

Interactive comment on “Late Quaternary vegetation – climate feedbacks¹” by M. Claussen

M. Claussen

martin.claussen@zmaw.de

Received and published: 27 April 2009

Firstly, I thank Nathalie de Noblet-Ducoudré for her useful comments. I consider these as editorial comments which help to clarify the text and to eliminate inconsistencies. Furthermore, I like the idea to open my paper for “non-(palaeo)experts”. This has certainly to be done “in a very balanced way”.

Indeed, I wrote this paper for CP readers, i.e., from a predominant palaeo perspective. Nonetheless I agree that it will be useful to make clearer the time scales and dynamics of processes and simulations involved (comment 2). There is a problem – which will be spoken out more clearly – that most studies on biogeochemical feedback concern future climate with a strong CO₂ forcing, i.e., feedback in the presence of perturbation (comment 7 and comment 4). Only recently studies emerge in which historical

¹Invited contribution by M. Claussen, EGU Milutin Milankovic Medal winner 2005

C110

and palaeo biogeochemical feedbacks are isolated. The term “Holocene greening of Sahara” (comment 6) is certainly misleading. Although there is some evidence that a reduction of Sahara started after the Younger Dryas, there is other evidence which indicates a “greening” with the Bolling-Allerod. I tried to avoid the term “greening” by replacing it with “wet phase” or “dynamics”, but I obviously didn’t do it consistently. The same is valid for “Charney’s desertification” – perhaps it should better read “Charney’s biogeophysical feedback”, because it works in both (“green” and “desert”) direction. Comment 8 will be hard to deal with, as it is often a subjective point of view whether or not things are known “for sure”, are “debatable”, or need to be “certify”. As I stated in my conclusion, I think that there are a number of arguments which speak in favour of vegetation dynamics being an amplifier of orbital forcing. No argument is really for sure. Only further palaeo-reconstruction and modelling will tell. Finally, I tend to agree that my statement that “over the past decade, climate system models have been developed in which not only atmospheric and oceanic, but also vegetation dynamics are simulated explicitly . . .” could be misunderstood as being overly optimistic. Perhaps saying that “some climate system models have been developed . . .” might be more appropriate.

Interactive comment on Clim. Past Discuss., 5, 635, 2009.

C111