Supporting Information for "Non-stationary teleconnection between the Pacific Ocean and Arctic sea ice"

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Contents

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Number	Model Name	Preindustrial	Historical-RCP8.5
1.	ACCESS1.0	599-799	1979-2018
2.	ACCESS1.3	549-749	1979-2018
3.	BCC-CSM1.1	300-500	1979-2018
4.	BCC-CSM1.1(m)	200-400	1979-2018
5.	CanESM2	2810-3010	1979-2018
6.	CCSM4	1100-1300	1979-2018
7.	CESM1(BGC)	400-600	1979-2018
8.	CESM1(CAM5)	119-319	1979-2018
9.	CMCC-CESM	4400-4600	1979-2018
10.	CMCC-CM	1679-1879	1979-2018
11.	CMCC-CMS	3983-4183	1979-2018
12.	CNRM-CM5	2499-2699	1979-2018
13.	FIO-ESM	1000-1200	1979-2018
14.	GFDL-CM3	300-500	1979-2018
15.	GFDL-ESM2G	300-500	1979-2018
16.	GFDL-ESM2M	300-500	1979-2018
17.	HadGEM2-CC	1899-2099	1979-2018
18.	HadGEM2-ES	2234-2434	1979-2018
19.	INM-CM4	2149-2349	1979-2018
20.	IPSL-CM5A-LR	2599-2799	1979-2018
21.	IPSL-CM5A-MR	1899-2099	1979-2018
22.	IPSL-CM5B-LR	1929-2129	1979-2018
23.	MIROC5	2469-2669	1979-2018
24.	MIROC-ESM	2130-2330	1979-2018
25.	MIROC-ESM-CHEM	1900-2100	1979-2018
26.	MPI-ESM-LR	2649-2849	1979-2018
27.	MPI-ESM-MR	2649-2849	1979-2018
28.	MRI-CGCM3	2150-2350	1979-2018
29.	NorESM1-M	1000-1200	1979-2018
30.	NorESM1-ME	952-1152	1979-2018

Table S1. Model names of the fully-coupled GCMs used in this study. For each model we use the preindustrial control, historical, and RCP8.5 simulations from CMIP5. The corresponding model years for the preindustrial control runs and historical period are shown. Across all models and experiments, we consider three variables: sea-ice concentration (SIC), sea-surface temperatures (SST), and the geopotential height at 200 hPa (Z200).

