Supplement Figures

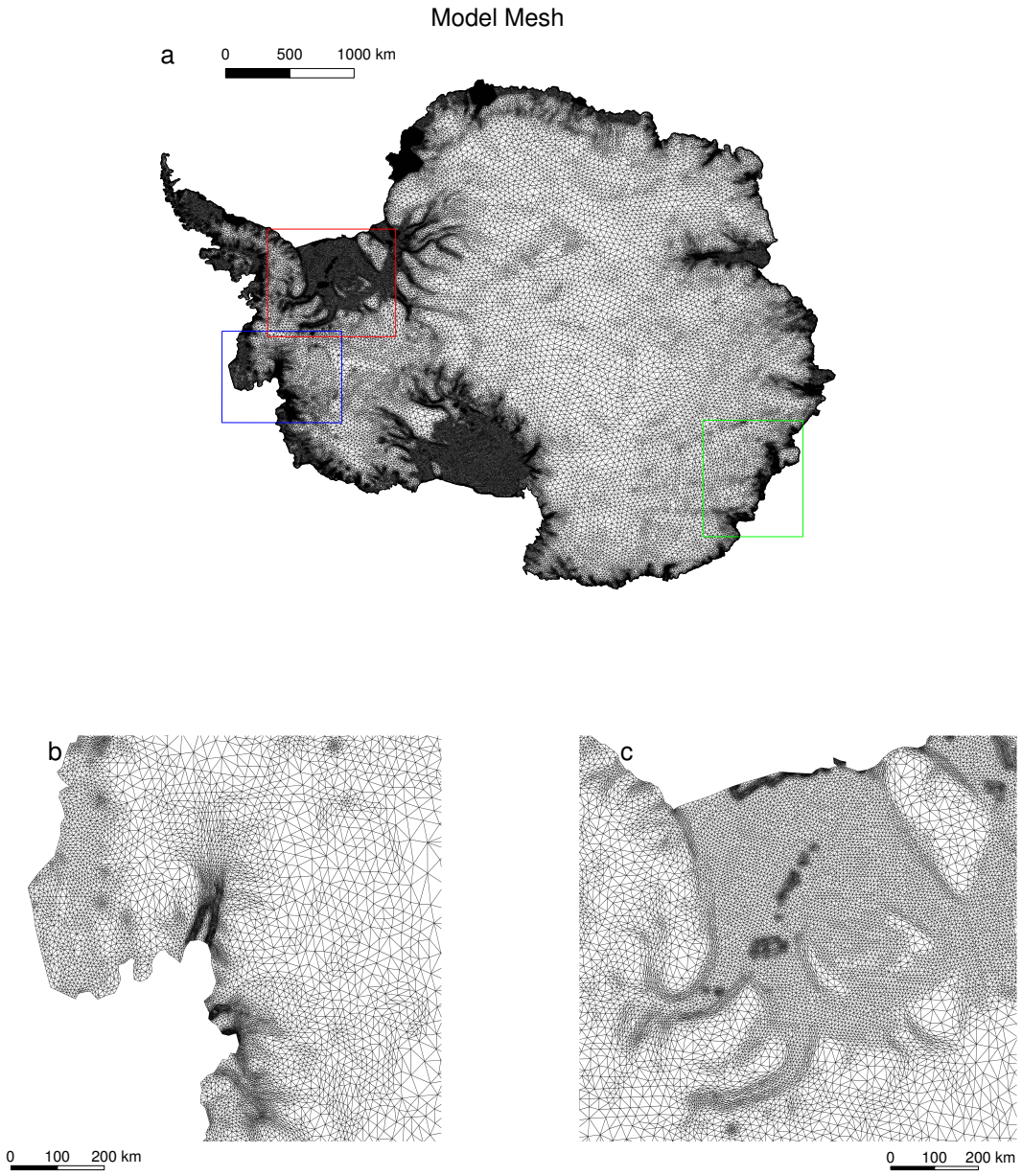

Figure S1. The ISSM Antarctica mesh for (a) the entire ice sheet, (b) Amundsen Sea sector (outlined in blue in (a)), and (c) Ronne Ice Shelf/Evans Ice Stream region (outlined in red in (a)). The green box shows the Wilkes Land (including Moscow University Ice Shelf and Totten Glacier) region (used in Fig. S5e,f).

