A regime view of future atmospheric circulation changes in Northern mid-latitudes

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Supplementary material

Table S1. Models and ensemble members used in the analysis. Hist stands for historical simulation and ssps means that SSP126, SSP245, SSP370, SSP585 were all analyzed for that model/member (for CMIP6).

CMIP5			CMIP6		
Model	Member	Experiment	Model	Member	Experiment
ACCESS1-0	r1i1p1	hist, rcp85	ACCESS-CM2	r1i1p1f1	hist, ssps
ACCESS1-3	r1i1p1	hist, rcp85	AWI-ESM-1-1-LR	r1i1p1f1	hist
BNU-ESM	r1i1p1	hist, rcp85	BCC-CSM2-MR	r1i1p1f1	hist, ssps
CMCC-CESM	r1i1p1	hist, rcp85	BCC-ESM1	r1i1p1f1	hist
CMCC-CM	r1i1p1	hist, rcp85	CanESM5	r1i1p1f1	hist, ssps
CMCC-CMS	r1i1p1	hist, rcp85	CESM2-FV2	r1i1p1f1	hist
CNRM-CM5	r1i1p1	hist, rcp85	CESM2	r1i1p1f1	hist
CanESM2	r1i1p1	hist, rcp85	CESM2-WACCM-FV2	r1i1p1f1	hist
FGOALS-g2	r1i1p1	hist, rcp85	CESM2-WACCM	r1i1p1f1	hist, ssps
GFDL-CM3	r1i1p1	hist, rcp85	CNRM-CM6-1-HR	r1i1p1f2	hist, ssps
GFDL-ESM2G	r1i1p1	hist	CNRM-CM6-1	r1i1p1f2	hist, ssps
HadGEM2-CC	r1i1p1	hist, rcp85	CNRM-ESM2-1	r1i1p1f2	hist, ssps
HadGEM2-ES	r1i1p1	hist	EC-Earth3	r1i1p1f1	hist, ssps
IPSL-CM5A-LR	r1i1p1	hist	FGOALS-f3-L	r1i1p1f1	hist
IPSL-CM5A-MR	r1i1p1	hist	FGOALS-g3	r1i1p1f1	hist, ssps
IPSL-CM5B-LR	r1i1p1	hist	GFDL-CM4	r1i1p1f1	hist
MIROC-ESM-CHEM	r1i1p1	hist, rcp85	GISS-E2-1-G	r1i1p1f1	hist
MIROC-ESM	r1i1p1	hist, rcp85	GISS-E2-1-G	r1i1p1f2	hist
MIROC5	r1i1p1	hist, rcp85	HadGEM3-GC31-LL	r1i1p1f3	hist
MPI-ESM-LR	r1i1p1	hist	HadGEM3-GC31-MM	r1i1p1f3	hist
MPI-ESM-MR	r1i1p1	hist, rcp85	INM-CM4-8	r1i1p1f1	hist, ssps
MPI-ESM-P	r1i1p1		INM-CM5-0	r1i1p1f1	hist, ssps
MRI-CGCM3	r1i1p1	hist, rcp85	IPSL-CM6A-LR	r1i1p1f1	hist, ssps
MRI-ESM1	r1i1p1	hist, rcp85	KACE-1-0-G	r1i1p1f1	hist

NorESM1-M	r1i1p1	hist, rcp85	MIROC6	r1i1p1f1	hist, ssps
bcc-csm1-1-m	r1i1p1	hist	MPI-ESM-1-2-HAM	r1i1p1f1	hist
bcc-csm1-1	r1i1p1	hist, rcp85	MPI-ESM1-2-HR	r1i1p1f1	hist, ssps
			MPI-ESM1-2-LR	r1i1p1f1	hist, ssps
			MRI-ESM2-0	r1i1p1f1	hist, ssps
			NorESM2-LM	r1i1p1f1	hist, ssps
			NorESM2-MM	r1i1p1f1	hist, ssps
			TaiESM1	r1i1p1f1	hist
			UKESM1-0-LL	r1i1p1f2	hist, ssps

Table S2. Standard deviation of the drivers used in Section 4.2, before standardization.

	AA	NAW	PST	UTW
std dev	0.16	0.22	0.11	0.41

Table S3. Cross-correlations of the standardized drivers used in Section 4.2 and Global Warming (GW).

	GW	UTW	AA	NAW	PST
GW	1.				
UTW	0.31	1.			
AA	-0.404	-0.152	1.		
NAW	-0.157	-0.42	0.41	1.	
PST	0.026	0.008	-0.181	-0.074	1.

