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*Geophysical Research Letters*

Supporting Information for

**Projected ENSO teleconnection changes in CMIP6**

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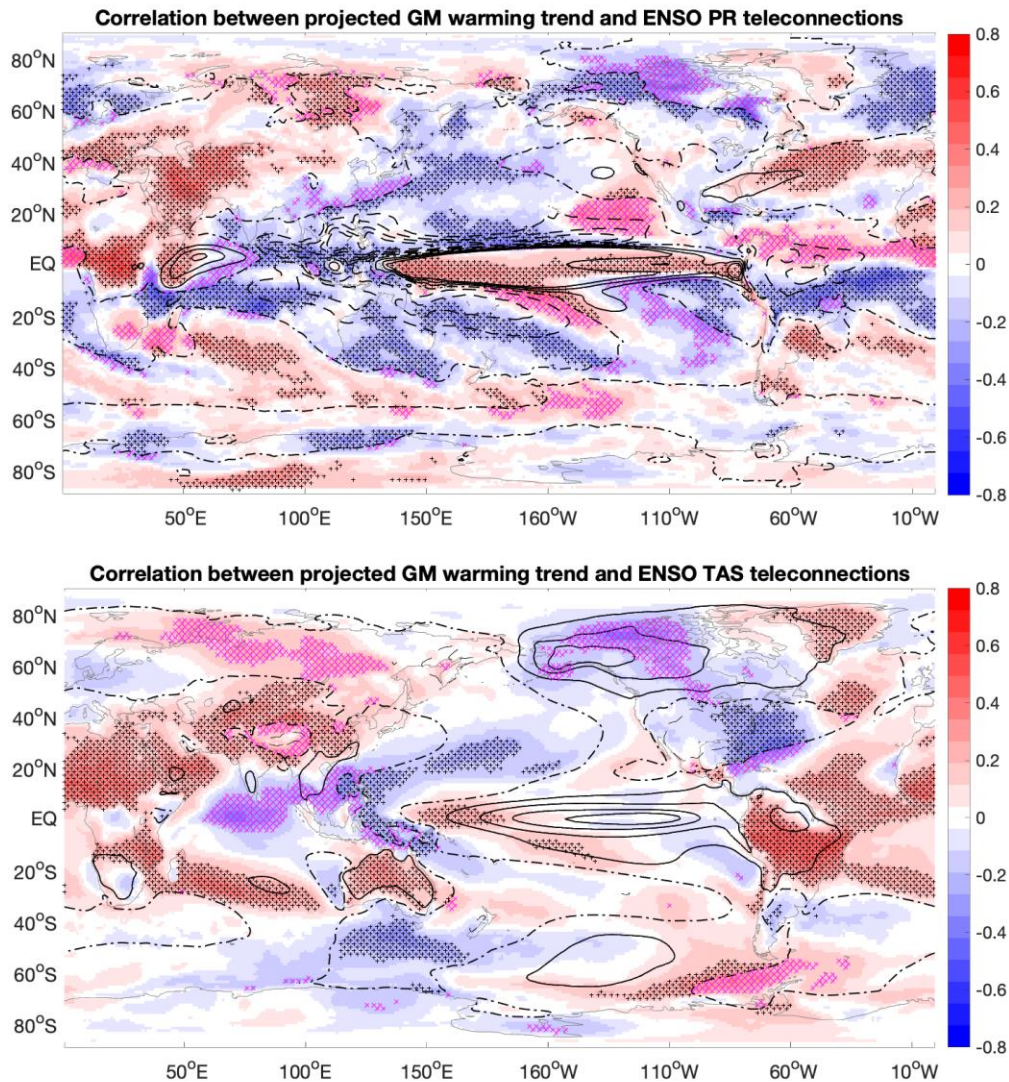
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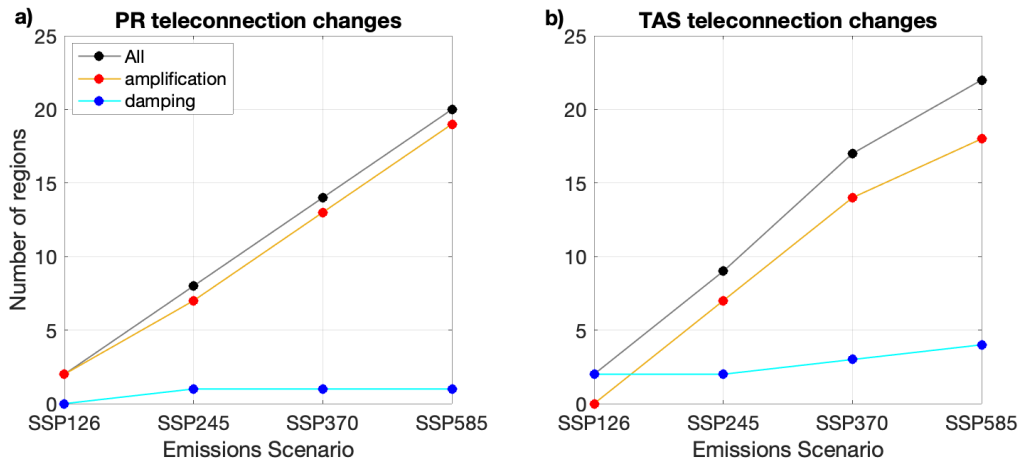
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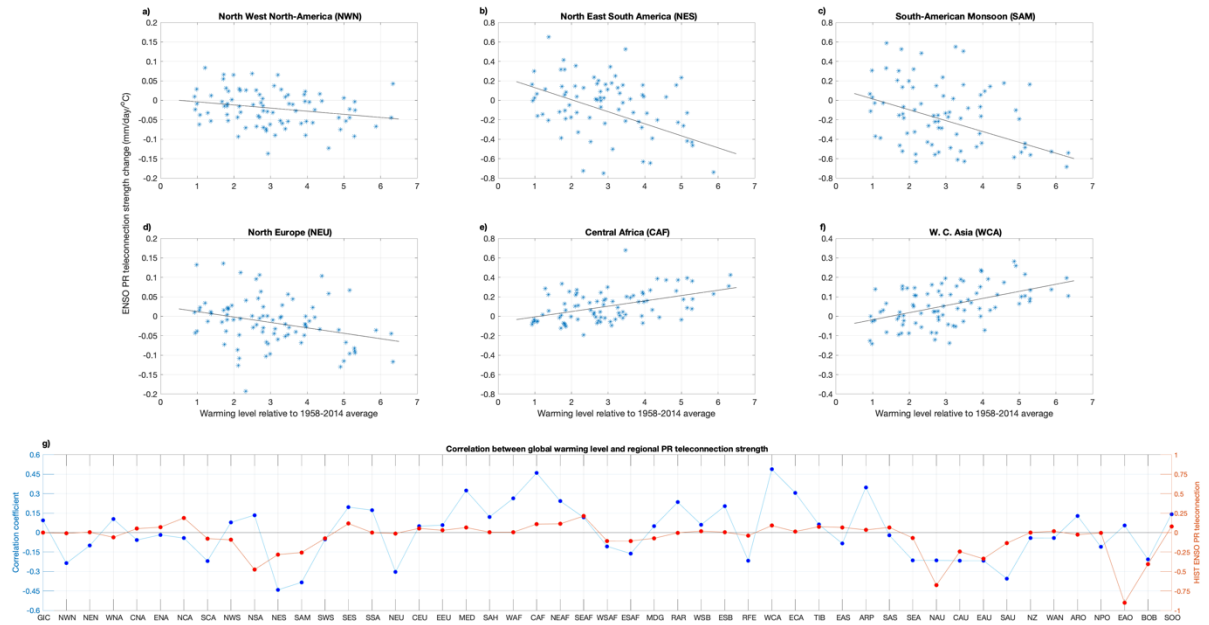
26  
 27 **Figure S1:** Correlation between projected global mean warming (calculated as a  
 28 difference between the 2080-2100 and 1958-2014 averages) and the (upper) ENSO PR  
 29 teleconnections, and (lower) ENSO TAS teleconnections. The overlying black contours  
 30 in (upper) and (lower) respectively represent the historical ensemble mean ENSO  
 31 precipitation and TAS teleconnection. Black stippling indicates projected statistical  
 32 significant teleconnection amplification, while magenta stippling indicates projected  
 33 statistical significant teleconnection dampening.

