

Supplementary material

Design and results of the ice sheet model initialisation experiments initMIP-Greenland: an ISMIP6 intercomparison

Heiko Goelzer et al. (2017)

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Table S1 Modelled present-day ice area, ice volume, assumed positive and negative SMB and mass trends in forward experiments for all participating models.

Model ID	Initial ice area (10^{12} m ²)	Initial ice volume (10^{15} m ³)	Initial positive SMB (Gt yr ⁻¹)	Initial negative SMB (Gt yr ⁻¹)	Mass trend in <i>ctrl</i> (mm SLE)	Mass trend in <i>asmb-ctrl</i> (mm SLE)
ARC-PISM	1.6998	2.9797	456.47	-222.27	1	141
AWI-ISSM1	1.7660	2.9822	529.01	-209.26	-25	127
AWI-ISSM2	1.7660	2.9822	529.01	-209.26	-25	127
BGC-BISICLES1	1.7225	2.9915	448.61	-103.12	14	106
BGC-BISICLES2	1.7323	3.0017	450.65	-103.49	8	111
BGC-BISICLES3	1.7465	3.0295	452.57	-102.43	-1	119
DMI-PISM1	1.8974	3.1881	1122.96	-3.00	55	205
DMI-PISM2	1.9388	3.2303	1151.06	-2.24	55	218
DMI-PISM3	1.9708	3.2631	1175.97	-1.02	52	234
DMI-PISM4	2.0025	3.2942	1198.00	-0.49	45	249
DMI-PISM5	2.0971	3.4113	1255.71	0.00	42	289
IGE-ELMER1	1.7747	2.9892	556.77	-192.72	3	108
IGE-ELMER2	1.7664	2.9976	534.58	-193.42	3	108
ILTS-SICOPOLIS	1.6586	2.9168	560.46	-95.97	20	92
ILTSPK-SICOPOLIS	1.8553	3.2157	531.05	-428.30	-2	172
IMAU-IMAUICE1	1.7393	2.9898	524.10	-188.62	0	134
IMAU-IMAUICE2	1.7763	3.0572	517.88	-231.18	0	137
IMAU-IMAUICE3	1.7692	3.2636	517.19	-205.02	0	142
JPL-ISSM	1.7152	2.9752	530.59	-163.68	-2	117
LANL-CISM	1.6610	2.9047	467.39	-156.99	1	115
LSCE-GRISLI	1.7720	2.9976	615.05	-165.27	-1	131
MIROC-ICIES1	1.7137	2.9369	538.80	-107.75	18	95
MIROC-ICIES2	2.0227	2.9622	746.75	-139.28	1	226
MPIM-PISM	2.0703	3.4362	473.16	-297.88	6	273
UAF-PISM1	1.6866	2.9657	522.94	-192.78	6	93
UAF-PISM2	1.7097	2.9795	519.73	-330.78	9	100
UAF-PISM3	1.6940	2.9823	518.44	-214.11	-19	104
UAF-PISM4	1.8837	2.8907	519.83	-1597.41	80	98
UAF-PISM5	1.9125	2.9075	516.76	-1799.81	97	99
UAF-PISM6	1.8917	2.9102	515.16	-1774.30	84	106
UCIJPL-ISSM	1.7469	2.9878	570.22	-85.88	7	87
ULB-FETISH1	1.6596	2.9631	508.40	-164.82	0	74
ULB-FETISH2	1.6812	2.9443	504.11	-201.30	-91	116
VUB-GISM1	1.9436	3.1465	606.43	-322.94	12	167
VUB-GISM2	1.9398	3.1467	601.84	-329.43	13	166

