

# Supplementary material to Effective radiative forcing and adjustments in CMIP6 models

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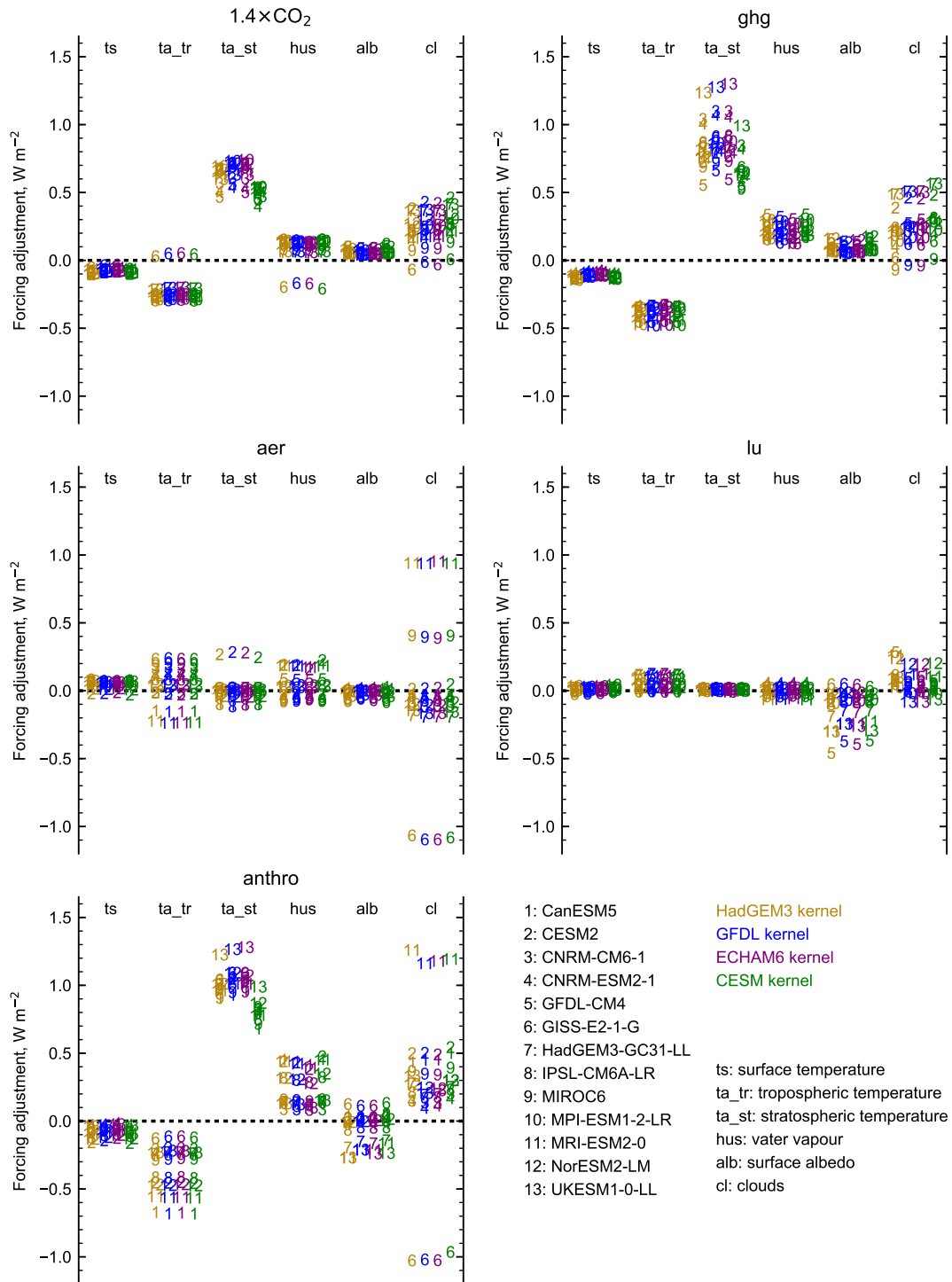
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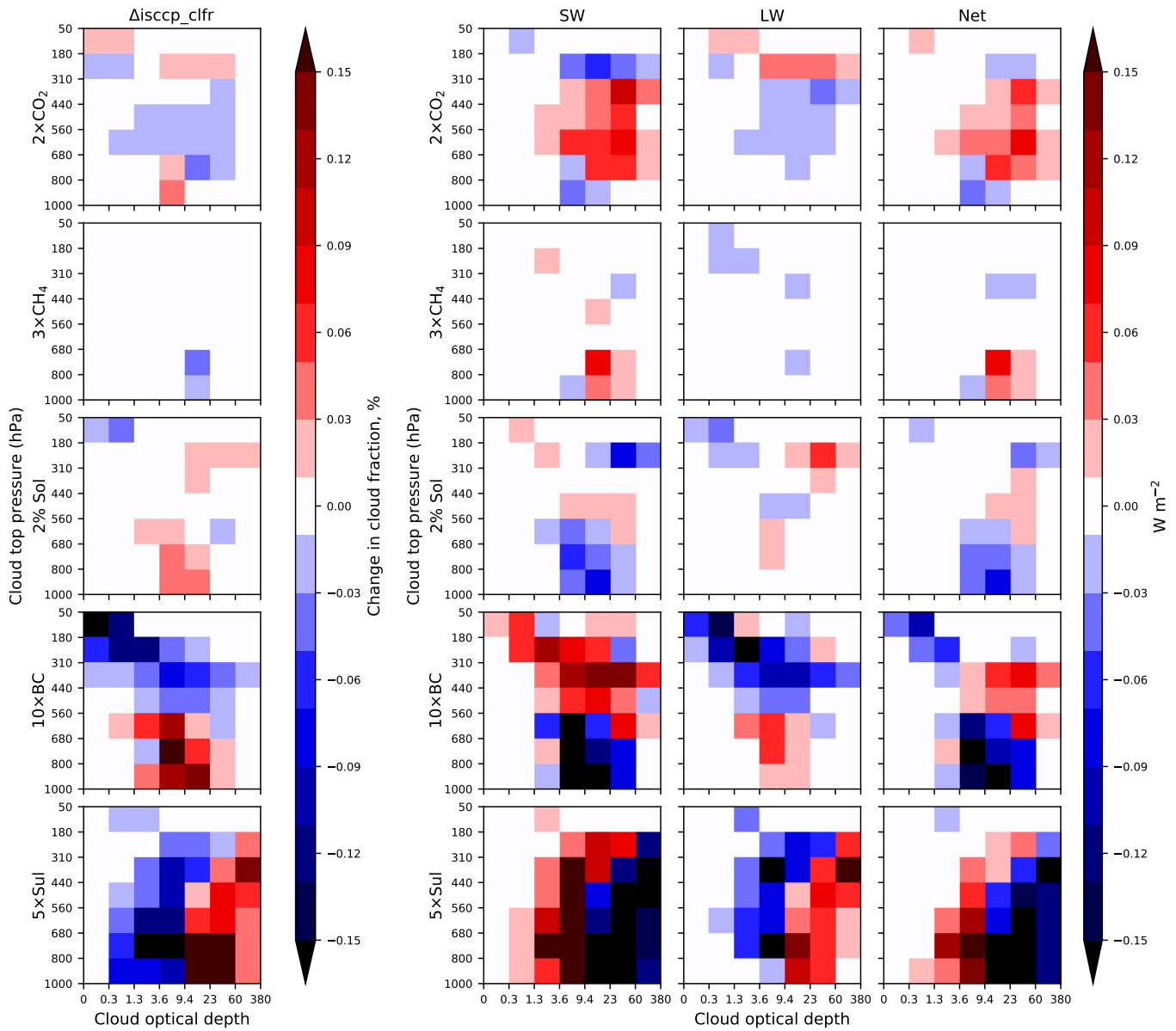
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**Table S1.** Comparison of effective radiative forcing from RFMIP piClim-4×CO<sub>2</sub> experiments scaled to 1.4×CO<sub>2</sub> using the formula from Etminan et al. (2016) compared to individual model results where a standalone 1.4×CO<sub>2</sub> experiment has been performed.

