

**Response to Editor Decision: Publish subject to minor revisions (review by editor) (03 Sep 2018) by Monica Bini**

### **Comments**

The paper "The 4.2 ka BP event: multi-proxy records from a closed lake in the northern margin of the East Asian summer monsoon" by Xiao et al. shows a good review of palaeoclimate data and reappraisal of palaeoclimate reconstruction around 4.2 ka BP from data already presented in the same lake. The article is well focused on the topic of special issue and provides a good contribution to the knowledge of the issue.

### **Response**

Thank you for the favorable comment on our manuscript!

### **Comments**

The authors did a good work in accepting most of the reviewers' suggestions and the article has improved. However, in my opinion some minor problems are still present.

I think that the introduction is still too similar to the paper Xiao et al., 2018 (Quaternary International) and it also seems strange that this paper on the same topic is not cited in this work.

### **Response**

As we responded to Referee #1, we think that it is well worth making a brief review of the research on Holocene abrupt climate changes in order to help early-career researchers understand the complexity of Holocene climate variability on millennial to centennial scales. Such a review would contribute to further studies on this important and crucial issue that affects modern societies.

The relevant paragraphs were re-organized and largely reduced following the comment from Referee #1. We don't deny the similarity in main points of the paragraphs between both papers. But we think that these points are expressed in a different, more concise pattern in the present study.

With respect to the matter that the QI paper was not cited in this study, it is merely due to the proverbial problem of chronology, that is, the dry event was assigned to a timespan of 4060–3690 cal yr BP in that study, about 200 yrs younger than in this study (4210–3840 cal. yr BP). We are more confident of the timespan in this study because the carbon reservoir age of radiocarbon dating of the bulk organic matter ( $366 \pm 124$  yr) in that study was obtained from a linear extrapolation of closely related  $^{14}\text{C}$  ages of 6 samples from the horizons at core depths of 1.60–10.63 m to the surface of the lake sediments (the horizon at core depth of 0 m) rather than the actual  $^{14}\text{C}$  dating of a sample from the surface of the lake sediments. We thus think that both start and end ages generated for the dry event in that study should have been younger than the true ages. In any case, the QI paper has been cited in the re-revised manuscript in view of your following suggestion. See below for details.

### **Comments**

Moreover, as far as concerns Fig. 5 I agree with Bradley's suggestion and the connections with HSG seem to me weak.

However, I understand the reply and if the authors prefer to maintain the figure in my opinion it could be useful to enlarge the discussion about this figure providing also a comparison with other more regional records in order to reinforce the interpretation obtained from the lake.

### **Response**

Yes. This is a good idea, and we totally agree. In order to reinforce the interpretation of the dry event obtained from Hulun Lake for the northern margin of the East Asian summer monsoon, proxy records from two other lakes, Dali Lake and Daihai Lake, located in the same region have been introduced into Discussion. For this presentation,

1) Fig. 1 has been revised to show the locations of Dali and Daihai Lakes; and a brief note added to the caption of Fig. 1. See the revised Fig. 1 and its caption on lines 492–493.

2) A paragraph has been added into Discussion to demonstrate records of the 4.2 ka BP event from Dali and Daihai Lakes that are supportive of the inference from proxy records in this study. See lines 313–323.

3) Two related papers have been cited in this study. See the reference list on lines 465–467 and 471–473.

### **Comments**

I think that this paper could be accepted for final publication after these minor changes are done.

### **Response**

We hope that two-round revisions of the original manuscript can satisfy you and the two referees and that the finally revised manuscript will be acceptable for publication.

Thank you again!