



Supplement of

Pacific Decadal Oscillation modulates the Arctic sea-ice loss influence on the midlatitude atmospheric circulation in winter

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Supplementary File

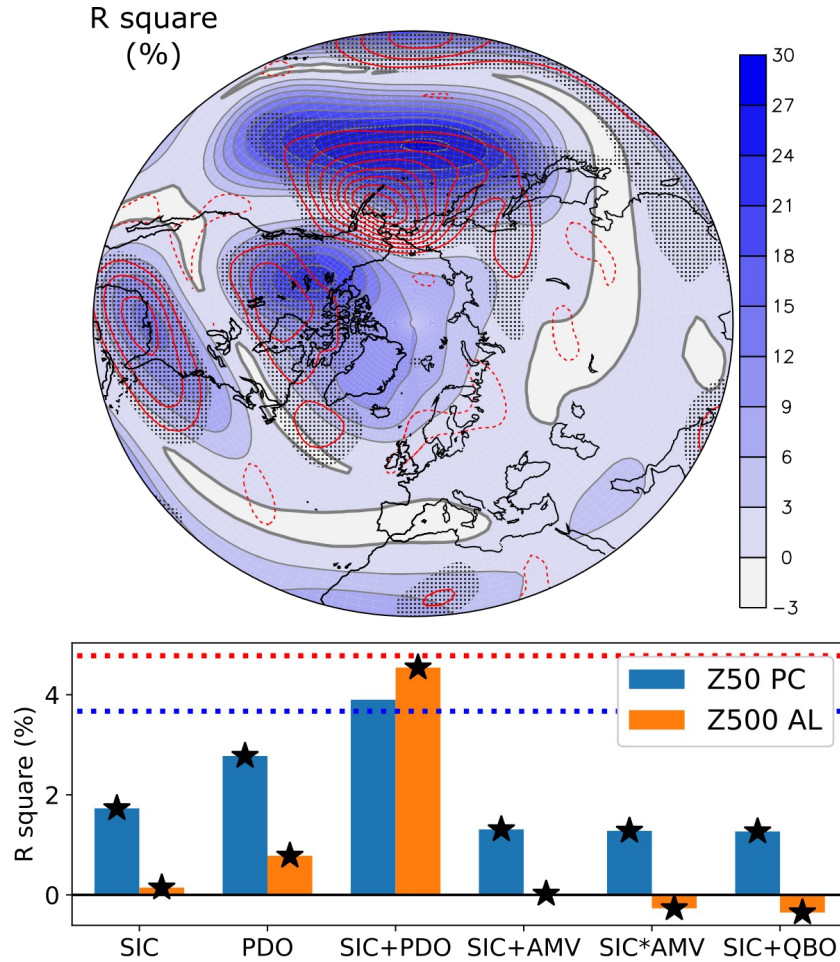


Figure S1: Explained variance when using different factors. (Top) Variance of the 500-hPa geopotential height in DJF, (color shade) explained by the PDO and sea-ice factors without any interaction, given by the adjusted R square; and (red contours, contour interval 0.3%, zero contours omitted) additional variance explained when adding the interaction between sea-ice condition and the PDO. The dots indicate the locations where the additional variance explained when adding the interaction term has a level of significance below 5%. (Bottom) Adjusted R square for a general linear model with (blue bars) the polar cap 50-hPa geopotential height or (orange bars) the 500-hPa geopotential height over the Aleutian as dependents variables. The factors, also known as the independent variables, are given on the x-axis. The SIC factor is a categorical independent variable with three levels as in Eq. (2). PDO, AMV and QBO denote three indices (see text for details). SIC+PDO (SIC+AMV and SIC+QBO) denotes the use of two

factors SIC and PDO (respectively AMV and QBO) in the regression, without accounting for the interaction. SIC*AMV denotes a regression with SIC, AMV and the interaction term between SIC and AMV.

