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Interactive comment on "Moving beyond the age-depth model paradigm in deep sea palaeoclimate archives: dual radiocarbon and stable isotope analysis on single foraminifera" *by* Bryan C. Lougheed et al.

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Dear Reviewer,

Thank you for providing a review for our manuscript and for your positive words concerning the potential of the method we have developed. We would be happy to briefly discuss your comments below:

"I think one obvious limitation is that this approach only works for samples that can be C14 dated. This should be stated."

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Discussion paper

It is stated in the title of the manuscript that the method involves radiocarbon. However, we will further underline in the manuscript that the method is best suited for late-glacial and Holocene samples (i.e. those within the suitable age range for the radiocarbon method.

“I have no suggestions as to how to deal with the edge effect. However, omitting âĹij20% of the data to pass a K-S test for a p value <0.05 is a bit of a statistical manipulation. The CDF is a reasonable ïňĄt in Fig 3B. I’m not sure what is gained by eliminating part of the dataset to pass a statistical test with an arbitrary p-value of 0.05.”

As you point out, in Fig. 3B the CDF appears normal upon first viewing. We omit the data from the 20 youngest and 20 oldest foraminifera in Fig 3C to demonstrate the presence of the temporal ‘edge effect’ upon our data. It would likely be possible to omit much less of the ‘edge data’ and still pass the K-S normality test: the amount omitted was not chosen with the express intent of passing the K-S test wit p=0.05. In any case, we show both Fig. 3B and Fig. 3C for the benefit of the reader.

“For Figure 4, it’s not really clear to me how a sediment accumulation rate was calculated for LR04. LR04 is a stack of benthic foraminifera records from a variety of depositional environments. It’s also an interpolated stack so the sampling resolution is variable.”

We had calculated a SAR of 3.8 $\pm$ 0.9 cm/ka for LR04, based on the mean and standard deviation of the LR04 average sedimentation rate provided by Lisiecki and Raymo (2005). We will try to include error bars on the figure, or at least mention in the text how the calculation was carried out.

“Please explain how the planktic record showed signiïňĄcant PDSM. It didn’t have an acceptable stable-isotope stratigraphy?”

That is correct. We will provide more information about this.

Thank you once again for your comments and your review, which will help to improve the manuscript.

On behalf of the co-authors,

Kind regards,

Bryan Lougheed

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