Supplementary material for

A synoptic perspective on the role of the upstream diabatic cooling in modulating the North Pacific storm track

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This file contains supplementary Figs. 1 - 6.

S1 The role of diabatic cooling for baroclinicity at the entrance of the storm tracks

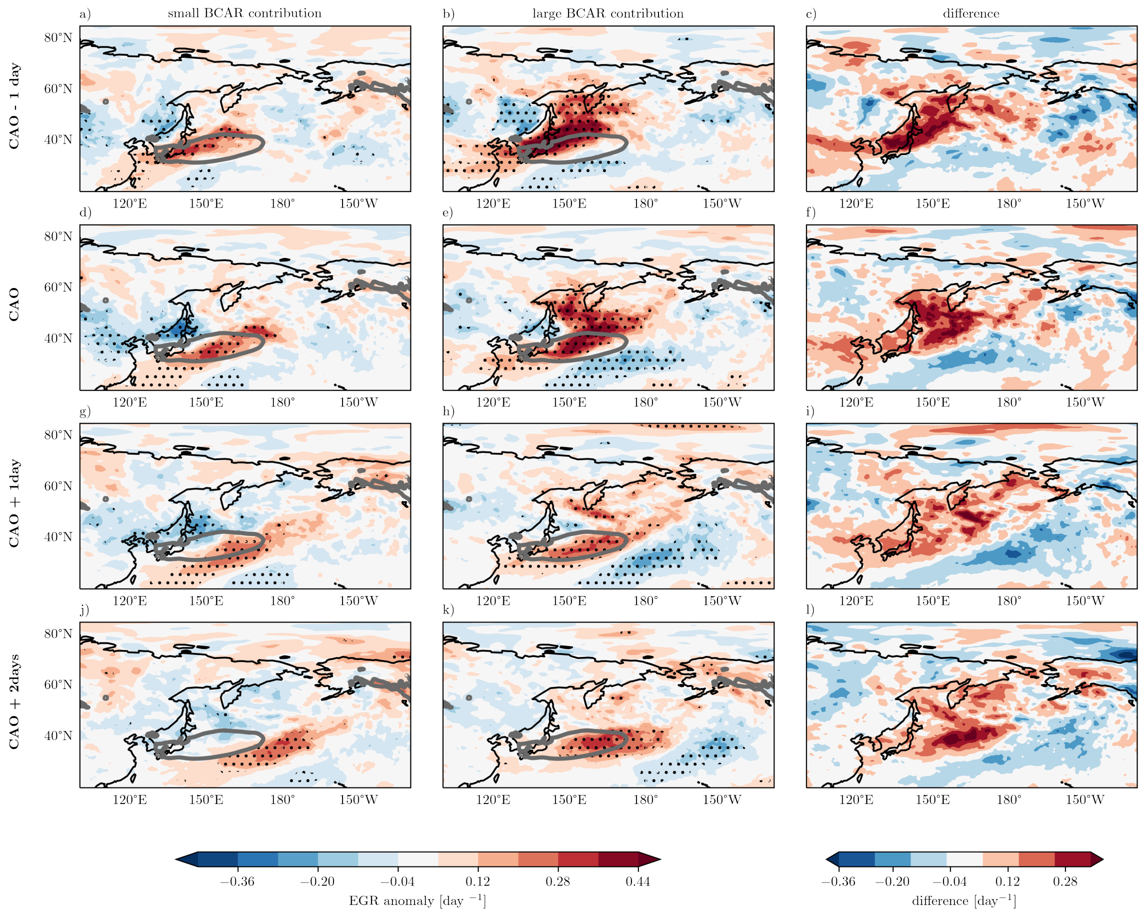

Figure S1: Composite of Eady growth rate anomalies (shading) at (a, b) $t_{CAO} - 1\,d$, (d, e) t_{CAO}, (g, h) $t_{CAO} + 1\,d$, and (j,k) $t_{CAO} + 2\,d$ for CAO featuring small BCAR contributions (left) and large BCAR contributions (right). The DJF climatology in Eady growth rates is additionally indicated in the gray contour (1 day^{-1}). The difference between the two is indicated in the right column (c,f,i,l).

