Response to the remaining comments on gchron-2019-14

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1. I thank Dr. Ickert for spotting the reference to the possible unresolved isobaric interference on ^{204}Pb in the Janots and Rubatto (2014) dataset. I have decided *not* to remove the conventional Th–Pb isochron from the paper for the following reasons. First, the main reason why Janots and Rubatto (2014) did not use a ^{204}Pb-based common Pb correction is the low abundance of this isotope in their sample, and *not* the alleged isobaric interference. Second, the proposed isobaric interference is only mentioned as a possibility and not as a fact. As Dr. Ickert pointed out, the first paper to report the possibility of an interference on ^{204}Pb in monazite was Stern and Berman (2001). However in monazite this interference is associated with a correlation between ThO_2 content and apparent ^{204}Pb counts. No such correlation is observed in allanite and so the presence of the interference is quite speculative. Third, applying the ^{204}Pb-based common Pb correction to the Janots and Rubatto (2014) dataset actually yields results that are in excellent agreement with the ^{207}Pb-based and ^{208}Pb-based alternatives. To me this suggests that the ^{204}Pb data are actually fine to use. However I have added a sentence to the revised manuscript about the possible interference.

2. As requested, the revised manuscript reports the published ages for the Parrish et al. (2018) and Janots and Rubatto (2014) datasets. As the reviewer remarkes, these are consistent with the new results, but are less precise and less robust.

3. I have changed all instances of the words 'lead' and 'uranium' to their chemical symbols 'Pb' and 'U'.

References

Janots, E. and Rubatto, D. U–Th–Pb dating of collision in the external Alpine domains (Urseren zone, Switzerland) using low temperature allanite and monazite. *Lithos*, 184:155–166, 2014.

Parrish, R. R., Parrish, C. M., and Lasalle, S. Vein calcite dating reveals Pyrenean orogen as cause of Paleogene deformation in southern England. *Journal of the Geological Society*, 175(3):425–442, 2018.

Stern, R. A. and Berman, R. G. Monazite U–Pb and Th–Pb geochronology by ion microprobe, with an application to in situ dating of an Archean metasedimentary rock. *Chemical Geology*, 172(1-2):113–130, 2001.