

Interactive comment on “A Revised Mid-Pliocene Composite Section for ODP Site 846” by Timothy D. Herbert et al.

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Herbert et al noted that the Site 846 composite section across the Pliocene M2 glaciation was anomalous compared to other sites. They attempt to remake a composite section for ODP Site 846 based on physical properties from shipboard scanning tracks but also by correlation to the wireline logs, and comparison to new discrete stable isotope and alkenone analyses. It has long been known that one hole, even if completely cored, will have gaps between cores taken. Two holes are better, but there can still be gaps. There are times when correlations are ambiguous. They develop a methodology to compare shipboard data to a conductivity record from the wireline logs and check it with other discrete measurements.

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They used a process where they compared a high-resolution electrical conductivity log to the shipboard bulk density measurements, a measure of porosity. In unconsolidated marine sediments, conductivity is directly related to the seawater present in the measurement volume, or porosity. They report that the record is from the HLDT tool, but this is incorrect. Comparing the data table to the archived logs, they are using conductivity data from the Formation MicroScanner, an imaging conductivity tool, on pass 2 of Hole 846B. It is important to keep the correct description of the data and they should make note of where it is archived (<http://brg.ideo.columbia.edu/logdb/hole/?path=odp/leg138/846B/>). The detrending and normalization of the data are warranted, since the FMS is not well calibrated to absolute values. _____ I think the reviewer is confused. We explicitly report data using the FMS log; the Harris et al. paper referenced used the HLDT tool instead. The URL cited in our text is identical to the one referenced above and was already included. We do now note that the data come from pass 2 of the FMS logging operation. _____ Elimination of flyers in both the logging and GRAPE data is justified and well explained.

Lines 258-274: I was impressed that the coring distortions were correlated across holes and apparently result from different responses by different lithologies to the coring. The most extension was in the more porous diatom-rich sediments, as might be expected.

Figure 6 and Fig 7: some scales on the graph would be useful. On reflectance, is white up or down? Is 18O reversed? _____ We agree that this was an omission in the first draft and have clarified the sign of the Y axes _____ I noticed that there was no table that describes the revised composite section. An interval table that shows their new proposed composite is needed for other researchers. It isn't clear from the text exactly what holes are involved, and where different cores are joined. They would only have to do the interval they have revised, e.g, like this section of Site 849 where each line represents an

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interval from each hole included in the composite. _____
_____ This is a little tricky, since the Match code that we use generates a continuous mapping function rather than a constant offset. The Match mapping is more realistic, but also difficult to summarize in a table. We now provide a table of the typical ODP form (e.g. splice points and revised composite depth section) and revise the text to emphasize how the data tables of GRAPE, reflectance etc report values mapped to log depth as the common depth scale _____

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2019-133>, 2020.