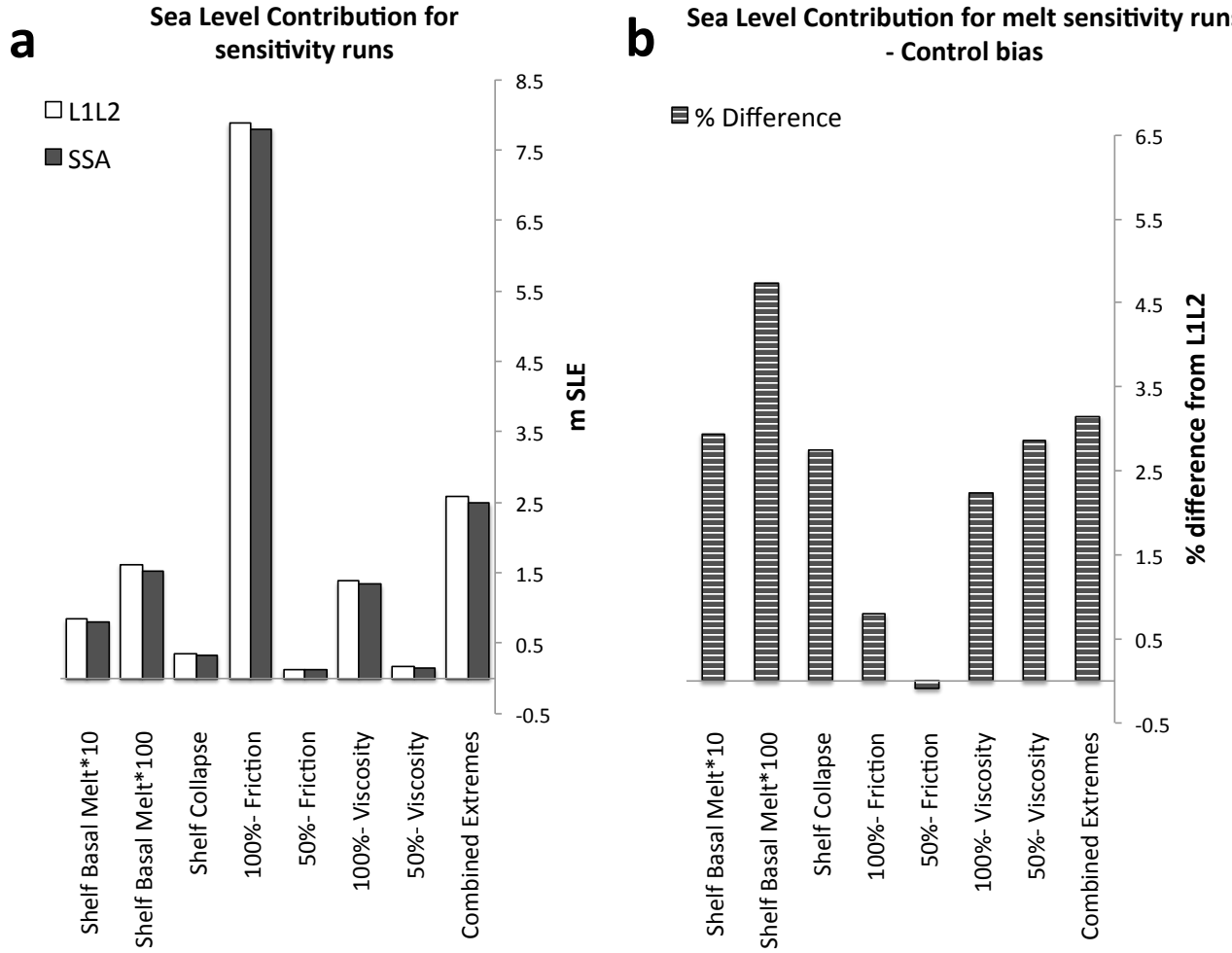

Figure S2. Mean SLE contribution (m) from single 100-year simulations, under various extreme scenarios, including uniform multiplication of ice shelf basal melt by 10 and 100; collapse of all ice shelves; uniform reduction of basal friction by 50% and 99.99%; uniform reduction of ice viscosity by 50% and 99.99%; and a combination of uniform extreme forcing (ice shelf basal melt multiplied by 10, basal friction decreased by 60%, ice viscosity decreased by 40%, and accumulation decreased by 50%). The combination results shown are equivalent to the max endmember of a UB 1-partition sampling experiment. (a) Comparison of results for these sensitivity experiments run for two different stress balance equations: L1L2 and SSA. (b) Percent difference between SSA and L1L2 simulations, corrected for the bias in their respective control runs. Note that the difference between all runs after 100 years is less than 5%.

