**Climate
of the Past**

Supplement of

The relevance of mid-Holocene Arctic warming to the future

Masakazu Yoshimori and Marina Suzuki

Correspondence to: Masakazu Yoshimori (masakazu@aori.u-tokyo.ac.jp)

1   Table S1   Model years used to construct the long-term climatology for the PI and MH simulations from

2   "r1i1p1" runs in the CMIP5 dataset.

Model	PI	MH
bcc-csm1-1	0001 - 0500	0001 - 0100
CCSM4	0800 - 1300	1000 - 1300
CNRM-CM5	1850 - 2699	1950 - 2149
CSIRO-Mk3-6-0	0001 - 0500	0001 - 0100
FGOALS-g2	0001 - 0900	0340 - 1024
FGOALS-s2	1850 - 2350	0001 - 0100
GISS-E2-R	3331 - 4530	2500 - 2599
IPSL-CM5A-LR	2370 - 2799	2701 - 2800
MIROC-ESM	1800 - 2429	2330 - 2429
MRI-CGCM3	1851 - 2350	1951 - 2050

3
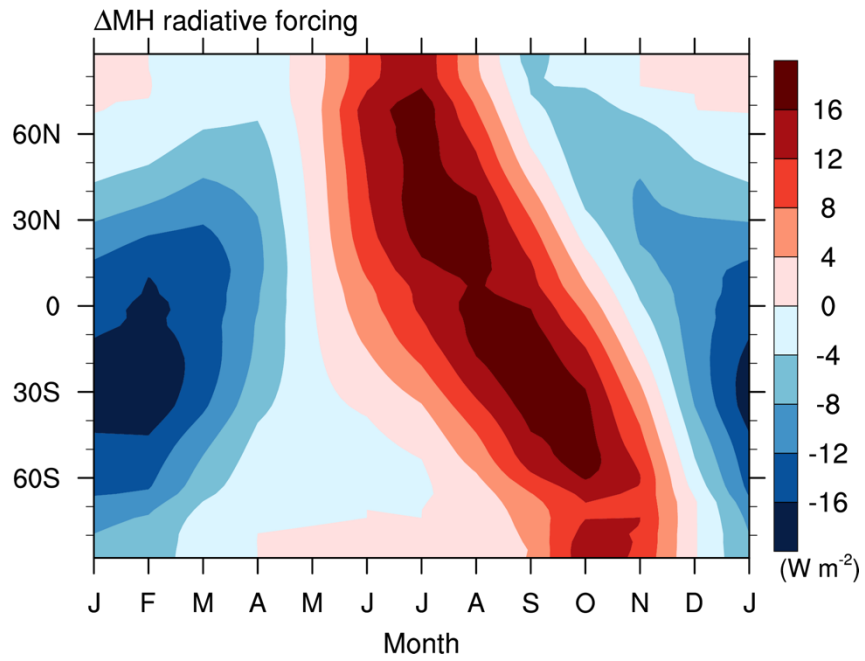
ΔMH radiative forcing


Fig. S1　Seasonal progress of the zonal mean radiative forcing calculated with the insolation anomaly for ΔMH and planetary albedo from the PI experiment (W m^{-2}). The mean of all 10 models was used. See main text for details.
