

## ***Interactive comment on “Pollen, biomes, forest successions and climate at Lake Barombi Mbo (Cameroon) during the last ca. 33 000 cal yr BP – a numerical approach” by J. Lebamba et al.***

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As indicated by the present referee, the pollen data of the sequence from Lake Barombi Mbo have only been represented in the form of diagrams, with specific curves for the main identified taxa or groups of taxa, by Maley and Brenac (1998). The raw data have never been published neither integrated in a database, for example the African Pollen Database. So they are not available to the scientific community. Meanwhile, these pollen data could be made available to pollen scientists who directly made the request to these authors, in order to work on a precise scientific project, as done presently in this numerical and quantitative approach. If really necessary, the PFTs and biome

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scores (such as PFTs and successional stage scores) could be given in this paper, but we have never seen such raw data published in any paper using the biomisation method. In return, we can provide in the final manuscript two tables with the specific PFT assignments to identified pollen taxa in the Barombi Mbo pollen sequence (the first one for biome reconstructions and the second one for successional stage reconstructions). The index  $\bar{A}_q$  is here expressed in %. This index is a ratio of actual over potential evapotranspiration which serves as an index of moisture availability. This parameter has been considered by Prentice et al. (1992) and Peyron et al. (1998) as more appropriate for defining the gradient from desert to rainforest than mean annual precipitation, a threshold value of 65% discriminating a forested environment ( $\bar{A}_q > 65\%$ ) from an open system ( $\bar{A}_q < 65\%$ ) (Peyron et al., 1998). Corrections will be made in the final manuscript. Concerning the “Result section” (section 4), which has been considered by the present referee as “a boring summary of the figures” and by H. Hooghiemstra referee as “little informative for the readers”, it will be deleted in the final manuscript and replaced by two tables indicating for the different period considered, in the first one the mean and range values of scores of reconstructed biomes and successional stages, and in the second one the mean and range values of the reconstructed climatic parameters (Pann, PETann and  $\bar{A}_q$ ). This “result section” will be renamed, as suggested by H. Hooghiemstra referee “Quantitative environmental reconstructions at Lake Barombi Mbo”. It will integrate part of our present section 5 but only including our results, their comparison with interpretations given by Maley and Brenac (1998) and other local reconstructions made on the Barombi Mbo site such as biome or climatic reconstructions (e.g. those of Jolly et al., 1998; Elenga et al., 2000; Peyron et al., 2006). In this way, the future section 5 “discussion” will be focused on more regional aspects, with a comparison between our data and empirical and/or quantitative previous reconstructions in Central Africa and in other parts of Africa such as East Africa (partly made in the present section 4), but also focused on the methods used in this paper, their reliability in central Africa compared to previous works undertaken in Africa. Concerning the Holocene dry episode, we have effectively written that “the perturbation of vegetation

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was not as intense as during the LGM" but we have never said that "this Holocene dry episode should be less severe than the LGM one". Meanwhile, the authors admit that the explanation is not clear and must be corrected in the final manuscript. Indeed, as explained by Maley and Brenac (1998, p. 182), the climatic nature of the Holocene dry episode intervening during the third millennium BP, is very different from the aridity during the LGM. So, during the LGM the yearly rains decreased (as presented in this manuscript), but during the third millennium P, the largest forest opening resulted apparently only from an increase of seasonality, outside the rain forest regular range. The lowest score values of all biomes and successions reconstructed along the Barombi Mbo pollen sequence are effectively registered during these two driest episodes, and they correspond to pollen spectra displaying the lowest microfloristic diversity. This will be discussed in the interpretation of the results. Specific remarks made by the referee Section 3.1: The sentence written in this section is clearly wrong and as indicated by the referee not applicable to this paper. Indeed, in this paper, each pollen spectrum has not been assigned to the biome (or successional stage) to which it has the highest affinity such as it was made for the reconstructions at the 0, 6000 and 18,000 BP key periods. In this paper, all biome scores (or successional stages) are considered and plotted versus time. This will be corrected in the final manuscript. The Figure 6 will be redrawn and results of both methods expressed on the same vertical scale with units indicated for Pann, PETann (mm) and also for the index  $\bar{A}_a$  (%).

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