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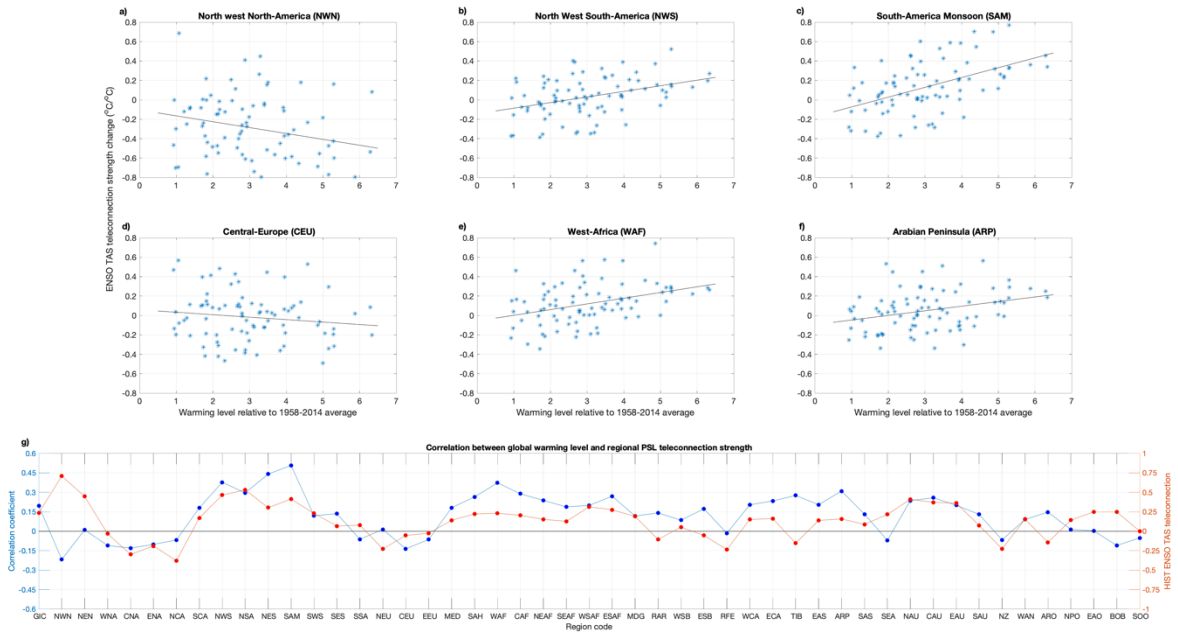


