Review of: "A QGIS Grid-Based Study to Understand the Relationship Between Land Surface Temperature and Greenness in Urban Areas"

Faisel Mohammed[1]

1 University of Baghdad

This is an interesting study due to it having collected a good dataset and implemented an excellent approach. The paper is generally well-written and structured. However, in my opinion, the paper has some shortcomings as follows:

1. The study title "A QGIS Grid-Based Study to Understand the Relationship between Land Surface Temperature and Greenness in Urban Areas" is straightforward and informative. However, we can rephrase it to make it more engaging or specific. Here is an option: "A Grid-Based Approach to Understanding the Influence of Vegetation on Urban Temperatures in Delhi."

2. Here are some potential weak points in the abstract:

3. **Lack of Clarity on the Study's Findings:** The abstract states that "the trend is not statistically significant," but it doesn't clearly explain what this means in practical terms. What implications does this have for the relationship between greenness and temperature in Delhi?

4. **Limited Context:** The abstract mentions that other studies have explored factors like elevation and built-up areas, but it doesn't explain how these factors might relate to the findings in Delhi. A brief mention of how the study contributes to existing knowledge would be helpful.

5. **Focus on Method Over Results:** The abstract emphasizes the use of the QGIS plugin and grid-based approach but doesn't clearly highlight the key findings of the study. The reader should be able to grasp the core conclusion from the abstract itself.

Suggestions for Improvement:

- **Strengthen the conclusion:** Instead of simply stating the lack of statistical significance, explain what this implies about the relationship between greenness and temperature in Delhi.

- **Provide context:** Briefly mention how the study builds upon or differs from previous research on this topic.

- **Balance method and results:** While the methods are important, the abstract should prioritize communicating the study's main findings in a clear and concise manner.

1. Here's a breakdown of potential weak points in the study, organized by sections:

Introduction:

- **Limited Scope:** The introduction focuses solely on the relationship between greenness and temperature, neglecting other potential factors that could influence LST in Delhi. It would be beneficial to acknowledge these factors and explain why they are not the focus of this study.
- **Overly General Statement:** The introduction states that "many studies worldwide are suggesting that the surface temperature in urban areas depends on vegetation." While this is generally true, it would be more impactful to cite specific studies relevant to Delhi or similar urban contexts.

Methodology:

- **Limited Explanation of Data Analysis:** The methodology section describes the steps involved in creating grids and extracting data, but it doesn't clearly explain how the relationship between greenness and temperature was analyzed. A more detailed explanation of the statistical methods used would enhance the study's rigor.
- **Lack of Justification for Grid Size:** The study uses a 5 km grid, but there's no explanation for why this size was chosen. Did the authors consider other grid sizes? What factors influenced their decision?

Results:

- **Descriptive Rather Than Analytical:** The results section primarily describes the spatial patterns of greenness and temperature in Delhi. While this is helpful, it would be more valuable to analyze these patterns in relation to the study's hypothesis about the relationship between greenness and temperature.
- **Lack of Statistical Support for Observations:** The results section states that there's a general inverse relationship between NDVI and LST, but it doesn't provide any statistical evidence to support this claim. The correlation coefficient and p-value should be included to quantify the strength and significance of the relationship.

Discussion and Conclusion:

- **Overreliance on Other Studies:** The discussion section relies heavily on citing other studies, which weakens the study's original contribution. It would be more impactful to focus on interpreting the findings in the context of Delhi and to offer specific insights based on the study's results.
- **Limited Explanation of Non-Significant Findings:** The conclusion acknowledges the lack of statistical significance but doesn't offer a clear explanation for why this might be the case. The authors should explore potential reasons for the weak relationship, such as the timing of the study, other influencing factors, or limitations of the methodology.

Overall:

- **Lack of Clear Research Question:** The study's objective, to understand the relationship between greenness and temperature, is stated, but a more focused research question would help guide the analysis and interpretation of findings.
- **Limited Contribution to Existing Knowledge:** The study's findings, while interesting, don't offer significant new insights into the relationship between greenness and temperature in urban areas. The authors could strengthen the study by focusing on a specific aspect of this relationship or by exploring the implications of their findings for urban

planning or environmental management.