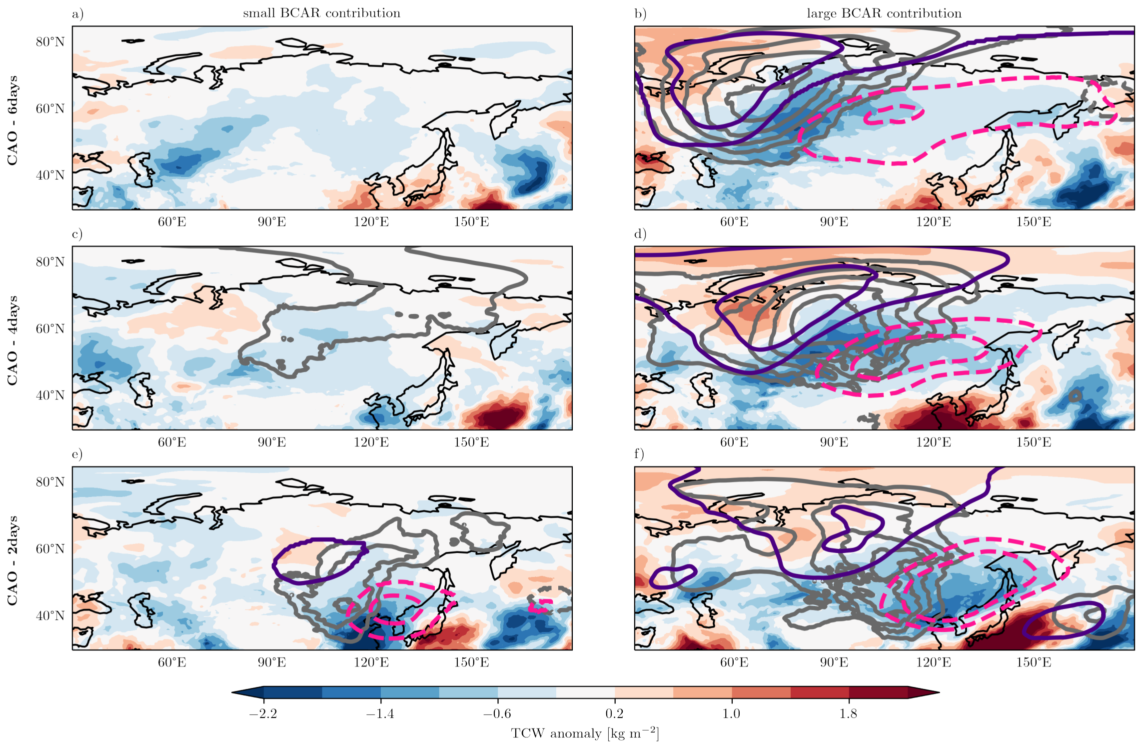

Figure S2: Composite of total column water anomalies (shading), sea level pressure anomalies (gray contours, dashed for negative and solid for positive), and geopotential height anomalies at 500 hPa (colored contours, pink for negative and blue for positive) at (a, b) $t_{CAO} - 6\,d$, (c,d) $t_{CAO} - 4\,d$, and (e,f) $t_{CAO} - 2\,d$ for CAO featuring small BCAR contributions (left) and large BCAR contributions (right).