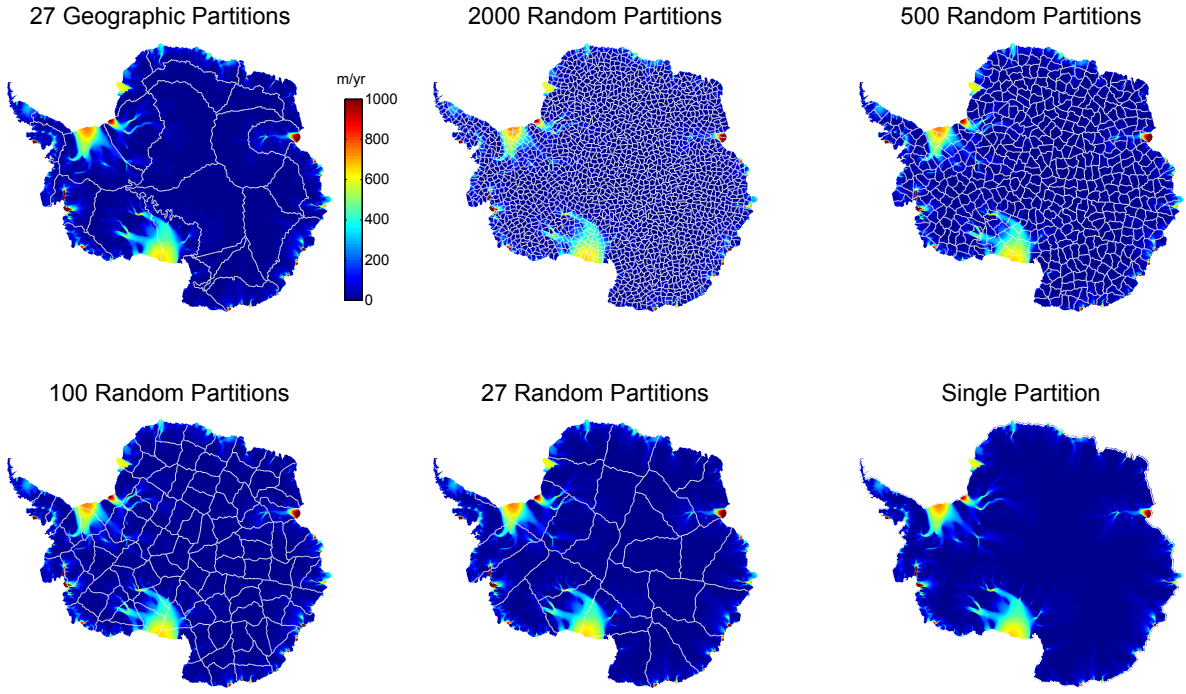

Figure S3. Various partition configurations corresponding to the sampling experiments featured in Fig. 2, plotted over initial modeled surface ice velocities (m y^{-1}).

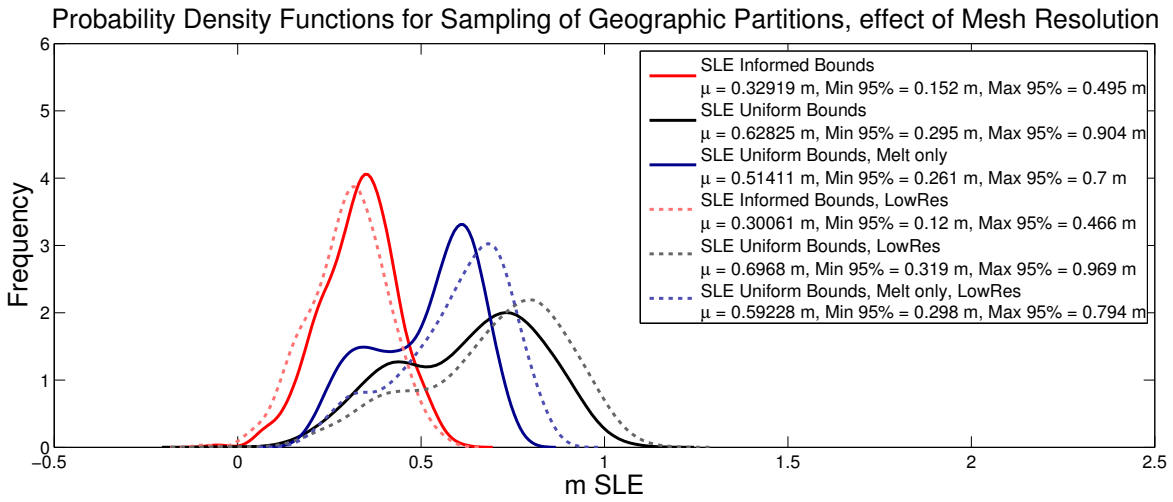

Figure S4. Comparison of SLE (m) PDFs for simulations performed with high (solid lines) and low (LowRes, dotted lines) mesh resolution. Ensemble runs of 800 simulations run with GP partitioning include UB combined variable (black) experiments, IB combined variable (red) experiments, and the UB melt only (dark blue) experiments.

