Supplementary Materials: The Weakening of the Stratospheric Polar Vortex and the Subsequent Surface Impacts as Consequences to Arctic Sea-ice Loss

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FIG. S1. JJA present ensemble-mean SST for AMV+/IPV- state (a) and AMV-/IPV+ state (b).
FIG. S2. As in Figure S1 but for SON.
FIG. S3. As in Figure S1 but for DJF.
FIG. S4. As in Figure S1 but for SON.
FIG. R7. The standard deviation of the global-mean SST time series during 1985-2014 period from CESM2-CAM6 and CESM2-WACCM6 historical simulations.
FIG. S6. December wavenumber1 Z300 response to (a) strong SIC forcing and (b) weak SIC forcing (color shadings). The contour lines represent the climatological wavenumber1 Z300 in December.

FIG. S7. December wavenumber2 Z300 response to (a) strong SIC forcing and (b) weak SIC forcing (color shadings). The contour lines represent the climatological wavenumber2 Z300 in December.
FIG. S8. January Z50 (a)-(b), responses to strong sea-ice forcing during AMV+/IPV- and AMV-/IPV+ states, respectively. (c) (a) minus (b). (d)-(f) as in (a)-(c) but to weak sea-ice forcing. The black dots denote the field significance, while the cyan dots the 5% local significance.
FIG. S9. January Z500 (a)-(b), responses to strong sea-ice forcing during AMV+/IPV- and AMV-/IPV+ states, respectively. (c) (a) minus (b). (d)-(f) as in (a)-(c) but to weak sea-ice forcing. The black dots denote the field significance, while the cyan dots the 5% local significance.
FIG. S10. January SLP (a)-(b), responses to strong sea-ice forcing during AMV+/IPV- and AMV-/IPV+ states, respectively. (c) (a) minus (b). (d)-(f) as in (a)-(c) but to weak sea-ice forcing. The black dots denote the field significance, while the cyan dots the 5% local significance.