

Interactive comment on “Hydroclimatic variations in southeastern China during the 4.2 ka event reflected by stalagmite records” by Haiwei Zhang et al.

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I am a Master's student with an interest in the research front.

Summary.

The purpose of this paper is to examine the link between environmental changes in the 5.3 and 3.6 ka BP period and the collapse of several Neolithic cultures in China like the Shijiahe Culture which was located in the middle reaches of the Yangtze River. Bigger focus is given on the 4.2 ka BP event during which dryer conditions insisted on the northern parts of China compared to the southern part, where the conditions where

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more wet. This is done by reconstructing regional monsoon intensity from a stalagmite in Shennong Cave (SN17). The reconstruction is done through $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ proxy analysis. The results are cross-referenced with other proxy data from previous work done on China monsoon. The explanation claimed for these climatic changes on the 4.2 ka BP event are attributed to a weaker East Asian summer monsoon (EASM) due to reduced Atlantic Meridional Overturning Circulation (AMOC) which led to a southward migration of the Intertropical Convergence Zone.

Paleoenvironmental reconstruction research to help us understand about the conditions surrounding the development of past civilizations and cultures is very important. This paper can give another aspect on this research front, with a greater focus on Southeastern Asia.

Comments.

(1). The methods chapter was very simply put with references provided so if readers are further interested they could further examine the details of techniques used.

(2). This paper's results can give further information on how the EASM intensity can be derived from $\delta^{18}\text{O}$ concentration in speleothems.

(3). Are there enough evidence which support that ice-rafted debris decreased AMOC intensity during that period?

(4). E'mei cave is being mentioned on 171 line without the being labeled on Figure 1 where all the other sites are recorded. Since the regional environmental changes have a spatial significance it would be appropriate if it was presented.

(5). Various parameters are presented that are able to influence the $\delta^{18}\text{O}$ of the paper's speleothem. It would be useful that the conditions of these parameters were presented for the other speleothems used in this paper to compare with the data acquired by the authors.

Also to this note it may be good if the paper urges other researches into further investi-

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gating the reasons behind the amplitude difference between the SN17 and Jiuxian and Xianglong speleothems.

(6). Shennong Cave is located in an area that is influenced also from spring persistent rain. Maybe this is something that needs further investigation since it provides the area with a surplus of water compared to the more naturally dry northern part of China. Do the authors think that this is something worth considering?

(7). In Figure 6 there is a good correlation in the $\delta^{18}\text{O}$ records between the SN17, Dongee and Xianshui during the 4.2 ka BP event, but for the other dates the fluctuations vary considerably. How can one examine the effect that different spatial distribution of precipitation could have on this environment.

(8). In Figure 7.H the $\delta^{13}\text{C}$ values for SN17 should be displayed according to the header underneath. The scale seems to be wrong and should be corrected.

(9). In Figure 7 $\delta^{18}\text{O}$ concentration on C speleothem is lesser indicating intensified monsoon at the 4.2 ka BP event. In contrast to A,C, D where the concentration has higher values. C and D are very near and in a slightly lower latitude whereas A is slightly westwards. What would be the explanation for these values given the spatial connection of those speleothems?

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