

Interactive comment on “Multiproxy reconstruction for Kuroshio responses to Northern Hemispheric oceanic climate and Asian Monsoon since marine isotope stage 5.1 (~ 88 ka)” by X. Shi et al.

Anonymous Referee #2

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The manuscript entitled “Multiproxy reconstruction for Kuroshio responses to Northern Hemispheric oceanic climate and Asian Monsoon since marine isotope stage 5.1 (~88 ka)” submitted by Shi et al. presents multi-proxies record of the region at northern part of the Okinawa Trough. In this manuscript, the authors state that the Kuroshio is the main governing factor on regulating regional hydrography for the last 88 ka. The data is plentiful and is sufficient to demonstrate the main points. However, there are some questions need to be clarify in the manuscript. Nevertheless, the manuscript is now in acceptable format for publishing on the journal of “Climate of the Past”.

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1. According to the record, sand depositions are high in interglacials. However, during interglacials, the sea-level are in high-stand periods. That means sources of riverine and costal sediments are far away from the coring site. Why coarse sediments are enriched during high-stand but low in glacial interval when coastline is close to coring area? 2. In the manuscript, the reconstructed SSS are important indicator for monitoring past changes of hydrography of the OT. The calculated $\delta^{18}O$ is based on foraminiferal $\delta^{18}O$ and alkenone-derived SST. This kind of calculation might be biased by the different growing seasons and dwelling depths of forams and coccolithophores. As mentioned in the manuscript, alkenone-derived SST is representative to annual temperature. But planktonic foram is possibly indicate to summer conditions, denotes in page 1350, line 2-3. Is there evidence to prove that alkenone-SSTs are usable in calculating $\delta^{18}O$ of this region? 3. The age model of this study is mainly built up with ^{14}C -datings and MIS events. However, when check in detail of planktonic foraminiferal oxygen isotope record, the picked MIS 5.1 is not so clear. The authors notice that there is a discrepancy of the age of ASO-4 event, and attribute to the uncertainty. I suggest to that volcanic events can be useful independently age control points to replace the MIS 5.1. The whole story may not change a lot, but the age can be more reliable. 4. In this study, the authors compare their records to other records of ODP1144 and MD972142. I realize that the authors try to compare their records to others for better addressing the AM topic. However, there are other published records that have similar age intervals based on cores retrieving from the ECS and SCS regions, why select ODP 1144 and MD972142? Is there any reason? In the manuscript, I didn't read any information for speculating this choice. 5. In discussion, the authors attribute the foraminiferal $\delta^{13}C$ record to land vegetation changes. But, mostly the foraminiferal $\delta^{13}C$ data reflect the DIC of sea water, which may imply to surface production change and upwelled subsurface water influence. Why varied land vegetation? Is there evidence can help to speculate the point? 6. It's better to give detail information about the transfer function of DOT, such as modern analog database used in this study and estimated errors. It will be helpful to readers to judge the confidence

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of calculated DOT. Otherwise, what DOT means in this study? Generally, thermocline is a kind of depth range shows the mostly decreased trend of water temperature. So the value of calculated DOT in this study means the lowest reach of thermocline or mean depth of thermocline? 7. The results of factor analysis of foram census data show that *G. bulloides*, usually represent to upwelling and the high nutrient inputs, is the most important and speculative species. However, the factor score of factor 1 displays a generally smooth pattern except the MIS 3 event and varied between -1 and 1, lesser than factors. I will expect a more fluctuated pattern of Factor 1. How come of this pattern? Is there any special reason for speculating this kind of variation?

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