

Interactive comment on “Sea-surface salinity variations in the Northern Caribbean Sea across the mid-Pleistocene transition” by S. Sepulcre et al.

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The detailed answer is available as a supplementary pdf file.

Please also note the supplement to this comment:

<http://www.clim-past-discuss.net/6/C1205/2010/cpd-6-C1205-2010-supplement.pdf>

Interactive comment on Clim. Past Discuss., 6, 1229, 2010.

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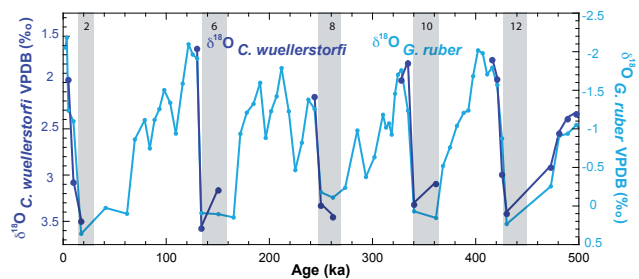
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Figure S1: $\delta^{18}\text{O}$ records of planktonic foraminifera *Globigerinoides ruber* (light blue) and benthic foraminifera *Cibicides wuellerstorfi* (dark blue) from core MD03-2628.

Fig. 1.

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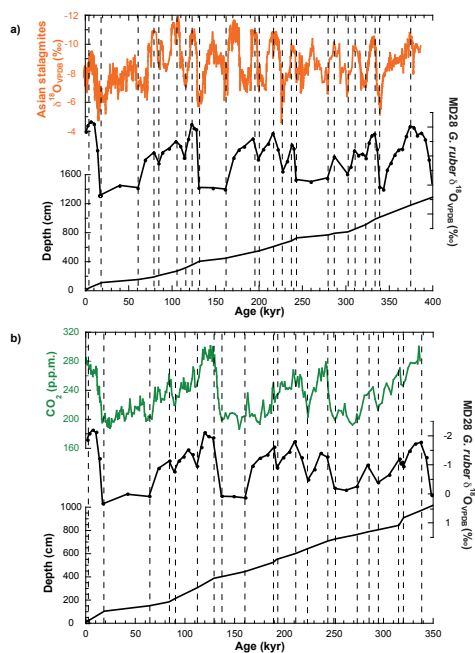
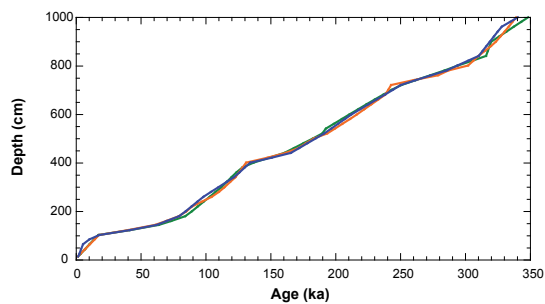


Figure S2: Chronological framework of core MD03-2628 over the last 350 ka based on two different reference series: a) Chronology based on the composite $\delta^{18}\text{O}$ record of Asian stalagmites dated by Uranium-Thorium compiled by Cheng *et al.* (2009) used for isotopic stratigraphy (orange curve), the *Globigerinoides ruber* $\delta^{18}\text{O}$ record of core MD03-2628 (black curve and full circles) and the age versus depth relationship of core MD03-2628 (black curve and empty squares). b) Chronology based on the Antarctic CO_2 record with the Kawamura *et al.* (2007) chronology based on the O_2/N_2 ratio used for isotopic stratigraphy (green curve), the *Globigerinoides ruber* $\delta^{18}\text{O}$ record of core MD03-2628 (black curve and full circles) and the age versus depth relationship of core MD03-2628 (black curve and empty squares). Black dashed lines in a) and b) indicate the correlation pointers established with the Analyseries software (Paillard *et al.*, 1996). Records are correlated by mainly using the maximum and minimum $\delta^{18}\text{O}$ values indicating maxima of glacial and interglacial stages, respectively.

Fig. 2.



Age model from Sepulcre *et al.* (2009)

Age model based on Asian stalagmite $\delta^{18}\text{O}$ records
U/Th-dated from Cheng *et al.* (2009)

Age model based on Antarctic CO_2
with Kawamura *et al.* (2007) chronology

Figure S3: The age versus depth relationship of core MD03-2628 based on different chronologies that are i) the original published chronology from Sepulcre *et al.* (2009) (blue curve), ii) the age model based on the composite $\delta^{18}\text{O}$ record of Asian stalagmites dated by Uranium-Thorium compiled by Cheng *et al.* (2009) (orange curve) and iii) the chronology based on the Antarctic CO_2 record with the Kawamura *et al.* (2007) age model (green curve).

