

Interactive comment on “Bottom-water deoxygenation at the Peruvian Margin during the last deglaciation recorded by benthic foraminifera” by Zeynep Erdem et al.

Anonymous Referee #2

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Erdem et al use benthic foraminiferal assemblages of live benthic foraminifera as a proxy assess bottom-water oxygen concentrations on fossil benthic foraminifera across the upper Peruvian Margin since the last deglaciation.

I do think this is an interesting study, however there are several important issues that need to be addressed to improve the study and interpretations:

1. In the current format, the authors have not demonstrated that the live population are identical too the dead population in the core tops, and without this evidence down-core reconstructions are not scientifically scrutinized.
2. Information concerning age models of the different cores is missing. The age model

needs fully discussed and shown in the article as it is crucial to consider the context and interpretations of the reconstructions.

3. The authors should have a good look at their data and critically reflect whether their conclusions really reflect the data. The main Figure 6, I presume, shows reconstructed O₂ plus error. Main changes seem to occur during deglaciation. There does not appear to be any differences between LGM and core tops/late Holocene (the authors suggest a 30 μ M change from the LGM to Holocene at the lower OMZ boundary): -The first site at 626 m shows (within error!) similar O₂ values during the LGM as core top; e.g. no statistically significant increase in LGM oxygenation. -The second core at 1013 m: all reconstructed values are below present day values: no significant increase in LGM oxygenation here. -Third core site at 1249 m: LGM oxygen concentrations are lower compared with core top; so no significant LGM increase in oxygenation here. -Fourth core at 997 m: perhaps H1, early deglacial higher O₂ values; but no reconstructions for the LGM.

So none of the cores show that the Peruvian margin, at the water depths investigated, was better oxygenated during the LGM compared to today.

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