

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

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Potential competing interests: No potential competing interests to declare.

Here are some grammatical and scientific comments on the provided text:

## Grammatical Comments:

### Sentence Clarity and Flow:

"It is observed from the figure (Fig 1) that the greenest areas (Class 4 & 5) in the city during the month of March are sporadic."

- Consider simplifying for clarity: "Figure 1 shows that the greenest areas (Class 4 & 5) in the city during March are sporadic."

"There is a big dark patch at the centre, some smaller patches towards the south and southwest..."

- "Big" is a casual term. You may replace it with "large" for a more formal tone. Also, "towards" could be replaced with "in" for precision: "There is a large dark patch in the center, with smaller patches in the south and southwest."

"Most of the central areas of the city and eastern areas are almost sparse with no or less green vegetation (yellow areas)."

- "Almost sparse" is vague. Instead, you could say: "Most of the central and eastern areas have little to no green vegetation, indicated by yellow areas."

"There is another outer zone with NDVI between 0.25 and 0.5."

- "Another" could be redundant. It may be clearer to say: "An outer zone with NDVI values between 0.25 and 0.5 surrounds these areas."

## Punctuation:

"Class 4 (2 (0.5 < NDVI <= 0.75))" has an extra parenthesis. It should be corrected to: "Class 4 (0.5 < NDVI <= 0.75)."

"Qeios, CC-BY 4.0 · Article, August 21, 2024" appears multiple times but isn't necessary in the flow of the text. You could omit these unless they're part of citation details.

**Redundancies:**

"It is observed from the figure..." is repeated multiple times. Vary the phrasing for readability, for example: "As shown in Figure 1," or "Figure 2 illustrates..."

"Comparatively" is used several times in close succession in the paragraph about temperature distribution. Consider removing some of the repetitions or replacing them with synonyms such as "relatively" to avoid redundancy.

**Use of Abbreviations:**

- NDVI (Normalized Difference Vegetation Index) is used without definition. If NDVI has not been defined previously in the document, include its full form the first time it appears.

**Scientific Comments:****Figure Descriptions:**

In Figure 1, a clear definition of "greenness" and how it's classified would help. Does it correspond to vegetation density? Providing a more scientific description of NDVI classes could enhance understanding.

In Figure 2, land surface temperature (LST) is discussed in relation to NDVI, but the method used to obtain this data is not mentioned. Clarifying how LST was measured (e.g., satellite imagery or ground-based observations) could improve scientific rigor.

**Correlation and Significance:**

"The correlation is not significant ( $R^2 = 0.1407$ )."

- This statement is accurate but incomplete. Consider elaborating on why the correlation is weak. You mention that "timing of the study" may influence the relationship between surface temperature and vegetation distribution, but what about other factors like seasonal variation, humidity, or urban heat islands?

Also, it's important to note that while  $R^2 = 0.1407$  shows a weak correlation, a more robust statistical analysis could strengthen the discussion. Have other potential confounders been considered in this analysis? If not, that could be mentioned as a limitation.

**Contextualizing Results:**

- The comparison to studies in other regions (e.g., Pakistan, Egypt, Brazil, Argentina, and India) is a strong point, but it could be expanded. How do environmental factors in Delhi compare to these regions? Are there differences in geography, climate, or urban development that might explain the variation in correlation strength?

**Trend Statement:**

- "Although there is a linear decreasing trend, the correlation is not significant."

- This statement would benefit from some clarification. It might be useful to explain the statistical meaning of "significant" for a broader audience and perhaps quantify what level of correlation would be considered significant in this type of analysis.

**Methodology Transparency:**

- There is no mention of the specific timeframe or data sources used for NDVI and LST measurements. Including information on the satellite, software, or time period used for data collection would enhance scientific transparency.

By improving clarity, precision, and adding more scientific depth, this text can be made more accessible and rigorous.