

Interactive comment on “Palynological evidence for gradual vegetation and climate changes during the “African Humid Period” termination at 13° N from a Mega-Lake Chad sedimentary sequence” by P. G. C. Amaral et al.

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RESPONSE TO THE INTERACTIVE COMMENT OF J. MALEY

We would like to thank Dr. Jean Maley, who was a pioneer in palynological studies in the African Sahel region and worked during a long time on Lake Chad and its palaeoenvironment during the Holocene. The authors have appreciated all his comments but many of them are related to the last two millennia and the recent period and do not directly concern the focus of this manuscript, i.e. the African Humid Period

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termination. Meanwhile, these comments and data will be taken into account when a continuous pollen sequence from Lake Chad will be studied.

One of the most interesting remarks in his comment concerns the upper part of the sequence. Maley propose a reinterpretation our chronological framework that leads him to conclude to the potential occurrence of a hiatus between 5000 and 3700 cal. yr BP in our record. This hiatus would be related to an arid event that would also be recorded elsewhere (Tjeri sequence, Maley, 1981) at 4000 yr BP.

Since there is no evidence of a clear discontinuity in the top 10 centimetres of the LT1, we rather suggest another hypothesis to explain the change in sedimentation observed at the top of the LT1 core. As proposed in our manuscript, the sloped layer observed at the very top of the core is related to sediment reworking, caused either by the coring operation or by the wave action and the subsequent mixing of surface sediment during the Harmattan season. The 14C age obtained at the top of the record (3700 cal. yr BP) very likely reflects a mixing between a small fraction of recent organic matter and Holocene material at the top of the core. This means that the change in sediment rate observed between 0 and 10 cm can be an artefact due this unreliable 14C age obtained at the top of the core and that it cannot be interpreted as the occurrence of a sedimentological hiatus between 5000 and 3700 cal. yr BP as proposed by Maley.

One of the most striking features of the LT1 record is the absence of the late Holocene sequence and of a sizeable modern sedimentation that was attested by the lack of unsupported 210Pb. The most reliable hypothesis to account for this absence of late Holocene sediment is the occurrence of one or several erosive phases due to wind deflation during drying period of the Lake Chad that have truncated the top of the Holocene sequence. A continuous record recently collected in Lake Chad coupled with seismic data will help us to better understand the cause of the truncation in LT1 record (Sylvestre et al., in prep., Waldmann et al., in prep.).