

Supplementary Information
Stratospheric modulation of winter temperature trends in a warming climate
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Supplementary Figures

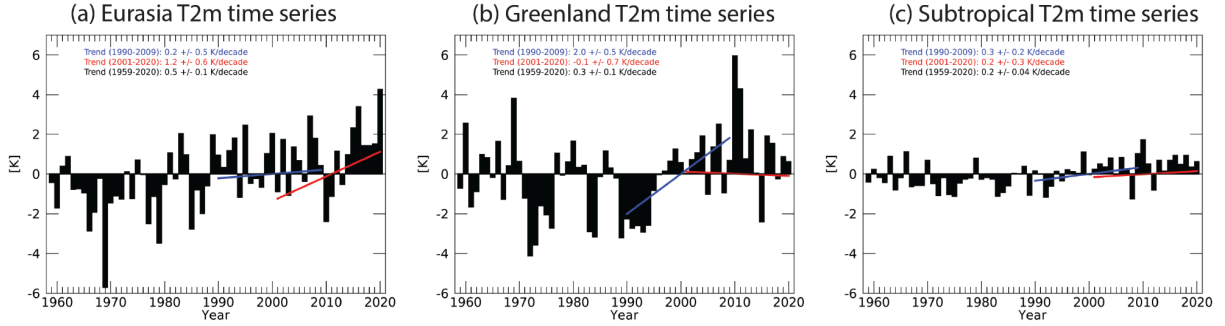


Figure S1. DJF near-surface (T2m) temperatures with land-sea mask applied over (a) Eurasia (area-weighted over blue box in Fig. 2), (b) Greenland (area-weighted over the green box in Fig. 2), and (c) subtropical Asia (area-weighted over red box in Fig. 2).

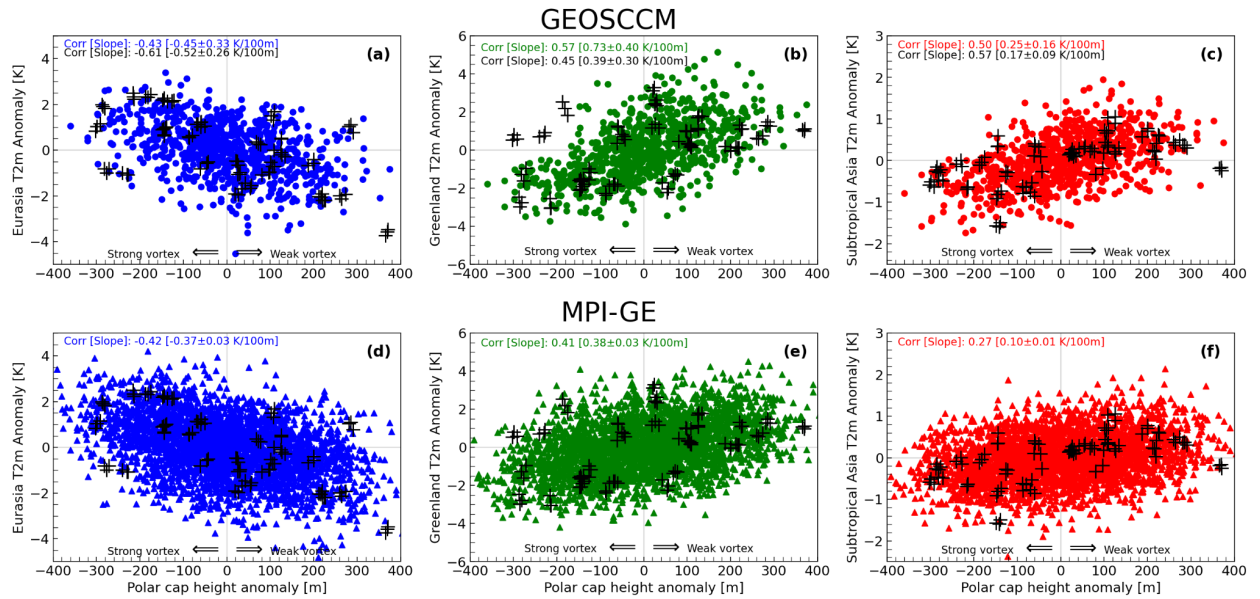


Figure S2. DJF year-to-year variability from 1980-2009 for 29 ensemble members in GEOSCCM (top row) and MPI-GE (bottom row) and 3 reanalysis products (ERA5, ERA-interim, and MERRA; black pluses), for the stratospheric polar vortex (50 hPa, 70-90N) anomalies in [m] versus (a,d) Eurasian 2m-temperature (T2m) anomalies [degK], (b,e) Greenland T2m anomalies [degK], and (c,f) subtropical Asia T2m anomalies in [degK]. Time series are first linearly detrended.

