Clim. Past Discuss.,
https://doi.org/10.5194/cp-2019-133-AC2, 2021

Climate of the Past Discussions
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Interactive comment on "A Revised Mid-Pliocene Composite Section for ODP Site 846" *by* Timothy D. Herbert et al.

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Received and published: 9 February 2021

Herbert et al. present a revised composite section during the Mid-Pliocene for tropical East Pacific ODP Site 846. Their new composite section is based on an existing high resolution electrical conductivity log (not previously used to establish a composite section). The authors check their composite section with new benthic stable oxygen, carbonate isotope, and alkenone-derived SST data from the same Site and from Site 850 for comparison. The presented study is interesting and important as Site 846 is one key record for reconstructing the Pliocene climate of the tropical East Pacific Ocean. The new com- posite section significantly changes previous interpretations of climatic changes around the well-known glacial M2 event. The claims of the authors are supported by the pre- sented data and the manuscript is well written. As such the

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Discussion paper

manuscript is suitable for C1

this journal, however, before final publication I have some minor comments that need to be addressed: I think the authors could better explain why using the conductivity record is the best method to achieve a reliable composite section. For instance, although the authors claim this is true in lines 93-96, there are missing some supporting references.

At most figures, scales are missing for the y-axes. It would also be useful if the authors would label the presented records with a) b) etc. in all figures. This would make it much easier to identify each data record. The authors use at many locations in the text abbreviations like PRISM, HLDT, ODP, FMS, MST, GRAPE etc. which are not explained at their first appearance.

========== Thank you for this suggestion; adopted ==========

More detailed comments: Title: The authors focus on changes around the glacial M2 event. Why not mention it in the title? ========== Thank you for this very useful suggestion- adopted in the revised version ==========

Line 15: The authors should specify the "errors in primary data sets" ========== We don't know the reason why alkenone and isotope data from one core section containing the M2 interval occurred previously. We have clarified that the data appear to be outliers in light of newly obtained information.

Lines 60-63: The authors could insert a figure with a map showing the locations of sites 846 and 850. ========== Agreed and now map incorporated ==========

Line 106: Please change "web bulk density" to "wet bulk density" and elsewhere. ========== Apologies for the typos! ==========

Lines 145-151: The sentence is too long. Please split. ========== revised as suggested ==========

Lines 192-194: The authors should specify “In accordance with standard practice”. Did they adjust the values according to their reported offsets or according to other studies? and if according to other studies they should specify to which studies. ========== The classic Shackleton and Opdyke (1973) and Duplessy et al. (1984) papers, whose isotopic offsets we use, are now cited ==========

Line 321: Can “for unknown reasons” be better specified? ========== We wish... The samples were run by two different investigators and we simply don’t know how to explain the apparent erroneous results. We suggest in the text that samples may have been mislabeled or the core section inverted during sampling. ==========

Lines 353-356: This is a new observation and has to be first mentioned in the results/discussion part. ========== For a short paper of this type, we prefer to keep the text as is- we feel that the focus on improving the stratigraphy around the M2 glacial interval works more effectively when all the information and interpretation are presented together.

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