Supplementary material:
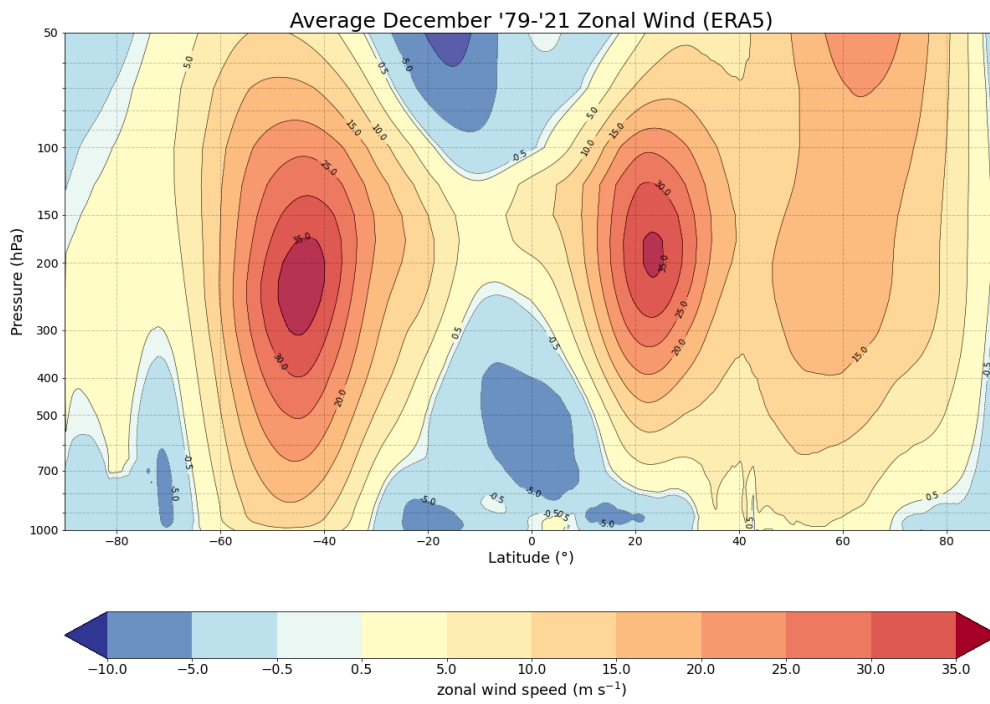
Figure S1: Cross-section of the average zonal wind speed of the ERA5 December between 1979 and 2021.
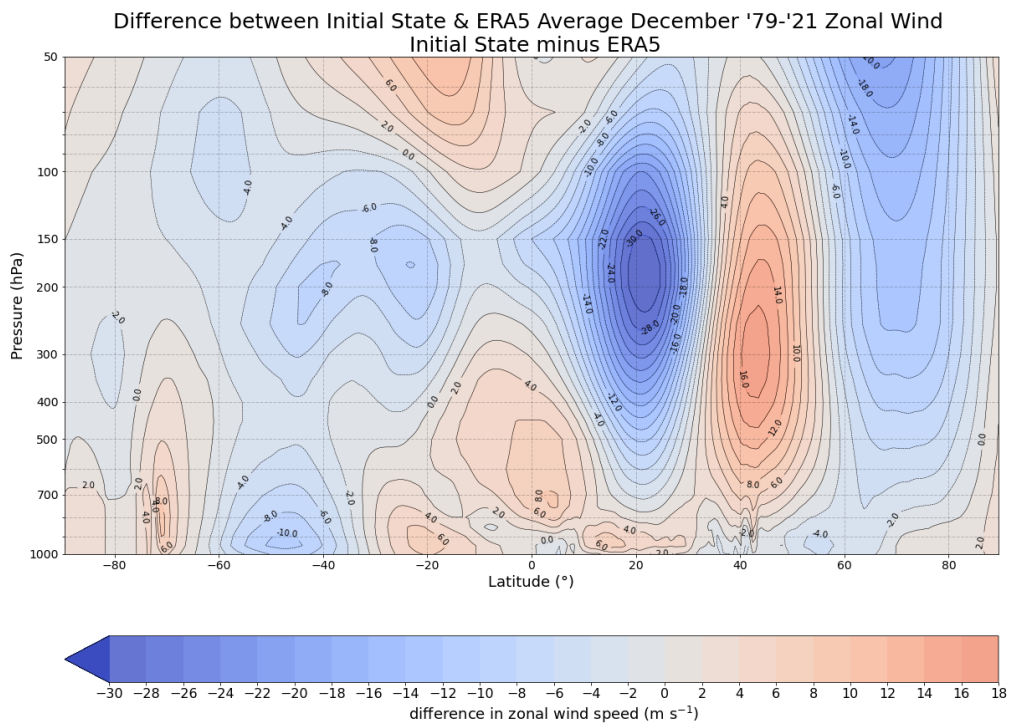
Figure S2: Cross-section of the difference between average zonal wind speed pictured Figure 1S and the analytical jet generated with n=3 and b=2.0.
