

## ***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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Hodell & Channell present substantial new stable isotope datasets measured on benthic foraminifera and on bulk carbonate from North Atlantic IODP Site U1308. They use these data, together with physical property measurements and previously published U1308 magnetics data, to shed new light on the evolution of Quaternary North Atlantic climate on orbital to suborbital timescales. They propose that orbital- and millennial-scale variability centred on the North Atlantic ‘co-evolved’ during the Quaternary and link this evolution to a series of mode transitions in climate at  $\sim 2.7$ ,  $\sim 1.5$ ,

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$\sim 0.9$  and  $\sim 0.65$  Ma. In presenting this work, the authors seemingly bring to fruition one important goal of Expedition 303/306: to document the evolution of Quaternary millennial-scale climate variability recorded at U1308, the reoccupation of DSDP Site 609. Studies of 609 set the agenda for our understanding of abrupt and rapid North Atlantic climate change during the last glacial and it is fitting that its reoccupation is proving to be just as important for advancing our understanding of these issues. It is certainly nice to review a paper in which I cannot find any real problems. For me its publication in CP is a formality following minor revision. The attached pdf contains a series of minor comments that I would like to see addressed to help improve their contribution further still.

Best Wishes, Ian Bailey

Please also note the supplement to this comment:

<http://www.clim-past-discuss.net/cp-2016-30/cp-2016-30-RC1-supplement.pdf>

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