

Interactive comment on “Tropical Extra-tropical thermocline water mass exchanges in the community climate model v.3 Part I: the Atlantic Ocean” by I. Wainer et al.

I. Wainer et al.

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I would like to clarify that the choices of preferred isopycnals were not random. They are different on occasion because for the model runs analysed (ocean-only, coupled t-42 and coupled-T85) the core of the EUC is at different isopycnals. Considering that I wanted to see exactly where the water reaching the EUC was coming from, this was important. I also stated in several parts of the paper, that even though there was this difference, the EUC core in the models were well within the density range between the $24.5 \text{ kg m}^{-3} < \sigma_{\theta} < 26.5 \text{ kg m}^{-3}$ isopycnal surfaces (Molinari and Schott define this isopycnal range for the EUC).

Reviewer 1 points out several corrections to the text to which I am thankful and did

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changes accordingly.

Overall - I think this paper is an important contribution, it shows great differences in the STC pathways (water that arrives at the equator) from two coupled-model simulations (differing only in resolution) and from the ocean-only component. The fact that this is an important results is why I was asked to contribute with 1 figure in the Alexander et al. Journ. Climate paper - reviewer 2 comment).

The main message of this paper is that in the Atlantic, the Northern Hemisphere pathway is absent in CCSM3, and the flow originating in the Southern Hemisphere is overly concentrated along the western boundary. Therefore, the fact that the coupled model doesnt do a good job in representing tropical-extratropical connections limits its ability to simulate longer term variability (e.g decadal scales).

Interactive comment on Ocean Sci. Discuss., 3, 55, 2006.

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