Reviewer #1: anonymous

We would like to thank this reviewer for reviewing our manuscript, giving us very valuable suggestions and comments, and pointing out mistakes we made. Our response is shown as two sections: (1) general suggestions, and (2) two specific comments.

R1.1 General suggestions: "The paper "Millennial meridional dynamics of Indo-Pacific Warm Pool during the last termination" by Lo et al. present new temperature and seawater $\delta^{18}O$ estimation data from a marine sediment core collected East of Papua-New Guinea. They put their results that encompass the last deglaciation in context with other such records from the northern and southern Indo-Pacific warm pool. They show that the anatomy of changes in temperature and regional precipitation in that region during the deglaciation were depending on the hemisphere. The article is well written, straightforward and points to coherent regional differences in the sensitivity of SST and rainfall with respect to the timing of climate events occurring at high latitudes. Instead of adding another record to the pile of other datasets published in the region, the authors have wisely opted for trying to map the likely boundary of precipitation anomalies during the H1 and YD, which may be useful for others studying the region in the future. I suggest the paper to be published after minor revisions that I list below."

We thank this reviewer for giving the positive comments on our manuscript and suggesting our paper to be published after minor revision.

R1.2 Specific comments:

R1.2.1 Specific comments: "Despite a clear N-S SST seesaw seen in the N- and S-IPWP stacks, the rainfall pattern of rainfall anomalies is clearly different (compare Fig 2 and Fig.6). This is, to me, the most interesting result, and I suggest the authors to point to this dissymetry more clearly in the discussion and the conclusion – clearly mentioning the mismatch between the geographical pattern of the N-S SST and $\delta^{18}O_{sw}$ dipoles."

Thank reviewer for expressing this issue. We have added about the geographical mismatch in our discussion (Lines 288-290 of the annotated manuscript, hereafter) and conclusion (Lines 314-316).

R1.2.2 Specific comments: "On such mismatch, would it be possible that the regional currents can dispatch high-salinity surface waters through the Indonesian through flow, contrarily to SST changes? I just though about such possibility after realizing the regions wetter for H1/YD – apart of the MD08 – are from continental archives. Also, the stalagmite from Borneo (Partin et al., 2007, Nature) show no particular dry anomalies during that time period."

Thank reviewer for proposing this very interesting mechanism. The S-IPWP (especially from the Coral and Solomon Seas) does contribute high salinity surface water to the Indonesian through flow (ITF) through the New

Guinea coastal current system, however, there is still lack of direct link to estimate the salinity contribution from S-IPWP to ITF. More terrestrial and marine records should be built in the near future to further solve longitudinal or zonal connection between Pacific to Indian Ocean in the IPWP region.

R1.2.3 Specific comments: "Can the authors briefly comment on why they think other proxies may provide other stories? In particular, some records employing alkenoens point to cold anomalies during the YD/H1, in particular in South China Sea. Do the authors think we should deal with water column and/or seasons sampled by different proxies?"

Thank reviewer for pointing out this inter-proxy comparison issue. It is difficult to well quantify the potential differences between different proxies. For conservative consideration, we compared our records with published studies using the same single species (*G. ruber*, *s.s.*, white) and tracers (δ^{18}O-Mg/Ca) to build solid stack records. The example that reviewer mentioned is also very good: specific region with strong monsoon may bias the application of sea surface temperature proxies. We think it would be great to go into the details of seasonality and water column in every specific site. It would be an in-depth study; but it is beyond the current scope of this work.

R1.2.4 Specific comments: "Figure 3: there seem to be a lower resolution in the $\delta^{18}O_{sw}$ compared to *G. ruber* δ^{18}O and Mg/Ca between 14 and 16 ka. Is that because the samples of *G. ruber* δ^{18}O and Mg/Ca do not perfectly correspond to the same depth horizons?"

Thank this reviewer for pointing out this resolution issue. This reviewer was correct. Some δ^{18}O and Mg/Ca data do not correspond to the same depth horizons. Please refer to the corrected version of this figure (new Figure 3). It clear catches the H1 $\delta^{18}O_{sw}$ increasing period. Figures 4B is also corrected with the new dataset.