Supplementary material for

Contrasting latitudinal evolution of East Asian monsoonal precipitation during the Last Interglacial (130–120 ka)

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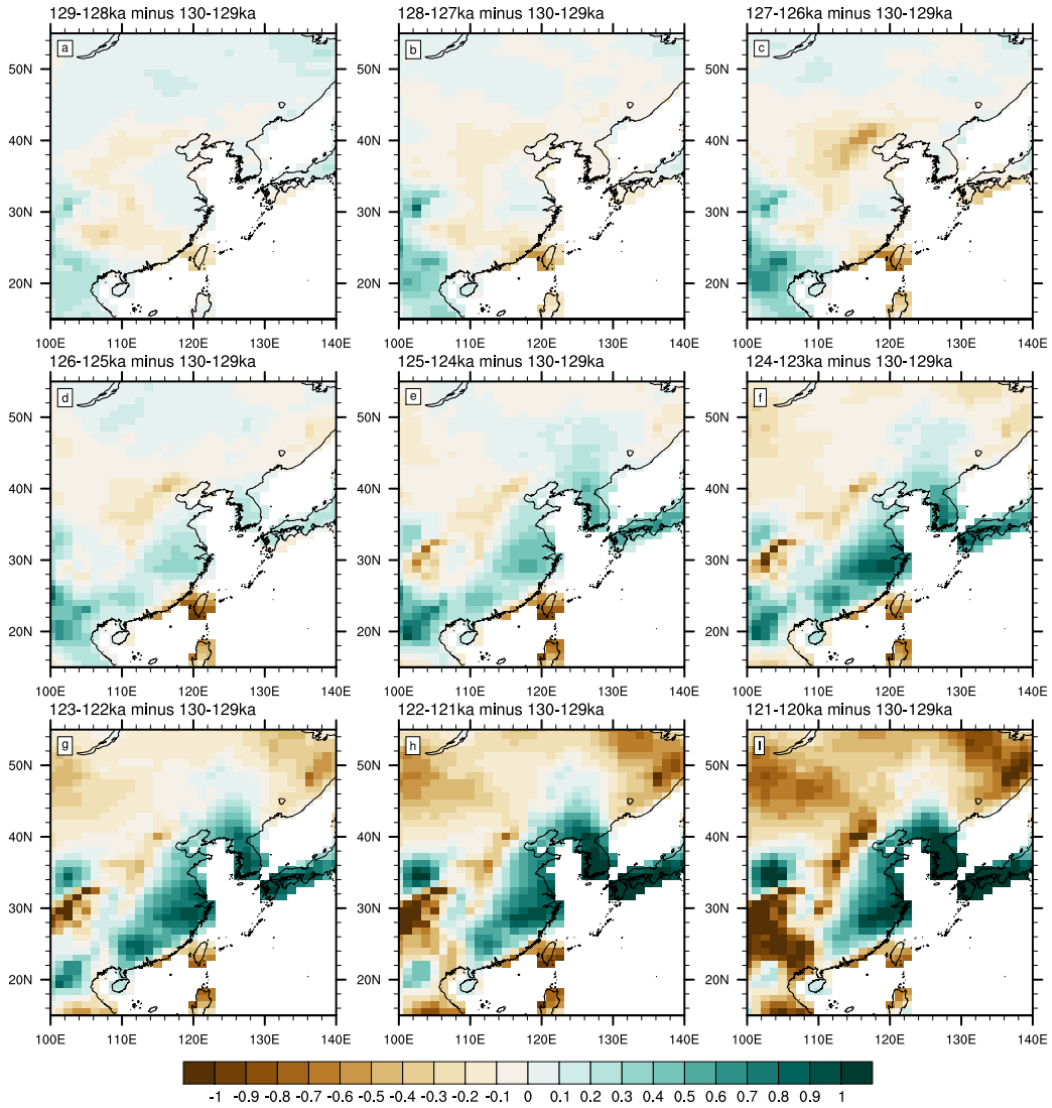
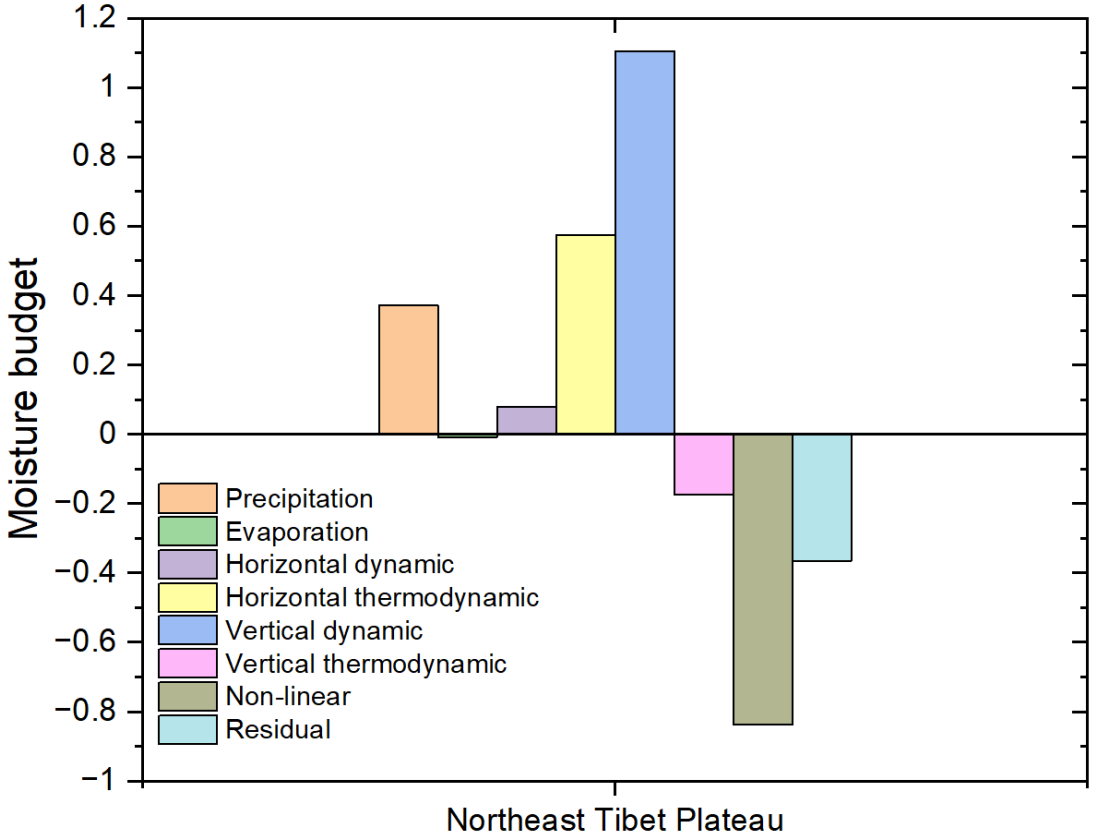
Supplementary Table 1 Forcings of LIG_130 ka and PI experiments

