

Interactive comment on “A tropical speleothem record of glacial inception, the South American summer monsoon from 125 to 115 ka” by S. J. Burns et al.

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I am grateful to R1 for their thoughtful comments and also for their close reading of the manuscript. In response to these comments I have made the following changes to the paper:

1. Amended the estimate of the timing of the rapid shifts in SASM intensity from 200 y to "600 years to as little as 200 y" to reflect inclusion of error estimates on the radiometric age determinations.
2. Expanded the discussion of how and why the timing of rapid high latitude climate shifts are so closely tied to low latitude shifts (page 4371, lines 15-25 in the original ms).

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In short, because the teleconnection is via the atmosphere, cooling in the high northern latitudes results in almost immediate increases in cross-equatorial heat transport, a southerly shift in the ITCZ and an enhanced SASM. This mechanism is discussed in more detail in this section of the ms, with additional references added. Thus, the timing of low and high latitude change is essentially synchronous.

3. More specific comments: Hendy (1971) defined two types of 'Hendy tests', one involving samples taken along a single growth layer and a second considering overall oxygen and carbon isotope correlation along the growth axis. The latter form of Hendy test is used in this ms. I agree with R1 that climatic effects might also result in correlation between oxygen and carbon isotopes along the growth axis. But the lack of correlation does not support that kinetic effects are not important in this sample (if one holds that 'Hendy tests' are of value, see e.g. Dorale and Liu, 2009). I have changed the wording on p.4370, lines 1 and 2, from 'actual change of $\delta^{18}O$ ' to effective change in $\delta^{18}O$ '. All technical corrections have been adopted.

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