Table S1. Correlation coefficients (R) between the PC1 of NEC snow cover variability from the JASMES data with the contemporary atmospheric teleconnections. One asterisk and double asterisks indicate the R exceeding the 95% and 99% confidence levels, respectively.

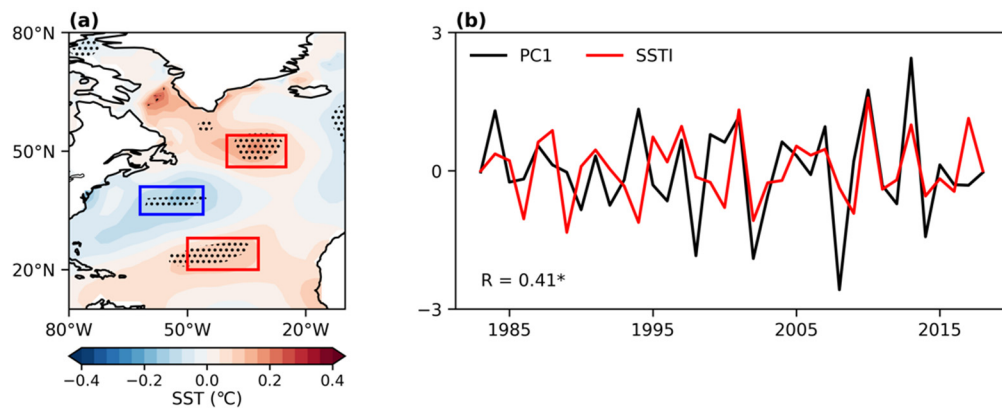| Teleconnection indices	R
AO	**-0.34***
NAO	0.03
EA	-0.07
EAWR	-0.04
POL	**-0.38***
SCAND	-0.11
WP	-0.1

Figure S1. (a) SST anomalies over North Atlantic obtained by regression against PC1 of JASMES data. (b) Timeseries of the SSTI and PC1. Black dots in (a) denote the SST anomalies exceeding 95% confidence level. The regions enclosed by rectangles are used to compute the SSTI. The domain of three key regions are 46°–54°N, 25°–40°W; 34°–41°N, 46°–62°W; and 20°–28°N, 32°–50°W for the north, central, and south regions, respectively.
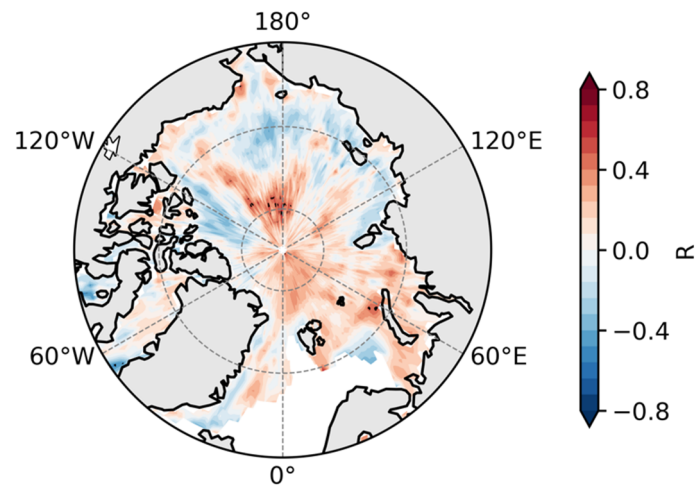
Figure S2. Correlations between PC1 of NEC spring snow cover variability from the JASMES data and simultaneous sea ice variations. Dots denote the correlations exceeding the 95% confidence level.