GCM astronomical variability

As noted in the main paper, the astronomical configuration of the GCM simulations used are not identical, although they are broadly similar. In Figure S1 we show how the different astronomical configurations compare with natural variability from the past 5 Ma.

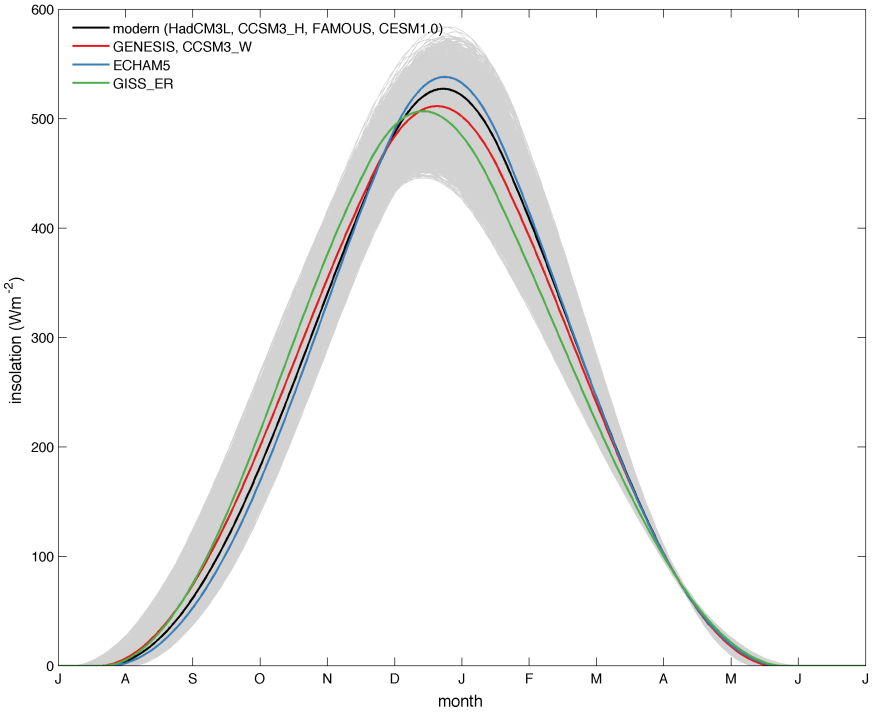

Figure S1: Insolation at 70°S for GCM simulations, with natural variability from the past 5 Ma shown in grey for reference.

Testing use of extrapolated climatology

In Figure 4 of the paper we present transient ISM simulations. Using Equation 1, we interpolate and extrapolate the climatology from 2 GCM simulations at 2× and 4× PIC to provide a climate forcing from 6× to 0.5× PIC. Here we test the validity of using extrapolation by comparing the extrapolated climate with additional control GCM simulations. These are for HadCM3L at 1× and 6× PIC and for CCSM3 at 8× PIC. Note that the errors introduced by extrapolation are significantly smaller than the inter-model disagreement (compare Table 2 and Table S1).

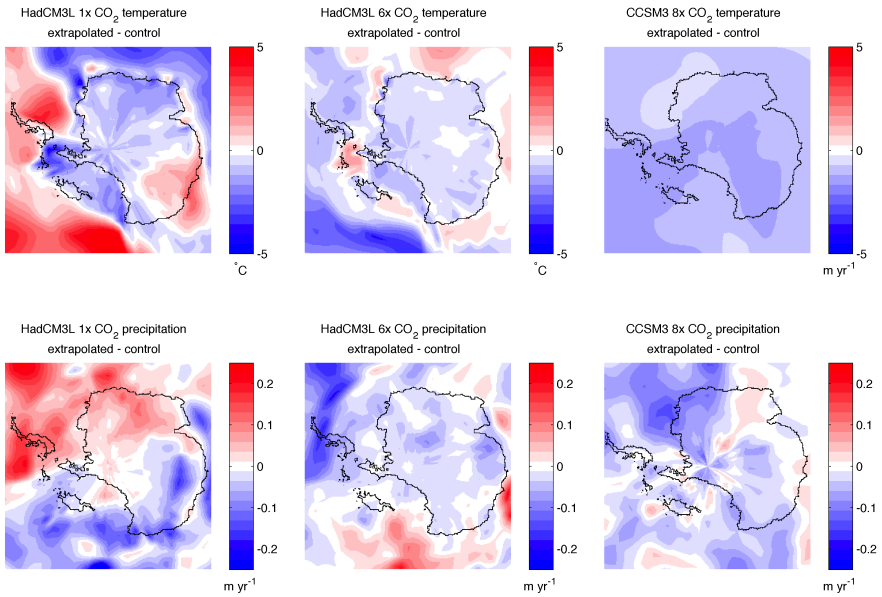

Figure S2: Anomaly plots of extrapolated – control climatology for HadCM3L simulations at 1× and 6× PIC and for CCSM3_H at 8× PIC. The extrapolated climate is created using simulations at 2× and 4× PIC.

Table S1: Mean annual climate over East Antarctic, extrapolated climate shown with error compared with control climate shown in parentheses. For comparison with Table 2 in the paper.

	PIC	T_a (°C)	P (m yr^{-1})
HadCM3L	1×	-17.8 (-0.4)	0.42 (-0.01)
HadCM3L	6×	-3.8 (-0.4)	0.74 (-0.01)
CCSM3_H	8×	1.9 (-1.1)	0.79 (-0.03)