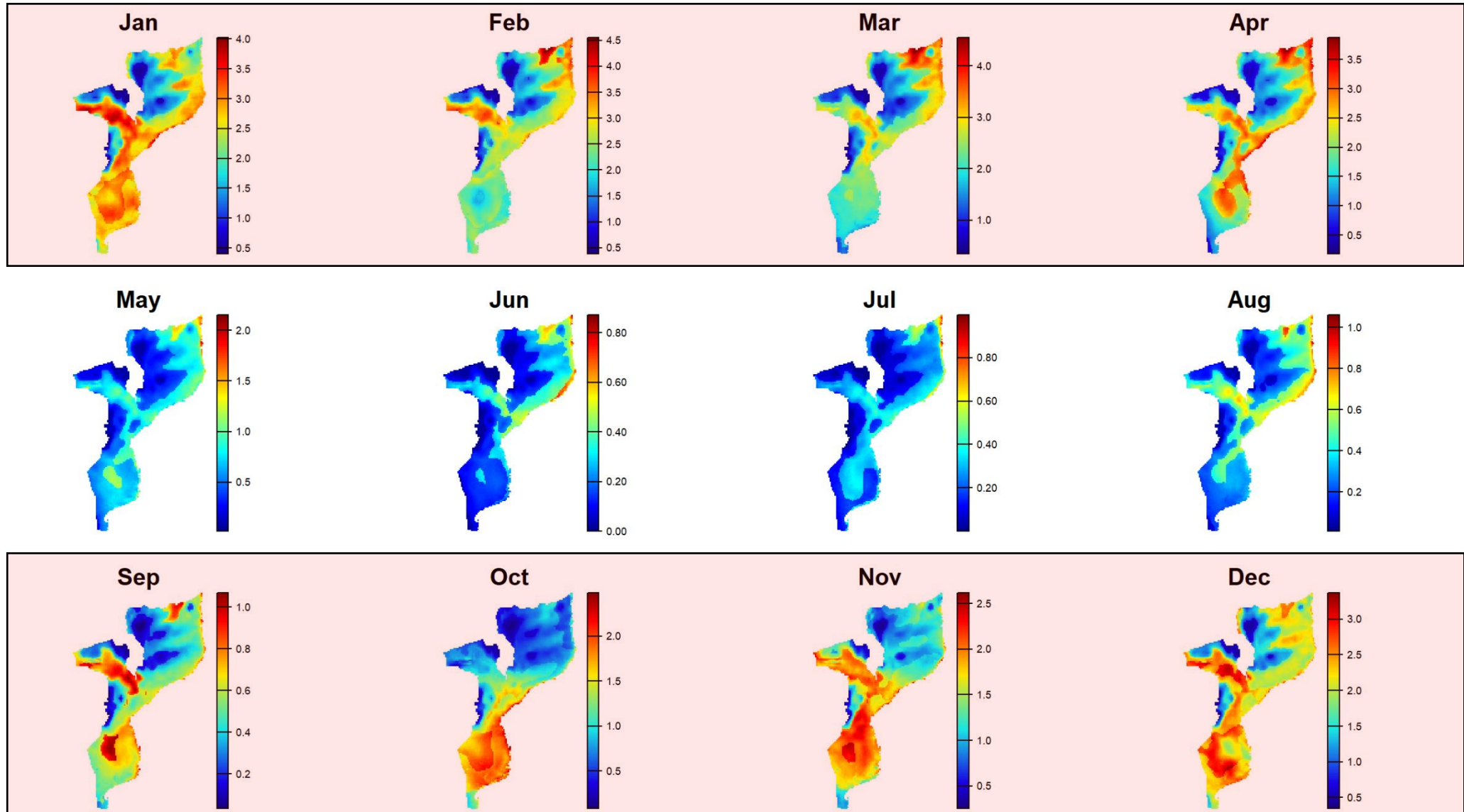
Transmission suitability $R_0(T)$ in 2022



