

REVIEWER'S REPORT

Manuscript No.: IJAR- 58480

Title: HOMO ERECTUS & HOMO SAPIENS IN VOLCANIC ECOLOGY WITH SPECIAL REFERENCE TO HOMINID OCCURRENCES IN NARMADA VALLEY, CENTAL INDIA ,

Recommendation:

Accept after minor revision

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

Reviewer's ID: Bilqees Hamza

Detailed Reviewer's Report

Overview

The manuscript addresses a subject of significant paleoanthropological and Quaternary geological importance: the relationship between hominid occurrences (*Homo erectus* and *Homo sapiens*) and volcanic tephra horizons within the Quaternary stratigraphy of the Narmada Rift Basin. The authors attempt to synthesize lithostratigraphic, sedimentological, tephrochronological, and paleontological data to reconstruct the Quaternary depositional history of the Narmada Valley and assess the ecological and survival impacts of mega-volcanic events—specifically the ~74 ka Youngest Toba Tuff (YTT) eruption—on early human populations in Peninsular India.

The primary strength of the work lies in its comprehensive local empirical data, including detailed lithostratigraphic descriptions of the Hathnora and adjacent formations, petrographic and geochemical analyses of volcanic ash horizons (designated NAB-I and NAB-II), and regional tectonic contextualization along the Narmada-Son Fault (NSF). The focus on the famous Hathnora hominid fossil site makes the paper inherently relevant to scholars studying South Asian human evolution and Late Pleistocene environmental history.

However, the manuscript in its current state suffers from fundamental structural, chronological, formatting, and stylistic deficiencies that severely compromise its scholarly rigor. The text is marked by pervasive structural repetition, internal chronological and stratigraphic inconsistencies, unvetted technical errors, incomplete sentences, and poor overall readability. Significant restructuring, rigorous editing, and

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substantial clarification of the chronostratigraphic framework are required before this manuscript can be considered suitable for publication.

Key Areas for Improvement

1. Structural Organization and Textual Repetition

The manuscript displays extreme structural redundancy. Entire multi-paragraph blocks are repeated almost verbatim across multiple sections. For instance:

- The description of the geography, origin, and general course of the Narmada River in the Abstract is repeated identically in Section 1.00 (Introduction) and again in later geographical descriptions.
- Large segments of text describing the tectonic framework of the Narmada Rift System, sediment provenance, and faulting mechanisms appear word-for-word in Section 2.00, Section 5.00, and Section 6.00 (Conclusion).
- Detailed petrographic and mineralogical descriptions of Ash Beds NAB-I and NAB-II are duplicated verbatim in Section 3.00 and Section 6.00.
- The discussion concerning Oppenheimer's (2003) hypothesis on hominid population bottlenecks and Toba-induced mass extinction appears in nearly identical phrasing in the Abstract, Introduction, Section 4.00, Section 5.00, and Conclusion.

This excessive repetition significantly inflates the document length without adding scientific value. The authors must thoroughly edit the manuscript to streamline the narrative, ensuring that introductory geographic settings, tectonic background, laboratory methodologies, and regional discussions appear once in their appropriate sections.

2. Chronostratigraphic Inconsistencies and Hominid Evolutionary Framework

There are profound internal contradictions regarding the age and stratigraphic position of the *Homo erectus* skull cap and associated tephra layers:

- In several sections, the authors propose an age of ~1.38 Ma for the Narmada *Homo erectus* based on comparative depth correlation with Chinese loess-paleosol sequences (e.g., Luochuan, Chenjiawo, and Gongwangling) on a "unified Quaternary platform".
- Conversely, in Section 4.00, the authors cite radiometric and paleontological age estimates ranging between 150 ka and 250 ka (Kennedy, 2001) or not less than 236 ka (Cameron et al., 2004) for the same hominid specimen.
- The text simultaneously attempts to link the *Homo erectus* horizon directly with the 74 ka Toba eruption. If the hominid horizon is 1.38 Ma or even 250 ka, it significantly predates the 74 ka YTT event. While the authors state that the Toba eruption occurred later than the existence of *Homo erectus* in the valley, they repeatedly conflate the direct ecological impacts of the 74 ka

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event with hominid populations without establishing a clear, high-resolution absolute chronological framework.

