

Review of: "Groundwater Potential Zone Assessment Using Remote Sensing, Geographical Information System (GIS), and Analytical Hierarchy Process (AHP) Techniques in Fogera Woreda, South Gondar Zone, Ethiopia"

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Potential competing interests: No potential competing interests to declare.

Dear Authors,

Thank you for your contribution. Although the contribution has the potential for publication, it's advised to revise the current version before considering submitting it for review in an international journal. Please find below a list of major changes for a revised version:

1. Abstract: The structure of the abstract should include an introduction, purpose/objective/relevance, method, result, and conclusion. Currently, it lacks a more robust research objective.
2. Introduction: It reads as a general introduction to the field of 'hydrogeology'. However, the audience of this paper already knows the majority of the terms that are included here.
 1. The term 'GIS' has already been explained earlier.
 2. Personally, I wouldn't use words like 'massive' or 'complicated'. Perhaps terms like 'large' or 'complex' would be more appropriate.
 3. The section lacks a strong definition of the objectives. Formulate these objectives clearly and in detail.
 4. The relevance of this work should also be explained, on a local and on a larger/global scale, to define where this work sits overall, providing supporting information about the need for this work.
3. Materials and methods:
 1. It might be a good idea to include a couple of sentences on the density of development in the area (i.e., low, medium development), as it is mentioned that '... an asphalt road that crosses the town...'. Define it in the text.
 2. What is the Belgian season? As in 'As a result, they cultivate rice, beans, and wheat during the Belgian season'. Define it in the text.
 3. The last couple of sentences of the first paragraph are not clear. Also, large precipitation does not indicate high recharge - it may indicate a large potential for recharge. Additionally, the study aims to find 'preferential' zones for recharge. Perhaps it might be a good idea to revisit the terms used across the manuscript?
 4. 2.2: Expert opinion and groundwater occurrence were taken into account for assigning weights - this is rather

5. Fig 2. The flow chart does not have a connection with the bottom 4 boxes (Validation of GWPZM and those connected to it). Shouldn't these be connected to the main flow chart? Consider reorganizing the chart to make it flow more naturally.

1. In all thematic layers, it is left unexplained and ambiguous how the weights were defined for each of the categories. Additionally, it is unclear the method(s) or process(es) or rationale for the definition of the ranges for several layers (e.g., slopes 0–4.490, 4.5–10.50, 10.60–19.20, and 19.30–76.40; drainage density 0–1.19, 1.2–2.28, 2.29–3.57, and 3.58–4.76). Clarify the method(s) followed for the definition of these ranges.
2. 3.1.5: The statement “High lineament density is favourable for high groundwater potential and gets higher ranks than lower lineament areas” is not exactly accurate - it depends. It is only applicable when those lineaments are proven to be in connectivity with the underlying aquifer. Please rephrase the sentence and include references when applicable.
3. 3.1.6: Do not use “... a good source of recharge”. Unless you define what is ‘good’, you need to define it as the ‘main’ or ‘major’ source, or simply as ‘one of the sources’ if there are more.
4. 3.1.8: TWI has been already defined earlier in the text.
5. 3.1.9: Is LULC really ‘THE’ major? It might be a good idea to rephrase this sentence.
6. 3.2: “The weight normalization is made by literature review and expert-based”, perhaps ‘was supported by’ instead of ‘made’? ‘
7. 3.2: ‘As advised by Saaty (1980)”, consider changing ‘as advised’ to ‘following’.
8. 3.3: ‘Using ArcGIS...’ → following a GIS approach.
9. 3.3: How do you define ‘appropriate’? Seems ambiguous.
10. 3.3: “The developed groundwater potential zone map” - then add ‘was categorized/grouped as...’.
11. Rephrase the part where the percentages are described, and do not begin the sentence with a number. It is slightly confusing and hard to follow.
12. Aren't hilly sections good for recharge? Discuss the reason why these are not good for recharge, i.e., describe the combination of the layers, perhaps geology or LULC here.
13. 3.4: The GWPI validation seems rather short. This section would benefit from a more extensive description as well as a discussion of the limitations of this research.

1. Was the objective of the study achieved? Here you should come back to your objectives.
2. Discuss the limitations of this work and how these may affect or influence the current results.
3. Where does this work sit in the overall hydrogeological research? How does it support the local/national/larger scale research on this same topic? How does it translate, and how applicable is this work to other areas with similar characteristics?