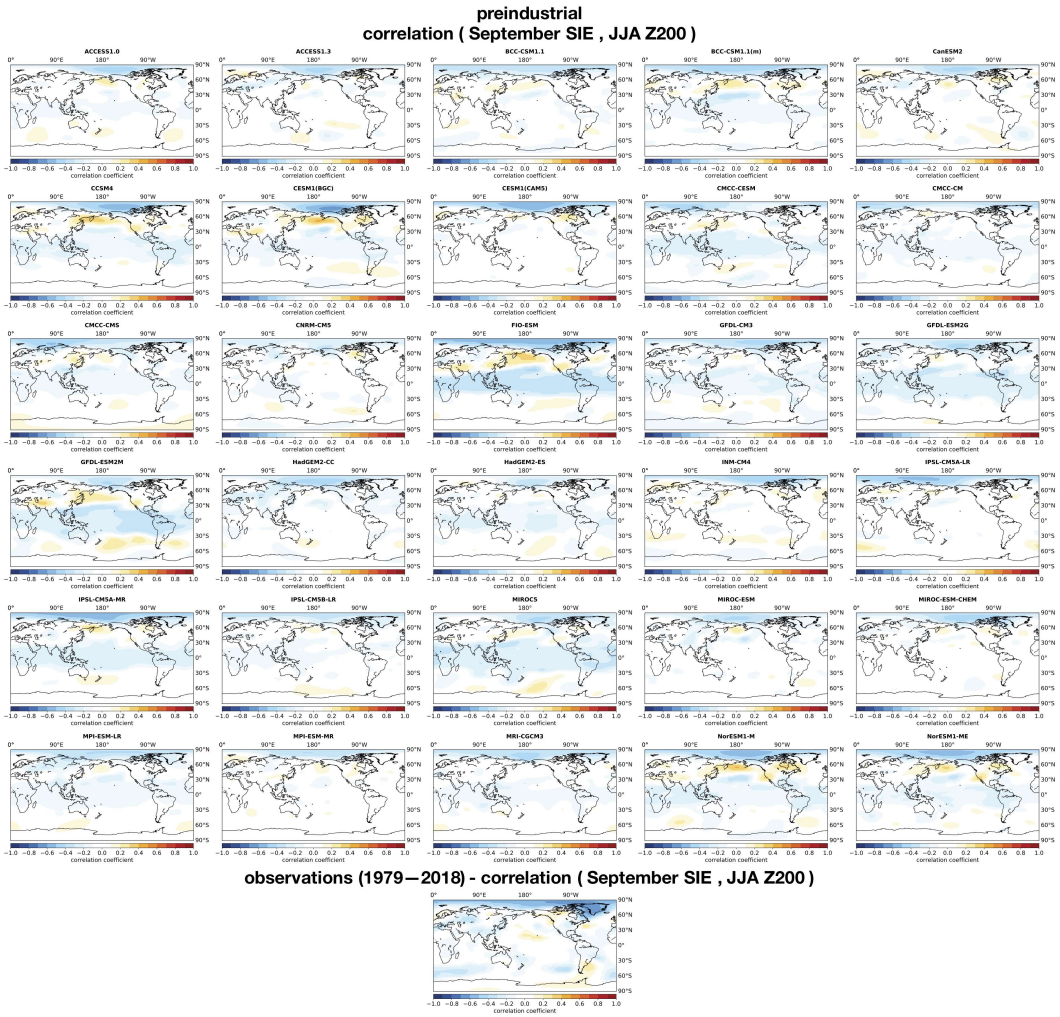

Figure S1. Pearson correlation coefficient between September Arctic sea-ice extent (SIE) and global June, July, and August (JJA) 200 hPa geopotential height (Z200) computed for each GCM across the 200-year-long preindustrial control simulation and in observations.

