Supplementary Information for
The role of history and strength of the oceanic forcing in sea-level projections from Antarctica with the Parallel Ice Sheet Model

Ronja Reese[1], Anders Levermann[1,2,3], Torsten Albrecht[1], Hélène Seroussi[4], and Ricarda Winkelmann[1,2]

[1] Potsdam Institute for Climate Impact Research (PIK), Member of the Leibniz Association, P.O. Box 60 12 03, 14412 Potsdam, Germany
[2] University of Potsdam, Institute of Physics and Astronomy, Karl-Liebknecht-Str. 24-25, 14476 Potsdam, Germany
[3] LDEO, Columbia University, New York, USA
[4] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Correspondence: Ronja Reese (ronja.reese@pik-potsdam.de)

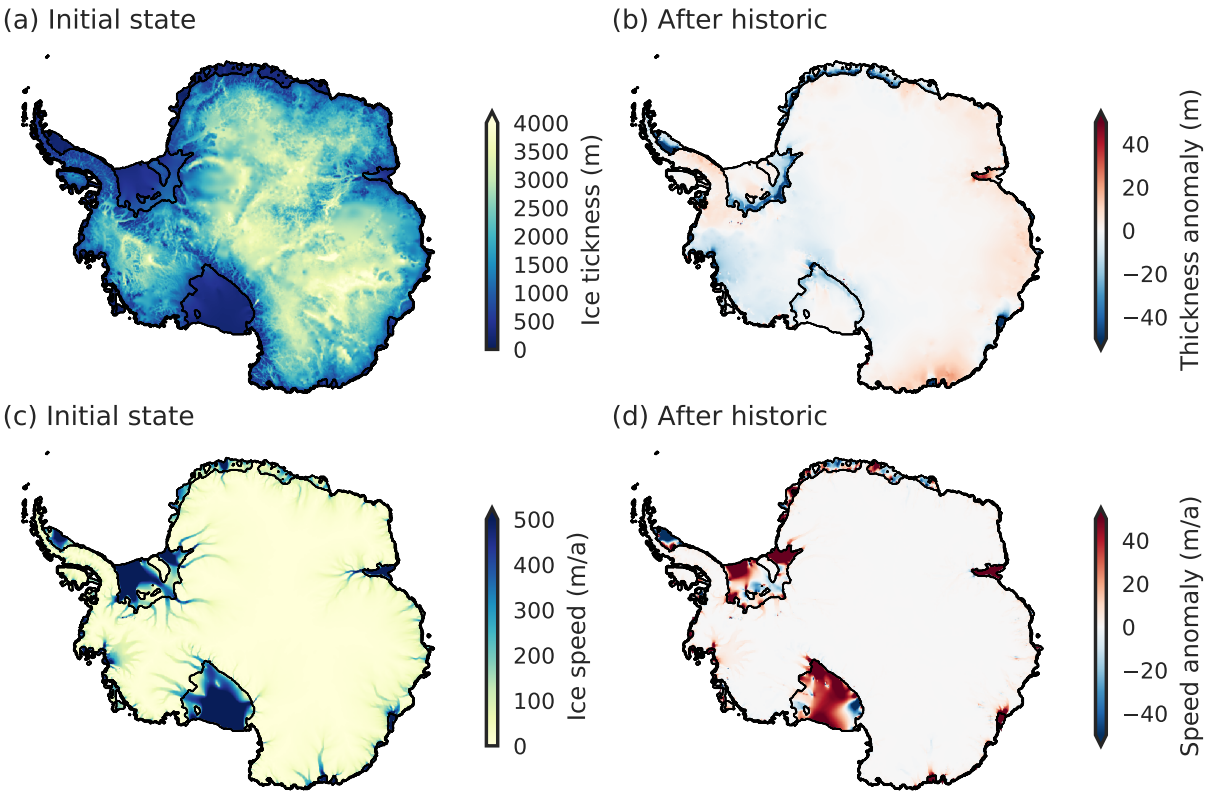

Figure S1. Modelled ice thickness as in **(a)** present-day pseudo-equilibrium configuration, and **(b)** changes after the historic run. Simulated ice speed in **(c)** pseudo-equilibrium and **(d)** changes after the historic run. Black contours indicate the initial (a,c) and final (b,d) grounding line location.