S2 Amplification of an upper-level wave train and Rossby wave breaking

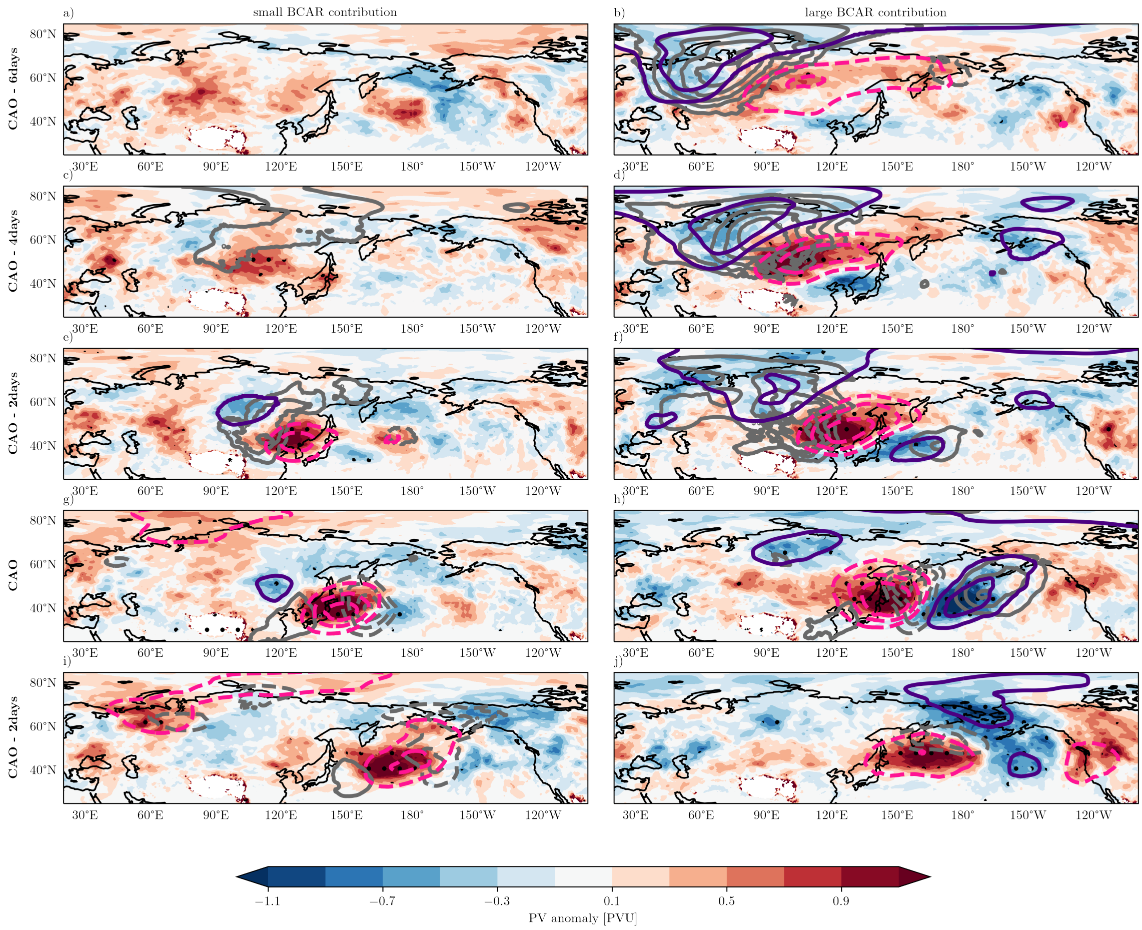

Figure S3: Composite of upper-level PV anomalies (shading), sea level pressure anomalies (gray contours, dashed for negative and solid for positive), and geopotential height anomalies at 500 hPa (colored contours, pink for negative and purple for positive) at (a, b) $t_{CAO} - 6\,d$, (c,d) $t_{CAO} - 4\,d$, (e,f) $t_{CAO} - 2\,d$, (g,h) t_{CAO}, and (i,j) $t_{CAO} + 2\,d$ for CAOs featuring small BCAR contributions (left) and large BCAR contributions (right).

S3 Cyclone characteristics before and after small and large C_{BCAR} CAOs

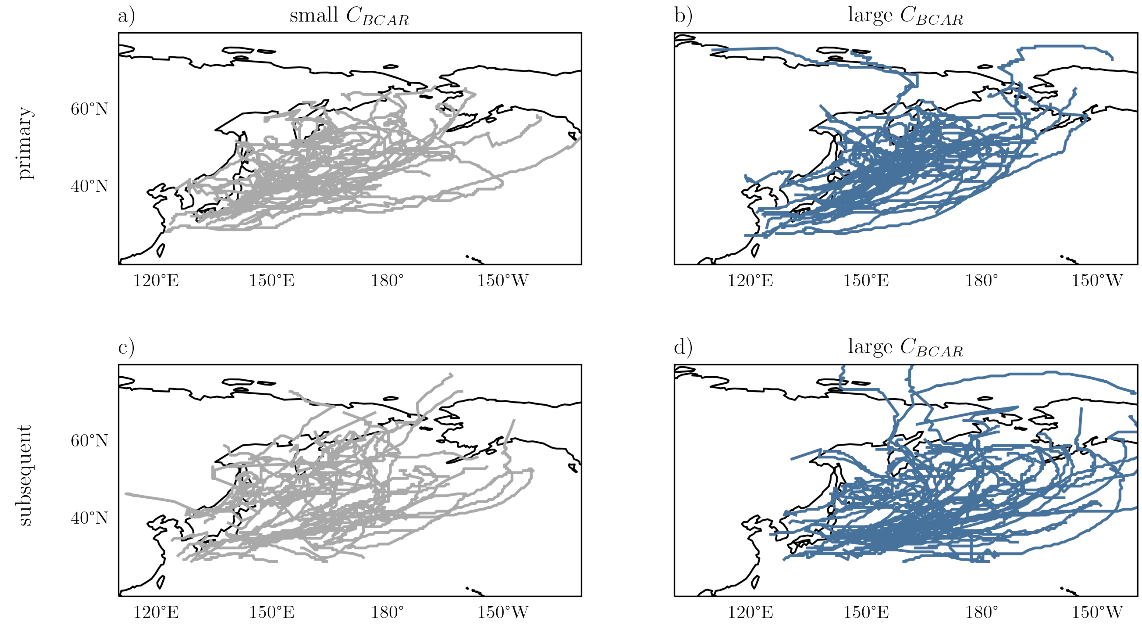

Figure S4: Cyclone tracks of primary cyclones initiating small and large C_{BCAR} CAOs (a,b) and subsequent cyclones with maximum intensification 1 to 3 days after the CAOs of the two types (c,d).

