Supplementary material for

A new look at the jet-storm track relationship in the North Pacific and North Atlantic

by Nora Zilibotti [a], Heini Wernli [a], and Sebastian Schemm [b]

[a]Institute for Atmospheric and Climate Science, ETH Zürich, Switzerland

[b]Department of Applied Mathematics and Theoretical Physics, University of Cambridge, Cambridge, UK

Corresponding author: Nora Zilibotti, nora.zilibotti@env.ethz.ch

This file contains supplementary Figs. 1 - 7.

1 Supplement

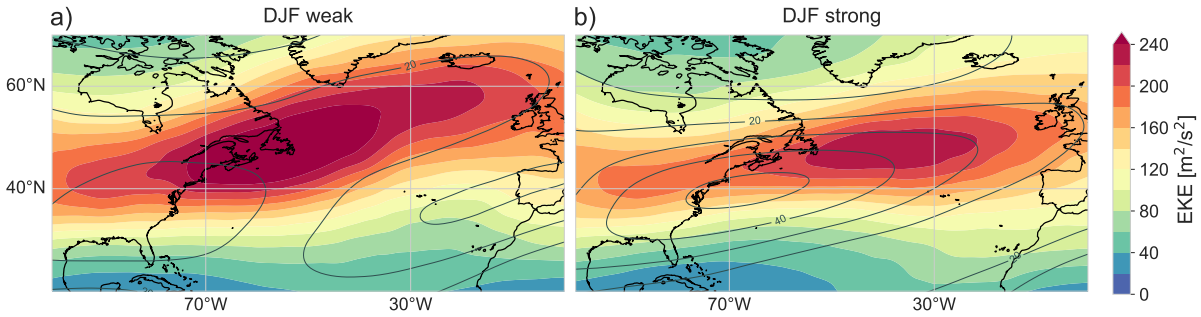

Figure S1: EKE at 300 hPa (shading) and 10-d low-pass filtered zonal wind at 250 hPa (U, gray contours, every 10 m s^{-1}) in the NA for weak **(a)** and strong **(b)** jet timesteps.

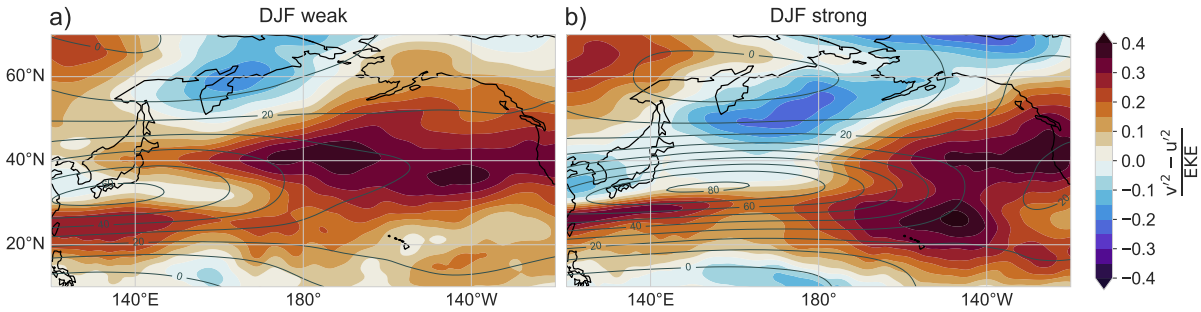

Figure S2: Eddy orientation measure, $v'^2 - u'^2$ normalized by EKE (shading) and the 10-d low-pass filtered zonal wind on 250 hPa (U, gray contours) for weak **(a)** and strong **(b)** jet timesteps in the NP.

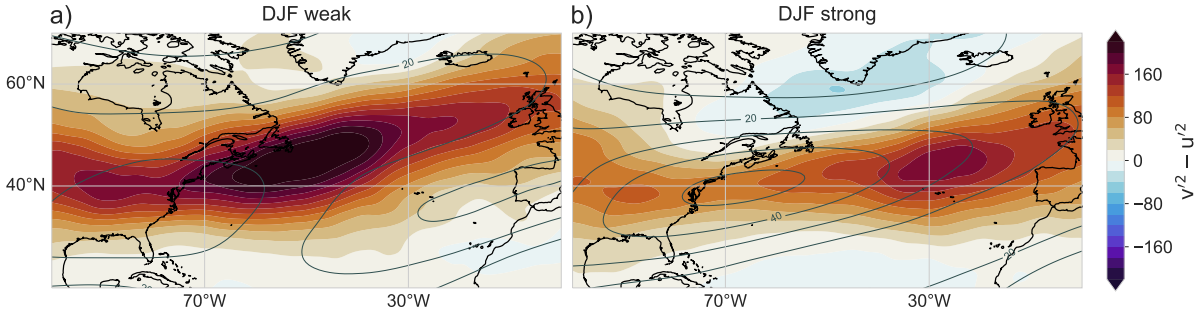

Figure S3: Unnormalized eddy orientation measure, $v'^2 - u'^2$ (shading) and the 10-d low-pass filtered zonal wind on 250 hPa (U, gray contours) for weak **(a)** and strong **(b)** jet timesteps in the NA

