

# 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.

This paper evaluates groundwater potential zones in Fogera Woreda, South Gondar Zone, Ethiopia, using remote sensing, GIS, and AHP techniques. Ten thematic layers, including land use, drainage density, and soil texture, were analyzed to map the groundwater potential. The study classified the area into four zones: excellent (2.02%), moderate (45.54%), poor (51.2%), and extremely poor (1.24%). These findings offer valuable insights for regional groundwater management strategies.

## Strengths

- The paper is well-written, structured, and easy to read.
- This paper effectively integrates remote sensing, GIS, and AHP techniques, providing a robust approach to assessing groundwater potential.
- The findings offer valuable information for decision-making in groundwater management, which can aid in developing sustainable water resource strategies in the region.

## Weaknesses

Although this work has a very attractive starting point, it also has some obvious limitations

- The writing and presentation should be improved. First, the authors should elaborate more on the underlying intuition or motivation behind the AHP techniques.
- Please add and discuss some of the mentioned references. What is the advantage/drawback of the presented approach?
- Fine-tuning the parameters should be discussed.
- I understand that the authors cannot compare/present everything. However, the authors should compare to a representative baseline (modern) methods. The technique mentioned in this paper does not appear.
- Lack of computational cost analysis. According to the implementation details and the overall inference process (testing time), the authors are suggested to comment on this issue.
- This paper uses thematic layers resampled to a uniform 30m × 30m spatial resolution, which may not capture finer-scale variations in groundwater potential.
- There is a lack of field validation for the identified groundwater potential zones, which raises questions about the

accuracy of the results.

- This paper does not account for temporal changes in groundwater potential, which could impact the accuracy of the findings.
- The study focuses on a specific region, making it difficult to generalize the findings to other areas with different geological and hydrological conditions.
- This paper lacks detailed explanations of the AHP process and the criteria weights used, which hinders the reproducibility of the study.