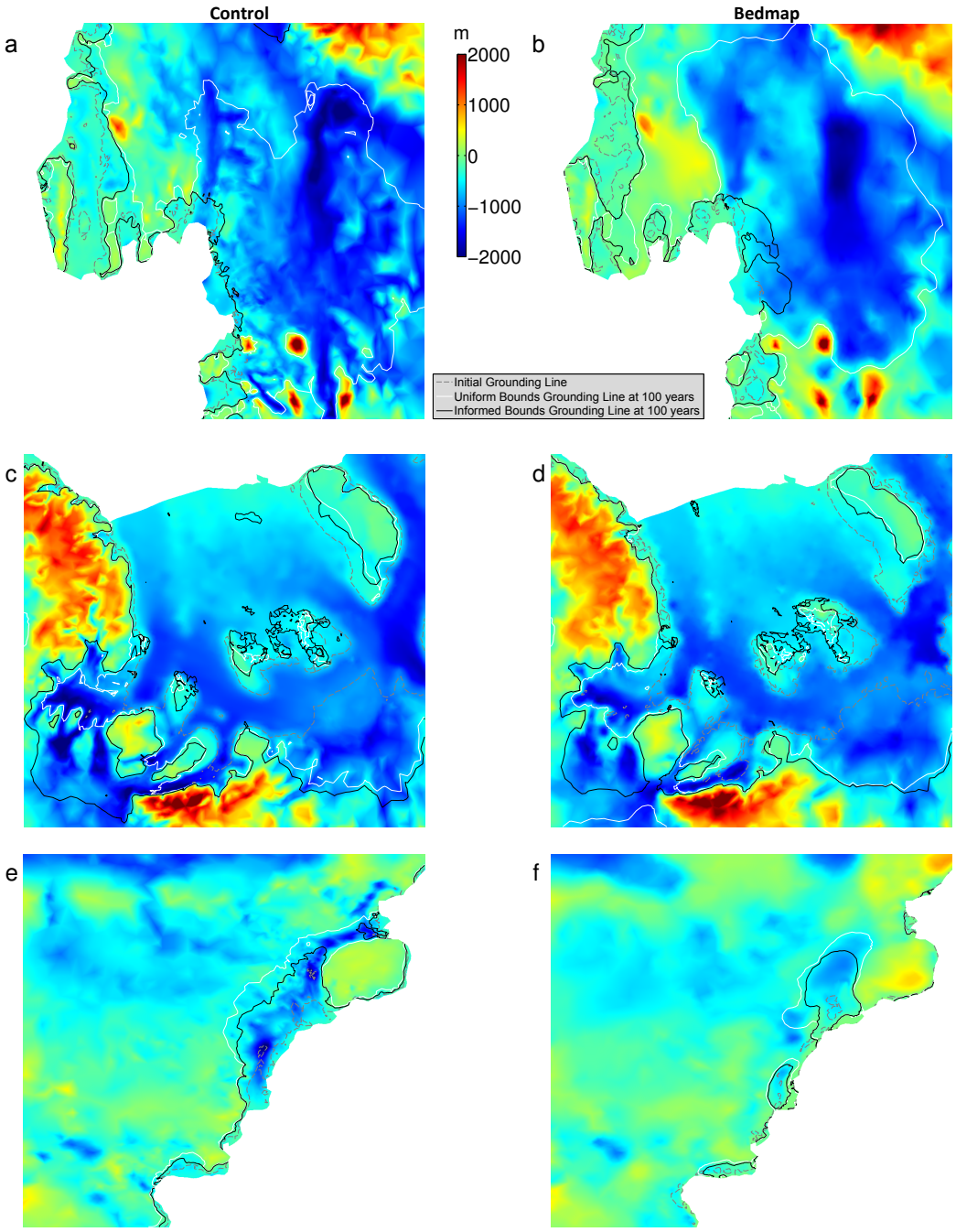

Figure S5. Regional bed topography used in ISSM for simulations performed with the Bedmap2/MC (left panels) and Bedmap1 bedrock topographies (right panels). Regions included are: (a,b) Amundsen Sea, particularly Pine Island and Thwaites Glaciers (blue inset in Fig. S1), (c,d) Ronne Ice Shelf, Evans Ice Stream (red inset in Fig. S1) and (e,f) Wilkes Land, including Moscow University Ice Shelf and Totten Glacier (green inset in Fig. S1). Gray dashed lines are the initial grounding line positions. White solid lines and black solid lines are respectively the grounding line positions for the single extreme scenarios highlighted in Fig. S6 for the UB and IB combined variable runs.

