Earth Syst. Dynam. Discuss., 3, C193–C194, 2012
www.earth-syst-dynam-discuss.net/3/C193/2012/

Earth System Dynamics Discussions

Interactive comment on "Enhanced Atlantic subpolar gyre variability through baroclinic threshold in a Coarse Resolution Model" *by* M. Mengel et al.

Anonymous Referee #1

Received and published: 29 May 2012

General comments

This paper adds one piece to the important puzzle regarding the variability of the subpolar gyre. The result that the subpolar gyre circulation can be brought to a threshold position, where is becomes highly sensitive to freshwater and wind stress forcing, is very interesting. And if this holds true, it might improve our ability to predict the marine climate and ecosystems in the subpolar Atlantic. The result that it is freshwater forcing over the Nordic Seas that regulates this threshold is both puzzling and interesting. But the paper appears rather unfinished to me. The linkage between the freshwater forcing over the Nordic Seas and the SPG, and the internal feedback loops in the North At-

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lantic do, unfortunately, not make clear sense to me. Maybe this becomes clearer after the questions below are answered.

(see attachement for more detailed comments)

Please also note the supplement to this comment:
http://www.earth-syst-dynam-discuss.net/3/C193/2012/esdd-3-C193-2012-supplement.pdf

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Interactive comment on Earth Syst. Dynam. Discuss., 3, 259, 2012.