Clim. Past Discuss., 10, C476–C478, 2014
www.clim-past-discuss.net/10/C476/2014/

Climate of the Past Discussions

Interactive comment on "Quantitative reconstruction of East Asian summer monsoon precipitation during the Holocene based on oxygen isotope mass-balance calculation in the East China Sea" *by* Y. Kubota et al.

Anonymous Referee #1

Received and published: 14 May 2014

Review of Kubota et al., "Quantitative reconstruction of East Asian summer monsoon precipitation during the Holocene based on oxygen isotope mass-balance calculation in the East China Sea

This study used G. ruber Mg/Ca and d18O in a sediment core from the East China Sea (ECS) to evaluate changes in regional hydrology and inferred century-scale changes Chiangjiang River discharge. They applied a mass balance calculation approach to evaluate changes in freshwater influx to the entire ECS over the Holocene. They conclude that changes in northern Hemisphere summer insolation does NOT control

changes in summer precipitation in South China. This conclusion is very important (and probably controversial) as it is opposite to what has been concluded in several studies using speleothem d18O to reconstruct rainfall in this region over the Holocene. I recommend publication following some editing to keep the paper focused on this key conclusion. The changes need to include a separate titled section discussing this conclusion (see comment under summary #1 below).

Abstract: Line 20; not clear what is written... indicates no longer term decreasing trend in river discharge.... I think the authors mean, no long-term (secular) trend in Changjiang River Q.

Suggest delete last sentence of abstract (lines 24-26) as this sentence does not add much and distracts from the main conclusion in the sentence just before.

Paper: The SSS climatology for the KY core site indicates a 1.7 salinity unit annual cycle with the SSS minima occurring in July. However, the July SSS spatial pattern shown in Figure 4 indicates that the diluted Changjiang River plume does not clearly reach the KY core site. What is the possibility that SSS at the core site is related or in-part related to Kuroshio Current dynamics.

The timing of the small century scale changes in Mg/Ca upper 30m temperatures does not agree between the cores KY and A7 (the next closest) to the south of KY. The century-scale temperature variations they observed in core KY are largest ($\sim$1.5-2°C) between $\sim$3.8-5Kyr, otherwise they are small and irregular. I think it is a stretch to define the series of "cool" events now defined on page 1456 (lines 24-26) given the +/- 0.3°C precision and the non-reproducible Mg/Ca temperature changes between at least cores KY and A7.

The Changjiang River discharge data for Datong station shows increases during most El Nino events (see 1997, 1982, 1972, 1953). However, the proposed link to the Moy et al., low frequency El Nino record spanning the last 10Kyr is not convincing in my opinion. I suggest removing this aspect from the manuscript. There have been a

CPD
10, C476–C478, 2014

lot of questions about a direct El Nino interpretation of the Moy record and given the mixed ENSO/monsoon signal in the Changjiang River basin, the comparison to the Moy record does not add much value to the paper and in my view raises more uncertainty issues.

Also, why has the upper 1,500 years of the d18Osw record from core KY been removed from the data series shown in Figures 7, 8 and 10?

Summary: #1 (P1471 lines 19-23): where is this conclusion discussed in the text? It is important and needs discussion in its own section. I apologize if I just missed it, but after scanning the text I could not find where this is discussed expect in the abstract and summary. Strongly recommend that you add a section supporting this conclusion in a separate titled section.

Figure 2; why not also plot total annual average discharge (Q). Figure 5: an age-depth x-y plot would help readers evaluate the sedimentation rate changes in the core.

Other edits: p. 1454 line 4, crashed should be changed to crushed. P. 1469, Line 21 ; Should read El Nino events and not ENSO events.

Interactive comment on Clim. Past Discuss., 10, 1447, 2014.