Supporting Information for "Limited influence of localized tropical sea surface temperatures on moisture transport into the Arctic"

Etienne Dunn-Sigouin[1], Camille Li[1], Paul J. Kushner[2]

[1]Geophysical Institute, University of Bergen and Bjerknes Centre for Climate Research, Bergen, Norway

[2]Department of Physics, University of Toronto, Toronto, Ontario, Canada

April 8, 2021, 3:41pm

References

Trenberth, K. E., & Solomon, A. (1994). The global heat balance: Heat transports in the atmosphere and ocean. *Climate Dyn.*, *10*(3), 107-134.

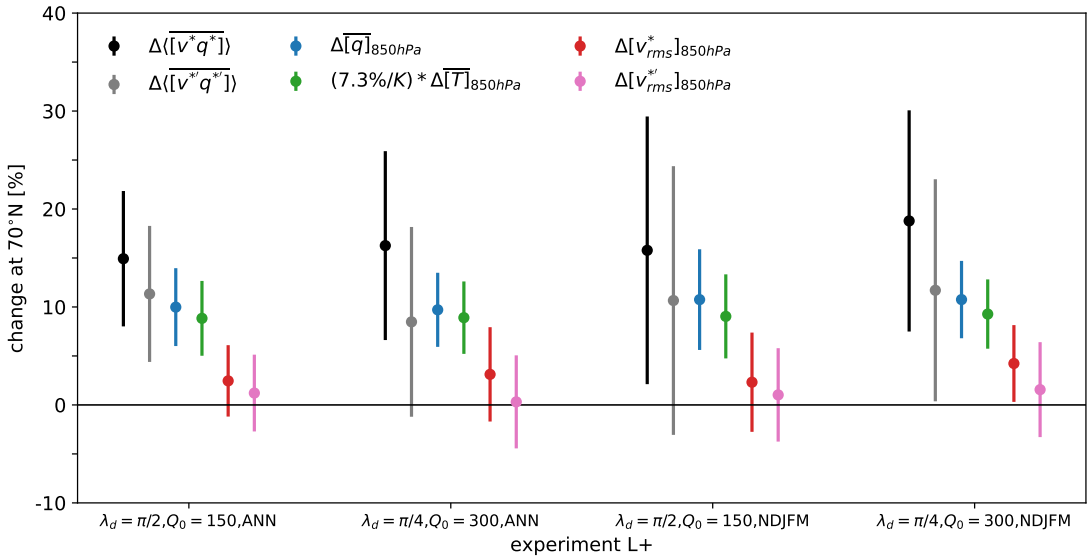

Figure S1. As in Fig. 3c of the manuscript except showing the sensitivity of experiment L+ to the zonal scale of the Q-flux perturbation using annual and wintertime data. The new simulation is the same as experiment L+ in the manuscript ($\lambda_d = \pi/2$, $Q_0 = 150$) except the zonal-scale is halved and the amplitude is doubled ($\lambda_d = \pi/4$, $Q_0 = 300$) to maintain the same integrated energy input into the slab ocean. The new simulation is branched from the control run, run for 30 years and the last 20 years are used for analysis.