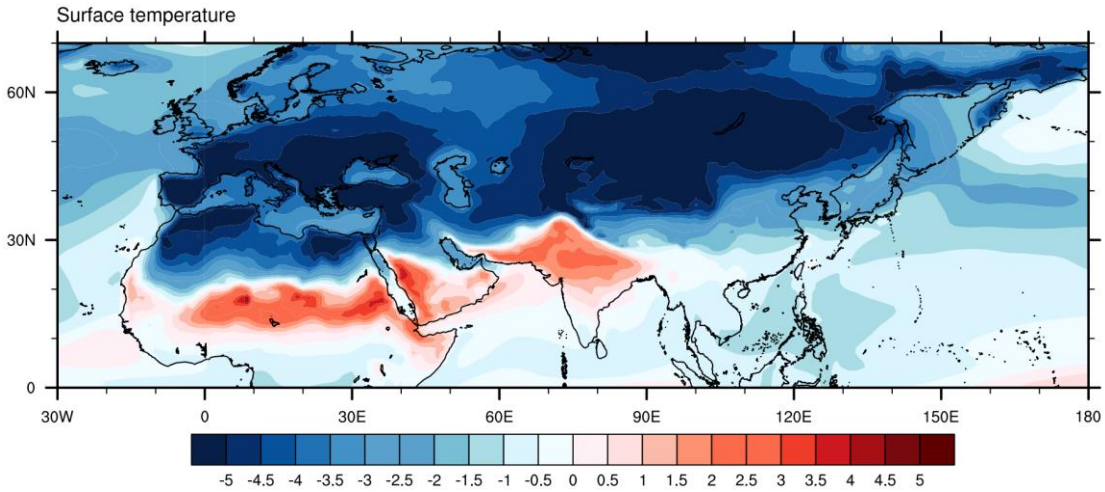
	130 ka (LIG_130ka)	1950 A.D. (PI)
Orbital parameters		
Eccentricity	0.038209	0.016724
Obliquity (degrees)	24.242	23.446
Perihelion-180 (degrees)	228.32	102.04
Vernal equinox	Fixed to noon on 21 March	
Greenhouse gases		
CO_2 (ppm)	258	280
CH_4 (ppb)	518	760
N_2O (ppb)	238	270
Other GHGs	0	PI
Ice sheets	PI	
Vegetation	PI	



