

2 July 2025

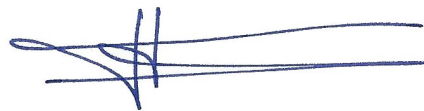
Dear Prof. Schmitt,

I hereby submit the revised manuscript on carbonate U–Pb geochronology, which addresses all the points raised in the public discussion. In this cover letter, I would like to highlight the most important changes, and address the additional points raised in your decision letter:

1. The title has been changed to “Carbonate $^{206}\text{Pb}/^{238}\text{U}$ problems and potential $^{207}\text{Pb}/^{235}\text{U}$ fixes”.
2. We followed your suggestion (and that of Dr. Pollard) to give greater prominence to the informative priors. The revised manuscript applies a $^{234}\text{U}/^{238}\text{U}$ disequilibrium correction to ASH-15, using a prior distribution obtained from an initial $^{234}\text{U}/^{238}\text{U}$ activity ratio compilation of Chaldekias et al. (2022).
3. The Hoogland example has been replaced with another example (AV03; Pickering et al., 2019). We seriously considered your suggestion to use synthetic examples, but decided to stick with real data to pre-empt any accusation that our paper addresses a “straw man problem”, as Reviewer 2 seems to suggest.
4. Additional references have been added (i) to document high $^{234}\text{U}/^{238}\text{U}$ activity ratios in other parts of the world, (ii) to give proper credit to previous proponents of the $^{207}\text{Pb}/^{235}\text{U}$ method, and (iii) to document Albarède (1995)’s use of matrix exponentials to solve disequilibrium problems.
5. Following Dr. Nuriel’s request, we have added a back-of-the-envelope calculation showing that the absolute magnitude of disequilibrium corrections is limited to c. 4 Myr. This brings home the point that our paper is not only relevant to young samples, but also to old ones.

My co-authors and I hope that you will find our revised manuscript suitable for publication in *Geochronology*.

Sincerely yours,



Pieter Vermeesch