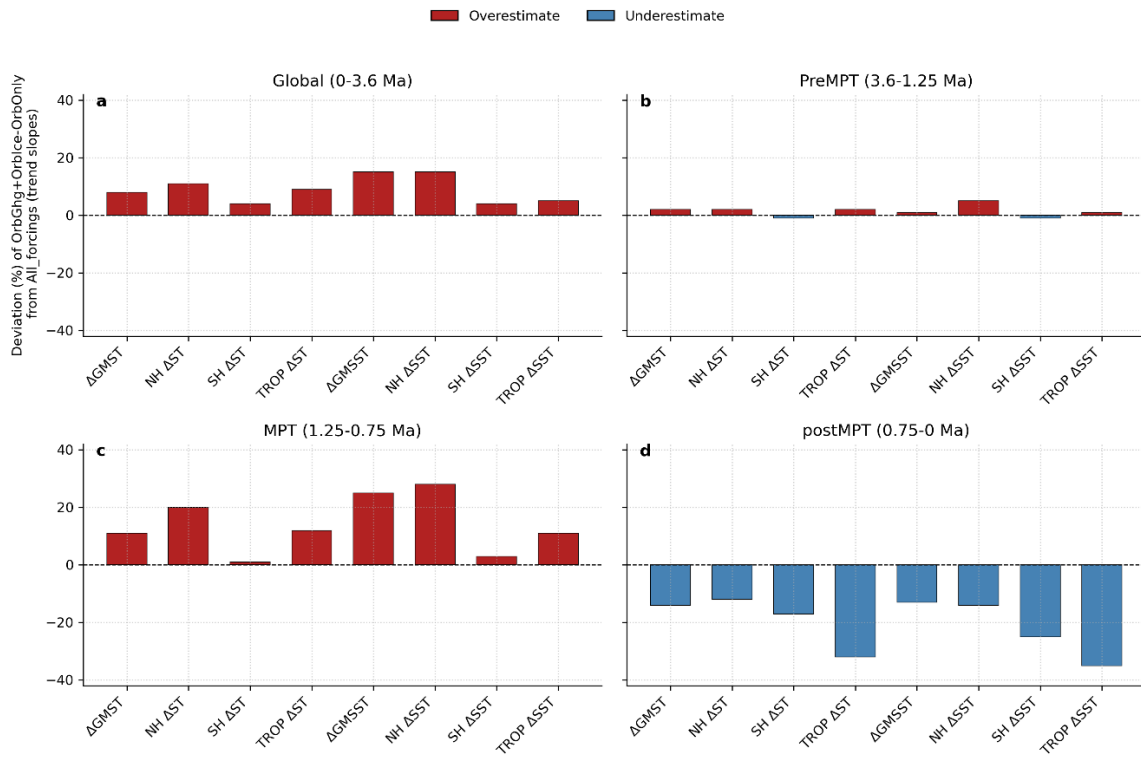
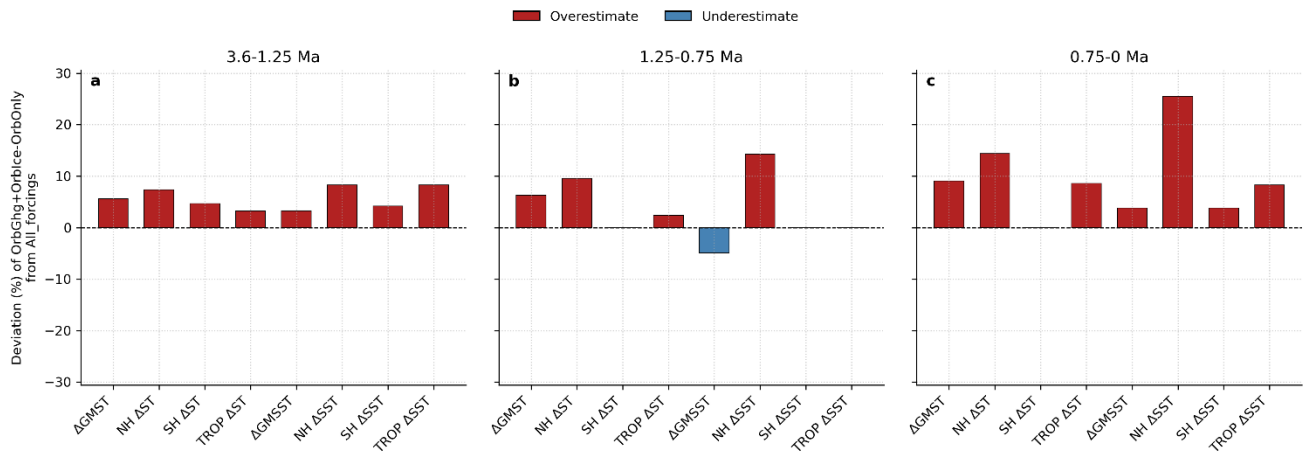




