

Interactive comment on “Late Pleistocene paleoproductivity patterns during the last climatic cycle in the Guyana Basin as revealed by calcareous nannoplankton” by G.-E. López-Otálvaro et al.

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General comments: This paper addresses an interesting topic, it contains new data, and presents hypotheses based on these data. The applied scientific methods are correct, only some doubts exists for the CEX index that consider different species lumped together (see below). The title is correct,. The abstract is informative. The text is well written, but discussions have to be simplified in order to facilitate the reader. Figures 2,3,4 are too little, turn them 90°clockwise

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Below, I suggest a number of corrections. Overall quality before review: 65/100. I recommend moderate to major revision

Specific comments: 1 Introduction and background: I would see, beside the classical introduction related to calcareous nannofossils and The Guyana basin hidrological setting also a short review of previous literature regarding similar studies in that area (I.e. Bassinot et al., among the others)

2.2 Age model and biostratigraphy, line 9 cite Lopez Otalvaro pers comm. This because you admit the paper is still in preparation.

2.3 Calcareous nannoplankton preparation and counting techniques, page 18 line 4, please add some indications of the variation of CEX index as it is done for N ratio : Low values account for low preservation. In addition the index was proposed considering the ratio between *Emiliana huxleyi* (the thinnest coccolith) vs *C. leptoporus* (Boeckel and Baumann 2004) and later adding also *G. ericsonii* (Boeckel et al 2006). Since you lump together *Gephyrocapsa aperta*, *G. ericsonii*, small *Reticulofenestra* and *Emiliana huxleyi*, I am afraid that this biases the index values. Why did you decide to lump together all these forms? Please explain in detail. In addition also please detail how you calculate the index, did you use the formula in Boeckel et al 2006?

3 results Page 19 lines 1 and 2, consider this order :Glacial MIS 6, Termination II , interglacial MIS 5, and MIS 4 to 2 and the Holocene.

Page 19, line 5 consider this order : showing high relative abundances during MIS 6, Termination II. the interglacial substages 5.3 and 5.1

4 Discussion Page 21,Line 5 consider to change as follows: N ratio, species percentages and 5 NAR values in Core MD03-2616 indicate a shallow nutri-thermocline and more nutrient-enriched conditions in the mixed layer during MIS 6, Termination II and the interglacial substages of MIS 5 (Figs. 3 and 4)

Line 12 consider to change as: Moreover, during the glacial substages of MIS 5, low

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N ratio and low NAR support a deeper nutri-thermocline and more nutrient depleted surface waters, resulting in a lower primary production in a deep stratified photic layer (Figs. 3 and 4).

Line 28 change as: The glacial MIS 4-2 and the Holocene low amplitude oscillations of N ratio and NAR indicate recurrent, steady and low amplitude variations in the shoaling/deepening of the nutri-thermocline,

Page 22 line 4 to the end of the page This part is obscure: I mean, is this an introduction that want to justify the visual correlation of NAR to the insolation curve? If yes, put this subject at the beginning otherwise the reader discover only at the end of these 20 lines the reason why you write them, but in the meantime he lost the attention to the problem.

The same is valid for the following page: what is the subject of the discussion? The depth of the termocline? Try to reorganize the paragraph that is very difficult to follow.

4.2 river runoff You describe the importance of river runoff but concluding that no evidences arise from nannos: Have you tried to consider variations in the proportion of reworked specimens (if present) they could indicate the fluvial input since as Parra and Pujos (1998) evidenced different sedimentary contribution (Andean vs Amazonian) in different time slices of the last 3000 years, I expect that the calcareous nanno assemblage reflects this change with fluctuations of the reworked specimens (more or less abundant)

4.3 Dissolution of calcareous nannoplankton This part of discussion should be checked in case the authors used a different CEX index, Just looking at the abundance of *E. huxleyi* in the upper part of the cores, this form is clearly below 2% I have no idea of the abundance of *G. ericssonii* but the whole small noelarhabdaceae group is 20%: this is a great difference!

Interactive comment on eEarth Discuss., 3, 11, 2008.

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