

Interactive comment on “Comparing transient, accelerated, and equilibrium simulations of the last 30 000 years with the GENIE-1 model” by D. J. Lunt et al.

D. J. Lunt et al.

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The reviewer makes 4 main comments, all of which we have addressed in a revised manuscript. The reviewer questions whether the main results in the paper are due to:

(1) Non-linearity. We have now included plots and discussion of the evolving oceanic circulation in the simulations. We find that the MOC is certainly not linear, and exhibits a complex response to the changing boundary conditions. However, the magnitude of this response is relatively small, which results in the rather linear response in terms of surface temperature evolution.

(2) Sea ice. How good is the model’s simulation of sea ice? We were in fact rather surprised to find that it is quite good, and compares reasonably well with HadSM3 for

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the pre-industrial and LGM.

(3) Tuning. As a sensitivity study, we have repeated the simulations with the tuned parameters found by Hargreaves et al. (2004). We find that in this case, the magnitude of the error introduced by acceleration is reduced, but the Southern Hemisphere is still more affected than the Northern Hemisphere.

(4) Resolution. Again, we repeat the simulations with greater vertical resolution in the ocean, and find that the main conclusions are unaffected.

The reviewer also raises a number of (valid) specific comments, which we have addressed in a letter to the editor and the revised manuscript.

Interactive comment on Clim. Past Discuss., 2, 267, 2006.

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2, S324–S325, 2006

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