

Interactive comment on “Mode transitions in Northern Hemisphere Glaciation: Co-evolution of millennial and orbital variability in Quaternary climate” by David A. Hodell and James E.T. Channell

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As the authors consider their comments on those of the reviewers, some minor considerations are also outlined here: - I also agree with the comments raised by reviewer 2 regarding age resolution. Do the authors see any relationship between these phase shifts and changes in sedimentation rate (e.g. Line 153?). - Line 117 mentions a hiatus which removed MIS G1 and G2. Does this hiatus have any bearing on the timing or expression of climate shift at 2.7 Ma? - Line 238 should say Ma not ka? - The results section details considerable efforts to understand the evolution of different cyclicity within

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the data sets, some of which look quite comparable between different proxies. Did the authors consider investigating whether leads/lags could be determined for their proxies from this site? - Section 4.1 (intensification of northern hemisphere glaciation): How precise are the Balco and Rovey (2010) dates for the two expansions of the Laurentide ice sheet? Could it be that the events onshore are synchronous with those determined from the ocean, within age model error, rather than appearing to lag them (when the ice sheet reaching the sea to provide IRD must have been extensive?) - Paragraph ending line 399: it isn't entirely clear here where the MIS 4 analogy ends and where the data for the time period being investigated starts. Perhaps clarify this 'using MIS 4 as an analogue we infer a larger Laurentide ice sheet compared to Eurasia' - Line 540: 'very large ice and or very cold water'. Does the deep water temperature reconstruction of Sosdian and Rosenthal offer any insights here? - Figure 1 - please ensure that the relevant permissions have been sought for the basemap of this figure, which is taken from Stokes and Clark 2001 (the only 'modifications' to this map are the additions of the site locations)

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