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Climate of the Past Discussions

Interactive comment on "Late Holocene environmental reconstructions and the implications on flood events, typhoon patterns, and agriculture activities in NE Taiwan" *by* L.-C. Wang et al.

Anonymous Referee #2

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This is an interesting paper, the authors use the contrast of sedimentation rate, relative abundance of fossil among the different intervals of core, as references to infer previous flooding events; and use the cultivated Poaceae to indicate human activities in NE Taiwan. Both bring us new insights in the NE Taiwan environmental changes. In addition, discuss the past hydrological change by considering the affecting factors such as, ENSO, IPWP-SST, ITCZ EASM and EAWM. And try to find relatively important factors on the paleohydrology of NE Taiwan. It represents a substantial contribution to scientific progress within the scope of Climate of the Past. The results and conclusions

presented in a well-structured way.

But the following aspects should be considered or discussed in the text: 1. To discriminate the flooding event from typhoon rainfall event in the proxies is not easy since flooding may also result from typhoon. According to the authors, typhoon is indicated by coarse sediments, Lagerstroemia pollen (infer denudation during typhoon) and P/B ratio of diatom (infer high lake level), but the denudation is not necessary due to typhoon, it may also due to other events in this area, i.e. sliding et al; and index of P/B ratio is only exists in samples where diatom fossil appeared and it is not available through the whole core. Thus, both of them are not the only necessary evidences of typhoon. Flooding event is possibly indicated by rapid sedimentation, and high ratio of UMF pollen, but they can also infer a typhoon event. Thus, some sentence in the abstract and conclusion may need to modified. But for the discussion of Fig. 9 it is still accepted (OK) because flooding and typhoon are combined together there IN Fig. 9.. In addition, usually the sedimentation of flooding can be episodic; i.e. large amounts of sediments deposited within short duration during flooding, and this makes the age/depth estimation difficult sometimes. Thus, the age assignment of interval of short dry such as 940-1010 AD should be very careful.

2. The dry / wet trend of MWP and LIA: If accepted the dates of this study, the increase of Poaceae in LPZ 2 (MWP) might indicate it is drier than LPZ 1 although fossil concentration are low indicating still some floods. Thus, LPZ 2 may be relatively drought eventhough flooding still occur red sometimes. In this paper, drought occurred at the lower part of LIA, i.e. LPZ 3 near MWP, although illite +muscovite still high in LPZ 3. However, studies in South China and Taiwan (Chen et al., 2005;Chu et al., 2002;Wang et al., 2012;2013; Chen et al., 2009) reported a relatively wet during LIA and drought during MWP. Or, the drought (LPZ 3) might be still in MWP? if consider the dating data is not so dense before the drought event (1400AD) and the sediments below 1400AD is still not exactly homogeneous-containing silt and clay etc, that make the estimation of age controversial. And, diatom inferred precip in fig. 8. is drought during MWP.

Although the precipitation may vary locally, but is there any other reference that discussed this dry/wet trend? Is there a clear drought existed in LIA 1 and not in MWP?

The suggestions are listed as follows: “Title” : “typhoon” instead of typhoon patterns No discussion about the typhoon patterns in the text. But only mention their routes.

“Abstrac”: Line 2 of the floodplain lake should better be “lake in the floodplain of Ilan Plain”. Line 8 the 940-1010 AD is not so convinced due to date uncertainty, thus better only mentioned “eventhough shortly dry phase existed” Line 12-13 “high percentage of Lagerstroemia “; better to be “coarse grained sediments and sometimes with local shrubs like Lagerstromia or planktonic diatoms” because Lagerstroemia is not found in LPZ 4 and planktonic diatoms not in LPZ 1. Line 17. better to delete “dry events and frequent typhoon events happened during La Nina like stage”. Because not so easy to discriminate typhoon and flooding.

“Conclusion” Line 2-3: better to modify the sentence. Please consider the difficulty from the sediments to discriminate between flood and typhoon event. Line 6-8: intense (intensity) of typhoon frequency? Evidence is not shown in Fig. 5 (Fig. 5 show benthic diatom also abundant). Better to “possibly indicate frequent typhoon. . .. .where the plankton diatom reaches its culmination.”

Technique corrections, : It is better to ask a reviewer of mother language to modified the sentences to make manuscript more clear. 1. p. 1979 line 24 “is locates” should be “is located”. 2. p. 1981 line 21 should be “is located” 3. p.1982 line 10 are occurred should be “occurred” 4. “ line 17 delete “carbon” 5. p. 1984 line 19 composite of mineral content should be “composed of clastic sediments”. line 20 uppermost 70cm should be” the uppermost 70 cm”. line 22 are consist should be “consist” 6. p. 1985 line 23 delete “which is” 7. line 25 upper part of the core should be “of the zone” 8. p. 1986 line 5 “has” better changes to “reaches” 9. p.1987 line 15 is consists should be consists. Line 16 “ sediment core can be seen” better use ”sediments of core can be looked”. 10. p.1988 line 1 form should be “from” line 5 can be contributed to the

deposition should be ”contributed from the deposition” line 11 “ . Although “ should be “, although” line 27 Fig. 6 should be Fig. 8. Line28 low latitude should be “low altitude” 11. p. 1989 line 20 agriculture activates should be “activity”. 12. p.1990 line 22 indicted should be “indicated” line 9 Inlan ahould be “ Ilan” line 24 “is indicating” should be “ indicates” 13 p. 1991 line 5 latitude should be altitude line 26 should be “examinated”.

14. p. 1992 line 14 millennia

15. p. 1993 line 15, typhoon induced landfalls should be “ rainfalls”.

16. p. 1994 line 9 should be 1250-1300 AD

Interactive comment on Clim. Past Discuss., 10, 1977, 2014.