Dynamical Drivers of the Exceptional Warmth Over Siberia During the Spring of 2020

The extreme Siberian warmth can be attributed to persistent atmospheric ridging over northern Asia associated with Rossby wave trains originating from the North Atlantic (cf. panels a and b).

A tropical-extratropical teleconnection through which above average tropical SSTs affected the upper-troposphere dynamics and mean meridional circulation, causing warming over the mid-high latitudes (panels c and d).

April 2020 anomalies in 2-m air temperature (color fills, K) and 250mb eddy stream function (contours drawn every 5*10^6 m^2/s) for (a) MERRA-2 and large-ensemble GEOS5 AGCM simulations with (b) regional replay applied near North America (magenta box; RPL_NA), (c) replay applied over the tropics (RPL_TR), (d) and no replay (NORPL).