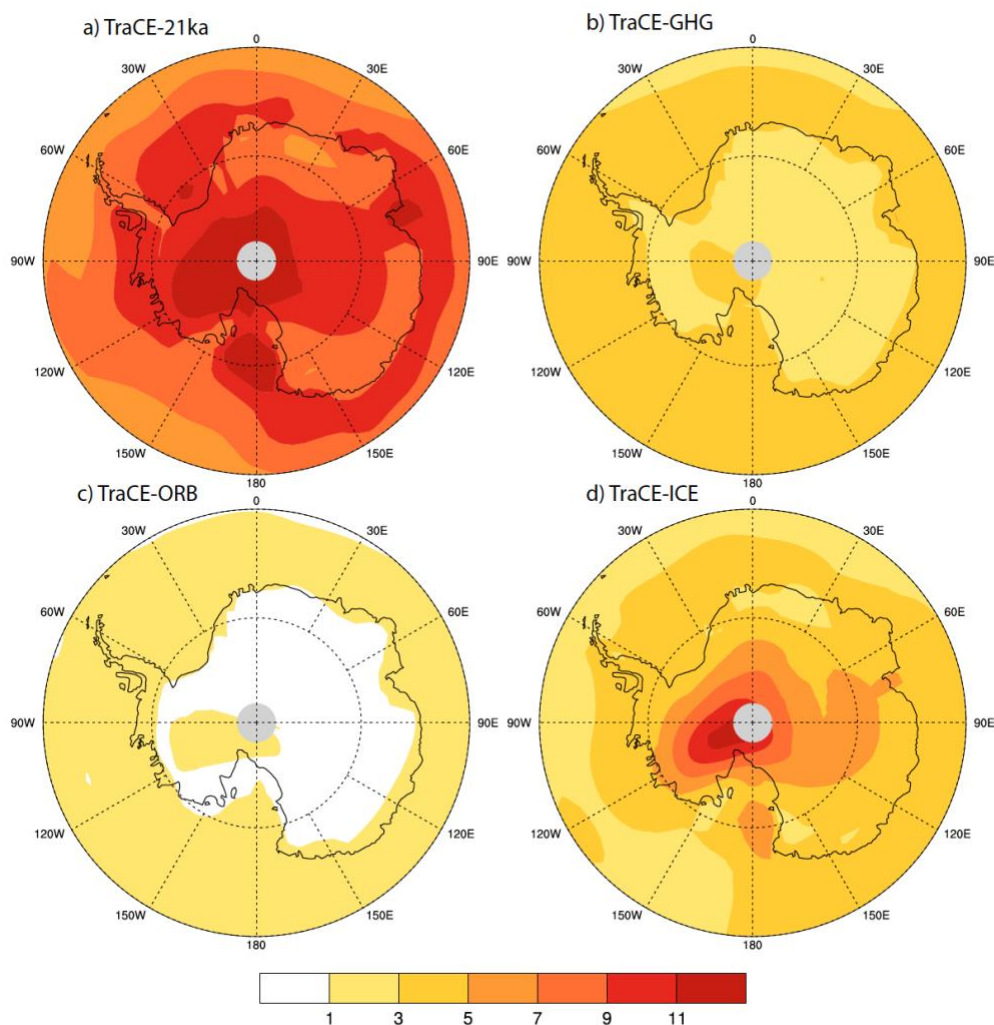
Supplemental Information

TraCE-21ka Sensitivity Experiments

      To attribute the causes of surface temperature changes in the TraCE-21ka experiment, we analyze three additional transient sensitivity experiments of each individual forcing using the CCSM3 model (He et al., 2013): TraCE-ORB, with only transient orbital forcing, and all other forcings and boundary conditions remaining at the TraCE state of 22ka; TraCE-GHG, with only transient greenhouse gas forcing, and all other forcings and boundary conditions remaining at the TraCE state of 22ka; TraCE-ICE, with only changing continental ice sheets, and all other forcings and boundary conditions remaining at the TraCE state of 19ka. TraCE-GHG and TraCE-ORB show the strongest warming occurring over the Southern Ocean, the continental margins, and interior West Antarctica, but the continental surface warming in these experiments is relatively minor compared to that in TraCE-ICE. The TraCE-ICE experiment demonstrates that the majority of the surface warming that occurs in West Antarctica and over the Antarctic Plateau can be explained by the decrease in ice surface elevation rather than changes in radiative forcing.

SI Fig. 1. Surface temperature warming (°C) from 18 kyr to 6.5 kyr in (a) TraCE-21ka and three transient sensitivity experiments.

References

He, F., J. D. Shakun, P. U. Clark, A. E. Carlson, Z. Liu, B. L. Otto-Bliesner, and J. E. Kutzbach (2013), Northern Hemisphere forcing of Southern Hemisphere climate during the last deglaciation, *Nature*, 494, 7435, 81-85, 2013.