Review of: "Cloud-based geospatial services for building capacity and safeguarding heritage in climatically marginal landscapes"

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Potential competing interests: No potential competing interests to declare.

Please change the title to : Leveraging Geospatial Innovation for Resilience: Addressing Climate Challenges in Remote Regions through Google Earth Engine

Abstract

Strengths:

Clear Overview: The conclusion section provides a concise summary of the study's findings and contributions.
Highlighting Contributions: The study's key contribution, the development of a soil spectral library, is highlighted and emphasized.
Specificity: Specific methodologies, such as using Spectroradiometer spectra and Hyperion data, are mentioned, adding clarity to the study's approach.
Application Potential: The potential applications of the study's results, such as precision agriculture and soil planning, are clearly stated.
Weaknesses:

Lack of Detail: The conclusion is relatively brief and lacks in-depth discussion of the implications of the findings or potential limitations.
Future Scope Mentioned Briefly: The "future scope" section is mentioned, but no specific details are provided regarding what areas should be explored in the future.
Limited Context: The conclusion could benefit from discussing the significance of the study's findings in relation to the broader field of soil science or remote sensing.
Recommendations for Improvement:

Expand on Findings: Provide more detailed insights into the implications of the study's findings. How do these findings contribute to the existing body of knowledge? Are there any unexpected or significant patterns observed?
Elaborate on Future Scope: In the "future scope" section, elaborate on specific areas of research that could build upon this study, such as improving classification accuracy, addressing potential limitations, or exploring other remote sensing methods.

Contextualize the Significance: Discuss how the study's findings could impact soil science, remote sensing, or related fields. Address any potential applications beyond those mentioned.
Address Limitations: If applicable, briefly address any limitations of the study, such as potential sources of error or challenges faced during data collection or analysis.
By addressing these recommendations, your "Conclusion" section can provide a more comprehensive overview of the study's findings, contributions, and future directions, enhancing its overall impact.

Key words : OK

Introduction

The introduction sets the stage for the research and provides context for the study. It highlights the urgency and significance of addressing environmental challenges in marginalized communities due to climate change and other factors. The use of contrasting study regions (Yukon-Kuskokwim Delta and Mauritania) to explore the application of free cloud-based geospatial services like Google Earth Engine (GEE) is introduced as a solution. The introduction effectively outlines the problem and the research objectives.

Strengths:

- The introduction provides a clear overview of the global environmental challenges and their impact on vulnerable communities.
- The use of two distinct study regions adds depth to the discussion and highlights the relevance of the research in different contexts.
- The introduction effectively introduces the concept of utilizing geospatial services like GEE to address these challenges, highlighting its potential benefits.

Weaknesses:

- The introduction could benefit from clearer organization and structure. It covers a wide range of topics, and some subtopics might be better suited for later sections of the paper.
- Some sentences are complex and might require multiple readings to grasp the intended meaning.

Recommendations for Improvement:

- Consider organizing the introduction into subsections to make the content more structured and easier to follow.
- Clarify complex sentences to ensure that the readers can understand the intended message on the first read.
- Focus on introducing the main research question and objectives more explicitly, possibly towards the end of the introduction.

Overall, while the introduction effectively captures the urgency of the research topic and the potential of geospatial services, it could benefit from improved organization and clarity to better guide the reader into the research's focus and objectives.

2. Automatic Workflows for Remote Communities : Ok that seems correct

Discussion

The discussion section provides an in-depth analysis and interpretation of the presented tools and their implications. It addresses the limitations and potential of the cloud-based geospatial platform, Google Earth Engine (GEE), in the context of environmental remote sensing. The strengths and weaknesses of GEE are discussed, along with considerations for its future use and development.

Strengths:

- The discussion effectively highlights the significance of environmental remote sensing and the challenges associated with the interpretation of remote sensing data.
- The introduction of the five tools built in GEE showcases the potential of cloud-based platforms in addressing urgent environmental concerns.
- The section acknowledges the importance of in-person engagement and workshops for effectively transferring knowledge and tools to remote communities.

Weaknesses:

- The discussion could be organized into subsections for better clarity and readability. This would make it easier for readers to follow the different topics being discussed.
- Some parts of the discussion are technical and might be challenging for non-expert readers to fully grasp.

Recommendations for Improvement:

- Consider organizing the discussion into subsections that address different aspects, such as the benefits of GEE, limitations, potential alternatives, and recommendations for future development.
- Provide more context or explanations for technical terms to make the content more accessible to a wider audience.
- Expand on the potential alternatives to GEE, such as Free and Open Remote Sensing Source Software (FOSS) like QGIS, to offer a more comprehensive comparison.

Overall, the discussion section effectively engages with the presented tools and the implications of using GEE for remote sensing. Clear organization and explanations of technical terms would enhance its readability and accessibility to a broader audience.

Conclusion

The conclusion succinctly summarizes the key points discussed in the article and emphasizes the significance of analytical remote sensing in addressing heritage threats in extreme climatic regions. It highlights the role of cloud-based spatial analysis platforms, particularly Google Earth Engine (GEE), in enabling local communities to implement complex remote sensing methods and visualize potential hazards. The conclusion also underscores the importance of

technological advancements, such as high-speed satellite broadband internet, in facilitating remote sensing capabilities for rural areas.

Strengths:

- The conclusion effectively captures the main takeaways from the article, emphasizing the benefits of cloud-based spatial analysis platforms like GEE in addressing heritage threats.
- The call for government investment in satellite-based internet and technological infrastructure in rural communities is well-placed and aligns with the context of the article.

Weaknesses:

- The conclusion could provide more specific recommendations or actions for governments, institutions, or stakeholders to take in order to promote the use of cloud-based geospatial services like GEE.

Recommendations for Improvement:

- Provide specific recommendations for how governments and institutions can invest in satellite-based internet and technological infrastructure in rural communities. This could include strategies for funding, policy support, and collaboration with technology providers.
- Consider expanding on the potential challenges or barriers that might arise in implementing these recommendations and how they could be overcome.

By offering more specific and actionable recommendations, the conclusion can provide readers with a clearer sense of what steps can be taken to support the adoption of cloud-based geospatial services and analytical remote sensing methods in remote and climatically extreme areas.

References

References to argue the introduction you can add the following references

Tamani, et al. (2019) Integrating Remotely Sensed and GIS Data for the Detailed Geological Mapping in Semi-Arid Regions: Case of Youks les Bains Area, Tebessa Province, NE Algeria. Geotechnical and Geological Engineering, 1-11.

Chibani et al. (2022) A combined field and automatic approach for lithological discrimination in semi-arid regions, the case of geological maps of bir later region and its vicinity, Nementcha mounts, Algeria. Geomatics, Landmanagement and Landscape No. 4 • 2022, 7–26. DOI: http://dx.doi.org/10.15576/GLL/2022.4.7