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**Figure S2:** The number of IPCC AR6 defined regions that display a significant ENSO (a) precipitation, (b) surface temperature (TAS) teleconnection changes under the various AR6 projection scenarios.

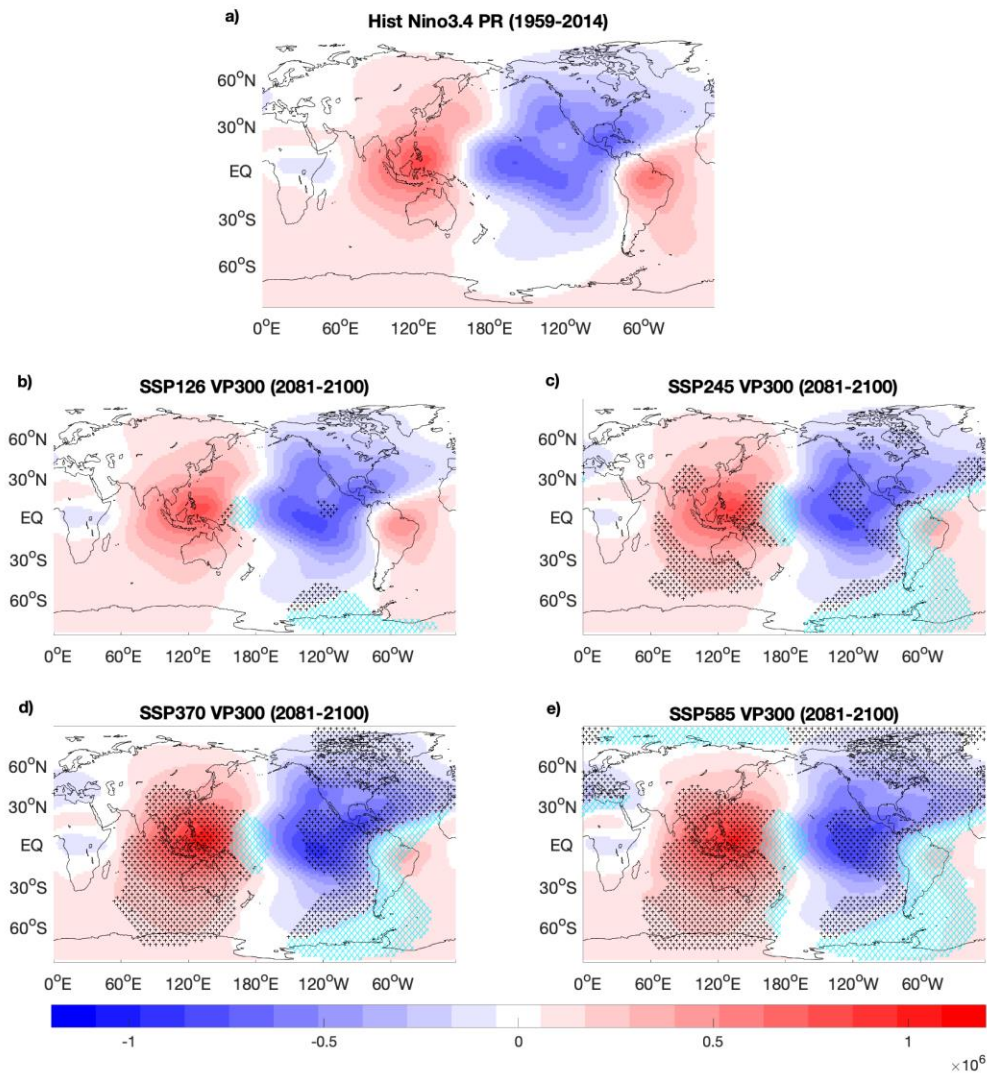


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 45 **Figure S3:** (a-f) display scatter plots of warming level (defined as the temperature  
 46 difference between the 1958-2014 and 2080-2100) versus ENSO precipitation (PR)  
 47 teleconnection changes for various regions (see plot titles). (g) Displays each regions  
 48 historical PR teleconnection (red) and the correlation between each regions projected  
 49 teleconnection changes and the warming level. Regions where both have the same sign  
 50 indicates regions of amplification, while regions where the sign of the historical  
 51 teleconnection and teleconnection change differ indicates regions of teleconnection  
 52 dampening.  
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 57 **Figure S4:** (a-f) display scatter plots of warming level (defined as the temperature  
 58 difference between the 1958-2014 and 2080-2100) versus ENSO surface temperature  
 59 (TAS) teleconnection changes for various regions (see plot titles). (g) Displays each  
 60 regions historical TAS teleconnection (red) and the correlation between each regions  
 61 projected teleconnection changes and the warming level. Regions where both have the  
 62 same sign indicates regions of amplification, while regions where the sign of the  
 63 historical teleconnection and teleconnection change differ indicates regions of  
 64 teleconnection dampening.

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 69 **Figure S5:** The global DJF 300hPa velocity potential teleconnections of ENSO and their  
 70 projected changes. a) Displays the MME precipitation teleconnections of the historical  
 71 simulation, calculated over the 1950-2014 period. In panels b) – e), black stippling  
 72 indicates projected statistical significant teleconnection amplification, while cyan  
 73 stippling indicates projected statistical significant teleconnection dampening.

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76 **Table S1:** IPCC AR6 models used, where the total number of ensemble members for  
77 each scenario also listed. The total number of ensemble members and models used for  
78 each scenario are also presented in the bottom two rows.  
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Model	Historical members	SSP126 members	SSP245 members	SSP370 members	SSP585 members
ACCESS-CM2	3	3	3	3	3
ACCESS-ESM1-5	10	3	3	3	3
AWI-CM-1-1-MR	5	1	1	5	1
AWI-ESM-1-1-LR	1	-	-	-	-
BCC-CSM2-MR	3	-	-	-	-
BCC-ESM1	3	-	-	-	-
CAMS-CSM1-0	3	2	2	2	2
CanESM5-CanOE	3	3	3	3	3
CanESM5	65	50	50	50	50
CAS-ESM2-0	4	-	-	-	-
CESM2-FV2	3	-	-	-	-
CESM2	11	5	6	9	5
CESM2-WACCM-FV2	3	-	-	-	-
CESM2-WACCM	3	1	5	3	5
CIESM	3	1	1	-	1
CMCC-CM2-SR5	1	1	1	1	1
CNRM-CM6-1-HR	1	1	1	1	1
CNRM-CM6-1	29	6	10	6	6
CNRM-ESM2-1	10	5	5	5	5
E3SM-1-0	5	-	-	-	-
E3SM-1-1-ECA	1	-	-	-	-
E3SM-1-1	1	-	-	-	-
EC-Earth3	20	7	22	7	7
EC-Earth3-Veg-LR	3	-	-	-	-
EC-Earth3-Veg	6	5	6	4	5
FGOALS-f3-L	3	1	1	1	1
FGOALS-g3	6	1	4	5	4
GFDL-CM4	1	-	1	-	1
GFDL-ESM4	3	1	3	1	1
GISS-E2-1-G-CC	1	-	-	-	-
GISS-E2-1-G	41	2	15	12	2