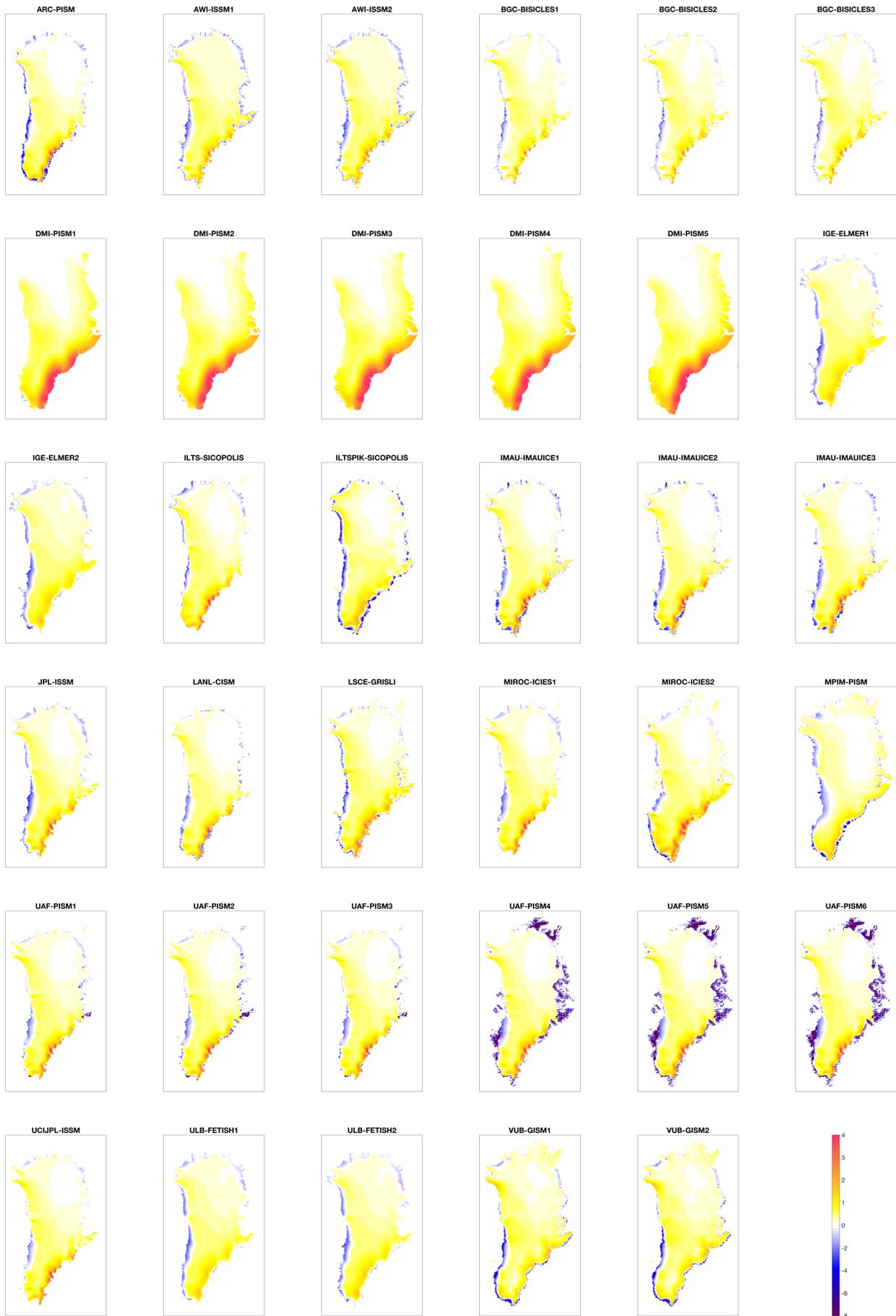


Figure S1: Initial surface mass balance forcing. The data are masked to the ice mask of each individual model.

