Authors’ Response

We thank the reviewer for the feedback. Our point-by-point responses are below:

[line 83] “those from” can be deleted. [line 90] Replace “occurred recent relative the timing of” with “post-dated”.

**Revised as suggested.**

[line 180] “(but not the same as the original unbroken crystal)” can probably be deleted. I think this is a reminder of the conceptual difference between their correction and the original one proposed by Farley, but it’s not really necessary and potentially confusing in this context.

**Revised as suggested.**

[line 207; Equation 6] The $4/\sqrt{3}$ should be surrounded by parentheses, and the “$s$” should be put back on the end of “ends”. At the same time, the authors might want to consider an alternative way of presenting the equations. It might be a little less confusing to use only one equation and introduce a variable $L_{fc}$ (or something like that) for fragmentation-corrected length, which is $2L$ for crystals broken on one end and approaches infinity (but is approximated as $20L$) for crystals broken on both ends. That way the reader does not have to remember that the extra factor of 2 is a stealth addition to both the numerator and denominator of Eq. 5, and also makes it easier to apply to different beta equations for other crystal morphologies, by just replacing $L$ with $L_{fc}$.

**Revised equation as suggested. We opted not to change the specific beta equations because the modification of length variable (2L v. 20L) is clearly discussed in the text.**

[line 218] The phrase in parentheses does not add anything, and distractingly implies that zircon fragments are not common, which will certainly vary from place to place. A better addition might be a reminder that a different beta equation would apply for zircon.

**Revised as suggested to include qualification about different beta equations, and to emphasize that zircon fragments are not necessarily uncommon, but simply less common than apatite fragments.**

[line 236] Replace “when these assumptions are relaxed. In other words, (B)” with “which”

**Revised as suggested**

[line 273 and 385] It might be better to say “violated” rather than “relaxed”, because the assumption is not really changed, only whether the synthetic data obey the assumption.

**Revised “relaxed” to “not met”**

[line 352] Delete “a” before “fragment”

**Revised as suggested.**

Additionally, we have added an updated acknowledgments section to reflect the contributions of the referees and others to the manuscript.