

Interactive comment on “Simulated effects of a seasonal precipitation change on the vegetation in tropical Africa” by C. Cassignat et al.

P. Bartlein (Referee)

bartlein@uoregon.edu

Received and published: 4 May 2009

This paper presents a good example of the use of a process model to investigate the potential role that, in this case, changes in the seasonality of precipitation have on the kind of vegetation changes that appear in the palaeo record and are interpreted in climatic terms. In this example, the model used was Biome 3.5, an equilibrium vegetation model that, while somewhat obsolescent, adequately serves to illustrate the general idea of using a model in a experimental context. The specific design here is inspired by an issue that arises in inverse approaches for inferring past climatic variations from palaeodata – the indeterminacy of the specific climate variations that generated the environmental variations recorded by the data. In other words, more than one sequence of palaeoclimatic variations can lead to the same palaeorecord, and in the

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absence of constraining information, it is impossible to determine which sequence gave rise to the data. In the example here, the experimental design was motivated by the standard interpretation of pollen sequences from tropical Africa in terms of annual precipitation variations. As the paper demonstrates, similar vegetation changes could be generated by changes in the seasonal distribution of precipitation without changes in annual precipitation. The paper does not provide actual reconstructions, but instead is focused on the plausibility of variations in the seasonal distribution of precipitation as an explanation for the observations. There are some mechanical issues in the current version of the manuscript, and I agree with Colin Prentice that the CO₂-variation experiments are flawed. Other than that, I think the paper is scientifically sound, and provides a useful contribution.

Please also note the Supplement to this comment.

Interactive comment on Clim. Past Discuss., 5, 853, 2009.

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