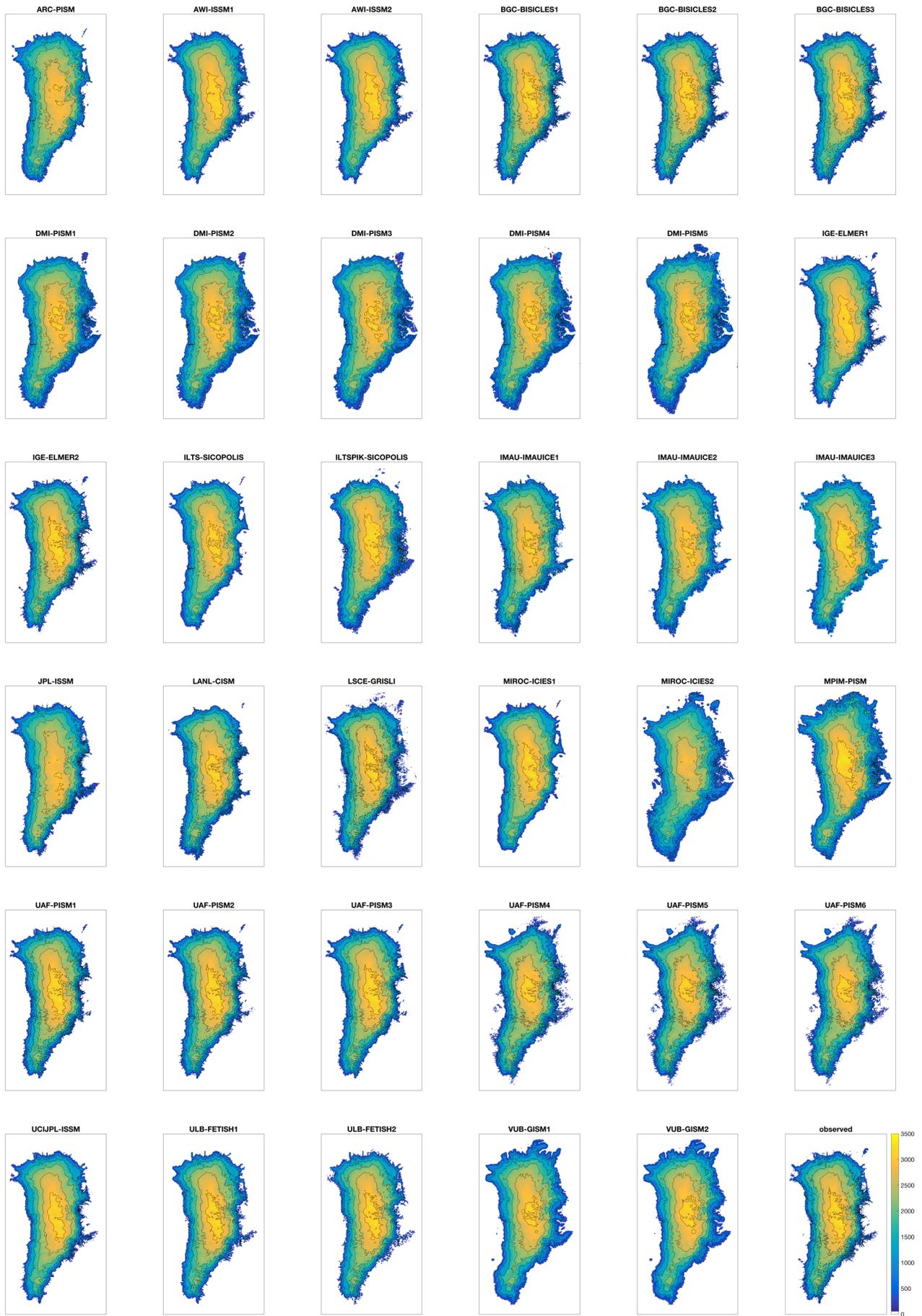


Figure S2: Ice thickness at the end of experiment *init*. The data are masked to the ice mask of each individual model. Observations in the lower right are from Morlighem et al. (2014)