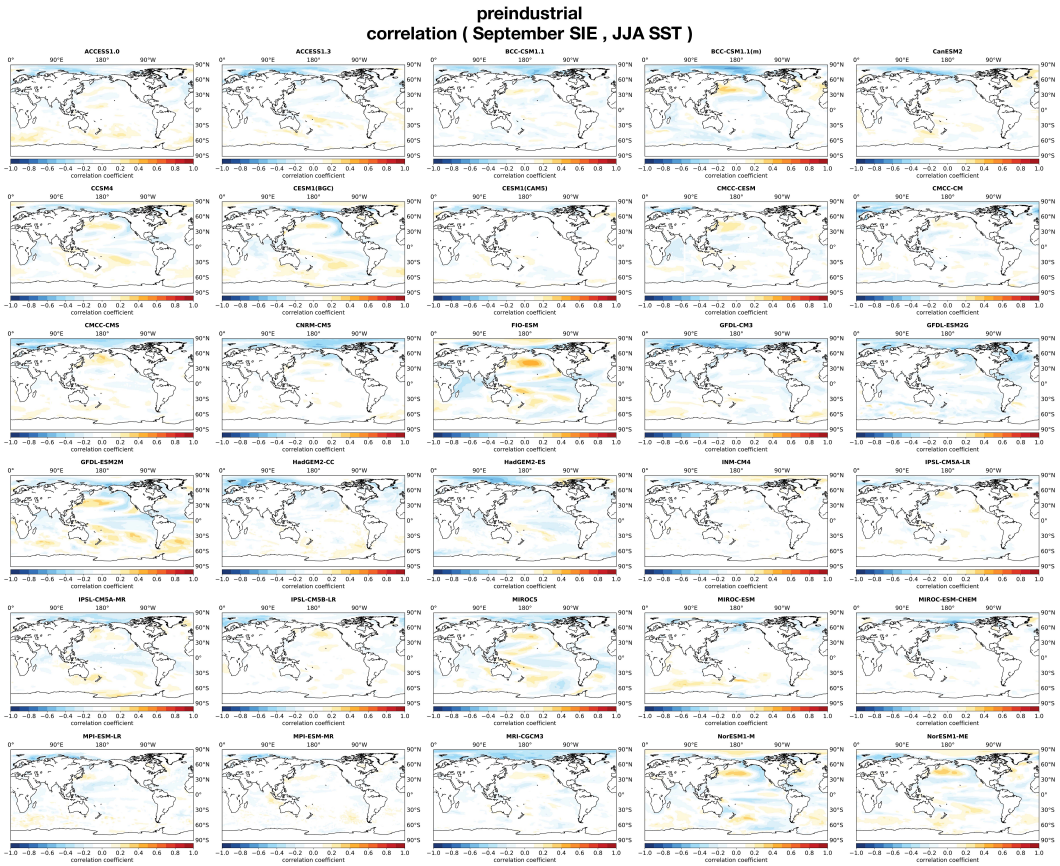

Figure S2. Pearson correlation coefficient between September Arctic sea-ice extent (SIE) and global June, July, and August (JJA) sea-surface temperatures (SSTs) computed for each GCM across the 200-year-long preindustrial control simulation.