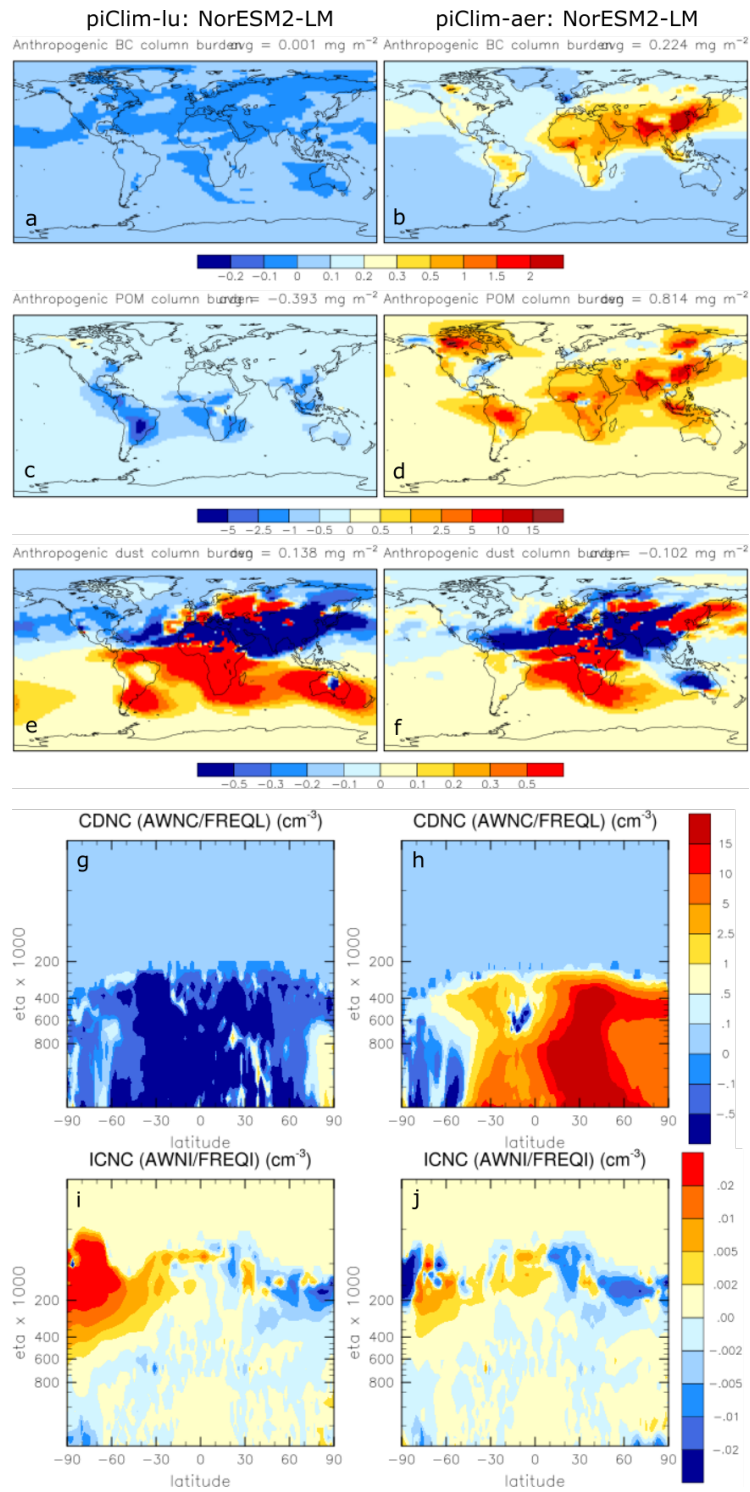
Model	Scaled-down 1.4×CO <sub>2</sub> (W m <sup>-2</sup> )	Model-specific 1.4×CO <sub>2</sub> (W m <sup>-2</sup> )	Reference
MRI-ESM2-0	1.89	1.85	Oshima et al. (in prep.)
UKESM1-0-LL	1.80	1.83	O'Connor et al. (submitted)