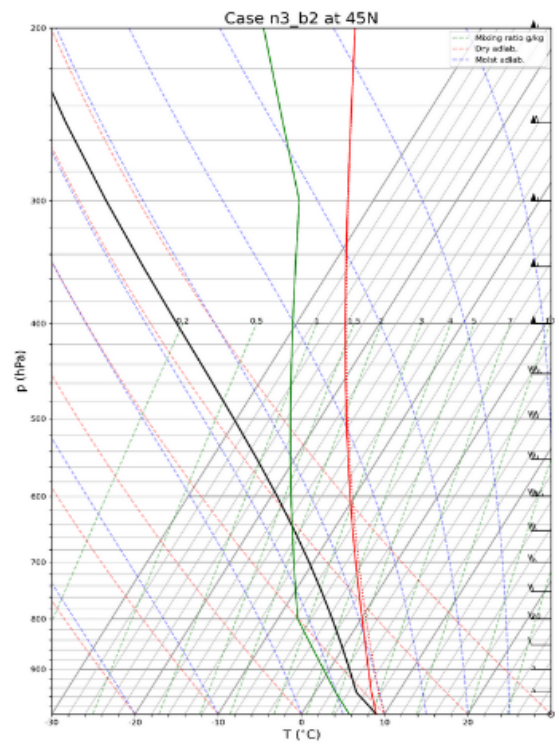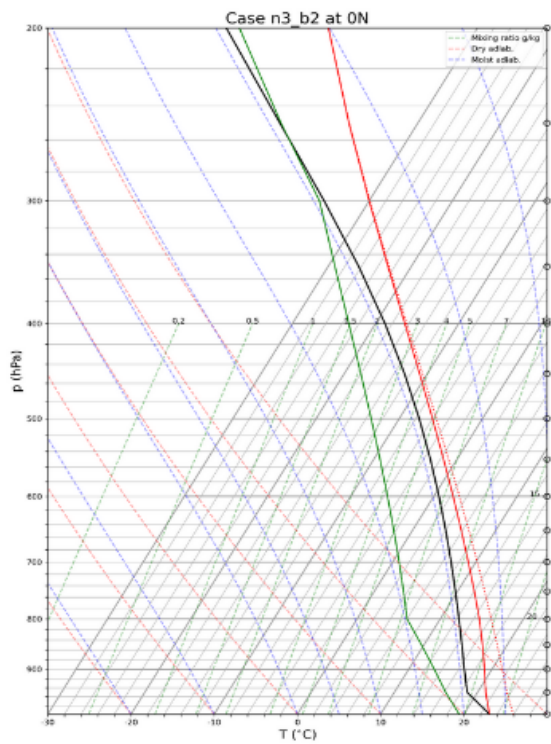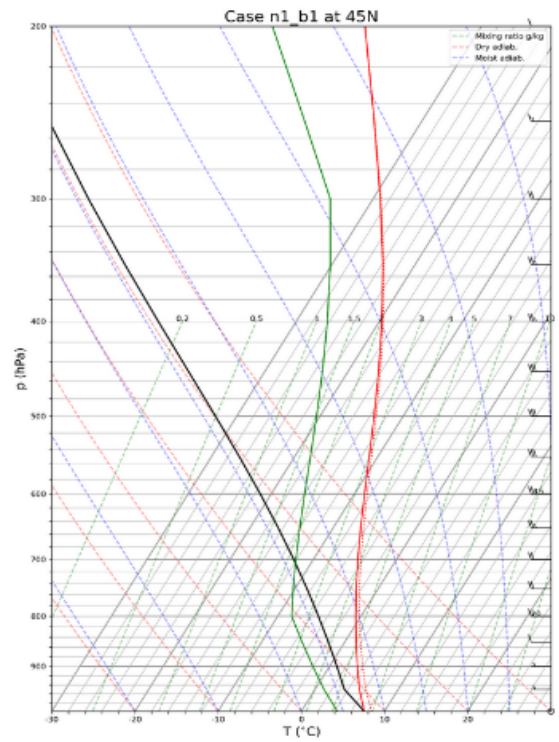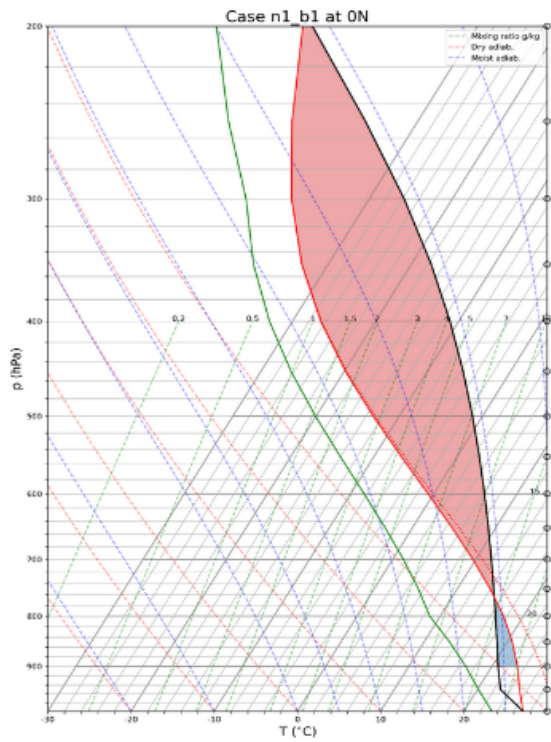
Figure S3: Sounding for two cases (n=3 and b=2.0, n=1 and b=1.0) for two latitudes (0° and 45°N). The solid green line represents the dew point, the solid red line the moist temperature, the solid black line the ideal parcel profile from the surface temperature and the dashed red line the dry temperature (added for reference). The red area represents the convective available potential energy and the blue area the convective inhibition.