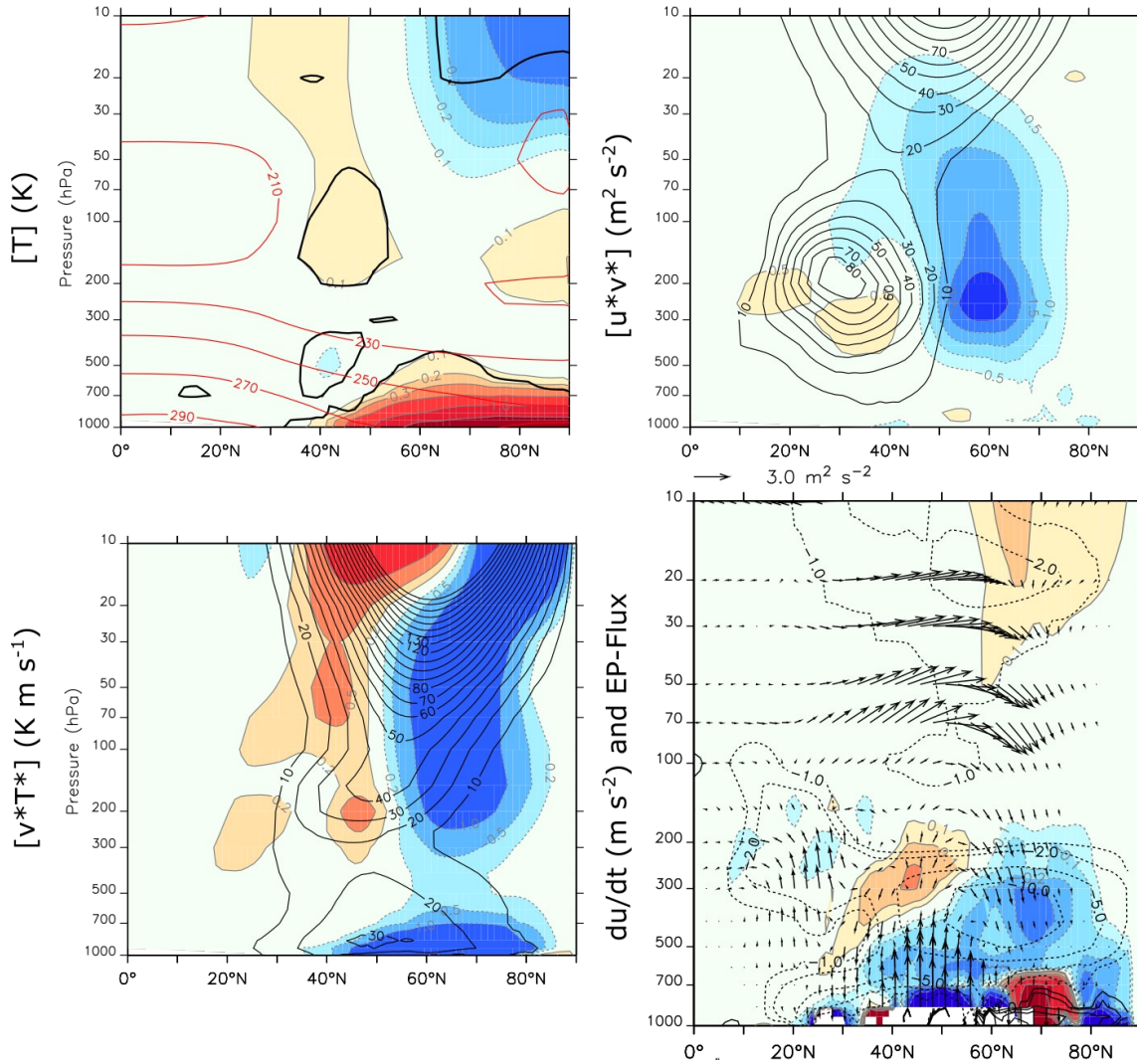


Figure S2: Zonal mean temperature and atmospheric circulation changes related to (left panels) sea-ice loss in FUT minus PI in atmosphere-only experiments: Temperature (in K; top left), eddy momentum flux (u^*v^* in $m^2 \cdot s^{-2}$; top right), eddy heat flux (v^*T^* in $K \cdot m \cdot s^{-1}$; bottom left), zonal wind tendency implied by the Eliassen-Palm flux divergence (in $10^2 m \cdot s^{-1} \cdot day^{-1}$; bottom right, color shade) and Eliassen-Palm flux ($m^2 \cdot s^{-2}$; bottom right, vectors). In the bottom row, the black contours show the zonal wind tendency implied by the Eliassen-Palm flux divergence in the PI ensemble, chosen as a reference. The regressions with a p-value below 10% are indicated by a thick black line for the zonal mean temperature.