Geochronology Discuss.,
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Interactive comment on "Exploring the advantages and limitations of *in situ* U-Pb carbonate geochronology using speleothems" *by* Jon Woodhead and Joseph Petrus

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We thank anonymous referee#2 for their positive review and address their specific comments below.

Comment: 'Further comment on why the heterogeneous nature of WC-1 was eliminated as an explanation for variability of common Pb compositions defined by ID or LA-ICP-MS could be of potential interest to the larger U-Pb LA-ICP-MS community due to the fact that many studies presented in the literature do not use WC-1 to correct for any bias on measured 207Pb/206Pb ratios of unknown carbonates due to its heterogeneous nature. Instead, many investigations use analysis of a NIST glass to

correct for any 207Pb/206Pb bias. Was using NIST to correct for 207Pb/206Pb bias explored by the authors and then results compared with the ID U-Pb ages? Including some discussion on using WC-1 or NIST to correct for any 207Pb/206Pb bias also allows the authors to expand the description of their data reduction procedure using VizualAge UComPbine DRS'.

Response: We did not use the NIST glass in any of our analyses since experiments conducted on a variety of carbonates showed a) no discernable matrix effects between carbonate and NIST for the 207/206 ratio and 2) no discernable mass bias effect on this ratio. This then allowed us to use the UComPbine DRS as a data reduction strategy - although we fully admit that some excess uncertainty in the 207/206 ratio is not accounted for with this method. Future development could include deploying a carbonate standard (e.g. a young material with 'constant' 207/206) to monitor this excess uncertainty. These issues are now discussed in the revised manuscript

Comment: 'I would like to see a data table with the U-Pb data presented in Figure 3 included in future publication'

Response: Now included in the revised text

Comment: 'Minor specific comments on Figure and Tables are included below.

I recommend the submitted manuscript for publication with minor revisions . Specific Comments: Figure 1 Caption: keep concentration units the same'

Response: Done

Comment: Figure 3: Would it be possible to make the LA and ID isochrons different colors?

Response: Done

Comment: Table 1: text in 'cell gas' description cut off

Response: Now corrected

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