

Review Form 2

Book Name:	Research Advances in Environment, Geography and Earth Science
Manuscript Number:	Ms_BPR_2783
Title of the Manuscript:	Spatial variability of mechanical properties of sedimentary rocks in the Jiu Valley Basin: a stress-strain curve analysis
Type of the Article	Book chapter

PART 1: Review Comments

Compulsory REVISION comments	Reviewer's comment	Author's Feedback(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	This manuscript is important to the scientific community as it provides a detailed analysis of the geomechanical properties of sedimentary rocks in the Jiu Valley Basin, a region with significant mining activity. By highlighting the spatial variability and mechanical behavior of different rock types, the study contributes valuable data that can inform safer and more efficient mining practices. The focus on stress-strain curve analysis elucidates the complex relationship between rock strength, deformability, and structural defects, which is critical for understanding rock stability in mining operations. Additionally, the findings have wider implications for geomechanics, resource management, and the development of predictive models in similar geological contexts, making this research relevant not only to the mining industry but also to other fields dealing with geological hazards and resource extraction. Overall, I appreciate the manuscript for its comprehensive approach and practical applications, which enhance its significance in advancing our understanding of sedimentary rock behavior.	
Is the title of the article suitable? (If not please suggest an alternative title)	It is suitable	

[Review Form 2](#)

Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract of the article provides a good overview of the study's objectives, methods, findings, and implications; however, it could benefit from some adjustments to enhance its comprehensiveness and clarity. Here are my suggestions: **Objective Clarification:** - While the objective of evaluating geomechanical characteristics is stated, it could be more explicitly linked to the broader significance of the study. For example, consider specifying how these characteristics inform safe mining practices right at the beginning. **Method Summary:** - Although the abstract mentions that "laboratory tests" were conducted, it could be more informative by briefly stating the types of tests performed or the key methods used to analyze the stress-strain behavior. **Results Precision:** - The results are described in a somewhat general manner. Including specific findings, such as statistical correlations or key values (e.g., ranges of rock strength), can provide more concrete insights. This would help readers quickly grasp the scope and significance of the results. **Implications Expansion:** - While the conclusion states that the results can optimize mining operations, it could be strengthened by specifying how they impact safety measures or design practices in mining engineering. This would accentuate the practical applications of the research findings. **Terminology and Conciseness:** - Consider reducing redundancy and refining language for clarity. For example, instead of saying "it was found that" you could say "the study identified," which is more direct. In summary, while the abstract covers the key elements of the research, refining it with more specific information and clearer connections could improve its comprehensiveness and make it more engaging for readers.	
Are subsections and structure of the manuscript appropriate?	Yes	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	This manuscript demonstrates scientific robustness and technical soundness through its rigorous methodology and comprehensive data analysis. The authors employ established geomechanical testing procedures, ensuring the reliability of their findings regarding the mechanical properties of sedimentary rocks in the Jiu Valley Basin. Moreover, the statistical methods utilized to analyze the stress-strain relationships enhance the validity of their conclusions, allowing for a clearer understanding of the variability in rock behavior under stress. Additionally, the manuscript contextualizes its findings within the existing literature, providing a solid theoretical framework that underscores its significance and relevance to the field of geomechanics. Overall, the meticulous approach and thorough validation of results reinforce the manuscript's scientific credibility and contribute meaningfully to the knowledge base in this area of research.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. =	Kianoush P, Mohammadi G, Hosseini SA, Keshavarz Faraj Khah N, Afzal P (2023a) Inversion of seismic data to modeling the Interval Velocity in an Oilfield of SW Iran. Results in Geophysical Sciences 13:100051. https://doi.org/10.1016/j.ringps.2023.100051 Keshavarz Faraj Khah N, Salehi B, Kianoush P, Varkouhi S (2024) Estimating elastic properties of sediments by pseudo-wells generation utilizing simulated annealing optimization method. Results in Earth Sciences 2:100024. https://doi.org/10.1016/j.rines.2024.100024	

