**Climate
of the Past
Discussions**

Interactive comment on "Climate and modulate the balance and signal in simulated vegetation" *by* O. Flores et al.

Anonymous Referee #1

Received and published: 6 May 2009

Flores et al. Climate & Co2 modulate the C3-C4 balance and C13 signal in simulated vegetation

Review General The paper is within the scope of the journal and has some interesting aspects. As currently written this is not an easy paper to read, partly it is problem of language (and it clearly needs to be edited by a native English speaker as there are many problems, too many to be addressed in this review), partly it is a problem of structure – the paper needs structure throughout – the discussion is especially poor to follow and partly it is a problem of what the paper is about – from the abstract one would gather it is about exploring the usefulness of a process-based model in understanding past changes in vegetation or is it about the C3-C4 relationships under different climates and CO2 levels. The abstract implies the former the introduction the

latter. If it is about the model then a more detailed (and CLEAR) model description is required plus a clear section about modelling assumptions and uncertainties. You seem to believe the results from the model without questioning your methods or the model. In my view this paper is very green and needs a complete rewrite based on a much simpler and CLEAR logical structure to make it intelligible to readers. At the moment all the problems distract the reader from the message and ideas within the paper.

Details (I Include some detailed comments but after a while I have given up trying to follow the logic of the arguments especially in the discussion).

Abstract Why was 50 years mentioned – I cant find anything in the introduction that refers to papers that are 50 years old – anecdotal dates need the evidence. What is the conflicting evidence ? How do plant functional types differ in their composition – I don't understand What does "C3 and C4 plants cannot be hardly considered as a simple binary scheme" mean ? Why do your results confirm the advantages of using process-based models to understand etc - advantages over what ?? Introduction page 1188 I think you need a sentence that sets the scene – the current first sentence reads like something has been deleted before it in the editing process. The first type of evidence is about current patterns, then there is experimental evidence, then the third evidence is from cores etc (that is current patterns and experimental evidence are clearly different sorts of evidence) page 1189 Why do you "note" rC4 - for what purpose ?? After Aucour et al – why do you have two numbers -28.5 and – 19.5 – is this a mistake or a range Accumulated evidence "moderated" this view – I think just giving references without at least some HINT about what this evidence could be is unhelpful to the reader. What do you mean about "opposed trends" and "different trajectories" – its unclear! I find the sentence beginning The reconstruction followed by some poorly written equations etc to be incomprehensible. What is leakiness ?? The aims of the study in the final paragraph are very poorly expressed. Overall the Introduction is quite difficult to follow and full of assumptions and jargon which the poor reader has to try to

find a path through. Rewrite with some structure – e.g. whats the problem, what is the state of the research, where are possible problems that could arise and what are your aims. Methods As I understand the past climate anomalies have been derived from pollen, then you are going to use these anomalies to drive the biome model to predict the vegetation – is that not a little circular ?? You refer to the Biome4 model both as Kaplan et al. 2002 – page 1193 and Table 4 as Biome 4 Haxeltine & Prentice 1996 – both cant be right! Results I find the result section very muddled and just mention a couple of points – but it really needs a good rewrite. What does hardly linear mean ? What does the surface response was rough and more contrasted in . . . .? For clarity you should give the long names of the PFTs in the text along with a acronym Discussion This seems to a mixture of results and discussion and lacks any structure - I gave up trying to make sense of it. You MUST include a section on assumptions and uncertainties about your approach and the model I find the Figures 2-5 very hard to read and follow.