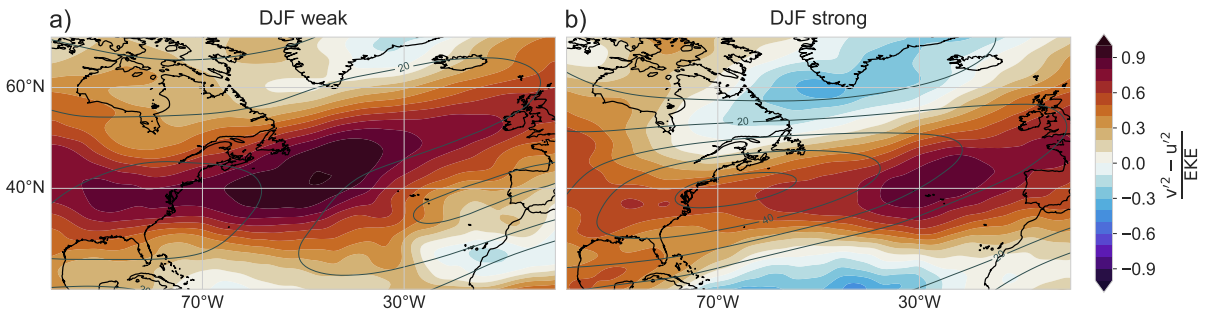

Figure S4: As Fig. S2 but for the NA.

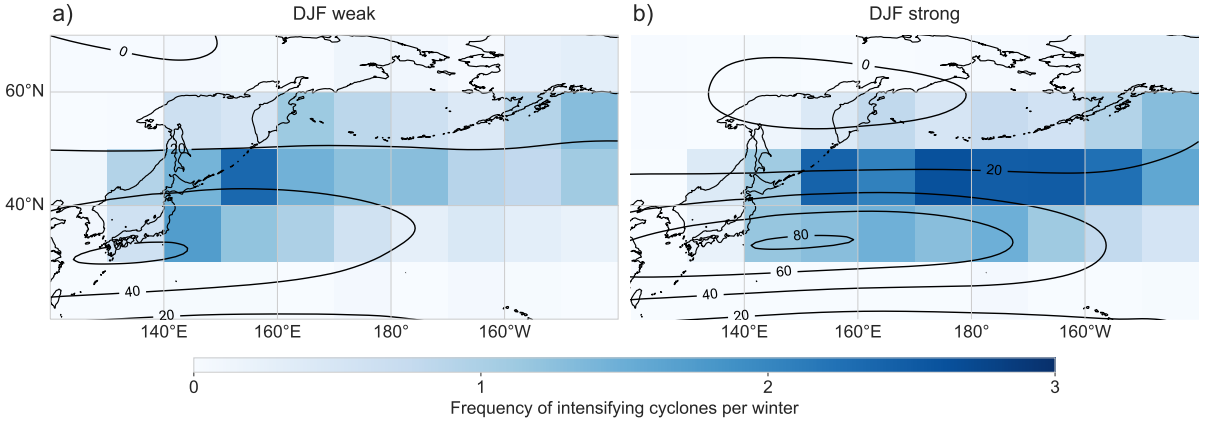

Figure S5: 10-day low-pass filtered zonal wind at 250 hPa (U) and area-weighted annual frequency of cyclones at their time of maximum 12-hourly intensification in the NP. Frequencies are computed separately for time steps belonging to the weakest (left) and strongest (right) tercile of U.

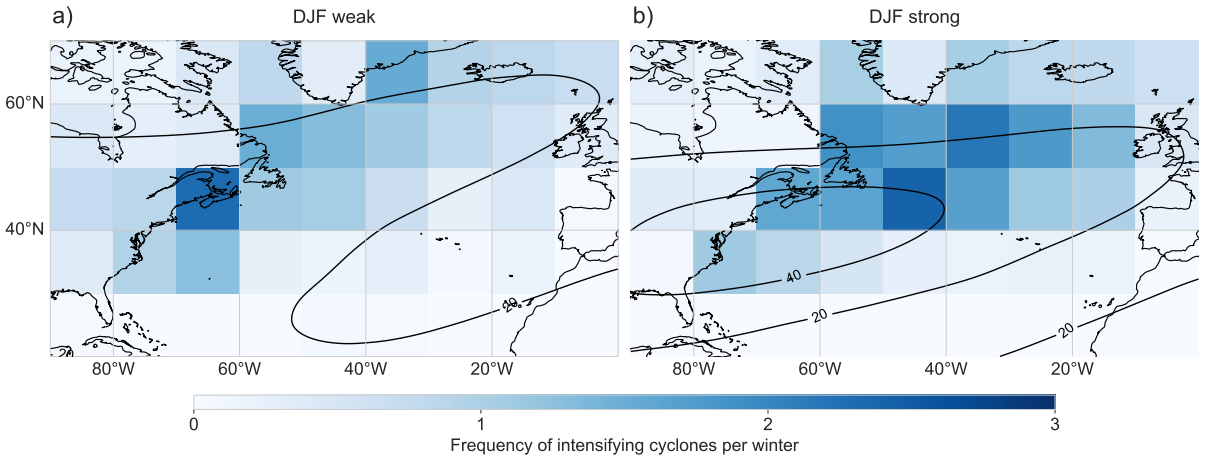

Figure S6: As Fig. S5 but for the NA.

