Reviewer's report

Title: Spatial-temporal analysis of malaria and the effect of environmental factors on its prevalence in Yongcheng, China, 2006-2010

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Reviewer: Li-Qun Fang

Reviewer's report:

In general, this manuscript focused on the space-time distribution pattern of malaria and influencing factors associated with malaria prevalence in Yongcheng from 2006 to 2010. According to the authors, annual malaria incidences at town-level decreased from the north to south, and monthly incidences at prefecture-level demonstrated a strong seasonal pattern with a peak from July to November. Significant factors contributing to malaria incidence were maximum temperature at one month lag, average humidity at one month lag, and the incidence of the previous month.

Major Compulsory Revisions:
1. Conclusions are obvious and old. The authors could conclude the results better. e.g. "Spatial-temporal analyses offer powerful tools for understanding incidence shifts as environment change. Historical weather and malaria data can be critical for optimizing current malaria monitoring and control, and malaria control targets should vary with the malaria transmission intensity, with more public resource allocated to controlling source of infections instead of An. sinensis density when malaria incidence is low."

2. The model has not really been extrapolated and validated for prediction, only the fit of historical malaria incidences. So, it is far from a reliable model (mentioned in section "Conclusion", "A reliable model has been developed in this study to predict the expected incidences of malaria based on historical malaria epidemics and a combination of weather factors at one month lag, which would simplify malaria surveillance by targeting control of malaria more effectively.").

Minor Essential Revisions
1. It is need to shorten the methods, and literatures can be used instead, e.g., "Kriging analysis for spatial interpolation of meteorological factors.", "GEE models".

2. Some of sentences need be removed from section "Results", e.g., "According to QIC values in models with various lag sizes, it can be concluded that An. sinensis density, average, maximum and minimum temperature, average and maximum humidity had 1-month lags respectively; rainfall had a 2-month lag; average, maximum and extreme wind velocity had no lags (Table 1). All these significant factors with various lag sizes were entered into the multivariable
model.

3. Poor plotting or mapping for figures e.g., on legend, scale, small resolution, etc.

4. Significant review for English grammar and readability is needed.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.