

Table 4

Effects of large-scale controls on palaeoclimates as simulated by general circulation model experiments ^a

Controlling factor and effects	Northern Hemisphere mid-to-high latitude	Speci@cresponse in the Paci@cNorthwest
Ice-sheet temperature effects ($d^{18}\text{O} > 12$ ka level)	colder than present ($\Delta T_{\text{Ann}} = 4$ to 10°C)	colder than present ($\Delta T_{\text{Ann}} = 7^{\circ}\text{C}$)
Ice-sheet circulation effects ($d^{18}\text{O} > 14$ ka level)	split jet=glacial anticyclone over North America	prevailing easterlies; drier than present
Direct insolation effects ($K_{\text{Jul}} > 6$ ka levels)	increased land±sea temperature contrast and seasonality; warmer continental interiors; ($\Delta T_{\text{Jul}} = 2^{\circ}$ to 4°C)	warmer than present; ($\Delta T_{\text{Jul}} = 2^{\circ}\text{C}$); reduced P±E and soil moisture
Indirect insolation effects ($K_{\text{Jul}} > 6$ ka levels)	strengthened oceanic high-pressure systems and continental thermal lows; enhanced monsoonal circulation	strengthened East Paci@csubtropical high-pressure system; greater subsidence and drought in summer
Additive insolation effects ($K_{\text{Jul}} > 126$ ka levels)	continental interiors 2°C warmer than at 6 ka; greater seasonality and stronger monsoons	warmer and drier than the early Holocene; ($\Delta T_{\text{Jul}} = 2^{\circ}$ to 4°C)
(Reduced) CO_2 temperature effects (CO_2 conc. = 200 ppm)	cooler than otherwise; ($\Delta T_{\text{Ann}} = 1^{\circ}\text{C}$)	cooler than otherwise; ($\Delta T_{\text{Ann}} = 1^{\circ}\text{C}$)
(Lower) sea-surface temperature effects	cooler land-surface temperatures downwind of oceans; ($\Delta T_{\text{Ann}} = 2^{\circ}\text{C}$)	cooler than otherwise; ($\Delta T_{\text{Ann}} = 0.5^{\circ}\text{C}$)
Sea-ice, vegetation, and snow-cover feedback effects, 9 and 6 ka	reduced Arctic sea ice and snow cover; warmer autumns and winters than otherwise	warmer autumns and winters than otherwise

^a Adapted from Bartlein et al. (1991).

Whitlock, C., Sarna-Wojcicki, A.M., Bartlein, P.J., and Nickmann, R.J. (2000). Environmental history and tephrostratigraphy at Carp Lake, southwestern Columbia Basin, Washington, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 155: 7-29.