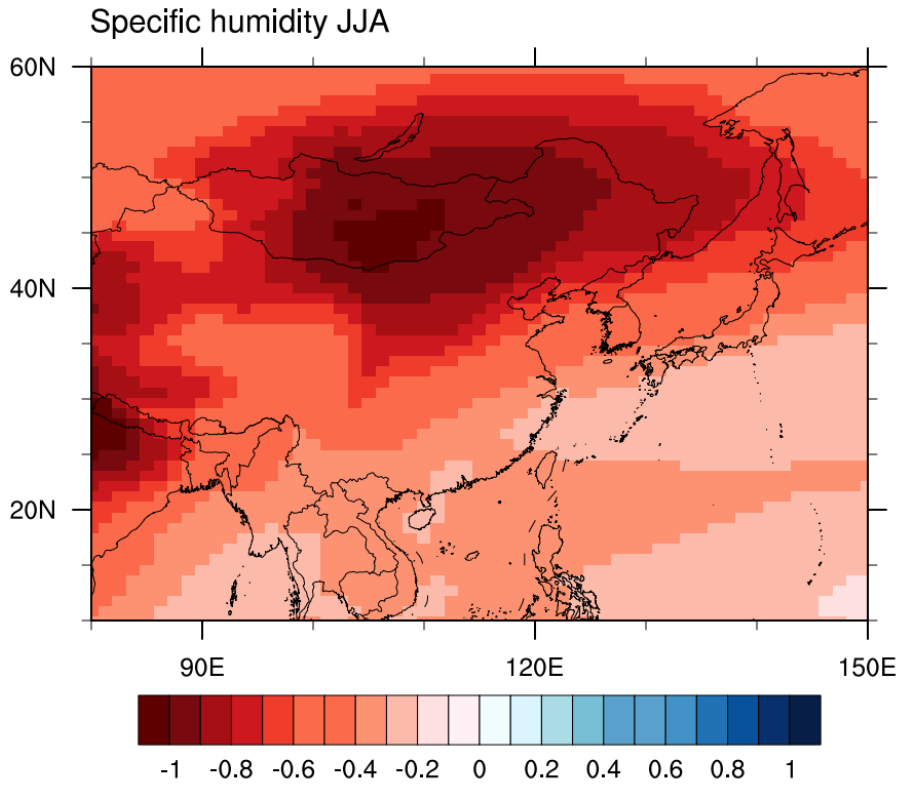
Supplementary Figure 1 Anomaly of precipitation over East Asia between 120 ka and 130 ka at every 1 ka interval (units: mm d^{-1}).



