This document provides supplementary material for the manuscript “Local temperatures rapidly depart from historical experience past 1.5°C of global warming” by Michel and Chirstensen. It contains:

- Supplementary tables 1 and 2 (pages 2-4)
- References (pages 5-10)

Model name	Model family ID	Members used	Reference
ACCESS-CM2	ACCESS	10	51
ACCESS-ESM1-5	ACCESS	40	52
AWI-CM-1-1-MR	AWI	1	53
AWI-ESM-1-REcoM	AWI	1	54
BCC-CSM2-MR	BCC	1	55
CanESM5	CCCma	50	56
CanESM5-CanOE	CCCma	3	56
CanESM5-1	CCCma	10	57
CAS-ESM2-0	CAS	1	58
CESM2	CESM	6	59
CESM2-WACCM	CESM	3	59
CMCC-CM2-SR5	CMCC	1	60
CMCC-ESM2	CMCC	1	61
CNRM-CM6-1	CNRM	6	62
CNRM-CM6-1-HR	CNRM	1	62
CNRM-ESM2-1	CNRM	10	63
EC-Earth3	EC-Earth	20	64
EC-Earth3-CC	EC-Earth	8	64
EC-Earth3-Veg	EC-Earth	7	64
EC-Earth3-Veg-LR	EC-Earth	3	64
FGOALS-f3-L	CAS	1	65
FGOALS-g3	CAS	4	66
FIO-ESM2-0	FIO	3	67
GFDL-CM4	GFDL	1	68
GFDL-ESM4	GFDL	3	69
GISS-E2-1-G	NASA-GISS	23	70
GISS-E2-1-H	NASA-GISS	8	70
HadGEM3-GC31-LL	MOHC	5	71
INM-CM4-8	INM	1	72
INM-CM5-0	INM	1	73
IPSL-CM6A-LR	IPSL	11	74
KACE-1-0-G	MOHC	3	75
KIOST-ESM	KIOST	1	76
MIROC6	MIROC	50	24
MIROC-ES2L	MIROC	30	77
MPI-ESM1-2-HR	MPI-M	2	78
MPI-ESM1-2-LR	MPI-M	50	78
MRI-ESM2-0	MRI	5	79
NESM3	NESM	2	80
NorESM2-LM	NCC	4	81
NorESM2-MM	NCC	2	81
TaiESM1	TaiESM	1	82
UKESM1-0-LL	MOHC	14	83

Supplementary Table 1: List of 408 simulations from 43 CMIP6 models used for the SSP2-4.5 experiment. Model family IDs were determined based on the modelling center in which each model was developed. The third column indicate the number of members

used for each model, each representing a full historical to future trajectory after merging by member ID.

Model name	Model family ID	N members used	Reference
ACCESS-CM2	ACCESS	10	51
ACCESS-ESM1-5	ACCESS	40	52
BCC-CSM2-MR	BCC	1	55
CanESM5	CCCma	50	56
CanESM5-CanOE	CCCma	3	56
CanESM-5-1	CCCma	10	57
CAS-ESM2-0	CAS	1	58
CESM2	CESM	6	59
CESM2-WACCM	CESM	1	59
CMCC-CM2-SR5	CMCC	1	60
CMCC-ESM2	CMCC	1	61
CNRM-CM6-1	CNRM	6	62
CNRM-CM6-1-HR	CNRM	1	62
CNRM-ESM2-1	CNRM	5	63
E3SM-1-0	E3SM	18	84
EC-Earth3	EC-Earth	5	64
EC-Earth3-AerChem	EC-Earth	1	85
EC-Earth3-Veg	EC-Earth	4	64
EC-Earth3-Veg-LR	EC-Earth	1	64
FGOALS-f3-L	CAS	1	65
GFDL-ESM4	GFDL	1	68
GISS-E2-1-G	NASA-GISS	19	70
GISS-E2-1-H	NASA-GISS	5	70
IITM-ESM	IITM	1	86
INM-CM4-8	INM	1	72
INM-CM5-0	INM	5	73
IPSL-CM5A-INCA	IPSL	1	87
IPSL-CM6A-LR	IPSL	11	74
KACE-1-0-G	MOHC	3	75
MIROC6	MIROC	50	24
MIROC-ES2L	MIROC	10	77
MPI-ESM1-2-HR	MPI-M	10	78
MPI-ESM1-2-LR	MPI-M	50	78
MRI-ESM2-0	MRI	5	79
NorESM2-LM	NCC	1	81
NorESM2-MM	NCC	1	81
TaiESM1	TaiESM	1	82
UKESM1-0-LL	MOHC	13	83

Supplementary Table 2: List of 356 simulations from 38 CMIP6 models used for the SSP3-7.0 experiment. Model family IDs were determined based on the modelling center in which each model was developed. The third column indicate the number of members used for each model, each representing a full historical to future trajectory after merging by member ID.

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