

## ***Interactive comment on “Late Quaternary vegetation – climate feedbacks<sup>1</sup>” by M. Claussen***

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Received and published: 16 March 2009

This paper provides a concise and clear overview of the major issues concerning vegetation-climate feedbacks during the late Quaternary. The author presents no new results, but this has clearly not been the intention of this manuscript. It is well-written, and, as far as I know, all relevant highlights from the literature are discussed. I find this a useful review for the readership of *Climate of the Past*, and would recommend publication with minor changes.

### **Main comments**

Section 2.1.2, page 641. I suggest merging this section with the previous one, as Section 2.1.2 is very short compared to the other sections in 2.1, making this part

<sup>1</sup>Invited contribution by M. Claussen, EGU Milutin Milankovic Medal winner 2005

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of the paper somewhat unbalanced. Moreover, processes relevant for ‘Taiga-Tundra dynamics’ are already discussed in the second paragraph of Section 2.1.1.

Figure 1. I propose to mention in the caption the actual surface albedos of the white and dark daisies to make Figure 1 an even more instructive example of relations between vegetation and climate.

Page 638. I suggest clarifying here that this paper only concerns terrestrial vegetation and excludes discussion of the role of marine plants in the climate system.

Page 639, line 11: ‘Mid-Holocene winter insolation was weaker than today’. This statement is particularly valid for the Northern Hemisphere. At Southern Hemisphere high latitudes this is however not so clear. For instance, according to Berger (1978), June insolation was slightly less at 6 ka than today at 60°S, but August insolation was slightly stronger. I suggest adjusting the text to make this clear.

Page 649, line 28. ‘consistent with model simulations by Betts (2000) and Bala et al. (2007)’. I suggest providing a bit more information on these simulations. With what type of models were they performed?

Page 652, line 8. ‘glacial inception could be strongly weakened or even suppressed, if vegetation pattern is kept constant at interglacial values – which would decide the case in favour of strong biogeophysical feedbacks.’ I am not convinced that biogeophysical feedbacks have to be strong to explain this model behaviour. I would argue that if the system was close to a threshold around the time of glacial inception, also a small biogeophysical feedback could have pushed the system to the glacial state.

### **Minor technical comments**

Page 640. Otto et al. (2009) is missing in the reference list.

Page 642, line 14. Typo. ‘Kagayama’ should be ‘Kageyama’.

Page 647, line 11. Typo. ‘Tjalingi’ should be ‘Tjalingii’.

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Page 648, line 4. Typo. 'vegetation dynamics tends' should be 'tend'.

Page 650, line 3. 'Tropical forests were presumably reduced in its extent' should be 'their extent'.

Reference list: there are two papers listed by Claussen et al. 2003, so it would be helpful to distinguish the two (i.e., 2003a and 2003b). The same is true for Liu et al. 2006.

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