

Interactive comment on “Evaluation of a present-day climate simulation with a new coupled atmosphere-ocean model GENMOM” by J. R. Alder et al.

Anonymous Referee #2

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Overall comment

This paper presents basic climatological features of a new coupled (non-flux corrected) climate model, GENMOM, based on GENESIS v3 and MOM2. It is not a revolutionary, but a necessary paper: new climate models, and versions thereof, have to be conveniently documented by citable references. Although the paper does not present any substantial new concepts, ideas, or methods, it should therefore be published in GMD which appears to be the right journal for such a paper. The quality of the presentation is generally good. Concerning the scientific requirement of reproducibility of the results, it is regrettable that there is no information about the conditions of the distribution of the

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model code, and that apparently there is not a more detailed technical report available.

Specific comments

- T31 is a rather low model resolution nowadays. Are higher-resolution version available (and if yes, how do they perform) or planned? - In the Genesis 3 description, it is not very clear what is new compared to previous model versions. In general, an evaluation of the model with respect to previous versions (possibly in uncoupled or flux-corrected mode) might have been useful. - "The bottommost level is 660 m thick": This thickness should depend on bathymetry... otherwise, what happens e.g. on the continental shelf? - "Continental freshwater runoff is ... spread over the ocean": Is this still state-of-the-art? - Eight selected IPCC AR4 models: How were these selected? - Use of NCEP for all validation fields to ensure consistency: Is that true? In the reanalysis, some fields are analyzed, others not. Therefore these fields different are not necessarily physically entirely consistent. - Bering strait closed: A word about the consequences? - Atmospheric fields: It would have been nice to present systematically the differences between the model and NCEP fields. Otherwise it is hard to see the biases in model fields that exhibit strong gradients. - weak Southern Ocean pressure gradient: Might be a resolution issue linked not only to the topographical forcing, but also the atmospheric dynamics itself - Ocean currents: It would have been nice to have a more quantitative assessment of the model quality, for example by indicating the strength of the Antarctic Circumpolar Current etc. - Almost nothing is said about the simulated interannual and interdecadal variability. This is clearly something that must be addressed in a revised version. ENSO, NAO, SAM, etc.: Are these realistic in the model? (Amplitudes and spatial patterns)

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