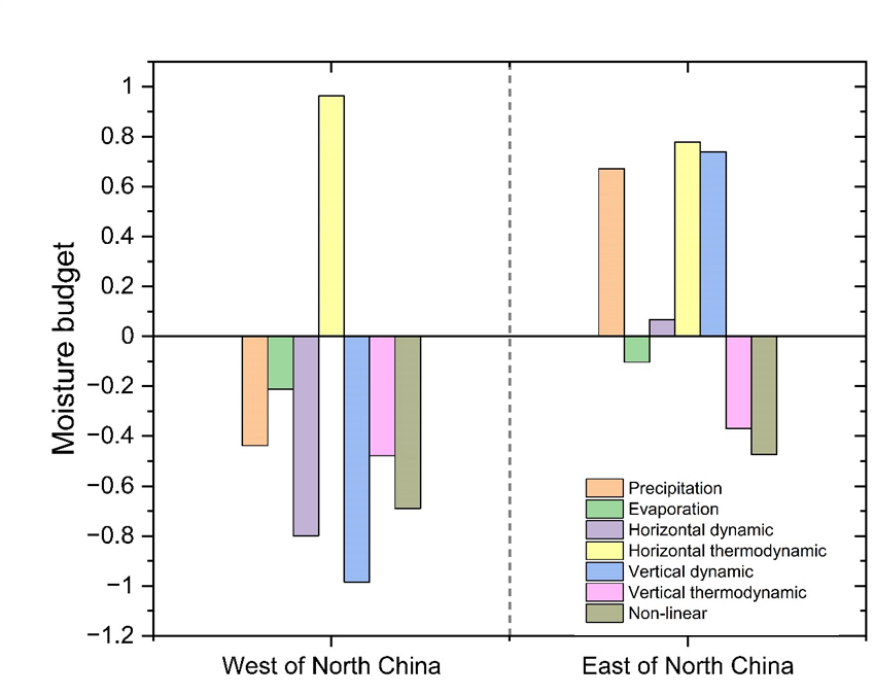
Supplementary Figure 2 Moisture budget analysis over the northeastern Tibetan Plateau between 121–120 ka and 130–129 ka (units: mm d^{-1}).



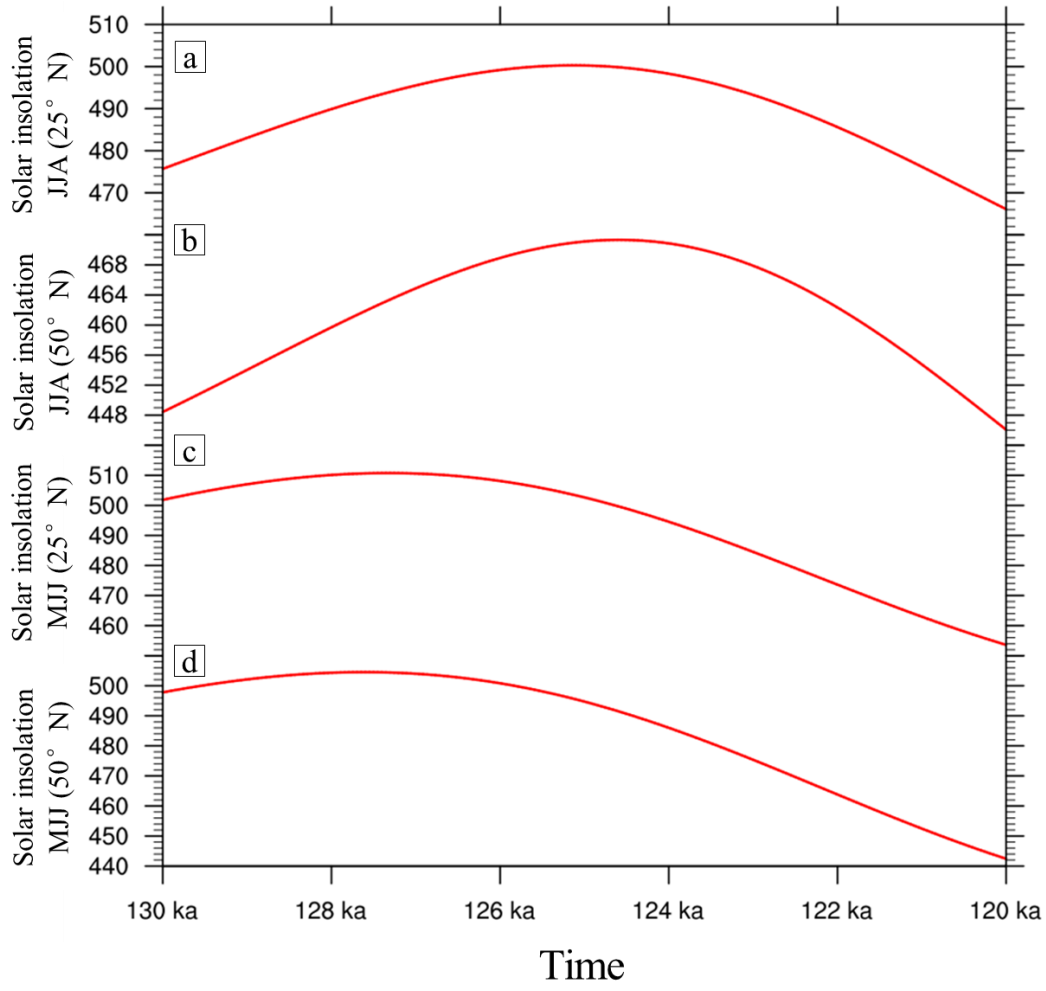
Supplementary Figure 3 Anomaly of surface temperature between 121–120 ka and 130–129 ka (units: ℃).