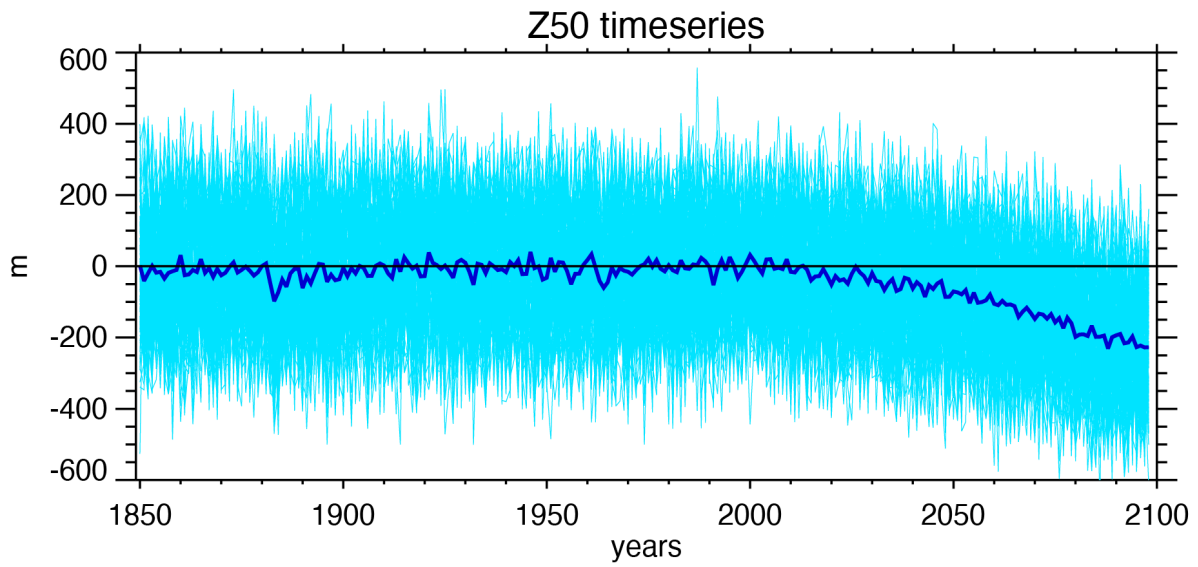


Figure S3. Individual ensemble members (light blue) and the ensemble-mean (dark blue) polar cap Z50 time series [m], with the global-mean removed. Negative values mean a strengthening vortex.

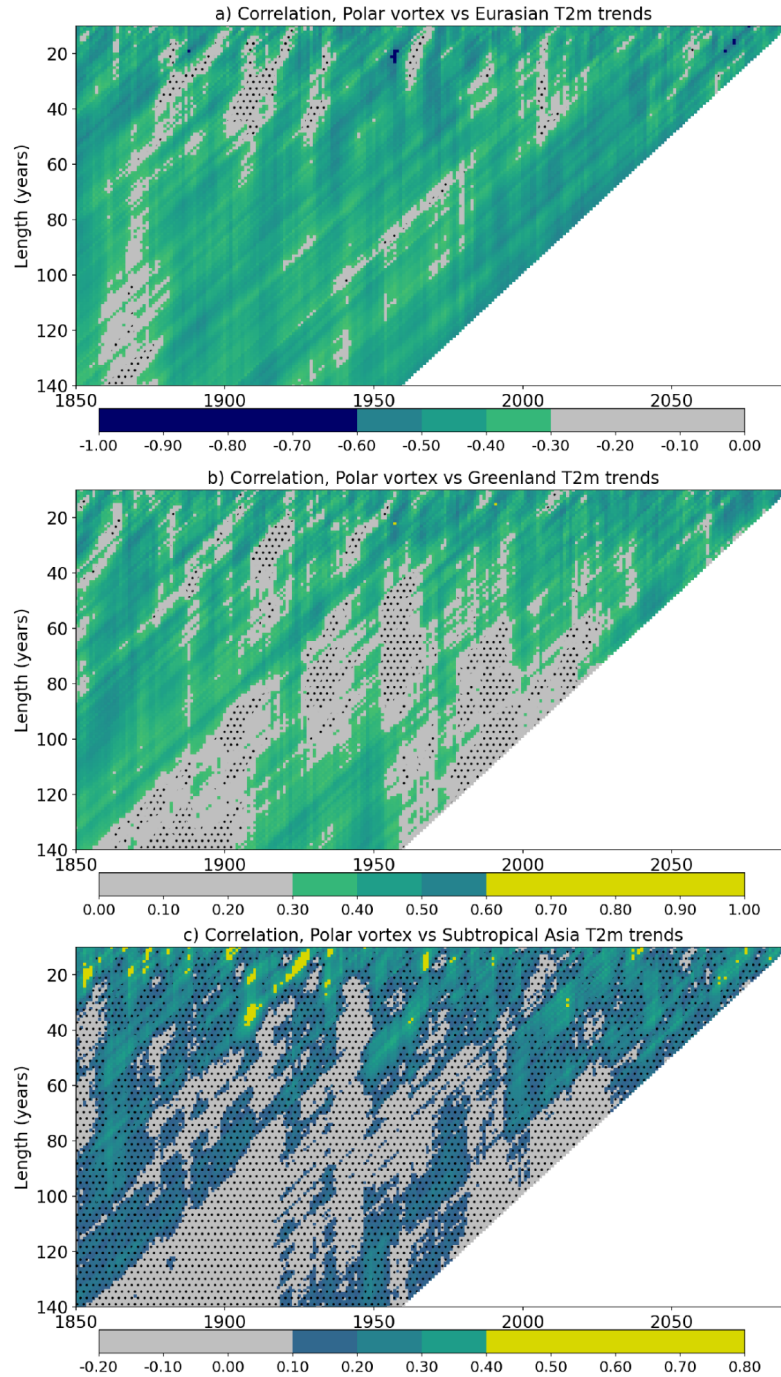


Figure S4. Correlation across 100 ensemble members, between polar vortex trends and (a) Eurasian, (b) Greenland, and (c) subtropical Asia T2m trends, as a function of trend starting year (x-axis) and trend length (y-axis). Stippling indicates non-significant ($p > 0.025$) correlations using a 2-tailed student t-test.