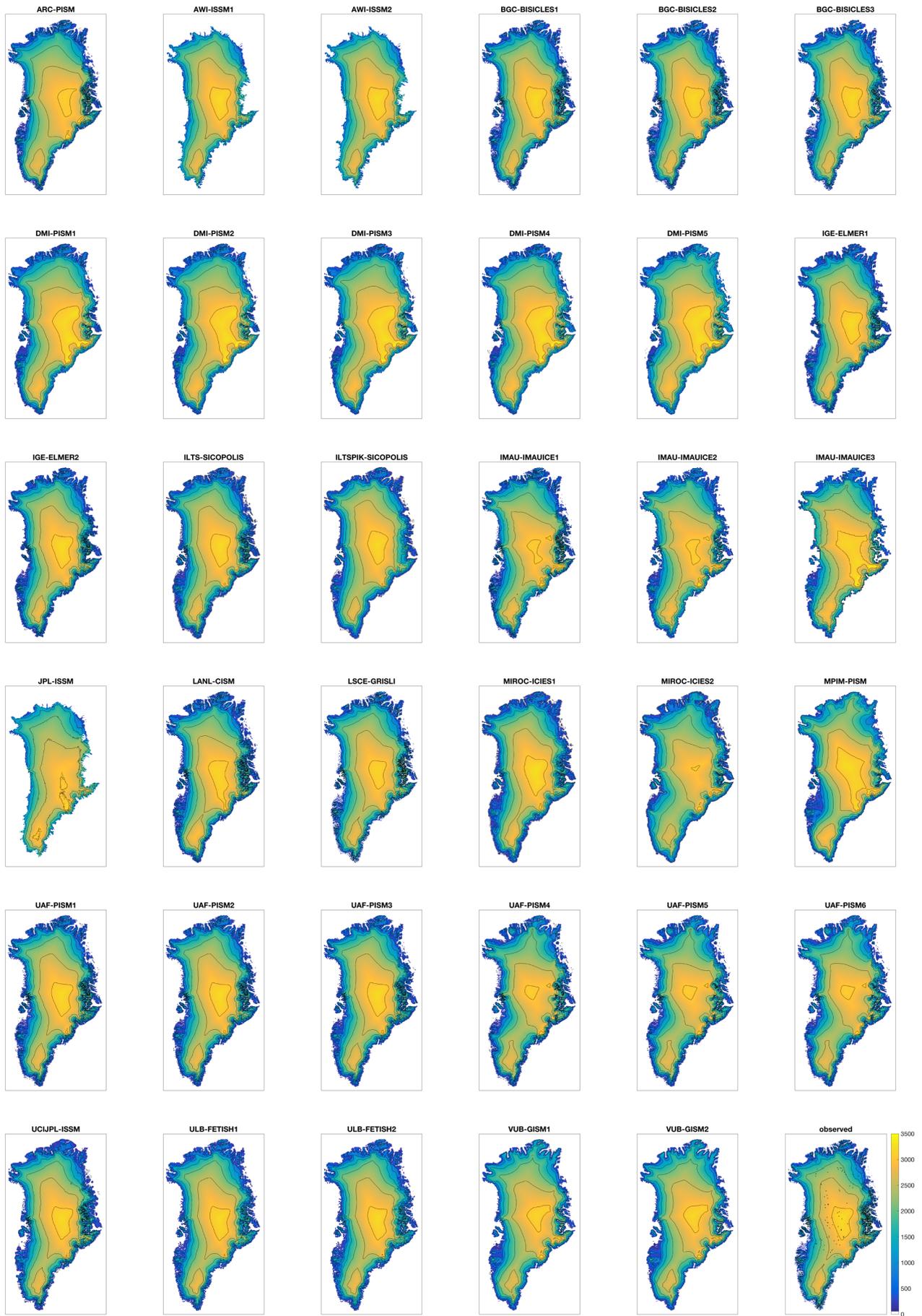


Figure S3: Initial surface elevation. The data are masked to the continent mask of each individual model except for AWI and JPL, where surface elevation is not defined outside of the ice sheet mask. Observations in the lower right are from Morlighem et al. (2014).