(a)



(b)

Figure 1: Deviation of OrbGhg + OrbIce - Orb from All_forcings trends (a) and amplitude of glacial-interglacial variability (b). Deviations are expressed as percentages of All_forcings temperature trends and mean absolute deviations from the mean, for global mean surface and sea surface temperatures ($\Delta GMST$, $\Delta GMSST$), and Northern and Southern hemisphere surface and sea surface temperatures (NH ΔST , NH ΔSST , SH ΔST , SH ΔSST). Values are shown for 3.6–1.25 Ma, 1.25–0.75 Ma, 0.75–0 Ma, and for the full period (3.6–0 Ma) in (a).

PreMPT (3.6 Ma - 1250 ka)	All_forcings	OrbGhg+OrbIce-Orb	OrbGhg	OrbIce	Orb
Δ GMST	0.54	0.57 (106% of All)	0.30 (56% of All)	0.38 (70% of All)	0.16 (30% of All)
Δ GMSST	0.30	0.31 (103%)	0.17 (57%)	0.22 (73%)	0.07 (23%)
NH Δ ST	0.68	0.73 (107%)	0.39 (56%)	0.51 (70%)	0.27 (40%)
NH Δ SST	0.36	0.39 (108%)	0.25 (69%)	0.28 (78%)	0.16 (44%)
SH Δ ST	0.43	0.45 (105%)	0.24 (56%)	0.30 (70%)	0.10 (23%)
SH Δ SST	0.24	0.25 (104%)	0.16 (67%)	0.17 (71%)	0.09 (37%)
TROP Δ ST	0.31	0.32 (103%)	0.23 (74%)	0.23 (74%)	0.19 (61%)
TROP Δ SST	0.24	0.26 (108%)	0.18 (75%)	0.18 (75%)	0.14 (58%)
MPT (1250 - 750 ka)	All_forcings	OrbGhg+OrbIce-Orb	OrbGhg	OrbIce	Orb
Δ GMST	0.80	0.85 (106% of All)	0.46 (58% of All)	0.46 (58% of All)	0.16 (20% of All)
Δ GMSST	0.41	0.39 (95%)	0.29 (71%)	0.22 (54%)	0.07 (17%)
NH Δ ST	1.04	1.14 (110%)	0.59 (58%)	0.67 (64%)	0.29 (28%)
NH Δ SST	0.42	0.48 (114%)	0.38 (91%)	0.26 (62%)	0.17 (40%)
SH Δ ST	0.56	0.56 (100%)	0.35 (62%)	0.29 (52%)	0.10 (18%)
SH Δ SST	0.32	0.32 (100%)	0.22 (69%)	0.15 (47%)	0.10 (31%)
TROP Δ ST	0.42	0.43 (102%)	0.35 (83%)	0.22 (52%)	0.20 (48%)
TROP Δ SST	0.35	0.35 (100%)	0.28 (80%)	0.17 (49%)	0.15 (43%)
postMPT (750 ka - 0)	All_forcings	OrbGhg+OrbIce-Orb	OrbGhg	OrbIce	Orb
Δ GMST	1.10	1.20 (109% of All)	0.69 (63% of All)	0.58 (53% of All)	0.16 (15% of All)
Δ GMSST	0.53	0.55 (104%)	0.43 (81%)	0.25 (47%)	0.07 (13%)
NH Δ ST	1.32	1.51 (114%)	0.84 (64%)	0.81 (61%)	0.28 (21%)
NH Δ SST	0.47	0.59 (126%)	0.50 (101%)	0.22 (47%)	0.16 (34%)
SH Δ ST	0.88	0.88 (100%)	0.55 (62%)	0.38 (43%)	0.11 (13%)
SH Δ SST	0.52	0.54 (104%)	0.36 (69%)	0.21 (40%)	0.09 (17%)
TROP Δ ST	0.58	0.63 (109%)	0.52 (90%)	0.20 (34%)	0.19 (33%)
TROP Δ SST	0.48	0.52 (108%)	0.42 (87%)	0.16 (33%)	0.13 (27%)

