

Interactive comment on “46 000 years of alternating wet and dry phases on decadal to orbital timescales in the cradle of modern humans: the Chew Bahir project, southern Ethiopia” by V. Foerster et al.

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Foerster et al. published in Quaternary International (2012) a drill core analysis and paleo-environmental reconstruction (core CB-01) from Chew Bahir, southern Ethiopia. Using potassium (derived from XRF data) as a proxy indicator for aridity, they proposed that “The termination of the AHP in the Chew Bahir basin according to the K record started around 6 ka ago and continued for 1000 years until full arid conditions were reached at 5 ka. This gradual climate change contrasts with the abrupt termination of the AHP recorded in marine archives”.

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In the follow-up study presented here, Foerster et al. provide the analysis of two additional cores: CB-03 and CB-05. As shown in their Figs. 6 and 7, core CB-03 records a different AHP termination compared to core CB-01 of the previous study. The potassium profile of core CB-03 shows a more ‘abrupt’ end of the AHP of about few centuries, although a trend toward drier conditions was initiated several centuries before. Even if there are large chronological uncertainties, core CB-03 may be the most reliable of the three studied cores. Indeed it constitutes the most continuous terrestrial drilling record across the whole African Humid Period as gaps related to coring operations are minimal. Surprisingly, the expression of the AHP termination in core CB-03 is neither described nor discussed in this new study. Instead, the authors maintained their original interpretation of a gradual AHP termination: page 999, lines 2-3: “...a delayed but gradual decline of the lakes at the termination of the AHP following ON insolation (Fig. 7)”; page 1003, lines 5-6: “gradual (1500-yr long) aridification trend at the end of the AHP starting at 6.5 ka ago in southern Ethiopia...”.

The data presented by Foerster et al. suggest that defining the AHP termination based on their records – in terms of a gradual versus abrupt process – will remain ambiguous, unless a better chronological framework is developed across the sedimentary records that reflect this climate transition. In light of this new study, I strongly recommend that the initial findings and interpretations of the Chew Bahir AHP termination should be re-evaluated.

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