Table S4. Cross-correlations of the drivers used in Section 4.2 and GW, before dividing by GW.

	GW	UTW	AA	NAW	PST
GW	1.				
UTW	0.929	1.			
AA	0.839	0.756	1.		
NAW	0.886	0.769	0.853	1.	
PST	-0.077	-0.073	-0.175	-0.172	1.
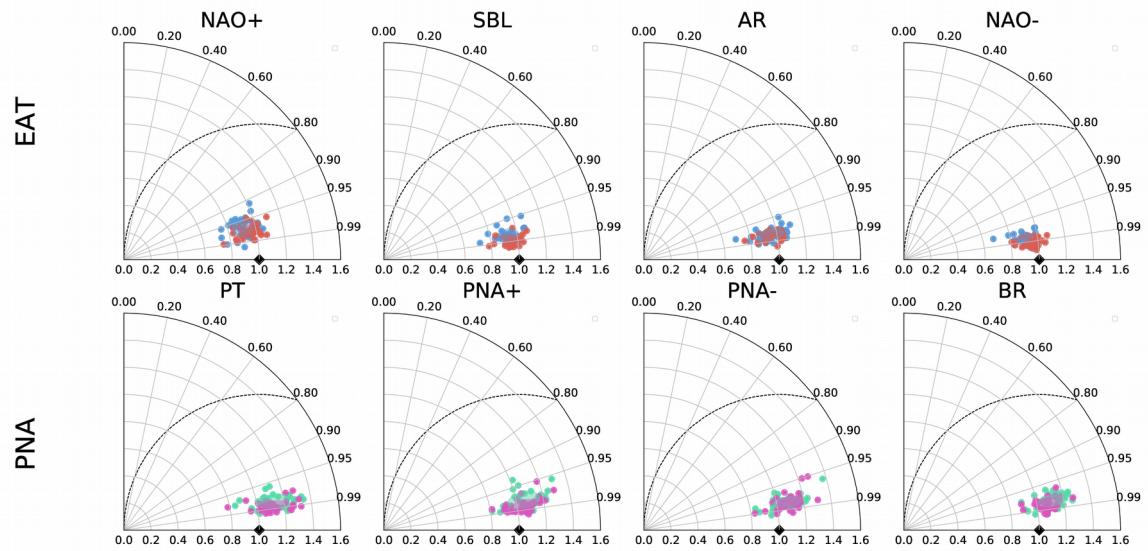
Figure S1. As Figure 2, but for the *projected regimes*.