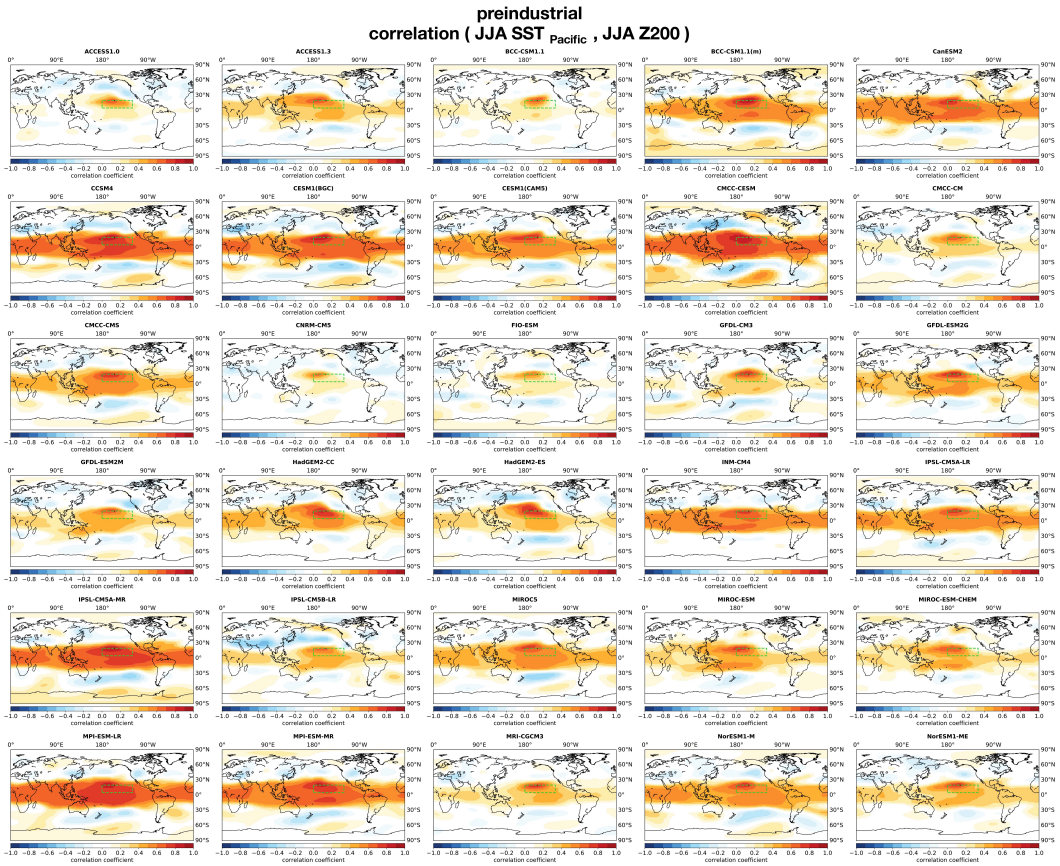

Figure S3. Pearson correlation coefficient between June, July, and August (JJA) sea-surface temperatures (SSTs) averaged in the dashed green box and global JJA 200 hPa geopotential height (Z200) computed for each GCM across the 200-year-long preindustrial control simulation.

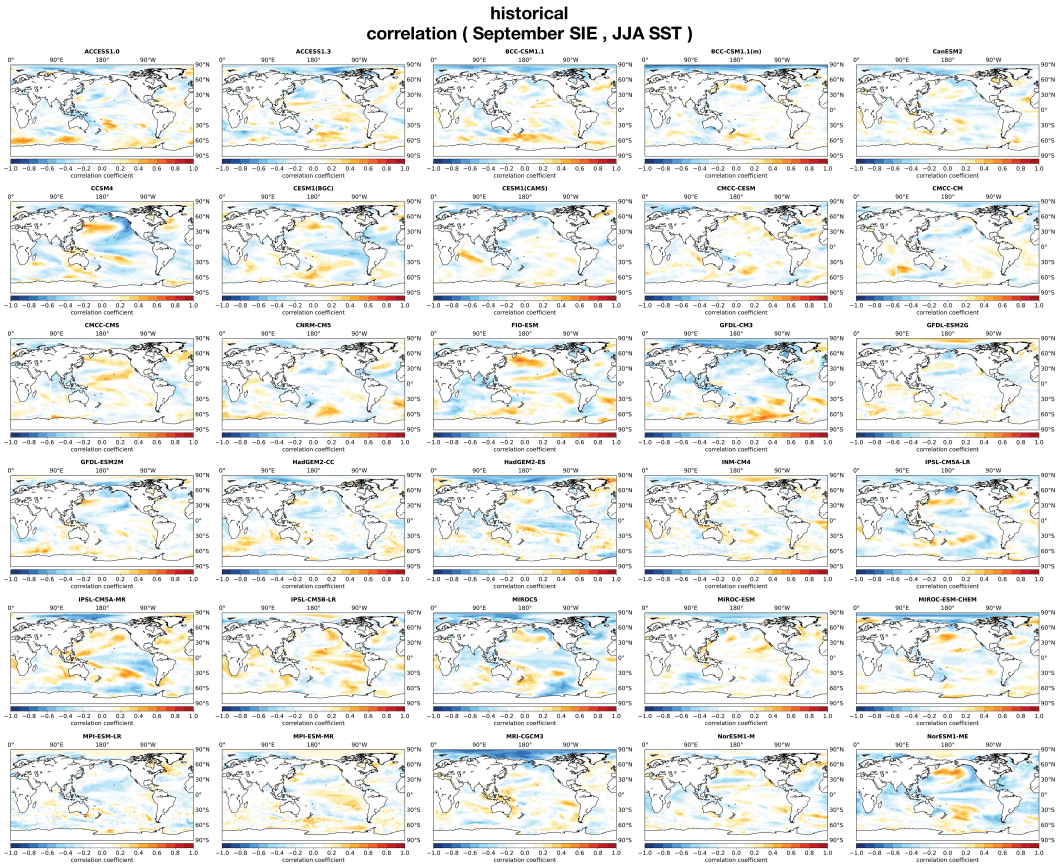

Figure S4. Pearson correlation coefficient between September Arctic sea-ice extent (SIE) and global June, July, and August (JJA) sea-surface temperatures (SSTs) computed for each GCM across the observational period (1979-2018) using the historical and RCP8.5 simulations.