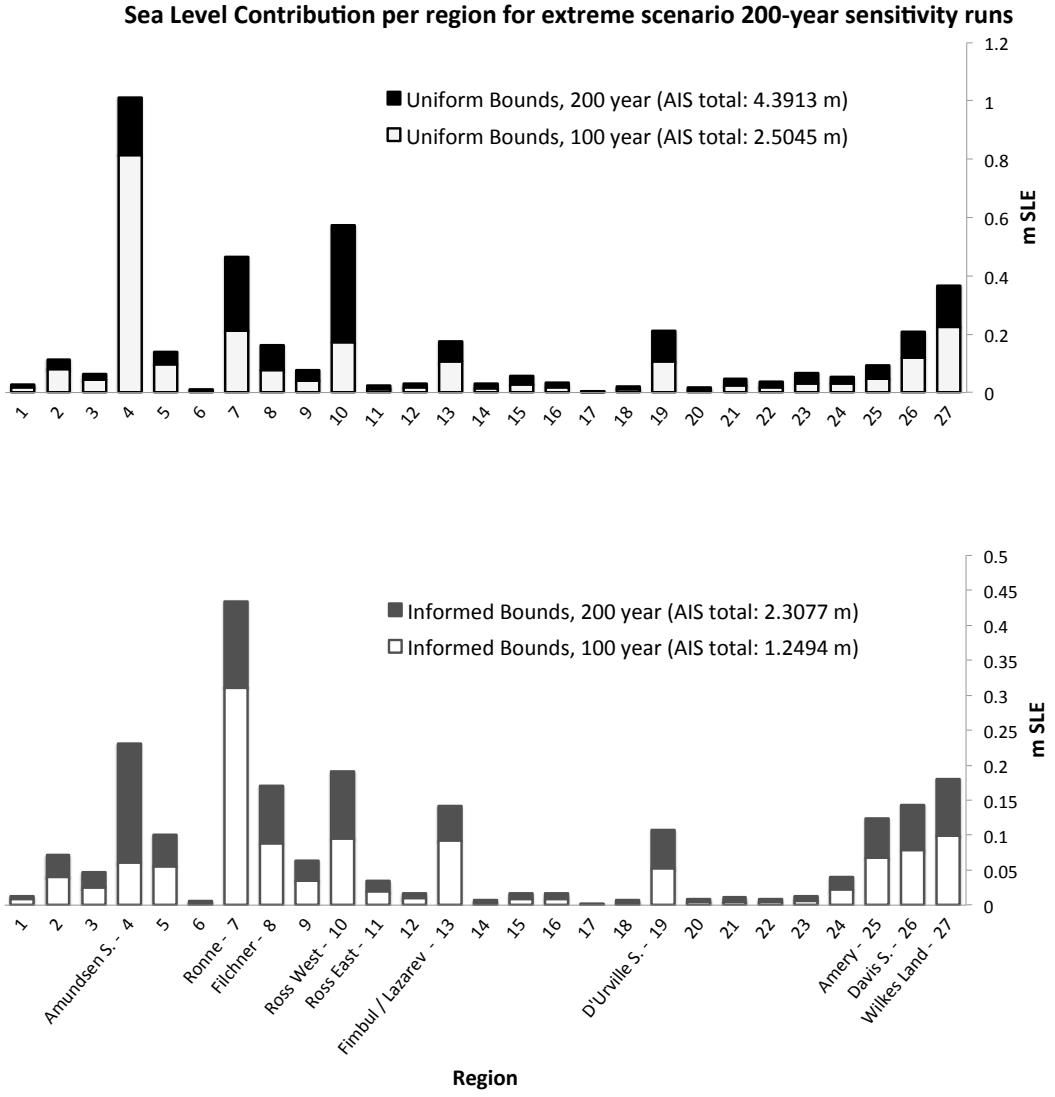

Figure S6. SLE contribution (m, with respect to a control run) from single AIS runs (200-year simulations) under extreme warming scenarios from the UB and IB experiments. Top: extreme scenario from the UB scenario (combination of ice shelf basal melt multiplied by 10, basal friction decreased by 60%, ice viscosity decreased by 40%, and accumulation decreased by 50%). Bottom: extreme scenario from the IB scenario (combination of parameter values set at informed extreme bounds, determined regionally). These two runs represent the regional SLE contribution far right endmember (maximum possible contribution) of the UB 1-partition (UB_1) and IB geographic partition (IB_27GP) sampling experiments. (See Table 1 and Table 2 respectively for details about simulation bounds.)