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Climate of the Past Discussions



# *Interactive comment on* "Interdependence of the Northern Hemisphere ice-sheets build-up during the last glaciation: the role of atmospheric circulation" *by* P. Beghin et al.

**Anonymous Referee #1**

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The manuscript presents various simulations of the Northern Hemisphere ice sheets and climate during the last glacial cycle in order to illustrate their interdependence. The work shows several transient feedbacks related to ice sheet growth, and from a quite low-resolution global climate model, the parameterizations still show interesting results. I think the implementation of the parameterizations and the experiments are novel and well described. While I am not an expert on atmospheric waves, the parameterizations used seem reasonable and are explained clearly. Furthermore, the results and subtleties are discussed in detail. Therefore scientifically I believe this paper deserves to be published almost as is.

However, significant revision of the grammar is needed throughout the manuscript,

which should preferably be done by a native speaker. For example, even the title should read “Interdependence of Northern Hemisphere ice-sheet build-up during the last deglaciation: the role of atmospheric circulation”.

Comments

Page 2197, Line 24: “Although. . .” is an incomplete sentence.

Section 4.4: The simulations seem to end at 15 ka. Out of curiosity, why not run the simulations through to present day? I suppose there would be related effects concerning deglaciation based on the same processes. It would be interesting to see how the ice sheets interplay during this time period too.

Figure 4: The time series plots of the various ice volumes is interesting, but somewhat difficult to understand. Would it additionally be possible to extract more universal relationships between the two ice sheets by plotting FIS-volume vs LIS-volume, for example? Also, why does the legend for the dashed lines appear twice above the figure?

Figure 8: Is it true that panel (a) and (b) are indentical? Is this an error? The scales are supposedly different but the patterns seem indistinguishable, which is surprising.

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Interactive comment on Clim. Past Discuss., 9, 2183, 2013.