Table A1: Mean absolute deviation ($^{\circ}\text{C}$) from the mean for temperatures from each snapshot set (All_forcings, the linear combination OrbGhg+OrbIce-OrbOnly, OrbGhg, OrbIce, and OrbOnly) ($\text{abs_deviation} = |\text{TSdetrend} - \text{TS_detrend}|$). Percentages indicate the fraction of variability relative to All_forcings within each time interval: 3.6–1.25 Ma (prior to MPT), 1.25–0.75 Ma (during the MPT) and 0.75–0 Ma (after the MPT).

Global (0 - 3.6 Ma)	All_forcings	OrbGhg+OrbIce-Orb	OrbGhg	OrbIce	Orb
ΔGMST	-1.49	-1.61 (108% of All)	-1.08 (72% of All)	-0.53 (36% of All)	0.0
ΔGMSST	-0.78	-0.90 (115%)	-0.68 (87%)	-0.22 (28%)	0.0
NH ΔST	-1.84	-2.04 (111%)	-1.32 (72%)	-0.72 (40%)	0.0
NH ΔSST	-0.88	-1.01 (115%)	-0.81 (92%)	-0.20 (23%)	0.0
SH ΔST	-1.11	-1.15 (104%)	-0.83 (73%)	-0.32 (29%)	0.0
SH ΔSST	-0.68	-0.71 (104%)	-0.55 (81%)	-0.16 (24%)	0.0
TROP ΔST	-0.96	-1.05 (109%)	-0.86 (90%)	-0.19 (20%)	0.0
TROPΔSST	-0.78	-0.82 (105%)	-0.67 (86%)	-0.15 (19%)	0.0
PreMPT (3.6 Ma - 1250 ka)	All_forcings	OrbGhg+OrbIce-Orb	OrbGhg	OrbIce	Orb
ΔGMST	-1.61	-1.64 (102% of All)	-1.14 (71% of All)	-0.50 (31% of All)	0.0
ΔGMSST	-0.80	-0.81 (101%)	-0.65 (81%)	-0.16 (20%)	0.0
NH ΔST	-2.03	-2.08 (102%)	-1.40 (69%)	-0.68 (33%)	0.0
NH ΔSST	-1.01	-1.06 (105%)	-0.87 (87%)	-0.19 (19%)	0.0
SH ΔST	-1.17	-1.16 (99%)	-0.86 (73%)	-0.30 (26%)	0.0
SH ΔSST	-0.70	-0.69 (99%)	-0.57 (81%)	-0.12 (17%)	0.0
TROP ΔST	-1.08	-1.10 (102%)	-0.93 (86%)	-0.17 (16%)	0.0
TROPΔSST	-0.83	-0.84 (101%)	-0.71 (86%)	-0.13 (16%)	0.0
MPT (1250 - 750 ka)	All_forcings	OrbGhg+OrbIce-Orb	OrbGhg	OrbIce	Orb
ΔGMST	-2.88	-3.21 (111% of All)	-2.17 (75% of All)	-1.16 (40% of All)	-0.12 (4% of All_forcings)
ΔGMSST	-1.55	-1.94 (125%)	-1.34 (86%)	-0.55 (35%)	0.05 (3%)
NH ΔST	-3.23	-3.86 (120%)	-2.62 (81%)	-1.34 (41%)	-0.10 (3%)
NH ΔSST	-1.46	-1.87 (128%)	-1.59 (109%)	-0.34 (23%)	-0.06 (4%)
SH ΔST	-2.48	-2.50 (101%)	-1.70 (68%)	-0.94 (38%)	-0.14 (6%)
SH ΔSST	-1.48	-1.53 (103%)	-1.12 (76%)	-0.49 (33%)	-0.08 (5%)
TROP ΔST	-1.74	-1.95 (112%)	-1.62 (93%)	-0.40 (23%)	-0.07 (4%)
TROP ΔSST	-1.45	-1.61 (111%)	-1.33 (92%)	-0.35 (24%)	-0.07 (5%)
postMPT (750 ka - 0)	All_forcings	OrbGhg+OrbIce-Orb	OrbGhg	OrbIce	Orb
ΔGMST	0.66	0.57 (86% of All)	0.33 (50% of All)	0.24 (36% of All)	0.0
ΔGMSST	0.31	0.27 (87%)	0.20 (64%)	0.07 (22%)	0.0
NH ΔST	0.78	0.69 (88%)	0.38 (49%)	0.31 (40%)	0.0
NH ΔSST	0.37	0.32 (86%)	0.23 (62%)	0.09 (24%)	0.0
SH ΔST	0.53	0.44 (83%)	0.27 (51%)	0.17 (32%)	0.0
SH ΔSST	0.32	0.24 (75%)	0.17 (53%)	0.07 (22%)	0.0
TROP ΔST	0.40	0.27 (68%)	0.21 (53%)	0.06 (15%)	0.0
TROP ΔSST	0.34	0.22 (65%)	0.17 (50%)	0.05 (15%)	0.0