GISS-E2-1-H	23	-	-	-	-
HadGEM3-GC31-LL	4	1	4	-	4
HadGEM3-GC31-MM	4	1	-	-	3
INM-CM4-8	1	1	1	1	1
INM-CM5-0	10	1	1	5	1
IPSL-CM6A-LR	32	6	11	11	6
KACE-1-0-G	3	3	3	3	3
MCM-UA-1-0	2	1	1	1	1
MIROC6	50	3	50	3	50
MIROC-ES2L	10	3	1	-	1
MPI-ESM1-2-HAM	2	-	-	2	-
MPI-ESM1-2-HR	10	2	2	10	2
MPI-ESM1-2-LR	10	10	10	10	10
MRI-ESM2-0	6	1	5	5	2
NESM3	5	2	2	-	-
NorCPM1	30	-	-	-	-
NorESM2-LM	3	1	3	3	1
NorESM2-MM	2	1	1	1	1
SAM0-UNICON	1	-	-	-	-
TaiESM1	1	-	-	-	-
UKESM1-0-LL	18	9	5	13	5
<b>Total ensemble size</b>	<b>482</b>	<b>145</b>	<b>243</b>	<b>189</b>	<b>198</b>
<b>Total model number</b>	<b>52</b>	<b>35</b>	<b>35</b>	<b>31</b>	<b>35</b>

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**Table S2:** IPCC AR6 Region codes and names following Iturbide et al. 2020.

Region code	Region name
GIC	Greenland/Iceland
NWN	N.W. North-America
NEN	N.E. North-America
WNA	W. North-America
CNA	C. North-America
ENA	E. North-America
NCA	N. Central-America
SCA	S. Central-America
CAR	Caribbean
NWS	N.W. South-America
NSA	N. South-America
NES	N.E. South-America
SAM	South-American-Monsoon
SWS	S.W. South America
SES	S.E. South America
SSA	S. South America
NEU	N. Europe
WCE	Western and Central Europe
EEU	E. Europe
MED	Mediterranean
SAH	Sahara
WAF	Western-Africa
CAF	Central-Africa
NEAF	N. Eastern-Africa
SEAF	S. Eastern-Africa
WSAF	W. Southern-Africa
ESAF	E. Southern-Africa
MDG	Madagascar
RAR	Russian-Arctic

Region code	Region name
WSB	W. Siberia
ESB	E. Siberia
RFE	Russian-Far-East
WCA	W.C. Asia
ECA	E.C. Asia
TIB	Tibetan-Plateau
EAS	E. Asia
ARP	Arabian-Peninsula
SAS	S. Asia
SEA	S.E. Asia
NAU	N. Australia
CAU	C. Australia
EAU	E. Australia
SAU	S. Australia
NZ	New-Zealand
EAN	E. Antarctic
WAN	W. Antarctic
ARO	Artic-Ocean
NPO	N. Pacific-Ocean
EPO	Equatorial-Pacific-Ocean
SPO	S. Pacific-Ocean
NAO	N. Atlantic-Ocean
EAO	Equatorial-Atlantic-Ocean
SAO	S. Atlantic-Ocean
ARS	Arabian-Sea
BOB	Bay-of-Bengal
EIO	Equatorial-Indian-Ocean
SIO	S. Indian-Ocean
SOO	Southern-Ocean

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90 **Table S3:** Spatial correlations of ENSO precipitation (red) and surface temperature  
91 (black) teleconnection difference maps, where the teleconnection difference is calculated  
92 between the various SSP scenarios and the historical simulation.  
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	<b>SSP126</b>	<b>SSP245</b>	<b>SSP370</b>	<b>SSP585</b>
<b>SSP126</b>		0.766	0.71	0.674
<b>SSP245</b>	0.876		0.758	0.726
<b>SSP370</b>	0.871	0.935		0.879
<b>SSP585</b>	0.854	0.922	0.954	

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