



Causes and Consequences of the Termination of the Late Paleozoic Ice Age

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The end of the Late Paleozoic Ice Age (LPIA) represents one of the largest and most dynamic climate transitions in Earth history. During this Permo-Carboniferous event in which Gondwanan ice sheets disappeared, tropical Pangea experienced profound climatic and environmental changes. We use a coupled climate-biome-ice sheet model to investigate the causes and consequences of the Gondwanan deglaciation. Initial results indicate that proxy-estimated increases in Permo-Carboniferous $p\text{CO}_2$ were sufficient to drive the deglaciation. In response to rising $p\text{CO}_2$ and ice sheet diminution, the GENESIS-BIOME model predicts substantial changes in the tropics including: continental drying due to southward migration of the Intertropical Convergence Zone, a reversal of equatorial winds, warming, elevated precipitation $\delta^{18}\text{O}$, and the expansion of deserts and the contraction of forests. These predictions are consistent with climatic and environmental trends determined from the geologic record.