

**Paper: “Quantifying Street Tree Regulating Heat Effects Using a Generalized Linear Mixed Model Approach”**

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Corresponding Author: V. A. Rosos Djikpo

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Peer review:

Reviewer 1: Soumyajit Koley  
Indian Institute of Technology Kharagpur, India

Reviewer 2: Sylvester Ekemhonye  
Federal University of Technology Minna, Nigeria

Reviewer 3: Olusola Popoola  
Federal University of Technology Akure, Nigeria

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Reviewer D:  
Recommendation: Revisions Required  
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**The TITLE is clear and it is adequate to the content of the article.**

Adequate

**The ABSTRACT clearly presents objects, methods, and results.**

The Abstract clearly presents the objects, methods and results. However, it is too long. The Abstract should be reduced to less than 250 words as against the 305 by the author(s).

**There are a few grammatical errors and spelling mistakes in this article.**

The manuscript is well written in good English language. Spelling errors were noticed (not much), but they are already highlighted in the manuscript. The expressions need to be more concise. Again, these have been highlighted in the manuscript.

**The study METHODS are explained clearly.**

The methods used in the manuscript are clearly explained and logical.

**The body of the paper is clear and does not contain errors.**

The body of the paper is clear. Errors noticed have been pointed out.

**The CONCLUSION or summary is accurate and supported by the content.**

Adequate

**The list of REFERENCES is comprehensive and appropriate.**

Some references are missing. They have been highlighted in the body of the paper. Likewise, there are many statements that need to be cited. The authors should ensure all sources of information are acknowledged.

*Please rate the TITLE of this paper.*

[Poor] **1-5** [Excellent]

*Please rate the ABSTRACT of this paper.*

[Poor] 1-5 [Excellent]

4

*Please rate the LANGUAGE of this paper.*

[Poor] 1-5 [Excellent]

4

*Please rate the METHODS of this paper.*

[Poor] 1-5 [Excellent]

5

*Please rate the BODY of this paper.*

[Poor] 1-5 [Excellent]

4

*Please rate the CONCLUSION of this paper.*

[Poor] 1-5 [Excellent]

4

*Please rate the REFERENCES of this paper.*

[Poor] 1-5 [Excellent]

3

**Overall Recommendation!!!**

Accepted, minor revision needed

**Comments and Suggestions to the Author(s):**

All comments pointed out must be attended to. Try to use more concise expressions in the body of the paper to ensure clearer readability.

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Reviewer F:  
Recommendation: Revisions Required

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**The TITLE is clear and it is adequate to the content of the article.**

Yes it is clear

**The ABSTRACT clearly presents objects, methods, and results.**

The abstract is in line with the content.  
The keyword should be reduce to three word and remove abbreviation.

**There are a few grammatical errors and spelling mistakes in this article.**

The et al. should be in italic form.

**The study METHODS are explained clearly.**

Yes the author explained the method clearly.

**The body of the paper is clear and does not contain errors.**

The authors needs to check Line 36 the full meaning IPCC should come before abbreviation.  
Line 48,52,56,83,364 quoted years need to be reviewed. It would have been better to quote authors of less than 10years.  
Line 34 the author that quoted the statement should be included in the manuscript.

**The CONCLUSION or summary is accurate and supported by the content.**

The conclusion is clear and also support the content.

**The list of REFERENCES is comprehensive and appropriate.**

Check line 528 the author should include 'and' after the second authors. The years should be in bracket (2014).  
The line spacing should also be check.

*Please rate the TITLE of this paper.*

[Poor] **1-5** [Excellent]

5

*Please rate the ABSTRACT of this paper.*

[Poor] **1-5** [Excellent]

4

*Please rate the LANGUAGE of this paper.*

[Poor] **1-5** [Excellent]

4

*Please rate the METHODS of this paper.*

[Poor] **1-5** [Excellent]

4

*Please rate the BODY of this paper.*

[Poor] **1-5** [Excellent]

4

*Please rate the CONCLUSION of this paper.*

[Poor] **1-5** [Excellent]

4

*Please rate the REFERENCES of this paper.*

[Poor] 1-5 [Excellent]

4

**Overall Recommendation!!!**

Accepted, minor revision needed

**Comments and Suggestions to the Author(s):**

The author did a great work. It would be nice if the author had included recommendation in the content of the work. The manuscript pages should have been summarised to reduce numbers of pages.