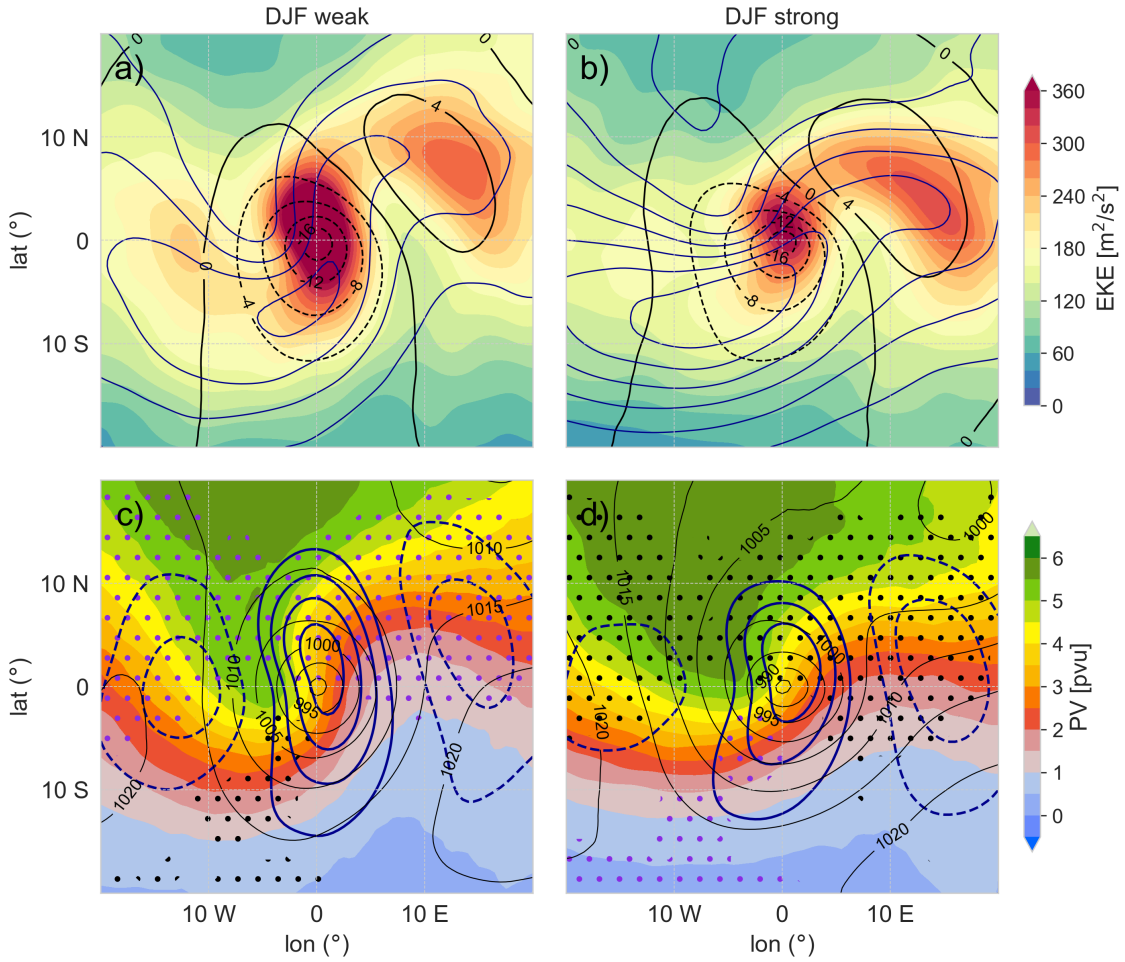

Figure S7: Cyclone-centered composites of cyclones at their time step of maximal 12-h intensification in the NA domain. Shown are cyclones with maximal intensification during time steps belonging to the weak (**a**,**c**) and strong U (**b**,**d**) terciles. (a,b) show the 300 hPa EKE in shading, the high-pass filtered SLP in black contours (every 4 hPa) and the total kinetic energy at 250 hPa in blue contours (every 200 $\mathrm{m^2\,s^{-2}}$). The innermost total kinetic energy contour is 1400 $\mathrm{m^2\,s^{-2}}$ in (a) and 2200 $\mathrm{m^2\,s^{-2}}$ in (b). (c,d) show PV on 320 K in shading, SLP in black contours (every 5 hPa), and the high-pass filtered meridional wind at 300 hPa in blue contours (every 5 $\mathrm{m\,s^{-1}}$). The significance of a positive (negative) PV anomaly with respect to the PV distribution of all DJF cyclones on a 1% level is shown by black (violet) stippling.