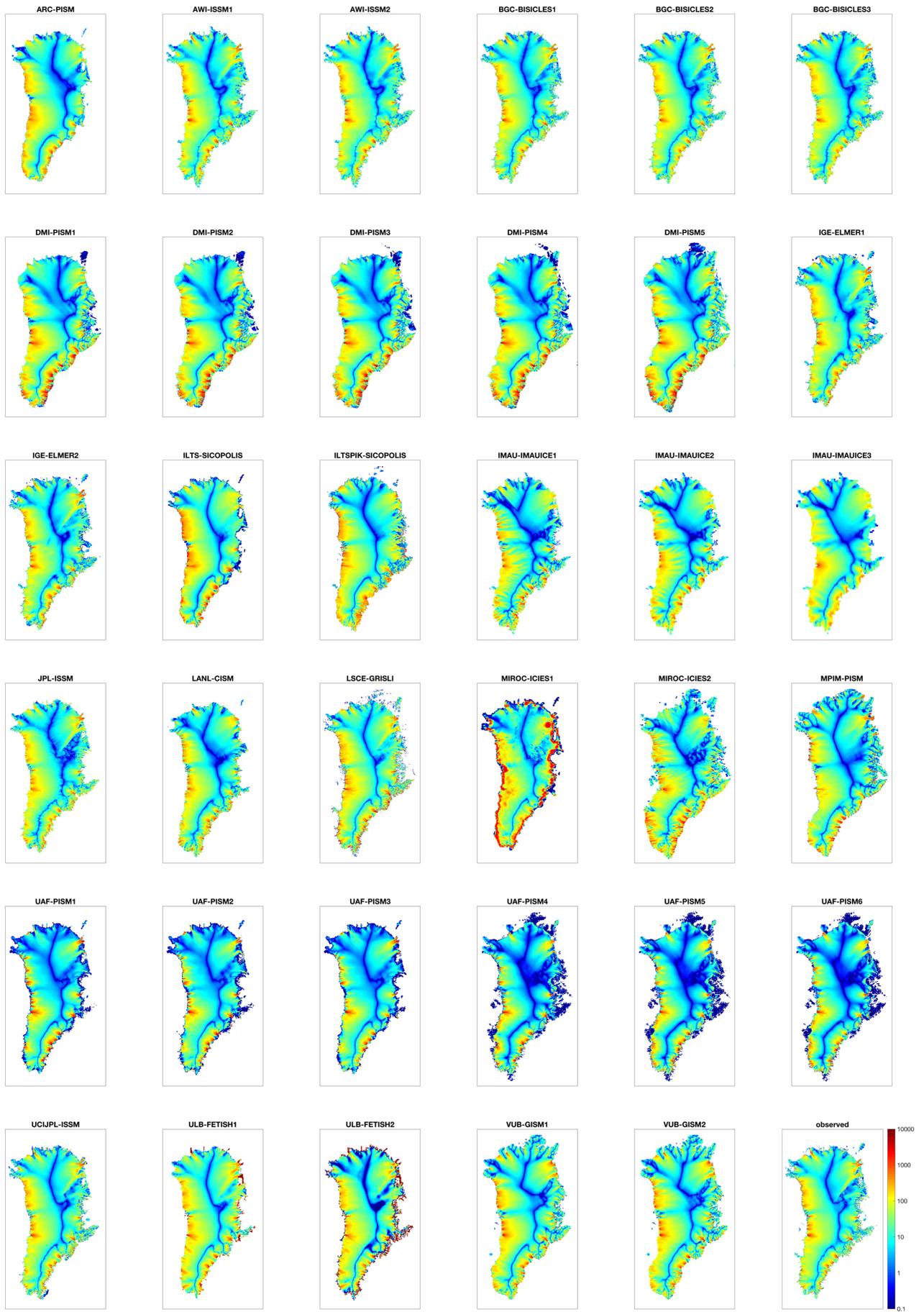


Figure S4: Initial vertically averaged horizontal velocity magnitude. The data are masked to the ice mask of each individual model. Observations in the lower right are from Joughin et al. (2016).

