

# Supporting Information for “Constraint on net long term climate feedback to emerge from satellite observed internal variability by mid 2040s”

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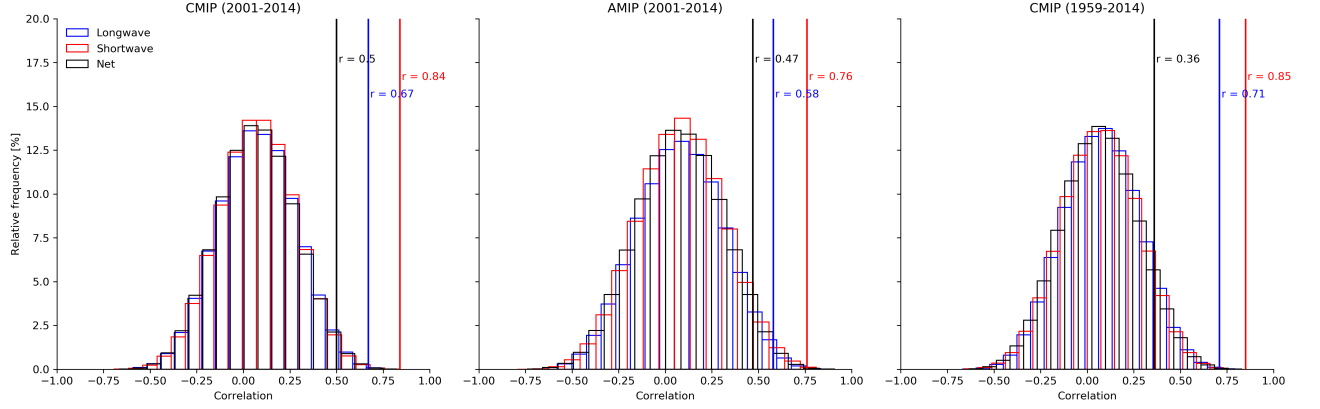
1. Table S1
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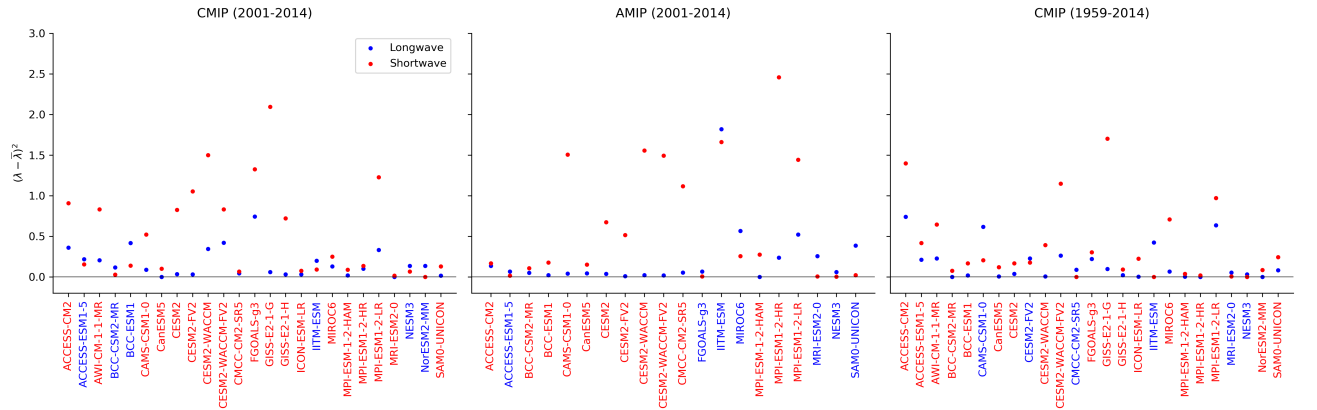
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**Table S1.** CMIP6 models used to calculate forced climate feedbacks and internal variability feedbacks. The availability of model realizations for estimating internal variability feedbacks is indicated by “X”.