Number of months permissive for transmission

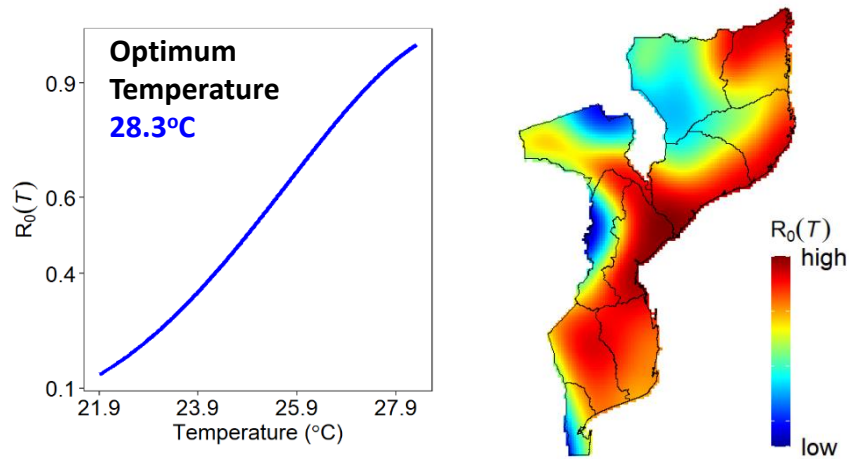


Spatial-temporal trend in transmission suitability

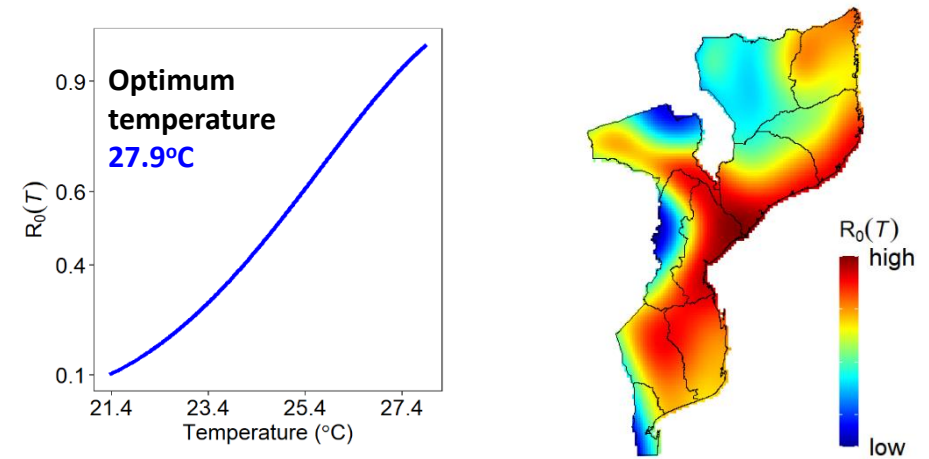


Transmission suitability under climate change scenarios

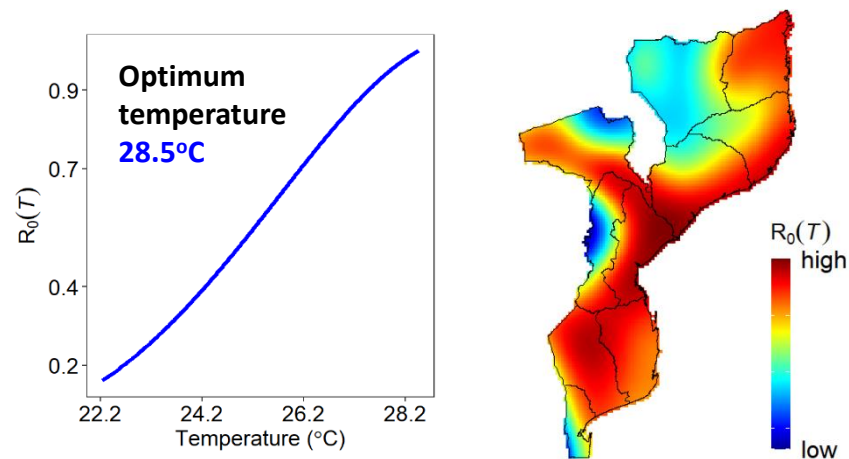
Transmission suitability in 2050
Low emission (RCP 2.6)



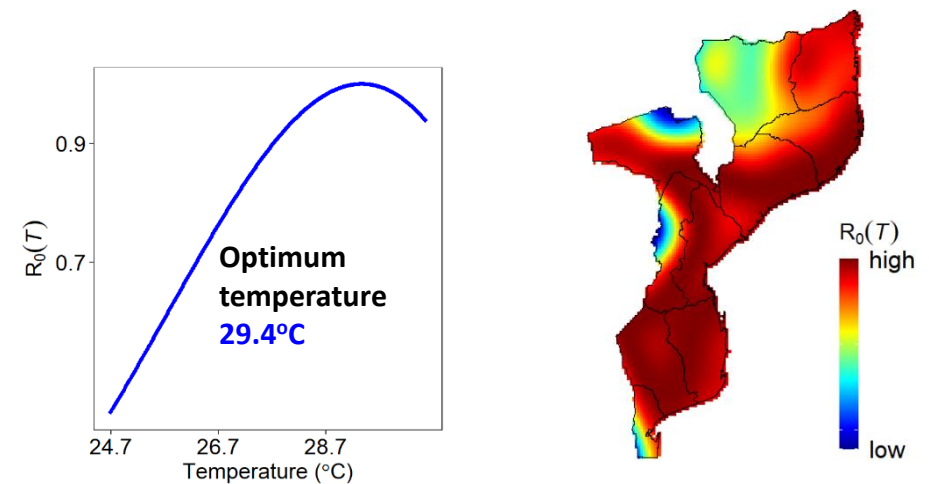
Transmission suitability in 2080
Low emission (RCP 2.6)