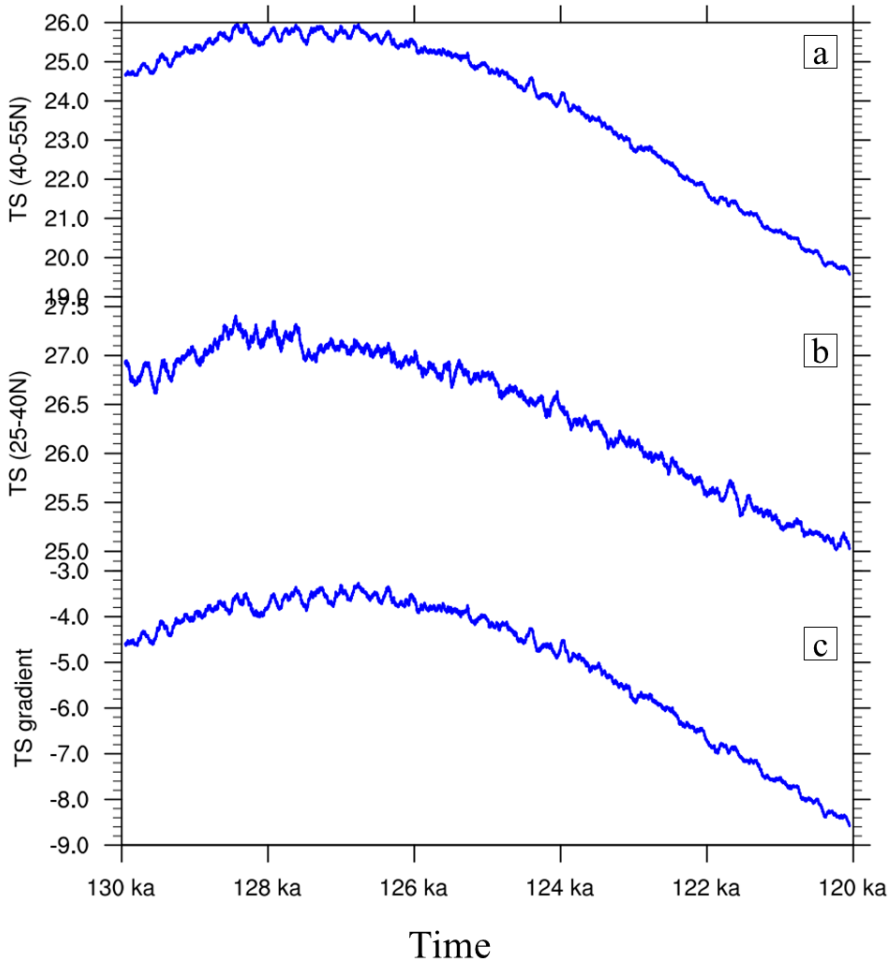
Supplementary Figure 4 Anomaly of vertically-averaged specific humidity at 300–1000 hPa in summer between 121–120 ka and 130–129 ka (units: g kg^{-1}).



