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Set-up and preliminary results of mid-Pliocene climate simulations with CAM3.1

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Abstract. The mid-Pliocene warm period (~3.264 to 3.025 Ma) is a potential analogue for future climate under global warming.

In this study, we use an atmospheric general circulation model (AGCM) called CAM3.1 to simulate the mid-Pliocene climate with the PRISM3D boundary conditions. The simulations show that the global annual mean surface air temperature (SAT) increases by 2.0 ° C in the mid-Pliocene compared with the pre-industrial temperature. The greatest warming occurs at high latitudes of both hemispheres, with little change in SAT at low latitudes. The equator-to-pole SAT gradient is reduced in the mid-Pliocene simulation. The annual mean precipitation is enhanced by 3.6% of the pre-industrial value. However, the changes in precipitation are greater at low latitudes than at high latitudes.

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