

Interactive comment on “Formulation of an ocean model for global climate simulations” by S. M. Griffies et al.

Anonymous Referee #1

Received and published: 6 June 2005

Review of Griffies et al 2005 manuscript: Formulation of an ocean model for global climate simulations.

General comments:

This manuscript is very clear and extremely well-written, and will be valuable to the community and hence is very suitable for publication. Apart from several very minor points there are few changes required.

Specific comments:

p177, top: would it be possible to comment on why you didn't use the advective part of the Beckmann and Doescher scheme? For a model with the resolution of this one, one might expect the advective part to be quite important (e.g. in Tang and Roberts 2005, JPO, 202-217 in a HadCM3 resolution model). This may be why the impact is relatively

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small.

p179, bottom: is there anything to say regarding the diffusiveness of 3rd order advection schemes - giving a diffusive rather than dispersive error?

Technical comments:

Clarification of page 174, line 15: The last sentence - from what is said before, do you mean that ice thicknesses greater than 4m exert no more pressure than the 4m of ice?

p190, line 16: you have time twice in the sentence.

p191, line 18-19: perhaps you could clarify this diurnal cycle - are the model components coupled every 3 hours, or do the individual components save their forcing every 3 hours?

p194, line 3 of footer: I think you can remove the "is"

p195, line 6-10: I had to read this a couple of times before I think I got it. Do you think that most other modellers, when they use a spatially-varying "thickness" diffusion, use that for the isopycnal diffusion too? Perhaps that is true, at the Hadley Centre we've always had them separate, but it might be worth clarifying the point you are making.

p198, line 19: "..., the tracer fluxes neutral physics reduce those from horizontal diffusion". I'm afraid I didn't understand quite what this meant - maybe a rewording would make clearer?

Fig 7 caption: needs the 10^{-4} in superscript.

Interactive comment on Ocean Science Discussions, 2, 165, 2005.

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