

## ***Interactive comment on “Stable isotope and trace element investigation of two contemporaneous annually-laminated stalagmites from northeastern China surrounding the “8.2 ka event”” by J. Y. Wu et al.***

**J. Y. Wu et al.**

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General comments: The paper addresses an interesting research question concerning the global pattern of the so-called 8.2 event, by adding stalagmite-based high-resolution records from northeastern China. The records do show a valuable potential to add to the understanding of this event and I agree with most of the conclusions as they are discussed in the discussion chapter, which I generally think is quite well-balanced with limited over-interpretation of the results. While the comparison with other stalagmite records is fairly weak the comparison with GISP record is rather striking.

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ing! Some more statistics here would definitely increase the strength of the paper. The age model constructed, using both U-series dating and layer counting, appears very convincing and precise! However, the paper suffers seriously from the lack of a stringent and correct use of the English language. Since I am not a native English-speaker I restrict myself from commenting comprehensively on this, but I recommend that the paper should be checked linguistically before it is re-submitted for a second review round. Overall I agree with the detailed and constructive comments already published by A Wackerbath, and would like to stress the following:

Reply: We thank Holmgren for his/her constructive suggestions. Yes, we should smooth the English by native speaking people although the original manuscript has been done. Following the suggestion, we did some statistical analyses to enhance our evidence for the correlation between different proxies from the same cave and Greenland ice cores.

Specific comments: P.1594 Material and methods, 1st paragraph, 2 last sentences: Your details about the cave indicates that the cave has been monitored. If so please specify the details – for how long has the cave been monitored, which parameters have been measured, is there a met. Station outside the cave. . .If no monitoring has taken place then you have to state on what basis you report the data in this paragraph.

Reply: We did not monitor hydrological processes of drip water in the cave, please see the detailed response to the Wackerbarth' comments in Section 3.2 - Page 1597 - Lines 3-7.

2nd paragraph: Stalagmites are collected in the “deep site of the cave”. Please give some information about the cave size and form so that the reader understands what the “deep site” means. How far away from each other were the stalagmites located? In case they are situated very close to each other a similar signal in them may in fact also be due to local factors as well as to regional factors!

Reply: We provided the detailed information about the cave in the revised manuscript.

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Although the two samples are only 3 m apart, it does not necessarily suggest that the two stalagmites underwent the same process in flow path, CO<sub>2</sub> partial pressure, residence time, concentration of solutes and degassing history.

P.1595, Material and methods, last paragraph: On which stalagmite (or both?) was the XRF performed?

Reply: Additionally we measured the Ba data for Sample NH6 (see the response to the Wackerbarth' comments in Section 4.2 - Page 1601 - Line 1).

P.1596, lines 1-2: I do not really understand the sentence; believe a word is missing in the end. Moreover I have difficulties in following how figure 3 illustrates this. Maybe a more explanatory figure text would help. The present figure text needs to be revised anyhow.

Reply: we have corrected this sentence and revised the figure text.

p.1596, line 25: I think the word “veracity” should not be used here. Maybe use “significance” instead.

Reply: The word “veracity” means “reliability” or “duplicated” but not “significance”.

p. 1597, line 4: add “as previously” before “interpreted for Hulu and. . .”

Reply: Yes, we did.

P. 1600, lines 6-18 and figure 5: It would be easier to evaluate the comparability if you showed the full record (7.8-8.6). Moreover, you state that the Dongge records show an abrupt change at 8.21 – but I think you mean 8.1 don't you?

Reply: We agree with the comment. However, the three carefully re-dated records (Cheng et al, 2009) here we used for comparison have a limited length from 8.0 to 8.6 ka. The Dongge records showing an abrupt change should be at 8.10, although 8.21ka as mentioned in the Cheng' paper (2009).

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P.1600, the paragraph starting on line 19: I suggest that you re-phrase this para and that you instead from the beginning state that you now compare your three proxy-records, O, C and Ba with GISP and not as now you use the Ba for validation.

Reply: Now that the new Ba/Ca data for NH6 are available, we could re-organize paragraphs related to the content of element Ba, including this paragraphy the reviewer mentioned.

P. 1602, line 9-17. I would suggest that you do the similar correlation analysis between you C13 and Ba data with the dendro-C14 data, since you stat that these proxies are best related to the North Atlantic

Reply: we did the similar correlation analysis between  $\delta^{13}\text{C}$  ( $r=0.07$ ,  $n=88$ ) and Ba/Ca ( $r=-0.15$ ,  $n=62$ ) with the dendro-C14 data. The correlation coefficients are low. The tree-ring  $\Delta^{14}\text{C}$  reflects changes in solar radiation which is not directly related to the North Atlantic circulation.

Technical corrections (obs! – not complete, language check needed)

Reply: we have checked the language carefully.

1. References cited in the text should be referred in chronologic order, which is not always the case.

Reply: We cited the references in chronologic order.

2. P.1592, line 5: Please replace the word “concerned” e.g. “studied” and “has” with “have”

Reply: Yes, we did.

3. P.1593, lines 4-9, 16-17, 26-1 (P.1594): The sentences are very difficult to understand, please correct them.

Reply: Yes, we did.

4. P.1594, line 5/6: You use the word “climate” in pluralis “climates” here as well as at many other places in the paper. I am not sure that this is correct. I would recommend using the word in singularis instead

Reply: we replaced the word “climates” with “climate”.

5. P.1594, lines 8, 10: Add C (Celsius).

Reply: we added C.

6. P. 1594, line 20: Remove the “a” before “continuously”

Reply: we removed the “a” before “continuously”

7. P. 1594, line 20 and 21. Add at 9.5 to 56 mm and at 43 to 88 mm

Reply: we did so.

8. P. 1595, line 17: replace “by the” with “using”

Reply: we replaced “by the” with “using”.

9. P. 1595, line 18: remove “which is”

Reply: we removed “which is”.

10. P. 1600, line 6: Add “that” after “Despite” and remove the comma after  $\delta 180$

Reply: we added “that” after “Despite” and remove the comma after  $\delta 180$

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Interactive comment on Clim. Past Discuss., 8, 1591, 2012.

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