

## Response to Reviewer #1 comments:

This revised version of this manuscript has been amended to make it suitable for a short communication rather than a review paper, so I note that many of my original comments about expanding the discussion are unwarranted. I think this version is improved and I appreciate the efforts of the authors to address many of my previous comments. However, I am confused that quite a few of the authors' responses do not align with the revised manuscript – i.e. they state that they will make a certain change but the change has not happened. There are other responses that just say “We thank the reviewer for the suggestion” without stating what (if any) change was made.

Correct, the manuscript was modified and condensed for publication as a *Short Communication* paper and a *Discussion* section was added to the revised version of the manuscript.

In our previous *Response to the Reviewer Comments*, we replied with “We thank the reviewer for the suggestion” to comments simply requesting rewording of sentences, a change of a subtitle, or correction of spelling mistakes. Despite not specifying exactly the change to be applied, in most cases, the reviewer requests were implemented. Suggestions regarding the redesign of figures were carefully considered and implemented in the new version of the manuscript.

Below I summarize the main issues I have identified, including ones that have supposedly been addressed but not according to the revised manuscript I am looking at. However, I ask the authors to carefully double check their responses to make sure they have done what they said they would.

1. Many of the terms that have been put into the glossary on github would be better placed in the main text, at least some of the shorter ones. Also, not all the terms I queried originally have been included, despite the response stating that they “will be added to a List of terms and definitions” – e.g. banded iron formations, “absolute” and “relative” supergene enrichment, iron ore copper gold deposits, massive sulphide deposits, saprock, mottled zone. Please carefully check again to ensure all definitions are given within the text or in the glossary.

The following definitions were added to the Glossary: *absolute and relative enrichment* (as part of the definition of Supergene processes), Banded iron-formation, Iron-oxide Copper Gold (IOCG) deposit, massive sulfide deposit, mottled zone, saprock, saprolite.

2. In Figure 1, the authors said they would put the age ranges in the figure caption so the geological time periods could more easily be compared with the numbers on the figure. Yet this has not happened.

Figure 1 no longer shows information on the age range. Following requests for simplification of Figure 1, we decided to show clusters of points (ages) at the different regions.

3. Figures 1 & 5 – It seems odd to group the ages by country. Since geology has no geographic boundary, what is the significance of showing the age distribution of, for example, Morocco relative to Tunisia? In Figure 1, I don't understand the legend. It seems to suggest that all

Australian samples (red) have ages of 251.9-299 Ma (?) Or are the colors of the circles separate to the colors on the map? If so, come up with a different scheme to avoid confusion. In Figure 5, make sure axes on the subplots are labeled.

We deem it important to show the number and range of ages per country to highlight how little is known about the age of weathering profiles within each region and to instigate the interest of other researchers in the application of the method in regions with little or any data at all. We understand that geology does not regard country boundaries, but geological investigation is bound by geopolitical issues (research capabilities, funding, access to sites, etc.). Throughout the manuscript, we present and discuss changes in goethite ages and U- and Th-contents regarding weathering environments.

We dramatically simplified Figure 1 and made the necessary modifications to Figure 5.

4. The use of colors is confusing because they don't hold for the other figures – e.g. in Figures 3 and 6, it looks like red should be Australia but presumably it's data from more than one country? If so, this needs to be made clear.

The new figures are in black and white to avoid confusion.

5. I agree with the editor's suggestion that this dataset would be of most use to the community if it was uploaded to an existing database rather than within a spreadsheet on github.

Access to the GitHub page is straight forward. Anyone can copy, add, edit, and make comments about the database using the GitHub link. I also encourage anyone interested to contribute to the database to contact me at [hevelynbr@gmail.com](mailto:hevelynbr@gmail.com) for questions and discussion of future collaboration.

I hope these comments are helpful in finalizing the manuscript for publication.

Thank you for your valuable suggestions and the time and effort you invested in improving the manuscript.