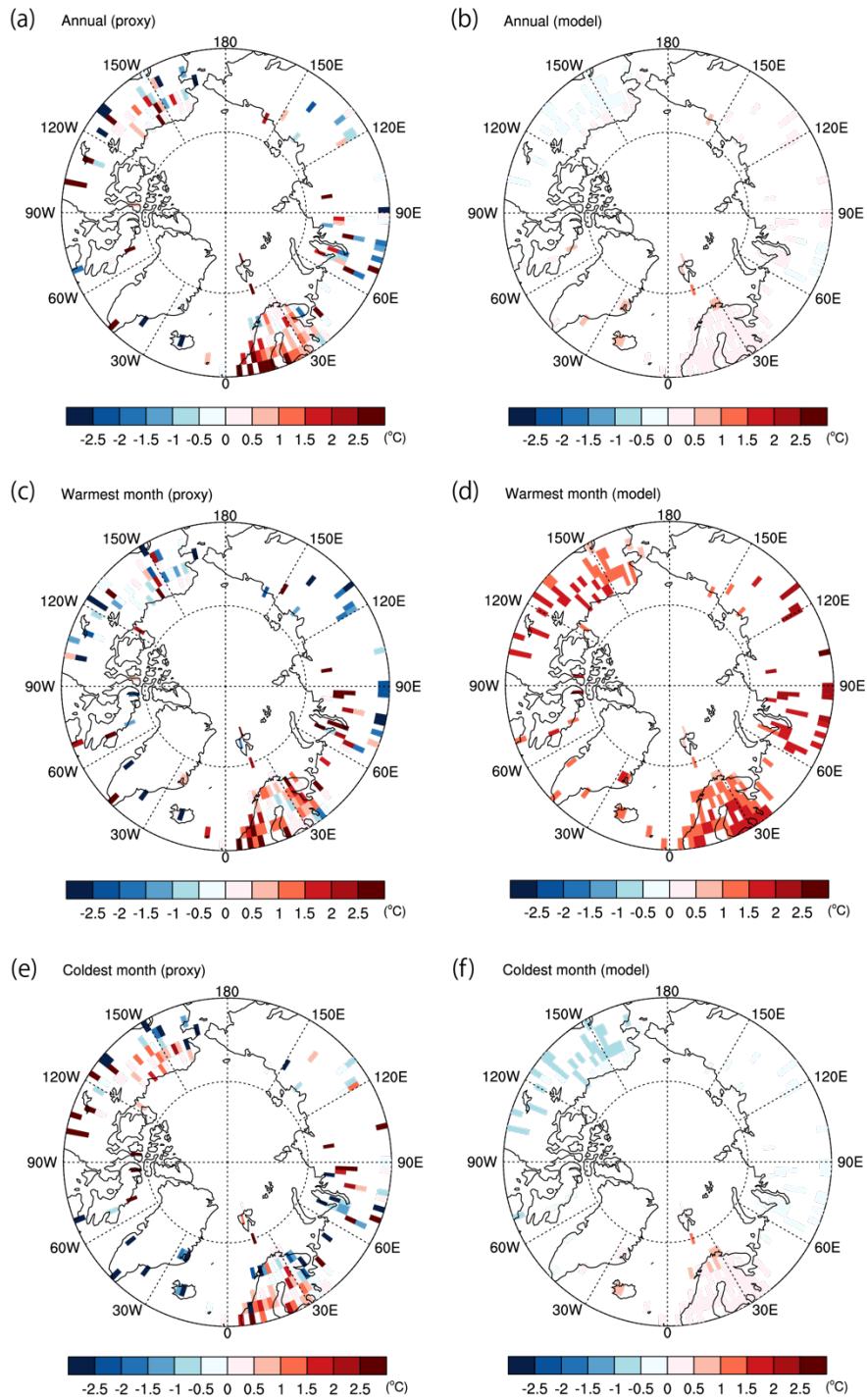
Fig. S2 Surface air temperature anomaly (°C) for ΔMH from the reconstruction (left) and simulations (right): (a) & (b) annual mean, (c) & (d) warmest month, and (e) & (f) coldest month. The reconstruction data are taken from the extended data of Bartlein et al. (2011). The mean of all 10 model simulations was used.

(a)

(b)
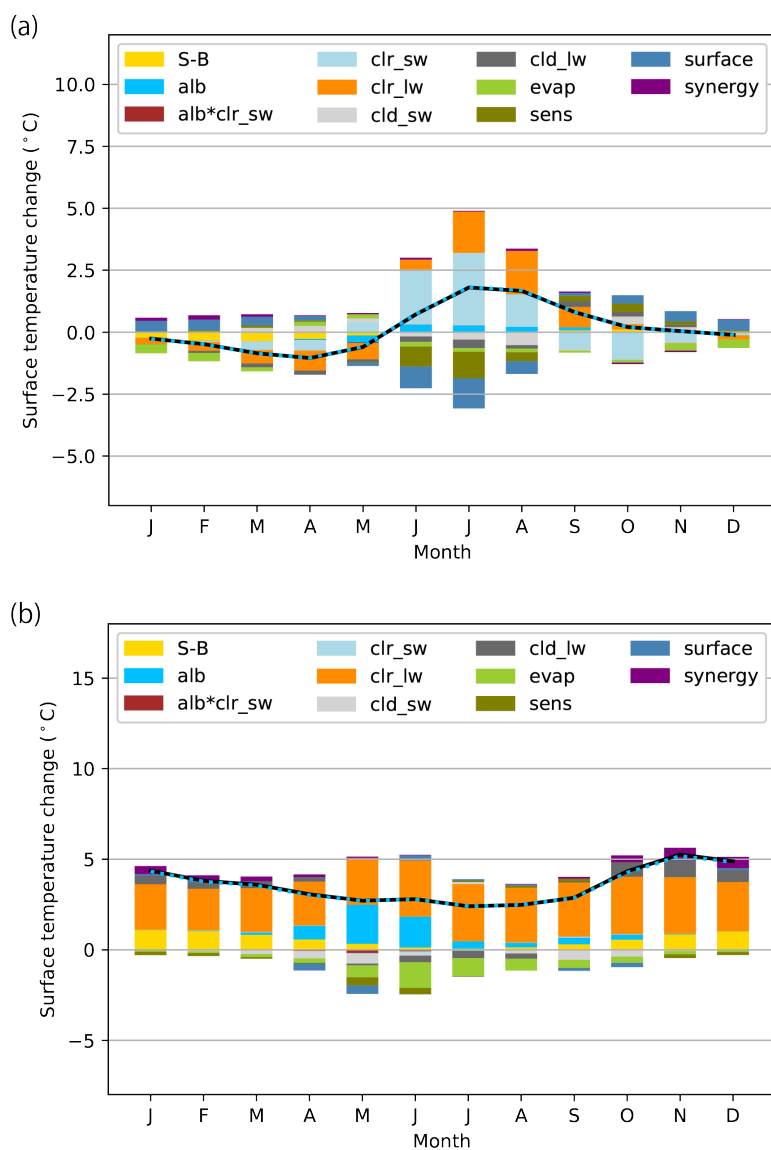
Figure S3　Simulated and diagnosed surface temperature changes (°C) for the land (north of 60°N): (a) ΔMH; and (b) ΔRCP4.5. The black polygonal solid lines denote simulated changes and blue polygonal dashed lines denote the sum of diagnosed partial changes; two lines are superimposed. The graphs represent the means of all 10 models listed in Table 2. See Table 3 for the interpretation of each component.