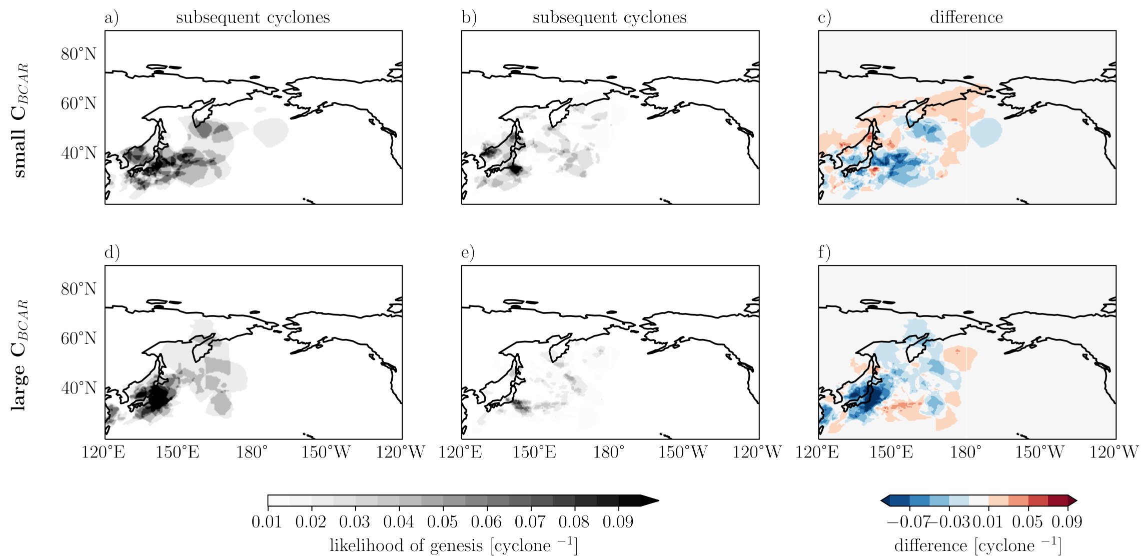

Figure S5: Genesis locations of primary cyclones initiating small and large C_{BCAR} CAOs (a,b) and subsequent cyclones with maximum intensification 1 to 3 days after the CAOs of the two types (c,d).

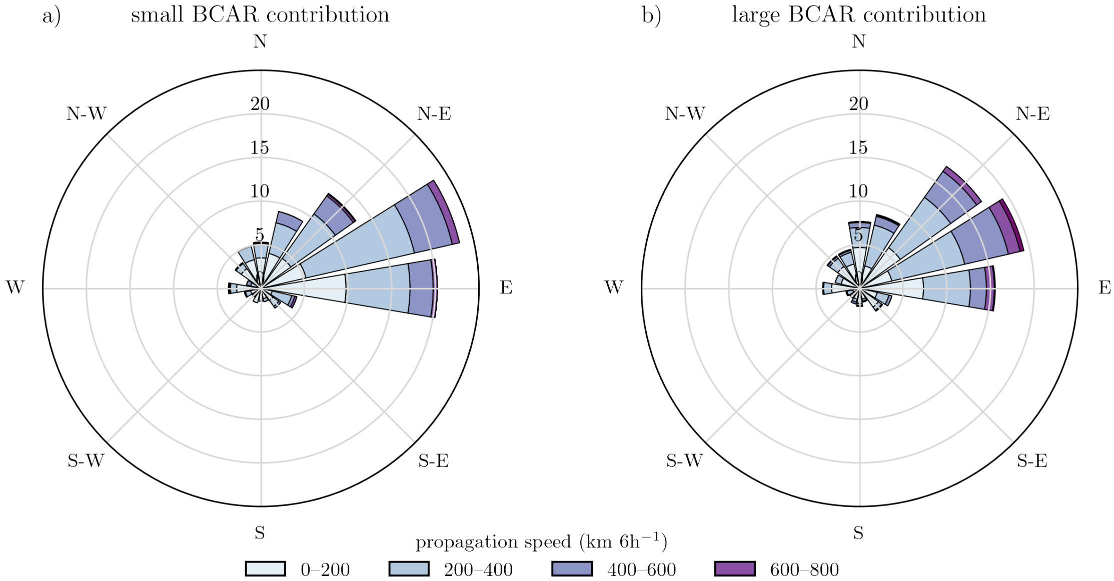

Figure S6: Windroses of the 6 h propagation direction and speed of primary cyclones associated with a) small C_{BCAR} CAOs, and b) large C_{BCAR} CAOs. The radial axis is expressed in %, indicating the relative contribution of each propagation direction to the total number of time steps. The shading additionally shows the 6 h propagation speed along the cyclone tracks.