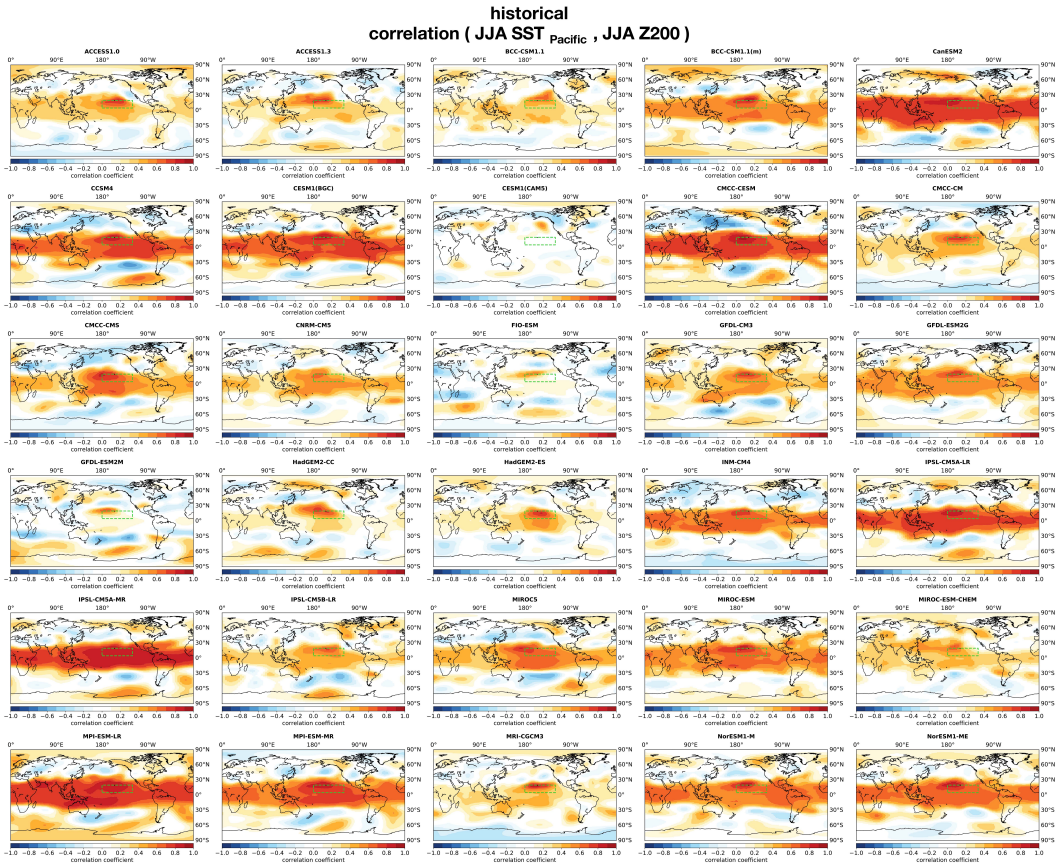

Figure S5. Pearson correlation coefficient between June, July, and August (JJA) sea-surface temperatures (SST) averaged in the dashed green box and global JJA 200 hPa geopotential height (Z200) computed for each GCM across the observational period (1979-2018) using the historical and RCP8.5 simulations.

