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Climate of the Past Discussions

Interactive comment on "An astronomical correspondence to the 1470 year cycle of abrupt climate change" *by* A. M. Kelsey et al.

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The authors of this paper start with the premise that "The existence of a ∼1470 year cycle of abrupt climate change is well-established", and later state that the periodicity is stable. While the possible existence of such a periodicity is still debated, it is by no means established or accepted. Indeed the majority of papers I can find that have studied the issue in the last decade using a variety of statistical methods have come down against or neutral about the existence of a stable periodicity (Ditlevsen et al., 2007; Ditlevsen and Ditlevsen, 2009; Ditlevsen et al., 2005; Long and Stoy, 2013; Obrochta et al., 2012; Peavoy and Franzke, 2010; Wanner and Butikofer, 2008). Particular issues are: (1) The 1470 year cycle found when using the original GISP2 timescale is not apparent, or much weaker, when using the more recent GICC05 age model, which

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is generally considered superior. (2) Many of the original analyses were done on restricted portions of the record. While the record has a visual appearance of regular occurrence of DO events between about 30-50 ka (DO5-12 say), the events after that (DO 1-4) or before it (DO13-25) do not have an appearance of regularity.

The authors show a 2013 citation in support of their premise. However this paper by Bond et al should actually be dated as 1999.

As I have indicated, it seems to me that the jury is still out on whether D-O events occur periodically, quasi-periodically or aperiodically: at the very least the evidence in favour of a set period seems elusive. The search for something metronomic and external to the Earth system to pace D-O recurrence therefore seems unnecessary at this stage. I leave it to others to assess whether the periodicity in astronomical cycles proposed by the authors could be expected to have any climatic effect, and specifically the one that is observed at D-O timescales.

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