

Additional Supplementary Table S1 and S2

Model	Members
ACCESS-CM2	r1i1p1f1-r2i1p1f1-r3i1p1f1
ACCESS-ESM1-5	r10i1p1f1-r1i1p1f1-r2i1p1f1-r3i1p1f1-r4i1p1f1-r5i1p1f1-r6i1p1f1-r7i1p1f1-r8i1p1f1-r9i1p1f1
CanESM5-CanOE	r1i1p2f1-r2i1p2f1-r3i1p2f1
CanESM5	r10i1p1f1-r10i1p2f1-r11i1p1f1-r11i1p2f1-r12i1p1f1-r12i1p2f1-r13i1p1f1-r13i1p2f1-r14i1p1f1-r14i1p2f1-r15i1p1f1-r15i1p2f1-r16i1p1f1-r16i1p2f1-r17i1p1f1-r17i1p2f1-r18i1p1f1-r18i1p2f1-r19i1p1f1-r19i1p2f1-r20i1p1f1-r20i1p2f1-r21i1p1f1-r21i1p2f1-r22i1p1f1-r22i1p2f1-r23i1p1f1-r23i1p2f1-r24i1p1f1-r24i1p2f1-r25i1p1f1-r25i1p2f1-r26i1p1f1-r26i1p2f1-r27i1p1f1-r27i1p2f1-r28i1p1f1-r28i1p2f1-r29i1p1f1-r29i1p2f1
CESM2	r10i1p1f1-r11i1p1f1-r4i1p1f1
CESM2-WACCM	r1i1p1f1-r2i1p1f1-r3i1p1f1
CIESM	r1i1p1f1
CMCC-CM2-SR5	r1i1p1f1
CMCC-ESM2	r1i1p1f1
CNRM-CM6-1	r1i1p1f2-r2i1p1f2-r3i1p1f2-r4i1p1f2-r5i1p1f2-r6i1p1f2
CNRM-CM6-1-HR	r1i1p1f2
CNRM-ESM2-1	r1i1p1f2-r2i1p1f2-r3i1p1f2-r4i1p1f2-r5i1p1f2
FGOALS-f3-L	r1i1p1f1-r2i1p1f1
FGOALS-g3	r1i1p1f1-r2i1p1f1-r3i1p1f1-r4i1p1f1
GFDL-CM4	r1i1p1f1
GISS-E2-1-G	r1i1p1f2-r1i1p3f1-r1i1p5f1-r2i1p3f1-r3i1p3f1-r4i1p3f1-r5i1p3f1
HadGEM3-GC31-LL	r1i1p1f3-r2i1p1f3-r3i1p1f3-r4i1p1f3
HadGEM3-GC31-MM	r1i1p1f3-r2i1p1f3-r3i1p1f3-r4i1p1f3
INM-CM4-8	r1i1p1f1
INM-CM5-0	r1i1p1f1
MIROC6	r1i1p1f1-r2i1p1f1-r3i1p1f1
MIROC-ES2L	r1i1p1f2-r2i1p1f2-r3i1p1f2-r4i1p1f2-r5i1p1f2-r7i1p1f2-r8i1p1f2-r9i1p1f2
MPI-ESM1-2-HR	r1i1p1f1-r2i1p1f1
MPI-ESM1-2-LR	r10i1p1f1-r1i1p1f1-r2i1p1f1-r3i1p1f1-r4i1p1f1-r5i1p1f1-r6i1p1f1-r7i1p1f1-r8i1p1f1-r9i1p1f1
MRI-ESM2-0	r1i1p1f1-r1i2p1f1
NorESM2-LM	r1i1p1f1
NorESM2-MM	r1i1p1f1
UKESM1-0-LL	r1i1p1f2-r2i1p1f2-r3i1p1f2-r4i1p1f2-r8i1p1f2

Table S1 : CMIP6 models and associated number of historical simulations used in this study

Model	Variance (Sv ²)
ACCESS-CM2	1.59
ACCESS-ESM1-5	0.96
CanESM5-CanOE	0.71
CanESM5	0.73
CESM2	0.68
CESM2-WACCM	0.64
CIESM	0.8
CMCC-CM2-SR5	4.06
CMCC-ESM2	3.91
CNRM-CM6-1	2.46
CNRM-CM6-1-HR	2.46
CNRM-ESM2-1	3.92
GISS-E2-1-G	4.08
HadGEM3-GC31-LL	0.96
HadGEM3-GC31-MM	1.02
INM-CM4-8	1.54
INM-CM5-0	0.96
MIROC6	1.12
MIROC-ES2L	1.14
MPI-ESM1-2-HR	1.27
MPI-ESM1-2-LR	1.37
MRI-ESM2-0	0.95
NorESM2-LM	0.64
NorESM2-MM	0.9
UKESM1-0-LL	0.93

Table S2 : Variance (Sv²) calculated from the piControl simulations for each CMIP6 model.