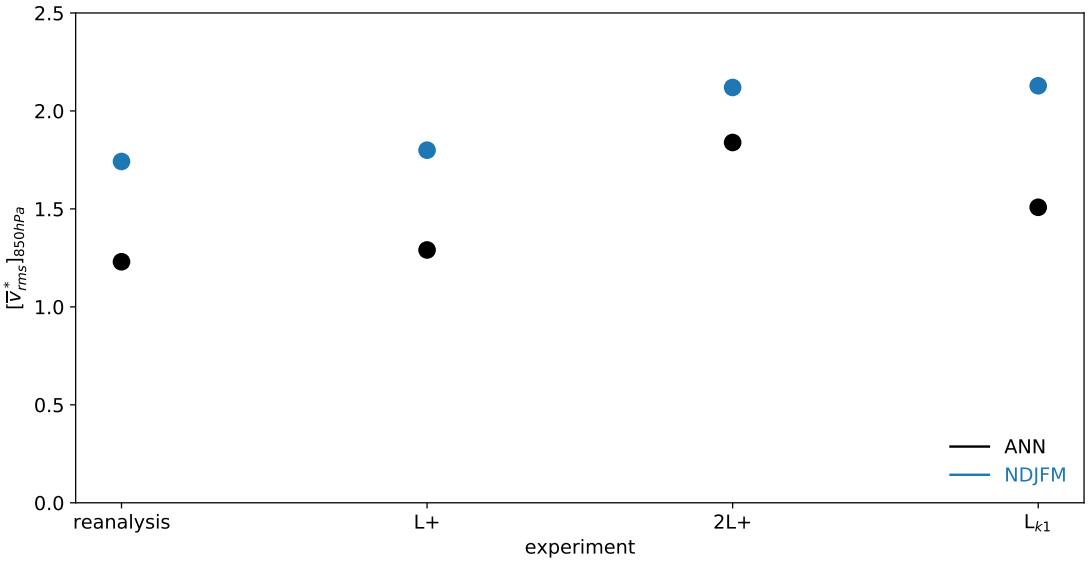

Figure S2. Annual and wintertime stationary wave amplitude in reanalysis and the localized forcing experiments. The amplitude is calculated by time-averaging the eddy meridional wind at 850 hPa and 70°N for each year and then taking the zonal-mean root-mean-square across all years.