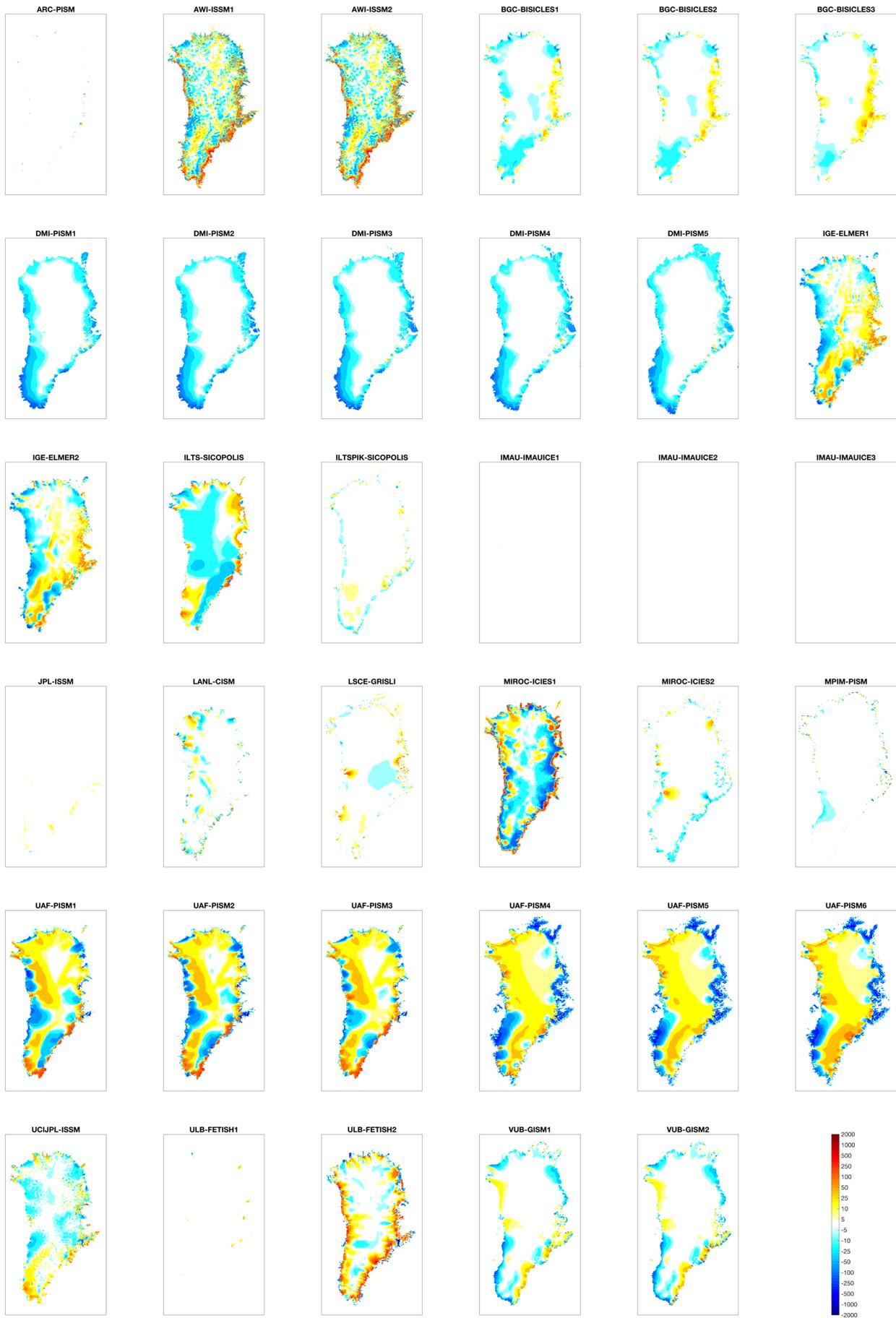


Figure S5: Ice thickness change in experiment *ctrl* after 100 years. Note the nonlinear contour intervals.

