Response to Francesco Perrone

I've completed the initial part of my review and have some feedback:

I noticed that @justaPCWingo is the submitting author for this paper. Considering the detailed documentation provided and the overall complexity of the software, I wonder if you could provide more information on the contributions made by each author? This would help me better understand the role of each individual in the development of the software and ensure that everyone who made a substantial contribution is properly credited.

Ok. Is this something that should be added to the frontmatter of the paper? I don't see it in the JOSS submission documentation, or at least not in the "What should my paper contain?" section. For now, I'll list here until advised otherwise:

- Patrick Wingo – Lead software developer.
- Devin Justman – Author of URC assessment method; domain knowledge expert.
- C. Gabriel Creason – Author of URC assessment and contributor of seed code for this submission; domain knowledge expert.
- Mackenzie Mark-Moser – Chief software tester.
- Scott Montross – Task lead and domain knowledge expert.
- Kelly Rose – Project portfolio lead; domain knowledge expert.

All the above authors contributed directly to the paper submission via edits and content feedback. Everyone in the list (except for myself) come from geology fields.

I have thoroughly reviewed your manuscript and found it to be valuable and informative. The provided documentation offers clear guidance on the usage of your software tool. However, one aspect that would benefit from further development is the detail provided in the paper itself, specifically relating to the methods and results. Although the documentation supports the usage of the software, the manuscript may not independently meet JOSS's reproducibility requirements as it currently stands.

The software has a present license (file named "COPYING"), it's GNU GENERAL PUBLIC LICENSE, which is an OSI-approved license. However, the license file in the software repository is named as "COPYING". While this file does contain the license information, it is a common practice in open-source software to name this file as "LICENSE" or "LICENSE.txt". This can help users and contributors quickly and easily find and understand the license terms of the software. I recommend renaming this file to align with these widely-accepted practices for clarity and discoverability.

Recommended change applied; COPYING renamed to LICENSE.

I couldn't find a version number for this software in the repository. It would be good to include this information, for instance in the README or as a GitHub release.

Information is in the Help->About dialog in the tool's GUI, but I agree it should also be in the documentation. Added to README and user documentation, and made sure the __version__ variable is available as an import from urclib

Thorough documentation is provided in the README file which describes the purpose of the software, how to install it, example usage, and provides contact information for support.

I don't see any formal system for automated testing **discussed in the documentation or in the README**, even though I can see some (unit) testing upon browsing the code in the repo (in the tests folder).

Noted; added instructions for running tests using pytest.

About Community Guidelines: The repository includes a CONTRIBUTING.md file, which outlines how interested people can contribute to the project.

Added a CONTRIBUTING.md with some of this information

Further suggestions: I would suggest the following improvements to enhance the reproducibility of your work:

- **Detailed Methods:** Please provide more detailed descriptions of your methods in the manuscript itself. Explain any unique aspects of your tool, how it works, and how it interacts with the user's inputs and other software systems.
  Added an "Implementation Details" section which provides some detail on how several of the libraries are utilized within the tool. Citations to sources with more specific information are also included. The user documentation (mirrored here) provides some information on the inputs and outputs.
- **Example Results:** If feasible, consider including an example case study in your paper demonstrating how to use your software to solve a real-world problem. Detail the input data used, the steps taken, and the resulting outputs, which will provide readers with a concrete example of the tool's functionality.
  There is an example tutorial included in the documentation for the application. It is not a full case study, but uses real-world data. I have expanded this to include the details you've mentioned.
- **Transparent Analysis:** If there are any analyses, predictions, or assessments made by your tool, describe in detail how these are accomplished. This could include describing the underlying algorithms, statistical methods, or computational techniques.
  Most of this is covered in the sister paper in Creason 2023 in greater detail than I can provide in this publication; I've ensured that the paper directs the reader to the sister paper as appropriate

SOFTWARE PAPER

Overall, the article is written in a clear and structured manner with a clear explanation of the purpose of the URC Resource Assessment Tool, its application, methodology, and its dependencies. The article seems to be well-aligned with the guidelines provided by the Journal of Open Source Software (JOSS). Here are some areas that might need attention:

1. **Title:** The title is specific and relevant, although a bit long. It might be possible to find a more succinct title that still captures the essence of the tool.
   I haven't been able to think of a title that is condensed without losing relevancy. "Unconventional Rare-Earth and Critical Minerals" is frequently abbreviated as URC, but I hesitate to introduce undefined acronyms. No change.
2. **Summary:** The first paragraph of the summary is quite dense with information. It might help readability if it were broken down into shorter, simpler sentences.
   I've broken up some of the sentences in hope of improvinig readability
3. **Statement of Need:** This section clearly articulates the need for the tool, its target audience, and its function.
4. **Methodology:** The methodology seems to be clearly defined. However, you might want to include more information on the heuristics that the tool uses to assess the potential occurrence of URC resources (as mentioned in line 21).
   The heuristics mentioned are covered in great detail in Creason 2023; Reiterating their discussion would require reproducing a number of figures and sections that would exceed the intended limits of this paper. No change.

5. **Support Libraries:** This section is clear and detailed. Consider adding the specific versions of the libraries used, for reproducibility purposes.
   Sounds reasonable; change applied
6. **References:** All the references seem relevant to the paper, and they are correctly formatted.

Overall, this article represents a significant contribution to the field of geospatial science and the exploration of unconventional mineral resources. While the tool might be complex for those outside the field, the article does a good job of breaking down how it works and why it is needed. A few minor changes to the structure and the inclusion of more technical detail could further improve its clarity.

Recommendation:

Based on the careful review of the manuscript and the presented URC Resource Assessment Tool, I recommend that the manuscript undergo minor revisions before it is accepted for publication.

The article is well-written, and the URC Resource Assessment Tool presents significant potential for improving our understanding of unconventional mineral resources. The tool clearly fills a gap in the field of geospatial science and mineral exploration, and it has been built using an intelligent combination of open-source libraries. However, several aspects of the manuscript and tool could benefit from minor modifications which have been discussed above.