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Reviewer H:

Recommendation: Revisions Required

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**The TITLE is clear and it is adequate to the content of the article.**

Yes, the Title is good.

**The ABSTRACT clearly presents objects, methods, and results.**

Yes, the Abstract is good.

**There are a few grammatical errors and spelling mistakes in this article.**

Overall, the paper is well-articulated.

**The study METHODS are explained clearly.**

Yes, the methodology has been properly explained.

**The body of the paper is clear and does not contain errors.**

Overall, the paper is well-articulated.

**The CONCLUSION or summary is accurate and supported by the content.**

Yes, the conclusion has been adequately described.

**The list of REFERENCES is comprehensive and appropriate.**

Yes, references are appropriate.

*Please rate the TITLE of this paper.*

[Poor] **1-5** [Excellent]

4

*Please rate the ABSTRACT of this paper.*

[Poor] **1-5** [Excellent]

4

*Please rate the LANGUAGE of this paper.*

[Poor] **1-5** [Excellent]

3

*Please rate the METHODS of this paper.*

[Poor] **1-5** [Excellent]

2

*Please rate the BODY of this paper.*

[Poor] **1-5** [Excellent]

2

*Please rate the CONCLUSION of this paper.*

[Poor] 1-5 [Excellent]

3

*Please rate the REFERENCES of this paper.*

[Poor] 1-5 [Excellent]

3

### **Overall Recommendation!!!**

Accepted, minor revision needed

### **Comments and Suggestions to the Author(s):**

With a GLMM approach, the study evaluates the influence of street trees on the urban microclimate in tropical cities in the southern region of Benin, namely Cotonou, Porto-Novo, and Ouidah. Results reveal that the presence of street trees, daytime, and height significantly influence air temperature, relative humidity, and wind speed. Likewise, street trees on both sides of roadways induced an air temperature decrease ranging from  $-0.6^{\circ}\text{C}$  to  $-1.4^{\circ}\text{C}$  and an increase in relative humidity ranging from  $+2.5\%$  to  $+5.2\%$  between 11 am and 5 pm. The results also suggest that urban forestry programs may be an effective strategy to mitigate the impacts of extreme heat. Overall, the paper is well-explained. However, I have a few suggestions which would help enable publication of the paper and promote its prospective readership:

(1) According to the study, the weather conditions observed during the designated study period exhibited typical characteristics of the summer season, with the exception that the air temperature in Porto-Novo consistently surpassed that of Cotonou and Ouidah. Additionally, the air temperature varied significantly based on both daytime and the presence of street trees. Street trees in the city of Cotonou were found to reduce air temperature by  $1.1^{\circ}\text{C}$  at 2 PM and to significantly reduce relative humidity. A few corroborative studies (e.g., <https://doi.org/10.3390/geosciences11020040>, <https://doi.org/10.3390/en15239167>, etc.) should also be mentioned in sections 3.2. and 3.3. so as to affirm the reliability of these data and observations.

(2) As the study examines, street trees in Cotonou, Porto-Novo, and Ouidah exhibit low plant diversity, are being over-exploited by the neighboring communities, and significantly affect air temperature, relative humidity, and wind speed. Findings in this regard also express that closed canopies of street trees result in the best tree



canopy patterns. In essence, the shading provided by street trees reduces the amount of solar radiation reaching the ground and increases the moisture content of the surrounding air, creating a cooler and more humid microclimate. The paper is hence significant for urban planners and policymakers seeking to mitigate the impact of climate change on urban areas, wherein planting street trees on both sides of the roadway can effectively reduce urban heat island effects. From a sustainability perspective, how effective or useful can these aspects be in fostering urban planning strategies (e.g., <https://doi.org/10.3390/su142013089>, <https://doi.org/10.3390/atmos11121313>, etc.), should also be briefly elaborated in the concluding discussion portions of sections 4.2. and 4.3., towards highlighting the scope field-scale applicability of the review's key highlights across geographic spectrums.

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