**Reviewer's report**

**Title:** Assessing Chikungunya risk in a metropolitan area of Argentina through satellite images and mathematical models

**Version:** 0  **Date:** 21 Aug 2015

**Reviewer:** David Gabriel Regan

**Reviewer's report:**

This a potentially interesting modelling paper that I feel is let down by a lack of detail. The description of the methods employed relies too heavily on the supplementary material, which will only be understood by those with a strong mathematical background. A more complete description of the model, including how travel is implemented, how infection is introduced and how the simulations are run and analysed should be given in the main document in terms that will be understood by the lay reader of BMC Infectious Diseases. There should also be more detailed discussion of the results rather than simply referring to the figures. The language used in the manuscript should also be reviewed as there are many grammatical and spelling errors throughout the manuscript. I also think the Results could be better described in the Abstract and I don't see how the final sentence of the Conclusion follows from either the results as they are presented or the conclusions that precede this sentence.

**Specific comments:**

1) It is not clear from the manuscript how human travel/movement is implemented. It is stated that this is proportional to population size but does this determine the rate to or from a population centre or both? It is stated in the supplementary material that this is determined by a matrix but this matrix is not given.

2) Lines 176-178: "...it was possible to test whether a difference arise from considering epidemic thresholds from symptomatic or asymptomatic individuals...". It is not clear to me what this means or how it was analysed.

3) Methods lines 173-180: the description of "measures used to quantify the probability of an outbreak" is inadequate and it is thus difficult to know how to interpret Figures 4 and S1. Furthermore, there should be some discussion of Figure S1 where these probabilities appear to be identical across all months except for a small difference for the red bars in June and a bigger difference in July. How do the authors explain this?
4) Conclusions lines 228-230: the authors state that "(1) reducing the movement of exposed individuals could reduce the spread of the disease and (2) reducing the population size of the vector could reduce the probability of disease transmission". This begs the obvious question, why not use the model to explore this? The paper would have far more impact if the impact of these potential interventions (and perhaps others) were investigated.

Minor comments:

1) Abstract lines 18-19: it should be stated that "In America, it is transmitted mainly by the MOSQUITO Aedes aegypti...". Similarly add "...and at that time THE MOSQUITO Ae. aegypti appeared to be the main vector..." at line 52 in Background.

2) Abstract lines 21-22: the name of city should be given, i.e., "...in the metropolitan area of Buenos Aires, the capital city of Argentina."

3) Line 77: it is not clear to me what an "intrinsic" incubation period is?

4) There are numerous abbreviations throughout the manuscript that are not defined. Each abbreviation should be defined the first time it appears in the manuscript.

5) The format used for references is not the correct format for BMC Infectious Diseases. These should be numbered and the authors should refer to the instructions to authors for the correct format.

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.

Unable to assess

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

Unable to assess
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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I am able to assess the statistics

Quality of written English
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