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Evaluation of a present-day climate simulation with a new coupled atmosphere–ocean model GENMOM

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Abstract. We present a new, non-flux corrected AOGCM, GENMOM, that combines the GENESIS version 3 atmospheric GCM (Global Environmental and Ecological Simulation of Interactive Systems) and MOM2 (Modular Ocean Model version 2) nominally at T31 resolution. We evaluate GENMOM by comparison with reanalysis products (e.g., NCEP2) and three models used in the IPCC AR4 assessment. GENMOM produces a global temperature bias of 0.6 °C. Atmospheric features such as the jet stream structure and major semi-permanent sea level pressure centers are well simulated as is the mean planetary-scale wind structure that is needed to produce the correct position of stormtracks. Most ocean surface currents are reproduced except where they are not resolvable at T31 resolution. Overall, GENMOM captures reasonably well the observed gradients and spatial distributions of annual surface temperature and precipitation and the simulations are on par with other AOGCMs. Deficiencies in the GENMOM simulations include a warm bias in the surface temperature over the southern oceans, a split in the ITCZ and weaker-than-observed overturning circulation.

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