

## ***Interactive comment on “Mid-depth South Atlantic ocean circulation and chemical stratification during MIS-10 to 12: implications for atmospheric CO<sub>2</sub>” by A. J. Dickson et al.***

### **Anonymous Referee #2**

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In this manuscript, Dickson et al. used a detailed record of benthic foraminifera carbon isotopes to reconstruct past circulation changes along the South East Atlantic margin between MIS 12 to MIS 10. The authors concluded that the intermediate water carbon isotopes variability was extremely muted between ~480-330ka and can be explained by the continuous influence of northern sourced deep waters during glacials MIS 10 and MIS12 (GNAIW) and interglacial MIS 11 (NADW). The paper presents a valuable new high resolution data from an area of the South Atlantic which is know has been rarely studied. I found the paper interesting, the discussion is rich and well substantiated, the hydrograph and results are thoroughly and solid presented and adequately documented. The manuscript should be considered for publication in Climate of the Past. I

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would suggest to the authors a revision in the references, in particular:

1) Some references are not cited in the text:

Boyle, E. A. and Keigwin, L. D.: Deep circulation of the north Atlantic over the last 200,000 years: geochemical evidence, *Science*, 218, 784-787, 1982.

Garzoli, S. L. and Gordon, A. L.: Origins and variability of the Benguela Current, *J.Geophys. Res.*, 101, 897-906, 1996.

Hodell, D. A.: Late Pleistocene paleoceanography of the South Atlantic sector of the Southern Ocean: Ocean Drilling Program hole 704A, *Paleoceanography*, 8, 47-67, 1993.

Saunders, P. M. and Thompson, S. R.: Transport, heat and freshwater fluxes within a diagnostic numerical model (FRAM), *J.Phys. Oceanogr.*, 23, 452-464, 1993.

Shackleton, N. J., Wiseman, J. D. H., and Buckley, H. A.: Non-equilibrium isotopic fractionation 15 between seawater and planktonic foraminiferal tests, *Nature*, 242, 177-179, 1973.

Woodruff, F., Savin, S. M., and Douglas, R. G.: Biological fractionation of oxygen and carbon isotopes by recent benthic foraminifera, *Mar. Micropaleontol.*, 5, 3-11, 1980.

2) Some citations are not listed in the references: 667 line 26: Oppo and Fairbanks, 1987 673 line 19: Mix et al., 1995 677 line 13: van Aken, 2000

3) Some citations are not coincident with the references (typing errors) that need to be revised:

Martinez-Mendez,et al. 2008.(text) or Martinez-Mendez,et al. 2007 (reference)?

Graham et al, 1980. (text) or Graham et al, 1981. (reference)?

Marinov et al, 2005.(text) or Marinov et al, 2006.(reference)?

Ziegler (text) or Zeigler (reference)?

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Interactive comment on Clim. Past Discuss., 4, 667, 2008.

**CPD**

4, S322–S324, 2008

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