Theoretical and Applied Climatology

Reviewers' comments:

Reviewer #1: The article presents a relevant topic regarding the proliferation of diseases typical of the State of Rio de Janeiro concerning the climate changes projected for the future. The article is well written and structured, but it still needs many revisions that need to be considered for the manuscript to be improved.

The reviewer did not specifically points for review, making adaptation work difficult due the generality.

Reviewer #2: Major comments

\* Justify better the choice of models used (e.g. other papers using them. What is the difference between them?)

Done. The selection of models is not due to the researchers' choices. At the time of preparing this research results, INPE had data only from models used in the paper. And from the literature, the characteristics of each model are indicated. The limitation imposed by the editorial scope of the magazine prevents extensive details of these.

\* Your study area is in Brazil but you require looking out other works and refer them here to demonstrate international significance of this work.

The article presents a list of bibliographies that have international relevance on the subject and its importance. I highlight some that may have gone unnoticed in the reviewer's at the reading moment:

* Cassab, A.; Morales, V.; Mattar, S. (2011). Factores climáticos y casos de Dengue em Montería, Colombia. 2003-2008. Revista de Salud Pública, 13: 115-128.
* Farnesi, L.C.; Martins, A. J.; Valle, D.; Resende, G. L. (2009). Embryonic develompment of Aedes aegypti (Diptera: Culicidae): influence of different constant temperatures. Mem. Inst. Oswaldo Cruz, 104: 124-126.
* Foo, L.; Lee, H. L.; Fang, R. (1985). Rainfall, abundance of Aedes aegypti infection in Selangor, Malaysia. Southeast Asian. J Trop Med Public Health, 16: 560-568.
* Fullerton, L; Dickin, S.; W. C.. (2014). Mapping Global Vulnerability to Dengue using the Water Associated Disease Index. ONU: United Nations University.42p.
* Gould, E.; Pettersson, J.; Higgs, S.; Charrel, R.; De Lamballerie, X. (2017). Emerging arboviruses: why today? One Heal, 4: 1-13.
* Hayden, M.; Uejio, C.; Walker, K.; Ramberg, F.; Moreno, R.; Rosales, C.; Gameros, M.; Mearns, L.; Zielinski-Gutierrez, E.; Janes, C. (2010). Microclimate and human factors in the divergent ecology of Aedes aegypti along the Arizona, US / Sonora, MX Border. Eco Health, 25: 1– 14, doi:10.1007/s10393-010-0288-z. 2010.
* Lambrechts, L. et al. Impact of daily temperature fluctuations on dengue virus transmission by Aedes aegypti. Proceedings of the National Academy of Sciences, 108: 7460-7465.

\* Regional factors (e.g. spatio-temporal distribution of rainfall) seem to have significant effect on risk of arboviral diseases, however the spatial and temporal distribution of rainfall for the region has not been shown.

It is important to note that the objective of the article is to reveal the relationship between global climate change and the risk of arboviruses for the state of Rio de Janeiro. In view of this and considering the limitation of words imposed by the periodical, working with the regional variability of climatic elements under arboviruses is, in itself, given the complexity, object of a specific article. In this article, based on climate indices and supported by specialized literature, it was possible to build a methodology that offers elements that help to project the expansion of diseases in the face of projected climate change scenarios at the regional level.

\* More details on all the analyzes made must be presented in the paper. Mainly related to the use of data in the regions of the state.

Done, but it must be taken into account that the article is at the word limit.

\* A review of the English language used in the article is necessary.

The article was translated and revised by a native

Minor comments

\* Adapt the form of citation to the model of the journal. E.g. line 59 (JULIÃO et al., 2009)> (Julião et al. 2019).

Done for all paper.

\* Suggestion: Create a topic Study Area, where it should be located and characterized, especially in relation to rainfall hydrology and climatology.

the authors believe that the creation of a topic for the study area establishes a fragmentation of the article that affects the understanding of the results. The request made by the evaluator is present in the analysis of the results, allowing the reader to contextualize the climatic characterization of the study area, without, however, requiring breaks in reading and understanding.

\* Figure 1: Put the acronyms of the bordering states.

Done.