**Figure S1.** Forcing adjustments from four radiative kernels for each model and adjustment. Clouds adjustments are calculated according to the cloud masking method described in Soden et al. (2008) and do not necessarily correspond to values in the main text.



**Figure S2.** ISCCP cloud radiative effect from idealised single forcing experiments in the HadGEM2-ES model as part of PDRMIP.



**Figure S3.** Change in (a,b) black carbon loading, (c,d) organic carbon loading, (e,f) mineral dust loading, (g,h) liquid cloud droplet number concentration and (i,j) ice cloud particle concentration for (left column) piClim-lu and (right column) piClim-aer in NorESM2-LM relative to piClim-control.

**Table S2.** Contribution of cloud adjustments to aerosol forcing. LWP = liquid water path; CLT = cloud fraction; ISCCP = ISCCP simulator kernel; MMRP = monthly mean partial radiative perturbation; CRE = cloud radiative effect. Columns are left blank where estimates are either unavailable or it is not appropriate to use them (e.g. CRE and ISCCP estimates for models which include ice-cloud nucleation). LW adjustment is the mean of available methods in each model.

Model	SW LWP	SW CLT	SW adj.	LW ISCCP	LW MMRP	LW CRE	LW adj.	Net adj.
CanESM5	-0.06	-0.14	-0.19	-0.08	-0.10		-0.09	-0.28
CESM2	-0.10	-0.01	-0.11			0.14	0.14	0.03
CNRM-CM6-1	0.01	0.05	0.06	-0.05	-0.12	-0.01	-0.06	-0.00
CNRM-ESM2-1	0.00	-0.03	-0.02	-0.02	-0.07	0.07	-0.01	-0.03
GFDL-CM4	-0.04	-0.09	-0.13	-0.06	-0.03	-0.04	-0.04	-0.17
GISS-E2-1-G	-0.07	-0.94	-1.01	0.10		0.04	0.07	-0.94
HadGEM3-GC31-LL	-0.02	-0.07	-0.09	-0.00	-0.07	-0.11	-0.06	-0.15
IPSL-CM6A-LR	0.00	0.06	0.06	-0.07	-0.13	-0.07	-0.09	-0.03
MIROC6	0.01	-0.01	-0.00			0.06	0.06	0.05
MRI-ESM2-0	-0.07	-0.38	-0.45			-0.21	-0.21	-0.66
NorESM2-LM	-0.08	-0.10	-0.19			0.13	0.13	-0.06
UKESM1-0-LL	-0.02	-0.10	-0.12	-0.04	-0.07	-0.06	-0.06	-0.18
Mean	-0.04	-0.15	-0.18	-0.03	-0.09	-0.01	-0.02	-0.20

## References

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