Reviewer’s report

Title: Effect of Transmission Intensity on Hotspots and Micro-Epidemiology of Malaria in sub-Saharan Africa

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Reviewer: Samir Bhatt

Reviewer’s report:

This is an interesting paper exploring micro-epidemiology of malaria - an area of research that has been under studied.

The authors aggregate data over a yearly period, this removes a huge amount of temporal signal that could be seasonal. This is valid at coarse spatio-temporal resolutions such as Noor et al 2014, but is far less justified in micro-epidemiological settings where seasonal fluctuations can have a large impact.

In testing the null hypothesis the authors state they use "monte carlo simulation", do they mean they performed bootstrapping? If so did they sample with replacement? This is crucial to ensuring valid p-values.

In results "Hotspots and clustering of malaria cases" the authors do not state how the trendline is generated. Is this simply a loess or is it a parametric polynomial/ nonparametric spline? If the later why are no confidence intervals provided, if the former what is the authors justification for using this rather blunt tool.

The P-values and trendlines in figure 2a and c just do not look believable. This is the perennial problem with using p values rather than statistical confidence. This greatly undermines the results.

Minor

This is a point that arises in many publications of this kind, and I think the authors would take a large step in the right direction by finally clarifying terms. It would be nice to see how to formally define the concept of a hotspot. Using this term is rather vague, is a hotspot an area with 20% prevalence? Is it an area with n degrees higher prevalence than the average? Is it an area of high incidence?

When referring to malaria at different scales, the authors should make reference to the modifiable area unit problem

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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