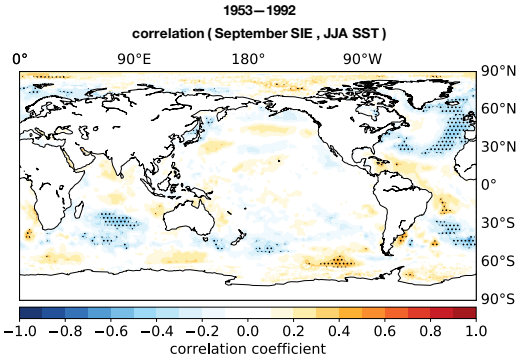

Figure S6. Pearson correlation coefficient between September Arctic sea-ice extent (SIE) and global June, July, and August (JJA) sea-surface temperatures (SSTs) computed across 1953-1992 using a reconstruction of Arctic SIE by Walsh et al. (2017).

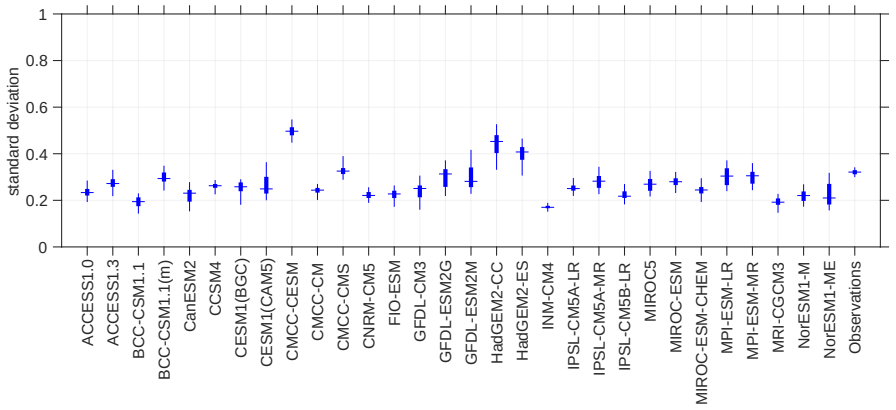

Figure S7. Standard deviation of sea-surface temperatures (SSTs) averaged in the subequatorial Pacific Ocean (5°N to 20°N, 180° to 120°W) using the 40-year time-slice ensemble from each GCM and the 40-year time-slice ensemble from the reanalysis datasets.

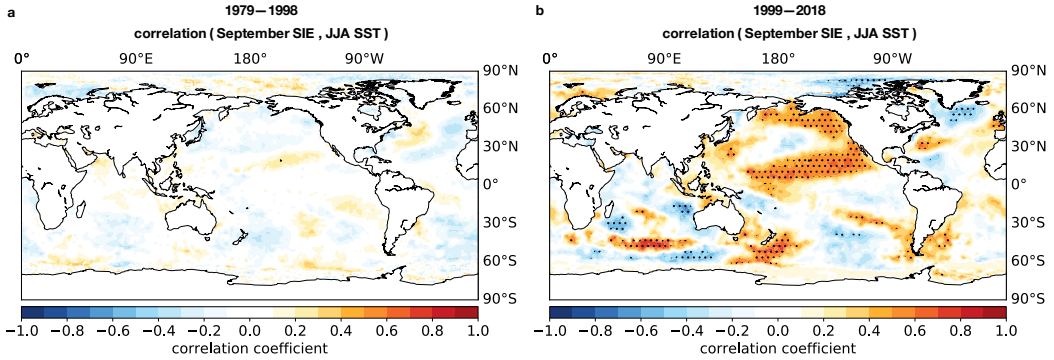

Figure S8. (a) Pearson correlation coefficient between September Arctic sea-ice extent (SIE) and global June, July, and August (JJA) sea surface temperatures (SSTs) from 1979–1998. (b) Pearson correlation coefficient between September Arctic sea-ice extent (SIE) and global June, July, and August (JJA) sea surface temperatures (SSTs) from 1999–2018. Black dots denote statistically significant correlation coefficient values at the 95% confidence level. All datasets are linearly detrended before correlation coefficient values are calculated.

References

Walsh, J. E., Fetterer, F., Scott Stewart, J., & Chapman, W. L. (2017). A database for depicting Arctic sea ice variations back to 1850. *Geographical Review*, *107*(1), 89–107.