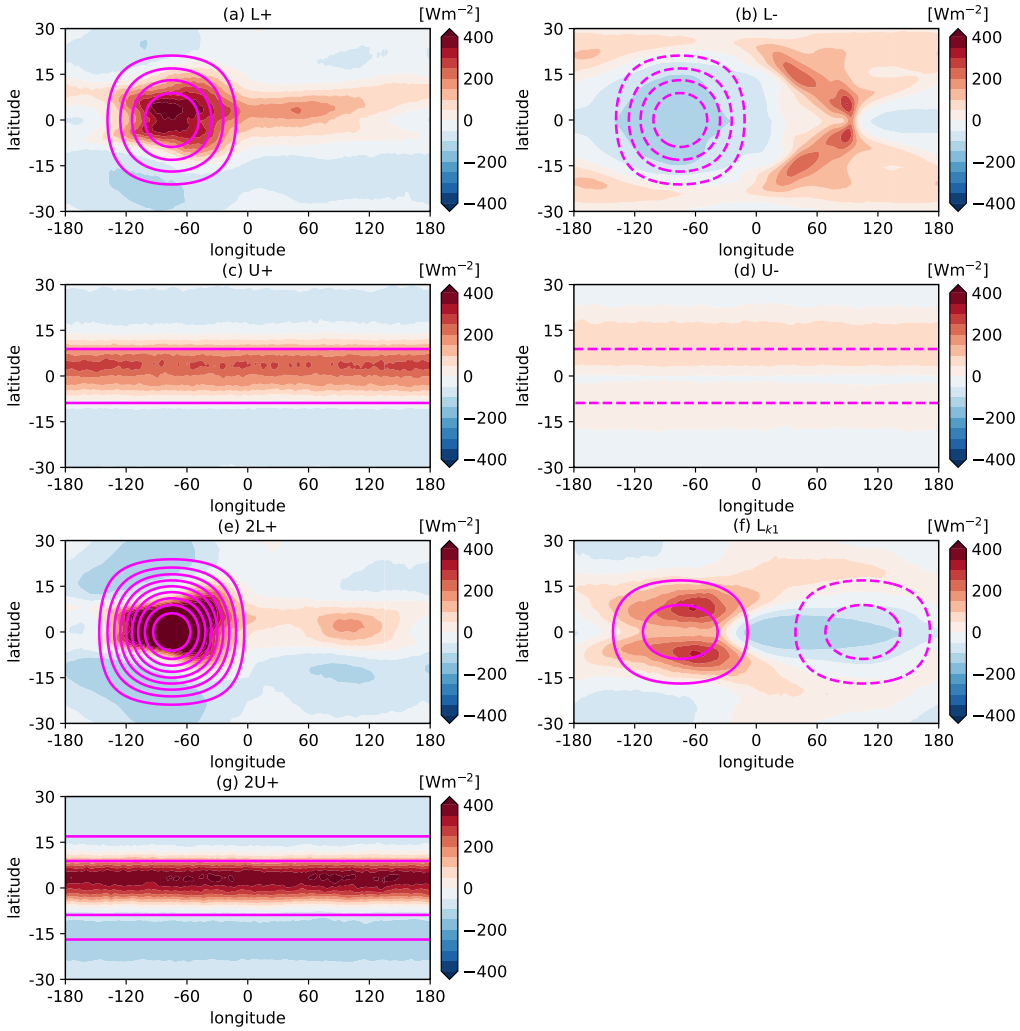

Figure S3. As in Fig. 1 except shading shows total (anomaly + climatology) diabatic heating. Diabatic heating is calculated using the atmospheric energy budget residual following equation 5 of Trenberth and Solomon (1994).