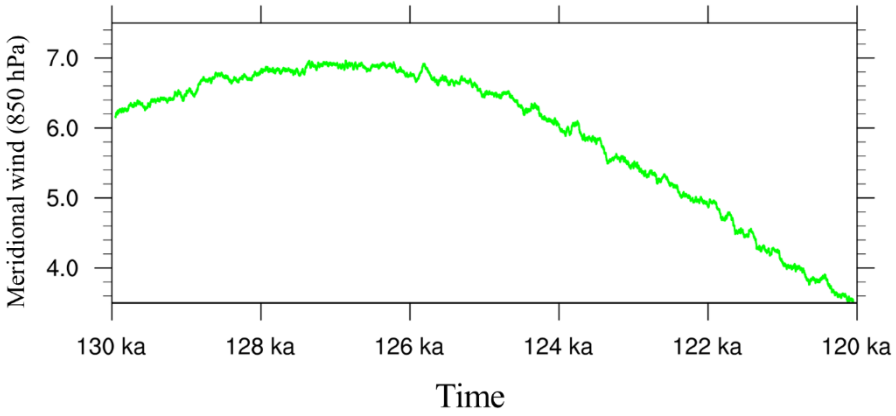
Supplementary Figure 5 Moisture budget analysis over the west of North China (35–45°N, 110–115°E) and the east of North China (35–45°N, 120–130°E) between 121–120 ka and 130–129 ka (units: mm d^{-1}).



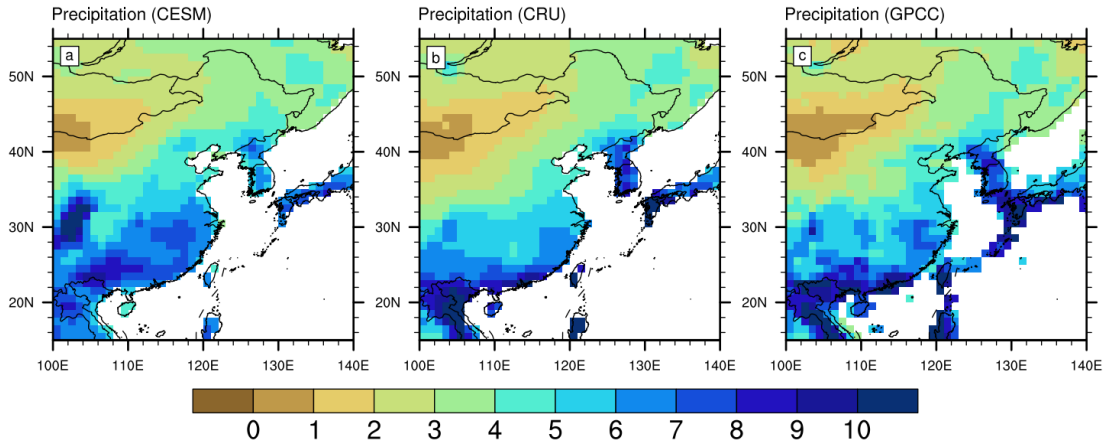
Supplementary Figure 6 Evolution of solar insolation in the top of the atmosphere (a) at 25°N in JJA, (b) at 50°N in JJA, (c) at 25°N in MJJ, and (d) at 50°N in MJJ between 130 ka and 120 ka during the LIG (units: W m^{-2}).