Fig. 3.

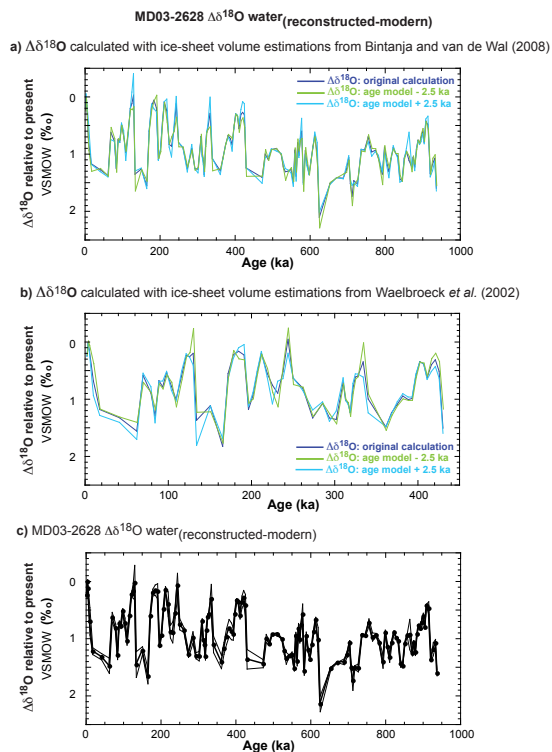


Figure S4: Variations in the $\delta^{18}\text{O}$ of seawater relative to modern values (noticed $\Delta\delta^{18}\text{O}$) at the core MD03-2628 location calculated using the reference records of a) Bintanja and van der Wal (2008) and b) Waelbroeck *et al.* (2002) to correct from the ice-volume effect. The different curves represent calculations of the $\Delta\delta^{18}\text{O}$ of seawater by using various estimations of the global oceanic $\Delta\delta^{18}\text{O}$ that takes into account an uncertainty of ± 2.5 ka in the age model. c) Mean variations for the $\Delta\delta^{18}\text{O}$ of seawater relative to modern values at the core MD03-2628 location as a proxy for past sea-surface salinities (SSS). The black bold line is the average of all ice-sheet volume effect corrections from a) and b).

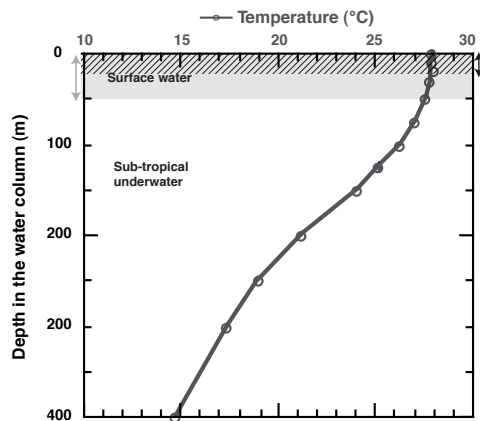


Figure S5: Depth profiles of present-day annual temperature (gray line and open symbols) at 17.5°N 77.5°W (LEVITUS, 1994). Surface and subsurface water masses flowing at the core site are also reported. Gray and shaded areas: living depths of coccolithophorids (Kameo *et al.*, 2004) and of planktonic foraminifera *Globigerinoides ruber* (Schmuker and Schiebel, 2002), respectively.

Fig. 5. This figure has already been used in the answer to the first reviewer of manuscript CP-2010-43 as Figure S2.

Table 1: Replicate $\delta^{18}\text{O}$ measurements on *Globigerinoides ruber*

Depth (cm)	Age (kyr)	$\delta^{18}\text{O}$ (‰)	
		VPDB	$\Delta\delta^{18}\text{O}$ (‰)
10.5	2.2	-2.037	0.097
		-2.134	
15.5	2.7	-1.824	0.109
		-1.934	
80.5	10.4	-1.087	0.098
		-1.185	
377.5	130.9	-1.901	0.003
		-1.898	
383.5	132.7	-0.837	0.026
		-0.863	
389.5	134.5	-0.447	0.035
		-0.413	

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Fig. 6. This table has already been used in the answer to the first reviewer of manuscript CP-2010-43 as Table S1