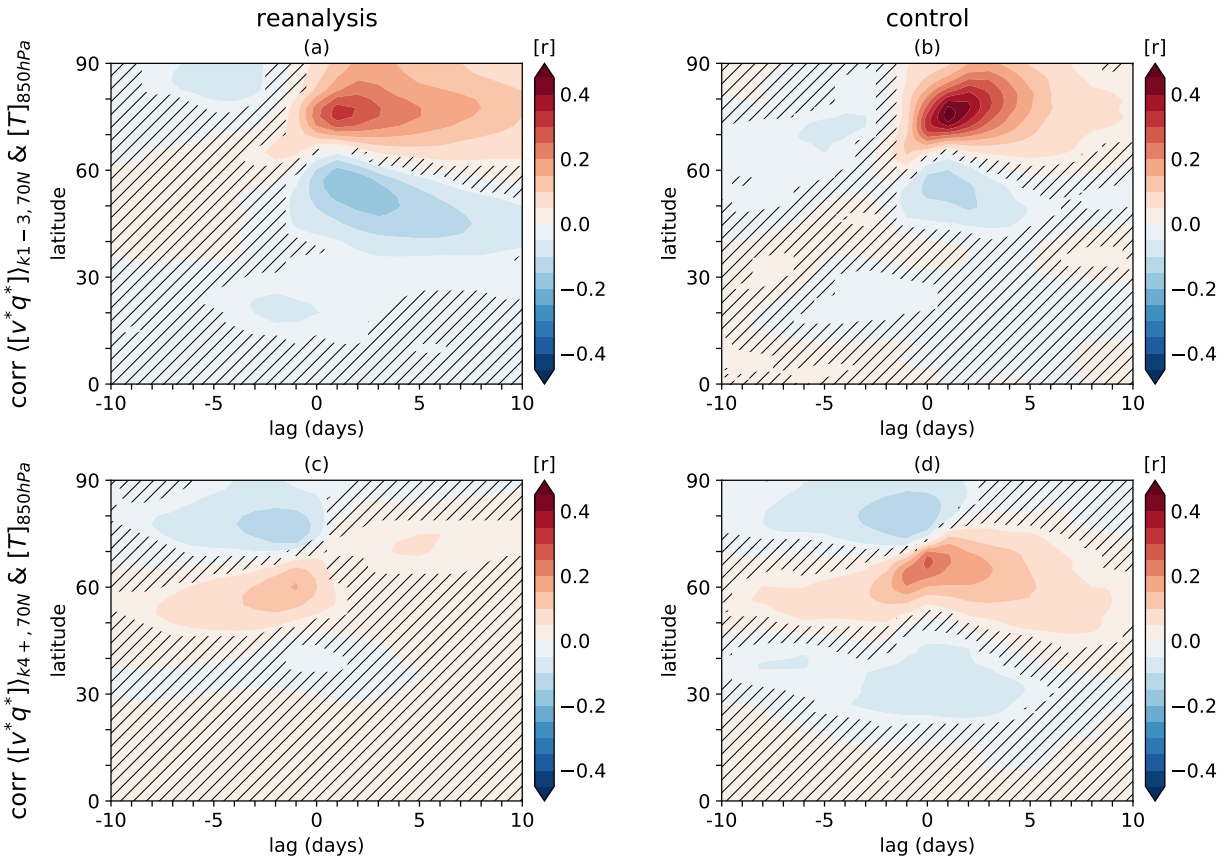

Figure S4. As in Fig. 2c,d except for (a,b) planetary wave ($k \leq 3$) and (c,d) synoptic wave ($k \geq 4$) moisture transport correlated with zonal-mean temperature at 850 hPa.

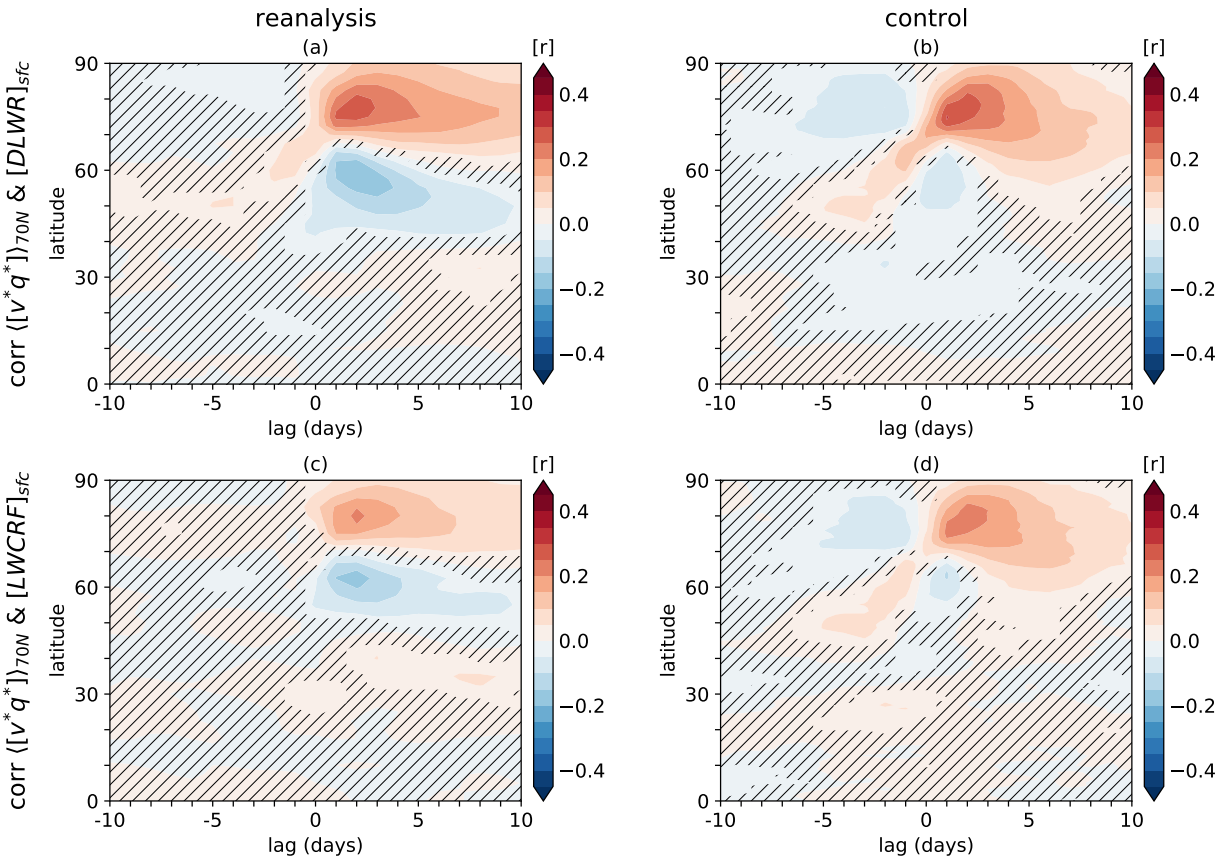

Figure S5. As in Fig. 2c,d except for zonal-mean surface (a,b) downward longwave radiation and (c,d) longwave cloud radiative forcing correlated with zonally and vertically integrated eddy moisture transport at 70°N.