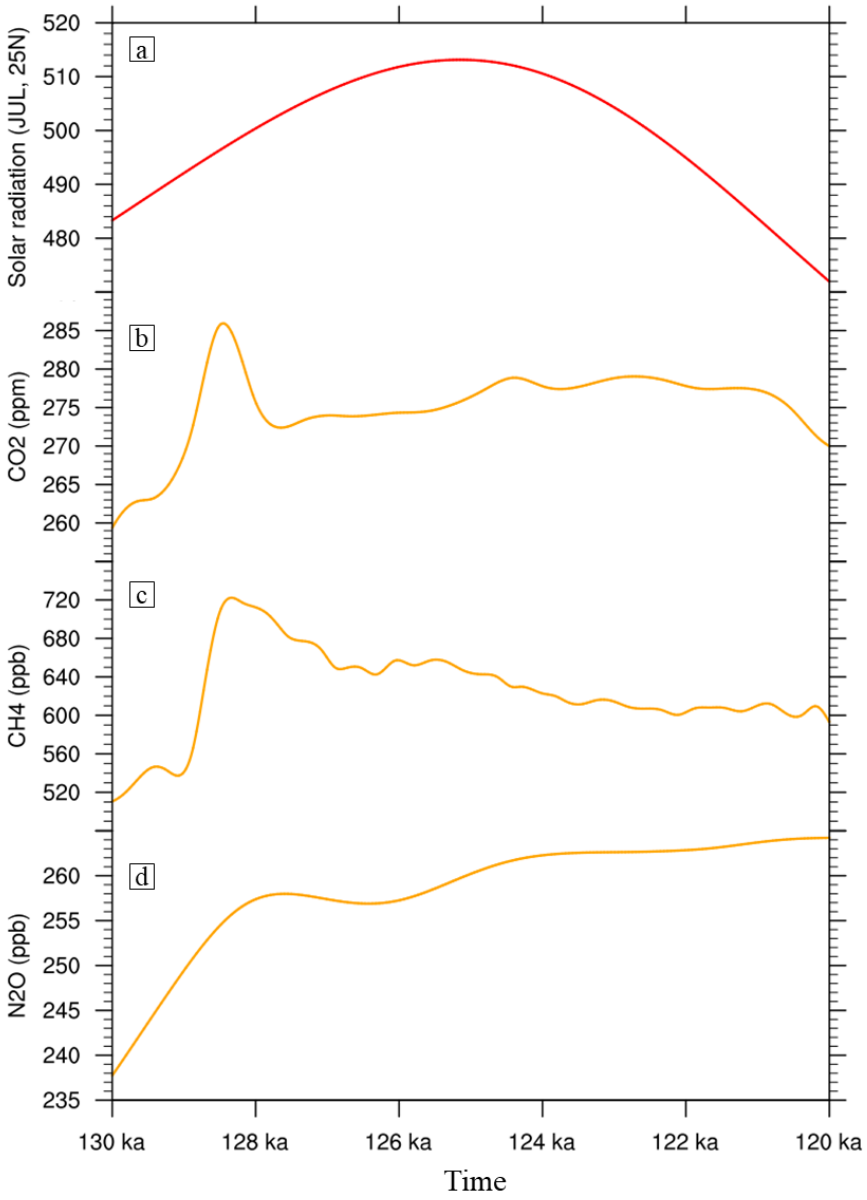
Supplementary Figure 7 Evolution of surface temperature (a) over northeast Asia/North China (40–55°N, 110–130°E) and (b) south China/North China (25–40°N, 110–130°E), and (c) surface temperature gradient between northeast Asia (45–55°N, 110–130°E) and South China Sea (10–20°N, 110–130°E) applying a 101-yr running average (units: ℃).



Supplementary Figure 8 Evolution of meridional wind indicating variations of monsoonal circulation over south and North China (25–40°N, 105–120°E) applying a 101-yr running average (units: m s^{-1}).



Supplementary Figure 9 Summer precipitation based on (a) control run in the CESM1.2, (b) long-term mean from Climatic Research Unit during 1901–2016, and (c) Global Precipitation Climatology Centre during 1901–2016 over eastern China (units: mm d^{-1}). All results are interpolated into 1°×1° to facilitate the model–observation comparisons.



Supplementary Figure 10 Evolution of (a) solar insolation at 25°N in July (units: W m^{-2}), (b) atmospheric CO_2 (units: ppm), (c) CH_4 (units: ppb), and (d) N_2O (units: ppb) in the transient simulation between 130 ka and 120 ka during the LIG.