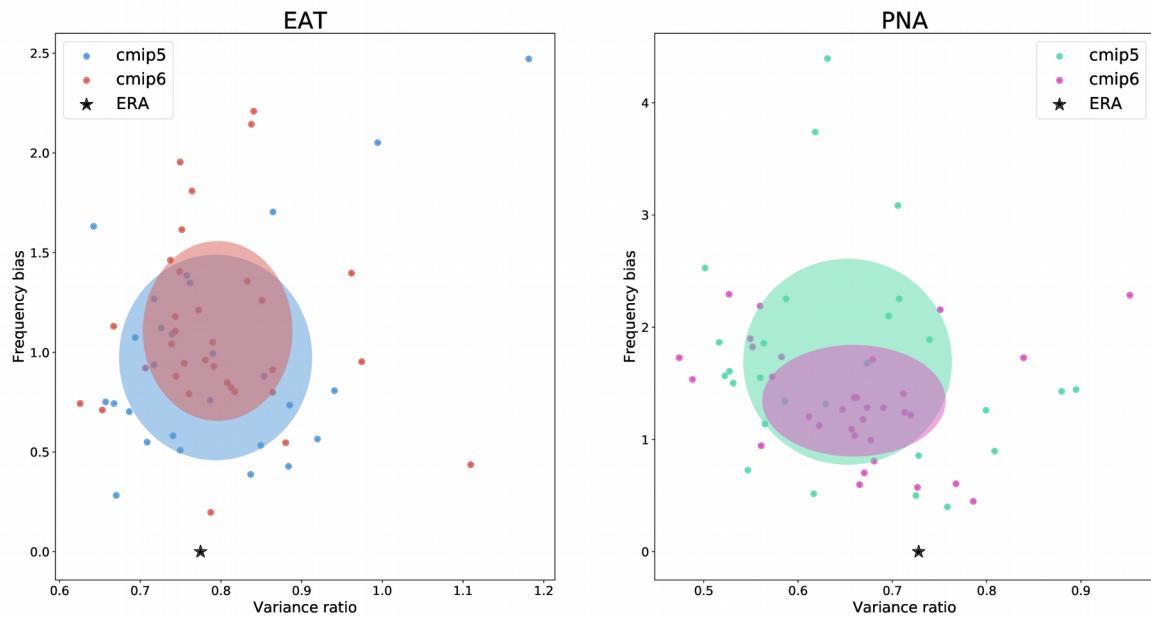
Figure S2. As Figure 3, but for the *projected regimes*.
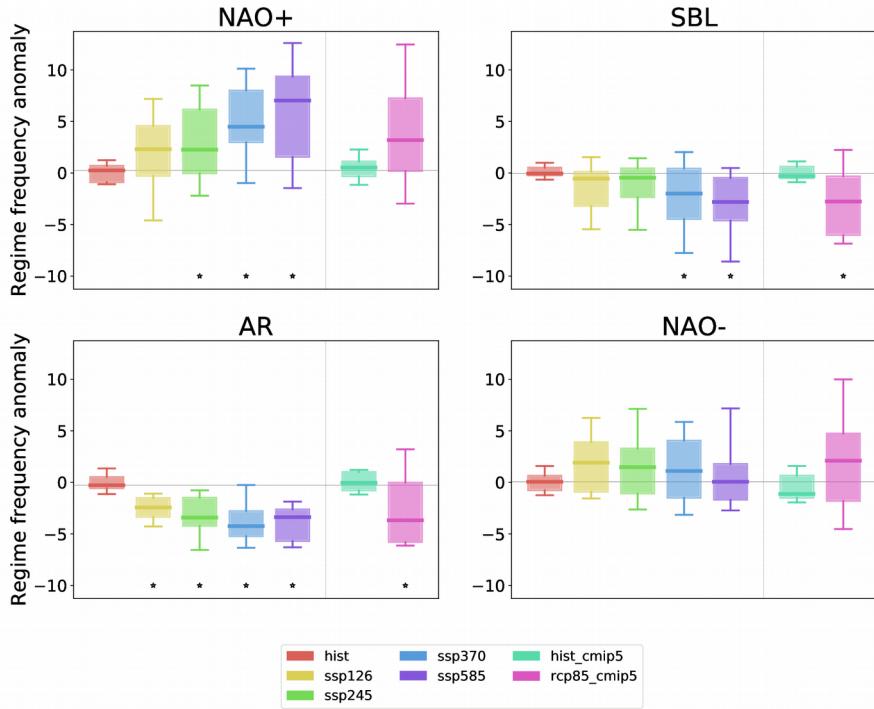
Figure S3. As Figure 4, but showing also the cmip5 historical frequency.
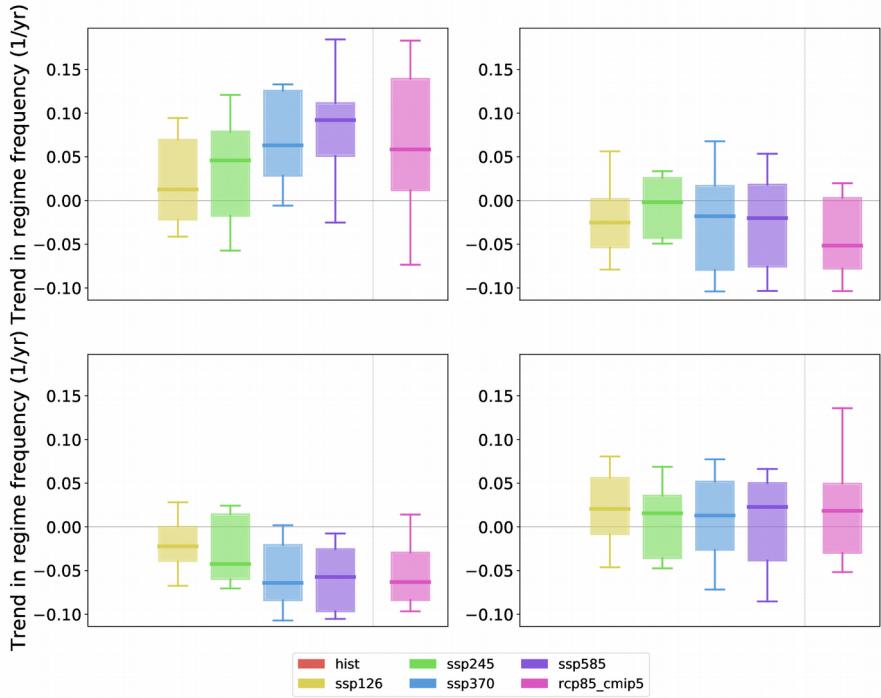
Figure S4. Trend of the seasonal regime frequencies (with 10-yr running mean) over 2015-2100 for EAT. The trend is in units of yr-1.