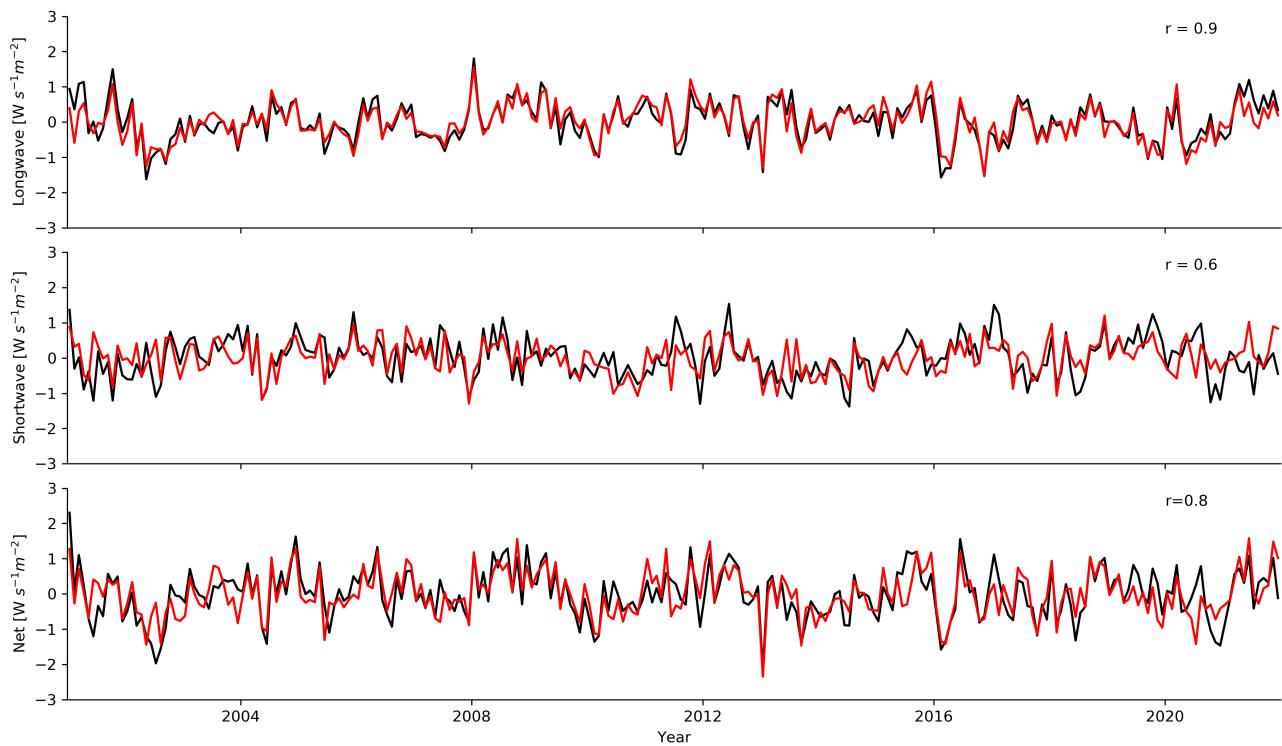
	r1i1p1f1		r2i1p1f1		r3i1p1f1		r4i1p1f1		r5i1p1f1	
	CMIP	AMIP	CMIP	AMIP	CMIP	AMIP	CMIP	AMIP	CMIP	AMIP
ACCESS-CM2	X	X	X	X	X	X				
ACCESS-ESM1-5	X	X	X	X	X	X	X		X	
AWI-CM-1-1-MR	X		X		X		X		X	
BCC-CSM2-MR	X	X	X	X		X				
BCC-ESM1	X	X	X	X	X	X				
CAMS-CSM1-0	X	X	X	X		X				
CanESM5	X	X	X	X	X		X		X	
CESM2	X	X	X				X	X	X	X
CESM2-FV2	X	X	X	X	X	X				
CESM2-WACCM	X	X	X	X	X	X				
CESM2-WACCM-FV2	X	X	X	X	X	X				
CMCC-CM2-SR5	X	X	X							
FGOALS-g3	X	X	X		X		X			
GISS-E2-1-G	X		X	X	X	X	X	X	X	X
GISS-E2-1-H	X		X		X		X		X	
ICON-ESM-LR	X		X		X		X		X	
IITM-ESM	X	X	X							
MIROC6	X	X	X	X	X	X	X	X	X	X
MPI-ESM-1-2-HAM	X	X	X	X	X	X				
MPI-ESM1-2-HR	X	X	X	X	X	X	X		X	
MPI-ESM1-2-LR	X	X	X	X	X	X	X		X	
MRI-ESM2-0	X	X	X	X	X	X	X		X	
NESM3	X	X	X	X	X	X	X	X	X	X
NorESM2-MM	X		X		X					
SAM0-UNICON	X	X	X							