25

26
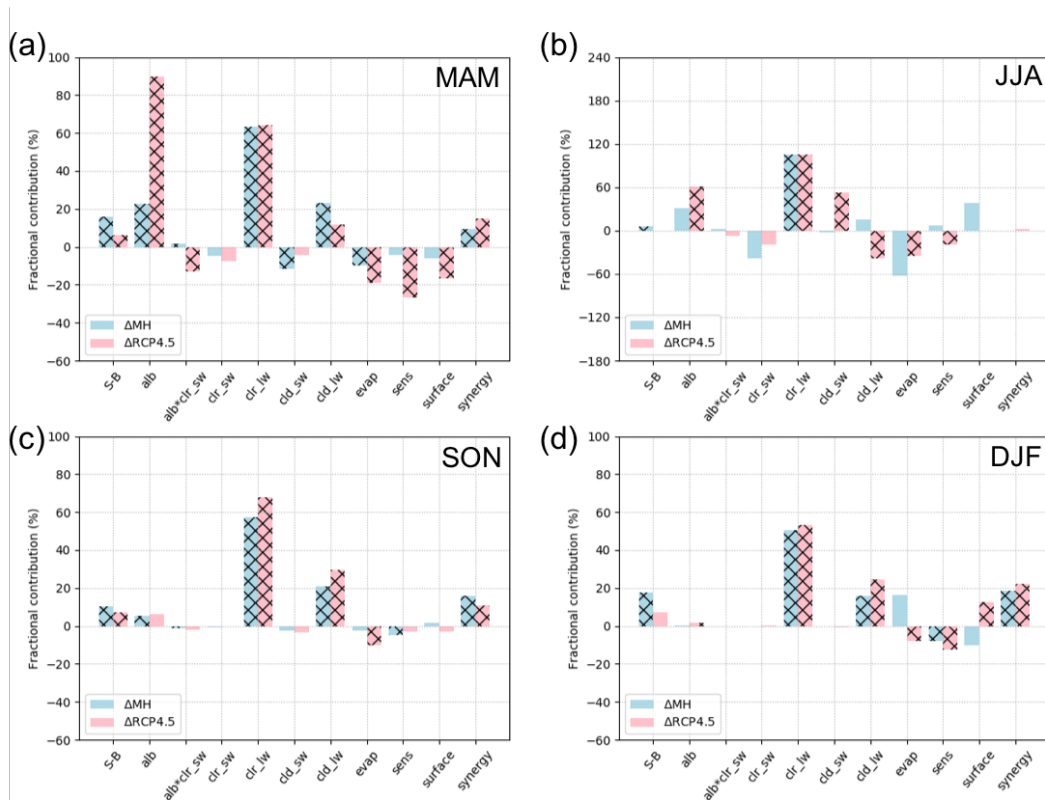
27   Figure S4   Fractional contribution of individual processes to the simulated surface temperature change
28   (%) over the land (north of 60°N) for ΔMH and ΔRCP4.5: (a) spring (March-April-May); (b) summer
29   (June-July-August);   (c)   autumn   (September-October-November);   and   (d)   winter
30   (December-January-February) means. The sum of the bar graphs in the same color for each plot adds up
31   to 100%. The hatching indicates the contribution is statistically significant at the 10% level. All 10
32   models listed in Table 2 are used. See Table 3 for the interpretation of each component. Note that the
33   vertical scale for (b) is three times larger than others.

34

35 **Reference**

36

37 Bartlein, P. J., Harrison, S. P., Brewer, S., Connor, S., Davis, B. A. S., Gajewski, K., Guiot, J.,

38   Harrison-Prentice, T. I., Henderson, A., Peyron, O., Prentice, I. C., Scholze, M., Seppa, H., Shuman,

39   B., Sugita, S., Thompson, R. S., Viau, A. E., Williams, J., and Wu, H.: Pollen-based continental

40   climate reconstructions at 6 and 21 ka: a global synthesis. Clim. Dyn., 37, 775-802,

41   https://doi.org/10.1007/s00382-010-0904-1, 2011.

42