

Interactive comment on “Climatically-controlled siliceous productivity in the eastern Gulf of Guinea during the last 40 000 yr” by X. Crosta et al.

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Dear Xavier

I read paper with interest, and I am pleased to see that the accumulation rate of fresh water diatoms largely confirm the trend in our reconstructed runoff-induced sea surface salinity (SSS) changes (Weldeab et al, 2005, 2007a, 2007b, 2007c). However, I feel that this paper was written in rush and can significantly benefit from more in-depth discussion and comparison with data that have been generated from the same location. GeoB4905-4 was retrieved from 02°30'N/09°23.04'E (water depth 1328 m), and there exists a high resolution record of Ba/Ca-based sea surface salinity (SSS) and Mg/Ca-based SST estimates from MD2707 that has been recovered from 02°30.11'N,/09°23.68'E (1295 m water depth) (Weldeab et al. 2007, Science). As you

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can see both MD2707 and GeoB4905-4 were retrieved virtually from same location. For instance, it would be highly interesting and of benefit for the case you are making, if you would compare your accumulation rate of fresh water diatoms with the Ba/Ca-based SSS and $\delta^{18}\text{O}$ seawater estimates. You briefly mentioned that the accumulation rate of fresh water diatoms suggests “two prominent desiccation” events around 8.5 kyr BP. However, there is no discussion provided as to how the timing of these “desiccation events” relates to the well known “8.2 kyr” events. Given that a prominent SSS rise has been documented in MD2707 centered at 8.25 kyr BP (Weldeab et al., 2007, GRL), it is more than likely that the changes in SSS (MD2707) and AR of fresh water diatoms (GeoB4905-4) related to the same “8.2 kyr” events. Because the MD2707 is based on much robust age model than GeoB4905-4, comparing the timing and magnitude of drop in the accumulation rate of freshwater diatoms and Ba/Ca-based SSS rise would lead to more nuanced interpretation. Finally, how does the trend and onset of AR of fresh water diatom during the deglaciation relate to the reconstruction the spatio-temporal evolution of monsoon precipitation in equatorial West Africa (Weldeab et al. 2011, GRL)? In that paper we show that during the early deglaciation the northward migration and intensification of monsoon precipitation were decoupled.

Comments to the source of ^{14}C - and biogenic opal data:

1) The ^{14}C -age and calendar age you are showing in Figure 2/ inserted table are taken from Weldeab et al. (Geology, 2005; doi: 10.1130/G21874.1) and Adgebie et al. (2003). The caption of Figure 2 (and) and the paragraph in the method section, however, are completely misleading and make one believe that these data have been generated in the context of this study. The authors need to unambiguously state the source of the ^{14}C data and the age model.

2) Part of the biogenic opal record (0-22 kyr BP) that has been used to calculate the accumulation rate of biogenic opal (OpalAR, Figure 3A) has been published by Weldeab et al. in 2007 (G-cubed, Q05P22, doi:10.1029/2006GC001360). In the method section and figure 3A of this paper, there is no reference to the fact that the biogenic opal data

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(0-22 kyr) are published in previous study. Again, the source of the data needs to be clearly stated.

Sincerely

Syee Weldeab

Interactive comment on Clim. Past Discuss., 7, 2445, 2011.

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