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Climate of the Past Discussions

Interactive comment on "Isotopic and lithologic variations of one precisely dated stalagmite across the Medieval/LIA period from Heilong Cave, Central China" *by* Y. F. Cui et al.

Anonymous Referee #1

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Cui and coworker present a high-resolution multi-proxy study for the Medieval/LIA period from a Central China to investigate the reasons for climatic variations. They find that the dynamics of the ITCZ-Mei Yu interaction might be the forcing for changing dry-wet conditions.

General comments: The authors present a manuscript of good quality that fits well into the scope of Climate of the Past. Their multi-proxy approach, combined with good age control, gives detailed insights into changing climatic conditions. I see this manuscript fit for publication in Climate of the Past, but I would like to suggest several improvements as outlined below. The main issue that I find needs some attention is the age

model. The age model is the base for any interpretation. The authors use linear interpolation between U-series dates. This procedure is not adequate and not realistic, because its highly unlikely that the growth rate changed at exactly the sampled spots. I suggest that a more realistic age model is build, in the knowledge that several software routines are freely available (e.g. Stalage by Scholz and Hoffmann 2011), which also allow uncertainty estimation. The uncertainty estimates can (and should) be used to establish which variations are significant and which are within uncertainties and thus indistinguishable from background uncertainty. This test will help improve the interpretation of short-term variations in the presented record. Furthermore, the English of the manuscript needs some attention. Finally, I summarize minor comments/typos in detail below. I suggest that this manuscript should be considered for publication after minor revision.

Specific comments/typing Results 3.1 Chronology line 11 develop the line 15-16 use a different age modeling procedure please (as outlined above) line 16 of the stalagmite 3.2 Proxy sequences line 20 Hendy tests line 21 show line 23 deposited close to – I am not convinced that Hendy tests are faithful tests for equil. conditions, as has been discussed by Mickler et al. and others line 24 climatic origin page 7, line 3 interval between 0 and 73 mm (please check this also in the rest of the manuscript) line 4 studies suggest line 9 The weighted mean line 10 1996 is -7.0 line 11 Please refer the standards to VSMOW (and explain the shortcut when introduced for the first time) line 17 please change 0 -73mm as above. . . line 19 the remaining record (the MWP) smaller during the line 21 in soil CO2 line 23/24 please comment here also on CO2 degassing (and refs.), as this is an important factor for d13C changes line 25 The profile of elemental Sr in bulk Sr generally line 27 measurement has page 8, line 5/6 please comment on PCP and other potential influences on Sr variations (changes in soil composition, loess?). 4. Discussion 4.1 line 11 with high values, corresponding line 12 low values correspond line 13 with negative excursions line 14 replace: and low . . . laminae) with gray line 15 delete: of gray values, respectively profile shows line 17 while low Sr intensities line 19 unclear> what do you mean with among them? line 21

0-75mm line 22 shows a much line 22/23 please reorganize this sentence, as it is not very clear also change 29-58 mm and 148 to 192 mm page 9, line 2 faint occurrence of line 6 climate with a strong line 7 45 to 120 line 12 G+Q proposed that annual line 19 lead to a reduced line 20 delete: dissolving in the seepage water page 10, line 2 Intra-seasonal by “active” line 7 shifts of the line 13 790 to 1320 line 19 and the subtropical line 21 maybe you better use Mei-Yu, because you have introduced it in line 19 line 24 the ITCZ line 25 Under LIA line 26 climate conditions, the of the Mei-Yu line 27 subtropical high, its line 28 in the mid-low page 11, line 1 Therefore, LIA line 6 Mei-Yu line 10 intensity during LIA line 16 replace idea with hypothesis line 17 the tropical line 19 tropical monsoon corresponding line 21 When the ITCZ line 23 may have reached from a page 12, line 11 vice versa line 20 indicating relatively drier conditions. line 21 The relationship line 22 mode during the LIA line 27 the ITCZ may have reached from Fig 2: please adjust the subfigures B and C, they are not of the same size as A. Please rotate the scale bars and put them into the respective figure (with good contrast), it will safe space. Please place the labels A, B, C into a better visible place and with better contrast, maybe into the upper left corner of the respective subfigure

Fig. 4 Please show also the d13C profile (dist from axis). The distance from the axis does not exceed 10mm, but to fully see degassing or evaporation effects, the profiles should be longer and in both directions from the axis. Please comment on your sampling strategy and or improve on this! X-axis title> it must be axis, not axix Caption> for stalagmite BD

Interactive comment on Clim. Past Discuss., 8, 1275, 2012.