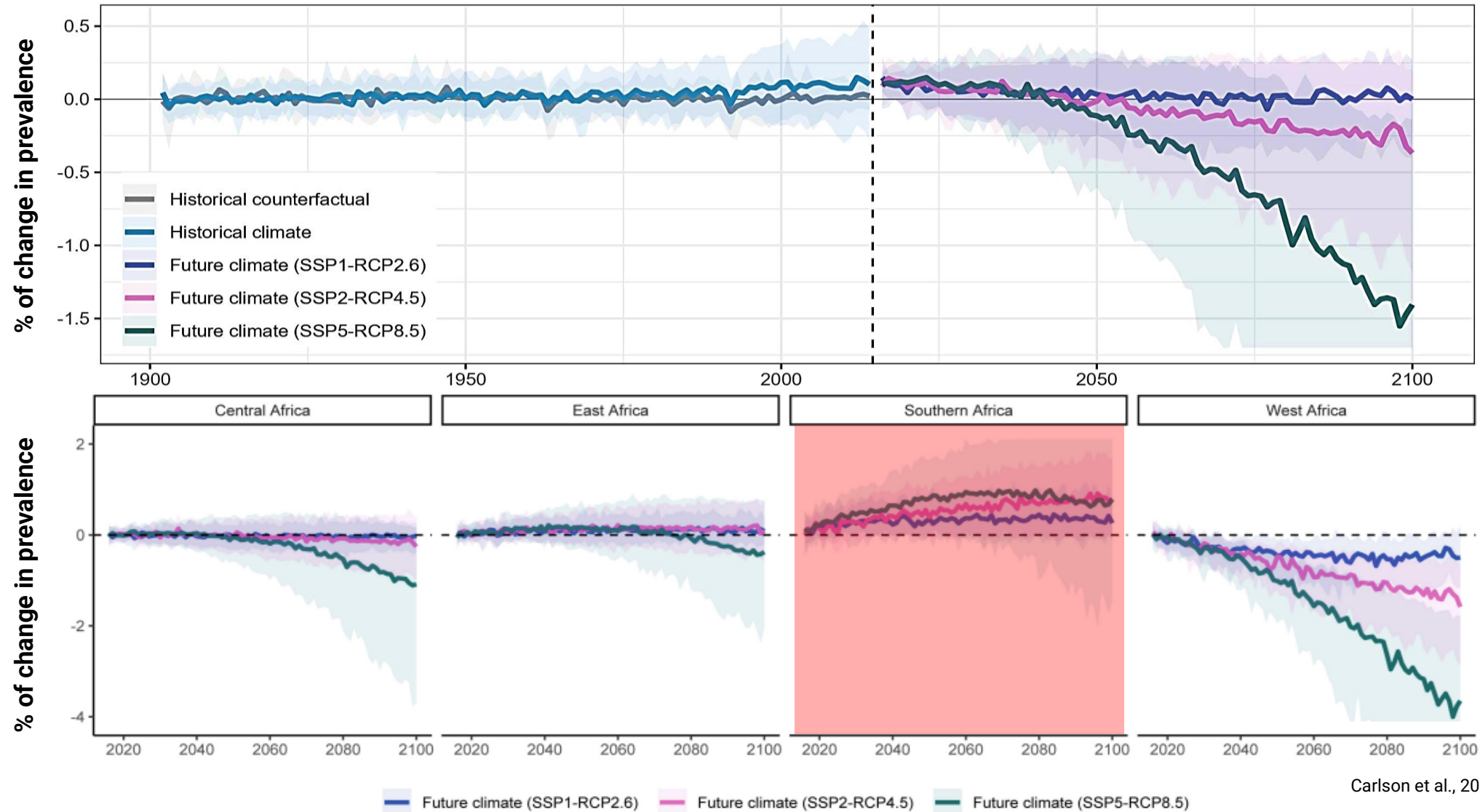
Transmission suitability in 2050
High emission (RCP 8.5)



