



## Supplement of

## The impact of the North American glacial topography on the evolution of the Eurasian ice sheet over the last glacial cycle

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**Figure S1.** The JJA (June–August) surface albedo in Eurasia from the EAonly simulations (a,b,e), and JJA surface albedo anomalies induced by the North American ice sheet (the difference between fullGlacial and EAonly simulations; b,d,f) for MIS5b (a,b), MIS4 (c,d) and LGM (e,f).



**Figure S2.** The initial surface mass balance in Eurasia (in m  $yr^{-1}$ ) derived from the EAonly (a,c,e) and full-Glacial (b,d,f) simulations for MIS5b (a,b), MIS4 (c,d) and LGM (e,f).



**Figure S3.** The stationary wavenumber  $K_s$  (Eq. A1 in the manuscript) calculated using the JJA climatology of the zonal-mean zonal wind at 300 hPa from the MIS5b (dashed line), MIS4 (thin solid line) and LGM (thick solid line) EAonly simulations.



Figure S4. JJA surface temperature: same as Fig. 2c-h in the main paper, but with BO2009 OHT.



Figure S5. Annual precipitation: same as Fig. 3c-h in the main paper, but with BO2009 OHT.



**Figure S6.** 700 hPa (shading) and 300 hPa (contours) geopotential height anomalies (zonal mean subtracted): same as Fig. 4c-h in the main paper, but with BO2009 OHT.



**Figure S7.** Same as Fig. 6 in the main paper, but using the Kleman et al. (2013) ice-sheet reconstructions (Fig. 1 in the main paper) as initial condition.

## References

Kleman, J., Fastook, J., Ebert, K., Nilsson, J., and Caballero, R.: Pre-LGM Northern Hemisphere ice sheet topography, Climate of the Past, 9, 2365–2378, doi:10.5194/cp-9-2365-2013, 2013.