Responses to Reviewer 2 (R1)

I am very pleased to say the authors have taken a generally positive approach to the revisions of the work and as a result, I congratulate them on a more balanced, targeted, informative, and ultimately useful contribution. Well-done! I provide a few more suggestions, which the authors may find of use. I look forward to seeing the final work published.

Some of the claims in the revision about balancing out references haven't been done, again I point out to the authors that in the first paragraph there is three different references to a single author with respect to rather generic TIMS approaches / applications. I don't think this is balanced on this topic for the concepts that are referenced.

Our Response: We have deleted the Schoene et al. (2010) and Schoene et al. (2012) references to avoid over-citing any single author.

It is still unfortunate that all of the chosen examples don't have independently constrained times of radiogenic-Pb loss.
Line 6. Suggest rewording so as not to start with "Because" and for precision in meaning consider the following suggestion, e.g. "The loss of radiogenic Pb from zircon is known to be a major factor that can cause inaccuracy in determining primary ages from the U-Pb geochronological system, hence there is a need to better characterize the distribution of Pb loss in natural samples".

Our Response: We have made this change

The authors may prefer to us en dash for U–Pb as I believe this is technically the correct use.

Our Response: We now use the longer dash in all occurrences of "U–Pb"

Fig 5 is particularly nice.
Line 262 "Common Pb corrections, particularly the 207 Pb-correction, may also introduce a bias towards artificially low Pb*/U values (Anderson, 2002; Anderson et al., 2019)". I don't believe this is correct as it is feasible that the common component in the 207 correction could be too radiogenic (e.g. to high common 7/6) the implication of this would be a distribution tail towards a bias towards lower 238/206, conversely a lower common 7/6 would result in a higher (younger) 207 corrected 8/6 age. The point is that bias can be either way.

Our Response: We have rephased the sentence "…may introduce a bias in Pb*/U values." This avoids suggesting that the 207 Pb-correction bias is exclusively towards younger 206Pb*/238U values.

Lines 43-49; I am not sure if this paragraph is of much use because unless some alpha dose calculations or raman measurements are done it appears very unconstrained. In the end, greater Pb loss could be a function of grain size, chemistry, fluids, structure, thermal history etc. All are factors that most people will be well aware of.

Our Response: We have rewritten the paragraph to emphasize the lack of correlation between apparent Pb loss and alpha dose, instead of referencing age alone. We have also clarified the importance of metamictization as a mechanism of Pb loss in paragraph 2 of the Introduction and also included alpha dose values in Table 1.