

REVIEWER'S REPORT

Manuscript No.: IJAR-52499

Date: 27 June 2025

Title: Hydrochemical characterization of groundwater in the Continental Terminal aquifer of Moundou and its surroundings (southwestern Chad)

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revisionv.....

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality				
Techn. Quality				
Clarity				
Significance				

Reviewer Name: Dr Ahmed M. Saqr

Date: 27 June 2025

Reviewer's Comment for Publication.

(To be published with the manuscript in the journal)

The reviewer is requested to provide a brief comment (3-4 lines) highlighting the significance, strengths, or key insights of the manuscript. This comment will be Displayed in the journal publication alongside with the reviewers name.

This manuscript provides a comprehensive hydrochemical and bacteriological assessment of groundwater in the Moundou region, southwestern Chad, a critical area for water resource management. The study's strength lies in its dual focus on both physicochemical and microbiological parameters, offering valuable insights into the quality and safety of local water sources. By integrating field data, laboratory analyses, and statistical approaches, the authors contribute important baseline information that can inform water management strategies and public health interventions in the region.

Detailed Reviewer's Report

Thank you for the opportunity to review the manuscript entitled "Hydrochemical characterization of groundwater in the Continental Terminal aquifer of Moundou and its surroundings (southwestern Chad)" submitted to the International Journal of Advanced Research. I appreciate the invitation and the authors' efforts in addressing an important topic related to water quality and public health in a vulnerable region.

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The manuscript presents valuable data on the hydrochemical and bacteriological characteristics of groundwater in the Moundou area. The work is relevant and timely, given the significance of groundwater for local communities. However, several sections require substantial clarification, methodological detail, and structural improvements to enhance the scientific rigor and clarity of the study. Therefore, I recommend a major revision before the manuscript can be considered for publication.

Below, I provide major and minor comments, organized by section, to guide the authors in strengthening their work.

Major Comments

1. Abstract

Can the abstract be revised to clearly state the main findings, including specific numerical results for key parameters, and to better reflect the study's limitations and recommendations for practice?

2. Introduction

The introduction references many studies but lacks a concise problem statement. Can the authors clarify the research gap and explicitly state the study's objectives and hypotheses?

The introduction to the study area is lengthy and, at times, repetitive. Would the authors consider condensing this section for better focus and flow?

3. Methods

The methodology section lacks sufficient detail for reproducibility. Can the authors provide more information on sample selection criteria, quality control measures, and the rationale for the number of samples used for each analysis?

The calculation of the Ground Water Quality Index (GWQI) is not fully transparent. Can the authors include the full formula, all parameters, and weighting factors used, referencing the original method?

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The description of laboratory procedures (e.g., bacteriological analysis) is fragmented. Can the authors reorganize and clarify the workflow, including quality assurance steps and standards followed?

4. Results

Some results are presented without adequate statistical analysis or discussion of variability. Can the authors include statistical comparisons (e.g., between seasons, between well types) and discuss the significance of observed differences?

The presentation of hydrochemical facies and PCA results is dense and difficult to interpret. Can the authors provide clearer explanations, possibly with simplified diagrams or summary tables?

5. Discussion

The discussion often repeats results rather than interpreting them. Can the authors deepen the analysis by comparing their findings with previous studies and discussing the implications for groundwater management in the region?

The role of anthropogenic versus natural factors in water quality is mentioned but not critically analyzed. Can the authors provide a more nuanced discussion, supported by data, on the sources of contamination and mineralization?

6. Images and Figures

Several figures (e.g., maps, diagrams) are referenced but not adequately described in the text. Can the authors ensure all figures are clearly labeled, of high resolution, and directly support the narrative?

Are all images and diagrams original? If not, have permissions and proper attributions been provided?

7. References

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The reference list contains inconsistencies in formatting and incomplete citations. Can the authors revise the references to adhere strictly to the journal's guidelines and ensure all in-text citations are matched?

8. Conclusion

The conclusion is largely a summary of results. Can the authors expand this section to include practical recommendations, policy implications, and suggestions for future research?

9. Language and Structure

There are numerous grammatical errors and awkward phrasings throughout the manuscript. Would the authors consider a thorough language edit, possibly with the assistance of a native English speaker or professional editor?

Minor Comments

1. Abstract

Please ensure all abbreviations (e.g., GWQI) are defined at first mention.

2. Introduction

Section I.1.1: The economic context could be shortened to focus on aspects directly relevant to groundwater quality.

3. Methods

Section I.2.1: The term "shallow" for the piezometric surface should be quantitatively defined (e.g., specify depth range).

4. Results

Tables: Some tables lack units and clear headings. Please revise for clarity and completeness.

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5. Results

Section IV.4: Ensure all parameters discussed in the text are included in the corresponding tables/figures.

6. Discussion

Section V.4.1.1: When referencing WHO standards, always provide the exact value for comparison.

7. Figures

All maps should include a scale bar and north arrow for orientation.

8. References

Ensure all references cited in the text are included in the reference list, and vice versa.