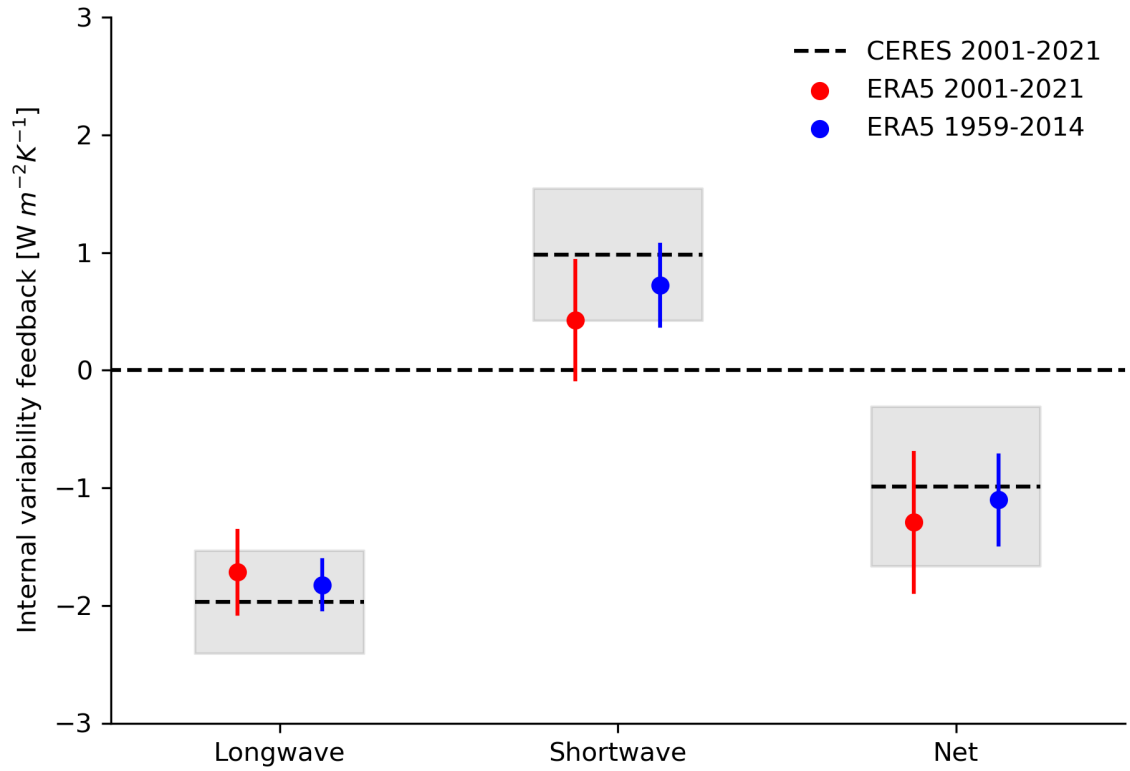
**Figure S1.** Estimated probability distribution of correlations coefficients between longwave (blue), shortwave (red) and net (black) internal variability and forced climate feedbacks for coupled (CMIP) and atmosphere-only (AMIP) models over CERES (2001-2014) and ERA5 (1959-2014) periods. Vertical lines show the correlation coefficients as from Figure 1.



**Figure S2.** Longwave (blue) and shortwave (red) internal variability feedback model contribution to net internal variability feedback variance for coupled (CMIP) and atmosphere-only (AMIP) models over the CERES (2001-2014) and ERA5 (1959-2014) periods. X-tick's color indicates the main contributor to the variance.



**Figure S3.** Longwave (top), shortwave (center) and net (bottom) monthly TOA anomalies from CERES (black) and ERA5 (red) during their common period 2001 to 2021. Panels include the correlation coefficient,  $r$ , between CERES and ERA5.



**Figure S4.** Longwave, shortwave and net internal variability feedbacks for the period 2001 to 2021 using CERES (dashed lines) and ERA5 (red), and 1959 to 2014 using ERA5 (blue). Grey shading and vertical lines extend from 5% to 95% confidence intervals of the internal variability feedback.