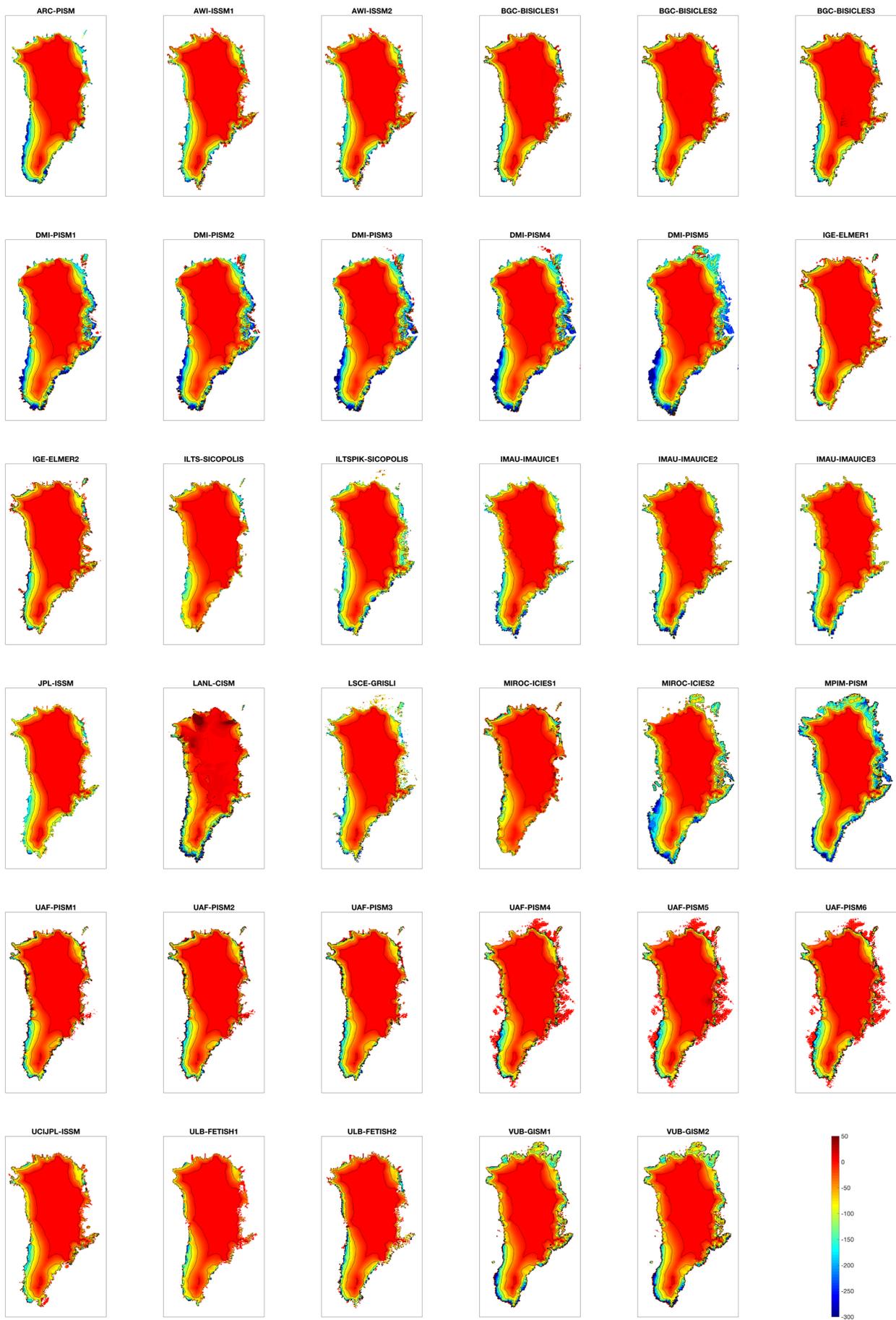


Figure S6: Difference in ice thickness change ($asmb - ctrl$) after 100 years.

