

Interactive comment on “Low-frequency oscillations of the Atlantic Ocean meridional overturning circulation in a coupled climate model” by M. Schulz et al.

M. Schulz et al.

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1. Link to DO events We added a new section "Relevance for past climate variations" to the discussion (sect. 4.5), in which this point is addressed.
2. Time-dependent boundary conditions The referee raises the interesting question as to whether the model can be kept in the parameter range to maintain the oscillations over a significant fraction of the Holocene. Changes in atmospheric greenhouse-gas concentration, orbital configuration or solar forcing all have the potential to perturb the precipitation field in the Labrador Sea and to generate the oscillations. (Indeed, we first encountered the oscillations in an experiment with idealized orbital forcing). It would require a large number of (very long) sensitivity experiments to disentangle

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how these forcings interact with each other with respect to the oscillations. This is clearly beyond the scope of this study which aims primarily at presenting a new type of oscillations. Moreover, we are not convinced whether such a suite of experiments conducted with our EMIC would shed much light on the Holocene climate variations, since (specifically) precipitation depends on highly parameterized processes in that model. Before moving to this question we would like to test if the oscillations can also occur in more comprehensive models.

3. Relevance for future climate change We followed the reviewer's recommendation and de-emphasized the potential role of the oscillations with respect to future climate change. Along this line we removed Fig. 11 and the corresponding text in sect. 5.

4. Figs. We increased in the fontsize in Figs. 1, 2 (legend) and 3 to 6. The colorscale in Fig. 3 was slightly modified.

Interactive comment on Clim. Past Discuss., 2, 801, 2006.

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2, S792–S793, 2007

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