Table A2: Temperature trend slopes relative to All_forcings Slopes (in °C/Ma) for each simulation set (All_forcings, the linear combination OrbGhg+OrbIce-OrbOnly, OrbGhg, OrbIce and OrbOnly). Percentages indicate the fraction of variability relative to All_forcings within each time interval: 3.6–1.25 Ma (prior to MPT), 1.25–0.75 Ma (during the MPT) and 0.75–0 Ma (after the MPT).

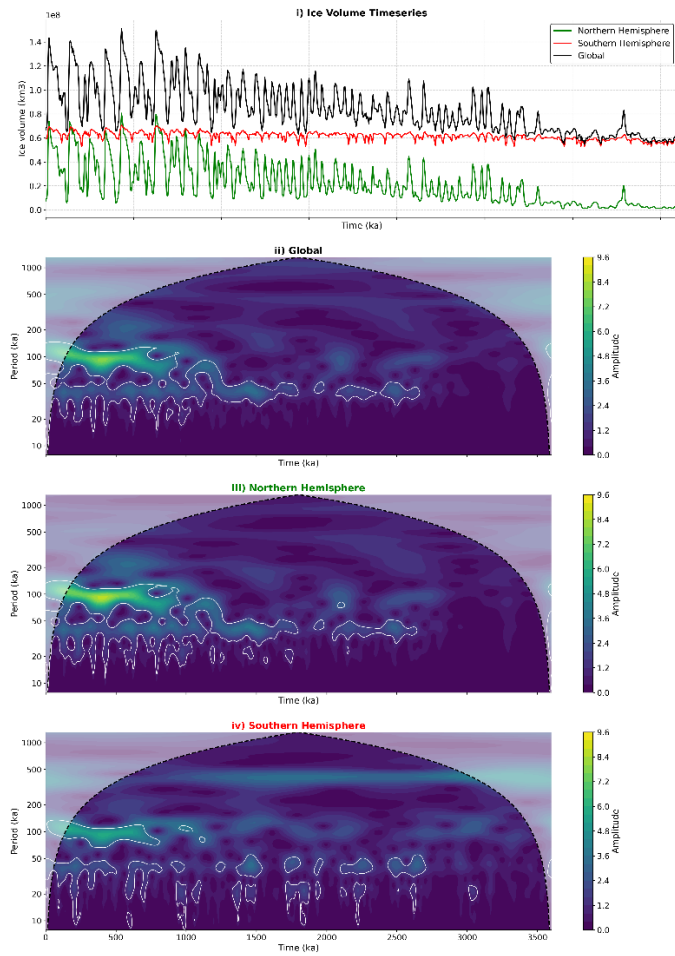


Figure 2: Ice sheet forcings applied to the simulations. i) Global, Northern and Southern hemispheres ice volume evolution prescribed to the snapshots and their associated wavelet power spectra (ii), iii) and iv) respectively.