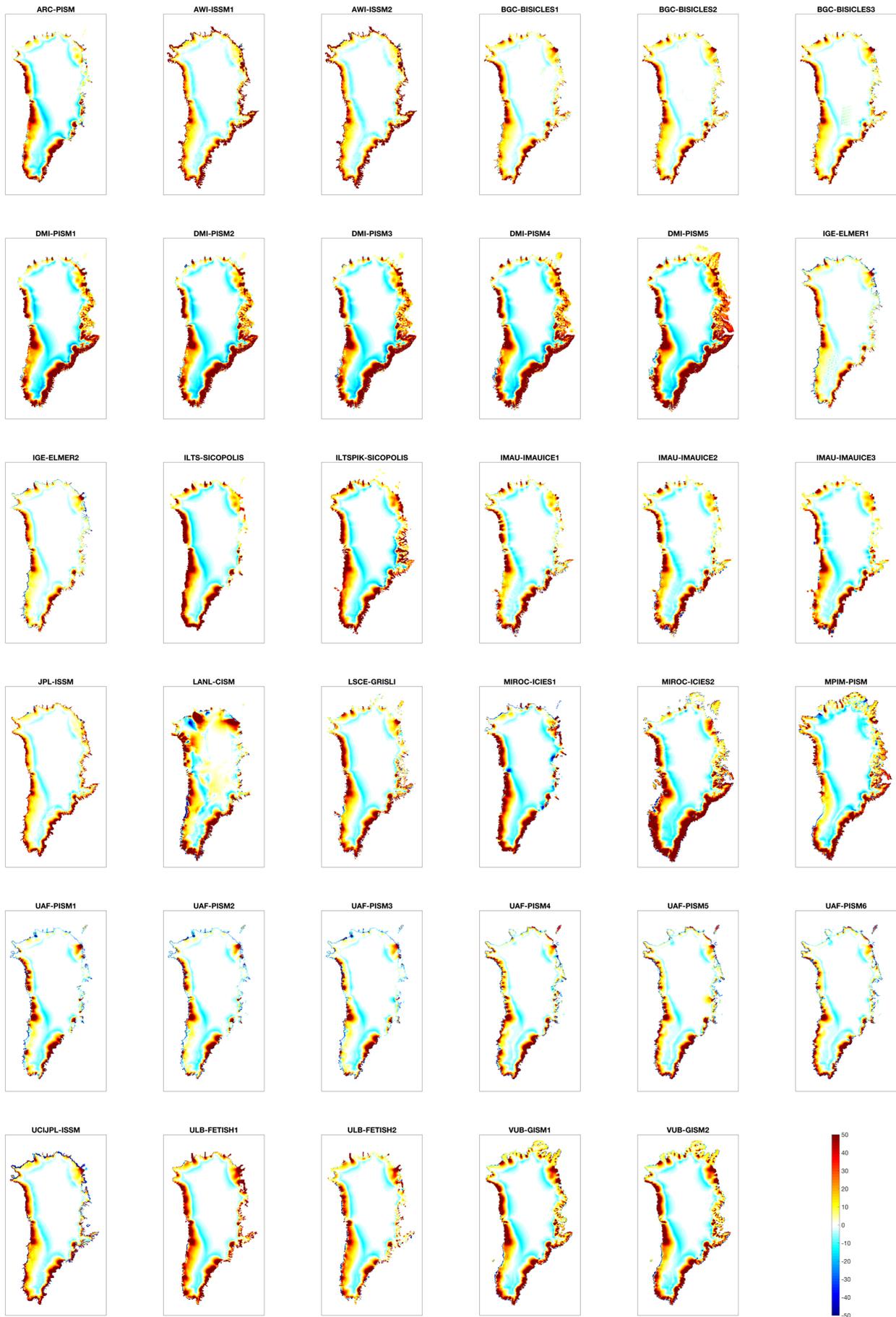


Figure S7: Dynamic ice thickness change after 100 years. This diagnostic is calculated as the residual between the time-integrated SMB anomaly and the difference in modelled ice thickness change ($asmb - ctrl$). Positive values indicate dynamic thickening, where less ice is lost compared to what the time-integrated SMB anomaly alone would predict.