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# IPCC-AR4 climate change simulations by CNRM-CM3 model: global analyses

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The climate simulations requested by the IPCC for assessment report 4 were carried out at CNRM with CNRM-CM3 global coupled model. It includes ARPEGE-Climat v3 AGCM, OPA8 OGCM, GELATO2 sea ice model and TRIP river routing. The whole system is coupled by OASIS2 software. The control simulation showed relatively little drift in 2m air temperature and sea surface temperature (less than 0.1°C per century). The simulation of climate is generally correct, except that it is biased to the cold side in most of the tropics. The historical simulation of the 1860-2000 period was carried out from year 110 of the control experiment. In this experiment, the global climate is also realistic, except again for tropical areas. The simulated global warming approaches 1°C over the XXth century, which is overestimated, as estimations range from 0.5 to 0.8°C. The sea ice is correctly simulated in both hemispheres. Climate change projections indicate global 2m temperature changes of 1.2, 2.5 and 3.5°C respectively for B1, A1B and A2 experiments. These warmings are accompanied with a gradual slowing down of the THC as deep water formation is reduced in the North Atlantic and near the Antarctic.