Review Form 2

	Jamshidi E, Kianoush P, Hosseini N, Adib A (2024) Scaling-up dynamic elastic logs to pseudo-static elastic moduli of rocks using a wellbore stability analysis approach in the Marun oilfield, SW Iran. Scientific Reports 14(1):19094. https://doi.org/10.1038/s41598-024-69758-w Hosseini SA, Khah NKF, Kianoush P, Afzal P, Ebrahimabadi A, Shirinabadi R (2023) Integration of fractal modeling and correspondence analysis reconnaissance for geochemically high-potential promising areas, NE Iran. Results in Geochemistry:100026. https://doi.org/10.1016/j.ringeo.2023.100026 Khoshmagham A, Hosseini N, Shirinabadi R, Bangian Tabrizi AH, Gholinejad M, Kianoush P (2024a) Investigating the Time-Dependent Behavior of Intact Rocks and Fractured Rocks Using Unconfined Relaxation Testing in Underground Coal Mines. Geotechnical and Geological Engineering https://doi.org/10.1007/s10706-024-02902-5 Khoshmagham A, Hosseini N, Shirinabadi R, Bangian Tabrizi AH, Gholinejad M, Kianoush P (2024b) Unraveling time-dependent roof stability dynamics in Iran's coal mines through laboratory-based rock displacement testing. Scientific Reports 14(1):19488. https://doi.org/10.1038/s41598-024-69854-x	
--	--	--

Review Form 2

Minor REVISION comments Is the language/English quality of the article suitable for scholarly communications?	The language and English quality of the article are generally suitable for scholarly communications; however, there are areas that could be improved for clarity and precision. The manuscript utilizes appropriate technical terminology and displays a good command of subject matter, indicating that the authors are knowledgeable about the topic. However, to enhance readability, the authors should consider simplifying complex sentences and reducing jargon where possible to ensure broader accessibility. Additionally, attention to grammar and punctuation, along with a thorough proofreading for typographical errors, would further elevate the quality of the writing. Overall, with a few adjustments, the language in the article can meet the standards expected in scholarly discourse.	
Optional/General comments	### General Review for Minor Revision of the Manuscript: “Spatial variability of mechanical properties of sedimentary rocks in the Jiu Valley Basin: a stress-strain curve analysis” Overview: The manuscript details an insightful study aimed at evaluating the geomechanical characteristics of sedimentary rocks in the Jiu Valley Basin using stress-strain curve analysis. The study explores the spatial variability of mechanical properties, offering valuable insights that can aid in the design and execution of mining operations. The research is well-founded, with ample data supporting the findings, although there are some areas that could benefit from further clarification, additional context, and slight restructuring. Strengths: Comprehensive Literature Review: The introduction effectively synthesizes current knowledge regarding the anisotropic and heterogeneous nature of sedimentary rocks, establishing a strong theoretical framework for the study. Detailed Geological Context: The geological context is elaborately described, providing the reader with a solid understanding of the sedimentary deposits in the Jiu Valley Basin. In-depth Analysis: The analysis of mechanical behavior under applied load, as well as the differentiation of rock types based on strength categories, is thorough and well-articulated. Implications for Application: The conclusion emphasizes the practical applications of the research findings, linking them to mining efficiency and safety. Areas for Minor Revision: Abstract Clarity: - The abstract is currently dense with information. It would benefit from more concise phrasing and clearer delineation of the research objectives, methods, results, and implications. Consider breaking it into distinct sentences or using bullet points for clarity. Terminology Consistency: - Ensure consistent terminology is used throughout the manuscript. For instance, the terms “rock type” and “rock category” appear interchangeably and could lead to confusion. Establish one term and use it consistently. Stylistic Adjustments: - A few sentences could be simplified for readability. For example: - Instead of “Through laboratory tests, the mechanical behavior of rocks under load was determined,” consider “Laboratory tests were conducted to determine the mechanical behavior of rocks under load.” Figures and Tables: - Figure 1 and Table 1 are mentioned, but clearer references within the text could enhance their integration. Additionally, ensure figures are labeled and sufficiently explained in the caption to aid understanding without having to refer back to the text frequently. - For Table 2, consider providing a brief explanatory note that clarifies the significance of the connection features listed.	

Review Form 2

	5. **Methodology:** - While the methodology section is comprehensive, it could be enhanced with a clearer outline of procedural steps, perhaps through a flowchart or summary that captures the experimental design and the interconnections between tests performed. 6. **Discussion:** - The discussion would benefit from a clearer connection between observed results and the prior literature. Consider incorporating more direct comparisons and discussing how your results corroborate or differ from existing studies. Highlighting implications for future research or practical applications of the findings in mining would also enhance this section. 7. **Proofreading for Language and Formatting:** - Several grammatical and syntactical errors could be addressed. Paying attention to sentence structure and punctuation will improve the manuscript's professionalism. Also, ensure all references are consistently formatted according to the journal's style guide. **Conclusion:** Overall, the manuscript presents significant findings on the mechanical properties of sedimentary rocks in the Jiu Valley Basin and their implications for mining operations. With revisions focusing on clarity, consistency, and formatting, this research will greatly contribute to the field of geomechanics and mining engineering.	
--	--	--

PART 2:

	Reviewer’s comment	Author’s comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

Reviewer Details:

Name:	Pooria Kianoush
Department, University & Country	Islamic Azad University, Iran