- The assertion that depth alone (e.g., comparing 83 m depth in Narmada to 38 m depth in Chinese loess) can establish an age of 1.38 Ma is methodologically flawed. Sedimentation rates in fluvio-glacial rift trenches differ drastically from aeolian loess depositional regimes. The authors must rigorously justify this correlation model and reconcile the massive discrepancy between the 1.38 Ma proposed age and the established Late-to-Middle Pleistocene radioisotopic/OSL/ESR dates for the Narmada alluvium.

3. Data Presentation, Tables, and Geochemical Formatting

- **Geochemical Tables:** Table No. 2 (Chemical analyses of Ash Bed) contains severe truncation, corrupt formatting, and unvetted OCR/typographical errors. Oxide labels are corrupted or missing (e.g., "SiO 2", "Momo", "al", "P2O"), and several data columns lack proper headers or standard weight percentage normalization. Furthermore, the table cuts off abruptly at the end of the text.
- **Lithostratigraphic Table:** Table 1 contains numerous garbled terms (e.g., "Tepra", "entrancing of river V", "Agradatio", "Matuyama") and alignment errors.
- **Incomplete Sentences and Mathematical Artifacts:** The manuscript contains truncated lines and broken prose. Examples include line 468 ("and Homo erectus of in sediment sequence"), line 644 ("Fig No \$ to&"), and line 609 ("tied up and developed at mean sea level") where specific text or figures are missing.
- **Formatting of Chemical and Geographic Nomenclature:** Standard conventions for isotopic notation, chemical formulas (SiO_2 , Fe_2O_3), coordinates, and biological binomial nomenclature (*Homo erectus*, *Homo sapiens*) must be consistently applied throughout the text. Coordinates are frequently rendered with typographical errors (e.g., "23° 07' 790530" or "22° 52' N").

4. Editorial Integrity and Manuscript Cleaning

The submission contains remaining operational artifacts, raw line numbers (1 through 1048), section headers embedded within running text, and publication status markers (e.g., "PEER REVIEW IN IJAR", "UNDER PEER REVIEW IN IJAR") scattered randomly throughout the text. The authors must thoroughly clean the draft, remove line numbering artifacts, and format the manuscript according to standard academic journal submission guidelines.

Recommendation

Minor Revision Required.

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The manuscript contains valuable regional geological and tephrochronological observations regarding the Narmada Rift Basin that merit publication. However, the conceptual and structural flaws outlined above prevent its publication in its present form. The authors are strongly advised to undertake a comprehensive overhaul of the manuscript based on the following specific recommendations:

- Eliminate All Redundancies:** Merge duplicated sections across the Abstract, Introduction, Tectonics, Petrography, and Conclusion into a single, cohesive narrative.
- Re-evaluate and Clarify Chronology:** Provide a clear, critical, and objective discussion of the age of the Hathnora hominid and ash beds. Disentangle the 1.38 Ma loess-correlation hypothesis from established Late/Middle Pleistocene geochronological data, and clearly differentiate between older tephra/fluvial units and the 74 ka YTT horizon.
- Overhaul Tables and Data:** Re-format Table 1 and Table 2 completely. Ensure all major oxide labels (SiO_2 , Al_2O_3 , Fe_2O_3 , TiO_2 , CaO , MgO , Na_2O , K_2O) are accurately tabulated, normalized, and error-checked.
- Complete Truncated Text:** Supply missing quantitative values, complete interrupted sentences, and repair broken figure/plate citations.
- Language and Style Polish:** Perform a meticulous language check to correct typographical errors, standardize geological/taxonomic nomenclature, and improve overall academic readability.

Final Evaluation

Recommendation: Accept with Minor Revisions