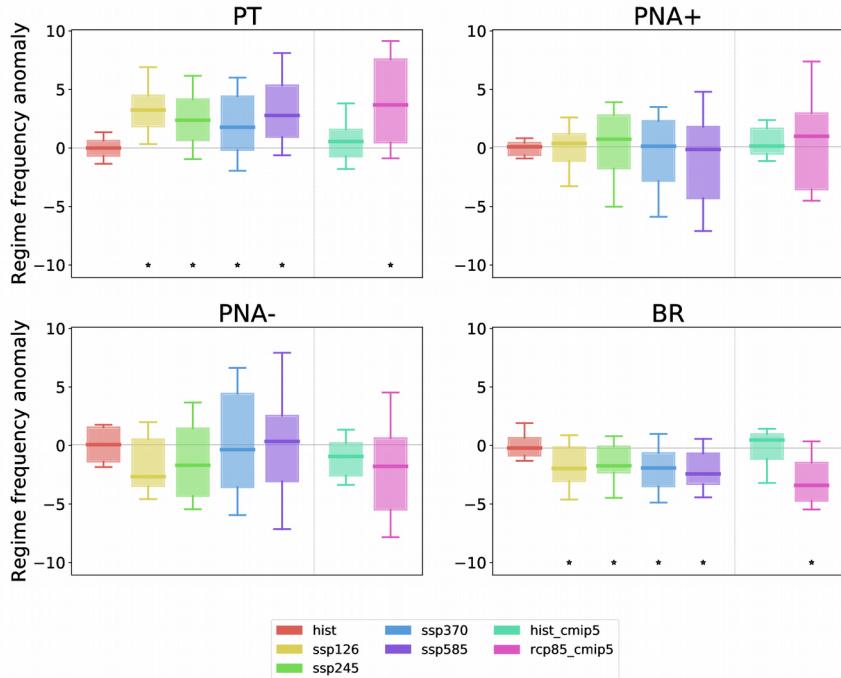
Figure S5. As Figure 6, but showing also the cmip5 historical frequency.
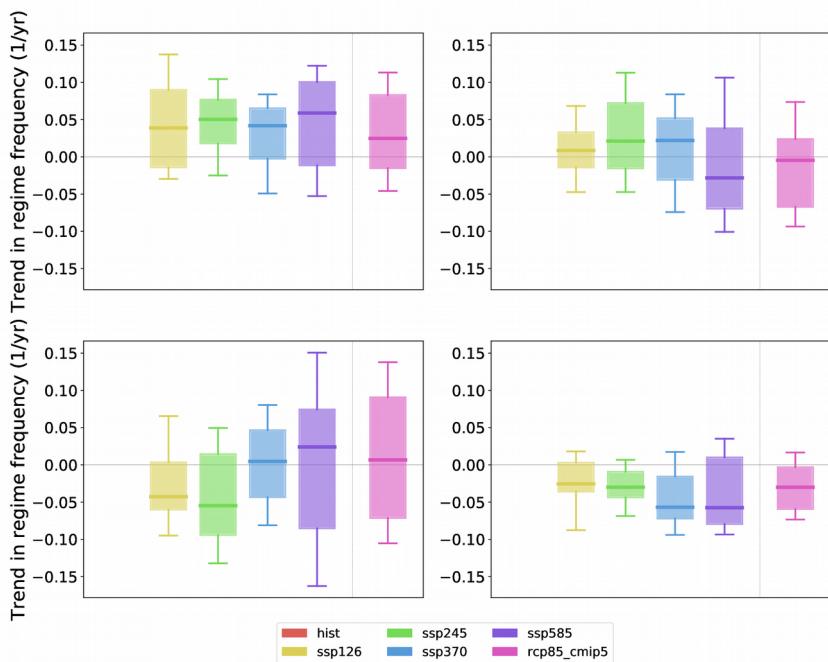
Figure S6. Trend of the seasonal regime frequencies (with 10-yr running mean) over 2015-2100 for PNA. The trend is in units of yr-1.