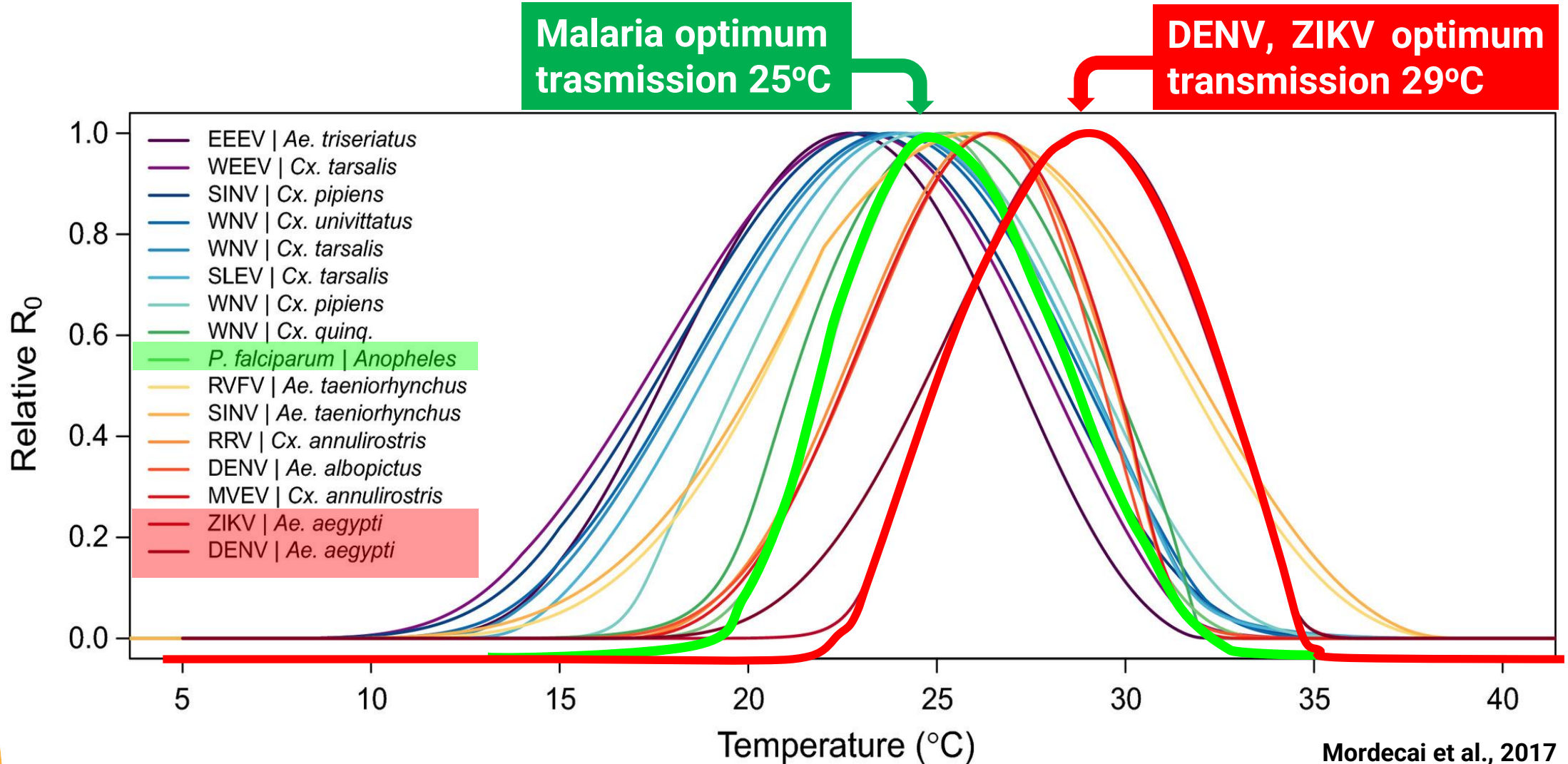
Transmission suitability in 2080
High emission (RCP 8.5)



Climate change may “eradicate” malaria from some regions and exacerbate the burden in others



Differential temperature-dependent suitability for malaria and arboviral diseases



Wrapping up

Climate change may increase the risk, frequency and intensity of arboviral diseases epidemics in Mozambique

It may also increase malaria transmission and burden in the country

This is a sharper reminder to improve preparedness for near future epidemics and challenges

Establishment of malaria and arboviral disease co-surveillance system

Co-integration will facilitate rapid response and allocation of control resources in case of epidemics



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