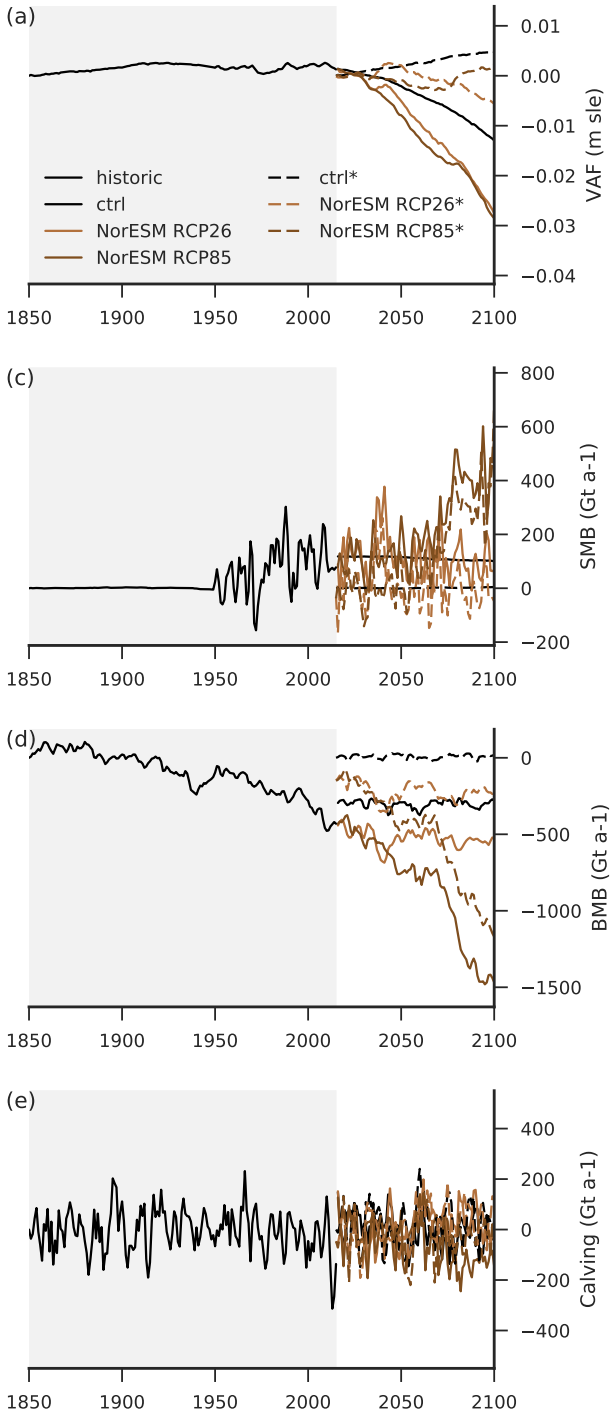

Figure S2. ISMIP6 experiments with (solid lines) and without (dashed lines) historic initialisation. Shown is the evolution of the (a) volume above flotation, (b) surface mass balance, (c) basal mass balance and (d) calving flux at the ice front relative to the starting condition. Experiments are forced with changes in ocean temperature and salinity and surface mass balance and temperatures from the ISMIP6 protocol experiments no. 1 and 3.

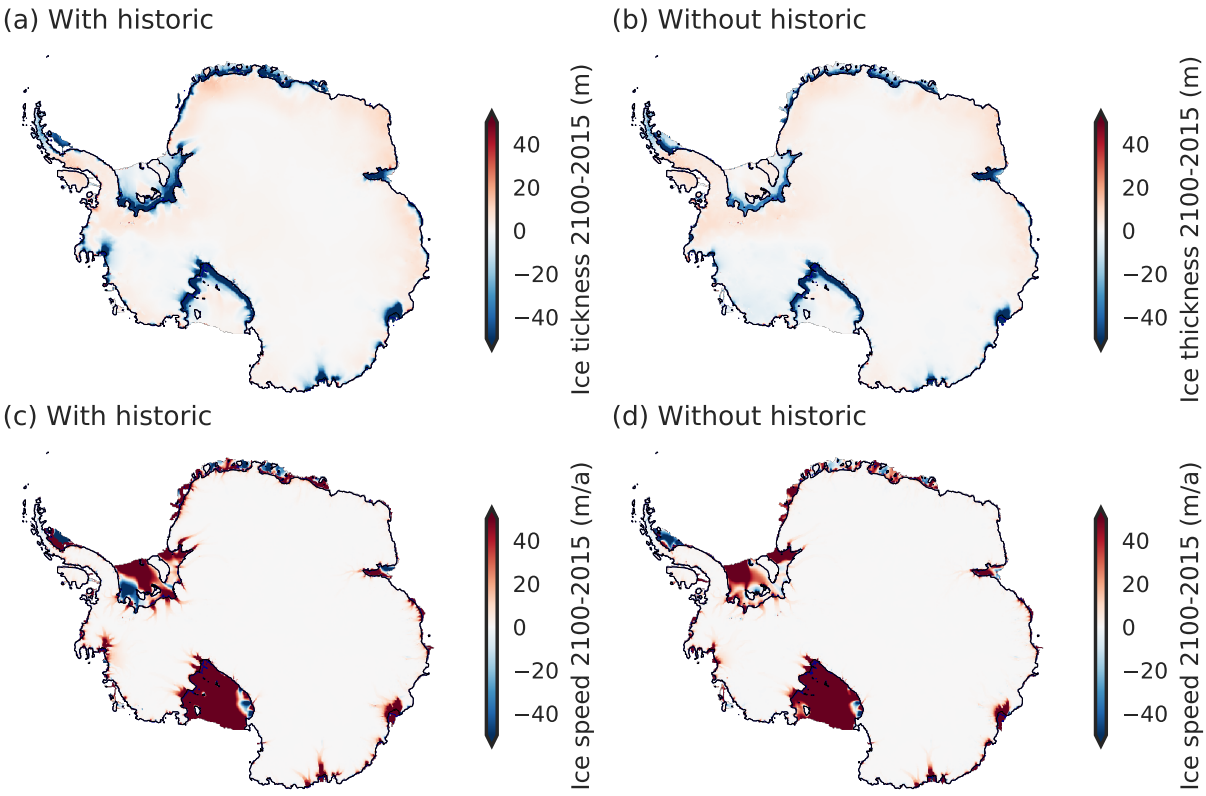

Figure S3. Changes in ice thickness **(a)** with and **(b)** without the historic run between 2100 and 2015. The corresponding changes in ice speed **(c)** with and **(d)** without the historic run for experiment no. 1 from ISMIP6 (NorESM1-M, RCP8.5).