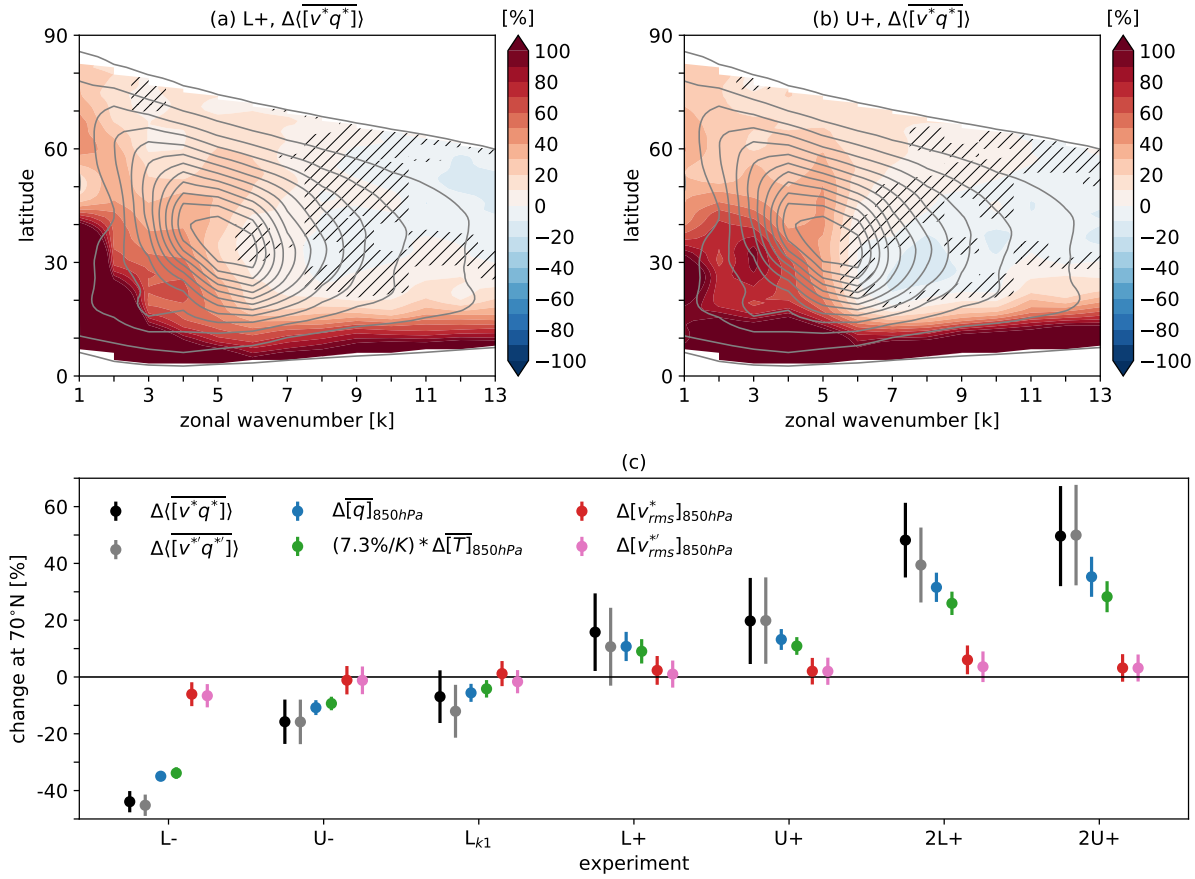

Figure S6. As in Fig. 3 except for the NDJFM winter season.