

Interactive comment on “Re-evaluation of the age model for North Atlantic Ocean Site 982 – arguments for a return to the original chronology” by K. T. Lawrence et al.

C. Langereis (Referee)

c.g.langereis@uu.nl

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The technical note on the age model of the North-Atlantic ODP Site 982 is an important contribution that establishes that the original age model with minimal later corrections is most likely correct, and in any case is much more robust and consistent than the revised age model proposed by Khelifi et al (2012).

The authors make their case very strongly, by going back to the original shipboard data used to develop the composite splice, the splice itself, the subsequent shore-based paleomagnetic data of Channell and Guyodo (2004) and all available benthic oxygen isotope data. I will not go into all details - these are well discussed and shown in

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the paper. But for example the later revised (shore-based) paleomagnetic data show that the position of the G/M boundary in hole A occurs at 57.24 mcd, and in hole B at 57.29 mcd rather than the original ship-board data (not properly demagnetized) that suggested 58.02 mcd in hole B. And precisely this was one of the reasons for Khelefi et al. to misidentify MIS 104 in their revised mcd (rmcd). In fact, their rmcd is not really different from the original mcd (fig. 4) but is the correlation to the LR04 stack that differs in several crucial points.

Lawrence et al. in addition show that sedimentation rates are more consistent in the original age model. Although this is not proof for a better age model per se, they strengthen their case further by comparing climate proxies from other sites (fig. 5), that quite convincingly provide better support for the original age model. Finally, the records for susceptibility and ice rafted debris show a coherent picture in the original age model, where the first well known cooling stages (previously MIS 110, 108, 106, now G6, G4, G2) correspond realistically with the ice rafted debris record.

In summary, there is ample, convincing and robust evidence that the original age model is far better than the revised one.

More technically: I find figure 2 very confusing and unreadable. A more convincing figure would be to have the LR04 stack in the middle, and the two different age models above and below it. In fact, very much like figure 1 in Khelefi et al. Or use arrows to highlight the differences in correlation to the LR04 stack. So, figure 2A and 2B could be combined, and actually also 2C and 2D could be combined in a single figure/panel.

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